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FINAL
BASELINE ECOLOGICAL RISK ASSESSMENT FOR OPERABLE UNITS 2 & 3 OF THE SMURFIT-STONE/FRENCHTOWN MILL SITE LOCATED IN MISSOULA COUNTY, MONTANA

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LIST OF ACRONYMS AND ABBREVIATIONS

AhR	Aryl Hydrocarbon Receptor
AOC	Administrative Order on Consent
ARCS	Assessment and Remediation of Contaminated Sediment
AUF	Area Use Factor
AVI	Aquatic Vegetation-Associated Invertebrate
BERA	Baseline Ecological Risk Assessment
BMI	Benthic Macroinvertebrate
BW	Body Weight
C_{biota}	Concentration in Biota
C_c	Concentration in Carcass
C_f	Concentration in Fillet
C_{lw}	Lipid Weight Concentration
C_{max}	Maximum Concentration
$C_{sediment}$	Concentration in Sediment
C_{soil}	Concentration in Soil
C_{wb}	Concentration in Whole Body
C_{ww}	Wet weight Concentration
C_{water}	Concentration in Water
Ca	Calcium
$CaCO_3$	Calcium Carbonate
CCC	Criterion Continuous Concentration
CDD	Chlorinated Dibenzo-*p*-Dioxins
CDF	Chlorinated Dibenzo-*p*-Furans
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Clark Fork River
CMC	Criteria Maximum Concentration
COPEC	Contaminant of Potential Ecological Concern
CSM	Conceptual Site Model
CTC	Critical Fish Tissue Concentration
D/F	Dioxins and furans
D/F/P	Dioxin, furans, and dioxin-like Polychlorinated Biphenyl congeners
DF	Dietary Fraction
DOC	Dissolved Organic Carbon
dw	Dry Weight
EC20	Effect Concentration Affecting 20% of the Population
Eco-SSL	Ecological Soil Screening Level
EDD	Estimated Daily Dose
EDD_{diet}	Estimated Daily Dose based on diet
$EDD_{sediment}$	Estimated Daily Dose based on sediment
EDD_{soil}	Estimated Daily Dose based on soil
EDD_{water}	Estimated Daily Dose based on water
EDD_{total}	Total Estimated Daily Dose
EPC	Exposure Point Concentration
EPC_{AVI}	Exposure Point Concentration for Aquatic Vegetation-Associated Invertebrates

EPC_{BMI}	Exposure Point Concentration for Benthic Macroinvertebrates
EPC_{invert}	Exposure Point Concentration for Invertebrate Tissue
ERA	Ecological Risk Assessment
ERM	Effect Range Median
ESL	Ecological Screening Level
ESV	Ecological Screening Value
FAVF	Final Acute Value Factor
FIR	Food Ingestion Rate
FSP	Field Sampling Plan
GLWQI	Great Lakes Water Quality Initiative
GMAV	Genus Mean Acute Value
ha	Hectare
HDPT	High-Density Pulp Tank
HQ	Hazard Quotient
HQ_{max}	Maximum Hazard Quotient
HQ_t	Total Hazard Quotient
IBA	Important Bird Area
IPaC	Information for Planning and Consultation
IR_{max}	Maximum intake rate
ISQG	Interim Sediment Quality Guideline
Kg	Kilogram
kg BW	Kilogram body weight
L	Liter
LANL	Los Alamos National Laboratory
LCV	Lowest Chronic Value
LOAEL	Lowest-Observable-Adverse-Effect-Level
LOEC	Lowest-Observed-Effect-Concentration
LOER	Lowest-Observed-Effect-Residue
lw	Lipid-adjusted weight
MDEQ	Montana Department of Environmental Quality
MFWP	Montana Fish, Wildlife and Parks
mg	Milligram
Mg	Magnesium
MTNHP	Montana National Heritage Program
NERH	No Effect Range High
NERM	No Effect Range Median
NOAA	National Oceanic and Atmospheric Administration
NOAEL	No-Observable-Adverse-Effect-Level
NOEC	No-Observed-Effect-Concentration
NOER	No-Observed-Effect-Residue
NPL	National Priorities List
NPP	North Polishing Pond
NRWQC	National Recommended Water Quality Criteria
ORNL	Oak Ridge National Laboratory
OU	Operable Unit
PCB	Polychlorinated Biphenyl

PCDD	Polychlorinated dibenzo-*p*-dioxin
PCDF	Polychlorinated dibenzo-*p*-furan
PEC	Probable Effect Concentration
PeCDF	2,3,4,7,8-pentachlorodibenzofuran
PEL	Probable Effect Level
PRP	Potentially Responsible Party
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RIWP	Remedial Investigation Work Plan
SACR	Secondary Acute-Chronic Ratio
SAV	Secondary Acute Value
SCV	Secondary Chronic Value
SEC	Sediment Effect Concentration
SI	Site Investigation
SIR	Soil Ingestion Rate
SLERA	Screening Level Ecological Risk Assessment
SOC	Species of Concern
SQG	Sediment Quality Guidelines
SSD	Species Sensitivity Distribution
SUF	Seasonal Use Factor
SVOC	Semi-Volatile Organic Compound
TCDD	2,3,7,8-Tetrachlorodibenzo-*p*-dioxin
TCDF	Tetrachlorodibenzo-*p*-furan
TEC	Threshold Effect Concentration
TEF	Toxicity Equivalence Factor
TEL	Threshold Effect Level
TEQ	Toxicity Equivalency
TEQ_A	Avian Toxicity Equivalency
TEQ_F	Fish Toxicity Equivalency
TEQ_M	Mammalian Toxicity Equivalency
TOC	Total Organic Carbon
TRB	Tissue Residue Benchmark
TRV	Toxicity Reference Value
TSB	Transformer Storage Building
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VOC	Volatile Organic Compound
W_c	Carcass Weight
W_f	Fillet Weight
WIR	Water Ingestion Rate
WMW	Wilcoxon-Mann-Whitney
ww	Wet Weight
WWTS	Wastewater Treatment System
95UCL	95th percentile Upper Confidence Limit

kg	Kilogram
kg BW-day	Kilogram body weight per day
mg	Milligram
µg	Microgram

EXECUTIVE SUMMARY

INTRODUCTION

This document is a Baseline Ecological Risk Assessment (BERA) for the Smurfit-Stone/Frenchtown Mill Site located in Missoula County, Montana. Given that the full geographic extent of the site, particularly in the Clark Fork River adjacent to and downstream of the site, has not been fully defined, the subject of this BERA will be referred to as the Smurfit-Stone/Frenchtown Mill Study Area (Study Area). The purpose of the BERA is to describe the likelihood that adverse effects may occur in ecological receptors exposed to environmental contaminants at the Site under present conditions. This information, along with other relevant information, will be used by risk managers to decide whether remedial actions (beyond those that have already been implemented) are needed to protect ecological receptors from adverse effects attributable to Site-related environmental contaminants. This assessment has been performed in basic accord with methods and procedures established by the United States Environmental Protection Agency (USEPA) for conducting ecological risk assessments**.**

BACKGROUND

Site Location and History

The Smurfit-Stone/Frenchtown Mill site encompasses approximately 3,150 acres of the northwestern portion of the Missoula Valley (Site). The Site is located in the Clark Fork River (CFR) drainage. A pulp mill operated at the Site from 1957 to 2010. Most areas of the Site have been idle since industrial activities at the Mill ceased in 2010. The core industrial footprint of the Mill Site covers about 260 acres and includes the former mill, recycling plant, wood chipping area, and hog fuel area as well as various equipment storage areas. Over 900 acres of the Site consist of a series of unlined ponds used to store treated and untreated wastewater effluent from the Mill, as well as primary sludge recovered from untreated wastewater. Some ponds initially used to store wastewater were drained and used for the landfilling of solid wastes generated from the Mill. Most of the pulp was used to produce un-bleached linerboard, but a small fraction (about 6 percent) of the total pulp produced from 1960-1999 was used to create white linerboard or sold as bleached pulp.

For assessment and management purposes, the Site is evaluated as separate operable units (OUs). This BERA focuses on OU2 (the former industrial area) and OU3 (the former wastewater treatment and holding ponds area, and parts of the CFR itself).

Site Investigations

In 2011, the USEPA conducted a site investigation (SI) to support evaluation of the Site for proposed National Priorities List (NPL) listing (USEPA 2012). Remedial Investigation (RI) activities began in 2014. In April 2014, the Potentially Responsible Parties (PRPs) commissioned the collection of environmental samples from areas that were not investigated by the USEPA in 2011. This was followed up by sampling conducted in 2015 in accordance with the Remedial Investigation Work Plan (RIWP) (NewFields 2015). USEPA completed the OU2/OU3 Screening Level Ecological Risk Assessment (SLERA) for the Site in 2017 (USEPA 2017a). Additional sampling of soils took place in 2017 as described in Addenda 5 and 7 to the RIWP (NewFields 2017a,b), and additional sampling of surface waters, sediments, and biotic data took place in 2018 as described in Addendum 9 to the RIWP (NewFields 2018). In addition, USEPA coordinated with the Montana Department of Environmental Quality (MDEQ) and the Montana Fish, Wildlife and Parks (MFWP) to conduct fish sampling in the CFR in 2018 and 2019 (USEPA 2018; 2019a,b; 2020).

Basis for Ecological Concern

The Site includes numerous habitat types and biological communities. Solid wastes and wastewater associated with the historic Mill operations may have contaminated environmental media at the Site. Contaminants used in, produced as a by-product, or included in waste products generated from historic Mill operations may be toxic to aquatic receptors or plants and soil organisms, and may be ingested by animals as they feed.

BERA METHODOLOGY

The management goal at the Site is to ensure adequate protection of ecological receptors that may utilize aquatic or terrestrial habitat within the Site boundaries. Adequate protection is defined as protection of growth, reproduction, and survival of local populations. That is, the focus is on ensuring sustainability of the local population, rather than on protection of every individual member of a population. The survival, growth, and reproduction of the organisms described below are considered ecological values to be protected.

- **Maintenance of Sufficient Rates of Survival, Growth, and Reproduction to Sustain Populations of Fish, Amphibians, and Aquatic Invertebrates**. Fish and aquatic invertebrates play an important role in nutrient cycling and in food webs in the area. Adverse effects on invertebrates could reduce the quantity and quality of food available to higher-trophic-level consumers, including fish. Similarly, adverse effects on fish could reduce the quantity and quality of food available to higher-trophic-level consumers, including piscivorous birds and mammals in the area.

- **Maintain Stable and Healthy Terrestrial Plant and Soil Invertebrate Communities**. Plants provide structure and function to the terrestrial habitat. Plants form the basis of the food web for most consumers; adverse effects on the plant community could reduce the quantity and quality of food available to higher-trophic-level consumers. Plants are also essential to reducing soil erosion and maintaining good water quality in the streams. Soil organisms play an important role in nutrient cycling and in food webs at the Site. Adverse effects on terrestrial invertebrates could reduce the quantity and quality of food available to higher-trophic-level consumers.

- **Maintain Stable and Healthy Bird and Mammal Populations**.

    - **Survival, Growth, and Reproduction of Herbivorous Birds and Mammals**. Herbivorous birds and mammals provide food for upper-trophic-level consumers. Adverse effects on these primary consumers could reduce the amount of food available to high-trophic-level consumers.

    - **Survival, Growth, and Reproduction of Omnivorous Birds and Mammals**. Omnivorous birds and mammals provide food for upper-trophic-level consumers. Adverse effects on these receptors could reduce the amount of food available to higher-trophic-level consumers.

    - **Survival, Growth, and Reproduction of Insectivorous Birds and Mammals**. Insectivorous birds and mammals provide food for upper-trophic-level consumers, and play a role in maintaining ecosystem diversity. Adverse effects on these receptors could reduce the amount of food available to higher-trophic-level consumers.

    - **Survival, Growth, and Reproduction of Carnivorous Birds and Mammals**. Carnivorous birds and mammals are important consumers at the Site and play a role in structuring the community through the food web. Adverse effects to these top predators could result in disruption of lower trophic levels.

Measurement endpoints are quantifiable ecological characteristics that can be measured, interpreted, and related to the valued ecological components chosen as the assessment endpoints. Predicted hazard quotients (HQs) were calculated by comparing estimated exposure levels to exposures that are believed to have minimal effect. The following measurement endpoints were used in evaluating potential ecological effects in this BERA:

- For aquatic receptors, comparison of the concentrations of COPECs in surface water, sediment, and pore water with available direct contact toxicity benchmarks for aquatic organisms. Fish tissue concentrations were also compared with available tissue-residue benchmarks (TRBs).

- For terrestrial plants and soil invertebrates, comparison of the concentrations of COPECs in surface soils with available direct contact toxicity benchmarks for plants and soil organisms.

- For birds and mammals, daily ingested doses were estimated based on COPEC concentrations at the Site and information on natural history for selected avian and mammalian receptors. Daily ingested doses were evaluated using dose-based toxicity reference values (TRVs).

Nineteen avian and mammalian receptors were selected as representative surrogates of the taxonomic groups and feeding guilds expected to occur at the Site. The following table lists the receptors evaluated in the BERA:

Feeding Guild	Receptor Surrogate	
	Avian	Mammalian
Terrestrial Invertivore	American robin Gray catbird	Vagrant shrew
Aerial Insectivore	Tree swallow (a)	Big Brown Bat
Aquatic Insectivore	American dipper (a)	-- (b)
Herbivore	Blue grouse	White-tail deer Montane vole
Carnivore	American kestrel	Red Fox American mink (a)
Piscivore	Belted kingfisher (a) Osprey (a)	River otter (a)
Omnivore	Mallard (a) Northern flicker Clark's nutcracker	Deer mouse

(a) This receptor is considered aquatic-dependent.
(b) This class of receptor is not expected at the Site.

HQs above 1.0 were interpreted as having potential for ecological risk under the exposure and toxicity assumptions used in the evaluation. Risk levels were assigned qualitative descriptions as follows:

Findings	Risk Characterization
No effect-based $HQ_t \leq 1$ ($HQ_N \leq 1$)	Minimal
Low effect-based $HQ_t \leq 1$, No effect-based $HQ_t > 1$ ($HQ_L \leq 1$, ($HQ_N > 1$))	Low
Low effect-based HQ_t 2-5 (HQ_L2-5)	Moderate
Low effect-based $HQ_t > 5$ ($HQ_L > 5$)	High
HQ_L = hazard quotient based on the lowest observed effect level; HQ_N = hazard quotient based on the no effect level; HQt = total hazard quotient	

SUMMARY OF RISKS

COPECs in surface waters, sediments, pond pore water, and surface soils were retained for quantitative evaluation of risks to aquatic (fish, invertebrates) or terrestrial (plants, invertebrates) receptors based on an updated COPEC screen considering all available and relevant ecological data. This update included comparing maximum detected concentrations in abiotic media to available conservative, no-effect ecological screening values (ESVs). The identified COPECs were:

- Surface Water: dioxin/furan toxicity equivalence for fish (TEQ_F), barium, copper, manganese
- Pond Pore Water: barium, manganese, mercury, selenium
- Sediment: TEQ_F, arsenic, cadmium, copper, lead, manganese, mercury, methylmercury, selenium, silver, and zinc
- Soil: dioxin/furan toxicity equivalence for birds and mammals (TEQ_A and TEQ_M, respectively) aluminum, arsenic, barium, chromium, copper, manganese, mercury, nickel, selenium, vanadium, zinc, polychlorinated biphenyls (PCBs; OU2 soils only)

For wildlife, a conservative COPEC screen based on comparing measured maximum concentrations in all possible dietary items (including abiotic media) identified the following COPECs: TEQ_A, TEQ_M, aluminum, antimony, arsenic, barium, chromium, copper, lead, manganese, mercury, nickel, selenium, thallium, vanadium, zinc.

Aquatic Setting

- Risks to aquatic receptors, including fish, from direct contact exposures with Site-related COPECs were minimal in O'Keefe and Lavalle Creeks and were low in the CFR.

Manganese was the risk driver in the CFR. However, water hardness may mitigate the toxicity of manganese to aquatic receptors.

- Based on evaluation of tissue concentrations, no unacceptable risks are expected to fish in the CFR due to dioxins, furans, dioxin-like PCBs, or methyl mercury.

- Risks to aquatic receptors in on-Site ponds may occur. Barium and manganese were the primary risk drivers. However, there is low confidence in the barium risk estimates based on significant uncertainty in the water ESV used in this assessment. Also, water hardness may mitigate the toxicity of manganese to aquatic receptors.

- Risks to aquatic-dependent wildlife are generally low, although moderate risks from exposures to vanadium in on-site ponds were predicted.

    - Low risks were predicted to the piscivorous receptors based on exposures within the CFR. Specifically, low risks to the belted kingfisher and osprey were estimated based on ingestion of mercury/methyl mercury from the CFR. Low risks were also predicted to the river otter and American mink based on ingestion of aluminum from the CFR.

    - Low to moderate risks were predicted in the on-Site ponds for the American dipper, tree swallow and mallard. The primary risk driver was vanadium. Low risks were also estimated for these receptors based on exposures within O'Keefe and Lavalle Creeks for aluminum, barium, copper, and mercury/methyl mercury.

Terrestrial Setting

- Metal contamination in Site soils may be causing adverse effects to terrestrial plants and soil invertebrates. Mercury is the primary risk driver and results in high risks for some soil samples. HQ_L and HQ_N values for mercury for soil invertebrates exceed 1.0 in OU3 soils. HQ_N values for mercury also exceed 1.0 for plants in OU3 soils. Low risks were also predicted to plants and soil invertebrates from copper, selenium, and zinc; low risks to soil invertebrates from barium were also predicted.

- Aluminum concentrations in Site soils may be contributing to adverse effects in terrestrial wildlife receptors. However, aluminum toxicity is related to soil pH. Soil pH data are lacking, so it is uncertain whether the predicted risks from aluminum are of authentic concern at the Site.

- Risks to large home range wildlife receptors are low (excluding risks associated with ingestion of aluminum). Low risks to the bat may occur due to ingestion of dioxins/furans in terrestrial invertebrates. However, this input is based on modeled data for earthworms that likely overestimate actual risks.

- Risks to medium home range wildlife receptors are low to moderate. Exposures to mercury as inorganic mercury in soils and as methyl mercury in prey items may result in adverse effects.

- Risks to small home range wildlife receptors may be high based on ingestion of mercury in their diet (e.g., plants and/or terrestrial invertebrates).

UNCERTAINTY ANALYSIS

Risks to ecological receptors that are estimated using the HQ approach (either dose-based or tissue-based) are subject to a number of uncertainties, including uncertainties in concentration values in environmental media and tissues, uncertainties in wildlife, exposure parameters, and uncertainties in toxicity reference values. Consequently, HQ-based evaluations are uncertain and should be interpreted with caution. However, the underlying assumptions used in this assessment are considered conservative to help protect against underestimating risks. In fact, these assumptions typically result in overestimation of risks.

1.0 INTRODUCTION

1.1 Purpose of Report

This document is a Baseline Ecological Risk Assessment (BERA) for Operable Units (OUs) 2 and 3 at the Smurfit-Stone/Frenchtown Mill Site (Site) located in Missoula County, Montana. The purpose of the BERA is to describe the likelihood, nature, and extent of adverse effects that may occur in ecological receptors exposed to environmental contaminants at the Site under present conditions. This information, along with other relevant information such as background concentrations and nature and extent of site-related contaminants, will be used by risk managers to decide whether remedial actions are needed to protect ecological receptors from adverse effects attributable to Site- related environmental contamination.

Although the Site is not listed on the National Priorities List (NPL), a Remedial Investigation (RI) is being conducted by the Potentially Responsible Parties (PRPs) in accordance with the Administrative Order on Consent (AOC) entered into with the U.S. Environmental Protection Agency (USEPA) in November 2015 (USEPA 2015). The RI serves as the mechanism for collecting data to characterize site conditions for the purposes of developing and evaluating remedial alternatives. The RI characterizes the nature and extent of contamination at a Site and estimates risks to human health and the environment posed by contaminants at the Site. The latter objective is achieved by conducting a baseline risk assessment during the RI process to characterize risks posed to human health or the environment by current environmental conditions at the Site. To meet this requirement and consistent with the Site-specific AOC, the USEPA has developed this BERA to quantitatively describe the potential excess ecological risk posed by the Site in the absence of remediation.

1.2 Overview of the Ecological Risk Assessment Process

The USEPA has developed specific methods and procedures for conducting ecological risk assessments (USEPA 1997, 1998). Figure 1-1 shows the process that is recommended for use at Superfund Sites under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

As shown, the process consists of eight steps. The first two steps are screening-level evaluations that result in a screening level ecological risk assessment (SLERA). The OU2/OU3 SLERA for this Site was developed by USEPA in 2017 (USEPA 2017a) and identified numerous contaminants of potential ecological concern (COPECs) for community-level aquatic and terrestrial receptors. The SLERA also identified data gaps for conducting a BERA.

The remaining steps of the 8-step process are intended to support the development of the BERA. Step 3 (problem formulation) is a systematic planning step that identifies the goals and focus of the BERA (USEPA 1997). Step 4 includes the design of additional studies that are needed to support the BERA. These studies are implemented in Steps 5 and 6, and the resulting data are used to generate the risk assessment (Step 7), which in turn helps guide risk management decision-making (Step 8).

It is important to realize that the steps shown in Figure 1-1 are not intended to represent a linear sequence of mandatory tasks. Rather, some tasks may proceed in parallel, some tasks may be performed in a phased or iterative fashion, and some tasks may be judged to be unnecessary at certain sites. As such, the evaluation presented herein is based on the current understanding of the Site given the information and data available at the time of development. This BERA represents a dynamic document that may need to be revised and/or updated to address new information.

1.3 Report Organization

In addition to this introduction, this report is organized into the following sections:

Section 2, **Problem Formulation for the BERA**. This section describes the environmental setting, data used in the BERA, the conceptual site model (CSM) for the Site, and the identified assessment and measurement endpoints.

Section 3, Contaminants of Potential Ecological Concern (COPECs). This section describes the updated COPEC screen to focus the risk assessment.

Section 4, Analysis of Exposure and Effects. This section describes the process for evaluating ecological receptors at the Site and the toxicological criteria used.

Section 5, Risk Characterization. This section summarizes the potential risks posed to each ecological receptor by COPECs at the Site.

Section 6, Uncertainty Analysis. This section summarizes identified uncertainties.

Section 7, BERA Conclusions. This section summarizes the conclusions.

Section 8, References. This section provides citations for all data, methods, studies, and reports utilized in the BERA.

All tables and figures are presented at the end of the document.

2.0 PROBLEM FORMULATION

2.1 Site Description and History

The Smurfit-Stone/Frenchtown Mill site encompasses approximately 3,150 acres of the northwestern portion of the Missoula Valley (herein referred to as "the Site") (Figure 2-1). The Site is located in the Clark Fork River (CFR) drainage. The CFR flows westward through the valley and north along the Site's western property boundary. The small tributaries O'Keefe Creek and Lavalle Creek flow through the southern end of the Site and drain into the CFR as shown on Figure 2-2. A pulp mill operated at the Site from 1957 to 2010. Most areas of the Site have been idle since industrial activities at the Mill ceased in 2010. A detailed description of the Site and historical operation of the pulp mill is provided in the Remedial Investigation Work Plan (RIWP) (NewFields 2015) and briefly summarized below.

The core industrial footprint of the Mill Site covers about 260 acres and includes the former mill, recycling plant, wood chipping area, and hog fuel area as well as various equipment storage areas. Over 900 acres of the Site consist of a series of unlined ponds used to store treated and untreated wastewater effluent from the Mill, as well as primary sludge recovered from untreated wastewater. Some ponds initially used to store wastewater were drained and used for the landfilling of solid wastes generated from the Mill. Most of the pulp was used to produce un-bleached linerboard, but about 6 percent of the total pulp produced from 1960-1999 was used to create white linerboard or sold as bleached pulp. Figure 2-3 (adapted from NewFields 2015) presents a schematic of the general wastewater treatment flow process that was followed during the last 13 years of plant operations (1997-2010). As shown, Smurfit Mill maintained four permitted outfalls to the CFR over the course of operations. The outlet at the North Polishing Pond (NPP) was the point of compliance for the wastewater treatment system. Prior to discharge to the CFR, treated effluent was stored in holding ponds to meet permit conditions including flow and ambient river temperatures. Treated wastewater was discharged to the CFR when river flow and temperature conditions were within permit limits. When holding ponds were at capacity, treated wastewater was moved to infiltration basins and infiltrated to groundwater. There are two main levees and several berms that were constructed using on-Site materials. The CFR levee located west of the treated water holding ponds provides flood protection, and the inner levee provides a physical barrier between wastewater solids and treated water holding ponds.

For assessment and management purposes, the USEPA, the Montana Department of Environmental Quality (MDEQ) and the PRPs agreed to divide the Site into three operable units (OUs) based on historic use and the nature of the potential environmental concerns (Figure 2-4). Ecological risks from OU1 (agricultural lands) have been evaluated previously (USEPA 2017b) and are not discussed further in this document. This BERA focuses on OU2 (the former industrial

area) and OU3 (the former wastewater treatment and holding ponds area, and parts of the CFR floodplain, including the CFR itself). As defined in NewFields (2015), OU3 includes locations in the CFR where hazardous substances from Site activities may have come to be located, if any. The full nature and extent to which hazardous substances from Site activities have come to be located in the CFR adjacent and downstream of the Site has not been fully established but will be considered within the RI. Thus, for the purposes of this assessment, the areas within the CFR adjacent to and downstream of the current Site boundary where sampling has been conducted to date is considered to represent potential areas where Site-related contamination may have deposited, and is hereafter defined as the "study area" evaluated within this BERA (Figure 2-5).

2.2 Summary of Site Investigations

In 2011, the USEPA conducted a site investigation (SI) to support evaluation of the Site for proposed NPL listing (USEPA 2012). Sampling to support the RI began in 2014. In April 2014, the PRPs commissioned the collection of environmental samples from areas that were not investigated by the USEPA in 2011. The 2014 data were evaluated within the RIWP (NewFields 2015) which outlined sampling in 2015. Subsequent RI studies are summarized in addenda to the RIWP; associated data were generally summarized in data summary reports. Additional RI activities conducted in 2016 and 2017 included focused assessment of polychlorinated biphenyl (PCB) impacted soils within OU2 (RIWP Addenda 2 and 5), an overall assessment of the existing berm (RIWP Addendum 6), and establishing a site-wide groundwater monitoring plan (Addenda 1, 3 and 4). The addenda and associated data summary reports are available on the USEPA Superfund Page for the Site[1].

As noted in Section 1.2, USEPA completed the OU2/OU3 SLERA for the study area in 2017 (USEPA 2017a) that identified COPECs in surface water, sediment and soil based on the data available at the time of the report. In addition, the SLERA identified data gaps relevant to completing the BERA. Additional sampling of soils under Addenda 5 and 7 to the RIWP (NewFields 2017a, b), and additional sampling of surface water, sediment, and biotic data under Addendum 9 to the RIWP (NewFields 2018a) are considered within this BERA. In addition, USEPA coordinated with MDEQ and the Montana Fish, Wildlife and Parks (MFWP) to conduct fish sampling in the CFR in 2018 and 2019 (USEPA 2018a; 2019a, b; 2020). All data were evaluated for data usability. Site-specific data used in this BERA are included in USEPA's Scribe database for the Site.

[1] Smurfit-Stone Mill Frenchtown, Missoula, MT webpage: https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0802850

The data collected as part of RI sampling that are relevant to evaluating ecological risks within the Site study area are summarized briefly in Table 2-1. Additional details on these data are provided in the cited reports in the table. All data used in this report are provided in Excel format in Appendix A for transparency and completeness; tables of summary statistics are also included in Appendix A.

2.3 Habitats and Biological Communities

2.3.1 OU2 Industrial Area

OU2 encompasses approximately 260 acres and includes the core industrial footprint of the former operational area. In OU2, there are a few buildings and other facilities and structures currently not in use, paved roads and parking areas, the wood chip staging area, and locations where recovery boilers, lime kilns and other equipment were once located but have been decommissioned. Many areas within OU2 do not currently provide good ecological habitat (gravel roads and/or paved areas). The plant community consists of hearty weeds, other forbs, and grasses. Wildlife that may use OU2 in its current state are those adapted to developed or disturbed areas (e.g., pigeons, swallows, crows, and small mammals). There is one area within OU2 that was formerly used as a borrow pit, and is now fed by groundwater, that may be considered surface water habitat in OU2. Another aquatic habitat feature in OU2 is the non-contact cooling water ditch that runs along the western border of the OU, flowing in a northerly direction along a roadway, eventually draining into a side channel of the CFR at the northern end of OU3.

2.3.2 OU3 Uplands, Floodplain, and the Clark Fork River

OU3 encompasses approximately 1,650 acres and includes areas of the Site where solid and liquid wastes were historically treated and stored. OU3 currently includes multiple habitat types: upland and floodplain meadows; ponds; wetlands; and both forested and shrubby riparian areas adjacent to Lavalle and O'Keefe Creeks, the CFR, and riverside channels. Some areas of the OU3 uplands were settling basins or landfills during mill operations. These occur closer to OU2, are covered with soil or wood chips and are sparsely vegetated.

2.3.2.1 Terrestrial Uplands and Floodplain Habitats

The upland meadows are occupied by both native forbs and shrubs and invasive weeds. Birds recently observed in this area include a variety of common passerines (e.g., sparrows, wrens, magpies), and small falcons as well as northern harriers, red-tailed hawks, and eagles perched in nearby snags or on poles or fences. Coyotes, moose, elk and deer have been observed in open areas of OU3. Numerous Columbia squirrels were observed in OU3 during a site visit in June 2017.

Forested riparian areas adjacent to the CFR have an open understory and sparsely distributed Ponderosa pines with shrubby vegetation in some portions directly adjacent to the CFR. Large snags provide perches for eagles and osprey. Great blue herons, kingfisher, a variety of passerines and waterfowl have been observed along the shoreline of the river adjacent to the Site. Larger mammals using the upland portion of the Site can also be expected to visit the riparian habitat.

2.3.2.2 O'Keefe and Lavalle Creeks

O'Keefe Creek runs along the southern edge of OU3, and is joined by Lavalle Creek just upstream of the confluence of Lavalle with the CFR (Figure 2-4). Creek substrates consist of sand or a mix of sand and small gravel, with a few patches of soft organic-rich sediments. O'Keefe Creek is surrounded by emergent wetland vegetation (e.g., cattails, sedges, grasses) in some areas, and passes through culverts in several places along its length. Lavalle Creek is heavily impacted by ongoing domestic livestock grazing above the confluence with O'Keefe Creek. Both have very sparse riparian vegetation consisting mainly of grasses and forbs; shrubs and trees are largely absent on portions of the creeks that run through the Site. Aquatic taxa observed in the creeks during 2018 fieldwork included filamentous algae (in Lavalle Creek above the confluence with O'Keefe Creek), macroinvertebrates (crustaceans, insects and mollusks) and small fish. Beaver are active at the confluence of Lavalle Creek with the CFR, and signs of other aquatic mammals (e.g., river otters) have also been observed in this area. Waterfowl can be expected to use the creeks at times for foraging, but the lack of vegetative cover limits the creeks as breeding areas for birds.

2.3.2.3 On-Site Ponds

As described in NewFields (2020b), there are isolated surface water features in OU3 outside of the 100-year floodplain including the non-contact cooling water ditch located on the eastern boundary of OU3, a pond located in the former log yard infiltration basin (IBJ), a borrow area south of the clarifier, and ponded water in the former primary settling basins P5 and P17. Ponded water is also present within the 100-year floodplain at areas historically used as treated water holding ponds during mill operations (HP1, HP2, HP7, HP10, HP11, HP13, HP13A, and HP18). The amount of water present at the surface in these areas fluctuates seasonally in response to spring snowmelt and the corresponding rise/decline of water levels in the underlying shallow aquifer.

Because they do not have a surface hydrological connection to the river, they are not expected to be occupied or used by fish. No fish were observed in these ponds during the 2018 sampling event. Ponds containing water for most or all of the year currently are occupied by early successional stage wetland plant communities, including algae, and some floating and some emergent aquatic

plants. Ponds are used by a variety of ducks, geese, and other waterfowl (e.g., grebes). They may also seasonally attract wading birds and shorebirds, amphibians, and reptiles.

2.3.3 Species of Special Concern

The Ecological Risk Assessment (ERA) for OU1 and the SLERA for OU2 and OU3 included identification of federal and state species of concern based on querying the United States Fish and Wildlife Services (USFWS) Information for Planning and Consultation (IPaC) site and cross-referencing with the Montana National Heritage Program (MTNHP) Species of Concern (SOC) report. Updated IPaC and MTNHP queries were run in October 2021. Those species of special concern identified as being potentially present at the Site are listed in Table 2-2. In addition, the Site overlaps USFWS designated critical habitat for bull trout.

The Site lies within the Clark Fork River-Grass Valley Important Bird Area (IBA), designated due to its significance to bird species of conservation concern. The IBA encompasses about 35 km of the river corridor and adjacent uplands between Missoula and Huson; the Site is included as a small portion of the IBA (Figure 2-6). Five Valleys Audubon volunteers have documented sixteen bird species of conservation priority within the IBA, including six pairs of Bald Eagles and high numbers of Lewis's Woodpeckers, Red-naped Sapsuckers, and Willow Flycatchers. The USFWS has identified 21 migratory bird species of particular conservation concern that may breed in the area of the study area or make residence in the vicinity of the Site (USFWS 2017).

USEPA risk assessments conducted under CERCLA are not conducted specifically for Threatened and Endangered species or for individuals thereof. There are specific federal and state programs that deal with issues related to special-status species. Instead of species-specific assessments, appropriate surrogates are chosen for the assessment endpoints that represent Site receptors.

2.4 Conceptual Model

Figure 2-7 presents the CSMs developed for the BERA, utilizing the results of the 2017 SLERA (USEPA 2017a) and the results of the subsequent field investigations conducted in 2018. Because no exposure pathways were eliminated by the SLERA, the CSM developed for the BERA is generally similar to that for the SLERA. However, aquatic plants and herptiles (amphibians and reptiles) were added to the CSM as potential aquatic receptors, and sediment, pore water and surface water in on-Site ponds were added as environmental media to which ecological receptors could be exposed.

The focus of the risk assessment CSMs is on defining the significant and complete exposure pathways for ecological receptors of concern[2]. As indicated in Figure 2-7, there are a number of exposure pathways by which ecological receptors may come into contact with Site-related contaminants. However, not all of these are likely to be of equal concern. For the purposes of the baseline problem formulation, each exposure pathway is classified into one of the following four categories:

- The pathway is complete, is potentially significant, and sufficient data are available to support a quantitative evaluation. These cases are indicated by boxes containing a solid circle (●).

- The pathway is complete and is potentially significant, but data (either toxicity values and/or exposure parameters) are limited or unavailable, so the pathway cannot be evaluated quantitatively. These cases are indicated by boxes with an open circle (○).

- The pathway is complete, but is likely to be minor, so quantitative assessment is not needed. These cases are indicated by boxes with an "x".

- The pathway is considered to be negligible or incomplete, and does not require assessment. These cases are shown as open boxes.

The ecological receptors and exposure pathways considered in the baseline CSM are discussed below.

2.4.1 Sources of Contamination

Pulp and paper manufacturing involves a series of steps, each producing one or more characteristic wastes. NewFields (2020a) provides a detailed description of the pulp making process at the Mill and the associated waste streams generated during operation. In brief, the chemical pulping process used at the Mill (the "Kraft process") used a sodium-based alkaline solution (white liquor), consisting of sodium hydroxide and sodium sulfide, to digest wood chips and produce pulp. Smaller amounts of sulfuric acid and aluminum sulfate were also used during the process. No metals were used in the paper making process, but pulp is made from raw materials (i.e., wood). The concentrations of metals in the trees used to produce the pulp is unknown.

After producing the raw pulp, it was processed to remove impurities by chemically treating the pulp mixture to recover residual white liquor for reuse and removing heavy metals. Waste products

[2] The risk assessment CSMs are focused on exposure pathways which differs from the other site wide CSMs. Refer to NewFields (2020a) for detailed information on the geology, hydrogeology, contaminant sources, and transport pathways for the Site.

such as excess sodium hydroxide and sodium sulfite were also removed. As noted above, a chlorine bleaching process was used to create white linerboard for about 6% of the pulp produced between 1960 and 1999 (NewFields 2020a). The combination of chlorine and carbon can result in the formation of dioxins and furans under particular temperature and pressure conditions.

Linerboard was produced at the Mill following pulp production and blending using large paper machines. During this process, wastewater is collected from the pulp and water used in the operation was filtered and recycled back into the process. Filtered solids were managed in the solid waste basins operated at the Mill as part of the permitted wastewater treatment system (WWTS) and landfills (Figure 2-3). The basins received Class II (general household non-hazardous materials) and waste solids generated during the wastewater treatment process. The Mill also operated Class III landfills, which received inert materials, and an asbestos landfill. All solid waste basins at the Mill were closed by the MDEQ predecessor (Montana Department of Health and Environmental Sciences) in 1993 with the exception of solid waste basin SWBG which has an open permit to receive Class III inert materials (NewFields 2020a).

At the time of Mill closure in January of 2010, the Mill utilized approximately 15 million gallons of water per day for operations (NewFields 2020a). This water was used in various process and recovery systems throughout the Mill, followed by treatment, seasonal storage in holding ponds, and eventual discharge to infiltration basins and/or the CFR pursuant to the Mill's MPDES permit (Figure 2-3).

Emissions from the recovery boilers, multi-fuel and power boilers, the lime kilns, and ambient air systems were controlled and monitored consistent with the Mill's Title V air quality operating permit issued by MDEQ (NewFields 2020a).

2.4.2 Suspected Contaminants

As described above, Site investigations have evaluated concentrations of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), PCBs, dioxins/furans, and metals[3]. The potential Site sources for these contaminants include the following (NewFields 2020a):

- Isolated locations of the former industrial area in OU2 including the former bleach plant (chlorine production area) and chemical recovery systems. These areas are potential sources for PCBs, VOCs, SVOCs, and dioxins/furans.

[3] USEPA has developed fact sheets on dioxins/furans and PCBs at the Site (USEPA 2021a,b).

- Site-wide use and storage of wood and wood fiber in OU2 and OU3 is a potential source of metals.

- The former wastewater collection and treatment system and the wastewater stored throughout OU3 is a potential source of metals.

- Wastewater treatment solids and multi-fuel boiler scrubber wastes present in former settling ponds, aerations basins and spoils basins in OU3 are potential sources of metals and dioxins/furans.

- Wastewater treatment solids and Class II refuse disposed of in Solid Waste Basins are a potential source of contaminants at the Site.

COPECs identified in the SLERA were dioxins/furans, PCBs, and metals (USEPA 2017a). As described in the SLERA, PCBs were only detected in OU2 soils at specific locations, the high-density pulp tank (HDPT) and the transformer storage building (TSB) foundation areas. Aroclor 1260 was detected in the HDPT area, and Aroclors 1254 and 1260 were detected in the TSB area. Response action involving soil excavation and disposal, followed by soil replacement with backfill, was carried out in December 2017 and January 2018 consistent with Addendum 5 (NewFields 2017a) to the RIWP for the Site. Data based on the removed soils are not considered in this assessment (i.e., concentration data based on backfill samples identified by NewFields are used for these areas). PCBs were not detected in OU3 soils or in surface waters or sediments within the study area. Further information on PCBs at the Site is presented in USEPA (2021b).

2.4.3 Fate and Transport

The transport of Site-related contaminants to points of contact with ecological receptors depends on several physical and chemical processes which dictate the concentrations and spatial distribution of COPECs. As shown in Figure 2-7, release and transport mechanisms potentially present at the Site include:

- Atmospheric deposition of contaminants as dust and emissions from Mill operations to surrounding surface soils[4];

- Fine-grained soil particulates may be released into the air as a consequence of either wind erosion and/or human/animal disturbances;

[4] USEPA has developed an air deposition fact sheet for the Site (USEPA 2021c).

- Dissolution and leaching of contaminants into soil solutions, pore water, and groundwater;

- Migration of contaminants in pore water and groundwater to soils, sediment and surface water in on-Site surface water features, and subsequent attenuation by dilution, dispersion, and sorption;

- Transport of dissolved and particulate metals in surface water to the floodplain and CFR, and;

- Uptake, accumulation, then trophic transfer of metals incorporated in tissues of aquatic and terrestrial plant, invertebrate, and wildlife food chains.

Dioxins/furans that deposit on land bind strongly to soil particles. Soil erosion and surface runoff can transport dioxins into surface water. Dioxins do not easily dissolve in water and therefore, most of the dioxins that enter surface water become strongly attached to particles that eventually settle in the sediment. Terrestrial and aquatic animals can be exposed to dioxins/furans in the air, water, sediment and soil, and through consumption of vegetation and prey items. Concentrations usually increase at each step in the food chain in a process known as biomagnification.

Unlike organic contaminants, metals are neither created nor destroyed by biological or chemical processes in the environment (USEPA 2007a). However, such processes can transform metal species and convert them between inorganic and organic forms. Movement of metals through soils is dependent on the chemical properties controlling speciation, the presence of ligands and the rate of water flux through the soil. Metals are lost from the soil by leaching into groundwater and through metal specific uptake by plants. Certain metal compounds are known to bioaccumulate in tissues. Trophic transfer can be an important route of exposure, although biomagnification of inorganic forms of metals in food webs is generally not a concern. Some trace elements, such as cobalt, copper, iron, manganese, selenium, molybdenum, and zinc are necessary for the normal development of plants and animals. Other metals, such as arsenic, cadmium, lead and mercury, have no known functions in plants and animals.

2.4.4 Exposure Routes

The exposure routes considered in this BERA as significant and complete are as follows:

- Direct contact of benthic invertebrates with sediment,
- Direct contact of benthic invertebrates with pore water,
- Direct contact of water-column invertebrates, fish, and amphibians with surface water,
- Ingestion of surface water by wildlife receptors,

- Direct contact of terrestrial plants and soil invertebrates with soil,
- Incidental ingestion of sediment and soil by wildlife receptors, and
- Ingestion of contaminated prey items by wildlife receptors.

Exposure routes that may be complete, but are expected to contribute minimally to total risk relative to another exposure route and/or be difficult to characterize (i.e., no established exposure models or toxicity criteria) are not assessed quantitatively in this BERA. These include the following:

- Ingestion of contaminated dietary items by aquatic invertebrates and fish,
- Direct contact of aquatic wildlife receptors with surface water and sediments, and
- Direct contact to or inhalation of dust (soil particles) by wildlife receptors.

2.4.5 Exposure Pathways and Critical Receptors

Exposure pathways are the means by which contaminants can be transferred from a contaminated medium to the target receptors. The complete exposure pathways evaluated quantitatively in this BERA are summarized below.

2.4.5.1 Aquatic Receptors

A wide variety of aquatic receptors may occur within the BERA study area, including fish, benthic macroinvertebrates (BMI), other aquatic invertebrates, aquatic plants, and amphibians. This BERA assumes that BMI live on and within the substrate in the CFR, Lavalle Creek, O'Keefe Creek, and within the on-Site ponds. It also assumes that fish inhabit the creeks and the CFR (no fish have been observed in the on-Site ponds).

For fish, the primary exposure pathway of concern is direct contact with surface water that is impacted by Site releases. Additional pathways of potential concern to fish are ingestion of contaminants in aquatic prey items and sediment. These pathways are usually believed to be minor compared to risks from direct contact with surface water, but may be important for contaminants that bioaccumulate. However, exposure parameters needed to convert exposure concentrations presented in published studies on the toxicity of contaminants of concern to fish are not readily available. In the absence of such information, these ingestion pathways cannot be evaluated quantitatively.

For BMI, the exposure pathways of primary concern are direct contact with surface water, sediment and sediment pore water. Ingestion of aquatic food web items by BMI is also a pathway

of potential concern. In most cases, toxicity values for exposure of BMI to sediments include at least some contribution from the ingestion pathway, so these two are usually evaluated together.

For aquatic plants, the exposure pathway of primary concern is exposure to contaminants in surface water as well as contaminants in the pore water of the sediments where the plants are rooted.

A number of frogs (unknown species) have been observed within the study area. Amphibians are an important part of the aquatic community. Pathways likely to be most important for amphibians include direct contact with surface water, ingestion of aquatic prey items, and incidental ingestion of sediment. However, exposure parameters and/or toxicity values for oral exposure are generally lacking, so amphibians are evaluated for direct exposure to water only.

2.4.5.2 Reptiles

Similar to amphibians, reptiles (some turtles have been observed within the study area) may be exposed in both the aquatic and terrestrial environment. Pathways likely to be most important include direct contact with surface water, ingestion of aquatic and terrestrial prey items, and incidental ingestion of soil or sediment. However, exposure parameters and/or toxicity values for reptiles are generally lacking, so reptiles are only considered qualitatively in this assessment. It is assumed that risk management decisions made to protect aquatic receptors and birds and mammals will be protective of reptiles as well.

2.4.5.3 Terrestrial Plants and Soil Invertebrates

The structure and function of the terrestrial plant and invertebrate community is important because it provides a significant portion of the energy, organic matter, and nutrient inputs for terrestrial systems as well as providing habitat and forage for a variety of wildlife species. Terrestrial plants and soil organisms are good indicators of soil condition because they reside directly in the soil and are not mobile.

The primary exposure pathway for both terrestrial plants and soil organisms is direct contact with contaminated soils. For terrestrial plants, exposure may also occur due to deposition of dust on foliar (leaf) surfaces, but this pathway is believed to be small compared to root exposures in surface soils.

2.4.5.4 Birds and Mammals

There are many different species of birds and mammals that may be exposed to contaminated media within the study area. Some semi-aquatic species tend to be exposed primarily along streams, while other species tend to be exposed primarily in the forested areas of the Site. In general, birds and mammals may be exposed to Site-related contaminants by three main pathways: 1) ingestion of contaminants in or on prey items, 2) incidental ingestion of soil and/or sediment while feeding, and 3) ingestion of contaminated water. Direct contact (i.e., dermal exposure) of birds and mammals to soils or sediments may occur in some cases, and inhalation exposure to airborne dusts is possible for all birds and mammals, but these exposures are usually considered to be minor in comparison to exposures from ingestion.

It is neither practical nor possible to evaluate potential ecological risks to each individual avian and mammalian species potentially present within the study area. Instead, key receptor groups and representative surrogate species were identified in the BERA Work Plan (USEPA 2018b). The BERA Work Plan selected 10 bird and 8 mammalian species for evaluation. However, one additional wildlife receptor is added and evaluated herein, the osprey. Table 2-3 summarizes the avian and mammalian surrogate receptors evaluated in this BERA. The complete and significant exposure pathways evaluated in this BERA for these receptors are:

<u>Birds</u>

- **Aquatic-dependent invertivorous birds (dipper, tree swallow)**: ingestion of surface water, sediment and aquatic invertebrates.
- **Aquatic-dependent omnivorous birds (mallard)**: ingestion of surface water, sediment, BMIs and aquatic plants.
- **Aquatic-dependent piscivorous birds (kingfisher, osprey)**: ingestion of surface water, sediment and fish.
- **Terrestrial herbivorous birds (grouse)**: ingestion of soil, surface water, and plants.
- **Terrestrial invertivorous birds (robin, catbird)**: ingestion of soil, surface water, and invertebrates.
- **Terrestrial omnivorous birds (flicker, nutcracker)**: ingestion of soil, surface water, invertebrates, and plants.
- **Terrestrial carnivorous birds (kestrel)**: ingestion of soil, surface water, and small mammals

Mammals

- **Aquatic-dependent piscivorous mammals (otter)**: ingestion of surface water, sediment, and fish.
- **Aquatic-dependent carnivorous mammals (mink)**: ingestion of surface water, sediment, fish and small mammals.
- **Terrestrial insectivorous mammals (shrew, bat)**: ingestion of soil, surface water, and terrestrial invertebrates.
- **Terrestrial herbivorous mammals (deer, vole)**: ingestion of soil, surface water, and terrestrial plants.
- **Terrestrial omnivorous mammals (mouse)**: ingestion of soil, surface water, terrestrial plants, and terrestrial invertebrates.
- **Terrestrial carnivorous mammals (fox)**: ingestion of soil, surface water, and small mammals.

2.5 Assessment and Measurement Endpoints

Assessment endpoints are explicit expressions of the ecological resources that are to be protected. Valuable ecological resources include those without which, ecosystem function would be significantly impaired or those providing critical resources (e.g., habitat). Because it is not practical or possible to directly evaluate risks to all of the individual components of the ecosystem within the study area, appropriate selection and definition of assessment endpoints is critical to focus the BERA on particular representative components of the ecosystem that could be adversely affected by the COPECs associated with the Site. The assessment endpoints selected for this BERA are the survival, growth and reproduction of aquatic organisms (benthic macroinvertebrates and fish), terrestrial organisms (plants and soil invertebrates) and all feeding guilds (herbivorous, omnivorous, insectivorous, piscivorous, and carnivorous) of birds and mammals.

Measures of exposure and effects (also called measurement endpoints) represent quantifiable ecological characteristics that can be measured, interpreted, and related to the valued ecological components chosen as the assessment endpoints (USEPA 1992, 1997). In general, measures of exposure and effects can be divided into three basic categories, as follows:

- Predicted Risks (Hazard Quotients [HQs]),
- Site-specific toxicity tests, and
- Observations of population and community demographics.

For this risk assessment, data were available to support estimation of predicted risks. Site-specific toxicity tests and community surveys have not been conducted. Table 2-4 summarizes the assessment endpoints and selected measurement endpoints.

3.0 CONTAMINANTS OF POTENTIAL ECOLOGICAL CONCERN (COPECs)

The 2017 SLERA identified COPECs in Site-media based on the Site-specific data available at the time of that evaluation (USEPA 2017a). COPECs were identified in the SLERA separately by media for surface water, sediment and soil (USEPA 2017a). COPECs identified in the SLERA were as follows:

C_{max} Compared to Soil Benchmarks				C_{max} Compared to Sediment Benchmarks		C_{max} Compared to Surface Water Benchmarks
OU2 Surface Soil	OU3 Upland Surface Soil	Floodplain Surface Soil	CFR Flood Fringe Soil	Floodplain Surface Soil	CFR Bed Sediment	CFR Surface Water
TEQ (a)	TEQ	TEQ	TEQ	TEQ	TEQ	TEQ
Aroclor-1254	Aluminum	Aluminum	Aluminum	Arsenic	Copper	
Aroclor-1260	Antimony	Antimony	Arsenic	Cadmium	Manganese	
Aluminum	Arsenic	Arsenic	Cadmium	Chromium	Mercury	
Arsenic	Barium	Barium	Chromium	Copper	Zinc	
Barium	Cadmium	Cadmium	Copper	Manganese		
Cadmium	Chromium	Chromium	Lead	Mercury		
Chromium	Copper	Copper	Manganese	Silver		
Copper	Lead	Lead	Mercury	Zinc		
Lead	Manganese	Manganese	Vanadium			
Manganese	Mercury	Mercury	Zinc			
Mercury	Nickel	Vanadium				
Selenium	Selenium	Zinc				
Vanadium	Vanadium					
Zinc	Zinc					

(a) TEQ = Toxicity equivalency (calculated based on dioxin and furan congener concentrations)

Based on additional data acquired since the development of the SLERA, additional screening steps were considered. Thus, the updated COPEC screen presented in this section involved the following:

- Conduct updated COPEC screens by media (surface water, sediment and soil) based on inclusion of additional data collected to address data gaps identified in the SLERA and BERA Work Plan (USEPA 2017a, 2018b).
- Conduct a COPEC screen for pond pore water using surface water benchmarks.
- Conduct a COPEC screen for wildlife receptors using available abiotic and biotic data.

3.1 Updated COPEC Screening of Abiotic Media

Additional data collected from within the study area since the development of the SLERA were incorporated into the surface water, sediment and soil COPEC screens originally presented in the SLERA (USEPA 2017a). These data include additional concentration data for surface water and sediment samples collected from the creeks, the CFR, and on-Site ponds during the 2018 RI

sampling event, as well as surface soil data collected in 2017. This update was done to ensure that if a contaminant was not detected at concentrations above ecological screening values (ESVs) in the 2015 data, but was detected at concentrations above ESVs in data collected more recently, it is identified and retained as a COPEC for further risk characterization.

The same general methodology for identifying COPECs in the SLERA was applied as summarized in Figure 3-1. In brief, if a contaminant was detected in 5% or more of the samples and the maximum detected concentration (C_{max}) exceeds the available ecological screening value (ESV; see Appendix B), the contaminant is identified as a COPEC and retained for further evaluation. Consistent with the SLERA, contaminants considered to be bioaccumulative in accordance with USEPA (1995) were also identified as a COPEC if detected in 5% or more of the samples, regardless of whether the maximum detected concentration exceeded the respective ESV. These contaminants include dioxins, furans, PCBs, and mercury. Contaminants detected in 5% or more of the samples with a maximum detected concentration lower than the respective ESV were excluded as a COPEC.

If a contaminant was detected in fewer than 5% of the site samples, then the detection limit is evaluated. If the detection limit is lower than the relevant ESV, then it is very unlikely that the contaminant will pose a significant ecological risk and may be excluded as a COPEC. However, if the detection limit is above the ESV, this is identified as a source of uncertainty.

If a contaminant lacks an ESV value, then it is not possible to make a judgement whether the contaminant may or may not pose significant ecological risk. This is also identified as a source of uncertainty.

The updated COPEC screen presented in this assessment focused on the analyte classes identified as COPECs in the SLERA: dioxins/furans, PCBs, and metals. Because polychlorinated dibenzo-p-dioxin (PCDD) and furan (PCDF) congeners, and dioxin-like co-planar PCB congeners all act by the same mechanism as 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD), concentrations for the PCDD, PCDF, and co-planar PCB congeners were converted to a TCDD toxicity equivalency value (TEQ) by computing the sum across congeners of the product of congener-specific concentration and relative Toxicity Equivalence Factor (TEF):

$$TEQ = \Sigma (C_i \times TEF_i)$$

TEFs are available for mammals, birds (avian), and fish. Mammalian TEFs from Van den Berg et al. (2006) were used to calculate mammal TEQs (TEQ_M) for the BERA. Avian and fish TEFs from Van den Berg et al. (1998) were used to calculate avian and fish TEQs (TEQ_A, TEQ_F), respectively.

Similarly, because PCBs generally occur as a mixture of congeners, total PCB concentrations were calculated as the sum across all PCB congeners for those samples where PCB-congener data are available. Soil samples collected in 2014/2015 were analyzed for PCBs as Aroclor mixtures. Soil samples collected in 2017 were analyzed for both Aroclors and PCB congeners. Congener-specific analyses generally offer lower detection limits and detection of concentrations biased by interference caused by chemicals that coelute, and account for changes in mixture composition related to weathering, metabolism, or degradation in the environment. The approach applied in this assessment to account for the OU2 soil dataset including a mixture of PCB data, including both Aroclor concentrations and PCB congener concentrations, was to maintain separation between these analyses.

3.1.1 Updated Surface Water COPEC Screen

TEQ was the only COPEC identified in the surface waters of the CFR in the SLERA (USEPA 2017a). However, Site surface water data used in the SLERA were limited to three samples collected from the CFR in 2015. The OU1 ERA evaluated surface water COPECs in O'Keefe and Lavalle Creeks based on two samples (one from each creek) (USEPA 2017b). In 2018, additional surface water samples were collected from the CFR, Lavalle Creek, O'Keefe Creek, and on-Site ponds and analyzed for dioxins, furans and metals as part of the RI activities as outlined in NewFields (2018a,b). This included the following:

- Two samples collected from the CFR and two samples collected from on-Site pond areas (HP13a and HP2) during the May flood event (NewFields 2018b).
- Samples collected in August 2018 in accordance with Addendum 9 (NewFields 2018a) (Figure 3-2):
    - 14 samples collected from locations within the study area of the CFR
    - Two samples collected from each creek (Lavalle and O'Keefe Creeks) inside of the current Site boundary
    - One sample collected from each of the 12 on-Site ponds

These data were combined with the 2015 surface water data to identify maximum detected concentrations of contaminants within the CFR study area, the creeks (combined) and the on-Site ponds (combined) for the updated surface water COPEC screen.

Maximum detected TEQ_F and metals concentrations measured in surface water samples were compared to the chronic surface water ESVs presented in Appendix B. These surface water ESVs represent chronic water quality standards for the protection of aquatic life from direct contact with

contaminants in surface waters. If available, National Recommended Water Quality Criteria (NRWQC) values were preferred. Consistent with the BERA Work Plan, if NRWQC values were not available, Montana DEQ-7 water quality standards were considered (MDEQ 2019[5]). No surface water ESV for TEQ is available from NRWQC or DEQ-7. Additionally, no metal for which an NRWQC ESV was not available had a benchmark based on DEQ-7. For contaminants without NRWQC or DEQ-7 values, the following sources and hierarchy were considered:

- Great Lake Water Quality Initiative (GLWQI) Tier II criteria derived in Suter and Tsao (1996)
- Canadian Water Quality Values (CCME 2003)
- Oak Ridge National Laboratory (ORNL) lowest chronic values (LCVs) and effect concentrations affecting 20% of the population (EC20) for fish, daphnids, and non-daphnid invertebrates (Suter and Tsao 1996).

For metals, the surface water ESVs are expressed as dissolved concentrations except for aluminum, which is expressed as the total recoverable fraction. For some metals, site-specific physical conditions greatly affect the concentrations where toxicity occurs. The aquatic toxicity of aluminum, cadmium, chromium (III), copper, lead, manganese, nickel, silver, and zinc depend on hardness. When controlling for other variables, the toxicity of these metals decreases in hard water but increases in soft water at a metal-specific rate. When evaluating these metals, the ESVs were modified using the NRWQC parameters for calculating freshwater dissolved metals criteria that are hardness-dependent (see Appendix B) and an estimate of Site-specific hardness. Hardness (as calcium carbonate [$CaCO_3$]) was calculated using sample-specific total calcium (Ca) and total magnesium (Mg) concentrations using the following equation:

$$\text{Hardness (mg/L as } CaCO_3\text{)} = 2.497 \times \text{Ca (mg/L)} + 4.118 \times \text{Mg (mg/L)}$$

Hardness was evaluated separately for the CFR, creeks (Lavalle and O'Keefe creeks evaluated together), and on-site ponds (all ponds combined). The 5th percentile was calculated as a conservative estimate of hardness at each of the three water body types.

Tables 3-1, 3-2 and 3-3 present the updated COPEC screens for the CFR, creeks and ponds, respectively. Surface water COPECs identified in this updated screen are TEQ_F, barium, copper and manganese. Even though there is no available surface water ESV for TEQ_F, it is retained as a COPEC in surface water because dioxins/furans were detected in surface waters of the CFR, creeks and on-Site ponds and this class of contaminants are considered bioaccumulative. Mercury is also considered a bioaccumulative, but it is not retained as a surface water COPEC as it was not detected

[5] Montana's DEQ-7 Water Quality Standards will be considered for all contaminants within the Feasibility Study.

in any surface water sample, and the detection limits were determined to be adequate relative to the ESV.

As shown in Tables 3-1 through 3-3, the maximum detected total aluminum concentrations exceed the chronic ESV of 87 µg/L in all water bodies. All maximum detected total aluminum concentrations are below the acute MDEQ-7 ESV of 750 µg/L. Per the 2018 updated NRWQC for aluminum, the bioavailability of aluminum to aquatic receptors is dependent on the chemistry of the water. The more bioavailable the aluminum is, the more likely it is to cause a toxic effect. The water chemistry parameters that have the greatest impact on aluminum's bioavailability are pH, total hardness and dissolved organic carbon (DOC). Using USEPA's Aluminum Criteria Calculator V.2.0, Site-specific measurements of pH, total hardness and DOC were used to estimate aquatic criteria for aluminum. Table 3-4 summarizes the calculated Criterion Continuous Concentrations (CCCs). USEPA aluminum criteria recommend staying within specific limits for pH (5.0-10.5), total hardness (0.01-430 mg/L as $CaCO_3$) and DOC (0.08-12.0 mg/L) for generating criteria. As shown in Table 3-4, water chemistry conditions are outside of these conditions for most of the on-Site ponds. In these cases, the calculator tool defaults to maximum or minimum recommended values. The maximum detected total aluminum concentrations are below the calculated CCC values at all locations. On this basis, aluminum is not retained as a surface water COPEC.

As shown in Table 3-3, concentrations of calcium, magnesium, potassium and sodium exceed the LCVs for daphnids (Suter and Tsao 1996). These metals are considered essential physiological electrolytes that are not typically retained as COPECs for further quantitative evaluation. Thus, although there are exceedances compared to the available LCVs, the LCVs themselves are considered highly conservative secondary values that are below commonly occurring ambient concentrations of these macronutrients. As such, calcium, magnesium, potassium and sodium are not retained as surface water COPECs.

3.1.1.1 Surface Water COPEC Summary

Surface water COPECs identified based on comparison of maximum detected concentrations to available surface water ESVs are:

- CFR: TEQ_F, barium, copper, and manganese
- O'Keefe and Lavalle Creeks: TEQ_F, barium, and manganese
- On-site Ponds: TEQ_F, barium, copper, and manganese

3.1.2 Updated Sediment COPEC Screen

The OU1 ERA evaluated sediment COPECs in O'Keefe and Lavalle Creeks based on five samples and determined that concentrations of TEQ_F, arsenic, copper and zinc exceeded available sediment benchmarks (USEPA 2017b). TEQ_F, copper, manganese, mercury and zinc were identified as COPECs in CFR bed sediments in the SLERA (USEPA 2017a). That evaluation was based on six sediment samples. In addition, the SLERA compared concentrations in samples identified as floodplain surface soils against both soil and sediment benchmarks. This was done because data for sediments in on-Site ponds were lacking. For this assessment, the maximum detected concentrations in floodplain surface soils were only compared to soil benchmarks. The sediment data collected from the on-Site ponds were incorporated into the updated sediment COPEC screen presented below.

In 2018, additional sediment samples were collected from the CFR, Lavalle Creek, O'Keefe Creek, and from on-Site ponds. Sediment samples collected in 2018 were analyzed for dioxin and furan congeners, metals, and methyl mercury as part of the RI activities (NewFields 2018a). This included the following (Figure 3-2):

- 14 samples collected from locations within the CFR adjacent to and downstream of the current Site boundary
- Three samples collected from O'Keefe Creek inside of the current Site boundary and four samples collected from Lavalle Creek
- One sample collected from each of the 12 on-Site ponds

These data were combined with the 2015 sediment data to identify maximum detected concentrations of contaminants within the CFR included in the study area, the creeks (combined) and the on-Site ponds (combined) for the updated sediment COPEC screen. "Flood fringe" samples collected in 2015 from areas along the banks of the CFR in undisturbed, low-lying areas where flood water has a history of occurring, but were not inundated at the time of sampling, were also included in the sediment COPEC screen. No additional flood fringe samples have been collected since that time. The flood fringe sample data were previously evaluated in the 2017 SLERA comparing maximum concentrations to soil ESVs because they were not collected in areas submerged by water (USEPA 2017a). However, the "flood fringe" represents the areas along the banks of the CFR that are likely to be flooded with water at some points in the year. Further, the receptors exposed while foraging along the CFR are assumed to be exposed to both bed sediments as well as these flood fringe sediments/soils. As such, the data for the flood fringe samples were considered in the COPEC screen for CFR sediments.

Maximum detected TEQ_F and metals concentrations measured in sediment samples were compared to no-effect sediment-based ESVs as presented in Appendix B. These sediment ESVs represent threshold effects concentrations (TECs) or threshold effects levels (TELs). If available, consensus-based sediment quality guidelines (SQGs) from MacDonald et al. (2000) were preferred, followed by sediment effect concentrations (SECs) from Ingersoll et al. (1996). For contaminants without SQGs or SECs from these sources, other sources considered included the following:

- Oak Ridge National Laboratory (Jones et al. 1997)
- USEPA Region 5 Ecological Screening Levels (USEPA 2003a)
- National Oceanic and Atmospheric Administration (NOAA) Sediment Effect Concentrations (Long and Morgan 1990)

For TEQ_F, the sediment ESV of 8.5E-07 mg/kg is based on the TEL value recommended as the Canadian interim sediment quality guideline (ISQG) for PCDD/Fs (CCME 2001). This is also the value that was included as the screening value in the USEPA Region 3 BTAG Freshwater Screening Benchmarks (USEPA 2006).

Tables 3-5, 3-6, and 3-7 present the updated sediment COPEC screens for the CFR, the creeks, and the on-Site ponds, respectively. Sediment COPECs identified in this updated screen are TEQ_F, arsenic, cadmium, copper, lead, manganese, mercury, selenium, silver, and zinc. In the CFR, the maximum detected concentrations for TEQ_F, lead and silver are based on the flood fringe samples (maximum detected concentrations of these contaminants in bed sediments were below the respective sediment ESVs). There was no sediment ESV for methyl mercury, but it was retained as a bioaccumulative and because the maximum detected total mercury concentration exceeded the sediment ESV. Although PCBs are also identified as bioaccumulatives, Aroclors were not detected in creek sediments or CFR sediments (pond sediments were not evaluated for PCBs) and were not retained as sediment COPECs.

3.1.2.1 Sediment COPEC Summary

Sediment COPECs identified based on comparison of maximum detected concentrations to available sediment ESVs are:

- CFR: TEQ_F, arsenic, cadmium, copper, lead, manganese, mercury, methyl mercury, selenium, silver, and zinc
- O'Keefe and Lavalle Creeks: TEQ_F, arsenic, copper, mercury, methylmercury, selenium, and zinc

- On-site Ponds: TEQ_F, arsenic, cadmium, copper, manganese, mercury, methylmercury, selenium, silver, and zinc

3.1.3 Updated Soil COPEC Screen

The SLERA identified COPECs for OU2 surface soils separately from OU3 surface soils based on soil data collected in 2014 and 2015. This approach was conducted to support future risk management efforts by each OU. Further, COPECs were identified separately for OU3 upland areas and OU3 floodplain areas due to differences in historical use of these areas and the potential for differences related to flooding events. These soil COPEC screens were updated based on the inclusion of the additional 20-pt and 30-pt composite surface soil samples collected in 2017 in accordance with RIWP Addendum 7 (NewFields 2017b).

Maximum detected surface soil concentrations were compared to soil ESVs as presented in Appendix B. As described in the SLERA, measured concentrations in surface soils were determined to be equal to, or greater, than concentrations in subsurface soils. Thus, evaluation of exposures by terrestrial receptors to surface soils (collected from 0-7 inches bgs) is considered representative and/or protective of exposures to terrestrial receptors in deeper soils.

Soil ESVs are based on USEPA's Ecological Soil Screening Levels (EcoSSLs) for plants and soil invertebrates where available. In the SLERA, the soil COPEC screen included EcoSSLs for birds and mammals. Wildlife COPECs are evaluated separately to account for exposures from multiple media (Section 3.3). If a plant or soil invertebrate EcoSSL value is not available, ORNL preliminary remediation goals for soil (Efroymson et al. 1997a,b) were considered. In the 2017 SLERA, the maximum TEQ concentrations were screened against the USEPA Region 5, Resource Conservation and Recovery Act (RCRA) Ecological Screening Level (ESL) of 1.99E-07 mg/kg (USEPA 2003a). This value was reported to be based on exposure to the masked shrew, but no other information was provided. There is no soil ESV for TEQ available based on plants or soil invertebrates. However, TEQ was retained as a COPEC for being identified as a bioaccumulative.

Tables 3-8, 3-9, and 3-10 present the updated soil COPEC screens for OU2 surface soils, OU3 upland surface soils, and OU3 floodplain surface soils, respectively. Soil COPECs identified in this updated screen are TEQ_A, TEQ_M, PCBs (OU2 soils only), aluminum, arsenic (OU3 upland soils only), barium, chromium, copper, manganese, mercury, nickel, selenium, vanadium, and zinc. PCBs were only detected in OU2 soils and the maximum detected concentrations (based on data excluding those soils that were removed in 2017) did not exceed the available soil ESVs. However, because PCBs are considered bioaccumulatives, they were retained as COPECs for OU2 soils.

Aluminum soil ESVs for plants are based on laboratory tests in which an aluminum solution is added to test soils (USEPA 2003b; Efroymson 1997a,b). Per USEPA (2003b), comparisons of total aluminum soil concentrations to solution-based screening values are inappropriate. Soluble aluminum is associated with uptake and bioaccumulation of aluminum from soils into plants, but it is difficult to measure soluble aluminum in pore water or in soil extracts. USEPA (2003b) instead recommends evaluation of soil pH as an alternative measurement because the presence of soluble aluminum forms is pH dependent. The use of a pH screening level of 5.5 is considered environmentally protective. The Site database does not include information on soil pH. On this basis, aluminum in soil is retained as a COPEC and associated uncertainties are discussed in the uncertainty assessment.

Iron was not evaluated as a COPEC because no toxicity benchmarks are available for iron. Iron is considered an essential trace element that mediates oxygen and energy transport in all living organisms. Iron is particularly essential for plant growth, and is generally considered to be a micronutrient (USEPA 2003c). In well-aerated soils between pH 5 and 8, the iron demand of plants is higher than the amount available (USEPA 2003c). Under these soil conditions, iron is not expected to be toxic to plants. However, as noted above, soil pH has not been measured as part of the RI sampling within the study area. Given that iron is considered an essential nutrient in soils, iron in soils is not retained as a COPEC but is considered a source of uncertainty.

3.1.3.1 Soil COPEC Summary

Soil COPECs identified based on comparison of maximum detected concentrations to available soil ESVs are:

- OU2 Soils: TEQ_A, TEQ_M, PCBs (Total PCBs, Aroclor-1254, and Aroclor-1260), aluminum, barium, chromium, copper, manganese, mercury, nickel, selenium, vanadium, and zinc
- OU3 Upland Soils: TEQ_A, TEQ_M, aluminum, arsenic, barium, chromium, copper, manganese, mercury, selenium, vanadium, and zinc
- OU3 Floodplain Soils: TEQ_A, TEQ_M, aluminum, barium, chromium, copper, manganese, mercury, vanadium, and zinc

3.2 Identification of Pond Pore water COPECs

The on-Site ponds represent geochemically unique environments. Risks to benthic macroinvertebrates is not likely to be a simple function of bulk sediment concentrations of metals

due to numerous potentially mitigating factors in the sediment of the on-Site ponds. For this reason, pore water samples were collected from 12 on-Site ponds in accordance with Addendum 9 (NewFields 2018a). Maximum detected concentrations in pore water samples were compared to the surface water ESVs (Section 3.1.1). For most metals, the dissolved concentrations measured with peepers were used in the screen. For aluminum, the total concentrations measured with PushPoint samplers were used in the screen. Table 3-11 presents the pore water COPEC screening results. As shown, aluminum, barium, iron, manganese, mercury and selenium were detected at concentrations greater than surface water ESVs.

All of the COPECs identified in pore water were identified as sediment COPECs except for aluminum and iron. As described above, iron is considered an essential trace element, and is not retained as a COPEC. Aluminum CCC were calculated based on the reported pH and DOC concentrations in the pore water samples using the USEPA's Aluminum Criteria Calculator V.2.0 as described above in Section 3.1.1. Hardness values were calculated as described above using the total calcium and magnesium concentrations reported in the pore water samples. Table 3-12 presents the calculated aluminum CCC values for the ponds. As shown, hardness and/or DOC were outside of the calibration ranges for the model at most ponds. However, the maximum detected total aluminum remained below the CCC values at all ponds except HP13a and HP7. The maximum concentration of 1,390 µg/L in pond HP13a is based on the field duplicate sample. The total aluminum concentration in the field sample collected from this pond is 863 µg/L, which is less than the CCC value for this pond. Because aluminum was detected at concentrations below the calculated CCC values in most ponds, and given that the water chemistry conditions were outside of the recommended model conditions within the ponds where the maximum detected concentrations exceeded the CCC values (ponds HP13a and HP7), aluminum is not retained as a COPEC in the ponds but is identified as a source of uncertainty.

3.2.1.1 Porewater COPEC Summary

Porewater COPECs in on-Site ponds identified based on comparison of maximum detected concentrations to available surface water ESVs are:

- Barium, manganese, mercury, and selenium

3.3 Identification of Wildlife COPECs

3.3.1 Data

In addition to the surface water, sediment and soil sampling conducted within the study area, biotic data were also collected as briefly described below. Tissue samples were analyzed for dioxin/furan

congeners, metals, methylmercury, lipid content, and percent moisture for samples with sufficient biomass. All biotic data used in this assessment are included in Appendix A along with summary statistics.

Fish Tissue

In August 2018, longnose dace (*Rhinichthys cataractae*) were collected at nine locations in the CFR within the study area (Figure 3-2) (NewFields 2020b). Whole-body samples were submitted for laboratory analysis.

USEPA coordinated an effort to collect rainbow trout and northern pike from the CFR in June 2019 (2019b). Fish were filleted; fillet and carcass tissue samples were composited (5 fish/composite if possible) consistent with USEPA (2019b). The sizes of fish collected (255-450 mm rainbow trout and 470-1,020 mm northern pike) generally represent fish outside the range commonly caught/consumed wholly by the ecological receptors evaluated in this assessment. However, the smaller sized rainbow trout may be consumed by osprey (typically consume fish in the 10-30 cm size range [Ueoka and Koplin 1973; Edwards 1988]). On this basis, the northern pike data are not utilized in the evaluation of wildlife exposures and the rainbow trout data are only used for evaluating exposures to osprey. However, both the rainbow trout and the northern pike tissue data were used for evaluating effects to fish by comparing concentrations to tissue residue benchmarks (TRBs).

Aquatic Invertebrate Tissue

Macroinvertebrate samples were collected from six sampling locations in Lavalle Creek (four locations within the current Site boundary) and four locations in O'Keefe Creek (three locations within the Site boundary) (Figure 3-3). These samples include both BMI and aquatic vegetation-associated invertebrates (AVI). Initial efforts to collect benthic infauna yielded insufficient biomass at all creek locations. Consistent with the Field Sampling Plan (FSP), a D-net was used in this case to collect AVI and achieve sufficient biomass for analysis (NewFields 2018a). Sampling involved disturbing benthic substrates and capturing dislodged organisms, coupled with sweeping submerged aquatic vegetation with D-nets. The aquatic invertebrate samples collected from the creeks that were evaluated for dioxins/furans and metals were a composite of AVI along with any BMI that could be collected.

Invertebrate tissue samples were collected from 11 of the on-Site ponds. Benthic grabs using a petit ponar did not yield sufficient infaunal biomass for the planned analysis, and samplers shifted to using D-nets to collect AVI along with the limited BMI biomass. At ponds where both BMI and AVI samples were collected, each was maintained separately as unique samples. Invertebrate

tissue data were used for evaluating exposures to aquatic-dependent wildlife ingesting invertebrates (see Section 4.1.4.1).

Small Mammal Tissue

Deer mice (*Peromyscus spp*.) were collected from eight locations using live traps at locations identified as suitable habitat for small mammals. Samples were also collected from two locations in OU1 (Figure 3-3) (NewFields 2018a). Whole-body samples were submitted for laboratory analysis. Small mammal tissue data were used for evaluating exposures to terrestrial wildlife receptors and the mink. In addition, the whole-body tissue data were used for evaluating effects to small mammals by comparing concentrations to TRBs.

3.3.2 Wildlife COPEC Screen

The screening criteria used in the COPEC screens presented for surface water, sediment and soil are protective of aquatic receptors (BMI, fish), terrestrial plants and soil invertebrates, but do not necessarily provide for protection of birds and mammals. Based on the COPECs identified in abiotic media, the wildlife COPEC screen presented below focused on dioxin/furans, PCBs and metals. For each contaminant in these classes, data were reviewed to determine if appropriate dose-based toxicity reference values (TRVs) for birds and mammals were available. Wildlife TRVs are summarized in Appendix B. If a contaminant lacks a TRV value, it is not possible to quantitatively evaluate the contaminant further and the contaminant is identified as a source of uncertainty.

A maximum HQ (HQ_{max}) was calculated for each medium for which measured data were available, for each class of receptors (birds and mammals) as follows:

$$HQ_{\max\,(i)} = \frac{C_{\max\,(i)} \times IR_{\max\,(i)}}{TRV_{NOAEL(i)}}$$

where:

$HQ_{max(i)}$	=	the maximum possible HQ for exposure to a chemical in medium "i"
$C_{max(i)}$	=	the maximum concentration in medium "i"
$IR_{max(i)}$	=	the maximum intake of medium "i" for any representative surrogate species in each receptor class
$TRV_{NOAEL(i)}$	=	The no-observable-adverse-effect-level (NOAEL) TRV for chemical "i" for each receptor class

Finally, an HQ_{max}(total) was calculated by summing across all potential exposure pathways, as follows:

$$HQ_{\max\,(total)} = \sum_{i=a}^{i=e} HQ_{\max\,(i)}$$

where:

a = soil/sediment
b = surface water
c = invertebrate tissue
d = fish
e = small mammal

If HQ_{max}(total) is less than or equal to 1, there is strong evidence that that contaminant is not of concern to any receptor in the group (birds or mammals), and the contaminant is eliminated as a COPEC for that group. If the value of HQ_{max}(total) exceeds 1, then the contaminant is retained as a COPEC for that group for all media. It is important to note that if the value of HQ_{max}(total) exceeds 1, it does not necessarily indicate an authentic risk associated with possible chronic exposures at the Site. HQ_{max}(total) is intended to be a highly conservative estimate of potential risk that is calculated assuming the highest ingestion rates for every individual media evaluated based on comparison to a NOAEL-based TRV. Thus, it is expected that some contaminants may be identified as COPECs as part of this initial screen that are actually of little or no concern, but this conservative approach ensures that no contaminants of authentic concern will be overlooked.

Maximum concentration values for each contaminant in each medium are shown in Table 3-13, along with the HQ_{max} values for each wildlife receptor group (mammals, birds), calculated as described above.

3.3.2.1 Wildlife COPEC Summary

Wildlife COPECs identified based on estimation of $HQ_{max(total)}$ values are:

- Mammals: TEQ_M, PCBs (OU2 only), aluminum, antimony, arsenic, barium, chromium, copper, manganese, mercury, methylmercury, nickel, selenium, thallium, vanadium, and zinc
- Birds: TEQ_A, PCBs (OU2 only), aluminum, arsenic, barium, chromium, copper, lead, manganese, methylmercury, selenium, vanadium, and zinc

3.4 Summary of the Updated COPEC Screen

As described above, updated COPEC screens were conducted to account for additional data collected since the SLERA (USEPA 2017a). In addition, pond pore water data were screened and wildlife COPECs were identified. Table 3-14 summarizes the COPECs retained for further evaluation in the BERA.

4.0 ANALYSIS OF EXPOSURE AND EFFECTS

USEPA guidance on performing ecological risk assessments instructs evaluation of exposures and associated adverse effects (USEPA 1997, 1998). Calculation of exposure estimates, and stressor response is the quantitative determination of what ecological receptors are exposed to and to what degree they are exposed, and if that level of exposure is likely or not to cause harmful ecological effects.

The CSM presented in Section 2.4 above provides the framework for the analysis of exposure and effects. This section focuses on evaluating the relationships between receptors, potential exposures, and potential effects and provides the inputs for calculating risk estimates in Section 5.0.

4.1 Exposure Assessment

The exposure assessment estimates the potential for Site-related exposure by evaluating co-occurrence of COPECs and the ecological receptors of concern (USEPA 1998). This section describes the approaches used to develop exposure estimates for each exposure group.

4.1.1 Exposure – Aquatic Community-Level Receptors

The evaluation of risk to aquatic receptors focused on maintaining sufficient rates of survival, growth, and reproduction to protect populations in on-Site ponds, O'Keefe and Lavalle Creeks, and the CFR. As shown in the CSM (Figure 2-7), the exposure pathways of primary concern for exposure of aquatic receptors include:

- Direct contact with COPECs in surface water. This pathway is applicable to fish, aquatic insects, benthic organisms that reside in the upper portion of the sediment substrate, aquatic plants, and amphibians.

- Direct contact with COPECs in sediment. This pathway is most applicable to benthic invertebrate species that live within the sediment substrate.

- Direct contact with inorganic COPECs in pond pore water. This pathway is most applicable to benthic invertebrate species that live within the sediment substrate.

4.1.1.1 Exposure Areas

For this assessment, the data for surface water and sediment were grouped in the following:

- CFR (within the study area)
- O'Keefe Creek
- Lavalle Creek
- Individual on-Site ponds

Sampling has occurred at upstream locations within O'Keefe and Lavalle Creeks outside of the current Site boundary, and at locations within the CFR upstream of the Site. While these data are useful to understanding the relative contribution of Site-related contamination to ecological exposures, such an evaluation is typically conducted outside of the risk assessment during risk management. Thus, data collected from upstream reaches were not evaluated within the quantitative risk evaluation presented in this BERA.

4.1.1.2 Surface Water Data

Surface water data are available for the surface water COPECs listed in Table 3-14 for samples collected in 2015 and 2018 from O'Keefe and Lavalle Creeks and from the CFR within the study area as part of ongoing RI activities (sampling locations shown in Figure 3-2). In addition, surface water data are also available for samples collected in 2018 from 12 on-Site ponds (sampling locations shown in Figure 3-2).

4.1.1.3 Sediment Data

Bulk sediment data are available for the sediment COPECs identified in Table 3-14 for samples collected from locations in O'Keefe and Lavalle Creeks, the CFR, and on-Site ponds co-located with surface water sampling as well as from additional locations where a surface water sample was not collected (Figure 3-2).

4.1.1.4 Porewater Data

Adverse effects of metals contamination in bulk sediment on benthic species may be mediated in large degree by exposure of the organisms to metals that exist in the pore water of the sediment, rather than the bulk sediment, *per se*. For this reason, risks to benthic organisms from exposure to metals in pore water are also evaluated in this assessment. Pore water data were collected in 2018 using peepers and PushPoint samplers from ponds shown in Figure 3-2. These data include dissolved (peeper data) and total (PushPoint data) concentrations of the pore water COPECs identified in Table 3-14.

4.1.1.5 Exposure Point Concentrations

For aquatic receptors, each sample of water and each sample of sediment may be viewed as representing an environmental exposure location in which one or more organisms may be exposed. Thus, exposure and risk were evaluated based on a sample-by-sample basis, stratified by exposure area. Non-detect values were evaluated at ½ the sample-specific detection limit.

4.1.2 Exposure – Fish

TEQ_F is a surface water COPEC, but a surface water toxicity benchmark protective of exposures to aquatic receptors is not available. Thus, to evaluate risk to fish due to exposures to dioxins and furans in the CFR, whole-body concentrations in fish collected and analyzed for tissue residues of dioxin and furan congeners were evaluated. Because PCBs and mercury are also considered bioaccumulatives, concentrations of these contaminants in fish tissues were also evaluated. Evaluation of PCB concentrations was based on calculating TEQ_F for dioxin, furan, and co-planar PCB congeners (D/F/P). Even though PCBs were not detected in surface waters or sediments, this evaluation was included to account for potential bioaccumulation and in an effort to be protective. However, PCB concentration data are only available for a subset of fish samples as noted below. Similarly, mercury was evaluated in fish tissues to account for potential bioaccumulation, but mercury data are only available for a subset of fish samples as noted below.

4.1.2.1 Fish Data

In 2018, longnose dace were collected from the CFR (sampling locations shown in Figure 3-2). Whole-body composite samples were analyzed for dioxin and furan congeners and metals, including mercury and methyl mercury.

In 2019, rainbow trout and northern pike were collected from the CFR (sampling locations shown on Figure 4-1). These fish were filleted with skin intact and belly flap attached. Fillet composite samples and carcass composite samples were analyzed for dioxin, furan, and PCB congeners. Rainbow trout and northern pike were also collected in 2018. Consistent with USEPA (2020), the quantitative evaluation presented in this BERA is based on evaluation of the tissue samples for the fish collected as part of the 2019 sampling effort. The concentration data for the tissue samples from fish collected as part of the 2018 sampling effort are also considered in the uncertainty assessment (Section 6.1.3).

4.1.2.2 Exposure Point Concentrations

TEQ_F concentrations were calculated using the congener data and fish TEFs consistent with the discussion provided in Section 3.1. The dioxin and furan congener concentrations reported in longnose dace samples represent whole-body concentrations in units of wet weight (ww). For the rainbow trout and northern pike samples, whole body concentrations were estimated from the fillet and caracass samples as (Bevelhimer et al. 1997):

$$C_{wb} = \frac{(C_f \times W_f + C_c \times W_c)}{(W_f + W_c)}$$

where,

C_f = fillet concentration (mg/kg)
W_f = average weight (g) across fish fillets included in a composite sample
C_c = carcass concentration (mg/kg)
W_c = average weight (g) across fish carcasses (not including fillets) in a composite sample

For many persistent, high-molecular weight chemicals such as dioxins/furans, fat is the primary repository. It is common to lipid-normalize the concentrations reported in tissues because the concentration at the site of action is a result of equilibrium partitioning with fat (USEPA 2011b). Lipid-normalized concentrations are calculated as:

$$C_{lw} = C_{ww}\left[\frac{100}{L}\right]$$

where,

C_{lw} = lipid-weight concentration (mg/kg-lw)
C_{ww} = wet-weight concentration (mg/kg-ww)
L = percent lipid (fat) content

For the purposes of evaluating effects on fish, the lipid adjusted whole-body concentrations of TEQ_F (as $TEQ_{F\text{-}(D/F)}$ for dace, rainbow trout and northern pike separately, and as $TEQ_{F(D/F/P)}$ for rainbow trout and northern pike separately) and methyl mercury (for dace) were evaluated on a sample-by-sample basis.

4.1.3 Exposure – Terrestrial Plants and Invertebrates

The terrestrial plant and soil invertebrate communities are important components of any ecosystem, and they are good indicators of soil condition because they reside directly in the soil

and are not (or minimally) mobile. The evaluation of risk to terrestrial receptors focused on maintaining sufficient rates of survival, growth, and reproduction to protect populations at the Site. As shown in the CSMs (Figure 2-7), the exposure pathways of primary concern for exposure of terrestrial receptors include:

- Direct contact with soils. Ingestion of soil by terrestrial invertebrates is included in the direct contact pathway. This pathway is applicable to both terrestrial plants and soil organisms.

The SLERA determined that evaluation of terrestrial exposures to soils collected from the top 0-7 inches below ground surface would be adequately protective of potential exposures by ecological receptors to subsurface soils (USEPA 2017a). On this basis, terrestrial exposures to Site soils are based on evaluating concentrations in surface soils.

4.1.3.1 Exposure Areas

For this assessment, the data for Site surface soils were grouped as:

- OU2 soils
- OU3 upland soils
- OU3 floodplain soils

Soils were also collected from an area of the CFR floodplain within the Site boundary downstream of the holding ponds that was never used for industrial purposes. This area is denoted as parcel "FP" on Figure 2-4. For the purposes of this assessment, this is considered a location representative of an undisturbed area within the Site boundary that is evaluated as a separate exposure area for comparison purposes.

4.1.3.2 Soil Data

Soil samples were collected in 2014, 2015 and 2016 as 5-point composite samples collected from locations across OU2 and OU3 following a biased sampling approach (i.e., sampling locations were selected based on Site knowledge to identify areas of most concern; sampling locations shown in Figure 4-2). In 2017, 20-point composite samples were collected from 20-acre (OU2 and OU3 uplands) or 100-acre (OU3 floodplain) grids (sampling locations are shown in Figures 4-3, 4-4, and 4-5). This included collecting 20-point composite samples from grids within the "FP" parcel identified as an area that was never used for industrial purposes. In addition, a 30-point composite sample was collected from within a historically defined basin/pond (aeration basin II, settling pond 8).

4.1.3.3 Exposure Point Concentrations

Because plants and soil organisms are not (or minimally) mobile, each sample of soil may be viewed as representing an environmental exposure location in which one or more organisms may be exposed. Thus, exposure and risk were evaluated based on a sample-by-sample basis, stratified by exposure area. Non-detect values were evaluated at ½ the sample-specific detection limit.

Bioavailability of metals for root uptake varies with the oxidation state and the organic composition of the soil. One hundred percent bioavailability was assumed for this BERA.

4.1.4 Exposure – Birds and Mammals

Exposures of birds and mammals will be characterized in terms of the total ingested dose from each contaminated environmental media (e.g., soil, water and food). The surrogate wildlife receptors evaluated in this BERA using exposure modeling are summarized in Table 2-3. Daily doses were estimated for each COPEC and representative surrogate receptor. The calculated doses were then compared with TRVs, to estimate the potential adverse biological effects on the receptor. The total exposure from ingestion for each receptor of concern was calculated as the sum of the separate dietary exposures.

The wildlife species evaluated in this assessment can be categorized as aquatic-dependent birds and mammals and terrestrial birds and mammals. Each category is discussed separately below.

4.1.4.1 Aquatic-dependent wildlife receptors

The aquatic-dependent receptors include the osprey, belted kingfisher (kingfisher), American dipper (dipper), tree swallow (swallow), mallard, otter, and mink. For these receptors, the total estimated daily dose (EDD_{total}) is the sum of the doses obtained from the three major routes of exposure, as follows:

$$EDD_{total} = EDD_{diet} + EDD_{water} + EDD_{sediment}$$

Dose from feeding on aquatic biota (BMIs, fish, and plants) is calculated as:

$$EDD_{diet} = FIR \times C_{biota} \times DF_i \times AUF$$

Where:

EDD_{diet}	= Dose of COPEC from feeding on aquatic biota (mg/kg body weight [BW]-day)
FIR	= Food ingestion rate (kg food/kg BW-day, dry weight [dw])
C_{biota}	= COPEC concentration in each food item (mg/kg dw)
DF_i	= Dietary fraction of each food item (unitless)
AUF	= Area use factor (unitless; assumed 1.0 for all wildlife receptors)

Dose from ingesting surface water is calculated as:

$$EDD_{water} = WIR \times C_{water} \times AUF$$

Where:

EDD_{water}	= Dose of COPEC from drinking surface water (mg/kg BW-day)
WIR	= Water ingestion rate (L/kg BW-day)
C_{water}	= COPEC concentration in drinking water (mg/L)
AUF	= Area use factor (unitless; assumed 1.0 for all wildlife receptors)

Dose from ingesting sediment is calculated as:

$$EDD_{sediment} = SIR \times C_{sediment} \times AUF$$

Where:

$EDD_{sediment}$	= Dose of COPEC from incidental ingestion of sediment (mg/kg BW-day)
SIR	= Sediment ingestion rate (kg/kg BW-day dw)
$C_{sediment}$	= COPEC concentration in sediment (mg/kg dw)
AUF	= Area use factor (unitless; assumed 1.0 for all wildlife receptors)

The mink is also evaluated for exposures to soil. Dose from ingesting soil is calculated the same as dose from ingesting sediment, but instead of using $C_{sediment}$, C_{soil} (COPEC concentration in soil in units of mg/kg dw) is used instead.

4.1.4.2 Terrestrial wildlife receptors

The terrestrial wildlife receptors include the American robin (robin), gray catbird (catbird), dusky grouse (grouse), American kestrel (kestrel), Northern flicker (flicker), Clark's nutcracker (nutcracker), vagrant shrew (shrew), big brown bat (bat), white-tail deer (deer), montane vole (vole), red fox (fox), and deer mouse (mouse). EDD_{total} is estimated as the sum of the doses obtained from three major routes of exposure as follows:

$$EDD_{total} = EDD_{diet} + EDD_{water} + EDD_{soil}$$

Dose from feeding on terrestrial biota (plants and soil invertebrates) is calculated as:

$$EDD_{diet} = FIR \times C_{biota} \times DF_i \times AUF$$

Where:

EDD_{diet} = Dose of COPEC from feeding on terrestrial biota (mg/kg BW-day)
FIR = Food ingestion rate (kg food/kg BW-day, dry weight [dw])
C_{biota} = COPEC concentration in each food item (mg/kg dw)
DF_i = Dietary fraction of each food item (unitless)
AUF = Area use factor (unitless)

Dose from ingesting surface water is calculated as:

$$EDD_{water} = WIR \times C_{water} \times AUF$$

Where:

EDD_{water} = Dose of COPEC from drinking surface water (mg/kg BW-day)
WIR = Water ingestion rate (L/kg BW-day)
C_{water} = COPEC concentration in drinking water (mg/L)
AUF = Area use factor (unitless)

Dose from ingesting soil is calculated as:

$$EDD_{soil} = SIR \times C_{soil} \times AUF$$

Where:

EDD_{soil} = Dose of COPEC from incidental ingestion of soil (mg/kg BW-day)
SIR = Soil ingestion rate (kg/kg BW-day dw)
C_{soil} = COPEC concentration in soil (mg/kg dw)
AUF = Area use factor (unitless)

4.1.4.3 Wildlife Exposure Parameters

Table 4-1 presents a summary of the wildlife species-specific exposure parameters (e.g., BWs, ingestion rates, etc.). Detailed tables presenting supporting reference sources and assumptions are included in Appendix C.

4.1.4.4 Exposure Areas and Exposure Point Concentrations

General Approach

When exposure occurs over a geographic area, risk from a chemical is related to the arithmetic mean concentration averaged over the entire exposure area. Since the true arithmetic mean concentration cannot be calculated with certainty from a limited number of measurements, the USEPA recommends that the upper 95th percentile confidence limit (95UCL) of the arithmetic mean of the chemical concentrations be used to estimate exposure.

Exposure point concentrations (EPCs) were calculated as the 95UCL of the mean and were derived using USEPA's ProUCL software (version 5.1). ProUCL recommended 95UCLs are based upon data size, data distributions, detections, and skewness. In some instances, limited data will preclude the ability to derive a 95UCL and the maximum detected concentration was used as the EPC. If a calculated 95UCL exceeded the maximum detected concentration, the latter was used as the EPC. Table 4-2 summarizes the data used to calculate an EPC for each receptor; further details are discussed below.

General considerations for evaluating wildlife exposures include the following:

- Wildlife receptors were evaluated separately for those considered to be exposed primarily while foraging at area ponds, creeks and at the CFR (aquatic-dependent), and those considered to primarily be exposed to on-Site soils while foraging (terrestrial). Table 4-2 includes the habitats evaluated for each of the avian and mammalian surrogate receptors evaluated in this assessment.

- Wildlife are expected to be exposed primarily to surface soils. To the extent that wildlife receptors burrow, evaluation of exposures to surface soils was determined to be representative and/or protective of exposures to subsurface soils (USEPA 2017a). Therefore, EPCs for soils were based on concentrations in surface soils (0 to 7 inches bgs).

- Wildlife are also expected to consume raw, unfiltered surface water. Therefore, only surface water data were used to derive exposure estimates for metals in drinking water. EPCs for metals in water were based on total (rather than dissolved) metal concentrations.

- Exposures to sediments by wildlife were included for aquatic-dependent receptors to evaluate incidental ingestion of sediment during foraging. For exposures associated with the CFR, flood fringe sample data were included with bed sediment sample data.

- Exposures of wildlife based on ingestion of dietary items were estimated using measured tissue concentrations where available (fish, aquatic invertebrates, small mammals). Tissue concentrations for terrestrial invertebrates and plants were modeled based on available soil data assuming generic moisture contents of 84% and 85% for soil invertebrates and terrestrial plants, respectively in accordance with the recommendations provided in the Ecological Soil Screening Level (Eco-SSL) Guidance Attachment 4-1 (USEPA 2007b).

Aquatic-Dependent Receptors

There are three distinct surface water features within the study area: the CFR, on-Site creeks, and on-Site ponds. Not all aquatic-dependent receptors were evaluated at each. There are no fish in the on-Site ponds, and only low numbers of small fish have been observed in the Creeks. Fish data are only available from the CFR. Thus, those receptors that primarily consumed fish were evaluated for the CFR; this includes the kingfisher, osprey, otter and mink. For estimating exposures to these receptors, sediment, surface water and fish EPCs were calculated for the CFR within the study area as one exposure area.

The aquatic-dependent receptors that primarily consumed invertebrates were evaluated for the creeks and ponds; this includes the swallow, dipper and mallard. Consistent with the BERA Work Plan, O'Keefe and Lavalle Creeks were evaluated as separate exposure areas (USEPA 2018b). The BERA Work Plan also identified upland wetlands and floodplain wetlands as additional exposure areas (USEPA 2018b). Based on further consideration and accounting for the available data, on-Site ponds were evaluated as a single exposure area for the aquatic-dependent receptors. Data collected to support the evaluation of exposures to aquatic-dependent wildlife include paired sediment, surface water and invertebrate samples collected from 11 individual ponds at the Site. A single surface water and sediment sample are available for each pond. Two invertebrate samples were collected from each of six ponds (Table 4-3; one sample of BMI and one sample of AVI), but only a single sample was collected at the other five ponds. For the purposes of this assessment, it is assumed that the aquatic-dependent birds may be exposed at any of the ponds, so all ponds were combined into a single exposure area. However, given that there are differences in water chemistry between the ponds and the home range of the dipper is smaller, the uncertainties associated with combining across ponds were considered in Section 6.0.

EPCs were calculated for each exposure area as summarized in Table 4-2 and described in further detail below. Appendix D summarizes the EPCs used in this assessment.

Data for the CFR include sediment, surface water and fish tissue data. Some of the surface water and sediment data were collected in 2015. Additional paired surface water and sediment data were collected in 2018 co-located with fish sampling (longnose dace). 95UCLs were calculated by

media regardless of when samples were collected. Whole-body ww concentrations in dace were used to generate 95UCLs for fish to represent the dietary fraction. Rainbow trout (25-45 cm) and northern pike (55-102 cm) were also collected from the CFR in 2019. These data were not used to evaluate exposures to otter or kingfishers who typically consume fish less than 20 cm in size. Osprey generally consume fish 10-30 cm in size (Ueoka and Koplin 1973; Edwards 1988). Several of the smaller rainbow trout collected from the CFR fall within this size range, but the composited tissue samples contain larger fish outside of this range. Nonetheless, the rainbow trout dioxin, furan, and dioxin-like PCB congener data were used to evaluate exposures of osprey to TEQ_F in rainbow trout tissues separately also. 95UCLs were calculated based on the 2019 rainbow trout $TEQ_{F\text{-}(D/F/P)}$ concentrations.

Data for the creeks include sediment, surface water and invertebrate tissue data. Some of the surface water and sediment data were collected in 2015. Additional paired surface water and sediment data were collected in 2018 co-located with invertebrate tissue sampling. 95UCLs were calculated by media across all data available for each creek (O'Keefe Creek and Lavalle Creek separately).

Data for on-Site ponds include sediment, surface water, and invertebrate tissue data collected from each pond in 2018. 95UCLs were calculated across all ponds for surface water and sediment. Tissue EPCs were calculated as 95UCLs based on the following assumptions:

- The available data for BMI and AVI was used to collectively represent the dietary fraction of aerial and benthic invertebrates.

- The dietary composition for the dipper is assumed to be comprised of 5% aerial invertebrates, 90% benthic invertebrates, and 5% fish. No fish data are available for the assumed exposure areas (creeks and ponds). Thus, the dietary composition for the dipper used in the risk calculations was 100% invertebrates. Because invertebrate tissue samples collected from the ponds were distinctly separate for BMI and AVI, the invertebrate EPCs for the pond exposure area was calculated assuming 95% contribution from BMI and 5% contribution from AVI (i.e., $EPC_{invert} = EPC_{BMI} \times 0.95 + EPC_{AVI} \times 0.05$). The EPCs calculated for the individual creeks were based on the available mixed invertebrate samples.

- The dietary composition for the tree swallow is assumed to be comprised of 10% terrestrial invertebrates and 90% aerial invertebrates. The invertebrate EPCs for the pond exposure area were calculated based only on the data for AVI. The EPCs calculated for the individual creeks were based on the available mixed invertebrate samples.

- As shown in Appendix C, the mallard is assumed to consume aquatic plants as part of its diet in addition to BMI. In the absence of data on aquatic plants, the dietary composition for the mallard is assumed to be comprised of 100% benthic invertebrates. This is consistent with the assumption presented in the BERA Work Plan (USEPA 2018b). The invertebrate EPCs for the pond exposure area were calculated based only on the data for BMI. The EPCs calculated for the individual creeks were based on the available mixed invertebrate samples.

- The dietary composition for the mink is assumed to be comprised of 25% small mammals and 75% fish. Thus, the mink is evaluated for ingestion of surface water, sediment, fish, soil, and small mammals. The EPCs for the surface water and fish were based on the available data from the CFR. A single EPC was calculated for evaluating ingestion of soil and sediment assuming exposure to sediments accounts for 75% of the EPC and exposure to soils accounts for 25% of the EPC (consistent with the foraging assumption). The EPC for small mammals was calculated using the tissue data from only those samples collected at locations within the OU3 floodplain.

Terrestrial Receptors

For terrestrial receptors, exposure areas were selected according to generic home range categories as follows:

- Large home range exposure areas are evaluated for those receptors with home ranges on the same scale as the study area. The exposure area selected was the combined area within OU2 and OU3. Large home range receptors include the bat (home range of 11,100 hectares [ha]) and fox (1,038 ha).

- Medium home range exposure areas are evaluated for those receptors with intermediate home ranges (5-500 ha). Exposure was evaluated separately for OU2, OU3 uplands, and OU3 floodplain. Medium home range receptors include the deer (home range of 238 ha), grouse (5 ha), kestrel (57 ha), flicker (55 ha), and nutcracker (473 ha).

- Small home range exposure areas are evaluated for those receptors with small home ranges (<10 acres). Exposure was evaluated on a sample-specific basis. Small home range receptors include the robin (home range of 0.37 ha), catbird (0.38 ha), shrew (0.25 ha), vole (0.027 ha), and mouse (0.077 ha).

- The CFR floodplain area within the current Site boundary downstream of the holding ponds that was never used for industrial purposes was evaluated as a separate exposure area.

For this assessment, the home ranges for the large home range receptors are larger than the Site. On this basis, AUFs were calculated for the big brown bat and the red fox as 0.07 and 0.76, respectively. For all other wildlife receptors, the AUF was assumed to be equal to 1. Effectively, this assumes that each receptor obtains 100 percent of its exposure to a given COPEC from the study area. In addition, no adjustments were incorporated based on seasonal use; a seasonal use factor (SUF) was conservatively assumed to be equal to 1.

EPCs were calculated for each exposure area as summarized below. Appendix D summarizes the EPCs used in this assessment.

Soil EPCs were calculated as 95UCLs across all surface soils for large home range receptors. For medium home range receptors, soil EPCs were calculated as 95UCLs for OU2, OU3 uplands, and the OU3 floodplain. A soil EPC was also calculated as a 95UCL for the undisturbed floodplain area (composite soil samples within sampling grids 82 and 84 on Figure 4-5). Exposures of small home range receptors to surface soils were evaluated on sample-by-sample basis.

Water EPCs were calculated as 95UCLs across all surface waters within the study area for large home range receptors. For medium home range receptors, the maximum of the water EPCs calculated for O'Keefe Creek, Lavalle Creek, and the on-Site ponds (combined) was used. Exposures of small home range receptors to surface waters were evaluated on sample-by-sample basis.

For dietary intake by terrestrial receptors, EPCs for small mammals were based on measured concentrations in small mammal tissue samples. Tissue concentration data are not available for terrestrial plants or soil invertebrates. In the absence of empirical data, concentrations in the tissues of these dietary items was modeled using the soil uptake models presented in Table 4-4. Dietary composition percentages in Table 4-1 are presented separately for terrestrial invertebrates and earthworms. The uptake models used were based on uptake from soil to earthworms. Using the uptake models from Table 4-4, a single EPC was generated for each COPEC representative of concentrations in soil invertebrates as a general category.

In addition to using the small mammal tissue data to evaluate exposures to higher trophic level wildlife consuming small mammals, the tissue data were also used to evaluate effects for small mammals themselves based on comparison to TRBs. For this purpose, the sample-specific whole-body concentrations were evaluated on a sample-by-sample basis.

4.2 Evaluation of Effects

This section describes the methodology for evaluating risk to aquatic receptors (fish, benthic invertebrates, and amphibians), terrestrial plants, soil invertebrates, birds, and mammals from exposures to COPECs in Site media.

4.2.1 Calculating Risk Estimates Using a Hazard Quotient Approach

4.2.1.1 Calculating HQs for Direct Contact Exposures

The basic equation used for calculation of an HQ value for direct contact exposures by aquatic and terrestrial receptors is:

$$HQ = \frac{EPC}{ESV}$$

where:

HQ	=	Hazard Quotient (unitless)
EPC	=	Exposure point concentration (µg/L or mg/kg)
ESV	=	Surface water, sediment or soil benchmark (µg/L or mg/kg)

For aquatic and terrestrial receptors exposed to Site COPECs via direct contact with either surface water (fish, benthic invertebrates, amphibians), pore water (benthic invertebrates), sediment (benthic invertebrates), or soil (terrestrial plants and soil invertebrates), HQ values were calculated on a sample-by-sample basis for all available samples.

4.2.1.2 Calculating HQs for Wildlife Receptors

The basic equation used for calculation of an HQ value for exposure of a wildlife receptor to a chemical by ingestion of an environmental medium is:

$$HQ = \frac{EDD}{TRV}$$

where:

HQ	=	Hazard Quotient (unitless)
EDD	=	Estimated daily dose (mg/kg BW-day)
TRV	=	Wildlife toxicity reference value (mg/kg BW-day)

Because wildlife receptors are exposed to more than one environmental medium, the total hazard quotient (HQ_t) for a receptor from a specific COPEC is calculated as the sum of HQs for that COPEC across all relevant media.

4.2.1.3 Interpreting HQs

HQs above 1.0 are interpreted as having potential for ecological risk under the exposure and toxicity assumptions used in the evaluation. For HQs calculated on a sample-by-sample basis, HQ exceedances are evaluated by consideration of the frequency and magnitude of HQ values that exceed 1.0 in each exposure unit. If all or nearly all of the HQs for individuals in a population of receptors are below 1.0, it is very unlikely that adverse, population-level effects will occur in the exposed population. Conversely, if many or all of the individual receptors have HQs that are above 1.0, then adverse effects on the exposed population are likely, especially if the HQ values are large. If only a small portion of the exposed population has HQ values that exceed 1.0, some individuals may be impacted, but population-level effects are not likely to occur. As the fraction of the population with HQ values above 1.0 increases, and as the magnitude of the exceedances increases, risk that a population-level effect will occur also increases. The distribution of HQ values for appropriate reference areas will also be provided for comparison, to help estimate the contribution of Site-related COPECs.

For medium or large home range receptors, one HQ value will be calculated for each exposure unit. The potential for adverse effects is considered minimal if each pathway-specific HQ and the HQ_t is equal to or below 1.0 based on the NOAEL TRV. If any pathway-specific HQ or the HQt is above 1 based on the NOAEL but is equal to or less than 1 based on the LOAEL, it is considered that adverse effects are possible, but they are likely to be low in extent and/or severity. If any pathway-specific HQ or the HQ_t is above 1 based on the LOAEL TRV, it is considered possible that some adverse effects will occur, with the frequency and/or severity of effects tending to increase as the LOAEL-based HQ value increases. Based on this, risk levels are assigned qualitative descriptions as follows:

Findings	Risk Characterization
NOAEL-based $HQ_t \leq 1$	Minimal
LOAEL-based $HQ_t \leq 1$, NOAEL-based $HQ_t > 1$	Low
LOAEL-based HQ_t 2-5	Moderate
LOAEL-based $HQ_t > 5$	High

These HQ thresholds were developed in the BERA Work Plan (USEPA 2018b).

Small Home Range Receptors

For small home range receptors, results for risks from a medium (soil, water, and diet) were evaluated by consideration of the frequency and magnitude of HQ values that exceed 1.0. However, samples of soil and water are not co-located, therefore it is not possible to calculate

the distribution of HQ_t with confidence. To address this issue, in addition to evaluating HQ values on a sample-by-sample basis for ingestion of soil, dietary items, and water separately, HQ_t values were calculated in the same manner as was done for the medium home range receptors (see Table 4-2).

4.2.2 General Considerations for COPEC Toxicity

COPECs at the Site include metals, dioxins/furans and PCBs. This section provides a generalized and brief overview of toxicity of these COPECs to ecological receptors.

4.2.2.1 Metals

USEPA (2007a) provides a detailed assessment of metals toxicity and highlights key principles to consider when evaluating risks associated with metals exposures, including:

- Metals are naturally occurring and many animals and plants exhibit adaptations to reflect variable requirements for and/or tolerance to certain metals. Some metals are essential for maintaining proper health of plants and animals.

- Different metals can act additively, independently, antagonistically or synergistically when they are present together.

- Interactions among metals within organisms may occur when they compete for binding locations on specific enzymes or receptors during the processes of absorption, excretion, or sequestration, or at the target site.

- The environmental chemistry of metals strongly influences their fate and effects on ecological receptors. Metals can exist and transform from one species to another (valence states) and convert between inorganic and organic forms. Environmental properties such as pH, particle size, moisture, redox potential, and organic matter content can influence the metal form. The form of the metal influences bioaccessibility, bioavailability, fate, and effects.

Copper, iron, manganese and zinc are essential micronutrients in most animals. Arsenic is considered beneficial but not essential to animals (USEPA 2007a). Animals can effectively store metals present at concentrations moderately above required levels without causing adverse effects. However, even essential elements can cause toxic effects when internal concentrations exceed levels that the animal can regulate.

Only the bioavailable fraction of the total metal concentration poses a risk. Total concentrations measured in the Site media are not expected to reflect actual exposure concentrations under most field conditions. Plants take up bioavailable metals from soils, sediment, and water through contact with external surfaces. Animals can absorb metals directly through their skin or ingest contaminated soil, sediment, water and food. Fish can take up metals directly from environmental media through its gills, its skin, or through incidental ingestion of sediment. Diet is the most important route of metals uptake in wildlife. In the absence of information on bioavailability, indirect estimates of food-chain exposures using models was done.

Mercury is identified as a bioaccumulative in this assessment. Mercury is a mutagen, teratogen, and carcinogen that causes cytochemical, histopathological, and embryocidal effects in biological organisms. Inorganic mercury has relatively low toxicity, but it can be transformed by biological and other processes into toxic forms like methylmercury. Methylmercury is produced primarily by bacteria-mediated methylation of inorganic mercury under aerobic and anaerobic conditions, although anaerobic conditions are favored (Eisler 1987). Plants are typically resistant to the toxic effects of mercury. Young animals (including larvae of aquatic life) are more sensitive to mercury than older animals. Mercury commonly affects the reproductive capacity of birds and mammals. Methylmercury biomagnifies in the food chain.

4.2.2.2 Dioxins and Furans

The seventeen dioxin and furan congeners that have chlorine substitutions in the 2, 3, 7, and 8 positions are evaluated in this assessment. In mammals, birds, and fish, dioxins and furans elicit toxicity via the aryl hydrocarbon receptor (AhR). Dioxins/furans bind to the Ah receptors in fish and wildlife. Dioxins have been found to be developmentally toxic, immunotoxic, neurotoxic, and hepatotoxic to vertebrate species. Dioxins have also been shown to induce disruption of endocrine signaling, cardiovascular toxicity, bone, skin, and tooth toxicity, carcinogenesis, wasting and lethality. However, invertebrates lack the AhR (Hahn et al. 1994; West et al. 1997) which likely limits the toxicity of dioxins/furans taken up from sediments and soils. Although amphibians have the AhR, the affinity to bind to TCDD has been found to be low whereby amphibians are considered insensitive to TCDD relative to fish (Jung and Walker 1997; Lavine et al., 2005). Plants do not have AhR genes, but limited data suggest that they are affected by dioxin exposure (Hanano et al. 2016, 2018).

TEFs express the toxicity of dioxins, furans and dioxin-like PCBs in terms of the most toxic form of dioxin, TCDD. The toxicity of individual congeners vary by orders of magnitude. Further, the rank order of individual congener toxicity (TEFs) vary across species. This congener-specific sensitivity suggests that for certain dioxins, not all exposed species will be affected equally.

4.2.2.3 PCBs

NAP (2001) includes an informative chapter on PCBs in the environment. Key principles described in this chapter associated with the dynamics of PCBs in the environment and their toxicity to ecological receptors are summarized below.

PCBs are stable compounds in the environment. There are 209 PCB congeners and the biological activity is congener specific. They are highly lipophilic, and consequently, have the potential to biomagnify in the ecological food web; the more chlorinated PCBs are more likely to biomagnify. Higher trophic level animals are generally at the greatest risk of PCB-related adverse effects. However, the magnitude of these risks can be impacted by such things and foraging preferences and species sensitivity. PCBs adsorb to organic matter in soils and sediment, and adhere to the surfaces of organic particles in the water column. In the environment PCBs can be transformed by a variety of factors including microbial degradation, reductive dichlorination, and metabolism via organisms. The susceptibility of PCBs to degradation and bioaccumulation is congener specific. PCBs are absorbed and stored in adipose tissue. The location of the chlorine atom on the phenyl rings influences metabolism and excretion. Chronic toxicity has been observed in fish, birds, and mammals including developmental effects, reproductive failure, liver damage, cancer, wasting syndrome, and death. There is also evidence of immunotoxicity in birds. Generally, PCBs are more toxic to embryonic and juvenile organisms than to adult organisms.

Twelve PCB congeners are characterized as “dioxin-like” because their toxicity is mediated through interaction with the AhR. TEFs have been developed for these co-planar PCBs for evaluation as TEQs.

Environmental weathering involving processes such as differential volatilization, solubility, sorption, anaerobic dichlorination, and metabolism results in changes in the composition of the PCB mixtures over time. Industrial PCB mixtures are composed of up to 50 or 60 congeners that were produced under the commercial name of Aroclors. Each Aroclor mixture is coded with the last two numbers referring to the percent by weight of chlorine in the mixture. Aroclor-1254 exists as a viscous liquid, whereas Aroclor-1260 exists as a sticky resin.

4.2.3 Toxicity Values

Toxicity values used in this assessment represent chemical-specific estimates of exposure that identify an exposure level that is believed to be without any risk of effect (no observed effect concentration [NOEC] or NOAEL) or identify the lowest exposure level that may cause an adverse effect (lowest observed effect concentration [LOEC] or lowest observed adverse effect

level [LOAEL]). Both NOEC/NOAEL and LOEC/LOAEL TRVs were used in the BERA. Three different types of TRVs were used in the BERA:

- **Concentration-based** TRVs are expressed as a concentration of a chemical in abiotic media. These will be used when evaluating risks to receptors that have direct contact with contaminated medium (e.g., fish in water, plants in soil) and are expressed in units of mg/unit medium.

- **Dose-based** TRVs are expressed as an ingested dose. These will be used to estimate exposure of individual wildlife via ingestion and are expressed in units of mg/kg BW-day.

- **Tissue-based** TRVs are expressed in units of mg/kg tissue in the exposed receptor. Most tissue-based TRVs are expressed as whole-body concentrations. In this assessment, TRBs are used.

4.2.4 Effect Levels – Aquatic Receptors

Effect levels for aquatic community-level receptors are based on the surface water and sediment ESVs briefly described in Section 3.0.

4.2.4.1 Surface Water Quality Criteria

Exposure estimates for COPECs in surface water were compared to acute and chronic aquatic life criteria (Table 4-5). Acute and chronic life criteria are based on the Criteria Maximum Concentration (CMC) and the CCC. The CMC is an estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed briefly without resulting in an unacceptable effect. The CCC is an estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed indefinitely without resulting in an unacceptable effect on growth, reproduction, or survival. These criteria are not species-specific, but are designed to protect 95% of the aquatic species. The USEPA NRWQC were preferred surface water ESVs. In cases where NRWQC were not available, MDEQ-7 criteria were considered. For copper, hardness-dependent ESVs were calculated using the NRWQC recommended parameters. NRWQC and MDEQ-7 criteria were not available for TEQ, barium, or manganese. For barium and manganese, the GLWQI Tier II secondary acute values (SAVs) and secondary chronic values (SCVs) were used as surface water ESVs. An SAV is derived by taking the lowest genus mean acute value (GMAV) and dividing it by the Final Acute Value Factor (FAVF). The FAVF is based on the number of studies and types of species used to derive the FAV. Once an SAV is calculated, the geometric mean of each of the secondary acute-chronic ratios (SACR) is found. The SCV is calculated by dividing the SAV by the SACR.

It was assumed that pore water exposures are equivalent to surface water exposures whereby the surface water ESVs were used to generate pore water HQs also.

No surface water ESV was identified for TEQ_F. This is not considered a significant source of uncertainty given that dioxins and furans are hydrophobic and will bind with the organic fraction of suspended and/or bed sediments when released into an aquatic system (CCME 2001). Furthermore, effects to fish were evaluated based on tissue residue comparisons.

4.2.4.2 Sediment Effect Levels

Exposure estimates for COPECs in sediments were compared with TECs and probable effect concentrations (PECs) (Table 4-6). Sediment benchmarks used in this assessment include TECs and TELs as described in Section 3.0, as well as PECs or probable effect levels (PELs). Sediment toxicity should be observed only rarely below the TEC/TEL and should be frequently observed above the PEC/PEL. For the sediment COPECs identified in this assessment, consensus-based PECs and TECs from MacDonald et al. (2000) were used for arsenic, cadmium, copper, mercury and zinc. The consensus-based TECs were calculated by determining the geometric mean of all threshold effect values from the literature included in their review. The consensus-based PECs were calculated by determining the geometric mean of all probable effect values from the literature included in their review. The PEL and TEL used for manganese was from the Assessment and Remediation of Contaminated Sediment (ARCS) Project (Ingersoll et al. 1996). In this case, the PEL represents the geometric mean of the effect range median (ERM) and no effect range high (NERH; 85th percentile of no effect data). The TEL represents the geometric mean of the effect range low (ERL; 10th percentile of adverse effect data) and the no effect range median (NERM). The sediment ESVs for selenium were based on Thompson et al. (2005). In the absence of other available values, the silver ESV used in this assessment is based on Long et al. (1995), even though this benchmark pertains specifically to estuarine and marine environments.

The sediment ESVs for TEQ are based on the CCME freshwater ISQG and PEL (CCME 2001). The ISQG is a TEL. Both the TEL and PEL include adjustment with a safety factor of 10 to meet the criteria of a TEL and PEL.

4.2.5 Effect Levels – Fish

Whole-body fish tissue concentrations of TEQ were compared to TRBs for 2,3,7,8-TCDD TEQ derived by Steevens et al. (2005) (Table 4-7). Steevens et al. (2005) reviewed literature with data on biological effects and whole-body residues in different species of fish. After applying screening criteria, ten data points were identified for generating a species sensitivity distribution (SSD) for

fish exposed to TCDD and dioxin-like compounds. The SSD was developed for the life stage of fish that is most sensitive to the Ah-receptor mediated toxicity of TCDD, the egg and embryo. Therefore, only residues reported on a whole egg and embryo basis were considered in the study. The SSD presented by Steevens et al. (2005) is based on the geometric means of the no-observed-effect-residue (NOER) and the lowest-observed-effect-residue (LOER) values associated with early life stage toxicity for several fish species. An SSD based on 50% lethal residues is also presented. The TRBs included in the study represent lipid-adjusted tissue-based criteria that provide for the protection of fish exposed to TCDD and dioxin-like compounds at multiple protection levels. Although the TRBs reported by Steevens et al. (2005) are based on egg and embryo data, the study authors note that the ratio of nonpolar organic compounds on a lipid-normalized basis was found to be approximately 1:1 egg to adult fish in a study by Russell et al. (1999). Russell et al. (1999) demonstrated that lipid mobilization has little effect on the relationship between maternal tissue and egg concentrations of contaminants in fish. The matrix of TRBs is included in Table 4-7. The selection of a single TRB is a risk-management decision based on the level of protection required.

NOEC and LOEC critical fish tissue concentrations (CTCs) for mercury were derived from dietary exposure studies with methyl mercury in five species of fish as described in Appendix B. Six studies were identified to include data on adverse effects in fish and reported tissue concentrations at which those effects were observed. Only studies where the observed adverse effects were either on growth, reproduction or survival were considered. The tissue concentration identified as the 10th percentile of the adverse effect concentrations reports in the compiled studies was selected as the residue effect threshold. The identified NOEC and LOEC CTCs for mercury are 0.070 and 0.643 mg/kg ww, respectively.

4.2.6 Effect Levels – Terrestrial Plants and Soil Invertebrates

Exposure estimates for COPECs in surface soils were compared with soil ESVs for plants and for soil invertebrates (Table 4-8). No-effect ESVs for plants for copper, selenium and zinc are Eco-SSLs, as are the soil invertebrate no-effect ESVs for barium, copper, selenium, and zinc. Eco-SSLs are risk-based concentrations of contaminants in soil that are protective of plants and soil invertebrates. Eco-SSLs were derived based on extensive literature reviews of available toxicity data on plants, soil invertebrates, birds and mammals. Eco-SSLs for plants and soil invertebrates apply to soils where the pH is between 4.0 and 8.5, with an organic matter content less than or equal to 10 percent (USEPA 2003d). Soil pH at the Site is unknown. Toxicological benchmarks developed by ORNL (Efroymson et al. 1997a,b) were used when an Eco-SSL was not available. The ORNL values derived as the approximated 10th percentile for a series of rank ordered LOECs for plants and soil organisms.

The no-effect soil ESV for total PCBs for plants is based on the ORNL value. For invertebrates, the no-effect soil ESV for total PCBs is based on an acute LC50 in earthworms with an uncertainty factor of 0.01 applied.

Low-effect plant and invertebrate soil ESVs reported by Los Alamos National Laboratory (LANL) were used for barium (invertebrates only), copper, mercury (invertebrates only), selenium and zinc (LANL 2016). Low-effect ESVs are not available for PCBs.

There are no soil ESVs for plants or soil invertebrates for dioxins/furans. This is not considered a significant source of uncertainty for soil invertebrates given that invertebrates do not have an AhR which limits the toxicity of dioxins and furans. The lack of a plant soil ESV represents a potential source of uncertainty given limited data to suggest toxic effects in plants. However, effects in wildlife consuming plants was evaluated and is expected to represent the more significant pathway of concern.

4.2.7 Effect Levels – Birds and Mammals

In general, wildlife TRVs were selected to represent relevant toxicity endpoints for population sustainability (growth, reproduction, mortality). A TRV is an exposure level considered not to pose unacceptable risk of deleterious effects to a receptor class. Ideally, TRVs used in the HQ calculations would be selected for each individual feeding guild that is evaluated. However, because TRVs are usually not available for each feeding guild, this assessment uses more generic TRVs that are based on all birds or all mammals. Two types of TRVs were identified: those based on a NOAEL, and those based on the LOAEL. The NOAEL-based and LOAEL-based TRVs selected for use are summarized in Table 4-9.

TRVs were selected from studies that were based on ingestion of chemicals and were developed as an exposure dose expressed as mg/kg BW-day for oral intake. However, in cases where studies that administered oral doses were not available, results of other study types were considered. Available sources of compiled toxicity data for birds and mammals were used as the basis for selecting TRVs that are protective of chronic exposures, primarily Eco-SSLs for birds and mammals. The Eco-SSL TRV was determined by calculating the geometric mean of NOAEL TRVs for growth and reproduction or the highest bounded NOAEL TRV below the lowest bounded LOAEL TRV for growth, reproduction or survival. However, as Eco-SSLs only provide a recommended NOAEL TRV, the LOAEL TRV was either derived using the lowest bounded LOAEL TRV for growth, reproduction, or survival in the Eco-SSL dataset or for NOAELs based on single studies, the LOAEL from that same study was selected.

When Eco-SSLs were not available, TRVs developed for ORNL by Sample et al. (1996) were used. ORNL applied uncertainty factors in some instances to account for deriving a LOAEL from a NOAEL or to account for using a subchronic value.

As seen in Table 4-9, two TRVs are available for mercury: one for the inorganic form and one for the organic form of the metal (methyl mercury). For quantifying risks to wildlife, the inorganic TRV was used to quantify risks from soil, sediment and surface water, since inorganic complexes are thought to be the dominant form of the metal in these media (ATSDR 1999). The chemical form of mercury in biotic (food web) samples (fish, plant, insect, earthworm, and small mammal tissue) is not known. For these media, the organic mercury TRV was conservatively used to quantify risks to wildlife from the ingestion of these media.

4.2.7.1 Avian TEQ TRVs

Information from the primary literature suggests that different bird species exhibit varying levels of sensitivity to TCDD toxicity. Given this, applying a single TRV value may underestimate risks to some birds and overestimate risks to other birds. As described in Appendix B, in vitro studies indicate that the varying degrees of sensitivity to the reproductive effects of TCDD observed in different bird species is attributable to the amino acid sequence of the AhR (Farmahin et al. 2013). Based on this study, the relative sensitivity of different bird species was grouped into three categories:

- Category 1 species are the most sensitive to TCDD;
- Category 2 species are moderately sensitive to TCDD; and
- Category 3 species are the least sensitive to TCDD.

For this assessment, each avian surrogate receptor included in Table 2-3 was assigned to one of these three sensitivity categories based on the categorization presented in Farmahin et al. (2013) as:

- Category 1: Gray catbird
- Category 2: American robin and tree swallow
- Category 3: American kestrel, belted kingfisher, osprey, and mallard

Farmahin et al. (2013) does not include the blue grouse, but a ruffed grouse was evaluated and assigned to Category 2. Similarly, the study does not include the Northern flicker, but a common flicker was evaluated and assigned to Category 3. These categories were assumed for the grouse and flicker for this assessment.

The American dipper and Clark's nutcracker were not included in Farmahin et al. (2013). In the absence of information on the sensitivities of a dipper and nutcracker to TCDD, these birds were evaluated as Category 1 species. This is a health-protective assumption to assure that risks to these species are not underestimated.

Each of the three avian categories was evaluated using a different TEQ_A TRV. As described in Appendix B, NOAEL and LOAEL TRVs are available from Sample et al. (1996) based on a study conducted in ring-necked pheasants (Nosek et al. 1992). Ring-necked pheasants are Category 2 birds. Thus, the NOAEL and LOAEL TRVs from Sample et al. (1996) are used to evaluate the Category 2 avian surrogate receptors evaluated in this assessment (American robin, tree swallow, and blue grouse). TRVs for Category 1 and 3 species were extrapolated from the Category 2 TRVs using the relative differences in toxicity test results from an avian egg injection studies that evaluated a species for each of the three sensitivity categories (Cohen-Barnhouse et al. 2011a). Table 4-10 presents the 50 percent (%) lethal doses (LD50s) reported by Cohen-Barnhouse et al. (2011a) for embryo mortality. These values were used to calculate ratios representative of the between-species relative sensitivity to TCDD. Avian TEQ TRVs for Category 1 species and Category 3 species were extrapolated from the Category 2 TRVs using these ratios as follows:

Category 1 TRV = Category 2 TRV × Category 1:2 Ratio

Category 2 TRV = Category 2 TRV × Category 3:2 Ratio

The resulting avian TRVs are shown in Table 4-9.

4.2.8 Effect Levels – Small Mammals

TRBs for small mammals were compiled primarily from Beyer and Meador (2011). The lowest tissue concentration associated with an effect level for a terrestrial mammal was selected as the benchmark. As shown in Table 4-11, TRBs were only available for TEQ_M, cadmium and mercury.

5.0 RISK CHARACTERIZATION

5.1 Risk Estimates for Aquatic Receptors

5.1.1 Evaluation of Risks from Surface Water

Detailed HQ calculations for exposure of aquatic receptors to surface water within the study area are provided in Appendix E1. General findings are summarized below.

5.1.1.1 HQ Results for CFR

COPECs evaluated in the CFR included dioxins/furans as TEQ_F, barium, copper and manganese. As noted above, an adequate surface water ESV is not available for dioxins/furans, thus no surface water quantitative risk evaluation was conducted for TEQ_F. Table 5-1 and Figure 5-1 summarize the frequency and magnitude of surface water HQ exceedances for the CFR. As shown:

- There is a high frequency and magnitude of exceedances of the chronic benchmark for barium. All HQ_C values for barium exceed 1.0 with values ranging from 17 to 35. Just under half of the available samples (47%) correspond to HQ_A values for barium that exceed 1.0 (9/19), and the magnitude of exceedance is small (Max HQ_A of 1.3). Interpretation of the barium HQ values should be made with caution however given uncertainties associated with the surface water ESV as described further in Section 6.3.

- The frequency and magnitude of exceedances for copper are both low. One sample (CFRHP13A_20180523) corresponds to an HQ_C of 2.1. This sample was collected during the 2018 flood event. The flooding event represents a short-term exposure. The HQ_A for this sample was 1.4.

- As shown in Figure 5-1, there are no HQ_A exceedances for manganese and the frequency of exceedances for the HQ_C values is relatively low. There are four CFR locations within the study area where manganese concentrations exceed the chronic ESV. The corresponding HQ_C values for these samples range from 1.3 to 11.4. One of these exceedances is based on sample CFRHP13A_20180523 which was collected during the 2018 flood event (HQ_C=2.1) and is the same sample with the copper exceedance. The HQ_A for manganese is below 1.0 for this sample. The largest HQ_C for manganese of 11.4 corresponds to sample SW52-CFR collected in 2018. Dissolved manganese in this sample was 1,370 µg/L. The total manganese concentration for this sample was 89.3 µg/L (HQ_c = 0.7). Typically, the dissolved concentration is expected to be less than the total concentration as the total concentration represents the metals content both dissolved in the

water and present in the particulates in the water. It is unknown if there was an analytical issue with this sample and both concentrations were flagged as estimated. The dissolved manganese concentration measured in the sample collected immediately downstream (SW53-CFR) was 34.8 µg/L (HQ_c = 0.3) further suggesting that the measured dissolved concentration in sample SW52-CFR is biased high and may not be representative of actual dissolved manganese concentrations at that location. Without this data point, the HQ_C values exceeding 1.0 for the remaining samples range from 1.3 to 4.1. Thus, the HQ calculations indicate that toxicity to aquatic organisms is likely to be low in the CFR based on exposures to manganese.

5.1.1.2 HQ Results for the Creeks

COPECs evaluated in the O'Keefe and Lavalle Creeks included dioxins/furans as TEQ_F, barium, and manganese. TEQ_F could not be evaluated quantitatively. Table 5-2 and Figure 5-2 summarize the frequency and magnitude of surface water HQ exceedances for the creeks. As shown:

- There is a high frequency and magnitude of exceedances of the chronic benchmark for barium. All HQ_C values (5/5) for barium exceed 1.0 with values ranging from 33 to 61. All of the available samples also correspond to HQ_A values for barium that exceed 1.0, with values ranging from 1.2 to 2.2. As noted above, interpretation of the barium HQ values should be made with caution given uncertainties associated with the surface water ESV as described further in Section 6.3.

- Risks to aquatic organisms from manganese in surface waters of O'Keefe Creek and Lavalle Creek are likely to be minimal. Only one sample had an HQ_C exceedance of 1.0 (SW39-LV), and the magnitude of the exceedance was minimal (HQ_C = 1.1).

5.1.1.3 HQ Results for On-Site Ponds

COPECs evaluated in the on-Site ponds included dioxins/furans as TEQ_F, barium, copper and manganese. TEQ_F could not be evaluated quantitatively. Table 5-3 and Figure 5-3 summarize the frequency and magnitude of surface water HQ exceedances for the ponds. As shown:

- All HQ_C values for barium exceed 1.0 with values ranging from 2.8 to 43. HQ_A values for barium exceed 1.0 for 3/14 samples, and the magnitude of exceedance is small (HQ_A of 1.2, 1.5 and 1.6). As described in Section 6.3, there is uncertainty in the surface water ESVs for barium.

- There is a low frequency and magnitude of exceedances of the chronic benchmark for copper. One sample corresponds to an HQ_C value greater than 1.0 (HQ_C = 1.3). This sample was collected during the 2018 flood event (HP13APOND_20180523_NM). All HQ_A values for copper are below 1.0.

- There is a moderately high frequency of exceedances of the chronic benchmark for manganese (10/14 samples; 71%). HQ_C values ranged from 2.0 to 31. HQ_A values for manganese exceed 1.0 for 1/14 samples, and the magnitude of exceedance is small (HQ_A = 1.6).

5.1.2 Evaluation of Risks from Sediment

Detailed HQ calculations for exposure of benthic invertebrates to sediments within the study area are provided in Appendix E2. General findings are summarized below.

Sediment samples collected from the CFR, creeks and on-Site ponds in 2018 were analyzed for both total mercury and methyl mercury. No sediment ESV was identified for methyl mercury. Using the total mercury ESV to calculate HQs for methyl mercury results in a high magnitude of HQ exceedances, but due to differences in toxicities between inorganic and organic forms of mercury, this approach was considered to be inappropriate. Thus, risks to benthic invertebrates from methyl mercury in sediments was not quantified and instead was identified as a source of uncertainty in this assessment.

5.1.2.1 HQ Results for CFR

Sediment COPECs evaluated in the CFR included dioxins/furans as TEQ_F, arsenic, cadmium, copper, lead, manganese, mercury, selenium, silver, and zinc. Scatter plots for each sediment COPEC are presented in Appendix E2. Table 5-4 summarizes the frequency and magnitude of HQ exceedances for the low-effect benchmark (PEL; HQ_L = LOEC-based HQ) and the no-effect benchmark (TEL; HQ_N = NOEC-based HQ). Inspection of the table reveals the following:

- HQ_L values exceed 1.0 for copper only. HQ_L values for copper exceeded 1.0 in 3/23 samples (13%). The magnitude of exceedances ranged from 1.2 to 2.1. The largest HQ_L of 2.1 corresponds to the flood-fringe sample SE24-CFR-FF. As shown in Figure 5-4, this sample was collected in the CFR within the Site study area downstream of the Mill Site. The copper HQ_L for the flood-fringe sample collected from a location further downstream (SE23-CFR-FF) was 1.2. Based on the low frequency and magnitude of these exceedances, associated risks to benthic invertebrates from exposures to copper in sediments within the CFR are expected to be low.

- HQ_N values exceed 1.0 for all sediment COPECs evaluated in the CFR except TEQ_F. The frequency of exceedances is greater than 20% for arsenic, copper, manganese, mercury, and zinc. The magnitude of HQ_N values exceeding 1.0 for these COPECs are generally less than 5.0. The exception is copper (HQ_N range from 1.6 to 9.9). The highest HQ_N of 9.9 corresponds to flood-fringe sample SE24-CFR-FF. The copper HQ_N for the flood-fringe sample collected further downstream (SE23-CFR-FF) is 5.6.

This line of evidence suggests that risks to benthic invertebrates from exposures to sediments within the CFR are generally low.

5.1.2.2 HQ Results for the Creeks

Sediment COPECs evaluated in the creeks included dioxins/furans as TEQ_F, arsenic, copper, mercury, selenium, and zinc. Scatter plots for each sediment COPEC are presented in Appendix E2. Table 5-5 summarizes the frequency and magnitude of HQ exceedances for the low-effect benchmark (HQ_L) and the no-effect benchmark (HQ_N). Inspection of the table reveals the following:

- HQ_L values exceed 1.0 for copper only. HQ_L values for copper exceeded 1.0 in 1/7 samples from Lavalle Creek (14%). The sample corresponding to an HQL above 1.1 (39-LV) was collected from the downstream most sampling location on the creek just before the confluence with the CFR. The magnitude of the exceedance for this sample was small (HQ_L = 1.1).

- HQ_N values exceed 1.0 for TEQ_F, arsenic, copper, mercury, selenium, and zinc in Lavalle Creek. The frequency of exceedances is greater than 20% for all of these COPECs except TEQ_F (14%, HQ_N = 3.3) and mercury (14%, HQ_N = 1.1).

- The largest HQ_N value for Lavalle Creek is for copper (HQ_N = 5.0) and corresponds to sample 39-LV. As noted above, the HQ_L associated with this sample only slightly exceeded 1.0 (HQ_L = 1.1). HQ_N exceeded 1.0 for copper in 3/7 samples (43%). However, based on the low frequency and magnitude of the HQ_L exceedances, associated risks to benthic invertebrates from exposures to copper in sediments within Lavalle Creek is expected to be low.

- The one sample in Lavalle Creek with an HQ_N value for TEQ_F greater than 1.0 was SE18-LV-SA. The HQ_N value for this sample was 3.3. Samples downstream of this sample in Lavalle Creek all correspond to HQ_N values less than 1.0. No HQ_L samples collected from Lavalle Creek exceeded 1.0 for TEQ_F. On this basis, associated risks to benthic

invertebrates from exposures to TEQ_F in sediments within Lavalle Creek is expected to be low.

- The magnitude of HQ_N exceedances for arsenic, mercury, selenium and zinc in Lavalle Creek range from 1.1 to 2.7. For all of these sediment COPECs, the largest HQ_N corresponds to sample 39-LV. However, given that no HQ_L exceeded 1.0 for these COPECs, associated risks to benthic invertebrates from exposures to sediments within Lavalle Creek is expected to be low.

- There were no HQ_L exceedances in O'Keefe Creek for any sediment COPEC. The only HQ_N exceedance in O'Keefe Creek corresponded to the TEQ_F sediment concentration reported for sample 43-OK (HQ_N = 1.4). This sample was collected from the farthest downstream sampling location in O'Keefe Creek near the confluence with Lavalle Creek (Figure 3-2). On this basis, associated risks to benthic invertebrates from exposures to TEQ_F in sediments within O'Keefe Creek is expected to be low.

This line of evidence suggests risks to benthic invertebrates from exposures to sediments within O'Keefe and Lavalle Creeks are low. Predicted risks to benthic invertebrates based on TEQ_F are also mitigated by the lack of toxicity found to occur in invertebrates following dioxin exposures.

5.1.2.3 HQ Results for On-Site Ponds

Sediment COPECs evaluated in the on-Site ponds included dioxins/furans as TEQ_F, arsenic, cadmium, copper, manganese, mercury, selenium, silver and zinc. Scatter plots for each COPEC are included in Appendix E2. Table 5-6 summarizes the frequency and magnitude of HQ exceedances for the no-effect benchmark and the low-effect benchmark. As shown, HQ_L values exceed 1.0 for cadmium, manganese, mercury and TEQ_F. HQ_N values exceed 1.0 in pond sediment for each COPEC, but the frequency and magnitude vary. The frequency of HQ_N exceedances is greatest for cadmium, copper, manganese, mercury, zinc and TEQ_F. Further evaluation of Table 5-6 reveals the following:

- Figure 5-5 presents the scatter plots for TEQ_F. HQ_L values for TEQ_F exceeded 1.0 in ponds HP7, HP2, HP10 and HP12 and the magnitude of these HQs ranged from 1.4 to 3.9. HQ_N values for TEQ_F are greater than 1.0 in all samples (12/12), with magnitudes ranging from 1.1 – 99. The lowest HQ_N is in the CWD. HQ_N values in the IBJ (HQ_N = 2.2) and HP18 (HQ_N = 4.7) were also below 5.0. HQs were greater than 10 in all of the other ponds evaluated. The highest HQ_N is in HP7 (HQ_N = 99). However, the HQ_L for this pond was 3.9. These results suggest that associated risks to benthic invertebrates from exposures to TEQ_F in sediments within ponds HP7, HP2, HP10 and HP12 is expected to be moderate.

- Figure 5-6 presents the scatter plots for cadmium. Cadmium concentrations are greatest in ponds P5, HP7, HP10 and HP12. However, HQ_L values exceed 1.0 in P5 only (HQ_L = 1.3). HQ_N values exceed 1.0 in 7/12 ponds with values ranging from 1.7 to 6.4.

- Figure 5-7 presents the scatter plots for manganese. Manganese concentrations are greatest in ponds HP1a, P5, HP7, HP10 and HP12. HQ_L values for these ponds are 2.0, 1.5, 1.1, and 2.1, respectively. HQ_N values for these ponds are generally low and range from 1.2 to 3.9.

- Figure 5-8 presents the scatter plots for mercury. Mercury concentrations are greatest in ponds HP1a, P5, HP7, HP2, HP10, HP13 and HP13a. HQ_L values exceed 1.0 for HP7 (HQ_L = 1.9) and HP10 (HQ_L = 2.4). HQ_N values for these ponds range from 1.8 to 13.9.

These results suggest that associated risks to benthic invertebrates from exposures to manganese and mercury in specific ponds are expected to be low.

Adverse effects of metals contamination in bulk sediment on benthic invertebrates may be mediated in large degree by exposure of the organisms to metals that exist in the pore water of the sediment, rather than the bulk sediment *per se*. For this reason, risks to benthic invertebrates from exposure to metals in pore water were also evaluated using concentrations of contaminants measured in sediment pore water of on-Site ponds. Table 5-7 summarizes the frequency and magnitude of HQ exceedances in pore water. Detailed calculations are presented in Appendix E3. Further evaluation of Table 5-7 reveals the following:

- By comparison to the metals in sediments that are present at concentrations above the ESVs, HQ_C values for pore water exceed 1.0 for manganese, selenium and silver. HQ_A values for pore water exceed 1.0 only for manganese.

- Figure 5-9 presents the scatter plots for manganese. HQ_C values for manganese in pore water exceed 1.0 in all ponds but the CWD. These HQs range from 1.6 to 55. HQ_C exceedances for manganese in pore water are greatest in CL-Pond, HP10 and IBJ. HQ_A values for manganese in pore water exceed 1.0 in CL-Pond, HP10 and IBJ, but the magnitude of exceedances is low (HQs of 2.9, 1.6 and 1.1, respectively).

- Although selenium and silver were detected in sediments, sediment HQ_N exceedances were infrequent and small (see Table 5-6). As shown in Figures 5-10 and 5-11, selenium was only detected in pore water in HP10 and silver was not detected in any pore water samples. There is some uncertainty associated with these data given that the detection limits exceeded the chronic surface water ESVs. However, the assumption that associated risks

to benthic invertebrates from these COPECs is minimal to low is supported by sediment HQ_L values not exceeding 1.0 in any pond.

- Barium was identified as a pore water COPEC. Figure 5-12 presents the scatter plots for barium in pore water. HQ_C values for barium exceed 1.0 in all ponds and the magnitudes of exceedance are large ranging from 9.8 in HP10 to 152 in IBJ. HQ_A values for barium exceed 1.0 in CL-Pond, HP1a, P5, IBJ, CWD and HP18. As described in Section 6.3, there is uncertainty in the surface water ESVs for barium. Barium was not evaluated in sediment for lack of an ESV. However, as described above, HQ exceedances were also observed for barium in pond surface waters.

Two lines of evidence are available for evaluation of risks to benthic invertebrates from exposures to metals in Site sediments: HQ values based on bulk sediment concentrations and HQ values based on pore water concentrations. These data provide evidence that benthic organisms exposed to sediment pore waters in on-Site ponds are likely to be impacted by metals contamination, with barium and manganese being the primary risk drivers. The single line of evidence available for evaluation of risks to benthic invertebrates in ponds from exposures to TEQ_F in Site sediments suggests that some percentage of benthic organisms may be impacted by dioxin/furan contamination in certain ponds. However, as described in Section 4.2.2.2, invertebrates lack the AhR which likely limits the toxicity of dioxins/furans taken up from pond sediments. On this basis, risks to benthic invertebrates from exposures to TEQ_F in pond sediments is likely to be low.

5.1.3 Evaluation of Risks Based on Tissue Residues in Fish

5.1.3.1 TEQ in Fish Tissue

As shown in Figure 5-13, whole-body lipid-adjusted fish tissue concentrations of TEQ_F in dace, rainbow trout and northern pike collected from the CFR are below TRBs derived by Steevens et al. (2005). This finding indicates that there are no unacceptable risks to fish in the CFR due to dioxins, furans, or dioxin-like PCBs.

5.1.3.2 Mercury in Fish Tissue

Figure 5-14 presents the whole-body wet weight methyl mercury concentrations in longnose dace. As shown, none of the samples collected from the CFR within the study area have methyl mercury concentrations that exceed the NOEC CTC of 0.07 mg/kg ww. This finding indicates that there are no unacceptable risks to dace in the CFR due to mercury. Mercury data were not collected in other higher trophic fish, so it is uncertain whether this finding is applicable to other fish species.

5.1.4 Site-Specific Toxicity Tests

No site-specific toxicity testing of live fish has been performed at the Site.

5.1.5 Site-Specific Community Surveys

No quantitative surveys of aquatic receptors have been performed at the Site as part of ongoing RI activities.

5.2 Risk Estimates for Plants and Soil Invertebrates

The detailed calculations of HQ values for plants and soil organisms exposed to Site soils are presented in Appendix F. Soil COPECs evaluated for plants and soil invertebrates were TEQ, PCBs, aluminum, arsenic, barium, chromium, copper, manganese, mercury, nickel, selenium, vanadium, and zinc. As discussed in Section 4.2, there are no soil ESVs for plants or soil invertebrates for dioxins/furans, thus, risks to these receptors could not be quantified for TEQ. Risks from exposures to Total PCBs, Aroclor-1254 and Aroclor-1260 were only quantified for OU2 soils. These COPECs were not detected in any OU3 soils and were primarily associated with distinct areas within OU2 (the HDPT foundation and the TSB). Table 5-8 summarizes the frequency and magnitude of HQ values exceeding 1 for plants and soil organisms for all identified COPECs in Site soils for which there was a no-effect soil ESV available. Table 5-9 summarizes the frequency and magnitude of HQ values exceeding 1 for plants and soil organisms in Site soils for COPECs with an available low-effect soil ESV (arsenic, barium [invertebrates only], chromium [invertebrates only], copper, manganese, mercury [invertebrates only], nickel [plants only], selenium, vanadium [plants only], and zinc). Scatter plots of predicted risks to plants and soil organisms in Site soils for these COPECs are included in Appendix F.

Inspection of Tables 5-8 and 5-9, and the graphs in Appendix F, reveal the following main points regarding the predicted risks for the soil COPECs:

- HQ_N values for both plants and soil invertebrates were all below 1.0 for PCBs in OU2 soils. Low effect-based soil ESVs were not available for PCBs.

- There was a high frequency and magnitude of HQ_N exceedances for plants for aluminum in OU2 and OU3 soils. HQ_N values are similarly high in the two soil samples collected from the undisturbed floodplain area. As noted in Appendix B, the measurement of total aluminum in soils is not considered suitable or reliable for the prediction of potential toxicity and bioaccumulation. Data on soil pH have not been collected at the Site. Tooke (2006) suggests that Site soils are alkaline based on measurements of pH in sludge collected from pond P8 in 2005. However, in the absence of pH measurements in Site soils

representative of current conditions, risks to plants from aluminum in surface soils is identified a source of uncertainty.

- There was a low frequency and magnitude of exceedances for plants exposed to arsenic in OU3 upland soils. Only two samples have HQ_N exceedances for arsenic (HQ_N = 2.3). HQ_L values for all samples and HQ_N values for OU2 and OU3 floodplain soil samples were all <1.0 for arsenic.

- Figure 5-15 presents the HQ_N scatter plots for barium. The maximum plant HQ_N values for barium in OU2, OU3 upland and OU3 floodplain soils were 2.2, 2.9 and 5.7, respectively. The maximum invertebrate HQ_N values were 3.3, 4.4, and 8.6, respectively. However, all HQ_L values for invertebrates were below 1.0. A low-effect ESV for barium for plants was not available, so the magnitude to which risks observed based on the no-effect ESV for plants will result in an observed adverse effect at the population level is uncertain. Figure 5-16 presents the barium HQs spatially.

- Figure 5-17 presents the HQ_N scatter plots for chromium. There is a high frequency and magnitude of exceedances based on the no effect soil ESVs. The maximum plant HQ_N values for chromium in OU2, OU3 upland and OU3 floodplain soils were 40, 58 and 45, respectively. The maximum invertebrate HQ_N values were 99, 150, and 110, respectively. There was a much lower frequency and magnitude of exceedances based on the low effect soil ESV for soil invertebrates. HQ_L values for invertebrates ranged from 1.1 to 2.1. A low-effect ESV for chromium for plants was not available, so the magnitude to which risks observed based on the no-effect ESV for plants will result in an observed adverse effect at the population level is uncertain. Figure 5-18 presents the chromium HQs spatially.

- The magnitudes of no-effect HQ exceedances for copper do not exceed 3.0 in any Site soil, and low-effect HQs for copper are all below 1.0 for both plants and invertebrates.

- Figure 5-19 presents the HQ_N scatter plots for manganese. There is a high frequency and magnitude of exceedances based on the no effect soil ESVs. The maximum plant HQ_N values for manganese in OU2, OU3 upland and OU3 floodplain soils were 14, 12 and 8.2, respectively. The maximum invertebrate HQ_N values were 6.8, 6.0 and 4.0, respectively. HQ_L values for invertebrates were all below 1.0. For plants, there was a much lower frequency and magnitude of exceedances based on the low effect soil ESV. The maximum plant HQ_L values for manganese in OU2, OU3 upland and OU3 floodplain soils were 2.8, 2.5, and 1.6, respectively. Figure 5-20 presents the manganese HQs spatially.

- Figure 5-21 presents the HQ_N scatter plots for mercury. There is a high frequency and magnitude of exceedances in OU3 soils based on the no effect soil ESVs. The maximum plant HQ_N values for mercury in OU2, OU3 upland and OU3 floodplain soils were 1.03, 27 and 18, respectively. The maximum invertebrate HQ_N values were 3.1, 80 and 50, respectively. HQ_L values for invertebrates were all below 1.0 in OU2. HQ_L values for invertebrates in OU3 ranged from 1.1 to 16. A low-effect ESV for mercury for plants was not available, so the magnitude to which risks observed based on the no-effect ESV for plants will result in an observed adverse effect at the population level is uncertain. Figure 5-22 presents the mercury HQs spatially.

- There was only a single HQ_N exceedance for nickel. The HQ_N value for plants exceeded 1.0 in one OU2 soil sample ($HQ_N = 1.1$).

- Figure 5-23 presents the HQ_N scatter plots for selenium. The magnitudes of HQ_N exceedances for plants are relatively low. The maximum plant HQ_N values for selenium in OU2, OU3 upland and OU3 floodplain soils are 4.0, 3.1, and <1.0, respectively. None of the plant HQ_L values for selenium, or the soil invertebrate HQ_N values for selenium exceed 1.0.

- Figure 5-24 presents the HQ_N scatter plots for vanadium. There is no soil ESV for vanadium for soil invertebrates. There is a high frequency and magnitude of exceedances based on the no effect soil ESVs for plants. The maximum plant HQ_N values for vanadium in OU2, OU3 upland and OU3 floodplain soils were 13, 60, and 23, respectively. HQ_L values for plants were below 1.0 in OU2 soil and OU3 floodplain soils. Only one sample in OU3 upland soils corresponded to an HQ_L greater than 1.0 ($HQ_L = 1.5$). Figure 5-25 presents the mercury HQs spatially.

- Figure 5-26 presents the HQ_N scatter plots for zinc. The magnitudes of HQ_N exceedances for zinc are relatively low. The maximum plant no-effect HQs for zinc in OU2, OU3 upland and OU3 floodplain soils are 2.8, 4.3, and 2.6, respectively. The maximum invertebrate no-effect HQs are 3.7, 5.7, and 3.4, respectively. None of the plant or invertebrate HQ_L values for zinc exceed 1.0.

These HQ calculations indicate that Site soils contain several metals that may be causing adverse effects on plants and soil invertebrates.

5.3 Risk Estimates for Birds and Mammals

5.3.1 HQs Based on Estimated Dose

5.3.1.1 Results for Aquatic-Dependent Receptors

Detailed HQ calculations for aquatic-dependent birds and mammals are presented in Appendix G1. Results are tabulated in Tables 5-10 and 5-11, and are shown graphically in Figures 5-27 through 5-33. Inspection of these tables and graphical summaries reveals the following main conclusions:

- Most COPECs evaluated appear to pose minimal risk to any of the aquatic-dependent receptors exposed at the CFR. This includes TEQ_A, TEQ_M, antimony, arsenic, barium, chromium, copper, lead, manganese, nickel, selenium, thallium, vanadium and zinc. For these COPECs, HQ_N values never exceeded 1.0.

- Most COPECs appear to pose minimal risk to any of the aquatic-dependent receptors exposed at the on-Site creeks and ponds. This includes TEQ_A, antimony, arsenic, chromium, lead, nickel, selenium, and zinc. For these COPECs, HQ_N values never exceeded 1.0.

- Aluminum appears to pose low risks for the dipper, mallard, otter and mink. HQ_N values exceeded 1.0 for these receptors, but HQ_L values were all below 1.0. Depending on the receptor, the risk is mainly due to ingestion of aluminum via the food web or ingestion of sediment.

- Mercury appears to pose low risks for all of the aquatic-dependent avian receptors. HQ_N values for mercury exceeded 1.0 for these receptors, but HQ_L values were all below 1.0. This risk is contributed mainly from ingestion of mercury in food sources (fish), with only a minimal contribution from water and sediment ingestion. Similar risks were predicted based on total mercury and methyl mercury. This was likely due to the use of the methyl mercury TRV for the dietary fraction when evaluating exposures to total mercury (the inorganic mercury TRV was used for evaluating exposures to water and sediment).

- Barium and copper appear to pose low risks for the aquatic-dependent receptors at O'Keefe and Lavalle Creeks.

- Vanadium appears to pose moderate risk for the dipper in the on-Site ponds (HQ_L = 2.1). Similarly, vanadium appears to pose a low risk for the mallard in the on-Site ponds (HQ_L = 1.3). This risk is contributed mainly from ingestion of BMI, with only minimal contribution from water and sediment ingestion.

5.3.1.2 Results for Large Home Range Terrestrial Receptors

Detailed HQ calculations for large home range terrestrial receptors (fox and bat) are presented in Appendix G2. Figures 5-34 and 5-35 present the results graphically for each receptor. Risks from Site exposures are also compared to risks from exposures within the undisturbed floodplain area (Grids 82 and 84 in Figure 4-5).

Inspection of Figures 5-34 and 5-35 reveals the following main conclusions:

- For both the bat and the fox, only one COPEC (aluminum) yields a HQ_L above 1.0. High risks are predicted for aluminum for the bat, and moderate risks are predicted for aluminum for the fox. For both receptors, the risk is contributed mainly from ingestion of aluminum in food sources. Aluminum concentrations were measured in small mammal tissues, but in the absence of a more appropriate uptake model, aluminum concentrations were modeled in terrestrial invertebrate and plant tissues conservatively assuming $C_{soil} = C_{tissue}$. This likely overestimates risks associated with ingesting aluminum in invertebrates and plants. Risks from aluminum are approximately the same for the undisturbed floodplain area as for the disturbed areas of the Site. A similar pattern occurs for the HQ_N values. This suggests that some of the risk may be attributable to natural and anthropogenic non-point sources. Further, confidence in the risk estimates for aluminum is low. As described previously, soil pH is an important consideration in evaluating the bioavailability for biological uptake and toxicity of aluminum in soils. Data on soil pH under current conditions is lacking. On this basis, aluminum is identified as a source of uncertainty.

- Other than the potential risks from exposures to aluminum in the diet, risks are minimal for all other COPECs for the fox.

- For the bat, risks from exposures to TEQ_M, mercury and thallium are low. The risks from these COPECs is contributed almost wholly to ingestion of invertebrates. In the absence of measured data, concentrations in invertebrates were modeled based on the soil EPCs. As described in Section 4.1.4.4, the available uptake model used in this assessment was based on evaluating soil uptake to earthworms. The bat is not expected to consume earthworms, but instead aerial invertebrates. This is identified as a source of uncertainty. Similar risks to thallium were predicted for exposures in the undisturbed floodplain area.

- Risks from exposures to PCBs in OU2 soils are minimal (HQ_N < 1.0) for the fox and low for the bat. The HQ_N for TEQ_M (calculated to include dioxin, furan and dioxin-like PCB congeners measured in OU2 soils) is 2.9 for the bat. The HQ_L for TEQ_M is 0.29. The HQ_N for total PCBs is < 1.0.

5.3.1.3 Results for Medium Home Range Terrestrial Receptors

Detailed HQ calculations for medium home range terrestrial receptors (grouse, kestrel, flicker, nutcracker, and deer) are presented in Appendix G3. Figures 5-36 to 5-42 present the results graphically for each receptor. Risks from Site exposures are also compared to risks from exposures within the undisturbed floodplain area (Grids 82 and 84 in Figure 4-5).

Inspection of Figures 5-36 to 5-42 reveals the following main conclusions:

- Most COPECs appear to pose minimal risk to any of the medium home range terrestrial receptors in any exposure area. This includes antimony, arsenic, barium, chromium, copper, lead, manganese, nickel, selenium, thallium, vanadium and zinc. For these COPECs, HQ_N values were all < 1.0.

- Aluminum appears to pose low risks for all of the medium home range terrestrial avian receptors, and moderate risk to the deer. The risk is mainly due to ingestion of aluminum via the food web (diet). Uptake models were not available for estimating aluminum concentrations in soil invertebrates and plants. In the absence of an adequate uptake model, $C_{soil} = C_{tissue}$ was conservatively assumed. This likely overestimates risks from aluminum. In addition, similar risks are observed in the undisturbed floodplain area suggesting that that some of the risk may be attributable to natural and anthropogenic non-point sources. As noted for large home range receptors, confidence in the risk estimates for aluminum is low and aluminum is is identified as a source of uncertainty.

- Mercury appears to pose low risks for all of the medium home range terrestrial avian receptors, except the nutcracker. Moderate risk from ingestion of mercury is estimated for the nutcracker in OU2 (HQ_L = 3.1). The observed risks are mainly due to ingestion of mercury via the food web. However, similar risks are observed in the undisturbed floodplain area suggesting that some of the risk may be attributable to natural and anthropogenic non-point sources. Risks to the deer from ingestion of mercury is minimal (HQ_N < 1.0 in all exposure areas).

- Risks appear low for exposure to TEQ_A by the nutcracker in the OU3 exposure areas (HQ_N values of 4.7 and 1.6 in the uplands and floodplain, respectively). The risk is primarily due to ingestion of TEQ_A via the food web (soil invertebrate concentrations modeled from soil EPCs). This is based on the Category 1 TRV. As described in Section 4.2.7.1, the relative sensitivity of the nutcracker to TCDD toxicity is unknown. The use of the Category 1 TRV is conservative and may overestimate sensitivity. The HQ_L values are below 1.0, and the HQ_N values calculated using the Category 2 TRV instead are also below 1.0 (not shown). Risks from exposure to TEQ_A are minimal for all other medium home range avian terrestrial receptors. Risks from exposure to TEQ_M are also minimal for the deer.

- PCB-related risks are minimal for all of the medium home range receptors except for the flicker and nutcracker (Figures 5-41 and 5-42). The HQ_N exceeds 1.0 for total PCBs for the flicker (HQ_N = 1.6). For the nutcracker, the HQ_N exceeds 1.0 for TEQ_A calculated based on dioxin, furan, and dioxin-like PCB congeners. As noted above, this HQ is calculated using the Category 1 TRV which may overestimate sensitivity to the nutcracker. The HQ_L values are both below 1.0.

5.3.1.4 Results for Small Home Range Terrestrial Receptors

Graphical summaries of HQ distributions and sample specific HQ values for the small home range terrestrial receptors (robin, catbird, shrew, vole and mouse) are presented in Appendix G4.

Risks from Soil

Tables 5-12 to 5-15 summarize the frequency and magnitudes of HQ exceedances for small home range receptors ingesting surface soils. Inspection of these tables and the graphs presented in Appendix G4 reveals the following main conclusions:

- For the mouse (Table 5-12), HQs exceed 1.0 for aluminum only. Just under half of all of the available Site soil samples correspond to an HQ_L greater than 1.0 (45%). However, the magnitude of HQ_L exceedances is low (Max HQ_L = 2.6). There is a high frequency and magnitude of exceedances based on the NOAEL TRV. HQ_N values ranged from 1.1 to 26. HQ_N values also exceeded 1.0 in the two undisturbed soil samples (HQ_N values exceeding 1.0 ranged from 6.7 to 7.6).

- For the vole (Table 5-13), HQ_N values exceed 1.0 for aluminum only. There is a high frequency and magnitude of exceedances in Site soils (60%). HQ_N values ranged from 1.1 to 3.4. There are no HQ_L values that exceed 1.0.

- For the shrew (Table 5-14), HQ_L values exceed 1.0 for a single sample for TEQ_M (P17-BH1; HQ_L = 3.0, moderate risk) and mercury (SS13-HP9; HQ_L = 1.3, low risk) in the OU3 upland exposure area and barium (SE2-HP1a; HQ_L = 1.4, low risk) in the OU3 floodplain exposure area. There is a high frequency and magnitude of exceedances for the HQ_L values for aluminum in Site soils. Similar exceedances based on aluminum were observed in the two undisturbed soil samples. In addition, low risks were observed ($HQ_N > 1.0$, $HQ_L < 1.0$) for TEQ_M, manganese, and thallium in all Site exposure areas, and for mercury in OU3 soils.

- For the robin and catbird (Table 5-15), risks from ingestion of metals in soils are the same for both species based on the same assumed soil ingestion rates. There is a low frequency and magnitude of exceedances for the HQ_L values for mercury (3/51; HQ_L 1.4 – 3.1) in the OU3 uplands, and for barium (1/22; HQ_L = 1.7) and mercury (2/22; HQ_L 2.0 – 2.1) in the OU3 floodplain. Frequency of exceedances for the HQ_L values for vanadium in OU3 soils was approximately 20%. The magnitude of these exceedances for vanadium ranged from 1.1 to 4.3. In addition, low risks were observed ($HQ_N > 1.0$, $HQ_L < 1.0$) for aluminum, barium, and mercury in all Site soils. The HQ_N for copper exceeded 1.0 for a single OU3 floodplain sample (HQ_N = 1.3), and the HQ_N for lead exceeded 1.0 for two OU3 upland samples (HQ_N = 1.6).

- For the robin and catbird, risks from ingestion of TEQ_A in soil is slightly different due differences in TRVs. As described in Section 4.2.7.1, the catbird is considered a Category 1 avian for increased sensitivity to TEQ toxicity, and the robin is considered a Category 2 avian. As shown in Table 5-15, there was only one HQ_L exceedance for TEQ_A for the catbird in the OU3 upland area (HQ_L = 1.8) and no exceedances for the robin. Additional exceedances for the HQ_N values for TEQ_A were observed for the catbird in OU3 upland soils (maximum HQ_N = 15) and OU3 floodplain soils (maximum HQ_N = 1.7). There was only a single exceedance for the HQ_N for TEQ_A for the robin in the OU3 upland area (HQ_N = 2.7).

Risks from Surface Water

No unacceptable risks to small home range receptors ingesting surface water were observed. Detailed risk calculation tables are included in Appendix G4.

Risks from Diet

No data are available for concentrations of COPECs in tissues of terrestrial plants or soil organisms. In the absence of empirical data, dietary concentrations for small home range receptors

were modeled using the uptake models summarized in Table 4-4. Tables 5-16 to 5-20 summarize the frequency and magnitudes of HQ exceedances for small home range receptors ingesting food (soil invertebrates and/or plants). Inspection of these tables and the graphs presented in Appendix G4 reveals the following main conclusions:

- Frequency and magnitude of HQ exceedances for the mammalian receptors are generally highest for the shrew. HQ_L exceedances were observed for the shrew for TEQ_M and aluminum in all Site soils, for PCBs and selenium in OU2 soils, nickel in OU2 and OU3 upland soils, antimony and thallium in OU3 upland soils, mercury in OU3 soils, and copper in OU3 floodplain soils. The frequency and magnitude of exceedances were small for each of these COPECs except TEQ_M and aluminum.

- For all COPECs except TEQ_A, the frequency and magnitude of HQ_L exceedances were higher for the robin compared to the catbird. HQ_L exceedances were observed for the robin for aluminum and mercury in all Site soils, for manganese in OU3 upland soils and for barium in OU3 floodplain soils. The frequency and magnitude of the HQ_L exceedances for manganese and barium were small.

- There is a high frequency and/or magnitude of exceedances for the HQ_L values for aluminum for all small home range terrestrial receptors. These findings are consistent with the discussion above regarding risks from ingestion of soil given that aluminum dietary concentrations were modeled based on the available soil concentrations. Similarly, confidence in these estimates are low given the uncertainty associated with evaluating aluminum toxicity based on the available TRVs without additional information on soil pH.

- The frequency and magnitude of exceedances for the HQ_L values for TEQ vary by receptor. The highest are observed for the shrew who was assumed to consume 100% soil invertebrates, followed by the catbird which is identified as a Category 1 avian for sensitivity to TCDD.

- The frequency and magnitude of exceedances for the HQ_L values for mercury vary by receptor and are higher for the birds (robin and catbird).

- The frequency and magnitude of HQ exceedances for PCBs in OU2 soils is generally small for all receptors. The highest risk was observed for the shrew ($HQ_L > 1.0$ in 1/9 samples; $HQ_L = 1.1$ for the composite soil sample collected from Grid 8 in 2018).

These risk estimates based on modeled tissue concentrations from soil are conservative and likely overestimate actual risks. However, without empirical data, the magnitude of this overestimation

is unknown. Figures 5-43 through Figure 5-51 maps the locations where HQs exceeded 1.0 based on both the ingestion of soil and dietary pathways.

Total Risks

As described in Section 4.0, because the data used to estimate EPCs and HQ values for soil, water and diet are not co-located for small home range receptors, it is not possible to compute a distribution of HQ_t values with these data. However, an estimate of the typical HQ_t value can be calculated based on the average value for each medium. Thus, HQ_t values were also calculated for small home range terrestrial receptors for the same exposure areas evaluated for the medium home range terrestrial receptors using the same soil and water EPCs. In the absence of measured tissue concentrations, the soil EPCs were used to model uptake to terrestrial plants and soil invertebrates.

Detailed HQ calculations for small home range terrestrial receptors are presented in Appendix G4. Figures 5-52 to 5-56 present the results graphically for each receptor. The HQt values shown in the figures are representative of exposure over a larger home range than is actually experienced by the small home range receptors. Nonetheless, in concert with the sample-specific HQs described above, evaluation of these figures provides an estimate of total risk while at the same time allowing for identification of specific sample exceedances based on the HQs presented by media.
Inspection of Figures 5-52 to 5-56 reveals the following main conclusions:

- Aluminum appears to pose high risks for all of the small home range terrestrial mammalian receptors, and low to moderate risk to the avian receptors. The risk is mainly due to ingestion of aluminum via the food web (diet). Uptake models were not available for estimating aluminum concentrations in soil invertebrates and plants. In the absence of an adequate uptake model, $C_{soil} = C_{tissue}$ was conservatively assumed. This likely overestimates risks from aluminum. In addition, similar risks are observed in the undisturbed floodplain area suggesting that that some of the risk may be attributable to natural and anthropogenic non-point sources.

- For the robin (Figure 5-52), mercury appears to pose moderate risk in both the OU3 upland and floodplain areas, and high risk in the OU2 area. However, moderate risk is also estimated in the undisturbed floodplain area. Low risks are also apparent for barium, copper and vanadium in the OU3 floodplain. Similar risk is seen for copper in the undisturbed floodplain area.

- For the catbird (Figure 5-53), mercury appears to pose low risk in all exposure areas including the undisturbed floodplain area. TEQ_A appears to pose low risk in OU3 upland and floodplain areas, and minimal risk in the OU2 area; low risk is also predicted for the

undisturbed floodplain area. The catbird is identified as a Category 1 bird (high sensitivity to TCDD). The maximum HQt observed in the OU3 upland area is 2.0 (LOAEL-based). The risk is mainly due to ingestion of TEQ_A via the diet.

- For the shrew (Figure 5-54), low risks are observed for ingestion of antimony, copper, mercury and thallium in all exposure areas. Similar risks are observed in the undisturbed floodplain area for copper, mercury and thallium. TEQ_M appears to pose low risk in OU2 and moderate risk in OU3 soils. The risk is mainly due to ingestion of TEQ_M via the diet.

- For the vole (Figure 5-55), low risks are observed for ingestion of TEQ_M in the Site exposure areas. The risk is mainly due to ingestion of TEQ_M via the food web (diet). The highest risks are observed in the OU3 upland (LOAEL-based HQ=1.9). Low risks were also observed for ingestion of mercury in the OU2 area and the OU3 floodplain area.

- For the mouse (Figure 5-56), low risks are observed for ingestion of TEQ_M in the Site exposure areas. The risk is mainly due to ingestion of TEQ_M via the food web (diet). The highest risks are observed in the OU3 upland. Low risks were also observed for ingestion of mercury in OU3 soils.

- Risks associated with ingestion of PCBs within OU2 soils are shown in Figures 5-57 through 5-61. As shown, HQ_L values for TEQ_A and TEQ_M based on dioxin, furan and dioxin-like PCB congeners in OU2 soils for the catbird and the shrew, respectively, are slightly elevated above 1.0 (HQ_L = 1.9). HQ_N values exceed 1.0 for all of the small home range receptors. The risk is mainly due to ingestion via the diet.

5.3.2 HQs Based on Tissue Residues

Tissue concentrations in small mammals were compared to available CTCs for small mammals. CTCs are limited to a NOAEL and LOAEL for TEQ_M and cadmium, and a LOAEL for mercury. As shown in Table 5-21, concentrations of cadmium and mercury (both inorganic and methyl mercury) are well below the available CTC values. TEQ_M tissue concentrations exceed the LOAEL-based CTC for TEQ_M in all samples, including the samples collected from the OU1 areas.

6.0 UNCERTAINTY ASSESSMENT

Uncertainty is an intrinsic part of all ecological risk assessments. Even in cases where highly detailed field studies are performed to provide site-specific data and multiple lines of evidence, uncertainty in the risk estimates cannot be avoided. The most common sources of uncertainty in an ecological risk assessment are uncertainties in exposure concentrations, exposure assumptions, and toxicity reference values. The predictive risk line of evidence (i.e., calculation of HQs) was conducted based on many assumptions and uncertainties. Maintaining USEPA's goal to be protective of ecological health, conservative assumptions, exposure inputs, and toxicity benchmarks were used to ensure that risks were not underestimated. This uncertainty assessment describes key sources of uncertainty that should be considered when interpreting the risk conclusions.

6.1 Uncertainty in Exposure Concentrations

Confidence in the concentration values for an environmental medium or for tissue samples is limited due to the variation between samples. It is for this reason that EPCs for avian and mammal receptors are based on the upper 95% confidence limit of the mean, derived using USEPA's ProUCL software. This approach is likely to result in a tendency to overestimate true risks, but minimizes the probability of underestimating risks. For small home range receptors, aquatic receptors, terrestrial receptors, and for the tissue-based approach, where evaluations are based on individual samples rather than a mean, confidence in the evaluation is determined mainly by the number of samples available, with increasing confidence as the number of samples increases.

6.1.1 Uncertainties in Measured Surface Water and Sediment Concentrations

EPC estimates reflect the exposure conditions at the time of sampling. Concentration values in surface water are variable over time, both short term (diurnal variation) and long term (seasonal or yearly). Consequently, the data set of available samples may or may not adequately characterize the true range and distribution of concentrations that may occur at a location.

Bulk sediment data can be poor predictors of toxicity due to unaccounted differences in metal bioavailability between samples. Pore water data provide a stronger measure of the chemical conditions experienced by benthic invertebrates living in the substrate. Pore water data were only available from the on-Site ponds, therefore exposures to benthic invertebrates in the CFR and on-Site creeks is based only on evaluating data for bulk sediment. The lack of such data increases the uncertainty in the risk estimates derived for these exposure areas.

For the wildlife receptors, exposure concentrations for pond surface waters and sediments were based on generating 95UCL values across all of the ponds with data as opposed to evaluating

ponds individually. This provides a better estimate of potential long-term exposures than using the single concentration values available for each pond. The latter approach would not account for potential changes in concentrations over time, the likely potential for the receptor to be exposed at more than one pond, and would also not account for sampling and analytical variability.

6.1.2 Uncertainties in Measured Soil Concentrations

Soil EPCs were calculated for the large exposure areas without differentiating between sample types (i.e., 5-point composites collected from known areas of concern and 20-point composites collected from randomized sampling grids). This approach may bias EPCs high as it assigns equal weight to both types of samples. However, as was apparent in the soil scatter plots presented in Appendix F, a clear difference in risk estimates was not apparent based on the different sample types. Thus, this source of uncertainty is not expected to significantly alter risk conclusions.

Soil pore water was not analyzed. Plants and soil organisms are exposed to metals in pore water, not in soil. It is expected that less than 100 percent of contaminants in soil will be dissolved in pore water. While this does represent a source of uncertainty, it is common to evaluate risks to plants and soil organisms based on measurements of COPECs in bulk soil. Further, the soil ESVs were generally derived using data from tests favoring relatively high bioavailability in order to ensure that the values were adequately conservative for a broad range of soils.

6.1.3 Prey Tissue Concentrations

Data for biotic media are not available for all locations or for all tissue types. Aquatic invertebrate, fish, and small mammal tissues were collected to use in estimating ingested doses in the food chain models. Notably, no data are available for concentration levels of contaminants in fish tissue for the on-Site creeks. On-Site observations have indicated the presence of small fish within the creeks, possibly shiners. However, based on the understanding that primary exposures to piscivorous receptors at the Site will occur based on the consumption of fish from the CFR, this BERA only evaluates piscivores consuming fish collected from the CFR. This leads to a potential underestimation of the risks that would occur to piscivorous receptors eating fish collected from the creeks. In general, risks to piscivorous birds are low and risks to piscivorous mammals are minimal, based on consuming dace collected from the CFR. To address uncertainties associated with the possibility that piscivorous receptors will consume higher trophic level fish (than dace) who may contain higher concentrations of COPECs that bioaccumulate, risks were also estimated for the osprey based on the consumption of rainbow trout. The same overall risk conclusions for TEQ_F were observed, the total HQ_N was below 1.0. The HQ_N for TEQ_F is below 1.0 based on the 2018 rainbow trout data also.

Whole-body concentrations of TEQ_F in rainbow trout and northern pike were estimated from composite fillet and carcass samples. Although there is some uncertainty associated with this estimation approach, similar tissue concentrations were observed in these species based on additional data collected following a similar sampling plan the previous year (USEPA 2018, 2019b). The $TEQ_{F-(D/F/P)}$ concentrations used in this assessment in Section 5.1.3.1 were higher than the concentrations measured in fish collected the previous year. This finding provides some understanding of potential variability in tissue concentrations over time and suggests that concentrations used in this assessment do not underestimate potential risks. Further, none of the measured tissue concentrations in three separate species exceed even the lowest no-effect levels protective of multiple fish species derived by Steevens et al. (2005). The estimated whole-body concentrations observed in the 2018 rainbow trout and northern pike samples similarly do not exceed any of the fish TRBs derived from Steevens et al. (2005).

As described above in the text, data on contaminant concentrations in aquatic invertebrate tissues collected from the Creeks are based on a mix of organisms (BMI and AVI). The collection of AVI in the absence of BMI was consistent with Addendum 9 of the RIWP (NewFields 2018a). As described in the data summary report for the Addendum 9 sampling, the AVI likely composed a substantial majority of biomass in each sample since attempts to sample benthic infaunal tissue from the sandy substrates of the creeks were not successful. The lack of benthic infaunal tissue from the Creeks mostly impacts the risk estimates for the dipper and mallard at O'Keefe and Lavalle Creek exposure areas. These receptors typically consume BMI as the majority of their diet. Data are not available for the creeks to provide information on how tissue concentrations may differ between BMI and the AVI. Separate samples of BMI and AVI were collected from some individual on-Site ponds. Data for TEQ and mercury for both samples from the same pond are only available for HP12 as shown below.

Sample Type	TEQ (mg/kg ww)	Mercury (mg/kg ww)	Methyl Mercury (mg/kg ww)
BMI	5.15E-07	0.019	0.009
AVI	8.48E-07	0.10	0.047

In this one case, concentrations in the AVI tissue sample were higher than concentrations in the BMI tissue sample. Comparison of concentrations in all BMI and AVI samples similarly showed higher concentrations in the AVI (Table 6-1). This suggests that it is possible that exposures from ingesting aquatic invertebrates for the dipper and the mallard at the on-Site creeks is protective of exposures from ingesting BMI. Further, coleopterans were collected in both the separate BMI samples and the separate AVI and mixed samples, and the AVI collected (juvenile

odonates, hemipterans, Ephemeroptera, coleopterans, annelids, amphipods, trichopterans, plecopterans, crayfish, and zooplankton) represent dietary items present within the Site habitats.

No data are available for contaminant levels in terrestrial invertebrates or plants. Plant and invertebrate species differ in the rate of uptake of contaminants, and in the extent to which the contaminants are retained in the tissues. Exposure concentrations for these prey items were estimated using available uptake models which may tend to either over- or under-estimate true risks from dietary exposures. However, the models used in this assessment are considered conservative models of uptake and were derived based on the upper 95% prediction interval on the regressions. In cases where an appropriate uptake model was not available, the simple and conservative assumption of $C_{soil} = C_{tissue}$ was applied. On this basis, the uncertainty that risks were underestimated based on the modeled exposure concentrations in terrestrial plants and soil invertebrates is low and is not considered a significant source of uncertainty.

6.1.4 Bioavailability

Analysis of biotic tissues demonstrated that invertebrates, fish and small mammals are exposed to contaminants at the Site. However, actual bioavailable concentrations have not been measured. The BERA made the conservative assumption that most, if not all, of the measured concentrations were bioavailable to ecological receptors. Published toxicological literature provide evidence that assuming 100% bioavailability likely results in an overestimation of exposure, but it considered health-protective.

6.1.5 Uncertainties in Methyl Mercury Concentrations

As discussed in the Data Summary Report for Addendum 9 (NewFields 2020b), during the 2018 sampling event, storage temperatures were exceeded for tissue, sediment, and surface water samples. Due to a shipping delay, temperatures in 5 coolers containing samples were ~20°C upon sample receipt by the analytical laboratory. Additionally, a refrigerator malfunction resulted in stored sediment samples sitting in storage at elevated temperatures for 8 hours. The specified storage temperature is -20°C. As discussed in Appendix I to NewFields (2020b), there is little concern for most of the COPECs, with the exception of mercury. It is unknown how the temperature impacted contaminant concentrations in the affected tissue and samples, but conceptually the main reasons for storing samples at lower temperatures is to minimize volatilization and to retard microbial activity that might alter the concentrations of the various mercury species. There is potential for methylation or demethylation of methyl mercury via bacterial activity in sediment samples, and in sediments within the guts of organisms. Data were reviewed by third party validator who noted that “a possible low bias could occur if demethylating bacteria are present or due to potential volatilization. A possible high bias could occur if anaerobic

bacteria that are responsible for methylation of inorganic mercury are present." The validator concluded that "all mercury and methyl mercury data impacted by the storage temperature issues are usable but should be considered estimates based on possible microbial activity and/or volatilization."

Mercury is identified as a risk driver contributing to HQt values that exceed 1.0 for a number of receptors. Low risks (NOAEL TRV < HQt < LOAEL TRV) were observed in kingfisher, osprey, dipper, swallow and mallard based on the measured methyl mercury concentrations in sediment and invertebrate tissues. An effect on the methyl mercury concentrations based on the temperature exceedances would impact these risk estimates. If the methyl mercury concentrations reported are underestimating the true exposure concentrations in the field, these risks would be more pronounced. If the methyl mercury concentrations reported are overestimating the true exposure concentrations in the field, these risks would be lower. However, none of the HQt values exceeded the LOAEL TRV suggesting that the uncertainty associated with the measured methyl mercury concentrations is not likely to impact the overall risk conclusions in most cases. The one exception may be the tree swallow exposed to methyl mercury in the ponds, whereby he LOAEL-HQt is just under 1.0 (HQ=0.9).

6.2 Uncertainties in Exposure Parameters

The dose modeling used literature-derived life history parameters for the target receptors. Conservative assumptions were used when species-specific information was not available in order to derive a missing life history variable. Data are generally available to derive reliable intake rates of water and food for ecological receptors, but intake rates of soil or sediment are usually based on limited data or are based on professional judgment. Consequently, HQ values for soil/sediment intakes are usually less reliable than HQ values for water or food intake. This uncertainty is further increased by the assumption that the relative bioavailability of metals in soils and sediments is 100%. However, in many cases the absorption of metals in soil is not as high as from food or water, so this approach will often tend to overestimate risks from soil ingestion.

6.3 Uncertainty in Toxicity Values

6.3.1 Uncertainties in Water Quality Criteria

Benchmark values used to predict risks to aquatic receptors from contaminants in surface water are based mainly on NRWQC or GLWQI Tier II values. Using these surface water benchmarks is consistent with USEPA ecological risk assessment guidance and is consistent with other regional

risk assessments. Outside of the risk assessment process, risk managers will have to consider Montana DEQ's Water Quality Standards for aquatic life for all contaminants.

These benchmarks are based on multiple toxicity studies and are intended to be protective of most aquatic species for which reliable toxicity data are available. However, the set of organisms for which there are data may not include the organisms most likely to be present in the Site waters. In addition, these benchmarks are based on studies performed in laboratory waters and may not account for Site-specific factors that influence toxicity of metals. Because of this, risk predictions based on these benchmarks may either overestimate or underestimate risks to Site species.

For barium, there is uncertainty in the Tier II water quality criteria based on Suter and Tsao (1996). The chronic value of 4 µg/L was derived by ORNL based on a 21-day test on *Daphnia magna* by Biesinger and Christensen (1972) which resulted in 16% reproductive impairment. In general, this value is considered highly conservative and likely overestimates risks to aquatic receptors from exposures to barium. The chronic value is much lower than the acute value of 110 µg/L. There is no NRWQC or MDEQ-7 criteria available for barium. The updated GLI Clearinghouse database (USEPA 2011b) includes three State chronic criteria for barium. Ohio EPA used a chronic criterion of 220 µg/L, whereas Indiana and Michigan consider barium toxicity to be hardness dependent. Key differences between the derivations of the ORNL chronic value of 4 µg/L and the Ohio EPA chronic criterion of 220 µg/L are that ORNL used a data from Vareille-Morel (1990) that Ohio EPA did not use and ORNL used a more conservative acute to chronic ratio. The Varielle-Morel (1990) study evaluated the toxicity of barium chloride to New Zealand mud snails. Barium chloride is a more toxic and bioavailable form of barium than forms more commonly found in the environment (i.e., barium sulfate). ORNL used an acute to chronic ratio of 28.29, whereas Ohio EPA used a ratio of 18. To address the uncertainties associated with using the ORNL chronic value in the risk assessment, evaluation was conducted using the Ohio EPA criterion of 220 µg/L. Table 6-2 presents the results of this uncertainty evaluation. As shown, HQ_C values based on the ORNL criterion exceed 1.0 in all samples, whereas HQ_C values based on the Ohio EPA criterion do not exceed 1.0 in any surface water sample in the CFR, O'Keefe Creek, or on-Site ponds. Only 1 of the surface water samples from Lavalle Creek corresponds to an $HQ_C > 1.0$ ($HQ_C = 1.1$). Porewater samples in the CL Pond, HP1 and IBJ correspond to HQ_C values > 1.0 (HQ_C values of 2.1, 1.1 and 2.8, respectively). HQ_C values in all other ponds were < 1.0. This evaluation suggests that barium HQ estimates in surface waters and pore waters may be overly conservative. On this basis, barium in Site waters is identified as a significant source of uncertainty.

The lack of a surface water ESV for TEQ precluded evaluation of surface water exposures. Consistent with the COPEC identification methodology, this is identified as a source of

uncertainty. However, it is not considered to represent a significant source of uncertainty because dioxins do not easily dissolve in water and tend to settle to the bottom and attach to sediments.

6.3.2 Uncertainties in Sediment Benchmarks

The consensus-based SDGs are commonly used in ecological risk assessments. McDonald et al. (2000) utilized a derivation procedure that incorporated toxicity data from numerous sources. Thus, uncertainties associated with these values arise based on limitations in the database that was evaluated. Evaluation of the predictive reliability of the PEC values determined reliable predictions in 90-100% of sediment samples for most metals (McDonald et al. 2000). The PEC for arsenic was found to be the least reliable (77%). The TEC represents a sediment concentration below which adverse effects are not expected to occur. The PEC represents a concentration above which adverse effects are expected to occur often. Therefore, sediment concentrations between the respective TEC and PEC values are suggestive of potential risks, but the frequency and magnitude of those effects is not certain. Associated uncertainties should be considered when interpreting sediment risks, but this is not considered a significant source of uncertainty.

6.3.3 Uncertainties in Soil Benchmarks

The toxicity benchmarks used in HQ calculations for plants and soil organisms are usually based on laboratory studies in which soluble forms of test metals are added to test soils. Thus, these values do not account for occurrence of metals in mineral forms that are largely insoluble and do not contribute as much toxicity as soluble forms. In addition, the values do not account for variations in environmental factors such as pH and total organic carbon (TOC) content which may influence the toxicity of metals in soils to terrestrial plants and invertebrates. Finally, the laboratory tests may not utilize test species that are likely to occur in site soils.

As noted in the risk characterization, there is significant uncertainty in the applicability of the soil benchmark for aluminum to evaluate aluminum concentrations in Site soils. USEPA (2003b) states that total aluminum in soil is not correlated with toxicity to the tested plants and soil invertebrates evaluated in the toxicity studies. Further, aluminum toxicity is associated with soluble aluminum and insoluble aluminum compounds are considerably less toxic compared to the soluble forms (USEPA 2003b). On this basis, potential ecological risks associated with aluminum should be identified based on the measured soil pH. However, data on soil pH have not been collected as part of RI activities. On this basis, aluminum in Site soils is identified as a significant source of uncertainty.

6.3.4 Uncertainties in Toxicity Reference Values

The effects assessment for the wildlife receptors used published TRVs to estimate COPEC toxicity. These studies are not Site-specific, and often are based on different species and different exposure media than those of concern at the Site. In addition, there is often uncertainty in the true threshold, and hence in the true NOAEL and true LOAEL. In most cases, TRVs are derived in a way that is more likely to overestimate than underestimate risks. But the assessment endpoints focus on preserving populations, whereas TRVs are derived from data on individuals or small groups of a test species. Extrapolating individual effects to populations is inherently uncertain. The degree of uncertainty with this approach is unknown.

Additionally, the wildlife TRVs are applied to all birds or mammals and not specific to any particular species. The differences in sensitivities among the surrogate receptors evaluated in the BERA to test species used to generate the TRVs are unknown. But the process for deriving TRVs is conservative by design, such that it is more likely that the wildlife risks are overestimated rather than underestimated.

6.3.4.1 Avian TRVs for Dioxin

As described previously, avian TRVs used for evaluating risks from TEQ_A were derived following an approach to categorize different bird species by their understood sensitivities to the reproductive effects of TCDD. The Category 1 and Category 3 TRVs were derived by applying a relative sensitivity ratio to the Category 2 TRV from Sample et al. (1996). This approach was conducted due to limited data on dietary effects of TEQ in birds. As described in Appendix B, a dietary study in White Leghorn chickens identified an unbounded NOAEL (Stephens et al. 1995). Although it is common practice to derive a NOAEL TRV from an unbounded LOAEL by applying a factor of 10, deriving a LOAEL TRV from an unbounded NOAEL is highly uncertain. On this basis, the study was not used for the basis of the Category 1 TRVs. However, the NOAEL of 2.5E-05 mg/kg/day is consistent with the Category 1 NOAEL TRV identified by applying the ratio approach. Similarly, a LOAEL of 2.9E-05 mg/kg/day based on an intraperitoneal injection study by Matsushita et al. (2002) in Barred Plymouth Rock hens is consistent with the Category 1 LOAEL TRV derived by the ratio approach. As noted in Appendix B, this study was not used as the basis for the Category 1 TRVs due to limited reporting that inhibited the ability to critically review the reported effects.

The ratios were derived based on embryo mortality induced following egg injection exposures (Cohen-Barnhouse et al. 2011a). The use of ratios accounts for the relative sensitivity differences between the avian categories. On this basis, it is considered appropriate to apply the ratios derived from acute toxicity endpoints to assess reproductive toxicity effects. Further, Cohen-Barnhouse et

al. (2011b) demonstrated that embryo mortality is related to dose within species and can be used to evaluate species sensitivity, whereas endpoints such as incidence of developmental deformities, changes in body and relative organ masses, and organ pathology could not be used to assess species sensitivity. Both the Cohen-Barnhouse et al. (2011a) study and the Nosek et al. (1992) study incubated eggs following exposures to TCDD, although exposures in Nosek et al. (1992) were based on injecting hens weekly prior to mating.

6.3.4.2 Avian TRVs for Mercury

There have been many studies conducted on the effects of mercury in birds with increasing frequency over the years. Yet, the avian TRVs for mercury used in this assessment are based on older studies. Nonetheless, available information from more recent studies supports the LOAEL TRV for methyl mercury of 0.064 mg/kg/day used in this assessment. Depew et al. (2012) conducted a literature search to evaluate the effects of exposure to dietary mercury on a piscivorous bird, the common loon. This study reported that at a dietary dose of 0.06 mg/kg/day significant reproductive impairment has been observed in wild adult loons, and at a dose of 0.13 mg/kg/day complete reproductive failure was observed. Fuchsman et al. (2017) conducted a comprehensive review of methyl mercury effects on avian reproduction and reported a typical range of mercury thresholds for adverse effects on avian reproductive success of 0.05 mg/kg/day to 0.5 mg/kg/day on a dose basis. The LOAEL TRV for organic mercury used in this assessment falls within this range (0.064 mg/kg/day).

6.3.5 Uncertainties in Tissue Residue Benchmarks

6.3.5.1 Fish TRBs

Steevens et al. (2005) used data on reproductive success for multiple fish species from five fish families to derive a SSD for the toxicity of dioxins in fish. Studies included in the evaluation presented by the study authors included maternal, egg injection, and water exposures. This approach indicates that the results presented are broadly applicable in risk assessment. The benchmark values recommended by Steevens et al. (2005) were derived based on a whole egg and embryo basis, but are being used to evaluate fully mature whole-body fish specimens. Steevens et al. (2005) notes that due to the lipophilicity of TCDD and dioxin-like compounds, effect residues in fish eggs could readily be related to maternal tissue concentrations after lipid normalization. Russell et al. (1999) supports an approximate 1:1 egg to adult fish ratio. This study reported that lipid mobilization has little effect on the relationship between maternal tissue and egg concentrations of contaminants of fish. Teitge et al. (1998) reported an egg:whole body ratio for TCDD concentration in brook trout to be 0.39. This suggests that assuming a 1:1 egg to whole body ratio is conservative. However, Russell et al. (1999) used adult dorsal muscle in their

analysis, as opposed to whole body fish. To address this source of uncertainty, the available fillet data for rainbow trout and northern pike collected from the CFR in 2019 were compared to the TRBs from Steevens et al. (2005). As shown in Figure 6-1, the same general risk conclusion is seen that TEQ_F concentrations are below the available TRBs.

6.3.5.2 Small Mammal TRBs

The small mammal TRBs used in this BERA are consistent with tissue-based TRVs being used at other Sites within USEPA Region 8. The selected values were compiled primarily from Beyer and Meador (2011). The lowest tissue concentration associated with an effect level for a terrestrial mammal was selected as the benchmark. The benchmarks for TEQ_M, cadmium and mercury were based on organ tissue residues and were converted to a whole organism residue based on an assumed percent moisture. There is significant uncertainty in these values. However, methyl mercury was not detected in small mammal tissues, and the reported concentrations of cadmium and mercury are well below the selected TRBs. TEQ_M concentrations exceed the selected TRBs from all sampling locations within OU2/OU3 and from the sampling locations within OU1, but due to the uncertainty in the TRBs, the confidence in this finding is low.

6.4 Uncertainties in Risk Estimates

In general, despite inherent uncertainties in predicting risks to ecological receptors, the use of conservative assumptions, particularly assuming 100% of contaminant bioavailability in food items, and using conservative TRVs, most likely overestimates true risk to the wildlife receptors. However, COPEC-specific HQs do not account for combined effects that could be additive, antagonistic, or unpredictable, and indirect effects of contaminants on species interactions are not evaluated in this BERA.

6.4.1 Uncertainties in Selection of Representative Surrogate Species

There are a wide variety and number of species that may inhabit the Site. However, it is impractical to evaluate each individual species. Surrogate species were selected to be representative of a variety of taxonomic classes to provide a broad understanding of potential risks to different species that occur at the Site. The northern pike was evaluated as a surrogate for a high trophic level piscivore like the threatened bull trout. Exposure factors selected for the representative surrogate wildlife species were selected to minimize underestimates of exposure to other species within a similar feeding guild.

6.4.2 Uncertainties in Chemicals Not Evaluated

Many of the metals without TRVs are considered essential nutrients and are required by living organisms for normal functioning (calcium, iron, magnesium, potassium, and sodium). Because of this, higher organisms like birds and mammals have evolved homeostatic mechanisms that control the absorption, retention and excretion of these chemicals, so variations in exposure and intake from environmental sources is very unlikely to cause any adverse effects. Thus, the absence of TRVs for the essential nutrients is not considered a significant source of uncertainty. The absence of TRVs for non-essential contaminants antimony and thallium for which there are no avian TRV values results in an underestimation of the total risk to birds from Site media. The magnitude of this underestimation is not known, but this is not expected to represent a significant source of uncertainty given that neither antimony nor thallium were identified as risk drivers in abiotic media.

One potential source of uncertainty is the lack of PCB data for dace samples. Dace were evaluated for dioxins and furans, but not for dioxin-like PCB congeners. This means that the total TEQ_F concentrations evaluated in this assessment may be underestimated. Dace were not analyzed for PCBs because PCBs were not identified as a Site-related COPEC in sediments or surface water. Data for PCBs in these media are limited, but no PCBs were detected when they were analyzed for in CFR sediments or surface water. Further, TEQ_F concentrations in the higher trophic level fish based on the inclusion of dioxin-like PCB congeners did not exceed identified TRB criteria. On this basis, it is unlikely that concentrations of PCB congeners in the smaller forage fish would be significant enough to produce whole body TEQ_F tissue concentrations above a level of concern. This is not considered a significant source of uncertainty.

6.4.3 Uncertainties in Exposure Pathways Not Evaluated

Inhalation and dermal exposures were not evaluated. Exclusion of these pathways may underestimate true risk to birds and mammals. The magnitude of this underestimation is not known, but these pathways represent minor contributions to total exposure relative to ingestion exposures.

6.4.4 Uncertainties in Risk Estimates to Aquatic Receptors

Water chemistry conditions influence the toxicity of manganese to aquatic organisms by affecting the environmental fate, behavior and bioavailability (CCME 2019). Data suggest that toxicity to invertebrates and fish decreases with increasing hardness (CCME 2019). Average water hardness of the CFR, creeks, and on-Site ponds estimated based on available calcium and magnesium concentrations were 120, 147, and 650 mg/L $CaCO_3$, respectively. It is likely that in such hard

waters, the Ca2+ and Mg2+ cations will compete for binding sites on the biotic ligand (Lasier et al. 2000). Toxicity from manganese is expected to be mitigated under such conditions. Community surveys are not available to allow for quantitative evaluation of species numbers in the various water bodies at the Site. Such information would be useful in better defining the uncertainty associated with the risk estimates for manganese for direct contact exposure of aquatic receptors.

6.4.5 Limited Lines of Evidence

Evaluation of ecological risks presented in this BERA are based solely on evaluation of predicted risks as HQs. The fraction of the population that must have HQ values below a value of 1.0 for the population to remain stable depends on the species being evaluated and on the toxicological endpoint underlying the toxicity benchmark. Consequently, reliable characterization of the impact of a chemical stressor on an exposed population risks requires knowledge of population size, birth rates, and death rates, as well as immigration and emigration rates. Because this type of detailed knowledge of population dynamics is generally not available on a site-specific basis, extrapolation from a distribution of individual risks to a characterization of population-level risks is generally uncertain.

In interpreting HQ values and distributions of HQ values, it is always important to bear in mind that the values are estimates, based on predictive models, and are subject to the uncertainties that are inherent in both the estimates of exposure and the estimates of toxicity benchmarks. Therefore, HQ values should be interpreted as estimates rather than highly precise values.

Site-specific toxicity tests compare the response of receptors that are exposed to Site media to the response in receptors exposed to laboratory control media or media collected from one or more reference locations. Such tests can help identify a direct link between exposure (i.e., surface water chemistry) and effect (i.e., changes in survival, growth, and/or reproduction). Tests of this type may be done either in the field or in the laboratory using media collected at the Site. The chief advantage of this approach is that site-specific conditions which can influence toxicity are usually accounted for. None of the Site surface waters, sediments, or soils were tested for toxicity in this manner. The lack of Site-specific toxicity testing does not invalidate the conclusions presented in the BERA, but instead would have provided one more line of evidence available for use in the risk characterization.

HQ estimates do not provide an assessment of habitat quality which may be of significant impact on community health. No community surveys have been conducted at the Site. Such information would provide direct observations on the receptors in the field, seeking to determine whether any receptor population has unusual numbers of individuals (either lower or higher than expected), or whether the diversity (number of different species) of a particular category of receptors (e.g.,

plants, benthic organisms, small mammals, and birds) is different than expected. The chief advantage of this approach is that direct observation of community status does not require making the numerous assumptions and estimates needed in the HQ approach. In addition, this line of evidence would provide additional support to the findings based on the HQ approach which assumes that any impacts on community health are associated with exposure to Site-related contaminants.

6.4.6 Contributions from Background

In order to incorporate feedback from USEPA Headquarters, be consistent with guidance, and increase transparency, this risk assessment will no longer use background concentrations as criteria for screening COPCs for targeted risk evaluation as was performed in the previous draft. High background concentrations that are either naturally occurring or attributable to non-Site related sources, such as other industrialized areas, may nevertheless contribute to collective risk at the Site and are thus appropriately included in the risk assessment. Although evaluation of background is an important consideration for risk management decisions, the risk assessment does not make remedial decisions but only documents risks associated with the site as consistent with USEPA guidance. USEPA will narrow the list of COPCs, considering background information, as the remedial investigation process continues.

The USEPA has developed a preferred approach for the consideration of background constituent concentrations of hazardous substances, pollutants, and contaminants in certain steps of the remedy selection process. USEPA does not require remedial action or further investigation of contaminants that are below background (non-site related) levels (USEPA 2002). Quantitative evaluation of background contributions to risk estimates may be necessary when making risk management decisions. As noted above, the purpose of the BERA is to quantify potential Site-related risks to ecological receptors within the currently defined study area. On this basis, risk estimates were generated based on the assumption that 100% of the detected contamination in Site samples is attributed to historical Mill operations. However, some of the estimated risk may be associated with COPEC concentrations attributable to natural and/or anthropogenic non-point sources. Naturally occurring concentrations are present in the environment in forms that have not been influenced by human activity. MDEQ (2005) notes that arsenic may occur naturally in Montana soils at levels above risk-based concentrations. Conversely, contaminants may also be present in the environment as a result of human activities not specifically related to the Site. Some contaminants detected in Site media may have both natural and non-Site related anthropogenic sources, in addition to contributions from historic Site activities. For instance, dioxins have multiple anthropogenic and natural point and non-point sources, making it difficult to evaluate whether concentrations at the Site are due to the bleaching process conducted as part of historical Mill operations, or other sources (e.g., forest fires, barrel trash burning, etc.).

Sources of background information relevant to this Site include the MDEQ soil background studies on dioxins/furans and metals (MDEQ 2011, 2013), as well as available surface water, sediment and tissue data collected from upstream locations within the CFR and on-Site creeks as part of either Site-related RI activities or ongoing monitoring programs such as those conducted by the USGS. Evaluation of these data as part of ongoing RI activities may provide risk managers with a better understanding of the predicted risks presented in this assessment (e.g., concentrations of dissolved copper within the study area of the CFR generally fall within the range of dissolved copper concentrations in samples collected from upstream locations within the CFR[6]).

[6] Based on a qualitative comparison of background data (e.g., upstream data) included in the Site-specific Scribe database.

7.0 SUMMARY AND CONCLUSIONS

Multiple investigations performed at the Site have produced data for characterizing exposures and risks to ecological receptors from Site-related COPECs. This BERA assesses community-level risks within the study area for aquatic receptors (fish, invertebrates, amphibians, aquatic plants) and terrestrial plants and soil organisms, as well as species-specific risks for nineteen representative surrogate wildlife species. Risk characterization used exposure data obtained from surface water, sediment, pore water, surface soil, fish tissue, aquatic invertebrate tissue, and small mammal tissue samples collected from the study area. Predicted risks were calculated as HQs.

Based on the evaluation presented in this BERA, a summary of the main conclusions regarding potential ecological exposures and associated risks within the study area as it is defined within this report is provided in Table 7-1. Risks shown as minimal represent those COPECs that pose no unacceptable risk and thus require no further evaluation. Risks flagged as significant sources of uncertainty represent COPECs that may require further evaluation in the RI. All other risks are qualified based on the magnitude of unacceptable risks that were predicted. The main conclusions are further summarized below.

Aquatic Setting

- Risks to aquatic receptors, including fish, from direct contact exposures with most Site-related COPECs in the CFR appear to be low, except for barium and manganese.
    - At a minimum, low risks to aquatic receptors from direct contact to manganese in surface waters of the CFR are predicted. High risks were estimated in the risk characterization, but as described in Section 5, there is uncertainty in the representativeness of the maximum dissolved manganese concentration that is driving the risk estimates. Low risks from manganese are also predicted within Lavalle Creek just upstream of the confluence with the CFR. Manganese toxicity may be mitigated by the concentrations of calcium and magnesium in the CFR (i.e., hardness).
    - As shown in Table 7-2, there are four samples where the calculated chronic HQ for manganese exceeds 1.0. There is uncertainty in the HQ estimates for the two samples collected in the reach of the CFR adjacent to the Site as described in Section 5.1.1.1.
    - High risks are predicted for aquatic receptors from exposures to barium in the surface waters of the CFR. However, as noted in Section 6, the surface water ESV for barium is a significant source of uncertainty. Therefore, there is low confidence in the predicted risk estimates for barium in surface water.

- Based on evaluation of tissue concentrations, no unacceptable risks are expected to fish in the CFR due to dioxins, furans, dioxin-like PCBs, or methyl mercury.
- Risks to aquatic receptors from direct contact exposures with Site-related COPECs in O'Keefe and Lavalle Creeks appear to be minimal upstream of the confluence with the CFR.
- Concentrations of metal COPECs in on-Site ponds may contribute to elevated risks to benthic invertebrates in on-Site ponds. Table 7-3 summarizes the predicted HQs for direct contact to surface water, sediment and pore water in the on-Site ponds.
    - Highest predicted risks in the on-Site ponds correspond to barium and manganese.
    - Chronic HQs for barium exceeded 1.0 for surface water and pore water in all ponds. Acute HQs for barium exceeded 1.0 for surface water and pore water in IBJ, CWD, and HP18, and for only pore water in CL Pond, HP1a, and P5. As noted in Section 6.3.1, confidence in these risk estimates is low based on the significant uncertainty in the barium water quality criteria.
    - HQ_C values for manganese exceed 1.0 for pore water in all ponds except CWD, and for surface water in eight ponds. The magnitude of exceedances range from 1.6 to 55 indicating notable differences between the individual ponds. The HQ_A values for manganese exceed 1.0 for pore water in HP10 (HQ_A = 1.6) and IBJ (HQ_A = 1.1), but the magnitude of the exceedances is small. The surface water HQ_A and sediment HQ_L also exceeded 1.0 in HP10, but again the magnitude of exceedance was small. Sediment HQ_Ls also exceed 1.0 for manganese in HP1a, P5, HP7, and HP12, but the corresponding pore water HQ_As are all below 1.0 in these ponds. Manganese toxicity may be mitigated by the concentrations of calcium and magnesium in the ponds (i.e., hardness).
    - Although sediment HQ_N values for arsenic, cadmium, copper, mercury and zinc exceed 1.0, pore water HQ_C values for these COPECs are all below 1.0. One sediment HQ_L is greater than 1.0 for cadmium in pond P5 (HQ_L = 1.3), and one sediment HQ_L is greater than 1.0 for mercury in pond HP10 (HQ_L = 2.4). Again, neither pore water HQ_C values in these ponds is above 1.0.
    - Selenium was only detected in one pore water sample in pond HP10, but the calculated HQ_C exceeded 1.0 (HQ_C = 1.9). The HQ_C values for the non-detected concentrations based on ½ DL also exceed 1.0 (1.8). The sediment HQ_N values also exceed 1.0 in ponds HP7 and HP12. No pore water HQ_A values exceed 1.0 for selenium.
- Risks to aquatic-dependent wildlife are generally low as summarized in Table 7-4.

- Low risks (HQ_N > 1.0, HQ_L < 2.0) are predicted to the belted kingfisher and osprey based on mercury/methyl mercury.
- Low risks are predicted to the otter and mink based on aluminum. These risk estimates are uncertain based on limitations with evaluating aluminum toxicity to ecological receptors based on measures of total aluminum as described in Section 6.3.3.
- Low risks were predicted for the dipper, swallow and mallard in O'Keefe and Lavalle Creeks for aluminum, barium, copper, and mercury/methyl mercury.
- Low to moderate risks are predicted in the on-Site ponds for the dipper, swallow and mallard. The primary risk driver is vanadium. The maximum HQ_L is 2.1 for the dipper.

Terrestrial Setting

- Metal contamination in Site soils may be causing adverse effects to plants and soil invertebrates. Specific locations where HQs exceed 1.0 are listed in Appendix F tables.
  - Mercury concentrations in soil appear to contribute the greatest risk. HQ_L values for mercury for soil invertebrates exceed 1.0 in OU3 soils. HQ_N values for mercury are highest in OU3 soils, with the maximum HQs associated with upland samples. There is no plant low-effect ESV to determine whether risks based on the HQ_N values for plants are associated with observed adverse effects.
  - Risks to plants and soil invertebrates from copper, selenium and zinc are low (HQ_N > 1.0, HQ_L < 1.0).
  - Risks to soil invertebrates from barium are also low. There is no plant low-effect ESV to determine whether risks based on the HQ_N values are associated with observed adverse effects.
- Tables 7-5 through 7-8 summarize risks to terrestrial wildlife receptors.
  - Aluminum concentrations in Site soils may be contributing to adverse effects in wildlife. Data on soil pH are lacking to determine if this is an authentic concern at the Site.
  - Risks to large home range wildlife receptors are low (excluding risks associated with ingestion of aluminum). Low risks to the bat may occur due to ingestion of dioxins/furans in terrestrial invertebrates. However, this input is based on modeled data for earthworms that likely overestimate actual risks.

- Risks to medium home range wildlife receptors are low to moderate. Exposures to mercury as inorganic mercury in soils and as methyl mercury in prey items may result in adverse effects.
- Risks to small home range wildlife receptors may be high based on ingestion of mercury in prey items.
- The use of conservative assumptions (i.e., 100% bioavailability, conservative toxicity benchmarks) and conservative uptake models may overestimate risks to wildlife receptors, but on this basis the risk estimates presented in this BERA are considered health-protective.

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Van den Berg et al. 2006. The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds. Toxicol. Sci. 93(2): 223-41.

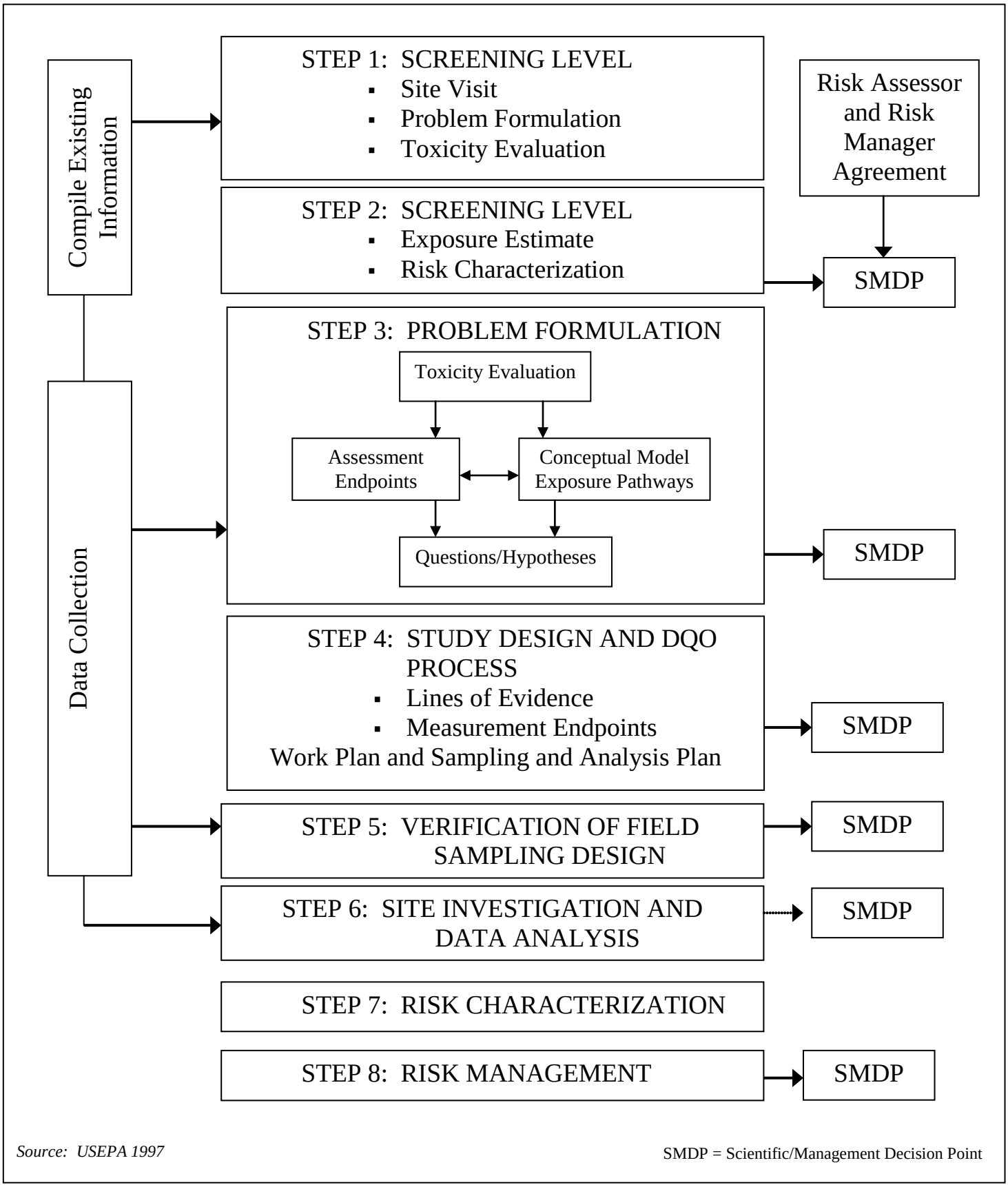
Vareille-Morel, C., et al. 1990. Sensitivity of the Prosobranch Mollusk *Potamopyrgus jenkinsi* to the action of metallic chlorides ($ZnCl_2$, $BaCl_2$, $CuCl_2$) and to the Synthetic Molluscacide N-tritylmorpholine. Ann Rech Vet., 21(2): 111-118.

West, C.W. et al. 1997. Toxicity and Bioaccumulation of 2,3,7,8-tetrachlorodibenzo-*p*-dioxin in Long Term Tests with the Freshwater Benthic Invertebrates *Chironomus tentans* and *Lumbriculus variegatus*. Environ. Toxicol. Chem. 16: 1287-1294.

FIGURES

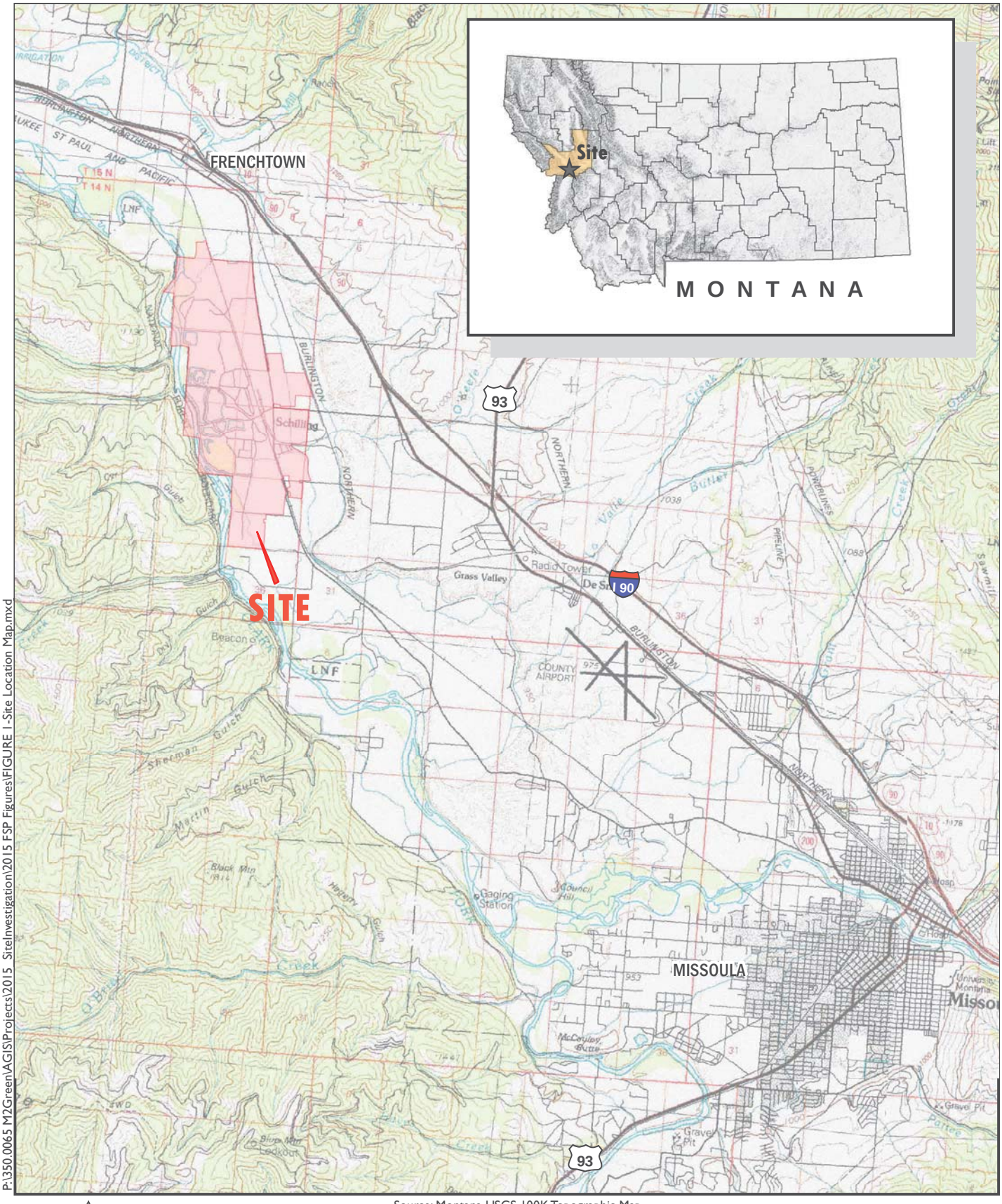
OU2/OU3 Smurfit-Stone/Frenchtown Mill Site
Baseline Ecological Risk Assessment

Figure 1-1. Eight Step Process for Ecological Risk Assessment at Superfund Sites



Source: USEPA 1997

SMDP = Scientific/Management Decision Point



P:\350.0065 M2Green\AGIS\Projects\2015 SiteInvestigation\2015 FSP Figures\FIGURE 1-Site Location Map.mxd

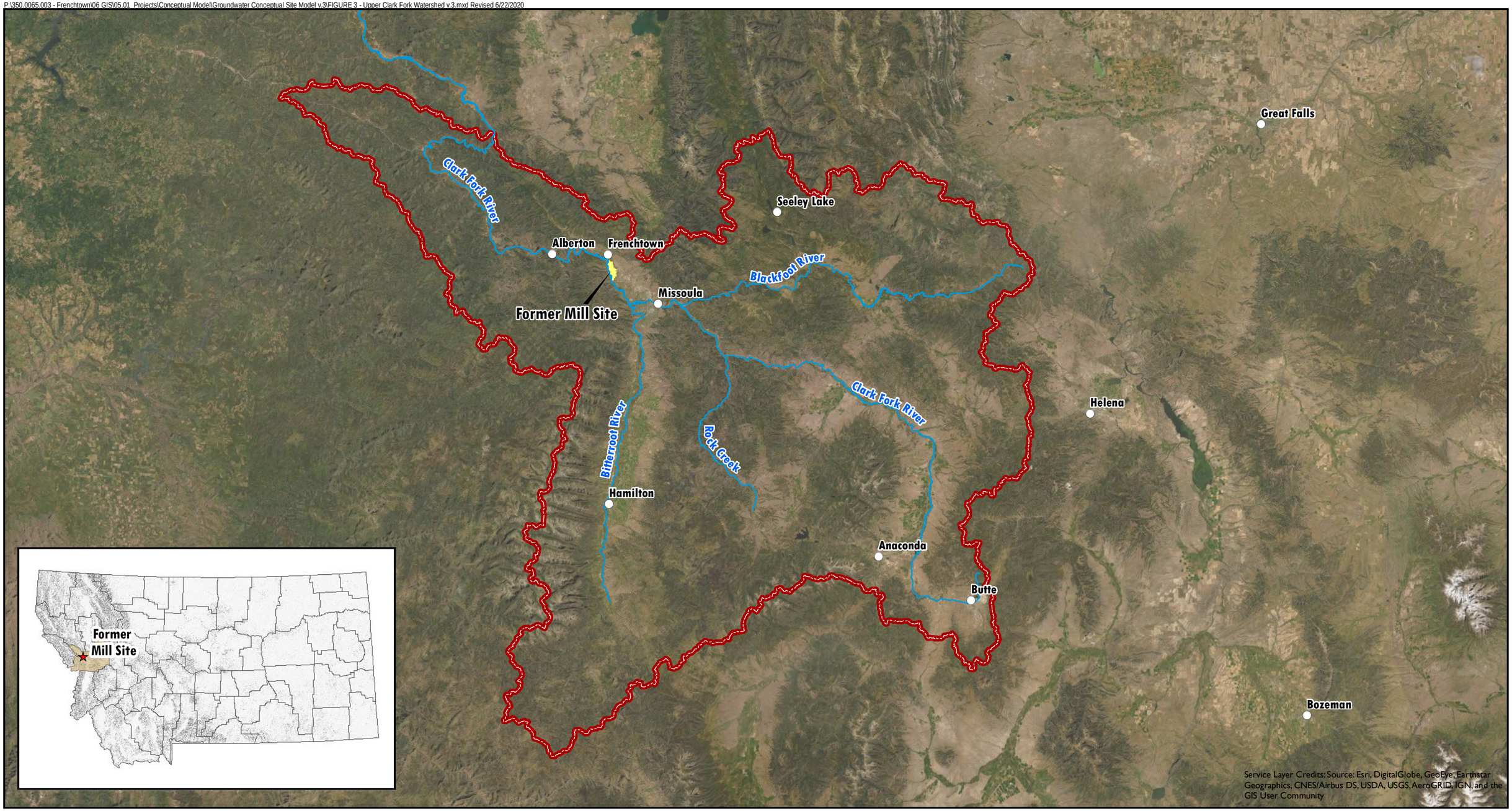
Source: Montana USGS 100K Topographic Map

0 Feet 10,000

NewFields

Site Location Map
Former Frenchtown Mill Site
Missoula County, Montana
FIGURE 2-1

P:\350.0065.003 - Frenchtown\06 GIS\05.01_Projects\Conceptual Model\Groundwater Conceptual Site Model v.3\FIGURE 3 - Upper Clark Fork Watershed v.3.mxd Revised 6/22/2020



N

0 Miles 20

NewFields

Upper Clark Fork River Watershed

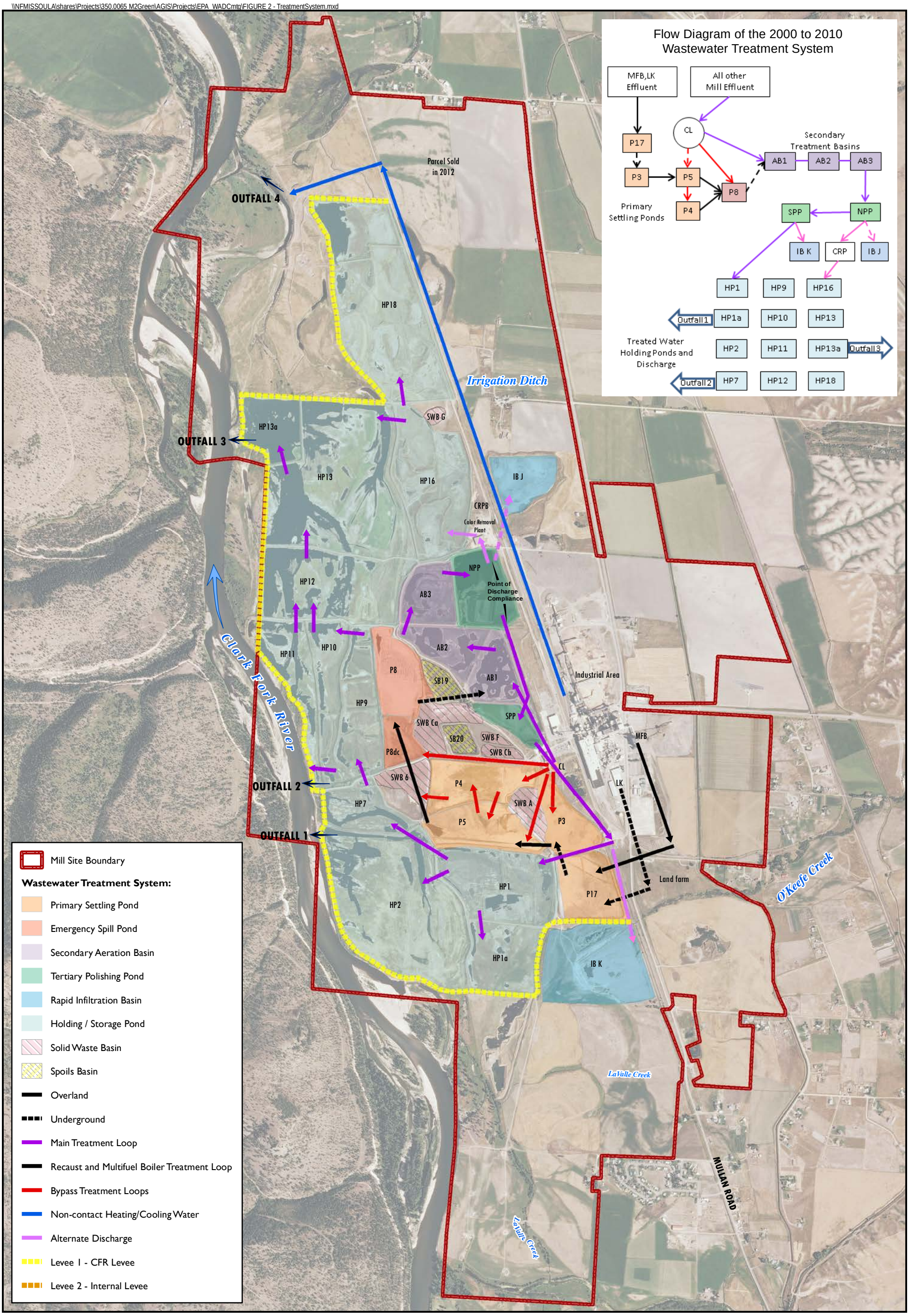
Sources:

U.S. Department of Agriculture, Natural Resouces Conservation Service, National Geospatial Center of Excellence, 2014. Watershed Boundary Dataset 8 Digit Hydrologic Units (Sub Basis) For Montana. Montana State Library.

Upper Clark Fork River Watershed
Smurfit-Stone/Former Frenchtown Mill Site

Missoula County, Montana
FIGURE 2-2
(adapted from NewFields 2020a)

\\NFMISSOULA\shares\Projects\350.0065 M2Green\AGIS\Projects\EPA_WADCmtg\FIGURE 2 - TreatmentSystem.mxd



Aerial Photo Source: NAIP 2011

0 Feet 1,600

NewFields

Wastewater Treatment System Overview from 2000 through 2010.

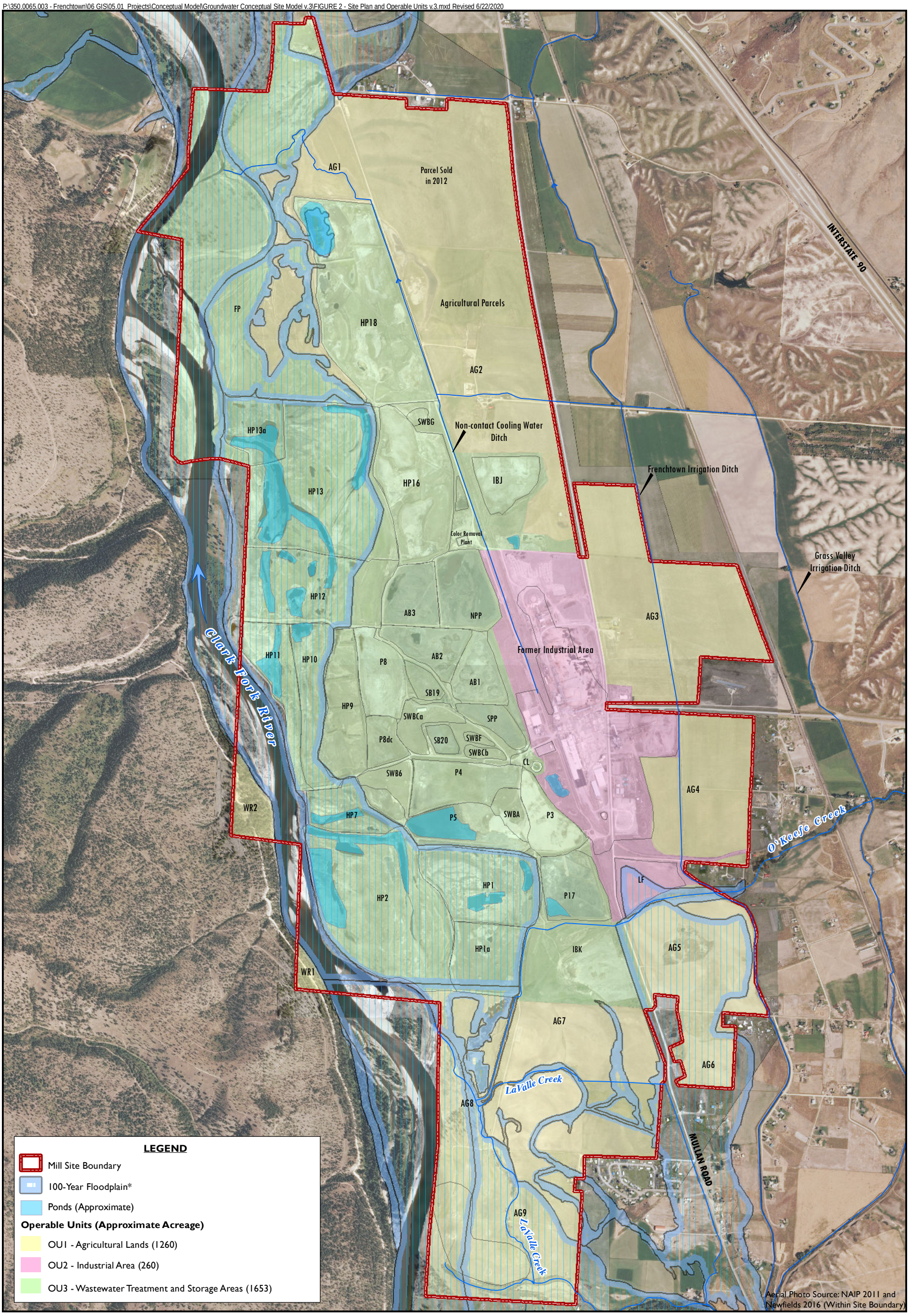
Notes

AB - Aeration Stabilization Basin
CL - Clarifier
CRPB - Color Removal Plant Basin
HP - Holding or Storage Pond
IB - Rapid Infiltration Basin
LK - Lime Kiln
MFB - Multifuel Boiler
NPP - North Polishing Pond
P - Settling Pond
SB - Spoils Basin
SPP - South Polishing Pond
SWB - Solid Waste Basin

Schematic of 2000 - 2010 Wastewater Treatment System
Former Frenchtown Mill Site
Missoula County, Montana

Figure 2-3

P:\350.0065.003 - Frenchtown\06 GIS\05.01 Projects\Conceptual Model\Groundwater Conceptual Site Model v.3\FIGURE 2 - Site Plan and Operable Units v.3.mxd Revised 6/22/2020



0 Feet 1,600

NewFields

***Floodplain Source:**

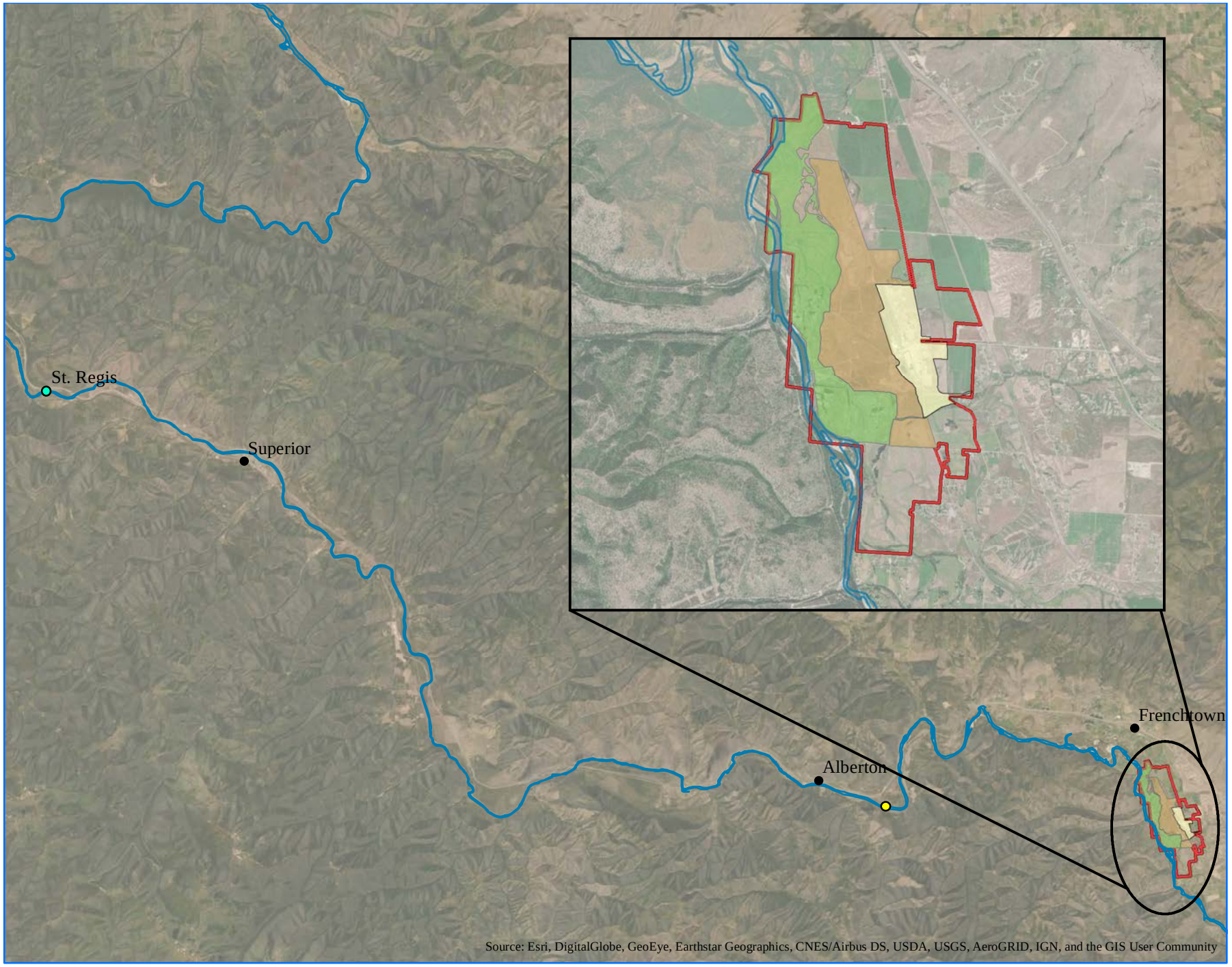
As defined by the Federal Emergency Management Agency (FEMA) 2013 Digital Flood Insurance Rate Map (DFIRM). (NFIP 2013)

Notes

AG - Agricultural Land
AB - Aeration Stabilization Basin
CFR - Clark Fork River
CL - Clarifier
FP - Floodplain
HP - Holding or Storage Pond
IB - Rapid Infiltration Basin
LF - Land Farm
NPP - North Polishing Pond
P - Settling Pond
SB - Spoils Basin
SPP - South Polishing Pond
SWB - Solid Waste Basin
WR - West of River

Map of Operable Units
Smurfit-Stone/Former Frenchtown Mill Site
Missoula County, Montana
FIGURE 2-4
(*Figure adapted from NewFields 2020a*)

Figure 2-5. BERA Study Area



Smurfit-Stone/ Frenchtown Mill Site, Montana

N

0 4 Miles

Downstream extent of fish sampling

Downstream extent of surface water, sediment, and dace sampling

Clark Fork River

Site_Boundary

Site OUs

OU2

OU3 Upland

OU3 Floodplain

Important Bird Areas

Clark Fork River-Grass Valley

Montana

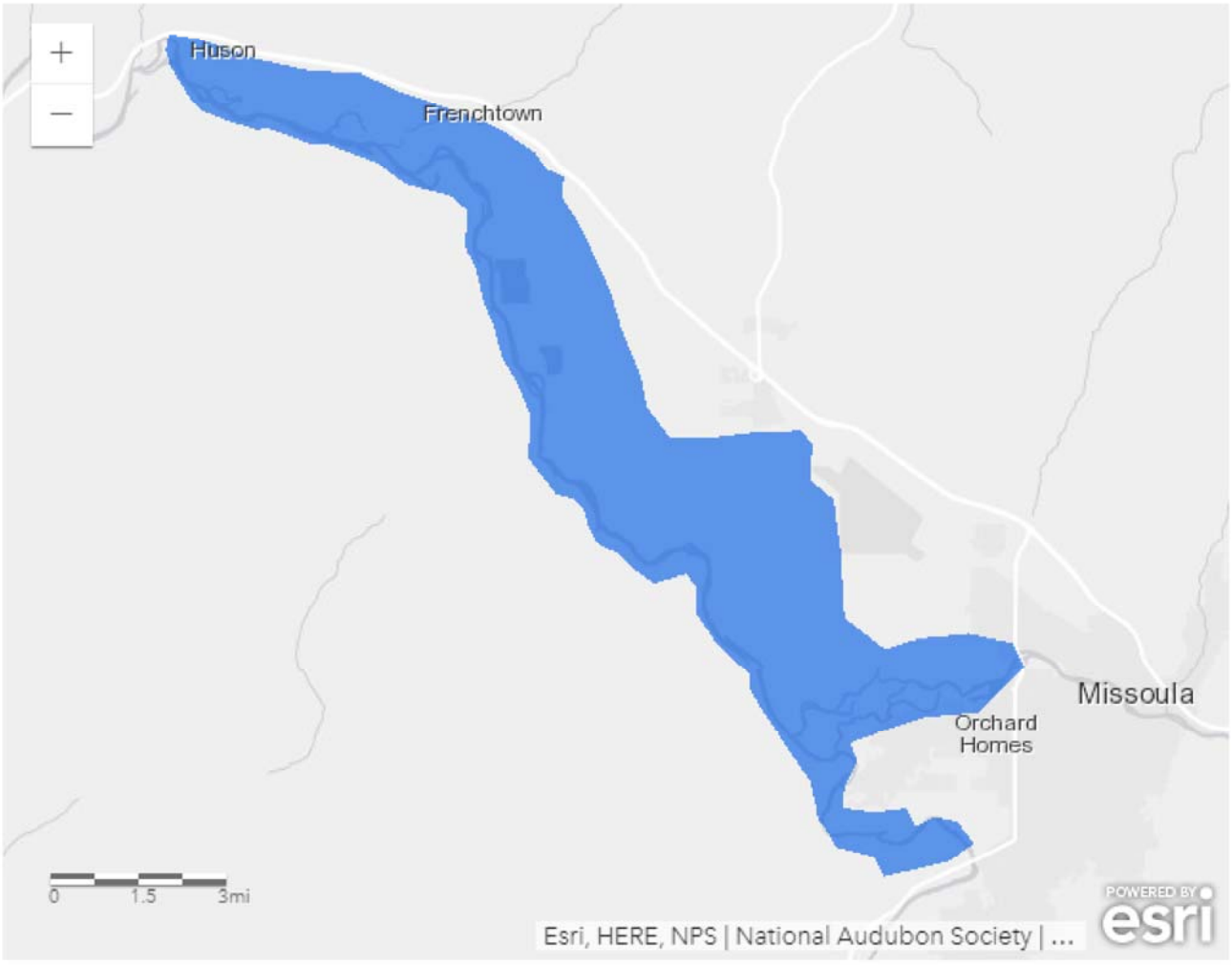
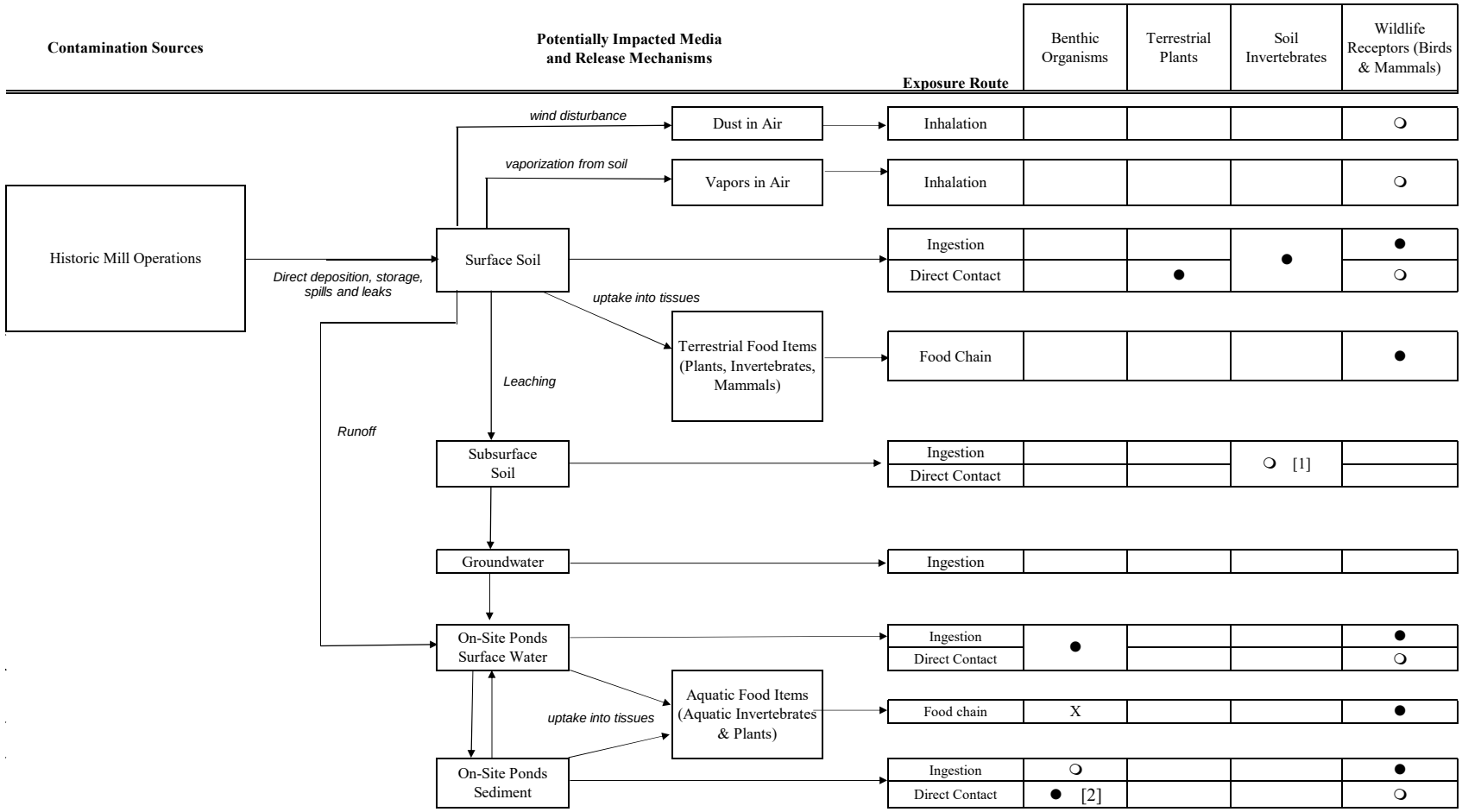


Figure 2-6

Printed from the Audubon Webpage

Figure 2-7A. Conceptual Site Model for Ecological Exposure at OU2



LEGEND

●	Pathway is complete and might be significant.
❍	Pathway is complete, but is relatively minor.
X	Pathway is complete and may be significant, but insufficient data (exposure or toxicity) are available for quantitative evalution.
	Pathway is not complete.

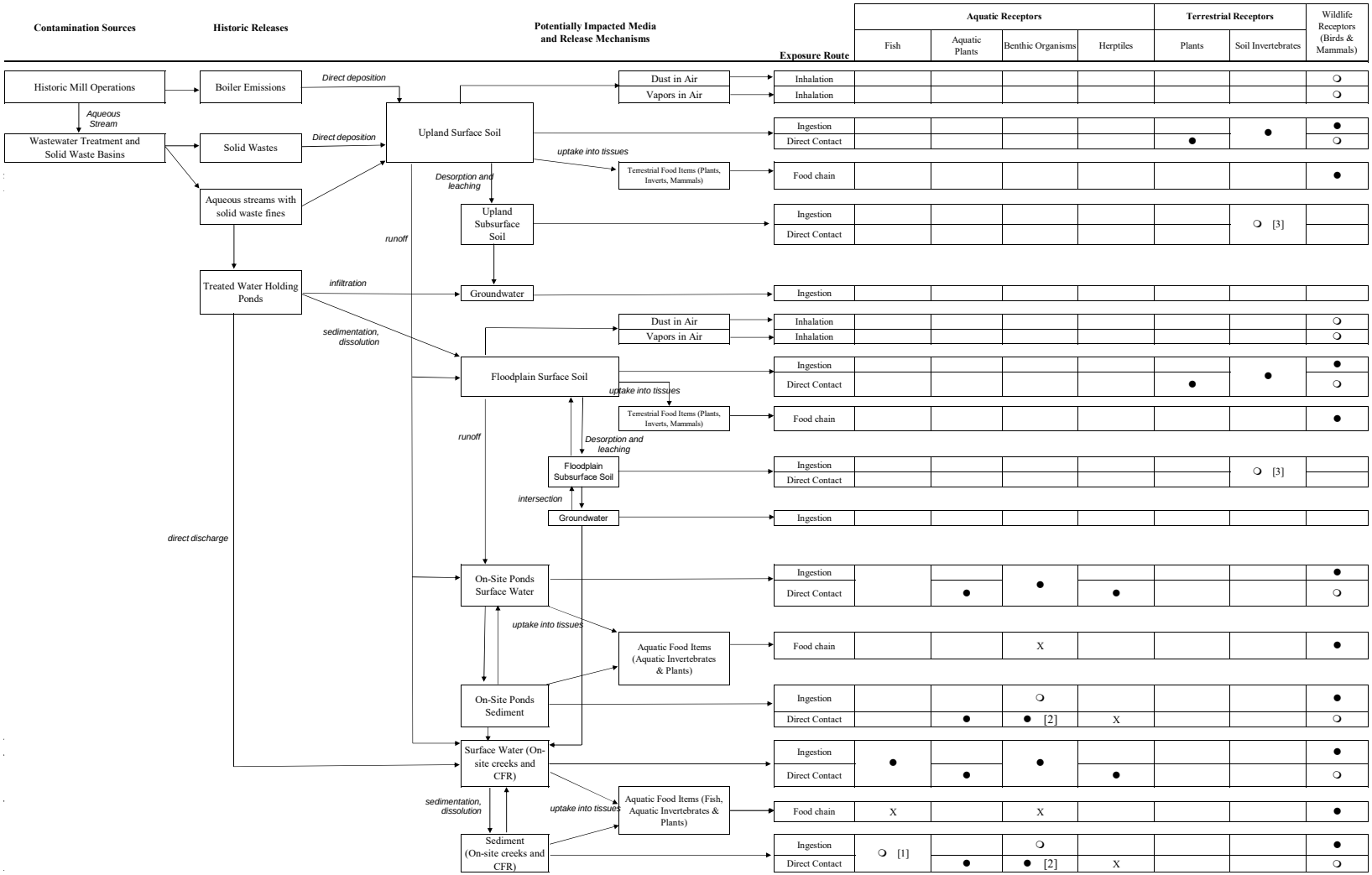
NOTES

Direct contact exposures include dermal contact, root uptake, respiration, and/or osmotic exchange.

[1] USEPA (2015) guidance recommends sampling to a depth of approximately 25-30 cm to capture the average biologically active zone (soil biota). Surface soil samples have been collected at 0-7 inches (0-18 cm). Subsurface samples have been collected at depths greater than 1 foot below ground surface. However, statistical testing has found that concentrations in surface soils are comparable or higher than concentrations in subsurface samples (alpha = 0.05). Thus, quantification of ecological exposures to surface soils is expected to be representative and/or protective of exposures to subsurface soils.

[2] In most cases, toxicity values for exposure of BMI to sediments likely include at least some contribution from the ingestion pathway, so direct contact and ingestion of benthic macroinvertebrates are usually evaluated together.

Figure 2-7B. Conceptual Site Model for Ecological Exposures at OU3



LEGEND

●	Pathway is complete and might be significant; quantitative evaluation.
❍	Pathway is complete, but is relatively minor; semi-quantitative evaluation.
X	Pathway is or may be complete, however, data for quanitative evaluation may be lacking.
	Pathway is not complete; no evaluation required.

NOTES

Direct contact exposures include dermal contact, root uptake, respiration, and/or osmotic exchange.

[1] Believed to be a minor pathway compared to risks from direct contact with surface water, but may be important for contaminants that bioaccumulate.

[2] In most cases, toxicity values for exposure of BMI to sediments likely include at least some contribution from the ingestion pathway, so direct contact and ingestion of benthic macroinvertebrates are usually evaluated together.

[3] USEPA (2015) guidance recommends sampling to a depth of approximately 25-30 cm to capture the average biologically active zone (soil biota). Surface soil samples have been collected at 0-7 inches (0-18 cm). Subsurface samples have been collected at depths greater than 1 foot below ground surface. However, statistical testing has found that concentrations in surface soils are comparable or higher than concentrations in subsurface samples (alpha = 0.05). Thus, quantification of ecological exposures to surface soils is expected to be representative and/or protective of exposures to subsurface soils.

Figure 3-1. COPEC Selection Procedure

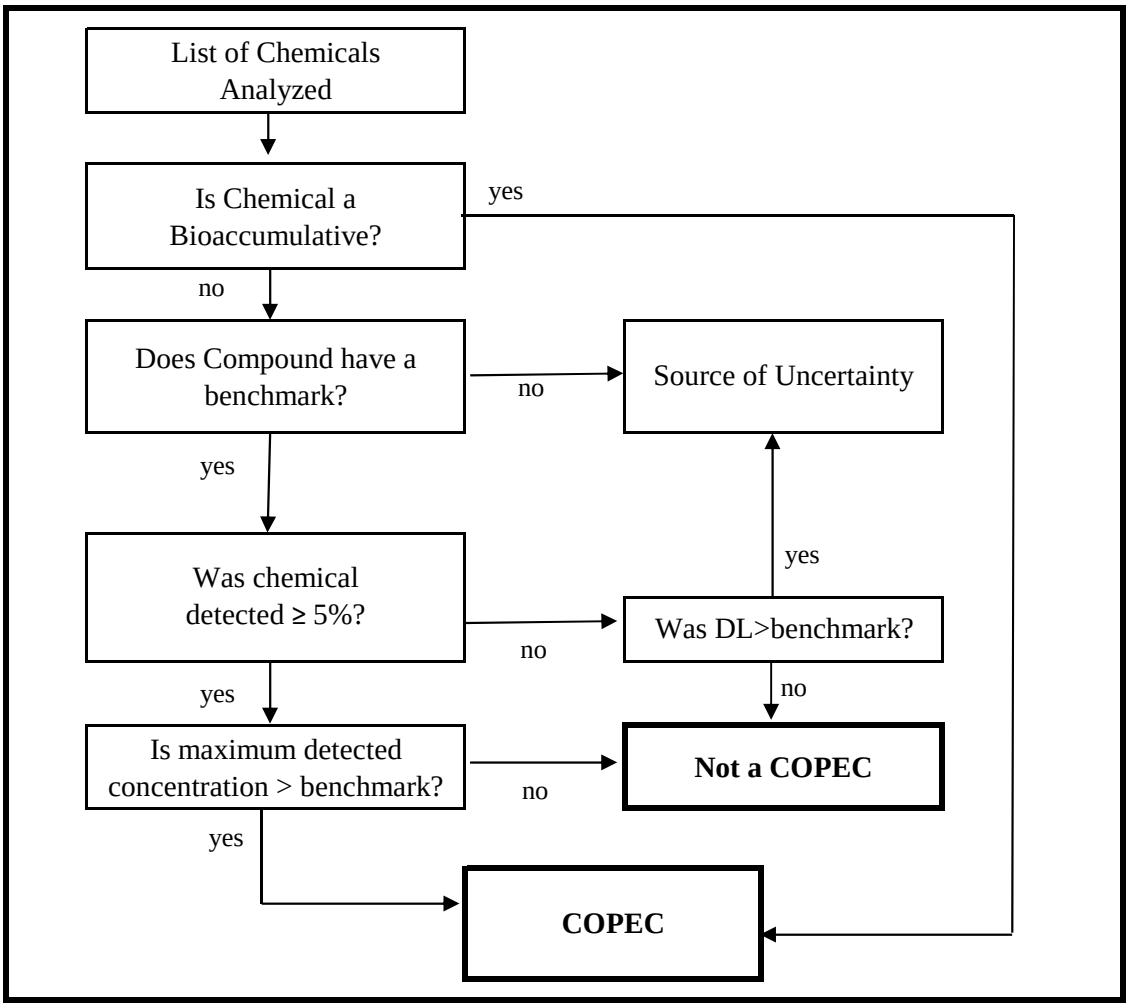
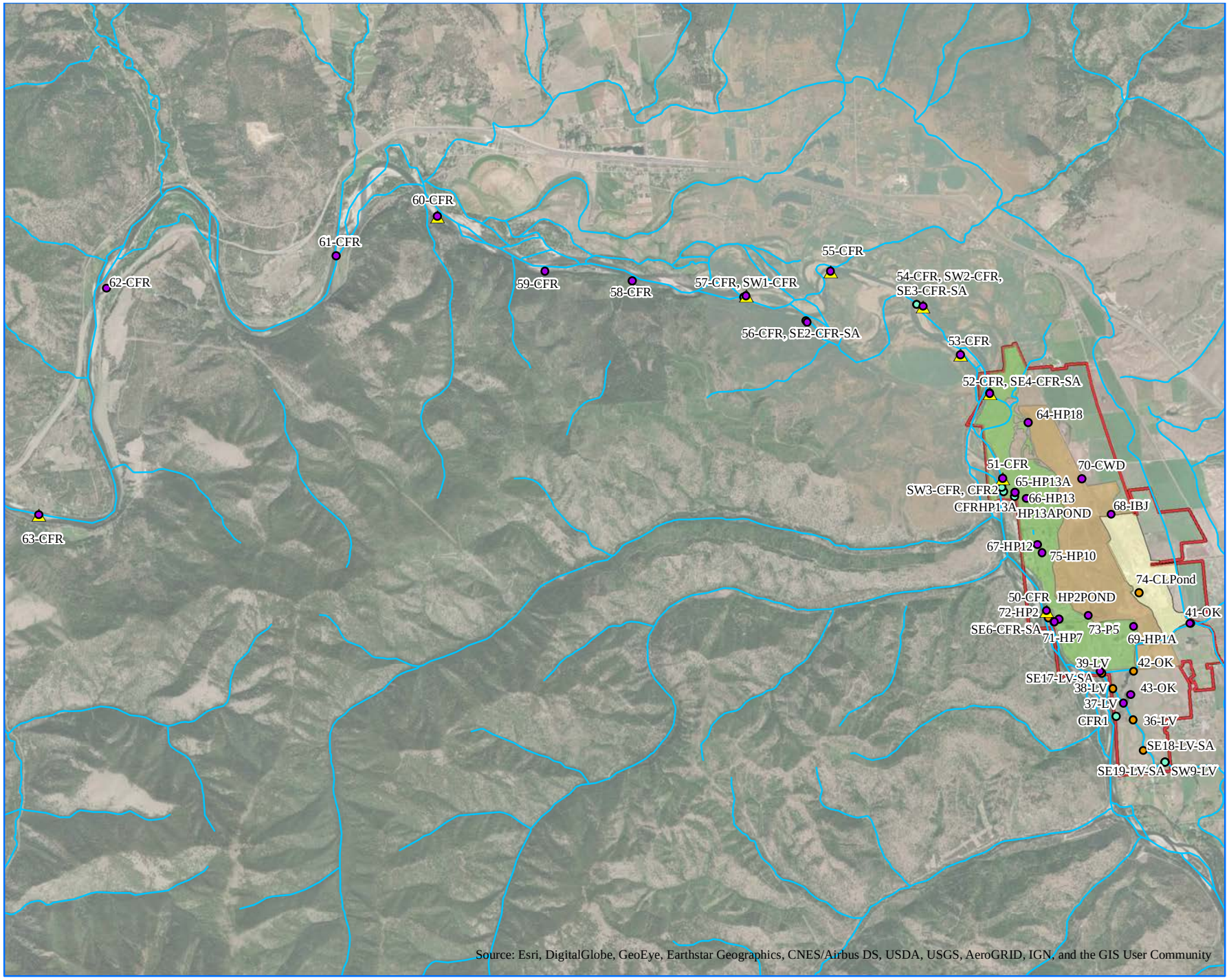


Figure 3-2. 2018 Sampling Locations for Sediment, Surface Water, and Fish



Smurfit-Stone/ Frenchtown Mill Site, Montana

N

0 1.1 Miles

Surface water and sediment sample

Dace sample

Surface water sample

Sediment sample

Site OUs

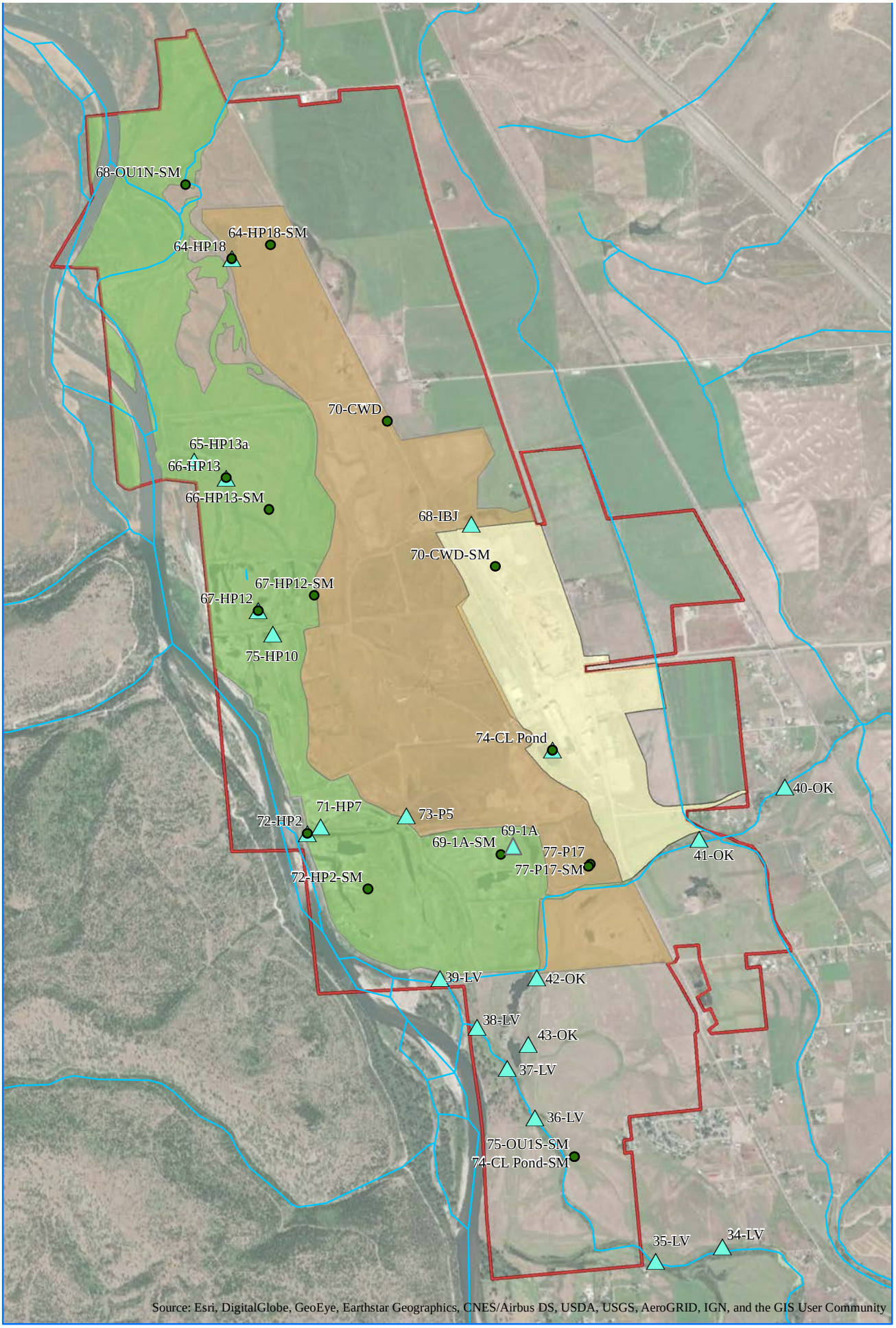
OU2

OU3 Upland

OU3 Floodplain

Site boundary

Figure 3-3. Aquatic Invertebrate and Small Mammal Sampling Locations



Smurfit-Stone/ Frenchtown Mill Site, Montana

N

0 0.3 Miles

Small mammal sampling locations

Aquatic invertebrate sampling locations

Site boundary

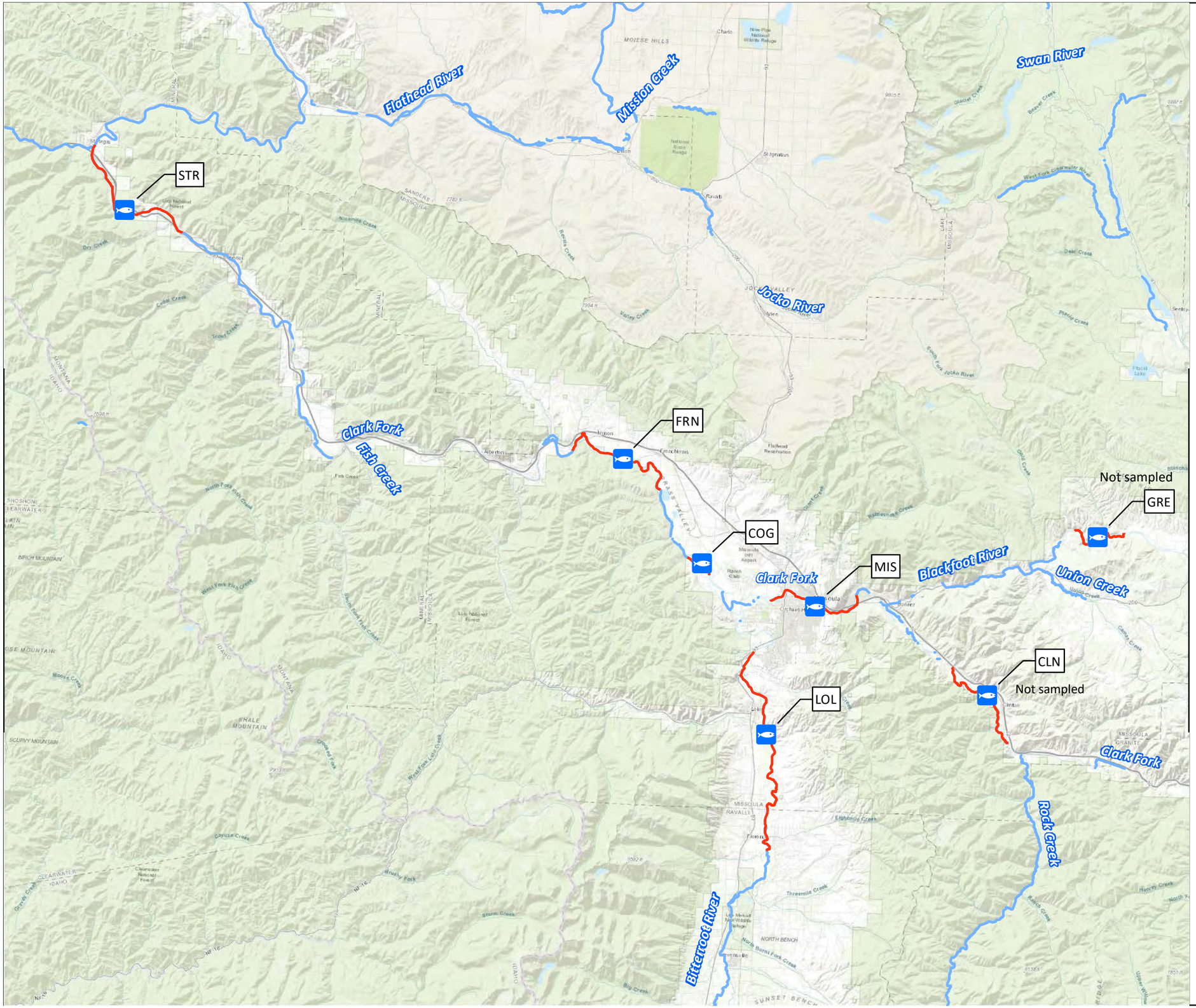
Site OUs

OU2

OU3 Upland

OU3 Floodplain

Figure 4-1
Spatial Boundary for Fish Sampling Locations (2019)



Fish (Northern Pike and Rainbow Trout) Sampling Locations

Reaches

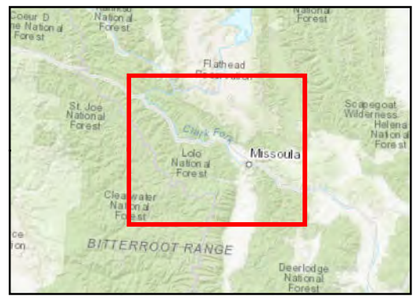
Rivers

Map Date: April 5, 2019

Data Sources:
Sample Locations: U.S. EPA (2019).
Rivers and Reaches: U.S. EPA and NHD Plus (2012).
Imagery: ESRI World Topo Service (2019).

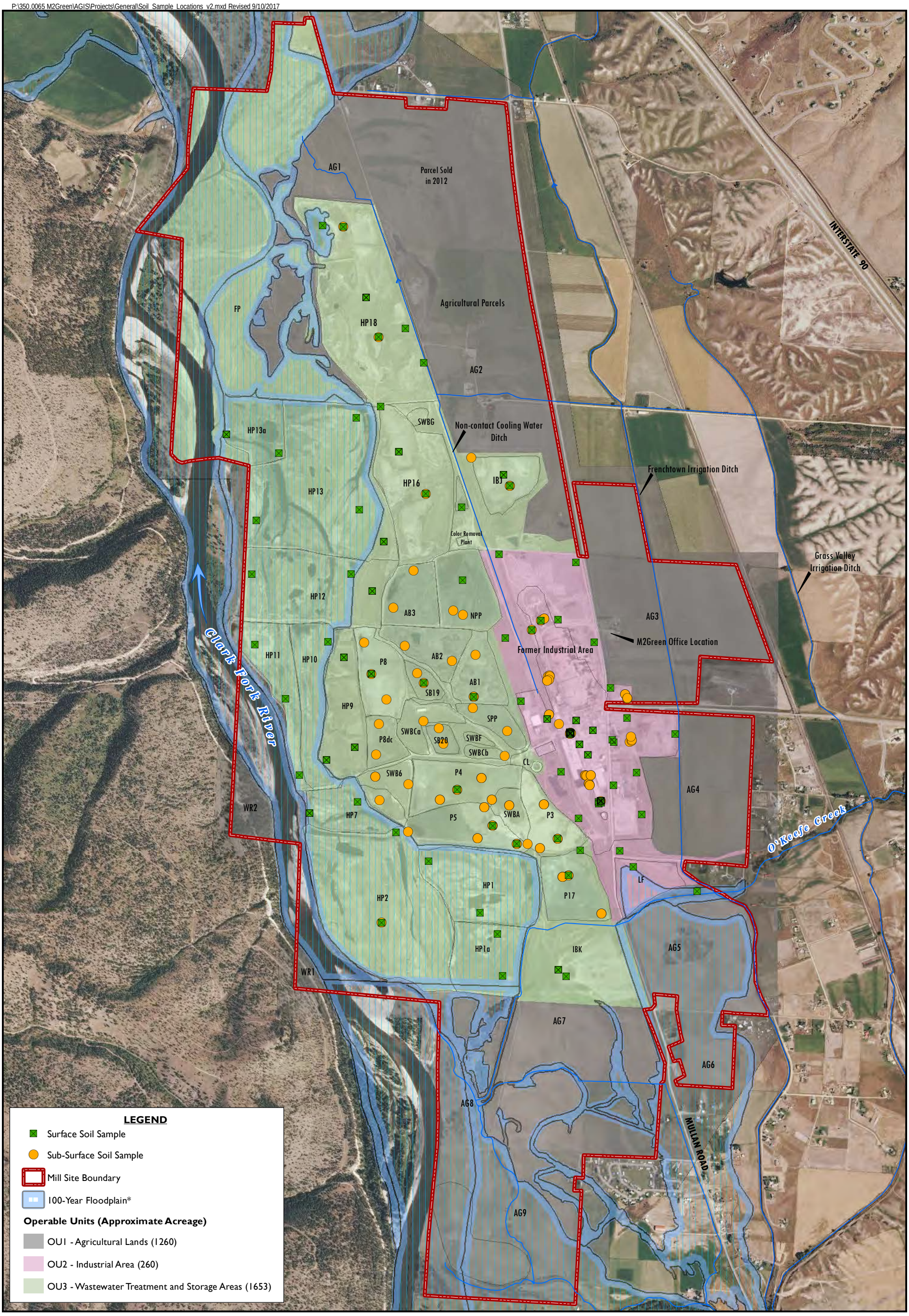
Map Projection: UTM Zone 12N, WGS84, Meters

0 10 20
Miles



Area of Interest

P:\350.0065 M2Green\AGIS\Projects\General\Soil_Sample_Locations_v2.mxd Revised 9/10/2017



Aerial Photo Source: NAIP 2011 and Newfields 2016 (Within Site Boundary)

0 1,500 Feet

*Floodplain Source:
As defined by the Federal Emergency Management Agency (FEMA) 2013 Digital Flood Insurance Rate Map (DFIRM). (NFIP 2013)

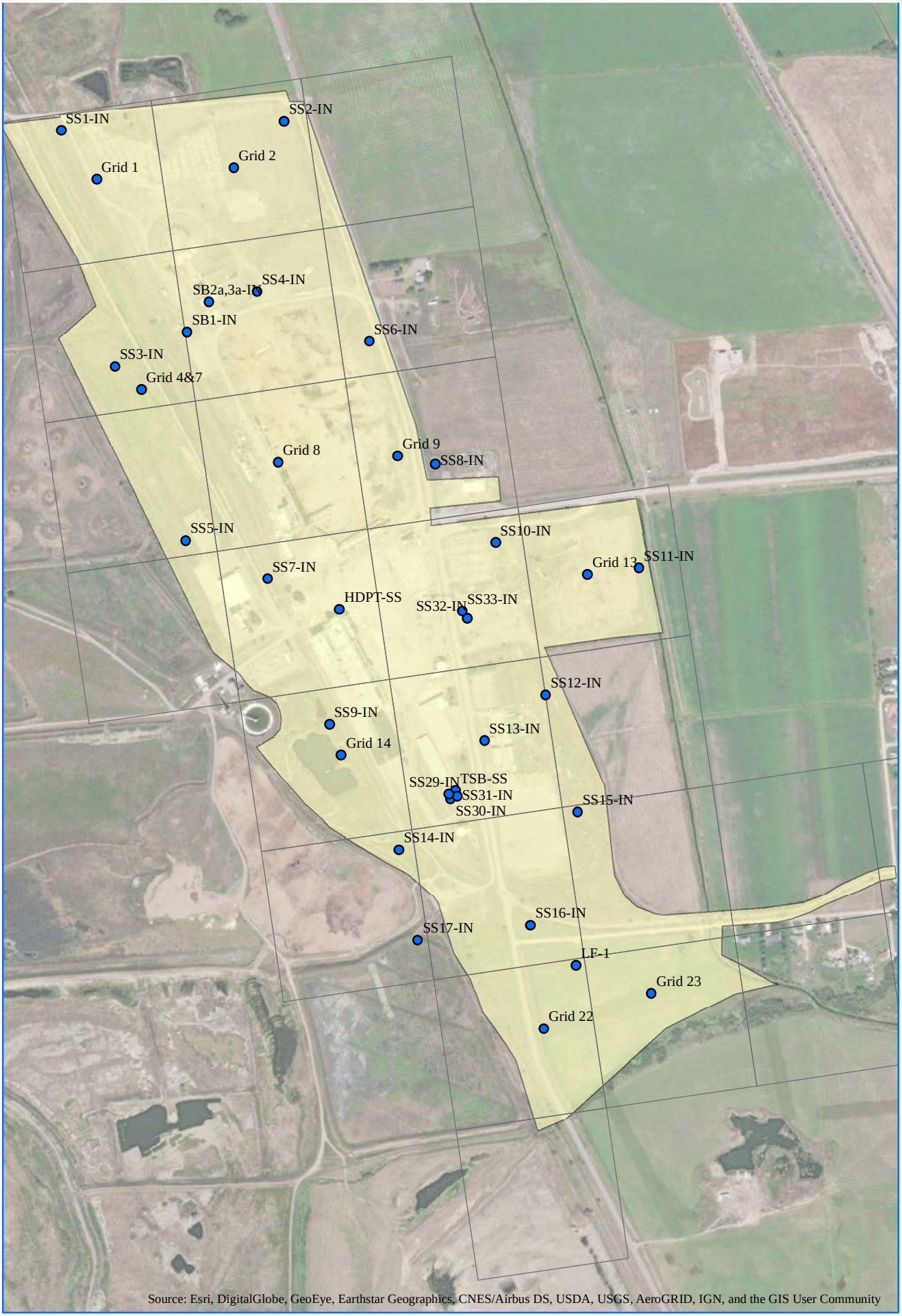
Notes

AG - Agricultural Land
AB - Aeration Stabilization Basin
CFR - Clark Fork River
CL - Clarifier
FP - Floodplain
HP - Holding or Storage Pond
IB - Rapid Infiltration Basin
NPP - North Polishing Pond
P - Settling Pond
SB - Spoils Basin
SPP - South Polishing Pond
SWB - Solid Waste Basin
WR - West of River

NewFields

2014, 2015 and 2016 Soil Sampling Locations
Former Frenchtown Mill Site
Missoula County, Montana
FIGURE 4-2
(*adapted from NewFields 2017b*)

Figure 4-3. Location of Surface Soil Sampling in OU2



Smurfit-Stone/
Frenchtown
Mill Site,
Montana

N

0 0.12 Miles

OU2

Surface soil samples

Figure 4-4 Location of Surface Soil Samples in OU3 Upland: Smurfit-Stone/Frenchtown Mill Site, Montana

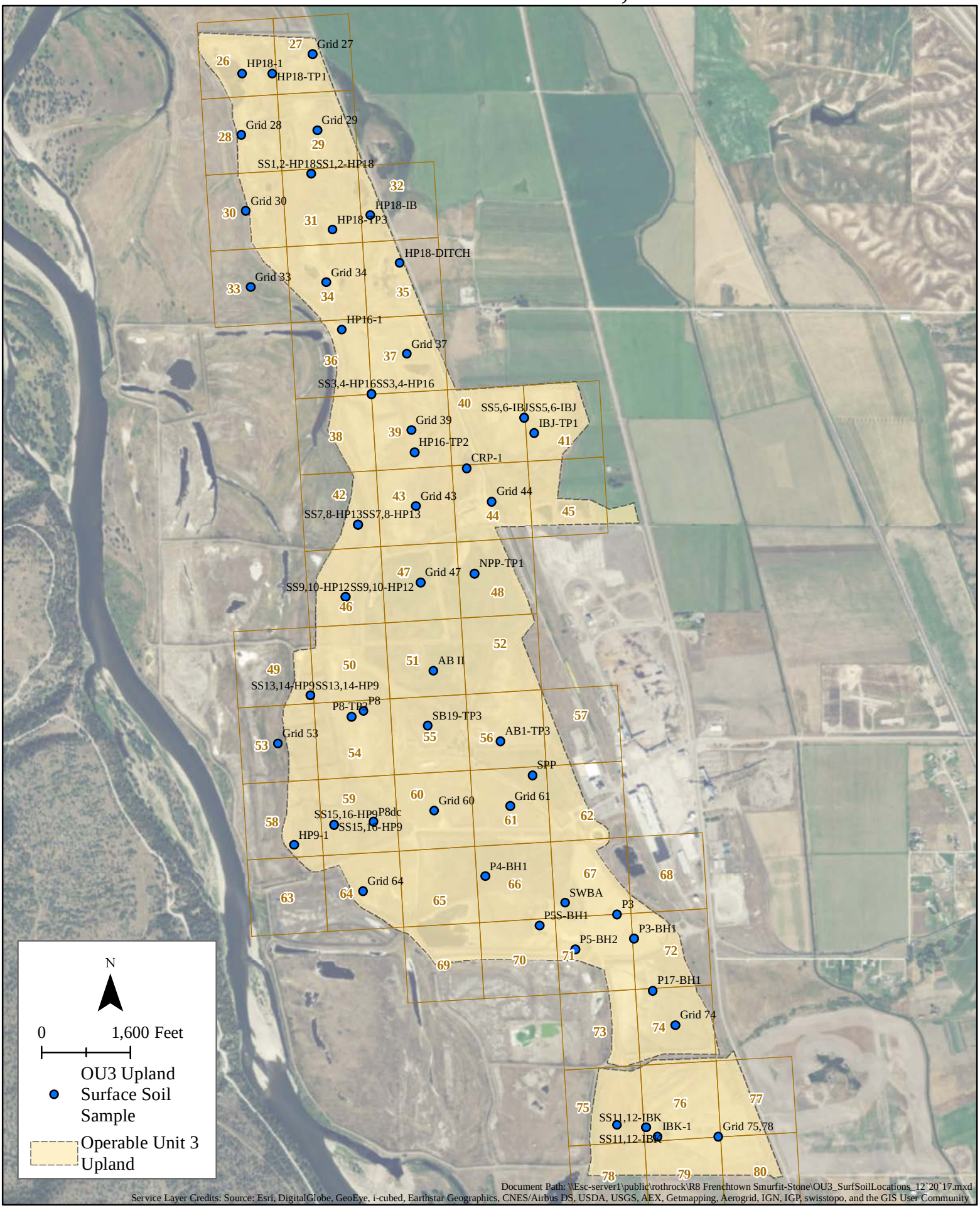


Figure 4-5. Location of Surface Soil Samples in OU3 Floodplain: Smurfit-Stone/Frenchtown Mill Site, Montana

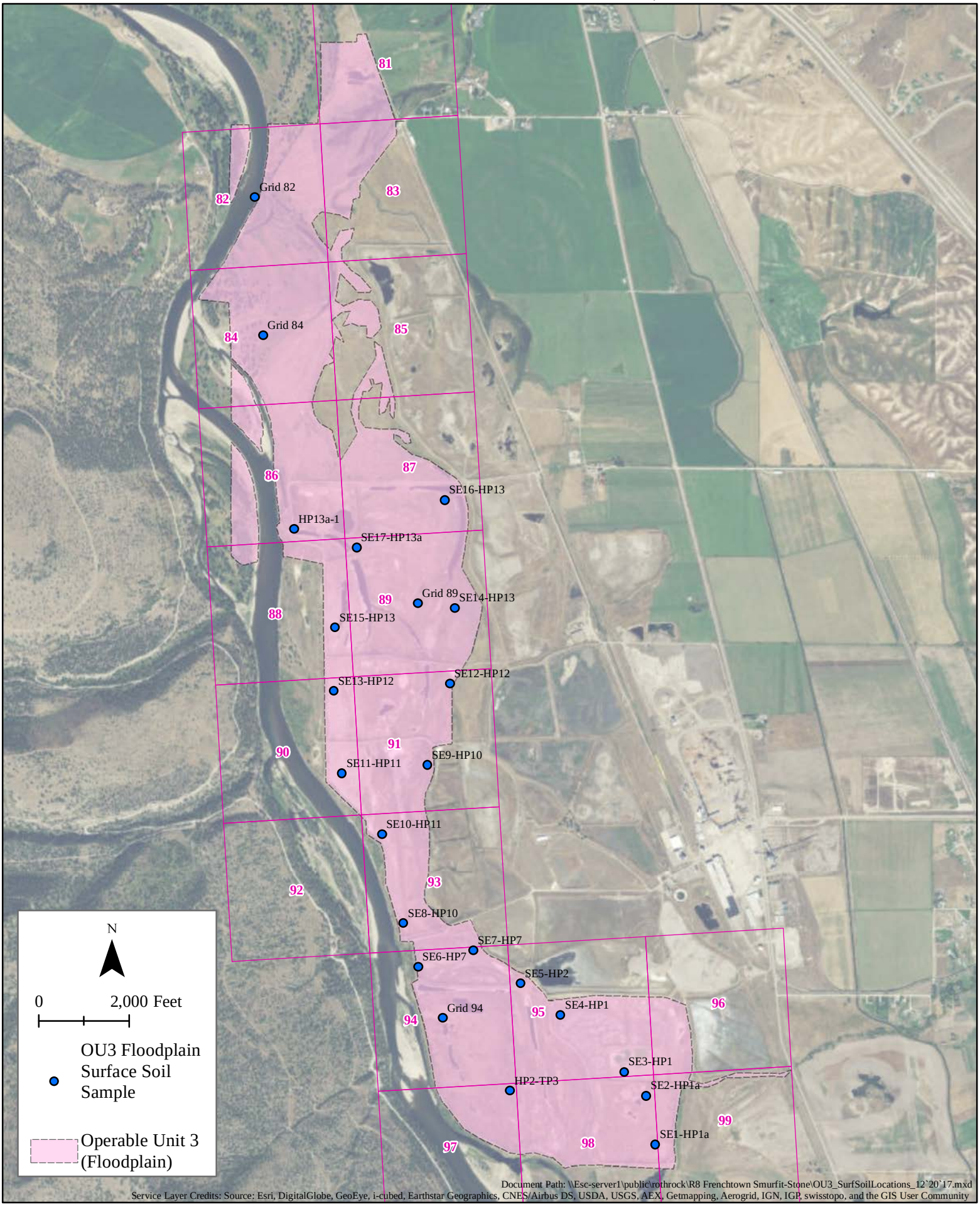
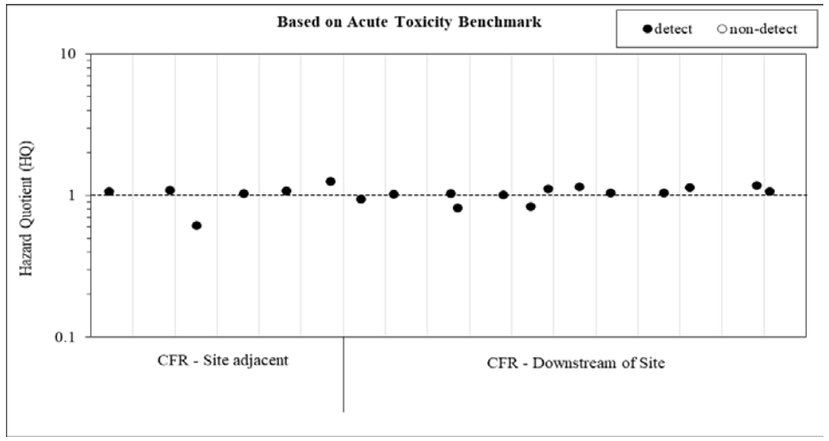
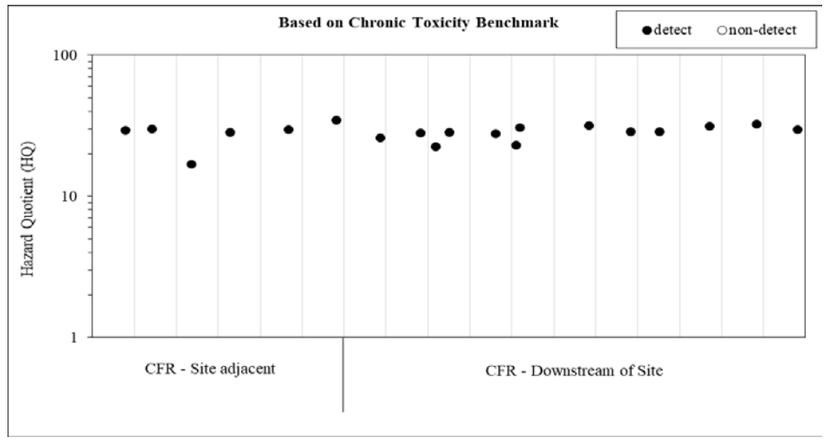


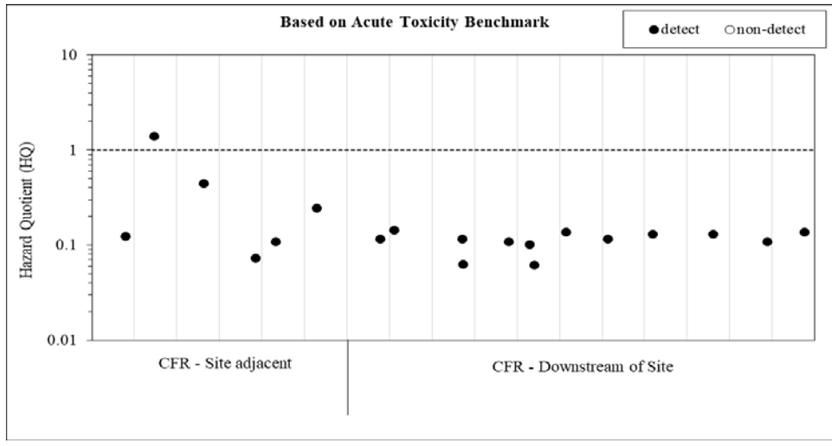
Figure 5-1
Hazard Quotients for Aquatic Receptors from
Direct Contact with Surface Water in the Clark Fork River

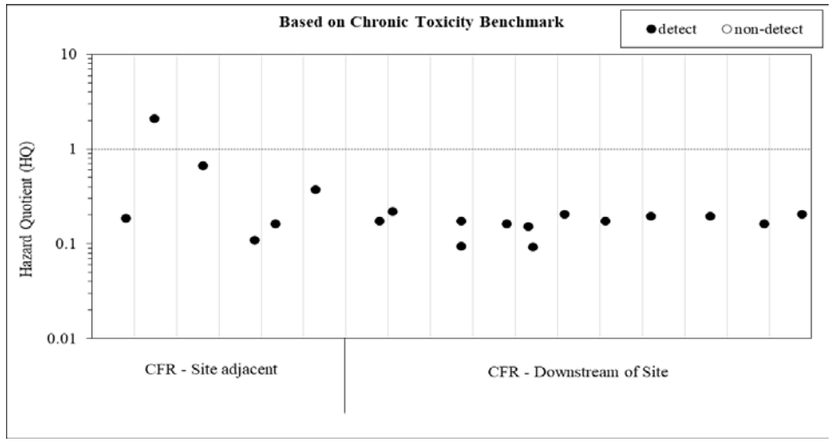
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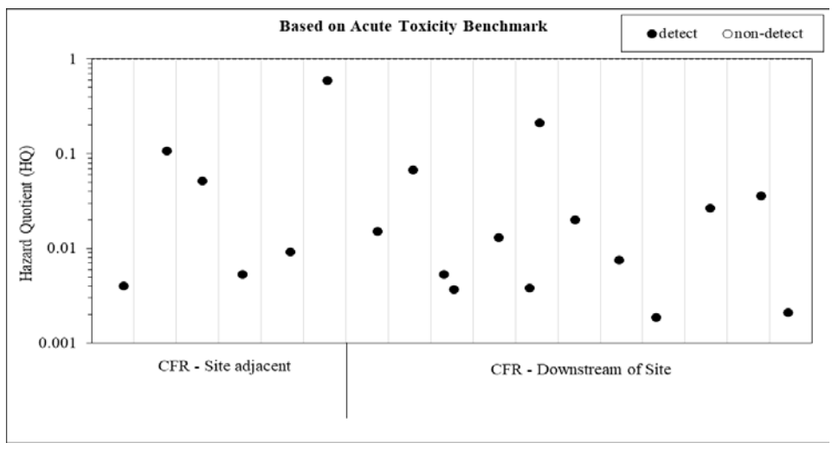


COPPER





MANGANESE



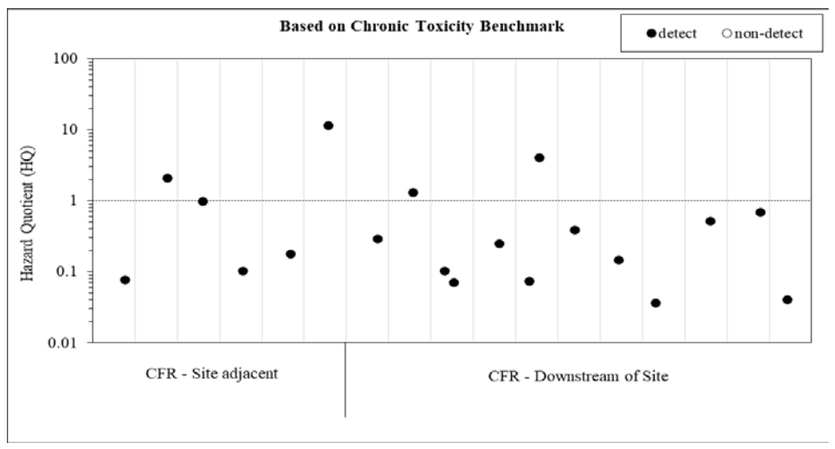
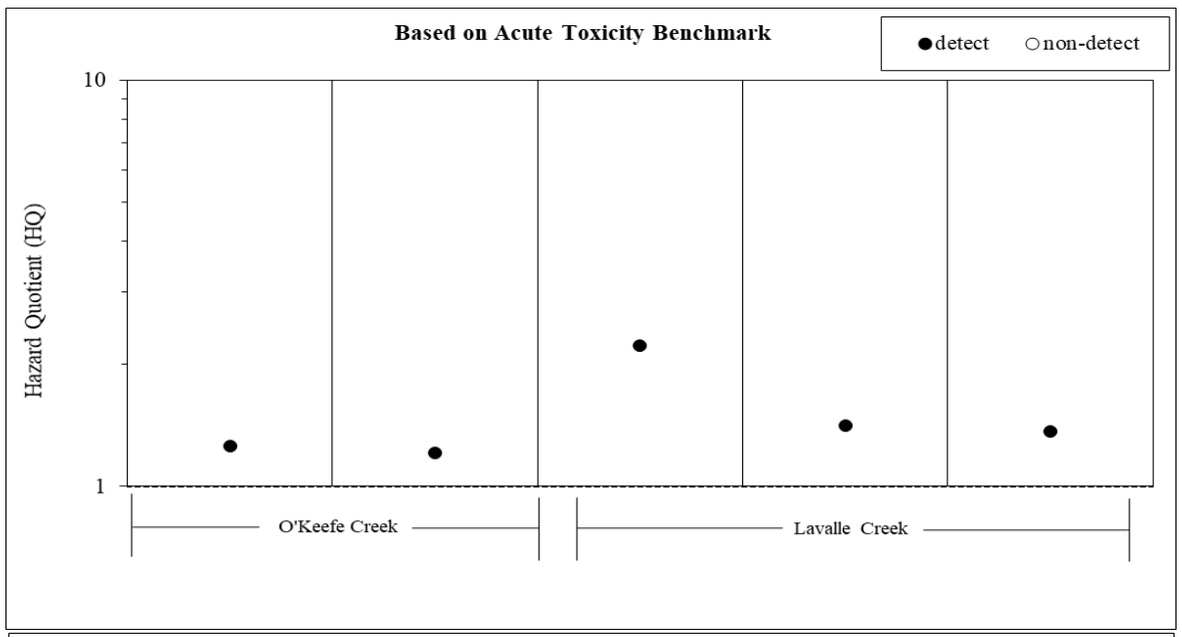
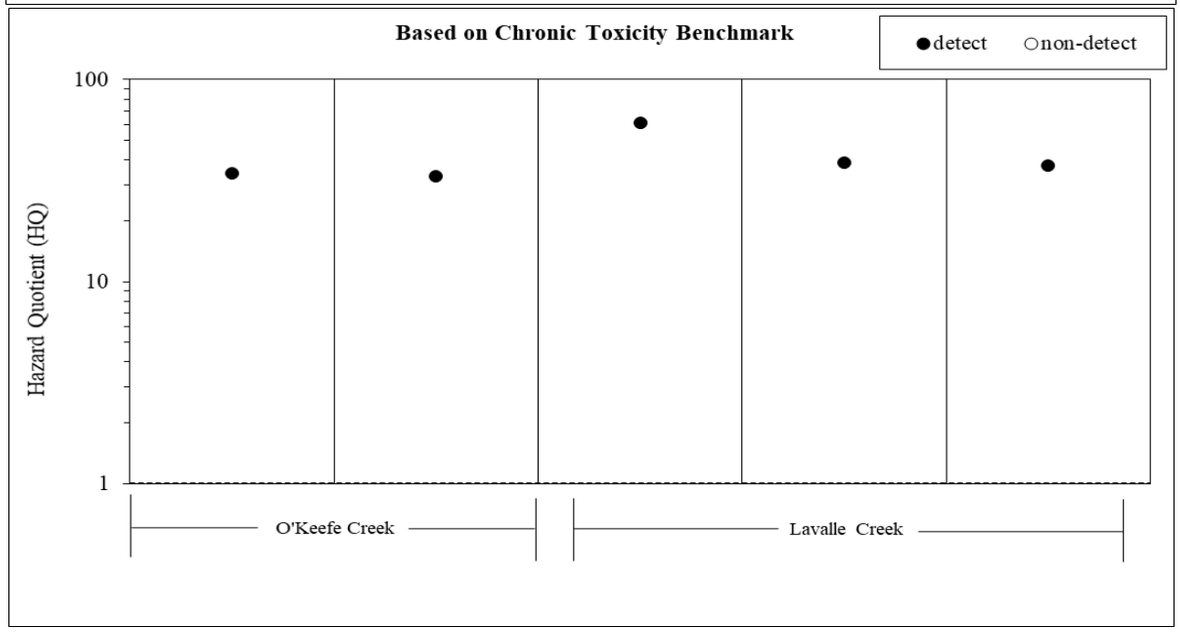


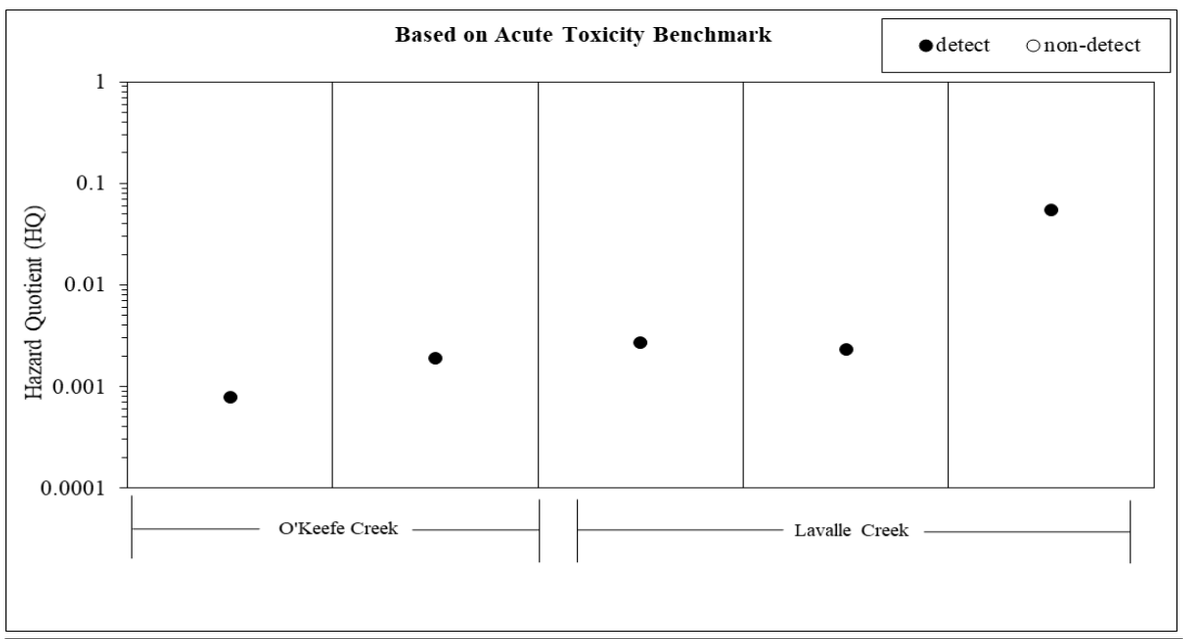
Figure 5-2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Surface Water in the Creeks

BARIUM





MANGANESE



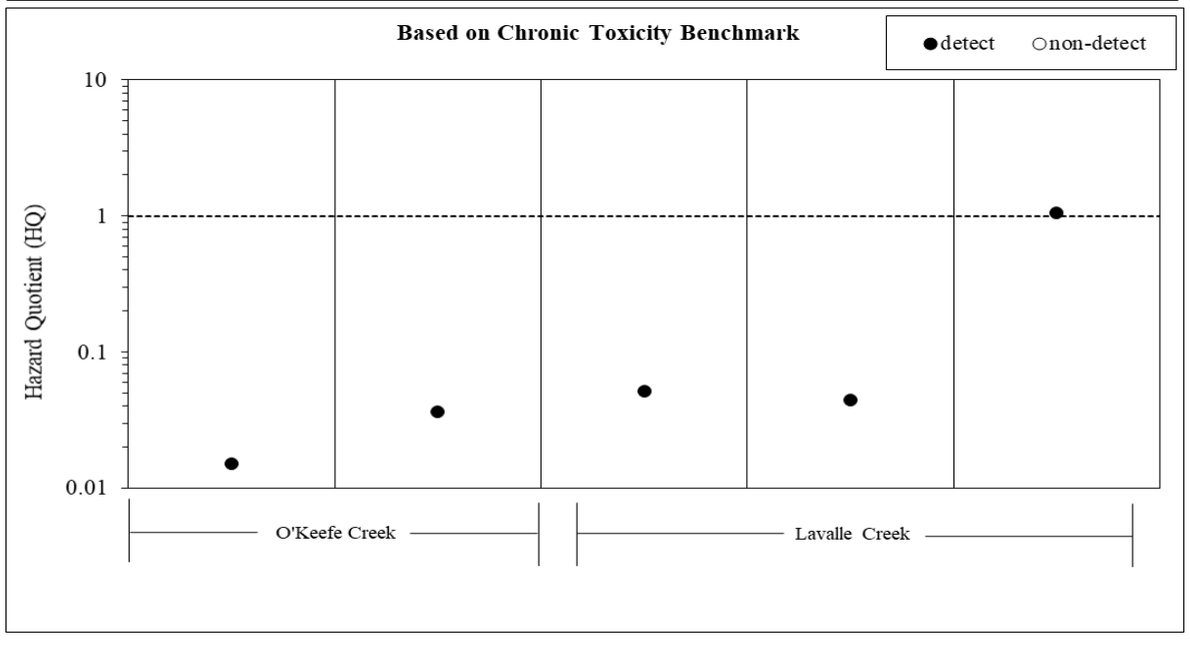
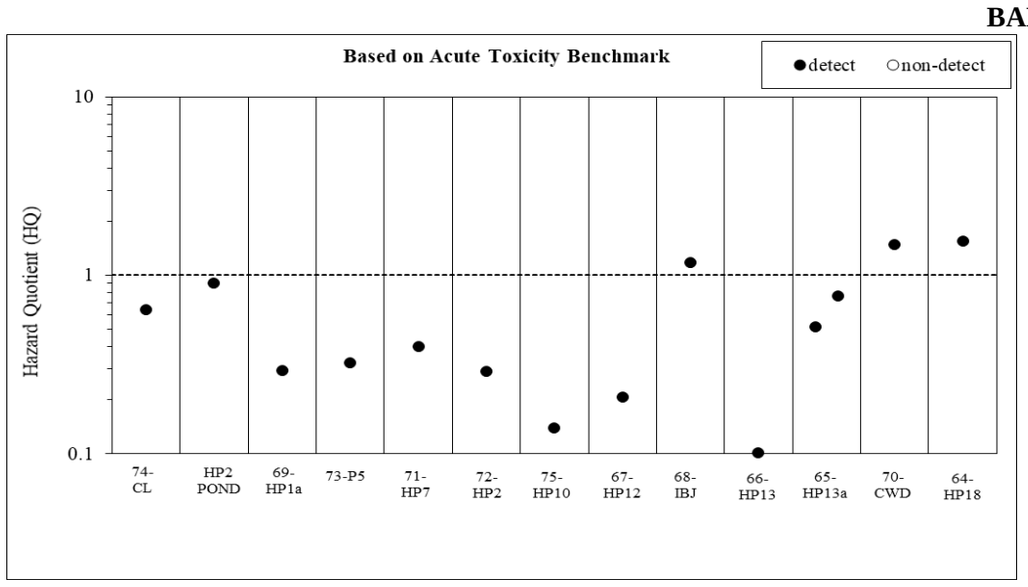
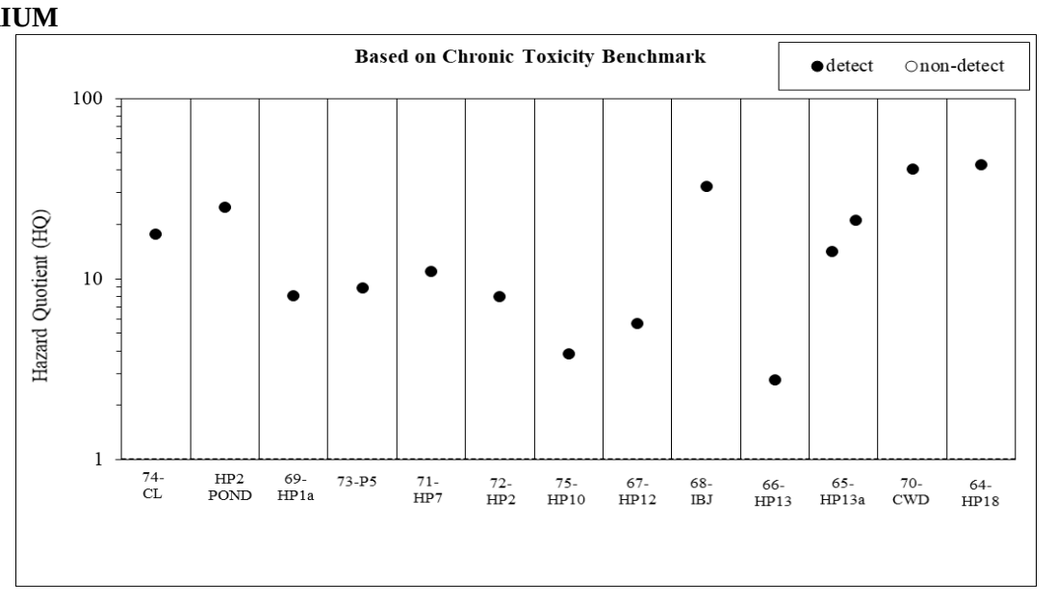


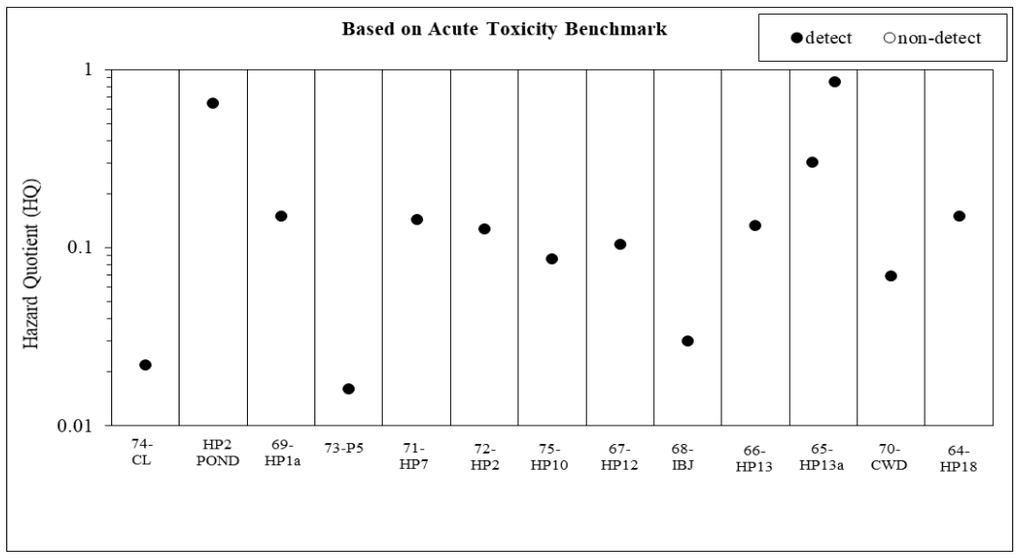
Figure 5-3
Hazard Quotients for Aquatic Receptors from
Direct Contact with Surface Water in the On-Site Ponds

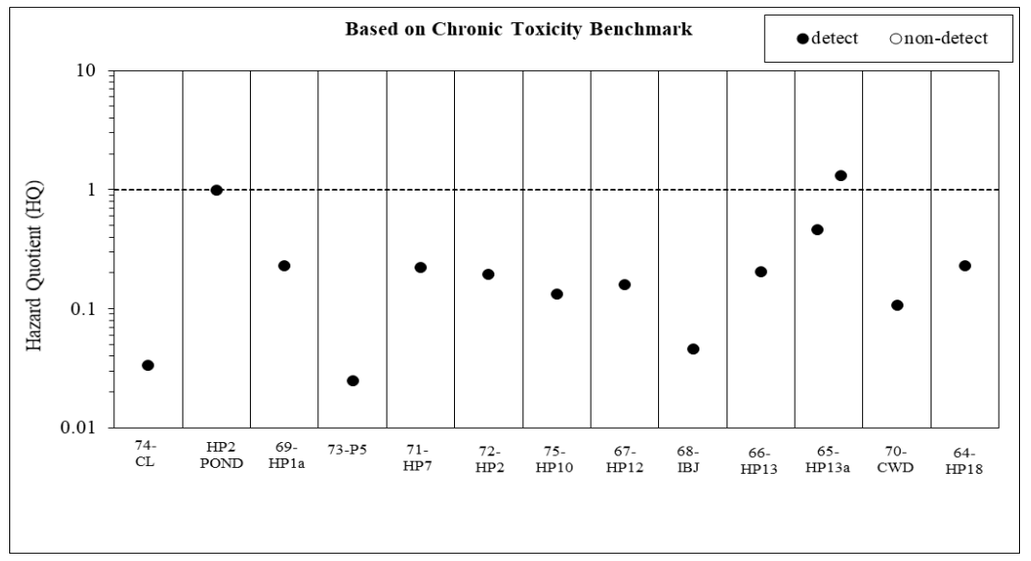
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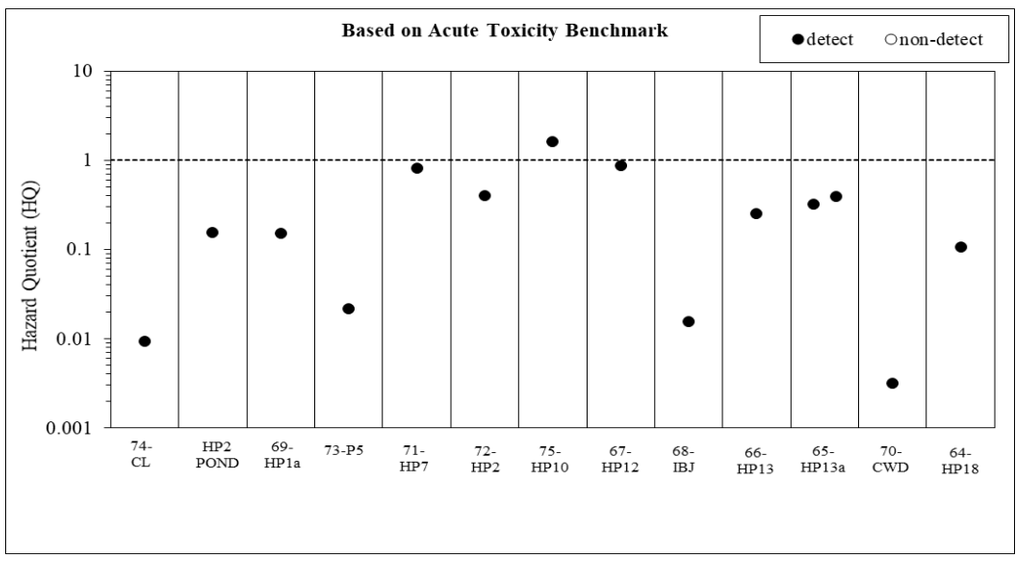


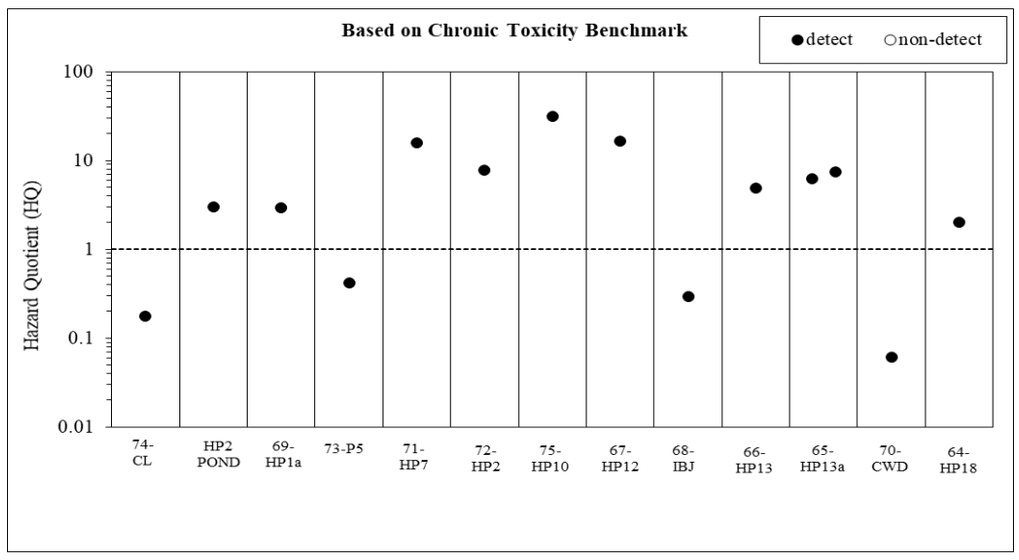
COPPER

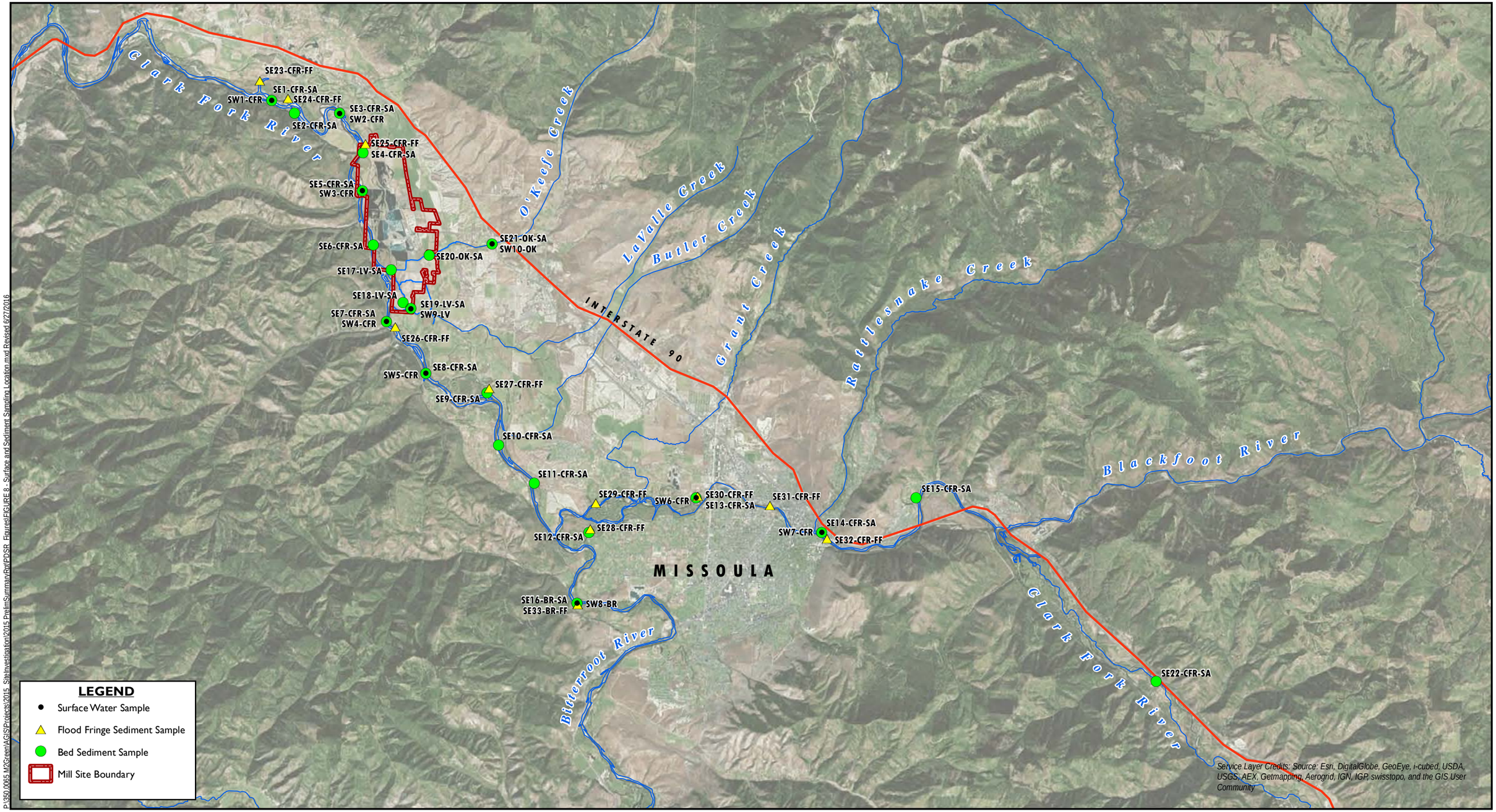




MANGANESE







P:\350,0065 M2\Geom\AGIS\Projects\2015_SiteInvestigation\2015 PrelimSummaryRpt\PDSR_Figures\FIGURE 8 - Surface and Sediment Sampling Location.mxd Revised 6/27/2016

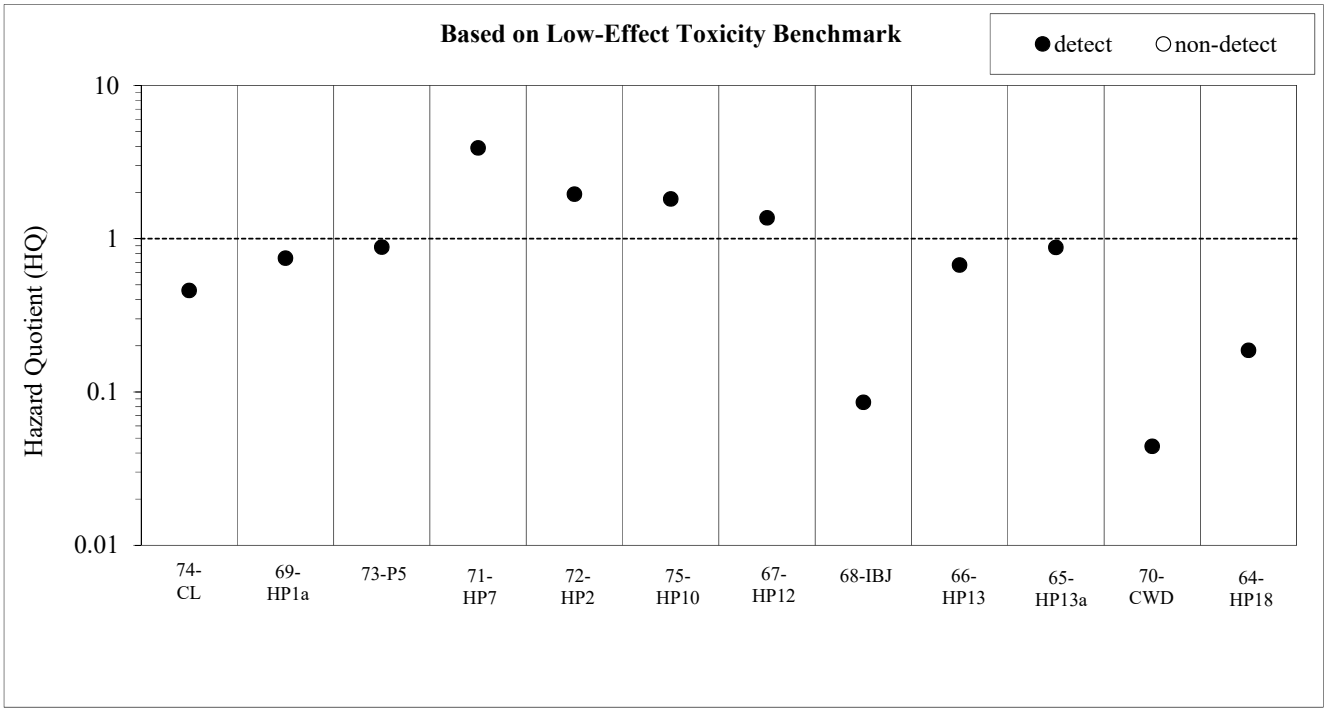
0 Feet 12,000

NewFields

2015
Surface Water and Sediment
Sampling Locations
Former Frenchtown Mill Site
Missoula County, Montana
FIGURE 5-4

Figure 5-5
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Ponds

Fish TEQ - ND=1/2RL



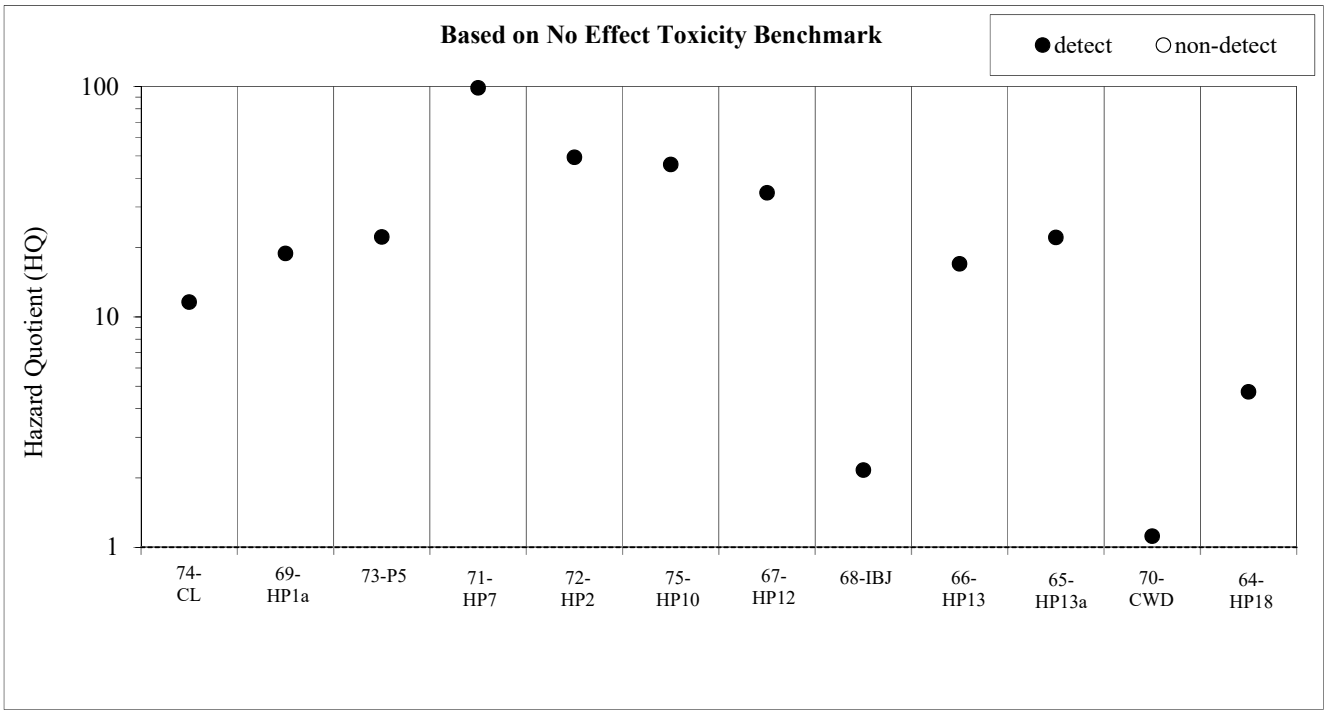
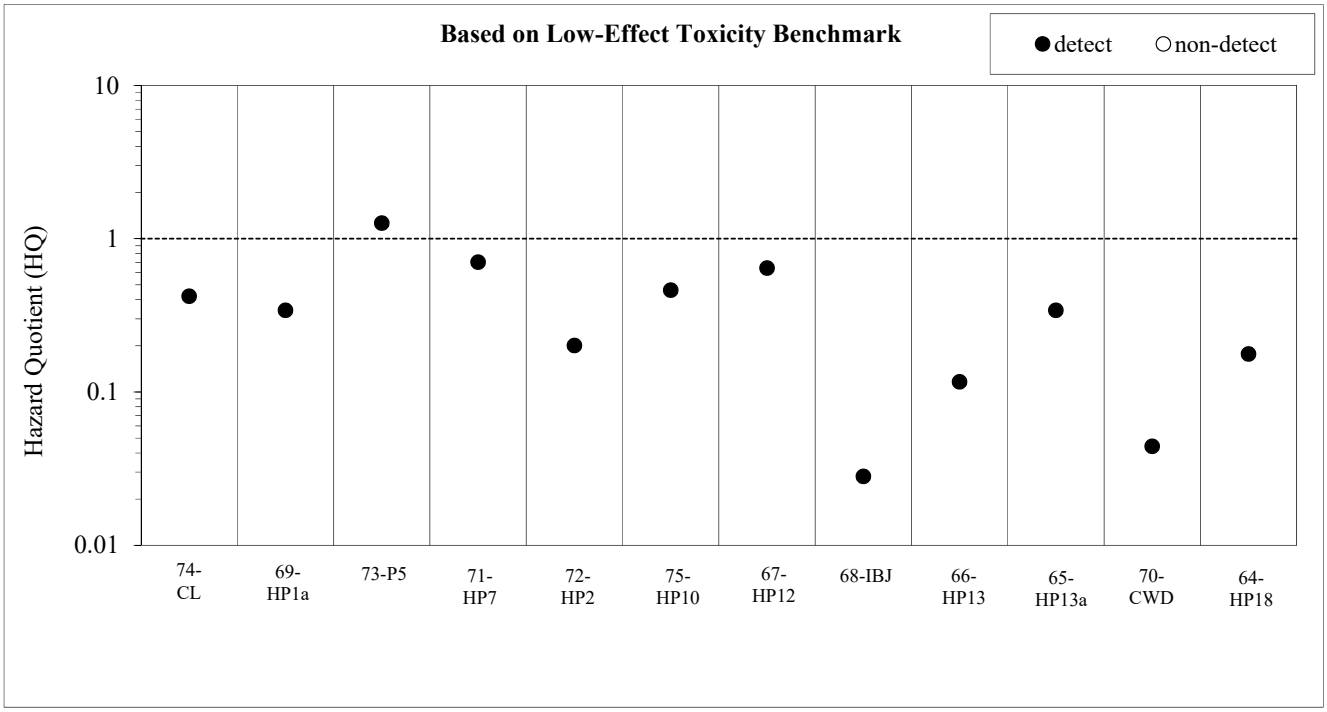


Figure 5-6
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Ponds

Cadmium



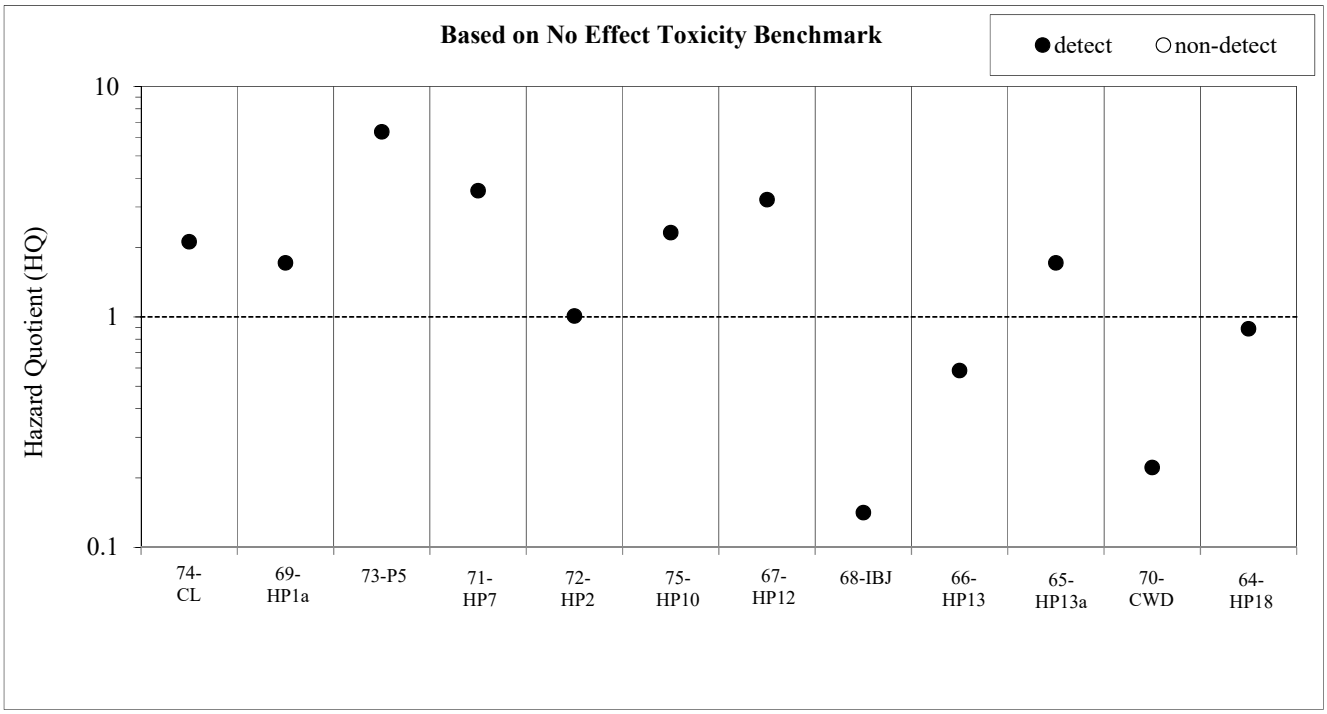
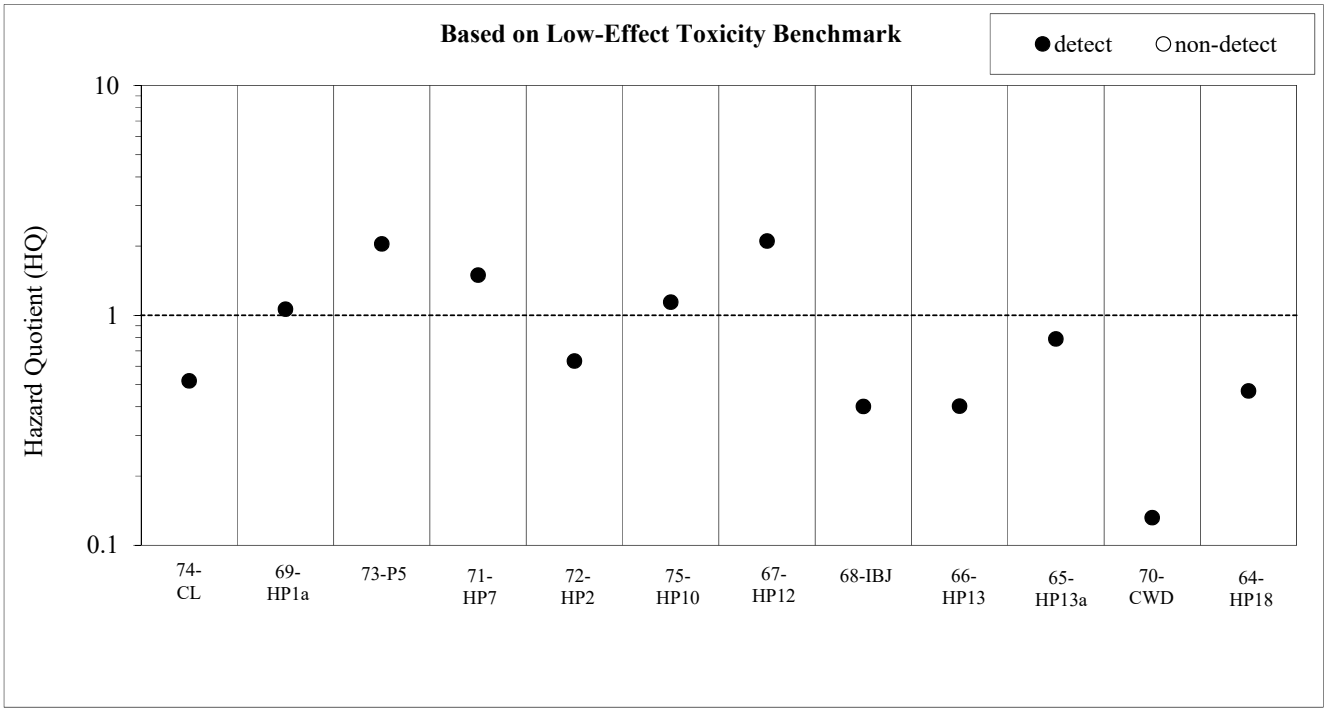


Figure 5-7
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Ponds

Manganese



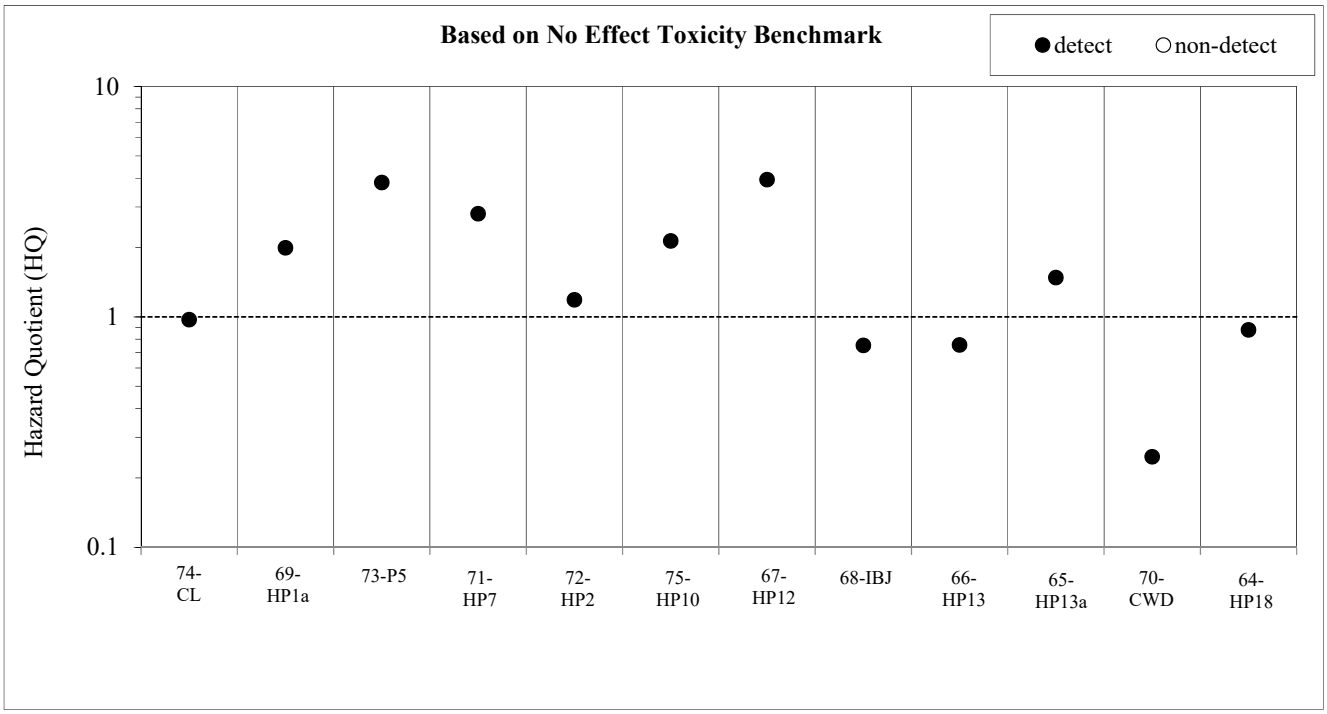
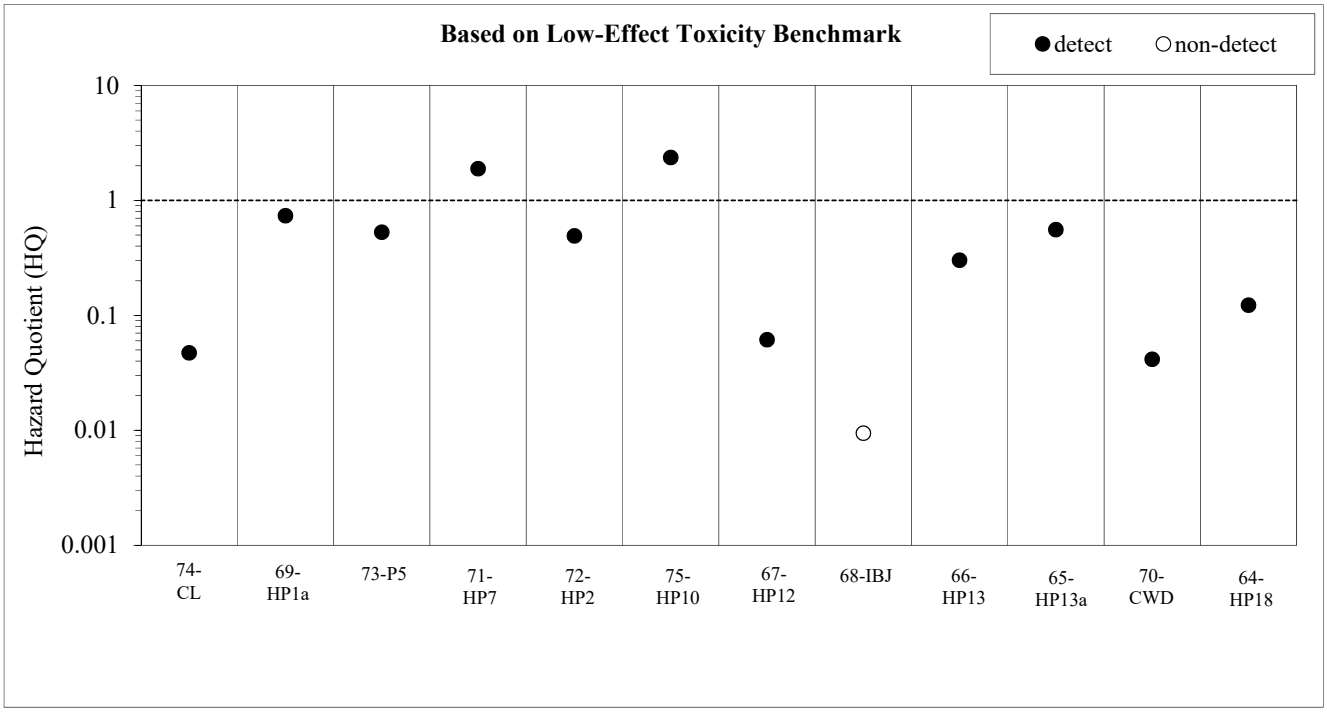


Figure 5-8
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Ponds

Mercury



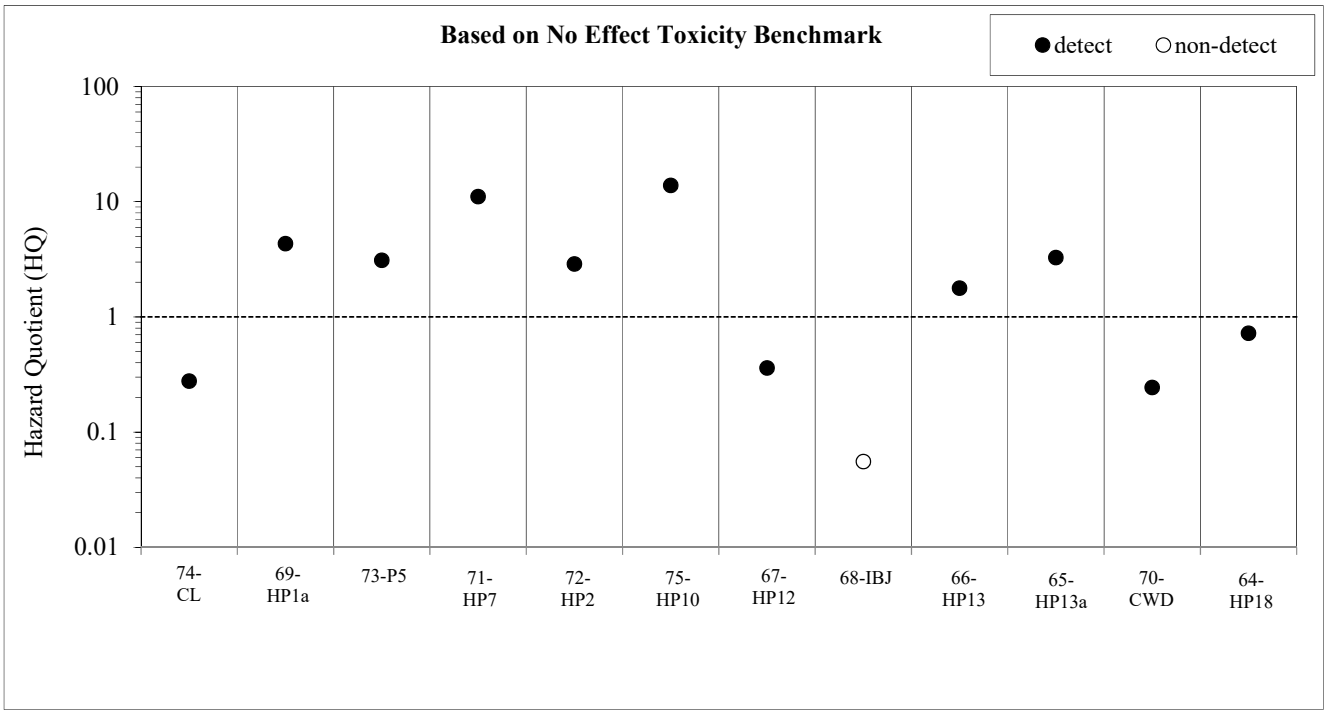
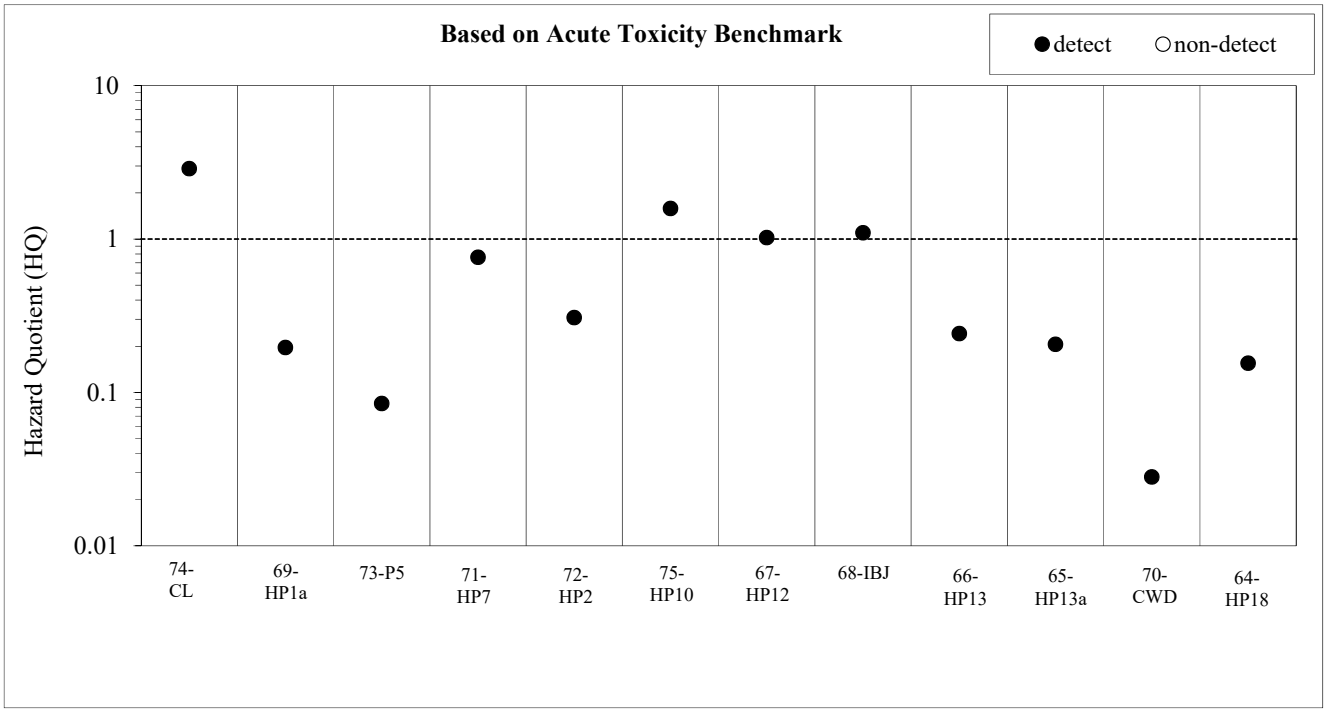


Figure 5-9
Hazard Quotients for Aquatic Receptors from
Direct Contact with Pore Water in Ponds

Manganese



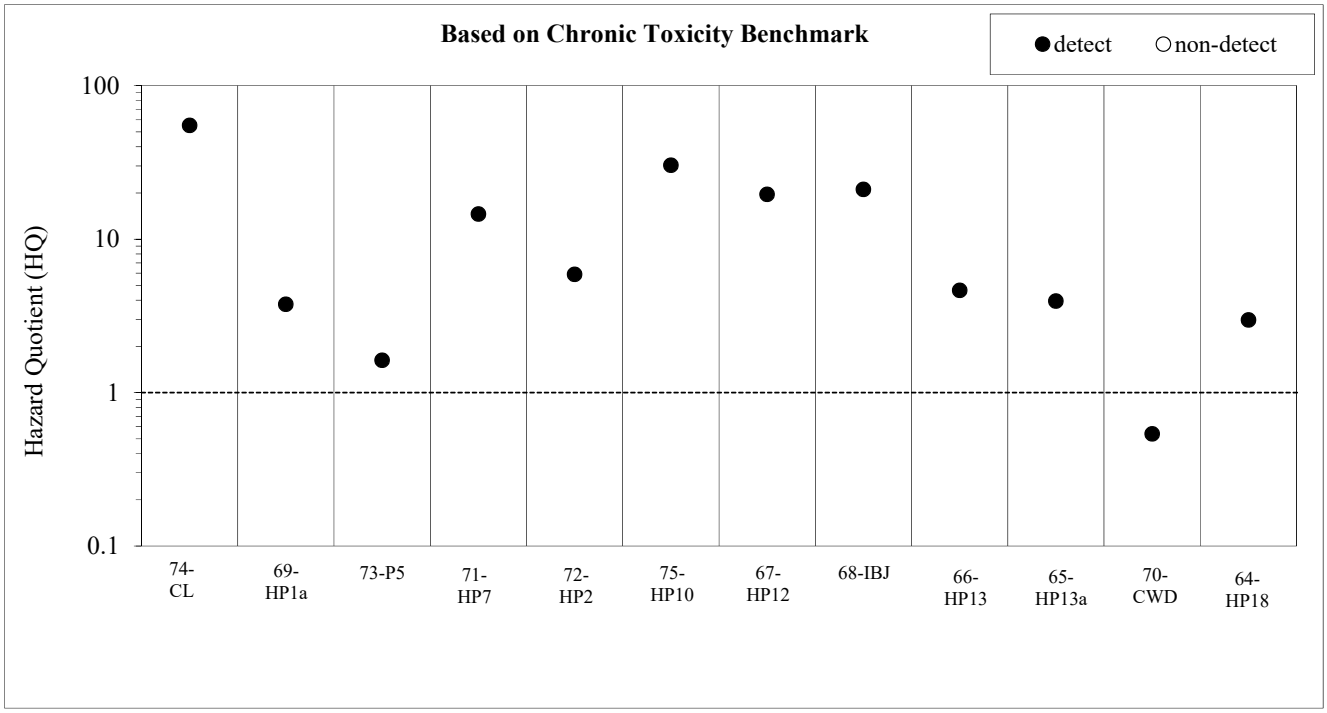
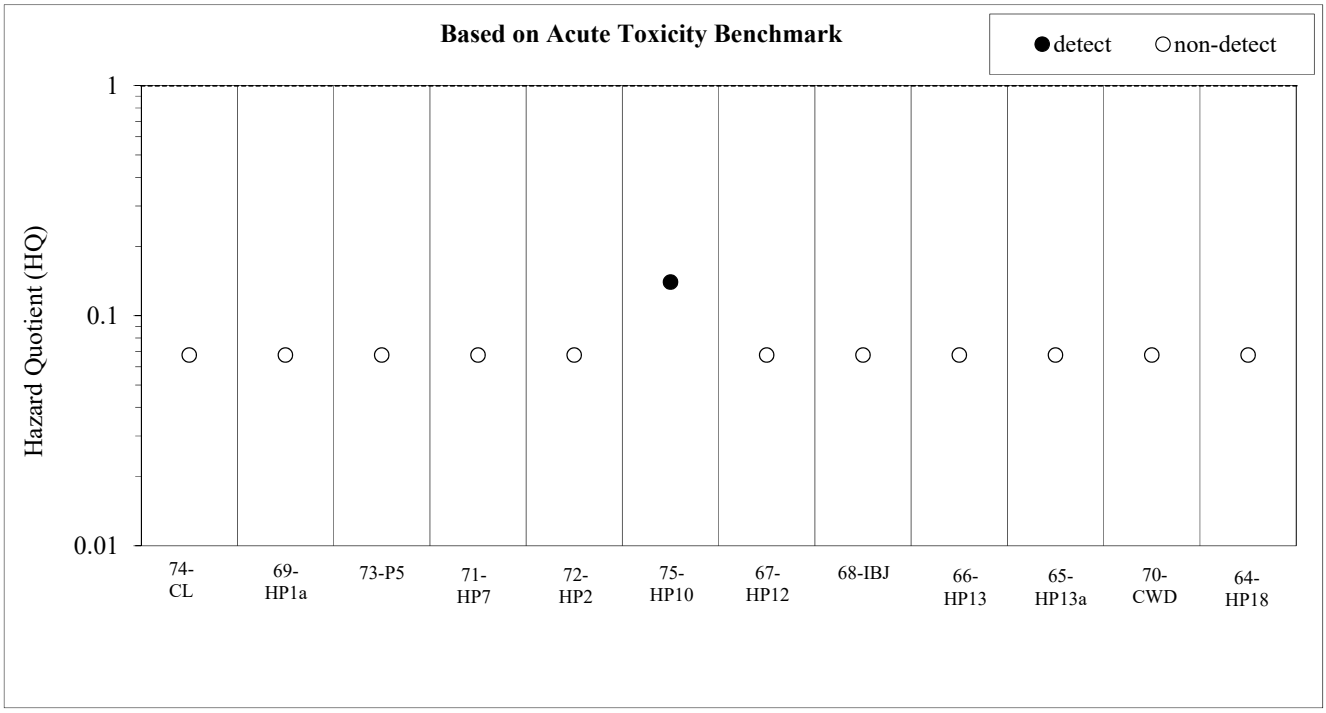


Figure 5-10
Hazard Quotients for Aquatic Receptors from
Direct Contact with Pore Water in Ponds

Selenium



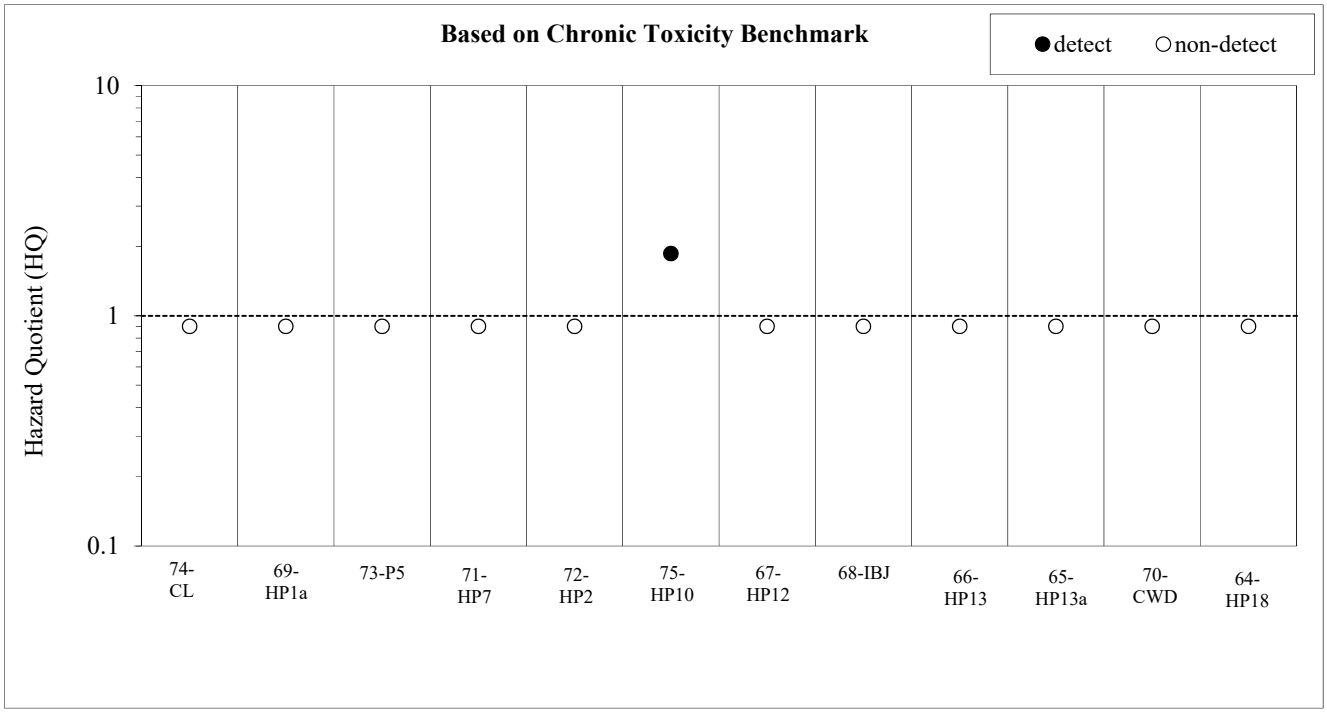
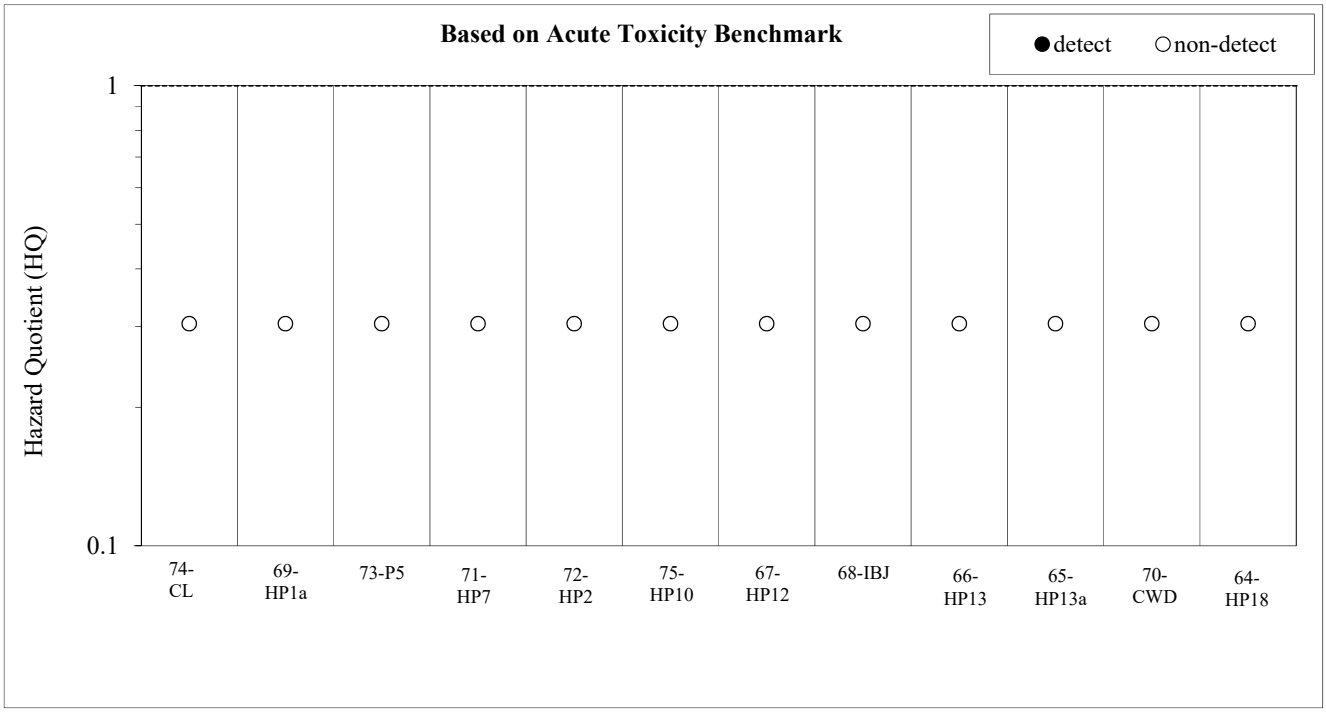


Figure 5-11
Hazard Quotients for Aquatic Receptors from
Direct Contact with Pore Water in Ponds

Silver



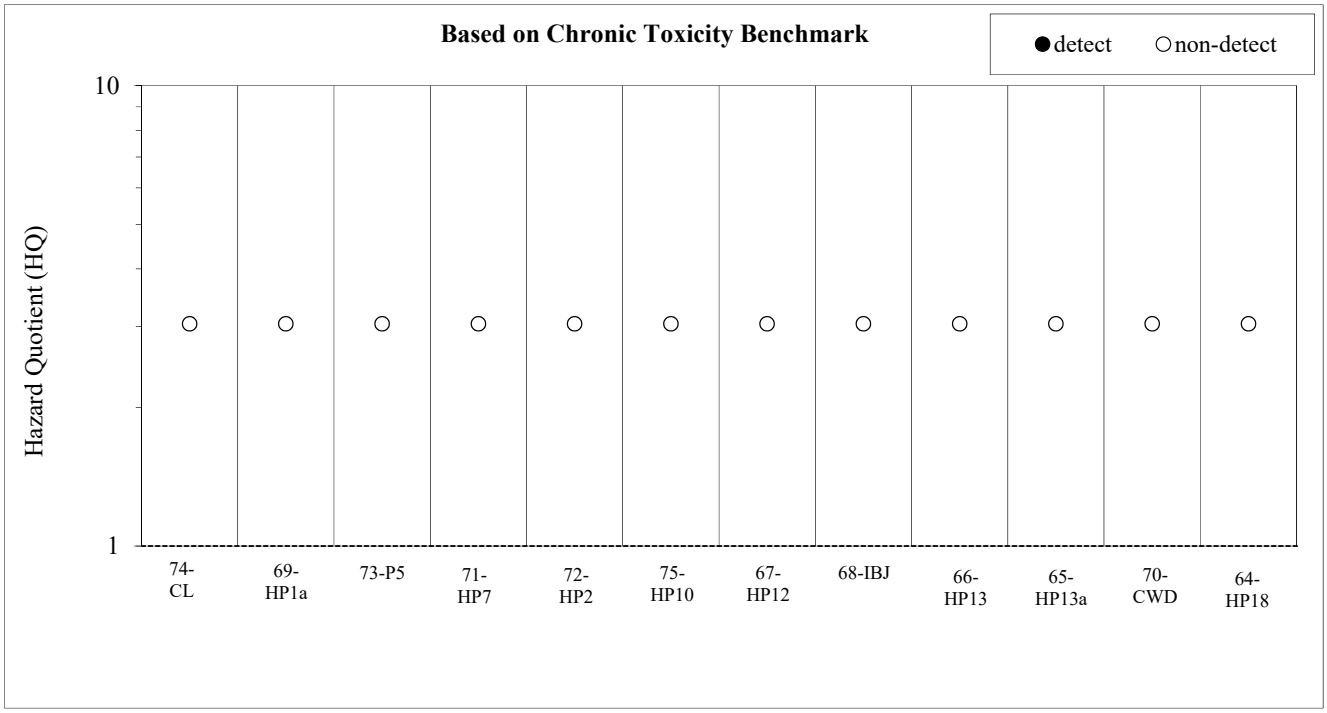
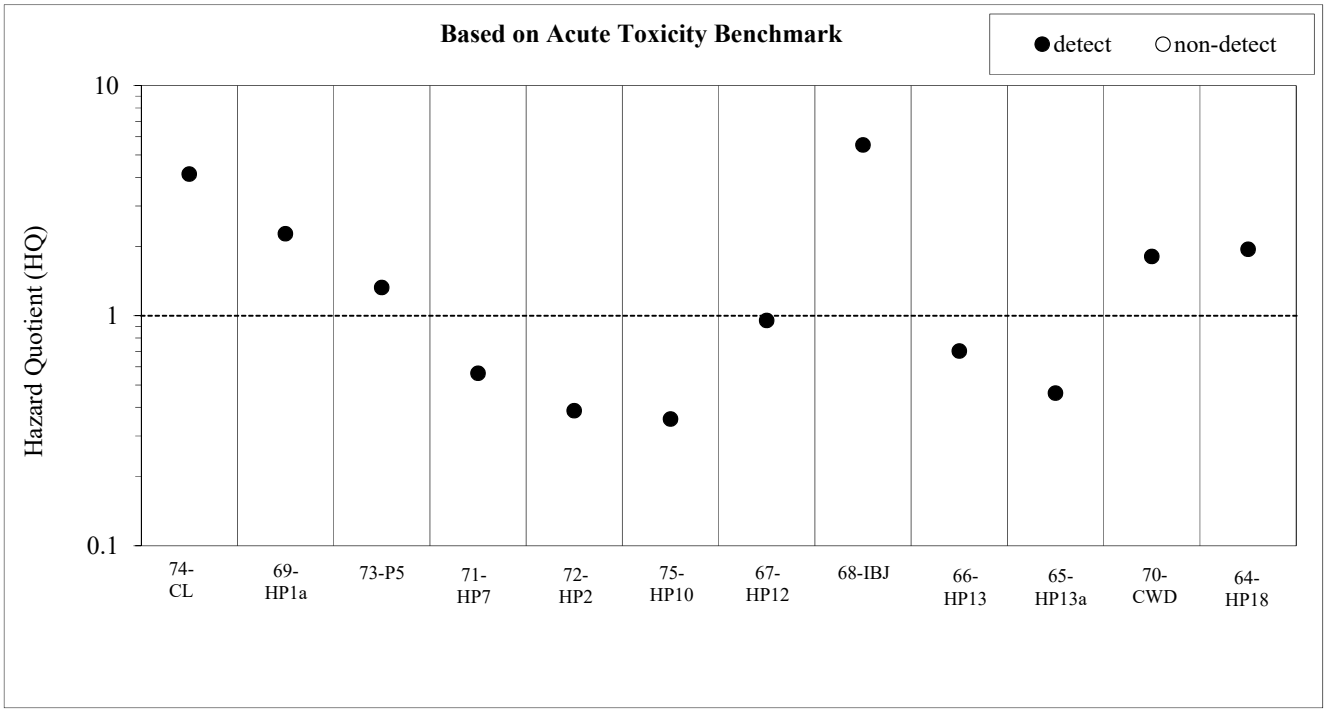


Figure 5-12
Hazard Quotients for Aquatic Receptors from
Direct Contact with Pore Water in Ponds

Barium



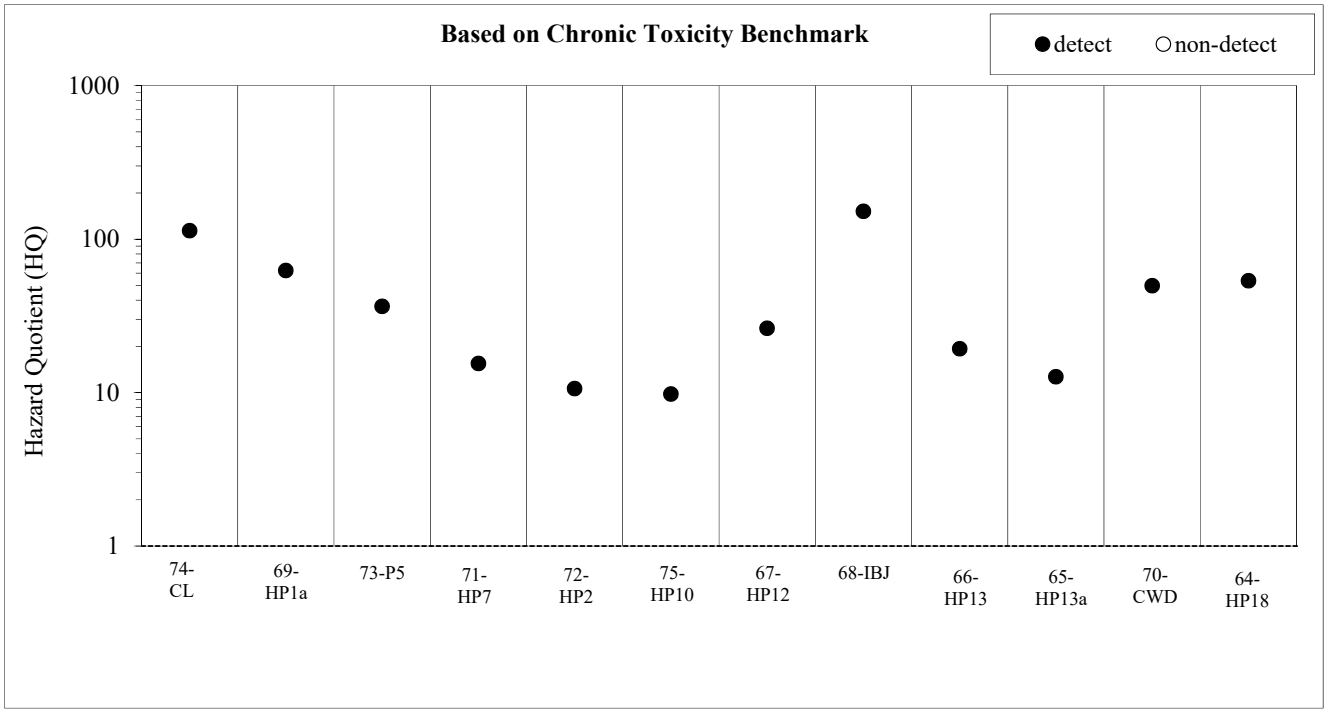


Figure 5-13. Comparison of TEQ_F Concentrations in Fish Whole Body Tissue to TRBs

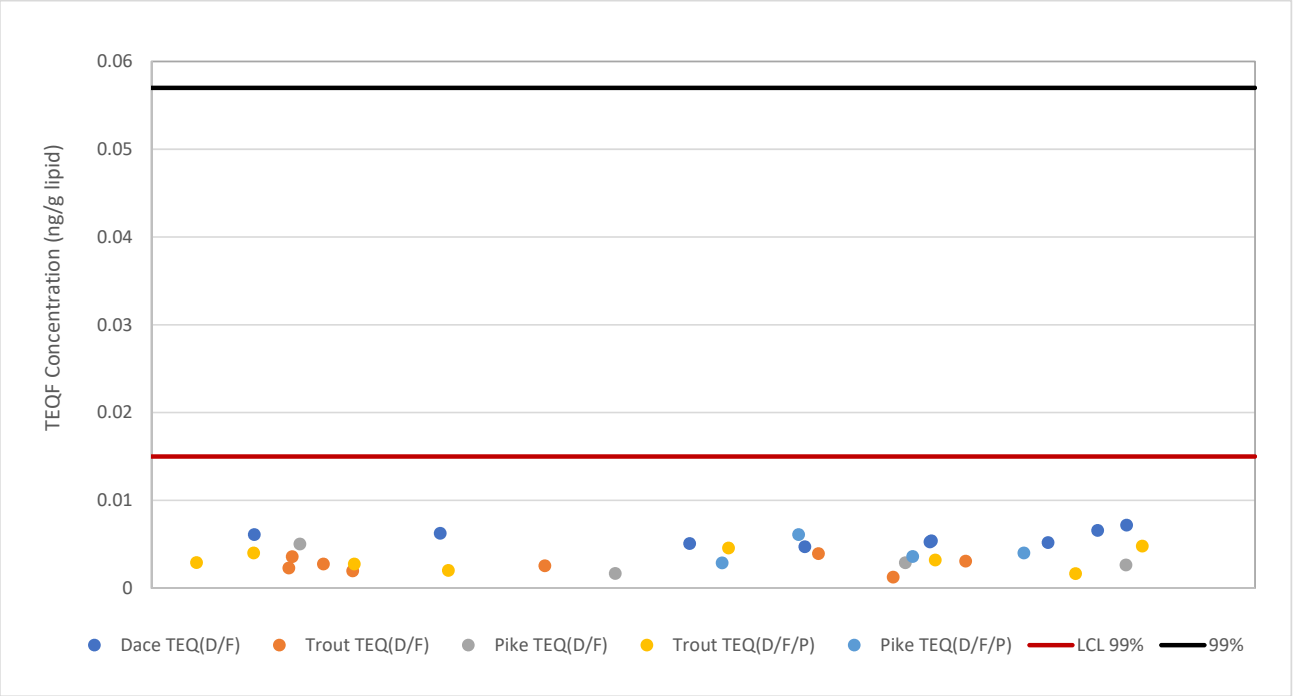


Figure 5-14. Comparison of Methyl Mercury Concentrations in Fish Tissue to TRBs

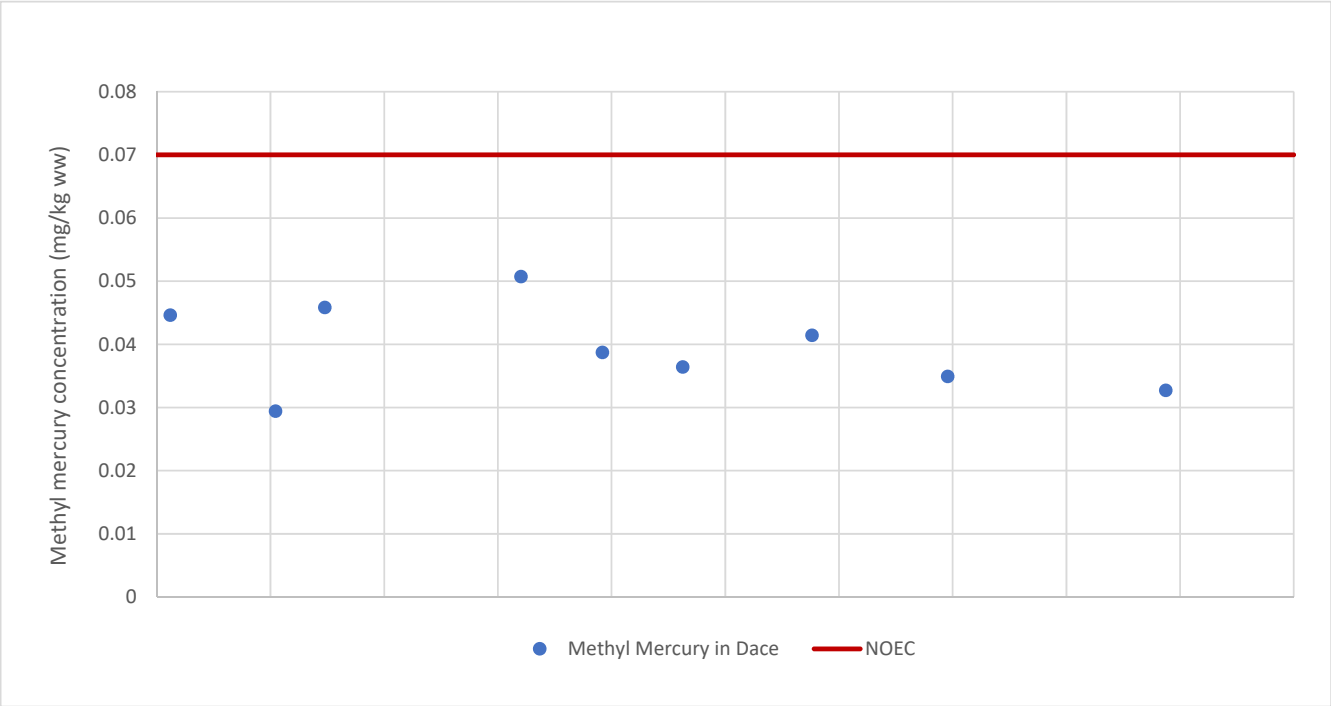
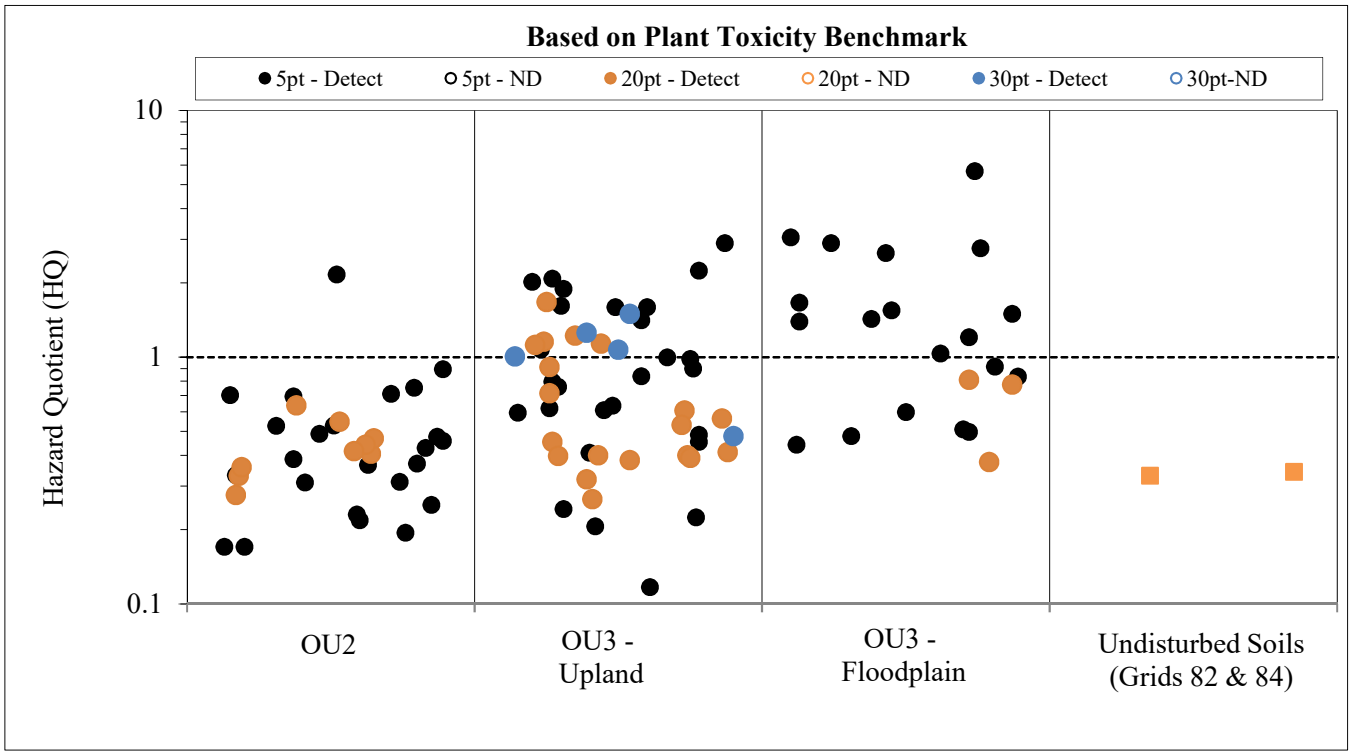


Figure 5-15

No Effect Hazard Quotients for Plants and Soil Invertebrates from Direct Contact with Barium in Surface Soils



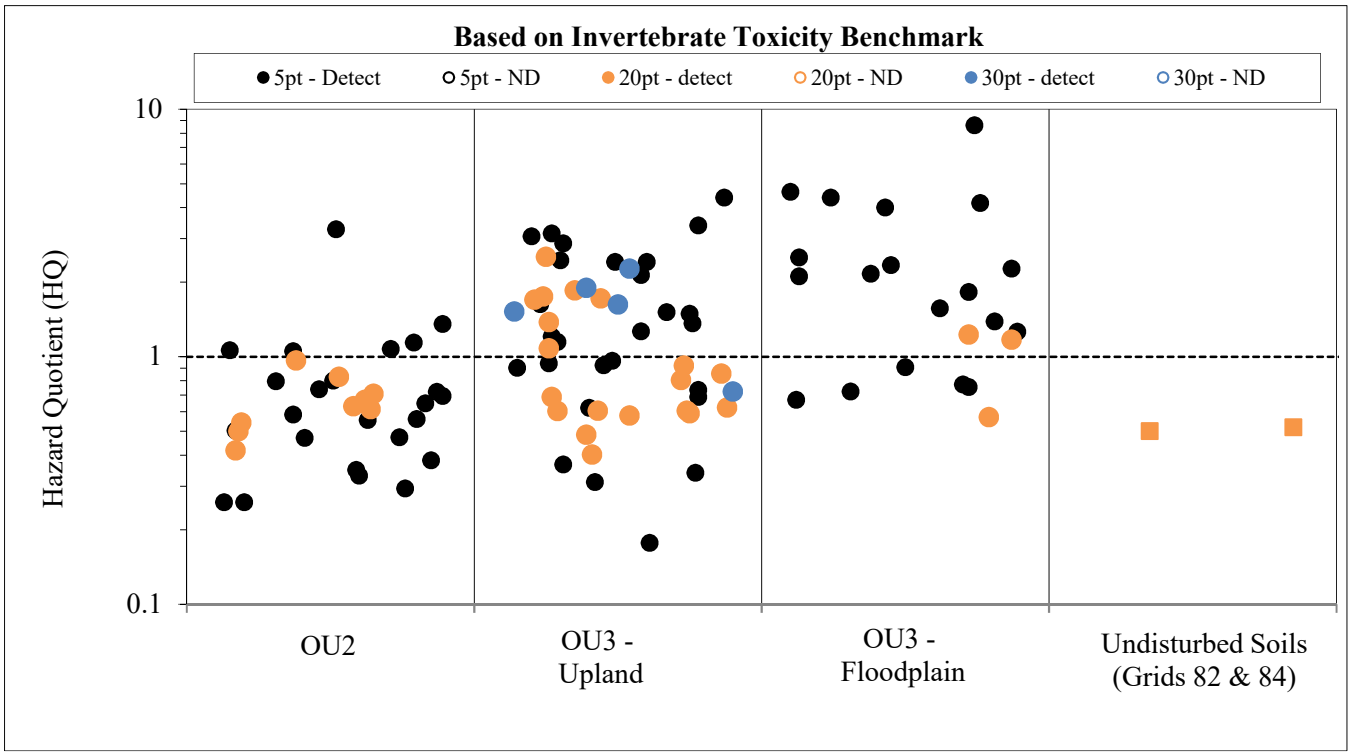


Figure 5-16. Barium HQs Exceeding Benchmarks for Plants and Soil Invertebrates

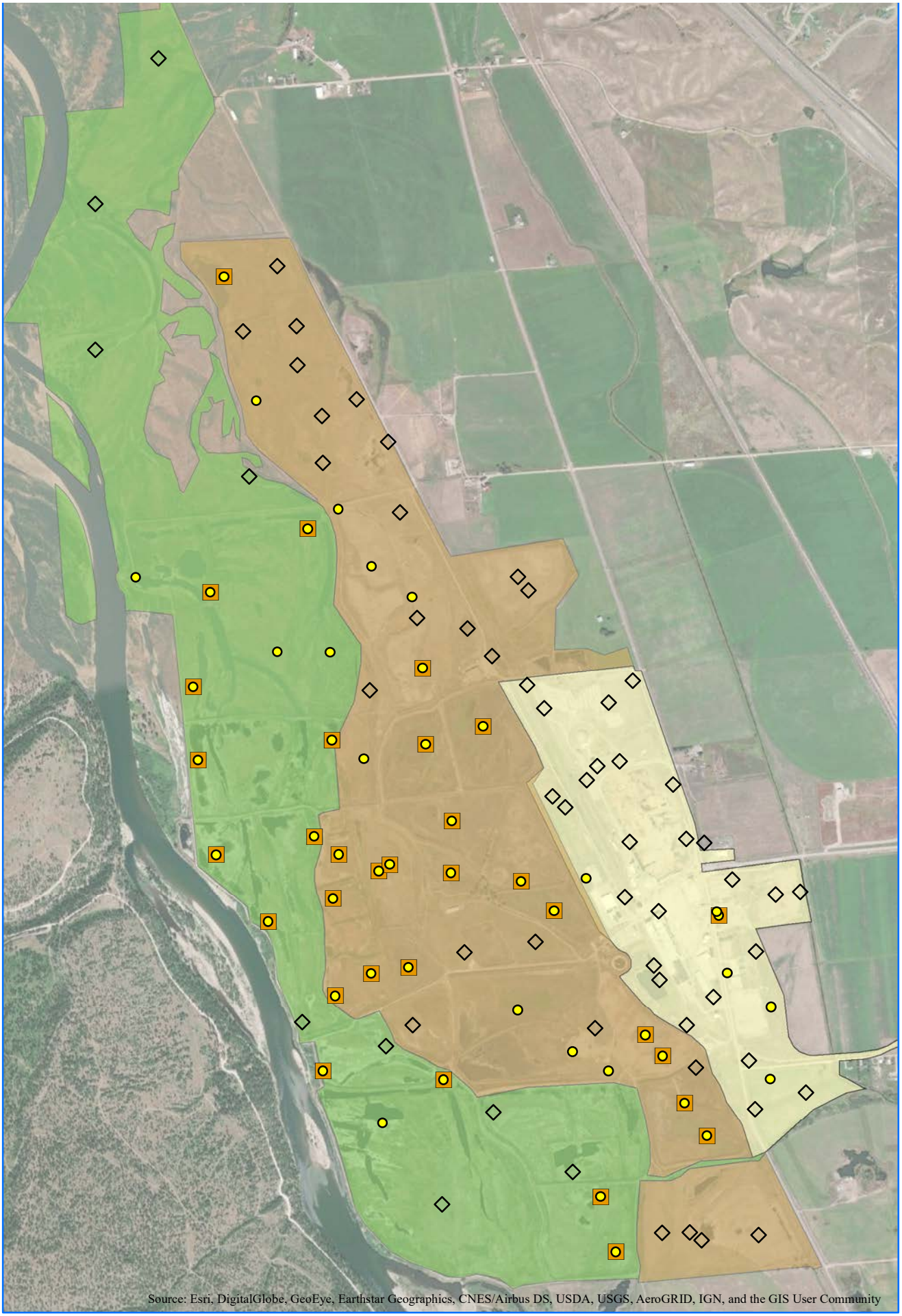
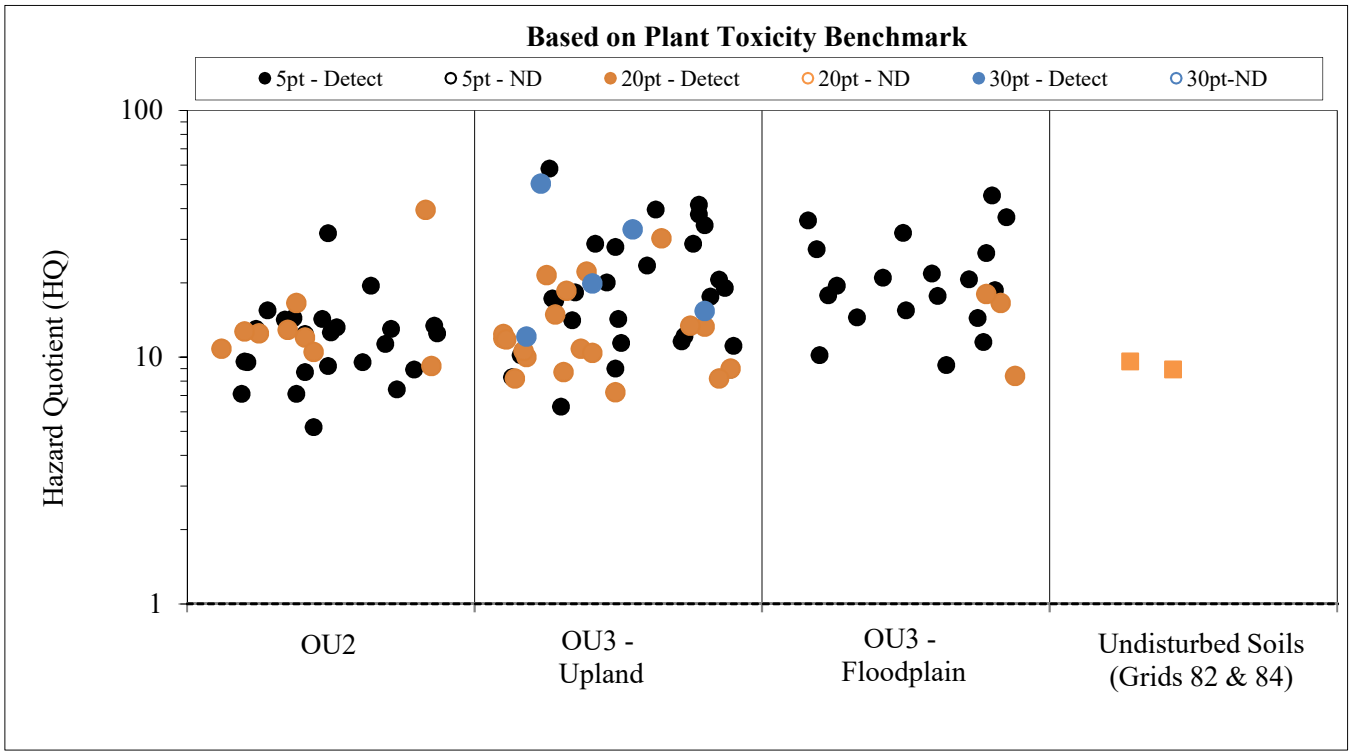


Figure 5-17

No Effect Hazard Quotients for Plants and Soil Invertebrates from Direct Contact with Chromium in Surface Soils



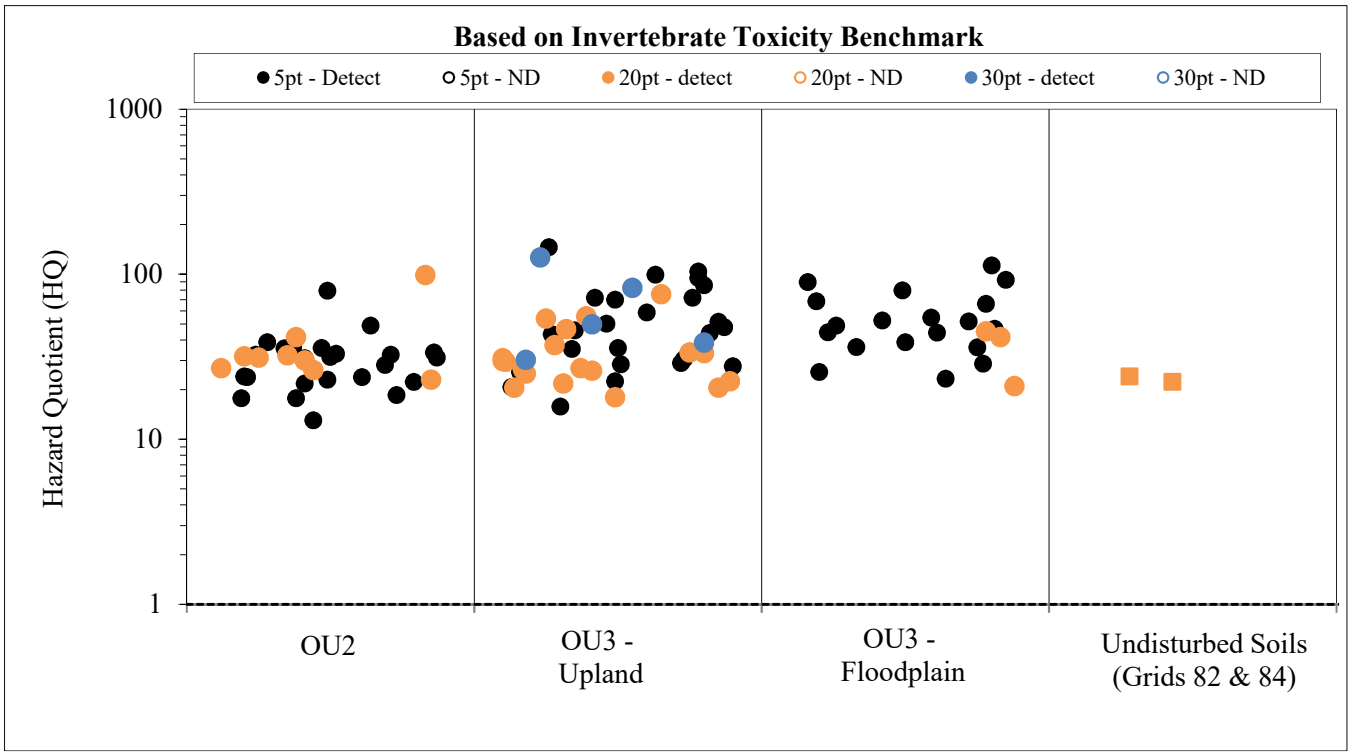


Figure 5-18. Chromium HQs Exceeding Benchmarks for Plants and Soil Invertebrates

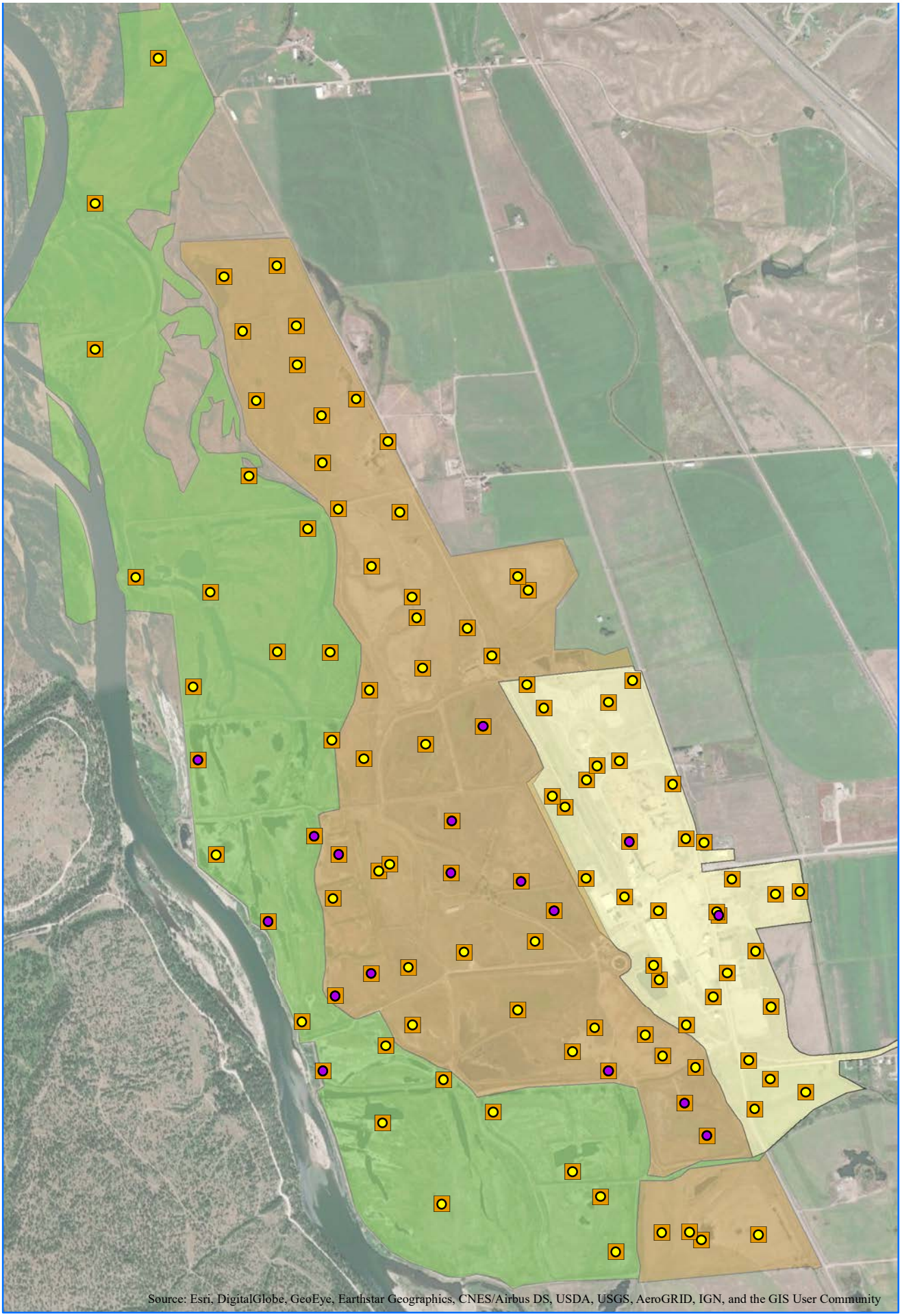
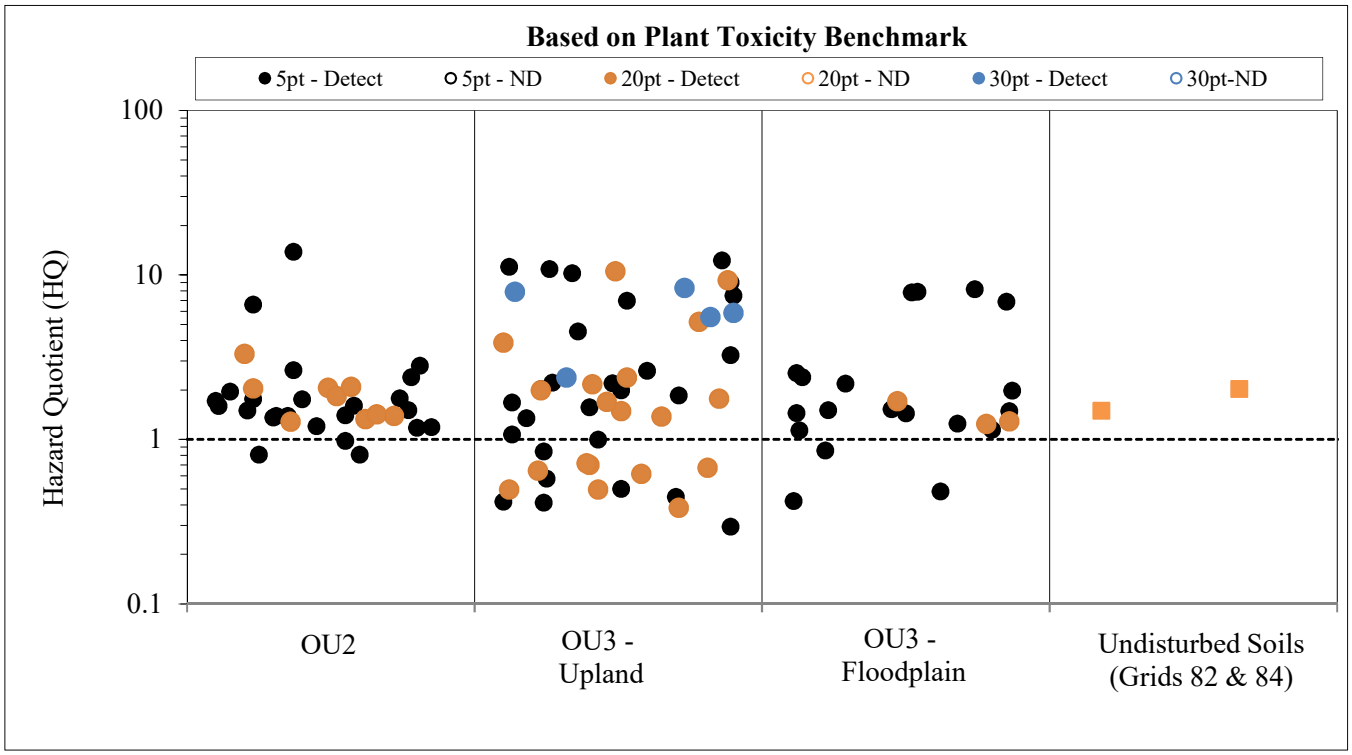
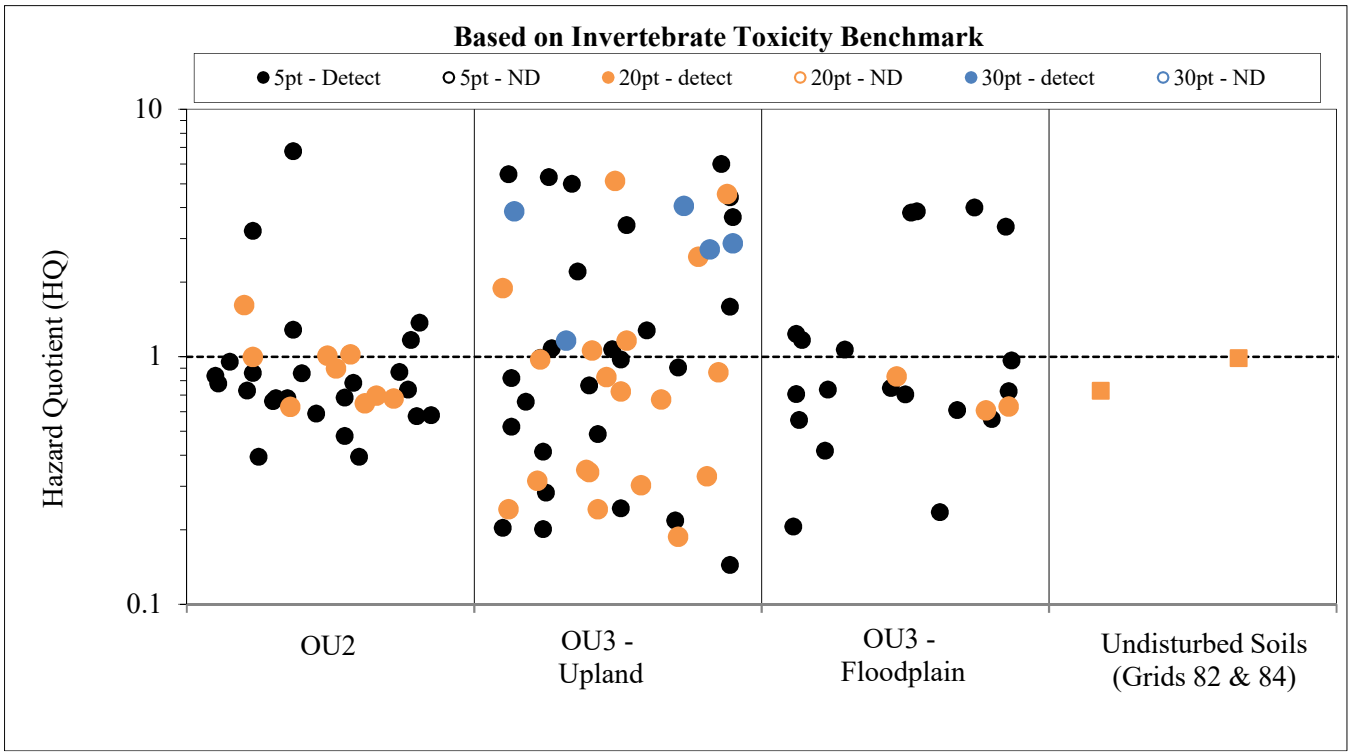


Figure 5-19

No Effect Hazard Quotients for Plants and Soil Invertebrates from Direct Contact with Manganese in Surface Soils





Scattergrams_Soil_v2.xlsm, HQ Graphs_All7/16/2021

Figure 5-20. Manganese HQs Exceeding Benchmarks for Plants and Soil Invertebrates

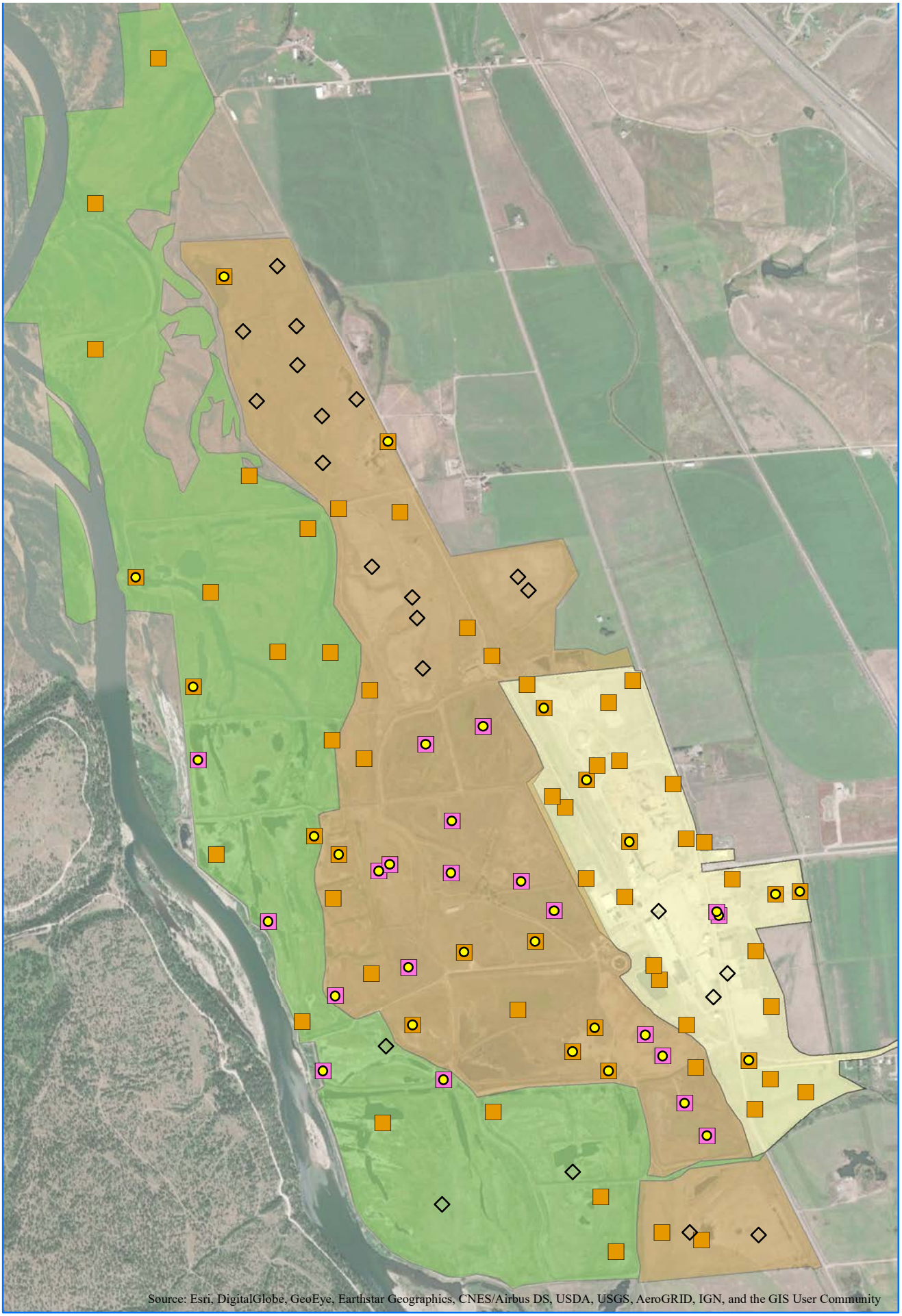
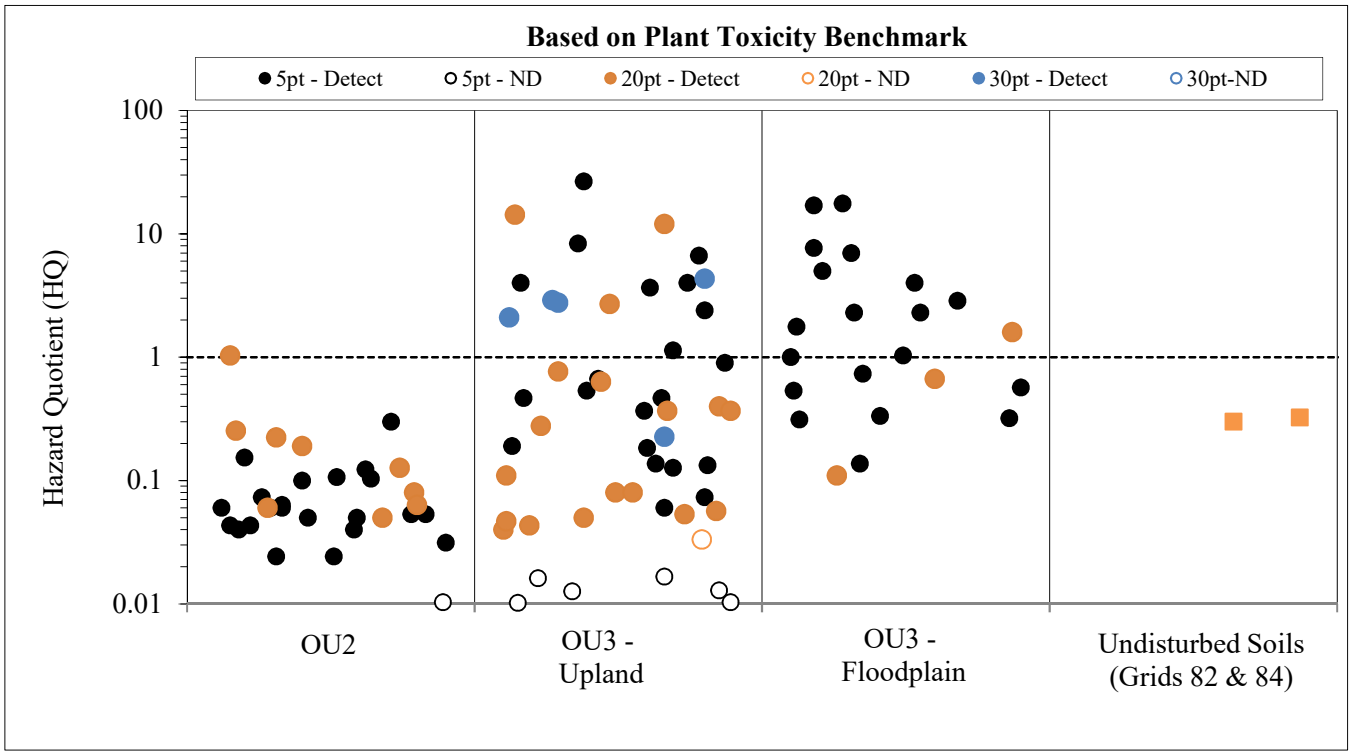


Figure 5-21

No Effect Hazard Quotients for Plants and Soil Invertebrates from Direct Contact with Mercury in Surface Soils



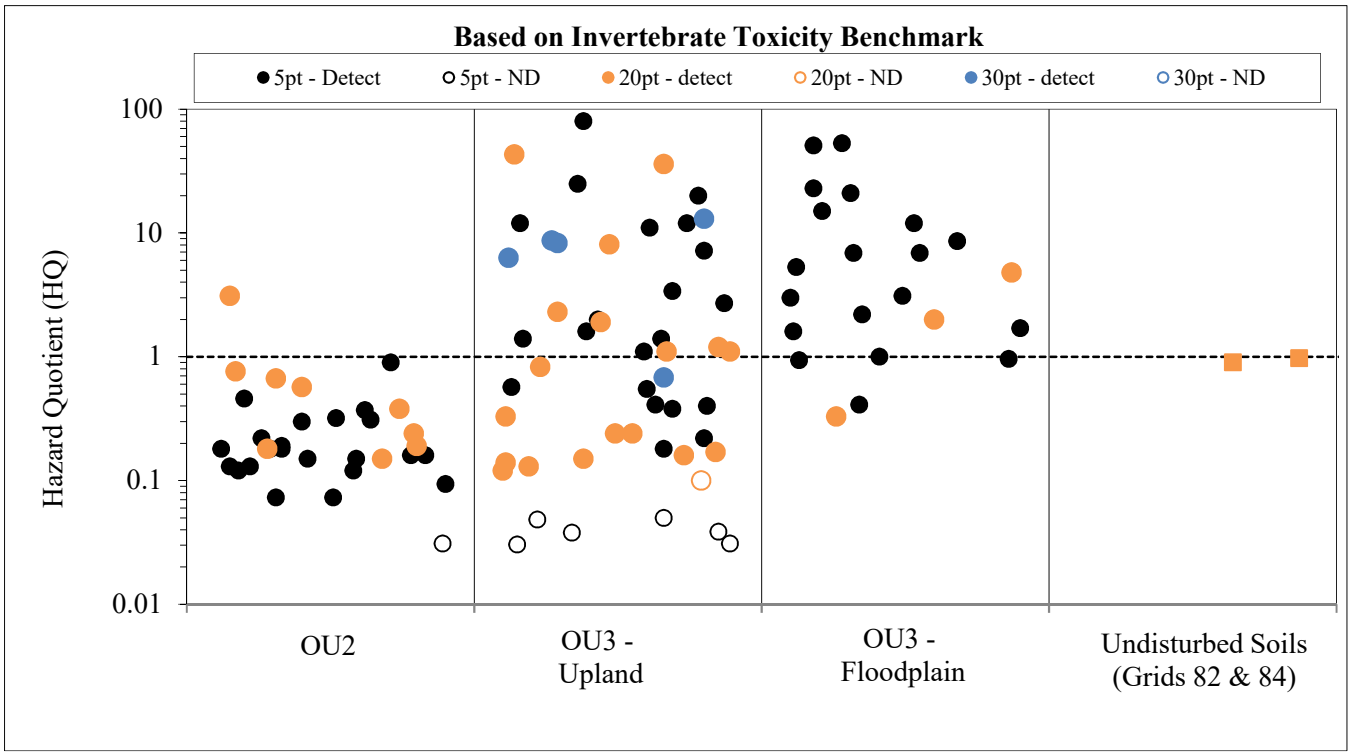


Figure 5-22. Mercury HQs Exceeding Benchmarks for Plants and Soil Invertebrates

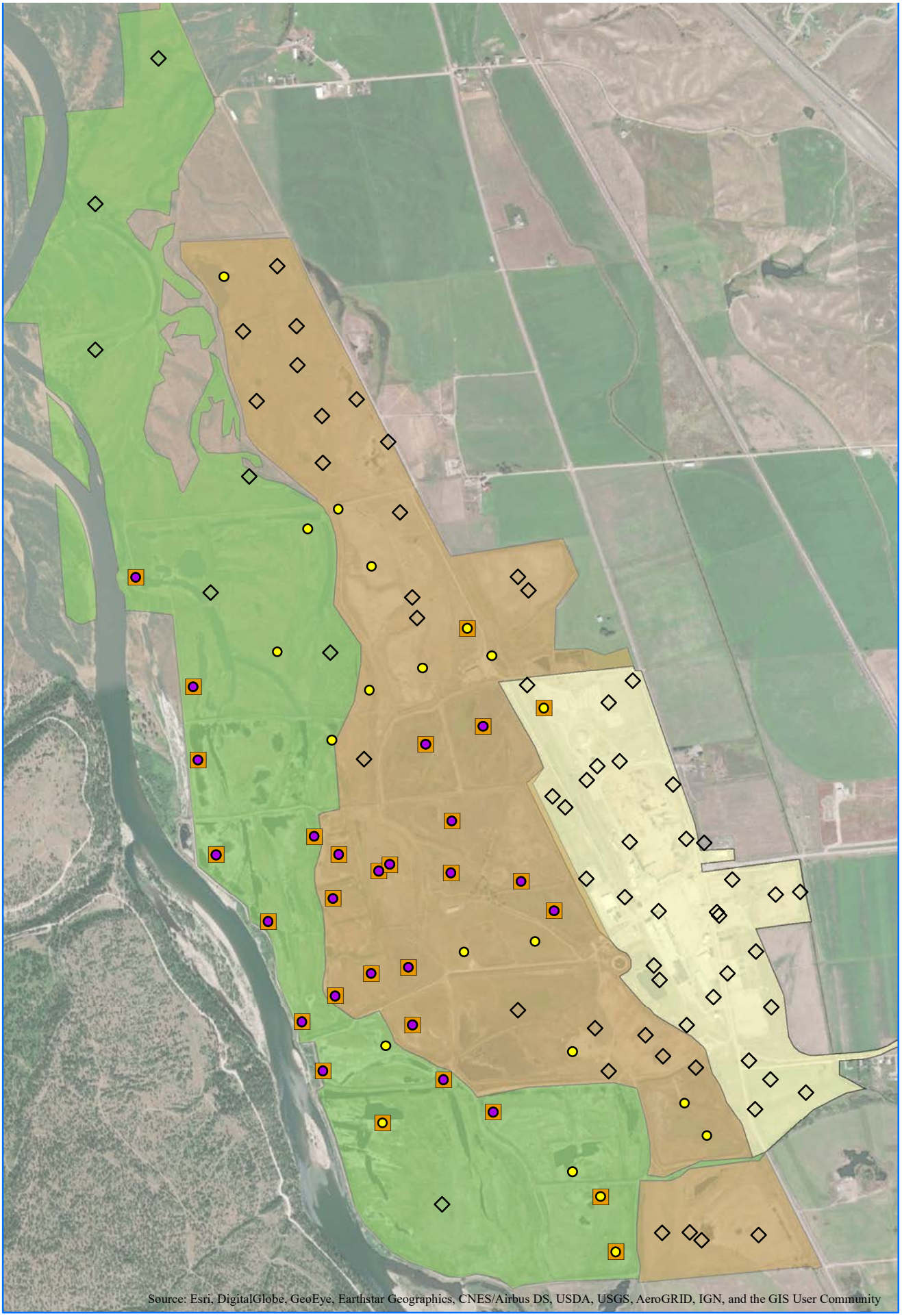
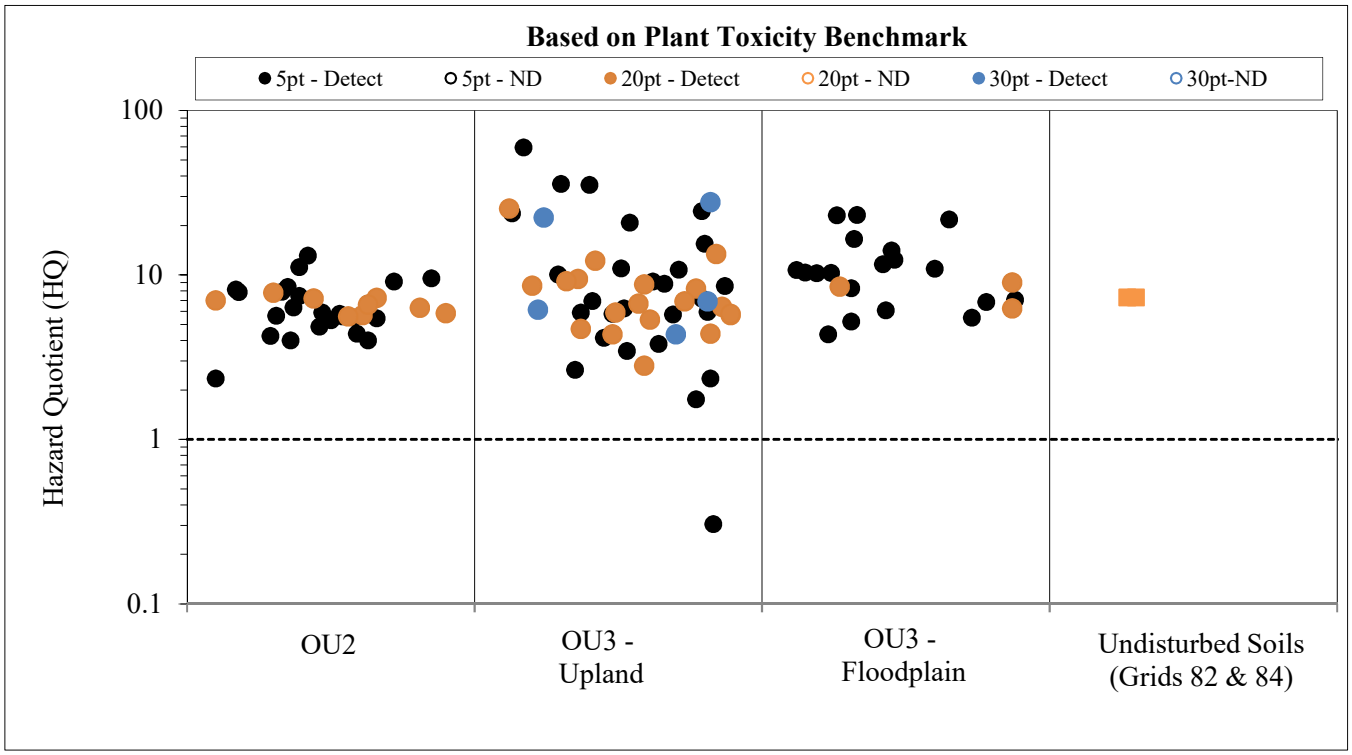
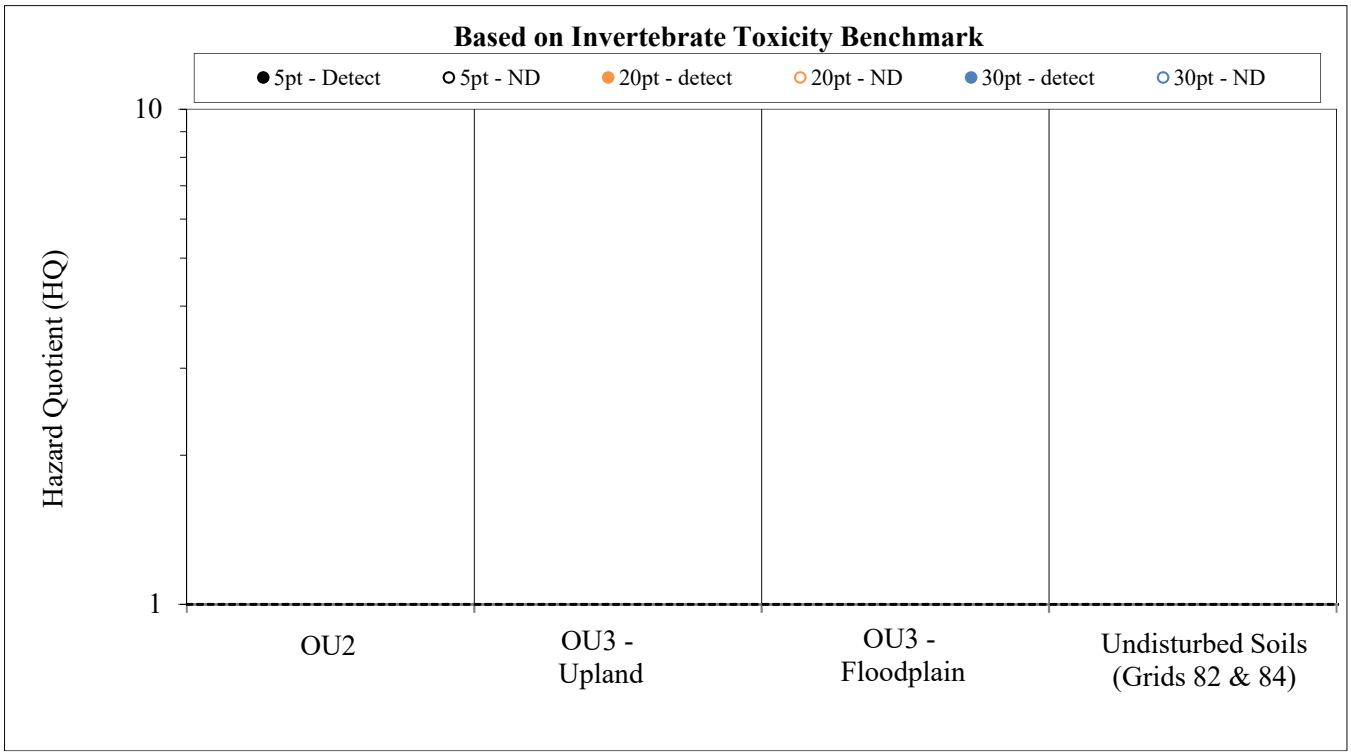


Figure 5-24

No Effect Hazard Quotients for Plants and Soil Invertebrates from Direct Contact with Vanadium in Surface Soils





Scattergrams_Soil_v2.xlsm, HQ Graphs_All7/16/2021

Figure 5-25. Vanadium HQs Exceeding Benchmarks for Plants

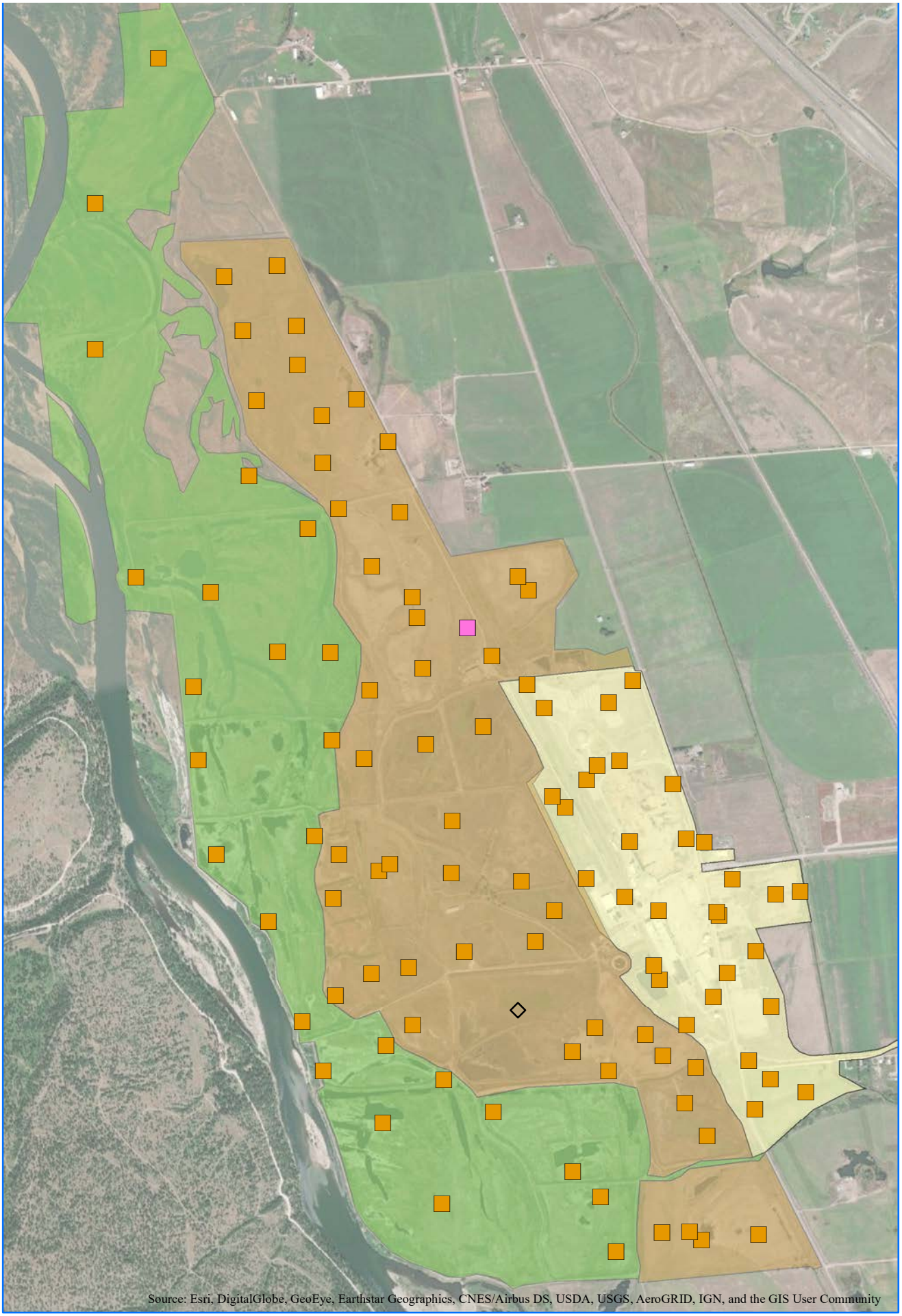
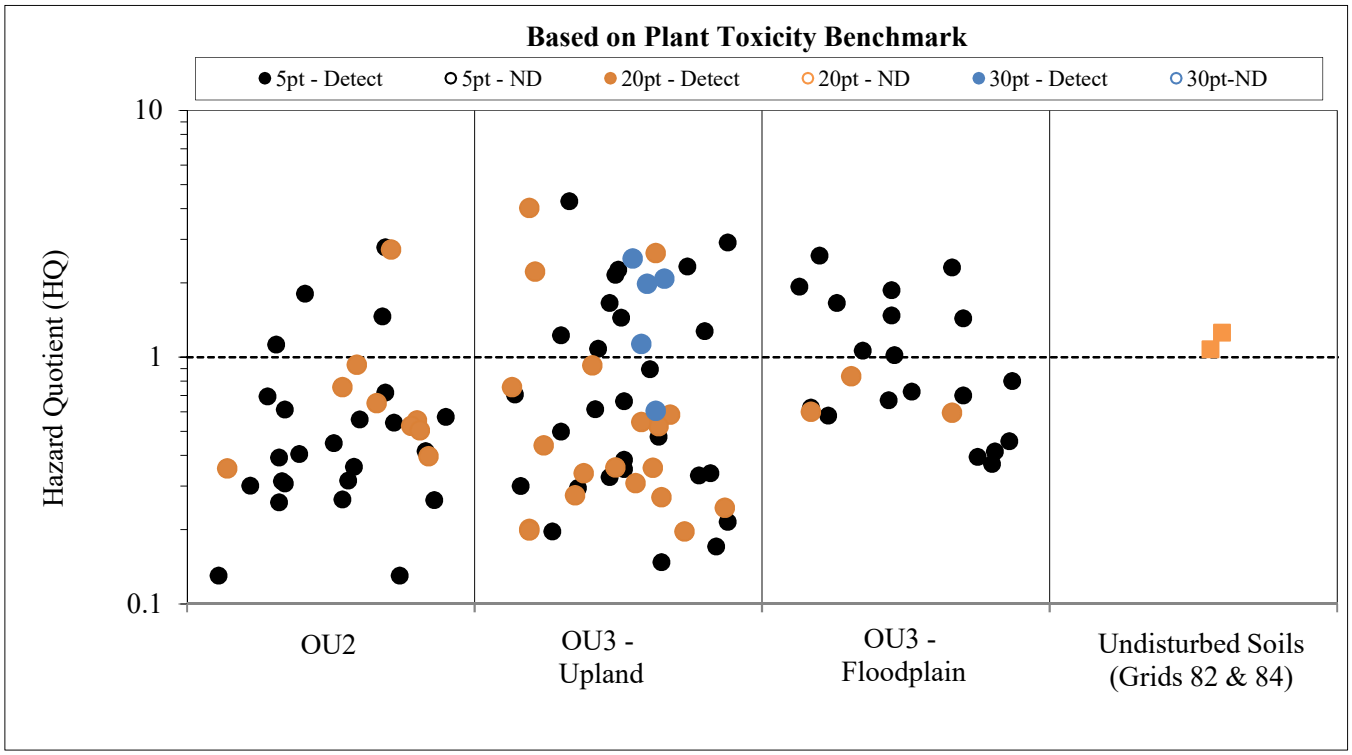


Figure 5-26

No Effect Hazard Quotients for Plants and Soil Invertebrates from Direct Contact with Zinc in Surface Soils



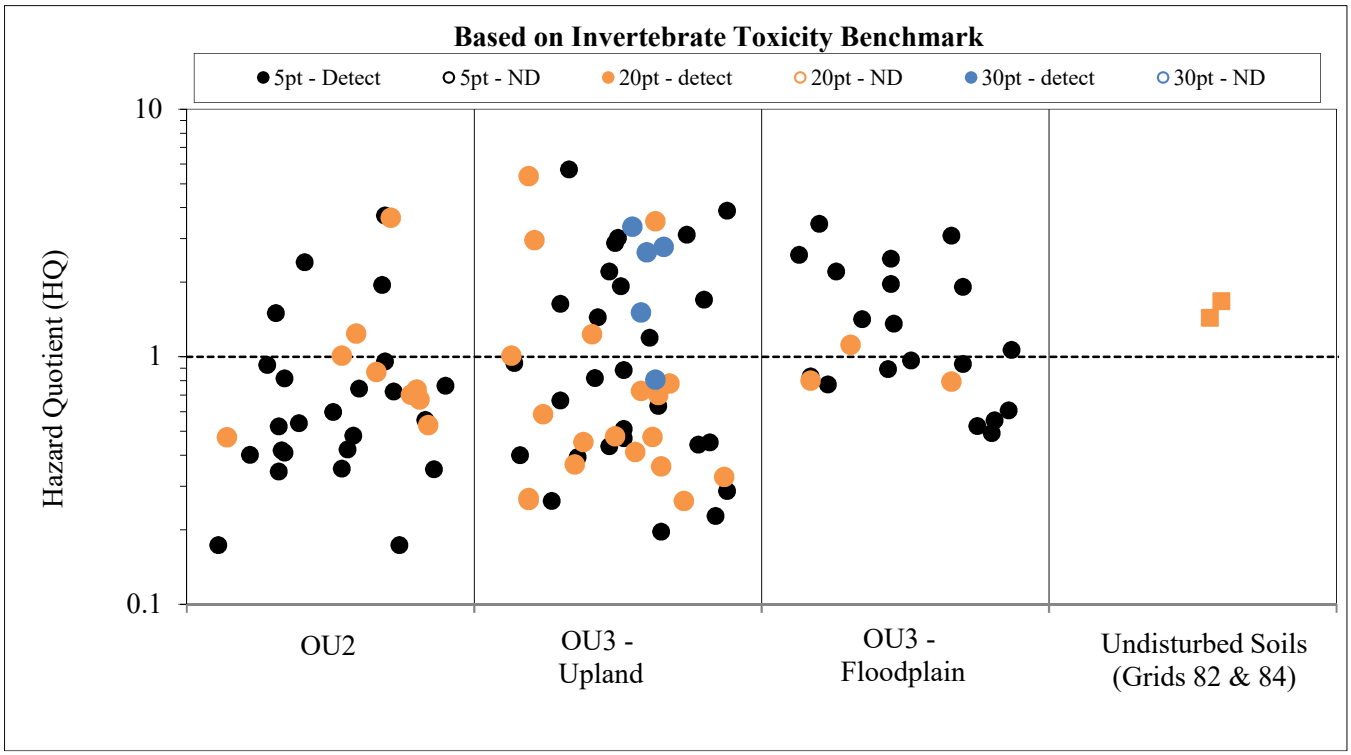
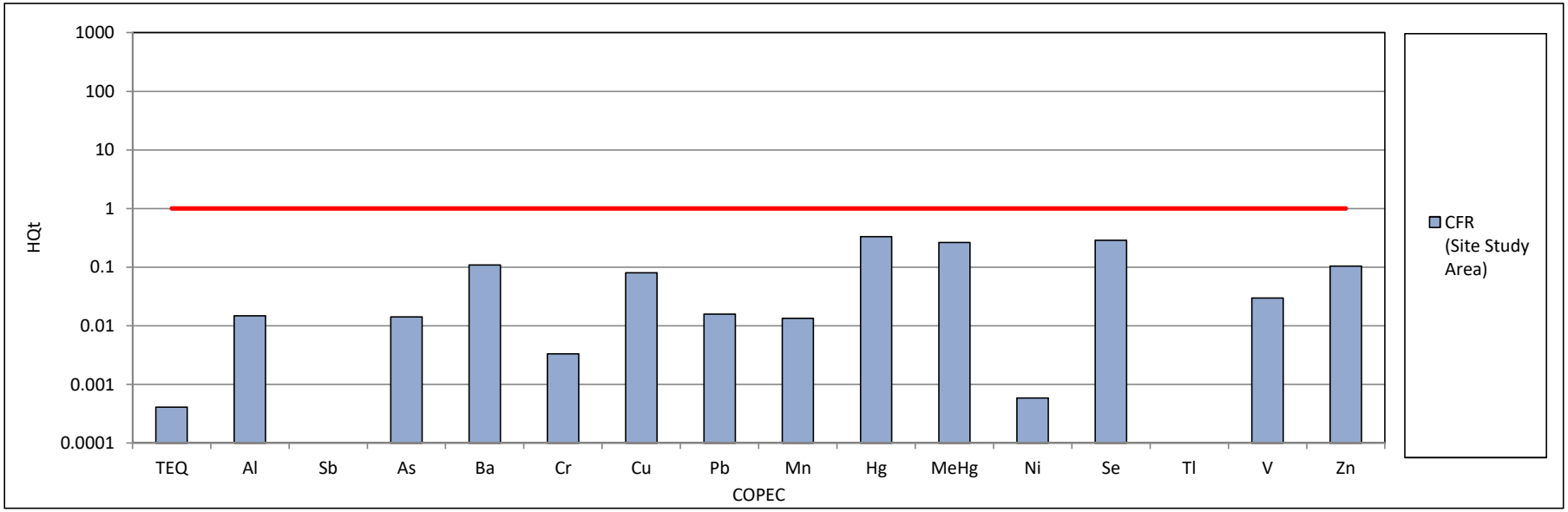


Figure 5-27. HQ Summary for Belted Kingfisher

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values

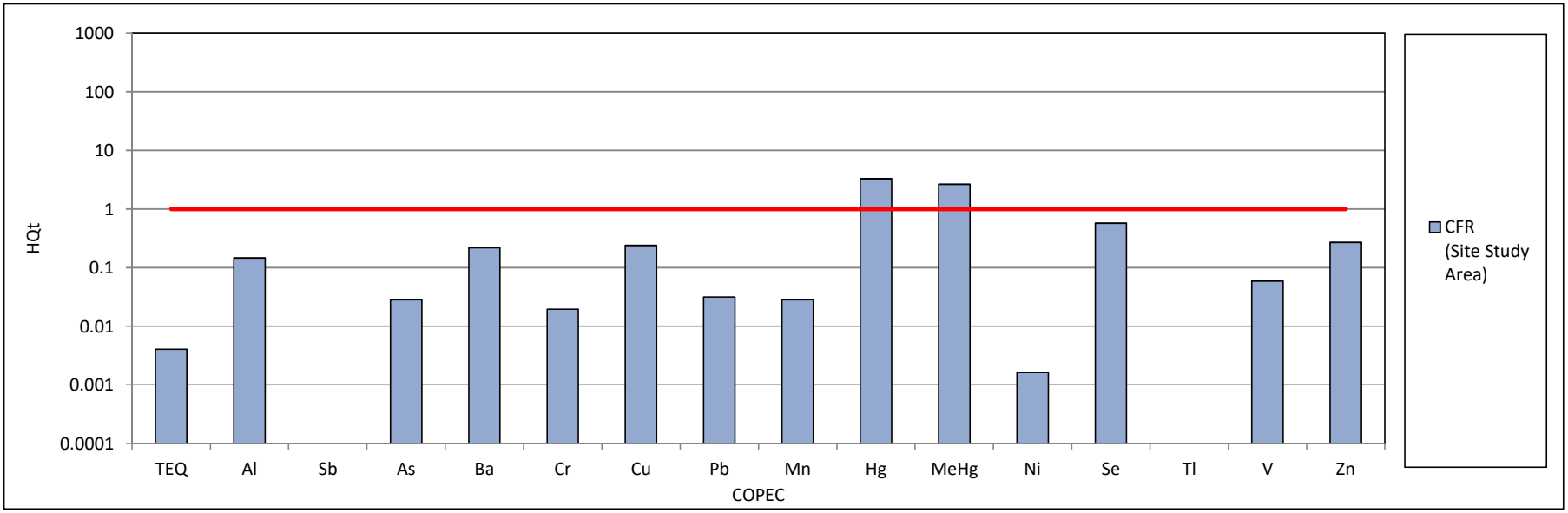
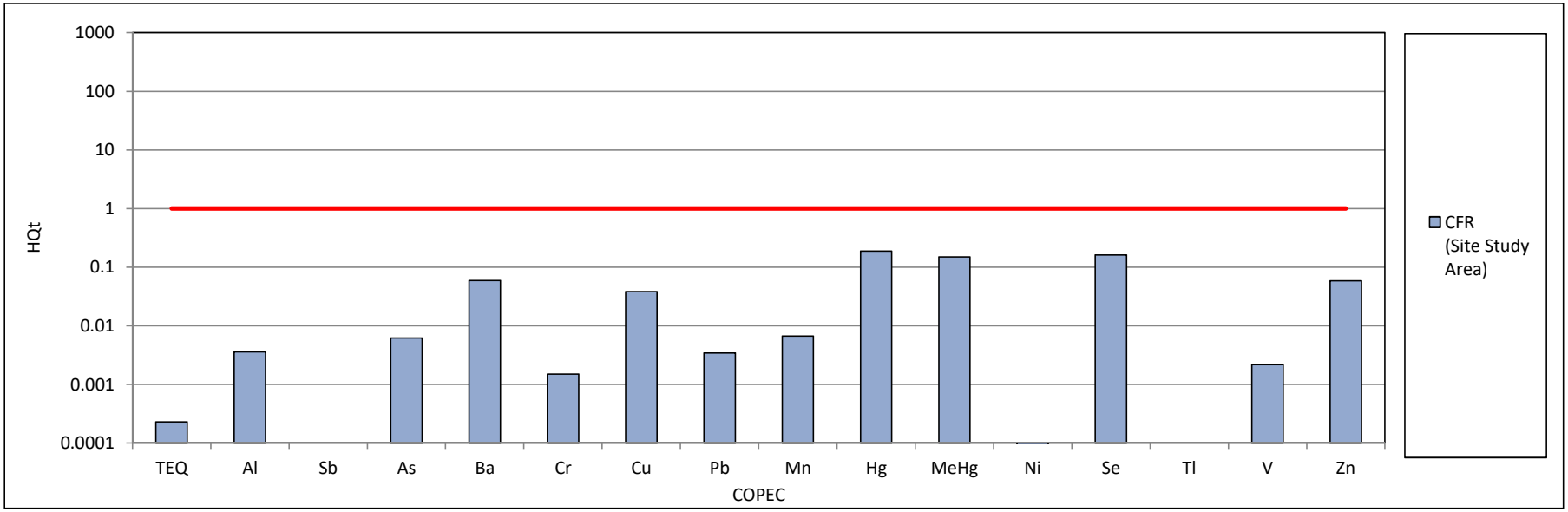


Figure 5-28. HQ Summary for Osprey

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values

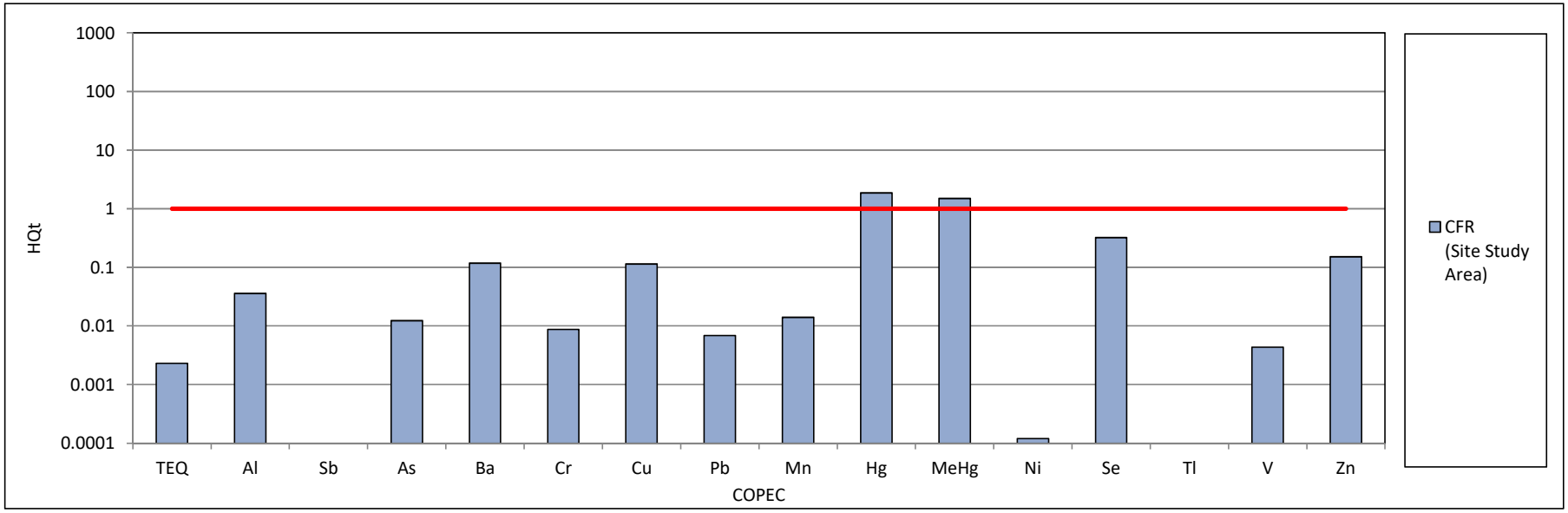
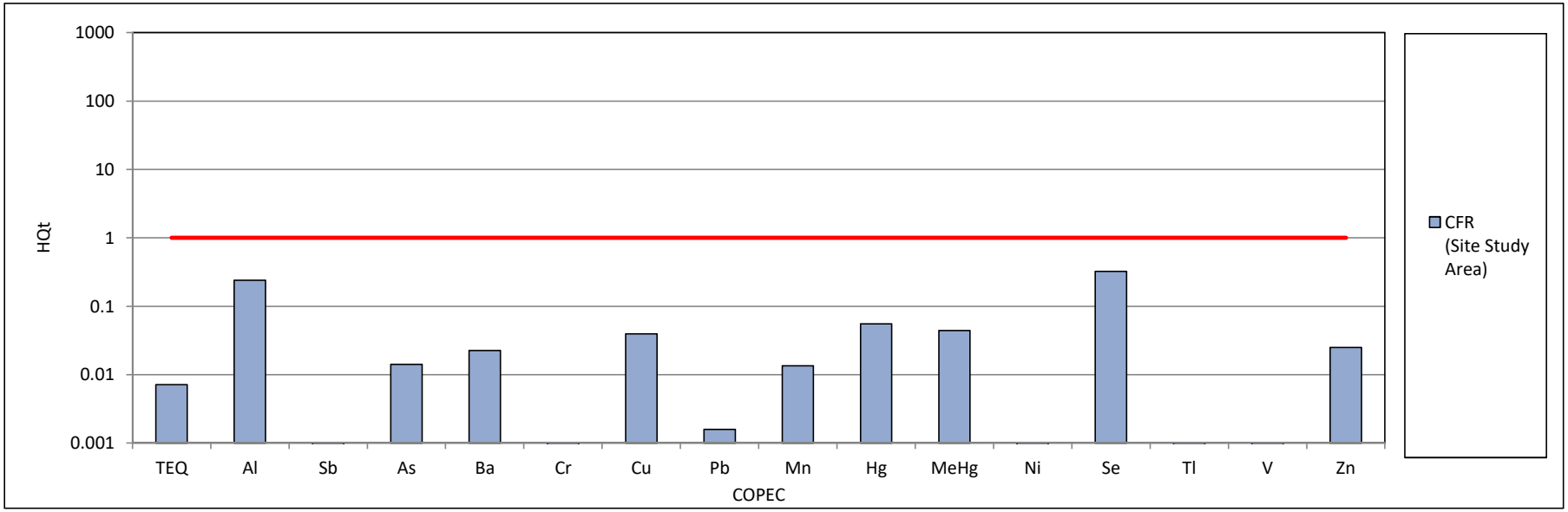


Figure 5-29. HQ Summary for River Otter

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values

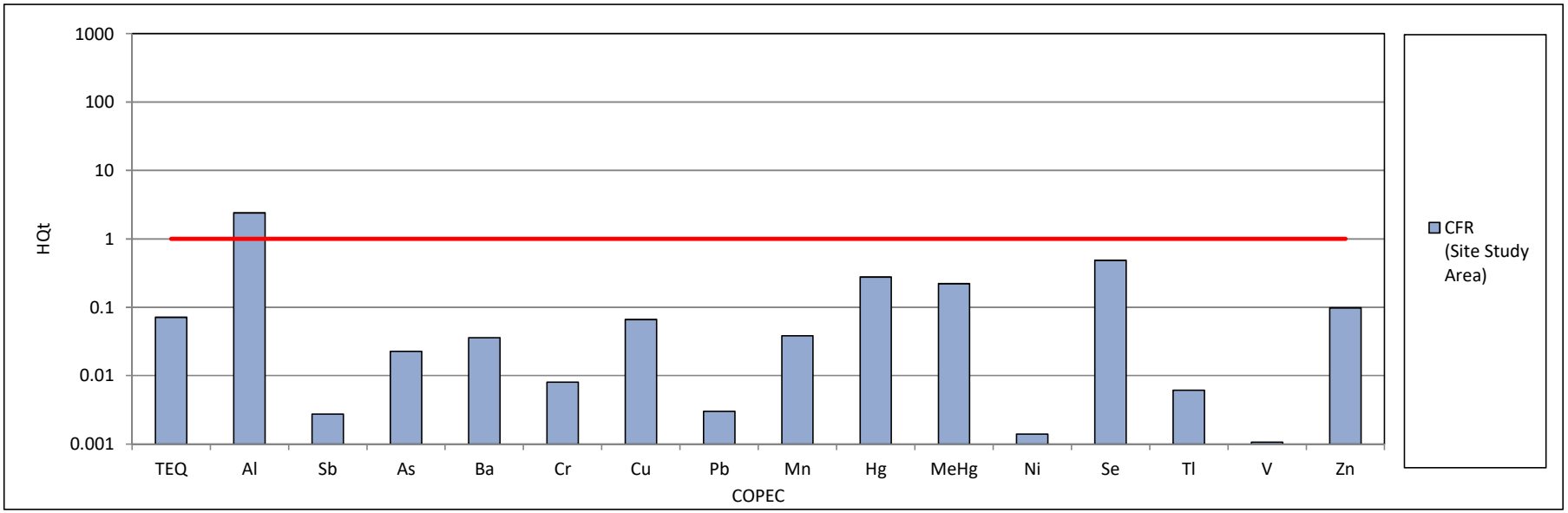
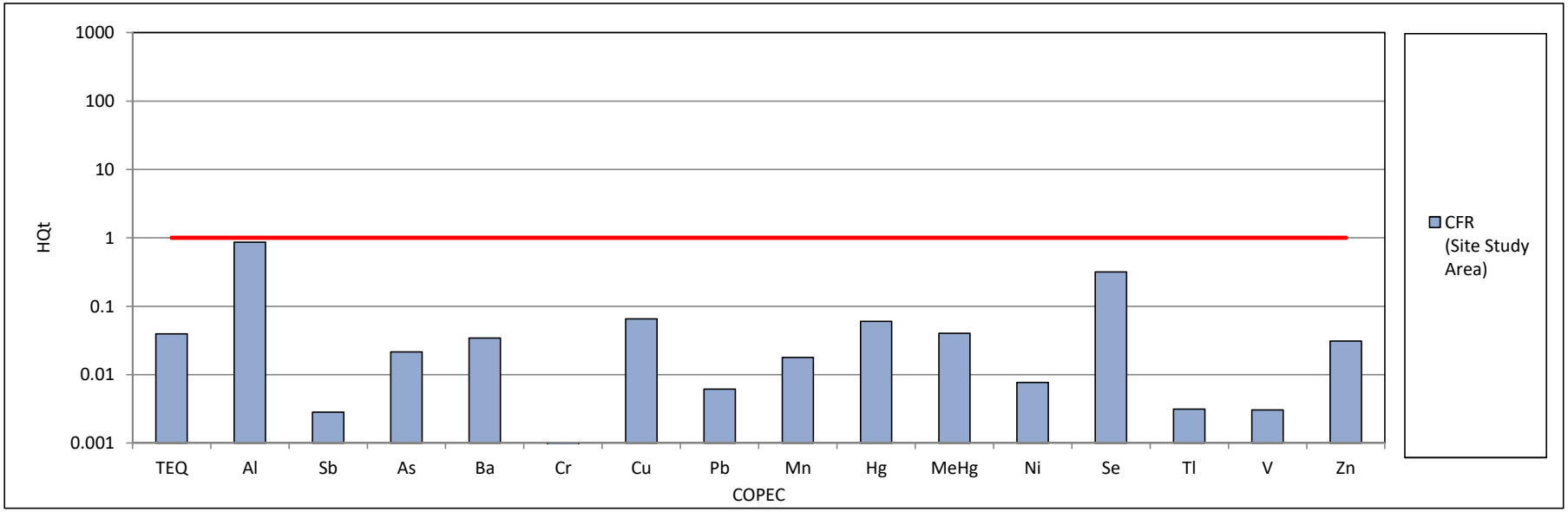


Figure 5-30. HQ Summary for American Mink

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values

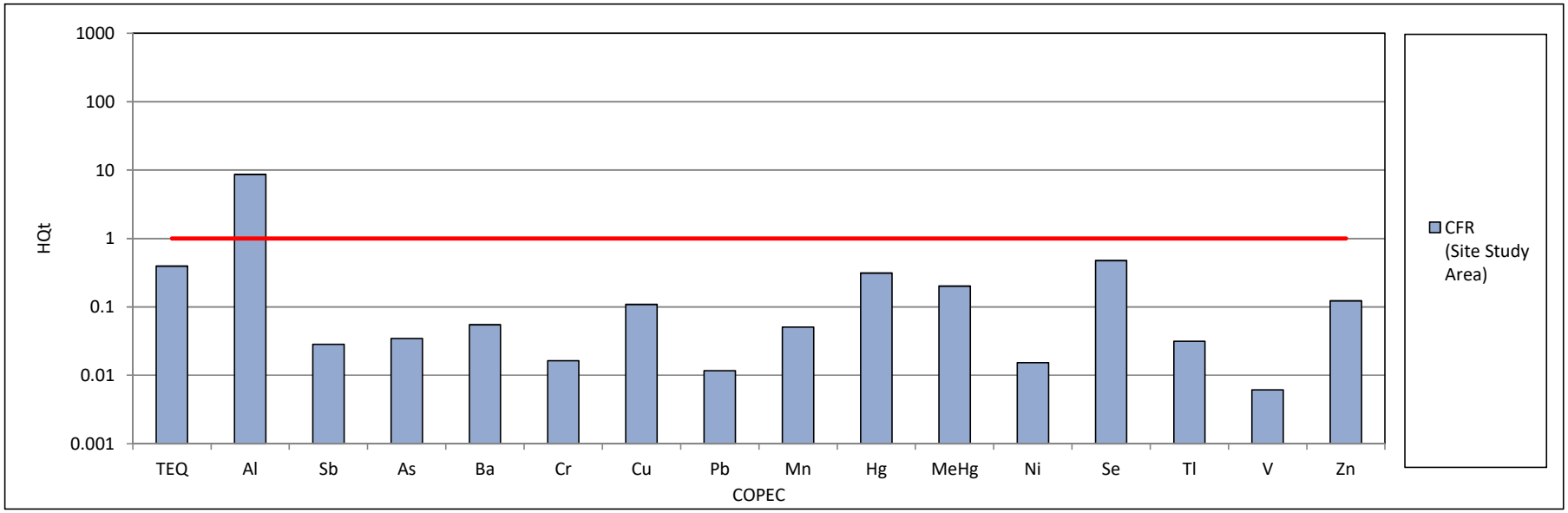
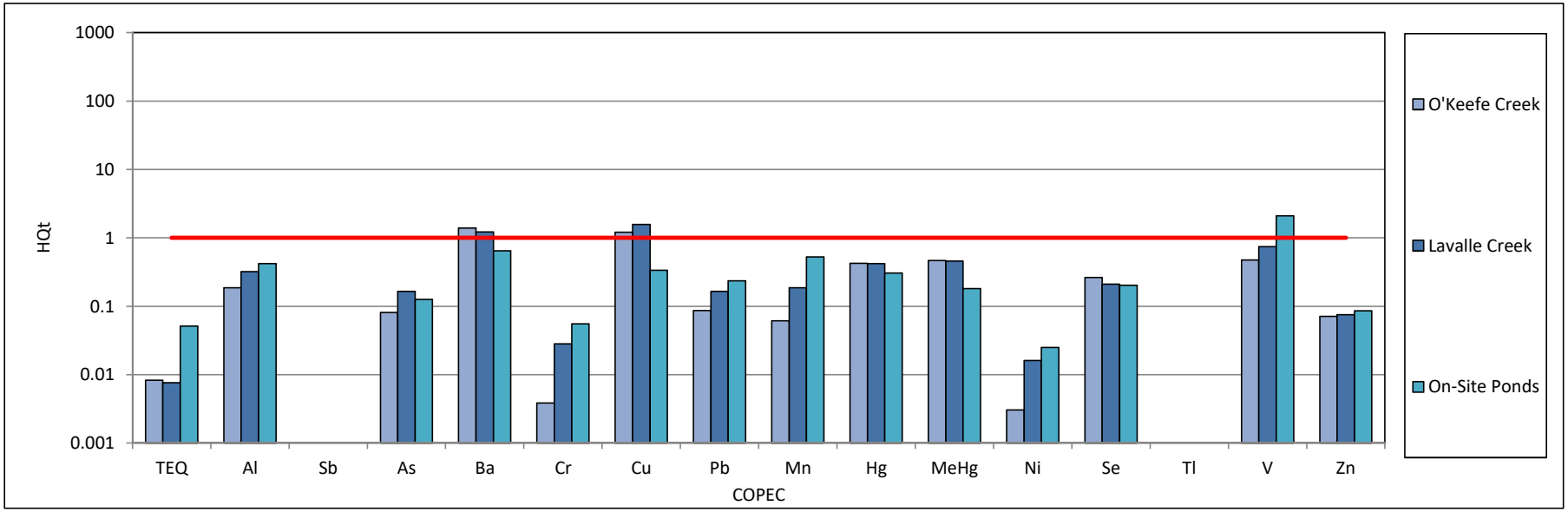


Figure 5-31. HQ Summary for American Dipper

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values

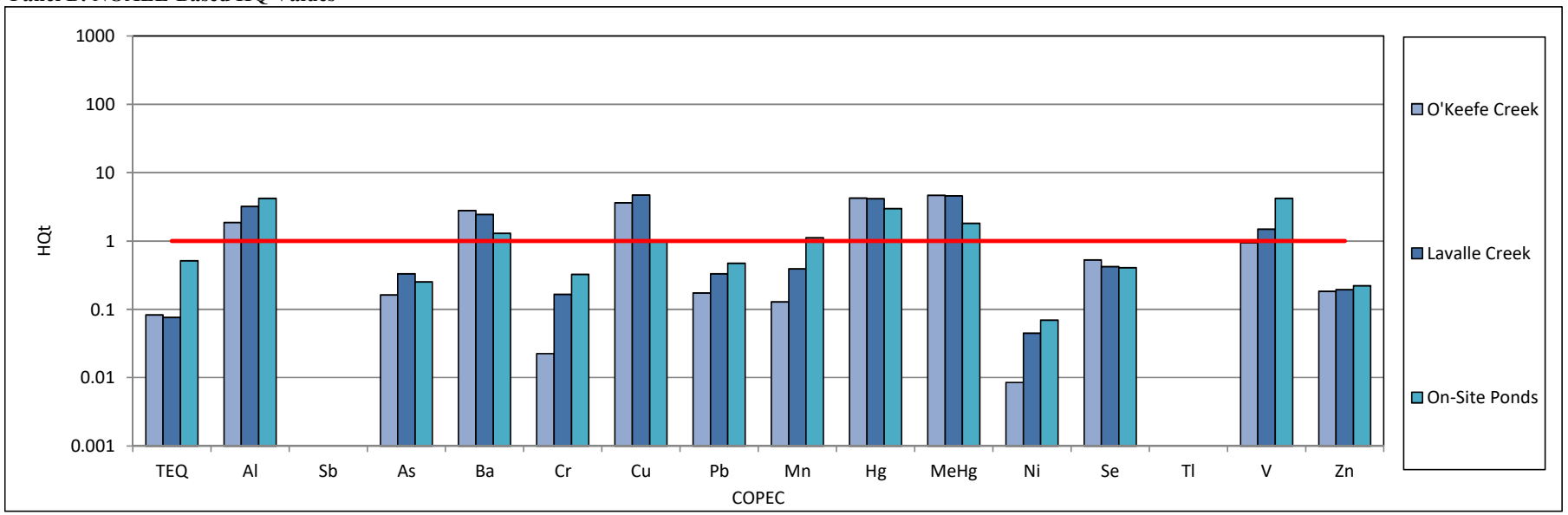
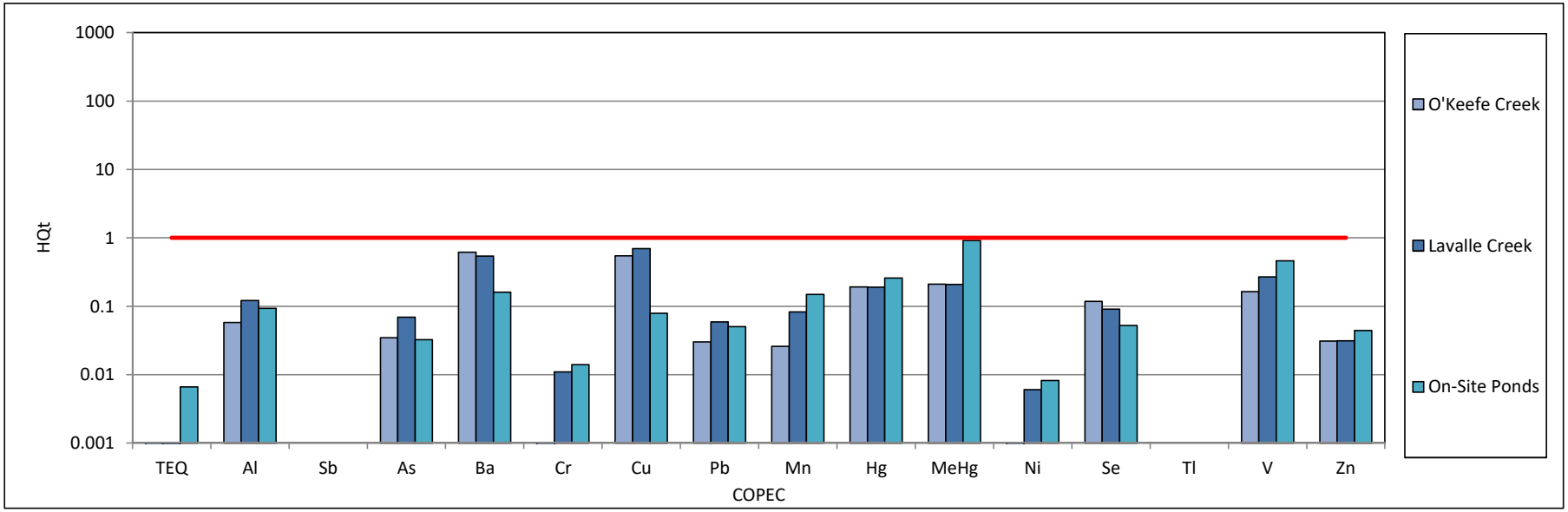


Figure 5-32. HQ Summary for Tree Swallow

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values

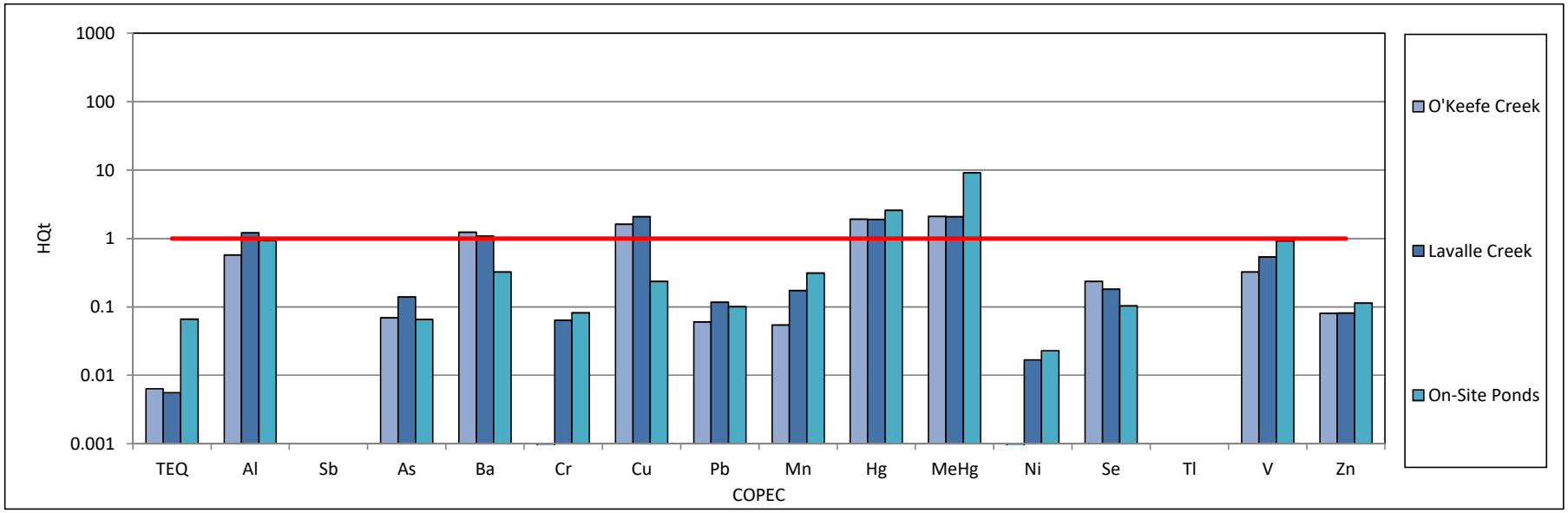
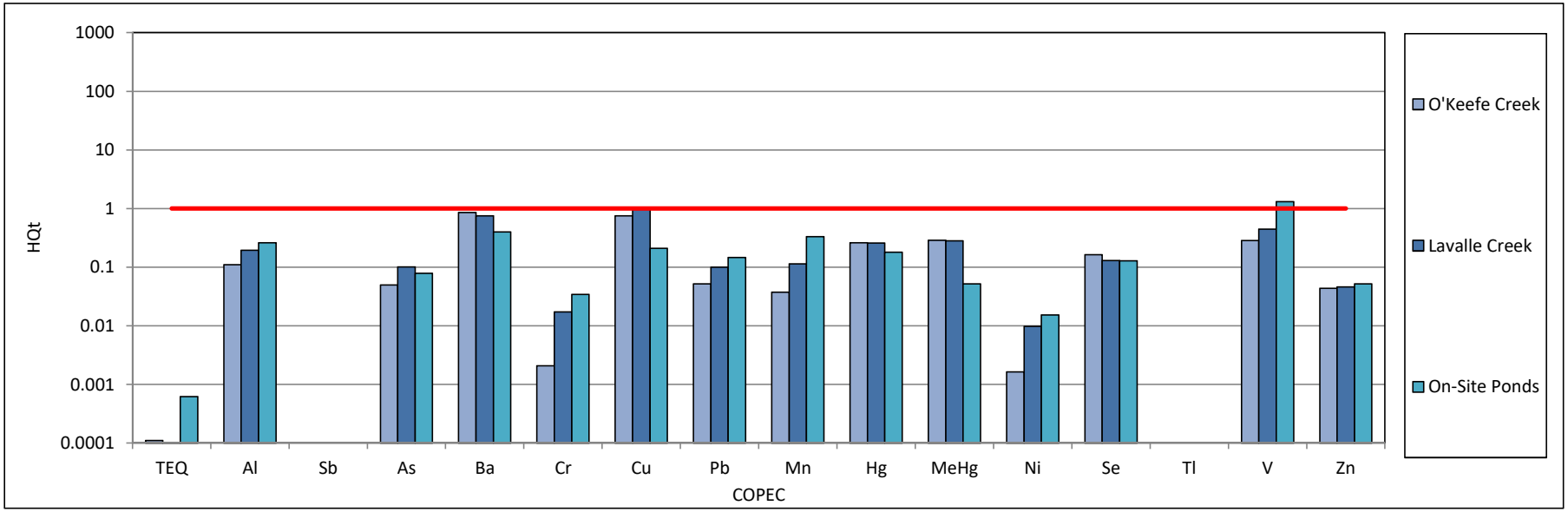


Figure 5-33. HQ Summary for Mallard

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values

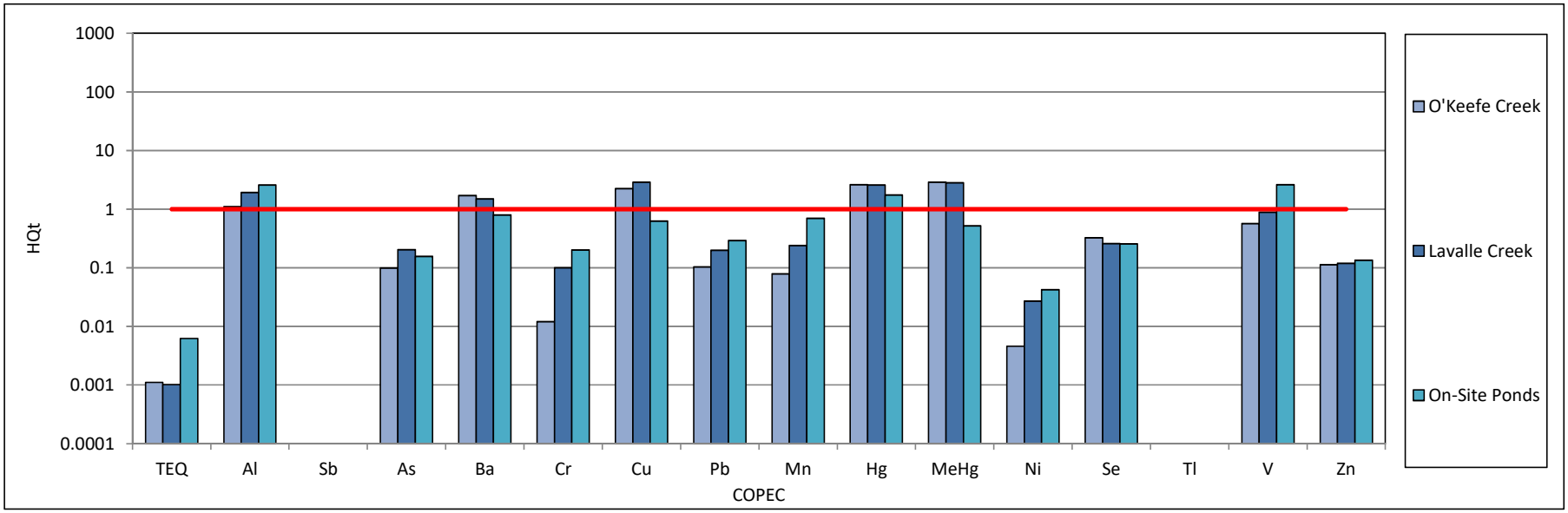
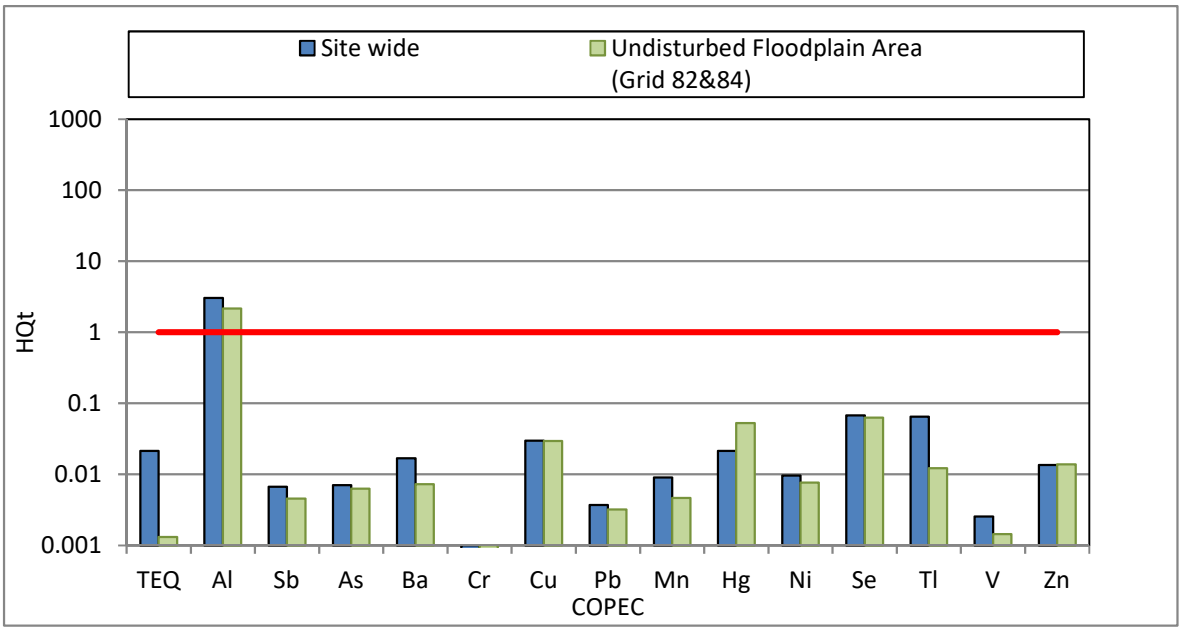


Figure 5-34. HQ Summary for Red Fox

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values

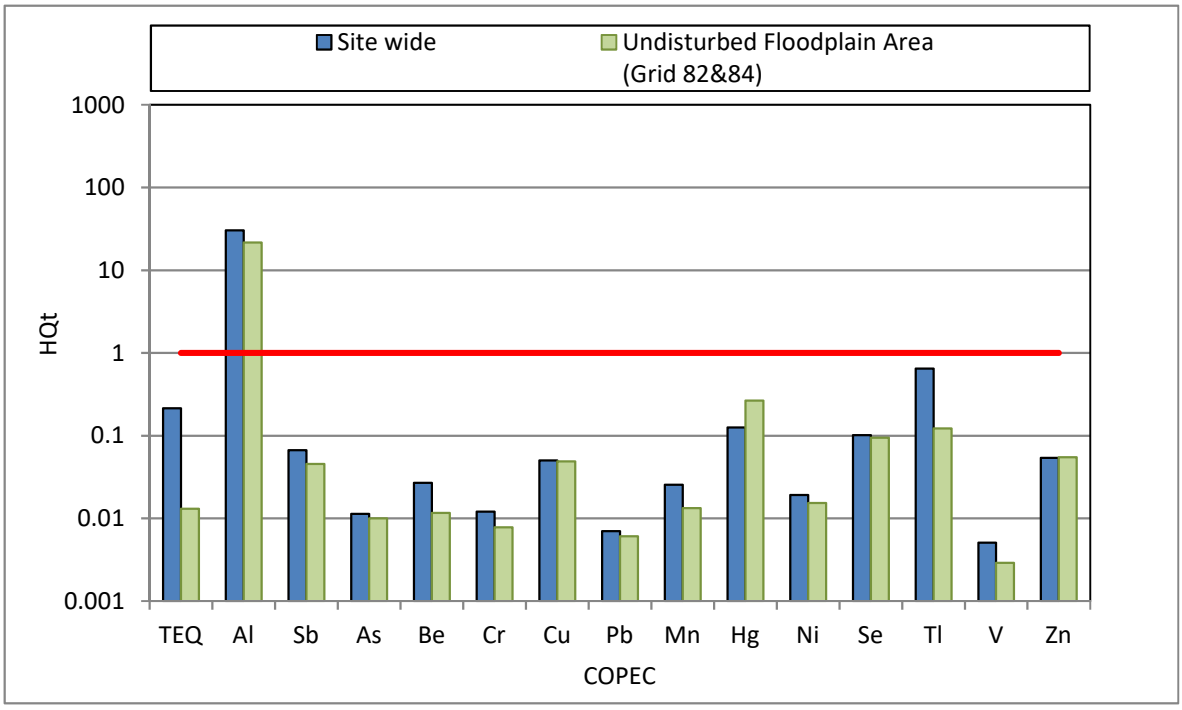
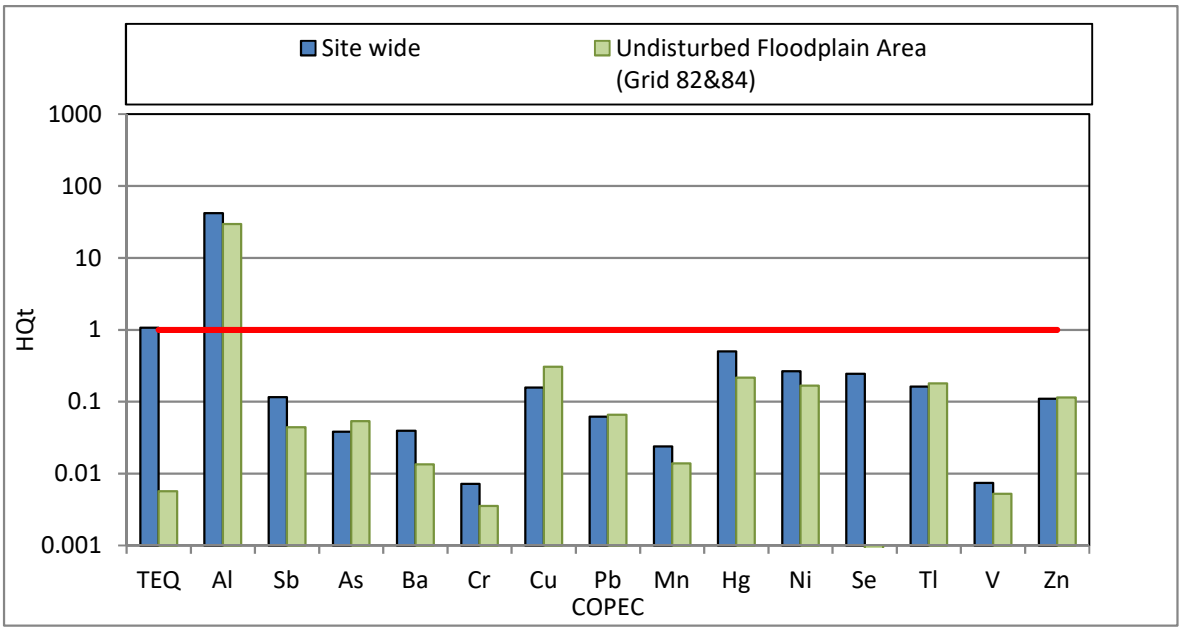


Figure 5-35. HQ Summary for Big Brown Bat

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values

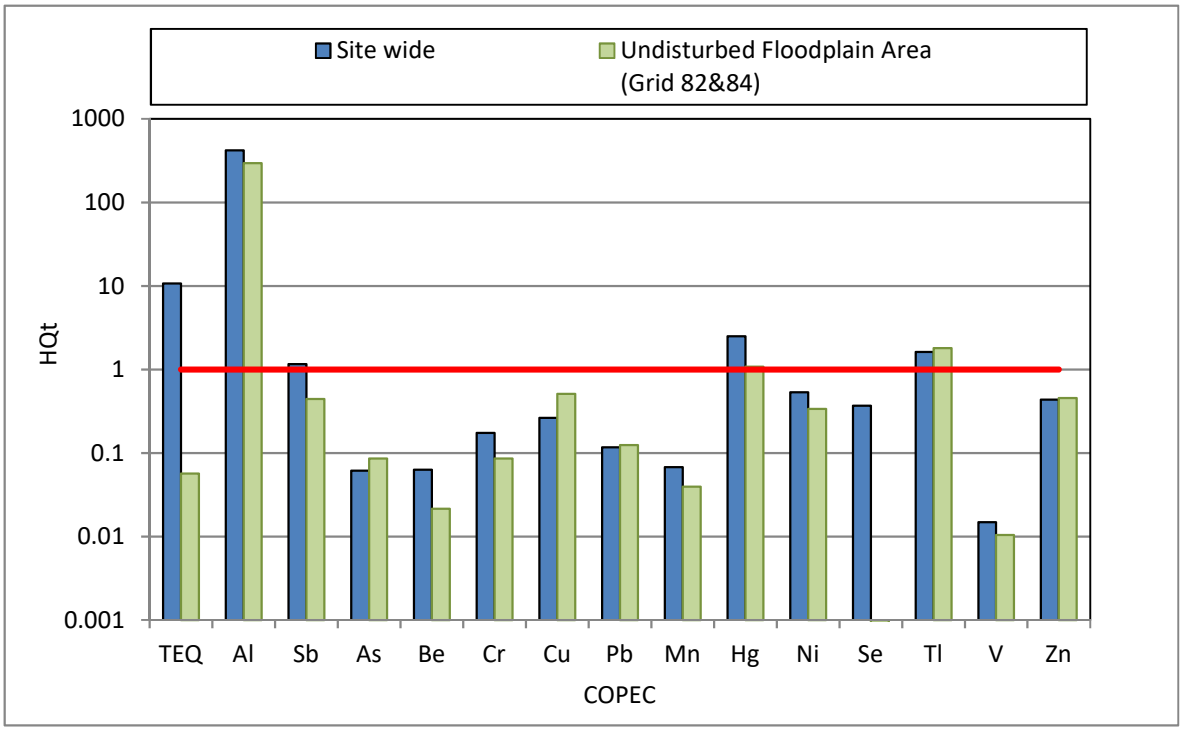
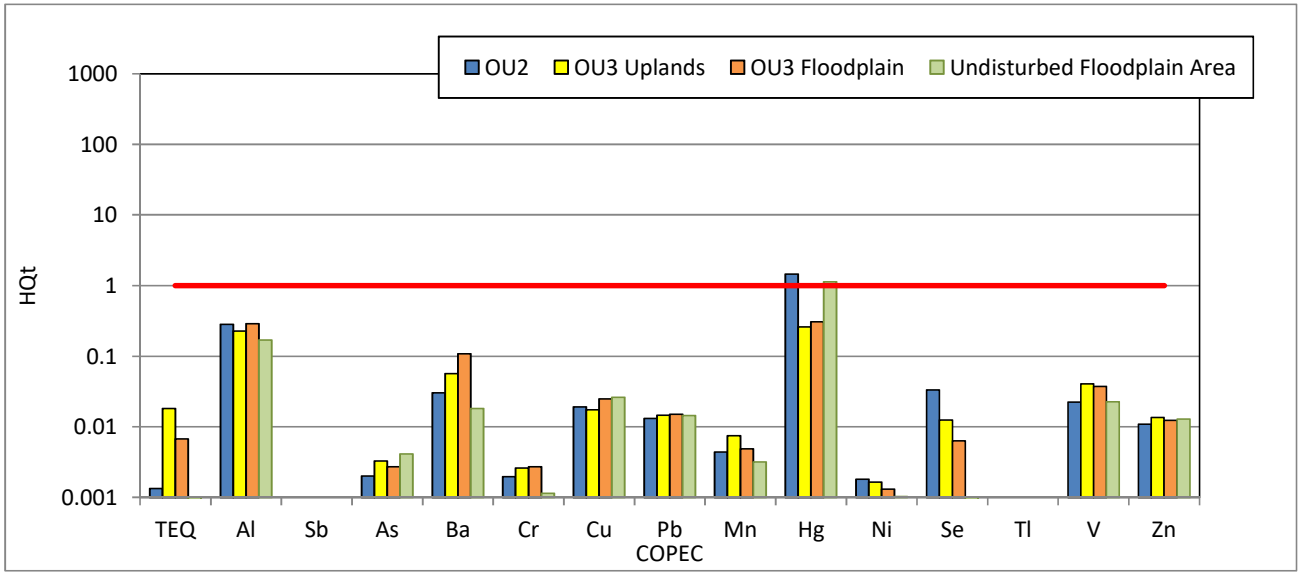


Figure 5-36. HQ Summary for Blue Grouse

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values

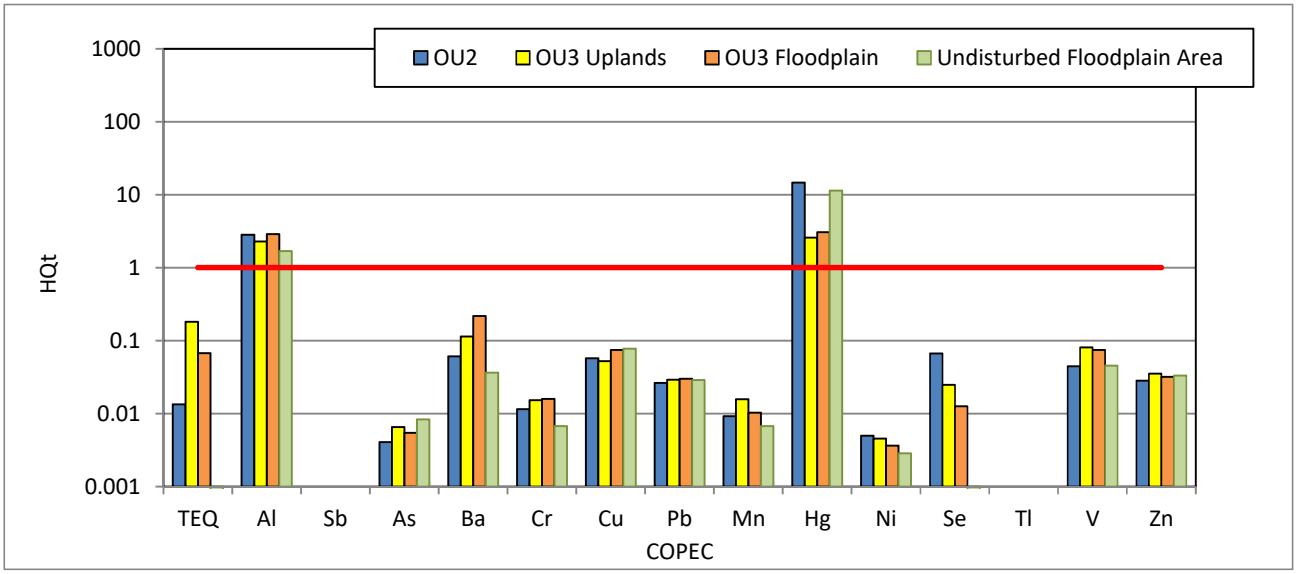
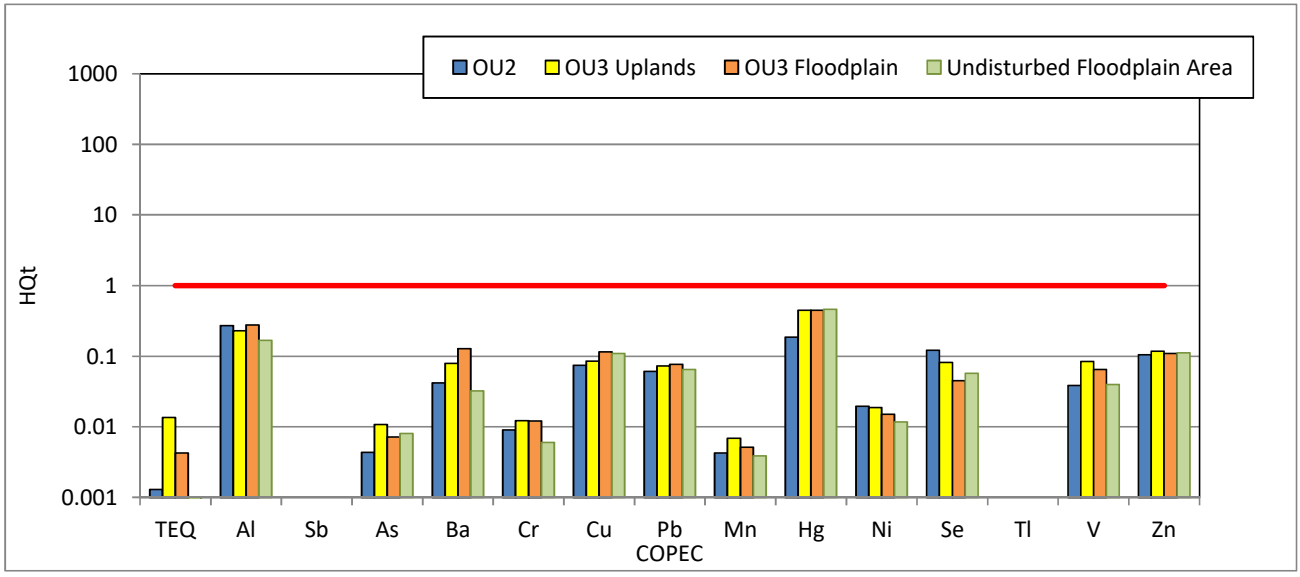


Figure 5-37. HQ Summary for American Kestrel

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values

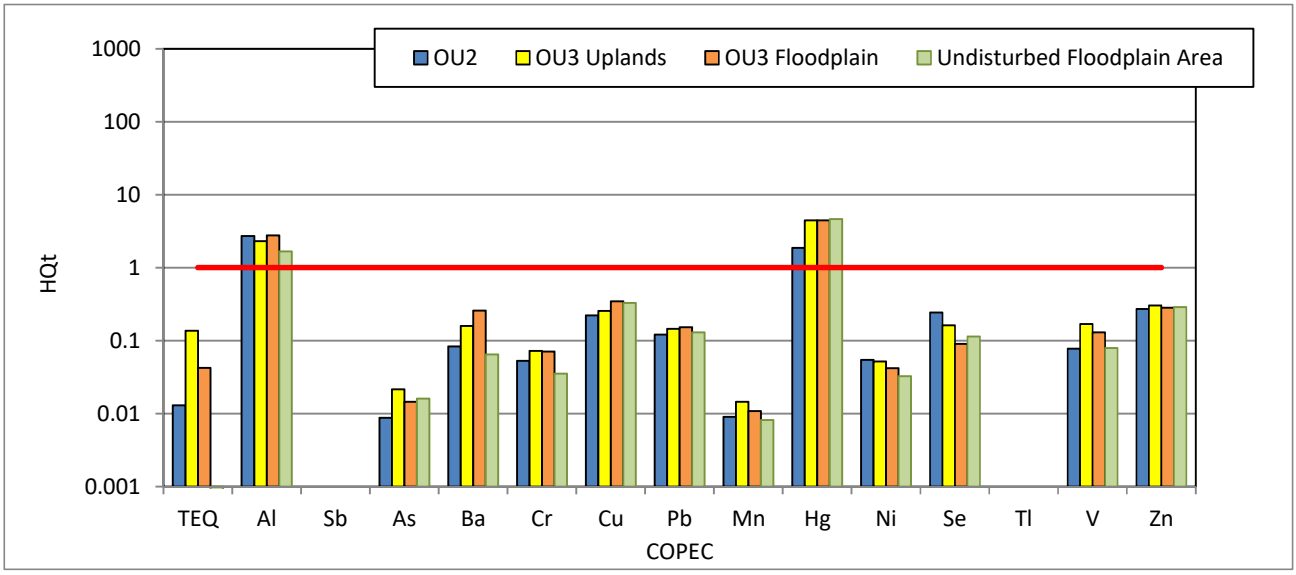
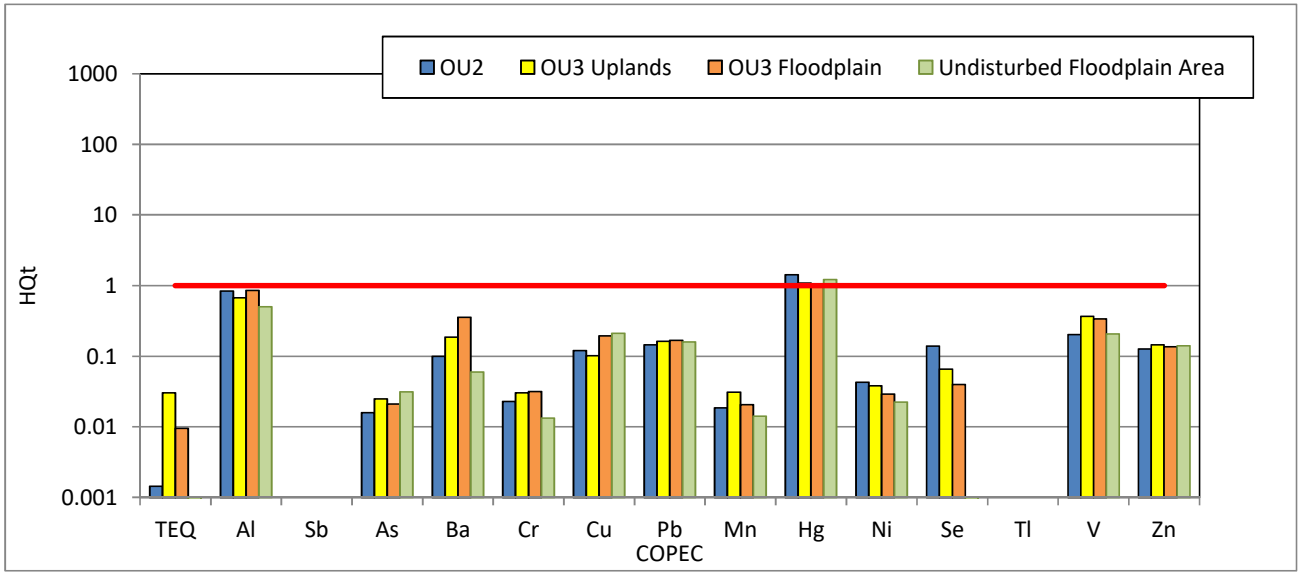


Figure 5-38. HQ Summary for Northern Flicker

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values

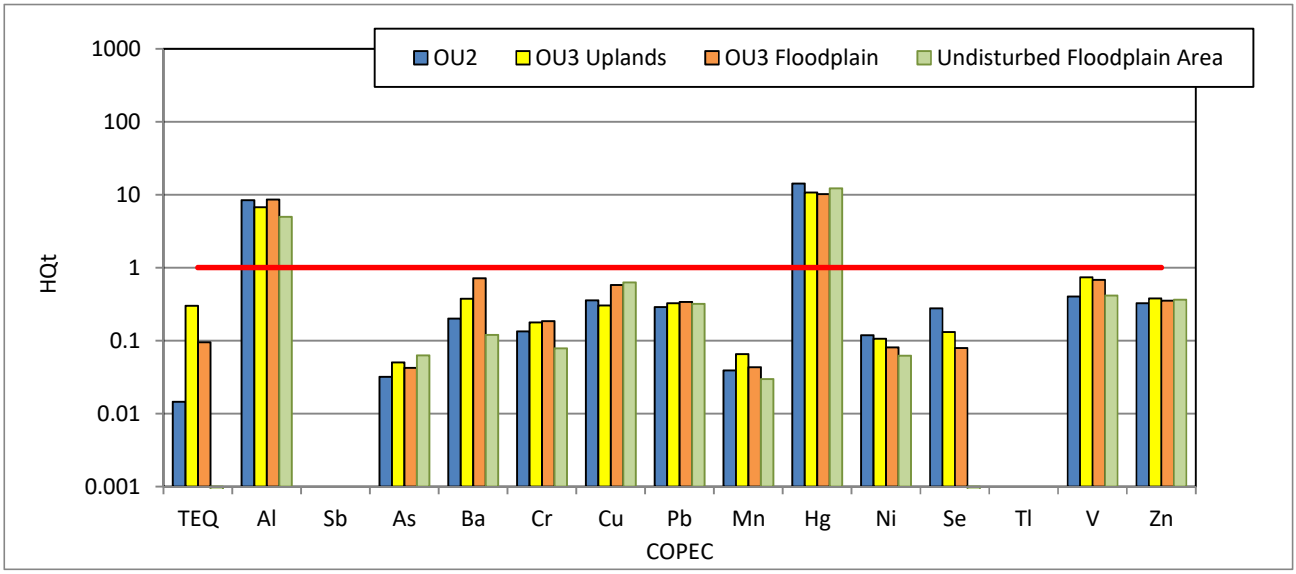
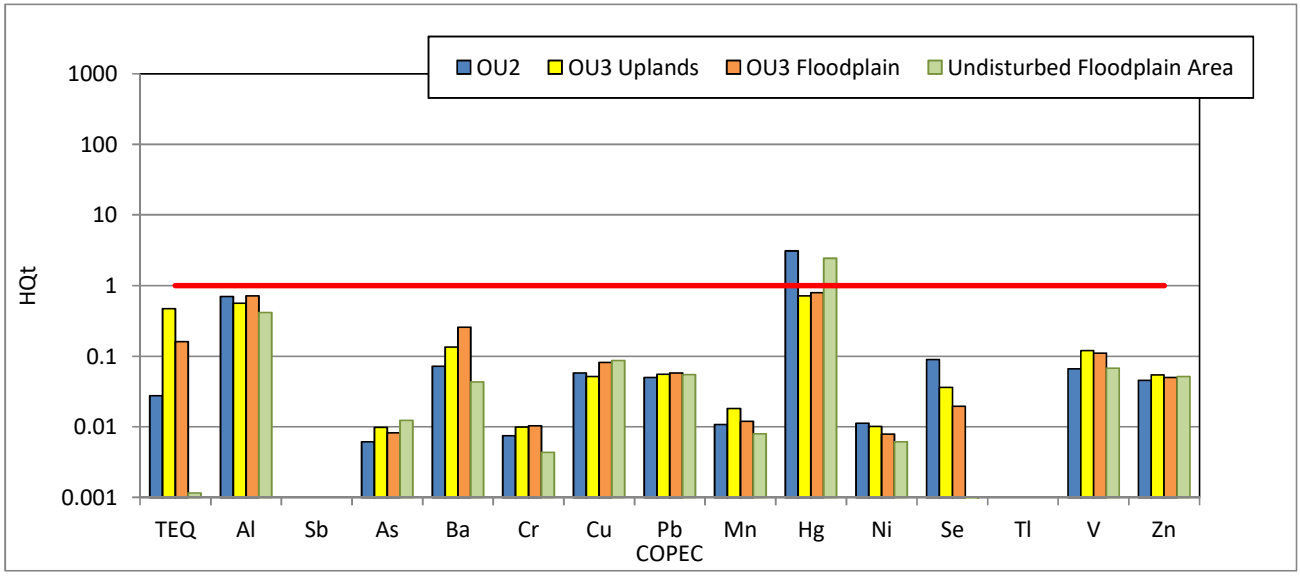


Figure 5-39. HQ Summary for Clark's Nutcracker

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values

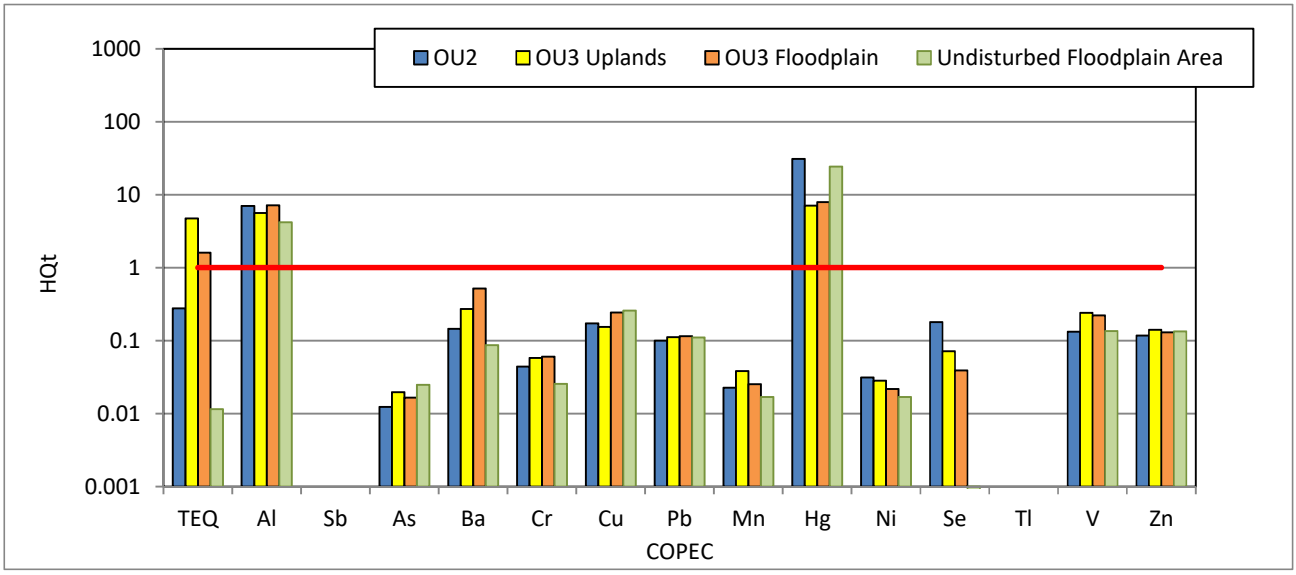
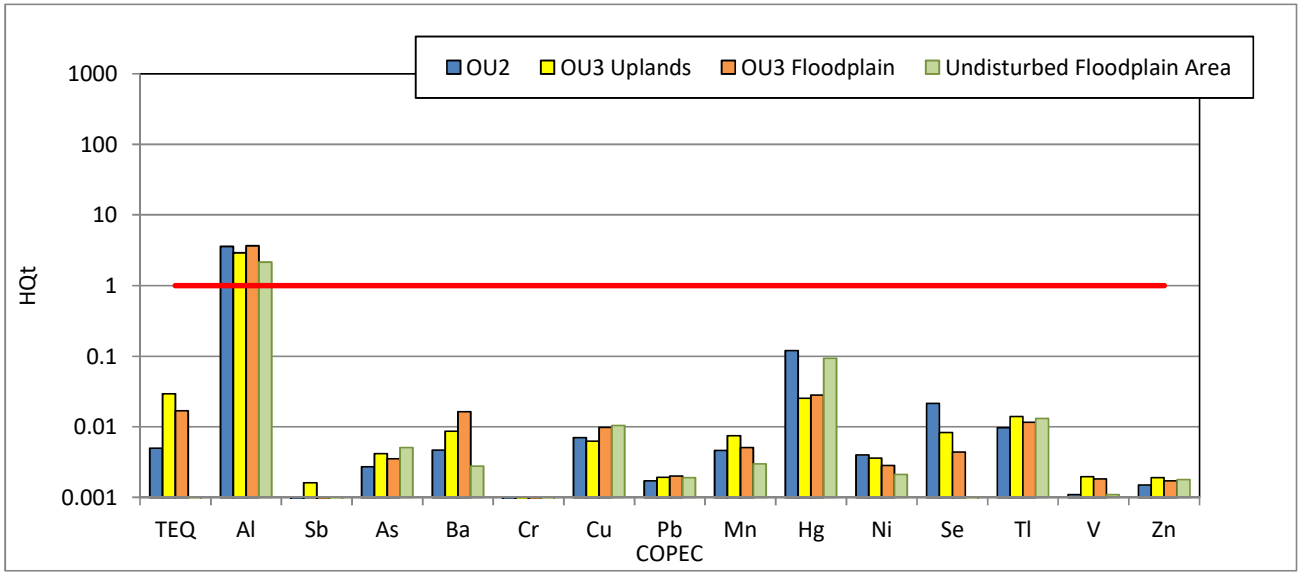


Figure 5-40. HQ Summary for White-Tail Deer

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values

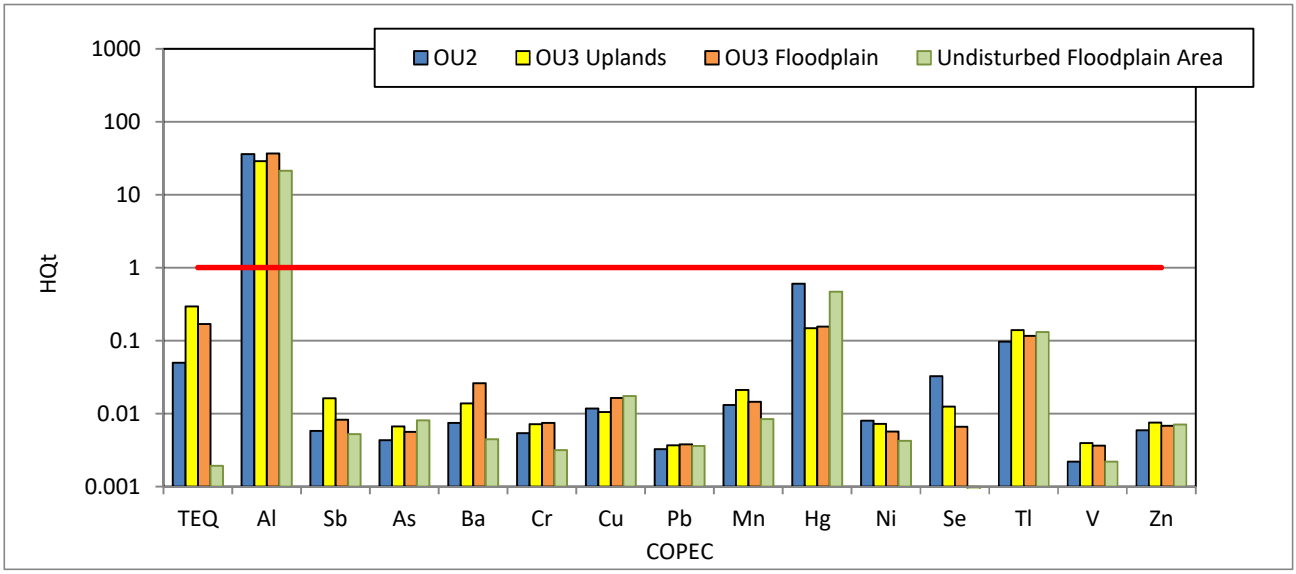
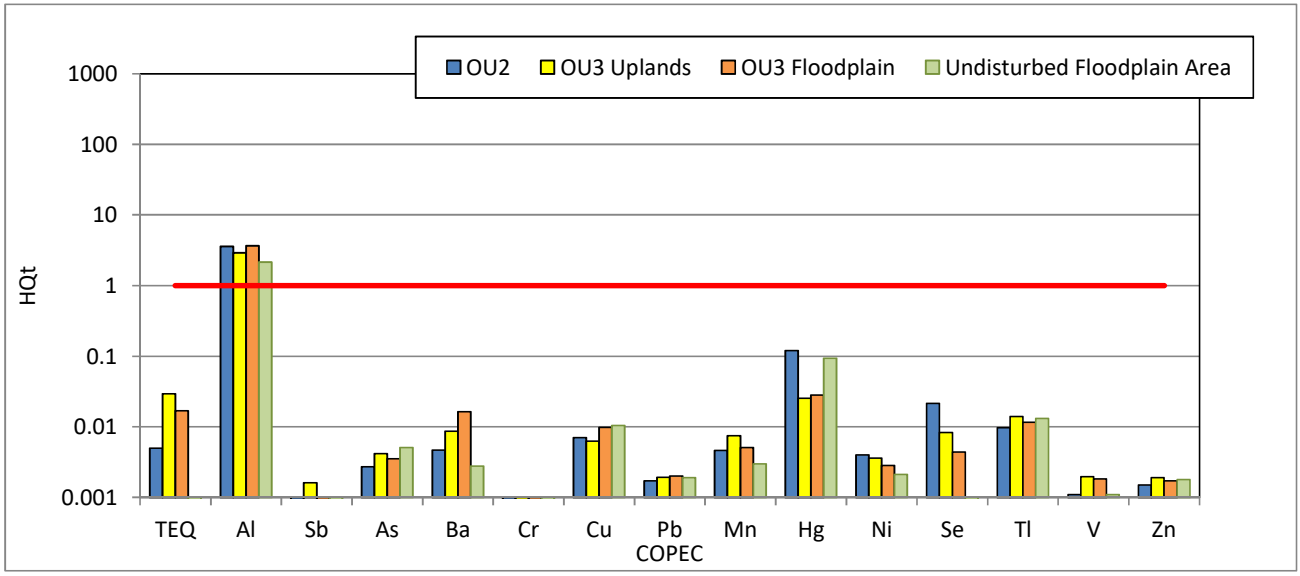


Figure 5-40. HQ Summary for White-Tail Deer

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values

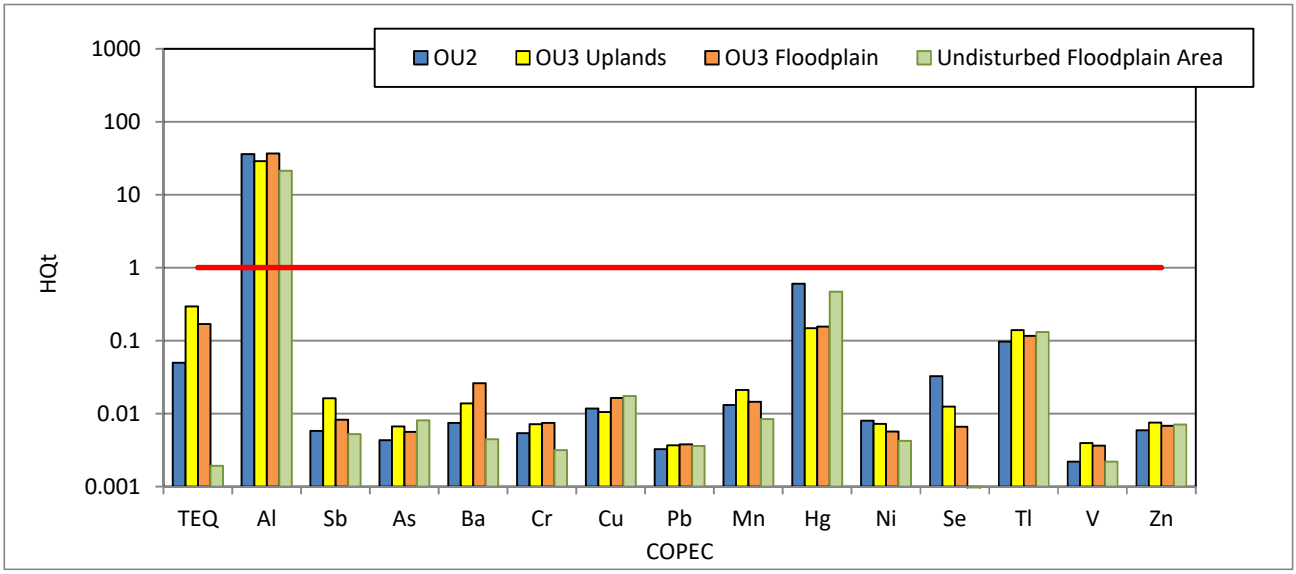
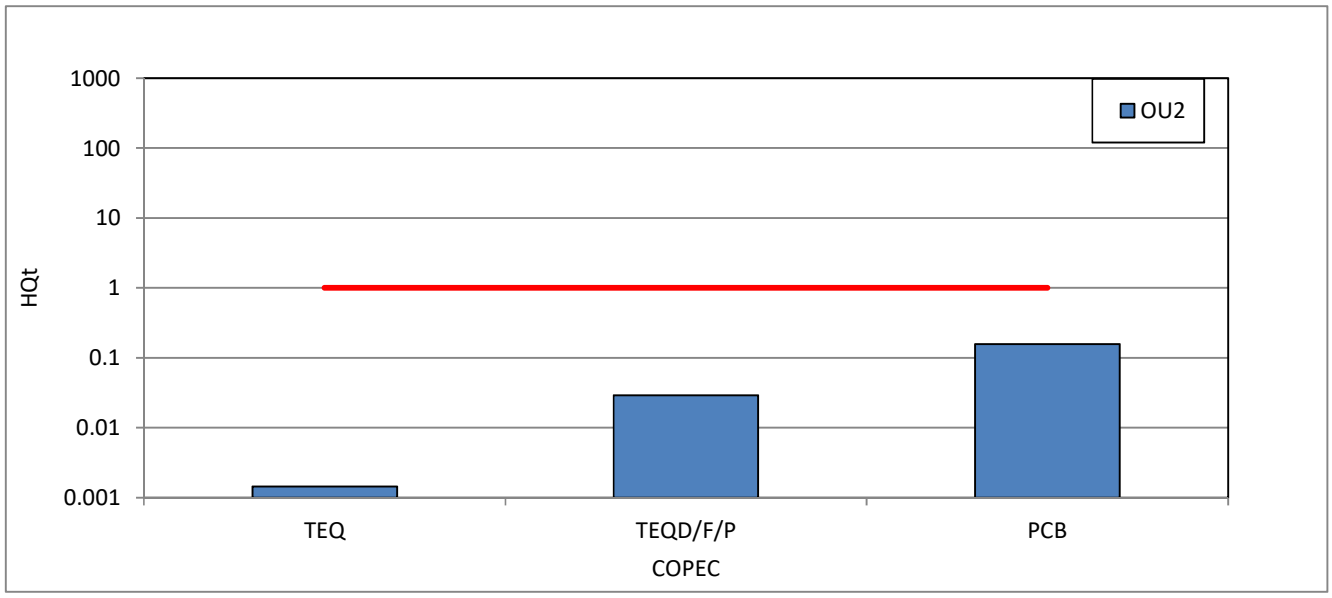


Figure 5-41. PCB HQ Summary for Northern Flicker

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values

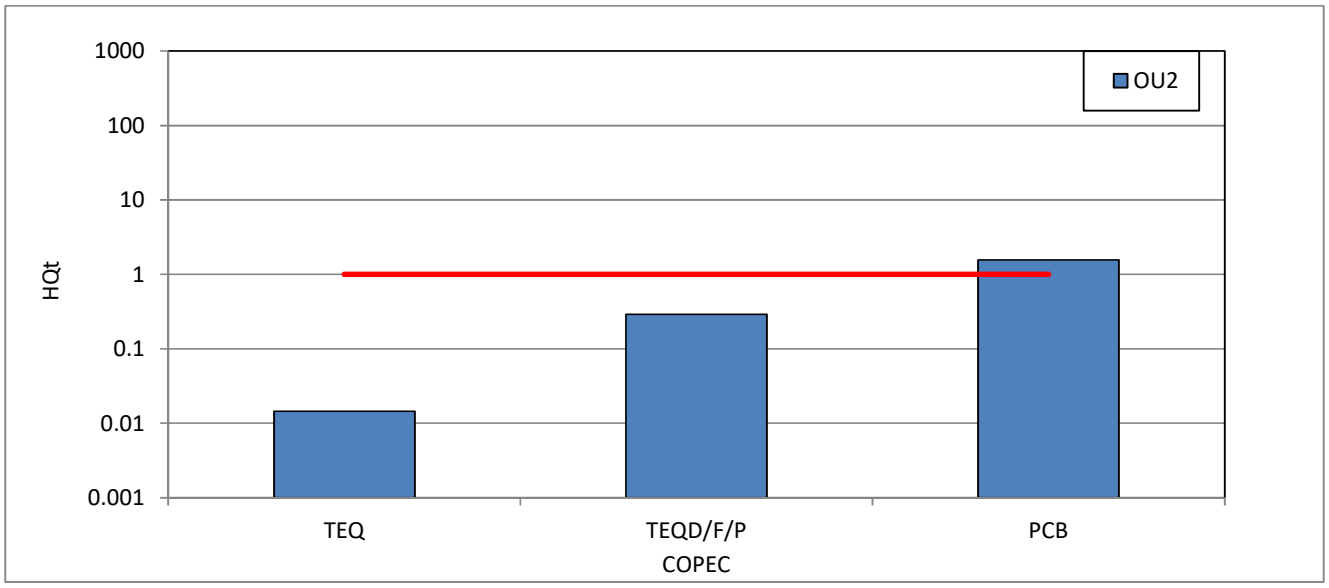
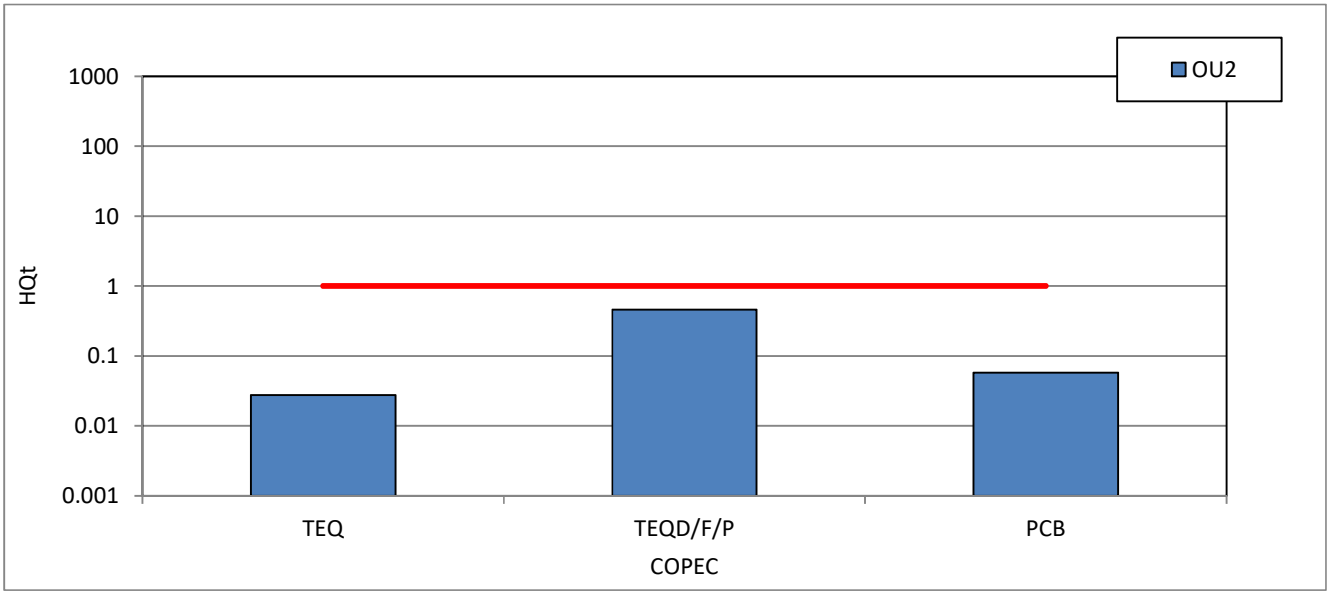


Figure 5-42. PCB HQ Summary for Clark's Nutcracker

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values

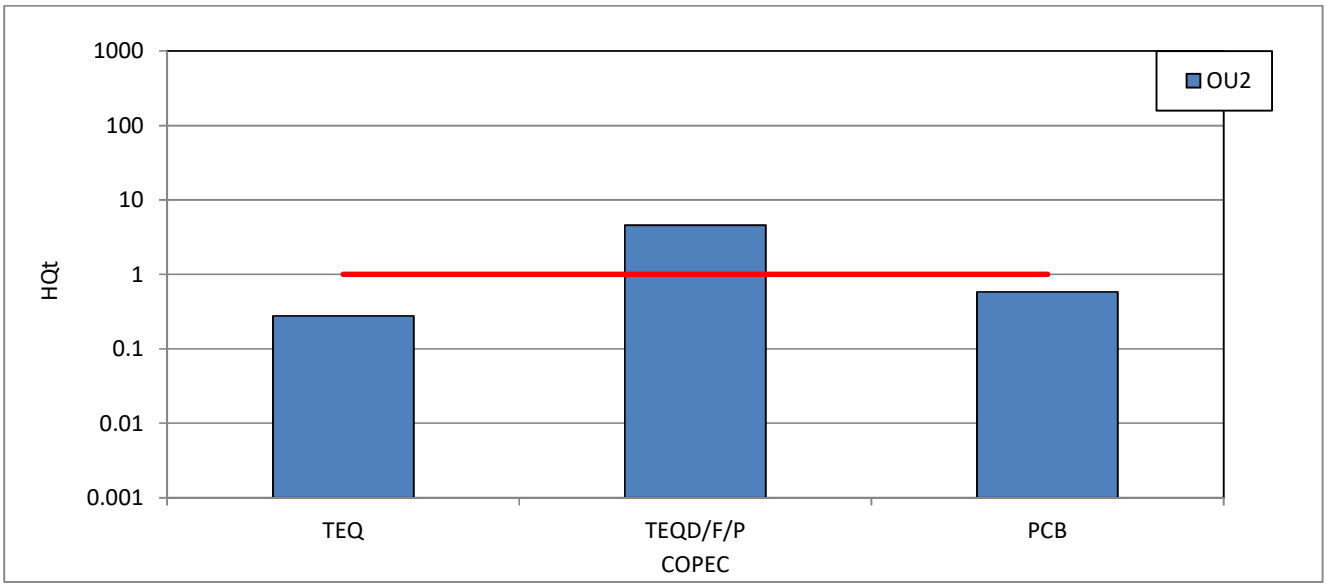


Figure 5-43. Aluminum HQs Exceeding Benchmarks for Small Home Range Birds

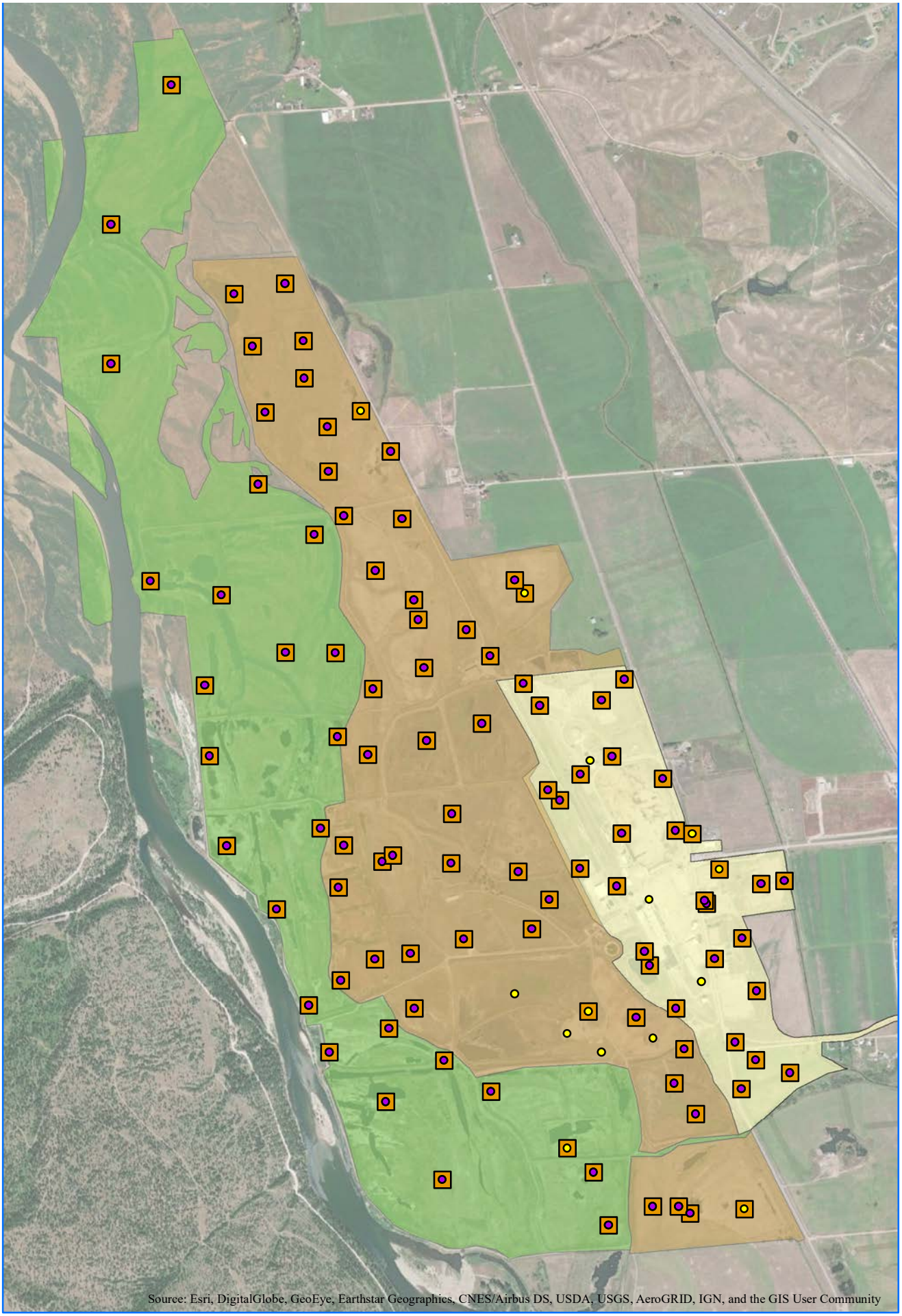


Figure 5-44. Aluminum HQs Exceeding Benchmarks for Small Mammals

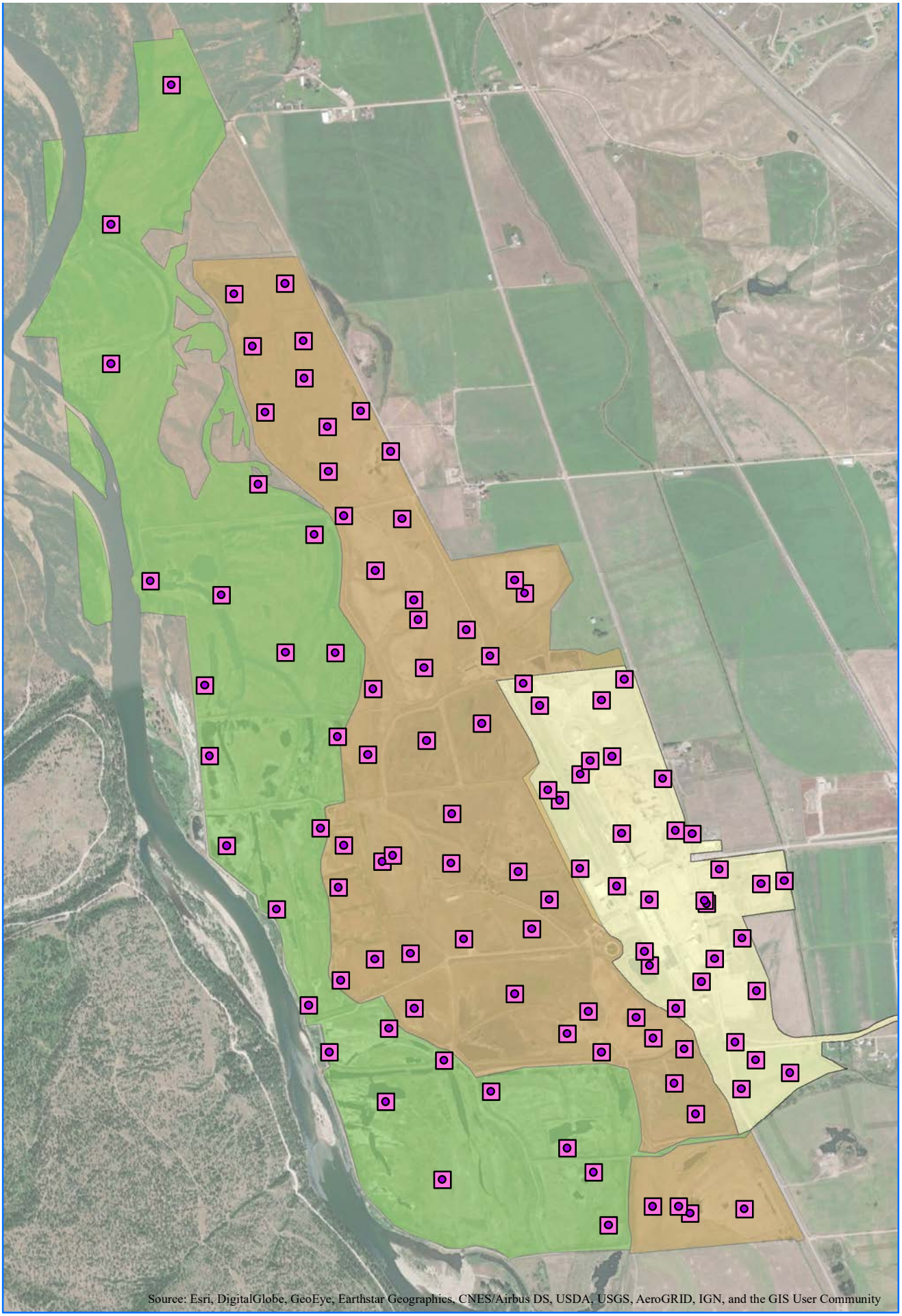


Figure 5-45. Barium HQs Exceeding Benchmarks for Small Home Range Birds

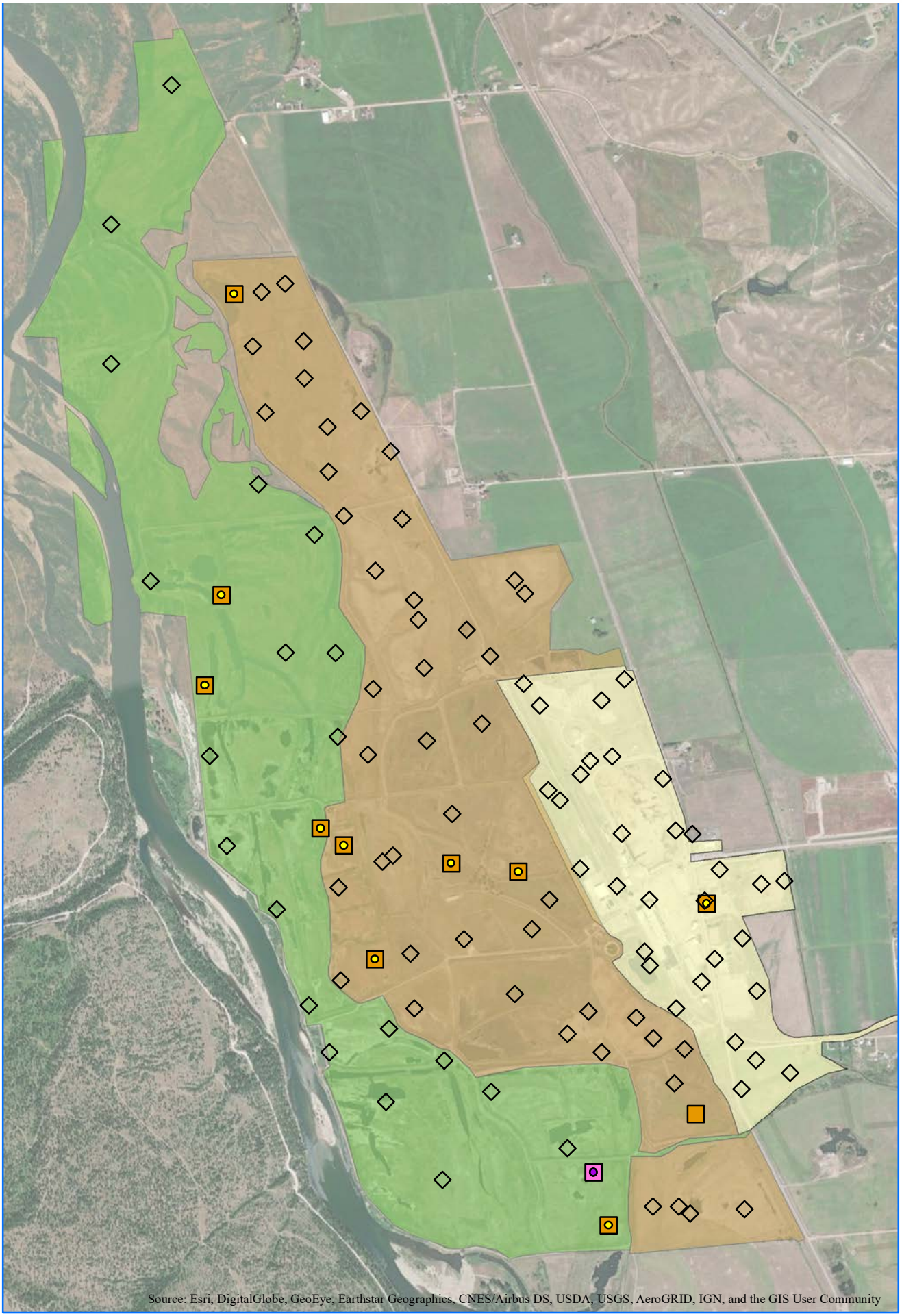


Figure 5-46. Barium HQs Exceeding Benchmarks for Small Mammals

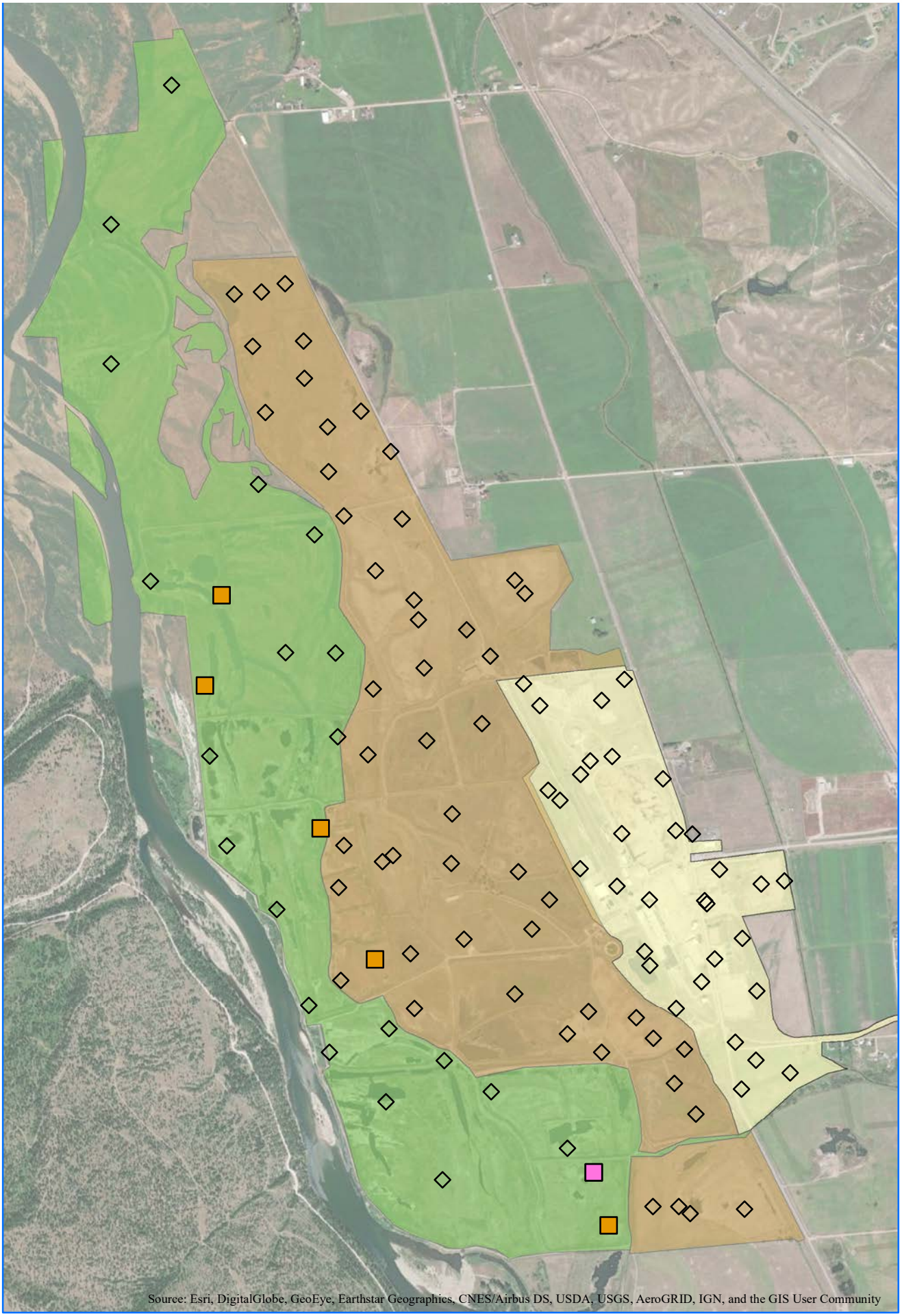


Figure 5-47. Mercury HQs Exceeding Benchmarks for Small Home Range Birds

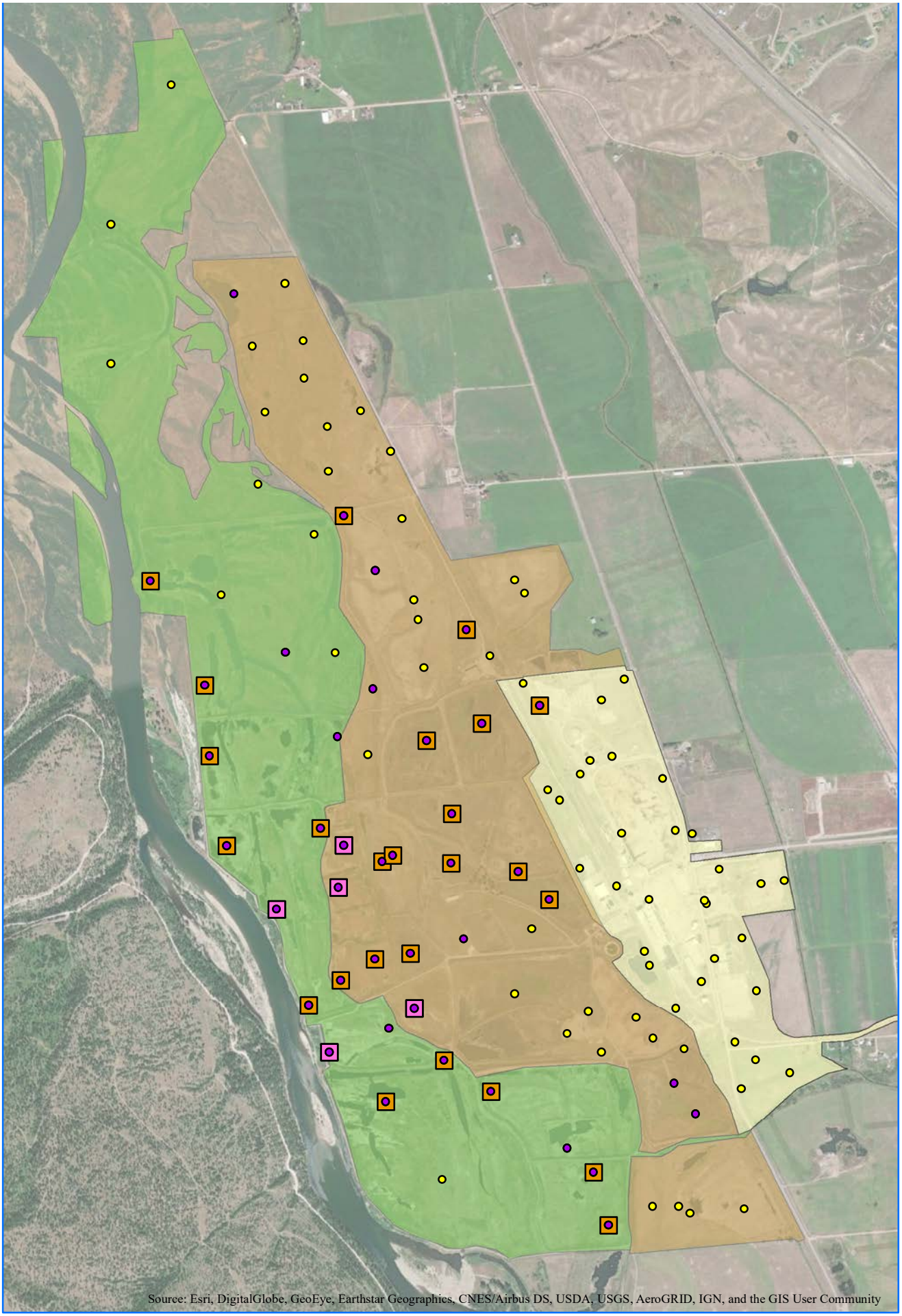


Figure 5-48. Mercury HQs Exceeding Benchmarks for Small Mammals

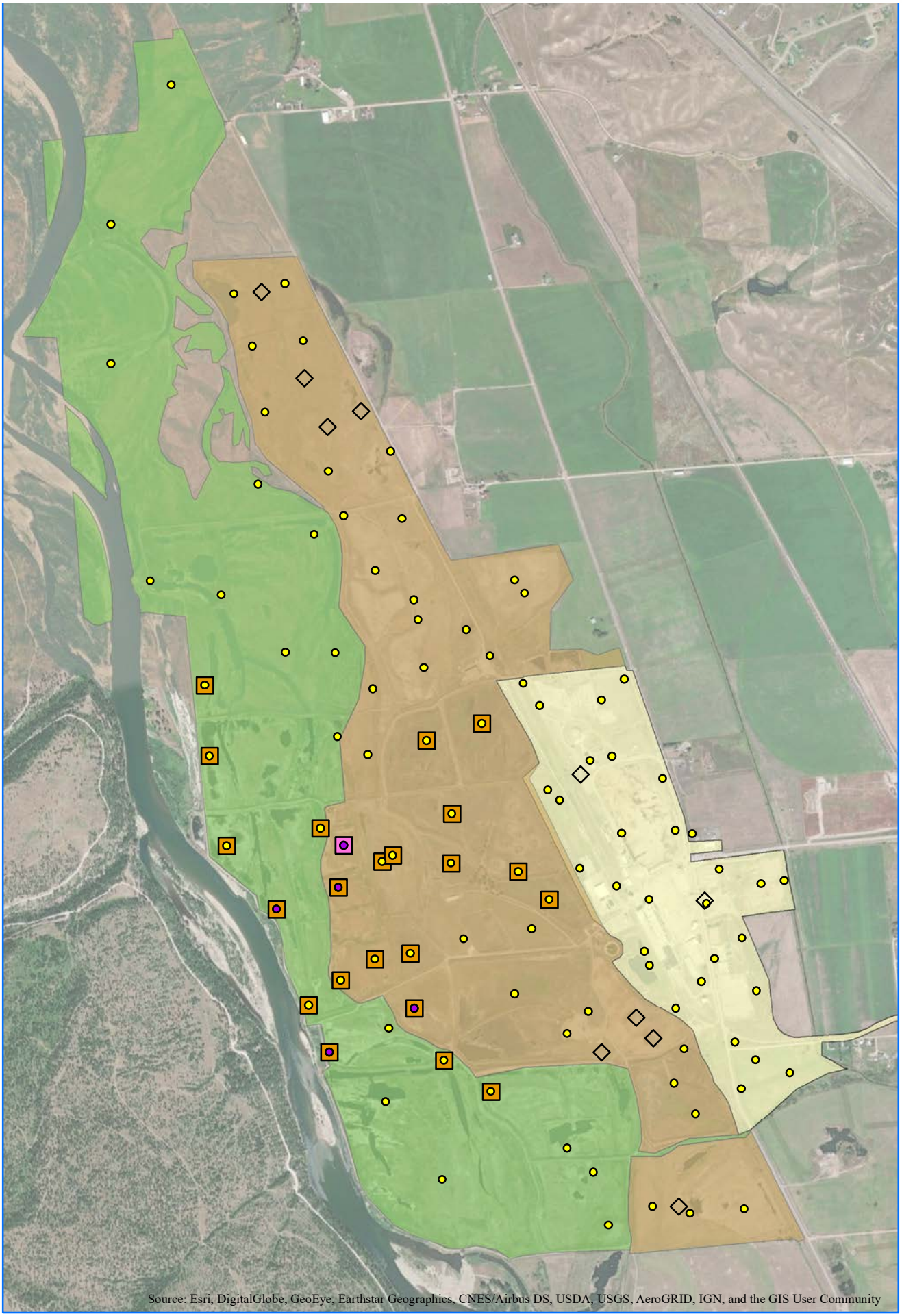
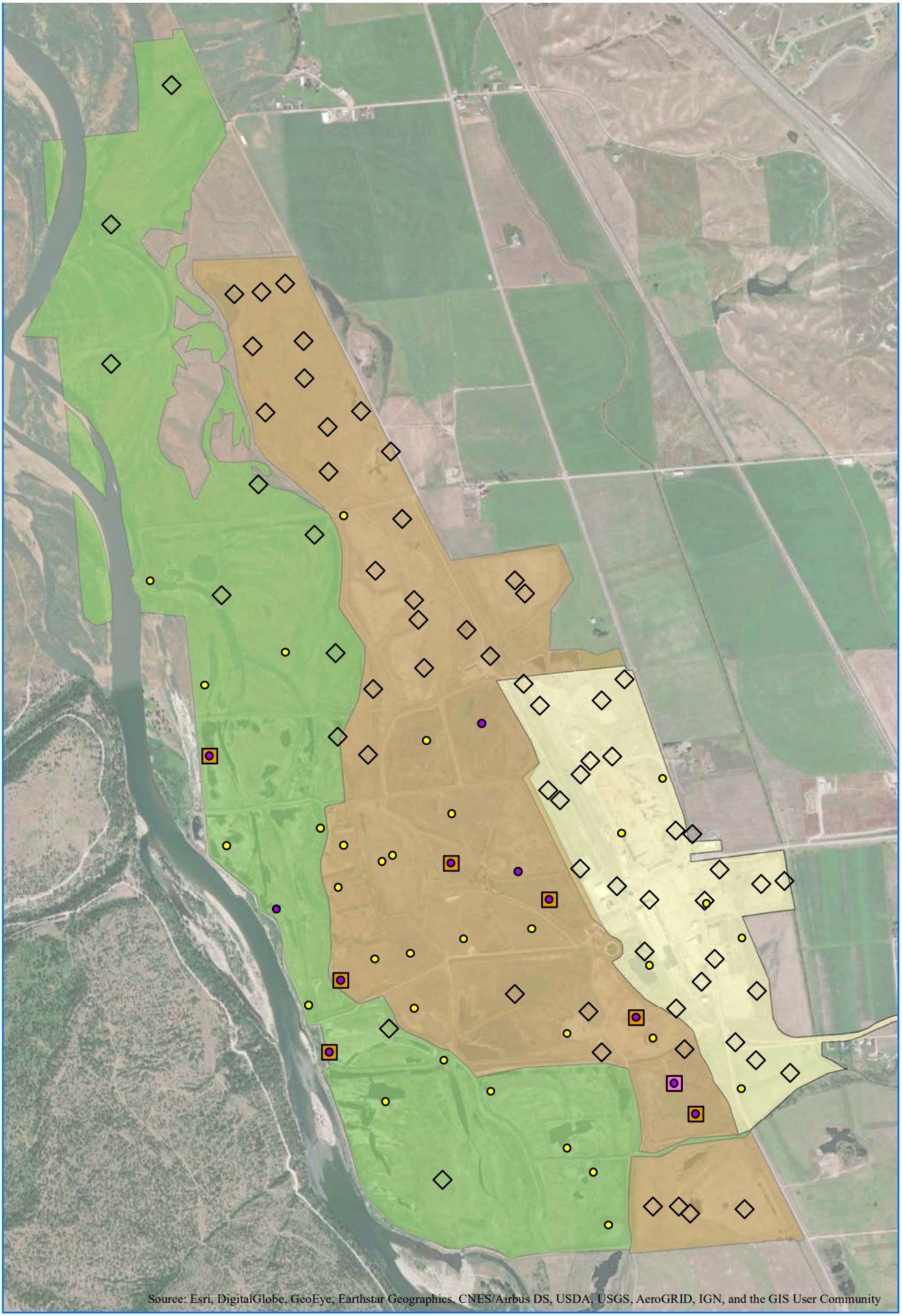


Figure 5-49. TEQ_A HQs Exceeding Benchmarks for Small Home Range Birds



Smurfit-Stone/ Frenchtown Mill Site, Montana

N

0 0.2 Miles

- Small Home Range Avian TEQ Soil and Diet HQ<1
- Small Home range Avian TEQ Diet HQ_L ≥1
- Small Home Range Avian TEQ Diet HQ_N ≥1
- Small Home Range Avian TEQ Soil HQ_L ≥1
- Small Home Range Avian TEQ Soil HQ_N ≥1

Site OUs

- OU2
- OU3 Upland
- OU3 Floodplain

Note: The catbird had higher HQ values than the robin at all locations.

Figure 5-50. TEQ_M HQs Exceeding Benchmarks for Small Mammals

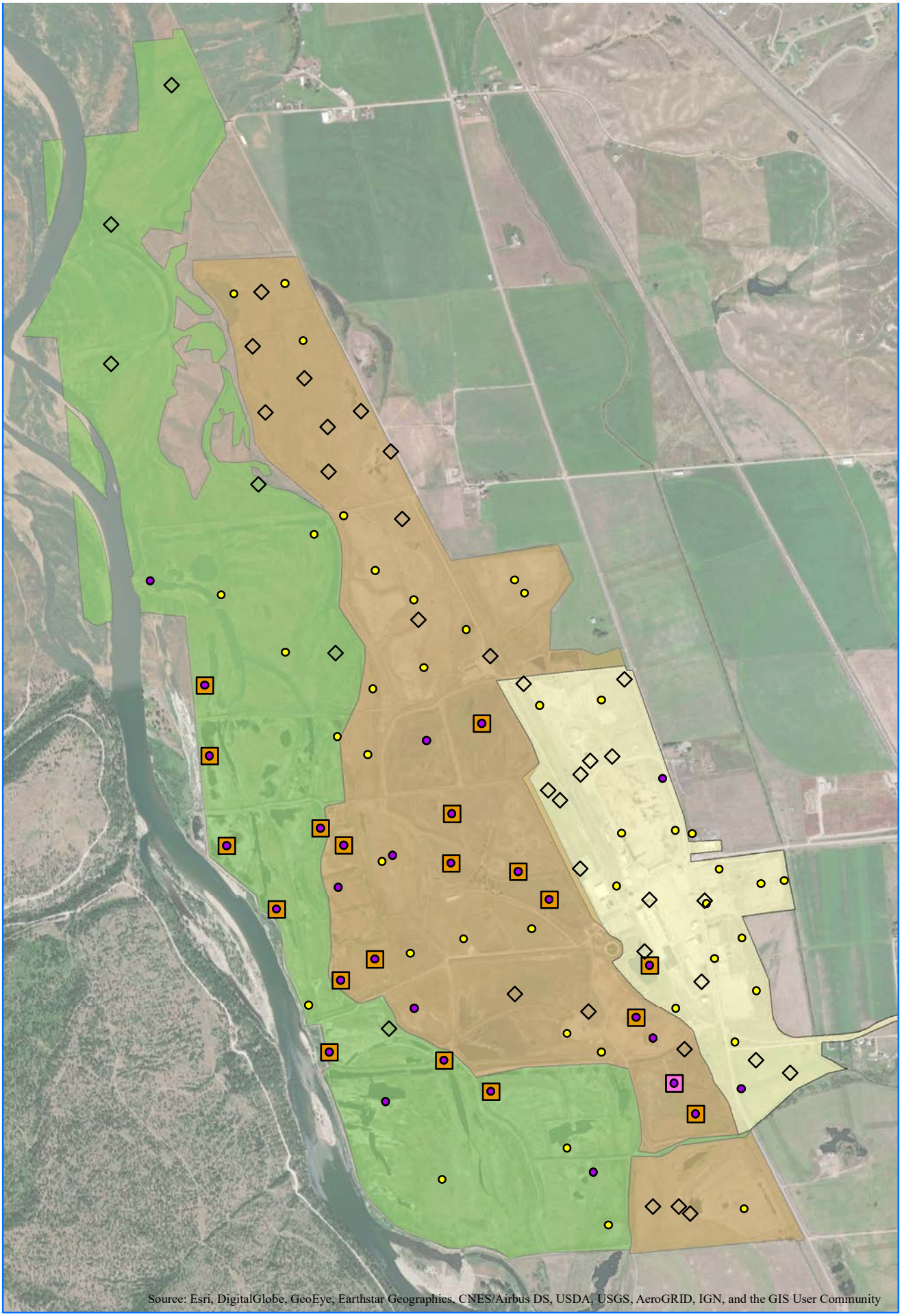


Figure 5-51. Vanadium HQs Exceeding Benchmarks for Small Home Range Birds

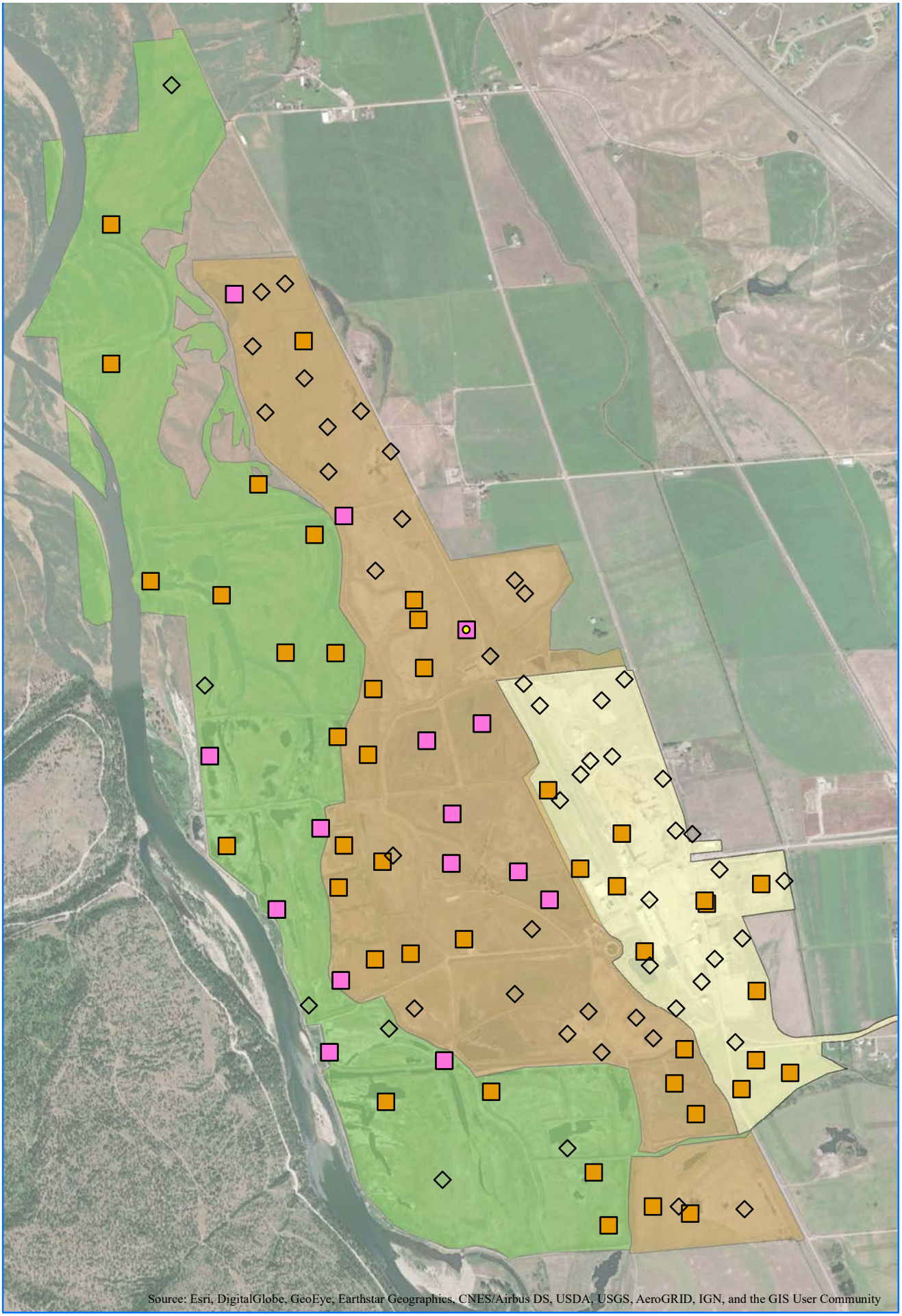
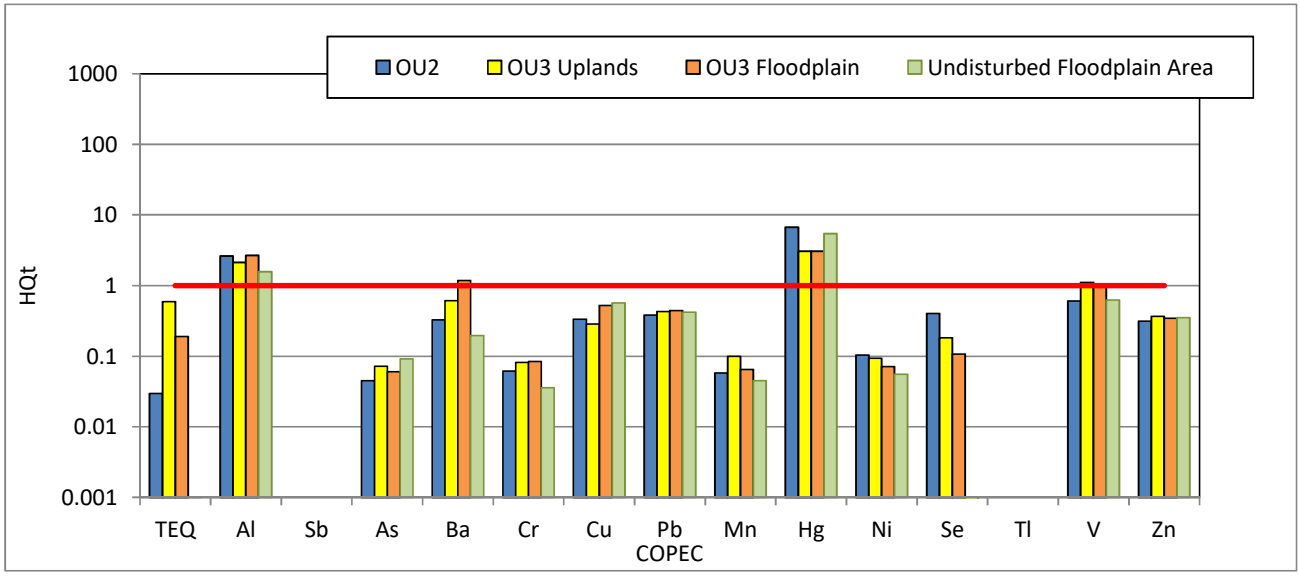


Figure 5-52. HQ Summary for American Robin

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values

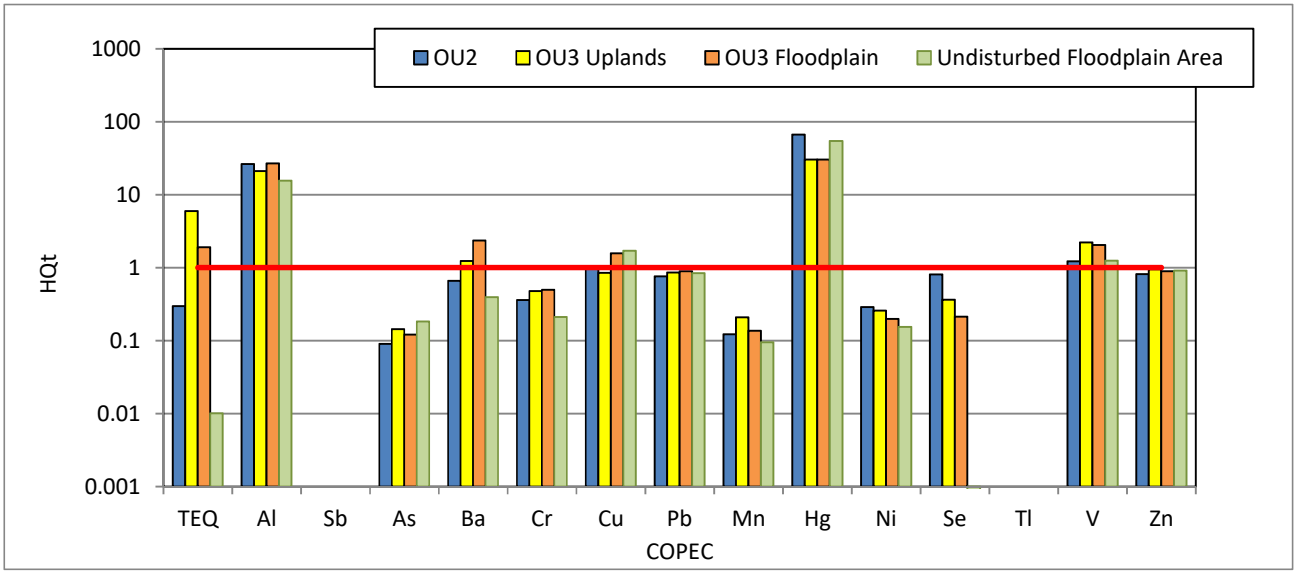
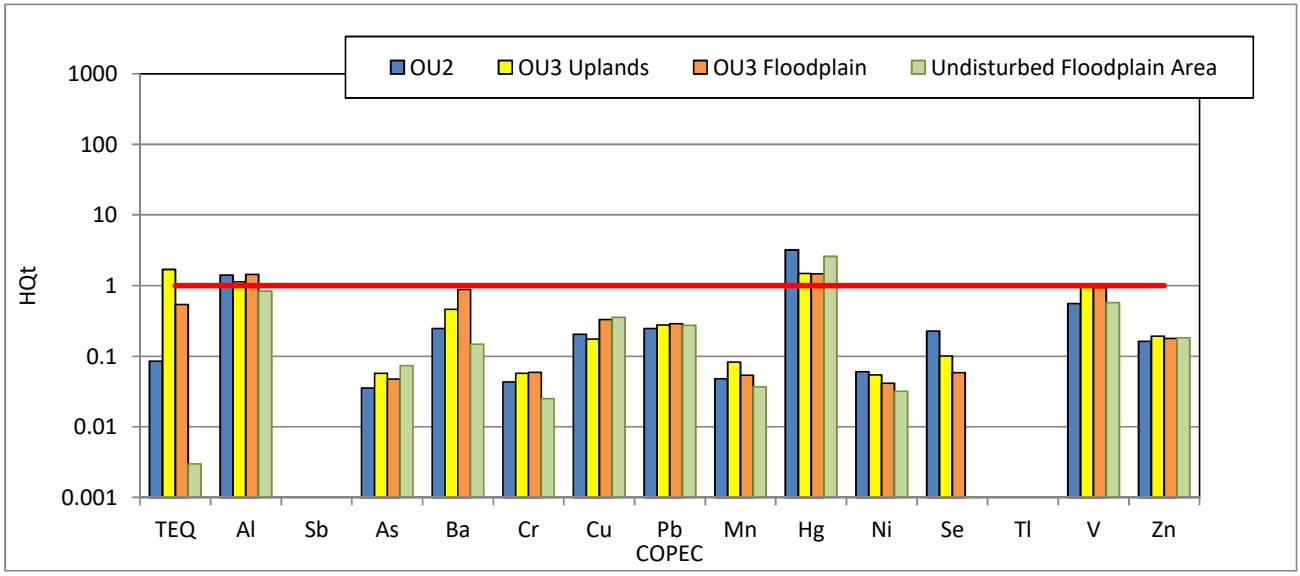


Figure 5-53. HQ Summary for Gray Catbird

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values

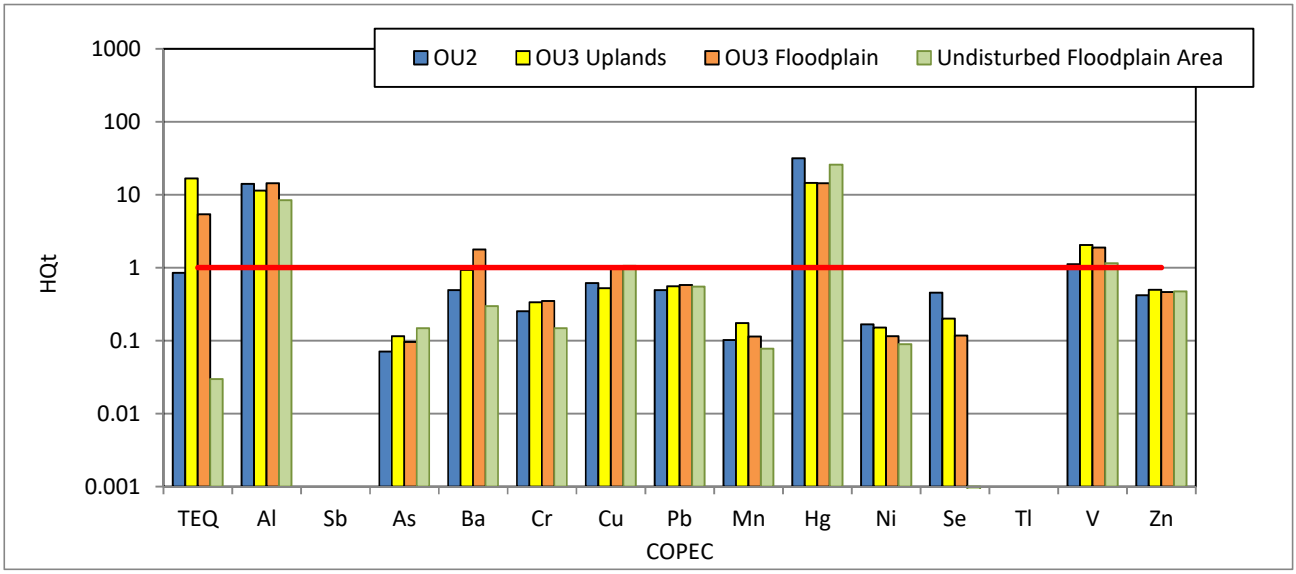
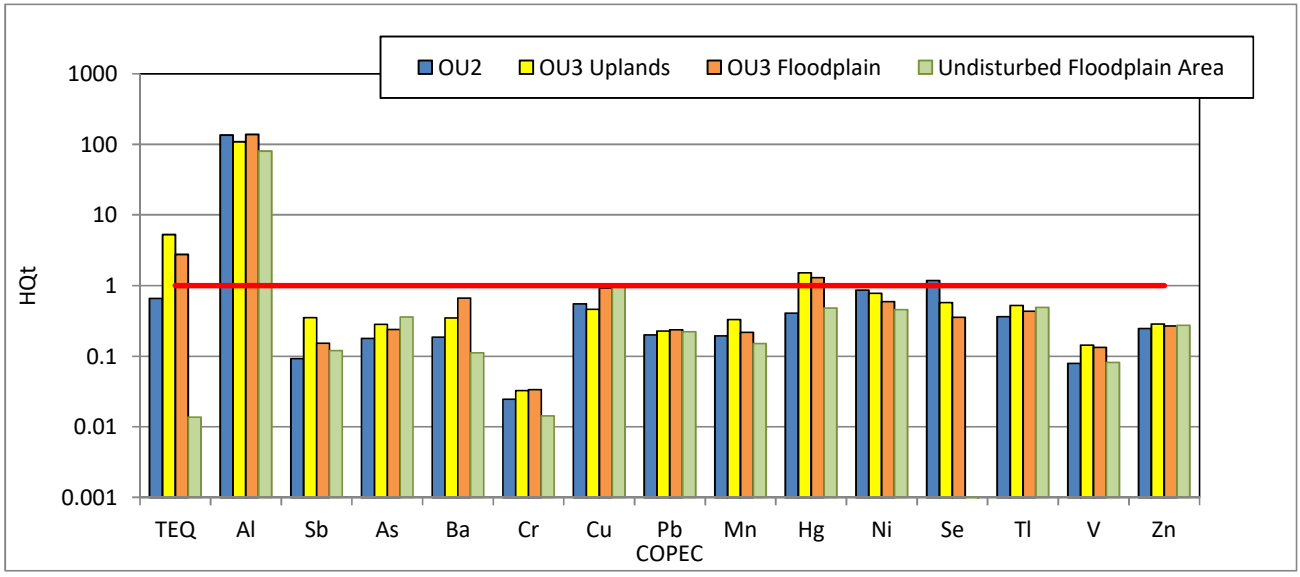


Figure 5-54. HQ Summary for Vagrant Shrew

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values

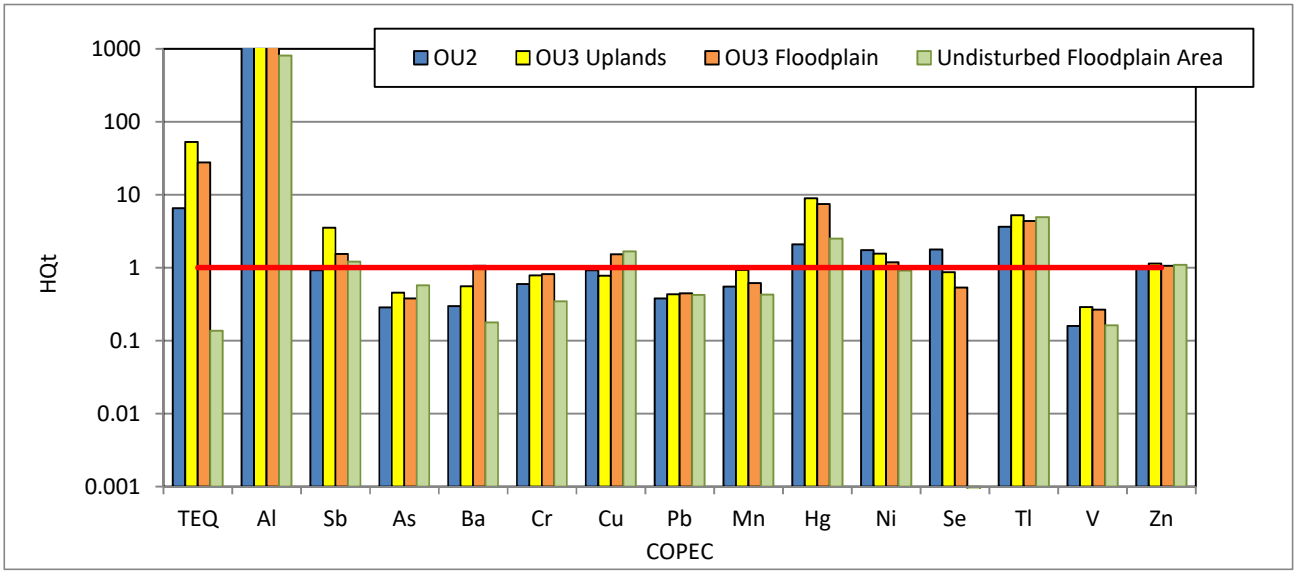
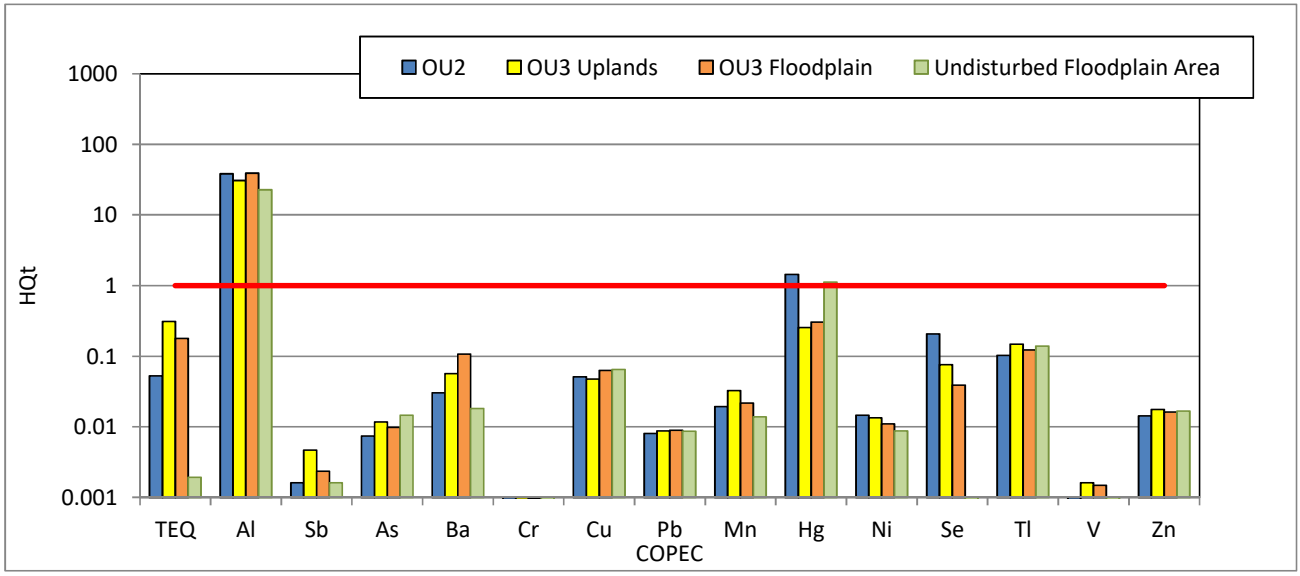


Figure 5-55. HQ Summary for Montane Vole

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values

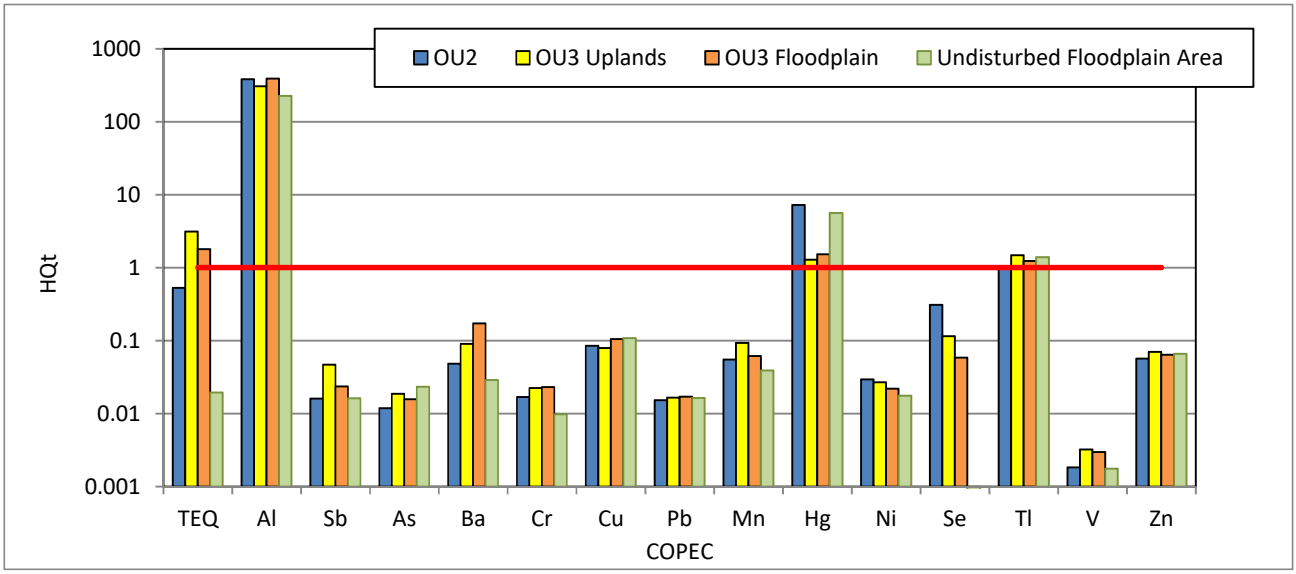
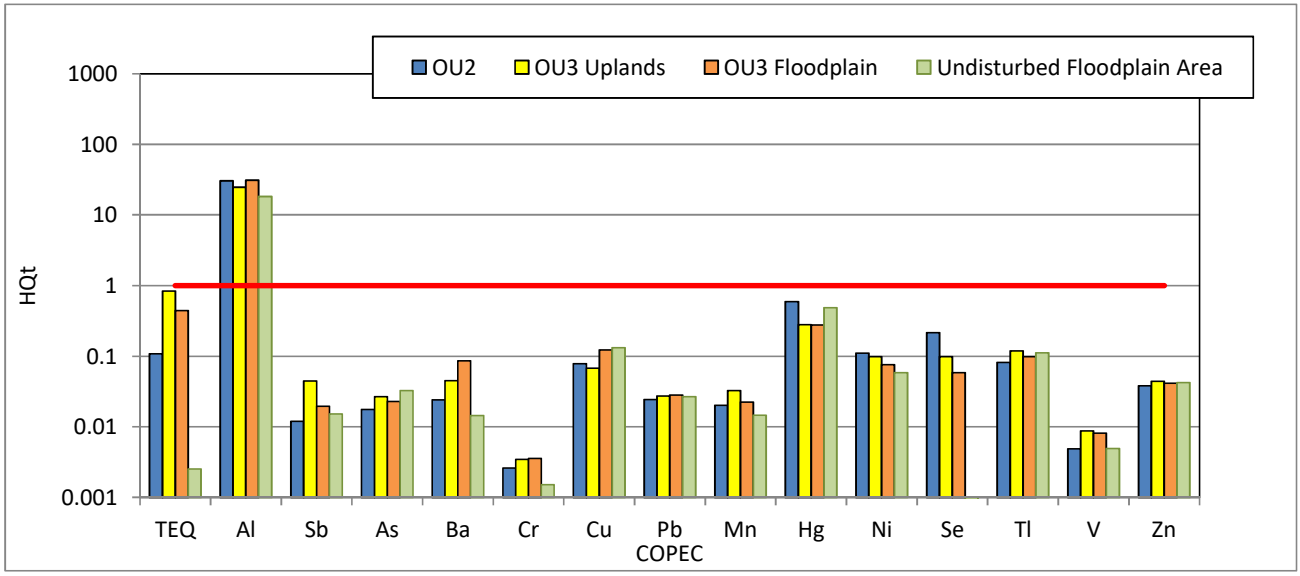


Figure 5-56. HQ Summary for Deer Mouse

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values

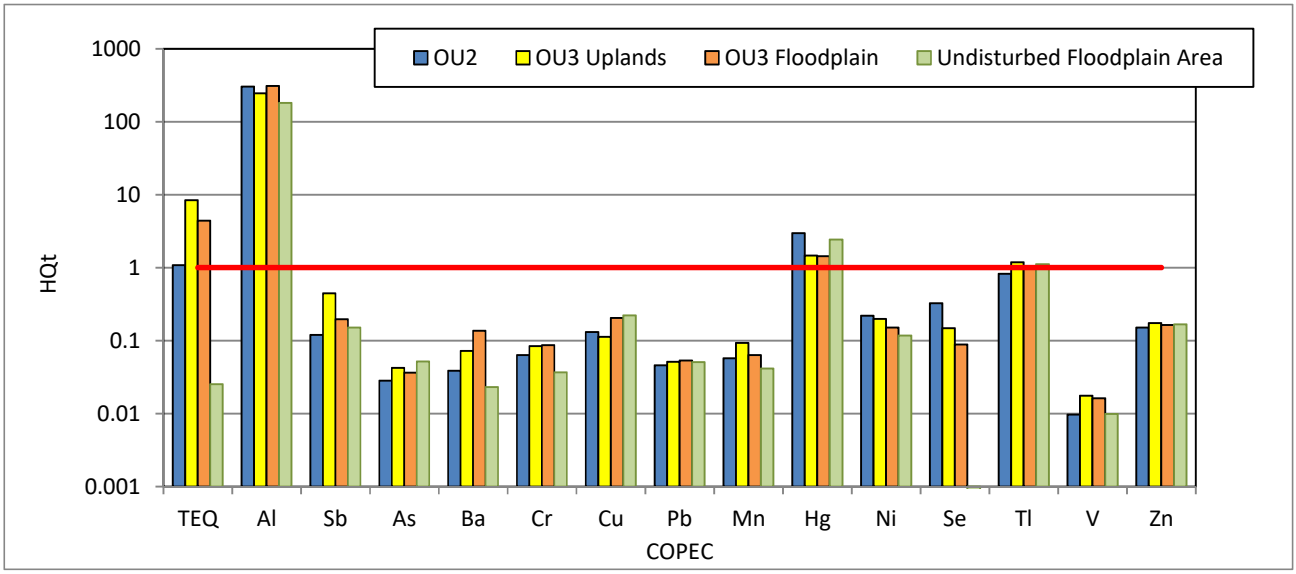
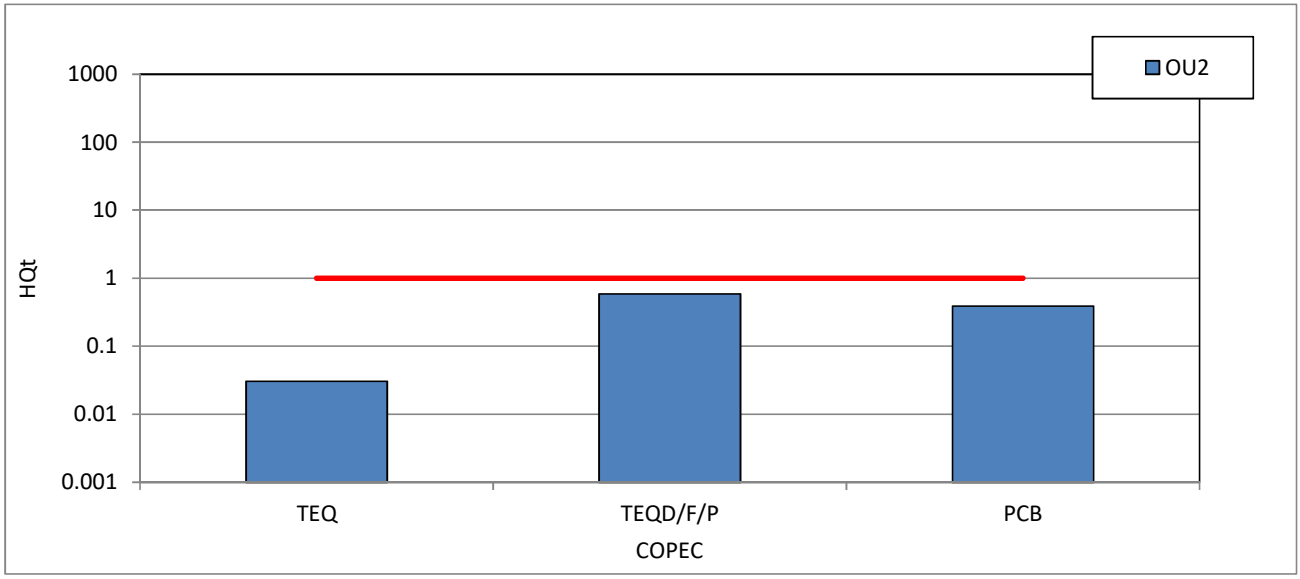


Figure 5-57. PCB HQ Summary for American Robin

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values

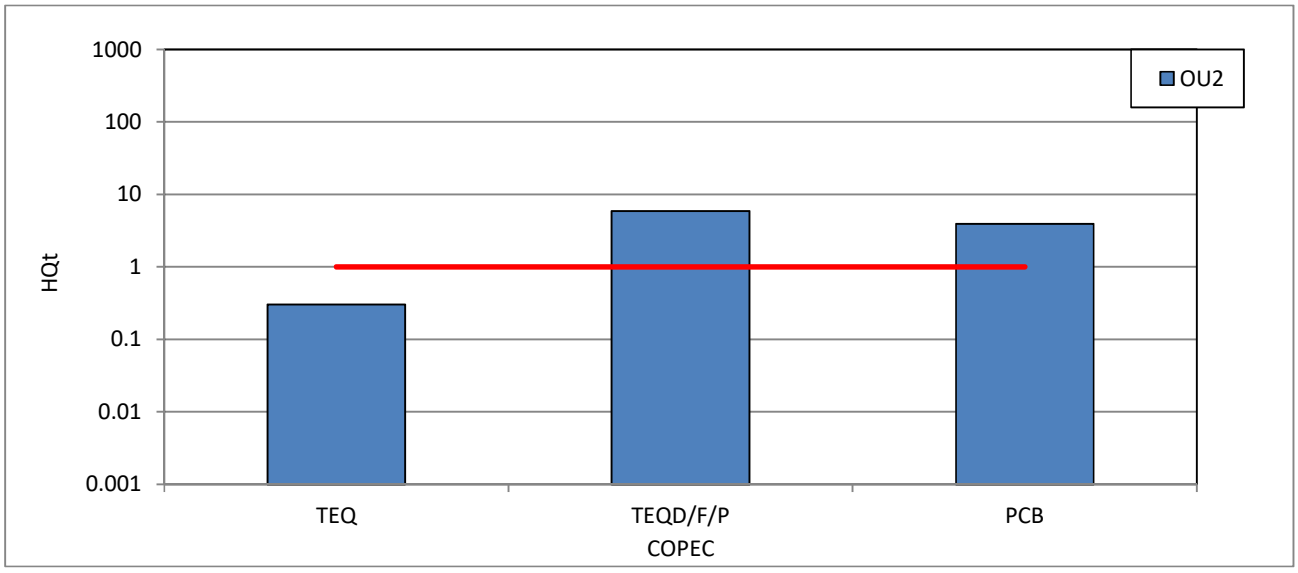
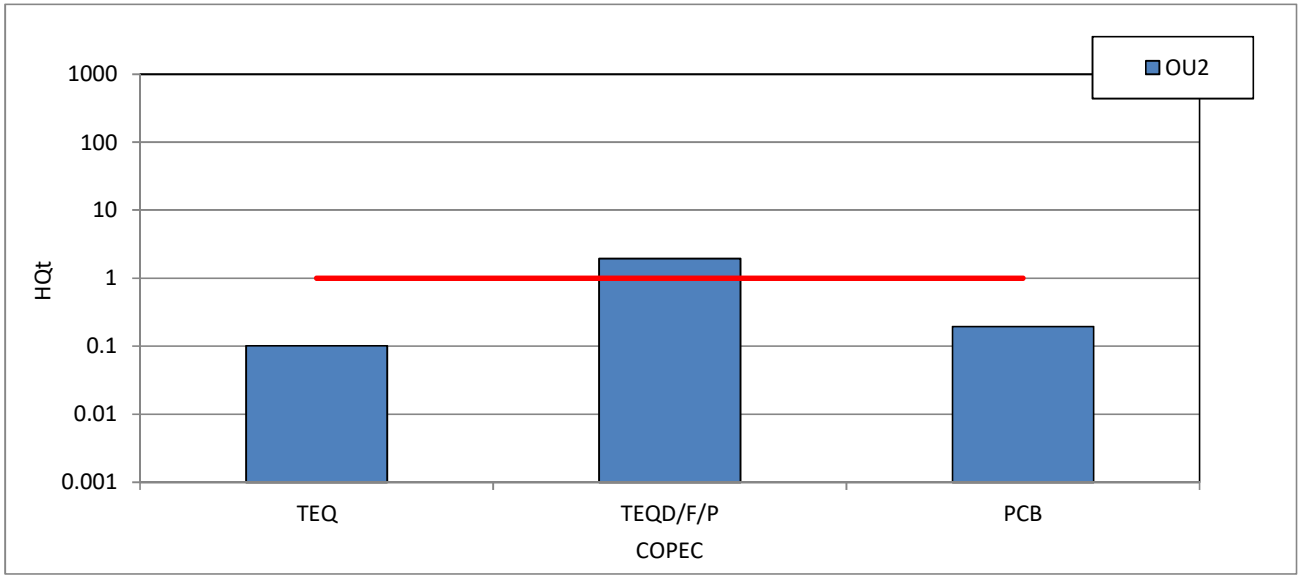


Figure 5-58. PCB HQ Summary for Gray Catbird

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values

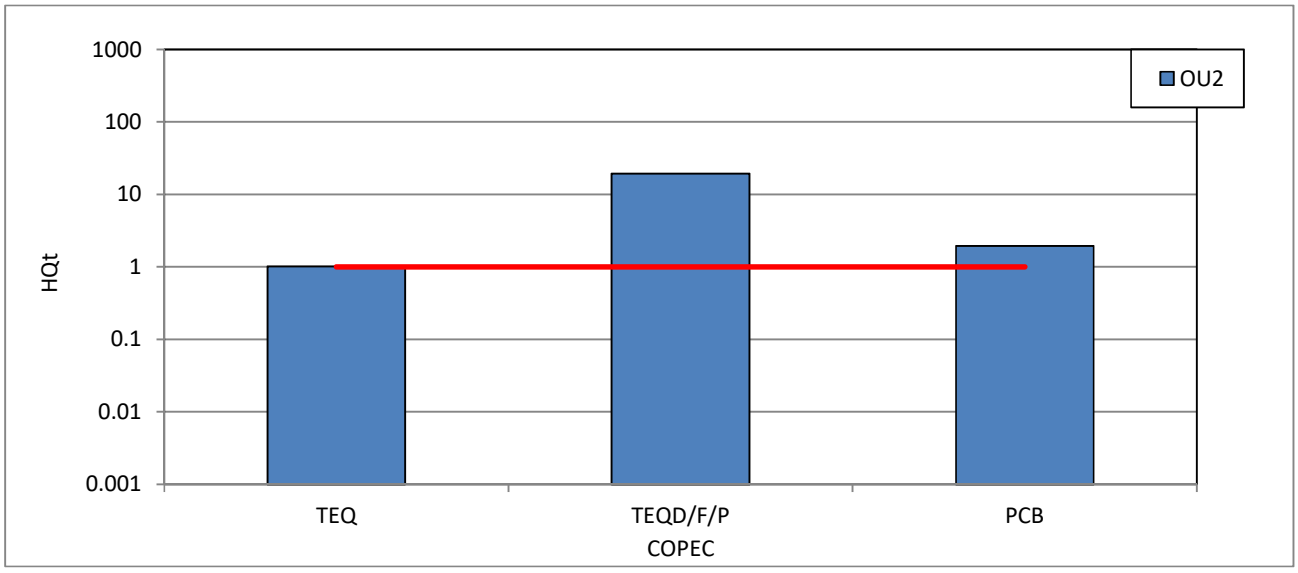
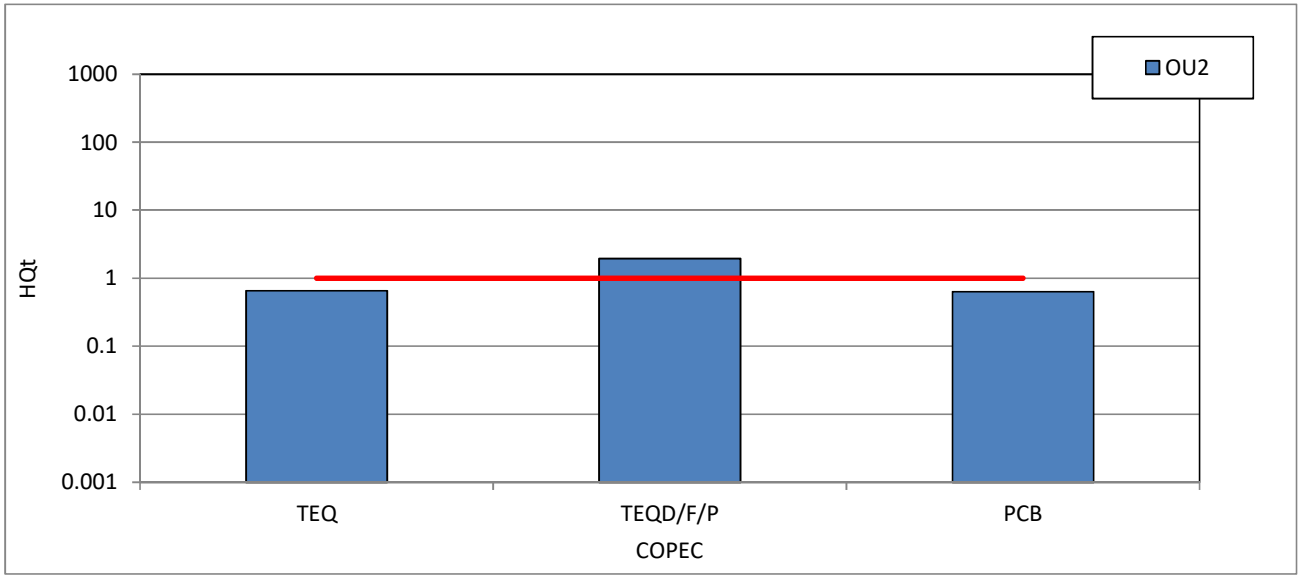


Figure 5-59. PCB HQ Summary for Vagrant Shrew

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values

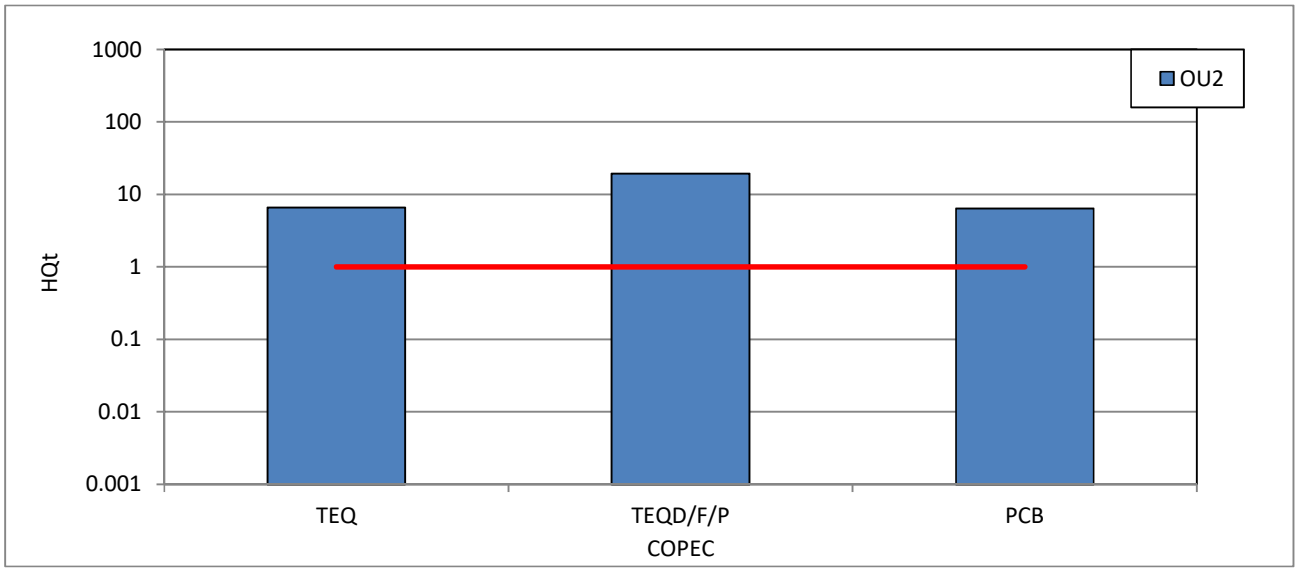
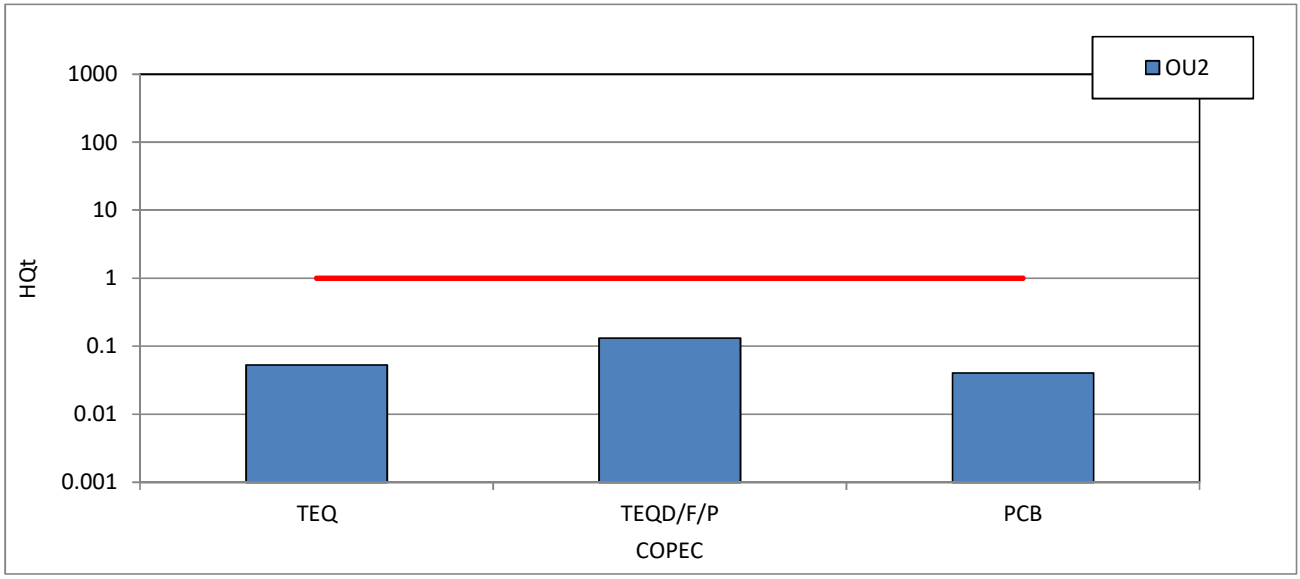


Figure 5-60. PCB HQ Summary for Montane Vole

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values

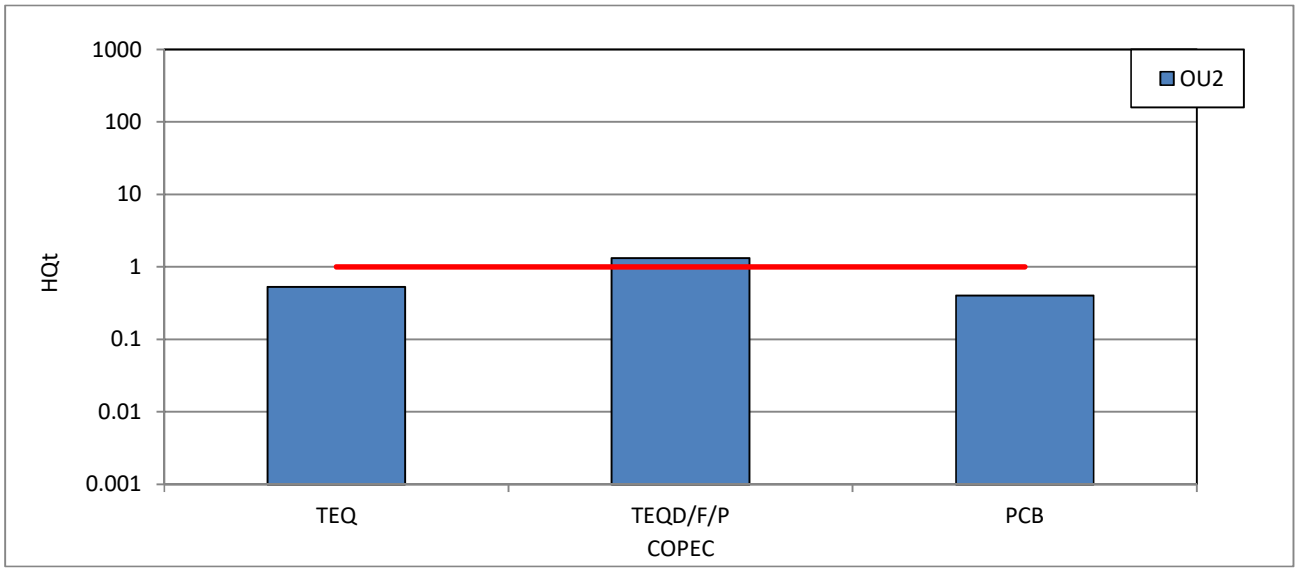
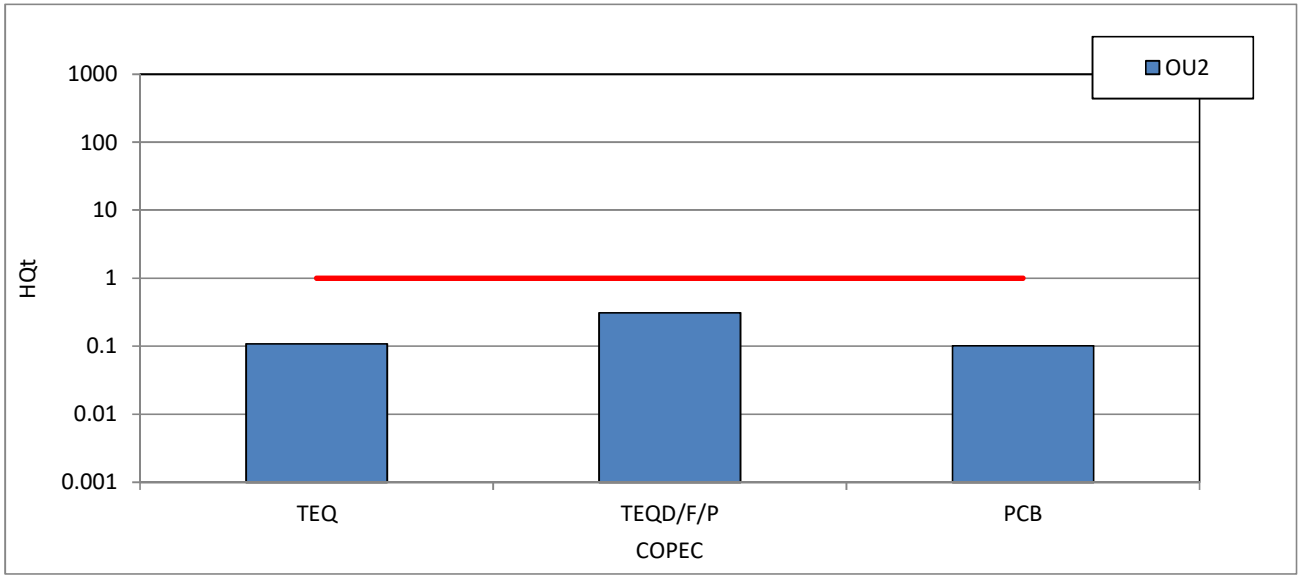


Figure 5-61. PCB HQ Summary for Deer Mouse

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values

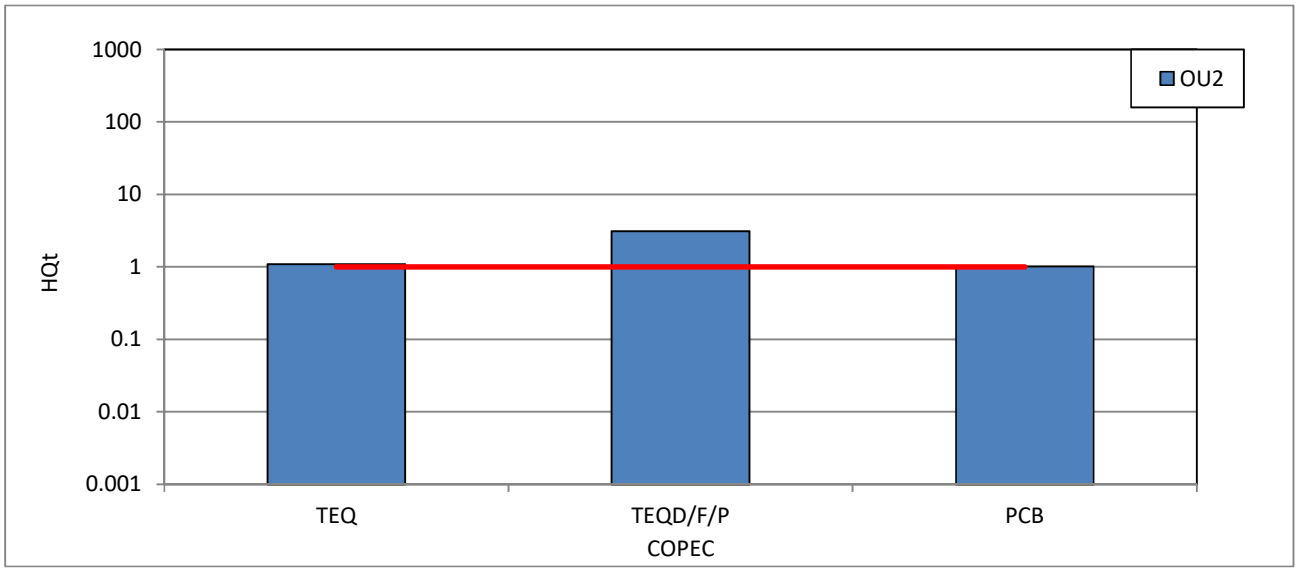
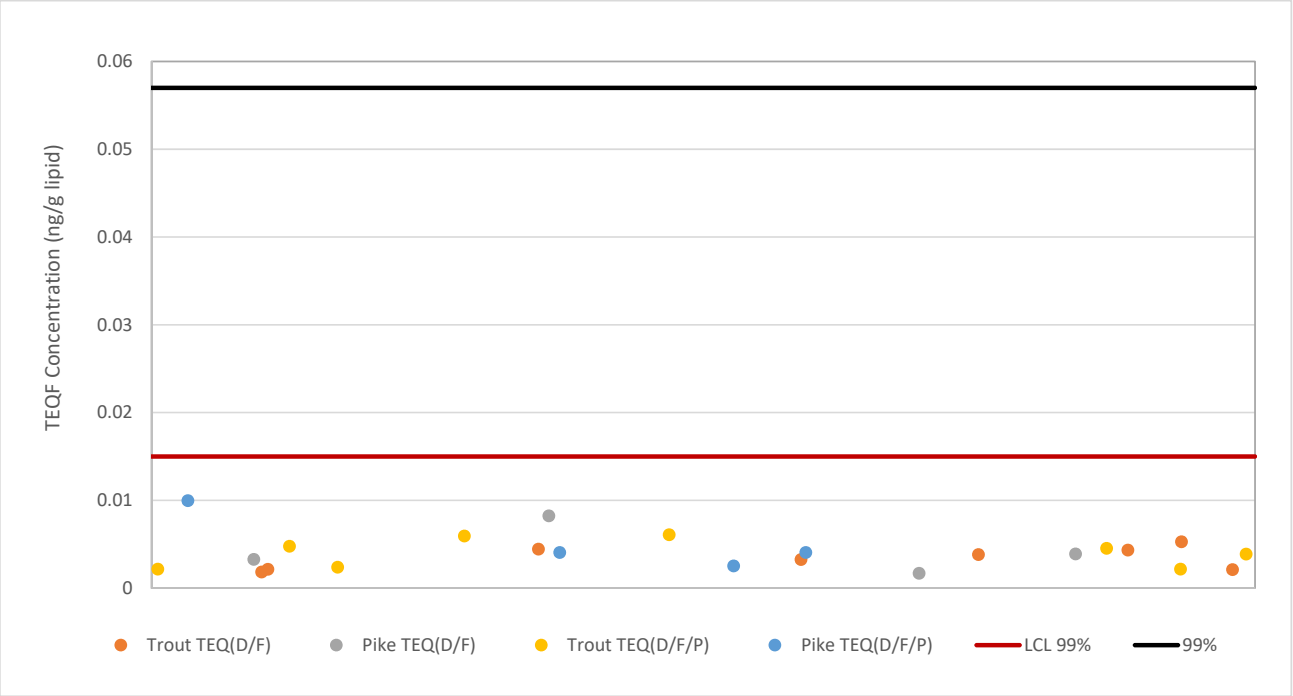


Figure 6-1. Comparison of TEQ_F Concentrations in Fish Fillet Tissue to TRBs



TABLES

OU2/OU3 Smurfit-Stone/Frenchtown Mill Site
Baseline Ecological Risk Assessment

Table 2-1. Site Data Evaluated in the BERA[1]

Environmental Medium	Sample Description	Sample Analysis	Reference
Soil[2]	Surface soil samples collected in April 2014 and November/December 2015. In both OU2 & OU3, 5-point composite samples collected from a square meter area at depths 0-2.4 inches (in) below ground surface (bgs). At 8 locations in OU3, samples were collected from depths of 0 to 2 in and 5-7 in bgs. Surface soil samples were also collected from 0-6 in. bgs in opportunistic test pits at potential source locations.	Samples were analyzed for dioxins/furans, Aroclors, and metals. OU2 soil samples were also analyzed for semi-volatile organic compounds (SVOCs) and volatile organic compounds (VOCs). OU3 floodplain soil samples were also analyzed for total organic carbon (TOC) and percent (%) fines.	NewFields 2015, 2016.
	Surface soil samples were collected in October 2017. In OU2 and OU3 uplands, 20-point composite samples were collected from 20-acre grid units. In the OU3 floodplain, 20-point composite samples were collected from 100-acre grid units. In addition, 30-point composite samples were collected from selected basins in the OU3 upland area.	Samples were analyzed for dioxins/furans and metals, as well as TOC and % fines. OU2 soil samples were also analyzed for PCBs (as Aroclors and as PCB congeners).	NewFields 2017.
	Flood fringe "sediment" samples collected in December 2015 along the CFR from undisturbed, low-lying areas where flood waters have a history of occurring, but may not currently be inundated.	Samples were analyzed for dioxins/furans and metals, as well as TOC and % fines.	NewFields 2015, 2016.
Sediment	Bed sediment samples collected in November 2015 from locations in the CFR, and from locations in O'Keefe and Lavalle Creeks. Discrete samples were collected from the top 6 inches of sediment.	Samples were analyzed for dioxins/furans, Aroclors, metals, and SVOCs, as well as TOC and % fines.	NewFields 2015, 2016.
	Sediment samples collected in August 2018 from locations in the CFR, and from locations in O'Keefe and Lavalle Creeks, and on-site ponds. Discrete samples were collected from the top 6 inches of sediment.	Samples were analyzed for dioxins/furans, metals and methyl mercury, as well as TOC and % fines.	NewFields 2018a, 2020b.
Surface Water	Surface water samples co-located with sediment samples were collected in November 2015 from locations in the CFR, and from locations in O'Keefe and Lavalle Creeks.	Samples were analyzed for dioxins/furans, Aroclors, metals (total and dissolved), SVOCs, and miscellaneous parameters.	NewFields 2015, 2016.
	Surface water samples were collected in May 2018 during a high flow event in the CFR and from floodwaters adjacent to some holding ponds.	Samples were analyzed for dioxins/furans, metals (total and dissolved), and miscellaneous parameters.	NewFields, 2018b.

Table 2-1. Site Data Evaluated in the BERA[1]

Environmental Medium	Sample Description	Sample Analysis	Reference
	Surface water samples co-located with sediment samples were collected in August 2018 from locations in the CFR, and from locations in O'Keefe and Lavalle Creeks, and on-site ponds.	Samples were analyzed for dioxins/furans, metals, and miscellaneous parameters.	NewFields 2018a, 2020.
Porewater	Porewater samples were collected from on-site ponds in August 2018 by PushPoint samplers and in October 2018 using peeper samplers.	Samples were analyzed for metals (total and dissolved) and miscellaneous parameters.	NewFields 2018a, 2020.
Biota	Longnose dace were collected from the CFR in August 2018.	Whole-body tissue composite samples were analyzed for dioxins/furans, metals, methyl mercury, percent moisture and percent lipid.	NewFields 2018a, 2020.
	Aquatic macroinvertebrates were collected from O'Keefe and Lavalle Creeks in August/September 2018, and from on-site ponds in August 2018. Samples included both benthic infaunal macroinvertebrates (BMI) and vegetation-associated macroinvertebrates (VI). Samples collected from the ponds were maintained separately as BMI or VI tissue only. In creeks, BMI and VI were mixed, with the VI likely making up the substantial majority of biomass in each sample.	Composite tissue samples were analyzed for dioxins/furans, metals, methyl mercury, percent moisture and percent lipid.	NewFields 2018a, 2020.
	Deer mice (*Peromyscus spp.*) were collected from two locations in OU2, six locations in OU3, and from two reference locations in OU1.	Whole-body tissue samples were analyzed for dioxins/furans, metals, methyl mercury, percent moisture and percent lipid.	NewFields 2018a, 2020.
	Rainbow trout and northern pike were collected from the CFR in June 2019. Fish were filleted.	Composite fillet and carcass tissue samples were analyzed for dioxins/furans, PCBs (as PCB congeners), percent solid and percent lipid.	USEPA 2018; 2019a,b; 2020.

[a]Additional data collected (and included in the Site database) to characterize background and/or reference areas are described in Appendix A and are not included in this Table.

[1]Due to soil removal activities in 2017 at the HDPT and TSB locations in OU2, soil data collected in 2014-2016 from these areas were excluded from this evaluation. Data for "backfill soil" were used in place of these excluded data as described in Appendix A.

Table 2-2. Wildlife and Plants of Special Concern in Missoula County, Montana

Category	Scientific Name	Common Name	Species Status[A]	Source
USFWS Federally Listed Species in Missoula County, Montana				
Mammals	*Lynx canadensis*	Canada Lynx	Threatened	USFWS
	Ursus arctos horribilis	Grizzly Bear	Threatened [PCH]	USFWS
Birds	*Calidris canutus rufa*	Red Knot	Threatened	USFWS
	Coccyzus americanus	Yellow-billed cuckoo (western pop.)	Threatened [PCH]	USFWS
Fishes	*Salvelinus confluentus*	Bull Trout	Threatened [DCH]	USFWS
Insects	*Danaus plexippus*	Monarch Butterfly	Candidate	USFWS
Flowering Plants	*Silene spaldingii*	Spalding's Catchfly	Threatened [PCH]	USFWS
Conifers and Cycads	*Pinus albicaulis*	Whitebark Pine	Candidate	USFWS
MTNHP Species of Concern[B]				
Mammals	*Lasiurus cinereus*	Hoary Bat	Species of Concern	MTNHP
	Myotis lucifugus	Little Brown Myotis Bat	Species of Concern	MTNHP
	Lasionycteris noctivagans	Silver-Haired Bat	Potential Species of Concern	MTNHP
	Corynorhinus townsendii	Townsend's Big-eared Bat	Species of Concern	MTNHP
Birds	*Haliaeetus leucocephalus*	Bald Eagle	Special Species Status	MTNHP
	Bucephala islandica	Barrow's Goldeneye	Potential Species of Concern	MTNHP
	Dolichonyx oryzivorus	Bobolink	Species of Concern	MTNHP
	Coccothraustes vespertinus	Evening Grosbeak	Species of Concern	MTNHP
	Buteo regalis	Ferruginous Hawk	Species of Concern	MTNHP
	Leucophaeus pipixcan	Franklin's Gull	Species of Concern	MTNHP
	Aquila chrysaetos	Golden Eagle	Species of Concern	MTNHP
	Ardea herodias	Great Blue Heron	Species of Concern	MTNHP
	Lophodytes cucullatus	Hooded Merganser	Potential Species of Concern	MTNHP
	Melanerpes lewis	Lewis's Woodpecker	Species of Concern	MTNHP
	Numenius americanus	Long-billed Curlew	Species of Concern	MTNHP
	Falco peregrinus	Peregrine Falcon	Species of Concern	MTNHP
	Dryocopus pileatus	Pileated Woodpecker	Species of Concern	MTNHP
	Selasphorus rufus	Rufous Hummingbird	Potential Species of Concern	MTNHP
Fish	*Salvelinus confluentus*	Bull Trout	Species of Concern	MTNHP
	Oncorhynchus clarkii lewisi	Westslope Cutthroat Trout	Species of Concern	MTNHP
Amphibians	*Anaxyrus boreas*	Western Toad	Species of Concern	MTNHP
Reptiles	*Plestiodon skiltonianus*	Western Skink	Species of Concern	MTNHP

Sources:
Montana Natural Heritage Map Viewer. Queried October 2021.
U.S. Fish and Wildlife Service, Information for Planning and Consultation (IPaC). Queried October 2021.

[A]USFWS also identified critical habitat as: DCH = designated critical habitat; PCH = potential critical habitat.

[B]MTNHP Species of Concern only presented for those species observed in the vicinity of the Site within the last 10 years (2010-2020).

Table 2-3. Surrogate Receptors Evaluated in the BERA

Feeding Guild	Receptor Surrogate	
	Avian	Mammalian
Terrestrial Invertivore	American robin Gray catbird	Vagrant shrew
Aerial Insectivore	Tree swallow (a)	Bat
Aquatic Insectivore	American dipper (a)	-- (b)
Herbivore	Blue grouse	White-tail deer Montane vole
Carnivore	American kestrel	Red Fox American mink (a)
Piscivore	Belted kingfisher (a) Osprey (a)	River otter (a)
Omnivore	Mallard (a) Northern flicker Clark's nutcracker	Deer mouse

(a) This receptor class is considered aquatic-dependent and is only evaluated for exposures in OU3 for exposure at on-Site ponds, creeks and the CFR.

(b) This class of receptor is not expected at the Site.

Table 2-4. Assessment and Measurement Endpoints

Assessment Endpoints	Risk Questions	Measurement Endpoints
Aquatic Receptors		
Maintain a stable and healthy water-column invertebrate, fish, and amphibian community in: - O'Keefe and Lavalle Creeks - Ponds in OU2 and OU3 - Clark Fork River (CFR)	*Are the contaminant levels in surface water high enough to affect survival, growth or reproduction in the water-column invertebrates, fish, and amphibians?*	• Comparison of dissolved concentrations of metals in surface water with acute and chronic direct contact surface water benchmarks • Comparison of whole-body fish tissue concentrations to tissue residue-based benchmarks
Maintain a stable and healthy BMI community in: - O'Keefe and Lavalle Creeks - Ponds in OU2 and OU3 - CFR	*Are the contaminant levels in sediment and porewater high enough to affect survival, growth or reproduction of BMIs?*	• Comparison of COPEC concentrations in sediments of ponds, creeks and the CFR with no-effect and low-effect direct contact sediment benchmarks • Comparison of metal levels in porewater samples from ponds to direct contact surface water benchmarks
Terrestrial Receptors		
Maintain stable and healthy terrestrial plant communities	*Are the contaminant levels in soil high enough to affect survival, growth or reproduction of terrestrial plants?*	• Comparison of COPEC concentrations in site surface soils to no-effect and low-effect direct contact soil benchmarks associated with phytotoxicity.
Maintain stable and healthy soil invertebrate communities	*Are the contaminant levels in soil high enough to affect survival, growth or reproduction of soil invertebrates?*	• Comparison of COPEC concentrations in site surface soils to no-effect and low-effect direct contact soil benchmarks associated with soil invertebrate toxicity and adverse changes to soil invertebrate community composition.
Birds and Mammals		
Maintain stable and healthy aquatic invertivorous bird populations	*Are the contaminant levels in surface water, sediment and BMIs high enough to affect survival, growth, or reproduction in aquatic invertivorous birds?*	• Use COPEC levels measured in surface water, sediment and BMIs in a food chain model to calculate estimated daily doses (EDDs) for comparison against avian no-effect and low-effect toxicity reference values (TRVs).

Table 2-4. Assessment and Measurement Endpoints

Assessment Endpoints	Risk Questions	Measurement Endpoints
Maintain stable and healthy aquatic omnivorous bird populations	*Are the contaminant levels in surface water, sediment, BMIs, and plants high enough to affect survival, growth, or reproduction in aquatic omnivorous birds?*	• Use COPEC levels measured in surface water, sediment and BMIs, and modeled concentrations in plants in a food chain model to calculate EDDs for comparison against avian no-effect and low-effect TRVs.
Maintain stable and healthy aquatic piscivorous bird populations	*Are the contaminant levels in surface water, sediment, and fish high enough to affect survival, growth, or reproduction in aquatic piscivorous birds?*	• Use COPEC levels measured in surface water, sediment and prey fish (longnose dace, rainbow trout) in a food chain model to calculate EDDs for comparison against avian no-effect and low-effect TRVs.
Maintain stable and healthy aquatic piscivorous mammal populations	*Are the contaminant levels in surface water, sediment, and fish high enough to affect survival, growth, or reproduction in aquatic piscivorous mammals?*	• Use COPEC levels measured in surface water, sediment and prey fish (longnose dace) in a food chain model to calculate EDDs for comparison against mammalian no-effect and low-effect TRVs.
Maintain stable and healthy aquatic carnivorous mammal populations	*Are the contaminant levels in surface water, sediment, fish and small mammals high enough to affect survival, growth, or reproduction in aquatic carnivorous mammals?*	• Use COPEC levels measured in surface water, sediment, prey fish (longnose dace), and small mammals in a food chain model to calculate EDDs for comparison against mammalian no-effect and low-effect TRVs.
Maintain stable and healthy herbivorous bird populations	*Are the contaminant levels in soil, surface water, and plants high enough to affect survival, growth, or reproduction in herbivorous birds?*	• Use COPEC levels measured in surface water and surface soil, and modeled concentrations in terrestrial plants in a food chain model to calculate EDDs for comparison against avian no-effect and low-effect TRVs.
Maintain stable and healthy insectivorous bird populations	*Are the contaminant levels in soil, surface water, and terrestrial invertebrates high enough to affect survival, growth, or reproduction in insectivorous birds?*	• Use COPEC levels measured in surface water and surface soil, and modeled concentrations in terrestrial invertebrates in a food chain model to calculate EDDs for comparison against avian no-effect and low-effect TRVs.

Table 2-4. Assessment and Measurement Endpoints

Assessment Endpoints	Risk Questions	Measurement Endpoints
Maintain stable and healthy omnivorous bird populations	*Are the contaminant levels in soil, surface water, terrestrial invertebrates and plants high enough to affect survival, growth, or reproduction in omnivorous birds?*	• Use COPEC levels measured in surface water and surface soil, and modeled concentrations in terrestrial invertebrates and plants in a food chain model to calculate EDDs for comparison against avian no-effect and low-effect TRVs.
Maintain stable and healthy carnivorous bird populations	*Are the contaminant levels in soil, surface water, and small mammal tissues high enough to affect survival, growth, or reproduction in carnivorous birds?*	• Use COPEC levels measured in surface water, surface soil, and small mammals in a food chain model to calculate EDDs for comparison against avian no-effect and low-effect TRVs.
Maintain stable and healthy herbivorous mammal populations	*Are the contaminant levels in soil, surface water, and plants high enough to affect survival, growth, or reproduction in herbivorous mammals?*	• Use COPEC levels measured in surface water and surface soil, and modeled concentrations in terrestrial plants in a food chain model to calculate EDDs for comparison against mammalian no-effect and low-effect TRVs.
Maintain stable and healthy insectivorous mammal populations	*Are the contaminant levels in soil, surface water, and terrestrial invertebrates high enough to affect survival, growth, or reproduction in insectivorous mammals?*	• Use COPEC levels measured in surface water and surface soil, and modeled concentrations in terrestrial invertebrates in a food chain model to calculate EDDs for comparison against mammalian no-effect and low-effect TRVs.
Maintain stable and healthy omnivorous mammal populations	*Are the contaminant levels in soil, surface water, terrestrial invertebrates and plants high enough to affect survival, growth, or reproduction in omnivorous mammals?*	• Use COPEC levels measured in surface water and surface soil, and modeled concentrations in terrestrial invertebrates and plants in a food chain model to calculate EDDs for comparison against mammalian no-effect and low-effect TRVs.
Maintain stable and healthy carnivorous mammal populations	*Are the contaminant levels in soil, surface water, and small mammal tissues high enough to affect survival, growth, or reproduction in carnivorous mammals?*	• Use COPEC levels measured in surface water, surface soil, and small mammals in a food chain model to calculate EDDs for comparison against mammalian no-effect and low-effect TRVs.

Table 3-1. Updated Surface Water COPEC Screen for the Clark Fork River

Contaminant		N Samples	N Detected Samples	Detection Frequency	Average Concentration (ug/L)	Standard Deviation (ug/L)	Maximum Detected Concentration (ug/L)	Average DL (ug/L)	Surface Water ESV (ug/L)	COPEC SELECTION STEPS					Clark Fork River Surface Water COPECs		
										Is the contaminant a bioaccumulative?	Is contaminant detected ≥5%?	Does contaminant have a benchmark?	Is Max Detect > benchmark?	Detection Limit: Is DL > benchmark?	COPEC	Not a COPEC	Source of Uncertainty
TEQ_F	**Fish TEQ (ND=1/2 DL)**	19	4	21%	1.68E-06	2.03E-07	1.91E-06	--	NV	yes	yes	no			X		
Metals[a]	Aluminum	19	19	100%	8.46E+01	1.62E+02	7.47E+02	4.84E+00	8.7E+01	no	yes	yes	yes			X[c]	
	Antimony	16	16	100%	7.39E-01	1.14E+00	4.00E+00	8.24E-02	3.0E+01	no	yes	yes	no			X	
	Arsenic	19	19	100%	4.11E+00	4.38E+00	2.18E+01	1.21E-01	1.5E+02	no	yes	yes	no			X	
	Barium	19	19	100%	1.13E+02	1.60E+01	1.38E+02	1.01E-01	4.0E+00	no	yes	yes	yes		X		
	Beryllium	16	0	0%	2.76E-02	1.71E-03	ND	5.53E-02	6.6E-01	no	no	yes		no		X	
	Cadmium	19	3	16%	2.59E-02	4.31E-02	2.00E-01	2.66E-02	7.3E-01 [b]	no	yes	yes	no			X	
	Calcium	19	19	100%	3.16E+04	4.05E+03	4.00E+04	4.01E+01	1.2E+05	no	yes	yes	no			X	
	Chromium	19	7	37%	5.60E-01	1.73E+00	7.70E+00	1.74E-01	1.1E+01	no	yes	yes	no			X	
	Cobalt	19	18	95%	3.35E-01	2.12E-01	9.40E-01	9.89E-02	2.3E+01	no	yes	yes	no			X	
	Copper	19	19	100%	2.80E+00	4.14E+00	1.92E+01	2.16E-01	9.2E+00 [b]	no	yes	yes	yes		X		
	Iron	19	17	89%	4.56E+01	9.06E+01	4.07E+02	6.86E+00	1.0E+03	no	yes	yes	no			X	
	Lead	19	10	53%	1.04E-01	1.45E-01	5.30E-01	3.89E-02	2.6E+00 [b]	no	yes	yes	no			X	
	Magnesium	19	19	100%	8.86E+03	1.12E+03	1.02E+04	7.16E+00	8.2E+04	no	yes	yes	no			X	
	Manganese	19	19	100%	1.44E+02	3.19E+02	1.37E+03	2.76E-01	1.2E+02	no	yes	yes	yes		X		
	Mercury	16	0	0%	3.90E-02	6.80E-10	ND	7.80E-02	7.7E-01	yes	no	yes		no		X	
	Nickel	19	19	100%	3.06E-01	1.97E-01	9.70E-01	1.19E-01	5.3E+01 [b]	no	yes	yes	no			X	
	Potassium	19	19	100%	2.08E+03	1.25E+03	7.22E+03	3.44E+01	5.3E+04 [b]	no	yes	yes	no			X	
	Selenium	16	0	0%	7.19E-02	5.12E-03	ND	1.44E-01	1.5E+00	no	no	yes		no		X	
	Silver	19	0	0%	7.61E-02	3.15E-03	ND	1.52E-01	3.4E-01 [b]	no	no	yes		no		X	
	Sodium	19	19	100%	1.15E+04	1.65E+04	7.82E+04	2.32E+01	6.8E+05	no	yes	yes	no			X	
	Thallium	19	0	0%	1.22E-02	2.13E-03	ND	2.45E-02	1.2E+01	no	no	yes		no		X	
	Vanadium	19	19	100%	8.78E-01	2.36E-01	1.40E+00	2.72E-01	2.0E+01	no	yes	yes	no			X	
	Zinc	19	16	84%	3.91E+00	2.10E+00	1.00E+01	2.05E+00	1.2E+02 [b]	no	yes	yes	no			X	

TEQ = toxicity equivalence; ND = non-detect; DL = detection limit; ESV = ecological screening value; NV = no value; COPEC = contaminant of potential ecological concern

Bolded contaminants represent COPECs.

(a) Dissolved concentrations are presented for all metals except aluminum (benchmark is based on total recoverable aluminum).

(b) The surface water criterion for this metal is expressed as a function of hardness. Values were calculated based on the 5th percentile of the calculated hardness values for the Clark Fork River of 103 mg/L.

(c) Maximum detected total aluminum concentration is below the calculated Criterion Continuous Concentration (CCC) (see Table 3-4); aluminum is not retained as a surface water COPEC.

Table 3-2. Updated Surface Water COPEC Screen for the Creeks (O'Keefe & Lavalle)

Contaminant		N Samples	N Detected Samples	Detection Frequency	Average Concentration (ug/L)	Standard Deviation (ug/L)	Maximum Detected Concentration (ug/L)	Average DL (ug/L)	Surface Water ESV (ug/L)	COPEC SELECTION STEPS					Creek Surface Water COPECs		
										Is the contaminant a bioaccumulative?	Is contaminant detected ≥5%?	Does contaminant have a benchmark?	Is Max Detect > benchmark?	Detection Limit Is DL > benchmark?	COPEC	Not a COPEC	Source of Uncertainty
TEQ_F	**Fish TEQ (ND=1/2 DL)**	5	5	100%	2.03E-06	2.29E-07	2.42E-06	--	NV	yes	yes	no			X		
Metals[a]	Aluminum	5	5	100%	2.47E+02	4.66E+01	3.05E+02	5.08E+00	8.7E+01	no	yes	yes	yes			X[c]	
	Antimony	4	4	100%	2.38E-01	1.26E-02	2.50E-01	7.70E-02	3.0E+01	no	yes	yes	no			X	
	Arsenic	5	5	100%	2.58E+00	6.83E-01	3.10E+00	1.10E-01	1.5E+02	no	yes	yes	no			X	
	Barium	5	5	100%	1.64E+02	4.56E+01	2.44E+02	9.62E-02	4.0E+00	no	yes	yes	yes		X		
	Beryllium	4	0	0%	2.70E-02	0.00E+00	ND	5.40E-02	6.6E-01	no	no	yes		no		X	
	Cadmium	5	0	0%	1.32E-02	6.71E-04	ND	2.64E-02	9.2E-01 [b]	no	no	yes		no		X	
	Calcium	5	5	100%	4.01E+04	7.10E+03	5.23E+04	7.14E+01	1.2E+05	no	yes	yes	no			X	
	Chromium	5	3	60%	1.86E-01	1.05E-01	3.00E-01	1.62E-01	1.1E+01	no	yes	yes	no			X	
	Cobalt	5	4	80%	3.42E-01	3.52E-01	9.20E-01	9.40E-02	2.3E+01	no	yes	yes	no			X	
	Copper	5	5	100%	1.30E+00	7.04E-01	2.20E+00	2.18E-01	1.2E+01 [b]	no	yes	yes	no			X	
	Iron	5	4	80%	1.76E+01	1.08E+01	3.45E+01	7.06E+00	1.0E+03	no	yes	yes	no			X	
	Lead	5	2	40%	5.94E-02	6.48E-02	1.70E-01	4.04E-02	3.6E+00 [b]	no	yes	yes	no			X	
	Magnesium	5	5	100%	1.38E+04	4.91E+03	2.23E+04	8.00E+00	8.2E+04	no	yes	yes	no			X	
	Manganese	5	5	100%	2.87E+01	5.44E+01	1.26E+02	2.40E-01	1.2E+02	no	yes	yes	yes		X		
	Mercury	4	0	0%	3.90E-02	0.00E+00	ND	7.80E-02	7.7E-01	yes	no	yes		no		X	
	Nickel	5	5	100%	2.06E-01	3.97E-02	2.60E-01	1.20E-01	6.9E+01 [b]	no	yes	yes	no			X	
	Potassium	5	5	100%	1.98E+03	1.53E+02	2.13E+03	3.95E+01	5.3E+04 [b]	no	yes	yes	no			X	
	Selenium	4	0	0%	7.00E-02	0.00E+00	ND	1.40E-01	1.5E+00	no	no	yes		no		X	
	Silver	5	0	0%	7.50E-02	0.00E+00	ND	1.50E-01	5.7E-01 [b]	no	no	yes		no		X	
	Sodium	5	5	100%	8.58E+03	1.82E+03	1.18E+04	2.14E+01	6.8E+05	no	yes	yes	no			X	
	Thallium	5	0	0%	1.19E-02	2.46E-03	ND	2.38E-02	1.2E+01	no	no	yes		no		X	
	Vanadium	5	5	100%	8.82E-01	8.17E-02	9.80E-01	2.72E-01	2.0E+01	no	yes	yes	no			X	
	Zinc	5	0	0%	2.40E+00	6.71E-01	ND	4.80E+00	1.6E+02 [b]	no	no	yes		no		X	

TEQ = toxicity equivalence; ND = non-detect; DL = detection limit; ESV = ecological screening value; NV = no value; COPEC = contaminant of potential ecological concern

Bolded contaminants represent COPECs.

(a) Dissolved concentrations are presented for all metals except aluminum (benchmark is based on total recoverable aluminum).

(b) The surface water criterion for this metal is expressed as a function of hardness. Values were calculated based on the 5th percentile of the calculated hardness values for the creeks of 139 mg/L.

(c) Maximum detected total aluminum concentration is below the calculated Criterion Continuous Concentration (CCC) (see Table 3-4); aluminum is not retained as a surface water COPEC.

Table 3-3. Updated Surface Water COPEC Screen for the On-Site Ponds

Contaminant		N Samples	N Detected Samples	Detection Frequency	Average Concentration (ug/L)	Standard Deviation (ug/L)	Maximum Detected Concentration (ug/L)	Average DL (ug/L)	Surface Water ESV (ug/L)	COPEC SELECTION STEPS					Pond Surface Water COPECs		
										Is the contaminant a bioaccumulative?	Is contaminant detected ≥5%?	Does contaminant have a benchmark?	Is Max Detect > benchmark?	Detection Limit Is DL > benchmark?	COPEC	Not a COPEC	Source of Uncertainty
TEQ_F	**Fish TEQ (ND=1/2 DL)**	14	14	100%	1.65E-06	5.18E-07	2.74E-06	--	NV	yes	yes	no			X		
Metals[a]	Aluminum	14	14	100%	1.20E+02	7.58E+01	2.71E+02	2.17E+01	8.7E+01	no	yes	yes	yes			X (d)	
	Antimony	14	14	100%	1.32E+00	7.69E-01	3.00E+00	2.56E-01	3.0E+01	no	yes	yes	no			X	
	Arsenic	14	14	100%	8.73E+00	7.95E+00	3.25E+01	3.87E-01	1.5E+02	no	yes	yes	no			X	
	Barium	14	14	100%	6.93E+01	5.36E+01	1.72E+02	3.46E-01	4.0E+00	no	yes	yes	yes		X		
	Beryllium	14	0	0%	1.27E-01	1.32E-01	ND	2.54E-01	6.6E-01	no	no	yes		no		X	
	Cadmium	14	2	14%	8.10E-02	8.04E-02	2.80E-01	9.17E-02	8.8E-01 [b]	no	yes	yes	no			X	
	Calcium	14	14	100%	7.55E+04	7.98E+04	3.17E+05	6.53E+02	1.2E+05	no	yes	yes	yes			X (c)	
	Chromium	14	6	43%	6.46E-01	4.67E-01	1.20E+00	7.39E-01	1.1E+01	no	yes	yes	no			X	
	Cobalt	14	12	86%	8.41E-01	5.06E-01	1.90E+00	4.07E-01	2.3E+01	no	yes	yes	no			X	
	Copper	14	14	100%	3.51E+00	4.27E+00	1.48E+01	7.20E-01	1.1E+01 [b]	no	yes	yes	yes		X		
	Iron	14	12	86%	1.72E+02	1.32E+02	3.98E+02	2.55E+01	1.0E+03	no	yes	yes	no			X	
	Lead	14	9	64%	3.03E-01	2.91E-01	8.80E-01	1.29E-01	3.4E+00 [b]	no	yes	yes	no			X	
	Magnesium	14	14	100%	1.07E+05	1.21E+05	4.36E+05	3.04E+02	8.2E+04	no	yes	yes	yes			X (c)	
	Manganese	14	14	100%	8.45E+02	1.05E+03	3.73E+03	5.54E+00	1.2E+02	no	yes	yes	yes		X		
	Mercury	14	0	0%	3.90E-02	7.31E-10	ND	7.80E-02	7.7E-01	yes	no	yes		no		X	
	Nickel	14	13	93%	3.41E+00	3.76E+00	1.57E+01	3.64E-01	6.5E+01 [b]	no	yes	yes	no			X	
	Potassium	14	14	100%	5.64E+04	3.81E+04	1.29E+05	4.95E+02	5.3E+04 [b]	no	yes	yes	yes			X (c)	
	Selenium	14	5	36%	4.69E-01	4.86E-01	1.50E+00	4.53E-01	1.5E+00	no	yes	yes	no			X	
	Silver	14	0	0%	2.54E-01	1.58E-01	ND	5.07E-01	5.1E-01 [b]	no	no	yes		no		X	
	Sodium	14	14	100%	9.42E+05	7.18E+05	2.56E+06	2.88E+03	6.8E+05	no	yes	yes	yes			X (c)	
	Thallium	14	1	7%	4.39E-02	2.56E-02	2.70E-02	8.57E-02	1.2E+01	no	yes	yes	no			X	
	Vanadium	14	14	100%	4.18E+00	2.08E+00	7.50E+00	1.22E+00	2.0E+01	no	yes	yes	no			X	
	Zinc	14	4	29%	6.41E+00	6.39E+00	2.60E+01	6.37E+00	1.5E+02 [b]	no	yes	yes	no			X	

TEQ = toxicity equivalence; ND = non-detect; DL = detection limit; ESV = ecological screening value; NV = no value; COPEC = contaminant of potential ecological concern

Bolded contaminants represent COPECs.

(a) Dissolved concentrations are presented for all metals except aluminum (benchmark is based on total recoverable aluminum).

(b) The surface water criterion for this metal is expressed as a function of hardness. Values were calculated based on the 5th percentile of the calculated hardness values for the ponds of 131 mg/L.

(c) The maximum detected concentration exceeds the surface water ESV, but this is an essential physiological electrolyte and is not retained as a COPEC.

(d) Maximum detected total aluminum concentration is below the calculated Criterion Continuous Concentration (CCC) (see Table 3-4); aluminum is not retained as a surface water COPEC.

Table 3-4. Comparison of Aluminum Concentrations in Site Surface Waters to Site-Specific Aluminum Water Quality Criteria

Waterbody	Location	pH	Hardness ($CaCO_3$)	DOC (mg/L)	Maximum Total Aluminum (µg/L)	Aluminum CCC (µg/L)[a]	Notes
Clark Fork River	CFR	7.6	120	2.4	747	800	
Creeks	Lavalle Creek	7.8	154	3.2	305	950	
	O'Keefe Creek	7.9	139	2.6	254	1,000	
On-Site Ponds	HP18	8.3	133	34	130	1,100	DOC outside model inputs
	HP13a	8.6	378	64	195	960	DOC outside model inputs
	HP13	8.8	256	70	100	940	DOC outside model inputs
	HP12	8.4	789	95	101	990	H, DOC outside model inputs
	IBJ	9.0	213	46	17.4	990	DOC outside model inputs
	HP1a	9.4	1,221	187	48	360	All parameters outside model inputs
	CWD	7.9	129	4.2	55.2	1,000	
	HP7	8.1	691	132	271	1,300	H, DOC outside model inputs
	HP2	8.5	533	65	218	970	H, DOC outside model inputs
	P5	8.7	2,093	154	171	670	H, DOC outside model inputs
	CL Pond	8.8	143	9.1	16.5	1,800	
	HP10	8.0	1,630	92	137	1,300	H, DOC outside model inputs

$CaCO_3$ = calcium carbonate; DOC = dissolved organic carbon; CCC = criterion continuous concentration; H=hardness; µg = micrograms; L = liters.

[a]Criterion Continuous Concentration (CCC) calculated using USEPA's Aluminum Criteria Calculator version 2.0.

Table 3-5. Updated Sediment COPEC Screen for the Clark Fork River

Contaminant		N Samples	N Detected Samples	Detection Frequency	Average Concentration (mg/kg)	Standard Deviation (mg/kg)	Maximum Detected Concentration (mg/kg)	Average DL (mg/kg)	Sediment ESV (mg/kg)	COPEC SELECTION STEPS					CFR Bed Sediment COPECs		
										Is the contaminant a bioaccumulative?	Is contaminant detected ≥5%?	Does contaminant have a benchmark?	Is Max Detect > benchmark?	Detection Limit Is DL > benchmark?	COPEC	Not a COPEC	Source of Uncertainty
TEQ_F	**Fish TEQ (ND=1/2 DL)**	23	23	100%	5.09E-07	1.34E-07	8.69E-07	--	8.50E-07	yes	yes	yes	yes		X		
Metals	Aluminum	23	23	100%	6.54E+03	2.73E+03	1.32E+04	8.07E+00	2.55E+04	no	yes	yes	no			X	
	Antimony	14	14	100%	4.05E-01	1.32E-01	6.70E-01	1.99E-01	1.20E+01	no	yes	yes	no			X	
	Arsenic	23	23	100%	9.93E+00	5.17E+00	2.72E+01	2.88E-01	9.79E+00	no	yes	yes	yes		X		
	Barium	23	23	100%	1.60E+02	5.52E+01	2.74E+02	1.90E-01	NV	no	yes	no					X
	Beryllium	14	14	100%	4.24E-01	1.26E-01	6.30E-01	8.56E-02	NV	no	yes	no					X
	Cadmium	23	23	100%	6.88E-01	4.38E-01	2.00E+00	4.94E-02	9.90E-01	no	yes	yes	yes		X		
	Chromium	23	23	100%	7.87E+00	2.88E+00	1.47E+01	2.74E-01	4.34E+01	no	yes	yes	no			X	
	Cobalt	23	23	100%	4.03E+00	1.55E+00	7.70E+00	2.94E-01	5.00E+01	no	yes	yes	no			X	
	Copper	23	23	100%	1.03E+02	6.42E+01	3.13E+02	4.77E-01	3.16E+01	no	yes	yes	yes		X		
	Iron	23	23	100%	9.56E+03	3.32E+03	1.80E+04	2.98E+01	1.88E+05	no	yes	yes	no			X	
	Lead	23	23	100%	2.12E+01	1.11E+01	5.32E+01	9.68E-02	3.58E+01	no	yes	yes	yes		X		
	Manganese	23	23	100%	4.07E+02	2.16E+02	8.32E+02	4.17E-01	6.31E+02	no	yes	yes	yes		X		
	Mercury	23	23	100%	1.64E-01	8.44E-02	3.90E-01	1.45E-02	1.80E-01	yes	yes	yes	yes		X		
	Methylmercury	14	14	100%	6.29E-03	4.25E-03	1.91E-02	1.82E-03	NV	yes	yes	no			X		
	Nickel	23	23	100%	6.77E+00	2.71E+00	1.34E+01	3.51E-01	2.27E+01	no	yes	yes	no			X	
	Selenium	14	8	57%	3.68E-01	3.01E-01	9.60E-01	2.76E-01	9.00E-01	no	yes	yes	yes		X		
	Silver	23	14	61%	4.00E-01	2.76E-01	1.20E+00	2.78E-01	1.00E+00	no	yes	yes	yes		X		
	Thallium	23	21	91%	1.30E-01	5.00E-02	2.30E-01	6.09E-02	NV	no	yes	no					X
	Vanadium	23	23	100%	1.31E+01	3.93E+00	2.04E+01	4.54E-01	NV	no	yes	no					X
	Zinc	23	23	100%	2.11E+02	9.32E+01	4.56E+02	2.28E+00	1.21E+02	no	yes	yes	yes		X		

ESV = ecological screening value; TEQ = toxicity equivalence; ND = non-detect; NV = no value; DL = sample-specific detection limit; COPEC = contaminant of potential ecological concern.

Bolded contaminants represent COPECs.

Table 3-6. Updated Sediment COPEC Screen for the Creeks (O'Keefe & Lavalle)

Contaminant		N Samples	N Detected Samples	Detection Frequency	Average Concentration (mg/kg)	Standard Deviation (mg/kg)	Maximum Detected Concentration (mg/kg)	Average DL (mg/kg)	Sediment ESV (mg/kg)	COPEC SELECTION STEPS					Creek Bed Sediment COPECs		
										Is the contaminant a bioaccumulative?	Is contaminant detected ≥5%?	Does contaminant have a benchmark?	Is Max Detect > benchmark?	Detection Limit Is DL > benchmark?	COPEC	Not a COPEC	Source of Uncertainty
TEQ_F	**Fish TEQ (ND=1/2 DL)**	11	11	100%	6.76E-07	7.83E-07	2.84E-06	--	8.50E-07	yes	yes	yes	yes		X		
Metals	Aluminum	11	11	100%	8.51E+03	3.84E+03	1.50E+04	8.08E+00	2.55E+04	no	yes	yes	no			X	
	Antimony	7	3	43%	2.01E-01	1.95E-01	6.20E-01	1.81E-01	1.20E+01	no	yes	yes	no			X	
	Arsenic	11	11	100%	5.45E+00	4.31E+00	1.55E+01	2.88E-01	9.79E+00	no	yes	yes	yes		X		
	Barium	11	11	100%	1.68E+02	7.70E+01	2.74E+02	1.88E-01	NV	no	yes	no					X
	Beryllium	7	7	100%	4.69E-01	2.50E-01	7.30E-01	8.03E-02	NV	no	yes	no					X
	Cadmium	11	11	100%	2.67E-01	2.69E-01	8.90E-01	5.00E-02	9.90E-01	no	yes	yes	no			X	
	Chromium	11	11	100%	9.42E+00	3.57E+00	1.57E+01	2.78E-01	4.34E+01	no	yes	yes	no			X	
	Cobalt	11	11	100%	5.10E+00	2.19E+00	8.50E+00	3.02E-01	5.00E+01	no	yes	yes	no			X	
	Copper	11	11	100%	4.45E+01	4.80E+01	1.58E+02	4.89E-01	3.16E+01	no	yes	yes	yes		X		
	Iron	11	11	100%	1.07E+04	3.81E+03	1.64E+04	3.06E+01	1.88E+05	no	yes	yes	no			X	
	Lead	11	11	100%	1.33E+01	7.66E+00	2.95E+01	9.47E-02	3.58E+01	no	yes	yes	no			X	
	Manganese	11	11	100%	1.95E+02	1.17E+02	3.83E+02	3.25E-01	6.31E+02	no	yes	yes	no			X	
	Mercury	11	9	82%	5.46E-02	6.29E-02	2.00E-01	1.41E-02	1.80E-01	yes	yes	yes	yes		X		
	Methylmercury	7	1	14%	1.73E-03	2.61E-03	7.60E-03	1.53E-03	NV	yes	yes	no			X		
	Nickel	11	11	100%	8.54E+00	2.98E+00	1.27E+01	3.49E-01	2.27E+01	no	yes	yes	no			X	
	Selenium	7	3	43%	3.34E-01	4.37E-01	1.30E+00	2.54E-01	9.00E-01	no	yes	yes	yes		X		
	Silver	11	2	18%	2.02E-01	1.59E-01	5.80E-01	2.75E-01	1.00E+00	no	yes	yes	no			X	
	Thallium	11	11	100%	1.25E-01	5.88E-02	2.10E-01	6.16E-02	NV	no	yes	no					X
	Vanadium	11	11	100%	1.40E+01	5.26E+00	2.55E+01	4.61E-01	NV	no	yes	no					X
	Zinc	11	11	100%	1.05E+02	9.49E+01	3.29E+02	2.31E+00	1.21E+02	no	yes	yes	yes		X		

ESV = ecological screening value; TEQ = toxicity equivalence; ND = non-detect; NV = no value; DL = sample-specific detection limit; COPEC = contaminant of potential ecological concern.

Bolded contaminants represent COPECs.

Table 3-7. Updated Sediment COPEC Screen for the On-Site Ponds

Contaminant		N Samples	N Detected Samples	Detection Frequency	Average Concentration (mg/kg)	Standard Deviation (mg/kg)	Maximum Detected Concentration (mg/kg)	Average DL (mg/kg)	Sediment Benchmark (mg/kg)	COPEC SELECTION STEPS					On-Site Ponds Sediment COPECs		
										Is the contaminant a bioaccumulative?	Is contaminant detected ≥5%?	Does contaminant have a benchmark?	Is Max Detect > benchmark?	Detection Limit Is DL > benchmark?	COPEC	Not a COPEC	Source of Uncertainty
TEQ_F	**Fish TEQ (ND=1/2 DL)**	12	12	100%	2.33E-05	2.34E-05	8.40E-05	--	8.50E-07	yes	yes	yes	yes		X		
Metals	Aluminum	12	12	100%	1.05E+04	4.19E+03	1.93E+04	1.42E+01	2.55E+04	no	yes	yes	no			X	
	Antimony	12	10	83%	1.35E+00	9.56E-01	3.00E+00	3.31E-01	1.20E+01	no	yes	yes	no			X	
	Arsenic	12	12	100%	7.87E+00	4.20E+00	1.49E+01	5.53E-01	9.79E+00	no	yes	yes	yes		X		
	Barium	12	12	100%	5.77E+02	2.47E+02	9.38E+02	3.69E-01	NV	no	yes	no					X
	Beryllium	12	11	92%	4.43E-01	2.18E-01	9.30E-01	1.43E-01	NV	no	yes	no					X
	Cadmium	12	12	100%	1.97E+00	1.74E+00	6.30E+00	8.33E-02	9.90E-01	no	yes	yes	yes		X		
	Chromium	12	12	100%	1.73E+01	7.92E+00	3.48E+01	3.90E-01	4.34E+01	no	yes	yes	no			X	
	Cobalt	12	12	100%	3.70E+00	1.39E+00	6.30E+00	3.38E-01	5.00E+01	no	yes	yes	no			X	
	Copper	12	12	100%	5.18E+01	2.38E+01	9.23E+01	6.86E-01	3.16E+01	no	yes	yes	yes		X		
	Iron	12	12	100%	9.15E+03	3.80E+03	1.83E+04	3.45E+01	1.88E+05	no	yes	yes	no			X	
	Lead	12	12	100%	1.52E+01	5.34E+00	2.21E+01	2.46E-01	3.58E+01	no	yes	yes	no			X	
	Manganese	12	12	100%	1.10E+03	7.73E+02	2.49E+03	8.67E-01	6.31E+02	no	yes	yes	yes		X		
	Mercury	12	11	92%	6.31E-01	8.06E-01	2.50E+00	2.34E-02	1.80E-01	yes	yes	yes	yes		X		
	Methylmercury	12	3	25%	7.45E-03	1.51E-02	5.46E-02	3.80E-03	NV	yes	yes	no			X		
	Nickel	12	12	100%	1.09E+01	4.15E+00	1.63E+01	6.70E-01	2.27E+01	no	yes	yes	no			X	
	Selenium	12	9	75%	6.92E-01	4.15E-01	1.50E+00	4.59E-01	9.00E-01	no	yes	yes	yes		X		
	Silver	12	5	42%	5.43E-01	4.64E-01	1.70E+00	5.34E-01	1.00E+00	no	yes	yes	yes		X		
	Thallium	12	12	100%	1.78E-01	6.07E-02	2.60E-01	8.33E-02	NV	no	yes	no					X
	Vanadium	12	12	100%	2.85E+01	1.59E+01	5.50E+01	7.26E-01	NV	no	yes	no					X
	Zinc	12	12	100%	2.01E+02	9.76E+01	3.54E+02	3.69E+00	1.21E+02	no	yes	yes	yes		X		

ESV = ecological screening value; TEQ = toxicity equivalence; ND = non-detect; NV = no value; DL = sample-specific detection limit; COPEC = contaminant of potential ecological concern.

Bolded contaminants represent COPECs.

Table 3-8. Updated Soil COPEC Screen for OU2 Surface Soils

	Contaminant	N Samples	N Detected Samples	Detection Frequency	Average Concentration (mg/kg)	Standard Deviation (mg/kg)	Maximum Detected Concentration (mg/kg)	Average DL (mg/kg)	Soil ESV (mg/kg)	COPEC SELECTION STEPS					OU2 Soil COPECs		
										Is the chemical a bioaccumulative?	Is chemical detected ≥5%?	Does chemical have a benchmark?	Is Max Detect > benchmark?	Detection Limit			
														Is DL > benchmark?	COPC	Not a COPC	Source of Uncertainty
TEQ	**Avian TEQ - D/F (ND=1/2 DL)**	31	31	100%	5.29E-06	5.55E-06	1.83E-05	--	1.99E-07	yes	yes	yes	yes		X		
	Avian TEQ - D/F/DL-PCBs (ND=1/2 DL)	9	9	100%	3.77E-05	5.73E-05	1.87E-04	--	1.99E-07	yes	yes	yes	yes		X		
	Avian TEQ - DL-PCBs (ND=1/2 DL)	9	9	100%	2.94E-05	5.39E-05	1.71E-04	--	1.99E-07	yes	yes	yes	yes		X		
	Mammalian TEQ - D/F (ND=1/2 DL)	31	31	100%	5.31E-06	6.27E-06	2.53E-05	--	1.99E-07	yes	yes	yes	yes		X		
	Mammalian TEQ - D/F/DL-PCBs (ND=1/2 DL)	9	9	100%	1.55E-05	1.42E-05	4.21E-05	--	1.99E-07	yes	yes	yes	yes		X		
	Mammalian TEQ - DL-PCBs (ND=1/2 DL)	9	9	100%	7.06E-06	1.03E-05	3.33E-05	--	1.99E-07	yes	yes	yes	yes		X		
PCBs (Aroclors)	**Total PCBs (ND=1/2 DL)**	9	9	100%	1.10E-01	2.69E-01	1.13E+00	--	4.00E+01	yes	yes	yes	no		X		
	Aroclor-1016	16	0	0%	4.58E-03	1.56E-03	--	9.15E-03	NV	yes	no	no					X
	Aroclor-1221	16	0	0%	5.46E-03	1.36E-03	--	1.09E-02	NV	yes	no	no					X
	Aroclor-1232	16	0	0%	5.49E-03	1.31E-03	--	1.10E-02	NV	yes	no	no					X
	Aroclor-1242	16	0	0%	6.19E-03	1.56E-03	--	1.24E-02	NV	yes	no	no					X
	Aroclor-1248	16	0	0%	5.39E-03	3.32E-04	--	1.08E-02	NV	yes	no	no					X
	Aroclor-1254	16	7	44%	4.96E-02	1.05E-01	4.13E-01	8.51E-03	4.00E+01	yes	yes	yes	no		X		
	Aroclor-1260	16	3	19%	2.11E-02	4.21E-02	1.54E-01	7.32E-03	4.00E+01	yes	yes	yes	no		X		
	Aroclor-1262	16	0	0%	5.08E-03	1.43E-03	--	1.02E-02	NV	yes	no	no					X
	Aroclor-1268	16	0	0%	3.21E-03	7.59E-04	--	6.42E-03	NV	yes	no	no					X
Metals	**Aluminum**	33	33	100%	1.12E+04	6.11E+03	2.84E+04	5.47E+00	5.00E+01	no	yes	yes	yes		X		
	Antimony	12	8	67%	2.13E-01	1.21E-01	3.60E-01	1.67E-01	5.00E+00	no	yes	yes	no			X	
	Arsenic	33	33	100%	4.21E+00	1.78E+00	1.14E+01	1.69E-01	1.80E+01	no	yes	yes	no			X	
	Barium	33	33	100%	2.43E+02	1.75E+02	1.08E+03	1.23E-01	3.30E+02	no	yes	yes	yes		X		
	Beryllium	12	12	100%	5.58E-01	2.96E-01	1.20E+00	7.77E-02	1.00E+01	no	yes	yes	no			X	
	Cadmium	33	33	100%	3.96E-01	5.95E-01	3.50E+00	3.24E-02	3.20E+01	no	yes	yes	no			X	
	Calcium	12	12	100%	7.69E+03	5.35E+03	2.17E+04	2.39E+01	NV	no	yes	no					X
	Chromium	33	33	100%	1.30E+01	6.61E+00	3.95E+01	1.88E-01	4.00E-01	no	yes	yes	yes		X		
	Cobalt	33	33	100%	4.94E+00	1.47E+00	8.00E+00	2.30E-01	1.30E+01	no	yes	yes	no			X	
	Copper	33	33	100%	2.92E+01	2.32E+01	1.13E+02	3.31E-01	7.00E+01	no	yes	yes	yes		X		
	Iron	33	33	100%	1.37E+04	5.87E+03	3.73E+04	2.78E+01	NV	no	yes	no					X
	Lead	33	33	100%	1.27E+01	7.44E+00	3.88E+01	4.46E-02	1.20E+02	no	yes	yes	no			X	
	Magnesium	12	12	100%	5.27E+03	1.38E+03	8.13E+03	6.02E+00	NV	no	yes	no					X
	Manganese	33	33	100%	4.79E+02	5.11E+02	3.04E+03	2.59E-01	2.20E+02	no	yes	yes	yes		X		
	Mercury	33	31	94%	3.42E-02	5.36E-02	3.10E-01	8.75E-03	1.00E-01	yes	yes	yes	yes		X		
	Nickel	33	33	100%	1.10E+01	6.61E+00	4.25E+01	1.73E-01	3.80E+01	no	yes	yes	yes		X		
	Potassium	12	12	100%	2.37E+03	1.01E+03	4.14E+03	2.58E+01	NV	no	yes	no					X
	Selenium	12	12	100%	1.26E+00	5.77E-01	2.10E+00	2.81E-01	5.20E-01	no	yes	yes	yes		X		
	Silver	33	6	18%	1.20E-01	1.27E-01	7.40E-01	1.54E-01	5.60E+02	no	yes	yes	no			X	
	Sodium	12	12	100%	1.72E+02	1.53E+02	5.59E+02	1.97E+01	NV	no	yes	no					X
	Thallium	33	33	100%	1.25E-01	8.55E-02	5.50E-01	4.39E-02	1.00E+00	no	yes	yes	no			X	
	Vanadium	33	33	100%	1.32E+01	4.26E+00	2.62E+01	3.45E-01	2.00E+00	no	yes	yes	yes		X		
	Zinc	33	33	100%	1.10E+02	1.03E+02	4.46E+02	1.47E+00	1.20E+02	no	yes	yes	yes		X		

ESV = ecological screening value; TEQ = toxicity equivalence; D/F = dioxins/furans; ND = non-detect; DL = sample-specific detection limit; PCB = polychlorinated biphenyls; DL-PCB = dioxin-like PCB; NV = no value.

*OU2 surface soil samples include 8 samples collected from 0-1 ft bgs in 2016 from the HDPT (n=4) and TSB (n=4) analyzed for aroclors. All other surface samples were collected at depths from 0-2.4 inches bgs.

Bolded contaminants represent COPECs.

Table 3-9. Updated Soil COPEC Screen for OU3 Upland Surface Soils

Contaminant		N Samples	N Detected Samples	Detection Frequency	Average Concentration (mg/kg)	Standard Deviation (mg/kg)	Maximum Detected Concentration (mg/kg)	Average DL (mg/kg)	Soil ESV (mg/kg)	COPEC SELECTION STEPS					OU3 Upland Soil COPECs		
										Is the chemical a bioaccumulative?	Is chemical detected ≥5%?	Does chemical have a benchmark?	Is Max Detect > benchmark?	Detection Limit Is DL > benchmark?	COPC	Not a COPC	Source of Uncertainty
TEQ	**Avian TEQ - D/F (ND=1/2 DL)**	52	52	100%	6.11E-05	2.18E-04	1.53E-03	--	1.99E-07	yes	yes	yes	yes		X		
	Mammalian TEQ - D/F (ND=1/2 DL)	52	52	100%	3.17E-05	1.08E-04	7.56E-04	--	1.99E-07	yes	yes	yes	yes		X		
PCBs (Aroclors)	Aroclor-1016	19	0	0%	8.46E-03	4.10E-03	--	1.69E-02	NV	yes	no	no					X
	Aroclor-1221	19	0	0%	5.30E-03	1.43E-03	--	1.06E-02	NV	yes	no	no					X
	Aroclor-1232	19	0	0%	9.51E-03	2.96E-03	--	1.90E-02	NV	yes	no	no					X
	Aroclor-1242	19	0	0%	8.42E-03	3.19E-03	--	1.68E-02	NV	yes	no	no					X
	Aroclor-1248	19	0	0%	5.01E-03	1.42E-03	--	1.00E-02	NV	yes	no	no					X
	Aroclor-1254	19	0	0%	7.33E-03	1.94E-03	--	1.47E-02	4.00E+01	yes	no	yes		no		X	
	Aroclor-1260	19	0	0%	7.07E-03	4.99E-03	--	1.41E-02	4.00E+01	yes	no	yes		no		X	
	Aroclor-1262	19	0	0%	7.94E-03	2.82E-03	--	1.59E-02	NV	yes	no	no					X
	Aroclor-1268	19	0	0%	4.83E-03	1.17E-03	--	9.66E-03	NV	yes	no	no					X
Metals	**Aluminum**	51	51	100%	9.88E+03	4.67E+03	1.89E+04	5.16E+00	5.00E+01	no	yes	yes	yes		X		
	Antimony	43	32	74%	8.02E-01	9.09E-01	3.90E+00	1.69E-01	5.00E+00	no	yes	yes	no			X	
	Arsenic	51	51	100%	6.50E+00	8.01E+00	4.07E+01	2.84E-01	1.80E+01	no	yes	yes	yes		X		
	Barium	51	51	100%	4.58E+02	3.05E+02	1.45E+03	3.03E-01	3.30E+02	no	yes	yes	yes		X		
	Beryllium	43	34	79%	3.50E-01	2.40E-01	1.10E+00	9.33E-02	1.00E+01	no	yes	yes	no			X	
	Cadmium	51	50	98%	1.82E+00	2.27E+00	8.30E+00	4.60E-02	3.20E+01	no	yes	yes	no			X	
	Calcium	43	43	100%	9.09E+04	1.25E+05	4.98E+05	8.78E+01	NV	no	yes	no					X
	Chromium	51	51	100%	1.87E+01	1.16E+01	5.82E+01	2.05E-01	4.00E-01	no	yes	yes	yes		X		
	Cobalt	51	50	98%	3.23E+00	1.59E+00	8.50E+00	2.49E-01	1.30E+01	no	yes	yes	no			X	
	Copper	51	51	100%	3.01E+01	2.06E+01	8.94E+01	6.79E-01	7.00E+01	no	yes	yes	yes		X		
	Iron	51	51	100%	8.35E+03	4.59E+03	2.08E+04	2.89E+01	NV	no	yes	no					X
	Lead	51	51	100%	1.56E+01	1.93E+01	1.04E+02	3.81E-02	1.20E+02	no	yes	yes	no			X	
	Magnesium	43	43	100%	6.77E+03	5.04E+03	2.93E+04	1.34E+01	NV	no	yes	no					X
	Manganese	51	51	100%	7.56E+02	7.75E+02	2.70E+03	3.60E-01	2.20E+02	no	yes	yes	yes		X		
	Mercury	51	44	86%	6.24E-01	1.38E+00	8.00E+00	1.40E-02	1.00E-01	yes	yes	yes	yes		X		
	Nickel	51	51	100%	1.20E+01	6.83E+00	3.79E+01	2.82E-01	3.80E+01	no	yes	yes	no			X	
	Potassium	43	39	91%	1.81E+03	1.77E+03	9.21E+03	5.18E+01	NV	no	yes	no					X
	Selenium	43	19	44%	4.99E-01	4.61E-01	1.60E+00	3.36E-01	5.20E-01	no	yes	yes	yes		X		
	Silver	51	27	53%	4.96E-01	5.08E-01	1.70E+00	2.62E-01	5.60E+02	no	yes	yes	no			X	
	Sodium	43	42	98%	1.66E+03	2.37E+03	8.89E+03	6.48E+01	NV	no	yes	no					X
	Thallium	51	50	98%	1.71E-01	1.55E-01	7.90E-01	3.46E-02	1.00E+00	no	yes	yes	no			X	
	Vanadium	51	51	100%	2.18E+01	2.15E+01	1.19E+02	3.15E-01	2.00E+00	no	yes	yes	yes		X		
	Zinc	51	51	100%	1.61E+02	1.61E+02	6.86E+02	1.95E+00	1.20E+02	no	yes	yes	yes		X		

ESV = ecological screening value; TEQ = toxicity equivalence; D/F = dioxins/furans; ND = non-detect; DL = sample-specific detection limit; PCB = polychlorinated biphenyls; DL-PCB = dioxin-like PCB; NV = no value.

Bolded contaminants represent COPECs.

Table 3-10. Updated Soil COPEC Screen for OU3 Floodplain Surface Soils

Contaminant		N Samples	N Detected Samples	Detection Frequency	Average Concentration (mg/kg)	Standard Deviation (mg/kg)	Maximum Detected Concentration (mg/kg)	Average DL (mg/kg)	Soil ESV (mg/kg)	COPEC SELECTION STEPS					OU3 Floodplain Soil COPECs		
										Is the chemical a bioaccumulative?	Is chemical detected ≥5%?	Does chemical have a benchmark?	Is Max Detect > benchmark?	Detection Limit: Is DL > benchmark?	COPC	Not a COPC	Source of Uncertainty
TEQ	**Avian TEQ (ND=1/2 DL)**	22	22	100%	3.57E-05	4.10E-05	1.69E-04	--	1.99E-07	yes	yes	yes	yes		X		
	Mammalian TEQ (ND=1/2 DL)	22	22	100%	2.56E-05	2.86E-05	1.02E-04	--	1.99E-07	yes	yes	yes	yes		X		
PCBs (Aroclors)	Aroclor-1016	2	0	0%	5.40E-03	5.66E-04	--	1.08E-02	NV	yes	no	no					X
	Aroclor-1221	2	0	0%	5.40E-03	5.66E-04	--	1.08E-02	NV	yes	no	no					X
	Aroclor-1232	2	0	0%	1.01E-02	1.10E-03	--	2.03E-02	NV	yes	no	no					X
	Aroclor-1242	2	0	0%	9.43E-03	1.03E-03	--	1.89E-02	NV	yes	no	no					X
	Aroclor-1248	2	0	0%	4.05E-03	4.24E-04	--	8.10E-03	NV	yes	no	no					X
	Aroclor-1254	2	0	0%	7.43E-03	8.13E-04	--	1.49E-02	4.00E+01	yes	no	yes		no		X	
	Aroclor-1260	2	0	0%	3.38E-03	3.89E-04	--	6.75E-03	4.00E+01	yes	no	yes		no		X	
	Aroclor-1262	2	0	0%	8.78E-03	9.55E-04	--	1.76E-02	NV	yes	no	no					X
	Aroclor-1268	2	0	0%	4.73E-03	5.30E-04	--	9.45E-03	NV	yes	no	no					X
Metals	**Aluminum**	22	22	100%	1.22E+04	4.16E+03	2.15E+04	4.70E+00	5.00E+01	no	yes	yes	yes		X		
	Antimony	5	3	60%	2.88E-01	2.00E-01	4.70E-01	1.64E-01	5.00E+00	no	yes	yes	no			X	
	Arsenic	22	22	100%	5.73E+00	3.65E+00	1.49E+01	1.69E-01	1.80E+01	no	yes	yes	no			X	
	Barium	22	22	100%	7.51E+02	6.28E+02	2.84E+03	5.04E-01	3.30E+02	no	yes	yes	yes		X		
	Beryllium	5	5	100%	5.46E-01	2.56E-01	9.50E-01	8.46E-02	1.00E+01	no	yes	yes	no			X	
	Cadmium	22	22	100%	1.39E+00	1.37E+00	5.10E+00	3.61E-02	3.20E+01	no	yes	yes	no			X	
	Calcium	5	5	100%	1.36E+04	9.56E+03	2.48E+04	1.77E+01	NV	no	yes	no					X
	Chromium	22	22	100%	2.09E+01	9.57E+00	4.52E+01	2.22E-01	4.00E-01	no	yes	yes	yes		X		
	Cobalt	22	22	100%	3.75E+00	1.44E+00	7.10E+00	2.81E-01	1.30E+01	no	yes	yes	no			X	
	Copper	22	22	100%	5.94E+01	4.36E+01	2.08E+02	4.02E-01	7.00E+01	no	yes	yes	yes		X		
	Iron	22	22	100%	1.09E+04	4.07E+03	2.29E+04	2.95E+01	NV	no	yes	no					X
	Lead	22	22	100%	1.72E+01	8.56E+00	3.53E+01	4.97E-02	1.20E+02	no	yes	yes	no			X	
	Magnesium	5	5	100%	5.06E+03	2.23E+03	8.63E+03	4.48E+00	NV	no	yes	no					X
	Manganese	22	22	100%	5.68E+02	5.56E+02	1.80E+03	4.73E-01	2.20E+02	no	yes	yes	yes		X		
	Mercury	22	22	100%	1.02E+00	1.50E+00	5.30E+00	2.45E-02	1.00E-01	yes	yes	yes	yes		X		
	Nickel	22	22	100%	9.70E+00	3.10E+00	1.45E+01	1.87E-01	3.80E+01	no	yes	yes	no			X	
	Potassium	5	5	100%	2.30E+03	1.06E+03	4.11E+03	1.92E+01	NV	no	yes	no					X
	Selenium	5	2	40%	2.22E-01	9.48E-02	3.40E-01	3.04E-01	5.20E-01	no	yes	yes	no			X	
	Silver	22	18	82%	4.53E-01	4.27E-01	1.80E+00	1.69E-01	5.60E+02	no	yes	yes	no			X	
	Sodium	5	5	100%	9.91E+02	8.31E+02	1.84E+03	1.46E+01	NV	no	yes	no					X
	Thallium	22	21	95%	1.46E-01	5.41E-02	2.20E-01	4.89E-02	1.00E+00	no	yes	yes	no			X	
	Vanadium	22	22	100%	2.20E+01	1.12E+01	4.62E+01	3.40E-01	2.00E+00	no	yes	yes	yes		X		
	Zinc	22	22	100%	1.68E+02	1.05E+02	4.13E+02	1.65E+00	1.20E+02	no	yes	yes	yes		X		

ESV = ecological screening value; TEQ = toxicity equivalence; D/F = dioxins/furans; ND = non-detect; DL = sample-specific detection limit; PCB = polychlorinated biphenyls; DL-PCB = dioxin-like PCB; NV = no value.

Bolded contaminants represent COPECs.

Table 3-11. Pore Water COPEC Screen for the On-Site Ponds

Contaminant		N Samples	N Detected Samples	Detection Frequency	Average Concentration (ug/L)	Standard Deviation (ug/L)	Maximum Detected Concentration (ug/L)	Average DL (ug/L)	SW ESV (ug/L)	COPEC SELECTION STEPS					Pond Pore Water COPECs		
										Is the contaminant a bioaccumulative?	Is contaminant detected ≥5%?	Does contaminant have a benchmark?	Is Max Detect > benchmark?	Detection Limit Is DL > benchmark?	COPEC	Not a COPEC	Source of Uncertainty
Metals[a]	Aluminum	10	10	100%	6.38E+02	5.98E+02	1.99E+03	2.42E+01	8.7E+01	no	yes	yes	yes				X
	Antimony	12	4	33%	1.73E+00	1.86E+00	7.00E+00	1.50E+00	3.0E+01	no	yes	yes	no			X	
	Arsenic	12	10	83%	1.01E+01	1.10E+01	4.02E+01	2.30E+00	1.5E+02	no	yes	yes	no			X	
	Barium	12	12	100%	1.87E+02	1.79E+02	6.08E+02	2.10E+00	4.0E+00	no	yes	yes	yes		X		
	Beryllium	12	0	0%	5.50E-01	1.56E-08	ND	1.10E+00	6.6E-01	no	no	yes		yes			X
	Cadmium	12	0	0%	2.70E-01	0.00E+00	ND	5.40E-01	1.3E+00 [b]	no	no	yes		no		X	
	Calcium	12	12	100%	1.01E+05	1.04E+05	3.97E+05	2.90E+02	1.2E+05	no	yes	yes	yes			X (c)	
	Chromium	12	1	8%	1.76E+00	5.48E-01	3.50E+00	3.20E+00	1.1E+01	no	yes	yes	no			X	
	Cobalt	12	3	25%	1.16E+00	5.86E-01	2.50E+00	1.70E+00	2.3E+01	no	yes	yes	no			X	
	Copper	12	4	33%	3.53E+00	2.21E+00	8.30E+00	4.30E+00	1.7E+01 [b]	no	yes	yes	no			X	
	Iron	12	10	83%	5.06E+02	7.11E+02	2.46E+03	1.09E+02	1.0E+03	no	yes	yes	yes			X (c)	
	Lead	12	1	8%	5.41E-01	5.23E-01	2.20E+00	7.80E-01	5.6E+00 [b]	no	yes	yes	no			X	
	Magnesium	12	12	100%	1.17E+05	1.05E+05	3.04E+05	9.92E+01	8.2E+04	no	yes	yes	yes			X (c)	
	Manganese	12	12	100%	1.64E+03	1.93E+03	6.62E+03	4.70E+00	1.2E+02	no	yes	yes	yes		X		
	Mercury	12	6	50%	7.72E-02	4.79E-02	1.90E-01	7.80E-02	7.7E-01	yes	yes	yes	no		X		
	Nickel	12	12	100%	6.69E+00	3.12E+00	1.25E+01	2.10E+00	9.7E+01 [b]	no	yes	yes	no			X	
	Potassium	12	12	100%	6.96E+04	4.54E+04	1.61E+05	3.58E+02	5.3E+04	no	yes	yes	yes			X (c)	
	Selenium	12	1	8%	1.47E+00	4.19E-01	2.80E+00	2.70E+00	1.5E+00	no	yes	yes	yes		X		
	Silver	12	0	0%	1.55E+00	0.00E+00	ND	3.10E+00	1.2E+00 [b]	no	no	yes		yes			X
	Sodium	12	12	100%	1.11E+06	9.11E+05	2.67E+06	2.30E+03	6.8E+05	no	yes	yes	yes			X (c)	
	Thallium	12	1	8%	3.11E-01	1.60E-01	8.20E-01	5.30E-01	1.2E+01	no	yes	yes	no			X	
	Vanadium	12	3	25%	3.94E+00	2.72E+00	1.16E+01	5.30E+00	2.0E+01	no	yes	yes	no			X	
	Zinc	12	11	92%	7.38E+01	2.84E+01	1.18E+02	3.82E+01	2.2E+02 [b]	no	yes	yes	no			X	

TEQ = toxicity equivalence; ND = non-detect; MDL = method detection limit; PCB = polychlorinated biphenyls; SVOCs = semi-volatile organic compounds; NV = no value.

(a) Dissolved concentrations are presented for all metals based on peeper samples except aluminum (benchmark is based on total recoverable aluminum) which is based on total concentration in the PushPoint samples.

(b) The surface water criterion for this metal is expressed as a function of hardness. Values were calculated based on the 5th percentile of the calculated hardness values for the ponds of 131 mg/L.

(c) The maximum detected concentration exceeds the surface water ESV, but this is an essential physiological electrolyte and is not retained as a COPEC.

Table 3-12. Comparison of Aluminum Concentrations in Pond Pore Waters to Site-Specific Aluminum Water Quality Criteria

Waterbody	Location	pH	Hardness ($CaCO_3$)	DOC (mg/L)	Maximum Total Aluminum (µg/L)	Aluminum CCC (µg/L)[a]	Notes
On-Site Ponds	HP18	7.9	235	23	382	1,100	DOC outside model inputs
	HP13a	8.2	236	50	**1,390**	1,100	DOC outside model inputs
	HP13	8.8	No data	39	No data	--	
	HP12	7.9	455	108	262	1,400	H, DOC outside model inputs
	IBJ	6.7	496	43	456	1,900	H, DOC outside model inputs
	HP1a	7.5	No data	145	No data	--	
	CWD	7.8	189	3.1	141	940	
	HP7	8.4	769	182	**1,990**	1,000	H, DOC outside model inputs
	HP2	7.8	491	57	769	1,300	H, DOC outside model inputs
	P5	8.5	1,903	121	237	830	H, DOC outside model inputs
	CL Pond	7.1	253	22.5	479	1,100	DOC outside model inputs
	HP10	7.6	1,438	104	274	1,900	H, DOC outside model inputs

$CaCO_3$ = calcium carbonate; DOC = dissolved organic carbon; CCC = criterion continuous concentration; H=hardness; µg = micrograms; L = liters.

[a]Criterion Continuous Concentration (CCC) calculated using USEPA's Aluminum Criteria Calcualtor version 2.0.

Table 3-13. HQ_{max} (Total) and Selection of COPECs for Quantitative Evaluation

Receptor Class	Maximum Concentration (mg/kg)						NOAEL TRV (mg/kg-d)	HQ_{MAX}						Results		
	Contaminant	Soil/ Sediment	Surface Water	BMI	Fish	Mammal		Soil/ Sediment	Surface Water	BMI	Fish	Mammal	HQ_{Total}	COPEC	Not a COPEC	Source of Uncertainty
Mammal	**TEQ_M**	7.56E-04	3.19E-06	9.70E-07	4.83E-07	1.21E-06	2.20E-07	137.5	2.2	4.3	2.1	5.3	151.4	X		
	PCBs	1.01	ND	NA	0.30	NA	0.093	0.4	NC	NC	3.1	NC	3.6	X		
	Aluminum	28400	747	971	22.8	75.9	1.93	589	58	488	11	38	1184	X		
	Antimony	3.9	4	0.2	ND	0.062	0.059	2.6	10.2	3.9	NC	1.0	17.8	X		
	Arsenic	40.7	32.5	1	0.12	0.098	1.04	1.6	4.7	1.3	0.1	0.1	7.8	X		
	Barium	2840	244	113	12.7	12.9	51.8	2.2	0.7	2.1	0.2	0.2	5.5	X		
	Beryllium	1.2	ND	ND	ND	ND	0.532	0.1	NC	NC	NC	NC	0.1		X	
	Cadmium	8.3	0.28	0.2	0.17	0.075	0.77	0.4	0.1	0.3	0.2	0.1	1.1		X	
	Chromium	58.2	7.7	2	0.13	0.16	2.4	1.0	0.5	0.9	0.1	0.1	2.5	X		
	Cobalt	8.5	1.9	0.3	0.031	0.056	7.33	0.05	0.04	0.04	0.004	0.01	0.1		X	
	Copper	208	19.2	37	2.4	3.1	5.6	1.5	0.5	6.4	0.4	0.5	9.3	X		
	Lead	104	0.88	2	0.052	0.25	4.7	0.9	0.03	0.4	0.01	0.1	1.3		X	
	Manganese	3040	3730	388	13.3	2.7	51.5	2.4	10.9	7.3	0.3	0.1	20.8	X		
	Mercury	8	ND	0.10	0.1	0.03	0.025	12.8	NC	3.9	2.5	1.0	20.2	X		
	Methyl Mercury	0.0546	ND	0.53	0.1	ND	0.032	0.1	NC	16.1	1.5	NC	17.7	X		
	Nickel	42.5	15.7	0.93	ND	0.27	1.7	1.0	1.4	0.5	NC	0.2	3.1	X		
	Selenium	2.1	1.5	0.34	0.5	0.22	0.143	0.6	1.6	2.3	3.3	1.5	9.3	X		
	Silver	1.8	ND	0.09	ND	0.02	6.02	0.01	NC	0.01	NC	0.003	0.03		X	
	Thallium	0.79	0.027	0.09	ND	0.05	0.0074	4.3	0.5	11.3	NC	6.6	22.6	X		
	Vanadium	119	7.5	3.20	ND	0.05	4.16	1.1	0.3	0.7	NC	0.01	2.2	X		
	Zinc	686	26	55.60	45.9	48.40	75.4	0.4	0.1	0.7	0.6	0.6	2.3	X		
Bird	**TEQ_A**	1.53E-03	3.19E-06	5.83E-06	1.31E-06	4.02E-06	2.50E-06	15.3	0.3	2.8	0.6	1.9	21.0	X		
	PCBs	1.01	ND	NA	0.30	NA	0.112	0.2	NC	NC	3.2	NC	3.5	X		
	Aluminum	28400	747	971	23	75.9	109.7	6.5	1.5	10.7	0.3	0.8	19.7	X		
	Antimony	3.9	4	0	ND	0.062	no TRV	NC	NC	NC	NC	NC	NC			X
	Arsenic	40.7	32.5	1	0	0.098	2.24	0.5	3.2	0.8	0.1	0.1	4.5	X		
	Barium	2840	244	113	13	12.9	20.8	3.4	2.6	6.5	0.7	0.7	14.0	X		
	Beryllium	1.2	ND	ND	ND	ND	no TRV	NC	NC	NC	NC	NC	NC			X
	Cadmium	8.3	0.28	0	0	0.075	1.47	0.1	0.0	0.2	0.1	0.1	0.6		X	
	Chromium	58.2	7.7	2.3	0.1	0.16	2.66	0.5	0.6	1.0	0.1	0.1	2.4	X		
	Cobalt	8.5	1.9	0.3	0.03	0.056	7.61	0.0	0.1	0.1	0.0	0.0	0.1		X	
	Copper	208	19.2	37	2.40	3.1	4.05	1.3	1.0	11.0	0.7	0.9	14.9	X		
	Lead	104	0.88	2	0.1	0.25	1.63	1.6	0.1	1.3	0.0	0.2	3.2	X		
	Manganese	3040	3730	388	13	2.7	179	0.4	4.6	2.6	0.1	0.0	7.7	X		
	Mercury	8	ND	0.10	0.06	0.026	0.45	0.4	NC	0.3	0.2	0.1	0.9		X	
	Methyl Mercury	0.0546	ND	0.53	0.05	ND	0.0064	0.2	NC	100	9.5	NC	110	X		
	Nickel	42.5	15.7	0.93	ND	0.27	6.71	0.2	0.5	0.2	NC	0.0	0.9		X	
	Selenium	2.1	1.5	0.34	0.49	0.22	0.29	0.2	1.1	1.4	2.0	0.9	5.7	X		
	Silver	1.8	ND	0.09	ND	0.021	2.02	0.0	NC	0.1	NC	0.0	0.1		X	
	Thallium	0.79	0.027	0.09	ND	0.05	no TRV	NC	NC	NC	NC	NC	NC			X
	Vanadium	119	7.5	3.20	ND	0.049	0.344	8.6	4.8	11.2	NC	0.2	24.8	X		
	Zinc	686	26	55.60	46	48.4	66.1	0.3	0.1	1.0	0.8	0.9	3.1	X		

NOAEL = no-observed-adverse-effect-level; LOAEL=lowest-observed-adverse-effect-level; TRV = toxicity reference value; BMI=benthic macroinvertebrate; HQ_{max} = maximum hazard quotient; HQ_{total} = total hazard quotient; COPEC = contaminant of potential ecological concern; TEQ_M = mammalian toxicity equivalence; TEQ_A = avian toxicity equivalence; ND = not detected; NA = not analyzed; NC = not calculated.
Bolded contaminants are retained as wildlife COPECs.

Table 3-14. Identified COPECs based on the BERA COPEC Screen

COPEC	SURFACE WATER						PORE WATER	SEDIMENT						SOIL						WILDLIFE	
	CFR		Creeks		Ponds		Ponds	CFR		Creeks		Ponds		OU2 Soil		OU3 Upland		OU3 Floodplain		Birds	Mammals
TEQ	X	[1]	X	[1]	X	[1]		X		X		X		X	[1]	X	[1]	X	[1]	X	X
Aluminum														X		X		X		X	X
Antimony																					X
Arsenic								X		X		X				X				X	X
Barium	X		X		X		X							X		X		X		X	X
Cadmium								X				X									
Chromium														X		X		X		X	X
Copper	X				X			X		X		X		X		X		X		X	X
Lead								X												X	
Manganese	X		X		X		X	X				X		X		X		X		X	X
Mercury							X	X	[3]	X	[3]	X	[3]	X		X		X		X	X
Nickel														X							X
Selenium							X	X		X		X		X		X				X	X
Silver								X				X									
Thallium																					X
Vanadium														X		X		X		X	X
Zinc								X		X		X		X		X		X		X	X
PCBs														X	[4]		[4]		[4]	X	X

COPEC = contaminant of potential ecological concern; CFR = Clark Fork River; TEQ = Toxicity Equivalence; PCB = polychlorinated biphenyl

[1] No ESV, but this COPEC is a detected bioaccumulative. This COPEC is considered a source of uncertainty.

[2] C_{max} < ESV, but retained as a COPEC because this is a detected bioaccumulative.

[3] Methylmercury also identified as a COPEC; sediment and tissue samples (dace, invertebrates and small mammals) collected in 2018 are the only samples analyzed for methyl mercury.

[4] OU2 Soil PCB COPECs: Total PCBs, Aroclor-1254, and Aroclor-1260. PCBs in OU3 soils have only been evlauated for Aroclor mixtures (ie., not PCB congeners); no Aroclor was detected in any of the 21 surface soil samples collected from OU3.

Table 4-1. Exposure Parameters for Representative Wildlife Species

Type	Receptor	Body Weight (kg ww)	Food Ingestion Rate (kg ww/kg BW/day)	Water Ingestion Rate (L/kg BW/day)	Sediment/Soil Ingestion Rate (kg dw/kg BW/day)	Home Range Size (ha)	Area Use Factor (AUF) (unitless)	Dietary Composition (%)						
								Plants	Terrestrial Invertebrates	Earthworms	Aerial Invertebrates	Benthic Invertebrates	Small Mammals	Fish
Aerial/Terrestrial Invertivore	American Robin	0.081	1.205	0.136	0.025	0.37 (small)	1	50	25	25				
Aerial/Terrestrial Invertivore	Gray Catbird	0.0396	0.574	0.171	0.025	0.38 (small)	1	50	50					
Aerial Insectivore	Tree Swallow	0.02	0.228	0.22	0	30	1		10		90			
Aquatic Insectivore	American Dipper	0.056	0.502	0.154	0.005	1115 m stream length	1				5	90		5
Herbivore	Dusky Grouse	1.16	0.146	0.056	0.00096	4.96 (medium)	1	100						
Carnivore	American Kestrel	0.119	0.324	0.012	0.001	57.2 (medium)	1		40				60	
Piscivore	Kingfisher	0.147	0.39	0.109	0.0014	1240 m stream length	1							100
Piscivore	Osprey	1.613	0.221	0.05	0.0001	453	1							100
Omnivore	Mallard	1.162	0.31	0.056	0.0027	136	1					100		
Omnivore	Northern Flicker	0.1388	0.381	0.113	0.0079	55 (medium)	1	30	65		5			
Omnivore	Clark's Nutcracker	0.1333	0.356	0.115	0.0026	473 (medium)	1	85	15					
Terrestrial Invertivore	Vagrant Shrew	0.0052	0.95	0.17	0.04	0.25 (small)	1		50	50				
Aerial Insectivore	Big Brown Bat	0.018	0.44	0.15	0	11,100 (large)	0.07				100			
Herbivore	White-tail Deer	56.5	0.03	0.065	0.0006	236 (medium)	1	100						
Herbivore	Montane Vole	0.047	0.36	0.13	0.00023	0.027 (small)	1	100						
Carnivore	Red Fox	4.53	0.106	0.085	0.0008	1038 (large)	0.76	25					75	
Carnivore	Mink	1.007	0.198	0.0664	0.0015	290	1						25	75
Piscivore	River Otter	8.55	0.163	0.08	0.0003	2,700	1							100
Omnivore	Deer Mouse	0.021	0.268	0.15	0.0018	0.077 (small)	1	50	50					

Table 4-2. Data Used to Calculate Exposure Point Concentrations for Each Ecological Receptor

Receptor Type	Representative Species	Feeding Guild	Habitat Evaluated	Home Range	Surface Water		Soil/ Sediment		Diet	
					Exposure Areas	EPCs	Exposure Areas	EPCs	Prey	EPCs
Aquatic-Dependent Birds	Belted kingfisher	Piscivore	CFR	CFR	CFR	95UCL surface water concentration	CFR	95UCL sediment concentration	Fish	95UCL Dace Tissue
	Osprey									95UCL Dace Tissue 95UCL Rainbow Trout Tissue
	American dipper	Aquatic insectivore	Creeks, ponds	Creeks, ponds	O'Keefe Creek	95UCL or maximum surface water concentration	O'Keefe Creek	95UCL or maximum sediment concentration	Aquatic Invertebrates	95UCL Tissue
					Lavalle Creek	95UCL or maximum surface water concentration	Lavalle Creek	95UCL or maximum sediment concentration	Aquatic Invertebrates	95UCL Tissue
					On-Site Ponds (combined)	95UCL or maximum surface water concentration	On-Site Ponds (combined)	95UCL or maximum sediment concentration	Aquatic Invertebrates	95UCL BMI Tissue (90%) + 95UCL AVI Tissue (10%)
	Tree swallow	Aerial insectivore	Creeks, ponds	Creeks, ponds	O'Keefe Creek	95UCL or maximum surface water concentration	O'Keefe Creek	95UCL or maximum sediment concentration	Aquatic Invertebrates	95UCL Tissue
					Lavalle Creek	95UCL or maximum surface water concentration	Lavalle Creek	95UCL or maximum sediment concentration	Aquatic Invertebrates	95UCL Tissue
					On-Site Ponds (combined)	95UCL or maximum surface water concentration	On-Site Ponds (combined)	95UCL or maximum sediment concentration	Aquatic Invertebrates	95UCL AVI Tissue
	Mallard	Omnivore	Creeks, ponds	Creeks, ponds	O'Keefe Creek	95UCL or maximum surface water concentration	O'Keefe Creek	95UCL or maximum sediment concentration	Aquatic Invertebrates	95UCL Tissue
					Lavalle Creek	95UCL or maximum surface water concentration	Lavalle Creek	95UCL or maximum sediment concentration	Aquatic Invertebrates	95UCL Tissue
					On-Site Ponds (combined)	95UCL or maximum surface water concentration	On-Site Ponds (combined)	95UCL or maximum sediment concentration	Aquatic Invertebrates	95UCL BMI Tissue
Aquatic-Dependent Mammals	River otter	Piscivore	CFR	CFR	CFR	95UCL surface water concentration	CFR	95UCL sediment concentration	Fish	95UCL Dace Tissue
	American mink	Carnivore	CFR, terrestrial	CFR	CFR	95UCL surface water concentration	CFR	95UCL sediment (75%) + 95UCL soil (25%)	Fish	95UCL Dace Tissue
				OU3 Floodplain			OU3 Floodplain		Small Mammals	95UCL Small Mammal Tissue
Terrestrial Birds	American robin	Aerial/Terrestrial invertivore	Terrestrial	Small Home Range	Sample-specific	Sample-specific surface water concentrations	Sample-specific	Sample-specific soil concentrations	Plants, Terrestrial Invertebrates	50% plants, 50% invertebrates; Each modeled based on soil EPC
	Gray catbird	Aerial/Terrestrial invertivore								
	Blue grouse	Herbivore	Terrestrial	Medium Home Range	On-Site Ponds & Creeks (combined)	Maximum surface water EPC for O'Keefe Creek, Lavalle Creek, or Ponds	OU2	95UCL OU2 soil	Plants	Modeled based on soil EPC
							OU3 Upland	95UCL OU3 upland soil	Plants	Modeled based on soil EPC
							OU3 Floodplain	95UCL OU3 floodplain soil	Plants	Modeled based on soil EPC
	American kestrel	Carnivore	Terrestrial	Medium Home Range	On-Site Ponds & Creeks (combined)	Maximum surface water EPC for O'Keefe Creek, Lavalle Creek, or Ponds	OU2	95UCL OU2 soil	Terrestrial Invertebrates, Small Mammals	40% invertebrates (modeled from soil EPC), 60% small mammals (95UCL Small Mammal Tissue)
							OU3 Upland	95UCL OU3 upland soil	Terrestrial Invertebrates, Small Mammals	40% invertebrates (modeled from soil EPC), 60% small mammals (95UCL Small Mammal Tissue)
							OU3 Floodplain	95UCL OU3 floodplain soil	Terrestrial Invertebrates, Small Mammals	40% invertebrates (modeled from soil EPC), 60% small mammals (95UCL Small Mammal Tissue)
	Northern flicker	Omnivore	Terrestrial	Medium Home Range	On-Site Ponds & Creeks (combined)	Maximum surface water EPC for O'Keefe Creek, Lavalle Creek, or Ponds	OU2	95UCL OU2 soil	Plants, Terrestrial Invertebrates	30% plants, 65% invertebrates; Each modeled based on soil EPC
							OU3 Upland	95UCL OU3 upland soil	Plants, Terrestrial Invertebrates	30% plants, 65% invertebrates; Each modeled based on soil EPC
							OU3 Floodplain	95UCL OU3 floodplain soil	Plants, Terrestrial Invertebrates	30% plants, 65% invertebrates; Each modeled based on soil EPC
	Clark's nutcracker	Omnivore	Terrestrial	Medium Home Range	On-Site Ponds & Creeks (combined)	Maximum surface water EPC for O'Keefe Creek, Lavalle Creek, or Ponds	OU2	95UCL OU2 soil	Plants, Terrestrial Invertebrates	85% plants, 15% invertebrates; Each modeled based on soil EPC
							OU3 Upland	95UCL OU3 upland soil	Plants, Terrestrial Invertebrates	85% plants, 15% invertebrates; Each modeled based on soil EPC
							OU3 Floodplain	95UCL OU3 floodplain soil	Plants, Terrestrial Invertebrates	85% plants, 15% invertebrates; Each modeled based on soil EPC
Terrestrial Mammals	Vagrant shrew	Terrestrial invertivore	Terrestrial	Small Home Range	Sample-specific	Sample-specific surface water concentrations	Sample-specific	Sample-specific soil concentrations	Terrestrial Invertebrates	Modeled based on soil EPC
	Montane vole	Herbivore							Plants	Modeled based on soil EPC
	Deer mouse	Omnivore							Plants, Terrestrial Invertebrates	50% plants, 50% invertebrates; Each modeled based on soil EPC
	White-tail deer	Herbivore	Terrestrial	Medium Home Range	On-Site Ponds & Creeks (combined)	Maximum surface water EPC for O'Keefe Creek, Lavalle Creek, or Ponds	OU2	95UCL OU2 soil	Plants	Modeled based on soil EPC
							OU3 Upland	95UCL OU3 upland soil	Plants	Modeled based on soil EPC
							OU3 Floodplain	95UCL OU3 floodplain soil	Plants	Modeled based on soil EPC
	Big brown bat	Aerial insectivore	Terrestrial	Large Home Range	All Site Surface Waters	95UCL surface water concentration	Site (OU2&OU3)	95UCL soil	Terrestrial Invertebrates	Modeled based on soil EPC
	Red fox	Carnivore	Terrestrial						Plants, Small Mammals	25% plants (modeled from soil EPC), 75% small mammals (95UCL Small Mammal Tissue)

Table 4-3. Summary of Aquatic Invertebrate Tissue Samples

Exposure Area	Location	Tissue Sample ID	Invertebrate Tissue Type	Analysis		
				Dioxins	Metals	MeHg
Upstream Lavalle Creek	34-LV	TI34-LV-BMI-C-NET	Mix	X	X	X
	35-LV	TI35-LV-BMI-C-NET	Mix	X	X	X
Lavalle Creek	36-LV	TI36-LV-BMI-C-NET	Mix	X	X	X
	37-LV	TI37-LV-BMI-C-NET	Mix	X	X	X
	38-LV	TI38-LV-BMI-C-NET	Mix	X	X	X
	39-LV	TI39-LV-BMI-C-NET	Mix	X	X	X
Upstream O'Keefe Creek	40-OK	TI40-OK-BMI-C-NET	Mix	X	X	X
O'Keefe Creek	41-OK	TI41-OK-BMI-C-NET	Mix	X	X	X
	42-OK	TI42-OK-BMI-C-NET	Mix	X	X	X
	43-OK	TI43-OK-BMI-C-NET	Mix	X	X	X
On-Site Pond	64-HP18	TI64-HP18-BMI-C	Benthic		X	
	64-HP18	TI64-HP18-BMI-C-NET	Vegetation-Associated	X		X
	65-HP13A	TI65-HP13A-BMI-C	Benthic		X	
	65-HP13A	TI65-HP13A-BMI-C-NET	Vegetation-Associated	X	X	X
	66-HP13	TI66-HP13-BMI-C	Benthic		X	
	66-HP13	TI66-HP13-BMI-C-NET	Vegetation-Associated	X	X	X
	67-HP12	TI67-HP12-BMI-C	Benthic	X	X	X
	67-HP12	TI67-HP12-BMI-C-NET	Vegetation-Associated	X	X	X
	68-IBJ	TI68-IBJ-BMI-C-NET	Vegetation-Associated	X	X	X
	69-HP1A	TI69-1A-BMI-C-NET	Vegetation-Associated	X	X	X
	71-HP7	TI71-HP7-BMI-C-NET	Vegetation-Associated		X	X
	72-HP2	TI72-HP2-BMI-C	Benthic		X	
	72-HP2	TI72-HP2-BMI-C-NET	Vegetation-Associated	X	X	X
	73-P5	TI73-P5-BMI-C	Benthic	X	X	
	74-CL POND	TI74-CL-POND-BMI-C-NET	Vegetation-Associated	X	X	X
	75-HP10	TI75-HP10-BMI-C	Benthic	X		
	75-HP10	TI75-HP10-BMI-C-NET	Vegetation-Associated		X	X

LV = Lavalle; OK = O'Keefe; HP = holding pond; IBJ = infiltration basin; CL = clarifier; BMI = benthic invertebrate; MeHg = methyl mercury.

Table 4-4. Uptake Equations

Analyte	Soil to Plants		Soil to Earthworms	
	Equation	**Source**	**Equation**	**Source**
Aluminum	$C_p = C_s$	f	$C_e = C_s$	f
Antimony	$\ln(C_p) = 0.938 * \ln(C_s) - 3.233$	a	$C_e = C_s$	f
Arsenic	$C_p = 0.03752 * C_s$	b	$\ln(C_e) = 0.706 * \ln(C_s) - 1.421$	e
Barium	$C_p = 0.156 * C_s$	b	$C_e = 0.091 * C_s$	c
Chromium	$C_p = 0.041 * C_s$	b	$C_e = 0.306 * C_s$	e
Copper	$\ln(C_p) = 0.394 * \ln(C_s) + 0.668$	b	$C_e = 0.515 * C_s$	e
Lead	$\ln(C_p) = 0.561 * \ln(C_s) - 1.328$	b	$\ln(C_e) = 0.807 * \ln(C_s) - 0.218$	e
Manganese	$C_p = 0.079 * C_s$	b	$\ln(C_e) = 0.682 * \ln(C_s) - 0.809$	e
Mercury	$\ln(C_p) = 0.538 * \ln(C_s) - 0.958$	d	$\ln(C_e) = 0.3369 * \ln(C_s) + 0.0781$	c
Nickel	$\ln(C_p) = 0.748 * \ln(C_s) - 2.223$	b	$C_e = C_s$	f
Selenium	$\ln(C_p) = 1.104 * \ln(C_s) - 0.677$	b	$\ln(C_e) = 0.733 * \ln(C_s) - 0.075$	e
Vanadium	$C_p = 0.00485 * C_s$	b	$C_e = 0.042 * C_s$	c
Thallium	$C_p = C_s$	f	$C_e = C_s$	f
Zinc	$\ln(C_p) = 0.554 * \ln(C_s) + 1.575$	b	$\ln(C_e) = 0.328 * \ln(C_s) + 4.449$	e
TCDD	$C_p = C_s$	f	$\ln(C_p) = 1.182* \ln(C_s) + 3.533$	c

Source:

a. USEPA 2007
b. Bechtel-Jacobs 1998
c. Sample et al. 1998b
d. Sample et al. 1998a
e. Sample et al. 1999
f. Assumed

Abbreviations:

C_s = Concentration in soil (mg/kg)
C_p = Concentration in plant tissue (mg/kg dry weight)
C_e = Concentration in earthworm (mg/kg dry weight)

Table 4-5. Acute and Chronic Water Quality Criteria Used in the BERA

	Contaminant		ACUTE				CHRONIC					
			NRWQC - Acute (µg/L) [1]	MDEQ-7 Acute (µg/L)[2]	GLWQI Tier II SAV (µg/L) [3]	**Surface Water Acute Benchmark (ug/L)**	NAWQC - Chronic (µg/L)[1]	MDEQ-7 Chronic (µg/L)[2]	GLWQI Tier II SCV (µg/L)[3]	Other (ug/L)[3,4]		**Surface Water Chronic Benchmark (ug/L)**
Inorganics	Aluminum		Variable	750	--	**750**	Variable	87	--	75	EC20 Sensitive Species	**87**
	Antimony		--	--	180	**180**	--	--	30			**30**
	Arsenic		340	340	--	**340**	150	150	--	5	CCME WQG	**150**
	Barium		--	--	110	**110**	--	--	4	--		**4**
	Beryllium		--	--	35	**35**	--	--	0.66			**0.66**
	Cadmium (a)	CFR	1.8	0.49	--	**1.84**	0.72	0.25	--	--		**0.73**
		Creeks				**2.44**						**0.92**
		Ponds				**2.31**						**0.88**
	Calcium		--		--	**No ESV**	--		--	116,000	LCV Daphnids	**116,000**
	Chromium III (a)	CFR	570	579	--	**584**	74	27.7	--	--		**76**
		Creeks				**746**						**97**
		Ponds				**711**						**92**
	Chromium VI		16	16	--	**16**	11	11	--	--		**11**
	Cobalt		--	--	1,500	**1,500**	--	--	23	--		**23**
	Copper (a)	CFR	13	3.79 (a)	--	**13.80**	9	2.85	--	--		**9.2**
		Creeks				**18.30**						**11.9**
		Ponds				**17.30**						**11.3**
	Iron		--	--	--	**No ESV**	1,000	1000	--	300	CCME WQG	**1,000**
	Lead (a)	CFR	82	13.98	--	**66.7**	3.2	0.545	--	--		**2.60**
		Creeks				**92.3**						**3.60**
		Ponds				**86.5**						**3.37**
	Magnesium		--	--		**No ESV**	--	--	--	82,000	LCV Daphnids	**82,000**
	Manganese		--	--	2,300	**2,300**	--	--	120	--		**120**
	Mercury		1.4	1.7	--	**1.4**	0.77	0.91	1.3	--		**0.77**
	Methyl mercury				0.099	**0.1**			0.0028			**0.0028**
	Nickel (a)	CFR	470	145	--	**480**	52	16.1	--	--		**53**
		Creeks				**619**						**69**
		Ponds				**588**						**65**
	Potassium		--			**No ESV**	--		--	53,000	LCV Daphnids	**53,000**
	Selenium		--	20		**20**	1.5	5				**1.5**
	Silver	CFR	3.2	0.374	--	**3.4**	0.32 (c)	--	0.36	--		**0.34**
		Creeks				**5.7**						**0.57**
		Ponds				**5.1**						**0.51**
	Sodium		--	--		**No ESV**	--		--	680,000	LCV Daphnids	**680,000**
	Thallium		--	--	110	**110**	--		12	--		**12**
	Vanadium		--	--	280	**280**	--		20	--		**20**
	Zinc (a)	CFR	120	37	--	**120**	120	37	--	--		**121**
		Creeks				**155**						**156**
		Ponds				**147**						**149**
TEQ	2,3,7,8-TCDD		--	--	--	**No ESV**	--	--	--	--		**No ESV**

NRWQC = National Recommended Water Quality Criteria; MDEQ = Montana Department of Environmental Quality; GLWQI = Great Lakes Water Quality Initiative; CFR = Clark Fork River; TEQ = toxicity equivalence; ESV = ecological screening value; CCME = Canadian Council of Ministers of the Environment; LCV = lowest chronic value; EC20 = effective concentrations affecting 20% of organisms tested; WQG = water quality guidelines.
(a) Hardness-dependent.

1 USEPA (2018). National Recommended Water Quality Guidelines.
2 MDEQ (2019). Montana Department of Environmental Quality Numeric Water Quality Standards.
3 Suter and Tsao (1996). Great Lakes Water Quality Initiative. Oak Ridge National Laboratories.
4 CCME (2001). Canadian Water Quality Guidelines.

Table 4-6. Sediment Criteria Used in the BERA

COPEC	No-effect ESVs (mg/kg)		Low-effect ESVs (mg/kg)	
Mercury	0.18	1	1.06	1
Methyl Mercury	NV		NV	
2,3,7,8-TCDD	8.50E-07	2	2.15E-05	2

COPEC = Contaminants of Potential Ecological Concern
ESV = Ecological Screening Value
NV = No value.

1 MacDonald et al. (2000)
2 CCME (2001) Sediment Quality Guidelines.

Table 4-7. Tissue-residue benchmarks (TRBs) for TEQ_F[a]

Species protection level	TRB (ng/g lw)		
	LCL	Mean	UCL
99%	0.015	0.057	0.201
97.50%	0.04	0.151	0.510
95%	0.088	0.321	1.05
90%	0.199	0.699	2.22

[a]TRBs are protective of fish exposed to 2,3,7,8-tetrachlorodibenzo-p-dioxin and dioxin-like compounds. Values shown represent the geometric mean of the no-observable-effects-residue and the lowest-observable-effects-residue.

Source: Steevens et al. (2005)

Abbreviations:

TRB = tissue-residue benchmark

TEQ_F = fish toxicity equivalence

LCL = lower 95% confidence limit on the mean

UCL = upper 95% confidence limit on the mean

Table 4-8. Plant and Soil Invertebrate Soil Toxicity Benchmarks Used in the BERA

Contaminant	Plants					Soil Invertebrates				
	EcoSSL	ORNL	LANL	**No-Effect ESV**	**Low-Effect ESV**	EcoSSL	ORNL	LANL	**No-Effect ESV**	**Low-Effect ESV**
Copper	70	100	490	**70**	**490**	80	50	530	**80**	**530**
Mercury		0.3		**0.3**	**No ESV**		0.1	0.5	**0.1**	**0.5**
Selenium	0.52	1	3	**0.52**	**3**	4.1	70	41	**4.1**	**41**
Zinc	160	50	810	**160**	**810**	120	200	930	**120**	**930**
PCBs		40		**40**	**No ESV**		251		**251**	**No ESV**
TEQ				**No ESV**	**No ESV**				**No ESV**	**No ESV**

All values shown are in units of mg/kg.

EcoSSL = Ecological Soil Screening Level; ESV = Ecological Screening Value; ORNL = Oak Ridge National Laboratory; LANL = Los Alamos National Laboratory

Table 4-9. Wildlife Toxicity Reference Values (TRVs)

Contaminant	Mammals				Birds			
	TRV (mg/kg bw day)		Source	Notes	TRV (mg/kg bw day)		Source	Notes
	NOAEL	LOAEL			NOAEL	LOAEL		
TEQ	2.2E-07	2.2E-06		Tillitt et al. (1996); TRVs based on several mink reproduction endpoints; similar LOAEL reported in additional mink studies; applied NOAEL to LOAEL UF of 0.1 to derive NOAEL.	2.50E-06	2.50E-05	c	Category 1 TRV; Calculated by multiplying Category 2 TRV by Category 1:2 ratio.
					1.43E-05	1.43E-04	b	Category 2 TRV; Nosek et al. (1992); based on reproductive endpoints in the ring-necked pheasant.
					1.15E-04	1.15E-03	c	Category 3 TRV; Calculated by multiplying Category 2 TRV by Category 3:2 ratio.
PCBs	0.093	0.93		McCoy et al. 1995; Based on LOAEL for pup viability in field mice; NOAEL TRV derived using a LOAEL to NOAEL UF of 10.	0.112	1.12		Tori and Peterle (1983); NOAEL and LOAEL values for breeding success in mourning doves.
Aluminum	1.93	19.3	b	Ondreicka et al. (1996); value based on unbounded LOAEL for growth, ORNL applied LOAEL to NOAEL UF of 0.1 to derive NOAEL.	109.7	1,097	b	Carriere et al. (1986); single dose study with no observed effects; applied NOAEL to LOAEL UF of 10 to derive LOAEL.
Antimony	0.059	0.59	a	Rossi et al. (1987); LOAEL from the same study used to select the Eco-SSL NOAEL TRV.	no TRV	no TRV		
Arsenic	1.04	1.66	a	Neiger and Osweiler (1989); LOAEL from the same study used to select the Eco-SSL NOAEL TRV.	2.24	4.5	a	Multiple studies; LOAEL is the geometric mean of the growth and reproduction LOAELS in the Eco-SSL data set.
Barium	51.8	82.7	a	Multiple studies; LOAEL is the geometric mean of the growth and reproduction LOAELs in the Eco-SSL data set.	20.8	41.7	b	Johnson et al. (1960); Based on bounded NOAEL and LOAEL; ORNL applied a subchronic to chronic UF of 0.1.
Chromium	2.4	58.2	a	Multiple studies; LOAEL is the geometric mean of the growth and reproduction LOAELs in the Eco-SSL data set.	2.66	15.6	a	Multiple studies; LOAEL is the geometric mean of the growth and reproduction LOAELS in the Eco-SSL data set.
Copper	5.6	9.34	a	Allcroft et al. (1961); LOAEL from the same study used to select the Eco-SSL NOAEL TRV.	4.05	12.1	a	Ankari et al. (1998); LOAEL from the same study used to select the Eco-SSL NOAEL TRV.
Lead	4.7	8.9	a	Kimmel et al. (1980); LOAEL from the same study used to select the Eco-SSL NOAEL TRV.	1.63	3.26	a	Edens and Garlich (1983); LOAEL from the same study used to select the Eco-SSL NOAEL TRV.
Manganese	51.5	146	a	Multiple studies; LOAEL is the geometric mean of the growth and reproduction LOAELs in the Eco-SSL data set.	179	377	a	Multiple studies; LOAEL is the geometric mean of the growth and reproduction LOAELS in the Eco-SSL data set.
Mercury, Inorganic	0.025	0.25		Khan et al. (2004); LOAEL for fertility in mice; LOAEL to NOAEL UF of 10 applied to derive NOAEL.	0.45	0.90	b	Hill and Schaffner (1976); Based on reproductive endpoints in the Japanese quail exposed to mercuric chloride.
Mercury, Organic	0.032	0.16	b	Verschuuren et al. (1976); LOAEL for reduced pup viability in rats fed methyl mercury chloride in food.	0.0064	0.064	b	Heinz (1979); LOAEL based on reproduction effects in mallard ducks; ORNL applied a NOAEL to LOAEL UF of 0.1 to derive NOAEL.
Nickel	1.7	3.4	a	Pandey and Srivastava (2000); LOAEL from the same study used to select the Eco-SSL NOAEL TRV.	6.71	18.6	a	Multiple studies; LOAEL is the geometric mean of the growth and reproduction LOAELS in the Eco-SSL data set.
Selenium	0.143	0.215	a	Mahan and Moxon (1984); LOAEL from the same study used to select the Eco-SSL NOAEL TRV.	0.29	0.579	a	El-Begearmi and Combs (1982); LOAEL from the same study used to select the Eco-SSL NOAEL TRV.
Thallium	0.0074	0.074	b	Formigli et al. (1986); NOAEL based on reproductive effects in rats, ORNL applied a subchronic to chronic UF of 0.1; LOAEL based on UF of 10.	no TRV	no TRV		
Vanadium	4.16	8.31	a	Sanchez et al. (1991); LOAEL from the same study used to select the Eco-SSL NOAEL TRV.	0.344	0.688	a	Hill (1979); LOAEL from the same study used to select the Eco-SSL NOAEL TRV.
Zinc	75.4	298	a	Multiple studies; LOAEL is the geometric mean of the growth and reproduction LOAELs in the Eco-SSL data set.	66.1	171	a	Multiple studies; LOAEL is the geometric mean of the growth and reproduction LOAELS in the Eco-SSL data set.

TRV = toxicity reference value; TEQ = toxicity equivalence; NOAEL = no-observed-adverse-effect-level; LOAEL = lowest-observed-adverse-effect-level; UF = uncertainty factor.

Source:

(a) Ecological Soil Screening Level (Eco-SSL).

(b) Oak Ridge National Laboratory (ORNL), Sample et al. (1996).

(c) Category 1 and 3 TRVs for TCDD TEQ were extrapolated from the Category 2 TRV using ratios provided in Table 4-10.

Table 4-10. Relative Sensitivity Ratios for Avian TEQ TRV Extrapolation

Congener	Effect level	Endpoint	AHR Category 1 LC50 (ug/kg ww)	AHR Category 2 LC50 (ug/kg ww)	AHR Category 3 LC50 (ug/kg ww)	Source
TCDD	LC50	mortality	0.210	1.200	9.700	Cohen-Barnhouse et al. 2011
Category 1 : Category 2 Ratio			**0.18**	-	-	
Category 3: Category 2 Ratio			-	-	**8.08**	

Notes:

TCDD = 2,3,7,8-tetrachlorodibenzo-p-dioxin

LC50 = lethal concentration to 50% of the test subjects

AHR - aryl hydrocarbon receptor

AHR Category 1 test species are chicken

AHR Category 2 test species are ring-necked pheasants

AHR Category 3 test species are Japanese quail

Table 4-11. Tissue Residue Benchmarks for Small Mammals

COPEC	NOAEL (mg/kg dw)	LOAEL (mg/kg dw)	NOAEL (mg/kg ww)	LOAEL (mg/kg ww)	Notes
TEQ_M	0.0355	0.355	0.012	0.117	Based on Kociba et al. (1978) and Murray et al. (1979) in Beyer and Meador (2011); liver concentration associated with TCDD NOEC and LOEC for reproduction/growth/survival in rats (510 and 5,100 ng/kg ww). Assume a liver:body weight ratio of 4.35% for female rats based on Webster et al. (1947).
Cadmium	12,758	42,525	4,210	14,033	Kidney concentration associated with NOEC and LOEC for nephrotoxicity in small mammals (105 and 350 mg/kg dw, respectively). Assume a kidney:body weight ratio of 0.823% for rats based on Webster et al. (1947).
Mercury	N/A	13,991	No benchmark	4,617	Based on geometric mean of kidney concentrations associated with impaired reproduction and lethality in mammals (38 mg/kg ww). Assume a kidney:body weight ratio of 0.823% for rats based on Webster et al. (1947) .

COPEC = contaminants of potential ecological concern; TEQ_M = mammalian toxicity equivalence; NOAEL = no-observed-adverse-effect-level; LOAEL = lowest-observed-adverse-effect-level; mg/kg ww = milligrams per kilogram wet weight

Source: Beyer and Meador (2011)

Table 5-1.
Frequency and Magnitude of Hazard Quotients for Aquatic Receptors from Direct Contact with Surface Water in the Clark Fork River

Acute

COPEC	CFR - Site Adjacent		CFR - Downstream of Site	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Barium	4/6	1.1 - 1.3	5/13	1.1 - 1.2
Copper	1/6	1.4 - 1.4	0/13	--
Manganese	0/6	--	0/13	--

Chronic

COPEC	CFR - Site Adjacent		CFR - Downstream of Site	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Barium	6/6	17 - 35	13/13	23 - 33
Copper	1/6	2.1 - 2.1	0/13	--
Manganese	2/6	2.1 - 11	2/13	1.3 - 4.1

COPEC = Contaminant of Potential Ecological Concern; HQ = Hazard Quotient; Freq. = Frequency

Table 5-2.
Frequency and Magnitude of Hazard Quotients for Aquatic Receptors from Direct Contact with Surface Water in the Creeks

Acute

COPEC	O'Keefe Creek		Lavalle Creek	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Barium	2/2	1.2 - 1.3	3/3	1.4 - 2.2
Manganese	0/2	--	0/3	--

Chronic

COPEC	O'Keefe Creek		Lavalle Creek	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Barium	2/2	33 - 35	3/3	38 - 61
Manganese	0/2	--	1/3	1.1 - 1.1

COPEC = Contaminant of Potential Ecological Concern; HQ = Hazard Quotient; Freq. = Frequency

Table 5-3.
Frequency and Magnitude of Hazard Quotients for Aquatic Receptors from Direct Contact with Surface Waters in On-Site Ponds

COPEC	Acute		Chronic	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Barium	3/14	1.2 - 1.6	14/14	2.8 - 43
Copper	0/14	--	1/14	1.3 - 1.3
Manganese	1/14	1.6 - 1.6	10/14	2 - 31

COPEC = Contaminant of Potential Ecological Concern; HQ = Hazard Quotient;
Freq. = Frequency

Table 5-4.
Frequency and Magnitude of Hazard Quotients for Aquatic Receptors from Direct Contact with Sediments in the Clark Fork River

No Effect Toxicity Benchmark

COPEC	CFR - Site Adjacent		CFR - Downstream of Site	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Arsenic	2/7	1.3 - 1.4	8/16	1.1 - 2.8
Cadmium	1/7	1.3 - 1.3	2/16	1.6 - 2
Copper	6/7	1.6 - 4.1	16/16	1.1 - 9.9
Lead	0/7	--	2/16	1.2 - 1.5
Manganese	2/7	1.1 - 1.3	3/16	1.1 - 1.2
Mercury	2/7	1.1 - 1.2	5/16	1.1 - 2.2
Selenium	0/3	--	1/11	1.1 - 1.1
Silver	0/7	--	1/16	1.2 - 1.2
Zinc	6/7	1.3 - 3.1	14/16	1.1 - 3.8
TEQ_F	0/7	--	0/16	--

Low-Effect Toxicity Benchmark

COPEC	CFR - Site Adjacent		CFR - Downstream of Site	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Arsenic	0/7	--	0/16	--
Cadmium	0/7	--	0/16	--
Copper	0/7	--	3/16	1.2 - 2.1
Lead	0/7	--	0/16	--
Manganese	0/7	--	0/16	--
Mercury	0/7	--	0/16	--
Selenium	0/3	--	0/11	--
Silver	0/7	--	0/16	--
Zinc	0/7	--	0/16	--
TEQ_F	0/7	--	0/16	--

CFR = Clark Fork River; COPEC = Contaminant of Potential Ecological Concern;
HQ = Hazard Quotient; Freq. = Frequency

Table 5-5.
Frequency and Magnitude of Hazard Quotients for Aquatic Receptors from Direct Contact with Sediment in the Creeks

No Effect Toxicity Benchmark

COPEC	O'Keefe Creek		Lavalle Creek	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Arsenic	0/4	--	2/7	1.2 - 1.6
Cadmium	0/4	--	0/7	--
Copper	0/4	--	3/7	1.4 - 5
Lead	0/4	--	0/7	--
Manganese	0/4	--	0/7	--
Mercury	0/4	--	1/7	1.1 - 1.1
Selenium	0/3	--	1/4	1.4 - 1.4
Silver	0/4	--	0/7	--
Zinc	0/4	--	2/7	2 - 2.7
TEQ_F	1/4	1.4 - 1.4	1/7	3.3 - 3.3

Low-Effect Toxicity Benchmark

COPEC	O'Keefe Creek		Lavalle Creek	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Arsenic	0/4	--	0/7	--
Cadmium	0/4	--	0/7	--
Copper	0/4	--	1/7	1.1 - 1.1
Lead	0/4	--	0/7	--
Manganese	0/4	--	0/7	--
Mercury	0/4	--	0/7	--
Selenium	0/3	--	0/4	--
Silver	0/4	--	0/7	--
Zinc	0/4	--	0/7	--
TEQ_F	0/4	--	0/7	--

COPEC = Contaminant of Potential Ecological Concern; HQ = Hazard Quotient;
Freq. = Frequency

Table 5-6.

Frequency and Magnitude of Hazard Quotients for Aquatic Receptors from Direct Contact with Sediments in Ponds

COPEC	No Effect Toxicity Benchmark		Low-Effect Toxicity Benchmark	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Arsenic	3/12	1.2 - 1.5	0/12	--
Cadmium	7/12	1.7 - 6.4	1/12	1.3 - 1.3
Copper	10/12	1.1 - 2.9	0/12	--
Manganese	7/12	1.2 - 3.9	5/12	1.1 - 2.1
Mercury	7/12	1.8 - 14	2/12	1.9 - 2.4
Selenium	2/12	1.4 - 1.7	0/12	--
Silver	2/12	1.1 - 1.7	0/12	--
Zinc	9/12	1.1 - 2.9	0/12	--
TEQ_F	12/12	1.1 - 99	4/12	1.4 - 3.9

Table 5-7.
Frequency and Magnitude of Hazard Quotients for Aquatic Receptors from Direct Contact with Pond Pore Water

COPEC	Pore Water COPEC	Sediment COPEC	Acute		Chronic	
			Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Arsenic		X	0/12	--	0/12	--
Barium	X		6/12	1.3 - 5.5	12/12	9.8 - 150
Cadmium		X	0/12	--	0/12	--
Copper		X	0/12	--	0/12	--
Manganese	X	X	3/12	1.1 - 2.9	11/12	1.6 - 55
Mercury	X	X	0/12	--	0/12	--
Selenium	X	X	0/12	--	1/12	1.9 - 1.9
Silver		X	0/12	--	12/12	3 - 3
Zinc		X	0/12	--	0/12	--

COPEC = Contaminant of Potential Ecological Concern; HQ = Hazard Quotient;
Freq. = Frequency

Table 5-8

Frequency and Magnitude of Hazard Quotients for Plants and Soil Organisms from Direct Contact with Surface Soil Based on No Effect Ecological Screening Values

Based on No-Effect Plant Toxicity Benchmark

COPEC	OU2		OU3-Upland		OU3-Floodplain		Undisturbed Soil (Grids 82 & 84)	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Total PCBs (ND=1/2 DL)	0/9	--	0/0	--	0/0	--	0/0	--
Aroclor-1254	0/15	--	0/19	--	0/2	--	0/0	--
Aroclor-1260	0/15	--	0/19	--	0/2	--	0/0	--
Aluminum	32/32	57 - 570	51/51	22 - 380	22/22	110 - 430	2/2	140 - 160
Arsenic	0/32	--	2/51	2.3 - 2.3	0/22	--	0/2	--
Barium	1/32	2.2 - 2.2	19/51	1 - 2.9	12/22	1 - 5.7	0/2	--
Chromium	32/32	5.2 - 40	51/51	6.3 - 58	22/22	8.4 - 45	2/2	8.9 - 9.6
Copper	2/32	1.2 - 1.6	3/51	1 - 1.3	6/22	1 - 3	2/2	1.1 - 1.1
Manganese	29/32	1.2 - 14	35/51	1.1 - 12	19/22	1.1 - 8.2	2/2	1.5 - 2
Mercury	1/32	1 - 1	15/51	1.1 - 27	12/22	1 - 18	0/2	--
Nickel	1/32	1.1 - 1.1	0/51	--	0/22	--	0/2	--
Selenium	10/12	1.6 - 4	14/43	1.1 - 3.1	0/5	--	0/2	--
Vanadium	32/32	2.4 - 13	50/51	1.8 - 60	22/22	4.4 - 23	2/2	7.3 - 7.3
Zinc	5/32	1.1 - 2.8	17/51	1.1 - 4.3	9/22	1 - 2.6	2/2	1.1 - 1.3

Based on No-Effect Invertebrate Toxicity Benchmark

COPEC	OU2		OU3-Upland		OU3-Floodplain		Undisturbed Soil (Grids 82 & 84)	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Total PCBs (ND=1/2 DL)	0/9	--	0/0	--	0/0	--	0/0	--
Aroclor-1254	0/15	--	0/19	--	0/2	--	0/0	--
Aroclor-1260	0/15	--	0/19	--	0/2	--	0/0	--
Aluminum	*No toxicity benchmark*							
Arsenic	0/32	--	0/51	--	0/22	--	0/2	--
Barium	6/32	1.1 - 3.3	27/51	1.1 - 4.4	16/22	1.2 - 8.6	0/2	--
Chromium	32/32	13 - 99	51/51	16 - 150	22/22	21 - 110	2/2	22 - 24
Copper	2/32	1.1 - 1.4	1/51	1.1 - 1.1	4/22	1.1 - 2.6	0/2	--
Manganese	7/32	1 - 6.8	23/51	1.1 - 6	7/22	1.1 - 4	0/2	--
Mercury	1/32	3.1 - 3.1	26/51	1.1 - 80	17/22	1.6 - 53	0/2	--
Nickel	0/32	--	0/51	--	0/22	--	0/2	--
Selenium	0/12	--	0/43	--	0/5	--	0/2	--
Vanadium	*No toxicity benchmark*							
Zinc	7/32	1 - 3.7	20/51	1 - 5.7	11/22	1.1 - 3.4	2/2	1.4 - 1.7

COPEC = Contaminants of potential ecological concern; HQ = hazard quotient; Freq. = frequency; PCB = polychlorinated biphenyl; ND = non-detects; DL =detection limit

-- = All HQs values were below 1.

HQ values shown to two significant figures.

Table 5-9.

Frequency and Magnitude of Hazard Quotients for Plants and Soil Organisms from Direct Contact with Surface Soil Based on Low Effect Ecological Screening Values

Based on the Low-Effect Plant Toxicity Benchmark

COPEC	OU2		OU3-Upland		OU3-Floodplain		Undisturbed Soil (Grids 82 & 84)	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Arsenic	0/32	--	0/51	--	0/22	--	0/2	--
Barium	*No toxicity benchmark*							
Chromium	*No toxicity benchmark*							
Copper	0/32	--	0/51	--	0/22	--	0/2	--
Manganese	2/32	1.3 - 2.8	14/51	1 - 2.5	4/22	1.4 - 1.6	0/2	--
Mercury	*No toxicity benchmark*							
Nickel	0/32	--	0/51	--	0/22	--	0/2	--
Selenium	0/12	--	0/43	--	0/5	--	0/2	--
Vanadium	0/32	--	1/51	1.5 - 1.5	0/22	--	0/2	--
Zinc	0/32	--	0/51	--	0/22	--	0/2	--

Based on the Low-Effect Invertebrate Toxicity Benchmark

COPEC	OU2		OU3-Upland		OU3-Floodplain		Undisturbed Soil (Grids 82 & 84)	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Arsenic	0/32	--	0/51	--	0/22	--	0/2	--
Barium	0/32	--	0/51	--	0/22	--	0/2	--
Chromium	2/32	1.1 - 1.4	10/51	1 - 2.1	4/22	1.1 - 1.6	0/2	--
Copper	0/32	--	0/51	--	0/22	--	0/2	--
Manganese	0/32	--	0/51	--	0/22	--	0/2	--
Mercury	0/32	--	14/51	1.3 - 16	10/22	1.1 - 11	0/2	--
Nickel	*No toxicity benchmark*							
Selenium	0/12	--	0/43	--	0/5	--	0/2	--
Vanadium	*No toxicity benchmark*							
Zinc	0/32	--	0/51	--	0/22	--	0/2	--

COPEC = Contaminants of potential ecological concern; HQ = hazard quotient; Freq. = frequency; PCB = polychlorinated biphenyl; ND = non-detects; RL = reporting limit

-- = All HQs values were below 1.

HQ values shown to two significant figures.

Table 5-10 Total Hazard Quotients for Aquatic-Dependent Birds Exposed at the Creeks and Ponds

Location	COPEC	American Dipper	Tree Swallow	Mallard
		HQt	HQt	HQt
		LOAEL - NOAEL	LOAEL - NOAEL	LOAEL - NOAEL
O'Keefe Creek	TEQ_A	8.3E-03 - 8.3E-02	6.3E-04 - 6.3E-03	1.1E-04 - 1.1E-03
	Aluminum	1.9E-01 - 1.9E+00	5.8E-02 - 5.8E-01	1.1E-01 - 1.1E+00
	Antimony	NC - NC	NC - NC	NC - NC
	Arsenic	8.1E-02 - 1.6E-01	3.5E-02 - 7.0E-02	5.0E-02 - 9.9E-02
	Barium	1.4E+00 - 2.8E+00	6.2E-01 - 1.2E+00	8.5E-01 - 1.7E+00
	Chromium	3.8E-03 - 2.2E-02	4.8E-06 - 2.8E-05	2.1E-03 - 1.2E-02
	Copper	1.2E+00 - 3.6E+00	5.4E-01 - 1.6E+00	7.5E-01 - 2.2E+00
	Lead	8.6E-02 - 1.7E-01	3.0E-02 - 6.0E-02	5.2E-02 - 1.0E-01
	Manganese	6.1E-02 - 1.3E-01	2.6E-02 - 5.5E-02	3.8E-02 - 7.9E-02
	Mercury	4.2E-01 - 4.2E+00	1.9E-01 - 1.9E+00	2.6E-01 - 2.6E+00
	Methyl Mercury	4.7E-01 - 4.7E+00	2.1E-01 - 2.1E+00	2.9E-01 - 2.9E+00
	Nickel	3.0E-03 - 8.4E-03	4.3E-06 - 1.2E-05	1.6E-03 - 4.5E-03
	Selenium	2.6E-01 - 5.3E-01	1.2E-01 - 2.4E-01	1.6E-01 - 3.2E-01
	Thallium	NC - NC	NC - NC	NC - NC
	Vanadium	4.7E-01 - 9.5E-01	1.6E-01 - 3.3E-01	2.8E-01 - 5.7E-01
	Zinc	7.1E-02 - 1.8E-01	3.1E-02 - 8.0E-02	4.4E-02 - 1.1E-01
Lavalle Creek	TEQ_A	7.6E-03 - 7.6E-02	5.6E-04 - 5.6E-03	1.0E-04 - 1.0E-03
	Aluminum	3.2E-01 - 3.2E+00	1.2E-01 - 1.2E+00	1.9E-01 - 1.9E+00
	Antimony	NC - NC	NC - NC	NC - NC
	Arsenic	1.6E-01 - 3.3E-01	6.9E-02 - 1.4E-01	1.0E-01 - 2.0E-01
	Barium	1.2E+00 - 2.4E+00	5.4E-01 - 1.1E+00	7.5E-01 - 1.5E+00
	Chromium	2.8E-02 - 1.7E-01	1.1E-02 - 6.4E-02	1.7E-02 - 1.0E-01
	Copper	1.6E+00 - 4.7E+00	7.0E-01 - 2.1E+00	9.7E-01 - 2.9E+00
	Lead	1.7E-01 - 3.3E-01	5.9E-02 - 1.2E-01	9.9E-02 - 2.0E-01
	Manganese	1.9E-01 - 3.9E-01	8.2E-02 - 1.7E-01	1.1E-01 - 2.4E-01
	Mercury	4.2E-01 - 4.2E+00	1.9E-01 - 1.9E+00	2.6E-01 - 2.6E+00
	Methyl Mercury	4.6E-01 - 4.6E+00	2.1E-01 - 2.1E+00	2.8E-01 - 2.8E+00
	Nickel	1.6E-02 - 4.5E-02	6.0E-03 - 1.7E-02	9.7E-03 - 2.7E-02
	Selenium	2.1E-01 - 4.2E-01	9.1E-02 - 1.8E-01	1.3E-01 - 2.6E-01
	Thallium	NC - NC	NC - NC	NC - NC
	Vanadium	7.4E-01 - 1.5E+00	2.7E-01 - 5.4E-01	4.5E-01 - 8.9E-01
	Zinc	7.5E-02 - 1.9E-01	3.1E-02 - 8.1E-02	4.6E-02 - 1.2E-01
On-Site Ponds	TEQ_A	5.1E-02 - 5.1E-01	6.6E-03 - 6.6E-02	6.2E-04 - 6.2E-03
	Aluminum	4.2E-01 - 4.2E+00	9.3E-02 - 9.3E-01	2.6E-01 - 2.6E+00
	Antimony	NC - NC	NC - NC	NC - NC
	Arsenic	1.3E-01 - 2.5E-01	3.3E-02 - 6.5E-02	7.8E-02 - 1.6E-01
	Barium	6.4E-01 - 1.3E+00	1.6E-01 - 3.2E-01	4.0E-01 - 8.0E-01
	Chromium	5.5E-02 - 3.2E-01	1.4E-02 - 8.2E-02	3.4E-02 - 2.0E-01
	Copper	3.4E-01 - 1.0E+00	7.9E-02 - 2.4E-01	2.1E-01 - 6.3E-01
	Lead	2.4E-01 - 4.7E-01	5.0E-02 - 1.0E-01	1.5E-01 - 2.9E-01
	Manganese	5.3E-01 - 1.1E+00	1.5E-01 - 3.1E-01	3.3E-01 - 7.0E-01
	Mercury	3.1E-01 - 3.0E+00	2.6E-01 - 2.6E+00	1.8E-01 - 1.8E+00
	Methyl Mercury	1.8E-01 - 1.8E+00	9.1E-01 - 9.1E+00	5.2E-02 - 5.2E-01
	Nickel	2.5E-02 - 6.9E-02	8.2E-03 - 2.3E-02	1.5E-02 - 4.2E-02
	Selenium	2.0E-01 - 4.1E-01	5.2E-02 - 1.0E-01	1.3E-01 - 2.5E-01
	Thallium	NC - NC	NC - NC	NC - NC
	Vanadium	2.1E+00 - 4.2E+00	4.6E-01 - 9.2E-01	1.3E+00 - 2.6E+00
	Zinc	8.6E-02 - 2.2E-01	4.4E-02 - 1.1E-01	5.2E-02 - 1.3E-01

COPEC = contaminant of potential ecological concern; HQt = total hazard quotient; TEQ_A = avian toxicity equivalence; LOAEL = lowest-observed-adverse-effect-level; NOAEL = no-observed-adverse-effect-level; NC = not calculated.

Blue highlight flags HQt values >1.0.

Orange highlight flags HQt values >5.0.

Table 5-11 Total Hazard Quotients for Aquatic-Dependent Receptors Exposed at the Clark Fork River

Location	COPEC	Kingfisher	Osprey	Otter	Mink
		HQt	HQt	HQt	HQt
		LOAEL - NOAEL	LOAEL - NOAEL	LOAEL - NOAEL	LOAEL - NOAEL
CFR (Site)	TEQ	4.1E-04 - 4.1E-03	2.3E-04 - 2.3E-03	7.1E-03 - 7.1E-02	8.7E-03 - 8.7E-02
	Aluminum	1.5E-02 - 1.5E-01	3.6E-03 - 3.6E-02	2.4E-01 - 2.4E+00	8.6E-01 - 8.6E+00
	Antimony	NC - NC	NC - NC	2.7E-04 - 2.7E-03	2.8E-03 - 2.8E-02
	Arsenic	1.4E-02 - 2.8E-02	6.2E-03 - 1.2E-02	1.4E-02 - 2.3E-02	2.1E-02 - 3.4E-02
	Barium	1.1E-01 - 2.2E-01	5.9E-02 - 1.2E-01	2.2E-02 - 3.6E-02	3.4E-02 - 5.5E-02
	Chromium	3.3E-03 - 2.0E-02	1.5E-03 - 8.7E-03	3.3E-04 - 8.0E-03	6.7E-04 - 1.6E-02
	Copper	8.0E-02 - 2.4E-01	3.8E-02 - 1.1E-01	4.0E-02 - 6.6E-02	6.5E-02 - 1.1E-01
	Lead	1.6E-02 - 3.1E-02	3.4E-03 - 6.9E-03	1.6E-03 - 3.0E-03	6.1E-03 - 1.2E-02
	Manganese	1.3E-02 - 2.8E-02	6.6E-03 - 1.4E-02	1.3E-02 - 3.8E-02	1.8E-02 - 5.0E-02
	Mercury	3.3E-01 - 3.3E+00	1.9E-01 - 1.9E+00	5.5E-02 - 2.8E-01	6.0E-02 - 3.1E-01
	Methyl Mercury	2.6E-01 - 2.6E+00	1.5E-01 - 1.5E+00	4.4E-02 - 2.2E-01	4.0E-02 - 2.0E-01
	Nickel	5.9E-04 - 1.6E-03	4.3E-05 - 1.2E-04	6.9E-04 - 1.4E-03	7.7E-03 - 1.5E-02
	Selenium	2.9E-01 - 5.7E-01	1.6E-01 - 3.2E-01	3.2E-01 - 4.8E-01	3.2E-01 - 4.8E-01
	Thallium	NC - NC	NC - NC	6.1E-04 - 6.1E-03	3.1E-03 - 3.1E-02
	Vanadium	3.0E-02 - 5.9E-02	2.2E-03 - 4.3E-03	5.3E-04 - 1.1E-03	3.0E-03 - 6.1E-03
	Zinc	1.0E-01 - 2.7E-01	5.8E-02 - 1.5E-01	2.5E-02 - 9.8E-02	3.1E-02 - 1.2E-01

COPEC = contaminant of potential ecological concern; HQt = total hazard quotient; TEQA = avian toxicity equivalence; LOAEL = lowest-observed-adverse-effect-level; NOAEL = no-observed-adverse-effect-level; NC = not calculated.
Blue highlight flags HQt values >1.0.
Orange highlight flags HQt values >5.0.

Table 5-12.
Frequency and Magnitude of HQs for Mouse from Ingestion of Surface Soil

Based on LOAEL-Based TRV

COPEC	OU2		OU3-Upland		OU3-Floodplain		Undisturbed Soil (Grids 82 & 84)	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Dioxin/Furan TEQ (ND=1/2DL)	0/31	--	0/52	--	0/22	--	0/2	--
Dioxin/Furan/DL-PCB TEQ (ND=1/2DL)	0/9	--	0/0	--	0/0	--	0/0	--
DL-PCB TEQ (ND=1/2DL)	0/9	--	0/0	--	0/0	--	0/0	--
Total PCBs (ND=1/2 DL)	0/9	--	0/0	--	0/0	--	0/0	--
Aroclor-1254	0/15	--	0/19	--	0/2	--	0/0	--
Aroclor-1260	0/15	--	0/19	--	0/2	--	0/0	--
Aluminum	15/32	1 - 2.6	19/51	1 - 1.8	13/22	1 - 2	0/2	--
Antimony	0/12	--	0/43	--	0/5	--	0/2	--
Arsenic	0/32	--	0/51	--	0/22	--	0/2	--
Barium	0/32	--	0/51	--	0/22	--	0/2	--
Chromium	0/32	--	0/51	--	0/22	--	0/2	--
Copper	0/32	--	0/51	--	0/22	--	0/2	--
Manganese	0/32	--	0/51	--	0/22	--	0/2	--
Mercury	0/32	--	0/51	--	0/22	--	0/2	--
Nickel	0/32	--	0/51	--	0/22	--	0/2	--
Selenium	0/12	--	0/43	--	0/5	--	0/2	--
Thallium	0/32	--	0/51	--	0/22	--	0/2	--
Vanadium	0/32	--	0/51	--	0/22	--	0/2	--
Zinc	0/32	--	0/51	--	0/22	--	0/2	--

Based on NOAEL-Based TRV

COPEC	OU2		OU3-Upland		OU3-Floodplain		Undisturbed Soil (Grids 82 & 84)	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Dioxin/Furan TEQ (ND=1/2DL)	0/31	--	1/52	1.4 - 1.4	0/22	--	0/2	--
Dioxin/Furan/DL-PCB TEQ (ND=1/2DL)	0/9	--	0/0	--	0/0	--	0/0	--
DL-PCB TEQ (ND=1/2DL)	0/9	--	0/0	--	0/0	--	0/0	--
Total PCBs (ND=1/2 DL)	0/9	--	0/0	--	0/0	--	0/0	--
Aroclor-1254	0/15	--	0/19	--	0/2	--	0/0	--
Aroclor-1260	0/15	--	0/19	--	0/2	--	0/0	--
Aluminum	32/32	2.7 - 26	51/51	1 - 18	22/22	5.1 - 20	2/2	6.7 - 7.6
Antimony	0/12	--	0/43	--	0/5	--	0/2	--
Arsenic	0/32	--	0/51	--	0/22	--	0/2	--
Barium	0/32	--	0/51	--	0/22	--	0/2	--
Chromium	0/32	--	0/51	--	0/22	--	0/2	--
Copper	0/32	--	0/51	--	0/22	--	0/2	--
Manganese	0/32	--	0/51	--	0/22	--	0/2	--
Mercury	0/32	--	0/51	--	0/22	--	0/2	--
Nickel	0/32	--	0/51	--	0/22	--	0/2	--
Selenium	0/12	--	0/43	--	0/5	--	0/2	--
Thallium	0/32	--	0/51	--	0/22	--	0/2	--
Vanadium	0/32	--	0/51	--	0/22	--	0/2	--
Zinc	0/32	--	0/51	--	0/22	--	0/2	--

COPEC = Contaminants of potential ecological concern; HQ = hazard quotient; Freq. = frequency; TEQ=toxicity equivalent; PCB = polychlorinated biphenyl; ND = non-detects; DL = detection limit

-- = All HQs values were below 1.

HQ values shown to two significant figures.

Table 5-13.
Frequency and Magnitude of HQs for Vole from Ingestion of Surface Soil

Based on LOAEL-Based TRV

COPEC	OU2		OU3-Upland		OU3-Floodplain		Undisturbed Soil (Grids 82 & 84)	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Dioxin/Furan TEQ (ND=1/2DL)	0/31	--	0/52	--	0/22	--	0/2	--
Dioxin/Furan/DL-PCB TEQ (ND=1/2DL)	0/9	--	0/0	--	0/0	--	0/0	--
DL-PCB TEQ (ND=1/2DL)	0/9	--	0/0	--	0/0	--	0/0	--
Total PCBs (ND=1/2DL)	0/9	--	0/0	--	0/0	--	0/0	--
Aroclor-1254	0/15	--	0/19	--	0/2	--	0/0	--
Aroclor-1260	0/15	--	0/19	--	0/2	--	0/0	--
Aluminum	0/32	--	0/51	--	0/22	--	0/2	--
Antimony	0/12	--	0/43	--	0/5	--	0/2	--
Arsenic	0/32	--	0/51	--	0/22	--	0/2	--
Barium	0/32	--	0/51	--	0/22	--	0/2	--
Chromium	0/32	--	0/51	--	0/22	--	0/2	--
Copper	0/32	--	0/51	--	0/22	--	0/2	--
Manganese	0/32	--	0/51	--	0/22	--	0/2	--
Mercury	0/32	--	0/51	--	0/22	--	0/2	--
Nickel	0/32	--	0/51	--	0/22	--	0/2	--
Selenium	0/12	--	0/43	--	0/5	--	0/2	--
Thallium	0/32	--	0/51	--	0/22	--	0/2	--
Vanadium	0/32	--	0/51	--	0/22	--	0/2	--
Zinc	0/32	--	0/51	--	0/22	--	0/2	--

Based on NOAEL-Based TRV

COPEC	OU2		OU3-Upland		OU3-Floodplain		Undisturbed Soil (Grids 82 & 84)	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Dioxin/Furan TEQ (ND=1/2DL)	0/31	--	0/52	--	0/22	--	0/2	--
Dioxin/Furan/DL-PCB TEQ (ND=1/2DL)	0/9	--	0/0	--	0/0	--	0/0	--
DL-PCB TEQ (ND=1/2DL)	0/9	--	0/0	--	0/0	--	0/0	--
Total PCBs (ND=1/2DL)	0/9	--	0/0	--	0/0	--	0/0	--
Aroclor-1254	0/15	--	0/19	--	0/2	--	0/0	--
Aroclor-1260	0/15	--	0/19	--	0/2	--	0/0	--
Aluminum	21/32	1 - 3.4	26/51	1 - 2.3	17/22	1 - 2.6	0/2	--
Antimony	0/12	--	0/43	--	0/5	--	0/2	--
Arsenic	0/32	--	0/51	--	0/22	--	0/2	--
Barium	0/32	--	0/51	--	0/22	--	0/2	--
Chromium	0/32	--	0/51	--	0/22	--	0/2	--
Copper	0/32	--	0/51	--	0/22	--	0/2	--
Manganese	0/32	--	0/51	--	0/22	--	0/2	--
Mercury	0/32	--	0/51	--	0/22	--	0/2	--
Nickel	0/32	--	0/51	--	0/22	--	0/2	--
Selenium	0/12	--	0/43	--	0/5	--	0/2	--
Thallium	0/32	--	0/51	--	0/22	--	0/2	--
Vanadium	0/32	--	0/51	--	0/22	--	0/2	--
Zinc	0/32	--	0/51	--	0/22	--	0/2	--

COPEC = Contaminants of potential ecological concern; HQ = hazard quotient; Freq. = frequency; TEQ=toxicity equivalent; PCB = polychlorinated biphenyl; ND = non-detects; DL = detection limit

-- = All HQs values were below 1.

HQ values shown to two significant figures.

Table 5-14.
Frequency and Magnitude of HQs for Shrew from Ingestion of Surface Soil

Based on LOAEL-Based TRV

COPEC	OU2		OU3-Upland		OU3-Floodplain		Undisturbed Soil (Grids 82 & 84)	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Dioxin/Furan TEQ (ND=1/2DL)	0/31	--	1/52	3 - 3	0/22	--	0/2	--
Dioxin/Furan/DL-PCB TEQ (ND=1/2DL)	0/9	--	0/0	--	0/0	--	0/0	--
DL-PCB TEQ (ND=1/2DL)	0/9	--	0/0	--	0/0	--	0/0	--
Total PCBs (ND=1/2DL)	0/9	--	0/0	--	0/0	--	0/0	--
Aroclor-1254	0/15	--	0/19	--	0/2	--	0/0	--
Aroclor-1260	0/15	--	0/19	--	0/2	--	0/0	--
Aluminum	32/32	5.9 - 59	51/51	2.3 - 39	22/22	11 - 45	2/2	15 - 17
Antimony	0/12	--	0/43	--	0/5	--	0/2	--
Arsenic	0/32	--	0/51	--	0/22	--	0/2	--
Barium	0/32	--	0/51	--	1/22	1.4 - 1.4	0/2	--
Chromium	0/32	--	0/51	--	0/22	--	0/2	--
Copper	0/32	--	0/51	--	0/22	--	0/2	--
Manganese	0/32	--	0/51	--	0/22	--	0/2	--
Mercury	0/32	--	1/51	1.3 - 1.3	0/22	--	0/2	--
Nickel	0/32	--	0/51	--	0/22	--	0/2	--
Selenium	0/12	--	0/43	--	0/5	--	0/2	--
Thallium	0/32	--	0/51	--	0/22	--	0/2	--
Vanadium	0/32	--	0/51	--	0/22	--	0/2	--
Zinc	0/32	--	0/51	--	0/22	--	0/2	--

Based on NOAEL-Based TRV

COPEC	OU2		OU3-Upland		OU3-Floodplain		Undisturbed Soil (Grids 82 & 84)	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Dioxin/Furan TEQ (ND=1/2DL)	1/31	1 - 1	11/52	1.1 - 30	8/22	1.1 - 4.1	0/2	--
Dioxin/Furan/DL-PCB TEQ (ND=1/2DL)	3/9	1.1 - 1.7	0/0	--	0/0	--	0/0	--
DL-PCB TEQ (ND=1/2DL)	1/9	1.3 - 1.3	0/0	--	0/0	--	0/0	--
Total PCBs (ND=1/2DL)	0/9	--	0/0	--	0/0	--	0/0	--
Aroclor-1254	0/15	--	0/19	--	0/2	--	0/0	--
Aroclor-1260	0/15	--	0/19	--	0/2	--	0/0	--
Aluminum	32/32	59 - 590	51/51	23 - 390	22/22	110 - 450	2/2	150 - 170
Antimony	0/12	--	10/43	1 - 2.6	0/5	--	0/2	--
Arsenic	0/32	--	2/51	1.6 - 1.6	0/22	--	0/2	--
Barium	0/32	--	1/51	1.1 - 1.1	5/22	1 - 2.2	0/2	--
Chromium	0/32	--	0/51	--	0/22	--	0/2	--
Copper	0/32	--	0/51	--	1/22	1.5 - 1.5	0/2	--
Manganese	2/32	1.1 - 2.4	12/51	1 - 2.1	4/22	1.2 - 1.4	0/2	--
Mercury	0/32	--	14/51	1 - 13	9/22	1.1 - 8.5	0/2	--
Nickel	0/32	--	0/51	--	0/22	--	0/2	--
Selenium	0/12	--	0/43	--	0/5	--	0/2	--
Thallium	2/32	1 - 1.1	12/51	1 - 4.3	5/22	1 - 1.2	1/2	1 - 1
Vanadium	0/32	--	1/51	1.1 - 1.1	0/22	--	0/2	--
Zinc	0/32	--	0/51	--	0/22	--	0/2	--

COPEC = Contaminants of potential ecological concern; HQ = hazard quotient; Freq. = frequency; TEQ=toxicity equivalent; PCB = polychlorinated biphenyl; ND = non-detects; DL = detection limit

-- = All HQs values were below 1.

HQ values shown to two significant figures.

Table 5-15.

Frequency and Magnitude of HQs for Robin and Catbird from Ingestion of Surface Soil

Based on LOAEL-Based TRV

COPEC	OU2		OU3-Upland		OU3-Floodplain		Undisturbed Soil (Grids 82 & 84)	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Category 1: Dioxin/Furan TEQ (ND=1/2DL)	0/31	--	1/52	1.5 - 1.5	0/22	--	0/2	--
Category 2: Dioxin/Furan TEQ (ND=1/2DL)	0/31	--	0/52	--	0/22	--	0/2	--
Dioxin/Furan/DL-PCB TEQ (ND=1/2DL)	0/9	--	0/0	--	0/0	--	0/0	--
DL-PCB TEQ (ND=1/2DL)	0/9	--	0/0	--	0/0	--	0/0	--
Total PCBs (ND=1/2DL)	0/9	--	0/0	--	0/0	--	0/0	--
Aluminum	0/33	--	0/51	--	0/22	--	0/2	--
Arsenic	0/33	--	0/51	--	0/22	--	0/2	--
Barium	0/33	--	0/51	--	1/22	1.7 - 1.7	0/2	--
Chromium	0/33	--	0/51	--	0/22	--	0/2	--
Copper	0/33	--	0/51	--	0/22	--	0/2	--
Lead	0/33	--	0/51	--	0/22	--	0/2	--
Manganese	0/33	--	0/51	--	0/22	--	0/2	--
Mercury	0/33	--	3/51	1.4 - 3.1	2/22	2 - 2.1	0/2	--
Nickel	0/33	--	0/51	--	0/22	--	0/2	--
Selenium	0/12	--	0/43	--	0/5	--	0/2	--
Vanadium	0/33	--	10/51	1.1 - 4.3	5/22	1 - 1.7	0/2	--
Zinc	0/33	--	0/51	--	0/22	--	0/2	--

Based on NOAEL-Based TRV

COPEC	OU2		OU3-Upland		OU3-Floodplain		Undisturbed Soil (Grids 82 & 84)	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Category 1: Dioxin/Furan TEQ (ND=1/2DL)	0/31	--	6/52	1 - 15	2/22	1 - 1.7	0/2	--
Category 2: Dioxin/Furan TEQ (ND=1/2DL)	0/31	--	1/52	2.7 - 2.7	0/22	--	0/2	--
Category 1: Dioxin/Furan/DL-PCB TEQ (ND=1/2DL)	1/9	1.9 - 1.9	0/0	--	0/0	--	0/0	--
Category 2: Dioxin/Furan/DL-PCB TEQ (ND=1/2DL)	0/9	--	0/0	--	0/0	--	0/0	--
Category 1: DL-PCB TEQ (ND=1/2DL)	1/9	1.7 - 1.7	0/0	--	0/0	--	0/0	--
Category 2: DL-PCB TEQ (ND=1/2DL)	0/9	--	0/0	--	0/0	--	0/0	--
Total PCBs (ND=1/2DL)	0/9	--	0/0	--	0/0	--	0/0	--
Aluminum	30/33	1.1 - 6.5	47/51	1.1 - 4.3	22/22	1.2 - 4.9	2/2	1.6 - 1.8
Arsenic	0/33	--	0/51	--	0/22	--	0/2	--
Barium	1/33	1.3 - 1.3	6/51	1 - 1.7	5/22	1.6 - 3.4	0/2	--
Chromium	0/33	--	0/51	--	0/22	--	0/2	--
Copper	0/33	--	0/51	--	1/22	1.3 - 1.3	0/2	--
Lead	0/33	--	2/51	1.6 - 1.6	0/22	--	0/2	--
Manganese	0/33	--	0/51	--	0/22	--	0/2	--
Mercury	1/33	1.2 - 1.2	16/51	1.1 - 31	13/22	1.2 - 21	0/2	--
Nickel	0/33	--	0/51	--	0/22	--	0/2	--
Selenium	0/12	--	0/43	--	0/5	--	0/2	--
Vanadium	13/33	1 - 1.9	27/51	1 - 8.6	16/22	1 - 3.4	2/2	1.1 - 1.1
Zinc	0/33	--	0/51	--	0/22	--	0/2	--

Catbird is considered an avian category 1 based on higher senstivity to dioxins/furans/dioxin-like PCBs. Robin is considered an avian category 2.

COPEC = Contaminants of potential ecological concern; HQ = hazard quotient; Freq. = frequency; TEQ=toxicity equivalent; PCB = polychlorinated biphenyl; ND = non-detects; DL = detection limit

-- = All HQs values were below 1.

HQ values shown to two significant figures.

Table 5-16.
Frequency and Magnitude of HQs for Mouse from Ingestion of Food

Based on LOAEL-Based TRV

COPEC	OU2		OU3-Upland		OU3-Floodplain		Undisturbed Soil (Grids 82 & 84)	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Dioxin/Furan TEQ (ND=1/2DL)	0/31	--	4/52	1.3 - 17	3/22	1.2 - 1.6	0/2	--
Dioxin/Furan/DL-PCB TEQ (ND=1/2DL)	0/9	--	0/0	--	0/0	--	0/0	--
DL-PCB TEQ (ND=1/2DL)	0/9	--	0/0	--	0/0	--	0/0	--
Total PCBs (ND=1/2DL)	0/9	--	0/0	--	0/0	--	0/0	--
Aroclor-1254	0/15	--	0/19	--	0/2	--	0/0	--
Aroclor-1260	0/15	--	0/19	--	0/2	--	0/0	--
Aluminum	32/32	6.2 - 61	51/51	2.3 - 41	22/22	12 - 46	2/2	16 - 17
Antimony	0/12	--	0/43	--	0/5	--	0/2	--
Arsenic	0/32	--	0/51	--	0/22	--	0/2	--
Barium	0/32	--	0/51	--	0/22	--	0/2	--
Chromium	0/32	--	0/51	--	0/22	--	0/2	--
Copper	0/32	--	0/51	--	0/22	--	0/2	--
Lead	0/32	--	0/51	--	0/22	--	0/2	--
Manganese	0/32	--	0/51	--	0/22	--	0/2	--
Mercury	0/32	--	0/51	--	0/22	--	0/2	--
Nickel	0/32	--	0/51	--	0/22	--	0/2	--
Selenium	0/12	--	0/43	--	0/5	--	0/2	--
Thallium	0/32	--	0/51	--	0/22	--	0/2	--
Vanadium	0/32	--	0/51	--	0/22	--	0/2	--
Zinc	0/32	--	0/51	--	0/22	--	0/2	--

Based on NOAEL-Based TRV

COPEC	OU2		OU3-Upland		OU3-Floodplain		Undisturbed Soil (Grids 82 & 84)	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Dioxin/Furan TEQ (ND=1/2DL)	4/31	1.2 - 3.2	18/52	1.6 - 170	14/22	1.2 - 16	0/2	--
Dioxin/Furan/DL-PCB TEQ (ND=1/2DL)	5/9	1.2 - 5.8	0/0	--	0/0	--	0/0	--
DL-PCB TEQ (ND=1/2DL)	1/9	4.4 - 4.4	0/0	--	0/0	--	0/0	--
Total PCBs (ND=1/2DL)	1/9	1.9 - 1.9	0/0	--	0/0	--	0/0	--
Aroclor-1254	0/15	--	0/19	--	0/2	--	0/0	--
Aroclor-1260	0/15	--	0/19	--	0/2	--	0/0	--
Aluminum	32/32	62 - 610	51/51	23 - 410	22/22	120 - 460	2/2	160 - 170
Antimony	0/12	--	2/43	1.1 - 1.5	0/5	--	0/2	--
Arsenic	0/32	--	0/51	--	0/22	--	0/2	--
Barium	0/32	--	0/51	--	0/22	--	0/2	--
Chromium	0/32	--	0/51	--	0/22	--	0/2	--
Copper	0/32	--	0/51	--	0/22	--	0/2	--
Lead	0/32	--	0/51	--	0/22	--	0/2	--
Manganese	1/32	1.2 - 1.2	1/51	1.1 - 1.1	0/22	--	0/2	--
Mercury	0/32	--	14/51	1.3 - 8.3	11/22	1.1 - 5.9	0/2	--
Nickel	0/32	--	0/51	--	0/22	--	0/2	--
Selenium	0/12	--	0/43	--	0/5	--	0/2	--
Thallium	2/32	1.1 - 1.2	13/51	1 - 4.4	10/22	1 - 1.2	1/2	1.1 - 1.1
Vanadium	0/32	--	0/51	--	0/22	--	0/2	--
Zinc	0/32	--	0/51	--	0/22	--	0/2	--

COPEC = Contaminants of potential ecological concern; HQ = hazard quotient; Freq. = frequency; TEQ=toxicity equivalent; PCB = polychlorinated biphenyl; ND = non-detects; DL = detection limit

-- = All HQs values were below 1.

HQ values shown to two significant figures.

Table 5-17.
Frequency and Magnitude of HQs for Vole from Ingestion of Food

Based on LOAEL-Based TRV

COPEC	OU2		OU3-Upland		OU3-Floodplain		Undisturbed Soil (Grids 82 & 84)	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Dioxin/Furan TEQ (ND=1/2DL)	0/31	--	2/52	1.1 - 4.1	0/22	--	0/2	--
Dioxin/Furan/DL-PCB TEQ (ND=1/2DL)	0/9	--	0/0	--	0/0	--	0/0	--
DL-PCB TEQ (ND=1/2DL)	0/9	--	0/0	--	0/0	--	0/0	--
Total PCBs (ND=1/2DL)	0/9	--	0/0	--	0/0	--	0/0	--
Aroclor-1254	0/15	--	0/19	--	0/2	--	0/0	--
Aroclor-1260	0/15	--	0/19	--	0/2	--	0/0	--
Aluminum	32/32	8 - 79	51/51	3 - 53	22/22	15 - 60	2/2	20 - 23
Antimony	0/12	--	0/43	--	0/5	--	0/2	--
Arsenic	0/32	--	0/51	--	0/22	--	0/2	--
Barium	0/32	--	0/51	--	0/22	--	0/2	--
Chromium	0/32	--	0/51	--	0/22	--	0/2	--
Copper	0/32	--	0/51	--	0/22	--	0/2	--
Lead	0/32	--	0/51	--	0/22	--	0/2	--
Manganese	1/32	1.1 - 1.1	0/51	--	0/22	--	0/2	--
Mercury	0/32	--	1/51	1.7 - 1.7	2/22	1.1 - 1.1	0/2	--
Nickel	0/32	--	0/51	--	0/22	--	0/2	--
Selenium	0/12	--	0/43	--	0/5	--	0/2	--
Thallium	0/32	--	0/51	--	0/22	--	0/2	--
Vanadium	0/32	--	0/51	--	0/22	--	0/2	--
Zinc	0/32	--	0/51	--	0/22	--	0/2	--

Based on NOAEL-Based TRV

COPEC	OU2		OU3-Upland		OU3-Floodplain		Undisturbed Soil (Grids 82 & 84)	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Dioxin/Furan TEQ (ND=1/2DL)	2/31	1.2 - 1.4	14/52	1.1 - 41	8/22	1.5 - 5.5	0/2	--
Dioxin/Furan/DL-PCB TEQ (ND=1/2DL)	3/9	1.4 - 2.3	0/0	--	0/0	--	0/0	--
DL-PCB TEQ (ND=1/2DL)	1/9	1.8 - 1.8	0/0	--	0/0	--	0/0	--
Total PCBs (ND=1/2DL)	0/9	--	0/0	--	0/0	--	0/0	--
Aroclor-1254	0/15	--	0/19	--	0/2	--	0/0	--
Aroclor-1260	0/15	--	0/19	--	0/2	--	0/0	--
Aluminum	32/32	80 - 790	51/51	30 - 530	22/22	150 - 600	2/2	200 - 230
Antimony	0/12	--	0/43	--	0/5	--	0/2	--
Arsenic	0/32	--	0/51	--	0/22	--	0/2	--
Barium	0/32	--	0/51	--	0/22	--	0/2	--
Chromium	0/32	--	0/51	--	0/22	--	0/2	--
Copper	0/32	--	0/51	--	0/22	--	0/2	--
Lead	0/32	--	0/51	--	0/22	--	0/2	--
Manganese	2/32	1.5 - 3.2	15/51	1 - 2.8	4/22	1.6 - 1.9	0/2	--
Mercury	0/32	--	14/51	1.4 - 17	11/22	1 - 11	0/2	--
Nickel	0/32	--	0/51	--	0/22	--	0/2	--
Selenium	0/12	--	0/43	--	0/5	--	0/2	--
Thallium	8/32	1 - 1.5	24/51	1 - 5.8	14/22	1 - 1.6	1/2	1.4 - 1.4
Vanadium	0/32	--	0/51	--	0/22	--	0/2	--
Zinc	0/32	--	0/51	--	0/22	--	0/2	--

COPEC = Contaminants of potential ecological concern; HQ = hazard quotient; Freq. = frequency; TEQ=toxicity equivalent; PCB = polychlorinated biphenyl; ND = non-detects; DL = detection limit

-- = All HQs values were below 1.

HQ values shown to two significant figures.

Table 5-18.
Frequency and Magnitude of HQs for Shrew from Ingestion of Food

Based on LOAEL-Based TRV

COPEC	OU2		OU3-Upland		OU3-Floodplain		Undisturbed Soil (Grids 82 & 84)	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Dioxin/Furan TEQ (ND=1/2DL)	3/31	1.3 - 1.9	16/52	1.1 - 110	11/22	1 - 9.9	0/2	--
Dioxin/Furan/DL-PCB TEQ (ND=1/2DL)	3/9	2 - 3.5	0/0	--	0/0	--	0/0	--
DL-PCB TEQ (ND=1/2DL)	1/9	2.7 - 2.7	0/0	--	0/0	--	0/0	--
Total PCBs (ND=1/2DL)	1/9	1.1 - 1.1	0/0	--	0/0	--	0/0	--
Aroclor-1254	0/15	--	0/19	--	0/2	--	0/0	--
Aroclor-1260	0/15	--	0/19	--	0/2	--	0/0	--
Aluminum	32/32	23 - 220	51/51	8.6 - 150	22/22	43 - 170	2/2	57 - 64
Antimony	0/12	--	1/43	1 - 1	0/5	--	0/2	--
Arsenic	0/32	--	0/51	--	0/22	--	0/2	--
Barium	0/32	--	0/51	--	0/22	--	0/2	--
Chromium	0/32	--	0/51	--	0/22	--	0/2	--
Copper	0/32	--	0/51	--	2/22	1 - 1.7	0/2	--
Lead	0/32	--	0/51	--	0/22	--	0/2	--
Manganese	0/32	--	0/51	--	0/22	--	0/2	--
Mercury	0/32	--	3/51	1 - 1.3	2/22	1.1 - 1.2	0/2	--
Nickel	1/32	1.9 - 1.9	5/51	1 - 1.7	0/22	--	0/2	--
Selenium	2/12	1 - 1.1	0/43	--	0/5	--	0/2	--
Thallium	0/32	--	3/51	1.4 - 1.6	0/22	--	0/2	--
Vanadium	0/32	--	0/51	--	0/22	--	0/2	--
Zinc	0/32	--	0/51	--	0/22	--	0/2	--

Based on NOAEL-Based TRV

COPEC	OU2		OU3-Upland		OU3-Floodplain		Undisturbed Soil (Grids 82 & 84)	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Dioxin/Furan TEQ (ND=1/2DL)	18/31	1.5 - 19	35/52	1.2 - 1100	19/22	1.4 - 99	0/2	--
Dioxin/Furan/DL-PCB TEQ (ND=1/2DL)	8/9	2.1 - 35	0/0	--	0/0	--	0/0	--
DL-PCB TEQ (ND=1/2DL)	5/9	2.7 - 27	0/0	--	0/0	--	0/0	--
Total PCBs (ND=1/2DL)	2/9	1.3 - 11	0/0	--	0/0	--	0/0	--
Aroclor-1254	0/15	--	0/19	--	0/2	--	0/0	--
Aroclor-1260	0/15	--	0/19	--	0/2	--	0/0	--
Aluminum	32/32	230 - 2200	51/51	86 - 1500	22/22	430 - 1700	2/2	570 - 640
Antimony	0/12	--	21/43	1.2 - 10	2/5	1.2 - 1.2	0/2	--
Arsenic	0/32	--	0/51	--	0/22	--	0/2	--
Barium	0/32	--	0/51	--	0/22	--	0/2	--
Chromium	0/32	--	1/51	1.1 - 1.1	0/22	--	0/2	--
Copper	2/32	1.2 - 1.6	3/51	1 - 1.2	5/22	1.1 - 2.9	2/2	1 - 1.1
Lead	0/32	--	2/51	1.1 - 1.1	0/22	--	0/2	--
Manganese	0/32	--	0/51	--	0/22	--	0/2	--
Mercury	31/32	1.3 - 4.4	44/51	1.5 - 13	22/22	2.1 - 12	2/2	2.9 - 3
Nickel	10/32	1 - 3.8	23/51	1 - 3.4	8/22	1 - 1.3	0/2	--
Selenium	8/12	1.2 - 1.7	9/43	1.1 - 1.4	0/5	--	0/2	--
Thallium	32/32	1 - 4.3	48/51	1.2 - 16	21/22	1.3 - 4.5	2/2	2.5 - 3.9
Vanadium	0/32	--	0/51	--	0/22	--	0/2	--
Zinc	4/32	1 - 1.3	13/51	1 - 1.5	7/22	1 - 1.2	0/2	--

COPEC = Contaminants of potential ecological concern; HQ = hazard quotient; Freq. = frequency; TEQ=toxicity equivalent; PCB = polychlorinated biphenyl; ND = non-detects; DL = detection limit

-- = All HQs values were below 1.

HQ values shown to two significant figures.

Table 5-19.
Frequency and Magnitude of HQs for Robin from Ingestion of Food

Based on LOAEL-Based TRV

COPEC	OU2		OU3-Upland		OU3-Floodplain		Undisturbed Soil (Grids 82 & 84)	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Dioxin/Furan TEQ (ND=1/2DL)	0/31	--	3/52	1.1 - 12	0/22	--	0/2	--
Dioxin/Furan/DL-PCB TEQ (ND=1/2DL)	1/9	1 - 1	0/0	--	0/0	--	0/0	--
DL-PCB TEQ (ND=1/2DL)	0/9	--	0/0	--	0/0	--	0/0	--
Total PCBs (ND=1/2DL)	0/9	--	0/0	--	0/0	--	0/0	--
Aroclor-1254	0/15	--	0/19	--	0/2	--	0/0	--
Aroclor-1260	0/15	--	0/19	--	0/2	--	0/0	--
Aluminum	27/32	1 - 4.8	43/51	1 - 3.2	21/22	1.2 - 3.7	2/2	1.2 - 1.4
Arsenic	0/32	--	0/51	--	0/22	--	0/2	--
Barium	0/32	--	0/51	--	1/22	1.6 - 1.6	0/2	--
Chromium	0/32	--	0/51	--	0/22	--	0/2	--
Copper	0/32	--	0/51	--	0/22	--	0/2	--
Lead	0/32	--	2/51	1.2 - 1.2	0/22	--	0/2	--
Manganese	0/32	--	0/51	--	0/22	--	0/2	--
Mercury	1/32	1.5 - 1.5	22/51	1 - 15	17/22	1.1 - 10	0/2	--
Nickel	0/32	--	0/51	--	0/22	--	0/2	--
Selenium	0/12	--	0/43	--	0/5	--	0/2	--
Vanadium	0/32	--	0/51	--	0/22	--	0/2	--
Zinc	0/32	--	0/51	--	0/22	--	0/2	--

Based on NOAEL-Based TRV

COPEC	OU2		OU3-Upland		OU3-Floodplain		Undisturbed Soil (Grids 82 & 84)	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Dioxin/Furan TEQ (ND=1/2DL)	0/31	--	17/52	1 - 120	9/22	1 - 9.1	0/2	--
Dioxin/Furan/DL-PCB TEQ (ND=1/2DL)	4/9	1.2 - 10	0/0	--	0/0	--	0/0	--
DL-PCB TEQ (ND=1/2DL)	2/9	1.2 - 9.2	0/0	--	0/0	--	0/0	--
Total PCBs (ND=1/2DL)	1/9	6.9 - 6.9	0/0	--	0/0	--	0/0	--
Aroclor-1254	1/15	2.5 - 2.5	0/19	--	0/2	--	0/0	--
Aroclor-1260	0/15	--	0/19	--	0/2	--	0/0	--
Aluminum	32/32	4.9 - 48	51/51	1.9 - 32	22/22	9.3 - 37	2/2	12 - 14
Arsenic	0/32	--	0/51	--	0/22	--	0/2	--
Barium	1/32	1.2 - 1.2	5/51	1 - 1.6	5/22	1.5 - 3.1	0/2	--
Chromium	0/32	--	0/51	--	0/22	--	0/2	--
Copper	3/32	1 - 1.7	5/51	1 - 1.4	9/22	1 - 2.9	2/2	1.2 - 1.2
Lead	1/32	1.1 - 1.1	3/51	1.2 - 2.5	0/22	--	0/2	--
Manganese	1/32	1.6 - 1.6	7/51	1 - 1.4	0/22	--	0/2	--
Mercury	32/32	1.5 - 15	51/51	1.5 - 150	22/22	5.6 - 100	2/2	8.5 - 8.8
Nickel	0/32	--	0/51	--	0/22	--	0/2	--
Selenium	0/12	--	0/43	--	0/5	--	0/2	--
Vanadium	0/32	--	1/51	1.6 - 1.6	0/22	--	0/2	--
Zinc	2/32	1.1 - 1.1	10/51	1 - 1.3	2/22	1 - 1.1	0/2	--

COPEC = Contaminants of potential ecological concern; HQ = hazard quotient; Freq. = frequency; TEQ=toxicity equivalent; PCB = polychlorinated biphenyl; ND = non-detects; DL = detection limit

-- = All HQs values were below 1.

HQ values shown to two significant figures.

Table 5-20.
Frequency and Magnitude of HQs for Catbird from Ingestion of Food

Based on LOAEL-Based TRV

COPEC	OU2		OU3-Upland		OU3-Floodplain		Undisturbed Soil (Grids 82 & 84)	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Dioxin/Furan TEQ (ND=1/2DL)	0/31	--	8/52	1.1 - 32	3/22	1.1 - 2.5	0/2	--
Dioxin/Furan/DL-PCB TEQ (ND=1/2DL)	1/9	2.8 - 2.8	0/0	--	0/0	--	0/0	--
DL-PCB TEQ (ND=1/2DL)	1/9	2.5 - 2.5	0/0	--	0/0	--	0/0	--
Total PCBs (ND=1/2DL)	0/9	--	0/0	--	0/0	--	0/0	--
Aroclor-1254	0/15	--	0/19	--	0/2	--	0/0	--
Aroclor-1260	0/15	--	0/19	--	0/2	--	0/0	--
Aluminum	12/32	1 - 2.3	15/51	1 - 1.5	11/22	1.1 - 1.7	0/2	--
Arsenic	0/32	--	0/51	--	0/22	--	0/2	--
Barium	0/32	--	0/51	--	0/22	--	0/2	--
Chromium	0/32	--	0/51	--	0/22	--	0/2	--
Copper	0/32	--	0/51	--	0/22	--	0/2	--
Lead	0/32	--	0/51	--	0/22	--	0/2	--
Manganese	0/32	--	0/51	--	0/22	--	0/2	--
Mercury	0/32	--	14/51	1.1 - 6.9	9/22	1.1 - 4.9	0/2	--
Nickel	0/32	--	0/51	--	0/22	--	0/2	--
Selenium	0/12	--	0/43	--	0/5	--	0/2	--
Vanadium	0/32	--	0/51	--	0/22	--	0/2	--
Zinc	0/32	--	0/51	--	0/22	--	0/2	--

Based on NOAEL-Based TRV

COPEC	OU2		OU3-Upland		OU3-Floodplain		Undisturbed Soil (Grids 82 & 84)	
	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0	Freq. of HQs > 1.0	Range of HQs > 1.0
Dioxin/Furan TEQ (ND=1/2DL)	6/31	1 - 1.9	22/52	1 - 320	15/22	1.2 - 25	0/2	--
Dioxin/Furan/DL-PCB TEQ (ND=1/2DL)	6/9	1.2 - 28	0/0	--	0/0	--	0/0	--
DL-PCB TEQ (ND=1/2DL)	5/9	1.1 - 25	0/0	--	0/0	--	0/0	--
Total PCBs (ND=1/2DL)	1/9	1.6 - 1.6	0/0	--	0/0	--	0/0	--
Aroclor-1254	1/15	1.2 - 1.2	0/19	--	0/2	--	0/0	--
Aroclor-1260	0/15	--	0/19	--	0/2	--	0/0	--
Aluminum	32/32	2.3 - 23	50/51	1 - 15	22/22	4.4 - 17	2/2	5.8 - 6.6
Arsenic	0/32	--	0/51	--	0/22	--	0/2	--
Barium	0/32	--	0/51	--	1/22	1.5 - 1.5	0/2	--
Chromium	0/32	--	0/51	--	0/22	--	0/2	--
Copper	0/32	--	0/51	--	1/22	1.4 - 1.4	0/2	--
Lead	0/32	--	2/51	1.2 - 1.2	0/22	--	0/2	--
Manganese	0/32	--	0/51	--	0/22	--	0/2	--
Mercury	31/32	1.5 - 7.3	45/51	1.1 - 69	22/22	2.7 - 49	2/2	4.1 - 4.2
Nickel	0/32	--	0/51	--	0/22	--	0/2	--
Selenium	0/12	--	0/43	--	0/5	--	0/2	--
Vanadium	0/32	--	0/51	--	0/22	--	0/2	--
Zinc	0/32	--	0/51	--	0/22	--	0/2	--

COPEC = Contaminants of potential ecological concern; HQ = hazard quotient; Freq. = frequency; TEQ=toxicity equivalent; PCB = polychlorinated biphenyl; ND = non-detects; DL = detection limit

-- = All HQs values were below 1.

HQ values shown to two significant figures.

Table 5-21. Small Mammal Tissue Evaluation

Exposure Area	Sample ID	Tissue Concentration (mg/kg ww)			
		TEQ_M	Cadmium	Mercury	MeHg[1]
OU2	74-CL POND	**1.58**	0.018	0.017	0.815
OU3 Upland	70-CWD	**2.03**	0.068	0.005	0.773
	77-P17	**0.42**	0.040	0.003	0.647
	64-HP18	**0.38**	0.075	0.008	0.805
OU3 Floodplain	66-HP13	**0.39**	0.014	0.004	0.993
	67-HP12	**0.50**	0.037	0.003	0.796
	72-HP2	**0.34**	0.014	0.026	0.934
	69-1A	**0.37**	0.025	0.009	0.767
Reference (OU1)	68-OU1N	**0.38**	0.014	0.003	0.828
	75-OU1S	**0.40**	0.014	0.100	0.746
NOAEL (mg/kg ww)		0.01	4,210	NV	NV
LOAEL (mg/kg ww)		0.12	14,033	NV	4,617

[1]Methyl mercury (MeHg) was not detected in any sample. The concentrations shown are the reported detection limits.

Bolded values exceed the NOAEL tissue-residue benchmark.

NV = no value; NOAEL = no-observed-adverse-effect-level; LOAEL = lowest-observed-adverse-effect-level.

Table 6-1. Summary of TEQ and Mercury Concentrations in Aquatic Invertebrate Tissue Samples

Exposure Area	Location	Tissue Sample ID	Invertebrate Tissue Type	Concentration (mg/kg ww)			
				TEQ_A	TEQ_M	Mercury	MeHg
Upstream Lavalle Creek	34-LV	TI34-LV-BMI-C-NET	Mix	1.38E-07	1.07E-07	0.011	0.027
	35-LV	TI35-LV-BMI-C-NET	Mix	2.29E-07	9.05E-08	0.037	0.020
Lavalle Creek	36-LV	TI36-LV-BMI-C-NET	Mix	2.25E-07	9.80E-08	0.026	0.029
	37-LV	TI37-LV-BMI-C-NET	Mix	3.47E-07	9.20E-08	0.031	0.043
	38-LV	TI38-LV-BMI-C-NET	Mix	3.44E-07	1.04E-07	0.056	0.060
	39-LV	TI39-LV-BMI-C-NET	Mix	1.39E-07	1.08E-07	0.0093	0.023
Upstream O'Keefe Creek	40-OK	TI40-OK-BMI-C-NET	Mix	1.65E-07	1.65E-07	0.03	0.022
O'Keefe Creek	41-OK	TI41-OK-BMI-C-NET	Mix	1.69E-07	1.24E-07	0.037	0.033
	42-OK	TI42-OK-BMI-C-NET	Mix	3.95E-07	1.15E-07	0.039	0.039
	43-OK	TI43-OK-BMI-C-NET	Mix	3.62E-07	1.16E-07	0.054	0.059
On-Site Ponds	64-HP18	TI64-HP18-BMI-C	Benthic			0.021	
	64-HP18	TI64-HP18-BMI-C-NET	Vegetation-Associated	6.65E-07	6.65E-07		0.134
	65-HP13A	TI65-HP13A-BMI-C	Benthic				
	65-HP13A	TI65-HP13A-BMI-C-NET	Vegetation-Associated	1.39E-07	1.39E-07	0.003	0.007
	66-HP13	TI66-HP13-BMI-C	Benthic			0.036	
	66-HP13	TI66-HP13-BMI-C-NET	Vegetation-Associated	1.57E-06	7.39E-07	0.088	0.091
	67-HP12	TI67-HP12-BMI-C	Benthic	5.15E-07	5.15E-07	0.019	0.009
	67-HP12	TI67-HP12-BMI-C-NET	Vegetation-Associated	8.48E-07	6.78E-07	0.1	0.047
	68-IBJ	TI68-IBJ-BMI-C-NET	Vegetation-Associated	4.23E-07	1.90E-07	0.08	0.072
	69-1A	TI69-1A-BMI-C-NET	Vegetation-Associated	5.48E-07	1.86E-07	0.027	0.029
	71-HP7	TI71-HP7-BMI-C	Benthic				0.011
	71-HP7	TI71-HP7-BMI-C-NET	Vegetation-Associated			0.0057	0.013
	72-HP2	TI72-HP2-BMI-C	Benthic			0.018	
	72-HP2	TI72-HP2-BMI-C-NET	Vegetation-Associated	2.27E-07	1.15E-07	0.049	0.044
	73-P5	TI73-P5-BMI-C	Benthic	1.44E-07	1.44E-07	0.022	
	74-CL POND	TI74-CL-POND-BMI-C-NET	Vegetation-Associated	5.83E-06	6.99E-07	0.022	0.053
	75-HP10	TI75-HP10-BMI-C	Benthic	1.42E-06	9.70E-07		
	75-HP10	TI75-HP10-BMI-C-NET	Vegetation-Associated				0.532

TEQ_A = avian toxicity equivalence; TEQ_M = mammalian toxicity equivalence; MeHg = methyl mercury.

Table 6-2. Uncertainty Evaluation of Hazard Quotients for Barium in Surface Water

Reach	Location	Sample ID	Water Concentration (ug/L)		Hazard Quotients Benchmark = 4 ug/L		Hazard Quotients Benchmark = 220 ug/L	
			Surface Water	Pore Water	Surface Water	Pore Water	Surface Water	Pore Water
CFR - Site Adjacent	50-CFR	SW50-CFR	117	--	**29**	--	0.5	--
	CFRHP13A	CFRHP13A_20180523_NM	120	--	**30**	--	0.5	--
	CFR2	CFR2_20180523_NM	67.4	--	**17**	--	0.3	--
	SW3-CFR	SW3-CFR	113	--	**28**	--	0.5	--
	51-CFR	SW51-CFR	119	--	**30**	--	0.5	--
	52-CFR	SW52-CFR	138	--	**35**	--	0.6	--
CFR - Downstream of Site	53-CFR	SW53-CFR	104	--	**26**	--	0.5	--
	54-CFR	SW54-CFR	112	--	**28**	--	0.5	--
	SW2-CFR	SW2-CFR	90.2	--	**23**	--	0.4	--
	55-CFR	SW55-CFR	114	--	**29**	--	0.5	--
	56-CFR	SW56-CFR	111	--	**28**	--	0.5	--
	SW1-CFR	SW1-CFR	92.1	--	**23**	--	0.4	--
	57-CFR	SW57-CFR	123	--	**31**	--	0.6	--
	58-CFR	SW58-CFR	127	--	**32**	--	0.6	--
	59-CFR	SW59-CFR	115	--	**29**	--	0.5	--
	60-CFR	SW60-CFR	115	--	**29**	--	0.5	--
	61-CFR	SW61-CFR	125	--	**31**	--	0.6	--
	62-CFR	SW62-CFR	130	--	**33**	--	0.6	--
	63-CFR	SW63-CFR	118	--	**30**	--	0.5	--
O'Keefe Creek	41-OK	SW41-OK	138	--	**35**	--	0.6	--
	43-OK	SW43-OK	133	--	**33**	--	0.6	--
Lavalle Creek	SW9-LV	SW9-LV	244	--	**61**	--	**1.1**	--
	37-LV	SW37-LV	155	--	**39**	--	0.7	--
	39-LV	SW39-LV	150	--	**38**	--	0.7	--
Ponds	74-CL Pond	SW74-CL Pond	70.8	454	**18**	**114**	0.3	**2.1**
	HP2POND	HP2POND_20180523_NM	100	--	**25**	--	0.5	--
	69-HP1a	SW69-HP1a	32.3	250	**8.1**	**63**	0.1	**1.1**
	73-P5	SW73-P5	35.6	146	**8.9**	**37**	0.2	0.7
	71-HP7	SW71-HP7	43.9	61.9	**11**	**15**	0.2	0.3
	72-HP2	SW72-HP2	32	42.5	**8.0**	**11**	0.1	0.2
	75-HP10	SW75-HP10	15.4	39.1	**3.9**	**9.8**	0.1	0.2
	67-HP12	SW67-HP12	22.8	105	**5.7**	**26**	0.1	0.5
	68-IBJ	SW68-IBJ	130	608	**33**	**152**	0.6	**2.8**
	66-HP13	SW66-HP13	11.1	77.3	**2.8**	**19**	0.1	0.4
	65-HP13a	SW65-HP13a	56.8	50.7	**14**	**13**	0.3	0.2
	HP13APOND	HP13APOND_20180523_NM	84.3	--	**21**	--	0.4	--
	70-CWD	SW70-CWD	163	199	**41**	**50**	0.7	0.9
	64-HP18	SW64-HP18	172	214	**43**	**54**	0.8	1.0

HQ values > 1.0 are bolded.

Table 7-1. Summary of Predicted Risks at the Site

COPEC	Risks to Aquatic Receptors from Direct Contact with Surface Water and Sediments [1]						Risks to Plants and Soil Organisms from Direct Contact with Soils [2]						Risks to Birds and Mammals [3]
	CFR		Creeks		Ponds		OU2 Soil		OU3 Upland		OU3 Floodplain		
TEQ	Minimal	Sed	Low	Sed	Low	Sed	No ESV		No ESV		No ESV		Mod
Aluminum							Low-Unc	*	Low-Unc	*	Low-Unc	*	High-Unc
Antimony													Low
Arsenic	Low	Sed	Low	Sed	Low	Sed			Low				Minimal
Barium	High-Unc	SW	High-Unc	SW	High-Unc	SW	Low	*	Low	*	Low	*	Low
Cadmium	Low	Sed			Low	Sed							
Chromium							Low	*	Low	*	Low	*	Minimal
Copper	Low	SW/Sed	Low	Sed	Low	SW/Sed	Low		Low		Low		Low
Lead	Low	Sed											Minimal
Manganese	High-Unc	SW	Low	SW	High	SW/PW	Low		Mod		Low		Minimal
Mercury	Low	Sed	Low	Sed	Low	Sed/PW	Low	*	High		High		High
Nickel							Low	*					Low
Selenium	Low	Sed	Low	Sed	Low	Sed	Low		Low				Minimal
Silver	Low	Sed			Low	Sed							
Thallium													Low
Vanadium							Low	*	Low	*	Low	*	Low
Zinc	Low	Sed	Low	Sed	Low	Sed	Low		Low		Low		Low
PCBs							Minimal						Low

COPEC = contaminant of potential ecological concern; CFR = Clark Fork River; TEQ = Toxicity Equivalence; PCB = polychlorinated biphenyl;
SW = surface water; Sed = sediment; PW = pore water

Unc = Significant source of uncertainty

Minimal = $HQ_N < 1.0$

Low = $HQ_N > 1.0$, $HQ_L \leq 1.0$

Moderate = HQ_L = 2-5

High = $HQ_L > 5$

Blank cells indicate that this contaminant was not identified as an ecological COPEC for that area.

[1] Risks qualified as high if the frequency of HQ exceedances (HQ_A or HQ_C) was at least 20% and the estimated HQ values (HQ_A or HQ_C) were greater than 5 in at least one medium.

[2] Risks qualified as high if the frequency of HQ_L exceedances was at least 20% and the estimated HQ_L values were greater than 5. Asterisks (*) note a source of uncertainty based on an ESV value not available for one of the receptors (plants or soil invertebrates).

[3] Risks qualified as high if the estimated HQ_L values were greater than 5.

Table 7-2. Summary of HQ Exceedances for Manganese in the CFR and Lavalle Creek

Reach	Location	Sample ID	Surface Water Concentraction (ug/L)	Toxicity Benchmark (ug/L)		Hazard Quotient (HQ)	
				Acute	Chronic	Acute	Chronic
Lavalle Creek	39-LV	SW39-LV	126	2300	120	<1.0	**1.1**
CFR (Site adjacent)	CFRHP13A	CFRHP13A_20180523_NM	247	2300	120	<1.0	**2.1**
	52-CFR	SW52-CFR	1370	2300	120	<1.0	**11.4**
CFR (Downstream)	54-CFR	SW54-CFR	156	2300	120	<1.0	**1.3**
	57-CFR	SW57-CFR	486	2300	120	<1.0	**4.1**

CFR = Clark Fork River

Table 7-3. Summary of Risks to Aquatic Receptors in Ponds

Pond	Arsenic			Barium			Cadmium			Copper			Manganese			Mercury			Selenium			Zinc		
	Surface Water	Sediment	Pore Water	Surface Water	Sediment	Pore Water	Surface Water	Sediment	Pore Water	Surface Water	Sediment	Pore Water	Surface Water	Sediment	Pore Water	Surface Water	Sediment	Pore Water	Surface Water	Sediment	Pore Water	Surface Water	Sediment	Pore Water
Acute (Water)/Low Effect Benchmark (Sediment)																								
CL Pond	<1.0	<1.0	<1.0	<1.0	NC	**4.1**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HP1a	<1.0	<1.0	<1.0	<1.0	NC	**2.3**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**1.1**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
P5	<1.0	<1.0	<1.0	<1.0	NC	**1.3**	<1.0	**1.3**	<1.0	<1.0	<1.0	<1.0	<1.0	**2.0**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HP7	<1.0	<1.0	<1.0	<1.0	NC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**1.5**	<1.0	<1.0	1.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HP2	<1.0	<1.0	<1.0	<1.0	NC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HP10	<1.0	<1.0	<1.0	<1.0	NC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**1.6**	**1.1**	**1.6**	<1.0	**2.4**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HP12	<1.0	<1.0	<1.0	<1.0	NC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**2.1**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
IBJ	<1.0	<1.0	<1.0	**1.2**	NC	**5.5**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**1.1**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HP13	<1.0	<1.0	<1.0	<1.0	NC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HP13a	<1.0	<1.0	<1.0	<1.0	NC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CWD	<1.0	<1.0	<1.0	**1.5**	NC	**1.8**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HP18	<1.0	<1.0	<1.0	**1.6**	NC	**1.9**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chronic (Water)/No Effect Benchmark (Sediment)																								
CL Pond	<1.0	<1.0	<1.0	**18**	NC	**114**	<1.0	**2.1**	<1.0	<1.0	**1.2**	<1.0	<1.0	<1.0	**55**	<1.0	<1.0	<1.0	<1.0	<1.0	***1.8***	<1.0	**1.8**	<1.0
HP1a	<1.0	<1.0	<1.0	**8.1**	NC	**63**	<1.0	**1.7**	<1.0	<1.0	**1.1**	<1.0	**2.9**	**2.0**	**3.8**	<1.0	**4.3**	<1.0	<1.0	<1.0	***1.8***	<1.0	**1.3**	<1.0
P5	<1.0	<1.0	<1.0	**8.9**	NC	**37**	<1.0	**6.4**	<1.0	<1.0	**2.0**	<1.0	<1.0	**3.8**	**1.6**	<1.0	**3.1**	<1.0	<1.0	<1.0	***1.8***	<1.0	**2.9**	<1.0
HP7	<1.0	**1.2**	<1.0	**11**	NC	**15**	<1.0	**3.5**	<1.0	<1.0	**2.4**	<1.0	**16**	**2.8**	**15**	<1.0	**11**	<1.0	<1.0	**1.7**	***1.8***	<1.0	**2.9**	<1.0
HP2	<1.0	<1.0	<1.0	**8.0 (25)**	NC	**11**	<1.0	<1.0	<1.0	<1.0	**2.4**	<1.0	**7.8 (3.0)**	**1.2**	**5.9**	<1.0	**2.9**	<1.0	<1.0	<1.0	***1.8***	<1.0	**1.5**	<1.0
HP10	<1.0	<1.0	<1.0	**3.9**	NC	**10**	<1.0	**2.3**	<1.0	<1.0	**1.8**	<1.0	**31**	**2.1**	**30**	<1.0	**14**	<1.0	<1.0	<1.0	**1.9**	<1.0	**1.5**	<1.0
HP12	<1.0	**1.5**	<1.0	**5.7**	NC	**26**	<1.0	**3.2**	<1.0	<1.0	**2.2**	<1.0	**17**	**3.9**	**20**	<1.0	<1.0	<1.0	<1.0	**1.4**	***1.8***	<1.0	**2.5**	<1.0
IBJ	<1.0	<1.0	<1.0	**33**	NC	**152**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**21**	<1.0	<1.0	<1.0	<1.0	<1.0	***1.8***	<1.0	<1.0	<1.0
HP13	<1.0	<1.0	<1.0	**2.8**	NC	**19**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**4.9**	<1.0	**4.6**	<1.0	**1.8**	<1.0	<1.0	<1.0	***1.8***	<1.0	<1.0	<1.0
HP13a	<1.0	**1.4**	<1.0	**14 (21)**	NC	**13**	<1.0	**1.7**	<1.0	<1.0 (1.3)	**2.9**	<1.0	**6.2 (7.5)**	**1.5**	**4.0**	<1.0	**3.3**	<1.0	<1.0	<1.0	***1.8***	<1.0	**2.2**	<1.0
CWD	<1.0	<1.0	<1.0	**41**	NC	**50**	<1.0	<1.0	<1.0	<1.0	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	***1.8***	<1.0	**1.1**	<1.0
HP18	<1.0	<1.0	<1.0	**43**	NC	**54**	<1.0	<1.0	<1.0	<1.0	1.2	<1.0	**2.0**	<1.0	**3.0**	<1.0	<1.0	<1.0	<1.0	<1.0	***1.8***	<1.0	<1.0	<1.0

NC = not calculated (no sediment benchmark for barium).

Values shown are hazard quotients (HQs). Bolded values represent HQs > 1.0. Italicized values represent HQs based on non-detects.

Values shown in parenthesis for ponds HP2 and HP13a reflect the HQ values based on the surface water samples collected during the flood event in 2018.

Table 7-4. Summary of Risks to Aquatic-Dependent Wildlife

Receptor Type	Representative Species	Exposure Areas	Risk Drivers	Site HQs[a] LOAEL HQt – NOAEL HQt	Risk Characterization
Piscivorous Receptors	Belted kingfisher	Clark Fork River	Mercury	0.3 - 3.3	Low
			Methyl Mercury	0.3 - 2.6	Low
	Osprey	Clark Fork River	Mercury	0.2 - 1.9	Low
			Methyl Mercury	0.1 - 1.5	Low
	River otter	Clark Fork River	Aluminum	0.2 - 2.4	Low
	American mink	Clark Fork River	Aluminum	0.9 - 8.6	Low
Aquatic-Dependent Birds	American dipper	O'Keefe Creek	Aluminum	0.2 - 1.9	Low
			Barium	**1.4 - 2.8**	**Low**
			Copper	**1.2 - 3.6**	**Low**
			Mercury	0.4 - 4.2	Low
			Methyl Mercury	0.5 - 4.7	Low
		Lavalle Creek	Aluminum	0.3 - 3.2	Low
			Barium	**1.2 - 2.4**	**Low**
			Copper	**1.6 - 4.7**	**Low**
			Mercury	0.4 - 4.2	Low
			Methyl Mercury	0.5 - 4.6	Low
			Vanadium	0.7 - 1.5	Low
		On-Site Ponds (combined)	Aluminum	0.4 - 4.2	Low
			Barium	0.6 - 1.3	Low
			Manganese	0.5 - 1.1	Low
			Mercury	0.3 - 3.0	Low
			Methyl Mercury	0.2 - 1.8	Low
			Vanadium	**2.1 - 4.2**	**Moderate**
	Tree swallow	O'Keefe Creek	Barium	0.6 - 1.2	Low
			Copper	0.5 - 1.6	Low
			Mercury	0.2 - 1.9	Low
			Methyl Mercury	0.2 - 2.1	Low
		Lavalle Creek	Aluminum	0.1 - 1.2	Low
			Barium	0.5 - 1.1	Low
			Copper	0.7 - 2.1	Low
			Mercury	0.2 - 1.9	Low
			Methyl Mercury	0.2 - 2.1	Low
		On-Site Ponds (combined)	Mercury	0.3 - 2.6	Low
			Methyl Mercury	0.9 - 9.1	Low
	Mallard	O'Keefe Creek	Aluminum	0.1 - 1.1	Low
			Barium	0.9 - 1.7	Low
			Copper	0.7 - 2.2	Low
			Mercury	0.3 - 2.6	Low
			Methyl Mercury	0.3 - 2.9	Low
		Lavalle Creek	Aluminum	0.2 - 1.9	Low
			Barium	0.7 - 1.5	Low
			Copper	1.0 - 2.9	Low
			Mercury	0.3 - 2.6	Low
			Methyl Mercury	0.3 - 2.8	Low
		On-Site Ponds (combined)	Aluminum	0.3 - 2.6	Low
			Mercury	0.2 - 1.8	Low
			Vanadium	**1.3 - 2.6**	**Low**

HQ = hazard quotient; LOAEL = lowest-observed-adverse-effect-level; NOAEL = no-observed-adverse-effect-level.

[a]All Site COPECs in this table correspond to NOAEL HQt > 1.0.

Bold font indicates LOAEL HQt > 1.0.

Table 7-5. Summary of Risks to Large Home Range Terrestrial Wildlife

Receptor Type	Representative Species	Exposure Areas	COPEC[c]	Site HQs[a] LOAEL HQt	Site HQs[a] NOAEL HQt	Risk Characterization
Large Home Range Terrestrial Receptors	Big brown bat	Site	**$TEQ_{M-(D/F)}$**	**1.1**	**11**	**Low**
			$TEQ_{M-(D/F/P)}$	0.2	2.9	Low
			Aluminum	**42**	**421**	**High**
			Mercury	0.5	2.5	Low
			Thallium	0.2	1.6	Low
		Undisturbed Floodplain	**Aluminum**	**30**	**295**	**High**
			Thallium	0.2	1.8	Low
	Red fox	Site	**Aluminum**	**3.0**	**30**	**Moderate**
		Undisturbed Floodplain	**Aluminum**	**2.2**	**22**	**Moderate**

HQ = hazard quotient; LOAEL = lowest-observed-adverse-effect-level; NOAEL = no-observed-adverse-effect-level;
$TEQ_{M-(D/F)}$ = mammalian toxicity equivalence for dioxin/furan congeners;
$TEQ_{M-(D/F/P)}$ = mammalian toxicity equivalence for dioxin/furan/dioxin-like PCB congeners.

[a]All Site COPECs in this table correspond to NOAEL HQt > 1.0. Bold font indicates LOAEL HQt > 1.0.

[b] Risks from aluminum in the soil pH is less than 5.5 (USEPA 2003); no data on soil pH are available.

Table 7-6. Summary of Risks to Medium Home Range Terrestrial Wildlife

Receptor Type	Representative Species	Exposure Areas	COPEC[c]	Site HQs[a]		Risk Characterization
				LOAEL HQt	NOAEL HQt	
Medium Home Range Terrestrial Receptors	Blue Grouse	OU2	Aluminum	0.3 - 2.8		Low
			Mercury	**1.5 - 15**		**Low**
		OU3 Upland	Aluminum	0.2 - 2.3		Low
			Mercury	0.3 - 2.6		Low
		OU3 Floodplain	Aluminum	0.3 - 2.9		Low
			Mercury	0.3 - 3.1		Low
		Undisturbed Floodplain	Aluminum	0.2 - 1.7		Low
			Mercury	**1.1 - 11**		**Low**
	American Kestrel	OU2	Aluminum	0.3 - 2.7		Low
			Mercury	0.2 - 1.9		Low
		OU3 Upland	Aluminum	0.2 - 2.3		Low
			Mercury	0.4 - 4.5		Low
		OU3 Floodplain	Aluminum	0.3 - 2.8		Low
			Mercury	0.4 - 4.5		Low
		Undisturbed Floodplain	Aluminum	0.2 - 1.7		Low
			Mercury	0.5 - 4.6		Low
	Northern Flicker	OU2	Total PCBs	0.2 - 1.6		Low
			Aluminum	0.8 - 8.4		Low
			Mercury	**1.4 - 14**		**Low**
		OU3 Upland	Aluminum	0.7 - 6.8		Low
			Mercury	**1.1 - 11**		**Low**
		OU3 Floodplain	Aluminum	0.9 - 8.6		Low
			Mercury	1.0 - 10		Low
		Undisturbed Floodplain	Aluminum	0.5 - 5.0		Low
			Mercury	**1.2 - 12**		**Low**
	Clark's Nutcracker	OU2	$TEQ_{A-(D/F/P)}$	0.5 - 4.6		Low
			Aluminum	0.7 - 7.0		Low
			Mercury	**3.1 - 31**		**Moderate**
		OU3 Upland	$TEQ_{A-(D/F)}$	0.6 - 5.6		Low
			Aluminum	0.6 - 5.6		Low
			Mercury	0.7 - 7.1		Low
		OU3 Floodplain	$TEQ_{A-(D/F)}$	0.2 - 1.9		Low
			Aluminum	0.7 - 7.1		Low
			Mercury	0.8 - 7.9		Low
		Undisturbed Floodplain	Aluminum	0.4 - 4.2		Low
			Mercury	**2.4 - 24**		**Moderate**
	White-Tail Deer	OU2	**Aluminum**	**3.6 - 36**		**Moderate**
		OU3 Upland	**Aluminum**	**2.9 - 29**		**Moderate**
		OU3 Floodplain	**Aluminum**	**3.7 - 37**		**Moderate**
		Undisturbed Floodplain	**Aluminum**	**2.1 - 21**		**Moderate**

HQ = hazard quotient; LOAEL = lowest-observed-adverse-effect-level; NOAEL = no-observed-adverse-effect-level;

$TEQ_{A-(D/F)}$ = avian toxicity equivalence for dioxin/furan congeners;

$TEQ_{A-(D/F/P)}$ = avian toxicity equivalence for dioxin/furan/dioxin-like PCB congeners.

[a]All Site COPECs in this table correspond to NOAEL HQt > 1.0. Bold font indicates LOAEL HQt > 1.0.

[b] Risks from aluminum in the soil pH is less than 5.5 (USEPA 2003); no data on soil pH are available.

Table 7-7. Summary of Risks to Small Home Range Terrestrial Birds[a]

Receptor Type	Representative Species	Exposure Areas	COPEC[c]	Site HQs[b] LOAEL HQt	Site HQs[b] NOAEL HQt	Risk Characterization
Small Home Range Terrestrial Receptors	American Robin	OU2	$TEQ_{A-(D/F/P)}$	0.6	5.9	Low
			Aluminum	**2.6**	**26**	**Moderate**
			Mercury	**6.7**	**67**	**High**
			Vanadium	0.6	1.2	Low
		OU3 Upland	$TEQ_{A-(D/F)}$	0.6	6.1	Low
			Aluminum	**2.1**	**21**	**Moderate**
			Barium	0.6	1.2	Low
			Mercury	**3.1**	**30**	**Moderate**
			Vanadium	**1.1**	**2.2**	**Low**
		OU3 Floodplain	$TEQ_{A-(D/F)}$	0.2	1.9	Low
			Aluminum	**2.7**	**27**	**Moderate**
			Barium	**1.2**	**2.4**	**Low**
			Copper	0.5	1.6	Low
			Mercury	**3.0**	**30**	**Moderate**
			Vanadium	1.0	2.0	Low
		Undisturbed Floodplain	**Aluminum**	**1.6**	**16**	**Low**
			Copper	0.6	1.7	Low
			Mercury	**5.4**	**54**	**High**
			Vanadium	0.6	1.3	Low
	Gray Catbird	OU2	**$TEQ_{A-(D/F/P)}$**	**1.9**	**19**	**Low**
			Aluminum	**1.4**	**14**	**Low**
			Mercury	**3.2**	**32**	**Moderate**
			Vanadium	0.6	1	Low
		OU3 Upland	**$TEQ_{A-(D/F)}$**	**1.7**	**17**	**Low**
			Aluminum	**1.1**	**11**	**Low**
			Mercury	**1.5**	**14**	**Low**
			Vanadium	1.0	2.0	Low
		OU3 Floodplain	$TEQ_{A-(D/F)}$	0.5	5.4	Low
			Aluminum	**1.4**	**14**	**Low**
			Barium	0.9	1.8	Low
			Mercury	**1.5**	**14**	**Low**
			Vanadium	0.9	1.9	Low
		Undisturbed Floodplain	Aluminum	0.8	8.4	Low
			Copper	0.4	1.1	Low
			Mercury	**2.6**	**26**	**Moderate**
			Vanadium	0.6	1.2	Low

HQ = hazard quotient; LOAEL = lowest-observed-adverse-effect-level; NOAEL = no-observed-adverse-effect-level;
$TEQ_{A-(D/F)}$ = avian toxicity equivalence for dioxin/furan congeners;
$TEQ_{A-(D/F/P)}$ = avian toxicity equivalence for dioxin/furan/dioxin-like PCB congeners.

[a]Sample-specific exceedances are presented in tables in Appendix H4.

[b]All Site COPECs in this table correspond to NOAEL HQt > 1.0. Bold font indicates LOAEL HQt > 1.0.

[c] Risks from aluminum in the soil pH is less than 5.5 (USEPA 2003); no data on soil pH are available.

Table 7-8. Summary of Risks to Small Home Range Terrestrial Mammals[a]

Receptor Type	Representative Species	Exposure Areas	COPEC[c]	Site HQs[b] LOAEL HQt	Site HQs[b] NOAEL HQt	Risk Characterization
Small Home Range Terrestrial Receptors	Vagrant Shrew	OU2	**$TEQ_{M-(D/F/P)}$**	**1.9 - 19.3**		**Low**
			$TEQ_{M-(D/F)}$	0.7 - 6.6		Low
			Aluminum	**135 - 1351**		**High**
			Mercury	0.4 - 2.1		Low
			Nickel	0.9 - 1.7		Low
			Selenium	**1.2 - 1.8**		**Low**
			Thallium	0.4 - 3.6		Low
		OU3 Upland	**$TEQ_{M-(D/F)}$**	**5.3 - 53**		**Moderate**
			Aluminum	**109 - 1090**		**High**
			Antimony	0.4 - 3.5		Low
			Mercury	**1.5 - 9.0**		**Low**
			Nickel	0.8 - 1.6		Low
			Thallium	0.5 - 5.2		Low
			Zinc	0.3 - 1.1		Low
		OU3 Floodplain	**$TEQ_{M-(D/F)}$**	**2.8 - 28**		**Moderate**
			Aluminum	**138 - 1379**		**High**
			Antimony	0.2 - 1.5		Low
			Barium	0.7 - 1.1		Low
			Copper	0.9 - 1.5		Low
			Mercury	**1.3 - 7.5**		**Low**
			Nickel	0.6 - 1.2		Low
			Thallium	0.4 - 4.4		Low
			Zinc	0.3 - 1.1		Low
		Undisturbed Floodplain	**Aluminum**	**81 - 806**		**High**
			Antimony	0.1 - 1.2		Low
			Copper	1.0 - 1.7		Low
			Mercury	0.5 - 2.5		Low
			Thallium	0.5 - 4.9		Low
			Zinc	0.3 - 1.1		Low
	Montane Vole	OU2	**Aluminum**	**38 - 382**		**High**
			Mercury	**1.4 - 7.2**		**Low**
		OU3 Upland	$TEQ_{M-(D/F)}$	0.3 - 3.1		Low
			Aluminum	**31 - 308**		**High**
			Mercury	0.3 - 1.3		Low
			Thallium	0.1 - 1.5		Low
		OU3 Floodplain	$TEQ_{M-(D/F)}$	0.2 - 1.8		Low
			Aluminum	**39 - 389**		**High**
			Mercury	0.3 - 1.5		Low
			Thallium	0.1 - 1.2		Low
		Undisturbed Floodplain	**Aluminum**	**23 - 228**		**High**
			Mercury	1.1 - 5.6		Low
			Thallium	0.1 - 1.4		Low
	Deer Mouse	OU2	$TEQ_{M-(D/F/P)}$	0.3 - 3.1		Low
			$TEQ_{M-(D/F)}$	0.1 - 1.1		Low
			Aluminum	**31 - 305**		**High**
			Mercury	0.6 - 3.0		Low
		OU3 Upland	$TEQ_{M-(D/F)}$	0.8 - 8.4		Low
			Aluminum	**25 - 246**		**High**
			Mercury	0.3 - 1.5		Low
			Thallium	0.1 - 1.2		Low
		OU3 Floodplain	$TEQ_{M-(D/F)}$	0.4 - 4.4		Low
			Aluminum	**31 - 311**		**High**
			Mercury	0.3 - 1.4		Low
		Undisturbed Floodplain	**Aluminum**	**18 - 182**		**High**
			Mercury	0.5 - 2.4		Low
			Thallium	0.1 - 1.1		Low

HQ = hazard quotient; LOAEL = lowest-observed-adverse-effect-level; NOAEL = no-observed-adverse-effect-level;
$TEQ_{M-(D/F)}$ = mammalian toxicity equivalence for dioxin/furan congeners;
$TEQ_{M-(D/F/P)}$ = mammalian toxicity equivalence for dioxin/furan/dioxin-like PCB congeners.

[a]Sample-specific exceedances are presented in tables in Appendix H4.

[b]All Site COPECs in this table correspond to NOAEL HQt > 1.0. Bold font indicates LOAEL HQt > 1.0.

[c] Risks from aluminum in the soil pH is less than 5.5 (USEPA 2003); no data on soil pH are available.

APPENDIX A

DATA SUMMARY

OU2/OU3 Smurfit-Stone/Frenchtown Mill Site

Baseline Ecological Risk Assessment

1.0 INTRODUCTION

This appendix summarizes the data utilized in this Baseline Ecological Risk Assessment (BERA). As described in the main text of this BERA, surface soil, groundwater, pore water, sediment, surface water, aquatic invertebrate tissue, small mammal tissue, and fish tissue samples were collected within Operable Units 2 and 3 (OU2 and OU3) in 2014, 2015, 2016, 2017 and 2018. These data were collected following approved sampling plans as part of ongoing RI activities (NewFields 2015). Fish tissue data were also collected in 2018 and 2019 to address data gaps for the risk assessments (USEPA 2018; 2019a,b; 2020).

Data collected prior to 2014 to support the Preliminary Assessment/Site Investigation are not used in the BERA due to deviations from the Quality Assurance Project Plan (QAPP) that occurred during sampling and analysis of those samples. Instead, USEPA used those data to inform the Remedial Investigation Work Plan (RIWP) and focused collection on those areas identified as having potentially elevated contamination. The sampling conducted as part of Remedial Investigation (RI) activities are more recent, were collected in accordance with the USEPA approved QAPP, and have been evaluated and determined to meet the needs of the risk assessment.

Data collected for the RIWP and associated Addenda have been uploaded to a USEPA Scribe database for the Smurfit-Stone/Frenchtown Mill Site. Data considered for use in the OU2/OU3 BERA were based on a Scribe download conducted May 2021. Not all of the data in Scribe were utilized in the risk evaluation presented within the BERA. This includes data for media not evaluated in the BERA (groundwater) and background data (i.e., samples collected within the Clark Fork River [CFR] upstream of the Site).

The available raw data selected for inclusion in the BERA were downloaded from the Scribe database and reduced to produce the Site dataset utilized in the BERA as described below. Data used in the OU2/OU3 BERA are provided as an electronic data file in Attachment A-1 to this appendix. Attachment A-1 includes separate tabs for each medium. Each tab includes a pivot table that presents summary statistics.

2.0 DATA SUMMARY

2.1 Surface Soil

2.1.1 Site Surface Soil

Surface soil samples were collected in April 2014, November/December 2015, and October 2017 at locations throughout OU2 and OU3 (both upland and floodplain areas). Upland soil samples from OU3 included surface soil samples collected from wastewater treatment basins and surface soil samples collected at potential source locations from opportunistic test pits. Floodplain soil samples from OU3 were collected from holding ponds inside of the 100-year floodplain that were used to store treated wastewater during plant operations. The amount of water present at the surface in these areas fluctuates seasonally in response to spring snowmelt and the corresponding rise/decline of water levels in the underlying shallow aquifer.

In 2014/2015, surface soils were collected as localized 5-point composites over a 1 to 2-meter area. In 2017, 20-point composite samples were collected from square grid units in OU2 and OU3. Samples were collected from 20-acre grid units in OU2 and OU3 Uplands, and 100-acre grid units in the OU3 Floodplain. In addition to the 20-point composite samples, the OU3 Uplands also had 30-point composite surface soil samples collected from basins.

Within OU2, surface soil samples were collected from 0 to 2 inches and from 0 to 6 inches. Surface soil samples from OU3 wastewater treatment basins and ponds were collected from 0 to 2 inches and from 5 to 7 inches below the surface. Surface soil samples from the OU3 opportunistic test pits were collected from 0 to 6 inches below the surface.

Surface soil samples from both OU2 and OU3 soil samples were analyzed for dioxins/furans, metals, and polychlorinated biphenyls (PCBs; reported as Aroclors). OU2 samples were also analyzed for semi-volatile organic compounds (SVOCs) and volatile organic compounds (VOCs). OU3 soil samples were not analyzed for SVOCs or VOCs based on the low level of detection of these contaminants observed in OU2 soil samples.

2.2 Sediment

2.2.1 Site Sediment

Sediment samples were collected in 2015 and 2018. In November 2015, bed sediment samples were collected from O'Keefe and Lavalle Creeks and within the CFR downstream and adjacent to the Site. In December 2015, additional sediment sampling was conducted along the CFR from

the flood fringe of the 100-year floodplain downstream of the Site. In August 2018, bed sediment samples were collected from on-Site ponds, O'Keefe and Lavalle Creeks, and within the CFR downstream and adjacent to the Site. Sediment samples were analyzed for dioxins/furans and metals. Miscellaneous parameters (e.g., organic carbon, percent fines) were also measured. Six of the bed sediment samples collected in 2015 were also analyzed for PCBs (as Aroclors) and SVOCs.

2.3 Surface Water

2.3.1 Site Surface Water

Surface water samples were collected in November 2015 from Lavalle Creek and within the CFR downstream and adjacent to the Site at locations coincident with the bed sediment samples. One surface water sample was collected from Lavalle Creek and three surface water samples were collected from the CFR adjacent to or downstream of the Site and analyzed for dioxins/furans, metals (total and dissolved), and miscellaneous parameters (e.g., measures of water quality such as alkalinity and pH, as well as ions such as chloride and fluoride). Three of the four surface water samples were also analyzed for PCBs (as Aroclors) and SVOCs.

To evaluate potential impacts to the CFR during high flows, surface water samples were collected in May 2018 from the CFR adjacent to the Site and within historic ponds during a high flow event. Two samples were collected from the CFR adjacent to the Site and two samples were collected from Site pond areas (HP2POND and HP13APOND). Samples were analyzed for dioxins/furans, metals (total and dissolved), and miscellaneous parameters (e.g., measures of water quality such as alkalinity and pH, as well as ions such as chloride and fluoride).

In August 2018, surface water samples were collected from 12 on-Site ponds, O'Keefe and Lavalle Creeks, and within the CFR downstream and adjacent to the Site co-incident with bed sediment samples. Samples were analyzed for dioxins/furans, metals (total and dissolved), and miscellaneous parameters (e.g., measures of water quality such as alkalinity and pH, as well as ions such as chloride and fluoride).

2.4 Pore Water

Pore water samples were collected from each of the 12 on-Site ponds in August and October 2018. Ten pore water samples were collected by PushPoint samplers in August 2018 and twelve pore water samples were collected in October 2018 using peeper samplers. Ten ponds were sampled using both PushPoint and peeper samplers (64-HP18, 65-HP13a, 67-HP12, 68-IBL, 70-CWD, 71-HP7, 72-HP2, 73-P5, 74-CL Pond, and 75-HP10). Two ponds were only sampled

using peeper samplers (66-HP13 and 69-HP1a). All pore water samples were analyzed for metals (PushPoint samples were analyzed for total metals and peeper samples were analyzed for dissolved metals) and miscellaneous parameters (e.g., measures of water quality such as alkalinity and pH, as well as ions such as chloride and fluoride).

2.5 Fish Tissue

2.5.1 Site Fish Tissue

2.5.1.1 2018 Longnose Dace Collection

In August 2018, nine whole body longnose dace (*Rhinicthys cataractae*) composite tissue samples were collected from locations within the CFR adjacent to or downstream of the Site. Samples were analyzed for dioxins/furans, metals, methyl mercury, % moisture, and % lipids.

2.5.1.2 2018 and 2019 Rainbow Trout and Northern Pike Collection

In July 2018, USEPA in cooperation with MFWP collected northern pike (*Esox lucius*) and rainbow trout (*Oncorhynchus mykiss*) from the CFR and its tributaries. Four composite fillet and four composite carcass northern pike samples were collected from the Frenchtown reach of the CFR adjacent to the site. Eight composite fillet and eight composite carcass rainbow trout samples were collected from reaches of the CFR downstream of the site. These data were not evaluated quantitatively in the BERA, but were considered in the uncertainty assessment in accordance with USEPA (2020).

In June 2019, USEPA with the support of multiple agencies and contractors, collected additional northern pike and rainbow trout samples from the CFR and its tributaries to address a data gap. Four composite fillet and four composite carcass northern pike samples were collected from the Frenchtown reach of the CFR adjacent to the Site. Eight composite fillet and eight composite carcass rainbow trout samples were collected from reaches of the CFR downstream of the Site.

All northern pike and rainbow trout samples from the 2018 and 2019 sampling events were analyzed for dioxins/furans, PCB congeners, % solids, and % lipids.

2.6 Aquatic Invertebrate Tissue

In August/September 2018, aquatic macroinvertebrates were collected from locations within O'Keefe and Lavalle Creeks within the Site boundary, and from on-Site ponds in August 2018. Samples included both benthic infaunal macroinvertebrates (BMI) and aquatic vegetation-associated macroinvertebrates (AVI). Initial efforts to collect benthic infauna yielded insufficient

biomass at all creek locations. Consistent with the Field Sampling Plan (FSP), a D-net was used in this case to collect AVI and achieve sufficient biomass for analysis (NewFields 2018). Sampling involved disturbing benthic substrates and capturing dislodged organisms, coupled with sweeping submerged aquatic vegetation with D-nets. Samples collected from the ponds were maintained separately as BMI or AVI tissue only. In creeks, BMI and AVI were mixed, with the AVI likely making up the substantial majority of biomass in each sample (NewFields, 2019). Samples were analyzed for dioxins/furans, metals, methyl mercury, percent moisture and percent lipid.

2.7 Small Mammal Tissue

In August/September 2018, composite deer mice (*Peromyscus spp.*) samples were collected from two locations in OU2, six locations in OU3, and from two locations in OU1. Samples were analyzed for dioxins/furans, metals, methyl mercury, percent moisture, and percent lipids.

3.0 DATA REDUCTION

3.1 Categorization as Surface Soil

For the purposes of the BERA, surface soil samples were classified as samples collected from a starting depth of either zero or one inch down to six inches below ground surface (bgs). However, in the OU3 upland area, surface soil sampling conducted in 2015 included collecting two separate samples from a single location from the top 7 inches of soil. A sample was collected from the 0-2 inch depth, and from the 5-7 inch depth. Because these two samples both characterize the same 0-6 inch surface sampling location, the maximum concentration result for each contaminant was used.

3.2 Removal Actions

In 2017, removal actions were performed at locations within OU2 near the High-Density Pulp Tank (HDPT) and Transformer Storage Building (TSB) due to high concentrations of PCBs (as Aroclors). Soil from OU1 was used to backfill the areas where this removal occurred. Sample SS28-IN-(0-2)c is a surface soil sample that was collected within the HDPT area in December 2015. This sample was excluded from the BERA surface soil data set. In its place, a calculated backfill sample result was used to represent the HDPT area. This calculated result was also used to represent surface soil at the TSB area. The following samples for each type of analysis were averaged to generate the calculated backfill result:

- Metals and TEQ: AG8-1-SS_4/18/14_NM; SS69-AG8-(0-2)c; SS70-AG8-(5-7)c
- SVOC: SS69-AG8-(0-2)c; SS70-AG8-(5-7)c
- VOC: SS22-IN-(12); SS23-IN-(24)
- PCB: Backfill Source AG8_20171028_NM

3.3 Treatment of Field Duplicates

In accordance with the RI QAPP, blind field duplicates (one for every twenty natural samples) were collected to provide quality assurance for field sampling. Two concentration results for a parent sample-duplicate pair were reduced to a single value for each contaminant as follows:

- If both the parent sample and the duplicate sample results were detected, the maximum detected concentration was retained, and the result was flagged as a detect.

- If both the parent sample and the duplicate sample results were qualified as not detected, the maximum detection limit (DL) was retained, and the result was flagged as a non-detect.

- If one result from the sample pair was detected, while the other was qualified as not detected, the detected concentration was retained, and the result was flagged as a detect.

Total PCB and TEQ concentrations were calculated for each parent sample and field duplicate as described in Section 3.6. For each sample pair, the results were reduced to a single value for each calculated result in accordance with the protocol presented above. Duplicate reduction was not done at the congener level.

Field duplicates were not collected during the 2018 and 2019 northern pike and rainbow trout sampling events. However, duplicate homogenate samples were created during sample processing to assess whether contamination occurred during sample processing (e.g., two carcass homogenate samples created from the same composite sample were submitted for analysis). Homogenate duplicate samples were not evaluated in the BERA, but were considered during the data validation process.

3.4 Treatment of Multiple Analytical Results

Some soil samples collected within OU3 were analyzed using two extraction methods during VOC analysis: EPA 5035/5030B and EPA 5035 Low. This resulted in several samples having two results for each VOC in the Scribe database. These results were reduced to a single value for each contaminant as follows:

- If both the results were detected, the maximum detected concentration was retained, and the result was flagged as a detect.

- If both results were qualified as not detected, the maximum DL was retained, and the result was flagged as a non-detect.

- If one of the results was detected, while the other was qualified as not detected, the detected concentration was retained, and the result was flagged as a detect.

3.5 Treatment of Non-detects

When calculating summary statistics and calculating sample-specific hazard quotients (HQs), non-detects were evaluated at ½ DL. When inputting data to ProUCL for the purposes of

calculating 95 UCL values for exposure point concentrations (EPCs), non-detect data were entered to the Software based on the DL.

Various detection limits were reported for Site data by laboratories and are defined slightly different by each laboratory that analyzed Site samples. Pace Analytical performed sample analyses for metals, PCBs (in abiotic media only), SVOCs and VOCs. For each sample result, Pace reported a "MDL" (method detection limit; adjusted for sample dilution) and "RDL/QL" (laboratory reporting limit/quantitation level). The MDL refers to the lowest concentration that can be detected by the laboratory with confidence that the analyte is present (i.e., not a false positive). The RDL/QL refers to the lowest concentration that can be reported with confidence in the accuracy and precision of the value. Concentrations below this limit can be detected, but the value should be considered estimated. The MDL reported by Pace was used as the DL for Site data. Dioxins/furans were analyzed by Frontier Analytical (Frontier) for all media except the northern pike and rainbow trout tissue samples. For Frontier, the reported MDL is the method detection limit under ideal conditions – not accounting for matrix interferences, dilution, etc. If an analyte is not detected in a sample, Frontier calculates a sample-specific detection limit and reports it as the RDL. The QL reported by Frontier is the lowest point of calibration on the instrument. This is analogous to the QL reported by Pace: analytes detected below this limit are present, but the reported value is estimated. The RDL reported by Frontier was used as the DL for Site data.

The northern pike and rainbow trout samples were analyzed for dioxins/furans and PCB congeners by ALS Environmental (ALS). For dioxins/furans a CRQL and MDL were reported by ALS. MDLs were calculated for each analyte in each sample by measuring the height of the noise level for each quantitation ion for the associated labeled standard. The concentration equivalent to 2.5 times the height of the noise is then calculated using the appropriate response factor and the weight of the sample. The calculated concentration equals the MDL. For PCB congeners an EDL was reported by ALS. The EDL is defined as the Estimated Detection Limit and based on the measured background noise for this target in this sample. The dioxin/furan MDL and PCB EDL reported by ALS was used as the DL for Site data.

3.6 Calculation of TEQ

Because dioxin and furan congeners and dioxin-like PCBs all act by the same mechanism as 2,3,7,8- Tetrachlorodibenzo-*p*-dioxin (TCDD), data for the dioxin and furan congeners and dioxin-like PCBs was converted to a TCDD toxicity equivalency value (TEQ) by computing the sum across congeners of the product of congener-specific concentration and relative Toxicity Equivalence Factor (TEF):

$$TEQ = \sum (Ci \times TEFi)$$

Mammalian TEFs were based on USEPA (2010) and avian and fish TEFs were based on Van den Berg et al. (1998). In Attachment A-1, separate TEQ values were calculated for dioxins and furans, dioxin-like PCBs, and dioxins, furans, and dioxin-like PCBs combined. For each type of TEQ, two alternative values were computed in the Scribe database, differing in the numeric concentration values assigned to concentrations flagged as ND as: ND = 0 and ND = ½ DL. A TEQ concentration is flagged as ND only if no individual congener was detected in that sample. The TEQ concentrations evaluated in the BERA are based on ND = 1/2 DL.

3.7 Calculation of lipid adjusted tissue results

Tissue concentrations were either reported on a dry weight or wet weight basis. The fish tissue samples were converted to a lipid weight basis using the following formula:

$C_{lw} = C_{ww}(100/\%L)$

where:

C_{lw} = lipid-weight concentration
C_{ww} = wet-weight concentration
%L = percent lipid content

Each fish sample was analyzed for % lipids. The sample specific lipid concentration was used to convert a result from a wet-weight basis to a lipid-weight basis.

4.0 REFERENCES

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ATTACHMENT A-1

Data Used in the Smurfit-Stone/Frenchtown Mill OU2/OU3 BERA
Electronic File
[Appendix A_Attachment A-1.xlsx]

APPENDIX B
Toxicity Benchmarks for Ecological Receptors

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Overview

The hazard quotient approach to risk characterization is based on comparison of site-related indices of exposure to appropriate benchmarks of toxicity. These benchmarks may be concentration-based (e.g., the concentration in soil, sediment, surface water, or diet), or may be dose-based. Each benchmark is contaminant-specific, receptor-specific and is usually medium-specific.

For this BERA, all toxicity benchmarks are based on values developed by various regulatory agencies and published in the literature. This appendix describes the various sources of benchmark values reviewed for this risk assessment, and identifies the hierarchy used to prioritize values when more than one value was available. In some cases, professional judgment was used to select a value inconsistent with the established hierarchy to remain consistent with other regional risk assessments.

This appendix is organized into the following sections:

Aquatic Receptors (Fish & Benthic Macroinvertebrates)

- B-1 Benchmarks for Direct Contact with Surface Water
- B-2 Benchmarks for Direct Contact with Sediment

Terrestrial Receptors (Plants & Soil Organisms)

- B-3 Benchmarks for Direct Contact with Surface Soils

Wildlife Receptors

- B-4 Dose-Based Ingestion Toxicity Reference Values
- B-5 Tissue-Based Benchmarks

Aquatic Receptors (Fish & Benthic Macroinvertebrates)

B-1 Benchmarks for Direct Contact with Surface Water

B-1a Aquatic Receptors

Toxicity values used in this risk assessment were chosen to be consistent with other recent regional ecological risk assessments. Toxicity values for the protection of aquatic life from contaminants in surface water are available from several sources. Each of these sources is described briefly below.

National Recommended Water Quality Criteria

The USEPA has established acute and chronic National Recommended Water Quality Criteria (NRWQC) values for surface waters for the protection of aquatic communities. Aquatic life criteria represent the highest concentration of specific pollutants or parameters in water that are not expected to pose a significant risk to the majority of species in a given environment or a narrative description of the desired conditions of a water body being "free from" certain negative conditions. The National Recommended Water Criteria – Aquatic Life Criteria Table was last updated in 2018 and is available online[1]. The Criteria Maximum Concentration (CMC) is an estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed briefly without resulting in an unacceptable effect. The Criterion Continuous Concentration (CCC) is an estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed indefinitely without resulting in an unacceptable effect on growth, reproduction, or survival. The NRWQC values are not species-specific, but are designed to protect 95% of the aquatic species for which toxicity data are available (USEPA 1985).

Montana Numeric Water Quality Standards

The Montana Department of Environmental Quality (MDEQ) last updated their Circular DEQ-7 Numeric Water Quality Standards in June 2019[2]. The DEQ-7 aquatic life criteria consider the magnitude, duration of exposure, and frequency to be protective of growth and propagation of fishes and associated wildlife, waterfowl and furbearers in state waters. Chronic criteria are based on a 96-hour exposure and can only be exceeded, on average, once in a three-year period. Acute criteria are based on a one-hour average that can only be exceeded, on average, once in a three-year period, with the exception of silver, which, at present, is interpreted as a "not to exceed" value. Many of the DEQ-7 criteria for inorganics are based on the NRWQC.

[1] https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table#main-content
[2] Montana DEQ-7 Water Quality Standards will be considered within the Feasibility Study.

Great Lake Water Quality Initiative Tier II Values

The approach used for the derivation of Great Lake Water Quality Initiative (GLWQI) Tier II secondary acute values (SAVs) and secondary chronic values (SCVs) is similar to that used to derive NAWQC. USEPA (1995) describes how to calculate the GLWQI Tier II values. Data and detailed methods and are described in Appendix B of Suter and Tsao (1996). In brief, a secondary acute value is derived by taking the lowest genus mean acute value (GMAV) and dividing it by the Final Acute Value Factor (FAVF). The FAVF is based on the number of studies and types of species used to derive the FAV. Once an SAV is calculated, the geometric mean of each of the secondary acute-chronic ratios (SACR) is found. The SCV is calculated by dividing the SAV by the SACR.

Canadian Water Quality Guidelines

The Canadian Council of Ministers of the Environment (CCME) have established water quality guidelines (WQG) for the protection of aquatic life in Canadian waters (CCME, 1991, 2001). The protocol for deriving water quality guidelines is similar to the NAWQC procedure. Protocol details are available on the CCME WQG website. In brief, the guideline is equal to the most sensitive lowest observed effect level (LOEL) from a chronic exposure study divided by a safety factor of 10. If a chronic LOEL is not available, the WQG is equal to the acute LC50 divided by the acute/chronic ratio (ACR). The CCME WQG is designed to be protective of "100% of the aquatic life species, 100% of the time".

Oak Ridge National Laboratory Lowest Chronic Values and EC20 Values

Oak Ridge National Laboratory (ORNL) has compiled summary tables of the lowest chronic values (LCVs) in surface water for fish, daphnids, non-daphnid invertebrates, aquatic plants, and aquatic populations (Suter and Tsao, 1996). In some instances, the LCVs were extrapolated from LC50 and EC50 data using fish and daphnid-specific equations. ORNL also summarized EC20 data for fish, daphnids, sensitive species, and aquatic populations. The EC20s are based on a level of biological effect; they are benchmarks derived by using mathematical models to evaluate a dose-response relationship, such as a concentration estimated to correspond to a 20% reduction in fish production (Suter and Tsao, 1996).

Selection of the surface water toxicity benchmarks for aquatic receptors was based on the following hierarchy:

- National Recommended Water Quality Criteria (NRWQC)
- Montana DEQ-7 Criteria
- Great Lake Water Quality Initiative (GLWQI) Tier II Values
- Canadian Water Quality Guidelines
- Oak Ridge National Laboratory (ORNL) LCVs and EC20s

NRWQCs were selected preferentially over other benchmark sources because these surface water quality criteria are derived using a well-documented derivation approach which incorporates toxicity data from multiple studies, receptors, and endpoints that has undergone extensive review and approval by EPA. If an NRWQC value was not available, the MDEQ-7 criteria were used where available. GLWQI Tier II values were selected next in the hierarchy because toxicity values are derived using a derivation procedure that is similar to NRWQC, but allows for derivation of toxicity benchmarks for data sets that are too limited to meet NRWQC requirements. The Canadian WQG, and the ORNL LCVs and EC20s are last in the hierarchy because they are often based on extremely limited data sets (i.e., only 1 or 2 studies), and these toxicity benchmarks tend to incorporate safety factor adjustments to account for limitations in the underlying data sets.

The surface water benchmark values from these sources are shown in Table B-1A, along with the values selected for use in the risk assessment. For many metals and metalloids, the NRWQC values are dependent on the hardness of the water, so the precise value of the acute and chronic NRWQC that applies to a sample depends on the hardness of that sample. Table B-1B summarizes the NRWQC conversion factors for dissolved metals. Table B-1C summarizes the parameters for calculating freshwater dissolved metals criteria that are hardness-dependent.

Of note, the NRWQC for aluminum is based on the water chemistry data (for pH, hardness and DOC) entered into a USEPA created criteria calculator. For freshwater criteria, users enter their site's water quality parameters into the *Aluminum Criteria Calculator V.2.0.xlsm*[3] or use the lookup tables in the criteria document's appendix. The resulting acute criterion indicates that freshwater organisms would be protected if the one-hour average concentration is not exceeded more than once every three years on average. The chronic criterion indicates that freshwater organisms would be protected if the four-day average concentration is not exceeded more than once every three years on average.

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B-2 Benchmarks for Direct Contact with Sediment

Sediment toxicity values used in this risk assessment were chosen to be consistent with other recent regional ecological risk assessments. Toxicity values for the protection of benthic macroinvertebrates from contaminants in freshwater sediment are available from several sources. Each of these sources is described briefly below.

Consensus-Based Sediment Quality Guidelines

MacDonald et al. (2000) issued consensus-based sediment quality guidelines (SQGs) for 28 chemicals of concern, in an effort to focus on agreement among the various sediment quality guidelines. For each chemical of concern, a threshold effect concentration (TEC) and a probable effect concentration (PEC) were identified based on available sediment toxicity literature. The consensus-based TECs were calculated by determining the geometric mean of all threshold effect values from the literature. The consensus-based PECs were calculated by determining the geometric mean of all probable effect values from the literature. A summary of the types of sediment effect concentrations included in the TEC and PEC calculations is provided in MacDonald et al. (2000).

The predictive reliability of these values was also evaluated. The predictive ability analyses were focused on the ability of each SQG when applied alone to classify samples as either toxic or non-toxic. Sediment toxicity should be observed only rarely below the TEC and should be frequently observed above the PEC. Individual TECs were considered reliable in more than 75% of the sediment samples were correctly predicted to be non-toxic. Similarly, the individual PEC was considered reliable if greater than 75% of the sediment samples were correctly predicted to be toxic. The SQGs were considered to be reliable only if a minimum of 20 samples were included in the predictive ability evaluation (MacDonald et al. 2000).

Because field collected sediments contain a mixture of chemicals, a second analysis was completed to investigate whether the toxicity of a sediment could be predicted based on the average of the PEC ratios for the sediment, using only the PEC values that were found to be reliable. It was found that 92% of sediment samples with a mean PEC quotient > 1.0 were toxic to one or more species of aquatic organisms. The mean PEC quotient was found to be highly correlated with incidence of toxicity ($R^2 = 0.98$) (MacDonald et al. 2000).

ARCS Sediment Effect Concentrations

As part of the Assessment and Remediation of Contaminated Sediment (ARCS) Project, Ingersoll et al. (1996) compiled freshwater sediment toxicity data from nine different sites in the United States and identified a series of sediment effect concentrations (SECs) for metals in sediment. The SECs are defined as the concentrations of individual contaminants in sediment below which toxicity is rarely observed and above which

toxicity is frequently observed. The database was compiled to classify toxicity data for Great Lakes sediment samples and is segregated into "effect" data and "no effect" data. Ingersoll et al. (1996) derived five different SECs; effect range low (ERL), effect range median (ERM), threshold effect level (TEL), probable effect level (PEL) and no effect concentration (NEC). The derivation of each of these SECs is presented below:

effect range low (ERL) = 10th percentile of adverse effect data
effect range median (ERM) = 50th percentile (median) of adverse effect data
no effect range median (NERM) = 50th percentile (median) of no effect data
no effect range high (NERH) = 85th percentile of no effect data
threshold effect level (TEL) = geometric mean of ERL and NERM
probable effect level (PEL) = geometric mean of ERM and NERH
no effect concentration (NEC) = maximum of no effect data

The ERL is defined as the concentration below which adverse effects are unlikely to occur. The ERM is defined as the concentration of a chemical above which effects are frequently or always observed or predicted among most species. The NEC is the maximum concentration of a chemical in sediment that does not significantly adversely affect the particular response when compared to the control.

USEPA Region 5 Ecological Screening Levels

The USEPA Region 5 Ecological Screening Levels (ESLs) for sediment were developed based on available federal freshwater sediment criteria and state-promulgated sediment quality guidelines (USEPA 1999). If no freshwater guidelines were available, marine criteria were used. For those chemicals for which no guidelines were available, an interim ESL was developed using the equilibrium partitioning approach. These interim guidelines were developed for both nonpolar and polar organic constituents. The equilibrium partitioning method is generally only applied to nonpolar organics, however, it was assumed to be a satisfactory method for organics for use on a screening level approach (USEPA 1999). The ESL was derived from the lowest federal, state or interim water quality guideline and assumes a total organic carbon content of 1%.

NOAA Sediment Effect Concentrations

The National Oceanic and Atmospheric Administration (NOAA) compiled sediment data from studies performed in both freshwater and saltwater (originally presented in NOS OMA Technical Memo 52, Long and Morgan 1990). The NOAA ERL and ERM were developed using the same procedures as outlined for the ARCS Project (Ingersoll et al. 1996). The NOAA ERL is defined as the concentration of a chemical in sediment below which adverse effects are rarely observed or predicted among sensitive species. The NOAA ERM is representative of concentrations above which effects frequently occur. The original data set used by Long and Morgan (1990) has since been supplemented with additional saltwater data, therefore these additional marine reports are not applicable (ie: Long et al. 1995).

CCME Sediment Quality Guidelines

The Canadian Council of Ministers of the Environment (CCME) derived sediment quality guidelines to support protection and management strategies for freshwater, estuarine, and marine ecosystems (CCME 1995). Guideline derivation protocols are detailed in CCME (1995) and are similar to the procedures described previously for the ARCS Project (Ingersoll et al. 1996). Separate guidelines were derived for freshwater and marine sediments (CCME 2001). The freshwater interim sediment quality guideline (ISQG) was equal to the TEL and is representative of the concentration below which adverse effects are not anticipated for aquatic life associated with bed sediments (CCME 1995). A PEL was also calculated to establish concentrations above which adverse effects are likely to occur.

Ontario Sediment Effect Levels

Persaud et al. (1993) derived sediment effect levels for the protection of aquatic organisms in Ontario, Canada. Three types of sediment quality guidelines were developed; a No Effect Level (NEL; no toxic effects), a Low Effect Level (LEL; tolerable by benthic species), and a Severe Effect Level (SEL; detrimental to most benthic species). A summary and review of the available approaches to sediment guideline development and the protocol for the derivation of the Ontario values is described in detail in Persaud et al. (1993). Briefly, the NEL is obtained through a chemical equilibrium approach using water quality standards. Because the equilibrium partitioning approach is only predictive for nonpolar organics, a No Effect Level is not derived for metals and polar organics. The LEL and SEL are based on the 5th and 95th percentiles of all effects data for bulk sediment analysis, respectively. For non-polar organics these concentrations were normalized for total organic carbon.

Of the remaining sources, a benchmark selection hierarchy is established as follows:

Consensus-based TEC (MacDonald et al., 2000)
ARCs TEL (Ingersoll et al., 1996)
NOAA ERL (Long and Morgan, 1990)

The consensus-based SQGs presented in MacDonald et al. (2000) were selected as the first preference in the hierarchy because they utilized a derivation procedure that incorporated toxicity data from numerous sources. ARCs TEL (Ingersoll et al. 1996) and NOAA ERL (Long and Morgan 1990) rank after the consensus-based SQGs because they are derived from toxicity data from a limited number of studies (i.e., only 1-2 studies). The ARCs TELs and NOAA ERLs were both developed using similar derivation procedures. ARCs TELs were selected in preference to NOAA ERLs because the ARCs data set included only freshwater studies, while the NOAA data set included both freshwater and saltwater studies. Additional published sources were also used to remain consistent with other regional risk assessments and include:

Jones, D.S., G.W. Suter and R.N. Hull. 1997. Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Sediment-Associated Biota: 1997 Revision. Oak Ridge National Laboratory. ES/ER/TM-95/R4.

Thompson, P.A., J. Kurias and S. Mihok. 2005. Derivation and Use of Sediment Quality Guidelines for Ecological Risk Assessment of Metals and Radionuclides Released to the Environment from Uranium Mining and Milling Activities. *Canada. Environ. Monitor. Assess*. 110(1-3):71-85.

A summary of all selected sediment toxicity benchmarks is shown in Table B-2.

References:

Canadian Council of Ministers of the Environment (CCME). 1995. *Protocol for the Derivation of Canadian Sediment Quality Guidelines for the Protection of Aquatic Life.* CCME EPC-98E.Prepared by Environment Canada, Guidelines Division, Technical Secretariat of the CCME Task Group on Water Quality Guidelines, Ottawa.[Reprinted in Canadian Environmental Quality Guidelines, Chapter 6, CCME, 1999, Winnipeg.]

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Jones, DS, GW Suter II, RN Hull. 1997. *Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Sediment-Dwelling Biota: 1997 Revision*. Oak Ridge National Laboratory. Document # ES/ER/TM-95/R4.

Long, ER and LG Morgan. 1990. *The Potential for Biological Effects of Sediment-Sorbed Contaminants Tested in the National Status and Trends Program*. National Oceanic and Atmospheric Administration Publication. Technical Memorandum NOS OMA 52. March 1990.

Long, ER, DD MacDonald, SL Smith, FD Calder. 1995. Incidence of Adverse Biological Effects Within Ranges of Chemical Concentrations in Marine and Estuarine Sediments. Environmental Management 19(1):81-97.

Ingersoll, CG, MacDonald, DD, RS Carr, FD Calder, ER Long. 1996. Development and Evaluation of Sediment Quality Guidelines for Florida Coastal Waters. *Ecotoxicology* 5:253-278.

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Thompson, P.A., J. Kurias and S. Mihok. 2005. Derivation and Use of Sediment Quality Guidelines for Ecological Risk Assessment of Metals and Radionuclides Released to the Environment from Uranium Mining and Milling Activities. *Canada. Environ. Monitor. Assess*. 110(1-3):71-85.

Terrestrial Receptors (Plants & Soil Invertebrates)

B-3 Benchmarks for Direct Contact with Surface Soils

Soil toxicity values used in this risk assessment were chosen to be consistent with other recent regional ecological risk assessments. Toxicity values for the protection of terrestrial plants and soil invertebrates from contaminants in surface soils are available from several sources. Each of these sources is described briefly below.

Ecological Soil Screening Levels (Eco-SSLs).

Eco-SSLs are concentrations of contaminants in soils that are protective of ecological receptors that commonly come into contact with soil or ingest biota that live in or on soil. The Eco-SSLs are screening values that can be used routinely to identify those contaminants of potential ecological concern (COPECs) in soils requiring further evaluation in a baseline ecological risk assessment (ERA). Eco-SSLs are derived separately for four groups of ecological receptors, plants, soil invertebrates, birds and mammals. As such, these values are presumed to provide adequate protection of terrestrial ecosystems. The lower of the values for plants and soil invertebrates is used preferentially as the soil screening benchmark.

The Eco-SSL derivation process represents a three-year collaborative effort of a multi-stakeholder workgroup consisting of federal, state, consulting, industry and academic participants led by the USEPA, Office of Emergency and Remedial Response (OERR) (USEPA, 2002b). The USEPA issued the final guidance for Eco-SSLs and interim final Eco-SSL values for several contaminants in 2003.

Oak Ridge National Laboratory Plants/Soil Organisms/Microbes

Oak Ridge National Laboratory (ORNL) reviewed data on the toxicity of contaminants in soil on a wide range of plants, soil organisms, and microbes, and determined the lowest observed effect concentration (LOEC) (Efroymson et al. 1997a,b). The LOEC is defined as the lowest applied concentration of the chemical causing a greater than 20% reduction in the measured response. In some cases, the LOEC is the lowest concentration tested or the only concentration reported (EC50 or ED50 data). The LOECs for a series of different plants and soil organisms are rank ordered and a value selected that approximated the 10th percentile. When a benchmark is based on a lethality endpoint, the benchmark value is divided by 5 to approximate an effects concentration for growth and reproduction. The factor is selected based on the author's judgement (Efroymson et al. 1997a,b). The benchmark values are then rounded to one significant figure.

Los Alamos National Laboratory (LANL).

The Los Alamos National Laboratory (LANL) have developed LOEC-based soil

benchmarks. Ecological Screening Levels (ESLs) are developed and maintained by the Laboratory as part of the ECORISK database. Selected benchmarks are based on the geometric mean LOEC.

Selection of the surficial soil toxicity benchmarks for terrestrial receptors is based on the following hierarchy:

No-Effect Benchmarks:

Minimum of the Eco-SSLs for plants and soil invertebrates
Minimum of the ORNL plant and soil organism benchmarks

For the purposes of calculating hazard quotients (HQs) for plants and soil invertebrates, the NOEC based Eco-SSLs were used preferentially. This is because the Eco-SSLs were derived using an EPA reviewed and accepted derivation methodology that incorporates an evaluation of multiple studies, receptors, and endpoints in the derivation of a screening level benchmark. If an Eco-SSL TRV was not available for a specific contaminant, then the lower of the ORNL plant and soil organism benchmarks was used. Benchmarks for soil microbes were not included for the purposes of performing screening level risk calculations (see Attachment 1-2 of the Eco-SSL guidance document for additional information on the exclusion of microbes).

The low-effect benchmarks from LANL were also used in this assessment. The soil benchmark values for all chemicals analyzed in surface soils are shown in Table B-3.

References:

Canadian Council of Ministers of the Environment (CCME). 1997. *Recommended Canadian Soil Quality Guidelines*. CCME, Winnipeg.

Canadian Council of Ministers of the Environment (CCME). 1999. Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health: Summary of the Protocol for the Derivation of Environmental and Human Health Soil Quality Guidelines. In: *Canadian Environmental Quality Guidelines, Chapter 7,* CCME, 1999, Winnipeg.

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Efroymson, R.A., M.E. Will, G.W. Suter II, and A.C. Wooten. 1997a. *Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Terrestrial Plants: 1997 Revision*. Prepared for the U.S. Department of Energy, Office of Environmental Management by Lockheed Martin Energy Systems, Inc. managing the Oak Ridge National Laboratory (ORNL).ORNL publication. ES/ER/TM-85/R3, November 1997.

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Contaminants of Potential Concern for Effects on Soil and Litter Invertebrates and Heterotrophic Process: 1997 Revision. Prepared for the U.S. Department of Energy, Office of Environmental Management by Lockheed Martin Energy Systems, Inc. managing the Oak Ridge National Laboratory (ORNL).ORNL publication. ES/ER/TM-126/R2, November 1997.
Swartjes, FA. 1999. Risk-Based Assessment of Soil and Groundwater Quality in the Netherlands: Standards and Remediation Urgency. *Risk Analysis* 19(6):1235-1249.

US Environmental Protection Agency (USEPA). 1999b. *Region 5 Ecological Screening Levels for RCRA Appendix IX Hazardous Constituents. Working Draft 1999.*United States Environmental Protection Agency, Region 5.

US Environmental Protection Agency (USEPA). 2002. *Region 4 Ecological Risk Assessment Bulletins - Supplement to RAGS. Soil Screening Values.* From: Friday, GP. 1998. Ecological Screening Values for Surface Water, Sediment, and Soil. Westinghouse Savannah River Company, Savannah River Technology Center. Report ID WSRC-TR-98-00110. Downloaded on July 15, 2002 from website: http://www.epa.gov/region04/waste/ots/ecolbul.htm

United States Environmental Protection Agency (USEPA). 2007. Ecological Soil Screening Levels (Eco-SSLs). Website. http://www.epa.gov/ecotox/ecossl/. Accessed 12/20/2007.

Wildlife Receptors (Birds & Mammals)

B-4 Dose-Based Ingestion Toxicity Reference Values

Toxicity Reference Values (TRVs) for ecological risk assessments are typically derived using the critical study method (where the no observed adverse effect level [NOAEL] and/or lowest observed adverse effect level [LOAEL] from a single study are used to derive the TRV) or a dose-response curve (Attachment 4-5 of EcoSSL Guidance, USEPA, 2003). For this risk assessment, the critical study method was used to select the TRV.

Available sources of compiled toxicity data for birds and mammals were considered and used as the basis for selecting TRVs that are protective of chronic exposure and do not impair growth, reproduction, or survival. The three primary sources of compiled toxicity data that were considered for chronic exposures were used in the following order:

USEPA Ecological Soil Screening Levels (Eco-SSLs).

Eco-SSLs for birds and mammals consider exposures via incidental ingestion of soils and ingestion of food contaminated as a result of the uptake of soil contaminants (USEPA 2005). The Eco-SSL TRV was determined by calculating the geometric mean of NOAEL TRVs for growth and reproduction or the highest bounded NOAEL TRV below the lowest bounded LOAEL TRV for growth, reproduction or survival. Eco-SSLs only provide a recommended NOAEL TRV. The LOAEL TRV derived using the lowest bounded LOAEL TRV for growth, reproduction, or survival in the Eco-SSL dataset was often very similar to the Eco-SSL NOAEL TRV, which did not provide an appropriate range between these effect levels. Therefore, the LOAEL TRVs were derived using the process developed by USEPA for the Portland Harbor BERA (USEPA 2011), as follows:

- If the Eco-SSL TRV was based on a NOAEL that was derived as a geometric mean of reported NOAELs in selected toxicological studies, then a LOAEL was derived as the geometric mean of LOAELs from the dataset presented in the Eco-SSL.

- If the Eco-SSL TRV was based on a NOAEL selected from a single study (e.g., the lowest appropriate study), then a LOAEL was selected from the same study, as presented in the Eco-SSL document.

Oak Ridge National Laboratory (ORNL).

If TRVs were not available for a COPEC from USEPA Eco-SSL sources, TRVs developed for ORNL (Sample et al. 1996) were used. Sample et al. (1996) compiled NOAEL and LOAEL results for 85 chemicals on nine representative mammal and 11 representative avian receptors. Sample et al. (1996) evaluated a number of toxicity studies on birds and mammals and provided recommendations on NOAEL- and LOAEL-based TRVs for wildlife. In cases where only a LOAEL was determined experimentally, the NOAEL was estimated by applying an uncertainty

factor ≤10. A final NOAEL and LOAEL TRV based on the test species is provided for each study. The lowest LOAEL TRV was selected as the LOAEL TRV to use in this assessment. Sample et al. (1996) evaluated a number of toxicity studies on birds and mammals and provided recommendations on NOAEL- and LOAEL-based TRVs for wildlife. Subchronic exposures were converted to chronic exposures by applying an uncertainty factor of 10. The exception was any exposure occurring during reproduction, which was considered chronic regardless of the exposure duration.

The mammalian TRVs for inorganic mercury and for dioxin/furan toxicity equivalence (TEQ) selected for use in this risk assessment represents exceptions to this selection approach.

- More recent data from Khan et al. (2004) determined a LOAEL concentration lower than any LOAEL reported in Sample et al. (1996). In this study, paired female and male mice were exposed to mercuric chloride via gavage at concentrations of 0, 0.25, 0.50 or 1.0 mg/kgBW/day during the pre-mating period and continued throughout mating and lactation. Offspring viability was significantly reduced in the highest dose group and fertility indices were significantly lower than controls in all dose groups. Based on the ecological significance of the observed effect (reproduction), an exposure concentration of 0.25 mg/kg-BW/day was identified as the LOAEL; a NOAEL of 0.025 mg/kgBW/day was estimated using a factor of 10. These TRVs for inorganic mercury are consistent with the TRV values used in other regional risk assessments.

- Sample et al. (1996) includes a mammalian NOAEL and LOAEL derived from a 3-generation rat dietary study that evaluated reproductive endpoints following exposure to 2,3,7,8-tetrachloro-dibenzodioxin (TCDD) (Murray et al. 1979). However, given that mink is a receptor of concern at this site, a more sensitive TRV is recommended to account for increased sensitivity among mink to the reproductive effects of dioxins/furans. In this case, the selected mammalian TRVs for TEQ are based on multiple studies of reproductive effects in mink. The lowest LOAEL of 2.2E-06 mg/kgBW/day is based on a chronic mink reproductive study in which mink were fed field-collected carp from the Great Lakes region (Restum et al. 1998; Tillitt et al. 1996). The NOAL was estimated using a factor of 10.

Peer-reviewed literature was also considered for cases where no Eco-SSL or ORNL TRV was available as summarized below.

- Mammalian TRVs for Total PCBs are based on the study by McCoy et al. (1995). Mated pairs of oldfield mice (*Peromyscus polionotus*) were fed diets containing 0 or 5 mg/kg Aroclor 1254 for 12 months, beginning exposure as young adults. The concentration administered was identified as a LOAEL based on significant effects on birth and weaning weights in the first and second generation, and fewer mice born per month along with decreased offspring survival in the second generation. This study is also included in Sample et al. (1996). For this risk assessment, a body weight of 18.9 grams and food ingestion rate of 3.5 g/day (Sanders and Kirkpatrick 1977) were used to convert the

dietary exposure concentrations to units of mg/kgBW/day. A LOAEL of 0.93 mg/kgBW/day and an estimated NOAEL of 0.093 mg/kgBW/day (based on a factor of 10) were calculated based on the results of this experiment.

- Avian TRVs for Total PCBs are based on the study by Tori and Peterle (1983). This study investigated courtship behavior (nest initiation and timing of egg laying) in mourning doves given dietary doses of Aroclor 1254. A LOAEL of 1.12 mg/kgBW/day was identified; a NOAEL of 0.112 mg/kgBW/day was estimated using a factor of 10.

Avian TRVs for dioxin/furan TEQ were derived to account for varying sensitivities in different bird species. This variability has been associated with interspecies differences in the amino acid sequence of the aryl hydrocarbon receptor (AhR) (Farmahin et al. 2013). For risk assessment purposes, birds can be classified into three main groups based on their sensitivity to (Farmahin et al. 2013):

- Category 1 species exhibit high sensitivity
- Category 2 species exhibit moderate sensitivity
- Category 3 species exhibit low sensitivity

The avian TRVs for dioxin/furan TEQ from Sample et al. (1996) are based on the study conducted in ring-necked pheasants by Nosek et al. (1992). Pheasants were exposed via weekly intraperitoneal (ip) injection with TCDD at three dose levels over a 10-week period. Hens were bred with roosters and egg production was monitored. Eggs were collected daily and incubated to hatching. Egg production and hatchability were significantly reduced at the highest dose level of 1 µg/kg/week. This dose was converted to a daily dose by dividing by 7 (1 week/7 days) and assuming an oral absorption fraction of 100%. A LOAEL of 1.43E-04 mg/kgBW/day and a NOAEL of 1.43E-05 mg/kgBW/day was derived for this study (Sample et al. 1996). As noted in Farmahin et al. (2013), ring-necked pheasants are classified as Category 2 bird species with moderate sensitivity to the reproductive effects of TCDD exposure. Thus, the LOAEL and NOAEL identified for this study are used at the avian TRVs for Category 2 birds.

Due to chicken sensitivity to the reproductive effects of TCDD exposures (Category 1 birds), a number of dioxin exposure studies in various chicken species have been conducted. However, no studies were identified that meet quality criteria for using as the basis for avian TRVs. Similarly, no key study was identified for using as the basis for the Category 3 avian TRVs.

In the absence of such information, LOAEL and NOAEL TRVs for Category 1 and Category 3 birds are derived by extrapolating from the Category 2 TRVs. This was done using the relative differences in toxicity test results from an avian egg injection study that evaluated a species from each of the three categories. Cohen-Barnhouse et al. (2011) injected eggs collected from white leghorn chicken (Category 1), common pheasant (Category 2), and Japanese quail (Category 3) with TCDD at multiple doses. Eggs were incubated to hatching and evaluated for embryo lethality. The lethal dose for 50% of the specimens (LD50) values reported for each species were

0.21 ng/g egg, 1.2 ng/g egg, and 9.7 ng/g egg for the chicken, pheasant, and quail, respectively. These values were used to calculate ratios as: 0.18 for the Category 1:Category 2 ratio and 8.08 for the Category 2:Category 3 ratio. These ratios were then used to extrapolate from the Category 2 TRVs as follows:

Category 1 NOAEL = Category 2 NOAEL × Category 1:Category 2 ratio

Category 3 NOAEL = Category 3 NOAEL × Category 3:Category 2 ratio

This approach resulted in the following avian TRVs:

TRV (mg/kg bw day)		Category
NOAEL	LOAEL	
2.50E-06	2.50E-05	1
1.43E-05	1.43E-04	2
1.15E-04	1.15E-03	3

The Category 1 values derived by this approach are supported by information in the primary literature.

Stephens et al. (1995) exposed White Leghorn chickens through their diet to soil contaminated with a mixture of dioxins and furans at multiple concentrations (evaluated as International Toxic Equivalent Quantities [I-TEQs]) for 178 days. All chickens remained in good health throughout the study and no gross abnormalities were observed at necropsy. Egg production was similar for all exposure groups. The authors reported daily intakes of 2.5 ng I-TEQ/kg/day and 0.3 ng I-TEQ/kg/day for the high and low exposure groups, respectively. Because no adverse effects were observed at the highest exposure concentration, a NOAEL of 0.0000025 mg/kg/day was identified from this experiment.

Matushita et al. (2002) evaluated the effects of maternal exposure to 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) on second generation chicks. TCDD was administered intramuscularly to Barred Plymouth Rock hens at a concentration of 0 or 200 ng/kg once a week from 14 to 23 weeks of age. Egg production by TCDD-exposed hens started at 20 weeks of age, two weeks earlier than in controls. Egg production by the exposed hens ceased between 23 and 24 weeks of age, and did not start again until two weeks after exposure stopped. Hatchability of the eggs produced by the TCDD-exposed hens was lower than for the control group, and the sex ratio (percent [%] males) was slightly higher than for controls. Based on the effects on egg production, a LOAEL of 0.000029 mg/kg/day (0.0002 mg/kg/week) and an estimated NOAEL of 0.0000029 mg/kgBW/day were identified from this experiment. This study was not considered adequate for using as the basis for the

Category 1 TRVs because the data reported in the study did not allow for evaluation of the magnitude of effects that were reported to be significant.

The wildlife TRVs for all COPECs evaluated for avian and mammalian receptors in this assessment are shown in Table B-4.

B-5 Tissue-Based Benchmarks

Steevens et al. (2005) reviewed literature with data on biological effects and whole-body residues in different species of fish. After applying screening criteria, ten data points were identified for generating a species sensitivity distribution (SSD) for fish exposed to TCDD and dioxin-like compounds. The SSD was developed for the life stage of fish that is most sensitive to the Ah-receptor mediated toxicity of TCDD, the egg and embryo. Therefore, only residues reported on a whole egg and embryo basis were considered in the study. The SSD presented by Steevens et al. (2005) is based on the geometric means of the no-observed-effect-residue (NOER) and the lowest-observed-effect-residue (LOER) values associated with early life stage toxicity for several fish species. An SSD based on 50% lethal residues is also presented. The TRBs included in the study represent lipid-adjusted tissue-based criteria that provide for the protection of fish exposed to TCDD and dioxin-like compounds at multiple protection levels. Although the TRBs reported by Steevens et al. (2005) are based on egg and embryo data, the study authors note that the ratio of nonpolar organic compounds on a lipid-normalized basis was found to be approximately 1:1 egg to adult fish in a study by Russell et al. (1999). The matrix of TRBs is included in Table B-5A.

A tissue residue-based benchmark for mercury in fish is based on a literature search conducted to locate studies that identified adverse effects in fish and reported tissue concentrations at which those effects were observed. Only studies where exposure was via water or diet and where the observed adverse effects were either on growth, reproduction or survival were summarized. The tissue concentration identified as the 10th percentile of the adverse effect concentrations reported in the compiled studies was selected as the residue effect threshold. The studies considered are summarized in Table B-5B.

Tissue residue-based benchmarks for small mammals were compiled primarily from Beyer and Meador (2011). The lowest tissue concentration associated with an effect level for a terrestrial mammal was selected as the benchmark. Benchmarks that were based on organ tissue residues were converted to whole organism tissue residues. Benchmark values and sources are presented in Table B-5C.

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APPENDIX C
WILDLIFE EXPOSURE PARAMETERS

OU2/OU3 Smurfit-Stone/Frenchtown Mill Site
Baseline Ecological Risk Assessment

American Robin
Turdus migratorius

Parameter	Symbol	Reported Values	Reference	Values Identified for BERA
Body Weight	BW	0.077 Mean (kg) - adults - Pennsylvania 0.086 Mean (kg) - adult male nonbreeders - New York 0.084 Mean (kg) - adult female nonbreeders - New York 0.077 Mean (kg) - adult female breeders - New York 0.081 Mean (kg) - adult male breeders - New York	USEPA, 1993	Average of reported means: **0.081 kg**
Food Ingestion Rate	IR_{food}	0.89 Mean (g ww/g BW-day) - breeding free-living male & females - California 1.52 Mean (g ww/g BW-day)- free-living adults - Kansas	USEPA, 1993	Average of reported means: **1.205 kg ww/kg BW/day**
Water Ingestion Rate	IR_{water}	No measured values available; estimated from avian allometric equation for water ingestion provided in USEPA (1993).	USEPA, 1993	Estimated from allometric equation: *IR (L/day) = [0.059 * BW (kg ww) 0.67] / BW (kg) =* **0.011 L/day or 0.136 L/kgBW/day**
Soil Ingestion Rate	IR_{soil}	No measured values available; fraction of soil in the diet is assumed to be 10% (Hansen et al. 2011) Assumes 20% dry matter in food (CF = 0.20 kg food dw / kg food ww).	Hansen et al. 2011 Assumption	Based on fraction of soil in the diet: $IR_{soil} = IR_{food}$ *(kg ww/kg BW/day) * soil in diet * CF (dw/ww)* **0.025 kg dw/kg BW/day**
Dietary Composition (fraction wet volume)	DF	Western United States: Spring: fruit 17%; invertebrates 83% Summer: fruit 29%; invertebrates 71% Fall: fruit 63%; invertebrates 37% Winter: fruit 70%; invertebrates 30%	USEPA, 1993	**50% plants, 25% terrestrial invertebrate, 25% earthworm**
Home Range Size	HR	0.15 Mean (ha) - adults with nestlings, foraging home range in summer 0.81 Mean (ha) - adults with fledglings, foraging home range in summer 0.13 ha - nesting territory 0.11 ha - nesting territory 0.33 (mean) ha -- breeding territory, 1971 0.55 (mean) ha - breeding territory, 1972 0.38 (mean) ha - breeding territory, 1974 0.51 (mean) ha - breeding territory, 1975 0.45 (mean) ha - breeding territory, 1976 0.34 (mean) ha - breeding territory, 1977 0.35 (mean) ha - breeding territory, 1980	USEPA, 1993 Wauer 1999 Howell 1942 Pitts 1984 Pitts 1984 Pitts 1984 Pitts 1984 Pitts 1984 Pitts 1984 Pitts 1984 Pitts 1984	Average of reported means: **0.37 hectares**
Seasonal Area Use Factor	SUF	Migratory in northern portion of range. Leave breeding grounds from September to November returning from February to April.	USEPA, 1993	

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Gray Catbird
Dumetella carolinensis

Parameter	Symbol	Reported Values	Reference	Values Identified for BERA
Body Weight	BW	38.3 Mean (g) of range 31.9-48.7 g, adult males 40.9 Mean (g) of range 31.6-54.5 g, adult females	Raynor, 1979	Average of reported means: **0.0396 kg**
Food Ingestion Rate	IR_{food}	Estimated from allometric equation for passerines: *FIR (g ww/day) = 2.438 (BW)* $^{0.607}$ *, BW in g*	Nagy 2001	Estimated from allometric equation for order passeriformes: 22.74 g ww/day **0.574 kg ww/kg BW/day**
Water Ingestion Rate	IR_{water}	No measured values available; estimated from avian allometric equation for water ingestion provided in USEPA (1993).	USEPA, 1993	Estimated from allometric equation: *IR (L/day) = [0.059 * BW (kg ww) 0.67] / BW (kg) =* **0.171 L/kgBW/day**
Soil Ingestion Rate	IR_{soil}	No measured values available; fraction of soil in the diet is assumed to be 10% (Hansen et al. 2011) Assumes 20% dry matter in food (CF = 0.20 kg food dw / kg food ww).	Hansen et al. 2011 Assumption	Based on fraction of soil in the diet: $IR_{soil} = IR_{food}$ *(kg ww/kg BW/day) * soil in diet * CF (dw/ww)* **0.025 kg dw/kg BW/day**
Dietary Composition (fraction wet volume)	DF	Mostly insects and berries. Beetles, ants, caterpillars, grasshoppers, crickets, true bugs, spiders and millipedes. More than half the annual diet of adults may be vegetable matter (primarily berries). Rarely catches small fish.	National Audubon Society	**50% plants; 50% terrestrial invertebrates**
Home Range Size	HR	Assumed value 0.38 hectares	Assumption	**0.38 ha**
Seasonal Area Use Factor	SUF	Migratory bird. Spring migration ranges from March to May, and in the fall ranges from late August to November. Normally present on breeding grounds in May.		

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Tree Swallow
Tachycineta bicolor

Parameter	Symbol	Reported Values	Reference	Values Identified for BERA
Body Weight	BW	0.020 kg	USEPA 1999	**0.020 kg**
Food Ingestion Rate	IR_{food}	0.0046 kg/day	USEPA 1999 (a)	**0.228 kg ww/kg BW/day** (calculated)
Water Ingestion Rate	IR_{water}	0.0044 L/day	USEPA 1999	**0.22 L/kg BW/day** (calculated)
Soil Ingestion Rate	IR_{soil}	1%	USEPA 1999	**0%**
Dietary Composition	DF	Mainly flying insects	USEPA 1999	**90% flying insects** **10% crawling invertebrates**
Home Range	HR	300,000 m2	USEPA 1999	**30 Ha**
Seasonal Area Use factor	SUF	Migrates north relatively early in spring. Southward migration begins as early as July, peaks in early fall.	National Audubon Society	

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(a) Food intake rates (kg/day) presented in Table A12-2 of USEPA1999 utilize an incorrect coefficient. The value shown in uin this table is calculated in accord with the equation and correct coefficent reported in the primary source doccument (Nagy 1987)

American Dipper
Cinclus mexicanus

Parameter	Symbol	Reported Values	Reference	Values Identified for BERA
Body Weight	BW	Average 57 g; range 50 - 61; males Average 51 g; range 44 -59; females Average 53.7 g; range 48.7 -70; females Average 58.2 g; range 53 -63; females Average 58.4 g; range 54 -61; sex undetermined Average 60 g; range 53.5 - 67; males; *C.m.mexicanus* Average 61 g; range 57 - 66; males; *C.m. unicolor* Average 53.6 g; range 48.5 - 62.5; females; *C.m.mexicanus* Average 54.6 g; range 43-65; females; *C.m. unicolor* Average 56.2 g; n = 25 Average 58.5 g; n = 31 Average 57.2; 61 males Average 48.6; 27 females	Armstrong and O'Clair 2008 Armstrong and O'Clair 2008 Lovett Lovett Lovett Wilson and Kingery 2011 Wilson and Kingery 2011 Wilson and Kingery 2011 Wilson and Kingery 2011 Price and Bock 1983 Price and Bock 1983 Green et al. 2009 Green et al. 2009	Average of reported means: **0.056 kg**
Food Ingestion Rate	IR_{food}	Estimated from allometric equation for passerines: *FIR (g ww/day) = 2.438 (BW) $^{0.607}$, BW in g*	Nagy 2001	Estimated from allometric equation for order passeriformes: 28.04 g ww/day **0.502 kg ww/kg BW/day**
Water Ingestion Rate	IR_{water}		USEPA, 1993	Estimated from allometric equation: *IR (L/day) = [0.059 * BW (kg ww) $^{0.67}$] / BW (kg)* **0.0086 L/day = 0.154 L/kg BW/day**
Soil Ingestion Rate	IR_{soil}	5.2%; common goldeneye; 4.7% lesser scaup -- IRsoil = 4.95% $IR_{soil} = IR_{food} * 0.2 * I_{soil}$ Where 0.2 (kg food dry weight /kg food wet weight) = wet weight to dry weight conversion factor for food assuming 20% dry matter in food:	Assumption SIR similar to other birds with diet primarily aquatic invertebrates (lesser scaup, goldeneye; Beyer 1998)	Based on fraction of soil in the diet: **0.005 kg dw/kg BW/day**
Dietary Composition	DF	42% fish, 58% invertebrates; Chilliwack River residents; stable isotope analysis 22% fish, 78% invertebrates; tributary residents 30% fish. 70% invertebrates; males; n = 20 37.4% fish, 62.2% invertebrates; females; n = 11 100% invertebrates, primarily Trichoptera, Ephemeroptera, Diptera; % by number 100% invertebrates, primarily Trichoptera and Ephemeroptera; % by number	Morrissey et al. 2004 Morrissey et al. 2004 Morrissey et al. 2004 Morrissey et al. 2004 Willson and Kingery 2011 Feck and Hall 2004	**90% benthic macroinvertebrates, 5% aerial invertebrates, 5% fish**
Home Range Size	HR	400 -4000 m stream length (midpoint 2200 m) 45 - 950 m stream length; winter territory (midpoint 498 m) 320 m stream length; maximum breeding territory 1504 m; polygynous males 944 m; monogamous males 759 m; monogamous males 1406 - 2070 m (midpoint 1738 m) 502 - 1378 m (midpoint 940 m)	Lovett Bakus 1959 Bakus 1959 Price and Bock 1983 Price and Bock 1983 Wilson and Kingery 2011 Wilson and Kingery 2011 Wilson and Kingery 2011	Average of reported means: **1115 m stream length**
Seasonal Area Use Factor	SUF	Does not migrate but moves to lower altitudes in fall	Terres, 1991	

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Blue Grouse
Dendragapus obscurus

Parameter	Symbol	Reported Values	Reference	Values Identified for BERA
Body Weight	BW	Average, 1279.3 g, range 1175 - 1375; males	Redfield 1973	Average of reported means:
		Average 868.9 g; range 773 - 1132; females	Redfield 1973	
		Average 1287 g, 17 males	Lewis and Zwickel 1981	
		Average 1293 g, 39 males	Lewis and Zwickel 1981	**1.160 kg**
		Average 1273 g; 482 males	Zwickel and Bendell 2004	
		Average 839 g; 223 females	Zwickel and Bendell 2004	
		Average 1171 g, n = 41, *D.o.pallidus* , Washington	Zwickel and Bendell 2004	
		Average 1271 g, n = 29, *D.o.pallidus* , Montana	Zwickel and Bendell 2004	
Food Ingestion Rate	IR_{food}	187.7 g ww/day; males	Zwickel and Bendell 2005	Average of reported means:
		151.3 g ww/day; females		**169.5 g ww/day; 0.146 kg/kg BW/day**
Water Ingestion Rate	IR_{water}	Estimated from allometric equation:	USEPA, 1993	
		$IR\ (L/day) = [0.059 * BW\ (kg\ ww)^{0.67}] / BW\ (kg)$		**0.065 L/day or 0.056 L/kg BW/day**
Soil Ingestion Rate	IR_{soil}	Ingestion of soil (I_{soil}) as percentage of food intake (kg soil dry weight/kg food dry weight) is not available. Assumed to be equal to 2%. Where 0.33 (kg food dry weight /kg food wet weight) = wet weight to dry weight conversion factor for food assuming 33% dry matter	Assumption	$IR_{soil} = IR_{food} * 0.33 * I_{soil}$ in food: **0.00096 kg dw/kg BW/day**
Dietary Composition (fraction wet volume)	% volume	35.9% conifer needles, 22.5% green leaves, 22.4 % fruits and seeds; 17% other plant, 2.2% invertebrates	Stewart 1944	**100% plants**
	% weight	44% conifer needles, 15.5% leaves, 5.3% flowers. 22.4% fruits, 0.2% invertebrates; males	King 1968	
	% weight	17% conifer needles, 20.4% leaves, 8.5% flowers. 29.3% fruits, 0.5% invertebrates; females	King 1968	
	% weight	13% leaves, 18.5% flowers. 36% fruits,22% invertebrates; chicks	King 1968	
Home Range Size	HR	Average 16.8 ha; range 3 to 42.5 ha	Hines 1986	Average of reported means:
		Average 0.63 ha; range 0.26 - 0.93 ha; breeding period	Lewis 1985	
		Average 1.07 ha; range 0.16 - 2.14 ha; post-breeding period	Lewis 1985	**4.96 ha**
		Average 0.6 ha; range 0.2 - 0.9 ha; males	Zwickel and Bendell 2005	
		Average 17.4 ha, breeding females	Zwickel and Bendell 2005	
		average 2.3 ha; females, laying period	Zwickel and Bendell 2005	
		average 6.4 ha; females, pre-incubation	Zwickel and Bendell 2005	
		average 0.8 ha; range 0.5 - 1.1 ha; males	Zwickel and Bendell 2005	
		average 1.5 ha; range 1.2 -1.9 ha; males	Zwickel and Bendell 2005	
		average 2.1 ha; range 0.4 - 5.2; males	Zwickel and Bendell 2005	
Seasonal Area Use Factor	SUF	Short migration. During the winter, inhabits mountainous pine forests; nesting time begins in spring.		

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American Kestrel
Falco sparvarius

Parameter	Symbol	Reported Values	Reference	Values Identified for BERA
Body Weight	BW	115 g; female, fall 132 g; female, winter 103 g; male, fall 114 g; male, winter 124 g; female, laying 127 g; female, fall 138 g; female, winter 108 g; male, incubating 111 g; male fall 119 g, male, winter	USEPA, 1993	Average of reported means: **119.1 g**
Food Ingestion Rate	IR_{food}	43 g/day ww; males 48.6 g/day ww, females 35 g/day; females 32.5 g/day ww; females 34.16 g/day ww; females 38.4 g/day ww; both sexes	Fernie and Bird 1999 Fernie and Bird 1999 Anderson et al. 1993 Anderson et al. 1993 Koplin et al. 1980 Lacombe et al. 1994	Average of reported means: **38.6 g ww/day; 0.324 kg ww/kg BW/day**
Water Ingestion Rate	IR_{water}	Estimated from allometric equation: $IR\ (L/day) = [0.059 * BW\ (kg\ ww)^{0.67}] / BW\ (kg)$	USEPA, 1993	**0.0014 L/day; 0.012 L/kg BW/day**
Soil Ingestion Rate	IR_{soil}	No measured values available; estimated fraction of sediment in the diet is assumed to be 0.01 (1%) based on professional judgement. Assumes 32% dry matter in food (CF = 0.32 kg food dw / kg food ww).	Assumption	Based on fraction of soil in the diet: $IR_{soil} = IR_{food}\ (kg\ ww/kg\ BW/day) * soil\ in\ diet * CF\ (dw/ww)$ **0.001 kg dw/kg BW/day**
Dietary Composition (% biomass)	DF	79.1% mammals, 8% birds, 2.4% reptiles, 10.5% invertebrates; females Oct - March 22.8% mammals, 37.9% reptiles, 39.3% invertebrates; females March - Sept 45.9% mammals, 51.8% birds, 0.5% reptiles, 1.8% invertebrates 30.4% mammals, 62.1% birds, 5.4% reptiles, 2.1% invertebrates 36.9% mammals, 7.04% birds, 19.3% reptiles, 36.7% invertebrates	Collopy and Koplin 1983 Collopy and Koplin 1983 Smith and Murphy 1973 Smith and Murphy 1973 Koplin et al. 1980	Average of reported %iles: 43% mammals. 13 % reptiles, 32% birds, 18% invertebrates. Only site-specific small mammal and invertebrate tissue data available. **60% small mammals, 40% invertebrates**
Home Range Size	HR	109.4 ha; breeding 80.29 ha; pair 67.34 ha; pair 41.44 ha; individual Average 31.6 ha; range 18.7 - 42 ha; female Average 13.1 ha; range 9.7 -14.8 ha; male	Balgooyen 1976 Smith and Murphy (1973) Smith and Murphy (1973) Smith and Murphy (1973) Meyer and Balgooyen 1987 Meyer and Balgooyen 1987	Average of reported means: **57.2 ha**
Seasonal Area Use Factor	SUF	Migratory over the northern-most portions of its range.	USEPA, 1993	

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Belted Kingfisher
Ceryle alcyon

Parameter	Symbol	Reported Values	Reference	Values Identified for BERA
Body Weight	BW	0.148 Mean (kg) - adults - Pennsylvania 0.136 Mean (kg) - adults - Pennsylvania 0.1436 Mean (kg) - adult males - Minnesota 0.1516 Mean (kg) - adult females - Minnesota 0.158 Mean (kg) - adults - Ohio	USEPA, 1993 USEPA, 1993 Hamas 1994 Hamas 1994 USEPA, 1993	Average of reported means: **0.147 kg**
Food Ingestion Rate	IR_{food}	56.2 g ww /day 61.5 g ww/day 54.6 g ww/day	Kelly 1998 Alexander 1977 Vessel 1977	Average of reported means: 57.4 kg ww/day **0.390 kg ww /kg BW/day**
Water Ingestion Rate	IR_{water}	No measured values available; estimated from allometric equation: $IR\ (L/day) = [0.059 * BW\ (kg\ ww)^{0.67}] / BW\ (kg)$	USEPA, 1993	**0.016 L/day or 0.109 L/kg BW/day**
Soil Ingestion Rate	IR_{soil}	No measured values available; estimated fraction of sediment in the diet is assumed to be 0.01 (1%) based on professional judgement. Assumes 27% dry matter in food (CF = 0.27 kg food dw / kg food ww).	Assumption	Based on fraction of soil in the diet: $IR_{soil} = IR_{food}\ (kg\ ww/kg\ BW/day) * soil\ in\ diet * CF\ (dw/ww)$ **0.0014 kg dw/kg BW/day**
Dietary Composition (fraction wet volume)	DF	Michigan/trout streams: Game fish: 43% Forage fish: 15% Unidentified fish: 1% Invertebrates: 41%	USEPA, 1993	**DF_{fish} = 100%**
Home Range Size	HR	389.29 m stream length; non-breeding territory 1030 m stream length; breeding territory 1566.25 m stream length; range 923 - 2908 m; breeding territory 2185 m stream length; Pennsylvania 1028 m stream length; Ohio	Davis 1982 Davis 1982 Mazeika et al. 2006 Brooks and Davis 1987 Brooks and Davis 1987	Average of reported means: **1240 m stream length**
Seasonal Area Use Factor	SUF	Migratory in northern portion of range. Leave breeding grounds from October to December returning from February to April.	USEPA, 1993	

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Osprey
Pandion haliaetus

Parameter	Symbol	Reported Values	Reference	Values Identified for BERA
Body Weight	BW	1.35 - 2.184 kg 1.79 (mean) kg - adult females 1.485 (mean) kg - adult male 1.79 (mean) kg - asymptotic female nestling 1.4995 (mean) kg - asymptotic male nestling	Candler and Kennedy 1995 Wiemeyer et al. 1987 Schaadt and Bird, 1993	**1.613 kg**
Food Ingestion Rate	IR_{food}	104.1 g ww/day (lowest estimate) 400 g ww/day (highest estimate)	Poole 1985 Poole 1989	**0.2213 kg ww/day**
Water Ingestion Rate	IR_{water}	No measured values available; estimated from allometric equation: $IR\ (L/day) = [0.059 * BW\ (kg\ ww)^{0.67}] / BW\ (kg)$	USEPA, 1993	**0.081 L/day or 0.05 L/kg BW/day**
Soil Ingestion Rate	IR_{soil}	No measured values available; estimated based on amount entrained in prey items Assumes 0.00168 kg sediment per kg fish BW for Bluegill fish (prey) assuming Bluegill (0.340 kg) contains 9.6% detritus; daily food ingestion rate of 1.75% of BW/day Assumes 27% dry matter in food (CF = 0.27 kg food dw / kg food ww).	Kolehmainen, 1974	Based on assuming 0.00168 kg of sediment per fish BW $IR_{soil} = SEDprey\ (kg\text{-}sed/BW\text{-}fish) * IR_{food} * CF\ (dw/ww)$ **0.0001 kg dw/kg BW/day**
Dietary Composition (fraction wet volume)	DF	Fish: 99%		**DF_{fish} = 100%**
Home Range Size	HR	Breeding ospreys travel up to 14 km from nest when hunting Non-breeding ospreys travel up to 10 km from nest when hunting Average wintering home range, adults, Fixed kernal 50% = 4.53 km^2 (453.1 ha) Average wintering home range, adults, Fixed kernal 95% = 40.47 km^2 (4047.4 ha)	Poole et al, 2002 Monti et al. 2018 Monti et al. 2018	Mean fixed kernal 50%: 453.1 ha
Seasonal Area Use Factor	SUF	Migratory in northern portion of range. Leave breeding grounds from October to December returning in March/April	State of Montana, 2020	

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Mallard
Anas platyrhynchos

Parameter	Symbol	Reported Values	Reference	Values Identified for BERA
Body Weight	BW	1.225 Mean (kg) - adult males, North America 1.043 Mean (kg) - adult females, North America 1.246 Mean (kg) - adult males in winter, Mississippi 1.095 Mean (kg) - adult females in winter, Mississippi 1.237 Mean (kg) - adult males in winter, Texas 1.088 Mean (kg) - adult females in winter, Texas 1.197 Mean (kg) - adult females in spring, North Dakota	USEPA, 1993	Average of reported means: **1.162 kg**
Food Ingestion Rate	IR_{food}	No measured values available; estimated from avian allometric equation for food ingestion provided in USEPA (1993). Assumes 18% dry matter in food (CF = 0.18 kg food dw / kg food ww).	USEPA, 1993	Estimated from allometric equation (converted to ww): IR(kg ww/day) = [0.621*BW (g)0.564] / [CF (dw/ww) * BW (kg) * 1000 (g/kg)] **0.31 kg ww/kg BW/day**
Water Ingestion Rate	IR_{water}	No measured values available; estimated from mammalian allometric equation for water ingestion provided in USEPA (1993).	USEPA, 1993	Estimated from allometric equation: $IR\ (L/day) = [0.099 * BW\ (kg\ ww)^{0.90}] / BW\ (kg)$ **0.056 L/kg BW/day**
Soil Ingestion Rate	IR_{soil}	Estimated fraction of sediment in the diet is 0.049 (4.9%). Assumes 18% dry matter in food (CF = 0.18 kg food dw / kg food ww).	Beyer et al., 1998	Based on fraction of soil in the diet: $IR_{soil} = IR_{food}\ (kg\ ww/kg\ BW/day) * soil\ in\ diet * CF\ (dw/ww)$ **0.0027 kg dw/kg BW/day**
Dietary Composition (fraction wet volume)	DF	North Dakota, prairie potholes 75% total invertebrates: average in spring 25% total plants: average in spring	USEPA, 1993	No measured data and cannot estimate concentrations in aquatic plants, therefore benthic concentrations are used as a surrogate for aquatic plant concentrations. **Dfbenthics = 100%**
Home Range Size	HR	111 Mean (ha) - adult females, laying - North Dakota, prairie potholes 210 Mean (ha) - adult females, Minnesota 240 Mean (ha) - adult males, Minnesota 135 Mean (ha) - adult females, pre-nesting, Minnesota 70 Mean (ha) - adult females, laying, Minnesota 127 Mean (ha) - brood rearing, range 4 - 623 ha, California 62 Mean (ha) - brood rearing, range 4.5 - 268 ha, California	Dwyer et al. 1979 Gilmer et al. 1975 Gilmer et al. 1975 Gilmer et al. 1975 Gilmer et al. 1975 Mauser et al. 1994 Mauser et al. 1994	Average of reported means: **136 hectares**
Seasonal Area Use Factor	SUF	Migratory in northern portion of range. Leave breeding grounds from September to November returning in spring.	USEPA, 1993	

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Northern Flicker
Colaptes auratus

Parameter	Symbol	Reported Values	Reference	Values Identified for BERA
Body Weight	BW	Average 140 g; Range 131 - 144 g, n = 4 males 112.8, n = 5 Average 161.1 g; range 131 -187 g, n = 703 males Average 153.7 g; range 124 -182 g, n = 707 females 121.8, n = 2 males 131.1, n = 1 female average 139.59 , range 129 - 154 g, n = 17 males; yellow-shafted average 131.83 g, range 117 - 150 g, n = 20 females; yellow-shafted average 156.45, range 143 - 167 g, 9 males; red-shafted average 139.17, range 130 - 145 g, n = 6 females; red-shafted	Royall and Bray 1980 Szaro and Balda 1979 Wiebe and Moore 2008 Wiebe and Moore 2008 Stegeman 1955 Stegeman 1955 Short 1965 Short 1965 Short 1965 Short 1965	Average of reported means: **138.8 g**
Food Ingestion Rate	IR_{food}	Estimated from allometric equation for insectivorous b irds: $FIR\ (g\ ww/day) = 1.633\ (BW)^{0.705}$, *BW in g*	Nagy 2001	**52.9 g ww/day; 0.381 kg ww/kg BW/day**
Water Ingestion Rate	IR_{water}	Estimated from allometric equation: $IR\ (L/day) = [0.059 * BW\ (kg\ ww)^{0.67}] / BW\ (kg)$	USEPA, 1993	**0.0157 L/day; 0.113 L/kg BW/day**
Soil Ingestion Rate	IR_{soil}	No measured values available; estimated fraction of soil in the diet is assumed to be equal to that of the American woodcock 0.104 (10.4%). Assumes 20% dry matter in food (CF = 0.20 kg food dw / kg food ww).	Beyer et al., 1994 Assumption	Based on fraction of soil in the diet: $IR_{soil} = IR_{food}\ (kg\ ww/kg\ BW/day) *$ *soil in diet* $* CF\ (dw/ww) =$ **0.0079 kg dw/kg BW/day**
Dietary Composition	DF	60.9 % invertebrates, 39.1 % plant; yellow-shafted flicker 67.7 % invertebrates, 32.3 % plant; red-shafted flicker	Beal 1911 as cited in Moore; not stated whether % volume or food item counts	70% invertebrates, 30% plants
Home Range Size	HR	16 ha; breeding pair in confier forest 25 ha; range 5 - 109 ha; n = 52 101 ha; individual male 91 ha; individual male 53 ha; individual male 48 ha; individual male	Lawrence 1967 Wiebe and Moore 2008 Royall and Bray 1980 Royall and Bray 1980 Royall and Bray 1980 Royall and Bray 1980	Average of reported means: **55 ha**
Seasonal Area Use Factor	SUF		USEPA, 1993	

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Clark's Nutcracker
Nucifraga columbiana

Parameter	Symbol		Reported Values	Reference	Values Identified for BERA
Body Weight	BW	124	Average 124 g; range 111 - 136 g; n = 7	Lorenz and Aubry 2011	Average of reported means:
		135	Average 135 g; range 121 -151 g; n = 13	Lorenz and Aubry 2011	
		136	Average 136 g; n = 51 males	Giuntoli and Mewaldt 1978	
		149	Average 149 g; n = 48 males	Giuntoli and Mewaldt 1978	
		122	Average 122 g; n = 30 females	Giuntoli and Mewaldt 1978	**133.3 g**
		134	Average 134 g; n = 27 females	Giuntoli and Mewaldt 1978	
Food Ingestion Rate	IR_{food}		Estimated from allometric equation for passerines: *FIR (g ww/day) = 2.438 (BW)* $^{0.607}$ *, BW in g*	Nagy 2001	**47.5 g ww/day; 0.356 g ww/kg BW/day**
Water Ingestion Rate	IR_{water}		Estimated from allometric equation: *IR (L/day) = [0.059 * BW (kg ww)* $^{0.67}$ *] / BW (kg)*	USEPA, 1993	**0.015 L/day; 0.1147 L/kg BW/day**
Soil Ingestion Rate	IR_{soil}		Ingestion of soil (I_{soil}) as percentage of food intake (kg soil dry weight/kg food dry weight) is not available. Assumed to be equal to 2%. Assumes 37% dry matter in food (Nagy 2001); CF = 0.37	Assumption	Based on fraction of soil in the diet: $IR_{soil} = IR_{food}$ *(kg ww/kg BW/day) * soil in diet * CF (dw/ww)* **0.0026 kg dw/kg BW/day**
Dietary Composition (fraction wet volume)	DF		83% conifer seeds, 13.3 % arthropods, 3.1 % carrion (mammals)	Giuntoli and Mewaldt	85% seeds [plants], 15% invertebrates
Home Range Size	HR		Average 440 ha; range 140 - 2070 ha; non-floaters; n = 13	Lorenz and Aubry 2011	Average of reported means:
		440	Average 413.2 ha; range 138.6 - 5207.4 ha; n = 18	Lorenz et al 2011	
		413.2	Average 315 ha; range 182 - 477 ha; n = 5. Core range	McMurray (2008)	473 ha
		315	Average 318.4 ha; range 157 - 547 ha; n = 5. summer range	McMurray (2008)	
		318.4	Average 879.6 ha; range 318 - 1357 ha; n = 5. Autumn range	McMurray (2008)	
		879.6			
Seasonal Area Use Factor	SUF			USEPA, 1993	

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Vagrant Shrew
Sorex vagrans

Parameter	Symbol	Reported Values	Reference	Values Identified for BERA
Body Weight	BW	4.6 Mean (g) of reported range 3.5-6.1 g (subadult males) 6.3 Mean (g) of reported range 4.9-7.8 g (adult males) 4.4 Mean (g) of reported range 3.4-5.7 g (subadult females) 5.5 Mean (g) of reported range 4.2-7.7 g (adult females)	Hooven et al., 1975 (as cited in Mammalian Species; No. 744)	Average of reported means: **0.0052 kg**
Food Ingestion Rate	IR_{food}	No measured values available; estimated from mammalian (rodent) allometric equation for food ingestion provided in USEPA (1993). Assumes 32% dry matter in food (CF = 0.32 kg food dw / kg food ww).	USEPA, 1993	Estimated from allometric equation (converted to ww): IR(kg ww/day) = [0.621*BW (g)$^{0.564}$] / [CF (dw/ww) * BW (kg) * 1000 (g/kg)] **0.95 kg ww/kg BW/day**
Water Ingestion Rate	IR_{water}	No measured values available; estimated from mammalian allometric equation for water ingestion provided in USEPA (1993).	USEPA, 1993	Estimated from allometric equation: $IR\ (L/day) = [0.099 * BW\ (kg\ ww)^{0.90}] / BW\ (kg)$ **0.17 L/kg BW/day**
Soil Ingestion Rate	IR_{soil}	No measured values available; estimated fraction of soil in the diet is assumed to be equal to that of the short-tailed shrew 0.13 (13%). Assumes 32% dry matter in food (CF = 0.32 kg food dw / kg food ww).	Talmage & Walton, 1993	Based on fraction of soil in the diet: $IR_{soil} = IR_{food}\ (kg\ ww/kg\ BW/day) * soil\ in\ diet * CF\ (dw/ww)$ **0.040 kg dw/kg BW/day**
Dietary Composition (fraction wet volume)	DF	Diet consists of earthworms, spiders, crickets, caterpillars, moths, slugs, snails, June beetles and larvae, ladybird beetles, centipedes, ants, craneflies, aphids, Hemipterans, grasshoppers, bees, and wasps. Also reported to eat fungi, flower parts, seeds and other vegetation.	Whitaker et al. 1983	**DFterrestrial invertebrates = 50%** **DFworms = 50%**
Home Range Size	HR	Home ranges are largest during the breeding season. 4,343 m^2 (males; breeding season in British Columbia) 2,233 m^2 (females; breeding season in British Columbia) 1,039 m^2 (males and females; non-breeding season in British Columbia)	Hawes, 1977	Average of reported values: **0.25 Ha**
Seasonal Area Use Factor	SUF	No information available		

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Deer Mouse
Peromyscus maniculatus

Parameter	Symbol	Reported Values	Reference	Values Identified for BERA
Body Weight	BW	0.0220 Mean (kg) - adult males - North America USEPA, 1993 Average of reported means: 0.0200 Mean (kg) - adult females - North America 0.0157 Mean (kg) - adult males, austerus spp. 0.0148 Mean (kg) - adult females, austerus spp. 0.0223 Mean (kg) - adult males, blandus spp. 0.0211 Mean (kg) - adult females, blandus spp. 0.0196 Mean (kg) - both sexes - New Hampshire 0.0203 Mean (kg) - adult females, nonbreeding, borealus spp. 0.0315 Mean (kg) - adult females, gestation, borealus spp. 0.0245 Mean (kg) - adult females, lactation, borealus spp.	USEPA, 1993	Average of reported means: **0.021 kg**
Food Ingestion Rate	IR_{food}	0.19 Mean (g/g BW-day) - adult females - Canada 0.18 Mean (g/g BW-day) - adult females - Canada 0.45 Mean (g/g BW-day) - lactating females - Canada 0.38 Mean (g/g BW-day) - lactating females - Canada 0.19 Mean (g/g BW-day) - nonbreeding females - Virginia lab 0.22 Mean (g/g BW-day) - nonbreeding males - Virginia lab	USEPA, 1993	Average of reported means: **0.268 kg ww/kg BW/day**
Water Ingestion Rate	IR_{water}	No measured values available; estimated from mammalian allometric equation for water ingestion provided in USEPA (1993).	USEPA, 1993	Estimated from allometric equation: $IR\ (L/day) = [0.099 * BW\ (kg\ ww)^{0.90}] / BW\ (kg)$ **0.15 L/kg BW/day**
Soil Ingestion Rate	IR_{soil}	No measured values available; estimated fraction of soil in the diet is assumed to be equal to that of the white-footed mouse 0.012 (1.2%). Assumes 55% dry matter in food (CF = 0.55 kg food dw / kg food ww).	Assumption	Based on fraction of soil in the diet: $IR_{soil} = IR_{food}\ (kg\ ww/kg\ BW/day) * soil\ in\ diet * CF\ (dw/ww)$ **0.0018 kg dw/kg BW/day**
Dietary Composition (fraction wet volume)	DF	Colorado, short grass prairie: USEPA, 1993 Spring - plants/seeds 35.0%, invertebrates 58.6% Summer - plants/seeds 39.9%, invertebrates 45.2% Fall - plants/seeds 66.0%, invertebrates 21.7% Winter - plants/seeds 77.1%, invertebrates 9.5%	USEPA, 1993	Approximate average across all seasons: **DFplant = 50%** **DFsurface invertebrates = 50%**
Home Range Size	HR	The home range of female deer mice encompass both their foraging areas and their nests. Male home ranges are larger and overlap those of the females. 0.039 Mean (ha) - adult males, summer, Utah subalpine meadow 0.027 Mean (ha) - adult females, summer, Utah subalpine meadow 0.100 Mean (ha) - adult males, Oregon ponderosa pines 0.075 Mean (ha) - adult females, Oregon ponderosa pines 0.128 Mean (ha) - adult males, Idaho desert 0.094 Mean (ha) - adult females, Idaho desert	USEPA, 1993	Average of reported means: **0.077 hectares**
Seasonal Area Use Factor	SUF	Torpor reported in winter in northern parts of range.	USEPA, 1993	

USEPA. 1993. Wildlife Exposure Factors Handbook. Office of Research and Development. December 1993. EPA/600/R-93/187a,b

Montane Vole
Microtus montanus

Parameter	Symbol	Reported Values	References	Values Identified for BERA
Body Weigh	BW	47.9 Mean (g) - males from 9 population 46.9 Mean (g) - females from 8 population	Innes and Millar, 199	Average of reported means (converted to kg): **0.047** **kg ww**
Food Ingestion Rate	IR_{food}	No measured values available; estimated from mammalian (rodent) allometr equation for food ingestion provided in USEPA (1993). Assumes 32% dry matter in food (CF = 0.32 kg food dw / kg food ww).	USEPA, 1993	Estimated from allometric equation (converted to ww) IR(kg ww/day) = [0.621*BW $(g)^{0.564}$] / [CF (dw/ww) * BW (kg) * 1000 (g/kg)] **0.36 kg ww/kg BW/day**
Water Ingestion Rate	IR_{water}	No measured values available; estimated from mammalian allometric equation for water ingestion provided in USEPA (1993).	USEPA, 1993	Estimated from allometric equation: *IR (L/day) = [0.099 * BW (kg ww)* $^{0.90}$ *] / BW (kg)* **0.13 L/kg BW/day**
Soil Ingestion Rate	IR_{soil}	No measured values available; estimated fraction of soil in the diet is <0.024 (2.4%). Assumes 20% dry matter in diet	Beyer et al., 1994 USEPA, 1993	Based on assumed fraction of soil in the diet: $IR_{soil} = IR_{food}$ *(kg ww/kg BW/day) * soil in diet * CF (dw/ww)* **0.00023** **kg dw/kg BW/day**
Dietary Composition (fraction wet volume)	DF	In Colorado, leaves and forbs accounted for 85% of the diet and grasses only 9%.	Vaughan, 1974	**DFplant = 100%**
Home Range Size (ha)	HR	0.019 Mean (ha) - adult males in summer - Virginia/old fiel 0.0069 Mean (ha) - adult females in summer - Virginia/old fiel 0.014 Mean (ha) - adult males and females in summer - Montana/alluvial benc 0.0002 Mean (ha) - adult males and females in winter - Montana/alluvial benc 0.083 Mean (ha) - adult males in summer - Massachusetts/grassy meado 0.037 Mean (ha) - adult females in summer - Massachusetts/grassy meado	USEPA, 1993	Based on data for a Meadow Vole *Microtus pennsylvanicus*) Average of reported means **0.027** **ha**
Seasonal Area Use Factor	SUF	No information available.		

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White-tailed Deer
Odocoileus virginianus

Parameter	Symbol	Reported Values	Reference	Values Identified for BERA
Body Weight	BW	68 kg (males) 45 kg (females) 56.5 kg (mean males and females)	Sample & Suter, 1994	Average of reported means: **56.5 kg**
Food Ingestion Rate	IR_{food}	1.74 kg/d wet weight	Sample & Suter, 1994	Reported value (adjusted for bw): **0.03 kg ww/kg BW/day**
Water Ingestion Rate	IR_{water}	3.7 L/d	Sample & Suter, 1994	Reported value (adjusted for bw): **0.065 L/kg BW/day**
Soil Ingestion Rate	IR_{soil}	Assuming 2% soil and 1.74 kg/day food consumption rates	Sample & Suter, 1994	Reported value: **0.0348kg dw/day; 0.0006 kg dw/kg BW/day**
Dietary Composition (fraction wet volume)	DF	White-tailed deer are exclusively herbivores with a diverse diet dependant on the availability of food. Major foods include buds and twigs of trees and shrubs, grasses and forbs (summer), masts and fruits (fall).	Sample *et al.* 1997	DFplant = 100%
Home Range Size	HR	16.2 Ha (minimum home range; Georgia) 1,526 Ha (maximum home range; Florida) 62 Ha (mean, Georgia, based on minimum polygon method) 85 Ha (mean, Florida and Alabama, minimum home range method) 270 Ha (mean, Florida, minimum home range method) 90 Ha (mean, Alabama, minimum home range method) 518 Ha (mean, Arkansas, minimum area method) 71 Ha (mean, Texas, grid method) 178 Ha (mean, Wisconsin, minimum polygon method) 362 Ha (mean, Florida, minimum home range method) 171 Ha (mean, South Carolina, minimum home range method) 130-659 Ha (Pennsylvania, method not stated)	Marshall & Whittington, 1969 Smith, 1970 Marshall & Whittington, 1969 Marchinton, 1968 Bridges, 1968 Byford, 1970 Cartwright, 1975 Hood, 1971 Larson et al., 1978 Smith, 1970 Sweeney, 1970 Merritt, 1987	Average of mean values: **236 Ha**
Seasonal Area Use Factor	SUF	Active year round and do not hibernate; often migrate from high mountainous areas in the summer to lower elevations in the winter to avoid deep snow.	Sample & Suter, 1994	

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Mink
Neovison vison

Parameter	Symbol	Reported Values	Reference	Values Identified for BERA
Body Weight	BW	Average 552 g; range 454 - 680 g; n = 6; females; Indiana	Mumford and Whitaker 1982	Average of reported means:
		Average 891 g; range 790 - 1200 g; n = 6; females; Alaska	Marshall 1936	
		Average 596 g; range 496 - 790 g; n = 5; females; Georgia	Grinnell et al. 1937	
		Average 542 g; n = 11; females; coastal habitat	Clode et al. 1995	
		Average 753 g; n = 6; females; riverine habitat	Clode et al. 1995	**1007 g**
		Average 1112 g; range 997 - 1362 g; n = 11; males; Indiana	Mumford and Whitaker 1982	
		Average 1150 g; range 875 - 1475; males; Montana	Mitchell 1961	
		Average 2070 g; range 1680 - 2310 g; n = 5; males; Alaska	Marshall 1936	
		Average 1221 g; range 1000 - 1451 g; n = 10; males; California	Grinnell et al. 1937	
		Average 955 g; n = 15; males; coastal habitat	Clode et al. 1995	
		Average 1240 g; n = 16; males; riverine habitat	Clode et al. 1995	
Food Ingestion Rate	IR_{food}	217.2 g/day, males	Bleavins and Aulerich 1981	Average of reported means:
		134.5 g/day, females	Bleavins and Aulerich 1981	
		175 g/day	Wamberg et al. 1996	
		261 g/day	Heaton et al.	**199 g ww/day; 0.198 kg ww/kgBW/day**
		238.2 g/day; males	Bucci et al. 1992	
		169.1 g/day; females	Bucci et al. 1992	
Water Ingestion Rate	IR_{water}	65 ml/day; fasting period	Wamberg et al 1996	Average of reported means:
		49 ml/day; feeding period		
		69 ml/day; non-breeding	Tauson et al. 1998	**0.0664 L/day**
		84 ml/day; late gestation		
		65 ml/day; lactating		
Soil Ingestion Rate	IR_{soil}	No measured values available; assumed estimated fraction of soil in the diet is similar to red fox (2.8%).	Beyer et al., 1994	Based on fraction of soil in the diet: $IR_{soil} = IR_{food}$ (kg ww/kg BW/day) * soil in diet * CF (dw/ww)
		Assumes 27% dry matter in food (CF = 0.27 kg food dw / kg food ww).		**0.0015 kg dw/kgBW/day**
Dietary Composition (fraction wet volume)	DF	55.6 % mammals, 5.7% birds; 18.4% fish; 8% crustaceans; 2.3 % insects, winter	Dearborn 1932	Approximate average across all studies:
		17% mammals, 61% fish, 5% amphibians, 11% crustaceans; 2% insects; spring/summer	Alexander 1977	
		6% mammals, 85% fish, 3% amphibians, 4% crustaceans	Alexander 1977	**25% terrestrial (small mammal), 75% aquatic (fish)**
		37.6% mammals, 5.6% birds, 19.9% fish, 24.9% amphibians, 9.3 % crustaceans	Schwartz 1981	
		36.2% mammals, 4.6% birds, 22.3% fish, 23% amphibians, 12.2 % crustaceans, 0.5 % insects; winter	Korschgen 1958	
Home Range Size	HR	Average 770 ha; male	Arnold 1987	Average of reported means:
		Average 646 ha; range 316 - 1626 ha; male	Arnold and Fritzell 1990	
	7519	average 7.72 ha; female	Mitchell 1961	
	6800	Average 20.16 ha; female	Mitchell 1961	**290 ha**
	2610	Average 8.1 ha; female	Marshall 1936	
	1350	Average 7519 m stream length; range 5663 - 11038 m; male	Stevens et al. 1997	**4570 m stream length**
		Average 6800 m stream length; male	Yamaguchi et al. 2004	
		Average 2610 m stream length, female	Yamaguchi et al. 2004	
		Average 1350 m stream length. Male	Dunstone and Birks 1983	
Seasonal Area Use Factor	SUF	No information available		

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River Otter
Lutra canadensis

Parameter	Symbol	Reported Values	Reference	Values Identified for BERA
Body Weight	BW	9.20 Mean (kg) adult males - wc Idaho 7.90 Mean (kg) adult females -wc Idaho	USEPA, 1993	Average of reported means: **8.55 kg**
Food Ingestion Rate	IR_{food}	1351 g/d ww (estimated food consumption with bioenergetics model; based on measured daily energy expenditure) 1225 g/d ww 1253 g/d ww 1258 g/d ww 1233 g/d ww 1264 g/d ww 1392 g/d ww 1438 g/d ww 1485 g/d ww 1522 g/d ww 1594 g/d ww 1755 g/d ww	Dekar et al, 2010	Average of reported values: **1,397 g ww/d; 0.163 kg ww/kg-bw/day**
Water Ingestion Rate	IR_{water}	No measured values available; estimated from mammalian allometric equation for water ingestion provided in USEPA (1993).	USEPA, 1993	Estimated from allometric equation: $IR\ (L/day) = [0.099 * BW\ (kg\ ww)^{0.90}] / BW\ (kg)$ **0.08 L/kg BW/day**
Soil Ingestion Rate	IR_{soil}	No measured values available; estimated fraction of sediment in the diet is assumed to be 0.01 (1%) based on professional judgement. Assumes 18% dry matter in food (CF = 0.18 kg food dw / kg food ww).	Assumption	Based on fraction of soil in the diet: $IR_{soil} = IR_{food}\ (kg\ ww/kg\ BW/day) * soil\ in\ diet * CF\ (dw/ww)$ **0.0003 kg dw/kg BW/day**
Dietary Composition (fraction wet volume)	DF	nw Montana/lakes and streams (based on percent frequency of occurrence in scats) Spring: 91.4% fish; Summer: 92.9% fish; Fall/Winter: 100% fish Invertebrates: 26% in winter - 44% in summer Frogs: 9% in winter - 19.6% in spring; birds and mammals wc Idaho mountain streams and lakes (percent frequency of occurrence in scats) Spring: 100% fish; Summer: 93% fish; Fall: 97% fish; Winter: 99% fish Invertebrates: 2% in spring - 12% in winter	USEPA, 1993	**DF_{fish} = 100%**
Home Range Size	HR	Shape of the home range varies by habitat type; near rivers it may be a long strip along the shoreline (km) wc Idaho/river drainage (no trends seen with season) 43 km yearling males 32 km yearling females 31 km adult females 28 km BB In marshes or areas with many small streams, may resemble a polygon (ha) 2,900 - 5,700 ha - Colorado (fall-spring) 400 - 1,900 ha - Missouri/marsh, streams	USEPA, 1993	Average of reported means in km: **33.5 km stream length** Midpoint of area ranges in ha: 2,700 ha
Seasonal Area Use Factor	SUF	No information available		

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Red Fox
Vulpes vulpes

Parameter	Symbol	Reported Values	Reference	Values Identified for BERA
Body Weight	BW	5.25 Mean (kg) - adult males in spring - Illinois 4.13 Mean (kg) - adult females in spring - Illinois 4.82 Mean (kg) - adult males in fall - Iowa 3.92 Mean (kg) - adult females in fall - Iowa	USEPA, 1993	Average of reported means: **4.53 kg**
Food Ingestion Rate	IR_{food}	Estimated from allometric equation for carnivorous mammals: *FIR (g ww/day) = 0.348 (BW)* $^{0.859}$ *, BW in g*	Nagy 2001	**481 g ww /day; 0.106 kg ww/kg BW/day**
Water Ingestion Rate	IR_{water}	No measured values available; estimated from mammalian allometric equation for water ingestion provided in USEPA (1993).	USEPA, 1993	Estimated from allometric equation: *IR (L/day) = [0.099 * BW (kg ww)* $^{0.90}$ *] / BW (kg)* **0.085 L/kg BW/day**
Soil Ingestion Rate	IR_{soil}	Estimated fraction of soil in the diet is 0.028 (2.8%). Assumes 27% dry matter in food (CF = 0.27 kg food dw/kg food ww	Beyer *et al.* 1994	Based on fraction of soil in the diet: $IR_{soil} = IR_{food}$ *(kg ww/kg BW/day) * soil in diet * CF (dw/ww)* **0.0008 kgdw/kg BW/day**
Dietary Composition (fraction wet volume)	DF	Nebraska, winter: (fraction wet volume) mammals 77.4%, birds 19.6%, other 3.0% Illinois, farm/woods (ranges across all seasons) mammals 37.1% - 92.2%, birds 0.2% - 43.2%, plants 4.6% - 31.1% Missouri (ranges across all seasons) mammals 18.3% - 69.4%, birds 11.6% - 45.0%, plants 2.1% - 6.9% Maryland, fall & winter: mammals 81.4%, birds 4.8%, plants 7.0%, other 6.8%	USEPA, 1993	**No measured data and cannot estimate concentrations in birds**. therefore mammal concentrations are used as representative of bird concentrations. **Dfmammal = 75%** **Df plants = 25%**
Home Range Size	HR	1611 Mean (ha) -adult both sexes - British Columbia 1967 Mean (ha) - adult male - British Columbia 1137 Mean (ha) - adult female - British Columbia hectares 699 Mean (ha) - adult female - spring - Minnesota 717 Mean (ha) - adult male - Wisconsin 96 Mean (ha) - adult female - Wisconsin	USEPA, 1993	Average of reported means: **1038 hecatres**
Area Use Factor	AUF			**0.76**
Seasonal Area Use Factor	SUF	No information available		

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APPENDIX C

Big Brown Bat

Eptesicus fuscus

Parameter	Symbol	Reported Values	Reference	Values Identified for BERA
Body Weight	BW	22 Mean (g) of reported range (14-30g) 14 Mean (g) of reported range (11-17g) Females 5% larger than males	Animal Diversity website Peterson, 1976 Collett and Zeveloff, 1988	Average of reported means: **0.018** **kg ww**
Food Ingestion Rate	IR_{food}	No measured values available; estimated from mammalian (rodent) allometri equation for food ingestion provided in USEPA (1993). Assumes 40% dry matter in food (CF = 0.40 kg food dw / kg food ww).	USEPA, 1993	Estimated from allometric equation (converted to ww): *IR(g ww/day) = [0.621*BW (g ww)$^{0.564}$] / [CF (dw/ww)* BW (kg) * 1000 (g/kg)]* **0.44** **kg ww/kg BW/day**
Water Ingestion Rate	IR_{water}	No measured values available; estimated from mammalian allometric equation for water ingestion provided in USEPA (1993).	USEPA, 1993	Estimated from allometric equation: *IR(L/day) = [0.099 * BW (kg ww)$^{0.90}$] / BW (kg)* **0.15** **L/kg BW/day**
Soil Ingestion Rate	IR_{soil}	No measured values available; as aerial insectivore assumed to be negligible.	Sample and Suter, 1994	Based on professional judgement: **0** **kg dw/kg BW/day**
Dietary Composition (fraction wet volume)	DF	Mostly flying insects, beetles, and infrequently moths	Collett and Zeveloff, 1988	**DFaerial invertebrates = 100%**
Home Range Size Area Use Factor	HR **AUF**	Estimated home range of 111 km² (43 mi²)	Beer 1955	**11,100** **hectares** **0.07**
Seasonal Area Use Factor	SUF	Activity descreases in October; hibernation is from late October-March/April. Low levels of winter activity.	MTNHP	

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APPENDIX D
WILDLIFE EXPOSURE POINT CONCENTRATIONS

OU2/OU3 Smurfit-Stone/Frenchtown Mill Site
Baseline Ecological Risk Assessment

Appendix D
Exposure Point Concentrations for Aquatic-Dependent Wildlife

Exposure Area	COPEC	Exposure Point Concentration					
		Surface Water	Surface Water	Sediment	Aquatic Invertebrates		
					Dipper	*Mallard*	*Swallow*
		ug/L	mg/L	mg/kg	mg/kg ww	mg/kg ww	mg/kg ww
O'Keefe Creek	TEQ_A	2.98E-06	2.98E-09	1.53E-06	3.95E-07	3.95E-07	3.95E-07
	Aluminum	2.54E+02	2.54E-01	1.31E+04	2.77E+02	2.77E+02	2.77E+02
	Antimony	2.10E-01	2.10E-04	ND	8.60E-02	8.60E-02	8.60E-02
	Arsenic	3.10E+00	3.10E-03	4.40E+00	6.80E-01	6.80E-01	6.80E-01
	Barium	1.45E+02	1.45E-01	2.21E+02	1.13E+02	1.13E+02	1.13E+02
	Chromium	3.40E-01	3.40E-04	1.19E+01	ND	ND	ND
	Copper	2.30E+00	2.30E-03	2.83E+01	2.89E+01	2.89E+01	2.89E+01
	Lead	2.70E-01	2.70E-04	1.32E+01	4.30E-01	4.30E-01	4.30E-01
	Manganese	8.10E+00	8.10E-03	3.22E+02	4.28E+01	4.28E+01	4.28E+01
	Mercury	ND	ND	3.70E-02	5.40E-02	5.40E-02	5.40E-02
	Methyl Mercury	ND	ND	ND	5.93E-02	5.93E-02	5.93E-02
	Nickel	3.60E-01	3.60E-04	1.13E+01	ND	ND	ND
	Selenium	ND	ND	3.50E-01	3.00E-01	3.00E-01	3.00E-01
	Thallium	3.30E-02	3.30E-05	1.87E-01	8.60E-02	8.60E-02	8.60E-02
	Vanadium	9.50E-01	9.50E-04	1.58E+01	4.90E-01	4.90E-01	4.90E-01
	Zinc	4.50E+00	4.50E-03	8.95E+01	2.33E+01	2.33E+01	2.33E+01
Lavalle Creek	TEQ_A	2.44E-06	2.44E-09	3.27E-06	3.47E-07	3.47E-07	3.47E-07
	Aluminum	3.05E+02	3.05E-01	1.17E+04	5.82E+02	5.82E+02	5.82E+02
	Antimony	1.70E-01	1.70E-04	6.20E-01	ND	ND	ND
	Arsenic	3.50E+00	3.50E-03	1.14E+01	1.36E+00	1.36E+00	1.36E+00
	Barium	2.50E+02	2.50E-01	2.51E+02	9.86E+01	9.86E+01	9.86E+01
	Chromium	5.10E-01	5.10E-04	1.34E+01	7.46E-01	7.46E-01	7.46E-01
	Copper	2.40E+00	2.40E-03	9.94E+01	3.69E+01	3.69E+01	3.69E+01
	Lead	3.40E-01	3.40E-04	2.35E+01	8.40E-01	8.40E-01	8.40E-01
	Manganese	1.28E+02	1.28E-01	3.14E+02	1.36E+02	1.36E+02	1.36E+02
	Mercury	3.00E-02	3.00E-05	1.28E-01	5.33E-02	5.33E-02	5.33E-02
	Methyl Mercury	ND	ND	7.60E-03	5.83E-02	5.83E-02	5.83E-02
	Nickel	3.90E-01	3.90E-04	1.08E+01	4.90E-01	4.90E-01	4.90E-01
	Selenium	ND	ND	1.30E+00	2.30E-01	2.30E-01	2.30E-01
	Thallium	ND	ND	1.86E-01	ND	ND	ND
	Vanadium	1.20E+00	1.20E-03	2.08E+01	8.08E-01	8.08E-01	8.08E-01
	Zinc	5.30E+00	5.30E-03	2.11E+02	2.35E+01	2.35E+01	2.35E+01
On-Site Ponds	TEQ_A	2.24E-06	2.24E-09	1.00E-04	1.56E-06	1.42E-06	4.14E-06
	Aluminum	1.55E+02	1.55E-01	1.27E+04	7.90E+02	8.08E+02	4.47E+02
	Antimony	1.81E+00	1.81E-03	1.85E+00	1.82E-01	1.87E-01	7.79E-02
	Arsenic	1.42E+01	1.42E-02	1.01E+01	1.02E+00	1.04E+00	6.28E-01
	Barium	1.15E+02	1.15E-01	7.05E+02	4.65E+01	4.74E+01	2.93E+01
	Chromium	1.07E+00	1.07E-03	2.14E+01	1.51E+00	1.54E+00	9.53E-01
	Copper	9.27E+00	9.27E-03	6.41E+01	7.47E+00	7.64E+00	4.17E+00
	Lead	7.67E-01	7.67E-04	1.79E+01	1.35E+00	1.39E+00	7.20E-01
	Manganese	1.96E+03	1.96E+00	1.51E+03	3.81E+02	3.88E+02	2.44E+02
	Mercury	ND	ND	1.61E+00	3.78E-02	3.60E-02	7.27E-02
	Methyl Mercury	ND	ND	1.69E-02	2.29E-02	1.06E-02	2.56E-01
	Nickel	8.53E+00	8.53E-03	1.30E+01	7.95E-01	8.02E-01	6.60E-01
	Selenium	1.02E+00	1.02E-03	9.18E-01	2.25E-01	2.30E-01	1.31E-01
	Thallium	ND	ND	2.10E-01	ND	ND	NC
	Vanadium	5.00E+00	5.00E-03	3.68E+01	2.51E+00	2.57E+00	1.39E+00
	Zinc	1.42E+01	1.42E-02	2.52E+02	2.67E+01	2.64E+01	3.31E+01

COPEC = contaminant of potential ecological concern; TEQ_A = avian toxicity equivalence; ND = not detected.

Appendix D
Exposure Point Concentrations for Aquatic-Dependent Wildlife

Exposure Area	COPEC	Exposure Point Concentration				
		Surface Water	Surface Water	Sediment	Dace	Rainbow Trout
		ug/L	mg/L	mg/kg	mg/kg ww	mg/kg ww
Clark Fork River (within BERA Study Area)	TEQ_A	1.85E-06	1.85E-09	8.11E-07	1.20E-06	1.50E-06
	TEQ_M	1.36E-06	1.36E-09	6.72E-07	4.35E-07	
	Aluminum	2.47E+02	2.47E-01	7.51E+03	1.44E+01	
	Antimony	2.52E-01	2.52E-04	4.68E-01	ND	
	Arsenic	8.75E+00	8.75E-03	1.18E+01	1.18E-01	
	Barium	1.22E+02	1.22E-01	1.83E+02	1.10E+01	
	Chromium	2.88E-01	2.88E-04	8.90E+00	1.01E-01	
	Copper	1.39E+01	1.39E-02	1.26E+02	2.03E+00	
	Lead	7.86E-01	7.86E-04	2.58E+01	3.87E-02	
	Manganese	1.64E+02	1.64E-01	5.02E+02	1.11E+01	
	Mercury	ND	ND	1.94E-01	5.41E-02	
	Methyl Mercury	ND	ND	8.30E-03	4.34E-02	
	Nickel	4.98E-01	4.98E-04	7.74E+00	ND	
	Selenium	1.40E-01	1.40E-04	5.42E-01	4.24E-01	
	Thallium	ND	ND	1.50E-01	ND	
	Vanadium	8.71E-01	8.71E-04	1.45E+01	ND	
	Zinc	1.29E+01	1.29E-02	2.44E+02	4.50E+01	

COPEC = contaminant of potential ecological concern; TEQ_A = avian toxicity equivalence; TEQ_M = mammalian toxicity equivalence; ND = not detected.

Appendix D

Exposure Point Concentrations for Aquatic-Dependent Wildlife - Mink

Location	Analyte	Exposure Point Concentration				
		Surface Water	Surface Water	Sediment/Soil	Fish	Small Mammals
		ug/L	mg/L	mg/kg	mg/kg ww	mg/kg ww
Clark Fork River (within BERA Study Area)	TEQ_M	1.36E-06	1.36E-09	8.76E-06	4.35E-07	1.76E-07
	Aluminum	2.47E+02	2.47E-01	9.10E+03	1.44E+01	1.65E+01
	Antimony	2.52E-01	2.52E-04	4.69E-01	ND	1.90E-02
	Arsenic	8.75E+00	8.75E-03	1.04E+01	1.18E-01	3.70E-02
	Barium	1.22E+02	1.22E-01	3.93E+02	1.10E+01	1.23E+01
	Chromium	2.88E-01	2.88E-04	1.23E+01	1.01E-01	1.09E-01
	Copper	1.39E+01	1.39E-02	1.13E+02	2.03E+00	2.81E+00
	Lead	7.86E-01	7.86E-04	2.42E+01	3.87E-02	2.50E-01
	Manganese	1.64E+02	1.64E-01	5.38E+02	1.11E+01	2.65E+00
	Mercury	ND	ND	4.54E-01	5.41E-02	2.30E-02
	Methyl Mercury	ND	ND	8.30E-03	4.34E-02	ND
	Nickel	4.98E-01	4.98E-04	8.42E+00	ND	2.70E-01
	Selenium	1.40E-01	1.40E-04	4.90E-01	4.24E-01	8.90E-02
	Thallium	ND	ND	1.55E-01	ND	ND
	Vanadium	8.71E-01	8.71E-04	1.68E+01	ND	ND
	Zinc	1.29E+01	1.29E-02	2.30E+02	4.50E+01	4.45E+01

COPEC = contaminant of potential ecological concern; TEQ_M = mammalian toxicity equivalence; ND = not detected.

Appendix D

Exposure Point Concentrations for Large Home Range Terrestrial Wildlife

Exposure Area	COPEC	Exposure Point Concentration					
		Water ug/L	Water mg/L	Soil mg/kg	Soil Invertebrate mg/kg ww	Small Mammals mg/kg ww	Plants mg/kg ww
OU2/3 Site	TEQ_M	1.48E-06	1.48E-09	2.95E-05	2.42E-05	9.21E-07	4.43E-06
	Aluminum	1.61E+02	1.61E-01	1.15E+04	1.85E+03	4.32E+01	1.73E+03
	Antimony	1.25E+00	1.25E-03	9.70E-01	1.55E-01	3.65E-02	5.75E-03
	Arsenic	1.05E+01	1.05E-02	6.27E+00	1.41E-01	6.18E-02	3.53E-02
	Barium	1.27E+02	1.27E-01	5.08E+02	7.40E+00	8.40E+00	1.19E+01
	Chromium	5.68E-01	5.68E-04	1.94E+01	9.50E-01	1.29E-01	1.19E-01
	Copper	9.69E+00	9.69E-03	4.05E+01	3.33E+00	2.69E+00	1.26E+00
	Lead	4.68E-01	4.68E-04	1.67E+01	1.25E+00	1.81E-01	1.93E-01
	Manganese	8.93E+02	8.93E-01	9.43E+02	7.61E+00	2.44E+00	1.12E+01
	Mercury	3.00E-02	3.00E-05	1.16E+00	1.82E-01	1.48E-02	6.23E-02
	Nickel	3.74E+00	3.74E-03	1.28E+01	2.05E+00	2.41E-01	1.09E-01
	Selenium	5.29E-01	5.29E-04	7.42E-01	1.19E-01	1.56E-01	5.48E-02
	Thallium	3.30E-02	3.30E-05	1.70E-01	2.72E-02	5.00E-02	2.55E-02
	Vanadium	3.21E+00	3.21E-03	2.08E+01	1.40E-01	4.90E-02	1.51E-02
	Zinc	1.34E+01	1.34E-02	1.77E+02	7.48E+01	4.51E+01	1.27E+01
Undisturbed Floodplain Area	TEQ_M	1.36E-06	1.36E-09	3.52E-07	1.29E-07	1.42E-07	5.28E-08
	Aluminum	2.47E+02	2.47E-01	8.10E+03	1.30E+03	3.92E+01	1.22E+03
	Antimony	2.52E-01	2.52E-04	3.70E-01	5.92E-02	2.90E-02	2.33E-03
	Arsenic	8.75E+00	8.75E-03	1.02E+01	1.99E-01	ND	5.74E-02
	Barium	1.22E+02	1.22E-01	1.71E+02	2.49E+00	4.40E+00	4.00E+00
	Chromium	2.88E-01	2.88E-04	9.60E+00	4.70E-01	1.20E-01	5.90E-02
	Copper	1.39E+01	1.39E-02	7.90E+01	6.51E+00	2.10E+00	1.64E+00
	Lead	7.86E-01	7.86E-04	1.81E+01	1.33E+00	1.10E-01	2.02E-01
	Manganese	1.64E+02	1.64E-01	4.44E+02	4.55E+00	2.20E+00	5.26E+00
	Mercury	ND	ND	9.70E-02	7.88E-02	1.00E-01	1.64E-02
	Nickel	4.98E-01	4.98E-04	8.10E+00	1.30E+00	2.20E-01	7.77E-02
	Selenium	1.40E-01	1.40E-04	ND	ND	1.70E-01	ND
	Thallium	ND	ND	1.90E-01	3.04E-02	ND	2.85E-02
	Vanadium	8.71E-01	8.71E-04	1.46E+01	9.81E-02	ND	1.06E-02
	Zinc	1.29E+01	1.29E-02	2.01E+02	7.79E+01	4.55E+01	1.37E+01

COPEC = contaminant of potential ecological concern; TEQ_M = mammalian toxicity equivalence; ND = not detected.

Appendix D
Exposure Point Concentrations for Medium Home Range Terrestrial Wildlife

Exposure Area	COPEC		Exposure Point Concentration				
		Water ug/L	Water mg/L	Soil mg/kg	Soil Invertebrate mg/kg ww	Small Mammals mg/kg ww	Plants mg/kg ww
OU2	TEQ_A	2.98E-06	2.98E-09	8.35E-06	5.44E-06	4.02E-06	1.25E-06
	TEQ_M	2.14E-06	2.14E-09	9.71E-06	6.50E-06	NC	1.46E-06
	Aluminum	3.05E+02	3.05E-01	1.36E+04	2.17E+03	1.22E+01	2.04E+03
	Antimony	1.81E+00	1.81E-03	2.82E-01	4.51E-02	2.30E-02	1.80E-03
	Arsenic	1.42E+01	1.42E-02	4.64E+00	1.14E-01	ND	2.61E-02
	Barium	2.50E+02	2.50E-01	2.85E+02	4.15E+00	4.70E+00	6.67E+00
	Chromium	1.07E+00	1.07E-03	1.65E+01	8.07E-01	1.00E-01	1.01E-01
	Copper	9.27E+00	9.27E-03	4.35E+01	3.59E+00	2.00E+00	1.29E+00
	Lead	7.67E-01	7.67E-04	1.60E+01	1.21E+00	1.30E-01	1.89E-01
	Manganese	1.96E+03	1.96E+00	5.73E+02	5.42E+00	1.60E+00	6.79E+00
	Mercury	3.00E-02	3.00E-05	5.98E-02	6.70E-02	1.70E-02	6.41E-01
	Nickel	8.53E+00	8.53E-03	1.54E+01	2.46E+00	1.60E-01	1.25E-01
	Selenium	1.02E+00	1.02E-03	1.53E+00	2.03E-01	2.20E-01	1.22E-01
	Thallium	3.30E-02	3.30E-05	1.40E-01	2.24E-02	ND	2.10E-02
	Vanadium	5.00E+00	5.00E-03	1.42E+01	9.52E-02	ND	1.03E-02
	Zinc	1.42E+01	1.42E-02	1.54E+02	7.14E+01	4.41E+01	1.18E+01
OU3 Uplands	TEQ_A	2.98E-06	2.98E-09	1.14E-04	1.19E-04	4.70E-07	1.71E-05
	TEQ_M	2.14E-06	2.14E-09	5.74E-05	5.32E-05	NC	8.61E-06
	Aluminum	3.05E+02	3.05E-01	1.10E+04	1.75E+03	7.59E+01	1.64E+03
	Antimony	1.81E+00	1.81E-03	1.08E+00	1.73E-01	6.20E-02	6.35E-03
	Arsenic	1.42E+01	1.42E-02	7.81E+00	1.65E-01	9.80E-02	4.39E-02
	Barium	2.50E+02	2.50E-01	5.36E+02	7.80E+00	9.10E+00	1.25E+01
	Chromium	1.07E+00	1.07E-03	2.19E+01	1.07E+00	1.60E-01	1.34E-01
	Copper	9.27E+00	9.27E-03	3.66E+01	3.01E+00	3.10E+00	1.21E+00
	Lead	7.67E-01	7.67E-04	1.84E+01	1.35E+00	2.20E-01	2.04E-01
	Manganese	1.96E+03	1.96E+00	1.01E+03	7.95E+00	2.70E+00	1.19E+01
	Mercury	3.00E-02	3.00E-05	1.73E+00	2.08E-01	7.80E-03	1.13E-01
	Nickel	8.53E+00	8.53E-03	1.37E+01	2.20E+00	2.50E-01	1.15E-01
	Selenium	1.02E+00	1.02E-03	6.18E-01	1.04E-01	1.70E-01	4.48E-02
	Thallium	3.30E-02	3.30E-05	2.02E-01	3.23E-02	5.00E-02	3.03E-02
	Vanadium	5.00E+00	5.00E-03	2.58E+01	1.73E-01	4.90E-02	1.88E-02
	Zinc	1.42E+01	1.42E-02	2.23E+02	8.06E+01	4.84E+01	1.45E+01
OU3 Floodplain	TEQ_A	2.98E-06	2.98E-09	4.23E-05	3.71E-05	1.76E-07	6.35E-06
	TEQ_M	2.14E-06	2.14E-09	3.30E-05	2.76E-05	NC	4.95E-06
	Aluminum	3.05E+02	3.05E-01	1.39E+04	2.22E+03	1.65E+01	2.08E+03
	Antimony	1.81E+00	1.81E-03	4.70E-01	7.52E-02	1.90E-02	2.91E-03
	Arsenic	1.42E+01	1.42E-02	6.42E+00	1.44E-01	3.70E-02	3.61E-02
	Barium	2.50E+02	2.50E-01	1.03E+03	1.49E+01	1.23E+01	2.40E+01
	Chromium	1.07E+00	1.07E-03	2.27E+01	1.11E+00	1.09E-01	1.39E-01
	Copper	9.27E+00	9.27E-03	7.25E+01	5.98E+00	2.81E+00	1.58E+00
	Lead	7.67E-01	7.67E-04	1.93E+01	1.40E+00	2.50E-01	2.09E-01
	Manganese	1.96E+03	1.96E+00	6.45E+02	5.87E+00	2.65E+00	7.64E+00
	Mercury	3.00E-02	3.00E-05	1.23E+00	1.86E-01	2.30E-02	1.35E-01
	Nickel	8.53E+00	8.53E-03	1.05E+01	1.68E+00	2.70E-01	9.42E-02
	Selenium	1.02E+00	1.02E-03	3.32E-01	6.62E-02	8.90E-02	2.26E-02
	Thallium	3.30E-02	3.30E-05	1.68E-01	2.69E-02	ND	2.52E-02
	Vanadium	5.00E+00	5.00E-03	2.38E+01	1.60E-01	ND	1.73E-02
	Zinc	1.42E+01	1.42E-02	1.90E+02	7.65E+01	4.45E+01	1.32E+01
Undisturbed Floodplain Area	TEQ_A	2.98E-06	2.98E-09	4.21E-07	1.59E-07	1.42E-07	6.32E-08
	TEQ_M	2.14E-06	2.14E-09	3.52E-07	1.29E-07	NC	5.28E-08
	Aluminum	3.05E+02	3.05E-01	8.10E+03	1.30E+03	3.92E+01	1.22E+03
	Antimony	1.81E+00	1.81E-03	3.70E-01	5.92E-02	2.90E-02	2.33E-03
	Arsenic	1.42E+01	1.42E-02	1.02E+01	1.99E-01	ND	5.74E-02
	Barium	2.50E+02	2.50E-01	1.71E+02	2.49E+00	4.40E+00	4.00E+00
	Chromium	1.07E+00	1.07E-03	9.60E+00	4.70E-01	1.20E-01	5.90E-02
	Copper	9.27E+00	9.27E-03	7.90E+01	6.51E+00	2.10E+00	1.64E+00
	Lead	7.67E-01	7.67E-04	1.81E+01	1.33E+00	1.10E-01	2.02E-01
	Manganese	1.96E+03	1.96E+00	4.44E+02	4.55E+00	2.20E+00	5.26E+00
	Mercury	3.00E-02	3.00E-05	9.70E-02	7.88E-02	1.00E-01	4.99E-01
	Nickel	8.53E+00	8.53E-03	8.10E+00	1.30E+00	2.20E-01	7.77E-02
	Selenium	1.02E+00	1.02E-03	ND	ND	1.70E-01	ND
	Thallium	3.30E-02	3.30E-05	1.90E-01	3.04E-02	ND	2.85E-02
	Vanadium	5.00E+00	5.00E-03	1.46E+01	9.81E-02	ND	1.06E-02
	Zinc	1.42E+01	1.42E-02	2.01E+02	7.79E+01	4.55E+01	1.37E+01

COPEC = contaminant of potential ecological concern; TEQ_A = avian toxicity equivalence; TEQ_M = mammalian toxicity equivalence; NC = not calculated; ND = not detected.

ATTACHMENT D-1

ProUCL Output
Exposure Point Concentrations
Smurfit-Stone/Frenchtown Mill OU2/OU3 BERA
Electronic File
[Appendix D_Attachment D-1.xlsx]

APPENDIX E
HQ CALCULATIONS FOR AQUATIC RECEPTORS

OU2/OU3 Smurfit-Stone/Frenchtown Mill Site
Baseline Ecological Risk Assessment

APPENDIX E1
HQ CALCULATIONS FOR AQUATIC RECEPTORS DIRECT CONTACT WITH SURFACE WATER

OU2/OU3 Smurfit-Stone/Frenchtown Mill Site
Baseline Ecological Risk Assessment

Appendix E1
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Surface Water in the Clark Fork River

Barium

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (ug/L)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
CFR - Site Adjacent	50-CFR	SW50-CFR	117	detect	110	4	**1.1**	**29.3**
	CFRHP13A	CFRHP13A_20180523_NM	120	detect	110	4	**1.1**	**30.0**
	CFR2	CFR2_20180523_NM	67.4	detect	110	4	<1.0	**16.9**
	SW3-CFR	SW3-CFR	113	detect	110	4	<1.0	**28.3**
	51-CFR	SW51-CFR	119	detect	110	4	**1.1**	**29.8**
	52-CFR	SW52-CFR	138	detect	110	4	**1.3**	**34.5**
CFR - Downstream of Site	53-CFR	SW53-CFR	104	detect	110	4	<1.0	**26.0**
	54-CFR	SW54-CFR	112	detect	110	4	<1.0	**28.0**
	SW2-CFR	SW2-CFR	90.2	detect	110	4	<1.0	**22.6**
	55-CFR	SW55-CFR	114	detect	110	4	<1.0	**28.5**
	56-CFR	SW56-CFR	111	detect	110	4	<1.0	**27.8**
	SW1-CFR	SW1-CFR	92.1	detect	110	4	<1.0	**23.0**
	57-CFR	SW57-CFR	123	detect	110	4	**1.1**	**30.8**
	58-CFR	SW58-CFR	127	detect	110	4	**1.2**	**31.8**
	59-CFR	SW59-CFR	115	detect	110	4	<1.0	**28.8**
	60-CFR	SW60-CFR	115	detect	110	4	<1.0	**28.8**
	61-CFR	SW61-CFR	125	detect	110	4	**1.1**	**31.3**
	62-CFR	SW62-CFR	130	detect	110	4	**1.2**	**32.5**
	63-CFR	SW63-CFR	118	detect	110	4	**1.1**	**29.5**

#N/A = not analyzed

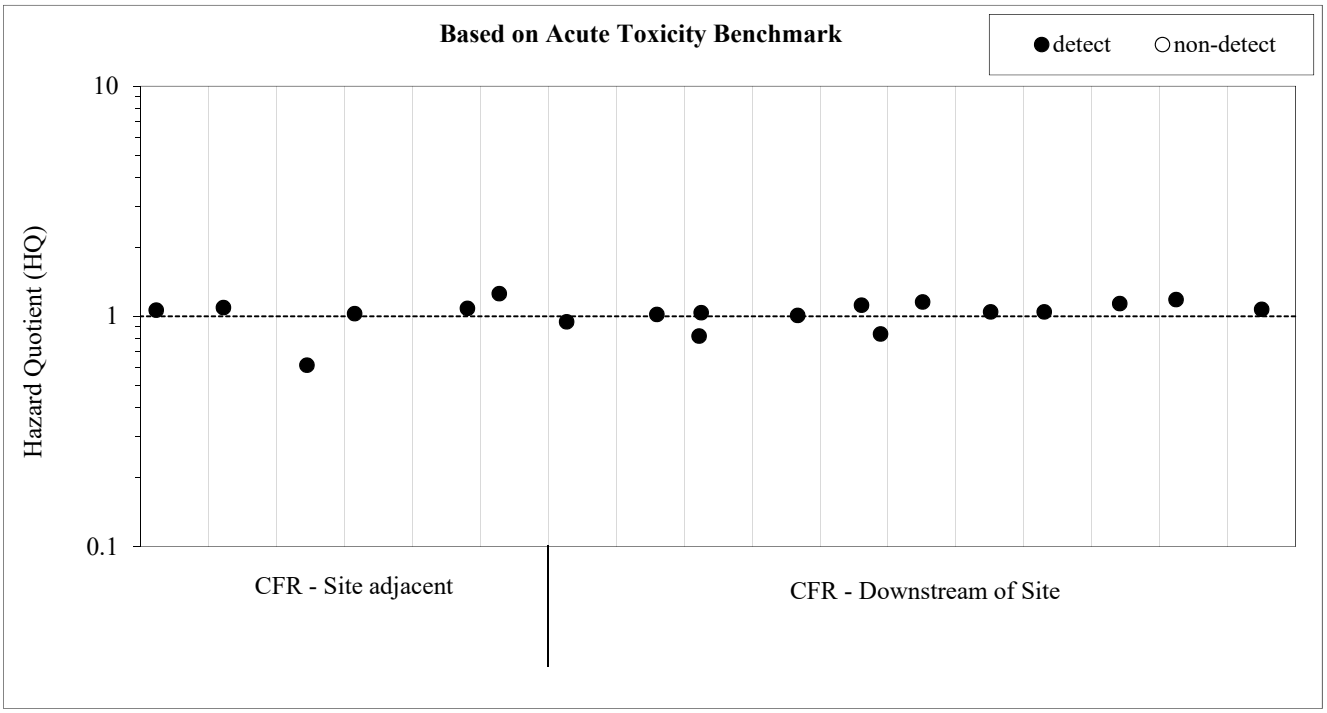
(a) Non-detects are evaluated at 1/2 the reported value.

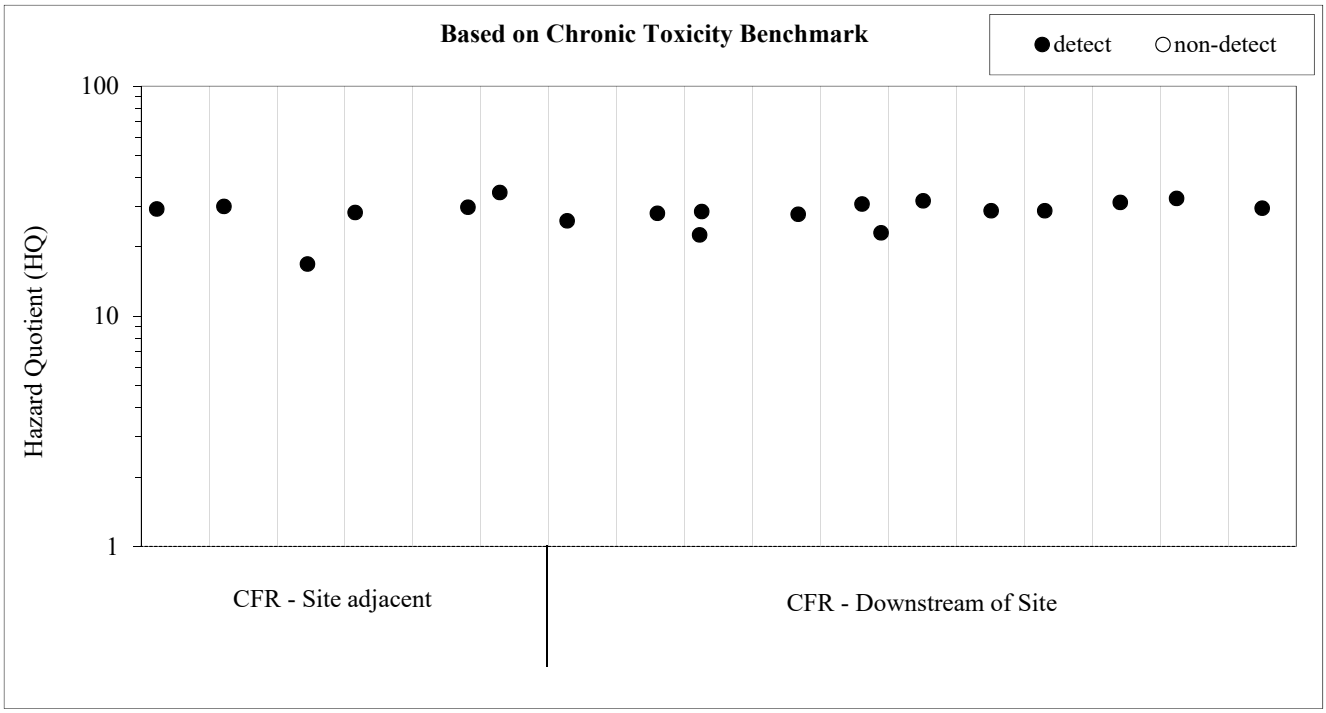
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E1
Hazard Quotients for Aquatic Receptors from
Direct Contact with Surface Water in the Clark Fork River

Barium





Appendix E1
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Surface Water in the Clark Fork River

Copper

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (ug/L)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
CFR - Site Adjacent	50-CFR	SW50-CFR	1.7	detect	13.8	9.2	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	19.2	detect	13.8	9.2	**1.4**	**2.1**
	CFR2	CFR2_20180523_NM	6.1	detect	13.8	9.2	<1.0	<1.0
	SW3-CFR	SW3-CFR	1	detect	13.8	9.2	<1.0	<1.0
	51-CFR	SW51-CFR	1.5	detect	13.8	9.2	<1.0	<1.0
	52-CFR	SW52-CFR	3.4	detect	13.8	9.2	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	1.6	detect	13.8	9.2	<1.0	<1.0
	54-CFR	SW54-CFR	2	detect	13.8	9.2	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.87	detect	13.8	9.2	<1.0	<1.0
	55-CFR	SW55-CFR	1.6	detect	13.8	9.2	<1.0	<1.0
	56-CFR	SW56-CFR	1.5	detect	13.8	9.2	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.85	detect	13.8	9.2	<1.0	<1.0
	57-CFR	SW57-CFR	1.4	detect	13.8	9.2	<1.0	<1.0
	58-CFR	SW58-CFR	1.9	detect	13.8	9.2	<1.0	<1.0
	59-CFR	SW59-CFR	1.6	detect	13.8	9.2	<1.0	<1.0
	60-CFR	SW60-CFR	1.8	detect	13.8	9.2	<1.0	<1.0
	61-CFR	SW61-CFR	1.8	detect	13.8	9.2	<1.0	<1.0
	62-CFR	SW62-CFR	1.5	detect	13.8	9.2	<1.0	<1.0
	63-CFR	SW63-CFR	1.9	detect	13.8	9.2	<1.0	<1.0

#N/A = not analyzed

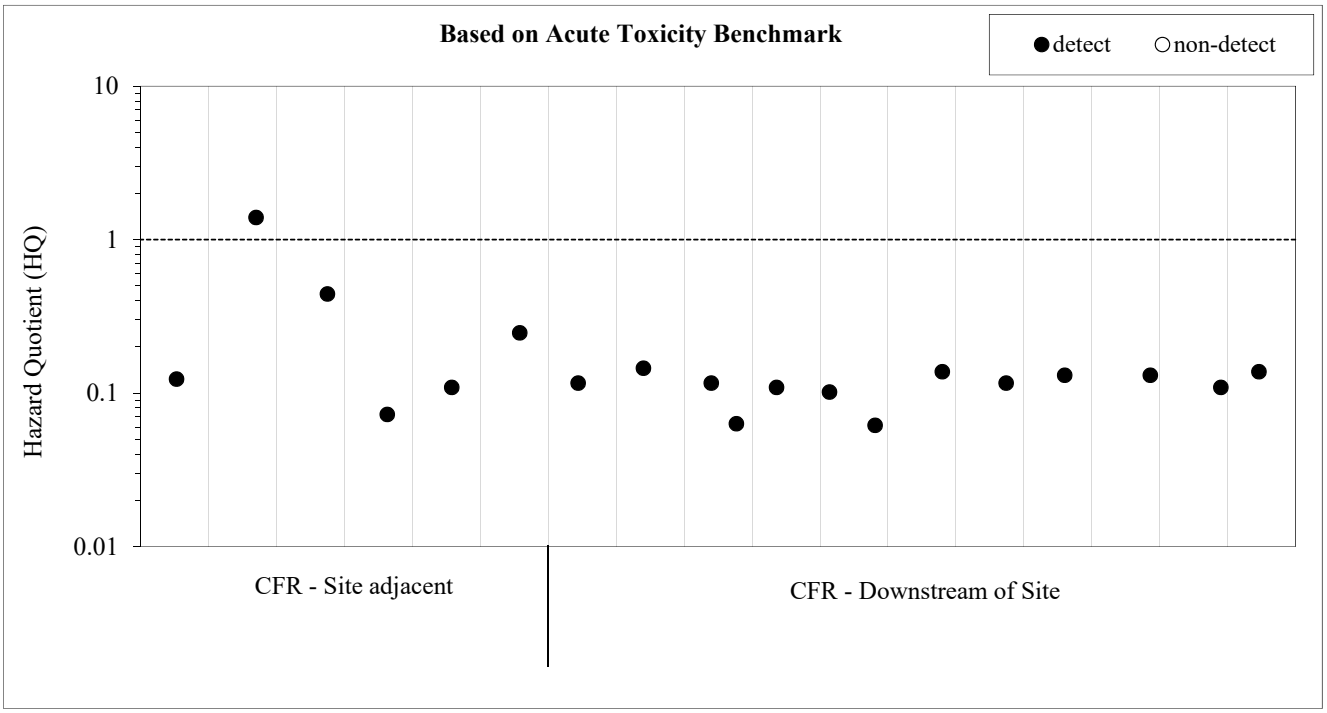
(a) Non-detects are evaluated at 1/2 the reported value.

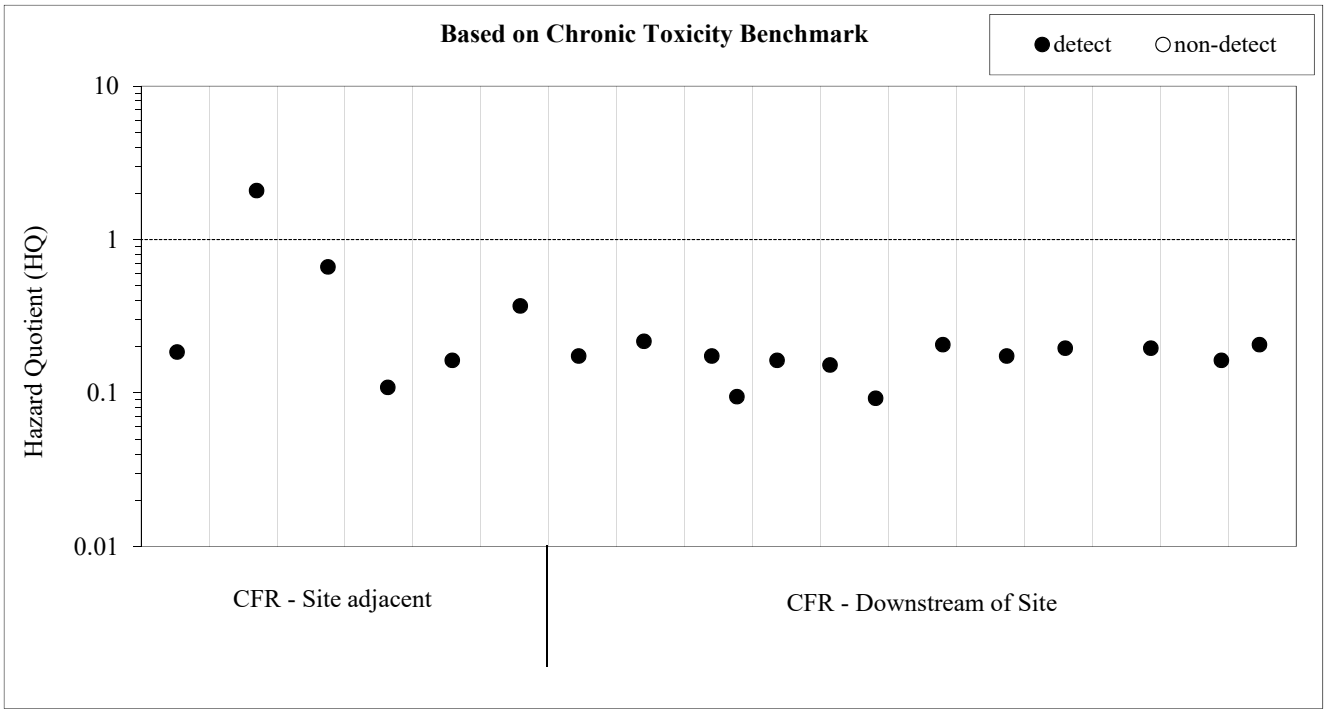
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E1
Hazard Quotients for Aquatic Receptors from
Direct Contact with Surface Water in the Clark Fork River

Copper





Appendix E1
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Surface Water in the Clark Fork River

Manganese

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (ug/L)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
CFR - Site Adjacent	50-CFR	SW50-CFR	9.2	detect	2300	120	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	247	detect	2300	120	<1.0	**2.1**
	CFR2	CFR2_20180523_NM	118	detect	2300	120	<1.0	<1.0
	SW3-CFR	SW3-CFR	12.3	detect	2300	120	<1.0	<1.0
	51-CFR	SW51-CFR	21.2	detect	2300	120	<1.0	<1.0
	52-CFR	SW52-CFR	1370	detect	2300	120	<1.0	**11.4**
CFR - Downstream of Site	53-CFR	SW53-CFR	34.8	detect	2300	120	<1.0	<1.0
	54-CFR	SW54-CFR	156	detect	2300	120	<1.0	**1.3**
	SW2-CFR	SW2-CFR	8.5	detect	2300	120	<1.0	<1.0
	55-CFR	SW55-CFR	12.3	detect	2300	120	<1.0	<1.0
	56-CFR	SW56-CFR	29.8	detect	2300	120	<1.0	<1.0
	SW1-CFR	SW1-CFR	8.8	detect	2300	120	<1.0	<1.0
	57-CFR	SW57-CFR	486	detect	2300	120	<1.0	**4.1**
	58-CFR	SW58-CFR	46.1	detect	2300	120	<1.0	<1.0
	59-CFR	SW59-CFR	17.3	detect	2300	120	<1.0	<1.0
	60-CFR	SW60-CFR	4.3	detect	2300	120	<1.0	<1.0
	61-CFR	SW61-CFR	61.6	detect	2300	120	<1.0	<1.0
	62-CFR	SW62-CFR	82.4	detect	2300	120	<1.0	<1.0
	63-CFR	SW63-CFR	4.8	detect	2300	120	<1.0	<1.0

#N/A = not analyzed

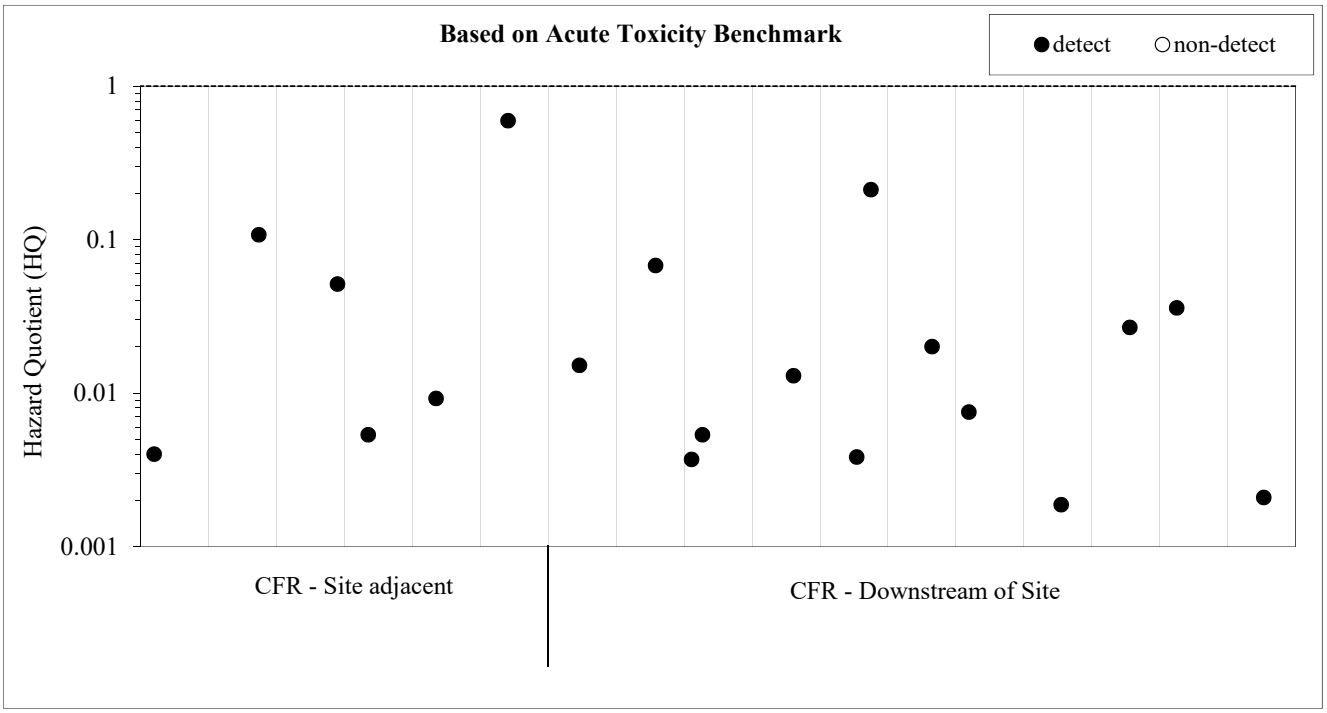
(a) Non-detects are evaluated at 1/2 the reported value.

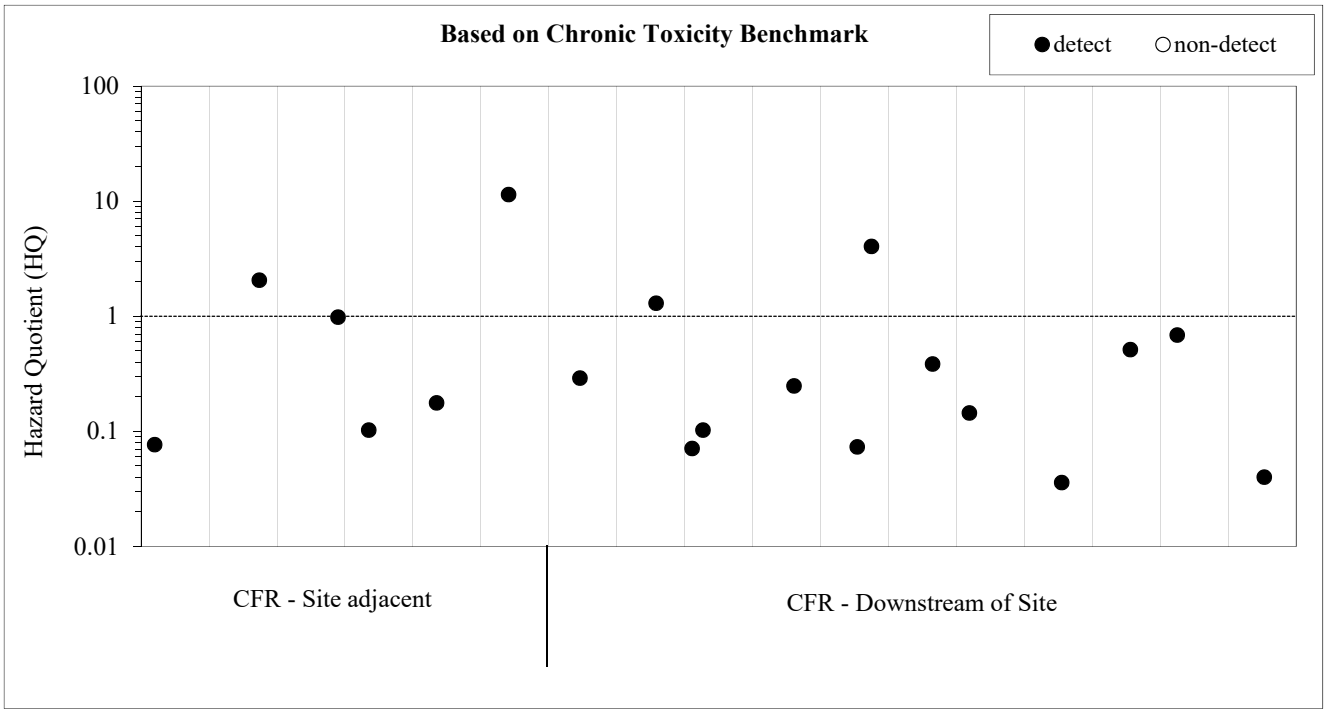
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E1
Hazard Quotients for Aquatic Receptors from
Direct Contact with Surface Water in the Clark Fork River

Manganese





Appendix E1
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Surface Water in Creeks

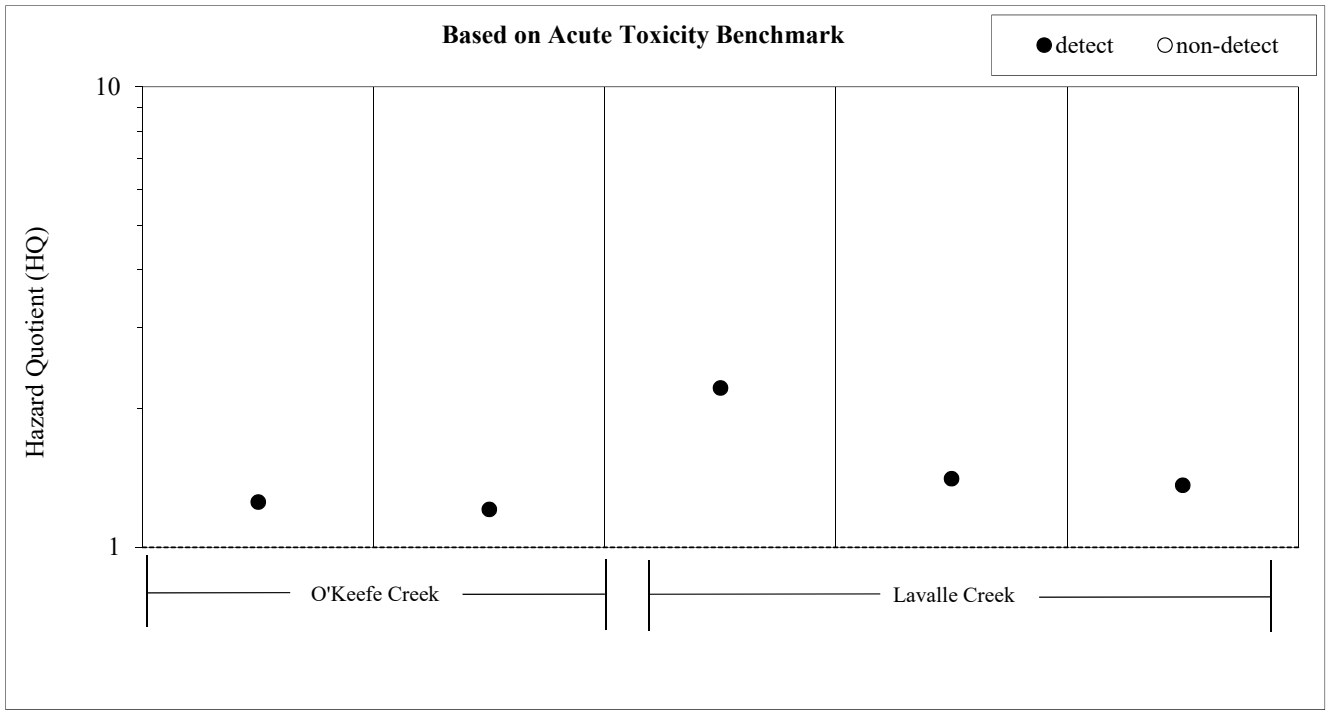
Barium

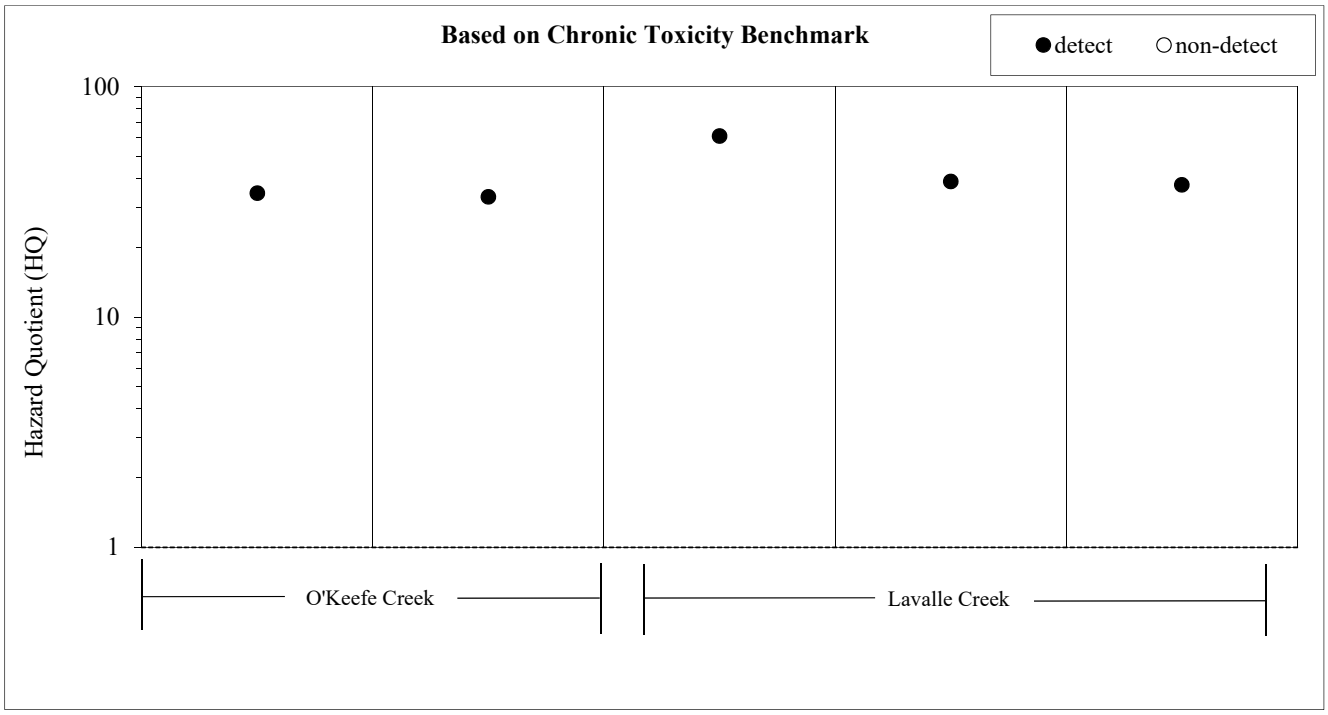
Water Body	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (ug/L)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	138	detect	110	4	**1.3**	**34.5**
	43-OK	SW43-OK	133	detect	110	4	**1.2**	**33.3**
Lavalle Creek	SW9-LV	SW9-LV	244	detect	110	4	**2.2**	**61.0**
	37-LV	SW37-LV	155	detect	110	4	**1.4**	**38.8**
	39-LV	SW39-LV	150	detect	110	4	**1.4**	**37.5**

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.
(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E1
Hazard Quotients for Aquatic Receptors from
Direct Contact with Surface Water in Creeks

Barium





Appendix E1
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Surface Water in Creeks

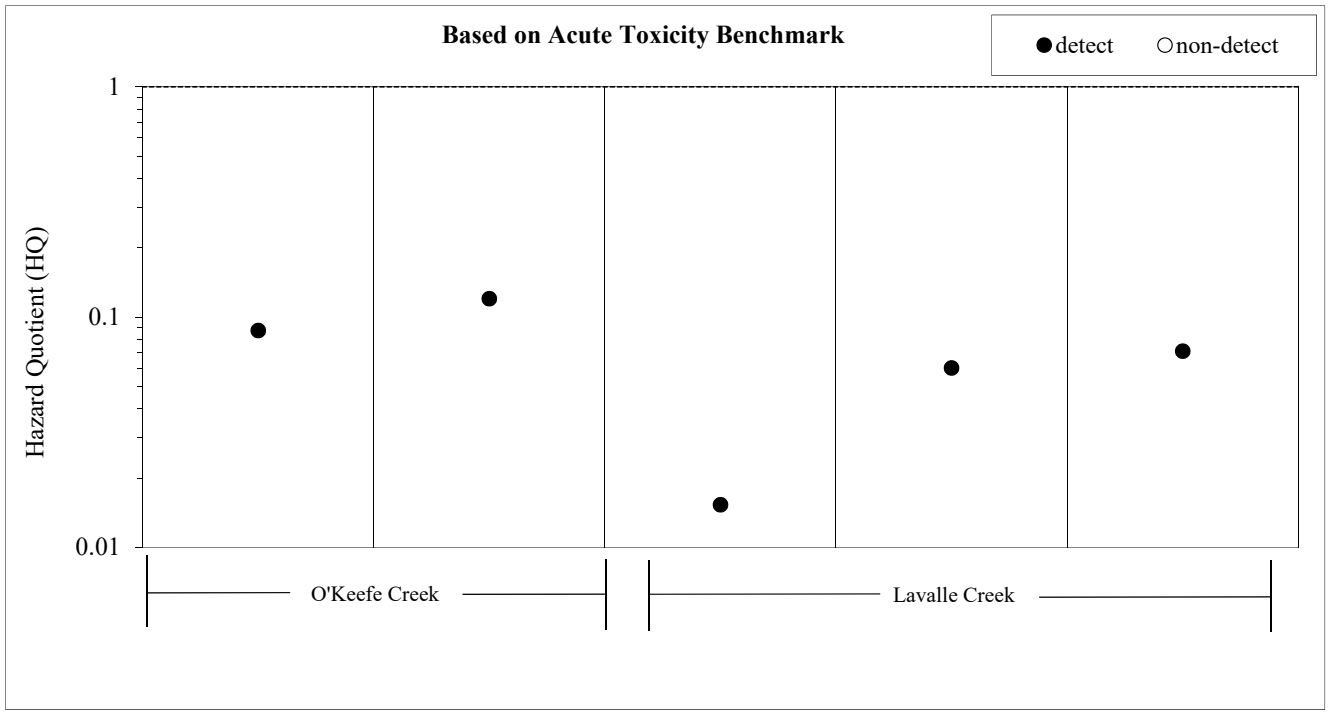
Copper

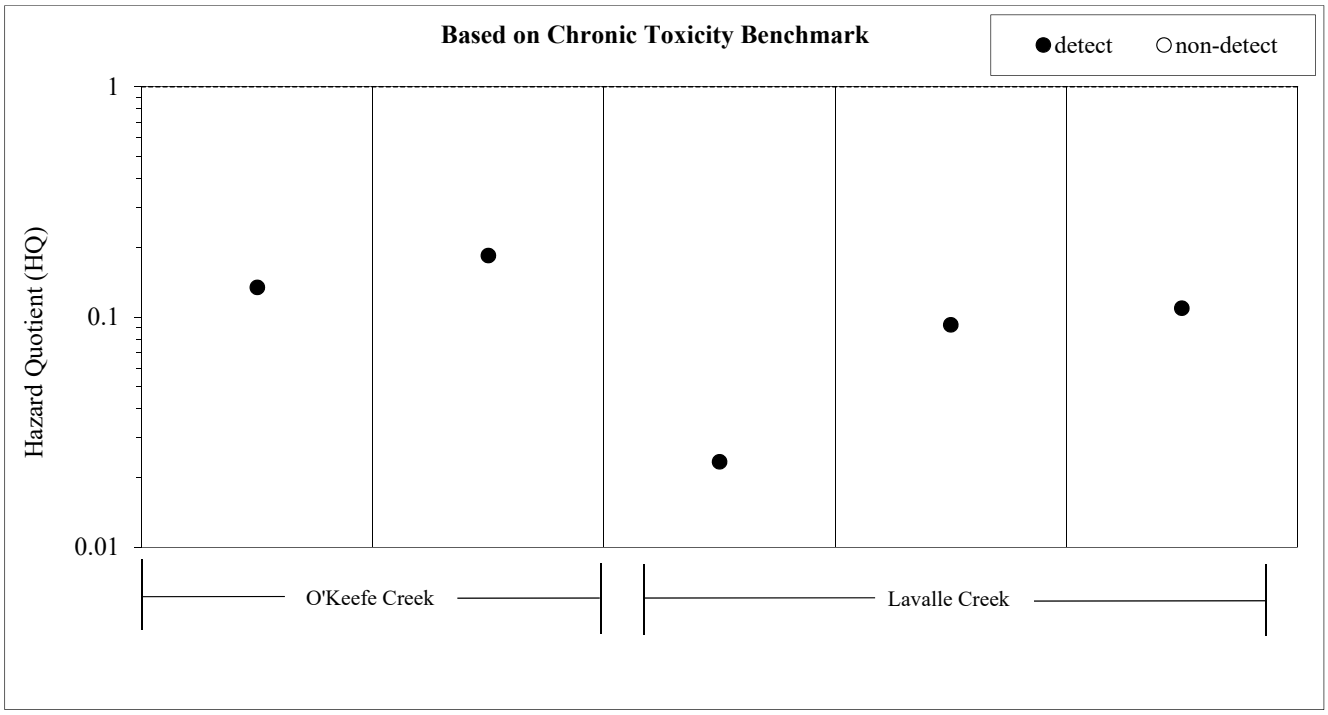
Water Body	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (ug/L)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	1.6	detect	18.3	11.9	<1.0	<1.0
	43-OK	SW43-OK	2.2	detect	18.3	11.9	<1.0	<1.0
Lavalle Creek	SW9-LV	SW9-LV	0.28	detect	18.3	11.9	<1.0	<1.0
	37-LV	SW37-LV	1.1	detect	18.3	11.9	<1.0	<1.0
	39-LV	SW39-LV	1.3	detect	18.3	11.9	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.
(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E1
Hazard Quotients for Aquatic Receptors from
Direct Contact with Surface Water in Creeks

Copper





Appendix E1
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Surface Water in Creeks

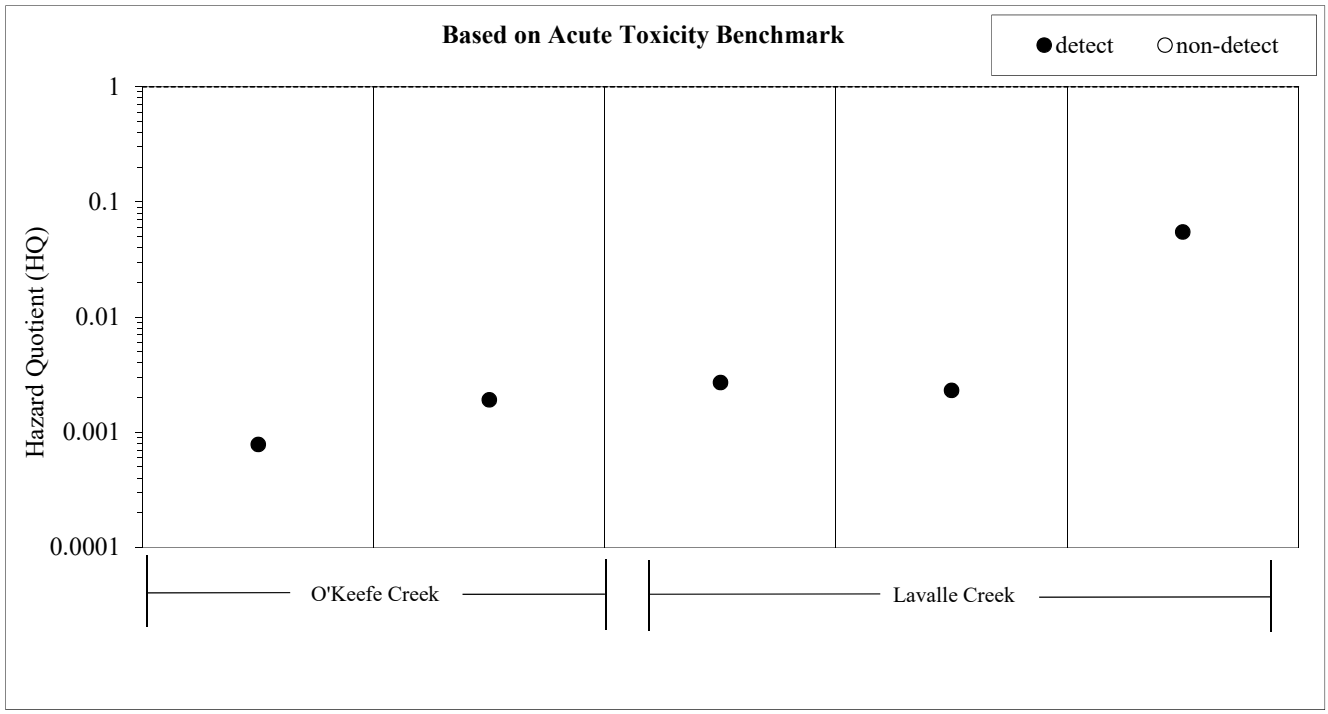
Manganese

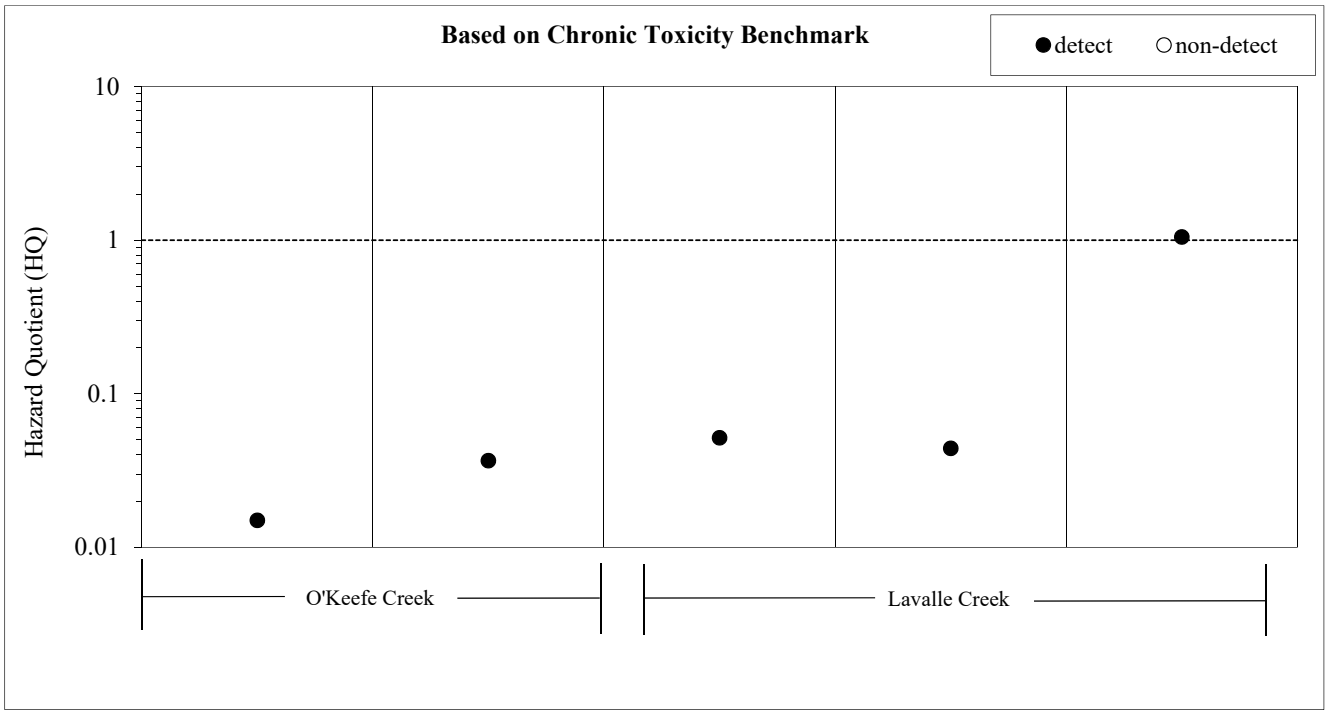
Water Body	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (ug/L)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	1.8	detect	2300	120	<1.0	<1.0
	43-OK	SW43-OK	4.4	detect	2300	120	<1.0	<1.0
Lavalle Creek	SW9-LV	SW9-LV	6.2	detect	2300	120	<1.0	<1.0
	37-LV	SW37-LV	5.3	detect	2300	120	<1.0	<1.0
	39-LV	SW39-LV	126	detect	2300	120	<1.0	**1.1**

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.
(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E1
Hazard Quotients for Aquatic Receptors from
Direct Contact with Surface Water in Creeks

Manganese





Appendix E1
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Surface Water in Ponds

Barium

Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (ug/L)		Hazard Quotient (c) (HQ)	
				Acute	Chronic	Acute	Chronic
74-CL Pond	SW74-CL Pond	70.8	detect	110	4	<1.0	**17.7**
HP2POND	HP2POND_20180523_NM	100	detect	110	4	<1.0	**25.0**
69-HP1a	SW69-HP1a	32.3	detect	110	4	<1.0	**8.1**
73-P5	SW73-P5	35.6	detect	110	4	<1.0	**8.9**
71-HP7	SW71-HP7	43.9	detect	110	4	<1.0	**11.0**
72-HP2	SW72-HP2	32	detect	110	4	<1.0	**8.0**
75-HP10	SW75-HP10	15.4	detect	110	4	<1.0	**3.9**
67-HP12	SW67-HP12	22.8	detect	110	4	<1.0	**5.7**
68-IBJ	SW68-IBJ	130	detect	110	4	**1.2**	**32.5**
66-HP13	SW66-HP13	11.1	detect	110	4	<1.0	**2.8**
65-HP13a	SW65-HP13a	56.8	detect	110	4	<1.0	**14.2**
HP13APOND	HP13APOND_20180523_NM	84.3	detect	110	4	<1.0	**21.1**
70-CWD	SW70-CWD	163	detect	110	4	**1.5**	**40.8**
64-HP18	SW64-HP18	172	detect	110	4	**1.6**	**43.0**

#N/A = not analyzed

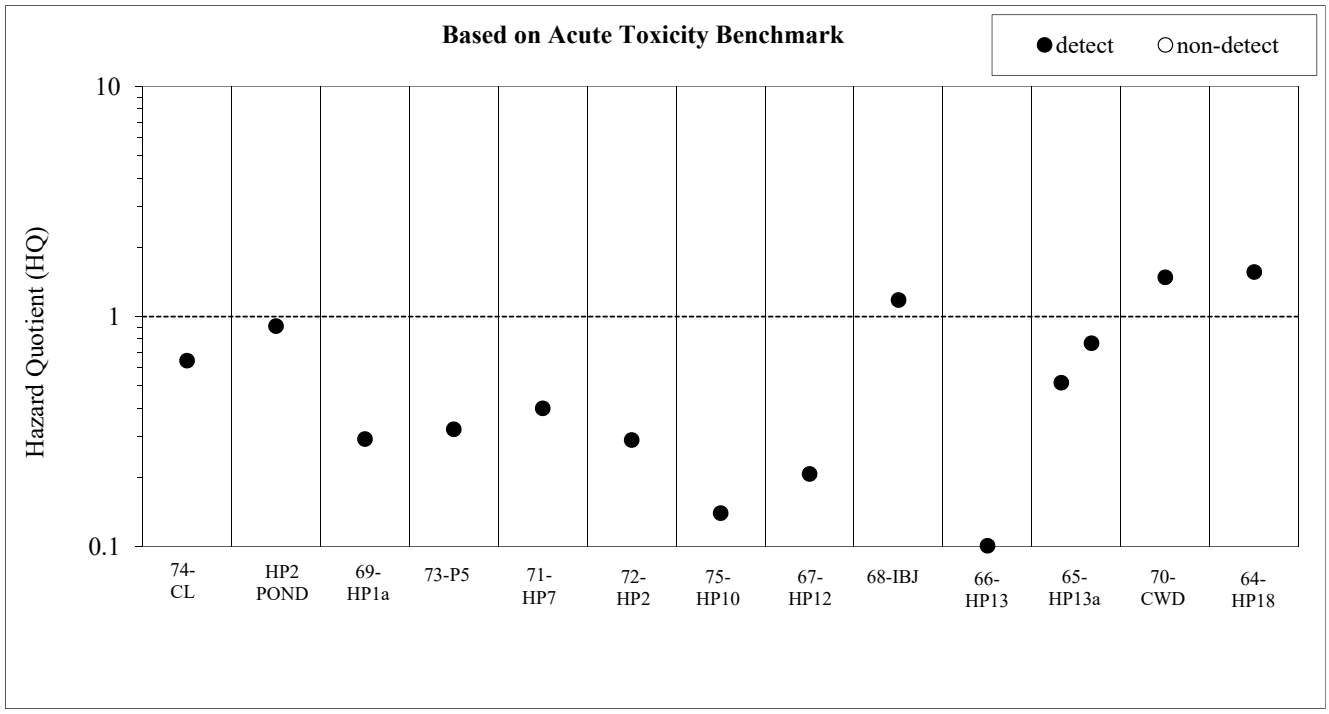
(a) Non-detects are evaluated at 1/2 the reported value.

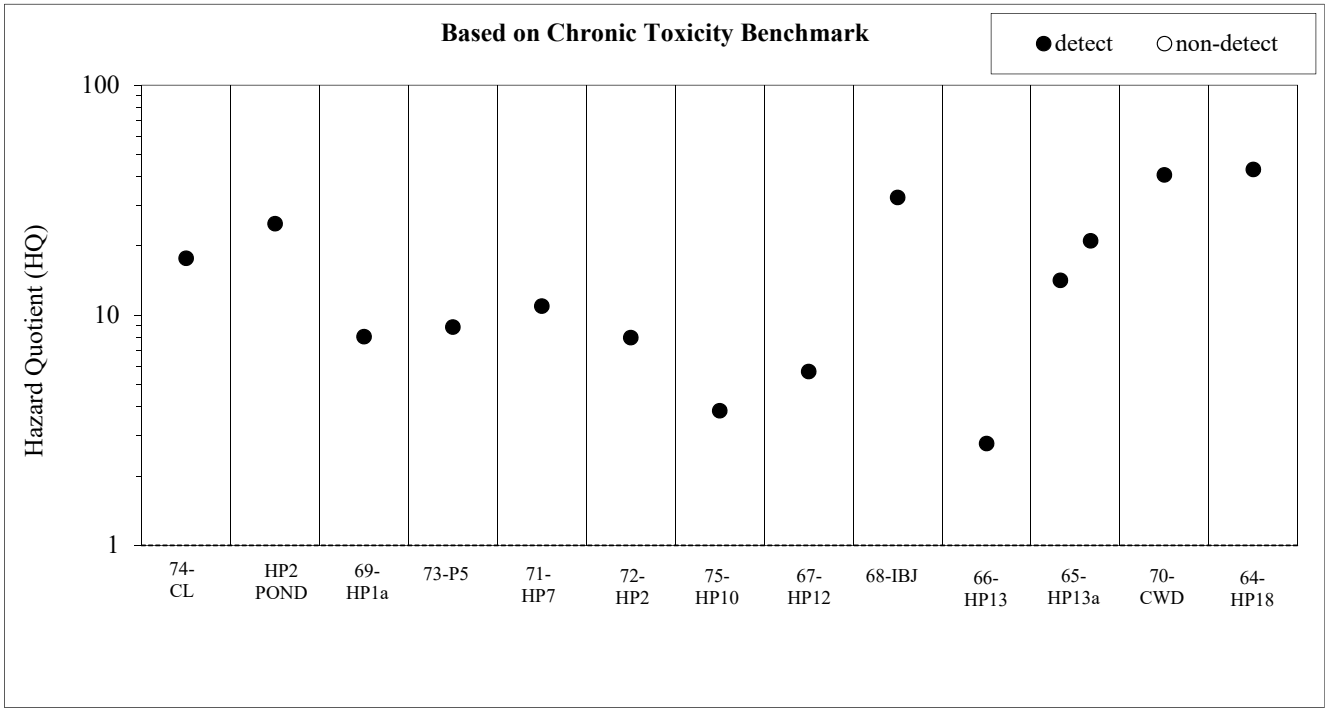
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E1
Hazard Quotients for Aquatic Receptors from
Direct Contact with Surface Water in Ponds

Barium





Appendix E1
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Surface Water in Ponds

Copper

Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (ug/L)		Hazard Quotient (c) (HQ)	
				Acute	Chronic	Acute	Chronic
74-CL Pond	SW74-CL Pond	0.38	detect	17.3	11.3	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	11.2	detect	17.3	11.3	<1.0	<1.0
69-HP1a	SW69-HP1a	2.6	detect	17.3	11.3	<1.0	<1.0
73-P5	SW73-P5	0.28	detect	17.3	11.3	<1.0	<1.0
71-HP7	SW71-HP7	2.5	detect	17.3	11.3	<1.0	<1.0
72-HP2	SW72-HP2	2.2	detect	17.3	11.3	<1.0	<1.0
75-HP10	SW75-HP10	1.5	detect	17.3	11.3	<1.0	<1.0
67-HP12	SW67-HP12	1.8	detect	17.3	11.3	<1.0	<1.0
68-IBJ	SW68-IBJ	0.52	detect	17.3	11.3	<1.0	<1.0
66-HP13	SW66-HP13	2.3	detect	17.3	11.3	<1.0	<1.0
65-HP13a	SW65-HP13a	5.2	detect	17.3	11.3	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	14.8	detect	17.3	11.3	<1.0	**1.3**
70-CWD	SW70-CWD	1.2	detect	17.3	11.3	<1.0	<1.0
64-HP18	SW64-HP18	2.6	detect	17.3	11.3	<1.0	<1.0

#N/A = not analyzed

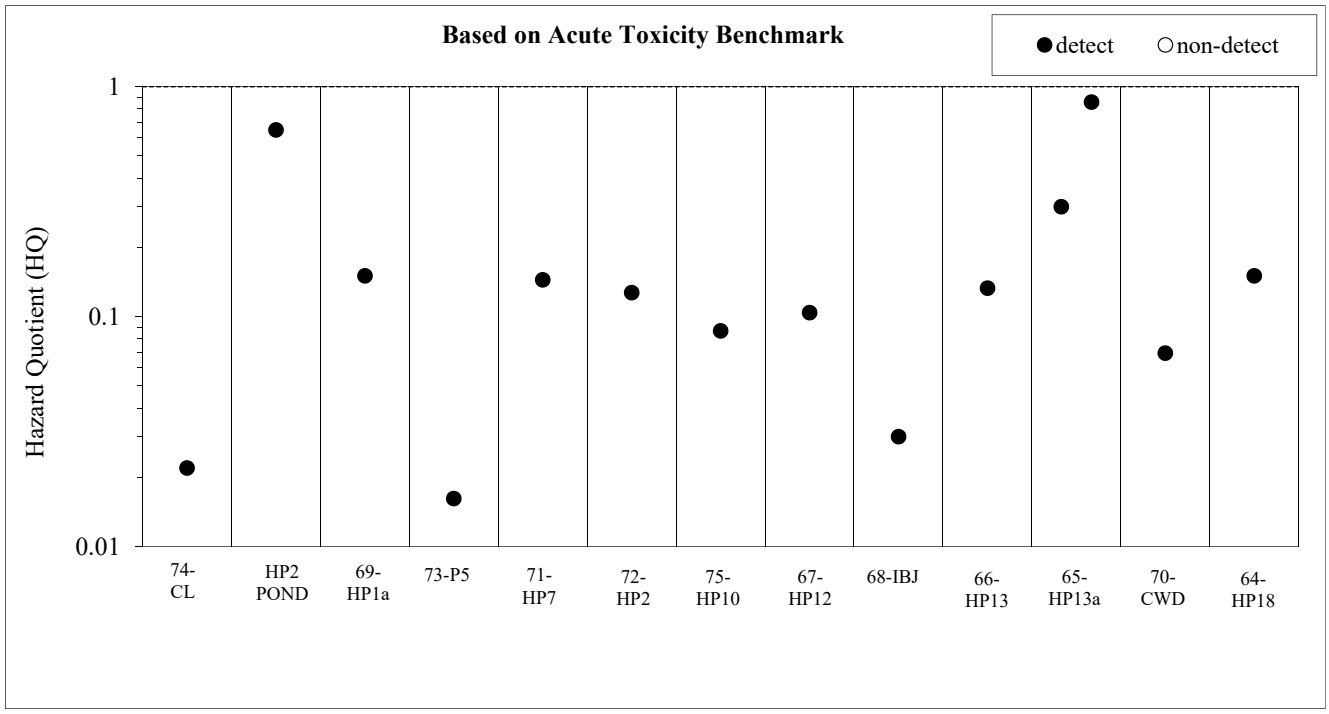
(a) Non-detects are evaluated at 1/2 the reported value.

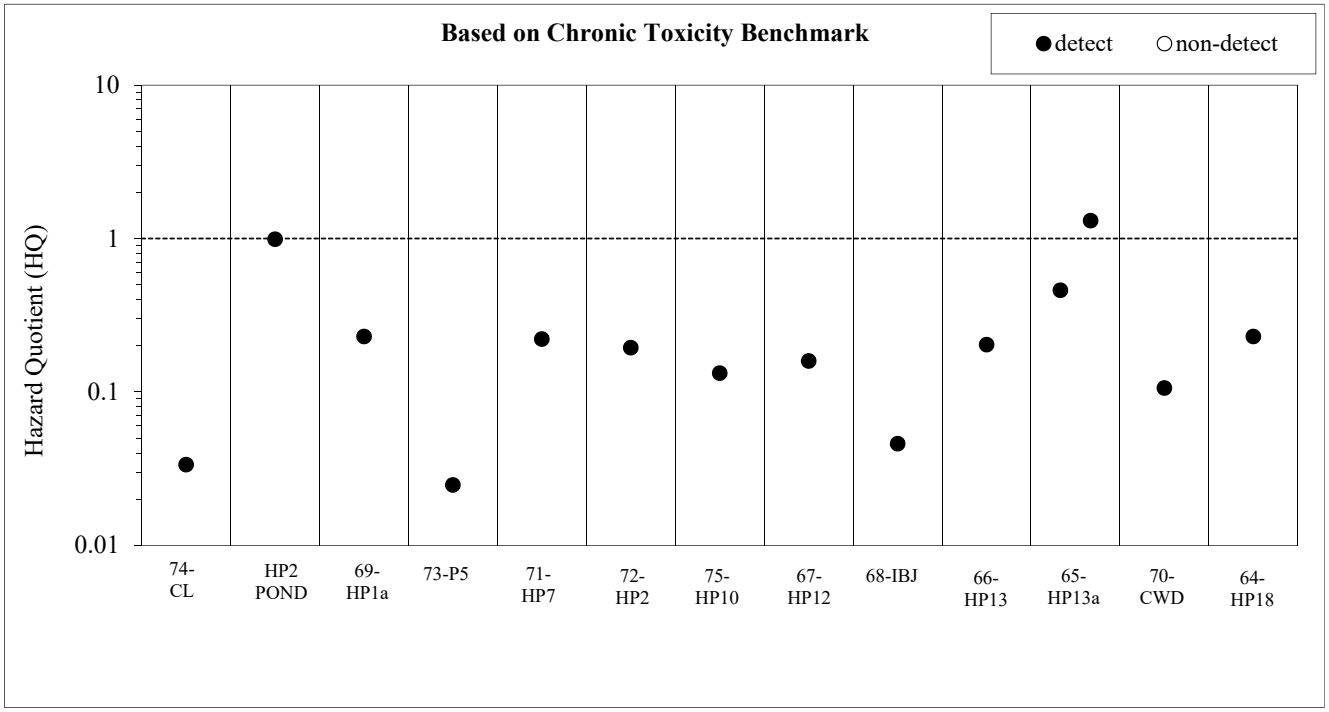
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E1
Hazard Quotients for Aquatic Receptors from
Direct Contact with Surface Water in Ponds

Copper





Appendix E1
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Surface Water in Ponds

Manganese

Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (ug/L)		Hazard Quotient (c) (HQ)	
				Acute	Chronic	Acute	Chronic
74-CL Pond	SW74-CL Pond	21.4	detect	2300	120	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	360	detect	2300	120	<1.0	**3.0**
69-HP1a	SW69-HP1a	351	detect	2300	120	<1.0	**2.9**
73-P5	SW73-P5	49.8	detect	2300	120	<1.0	<1.0
71-HP7	SW71-HP7	1880	detect	2300	120	<1.0	**15.7**
72-HP2	SW72-HP2	935	detect	2300	120	<1.0	**7.8**
75-HP10	SW75-HP10	3730	detect	2300	120	**1.6**	**31.1**
67-HP12	SW67-HP12	1990	detect	2300	120	<1.0	**16.6**
68-IBJ	SW68-IBJ	35.6	detect	2300	120	<1.0	<1.0
66-HP13	SW66-HP13	582	detect	2300	120	<1.0	**4.9**
65-HP13a	SW65-HP13a	746	detect	2300	120	<1.0	**6.2**
HP13APOND	HP13APOND_20180523_NM	897	detect	2300	120	<1.0	**7.5**
70-CWD	SW70-CWD	7.3	detect	2300	120	<1.0	<1.0
64-HP18	SW64-HP18	243	detect	2300	120	<1.0	**2.0**

#N/A = not analyzed

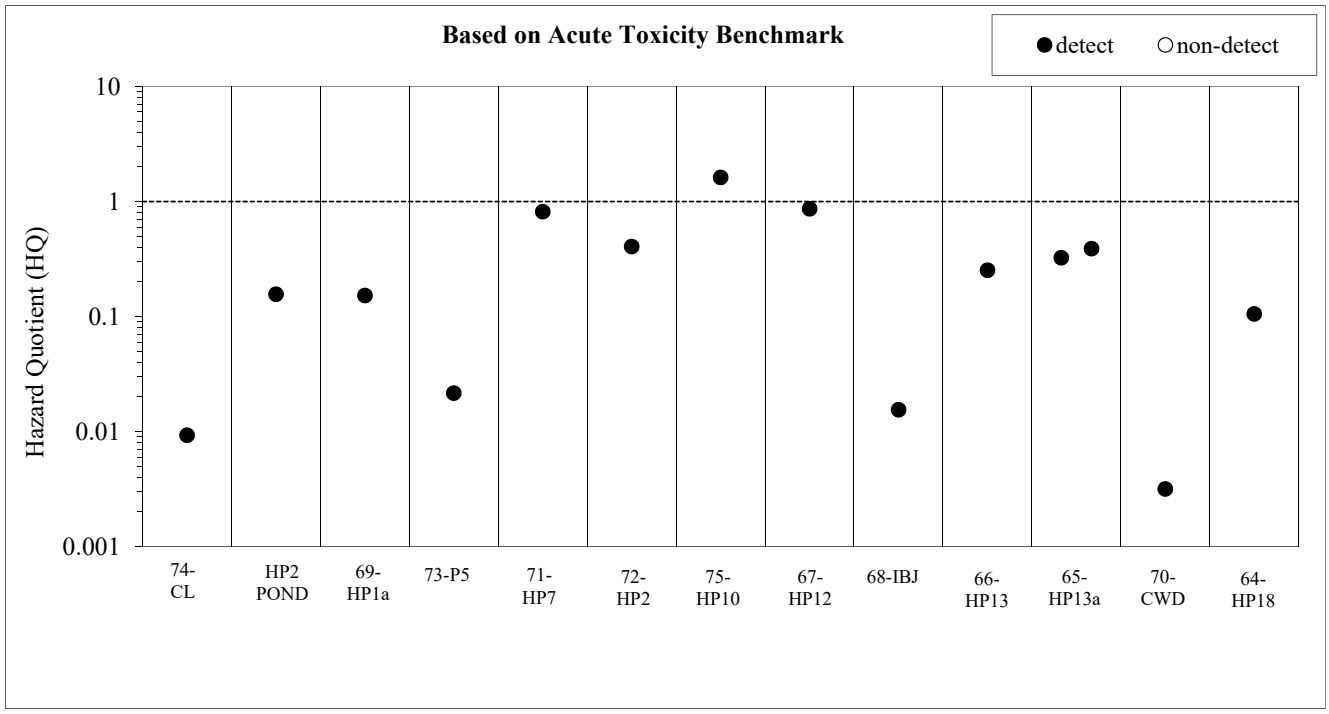
(a) Non-detects are evaluated at 1/2 the reported value.

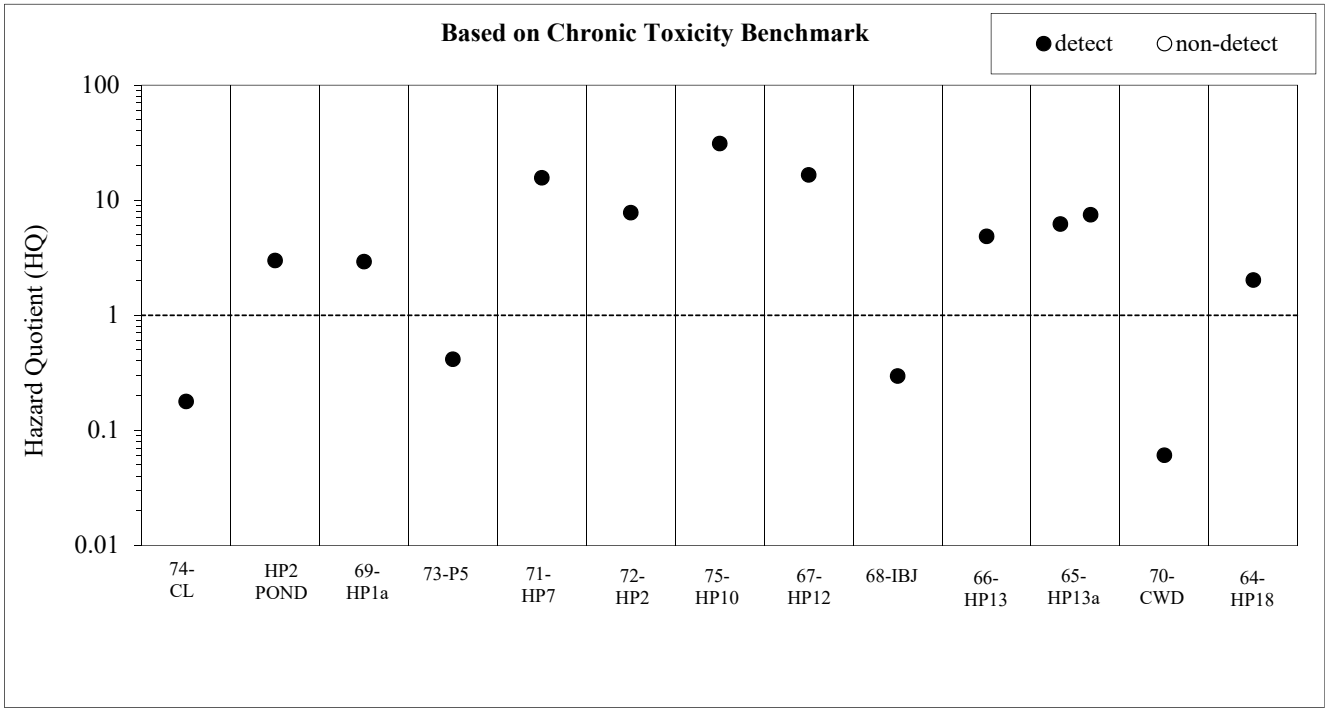
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E1
Hazard Quotients for Aquatic Receptors from
Direct Contact with Surface Water in Ponds

Manganese





APPENDIX E2
HQ CALCULATIONS FOR AQUATIC RECEPTORS
DIRECT CONTACT WITH SEDIMENT

OU2/OU3 Smurfit-Stone/Frenchtown Mill Site
Baseline Ecological Risk Assessment

Appendix E2
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Sediment in the Clark Fork River

Arsenic

Reach	Location	Sample ID	Sediment Type	Sediment Conc. (a) (ug/L)		Toxicity Benchmark (ug/L)		Hazard Quotient (b) (HQ)	
						No Effect	Low-Effect	No Effect	Low-Effect
CFR - Within Site Boundary	SE6-CFR-SA	SE6-CFR-SA	Bed	6.6	detect	9.79	33	<1.0	<1.0
	50-CFR	SE50-CFR-SA	Bed	8.1	detect	9.79	33	<1.0	<1.0
	SE5-CFR-SA	SE5-CFR-SA	Bed	6.8	detect	9.79	33	<1.0	<1.0
	51-CFR	SE51-CFR-SA	Bed	4.9	detect	9.79	33	<1.0	<1.0
	52-CFR	SE52-CFR-SA	Bed	13.6	detect	9.79	33	**1.4**	<1.0
	SE4-CFR-SA	SE4-CFR-SA	Bed	6.5	detect	9.79	33	<1.0	<1.0
	SE25-CFR-FF	SE25-CFR-FF	Flood Fringe	13.2	detect	9.79	33	**1.3**	<1.0
CFR - Downstream of Site	53-CFR	SE53-CFR-SA	Bed	8.9	detect	9.79	33	<1.0	<1.0
	54-CFR	SE54-CFR-SA	Bed	7.3	detect	9.79	33	<1.0	<1.0
	SE3-CFR-SA	SE3-CFR-SA	Bed	5.6	detect	9.79	33	<1.0	<1.0
	55-CFR	SE55-CFR-SA	Bed	13.2	detect	9.79	33	**1.3**	<1.0
	56-CFR	SE56-CFR-SA	Bed	5	detect	9.79	33	<1.0	<1.0
	SE2-CFR-SA	SE2-CFR-SA	Bed	7.7	detect	9.79	33	<1.0	<1.0
	SE24-CFR-FF	SE24-CFR-FF	Flood Fringe	27.2	detect	9.79	33	**2.8**	<1.0
	SE1-CFR-SA	SE1-CFR-SA	Bed	3.8	detect	9.79	33	<1.0	<1.0
	57-CFR	SE57-CFR-SA	Bed	17.9	detect	9.79	33	**1.8**	<1.0
	58-CFR	SE58-CFR-SA	Bed	10.3	detect	9.79	33	**1.1**	<1.0
	59-CFR	SE59-CFR-SA	Bed	10.5	detect	9.79	33	**1.1**	<1.0
	60-CFR	SE60-CFR-SA	Bed	9.3	detect	9.79	33	<1.0	<1.0
	61-CFR	SE61-CFR-SA	Bed	13.2	detect	9.79	33	**1.3**	<1.0
	62-CFR	SE62-CFR-SA	Bed	10.6	detect	9.79	33	**1.1**	<1.0
	63-CFR	SE63-CFR-SA	Bed	5.8	detect	9.79	33	<1.0	<1.0
	SE23-CFR-FF	SE23-CFR-FF	Flood Fringe	12.5	detect	9.79	33	**1.3**	<1.0

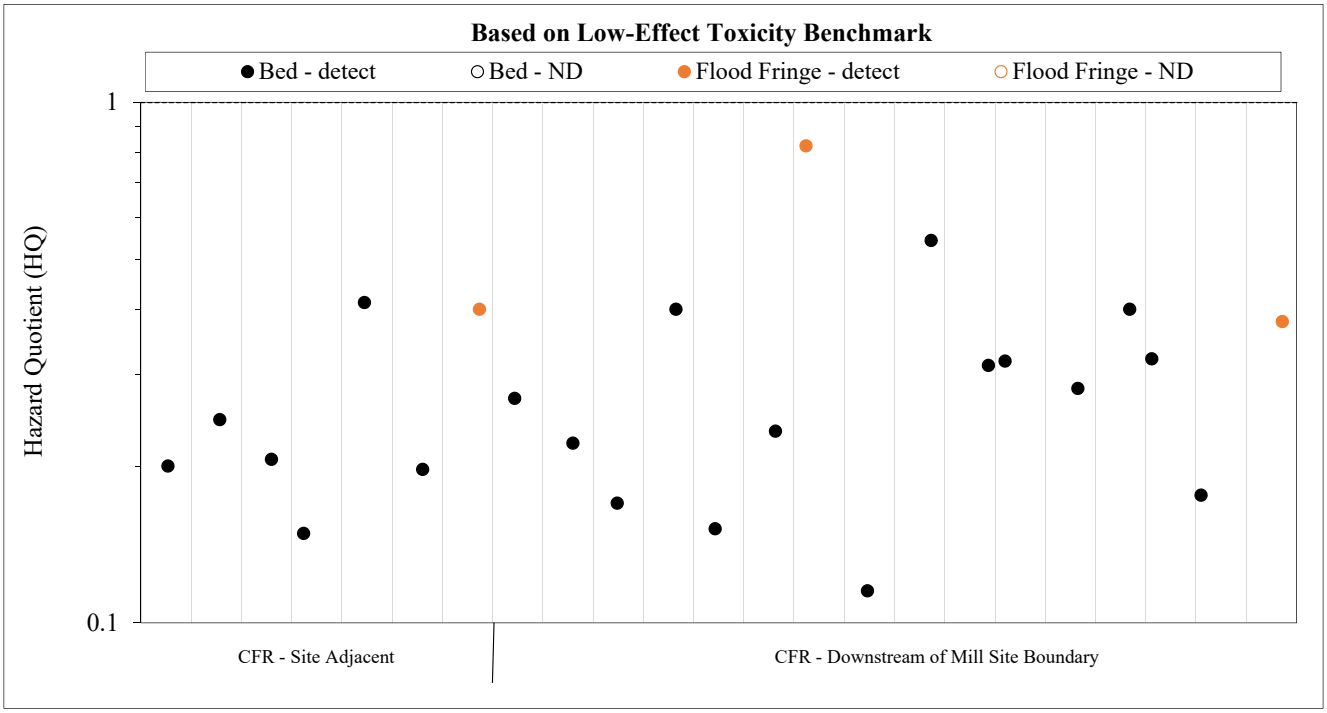
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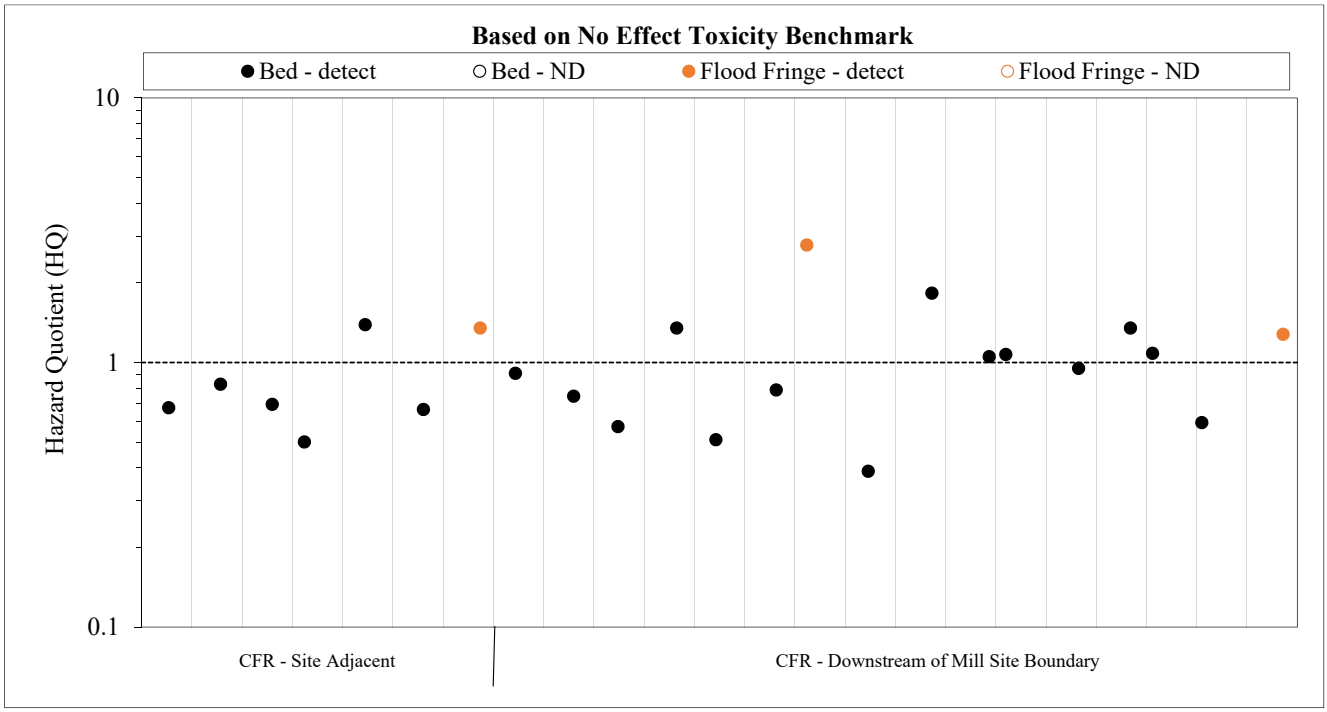
(a) Non-detects are evaluated at 1/2 the reported value.

(b) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Clark Fork River

Arsenic





Appendix E2
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Sediment in the Clark Fork River

Cadmium

Reach	Location	Sample ID	Sediment Type	Sediment Conc. (a) (ug/L)		Toxicity Benchmark (ug/L)		Hazard Quotient (b) (HQ)	
						No Effect	Low-Effect	No Effect	Low-Effect
CFR - Within Site Boundary	SE6-CFR-SA	SE6-CFR-SA	Bed	0.15	detect	0.99	4.98	<1.0	<1.0
	50-CFR	SE50-CFR-SA	Bed	0.59	detect	0.99	4.98	<1.0	<1.0
	SE5-CFR-SA	SE5-CFR-SA	Bed	0.57	detect	0.99	4.98	<1.0	<1.0
	51-CFR	SE51-CFR-SA	Bed	0.42	detect	0.99	4.98	<1.0	<1.0
	52-CFR	SE52-CFR-SA	Bed	0.58	detect	0.99	4.98	<1.0	<1.0
	SE4-CFR-SA	SE4-CFR-SA	Bed	0.57	detect	0.99	4.98	<1.0	<1.0
	SE25-CFR-FF	SE25-CFR-FF	Flood Fringe	1.3	detect	0.99	4.98	**1.3**	<1.0
CFR - Downstream of Site	53-CFR	SE53-CFR-SA	Bed	0.4	detect	0.99	4.98	<1.0	<1.0
	54-CFR	SE54-CFR-SA	Bed	0.41	detect	0.99	4.98	<1.0	<1.0
	SE3-CFR-SA	SE3-CFR-SA	Bed	0.52	detect	0.99	4.98	<1.0	<1.0
	55-CFR	SE55-CFR-SA	Bed	0.68	detect	0.99	4.98	<1.0	<1.0
	56-CFR	SE56-CFR-SA	Bed	0.4	detect	0.99	4.98	<1.0	<1.0
	SE2-CFR-SA	SE2-CFR-SA	Bed	0.76	detect	0.99	4.98	<1.0	<1.0
	SE24-CFR-FF	SE24-CFR-FF	Flood Fringe	1.6	detect	0.99	4.98	**1.6**	<1.0
	SE1-CFR-SA	SE1-CFR-SA	Bed	0.21	detect	0.99	4.98	<1.0	<1.0
	57-CFR	SE57-CFR-SA	Bed	1	detect	0.99	4.98	<1.0	<1.0
	58-CFR	SE58-CFR-SA	Bed	0.64	detect	0.99	4.98	<1.0	<1.0
	59-CFR	SE59-CFR-SA	Bed	0.91	detect	0.99	4.98	<1.0	<1.0
	60-CFR	SE60-CFR-SA	Bed	0.34	detect	0.99	4.98	<1.0	<1.0
	61-CFR	SE61-CFR-SA	Bed	0.67	detect	0.99	4.98	<1.0	<1.0
	62-CFR	SE62-CFR-SA	Bed	0.74	detect	0.99	4.98	<1.0	<1.0
	63-CFR	SE63-CFR-SA	Bed	0.37	detect	0.99	4.98	<1.0	<1.0
	SE23-CFR-FF	SE23-CFR-FF	Flood Fringe	2	detect	0.99	4.98	**2.0**	<1.0

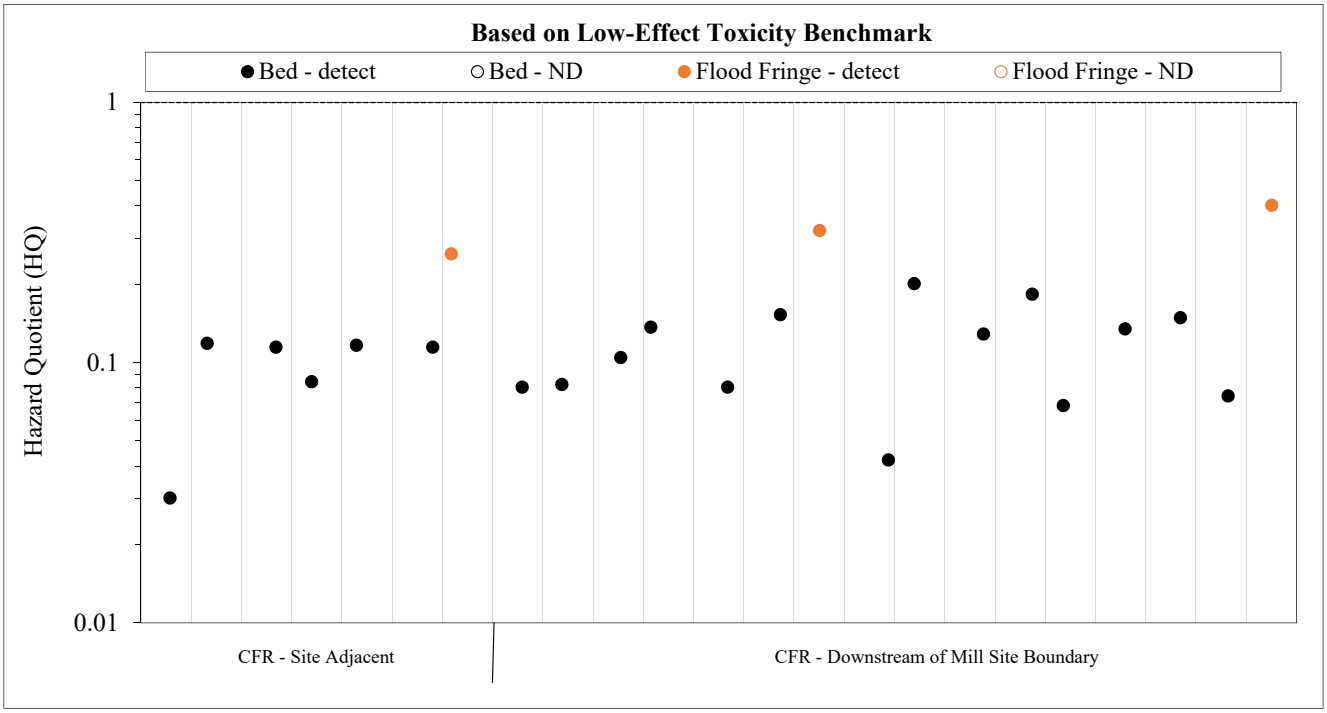
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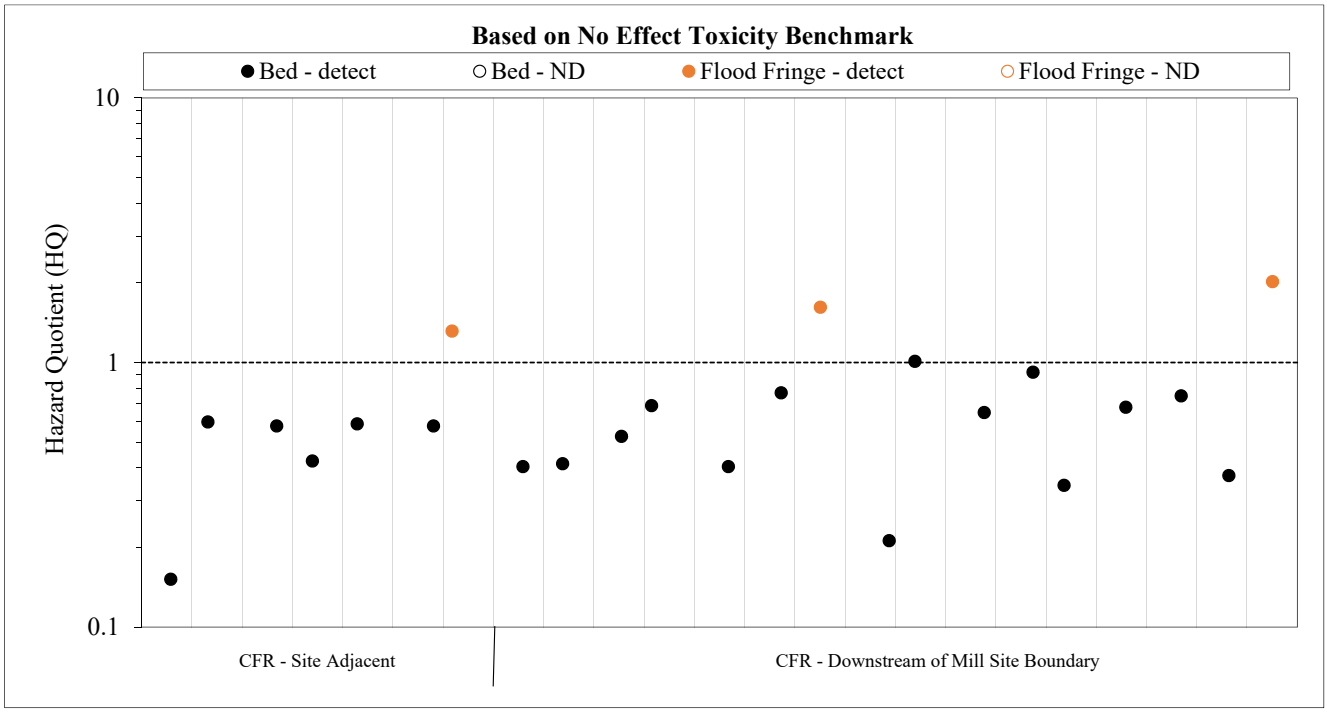
(a) Non-detects are evaluated at 1/2 the reported value.

(b) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Clark Fork River

Cadmium





Appendix E2
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Sediment in the Clark Fork River

Copper

Reach	Location	Sample ID	Sediment Type	Sediment Conc. (a) (ug/L)		Toxicity Benchmark (ug/L)		Hazard Quotient (b) (HQ)	
						No Effect	Low-Effect	No Effect	Low-Effect
CFR - Within Site Boundary	SE6-CFR-SA	SE6-CFR-SA	Bed	18.3	detect	31.6	149	<1.0	<1.0
	50-CFR	SE50-CFR-SA	Bed	95.1	detect	31.6	149	**3.0**	<1.0
	SE5-CFR-SA	SE5-CFR-SA	Bed	50.8	detect	31.6	149	**1.6**	<1.0
	51-CFR	SE51-CFR-SA	Bed	67.7	detect	31.6	149	**2.1**	<1.0
	52-CFR	SE52-CFR-SA	Bed	117	detect	31.6	149	**3.7**	<1.0
	SE4-CFR-SA	SE4-CFR-SA	Bed	77.2	detect	31.6	149	**2.4**	<1.0
	SE25-CFR-FF	SE25-CFR-FF	Flood Fringe	131	detect	31.6	149	**4.1**	<1.0
CFR - Downstream of Site	53-CFR	SE53-CFR-SA	Bed	65.6	detect	31.6	149	**2.1**	<1.0
	54-CFR	SE54-CFR-SA	Bed	78	detect	31.6	149	**2.5**	<1.0
	SE3-CFR-SA	SE3-CFR-SA	Bed	54.3	detect	31.6	149	**1.7**	<1.0
	55-CFR	SE55-CFR-SA	Bed	127	detect	31.6	149	**4.0**	<1.0
	56-CFR	SE56-CFR-SA	Bed	57.3	detect	31.6	149	**1.8**	<1.0
	SE2-CFR-SA	SE2-CFR-SA	Bed	83.3	detect	31.6	149	**2.6**	<1.0
	SE24-CFR-FF	SE24-CFR-FF	Flood Fringe	313	detect	31.6	149	**9.9**	**2.1**
	SE1-CFR-SA	SE1-CFR-SA	Bed	34.7	detect	31.6	149	**1.1**	<1.0
	57-CFR	SE57-CFR-SA	Bed	192	detect	31.6	149	**6.1**	**1.3**
	58-CFR	SE58-CFR-SA	Bed	117	detect	31.6	149	**3.7**	<1.0
	59-CFR	SE59-CFR-SA	Bed	150	detect	31.6	149	**4.7**	<1.0
	60-CFR	SE60-CFR-SA	Bed	55.6	detect	31.6	149	**1.8**	<1.0
	61-CFR	SE61-CFR-SA	Bed	118	detect	31.6	149	**3.7**	<1.0
	62-CFR	SE62-CFR-SA	Bed	134	detect	31.6	149	**4.2**	<1.0
	63-CFR	SE63-CFR-SA	Bed	55.9	detect	31.6	149	**1.8**	<1.0
	SE23-CFR-FF	SE23-CFR-FF	Flood Fringe	178	detect	31.6	149	**5.6**	**1.2**

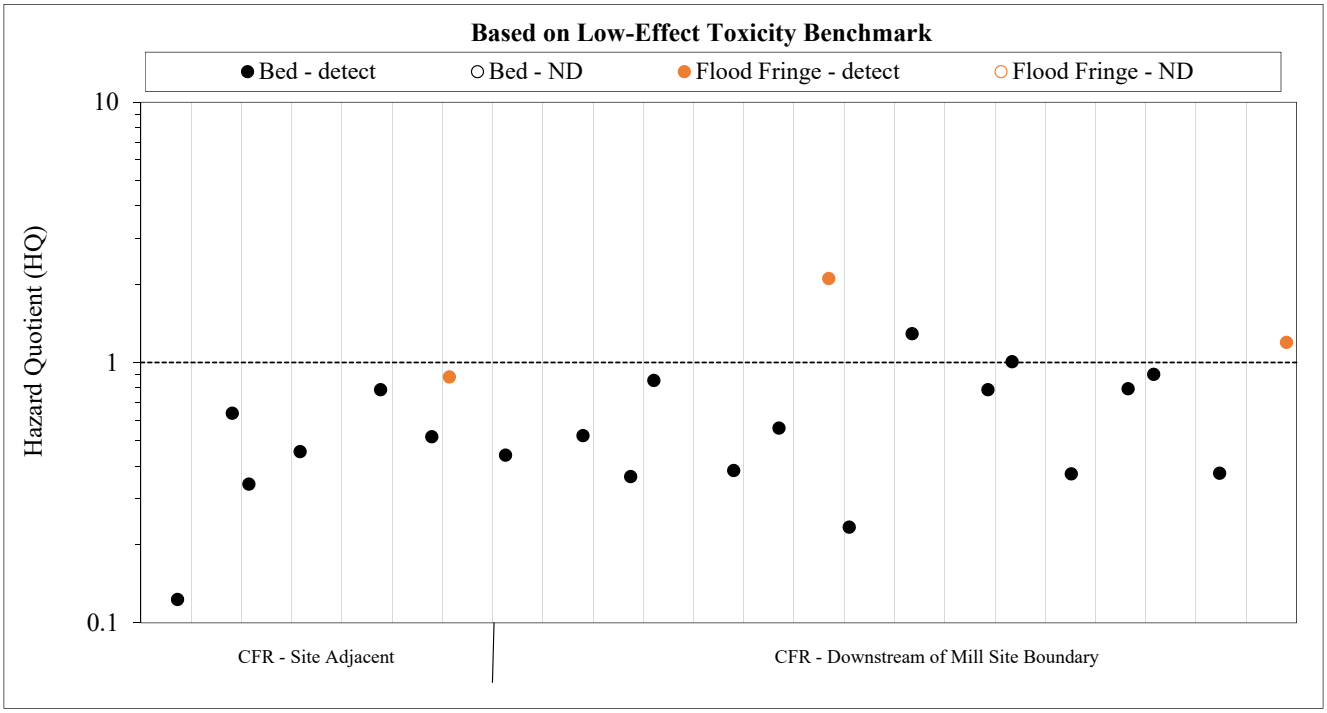
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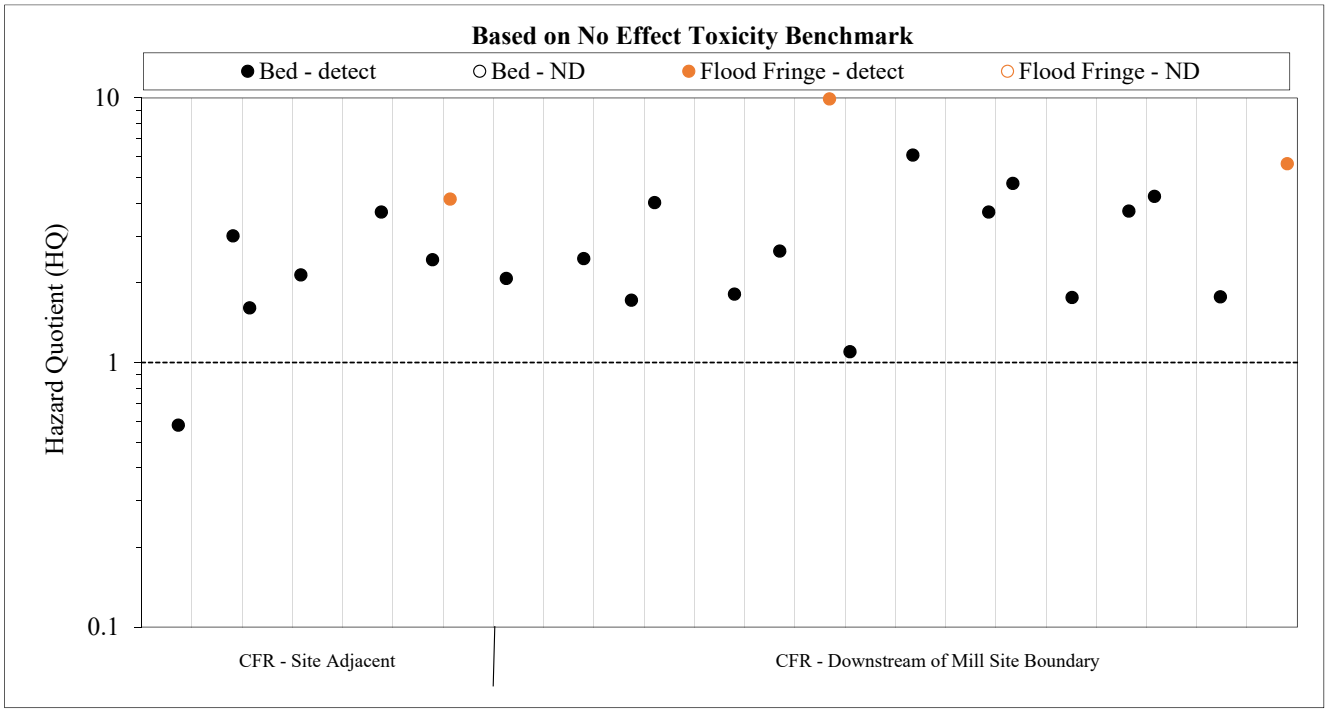
(a) Non-detects are evaluated at 1/2 the reported value.

(b) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Clark Fork River

Copper





Appendix E2
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Sediment in the Clark Fork River

Lead

Reach	Location	Sample ID	Sediment Type	Sediment Conc. (a) (ug/L)		Toxicity Benchmark (ug/L)		Hazard Quotient (b) (HQ)	
						No Effect	Low-Effect	No Effect	Low-Effect
CFR - Within Site Boundary	SE6-CFR-SA	SE6-CFR-SA	Bed	6.7	detect	35.8	128	<1.0	<1.0
	50-CFR	SE50-CFR-SA	Bed	18.4	detect	35.8	128	<1.0	<1.0
	SE5-CFR-SA	SE5-CFR-SA	Bed	15	detect	35.8	128	<1.0	<1.0
	51-CFR	SE51-CFR-SA	Bed	15	detect	35.8	128	<1.0	<1.0
	52-CFR	SE52-CFR-SA	Bed	21.2	detect	35.8	128	<1.0	<1.0
	SE4-CFR-SA	SE4-CFR-SA	Bed	18	detect	35.8	128	<1.0	<1.0
	SE25-CFR-FF	SE25-CFR-FF	Flood Fringe	33.8	detect	35.8	128	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SE53-CFR-SA	Bed	12.8	detect	35.8	128	<1.0	<1.0
	54-CFR	SE54-CFR-SA	Bed	14.1	detect	35.8	128	<1.0	<1.0
	SE3-CFR-SA	SE3-CFR-SA	Bed	14.4	detect	35.8	128	<1.0	<1.0
	55-CFR	SE55-CFR-SA	Bed	29.3	detect	35.8	128	<1.0	<1.0
	56-CFR	SE56-CFR-SA	Bed	13	detect	35.8	128	<1.0	<1.0
	SE2-CFR-SA	SE2-CFR-SA	Bed	21.3	detect	35.8	128	<1.0	<1.0
	SE24-CFR-FF	SE24-CFR-FF	Flood Fringe	53.2	detect	35.8	128	**1.5**	<1.0
	SE1-CFR-SA	SE1-CFR-SA	Bed	9.9	detect	35.8	128	<1.0	<1.0
	57-CFR	SE57-CFR-SA	Bed	29.3	detect	35.8	128	<1.0	<1.0
	58-CFR	SE58-CFR-SA	Bed	22.2	detect	35.8	128	<1.0	<1.0
	59-CFR	SE59-CFR-SA	Bed	27	detect	35.8	128	<1.0	<1.0
	60-CFR	SE60-CFR-SA	Bed	12	detect	35.8	128	<1.0	<1.0
	61-CFR	SE61-CFR-SA	Bed	22.7	detect	35.8	128	<1.0	<1.0
	62-CFR	SE62-CFR-SA	Bed	22.8	detect	35.8	128	<1.0	<1.0
	63-CFR	SE63-CFR-SA	Bed	12.5	detect	35.8	128	<1.0	<1.0
	SE23-CFR-FF	SE23-CFR-FF	Flood Fringe	43.8	detect	35.8	128	**1.2**	<1.0

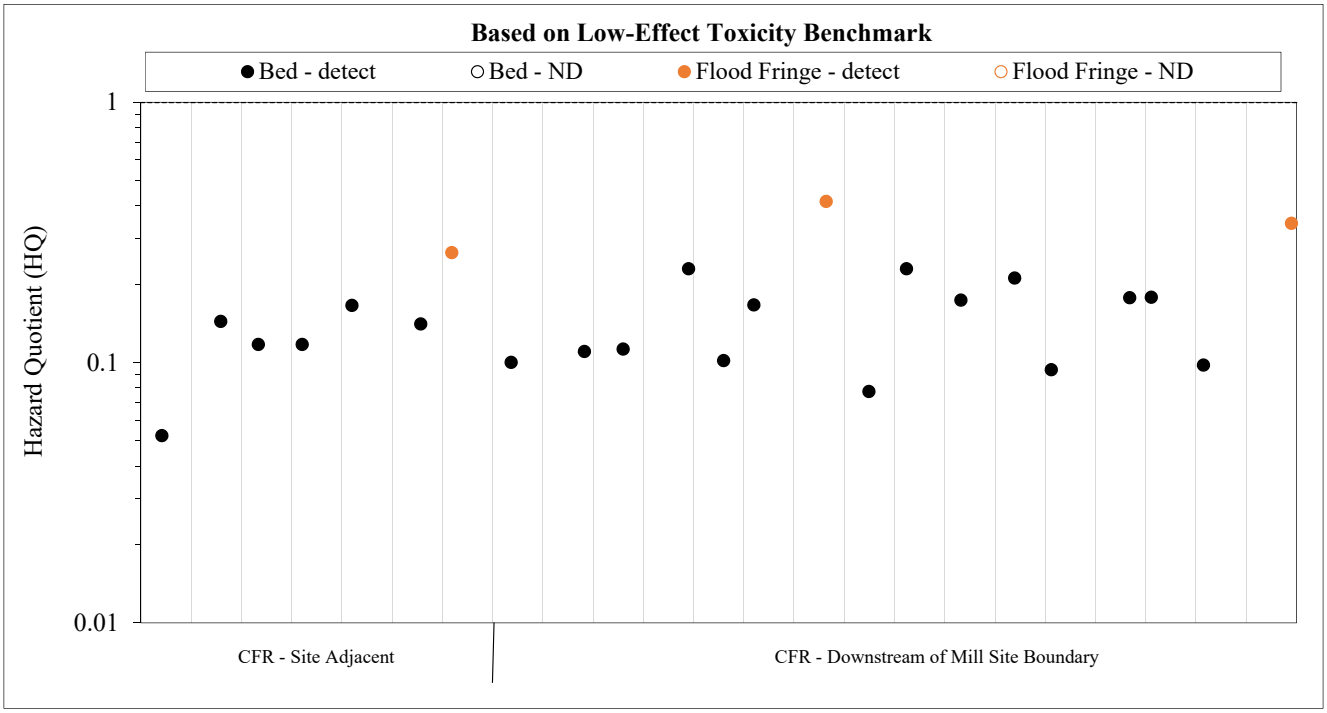
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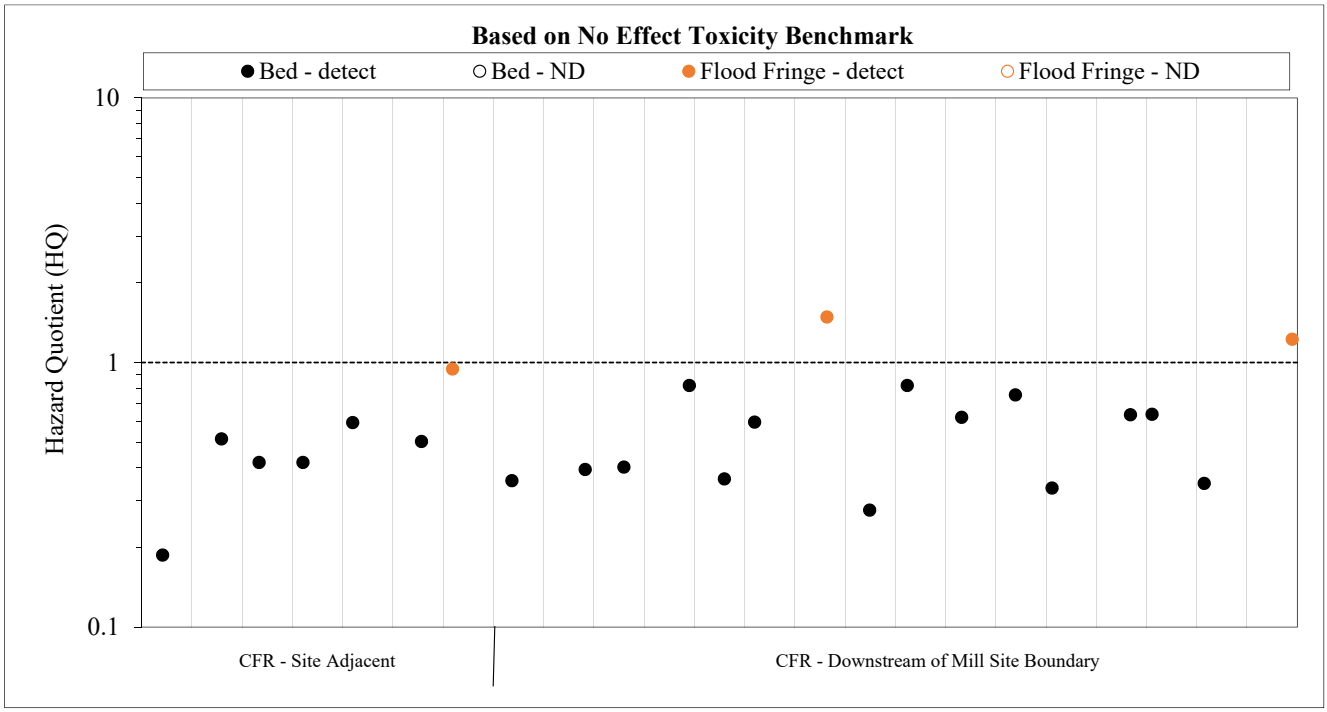
(a) Non-detects are evaluated at 1/2 the reported value.

(b) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Clark Fork River

Lead





Appendix E2
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Sediment in the Clark Fork River

Manganese

Reach	Location	Sample ID	Sediment Type	Sediment Conc. (a) (ug/L)		Toxicity Benchmark (ug/L)		Hazard Quotient (b) (HQ)	
						No Effect	Low-Effect	No Effect	Low-Effect
CFR - Within Site Boundary	SE6-CFR-SA	SE6-CFR-SA	Bed	832	detect	631	1184	**1.3**	<1.0
	50-CFR	SE50-CFR-SA	Bed	250	detect	631	1184	<1.0	<1.0
	SE5-CFR-SA	SE5-CFR-SA	Bed	694	detect	631	1184	**1.1**	<1.0
	51-CFR	SE51-CFR-SA	Bed	162	detect	631	1184	<1.0	<1.0
	52-CFR	SE52-CFR-SA	Bed	425	detect	631	1184	<1.0	<1.0
	SE4-CFR-SA	SE4-CFR-SA	Bed	287	detect	631	1184	<1.0	<1.0
	SE25-CFR-FF	SE25-CFR-FF	Flood Fringe	448	detect	631	1184	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SE53-CFR-SA	Bed	517	detect	631	1184	<1.0	<1.0
	54-CFR	SE54-CFR-SA	Bed	277	detect	631	1184	<1.0	<1.0
	SE3-CFR-SA	SE3-CFR-SA	Bed	163	detect	631	1184	<1.0	<1.0
	55-CFR	SE55-CFR-SA	Bed	386	detect	631	1184	<1.0	<1.0
	56-CFR	SE56-CFR-SA	Bed	179	detect	631	1184	<1.0	<1.0
	SE2-CFR-SA	SE2-CFR-SA	Bed	264	detect	631	1184	<1.0	<1.0
	SE24-CFR-FF	SE24-CFR-FF	Flood Fringe	768	detect	631	1184	**1.2**	<1.0
	SE1-CFR-SA	SE1-CFR-SA	Bed	233	detect	631	1184	<1.0	<1.0
	57-CFR	SE57-CFR-SA	Bed	534	detect	631	1184	<1.0	<1.0
	58-CFR	SE58-CFR-SA	Bed	298	detect	631	1184	<1.0	<1.0
	59-CFR	SE59-CFR-SA	Bed	199	detect	631	1184	<1.0	<1.0
	60-CFR	SE60-CFR-SA	Bed	197	detect	631	1184	<1.0	<1.0
	61-CFR	SE61-CFR-SA	Bed	750	detect	631	1184	**1.2**	<1.0
	62-CFR	SE62-CFR-SA	Bed	480	detect	631	1184	<1.0	<1.0
	63-CFR	SE63-CFR-SA	Bed	305	detect	631	1184	<1.0	<1.0
	SE23-CFR-FF	SE23-CFR-FF	Flood Fringe	706	detect	631	1184	**1.1**	<1.0

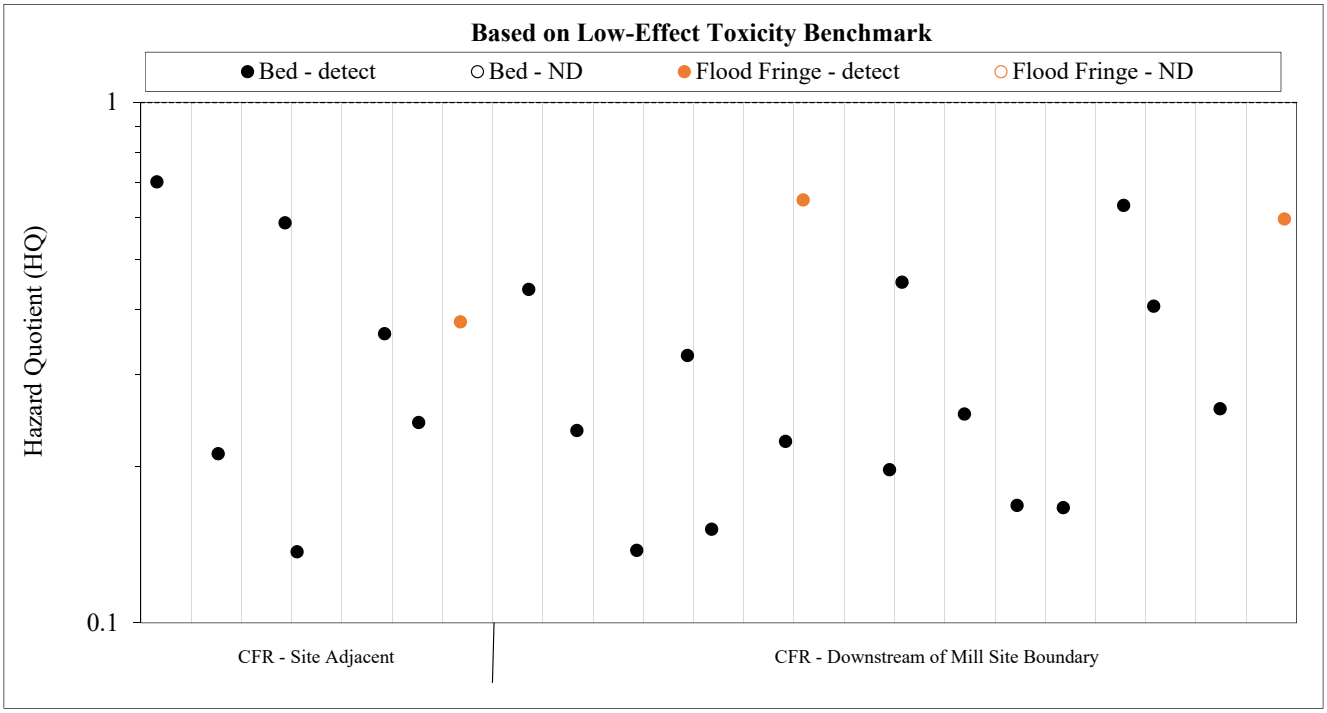
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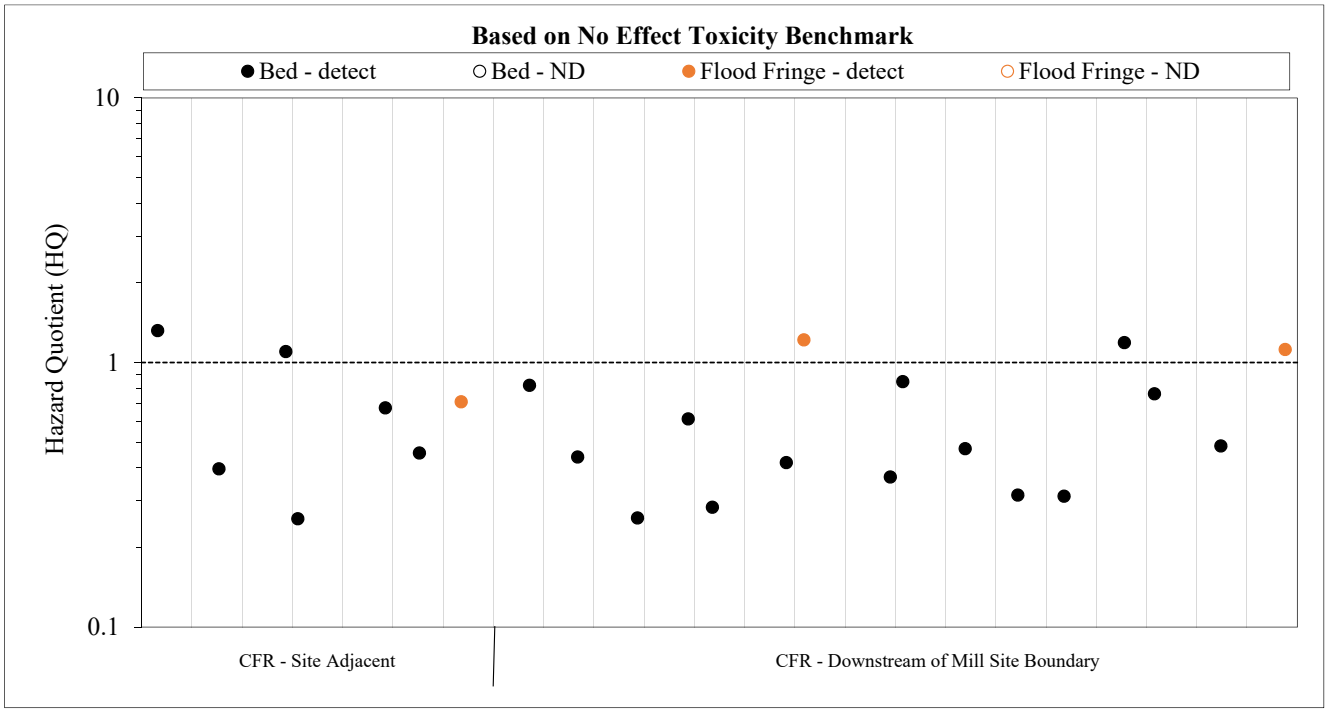
(a) Non-detects are evaluated at 1/2 the reported value.

(b) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Clark Fork River

Manganese





Appendix E2
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Sediment in the Clark Fork River

Mercury

Reach	Location	Sample ID	Sediment Type	Sediment Conc. (a) (ug/L)		Toxicity Benchmark (ug/L)		Hazard Quotient (b) (HQ)	
						No Effect	Low-Effect	No Effect	Low-Effect
CFR - Within Site Boundary	SE6-CFR-SA	SE6-CFR-SA	Bed	0.03	detect	0.18	1.06	<1.0	<1.0
	50-CFR	SE50-CFR-SA	Bed	0.15	detect	0.18	1.06	<1.0	<1.0
	SE5-CFR-SA	SE5-CFR-SA	Bed	0.17	detect	0.18	1.06	<1.0	<1.0
	51-CFR	SE51-CFR-SA	Bed	0.17	detect	0.18	1.06	<1.0	<1.0
	52-CFR	SE52-CFR-SA	Bed	0.21	detect	0.18	1.06	**1.2**	<1.0
	SE4-CFR-SA	SE4-CFR-SA	Bed	0.2	detect	0.18	1.06	**1.1**	<1.0
	SE25-CFR-FF	SE25-CFR-FF	Flood Fringe	0.12	detect	0.18	1.06	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SE53-CFR-SA	Bed	0.081	detect	0.18	1.06	<1.0	<1.0
	54-CFR	SE54-CFR-SA	Bed	0.11	detect	0.18	1.06	<1.0	<1.0
	SE3-CFR-SA	SE3-CFR-SA	Bed	0.17	detect	0.18	1.06	<1.0	<1.0
	55-CFR	SE55-CFR-SA	Bed	0.29	detect	0.18	1.06	**1.6**	<1.0
	56-CFR	SE56-CFR-SA	Bed	0.1	detect	0.18	1.06	<1.0	<1.0
	SE2-CFR-SA	SE2-CFR-SA	Bed	0.3	detect	0.18	1.06	**1.7**	<1.0
	SE24-CFR-FF	SE24-CFR-FF	Flood Fringe	0.39	detect	0.18	1.06	**2.2**	<1.0
	SE1-CFR-SA	SE1-CFR-SA	Bed	0.086	detect	0.18	1.06	<1.0	<1.0
	57-CFR	SE57-CFR-SA	Bed	0.17	detect	0.18	1.06	<1.0	<1.0
	58-CFR	SE58-CFR-SA	Bed	0.24	detect	0.18	1.06	**1.3**	<1.0
	59-CFR	SE59-CFR-SA	Bed	0.096	detect	0.18	1.06	<1.0	<1.0
	60-CFR	SE60-CFR-SA	Bed	0.12	detect	0.18	1.06	<1.0	<1.0
	61-CFR	SE61-CFR-SA	Bed	0.16	detect	0.18	1.06	<1.0	<1.0
	62-CFR	SE62-CFR-SA	Bed	0.17	detect	0.18	1.06	<1.0	<1.0
	63-CFR	SE63-CFR-SA	Bed	0.044	detect	0.18	1.06	<1.0	<1.0
	SE23-CFR-FF	SE23-CFR-FF	Flood Fringe	0.19	detect	0.18	1.06	**1.1**	<1.0

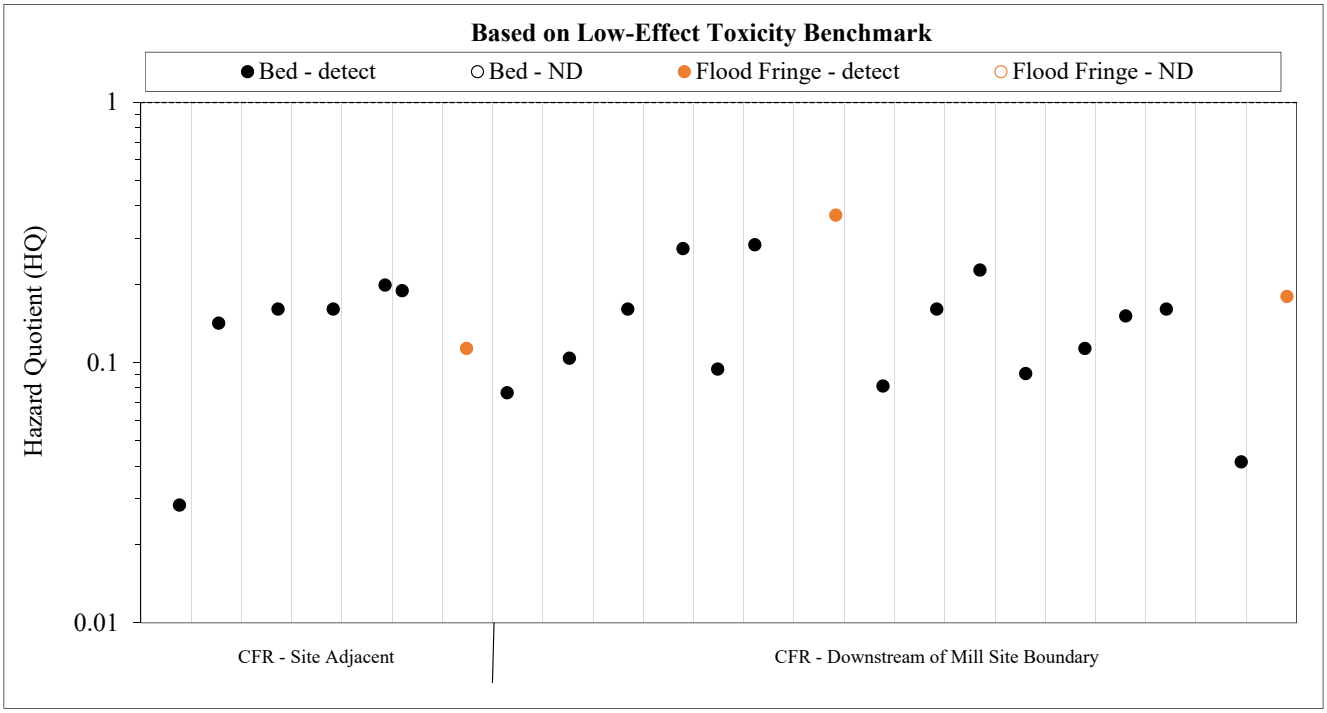
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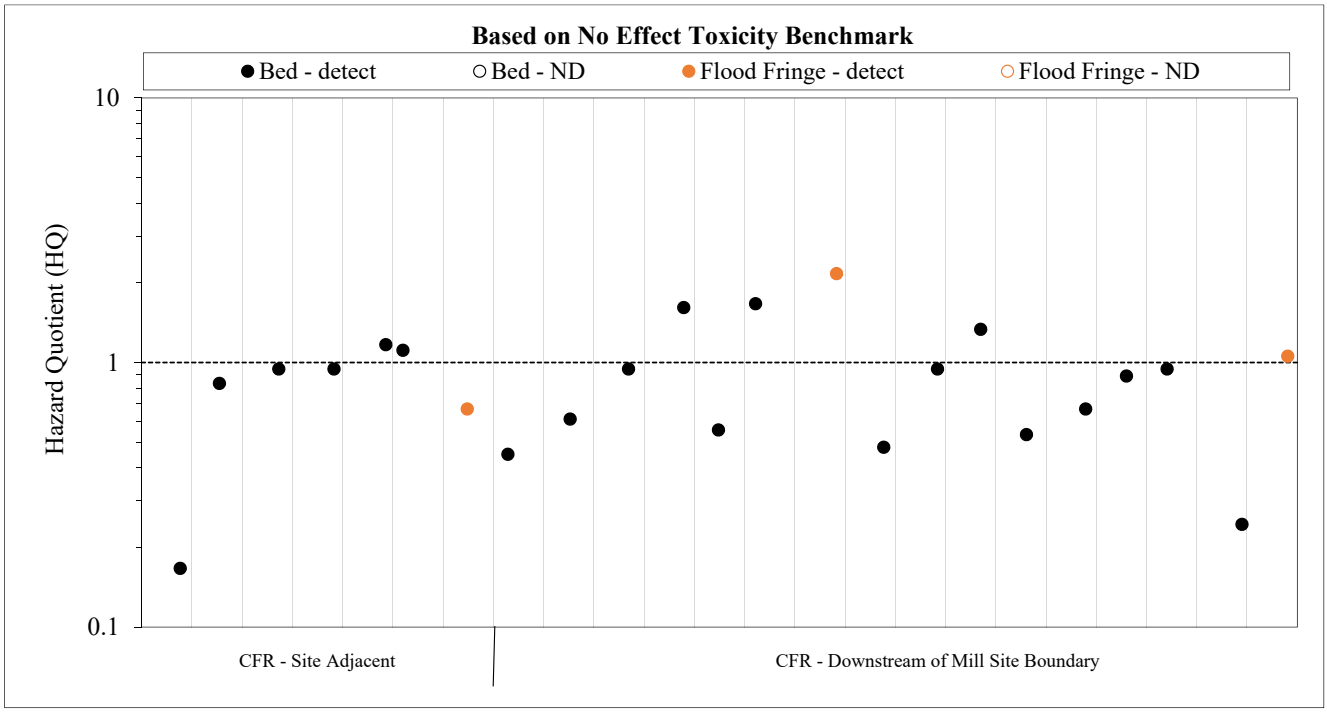
(a) Non-detects are evaluated at 1/2 the reported value.

(b) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Clark Fork River

Mercury





Appendix E2
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Sediment in the Clark Fork River

Selenium

Reach	Location	Sample ID	Sediment Type	Sediment Conc. (a) (ug/L)		Toxicity Benchmark (ug/L)		Hazard Quotient (b) (HQ)	
						No Effect	Low-Effect	No Effect	Low-Effect
CFR - Within Site Boundary	SE6-CFR-SA	SE6-CFR-SA	Bed	#N/A	#N/A	0.9	4.7	#N/A	#N/A
	50-CFR	SE50-CFR-SA	Bed	0.23	detect	0.9	4.7	<1.0	<1.0
	SE5-CFR-SA	SE5-CFR-SA	Bed	#N/A	#N/A	0.9	4.7	#N/A	#N/A
	51-CFR	SE51-CFR-SA	Bed	0.115	ND	0.9	4.7	<1.0	<1.0
	52-CFR	SE52-CFR-SA	Bed	0.31	detect	0.9	4.7	<1.0	<1.0
	SE4-CFR-SA	SE4-CFR-SA	Bed	#N/A	#N/A	0.9	4.7	#N/A	#N/A
	SE25-CFR-FF	SE25-CFR-FF	Flood Fringe	#N/A	#N/A	0.9	4.7	#N/A	#N/A
CFR - Downstream of Site	53-CFR	SE53-CFR-SA	Bed	0.135	ND	0.9	4.7	<1.0	<1.0
	54-CFR	SE54-CFR-SA	Bed	0.125	ND	0.9	4.7	<1.0	<1.0
	SE3-CFR-SA	SE3-CFR-SA	Bed	#N/A	#N/A	0.9	4.7	#N/A	#N/A
	55-CFR	SE55-CFR-SA	Bed	0.38	detect	0.9	4.7	<1.0	<1.0
	56-CFR	SE56-CFR-SA	Bed	0.12	ND	0.9	4.7	<1.0	<1.0
	SE2-CFR-SA	SE2-CFR-SA	Bed	#N/A	#N/A	0.9	4.7	#N/A	#N/A
	SE24-CFR-FF	SE24-CFR-FF	Flood Fringe	#N/A	#N/A	0.9	4.7	#N/A	#N/A
	SE1-CFR-SA	SE1-CFR-SA	Bed	#N/A	#N/A	0.9	4.7	#N/A	#N/A
	57-CFR	SE57-CFR-SA	Bed	0.88	detect	0.9	4.7	<1.0	<1.0
	58-CFR	SE58-CFR-SA	Bed	0.96	detect	0.9	4.7	**1.1**	<1.0
	59-CFR	SE59-CFR-SA	Bed	0.8	detect	0.9	4.7	<1.0	<1.0
	60-CFR	SE60-CFR-SA	Bed	0.5	detect	0.9	4.7	<1.0	<1.0
	61-CFR	SE61-CFR-SA	Bed	0.135	ND	0.9	4.7	<1.0	<1.0
	62-CFR	SE62-CFR-SA	Bed	0.3	detect	0.9	4.7	<1.0	<1.0
	63-CFR	SE63-CFR-SA	Bed	0.165	ND	0.9	4.7	<1.0	<1.0
	SE23-CFR-FF	SE23-CFR-FF	Flood Fringe	#N/A	#N/A	0.9	4.7	#N/A	#N/A

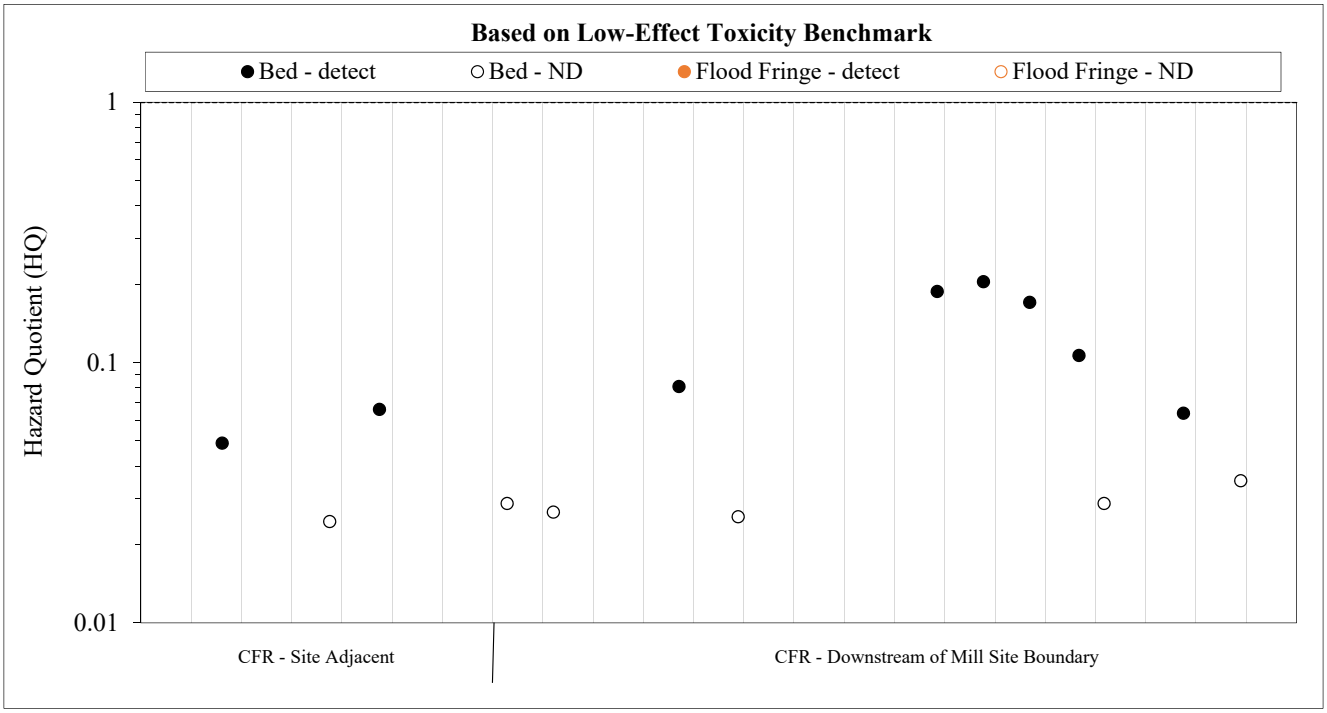
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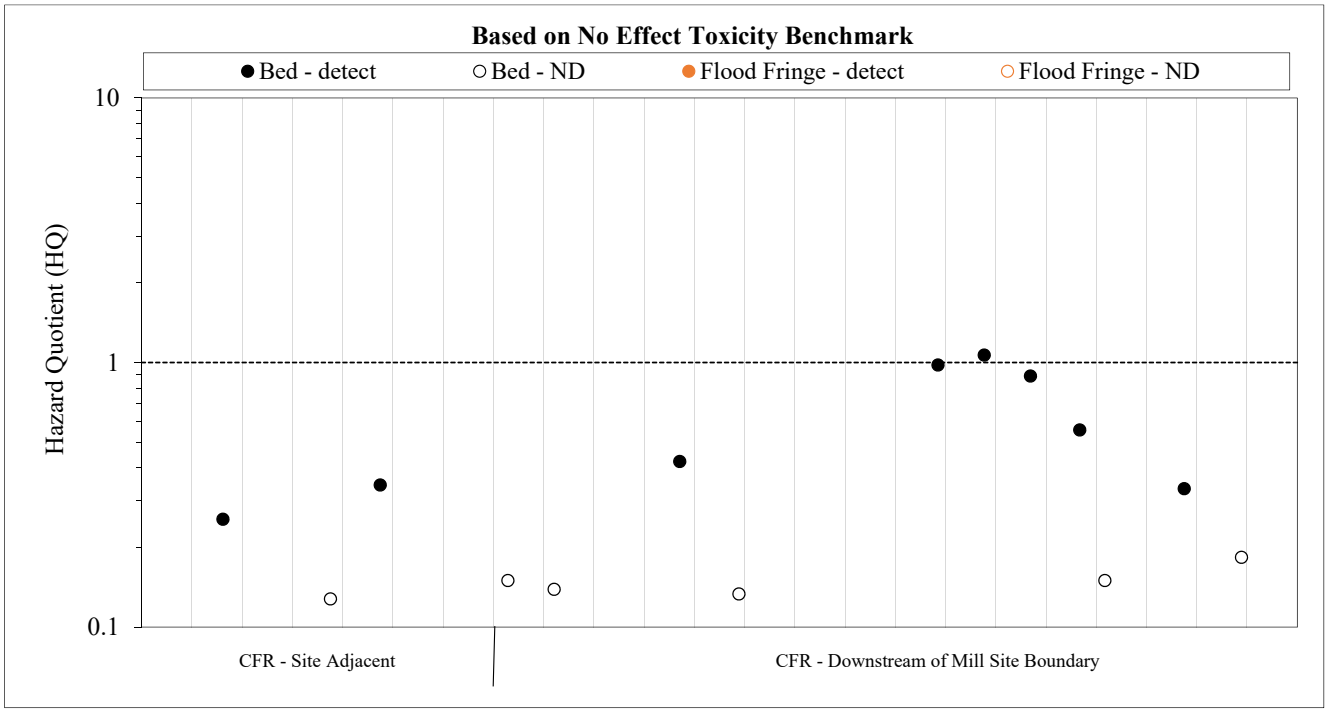
(a) Non-detects are evaluated at 1/2 the reported value.

(b) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Clark Fork River

Selenium





Appendix E2
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Sediment in the Clark Fork River

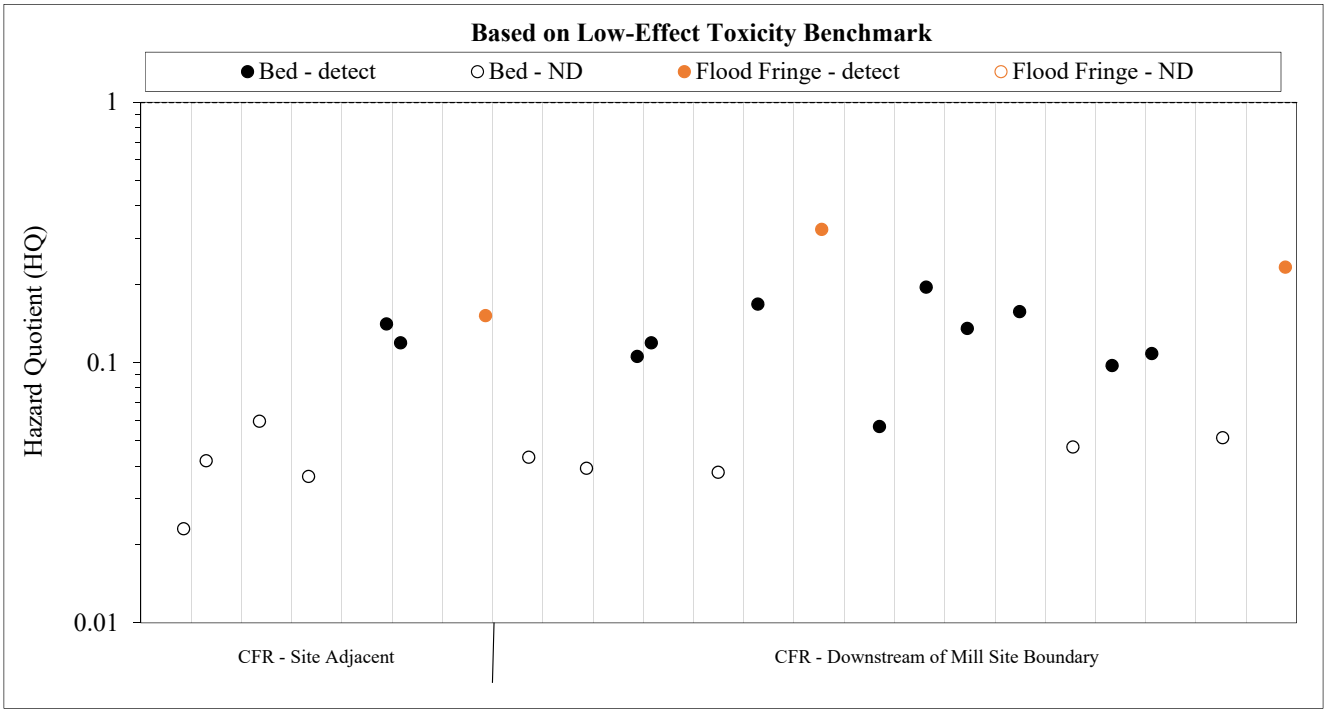
Silver

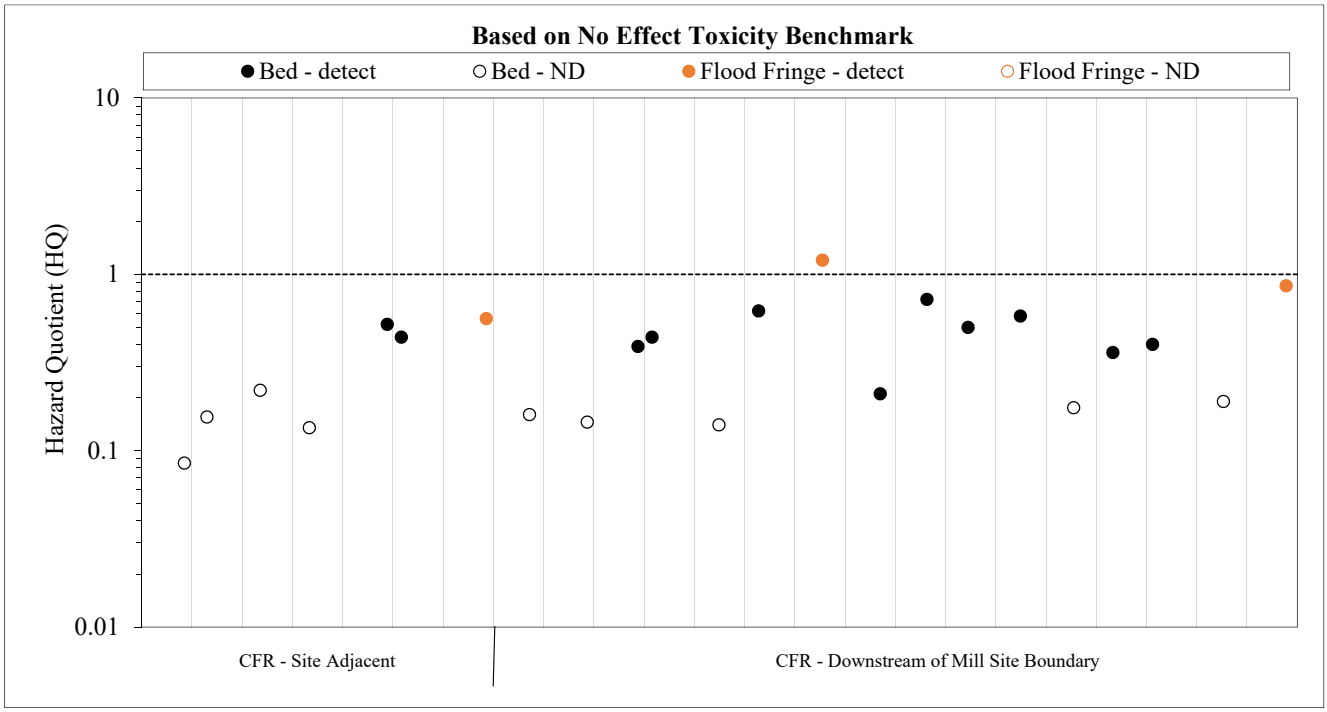
Reach	Location	Sample ID	Sediment Type	Sediment Conc. (a) (ug/L)		Toxicity Benchmark (ug/L)		Hazard Quotient (b) (HQ)	
						No Effect	Low-Effect	No Effect	Low-Effect
CFR - Within Site Boundary	SE6-CFR-SA	SE6-CFR-SA	Bed	0.085	ND	1	3.7	<1.0	<1.0
	50-CFR	SE50-CFR-SA	Bed	0.155	ND	1	3.7	<1.0	<1.0
	SE5-CFR-SA	SE5-CFR-SA	Bed	0.22	ND	1	3.7	<1.0	<1.0
	51-CFR	SE51-CFR-SA	Bed	0.135	ND	1	3.7	<1.0	<1.0
	52-CFR	SE52-CFR-SA	Bed	0.52	detect	1	3.7	<1.0	<1.0
	SE4-CFR-SA	SE4-CFR-SA	Bed	0.44	detect	1	3.7	<1.0	<1.0
	SE25-CFR-FF	SE25-CFR-FF	Flood Fringe	0.56	detect	1	3.7	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SE53-CFR-SA	Bed	0.16	ND	1	3.7	<1.0	<1.0
	54-CFR	SE54-CFR-SA	Bed	0.145	ND	1	3.7	<1.0	<1.0
	SE3-CFR-SA	SE3-CFR-SA	Bed	0.39	detect	1	3.7	<1.0	<1.0
	55-CFR	SE55-CFR-SA	Bed	0.44	detect	1	3.7	<1.0	<1.0
	56-CFR	SE56-CFR-SA	Bed	0.14	ND	1	3.7	<1.0	<1.0
	SE2-CFR-SA	SE2-CFR-SA	Bed	0.62	detect	1	3.7	<1.0	<1.0
	SE24-CFR-FF	SE24-CFR-FF	Flood Fringe	1.2	detect	1	3.7	**1.2**	<1.0
	SE1-CFR-SA	SE1-CFR-SA	Bed	0.21	detect	1	3.7	<1.0	<1.0
	57-CFR	SE57-CFR-SA	Bed	0.72	detect	1	3.7	<1.0	<1.0
	58-CFR	SE58-CFR-SA	Bed	0.5	detect	1	3.7	<1.0	<1.0
	59-CFR	SE59-CFR-SA	Bed	0.58	detect	1	3.7	<1.0	<1.0
	60-CFR	SE60-CFR-SA	Bed	0.175	ND	1	3.7	<1.0	<1.0
	61-CFR	SE61-CFR-SA	Bed	0.36	detect	1	3.7	<1.0	<1.0
	62-CFR	SE62-CFR-SA	Bed	0.4	detect	1	3.7	<1.0	<1.0
	63-CFR	SE63-CFR-SA	Bed	0.19	ND	1	3.7	<1.0	<1.0
	SE23-CFR-FF	SE23-CFR-FF	Flood Fringe	0.86	detect	1	3.7	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Clark Fork River

Silver





Appendix E2
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Sediment in the Clark Fork River

Zinc

Reach	Location	Sample ID	Sediment Type	Sediment Conc. (a) (ug/L)		Toxicity Benchmark (ug/L)		Hazard Quotient (b) (HQ)	
						No Effect	Low-Effect	No Effect	Low-Effect
CFR - Within Site Boundary	SE6-CFR-SA	SE6-CFR-SA	Bed	106	detect	121	459	<1.0	<1.0
	50-CFR	SE50-CFR-SA	Bed	209	detect	121	459	**1.7**	<1.0
	SE5-CFR-SA	SE5-CFR-SA	Bed	162	detect	121	459	**1.3**	<1.0
	51-CFR	SE51-CFR-SA	Bed	161	detect	121	459	**1.3**	<1.0
	52-CFR	SE52-CFR-SA	Bed	219	detect	121	459	**1.8**	<1.0
	SE4-CFR-SA	SE4-CFR-SA	Bed	169	detect	121	459	**1.4**	<1.0
	SE25-CFR-FF	SE25-CFR-FF	Flood Fringe	375	detect	121	459	**3.1**	<1.0
CFR - Downstream of Site	53-CFR	SE53-CFR-SA	Bed	143	detect	121	459	**1.2**	<1.0
	54-CFR	SE54-CFR-SA	Bed	159	detect	121	459	**1.3**	<1.0
	SE3-CFR-SA	SE3-CFR-SA	Bed	132	detect	121	459	**1.1**	<1.0
	55-CFR	SE55-CFR-SA	Bed	197	detect	121	459	**1.6**	<1.0
	56-CFR	SE56-CFR-SA	Bed	147	detect	121	459	**1.2**	<1.0
	SE2-CFR-SA	SE2-CFR-SA	Bed	192	detect	121	459	**1.6**	<1.0
	SE24-CFR-FF	SE24-CFR-FF	Flood Fringe	372	detect	121	459	**3.1**	<1.0
	SE1-CFR-SA	SE1-CFR-SA	Bed	94.3	detect	121	459	<1.0	<1.0
	57-CFR	SE57-CFR-SA	Bed	299	detect	121	459	**2.5**	<1.0
	58-CFR	SE58-CFR-SA	Bed	229	detect	121	459	**1.9**	<1.0
	59-CFR	SE59-CFR-SA	Bed	288	detect	121	459	**2.4**	<1.0
	60-CFR	SE60-CFR-SA	Bed	125	detect	121	459	<1.0	<1.0
	61-CFR	SE61-CFR-SA	Bed	226	detect	121	459	**1.9**	<1.0
	62-CFR	SE62-CFR-SA	Bed	246	detect	121	459	**2.0**	<1.0
	63-CFR	SE63-CFR-SA	Bed	136	detect	121	459	**1.1**	<1.0
	SE23-CFR-FF	SE23-CFR-FF	Flood Fringe	456	detect	121	459	**3.8**	<1.0

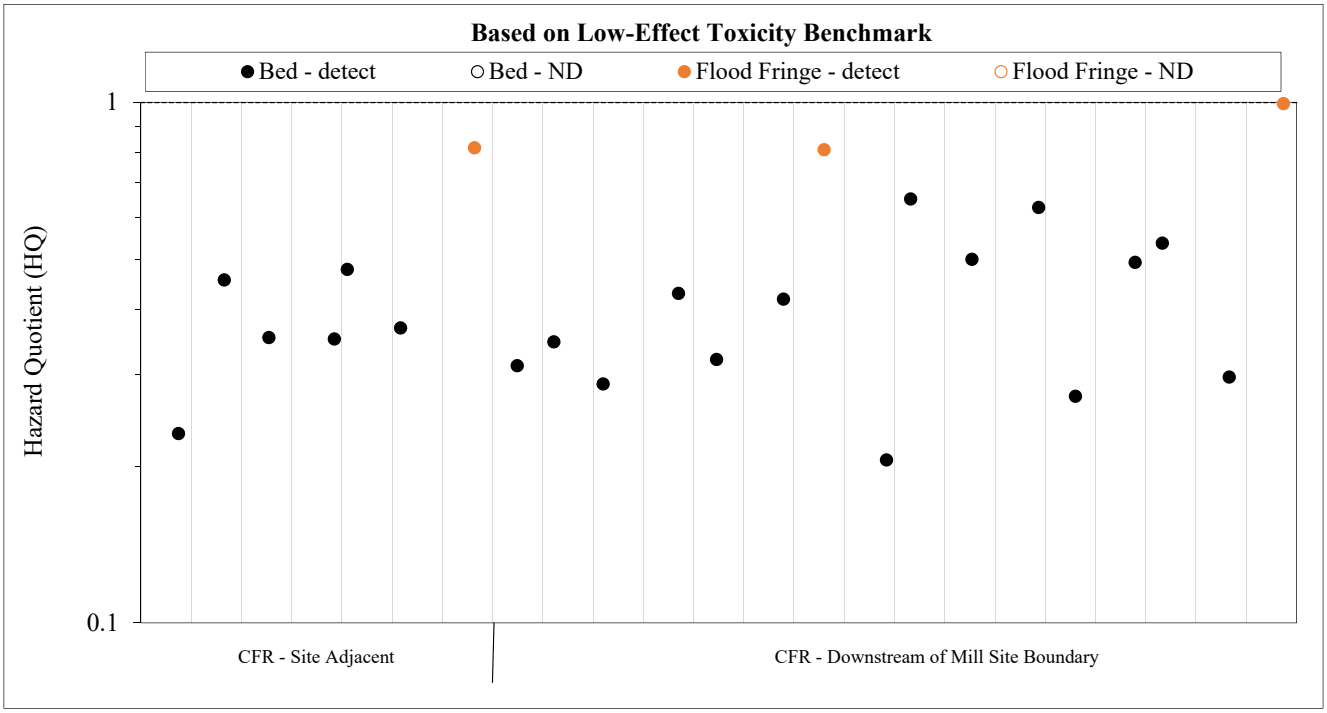
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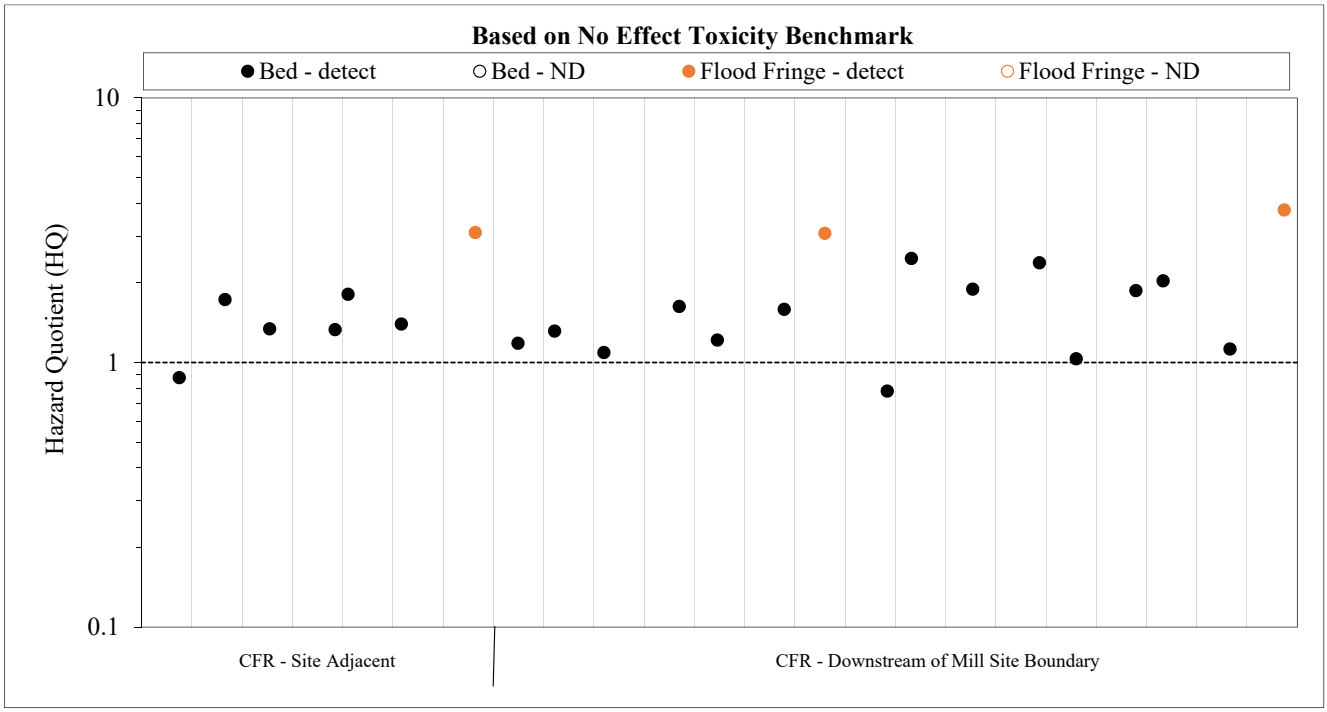
(a) Non-detects are evaluated at 1/2 the reported value.

(b) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Clark Fork River

Zinc





Appendix E2
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Sediment in the Clark Fork River

Fish TEQ - ND=1/2DL

Reach	Location	Sample ID	Sediment Type	Sediment Conc. (a) (ug/L)		Toxicity Benchmark (ug/L)		Hazard Quotient (b) (HQ)	
						No Effect	Low-Effect	No Effect	Low-Effect
CFR - Within Site Boundary	SE6-CFR-SA	SE6-CFR-SA	Bed	4.07866E-07	detect	0.00000085	0.0000215	<1.0	<1.0
	50-CFR	SE50-CFR-SA	Bed	4.71718E-07	detect	0.00000085	0.0000215	<1.0	<1.0
	SE5-CFR-SA	SE5-CFR-SA	Bed	6.09135E-07	detect	0.00000085	0.0000215	<1.0	<1.0
	51-CFR	SE51-CFR-SA	Bed	3.46605E-07	detect	0.00000085	0.0000215	<1.0	<1.0
	52-CFR	SE52-CFR-SA	Bed	3.6776E-07	detect	0.00000085	0.0000215	<1.0	<1.0
	SE4-CFR-SA	SE4-CFR-SA	Bed	5.50282E-07	detect	0.00000085	0.0000215	<1.0	<1.0
	SE25-CFR-FF	SE25-CFR-FF	Flood Fringe	6.80172E-07	detect	0.00000085	0.0000215	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SE53-CFR-SA	Bed	4.77692E-07	detect	0.00000085	0.0000215	<1.0	<1.0
	54-CFR	SE54-CFR-SA	Bed	3.34366E-07	detect	0.00000085	0.0000215	<1.0	<1.0
	SE3-CFR-SA	SE3-CFR-SA	Bed	5.59756E-07	detect	0.00000085	0.0000215	<1.0	<1.0
	55-CFR	SE55-CFR-SA	Bed	3.79961E-07	detect	0.00000085	0.0000215	<1.0	<1.0
	56-CFR	SE56-CFR-SA	Bed	2.62579E-07	detect	0.00000085	0.0000215	<1.0	<1.0
	SE2-CFR-SA	SE2-CFR-SA	Bed	6.0439E-07	detect	0.00000085	0.0000215	<1.0	<1.0
	SE24-CFR-FF	SE24-CFR-FF	Flood Fringe	6.5159E-07	detect	0.00000085	0.0000215	<1.0	<1.0
	SE1-CFR-SA	SE1-CFR-SA	Bed	4.4675E-07	detect	0.00000085	0.0000215	<1.0	<1.0
	57-CFR	SE57-CFR-SA	Bed	5.74681E-07	detect	0.00000085	0.0000215	<1.0	<1.0
	58-CFR	SE58-CFR-SA	Bed	6.1677E-07	detect	0.00000085	0.0000215	<1.0	<1.0
	59-CFR	SE59-CFR-SA	Bed	4.89842E-07	detect	0.00000085	0.0000215	<1.0	<1.0
	60-CFR	SE60-CFR-SA	Bed	4.91271E-07	detect	0.00000085	0.0000215	<1.0	<1.0
	61-CFR	SE61-CFR-SA	Bed	4.62875E-07	detect	0.00000085	0.0000215	<1.0	<1.0
	62-CFR	SE62-CFR-SA	Bed	5.6616E-07	detect	0.00000085	0.0000215	<1.0	<1.0
	63-CFR	SE63-CFR-SA	Bed	4.9468E-07	detect	0.00000085	0.0000215	<1.0	<1.0
	SE23-CFR-FF	SE23-CFR-FF	Flood Fringe	8.68724E-07	detect	0.00000085	0.0000215	<1.0	<1.0

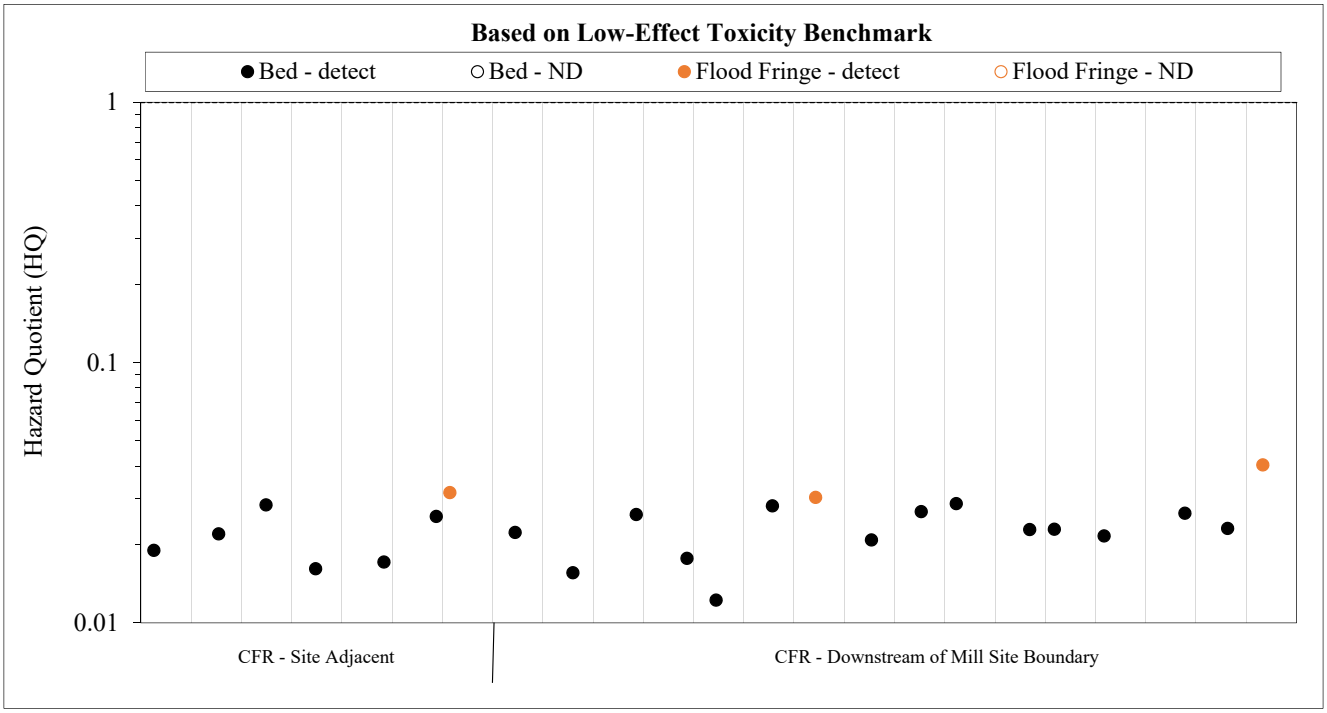
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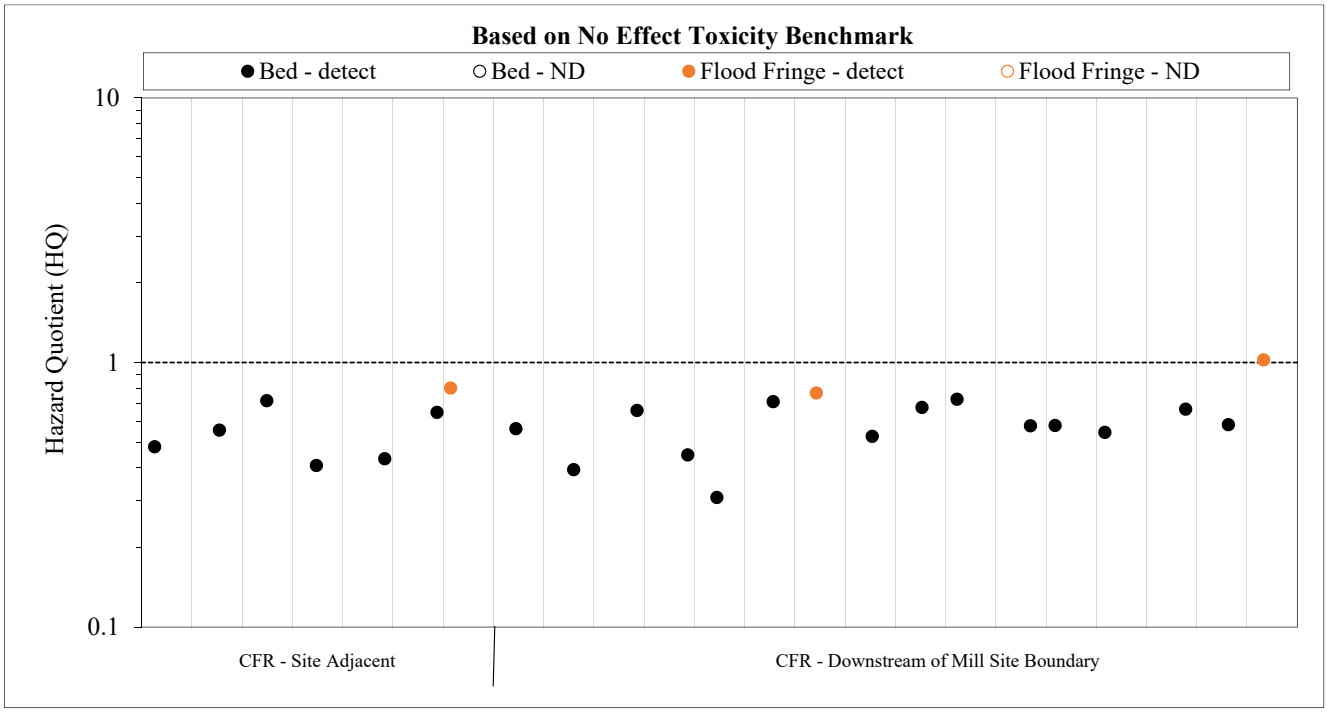
(a) Non-detects are evaluated at 1/2 the reported value.

(b) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Clark Fork River

Fish TEQ - ND=1/2DL





Appendix E2
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Sediment in Creeks

Arsenic

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (ug/L)		Hazard Quotient (b) (HQ)	
					No Effect	Low-Effect	No Effect	Low-Effect
O'Keefe Creek	SE20-OK-SA	SE20-OK-SA	4	detect	9.79	33	<1.0	<1.0
	41-OK	SE41-OK-SA-C	4.3	detect	9.79	33	<1.0	<1.0
	42-OK	SE42-OK-SA-C	3.7	detect	9.79	33	<1.0	<1.0
	43-OK	SE43-OK-SA-C	4.4	detect	9.79	33	<1.0	<1.0
Lavalle Creek	SE19-LV-SA	SE19-LV-SA	2.7	detect	9.79	33	<1.0	<1.0
	SE18-LV-SA	SE18-LV-SA	5	detect	9.79	33	<1.0	<1.0
	36-LV	SE36-LV-SA	3.4	detect	9.79	33	<1.0	<1.0
	37-LV	SE37-LV-SA	1.8	detect	9.79	33	<1.0	<1.0
	38-LV	SE38-LV-SA	3	detect	9.79	33	<1.0	<1.0
	SE17-LV-SA	SE17-LV-SA	12.2	detect	9.79	33	**1.2**	<1.0
	39-LV	SE39-LV-SA	15.5	detect	9.79	33	**1.6**	<1.0

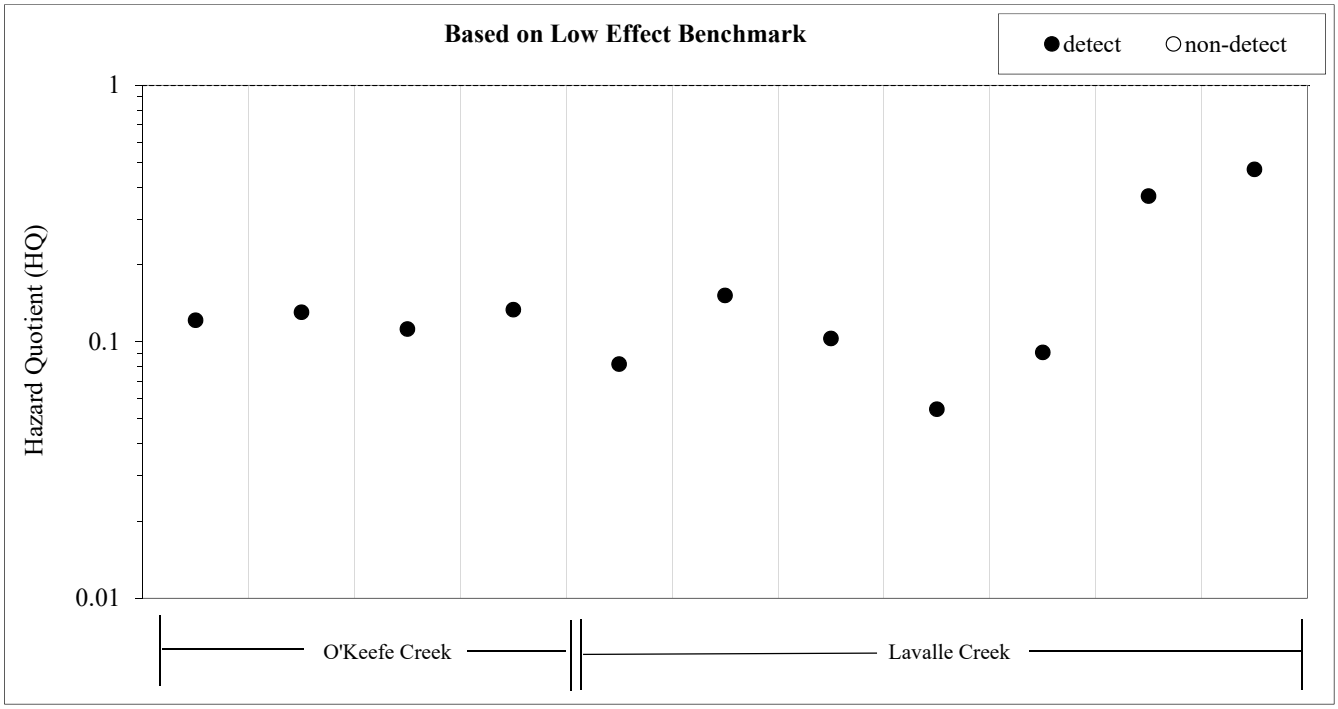
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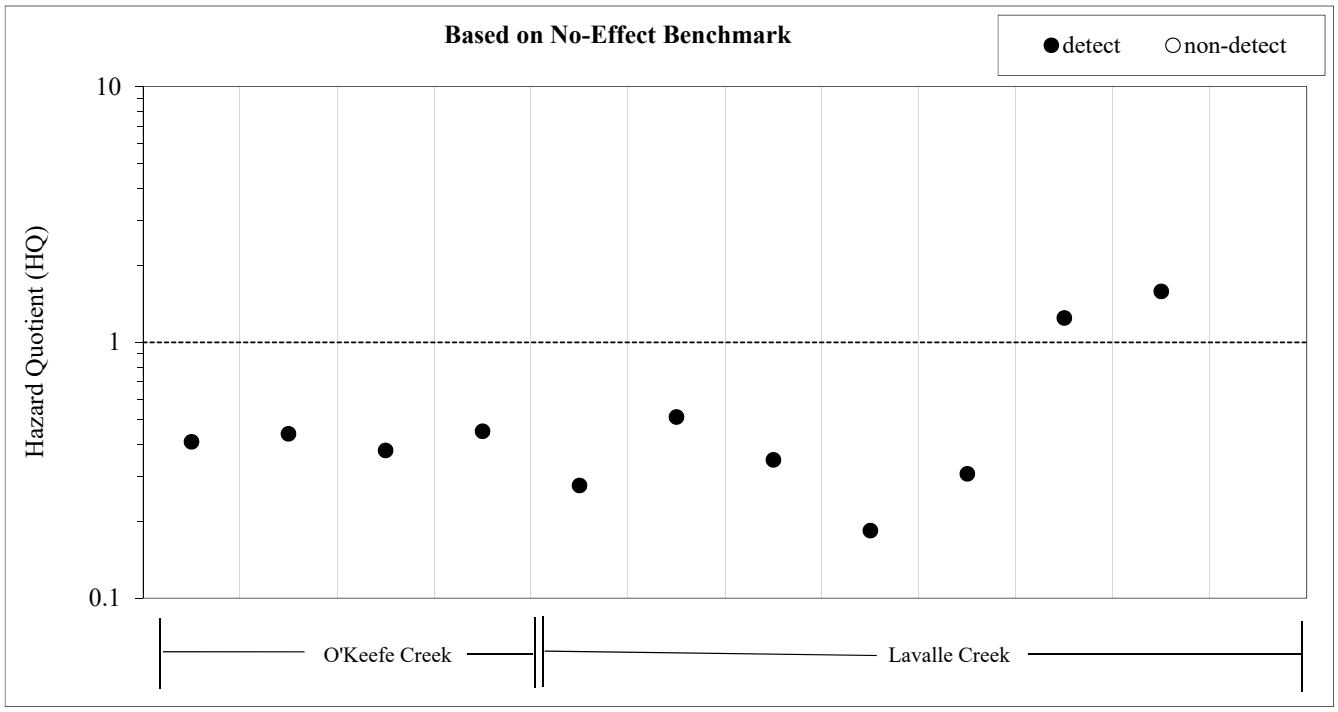
(a) Non-detects are evaluated at 1/2 the reported value.

(b) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Creeks

Arsenic





Appendix E2
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Sediment in Creeks

Cadmium

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (ug/L)		Hazard Quotient (b) (HQ)	
					No Effect	Low-Effect	No Effect	Low-Effect
O'Keefe Creek	SE20-OK-SA	SE20-OK-SA	0.076	detect	0.99	4.98	<1.0	<1.0
	41-OK	SE41-OK-SA-C	0.17	detect	0.99	4.98	<1.0	<1.0
	42-OK	SE42-OK-SA-C	0.2	detect	0.99	4.98	<1.0	<1.0
	43-OK	SE43-OK-SA-C	0.23	detect	0.99	4.98	<1.0	<1.0
Lavalle Creek	SE19-LV-SA	SE19-LV-SA	0.12	detect	0.99	4.98	<1.0	<1.0
	SE18-LV-SA	SE18-LV-SA	0.28	detect	0.99	4.98	<1.0	<1.0
	36-LV	SE36-LV-SA	0.13	detect	0.99	4.98	<1.0	<1.0
	37-LV	SE37-LV-SA	0.051	detect	0.99	4.98	<1.0	<1.0
	38-LV	SE38-LV-SA	0.11	detect	0.99	4.98	<1.0	<1.0
	SE17-LV-SA	SE17-LV-SA	0.68	detect	0.99	4.98	<1.0	<1.0
	39-LV	SE39-LV-SA	0.89	detect	0.99	4.98	<1.0	<1.0

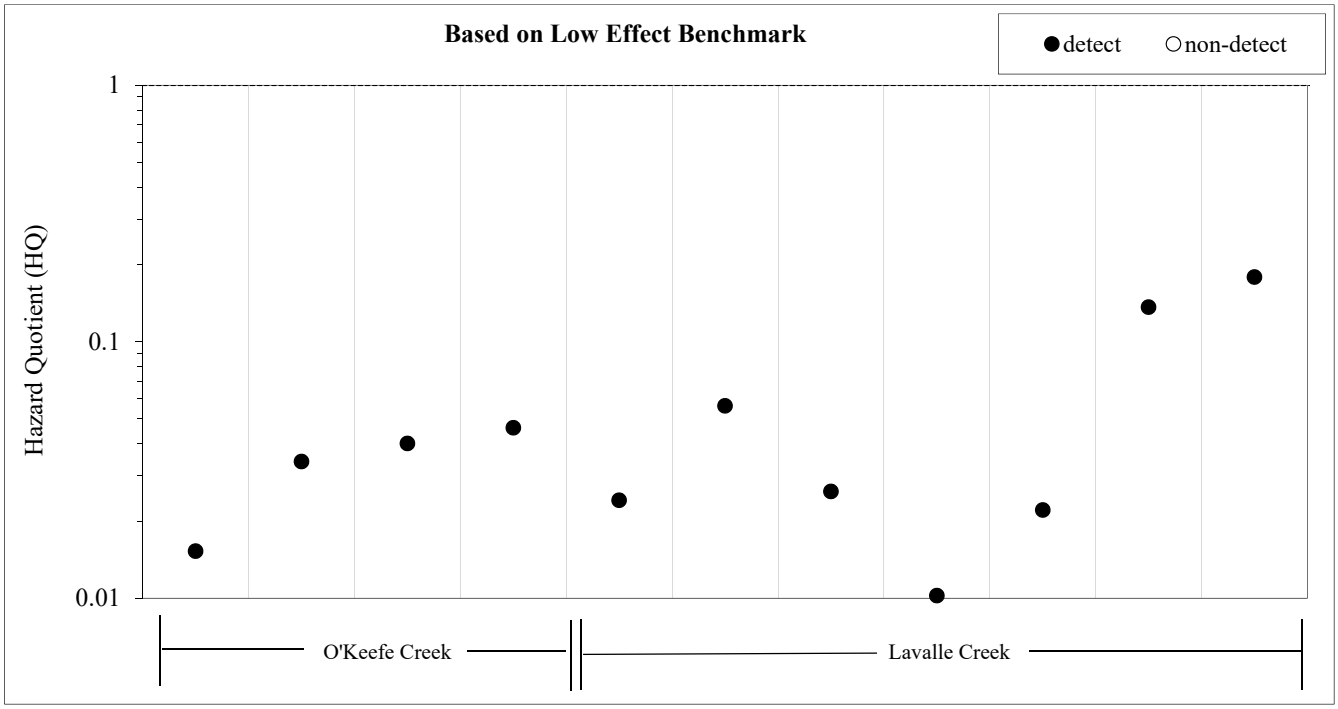
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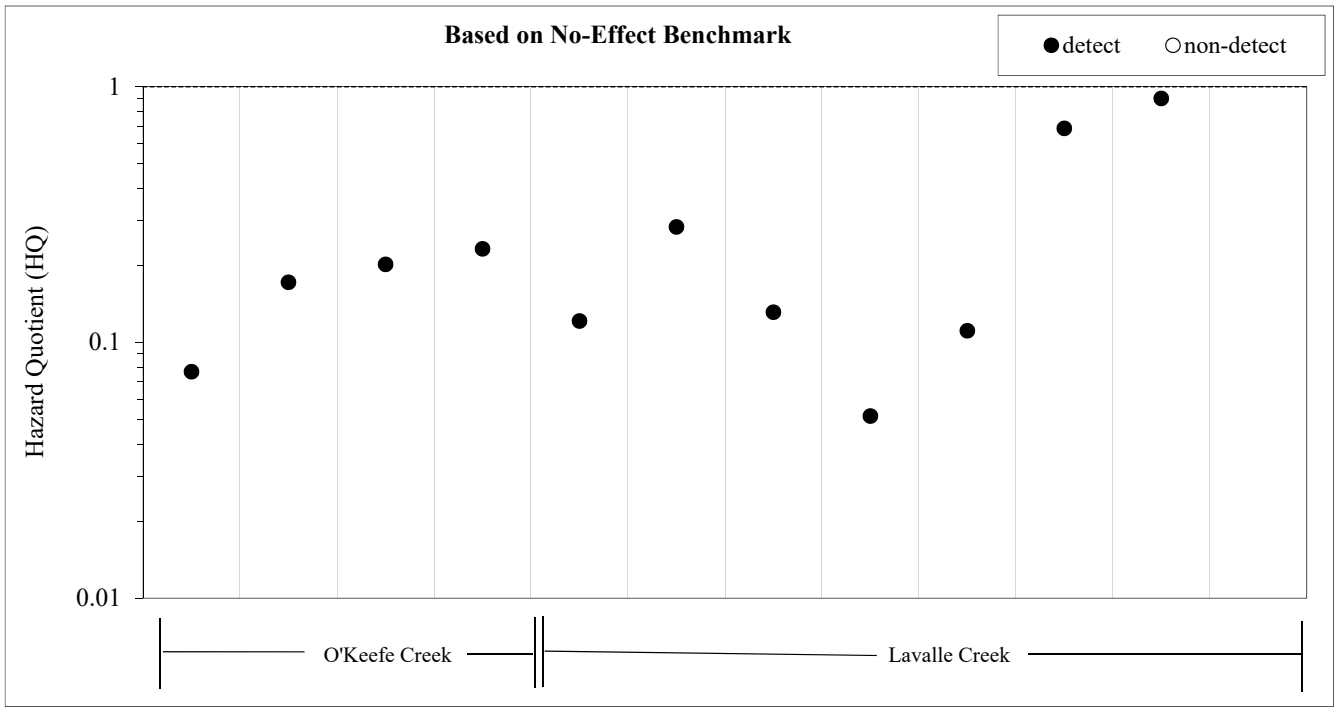
(a) Non-detects are evaluated at 1/2 the reported value.

(b) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Creeks

Cadmium





Appendix E2
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Sediment in Creeks

Copper

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (ug/L)		Hazard Quotient (b) (HQ)	
					No Effect	Low-Effect	No Effect	Low-Effect
O'Keefe Creek	SE20-OK-SA	SE20-OK-SA	14.4	detect	31.6	149	<1.0	<1.0
	41-OK	SE41-OK-SA-C	22.4	detect	31.6	149	<1.0	<1.0
	42-OK	SE42-OK-SA-C	23.9	detect	31.6	149	<1.0	<1.0
	43-OK	SE43-OK-SA-C	28.3	detect	31.6	149	<1.0	<1.0
Lavalle Creek	SE19-LV-SA	SE19-LV-SA	27.8	detect	31.6	149	<1.0	<1.0
	SE18-LV-SA	SE18-LV-SA	45.5	detect	31.6	149	**1.4**	<1.0
	36-LV	SE36-LV-SA	23	detect	31.6	149	<1.0	<1.0
	37-LV	SE37-LV-SA	8.4	detect	31.6	149	<1.0	<1.0
	38-LV	SE38-LV-SA	19.9	detect	31.6	149	<1.0	<1.0
	SE17-LV-SA	SE17-LV-SA	118	detect	31.6	149	**3.7**	<1.0
	39-LV	SE39-LV-SA	158	detect	31.6	149	**5.0**	**1.1**

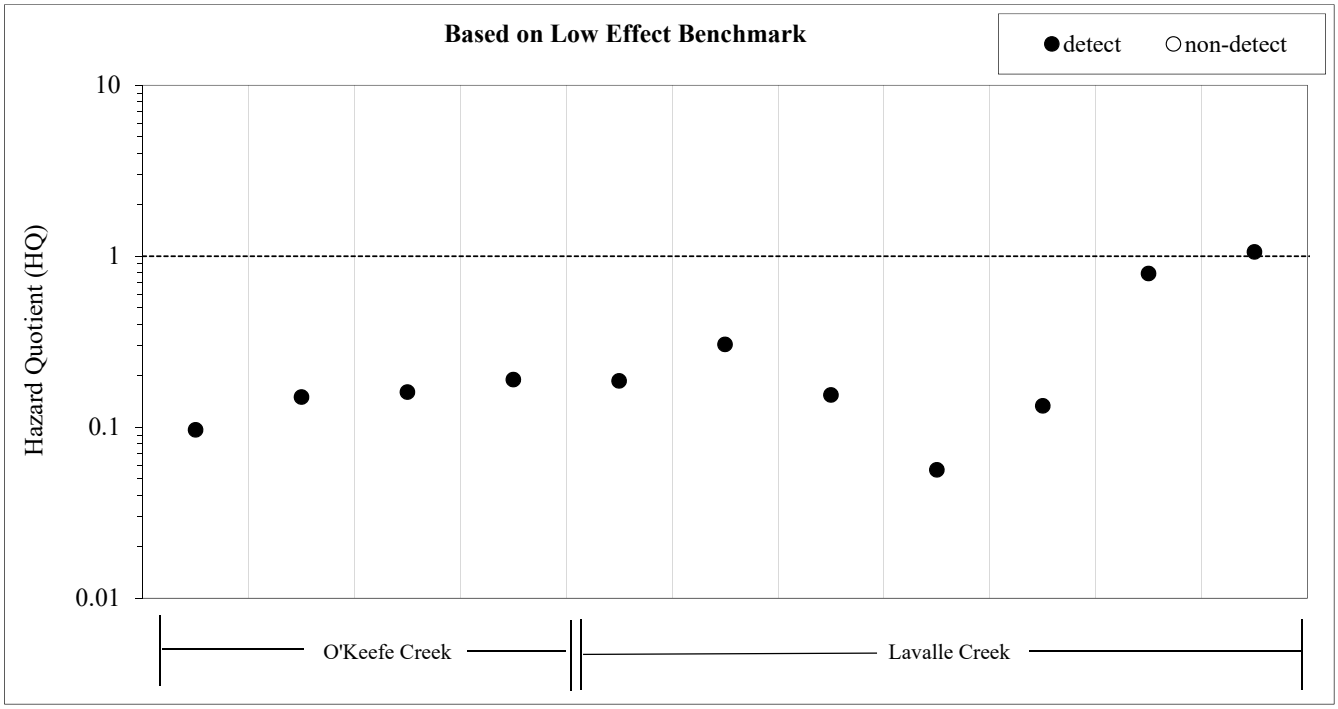
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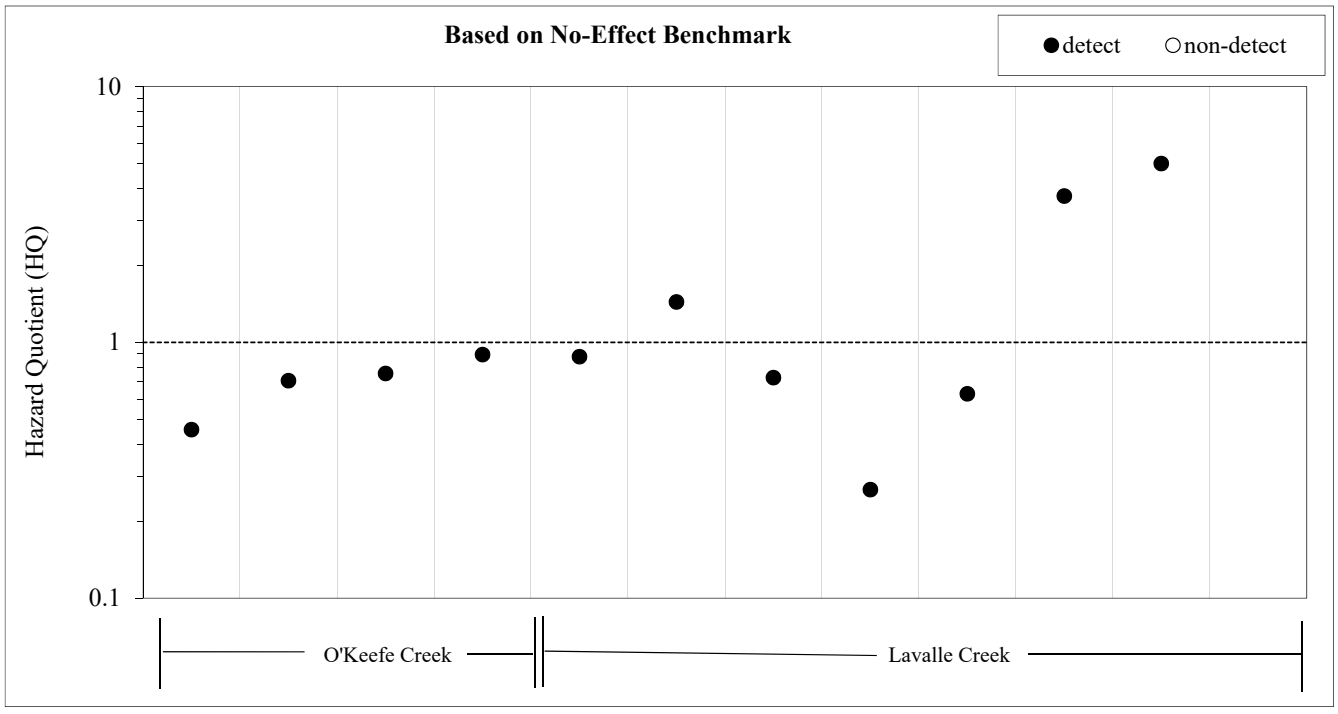
(a) Non-detects are evaluated at 1/2 the reported value.

(b) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Creeks

Copper





Appendix E2
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Sediment in Creeks

Lead

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (ug/L)		Hazard Quotient (b) (HQ)	
					No Effect	Low-Effect	No Effect	Low-Effect
O'Keefe Creek	SE20-OK-SA	SE20-OK-SA	9.2	detect	35.8	128	<1.0	<1.0
	41-OK	SE41-OK-SA-C	13	detect	35.8	128	<1.0	<1.0
	42-OK	SE42-OK-SA-C	13	detect	35.8	128	<1.0	<1.0
	43-OK	SE43-OK-SA-C	13.2	detect	35.8	128	<1.0	<1.0
Lavalle Creek	SE19-LV-SA	SE19-LV-SA	11.5	detect	35.8	128	<1.0	<1.0
	SE18-LV-SA	SE18-LV-SA	17.5	detect	35.8	128	<1.0	<1.0
	36-LV	SE36-LV-SA	6.4	detect	35.8	128	<1.0	<1.0
	37-LV	SE37-LV-SA	4.3	detect	35.8	128	<1.0	<1.0
	38-LV	SE38-LV-SA	5.6	detect	35.8	128	<1.0	<1.0
	SE17-LV-SA	SE17-LV-SA	23.2	detect	35.8	128	<1.0	<1.0
	39-LV	SE39-LV-SA	29.5	detect	35.8	128	<1.0	<1.0

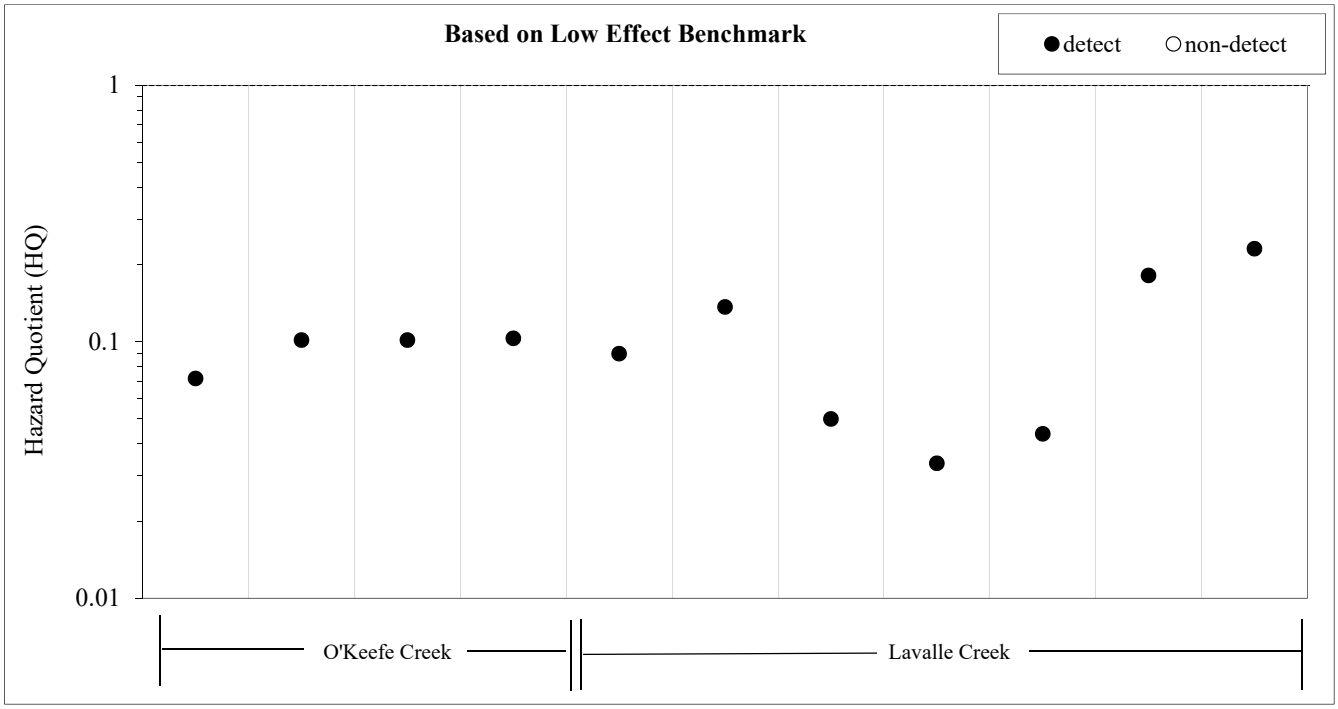
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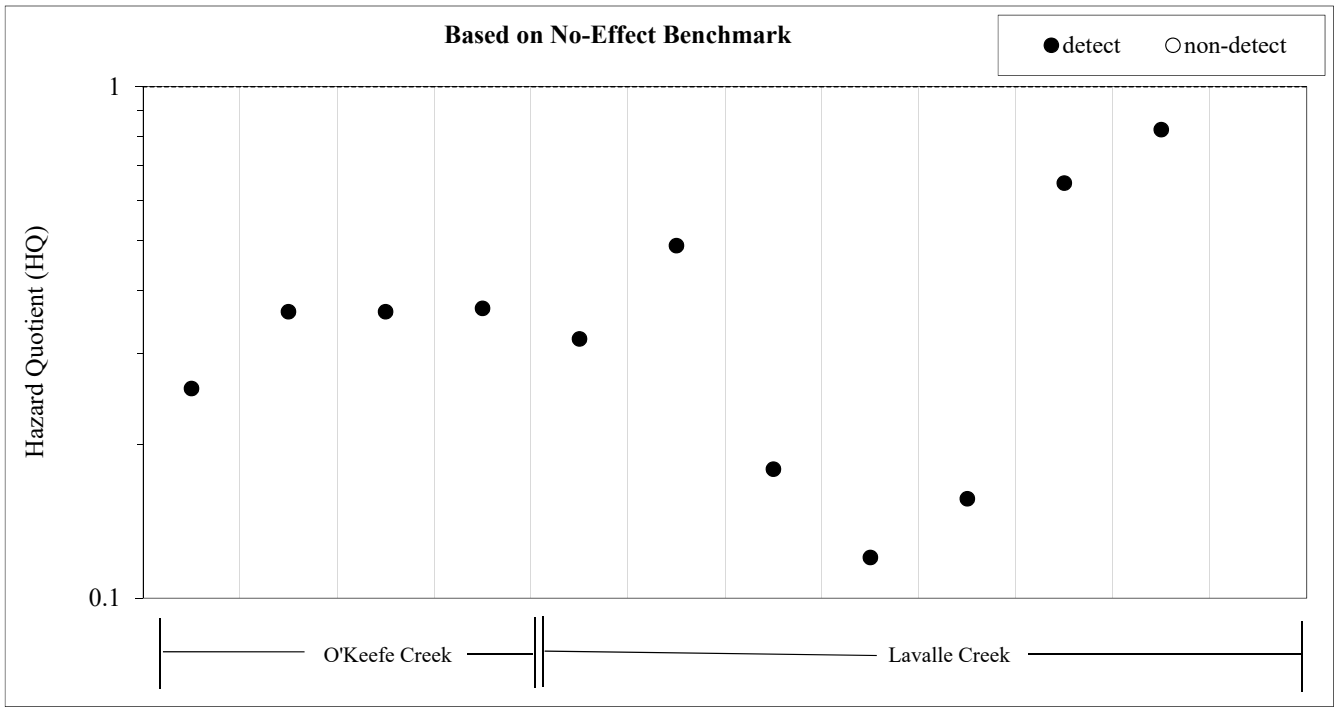
(a) Non-detects are evaluated at 1/2 the reported value.

(b) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Creeks

Lead





Appendix E2
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Sediment in Creeks

Manganese

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (ug/L)		Hazard Quotient (b) (HQ)	
					No Effect	Low-Effect	No Effect	Low-Effect
O'Keefe Creek	SE20-OK-SA	SE20-OK-SA	175	detect	631	1184	<1.0	<1.0
	41-OK	SE41-OK-SA-C	350	detect	631	1184	<1.0	<1.0
	42-OK	SE42-OK-SA-C	182	detect	631	1184	<1.0	<1.0
	43-OK	SE43-OK-SA-C	153	detect	631	1184	<1.0	<1.0
Lavalle Creek	SE19-LV-SA	SE19-LV-SA	61.5	detect	631	1184	<1.0	<1.0
	SE18-LV-SA	SE18-LV-SA	217	detect	631	1184	<1.0	<1.0
	36-LV	SE36-LV-SA	104	detect	631	1184	<1.0	<1.0
	37-LV	SE37-LV-SA	75.1	detect	631	1184	<1.0	<1.0
	38-LV	SE38-LV-SA	95.7	detect	631	1184	<1.0	<1.0
	SE17-LV-SA	SE17-LV-SA	383	detect	631	1184	<1.0	<1.0
	39-LV	SE39-LV-SA	349	detect	631	1184	<1.0	<1.0

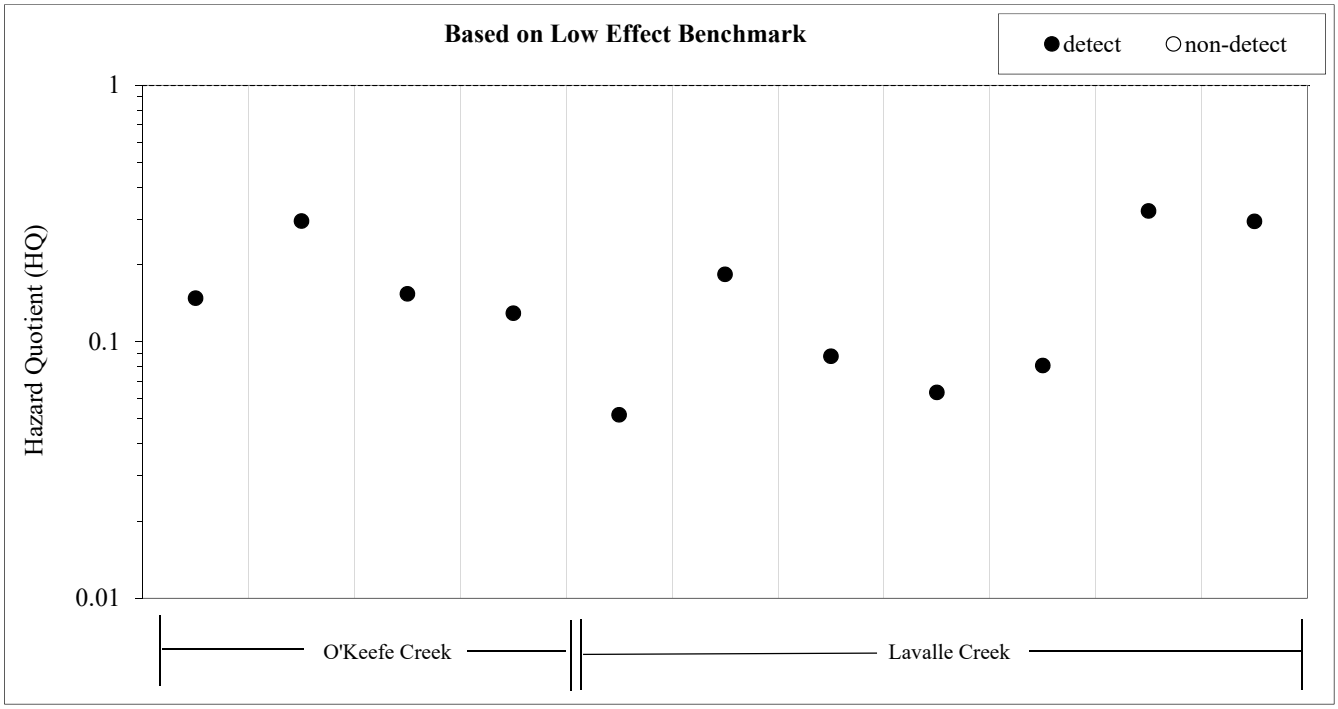
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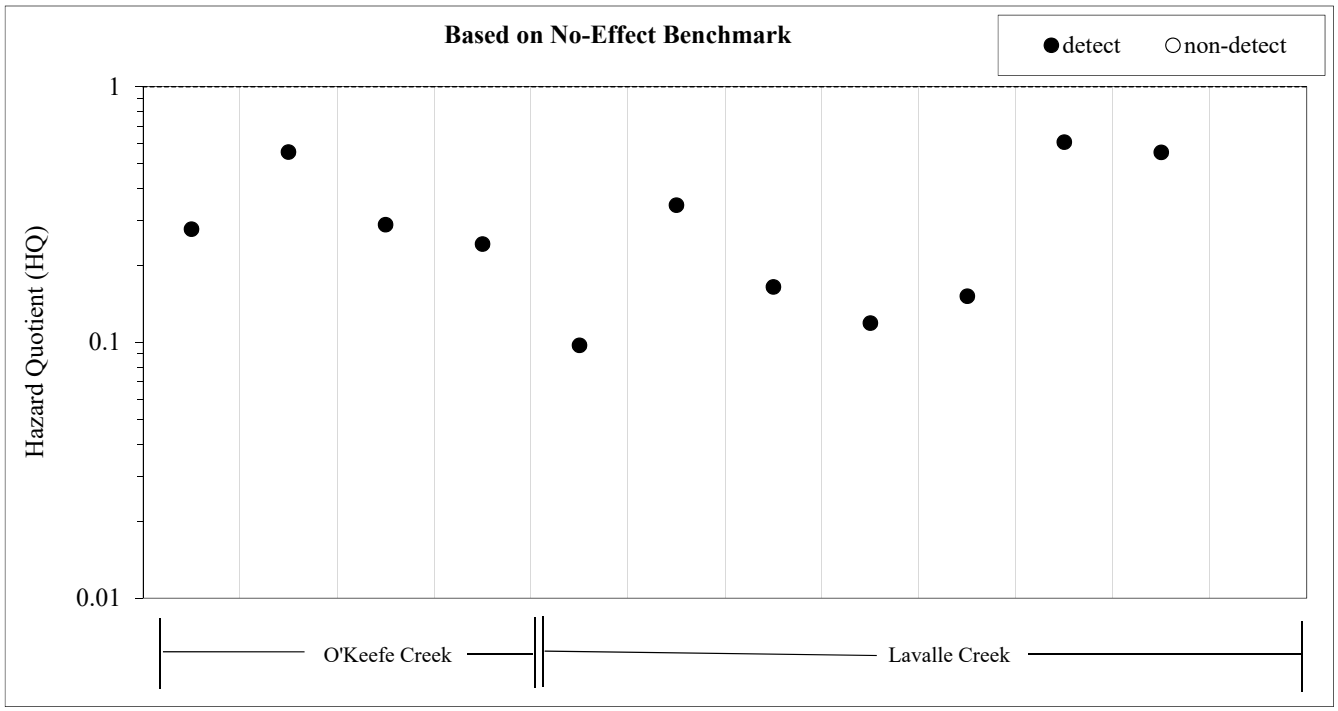
(a) Non-detects are evaluated at 1/2 the reported value.

(b) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Creeks

Manganese





Appendix E2
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Sediment in Creeks

Mercury

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (ug/L)		Hazard Quotient (b) (HQ)	
					No Effect	Low-Effect	No Effect	Low-Effect
O'Keefe Creek	SE20-OK-SA	SE20-OK-SA	0.016	detect	0.18	1.06	<1.0	<1.0
	41-OK	SE41-OK-SA-C	0.031	detect	0.18	1.06	<1.0	<1.0
	42-OK	SE42-OK-SA-C	0.037	detect	0.18	1.06	<1.0	<1.0
	43-OK	SE43-OK-SA-C	0.036	detect	0.18	1.06	<1.0	<1.0
Lavalle Creek	SE19-LV-SA	SE19-LV-SA	0.033	detect	0.18	1.06	<1.0	<1.0
	SE18-LV-SA	SE18-LV-SA	0.067	detect	0.18	1.06	<1.0	<1.0
	36-LV	SE36-LV-SA	0.005	ND	0.18	1.06	<1.0	<1.0
	37-LV	SE37-LV-SA	0.005	ND	0.18	1.06	<1.0	<1.0
	38-LV	SE38-LV-SA	0.021	detect	0.18	1.06	<1.0	<1.0
	SE17-LV-SA	SE17-LV-SA	0.15	detect	0.18	1.06	<1.0	<1.0
	39-LV	SE39-LV-SA	0.2	detect	0.18	1.06	**1.1**	<1.0

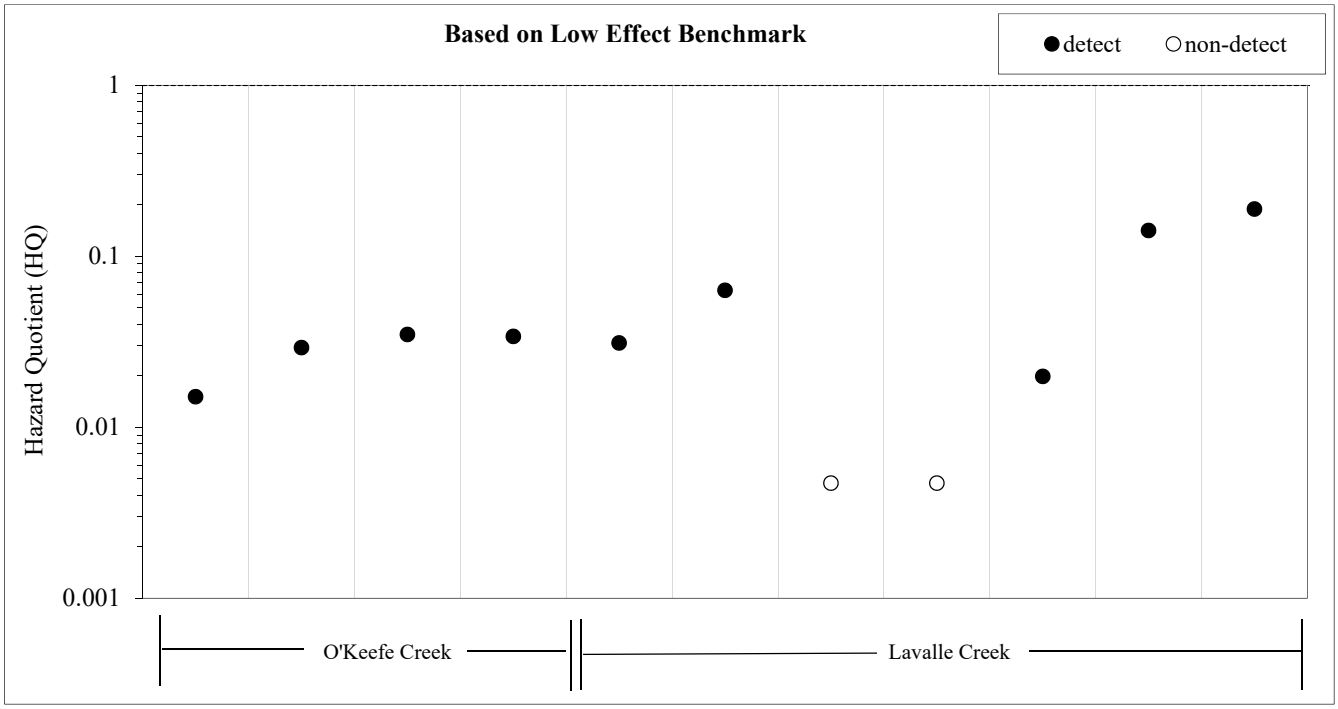
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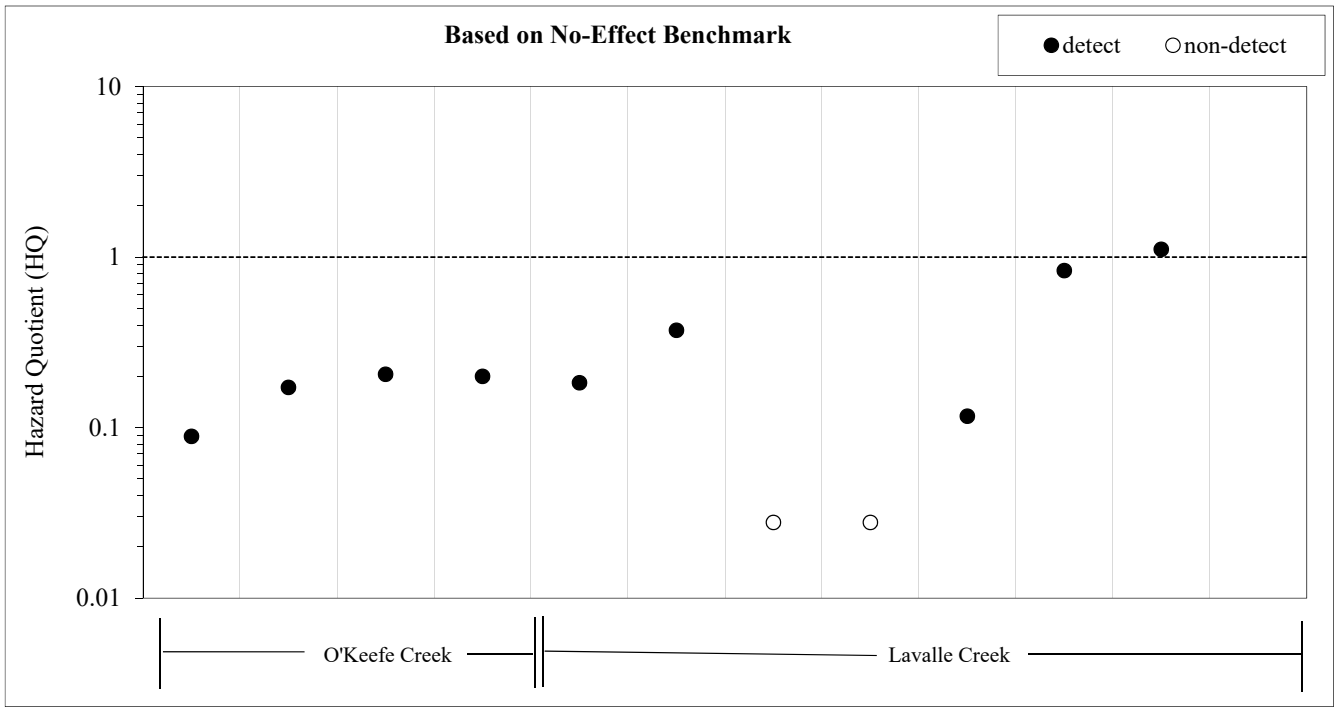
(a) Non-detects are evaluated at 1/2 the reported value.

(b) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Creeks

Mercury





Appendix E2
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Sediment in Creeks

Selenium

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (ug/L)		Hazard Quotient (b) (HQ)	
					No Effect	Low-Effect	No Effect	Low-Effect
O'Keefe Creek	SE20-OK-SA	SE20-OK-SA	#N/A	#N/A	0.9	4.7	#N/A	#N/A
	41-OK	SE41-OK-SA-C	0.25	detect	0.9	4.7	<1.0	<1.0
	42-OK	SE42-OK-SA-C	0.13	ND	0.9	4.7	<1.0	<1.0
	43-OK	SE43-OK-SA-C	0.35	detect	0.9	4.7	<1.0	<1.0
Lavalle Creek	SE19-LV-SA	SE19-LV-SA	#N/A	#N/A	0.9	4.7	#N/A	#N/A
	SE18-LV-SA	SE18-LV-SA	#N/A	#N/A	0.9	4.7	#N/A	#N/A
	36-LV	SE36-LV-SA	0.105	ND	0.9	4.7	<1.0	<1.0
	37-LV	SE37-LV-SA	0.1	ND	0.9	4.7	<1.0	<1.0
	38-LV	SE38-LV-SA	0.1	ND	0.9	4.7	<1.0	<1.0
	SE17-LV-SA	SE17-LV-SA	#N/A	#N/A	0.9	4.7	#N/A	#N/A
	39-LV	SE39-LV-SA	1.3	detect	0.9	4.7	**1.4**	<1.0

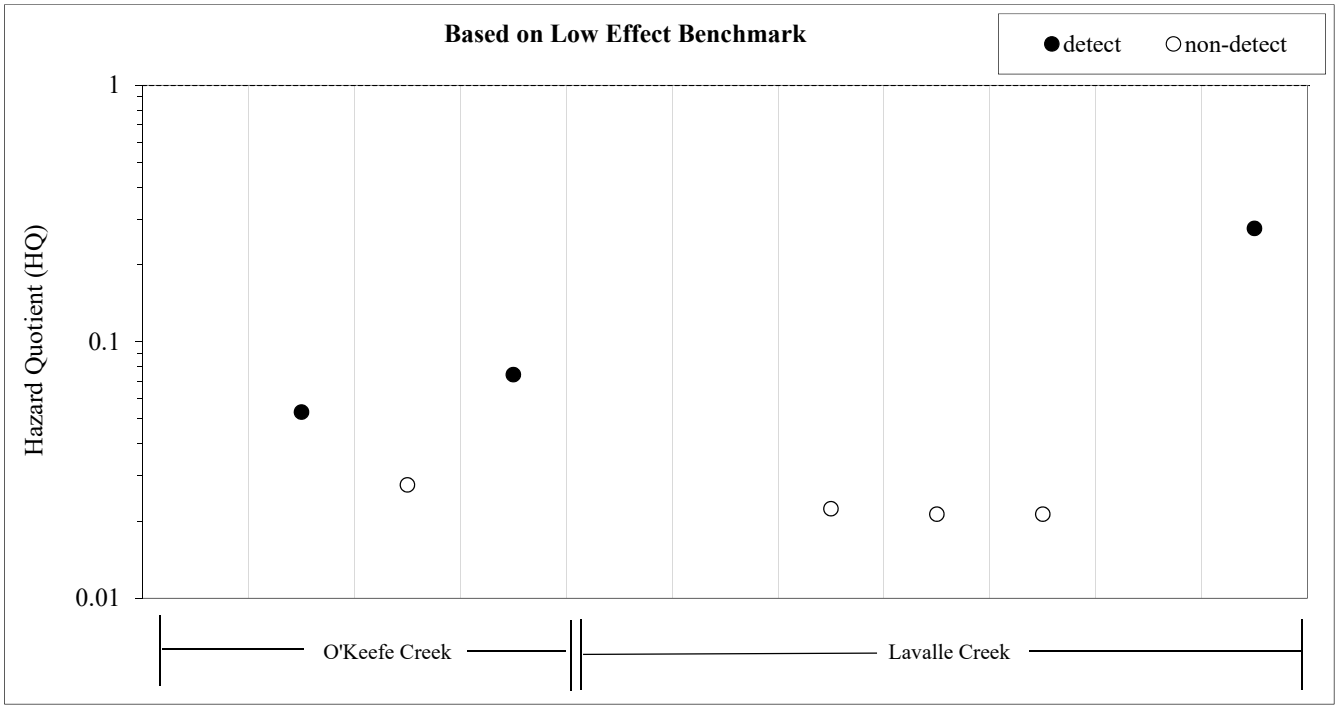
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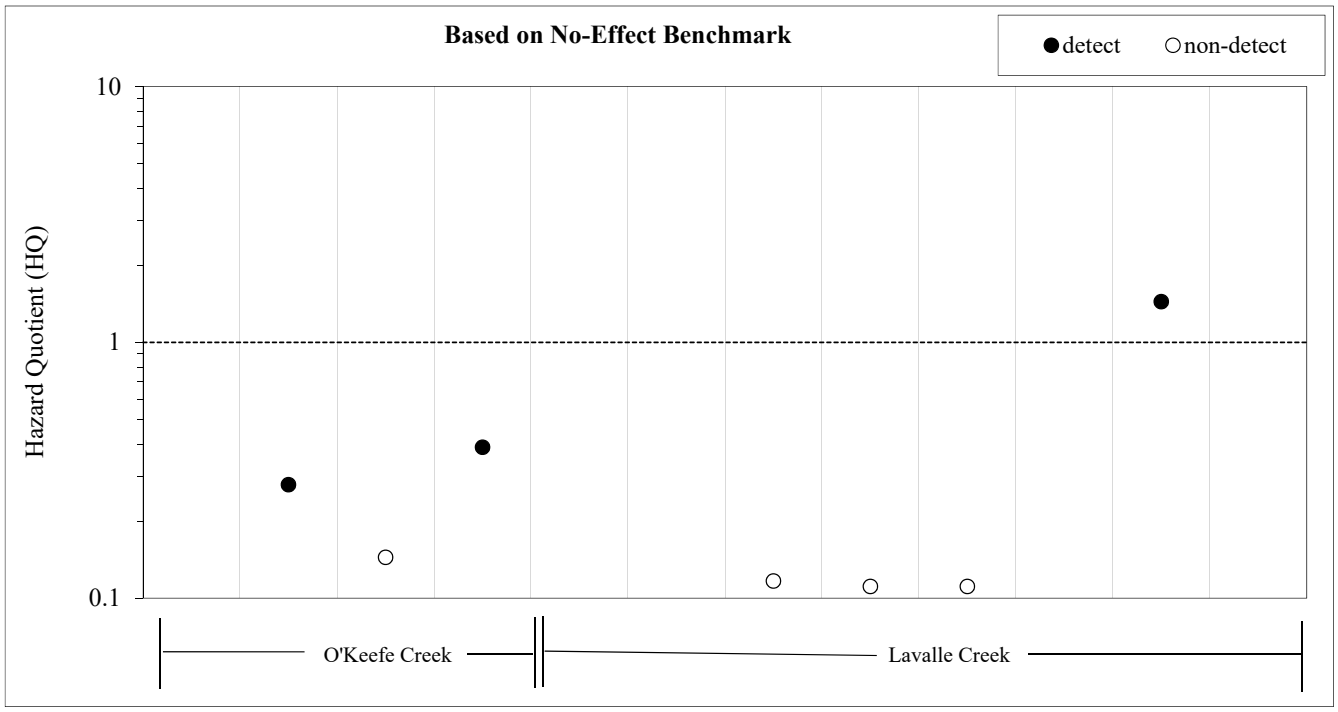
(a) Non-detects are evaluated at 1/2 the reported value.

(b) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Creeks

Selenium





Appendix E2
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Sediment in Creeks

Silver

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (ug/L)		Hazard Quotient (b) (HQ)	
					No Effect	Low-Effect	No Effect	Low-Effect
O'Keefe Creek	SE20-OK-SA	SE20-OK-SA	0.065	ND	1	3.7	<1.0	<1.0
	41-OK	SE41-OK-SA-C	0.135	ND	1	3.7	<1.0	<1.0
	42-OK	SE42-OK-SA-C	0.155	ND	1	3.7	<1.0	<1.0
	43-OK	SE43-OK-SA-C	0.195	ND	1	3.7	<1.0	<1.0
Lavalle Creek	SE19-LV-SA	SE19-LV-SA	0.1	ND	1	3.7	<1.0	<1.0
	SE18-LV-SA	SE18-LV-SA	0.205	ND	1	3.7	<1.0	<1.0
	36-LV	SE36-LV-SA	0.125	ND	1	3.7	<1.0	<1.0
	37-LV	SE37-LV-SA	0.115	ND	1	3.7	<1.0	<1.0
	38-LV	SE38-LV-SA	0.115	ND	1	3.7	<1.0	<1.0
	SE17-LV-SA	SE17-LV-SA	0.43	detect	1	3.7	<1.0	<1.0
	39-LV	SE39-LV-SA	0.58	detect	1	3.7	<1.0	<1.0

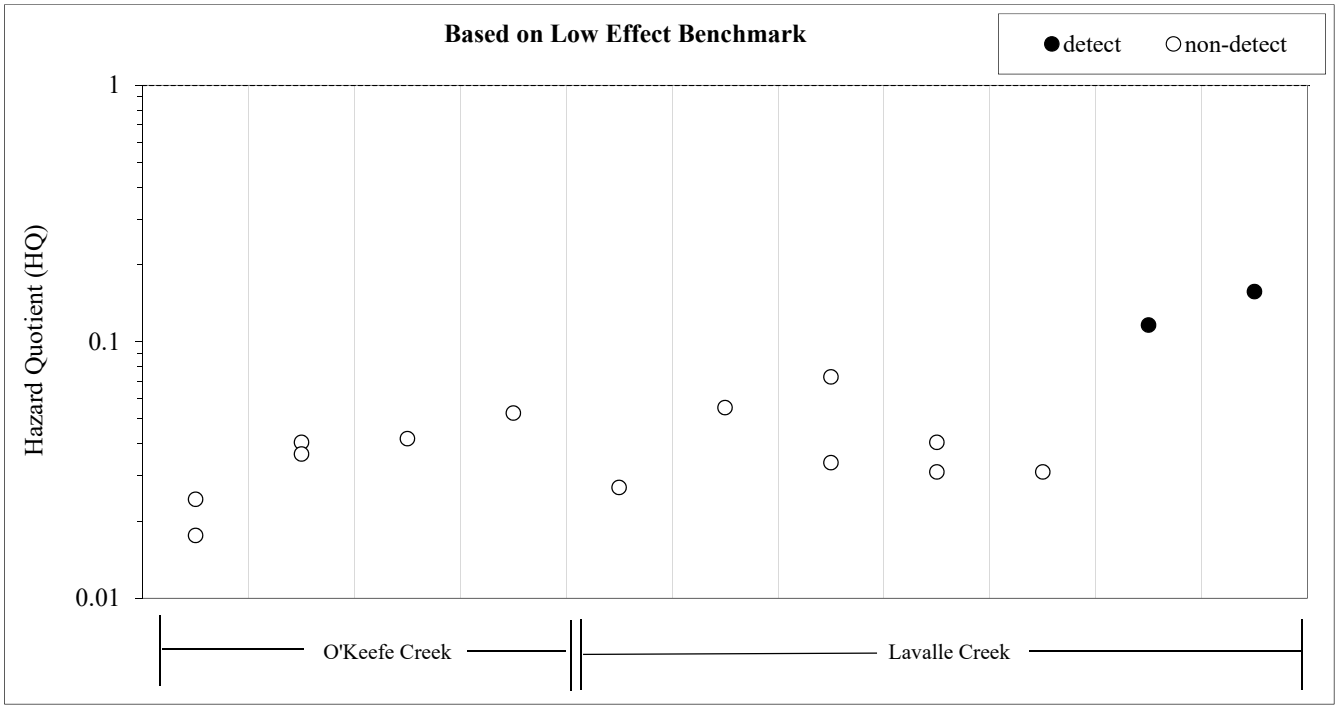
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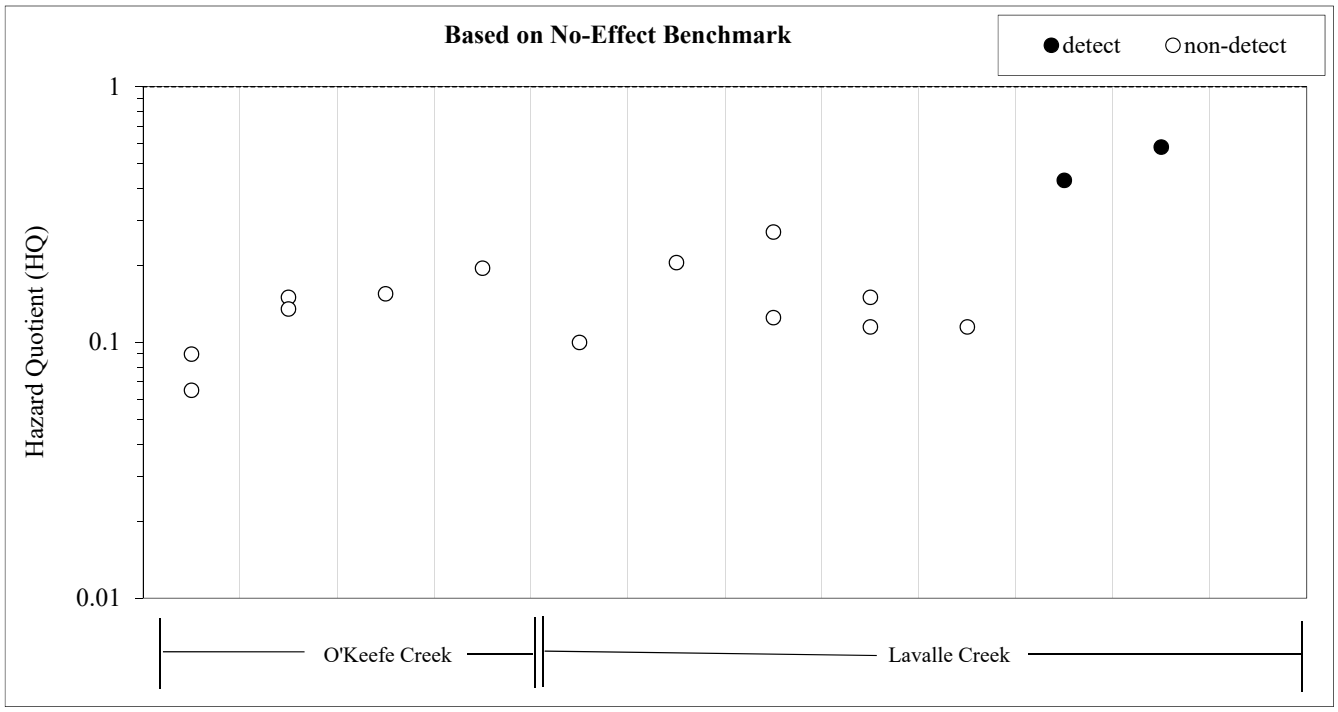
(a) Non-detects are evaluated at 1/2 the reported value.

(b) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Creeks

Silver





Appendix E2
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Sediment in Creeks

Zinc

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (ug/L)		Hazard Quotient (b) (HQ)	
					No Effect	Low-Effect	No Effect	Low-Effect
O'Keefe Creek	SE20-OK-SA	SE20-OK-SA	41.9	detect	121	459	<1.0	<1.0
	41-OK	SE41-OK-SA-C	66.6	detect	121	459	<1.0	<1.0
	42-OK	SE42-OK-SA-C	80.4	detect	121	459	<1.0	<1.0
	43-OK	SE43-OK-SA-C	89.5	detect	121	459	<1.0	<1.0
Lavalle Creek	SE19-LV-SA	SE19-LV-SA	42.1	detect	121	459	<1.0	<1.0
	SE18-LV-SA	SE18-LV-SA	102	detect	121	459	<1.0	<1.0
	36-LV	SE36-LV-SA	68.6	detect	121	459	<1.0	<1.0
	37-LV	SE37-LV-SA	27.2	detect	121	459	<1.0	<1.0
	38-LV	SE38-LV-SA	62.4	detect	121	459	<1.0	<1.0
	SE17-LV-SA	SE17-LV-SA	248	detect	121	459	**2.0**	<1.0
	39-LV	SE39-LV-SA	329	detect	121	459	**2.7**	<1.0

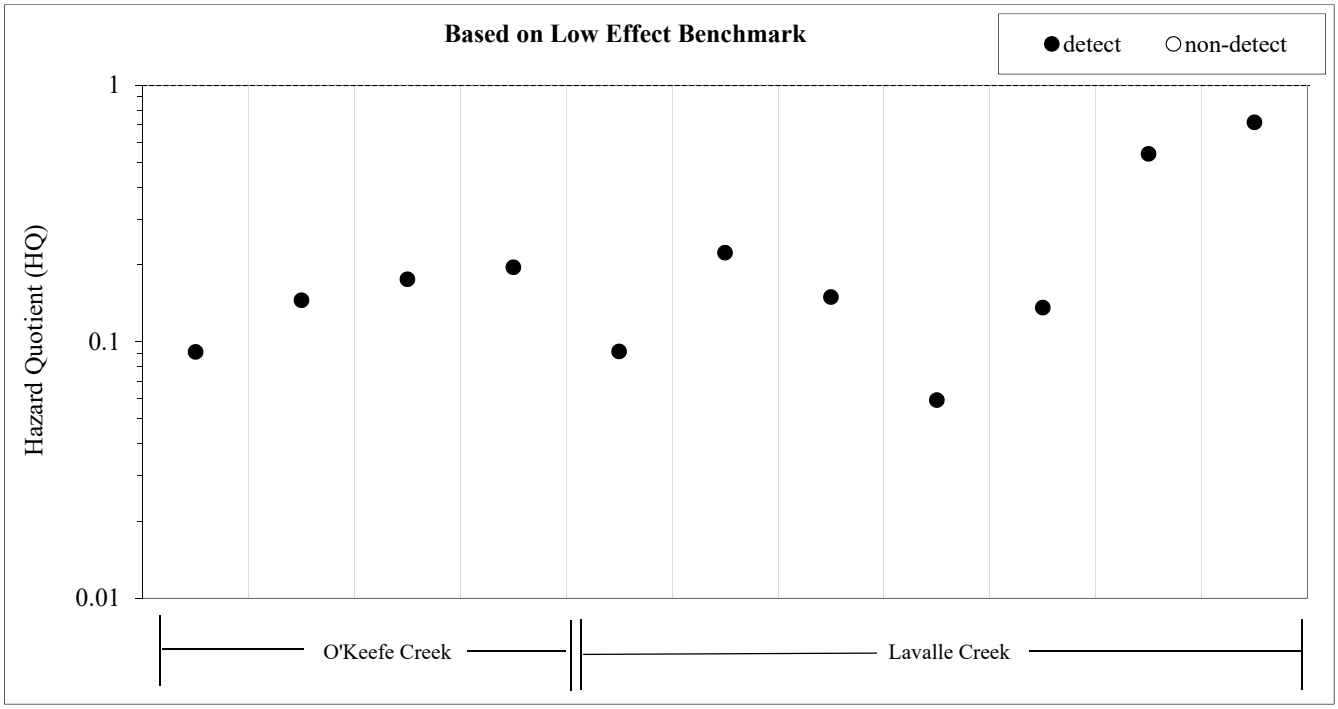
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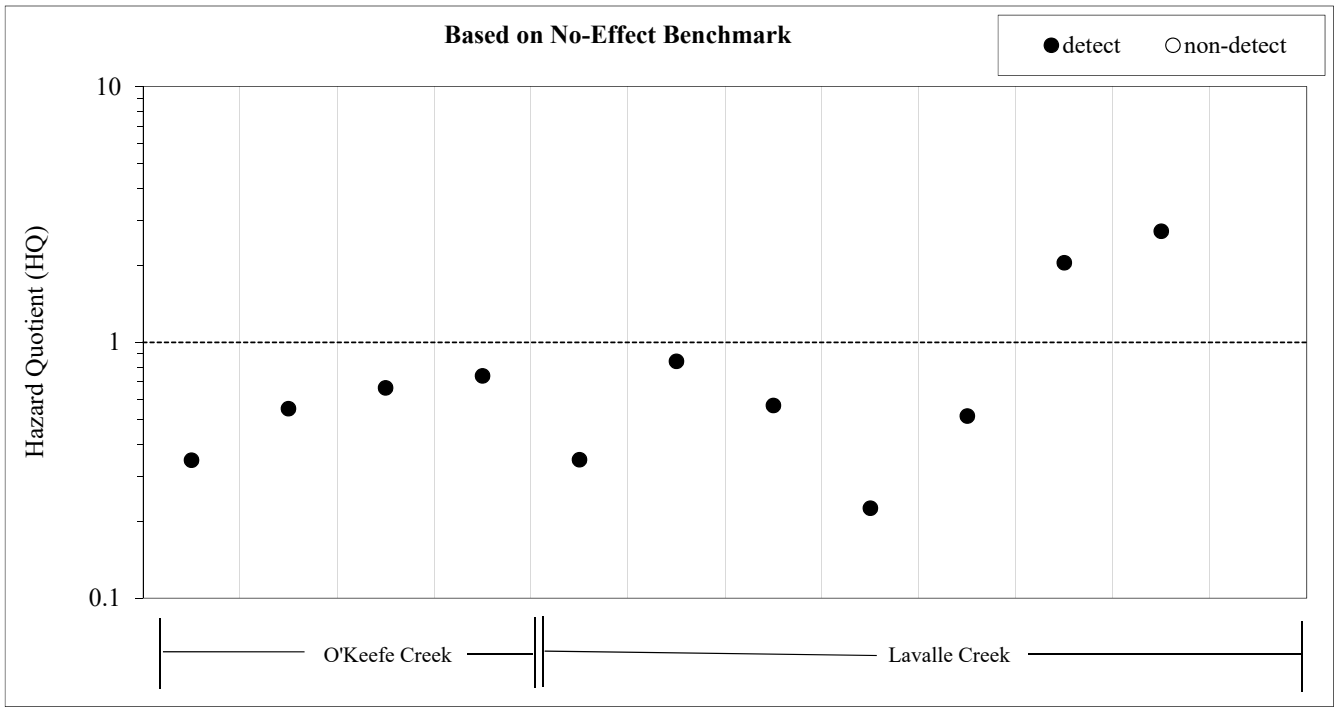
(a) Non-detects are evaluated at 1/2 the reported value.

(b) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Creeks

Zinc





Appendix E2
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Sediment in Creeks

Fish TEQ - ND=1/2DL

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (ug/L)		Hazard Quotient (b) (HQ)	
					No Effect	Low-Effect	No Effect	Low-Effect
O'Keefe Creek	SE20-OK-SA	SE20-OK-SA	4E-07	detect	0.00000085	0.0000215	<1.0	<1.0
	41-OK	SE41-OK-SA-C	3E-07	detect	0.00000085	0.0000215	<1.0	<1.0
	42-OK	SE42-OK-SA-C	6E-07	detect	0.00000085	0.0000215	<1.0	<1.0
	43-OK	SE43-OK-SA-C	1E-06	detect	0.00000085	0.0000215	**1.4**	<1.0
Lavalle Creek	SE19-LV-SA	SE19-LV-SA	5E-07	detect	0.00000085	0.0000215	<1.0	<1.0
	SE18-LV-SA	SE18-LV-SA	3E-06	detect	0.00000085	0.0000215	**3.3**	<1.0
	36-LV	SE36-LV-SA	2E-07	detect	0.00000085	0.0000215	<1.0	<1.0
	37-LV	SE37-LV-SA	2E-07	detect	0.00000085	0.0000215	<1.0	<1.0
	38-LV	SE38-LV-SA	2E-07	detect	0.00000085	0.0000215	<1.0	<1.0
	SE17-LV-SA	SE17-LV-SA	7E-07	detect	0.00000085	0.0000215	<1.0	<1.0
	39-LV	SE39-LV-SA	3E-07	detect	0.00000085	0.0000215	<1.0	<1.0

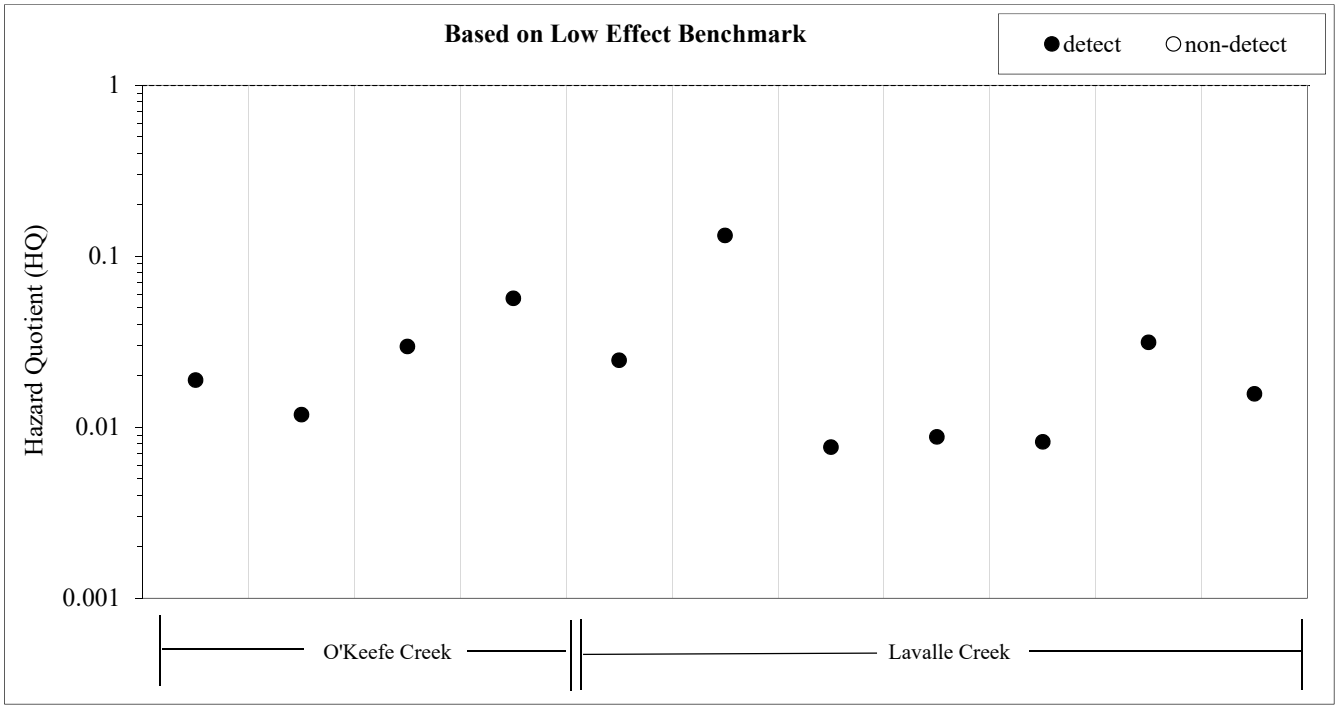
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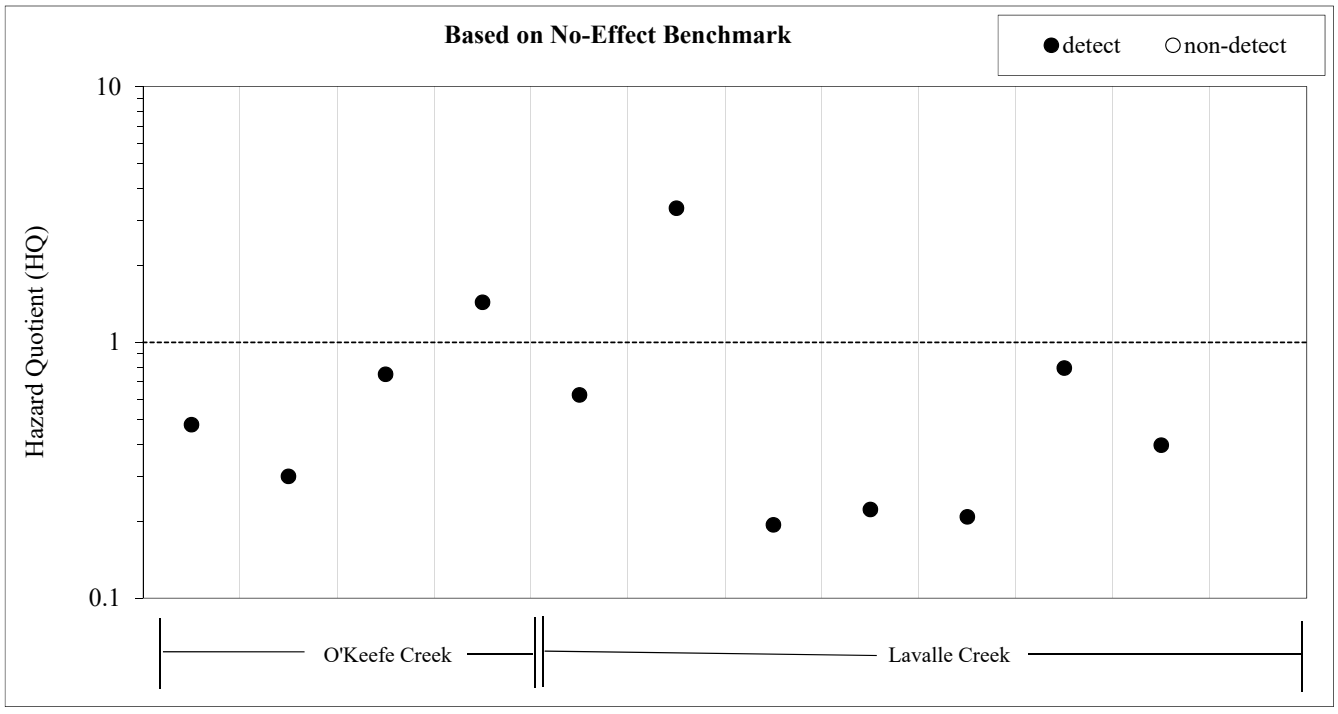
(a) Non-detects are evaluated at 1/2 the reported value.

(b) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Creeks

Fish TEQ - ND=1/2DL





Appendix E2
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Sediment in On-Site Ponds

Arsenic

Location	Sample ID	Sediment Conc. (a) (mg/kg)		Toxicity Benchmark (ug/L)		Hazard Quotient (b) (HQ)	
				Acute	Chronic	No Effect	Low-Effect
74-CL Pond	SE74-CL-POND-SA-C	8.7	detect	9.79	33	<1.0	<1.0
69-HP1a	SE69-HP1-SA-C	4.9	detect	9.79	33	<1.0	<1.0
73-P5	SE73-P5-SA-C	9.6	detect	9.79	33	<1.0	<1.0
71-HP7	SE71-HP7-SA	12.1	detect	9.79	33	**1.2**	<1.0
72-HP2	SE72-HP2-SA-C	7.2	detect	9.79	33	<1.0	<1.0
75-HP10	SE75-HP10-SA-C	6.9	detect	9.79	33	<1.0	<1.0
67-HP12	SE67-HP12-SA-C	14.9	detect	9.79	33	**1.5**	<1.0
68-IBJ	SE68-IBJ-SA-C	2.2	detect	9.79	33	<1.0	<1.0
66-HP13	SE66-HP13-SA-C	4.7	detect	9.79	33	<1.0	<1.0
65-HP13a	SE65-HP13a-SA-C	13.7	detect	9.79	33	**1.4**	<1.0
70-CWD	SE70-CWD-SA-C	1.8	detect	9.79	33	<1.0	<1.0
64-HP18	SE64-HP18-SA-C	7.7	detect	9.79	33	<1.0	<1.0

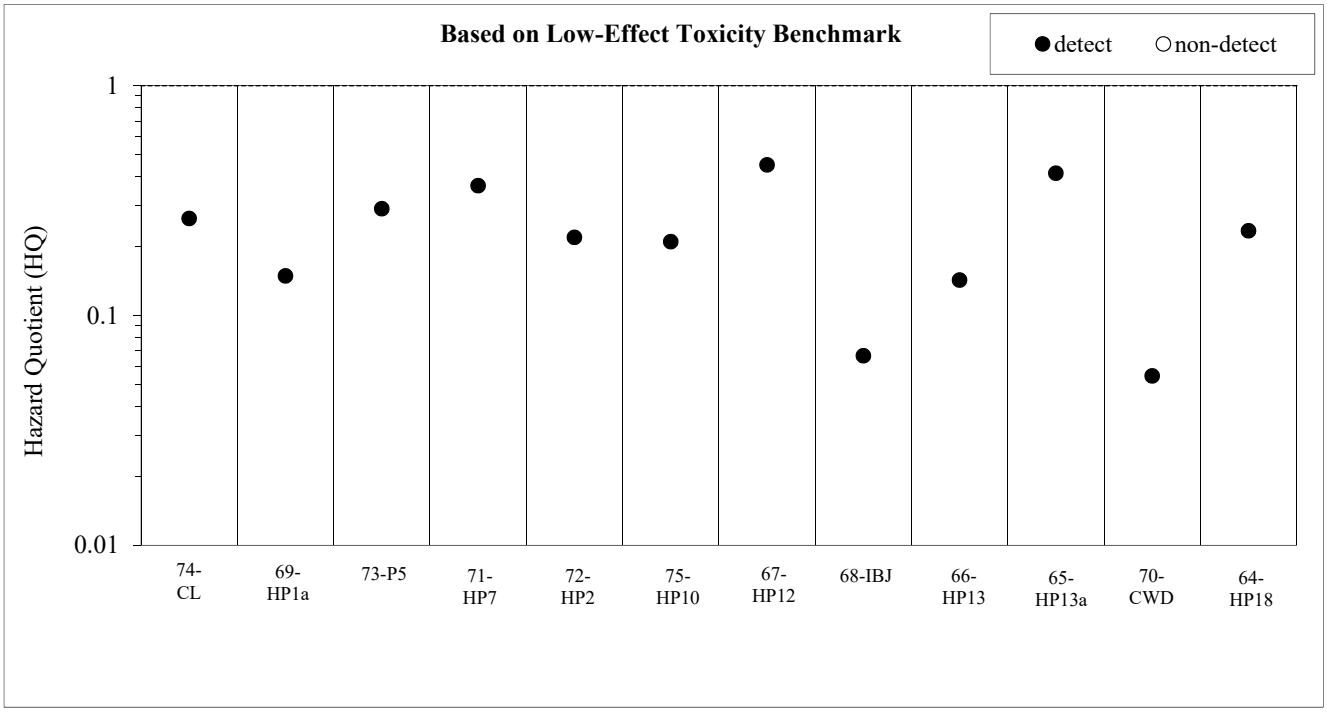
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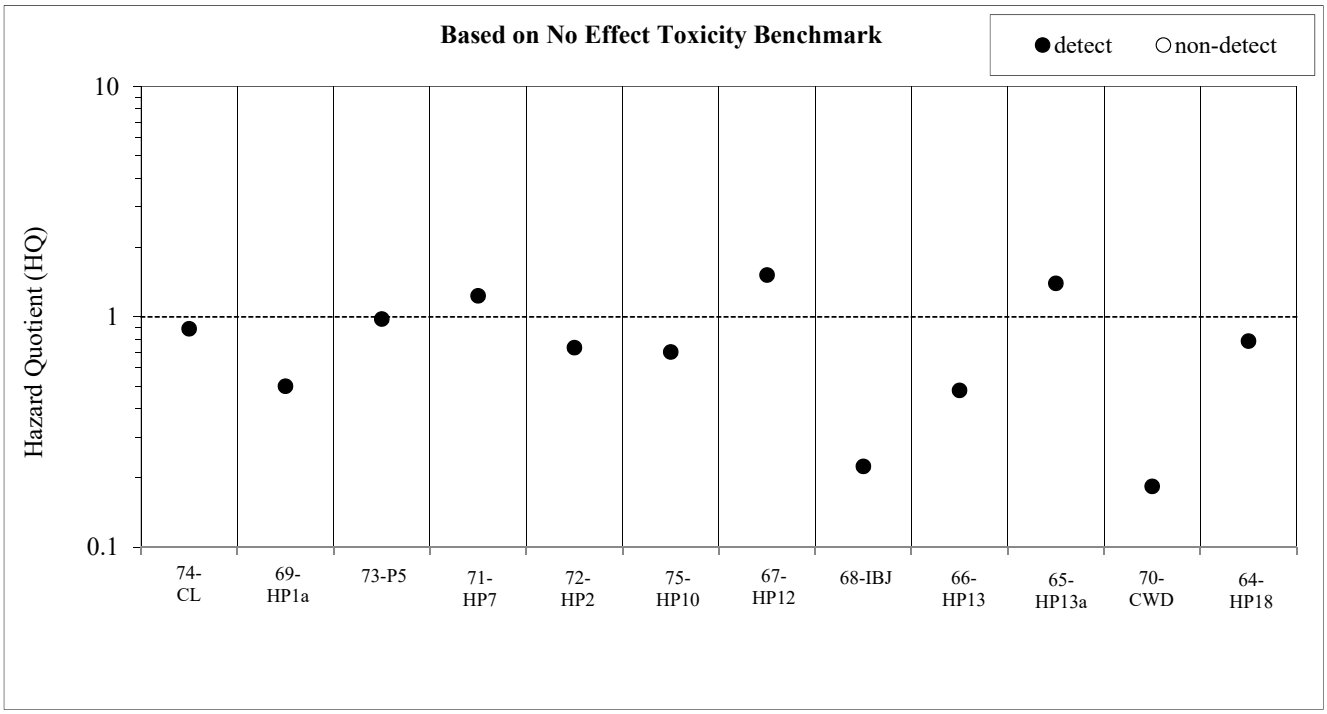
(a) Non-detects are evaluated at 1/2 the reported value.

(b) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Ponds

Arsenic





Appendix E2
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Sediment in On-Site Ponds

Cadmium

Location	Sample ID	Sediment Conc. (a) (mg/kg)		Toxicity Benchmark (ug/L)		Hazard Quotient (b) (HQ)	
				Acute	Chronic	No Effect	Low-Effect
74-CL Pond	SE74-CL-POND-SA-C	2.1	detect	0.99	4.98	**2.1**	<1.0
69-HP1a	SE69-HP1-SA-C	1.7	detect	0.99	4.98	**1.7**	<1.0
73-P5	SE73-P5-SA-C	6.3	detect	0.99	4.98	**6.4**	**1.3**
71-HP7	SE71-HP7-SA	3.5	detect	0.99	4.98	**3.5**	<1.0
72-HP2	SE72-HP2-SA-C	1	detect	0.99	4.98	<1.0	<1.0
75-HP10	SE75-HP10-SA-C	2.3	detect	0.99	4.98	**2.3**	<1.0
67-HP12	SE67-HP12-SA-C	3.2	detect	0.99	4.98	**3.2**	<1.0
68-IBJ	SE68-IBJ-SA-C	0.14	detect	0.99	4.98	<1.0	<1.0
66-HP13	SE66-HP13-SA-C	0.58	detect	0.99	4.98	<1.0	<1.0
65-HP13a	SE65-HP13a-SA-C	1.7	detect	0.99	4.98	**1.7**	<1.0
70-CWD	SE70-CWD-SA-C	0.22	detect	0.99	4.98	<1.0	<1.0
64-HP18	SE64-HP18-SA-C	0.88	detect	0.99	4.98	<1.0	<1.0

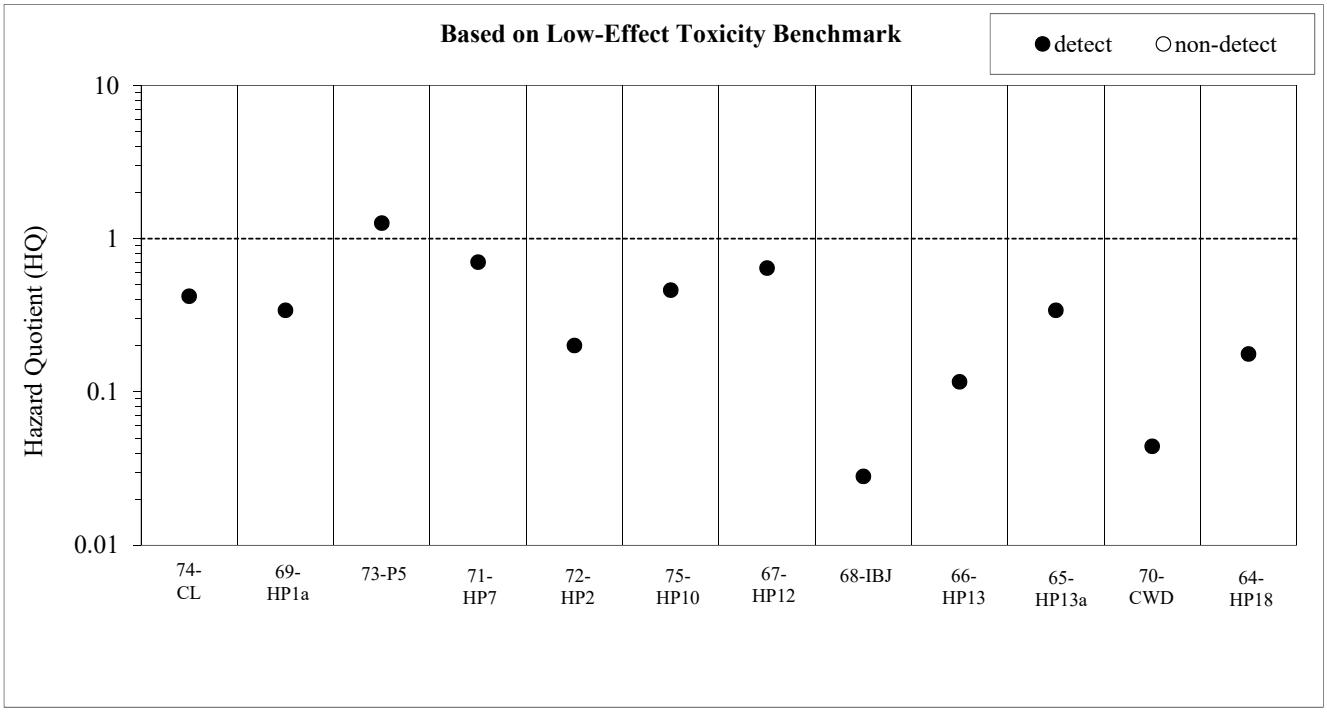
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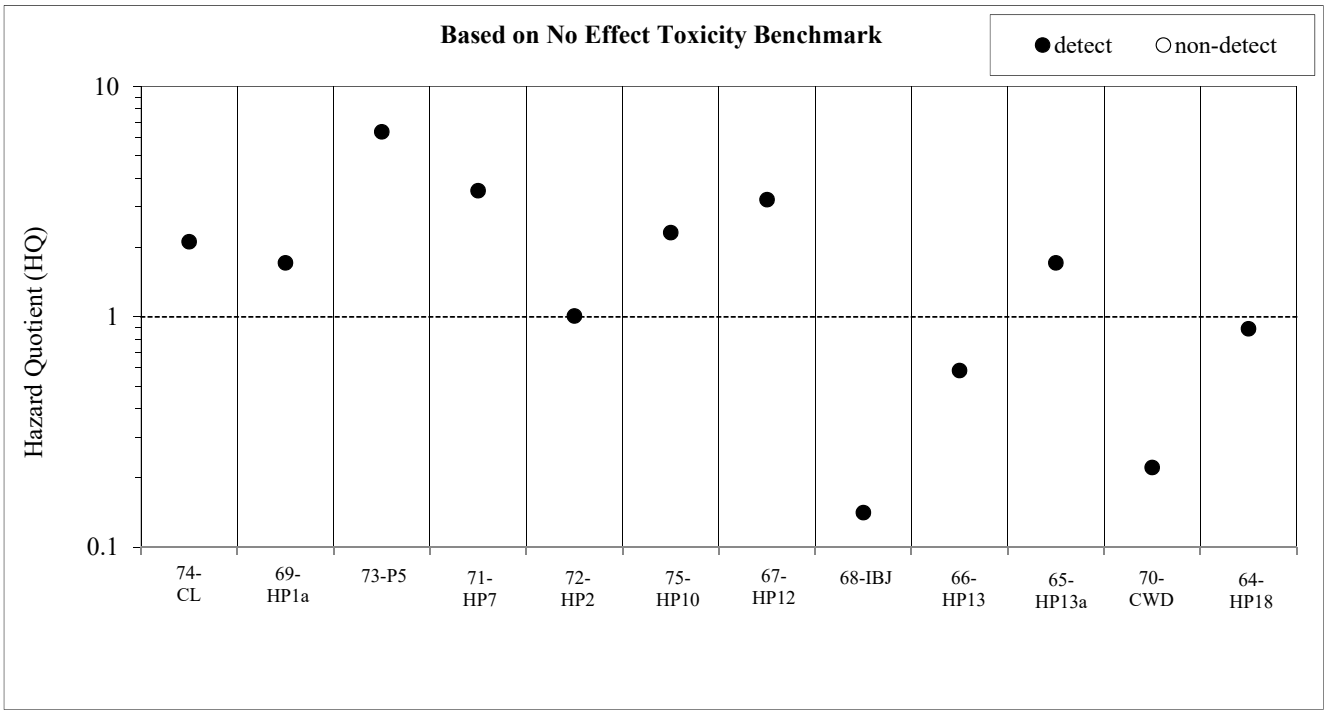
(a) Non-detects are evaluated at 1/2 the reported value.

(b) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Ponds

Cadmium





Appendix E2
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Sediment in On-Site Ponds

Copper

Location	Sample ID	Sediment Conc. (a) (mg/kg)		Toxicity Benchmark (ug/L)		Hazard Quotient (b) (HQ)	
				Acute	Chronic	No Effect	Low-Effect
74-CL Pond	SE74-CL-POND-SA-C	37	detect	31.6	149	**1.2**	<1.0
69-HP1a	SE69-HP1-SA-C	36.3	detect	31.6	149	**1.1**	<1.0
73-P5	SE73-P5-SA-C	62.7	detect	31.6	149	**2.0**	<1.0
71-HP7	SE71-HP7-SA	75.1	detect	31.6	149	**2.4**	<1.0
72-HP2	SE72-HP2-SA-C	74.7	detect	31.6	149	**2.4**	<1.0
75-HP10	SE75-HP10-SA-C	57.7	detect	31.6	149	**1.8**	<1.0
67-HP12	SE67-HP12-SA-C	70.8	detect	31.6	149	**2.2**	<1.0
68-IBJ	SE68-IBJ-SA-C	11.2	detect	31.6	149	<1.0	<1.0
66-HP13	SE66-HP13-SA-C	31.9	detect	31.6	149	<1.0	<1.0
65-HP13a	SE65-HP13a-SA-C	92.3	detect	31.6	149	**2.9**	<1.0
70-CWD	SE70-CWD-SA-C	34.8	detect	31.6	149	**1.1**	<1.0
64-HP18	SE64-HP18-SA-C	37.1	detect	31.6	149	**1.2**	<1.0

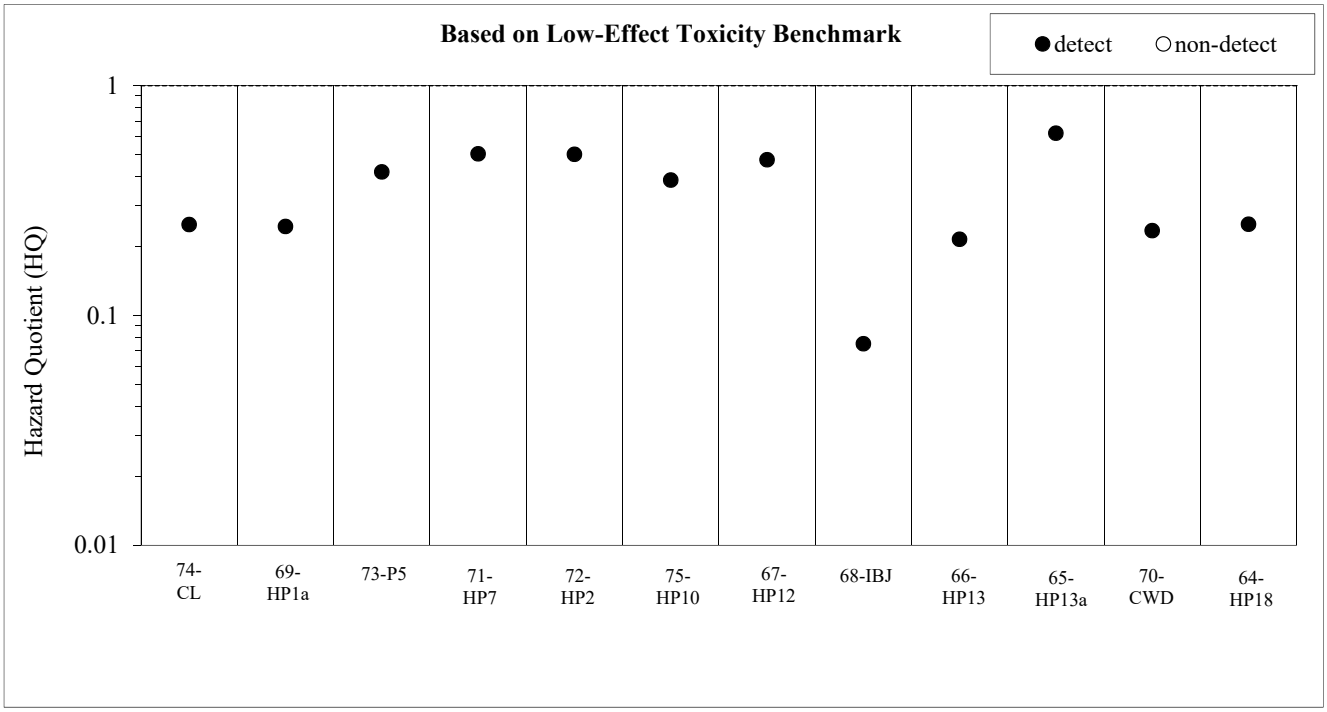
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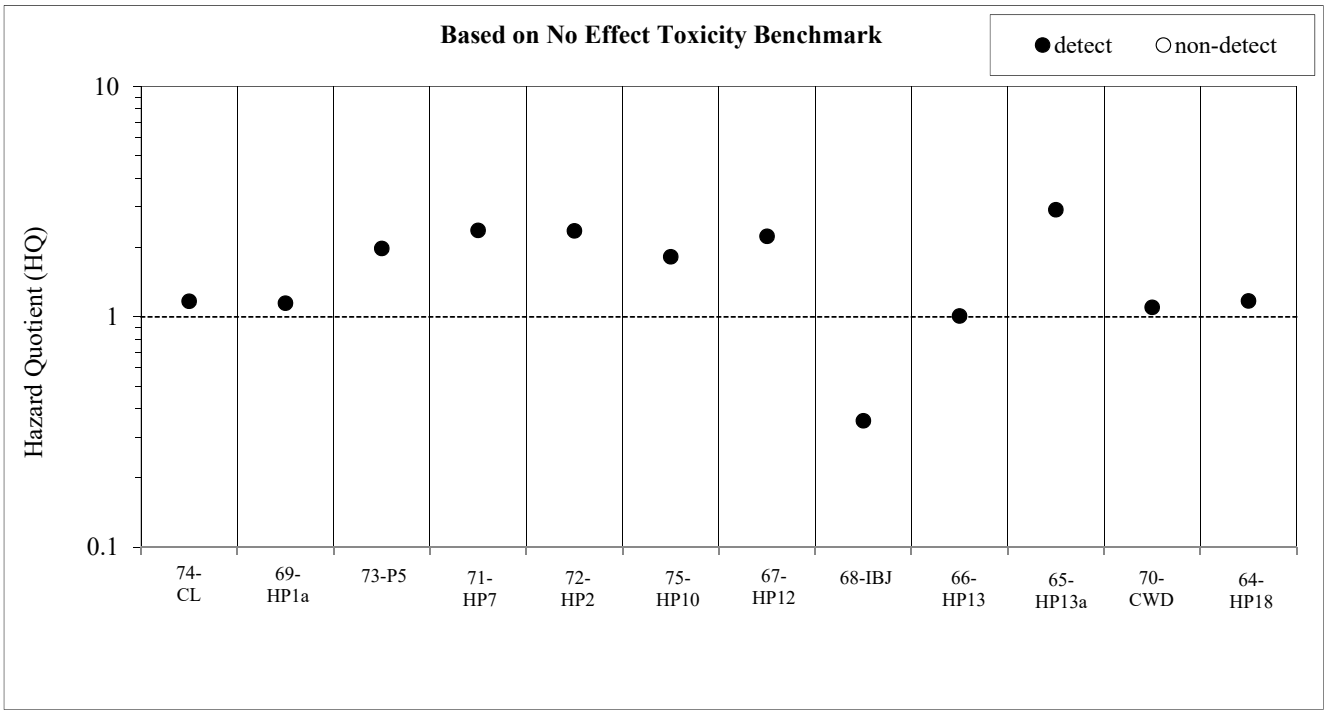
(a) Non-detects are evaluated at 1/2 the reported value.

(b) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Ponds

Copper





Appendix E2
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Sediment in On-Site Ponds

Lead

Location	Sample ID	Sediment Conc. (a) (mg/kg)		Toxicity Benchmark (ug/L)		Hazard Quotient (b) (HQ)	
				Acute	Chronic	No Effect	Low-Effect
74-CL Pond	SE74-CL-POND-SA-C	19.3	detect	35.8	128	<1.0	<1.0
69-HP1a	SE69-HP1-SA-C	11.3	detect	35.8	128	<1.0	<1.0
73-P5	SE73-P5-SA-C	19.2	detect	35.8	128	<1.0	<1.0
71-HP7	SE71-HP7-SA	17.9	detect	35.8	128	<1.0	<1.0
72-HP2	SE72-HP2-SA-C	19.3	detect	35.8	128	<1.0	<1.0
75-HP10	SE75-HP10-SA-C	15.5	detect	35.8	128	<1.0	<1.0
67-HP12	SE67-HP12-SA-C	22.1	detect	35.8	128	<1.0	<1.0
68-IBJ	SE68-IBJ-SA-C	5	detect	35.8	128	<1.0	<1.0
66-HP13	SE66-HP13-SA-C	9.5	detect	35.8	128	<1.0	<1.0
65-HP13a	SE65-HP13a-SA-C	19.2	detect	35.8	128	<1.0	<1.0
70-CWD	SE70-CWD-SA-C	8.8	detect	35.8	128	<1.0	<1.0
64-HP18	SE64-HP18-SA-C	14.9	detect	35.8	128	<1.0	<1.0

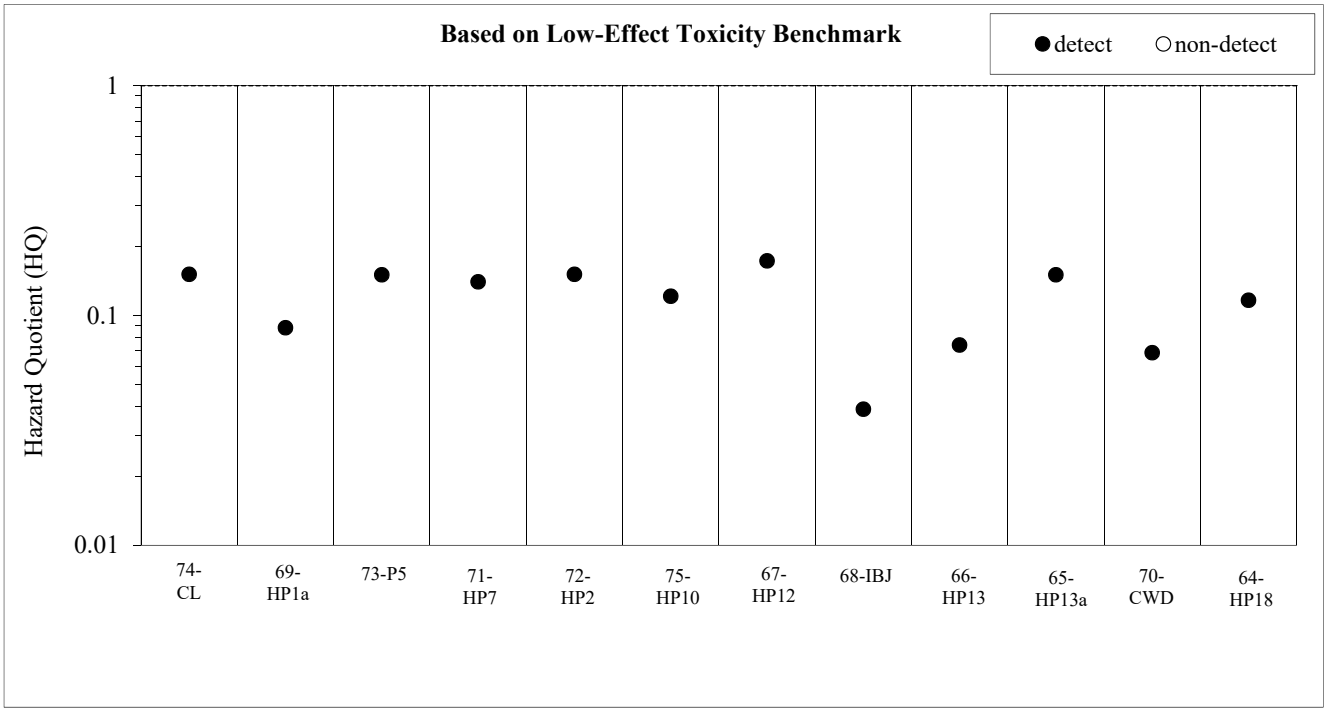
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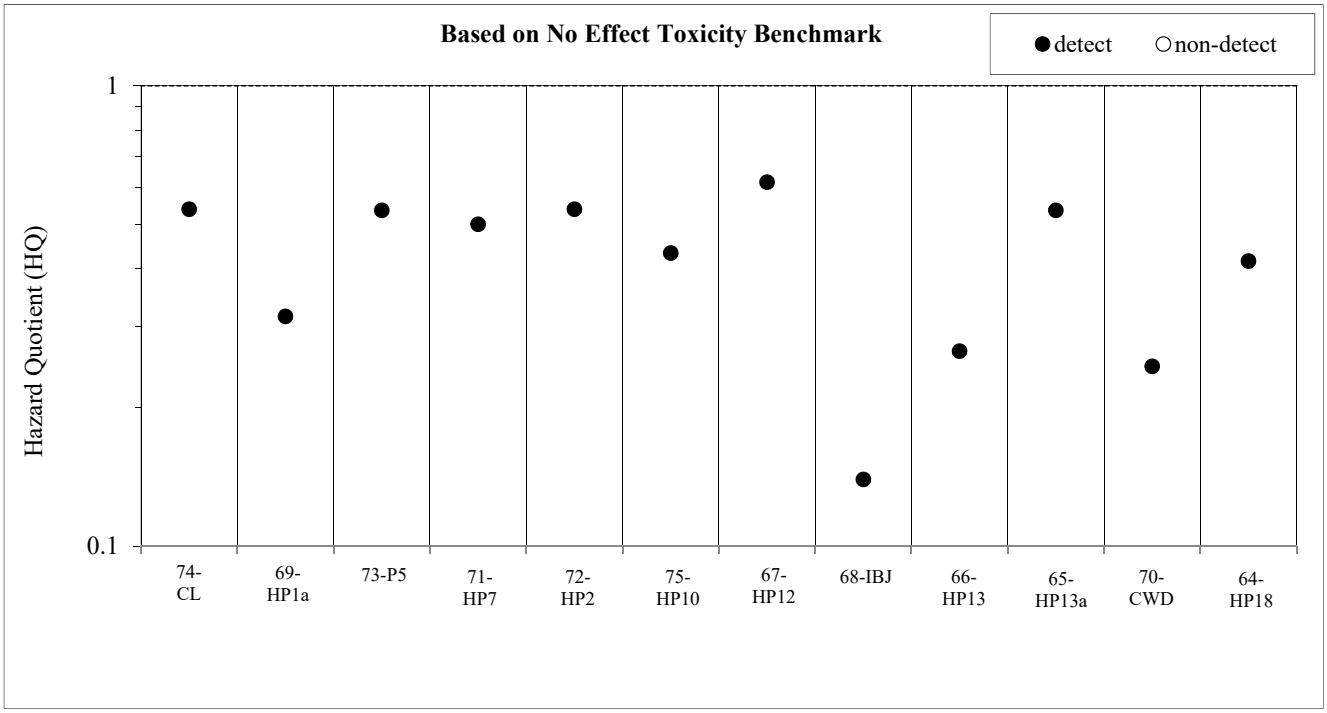
(a) Non-detects are evaluated at 1/2 the reported value.

(b) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Ponds

Lead





Appendix E2
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Sediment in On-Site Ponds

Manganese

Location	Sample ID	Sediment Conc. (a) (mg/kg)		Toxicity Benchmark (ug/L)		Hazard Quotient (b) (HQ)	
				Acute	Chronic	No Effect	Low-Effect
74-CL Pond	SE74-CL-POND-SA-C	614	detect	631	1184	<1.0	<1.0
69-HP1a	SE69-HP1-SA-C	1260	detect	631	1184	**2.0**	**1.1**
73-P5	SE73-P5-SA-C	2420	detect	631	1184	**3.8**	**2.0**
71-HP7	SE71-HP7-SA	1770	detect	631	1184	**2.8**	**1.5**
72-HP2	SE72-HP2-SA-C	749	detect	631	1184	**1.2**	<1.0
75-HP10	SE75-HP10-SA-C	1350	detect	631	1184	**2.1**	**1.1**
67-HP12	SE67-HP12-SA-C	2490	detect	631	1184	**3.9**	**2.1**
68-IBJ	SE68-IBJ-SA-C	475	detect	631	1184	<1.0	<1.0
66-HP13	SE66-HP13-SA-C	477	detect	631	1184	<1.0	<1.0
65-HP13a	SE65-HP13a-SA-C	935	detect	631	1184	**1.5**	<1.0
70-CWD	SE70-CWD-SA-C	156	detect	631	1184	<1.0	<1.0
64-HP18	SE64-HP18-SA-C	555	detect	631	1184	<1.0	<1.0

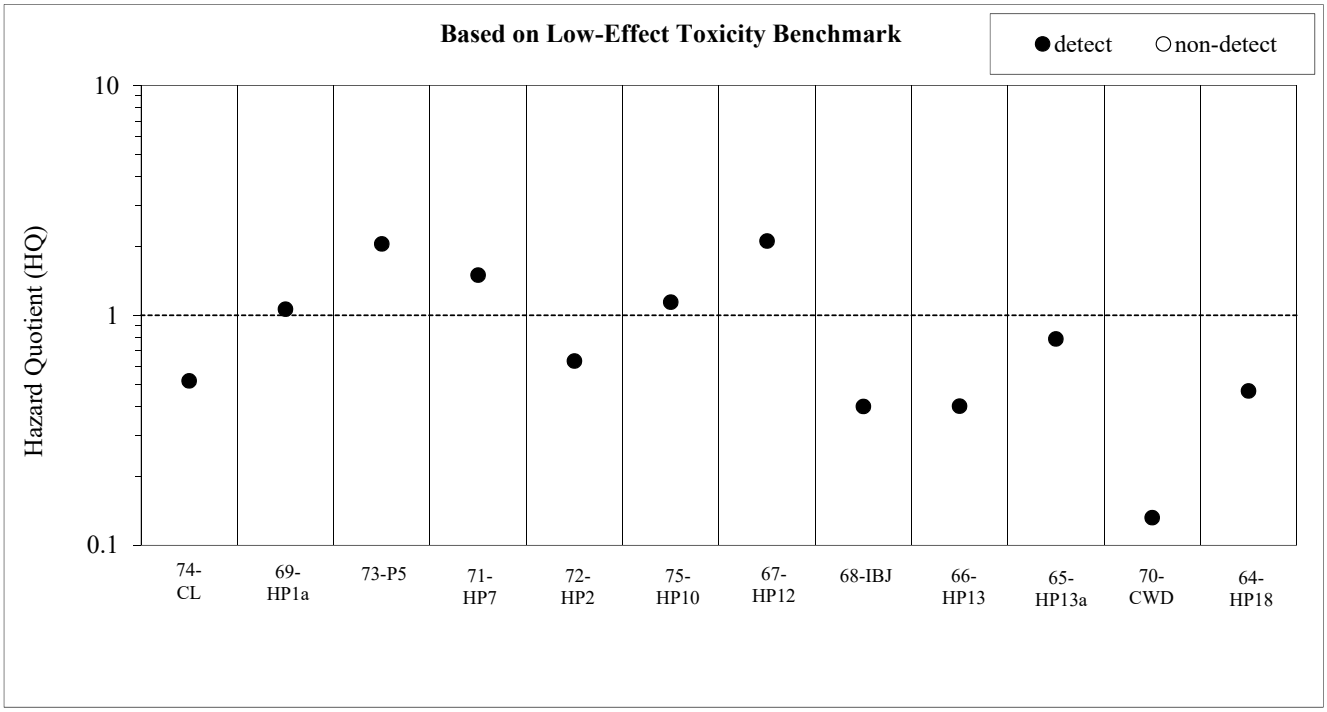
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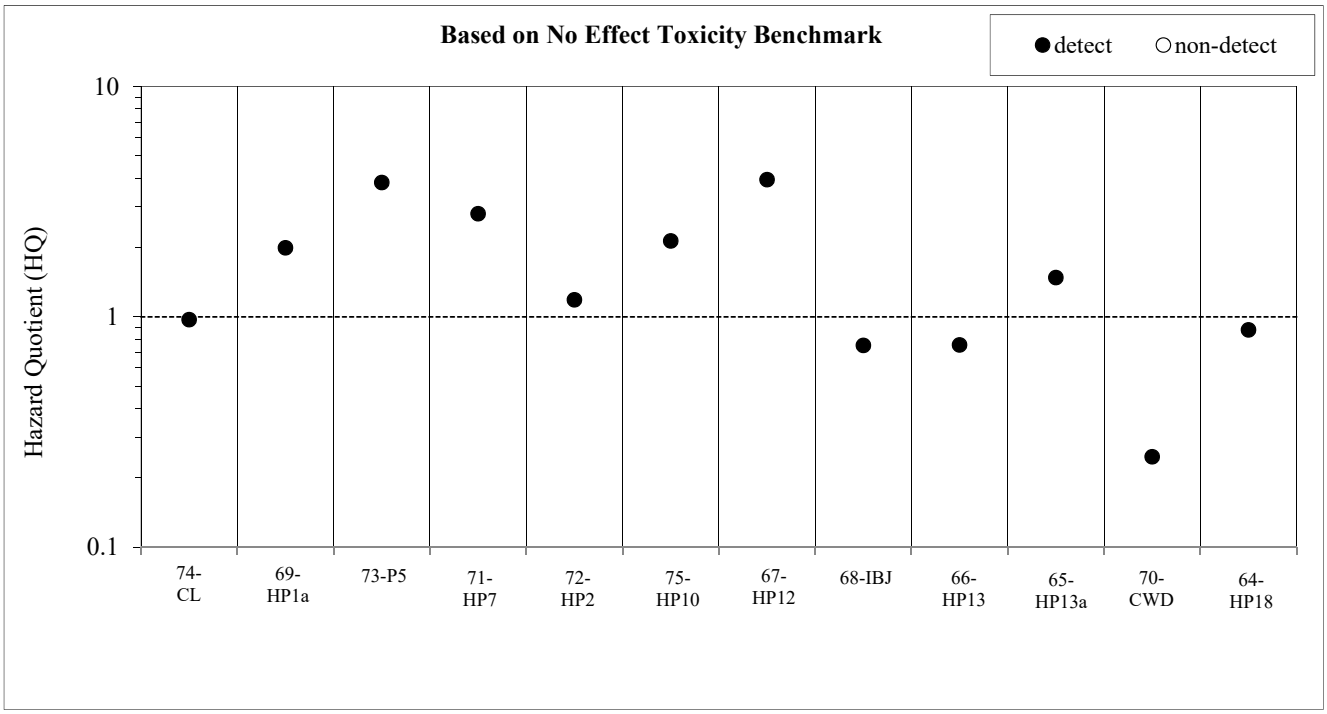
(a) Non-detects are evaluated at 1/2 the reported value.

(b) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Ponds

Manganese





Appendix E2
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Sediment in On-Site Ponds

Mercury

Location	Sample ID	Sediment Conc. (a) (mg/kg)		Toxicity Benchmark (ug/L)		Hazard Quotient (b) (HQ)	
				Acute	Chronic	No Effect	Low-Effect
74-CL Pond	SE74-CL-POND-SA-C	0.05	detect	0.18	1.06	<1.0	<1.0
69-HP1a	SE69-HP1-SA-C	0.78	detect	0.18	1.06	**4.3**	<1.0
73-P5	SE73-P5-SA-C	0.56	detect	0.18	1.06	**3.1**	<1.0
71-HP7	SE71-HP7-SA	2	detect	0.18	1.06	**11.1**	**1.9**
72-HP2	SE72-HP2-SA-C	0.52	detect	0.18	1.06	**2.9**	<1.0
75-HP10	SE75-HP10-SA-C	2.5	detect	0.18	1.06	**13.9**	**2.4**
67-HP12	SE67-HP12-SA-C	0.065	detect	0.18	1.06	<1.0	<1.0
68-IBJ	SE68-IBJ-SA-C	0.01	ND	0.18	1.06	<1.0	<1.0
66-HP13	SE66-HP13-SA-C	0.32	detect	0.18	1.06	**1.8**	<1.0
65-HP13a	SE65-HP13a-SA-C	0.59	detect	0.18	1.06	**3.3**	<1.0
70-CWD	SE70-CWD-SA-C	0.044	detect	0.18	1.06	<1.0	<1.0
64-HP18	SE64-HP18-SA-C	0.13	detect	0.18	1.06	<1.0	<1.0

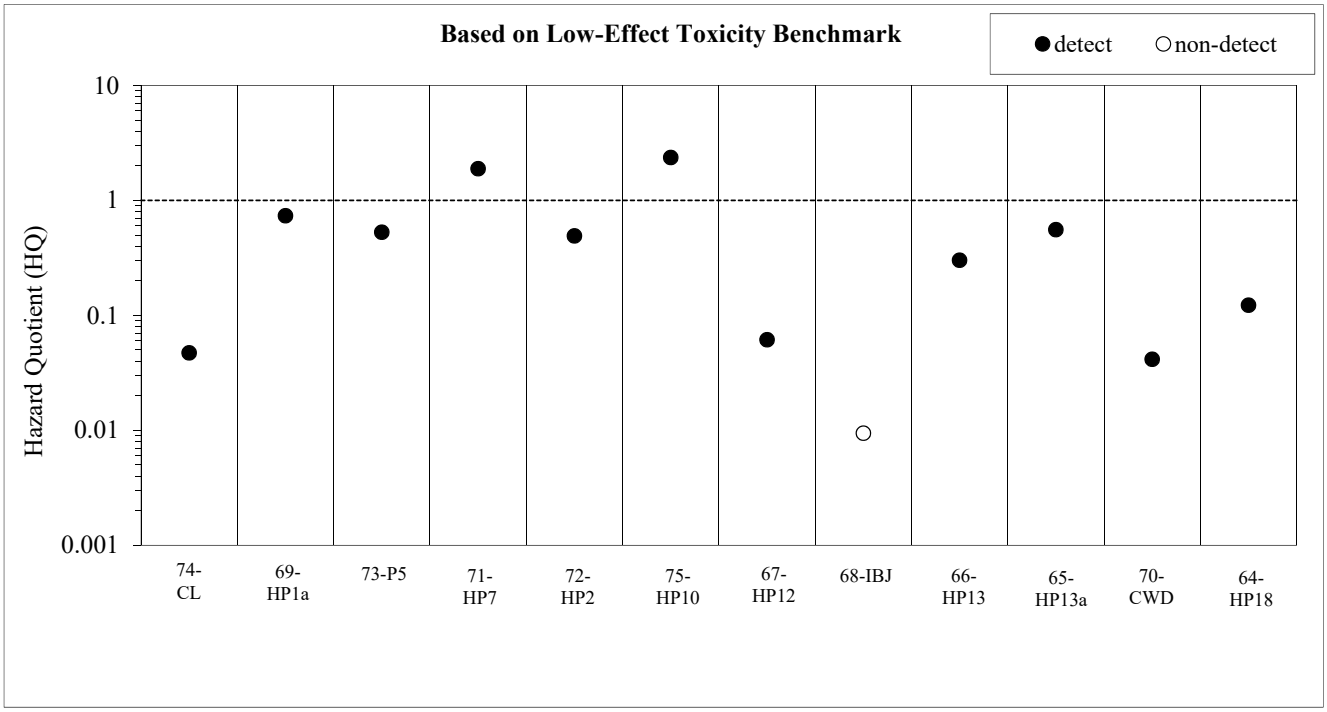
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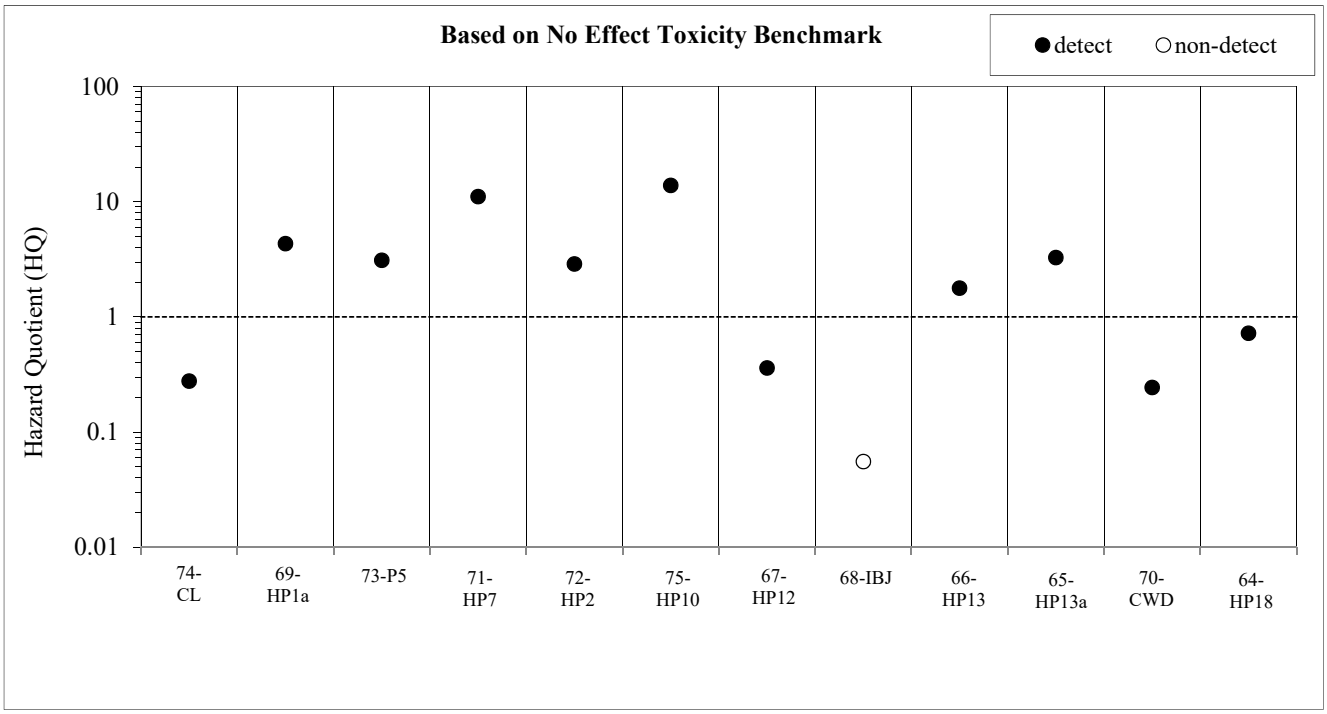
(a) Non-detects are evaluated at 1/2 the reported value.

(b) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Ponds

Mercury





Appendix E2
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Sediment in On-Site Ponds

Selenium

Location	Sample ID	Sediment Conc. (a) (mg/kg)		Toxicity Benchmark (ug/L)		Hazard Quotient (b) (HQ)	
				Acute	Chronic	No Effect	Low-Effect
74-CL Pond	SE74-CL-POND-SA-C	0.205	ND	0.9	4.7	<1.0	<1.0
69-HP1a	SE69-HP1-SA-C	0.64	detect	0.9	4.7	<1.0	<1.0
73-P5	SE73-P5-SA-C	0.265	ND	0.9	4.7	<1.0	<1.0
71-HP7	SE71-HP7-SA	1.5	detect	0.9	4.7	**1.7**	<1.0
72-HP2	SE72-HP2-SA-C	0.89	detect	0.9	4.7	<1.0	<1.0
75-HP10	SE75-HP10-SA-C	0.76	detect	0.9	4.7	<1.0	<1.0
67-HP12	SE67-HP12-SA-C	1.3	detect	0.9	4.7	**1.4**	<1.0
68-IBJ	SE68-IBJ-SA-C	0.205	ND	0.9	4.7	<1.0	<1.0
66-HP13	SE66-HP13-SA-C	0.67	detect	0.9	4.7	<1.0	<1.0
65-HP13a	SE65-HP13a-SA-C	0.76	detect	0.9	4.7	<1.0	<1.0
70-CWD	SE70-CWD-SA-C	0.3	detect	0.9	4.7	<1.0	<1.0
64-HP18	SE64-HP18-SA-C	0.81	detect	0.9	4.7	<1.0	<1.0

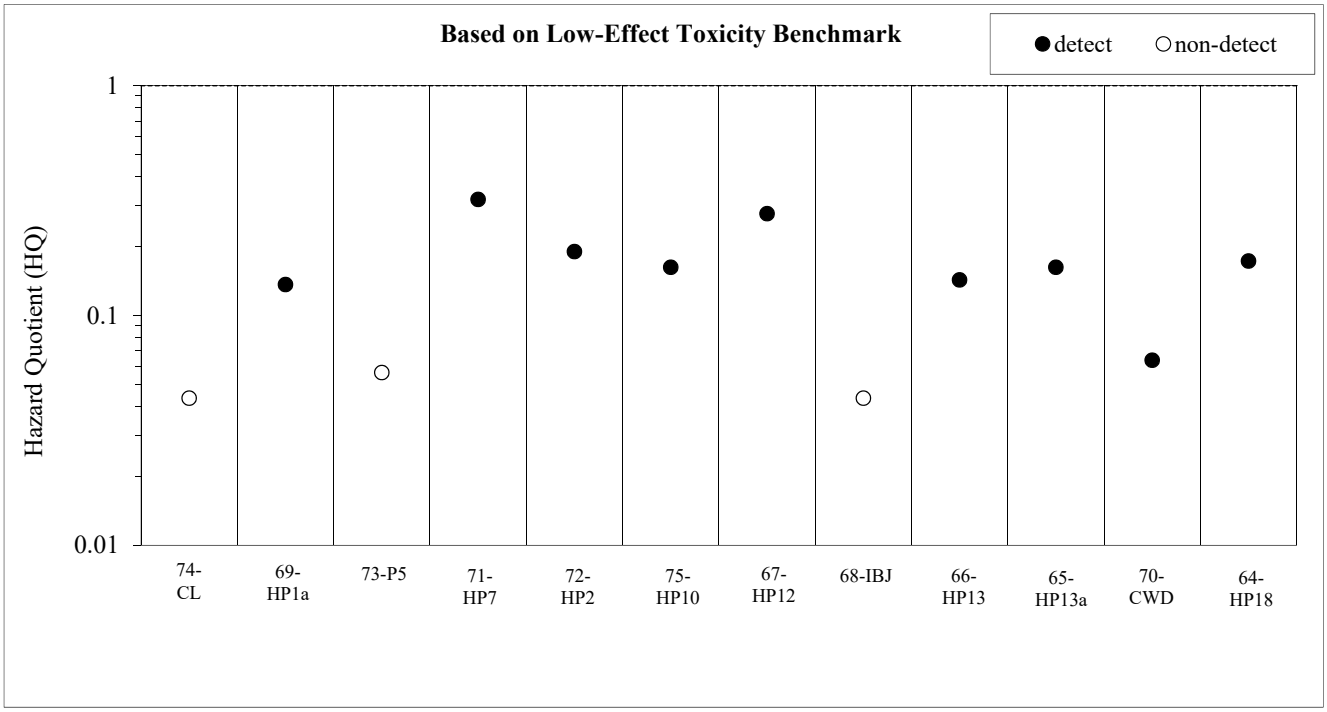
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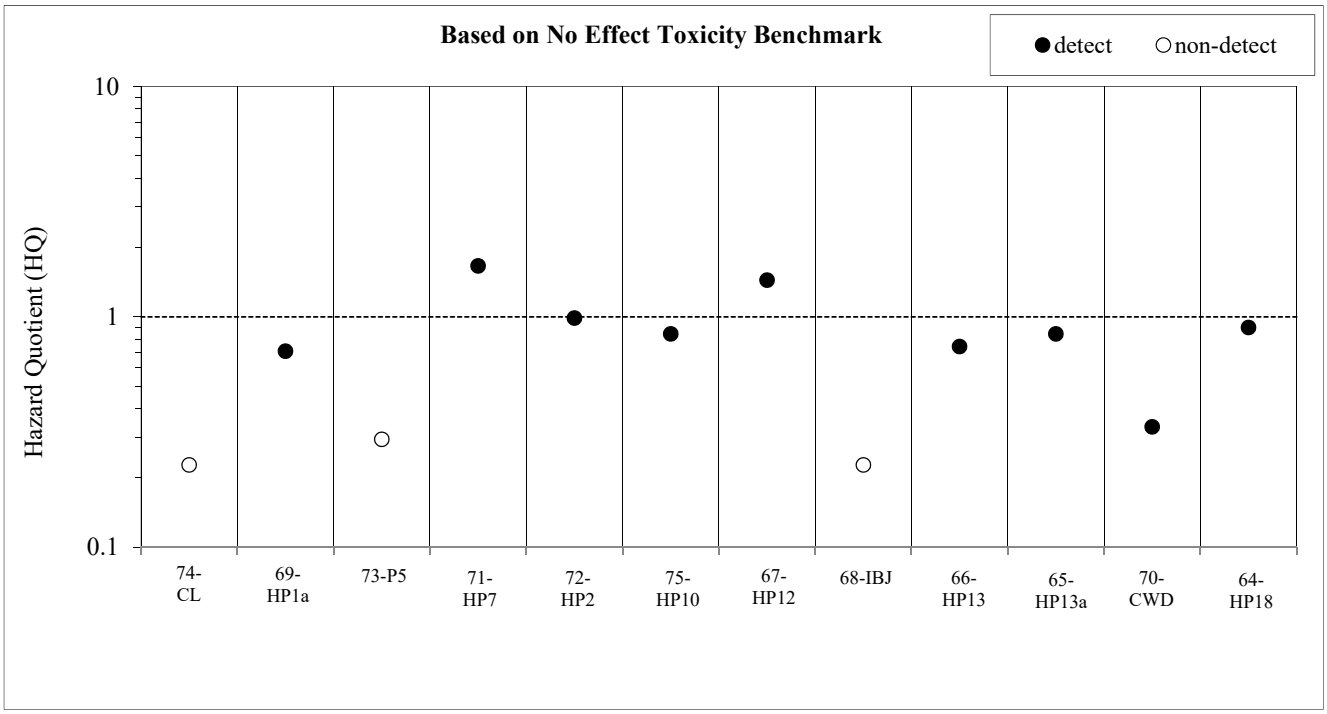
(a) Non-detects are evaluated at 1/2 the reported value.

(b) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Ponds

Selenium





Appendix E2
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Sediment in On-Site Ponds

Silver

Location	Sample ID	Sediment Conc. (a) (mg/kg)		Toxicity Benchmark (ug/L)		Hazard Quotient (b) (HQ)	
				Acute	Chronic	No Effect	Low-Effect
74-CL Pond	SE74-CL-POND-SA-C	0.24	ND	1	3.7	<1.0	<1.0
69-HP1a	SE69-HP1-SA-C	0.355	ND	1	3.7	<1.0	<1.0
73-P5	SE73-P5-SA-C	1.7	detect	1	3.7	**1.7**	<1.0
71-HP7	SE71-HP7-SA	1.1	detect	1	3.7	**1.1**	<1.0
72-HP2	SE72-HP2-SA-C	0.285	ND	1	3.7	<1.0	<1.0
75-HP10	SE75-HP10-SA-C	0.67	detect	1	3.7	<1.0	<1.0
67-HP12	SE67-HP12-SA-C	0.8	detect	1	3.7	<1.0	<1.0
68-IBJ	SE68-IBJ-SA-C	0.24	ND	1	3.7	<1.0	<1.0
66-HP13	SE66-HP13-SA-C	0.175	ND	1	3.7	<1.0	<1.0
65-HP13a	SE65-HP13a-SA-C	0.49	detect	1	3.7	<1.0	<1.0
70-CWD	SE70-CWD-SA-C	0.15	ND	1	3.7	<1.0	<1.0
64-HP18	SE64-HP18-SA-C	0.31	ND	1	3.7	<1.0	<1.0

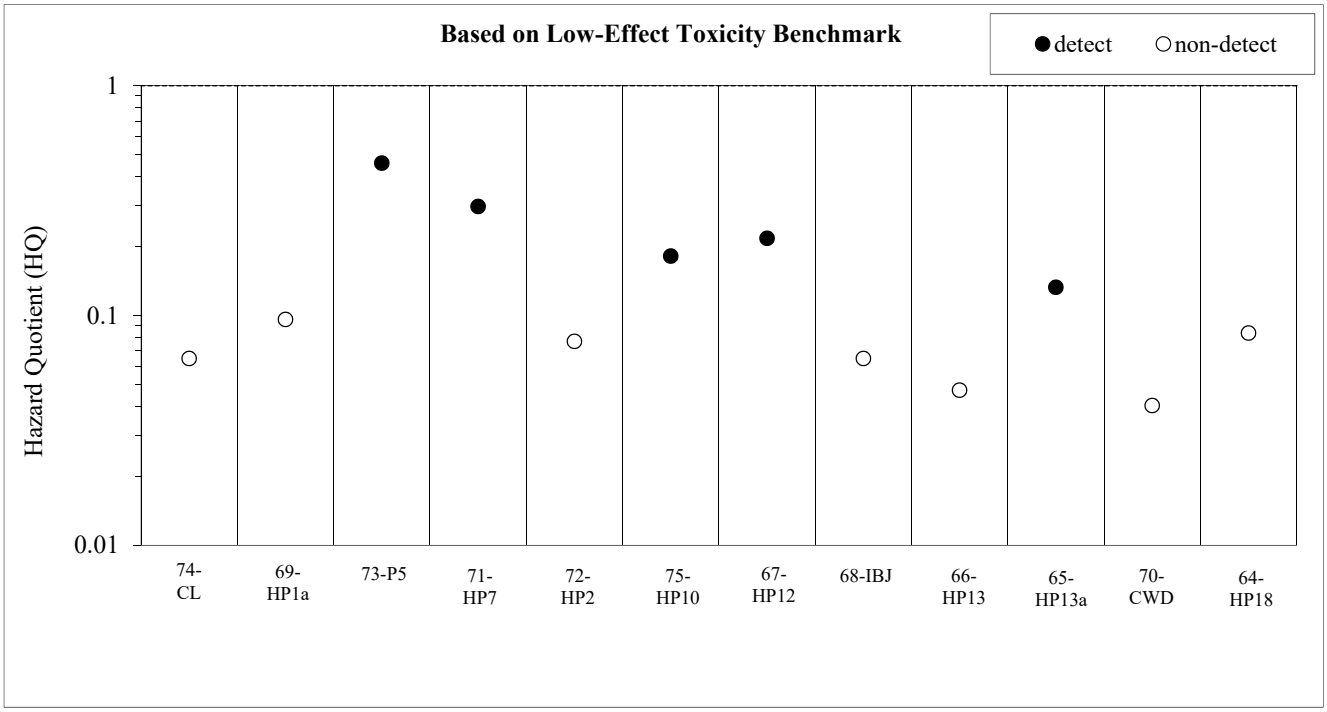
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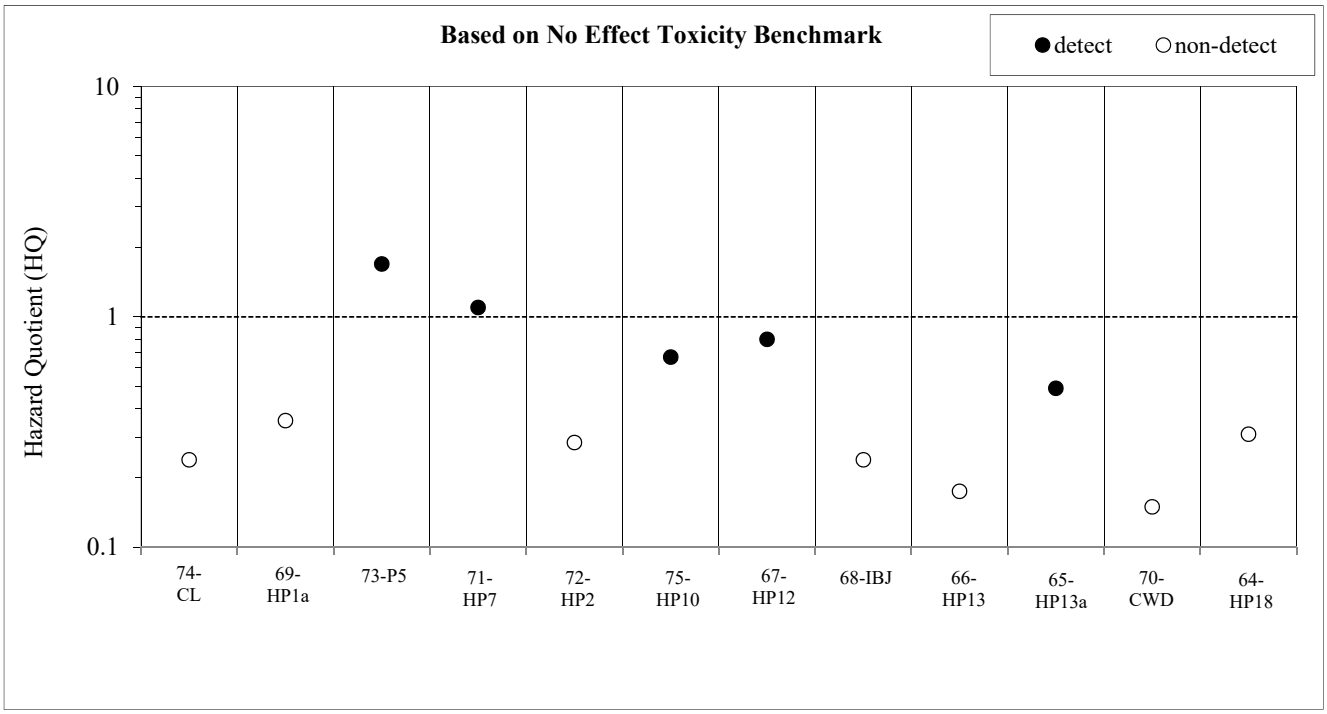
(a) Non-detects are evaluated at 1/2 the reported value.

(b) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Ponds

Silver





Appendix E2
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Sediment in On-Site Ponds

Zinc

Location	Sample ID	Sediment Conc. (a) (mg/kg)		Toxicity Benchmark (ug/L)		Hazard Quotient (b) (HQ)	
				Acute	Chronic	No Effect	Low-Effect
74-CL Pond	SE74-CL-POND-SA-C	213	detect	121	459	**1.8**	<1.0
69-HP1a	SE69-HP1-SA-C	154	detect	121	459	**1.3**	<1.0
73-P5	SE73-P5-SA-C	354	detect	121	459	**2.9**	<1.0
71-HP7	SE71-HP7-SA	346	detect	121	459	**2.9**	<1.0
72-HP2	SE72-HP2-SA-C	179	detect	121	459	**1.5**	<1.0
75-HP10	SE75-HP10-SA-C	179	detect	121	459	**1.5**	<1.0
67-HP12	SE67-HP12-SA-C	298	detect	121	459	**2.5**	<1.0
68-IBJ	SE68-IBJ-SA-C	37.7	detect	121	459	<1.0	<1.0
66-HP13	SE66-HP13-SA-C	127	detect	121	459	<1.0	<1.0
65-HP13a	SE65-HP13a-SA-C	270	detect	121	459	**2.2**	<1.0
70-CWD	SE70-CWD-SA-C	129	detect	121	459	**1.1**	<1.0
64-HP18	SE64-HP18-SA-C	126	detect	121	459	<1.0	<1.0

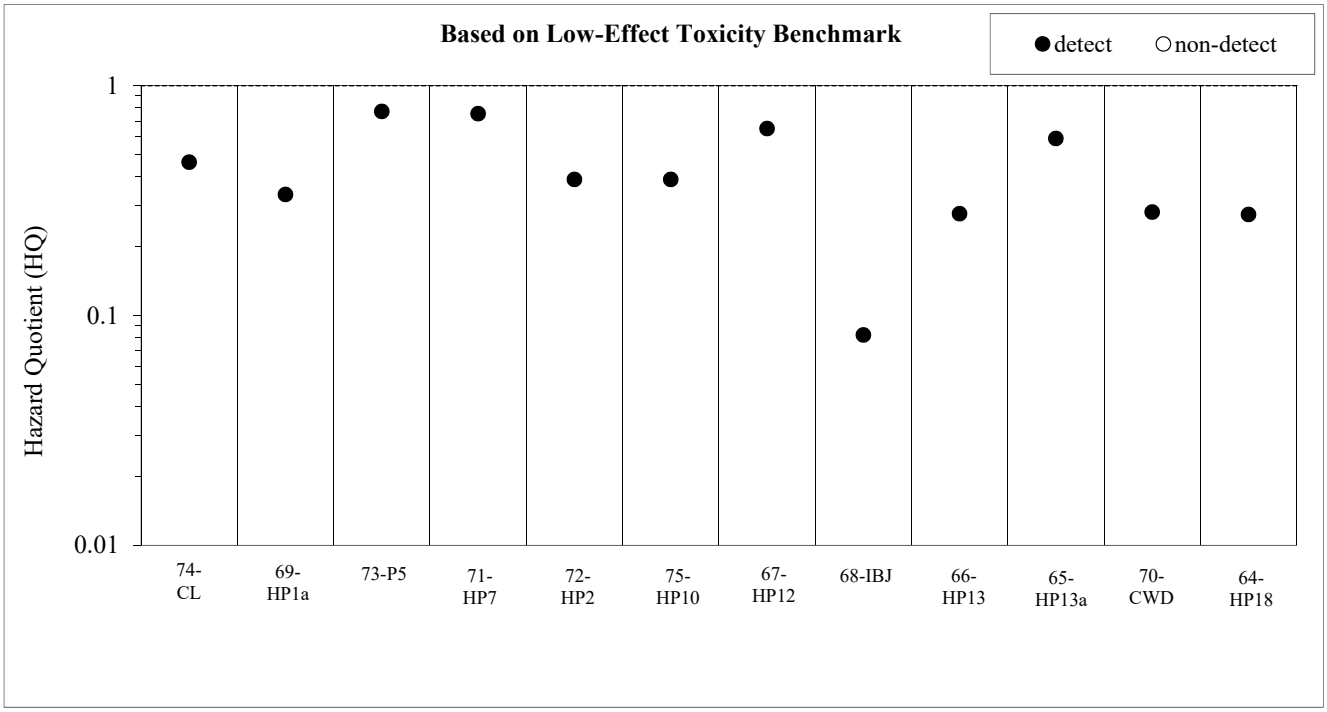
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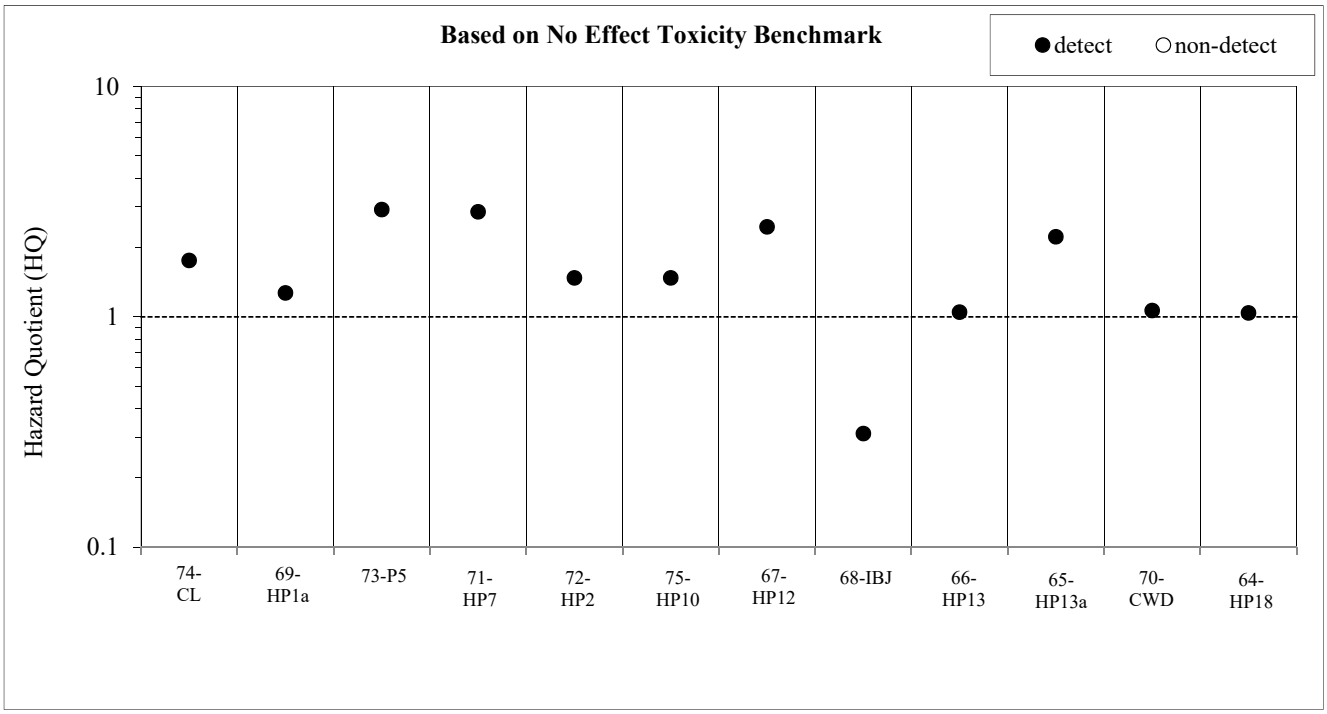
(a) Non-detects are evaluated at 1/2 the reported value.

(b) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Ponds

Zinc





Appendix E2
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Sediment in On-Site Ponds

Fish TEQ - ND=1/2DL

Location	Sample ID	Sediment Conc. (a) (mg/kg)		Toxicity Benchmark (ug/L)		Hazard Quotient (b) (HQ)	
				Acute	Chronic	No Effect	Low-Effect
74-CL Pond	SE74-CL-POND-SA-C	1E-05	detect	0.00000085	0.0000215	**11.6**	<1.0
69-HP1a	SE69-HP1-SA-C	2E-05	detect	0.00000085	0.0000215	**18.9**	<1.0
73-P5	SE73-P5-SA-C	2E-05	detect	0.00000085	0.0000215	**22.3**	<1.0
71-HP7	SE71-HP7-SA	8E-05	detect	0.00000085	0.0000215	**98.9**	**3.9**
72-HP2	SE72-HP2-SA-C	4E-05	detect	0.00000085	0.0000215	**49.4**	**2.0**
75-HP10	SE75-HP10-SA-C	4E-05	detect	0.00000085	0.0000215	**45.9**	**1.8**
67-HP12	SE67-HP12-SA-C	3E-05	detect	0.00000085	0.0000215	**34.6**	**1.4**
68-IBJ	SE68-IBJ-SA-C	2E-06	detect	0.00000085	0.0000215	**2.2**	<1.0
66-HP13	SE66-HP13-SA-C	1E-05	detect	0.00000085	0.0000215	**17.0**	<1.0
65-HP13a	SE65-HP13a-SA-C	2E-05	detect	0.00000085	0.0000215	**22.2**	<1.0
70-CWD	SE70-CWD-SA-C	1E-06	detect	0.00000085	0.0000215	**1.1**	<1.0
64-HP18	SE64-HP18-SA-C	4E-06	detect	0.00000085	0.0000215	**4.7**	<1.0

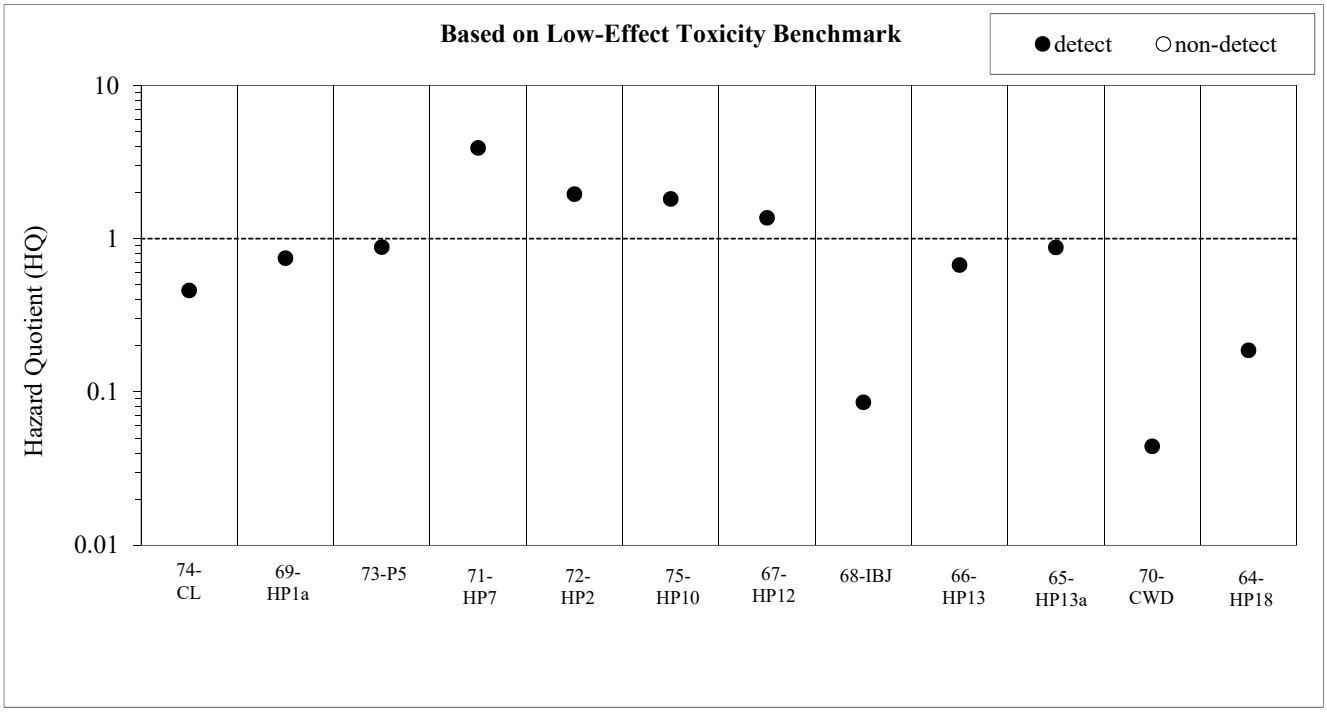
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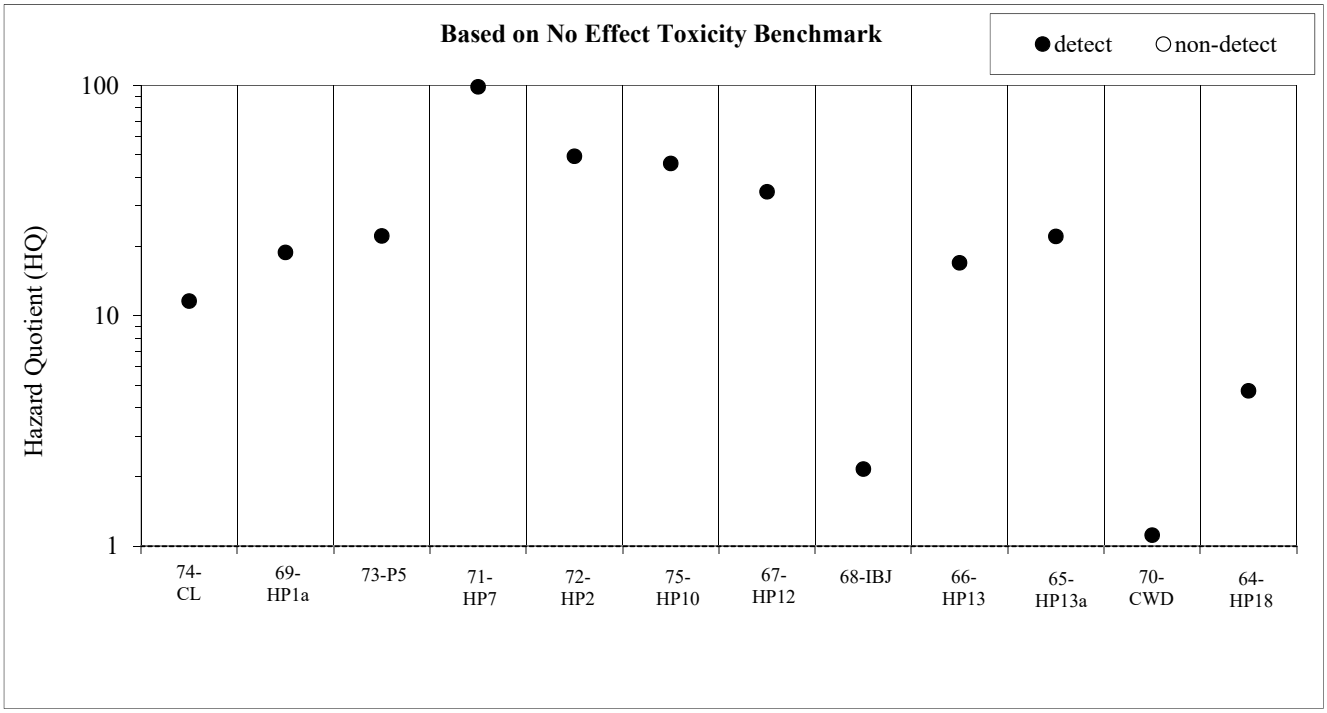
(a) Non-detects are evaluated at 1/2 the reported value.

(b) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E2
Hazard Quotients for Aquatic Receptors from
Direct Contact with Sediment in Ponds

Fish TEQ - ND=1/2DL





APPENDIX E3
HQ CALCULATIONS FOR AQUATIC RECEPTORS
DIRECT CONTACT WITH PORE WATER

OU2/OU3 Smurfit-Stone/Frenchtown Mill Site
Baseline Ecological Risk Assessment

Appendix E3
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Pore Water in Ponds

Barium

Location	Sample ID	Porewater Conc. (a) (ug/L)		Toxicity Benchmark (b) (ug/L)		Hazard Quotient (c) (HQ)	
				Acute	Chronic	Acute	Chronic
74-CL Pond	PW74-CL Pond	454	detect	110	4	**4.1**	**113.5**
PW69-HP1a	PW69-HP1a	250	detect	110	4	**2.3**	**62.5**
73-P5	PW73-P5	146	detect	110	4	**1.3**	**36.5**
71-HP7	PW71-HP7	61.9	detect	110	4	<1.0	**15.5**
72-HP2	PW72-HP2	42.5	detect	110	4	<1.0	**10.6**
75-HP10	PW75-HP10	39.1	detect	110	4	<1.0	**9.8**
67-HP12	PW67-HP12	105	detect	110	4	<1.0	**26.3**
68-IBJ	PW68-IBJ	608	detect	110	4	**5.5**	**152.0**
PW66-HP13	PW66-HP13	77.3	detect	110	4	<1.0	**19.3**
65-HP13a	PW65-HP13A	50.7	detect	110	4	<1.0	**12.7**
70-CWD	PW70-CWD	199	detect	110	4	**1.8**	**49.8**
64-HP18	PW64-HP18	214	detect	110	4	**1.9**	**53.5**

#N/A = not analyzed

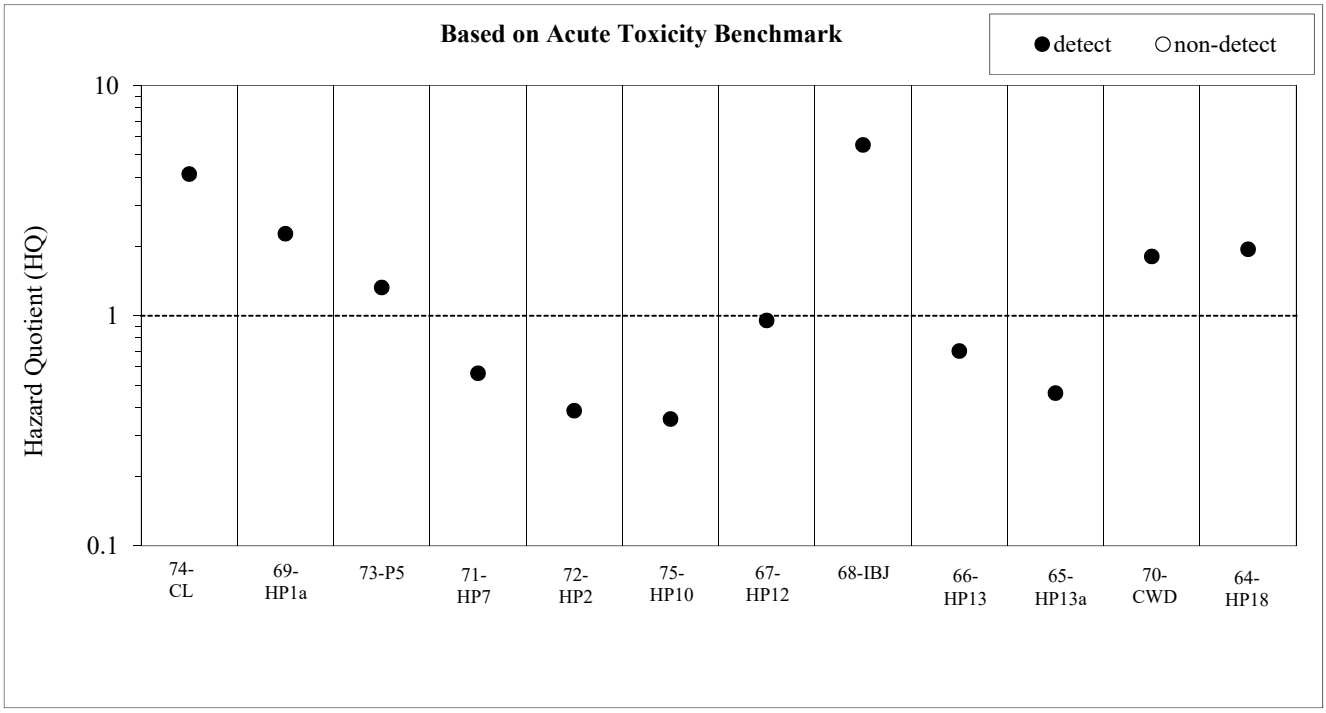
(a) Non-detects are evaluated at 1/2 the reported value.

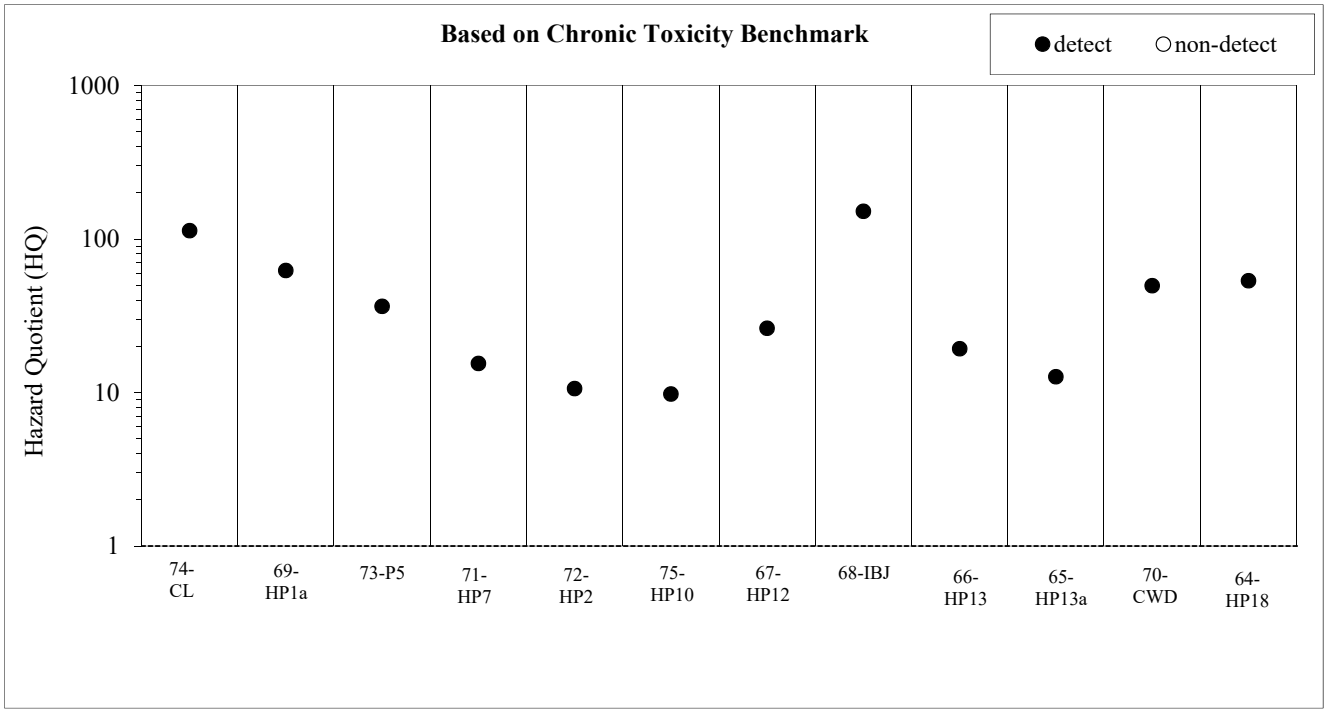
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E3
Hazard Quotients for Aquatic Receptors from
Direct Contact with Pore Water in Ponds

Barium





Appendix E3
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Pore Water in Ponds

Manganese

Location	Sample ID	Porewater Conc. (a) (ug/L)		Toxicity Benchmark (b) (ug/L)		Hazard Quotient (c) (HQ)	
				Acute	Chronic	Acute	Chronic
74-CL Pond	PW74-CL Pond	6620	detect	2300	120	**2.9**	**55.2**
PW69-HP1a	PW69-HP1a	452	detect	2300	120	<1.0	**3.8**
73-P5	PW73-P5	195	detect	2300	120	<1.0	**1.6**
71-HP7	PW71-HP7	1750	detect	2300	120	<1.0	**14.6**
72-HP2	PW72-HP2	707	detect	2300	120	<1.0	**5.9**
75-HP10	PW75-HP10	3640	detect	2300	120	**1.6**	**30.3**
67-HP12	PW67-HP12	2350	detect	2300	120	<1.0	**19.6**
68-IBJ	PW68-IBJ	2530	detect	2300	120	**1.1**	**21.1**
PW66-HP13	PW66-HP13	557	detect	2300	120	<1.0	**4.6**
65-HP13a	PW65-HP13A	474	detect	2300	120	<1.0	**4.0**
70-CWD	PW70-CWD	64.6	detect	2300	120	<1.0	<1.0
64-HP18	PW64-HP18	357	detect	2300	120	<1.0	**3.0**

#N/A = not analyzed

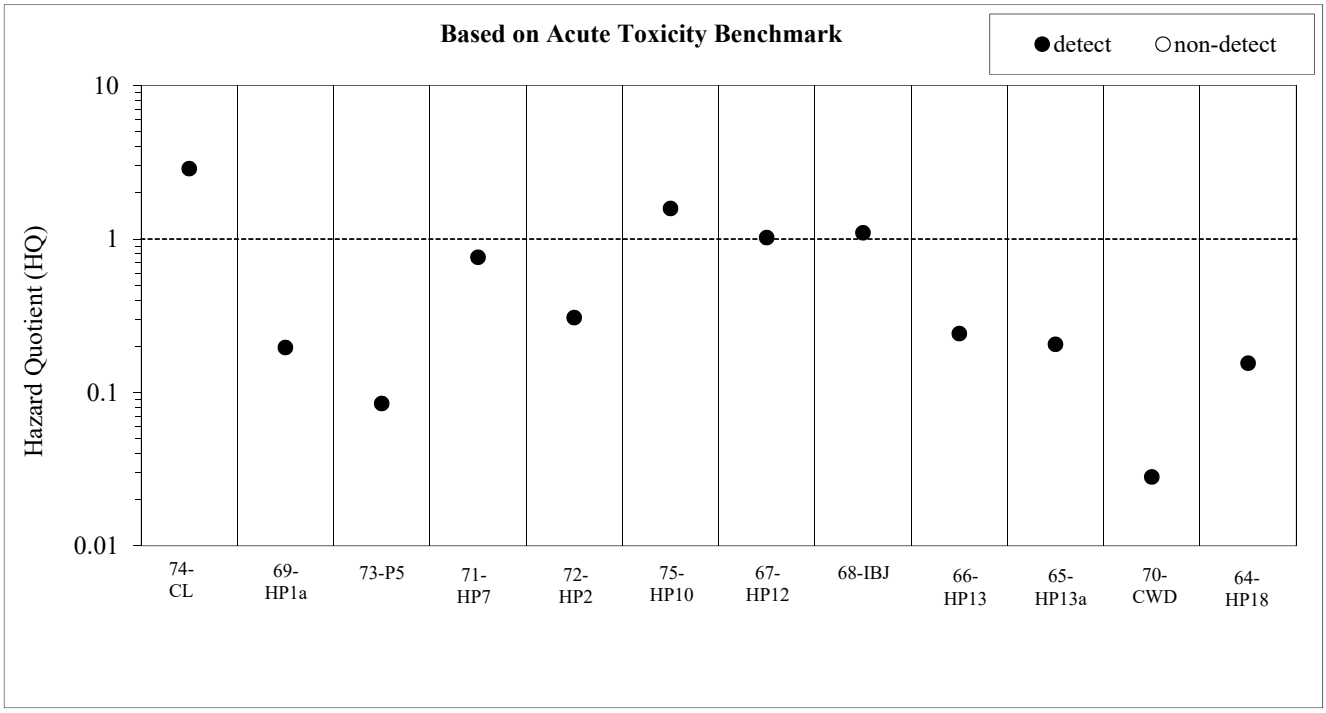
(a) Non-detects are evaluated at 1/2 the reported value.

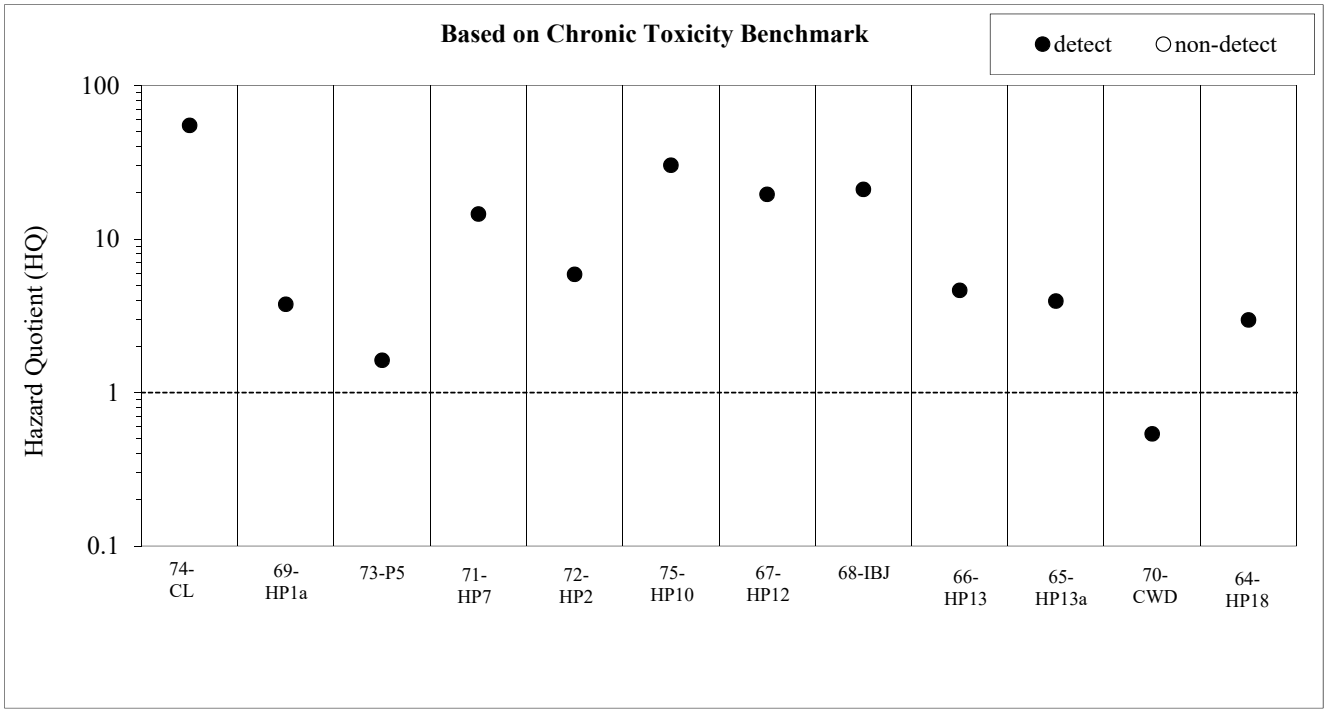
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E3
Hazard Quotients for Aquatic Receptors from
Direct Contact with Pore Water in Ponds

Manganese





Appendix E3
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Pore Water in Ponds

Mercury

Location	Sample ID	Porewater Conc. (a) (ug/L)		Toxicity Benchmark (b) (ug/L)		Hazard Quotient (c) (HQ)	
				Acute	Chronic	Acute	Chronic
74-CL Pond	PW74-CL Pond	0.039	ND	1.4	0.77	<1.0	<1.0
PW69-HP1a	PW69-HP1a	0.11	detect	1.4	0.77	<1.0	<1.0
73-P5	PW73-P5	0.039	ND	1.4	0.77	<1.0	<1.0
71-HP7	PW71-HP7	0.1	detect	1.4	0.77	<1.0	<1.0
72-HP2	PW72-HP2	0.12	detect	1.4	0.77	<1.0	<1.0
75-HP10	PW75-HP10	0.078	detect	1.4	0.77	<1.0	<1.0
67-HP12	PW67-HP12	0.19	detect	1.4	0.77	<1.0	<1.0
68-IBJ	PW68-IBJ	0.039	ND	1.4	0.77	<1.0	<1.0
PW66-HP13	PW66-HP13	0.039	ND	1.4	0.77	<1.0	<1.0
65-HP13a	PW65-HP13A	0.094	detect	1.4	0.77	<1.0	<1.0
70-CWD	PW70-CWD	0.039	ND	1.4	0.77	<1.0	<1.0
64-HP18	PW64-HP18	0.039	ND	1.4	0.77	<1.0	<1.0

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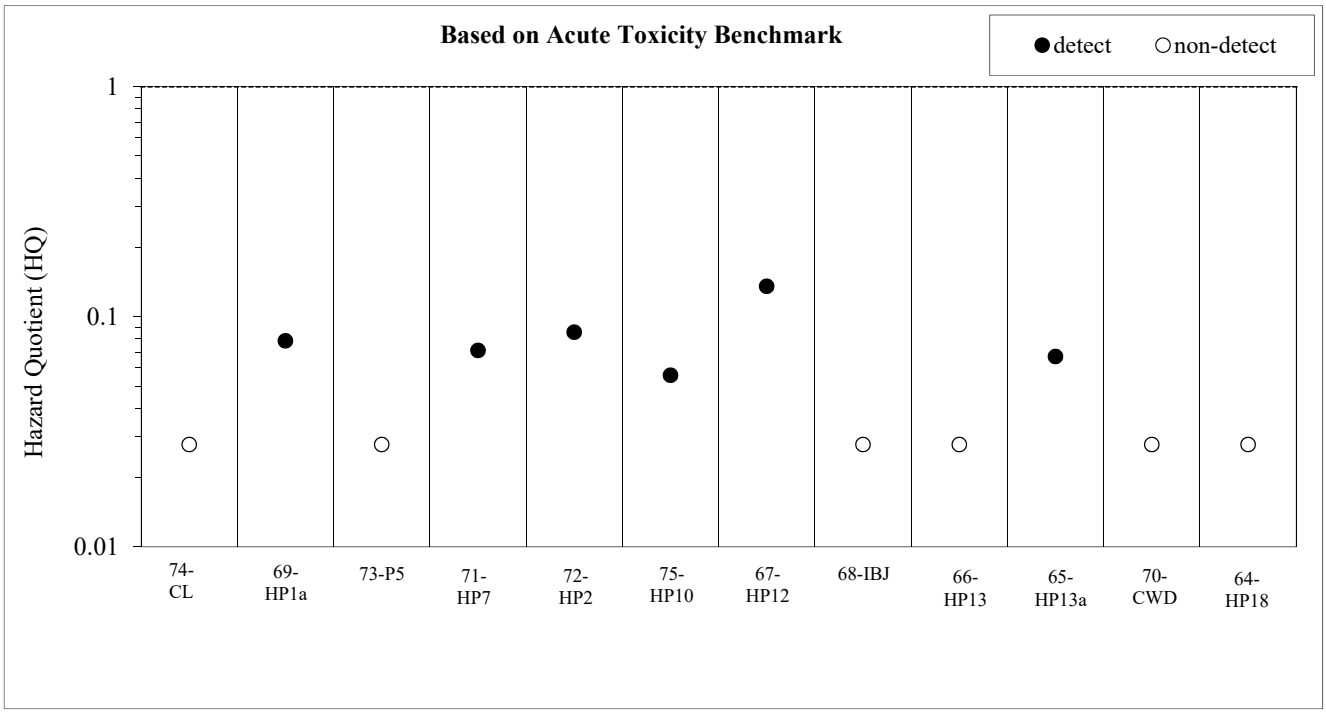
(a) Non-detects are evaluated at 1/2 the reported value.

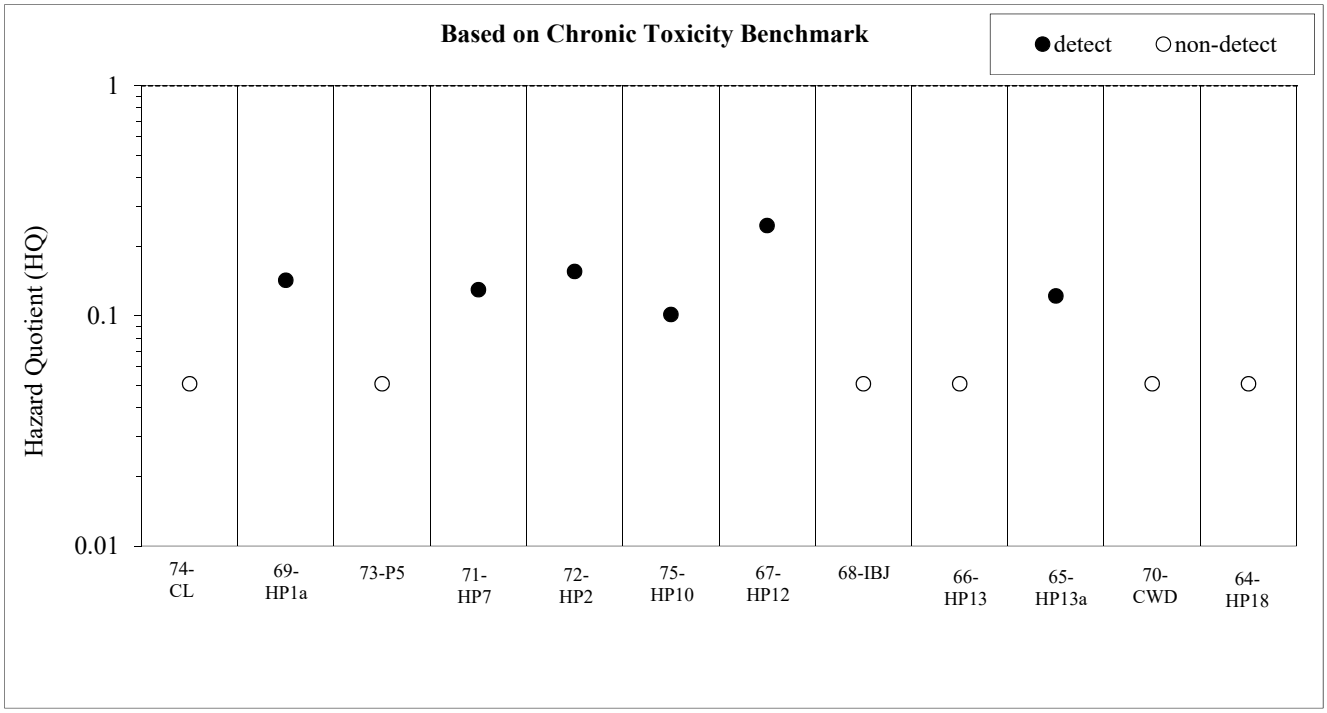
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E3
Hazard Quotients for Aquatic Receptors from
Direct Contact with Pore Water in Ponds

Mercury





Appendix E3
Sample-Specific Hazard Quotients for Aquatic Receptors
from Direct Contact with Pore Water in Ponds

Selenium

Location	Sample ID	Porewater Conc. (a) (ug/L)		Toxicity Benchmark (b) (ug/L)		Hazard Quotient (c) (HQ)	
				Acute	Chronic	Acute	Chronic
74-CL Pond	PW74-CL Pond	1.35	ND	20	1.5	<1.0	<1.0
PW69-HP1a	PW69-HP1a	1.35	ND	20	1.5	<1.0	<1.0
73-P5	PW73-P5	1.35	ND	20	1.5	<1.0	<1.0
71-HP7	PW71-HP7	1.35	ND	20	1.5	<1.0	<1.0
72-HP2	PW72-HP2	1.35	ND	20	1.5	<1.0	<1.0
75-HP10	PW75-HP10	2.8	detect	20	1.5	<1.0	**1.9**
67-HP12	PW67-HP12	1.35	ND	20	1.5	<1.0	<1.0
68-IBJ	PW68-IBJ	1.35	ND	20	1.5	<1.0	<1.0
PW66-HP13	PW66-HP13	1.35	ND	20	1.5	<1.0	<1.0
65-HP13a	PW65-HP13A	1.35	ND	20	1.5	<1.0	<1.0
70-CWD	PW70-CWD	1.35	ND	20	1.5	<1.0	<1.0
64-HP18	PW64-HP18	1.35	ND	20	1.5	<1.0	<1.0

#N/A = not analyzed

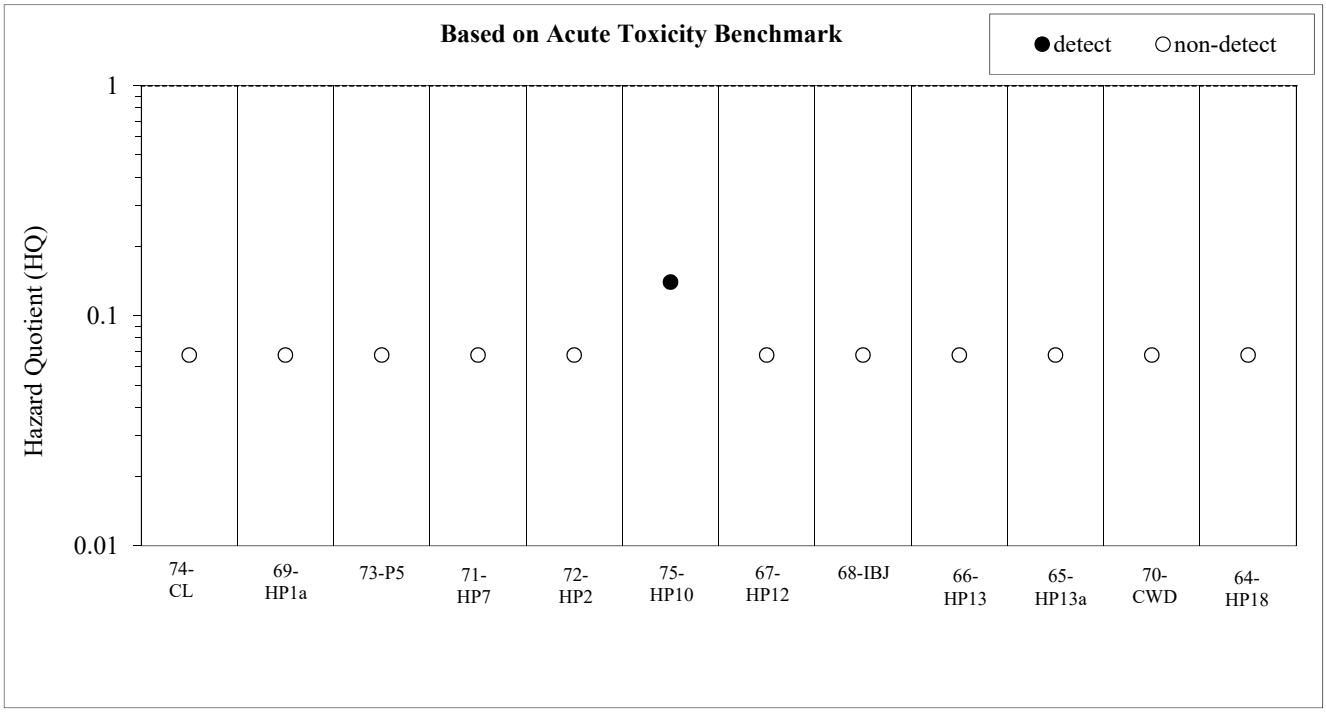
(a) Non-detects are evaluated at 1/2 the reported value.

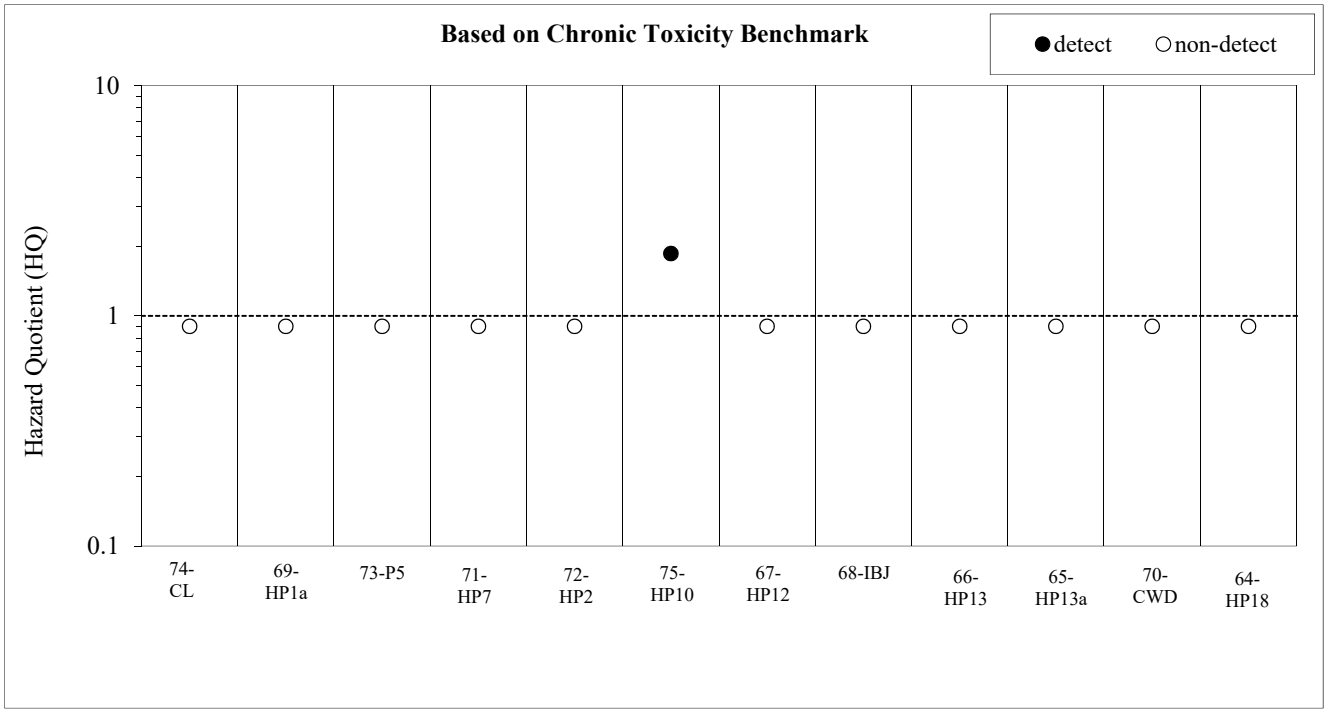
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix E3
Hazard Quotients for Aquatic Receptors from
Direct Contact with Pore Water in Ponds

Selenium





APPENDIX F
HQ CALCULATIONS FOR PLANTS AND SOIL INVERTEBRATES

OU2/OU3 Smurfit-Stone/Frenchtown Mill Site
Baseline Ecological Risk Assessment

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

Aluminum

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	7290	detect	50	NA	**145.8**	no benchmark
	Grid 13	Grid 13-SSComp-01_20171019_NM	16000	detect	50	NA	**320.0**	no benchmark
	Grid 14	Grid 14-SSComp-01_20171017_NM	8510	detect	50	NA	**170.2**	no benchmark
	Grid 2	Grid 2-SSComp-01_20171016_NM	6520	detect	50	NA	**130.4**	no benchmark
	Grid 22	Grid 22-SSComp-01_20171018_NM	12400	detect	50	NA	**248.0**	no benchmark
	Grid 23	Grid 23-SSComp-01_20171018_NM	16500	detect	50	NA	**330.0**	no benchmark
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	11200	detect	50	NA	**224.0**	no benchmark
	Grid 8	Grid 8-SSComp-01_20171018_NM	12800	detect	50	NA	**256.0**	no benchmark
	Grid 9	Grid 9-SSComp-01_20171018_NM	12200	detect	50	NA	**244.0**	no benchmark
	LF-1	LF-1-SS_4/18/14_NM	28400	detect	50	NA	**568.0**	no benchmark
	SB2a,3a-IN	SB2a-IN-(0-2)	2860	detect	50	NA	**57.2**	no benchmark
	SS10-IN	SS10-IN-(0-2)c	4970	detect	50	NA	**99.4**	no benchmark
	SS11-IN	SS11-IN-(0-2)c	8510	detect	50	NA	**170.2**	no benchmark
	SS12-IN	SS12-IN-(0-2)c	8010	detect	50	NA	**160.2**	no benchmark
	SS13-IN	SS13-IN-(0-2)c	5900	detect	50	NA	**118.0**	no benchmark
	SS14-IN	SS14-IN-(0-2)c	9890	detect	50	NA	**197.8**	no benchmark
	SS15-IN	SS15-IN-(0-2)c	22500	detect	50	NA	**450.0**	no benchmark
	SS16-IN	SS16-IN-(0-2)c	15000	detect	50	NA	**300.0**	no benchmark
	SS17-IN	SS17-IN-(0-2)c	9950	detect	50	NA	**199.0**	no benchmark
	SS1-IN	SS1-IN-(0-2)c	7730	detect	50	NA	**154.6**	no benchmark
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	50	NA	#N/A	no benchmark
	SS2-IN	SS2-IN-(0-2)c	6790	detect	50	NA	**135.8**	no benchmark
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	50	NA	#N/A	no benchmark
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	50	NA	#N/A	no benchmark
	SS32-IN	SS32-IN-(0-2)c	25700	detect	50	NA	**514.0**	no benchmark
	SS33-IN	SS33-IN-(0-2)c	12500	detect	50	NA	**250.0**	no benchmark
	SS3-IN	SS3-IN-(0-2)c	12500	detect	50	NA	**250.0**	no benchmark
	SS4-IN	SS4-IN-(0-2)c	8600	detect	50	NA	**172.0**	no benchmark
	SS5-IN	SS5-IN-(0-2)c	18800	detect	50	NA	**376.0**	no benchmark
	SS6-IN	SS6-IN-(0-2)c	8860	detect	50	NA	**177.2**	no benchmark
	SS7-IN	SS7-IN-(0-2)c	12300	detect	50	NA	**246.0**	no benchmark
	SS8-IN	SS8-IN-(0-2)c	4890	detect	50	NA	**97.8**	no benchmark
	SS9-IN	SS9-IN-(0-2)c	17000	detect	50	NA	**340.0**	no benchmark
	HDPT-SS	BACKFILL-HDPT-SS	4300	detect	50	NA	**86.0**	no benchmark
	TSB-SS	BACKFILL-TSB-SS	4300	detect	50	NA	**86.0**	no benchmark

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

Aluminum

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	15000	detect	50	NA	**300.0**	no benchmark
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	10200	detect	50	NA	**204.0**	no benchmark
	CRP-1	CRP-1-SS_4/10/14_NM	11200	detect	50	NA	**224.0**	no benchmark
	Grid 27	Grid 27-SSComp-01_20171019_NM	6730	detect	50	NA	**134.6**	no benchmark
	Grid 28	Grid 28-SSComp-01_20171019_NM	6360	detect	50	NA	**127.2**	no benchmark
	Grid 29	Grid 29-SSComp-01_20171019_NM	7560	detect	50	NA	**151.2**	no benchmark
	Grid 30	Grid 30-SSComp-01_20171020_NM	8210	detect	50	NA	**164.2**	no benchmark
	Grid 33	Grid 33-SSComp-01_20171020_NM	8760	detect	50	NA	**175.2**	no benchmark
	Grid 34	Grid 34-SSComp-01_20171019_NM	7170	detect	50	NA	**143.4**	no benchmark
	Grid 37	Grid 37-SSComp-01_20171020_NM	8370	detect	50	NA	**167.4**	no benchmark
	Grid 39	Grid 39-SSComp-01_20171020_NM	9120	detect	50	NA	**182.4**	no benchmark
	Grid 43	Grid 43-SSComp-01_20171023_NM	9110	detect	50	NA	**182.2**	no benchmark
	Grid 44	Grid 44-SSComp-01_20171023_NM	9580	detect	50	NA	**191.6**	no benchmark
	Grid 47	Grid 47-SSComp-01_20171023_NM	17600	detect	50	NA	**352.0**	no benchmark
	Grid 53	Grid 53-SSComp-01_20171020_NM	12100	detect	50	NA	**242.0**	no benchmark
	Grid 60	Grid 60-SSComp-01_20171023_NM	8040	detect	50	NA	**160.8**	no benchmark
	Grid 61	Grid 61-SSComp-01_20171023_NM	8190	detect	50	NA	**163.8**	no benchmark
	Grid 64	Grid 64-SSComp-01_20171024_NM	7600	detect	50	NA	**152.0**	no benchmark
	Grid 74	Grid 74-SSComp-01_20171023_NM	18700	detect	50	NA	**374.0**	no benchmark
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	12400	detect	50	NA	**248.0**	no benchmark
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	5450	detect	50	NA	**109.0**	no benchmark
	HP16-1	HP16-1-SS_4/10/14_NM	12500	detect	50	NA	**250.0**	no benchmark
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	12100	detect	50	NA	**242.0**	no benchmark
	HP18-1	HP18-1-SS_4/10/14_NM	18900	detect	50	NA	**378.0**	no benchmark
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	9520	detect	50	NA	**190.4**	no benchmark
	HP18-IB	HP18-SSC-IB_4/10/14_NM	4840	detect	50	NA	**96.8**	no benchmark
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	50	NA	#N/A	no benchmark
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	6250	detect	50	NA	**125.0**	no benchmark
	HP9-1	HP9-1-SS_4/10/14_NM	16100	detect	50	NA	**322.0**	no benchmark
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	5730	detect	50	NA	**114.6**	no benchmark
	IBK-1	IBK-1-SS_4/16/14_NM	17000	detect	50	NA	**340.0**	no benchmark
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	18700	detect	50	NA	**374.0**	no benchmark
	P17-BH1	P17-BH1-SS_4/3/14_NM	16200	detect	50	NA	**324.0**	no benchmark
	P3	P3-SSComp-01_20171020_NM	5990	detect	50	NA	**119.8**	no benchmark
	P3-BH1	P3-BH1-SS_4/3/14_NM	2270	detect	50	NA	**45.4**	no benchmark
	P4-BH1	P4-BH1-SS_4/4/14_NM	1240	detect	50	NA	**24.8**	no benchmark
	P5-BH2	P5-BH2-SS_4/3/14_NM	1090	detect	50	NA	**21.8**	no benchmark
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	3360	detect	50	NA	**67.2**	no benchmark
	P8	P8-SSComp-01_20171025_NM	8120	detect	50	NA	**162.4**	no benchmark
	P8dc	P8dc-SSComp-01_20171024_NM	7530	detect	50	NA	**150.6**	no benchmark
	P8-TP3	P8-TP3-SS_4/4/14_NM	10700	detect	50	NA	**214.0**	no benchmark
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	15400	detect	50	NA	**308.0**	no benchmark
	SPP	SPP-SSComp-01_20171025_NM	16900	detect	50	NA	**338.0**	no benchmark
	SS1,2-HP18	SS1-HP18-(0-2)c	7030	detect	50	NA	**140.6**	no benchmark
	SS11,12-IBK	SS11-IBK-(0-2)c	7620	detect	50	NA	**152.4**	no benchmark
	SS13,14-HP9	SS13-HP9-(0-2)c	14400	detect	50	NA	**288.0**	no benchmark
	SS15,16-HP9	SS15-HP9-(0-2)c	15200	detect	50	NA	**304.0**	no benchmark
	SS3,4-HP16	SS3-HP16-(0-2)c	6140	detect	50	NA	**122.8**	no benchmark
	SS5,6-IBJ	SS5-IBJ-(0-2)c	5950	detect	50	NA	**119.0**	no benchmark
	SS7,8-HP13	SS7-HP13-(0-2)c	12900	detect	50	NA	**258.0**	no benchmark
	SS9,10-HP12	SS9-HP12-(0-2)c	11700	detect	50	NA	**234.0**	no benchmark
	SWBA	SWBA-SSComp-01_20171024_NM	5200	detect	50	NA	**104.0**	no benchmark

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

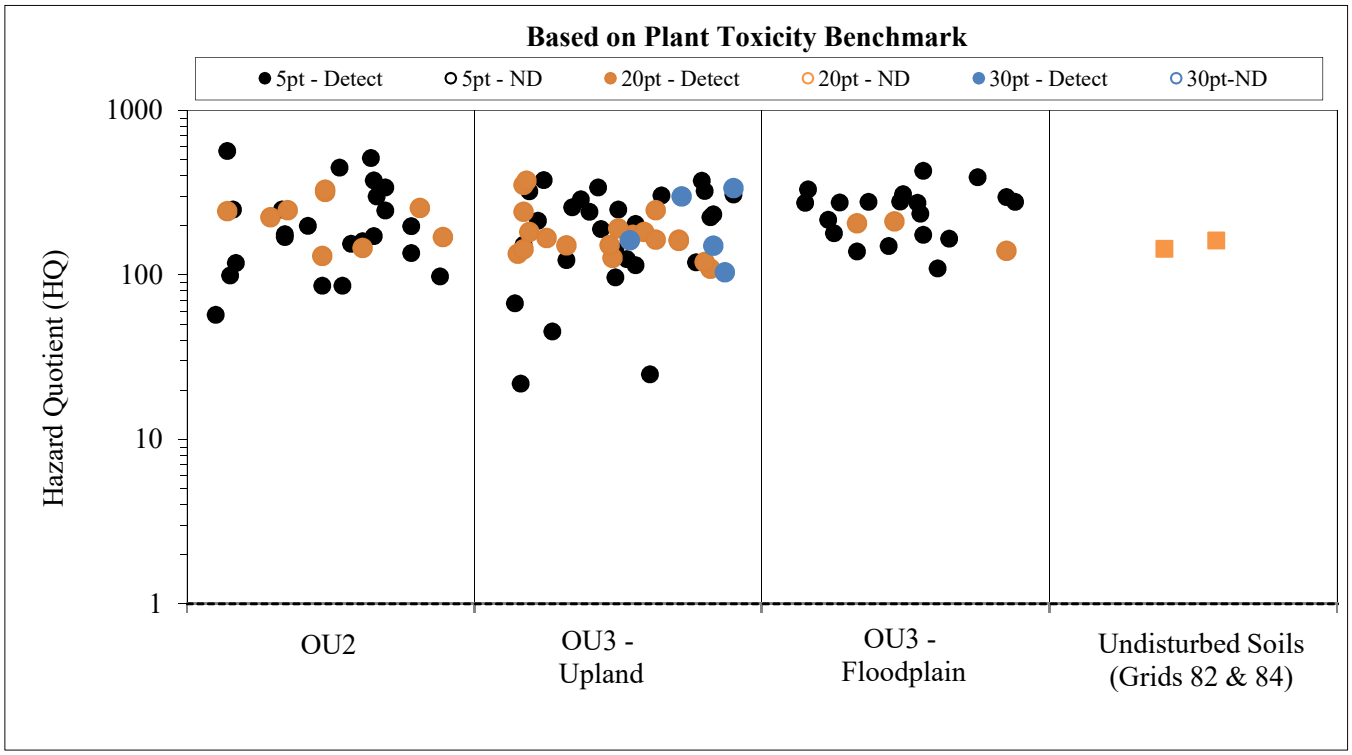
Aluminum

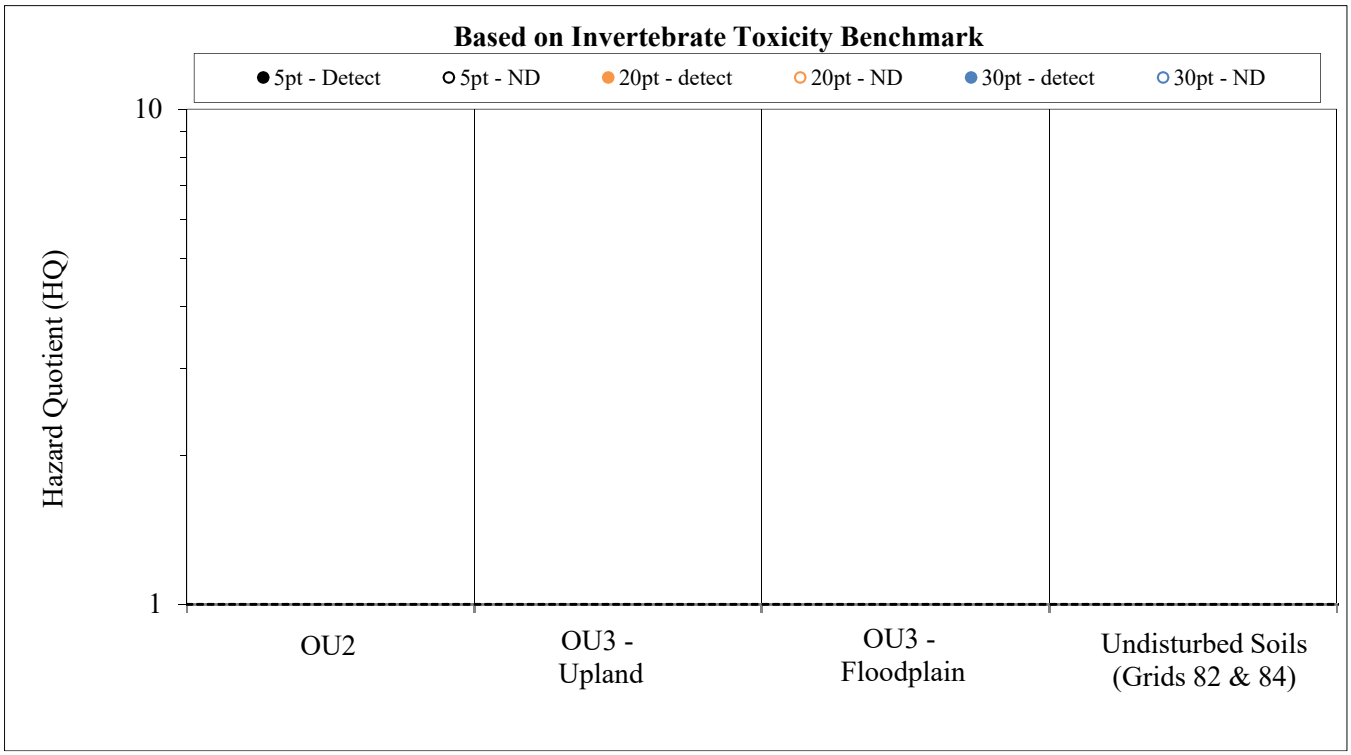
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	7000	detect	50	NA	**140.0**	no benchmark
	Grid 89	Grid 89-SSComp-01_20171026_NM	10600	detect	50	NA	**212.0**	no benchmark
	Grid 94	Grid 94-SSComp-01_20171026_NM	10300	detect	50	NA	**206.0**	no benchmark
	HP13a-1	HP13A-1-SS_4/10/14_NM	19600	detect	50	NA	**392.0**	no benchmark
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	6930	detect	50	NA	**138.6**	no benchmark
	SE10-HP11	SE10-HP11-(0-2)c	21500	detect	50	NA	**430.0**	no benchmark
	SE11-HP11	SE11-HP11-(0-2)c	8290	detect	50	NA	**165.8**	no benchmark
	SE12-HP12	SE12-HP12-(0-2)c	15500	detect	50	NA	**310.0**	no benchmark
	SE13-HP12	SE13-HP12-(0-2)c	14000	detect	50	NA	**280.0**	no benchmark
	SE14-HP13	SE14-HP13-(0-2)c	13900	detect	50	NA	**278.0**	no benchmark
	SE15-HP13	SE15-HP13-(0-2)c	11800	detect	50	NA	**236.0**	no benchmark
	SE16-HP13	SE16-HP13-(0-2)c	10800	detect	50	NA	**216.0**	no benchmark
	SE17-HP13a	SE17-HP13a-(0-2)c	13700	detect	50	NA	**274.0**	no benchmark
	SE1-HP1a	SE1-HP1a-(0-2)c	13700	detect	50	NA	**274.0**	no benchmark
	SE2-HP1a	SE2-HP1a-(0-2)c	16600	detect	50	NA	**332.0**	no benchmark
	SE3-HP1	SE3-HP1-(0-2)c	5470	detect	50	NA	**109.4**	no benchmark
	SE4-HP1	SE4-HP1-(0-2)c	8950	detect	50	NA	**179.0**	no benchmark
	SE5-HP2	SE5-HP2-(0-2)c	14900	detect	50	NA	**298.0**	no benchmark
	SE6-HP7	SE6-HP7-(0-2)c	13800	detect	50	NA	**276.0**	no benchmark
	SE7-HP7	SE7-HP7-(0-2)c	7500	detect	50	NA	**150.0**	no benchmark
	SE8-HP10	SE8-HP10-(0-2)c	8760	detect	50	NA	**175.2**	no benchmark
	SE9-HP10	SE9-HP10-(0-2)c	13900	detect	50	NA	**278.0**	no benchmark
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	8100	detect	50	NA	**162.0**	no benchmark
	Grid 84	Grid 84-SSComp-01_20171026_NM	7210	detect	50	NA	**144.2**	no benchmark

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix F

No Effect Hazard Quotients for Plants and Soil Invertebrates from Direct Contact with Aluminum in Surface Soils





APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

Aroclor-1254

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.141	detect	40	251	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.0114	ND	40	251	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.104	detect	40	251	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.0247	detect	40	251	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.0301	detect	40	251	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.0099	ND	40	251	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.0318	detect	40	251	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.413	detect	40	251	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.0162	detect	40	251	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.0093	ND	40	251	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	40	251	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	0.0041	ND	40	251	<1.0	<1.0
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	0.0043	ND	40	251	<1.0	<1.0
	SS31-IN	SS31-IN-(0-2)c	0.0043	ND	40	251	<1.0	<1.0
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.0096	ND	40	251	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.0096	ND	40	251	<1.0	<1.0

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

Aroclor-1254

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	40	251	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.0199	ND	40	251	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.0127	ND	40	251	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	40	251	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	0.0174	ND	40	251	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.0136	ND	40	251	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.0199	ND	40	251	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.0129	ND	40	251	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.0114	ND	40	251	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	40	251	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.0076	ND	40	251	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.0169	ND	40	251	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.0121	ND	40	251	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.008	ND	40	251	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.0206	ND	40	251	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.0162	ND	40	251	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	40	251	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.0117	ND	40	251	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.013	ND	40	251	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.0133	ND	40	251	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.0143	ND	40	251	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	40	251	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	40	251	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.0173	ND	40	251	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.0197	ND	40	251	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	40	251	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	40	251	#N/A	#N/A

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

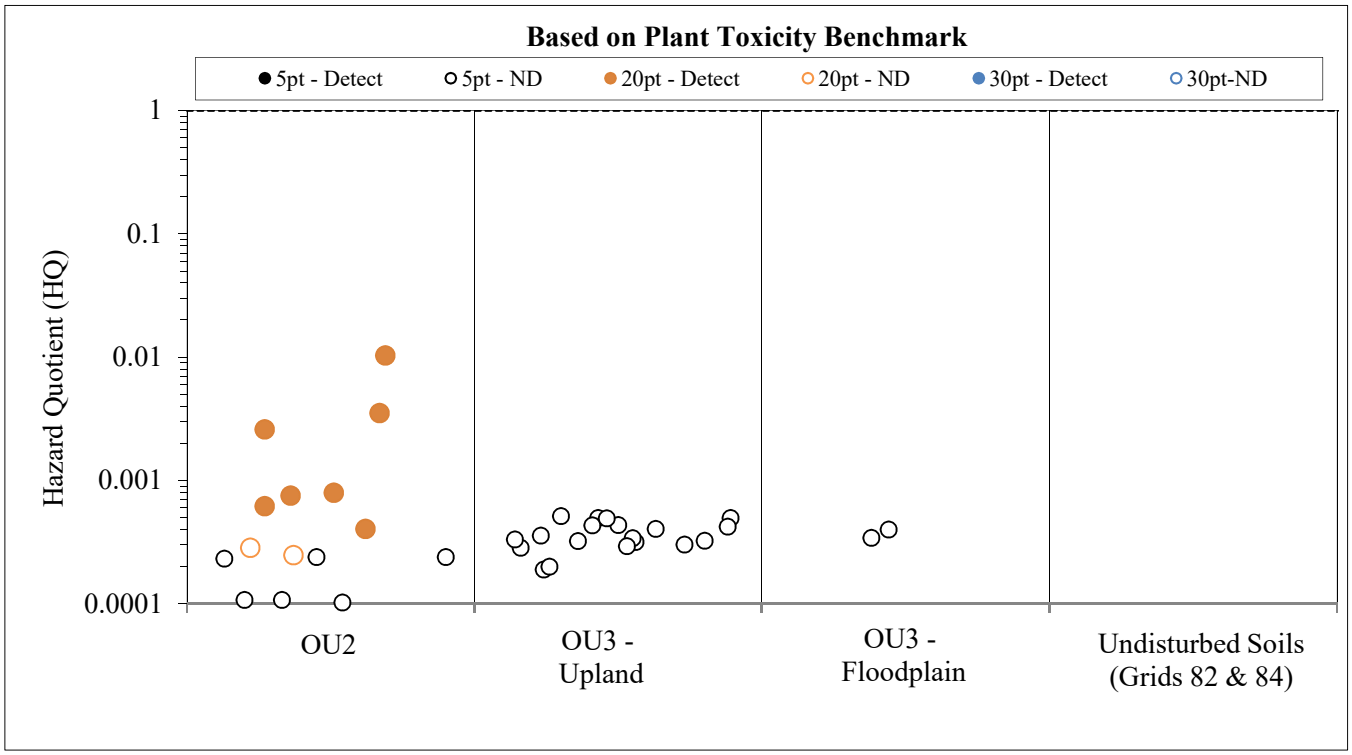
Aroclor-1254

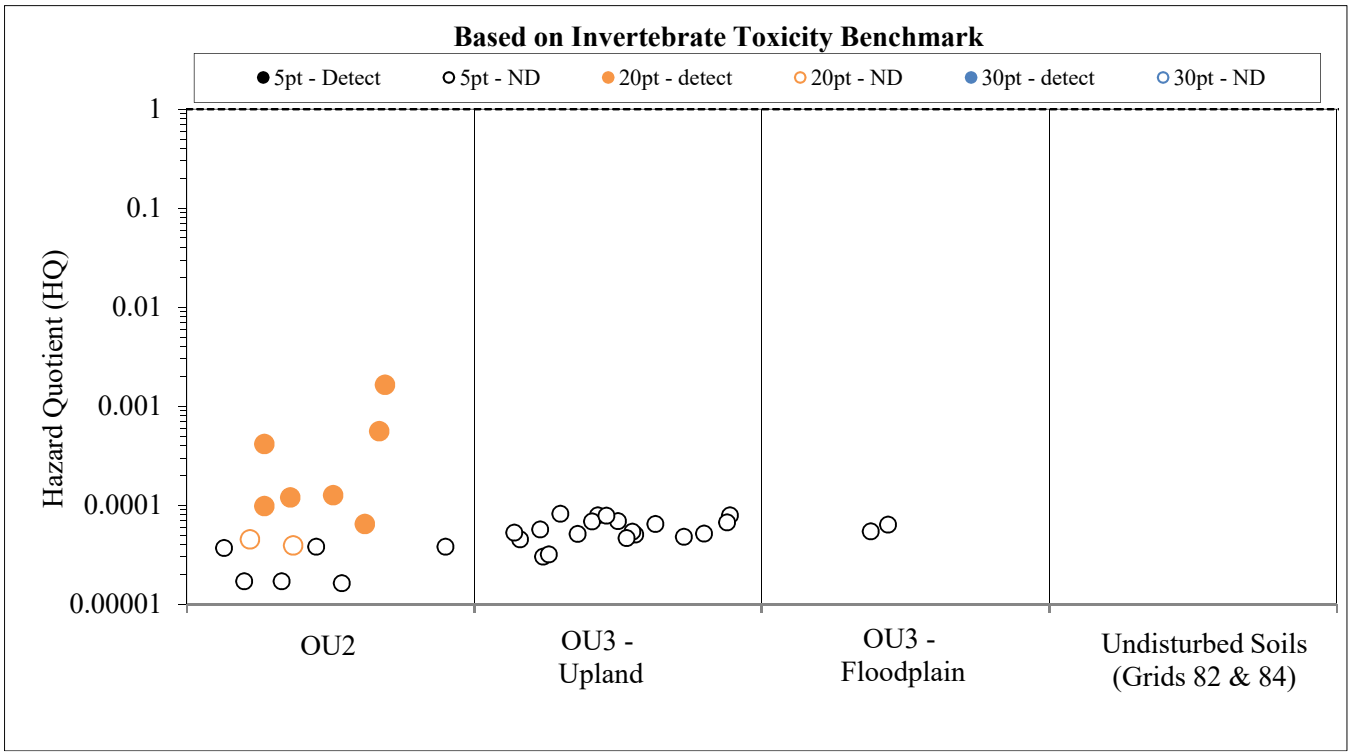
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	40	251	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.016	ND	40	251	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.0137	ND	40	251	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	40	251	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix F

No Effect Hazard Quotients for Plants and Soil Invertebrates from Direct Contact with Aroclor-1254 in Surface Soils





APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

Aroclor-1260

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.007	ND	40	251	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.0083	ND	40	251	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.0068	ND	40	251	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.0073	ND	40	251	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.0445	detect	40	251	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.0072	ND	40	251	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.0073	ND	40	251	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.0073	ND	40	251	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.0074	ND	40	251	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.0199	ND	40	251	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	40	251	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	0.154	detect	40	251	<1.0	<1.0
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	0.0044	ND	40	251	<1.0	<1.0
	SS31-IN	SS31-IN-(0-2)c	0.0881	detect	40	251	<1.0	<1.0
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.007	ND	40	251	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.007	ND	40	251	<1.0	<1.0

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

Aroclor-1260

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	40	251	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.0091	ND	40	251	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.0058	ND	40	251	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	40	251	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	0.0079	ND	40	251	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.0062	ND	40	251	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.009	ND	40	251	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.0059	ND	40	251	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.0052	ND	40	251	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	40	251	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.0162	ND	40	251	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.0077	ND	40	251	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.0055	ND	40	251	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.0172	ND	40	251	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.0094	ND	40	251	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.0347	ND	40	251	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	40	251	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.025	ND	40	251	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.0279	ND	40	251	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.0284	ND	40	251	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.0306	ND	40	251	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	40	251	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	40	251	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.0078	ND	40	251	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.009	ND	40	251	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	40	251	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	40	251	#N/A	#N/A

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

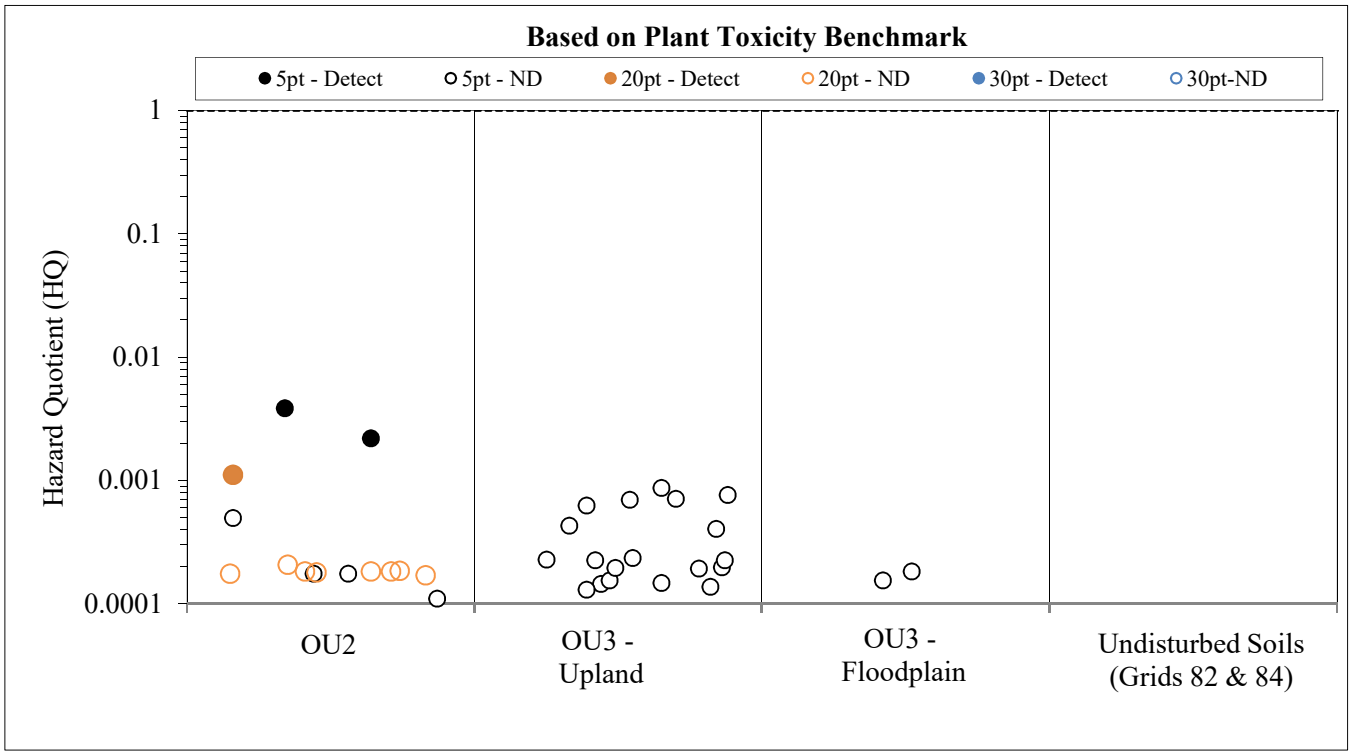
Aroclor-1260

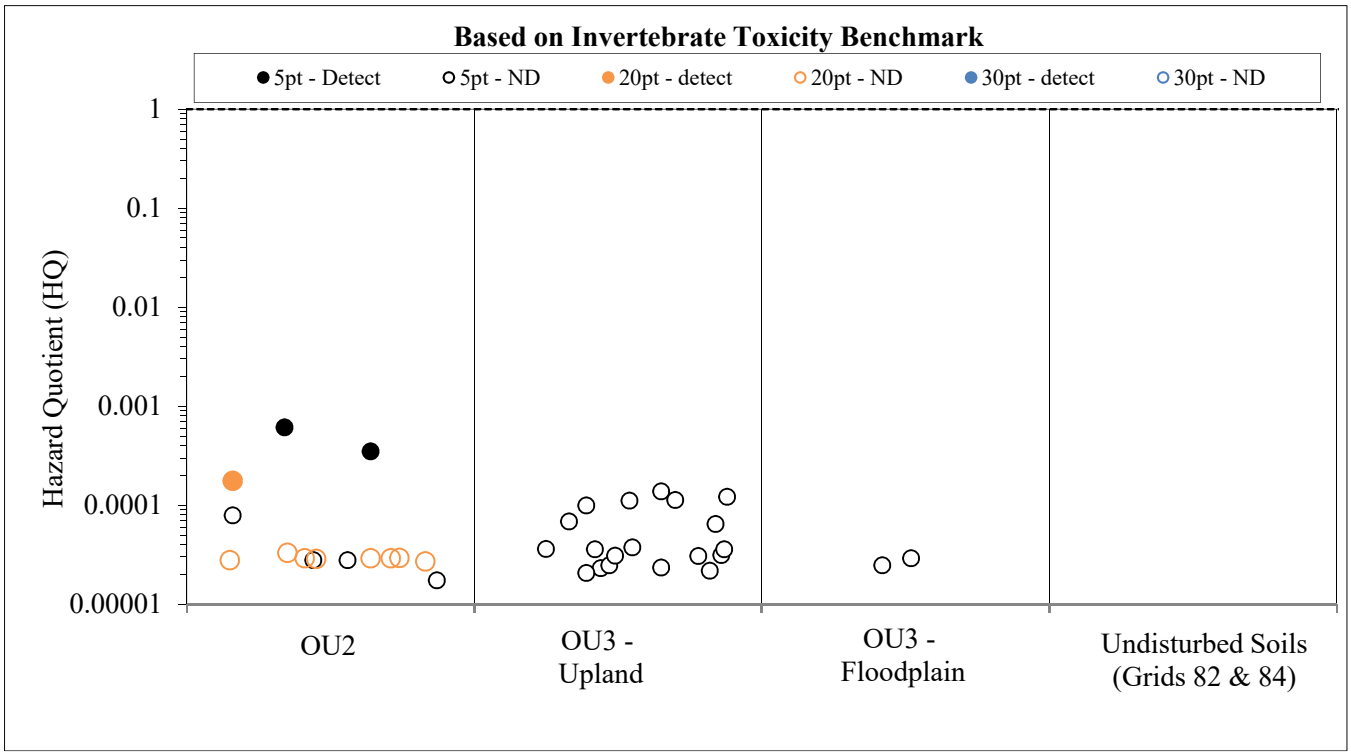
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	40	251	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.0073	ND	40	251	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.0062	ND	40	251	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	40	251	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

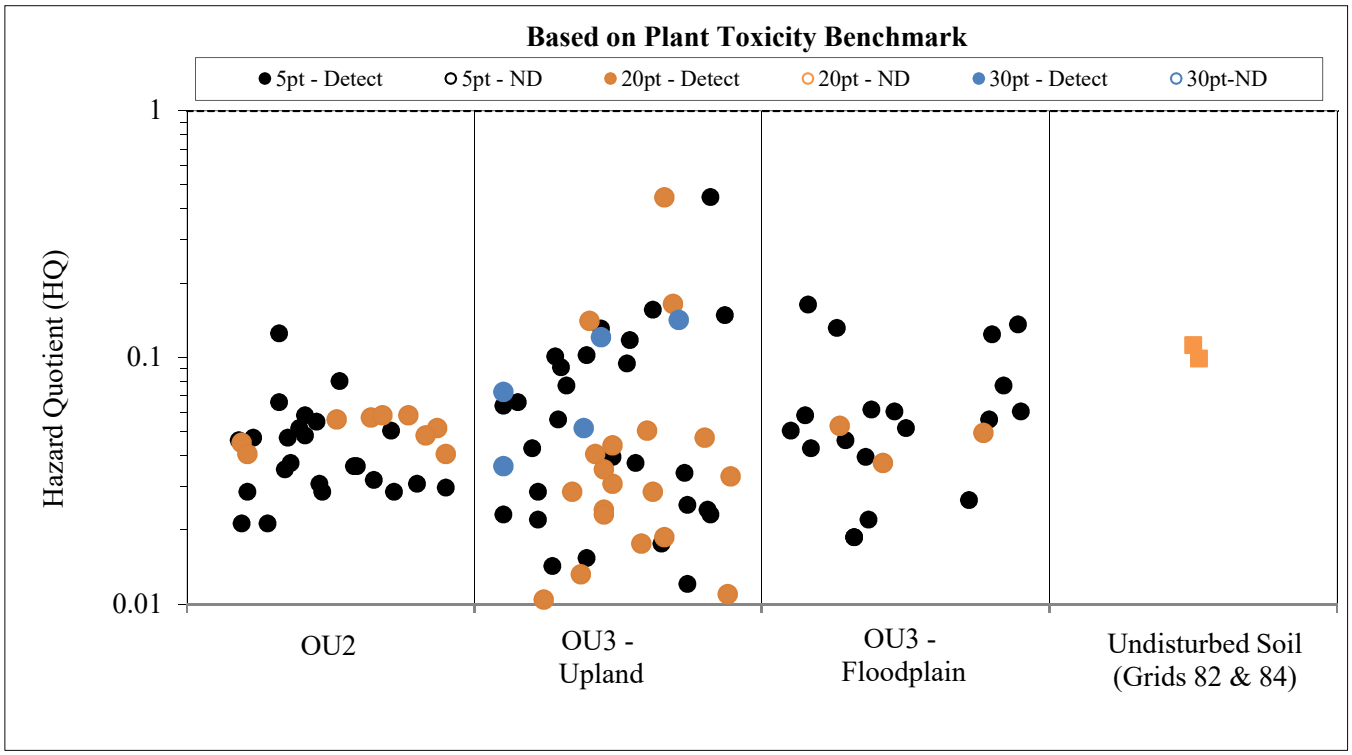
Appendix F

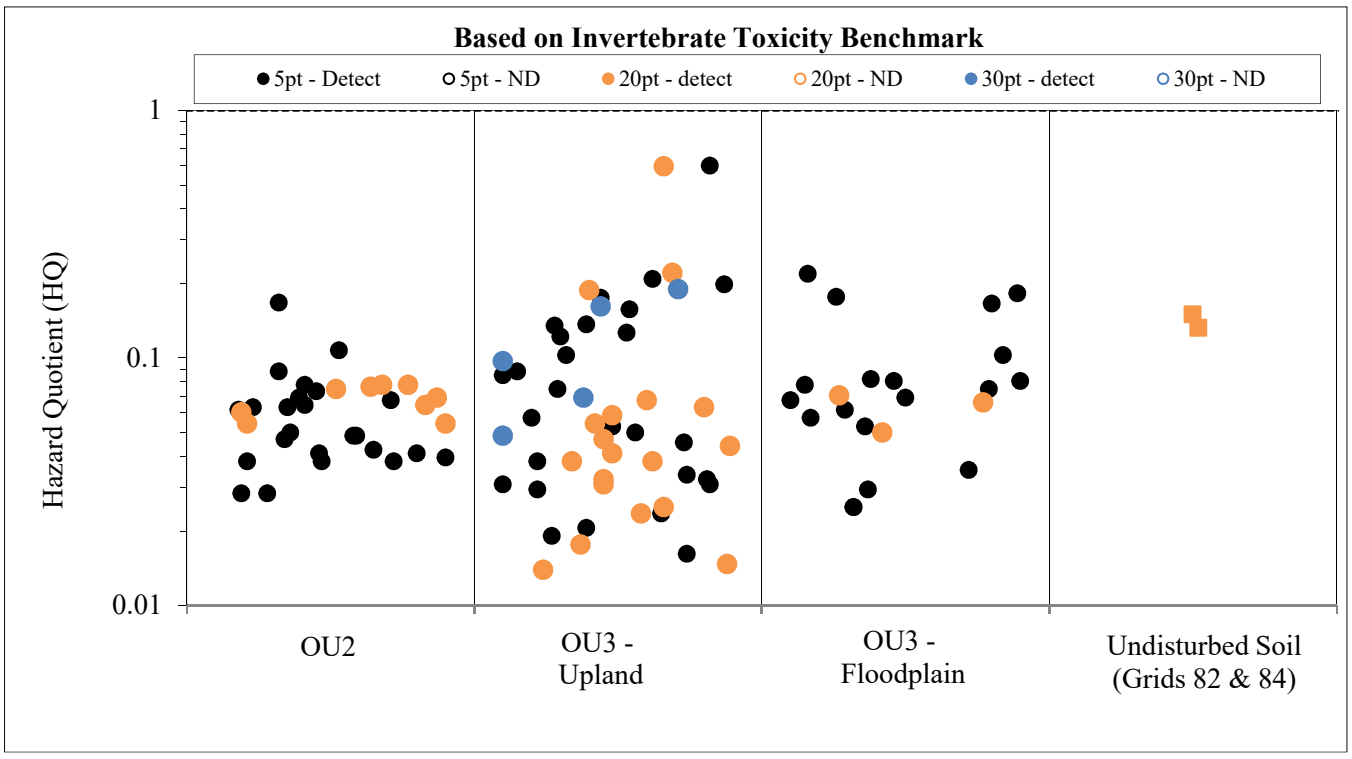
No Effect Hazard Quotients for Plants and Soil Invertebrates from Direct Contact with Aroclor-1260 in Surface Soils





APPENDIX F
Hazard Quotients for Plants and Soil Organisms from Direct Contact with Surface Soil
(Based on the Low Effect ESV)
Arsenic





APPENDIX F
Sample-Specific Hazard Quotients for Plants and Soil Organisms from Direct Contact with Surface Soil (Based on Low-Effect ESV)

Arsenic

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	5.1	detect	91	68	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	5.2	detect	91	68	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	4.1	detect	91	68	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	3.7	detect	91	68	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	5.3	detect	91	68	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	5.3	detect	91	68	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	3.7	detect	91	68	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	4.7	detect	91	68	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	4.4	detect	91	68	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	6	detect	91	68	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	2.6	detect	91	68	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	4.3	detect	91	68	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	5	detect	91	68	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	3.3	detect	91	68	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	2.6	detect	91	68	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	2.7	detect	91	68	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	4.3	detect	91	68	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	4.4	detect	91	68	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	5.3	detect	91	68	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	3.4	detect	91	68	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	91	68	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	2.6	detect	91	68	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	91	68	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	91	68	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	11.4	detect	91	68	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	7.3	detect	91	68	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	4.7	detect	91	68	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	2.8	detect	91	68	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	2.8	detect	91	68	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	3.2	detect	91	68	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	3.3	detect	91	68	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	2.9	detect	91	68	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	4.2	detect	91	68	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	1.933333	detect	91	68	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	1.933333	detect	91	68	<1.0	<1.0
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	11	detect	91	68	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	8.6	detect	91	68	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	9.2	detect	91	68	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	1	detect	91	68	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.95	detect	91	68	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	1.7	detect	91	68	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	1.2	detect	91	68	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	4	detect	91	68	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	1.6	detect	91	68	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	2.6	detect	91	68	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	2.2	detect	91	68	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	2.8	detect	91	68	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	3.2	detect	91	68	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	12.8	detect	91	68	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	2.6	detect	91	68	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	4.6	detect	91	68	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	3.7	detect	91	68	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	3	detect	91	68	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	40.5	detect	91	68	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	4.3	detect	91	68	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	2.1	detect	91	68	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	5.1	detect	91	68	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	2	detect	91	68	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	9.3	detect	91	68	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	2.1	detect	91	68	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	1.1	detect	91	68	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	91	68	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	1.6	detect	91	68	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	11.9	detect	91	68	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	1.3	detect	91	68	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	8.3	detect	91	68	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	14.2	detect	91	68	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	40.7	detect	91	68	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	15	detect	91	68	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	7	detect	91	68	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	2.6	detect	91	68	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	5.8	detect	91	68	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	6	detect	91	68	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	4.7	detect	91	68	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	6.6	detect	91	68	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	10.7	detect	91	68	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	13.5	detect	91	68	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	12.9	detect	91	68	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	2.1	detect	91	68	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	3.4	detect	91	68	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	3.6	detect	91	68	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	3.9	detect	91	68	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	2.2	detect	91	68	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	1.4	detect	91	68	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	3.1	detect	91	68	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	2.3	detect	91	68	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	3.3	detect	91	68	<1.0	<1.0

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil
(Based on Low-Effect ESV)

Arsenic

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	4.5	detect	91	68	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	4.8	detect	91	68	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	3.4	detect	91	68	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	4.6	detect	91	68	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	1.7	detect	91	68	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	12	detect	91	68	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	5.1	detect	91	68	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	5.6	detect	91	68	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	14.9	detect	91	68	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	5.3	detect	91	68	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	5.5	detect	91	68	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	4.7	detect	91	68	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	3.9	detect	91	68	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	4.2	detect	91	68	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	5.5	detect	91	68	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	2.4	detect	91	68	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	2	detect	91	68	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	12.4	detect	91	68	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	11.3	detect	91	68	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	1.7	detect	91	68	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	3.6	detect	91	68	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	7	detect	91	68	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	10.2	detect	91	68	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	9	detect	91	68	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

Arsenic

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	5.1	detect	18	60	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	5.2	detect	18	60	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	4.1	detect	18	60	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	3.7	detect	18	60	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	5.3	detect	18	60	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	5.3	detect	18	60	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	3.7	detect	18	60	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	4.7	detect	18	60	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	4.4	detect	18	60	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	6	detect	18	60	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	2.6	detect	18	60	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	4.3	detect	18	60	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	5	detect	18	60	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	3.3	detect	18	60	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	2.6	detect	18	60	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	2.7	detect	18	60	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	4.3	detect	18	60	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	4.4	detect	18	60	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	5.3	detect	18	60	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	3.4	detect	18	60	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	18	60	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	2.6	detect	18	60	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	18	60	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	18	60	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	11.4	detect	18	60	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	7.3	detect	18	60	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	4.7	detect	18	60	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	2.8	detect	18	60	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	2.8	detect	18	60	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	3.2	detect	18	60	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	3.3	detect	18	60	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	2.9	detect	18	60	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	4.2	detect	18	60	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	1.933333	detect	18	60	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	1.933333	detect	18	60	<1.0	<1.0

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

Arsenic

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	11	detect	18	60	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	8.6	detect	18	60	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	9.2	detect	18	60	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	1	detect	18	60	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.95	detect	18	60	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	1.7	detect	18	60	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	1.2	detect	18	60	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	4	detect	18	60	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	1.6	detect	18	60	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	2.6	detect	18	60	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	2.2	detect	18	60	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	2.8	detect	18	60	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	3.2	detect	18	60	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	12.8	detect	18	60	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	2.6	detect	18	60	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	4.6	detect	18	60	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	3.7	detect	18	60	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	3	detect	18	60	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	40.5	detect	18	60	**2.3**	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	4.3	detect	18	60	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	2.1	detect	18	60	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	5.1	detect	18	60	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	2	detect	18	60	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	9.3	detect	18	60	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	2.1	detect	18	60	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	1.1	detect	18	60	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	18	60	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	1.6	detect	18	60	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	11.9	detect	18	60	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	1.3	detect	18	60	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	8.3	detect	18	60	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	14.2	detect	18	60	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	40.7	detect	18	60	**2.3**	<1.0
	P3	P3-SSComp-01_20171020_NM	15	detect	18	60	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	7	detect	18	60	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	2.6	detect	18	60	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	5.8	detect	18	60	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	6	detect	18	60	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	4.7	detect	18	60	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	6.6	detect	18	60	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	10.7	detect	18	60	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	13.5	detect	18	60	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	12.9	detect	18	60	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	2.1	detect	18	60	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	3.4	detect	18	60	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	3.6	detect	18	60	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	3.9	detect	18	60	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	2.2	detect	18	60	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	1.4	detect	18	60	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	3.1	detect	18	60	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	2.3	detect	18	60	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	3.3	detect	18	60	<1.0	<1.0

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

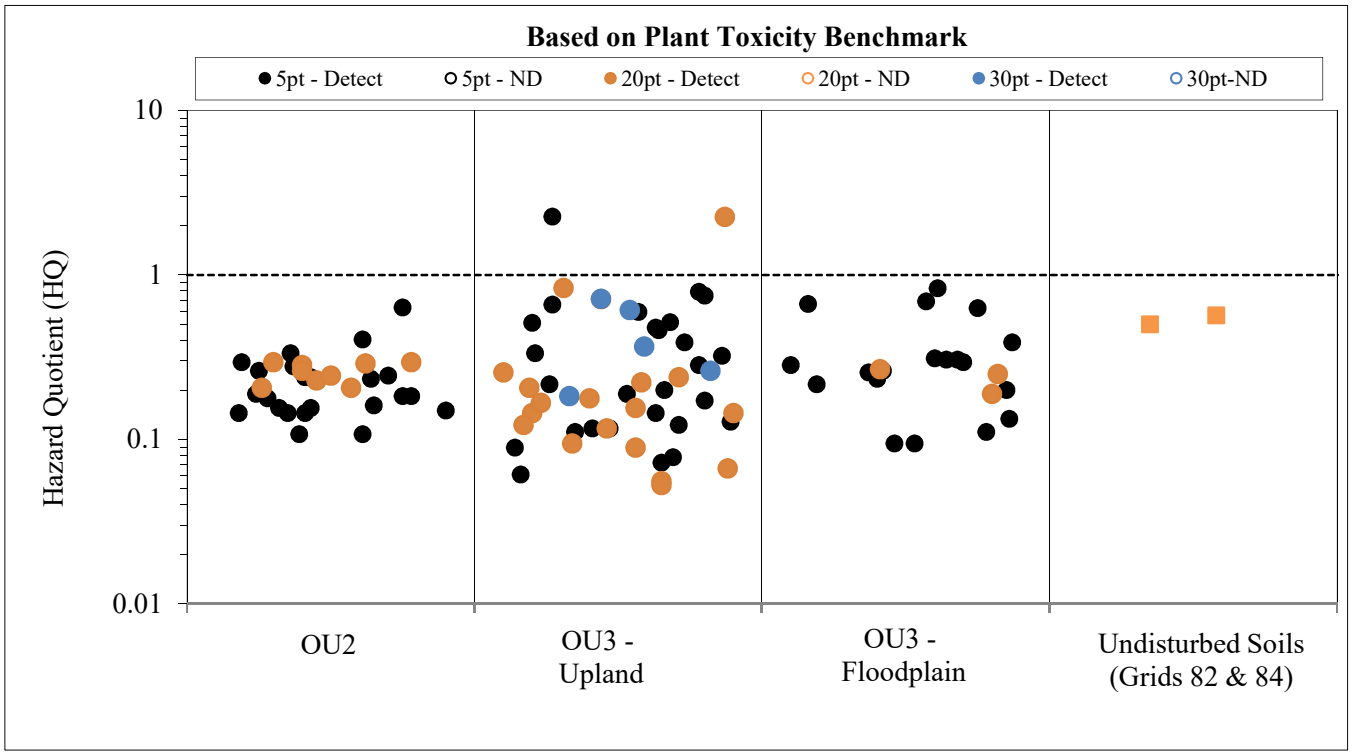
Arsenic

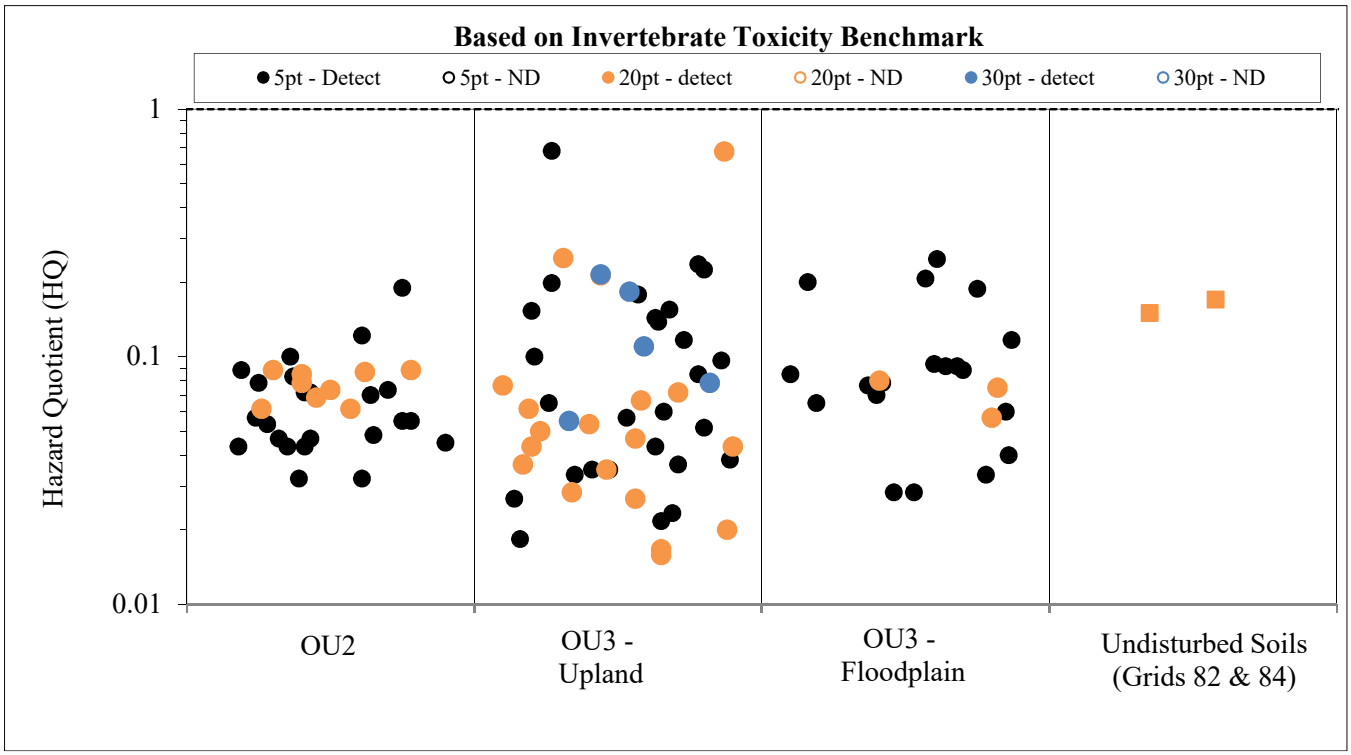
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	4.5	detect	18	60	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	4.8	detect	18	60	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	3.4	detect	18	60	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	4.6	detect	18	60	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	1.7	detect	18	60	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	12	detect	18	60	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	5.1	detect	18	60	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	5.6	detect	18	60	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	14.9	detect	18	60	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	5.3	detect	18	60	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	5.5	detect	18	60	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	4.7	detect	18	60	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	3.9	detect	18	60	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	4.2	detect	18	60	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	5.5	detect	18	60	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	2.4	detect	18	60	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	2	detect	18	60	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	12.4	detect	18	60	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	11.3	detect	18	60	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	1.7	detect	18	60	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	3.6	detect	18	60	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	7	detect	18	60	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	10.2	detect	18	60	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	9	detect	18	60	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

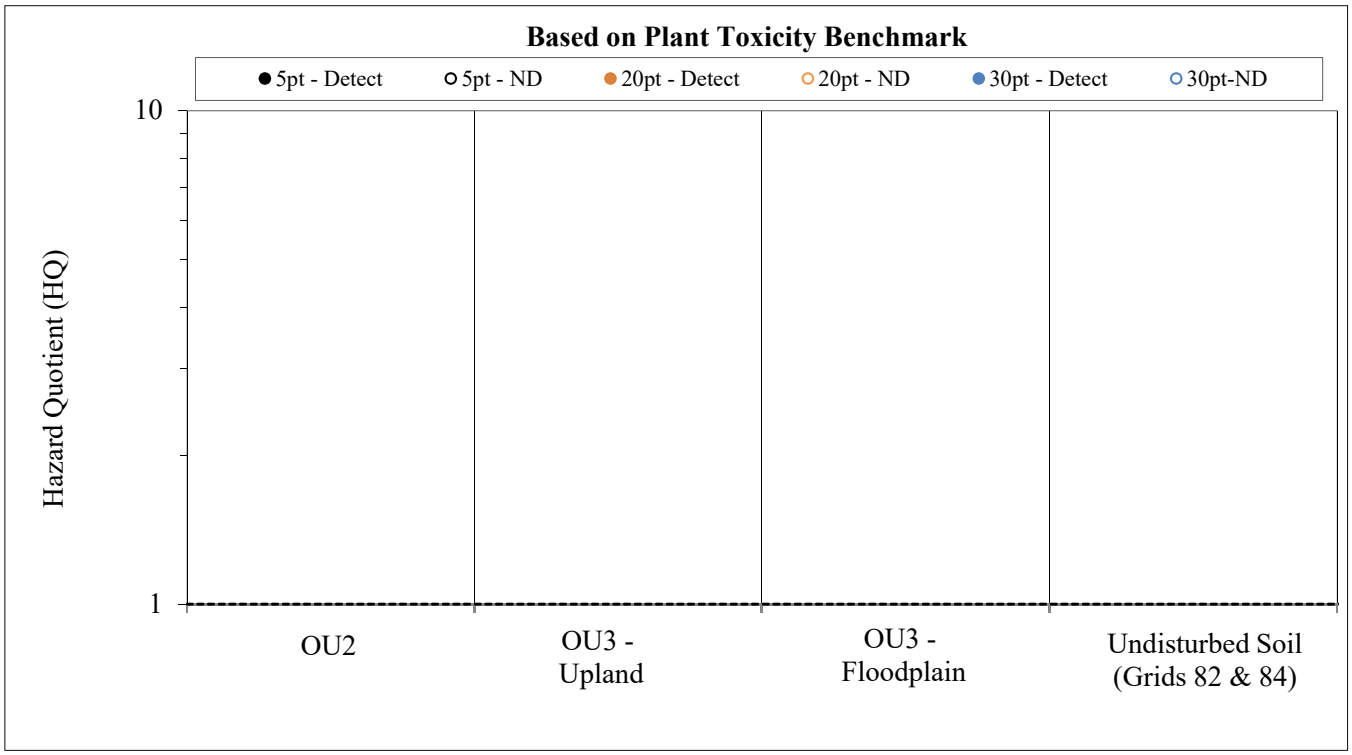
Appendix F

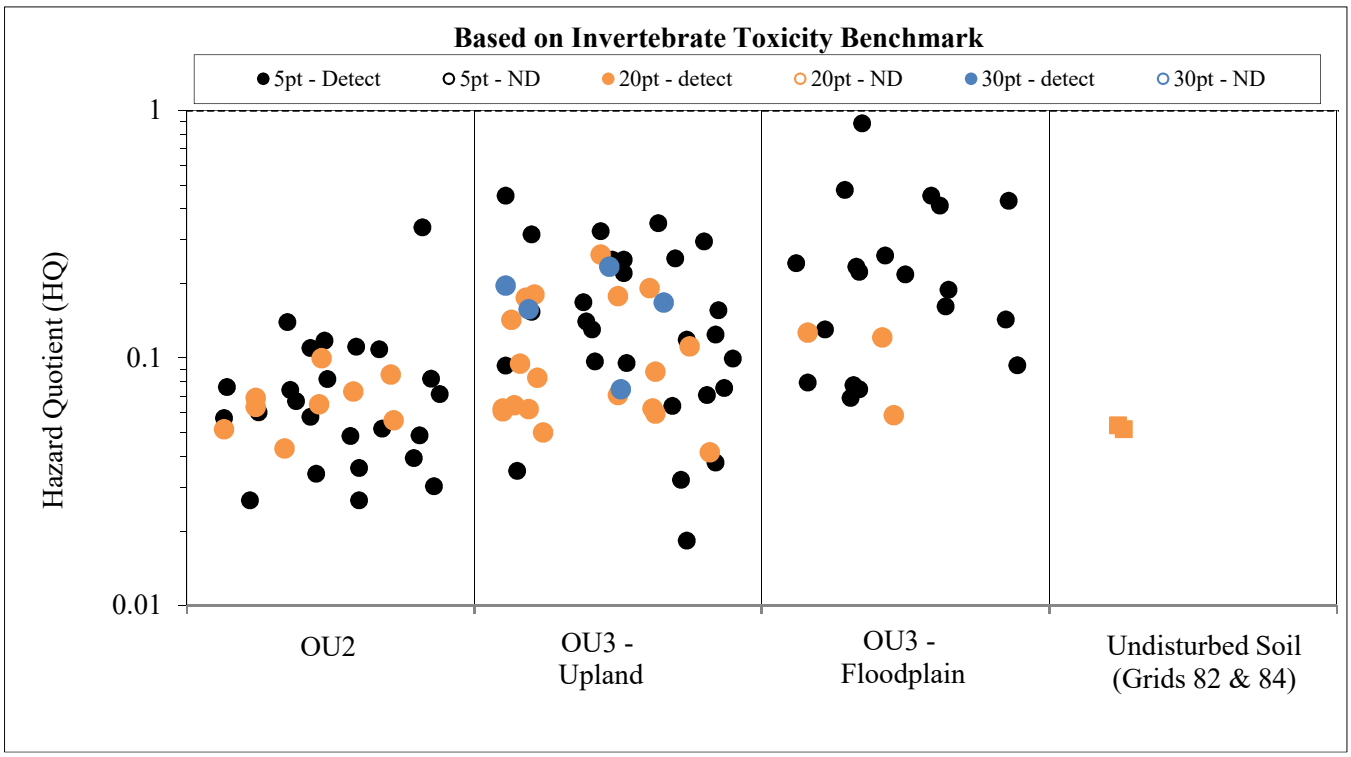
No Effect Hazard Quotients for Plants and Soil Invertebrates from Direct Contact with Arsenic in Surface Soils





APPENDIX F
Hazard Quotients for Plants and Soil Organisms from Direct Contact with Surface Soil
(Based on the Low Effect ESV)
Barium





APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil
(Based on Low-Effect ESV)

Barium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	203	detect	NA	3200	no benchmark	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	234	detect	NA	3200	no benchmark	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	165	detect	NA	3200	no benchmark	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	138	detect	NA	3200	no benchmark	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	319	detect	NA	3200	no benchmark	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	274	detect	NA	3200	no benchmark	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	221	detect	NA	3200	no benchmark	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	208	detect	NA	3200	no benchmark	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	179	detect	NA	3200	no benchmark	<1.0
	LF-1	LF-1-SS_4/18/14_NM	355	detect	NA	3200	no benchmark	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	155	detect	NA	3200	no benchmark	<1.0
	SS10-IN	SS10-IN-(0-2)c	264	detect	NA	3200	no benchmark	<1.0
	SS11-IN	SS11-IN-(0-2)c	229	detect	NA	3200	no benchmark	<1.0
	SS12-IN	SS12-IN-(0-2)c	166	detect	NA	3200	no benchmark	<1.0
	SS13-IN	SS13-IN-(0-2)c	376	detect	NA	3200	no benchmark	<1.0
	SS14-IN	SS14-IN-(0-2)c	183	detect	NA	3200	no benchmark	<1.0
	SS15-IN	SS15-IN-(0-2)c	347	detect	NA	3200	no benchmark	<1.0
	SS16-IN	SS16-IN-(0-2)c	263	detect	NA	3200	no benchmark	<1.0
	SS17-IN	SS17-IN-(0-2)c	185	detect	NA	3200	no benchmark	<1.0
	SS1-IN	SS1-IN-(0-2)c	109	detect	NA	3200	no benchmark	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	NA	3200	no benchmark	#N/A
	SS2-IN	SS2-IN-(0-2)c	126	detect	NA	3200	no benchmark	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	NA	3200	no benchmark	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	NA	3200	no benchmark	#N/A
	SS32-IN	SS32-IN-(0-2)c	1080	detect	NA	3200	no benchmark	<1.0
	SS33-IN	SS33-IN-(0-2)c	447	detect	NA	3200	no benchmark	<1.0
	SS3-IN	SS3-IN-(0-2)c	238	detect	NA	3200	no benchmark	<1.0
	SS4-IN	SS4-IN-(0-2)c	115	detect	NA	3200	no benchmark	<1.0
	SS5-IN	SS5-IN-(0-2)c	351	detect	NA	3200	no benchmark	<1.0
	SS6-IN	SS6-IN-(0-2)c	156	detect	NA	3200	no benchmark	<1.0
	SS7-IN	SS7-IN-(0-2)c	214	detect	NA	3200	no benchmark	<1.0
	SS8-IN	SS8-IN-(0-2)c	97	detect	NA	3200	no benchmark	<1.0
	SS9-IN	SS9-IN-(0-2)c	244	detect	NA	3200	no benchmark	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	85.16667	detect	NA	3200	no benchmark	<1.0
	TSB-SS	BACKFILL-TSB-SS	85.16667	detect	NA	3200	no benchmark	<1.0
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	536	detect	NA	3200	no benchmark	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	946	detect	NA	3200	no benchmark	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	242	detect	NA	3200	no benchmark	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	200	detect	NA	3200	no benchmark	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	200	detect	NA	3200	no benchmark	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	191	detect	NA	3200	no benchmark	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	357	detect	NA	3200	no benchmark	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	227	detect	NA	3200	no benchmark	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	199	detect	NA	3200	no benchmark	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	160	detect	NA	3200	no benchmark	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	456	detect	NA	3200	no benchmark	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	578	detect	NA	3200	no benchmark	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	304	detect	NA	3200	no benchmark	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	561	detect	NA	3200	no benchmark	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	568	detect	NA	3200	no benchmark	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	282	detect	NA	3200	no benchmark	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	195	detect	NA	3200	no benchmark	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	266	detect	NA	3200	no benchmark	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	837	detect	NA	3200	no benchmark	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	206	detect	NA	3200	no benchmark	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	133	detect	NA	3200	no benchmark	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	492	detect	NA	3200	no benchmark	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	305	detect	NA	3200	no benchmark	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	1040	detect	NA	3200	no benchmark	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	227	detect	NA	3200	no benchmark	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	121	detect	NA	3200	no benchmark	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	NA	3200	no benchmark	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	58.5	detect	NA	3200	no benchmark	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	798	detect	NA	3200	no benchmark	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	318	detect	NA	3200	no benchmark	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	310	detect	NA	3200	no benchmark	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	798	detect	NA	3200	no benchmark	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	808	detect	NA	3200	no benchmark	<1.0
	P3	P3-SSComp-01_20171020_NM	612	detect	NA	3200	no benchmark	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	538	detect	NA	3200	no benchmark	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	398	detect	NA	3200	no benchmark	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	499	detect	NA	3200	no benchmark	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	450	detect	NA	3200	no benchmark	<1.0
	P8	P8-SSComp-01_20171025_NM	503	detect	NA	3200	no benchmark	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	627	detect	NA	3200	no benchmark	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	705	detect	NA	3200	no benchmark	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1120	detect	NA	3200	no benchmark	<1.0
	SPP	SPP-SSComp-01_20171025_NM	749	detect	NA	3200	no benchmark	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	112	detect	NA	3200	no benchmark	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	103	detect	NA	3200	no benchmark	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	1010	detect	NA	3200	no benchmark	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	1450	detect	NA	3200	no benchmark	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	379	detect	NA	3200	no benchmark	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	205	detect	NA	3200	no benchmark	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	298	detect	NA	3200	no benchmark	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	418	detect	NA	3200	no benchmark	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	239	detect	NA	3200	no benchmark	<1.0

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil
(Based on Low-Effect ESV)

Barium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	188	detect	NA	3200	no benchmark	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	405	detect	NA	3200	no benchmark	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	387	detect	NA	3200	no benchmark	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	458	detect	NA	3200	no benchmark	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	239	detect	NA	3200	no benchmark	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	603	detect	NA	3200	no benchmark	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	831	detect	NA	3200	no benchmark	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	517	detect	NA	3200	no benchmark	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	697	detect	NA	3200	no benchmark	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	417	detect	NA	3200	no benchmark	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	1450	detect	NA	3200	no benchmark	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	773	detect	NA	3200	no benchmark	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	1380	detect	NA	3200	no benchmark	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	1530	detect	NA	3200	no benchmark	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	2840	detect	NA	3200	no benchmark	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	221	detect	NA	3200	no benchmark	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	249	detect	NA	3200	no benchmark	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	713	detect	NA	3200	no benchmark	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	749	detect	NA	3200	no benchmark	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	299	detect	NA	3200	no benchmark	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	255	detect	NA	3200	no benchmark	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	1320	detect	NA	3200	no benchmark	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	171	detect	NA	3200	no benchmark	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	165	detect	NA	3200	no benchmark	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

Barium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	203	detect	500	330	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	234	detect	500	330	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	165	detect	500	330	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	138	detect	500	330	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	319	detect	500	330	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	274	detect	500	330	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	221	detect	500	330	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	208	detect	500	330	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	179	detect	500	330	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	355	detect	500	330	<1.0	**1.1**
	SB2a,3a-IN	SB2a-IN-(0-2)	155	detect	500	330	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	264	detect	500	330	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	229	detect	500	330	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	166	detect	500	330	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	376	detect	500	330	<1.0	**1.1**
	SS14-IN	SS14-IN-(0-2)c	183	detect	500	330	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	347	detect	500	330	<1.0	**1.1**
	SS16-IN	SS16-IN-(0-2)c	263	detect	500	330	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	185	detect	500	330	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	109	detect	500	330	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	500	330	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	126	detect	500	330	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	500	330	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	500	330	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	1080	detect	500	330	**2.2**	**3.3**
	SS33-IN	SS33-IN-(0-2)c	447	detect	500	330	<1.0	**1.4**
	SS3-IN	SS3-IN-(0-2)c	238	detect	500	330	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	115	detect	500	330	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	351	detect	500	330	<1.0	**1.1**
	SS6-IN	SS6-IN-(0-2)c	156	detect	500	330	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	214	detect	500	330	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	97	detect	500	330	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	244	detect	500	330	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	85.16667	detect	500	330	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	85.16667	detect	500	330	<1.0	<1.0

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

Barium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	536	detect	500	330	**1.1**	**1.6**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	946	detect	500	330	**1.9**	**2.9**
	CRP-1	CRP-1-SS_4/10/14_NM	242	detect	500	330	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	200	detect	500	330	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	200	detect	500	330	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	191	detect	500	330	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	357	detect	500	330	<1.0	**1.1**
	Grid 33	Grid 33-SSComp-01_20171020_NM	227	detect	500	330	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	199	detect	500	330	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	160	detect	500	330	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	456	detect	500	330	<1.0	**1.4**
	Grid 43	Grid 43-SSComp-01_20171023_NM	578	detect	500	330	**1.2**	**1.8**
	Grid 44	Grid 44-SSComp-01_20171023_NM	304	detect	500	330	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	561	detect	500	330	**1.1**	**1.7**
	Grid 53	Grid 53-SSComp-01_20171020_NM	568	detect	500	330	**1.1**	**1.7**
	Grid 60	Grid 60-SSComp-01_20171023_NM	282	detect	500	330	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	195	detect	500	330	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	266	detect	500	330	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	837	detect	500	330	**1.7**	**2.5**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	206	detect	500	330	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	133	detect	500	330	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	492	detect	500	330	<1.0	**1.5**
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	305	detect	500	330	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	1040	detect	500	330	**2.1**	**3.2**
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	227	detect	500	330	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	121	detect	500	330	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	500	330	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	58.5	detect	500	330	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	798	detect	500	330	**1.6**	**2.4**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	318	detect	500	330	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	310	detect	500	330	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	798	detect	500	330	**1.6**	**2.4**
	P17-BH1	P17-BH1-SS_4/3/14_NM	808	detect	500	330	**1.6**	**2.4**
	P3	P3-SSComp-01_20171020_NM	612	detect	500	330	**1.2**	**1.9**
	P3-BH1	P3-BH1-SS_4/3/14_NM	538	detect	500	330	**1.1**	**1.6**
	P4-BH1	P4-BH1-SS_4/4/14_NM	398	detect	500	330	<1.0	**1.2**
	P5-BH2	P5-BH2-SS_4/3/14_NM	499	detect	500	330	<1.0	**1.5**
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	450	detect	500	330	<1.0	**1.4**
	P8	P8-SSComp-01_20171025_NM	503	detect	500	330	<1.0	**1.5**
	P8dc	P8dc-SSComp-01_20171024_NM	627	detect	500	330	**1.3**	**1.9**
	P8-TP3	P8-TP3-SS_4/4/14_NM	705	detect	500	330	**1.4**	**2.1**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1120	detect	500	330	**2.2**	**3.4**
	SPP	SPP-SSComp-01_20171025_NM	749	detect	500	330	**1.5**	**2.3**
	SS1,2-HP18	SS1-HP18-(0-2)c	112	detect	500	330	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	103	detect	500	330	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	1010	detect	500	330	**2.0**	**3.1**
	SS15,16-HP9	SS15-HP9-(0-2)c	1450	detect	500	330	**2.9**	**4.4**
	SS3,4-HP16	SS3-HP16-(0-2)c	379	detect	500	330	<1.0	**1.1**
	SS5,6-IBJ	SS5-IBJ-(0-2)c	205	detect	500	330	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	298	detect	500	330	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	418	detect	500	330	<1.0	**1.3**
	SWBA	SWBA-SSComp-01_20171024_NM	239	detect	500	330	<1.0	<1.0

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

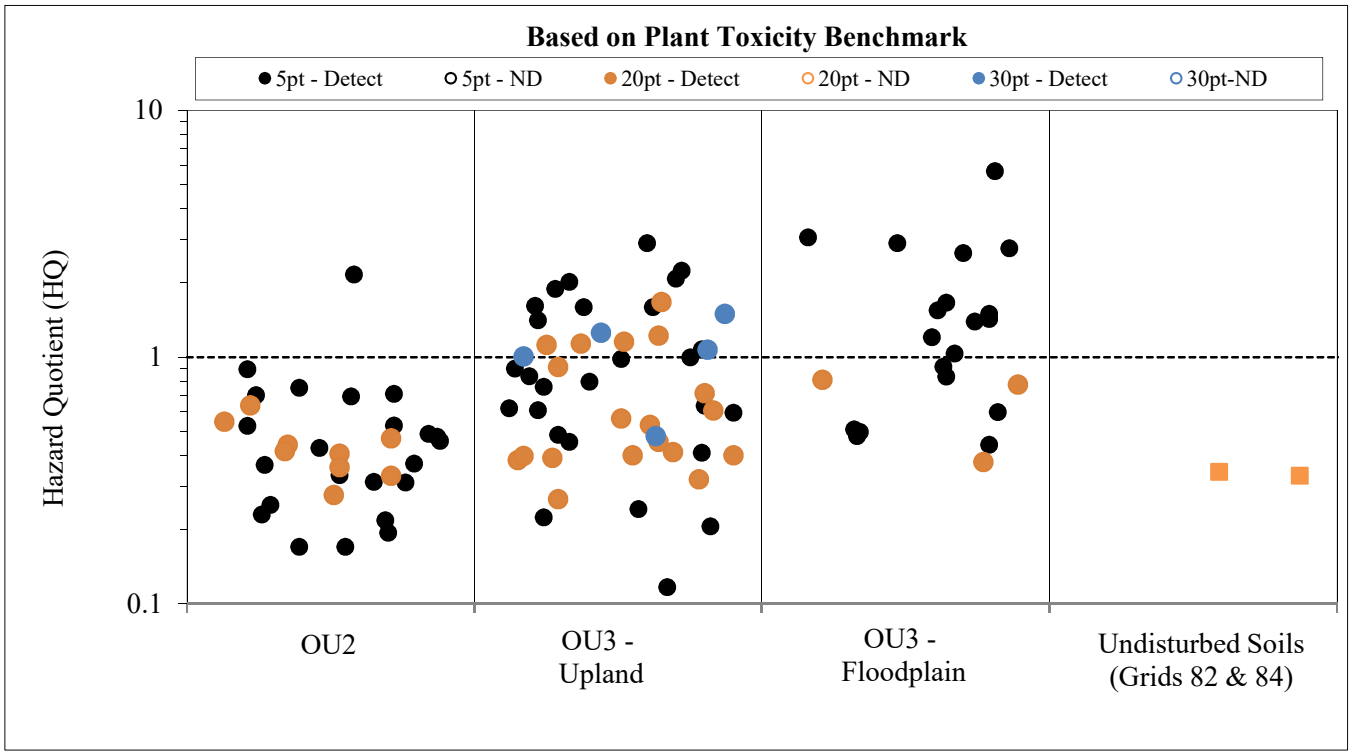
Barium

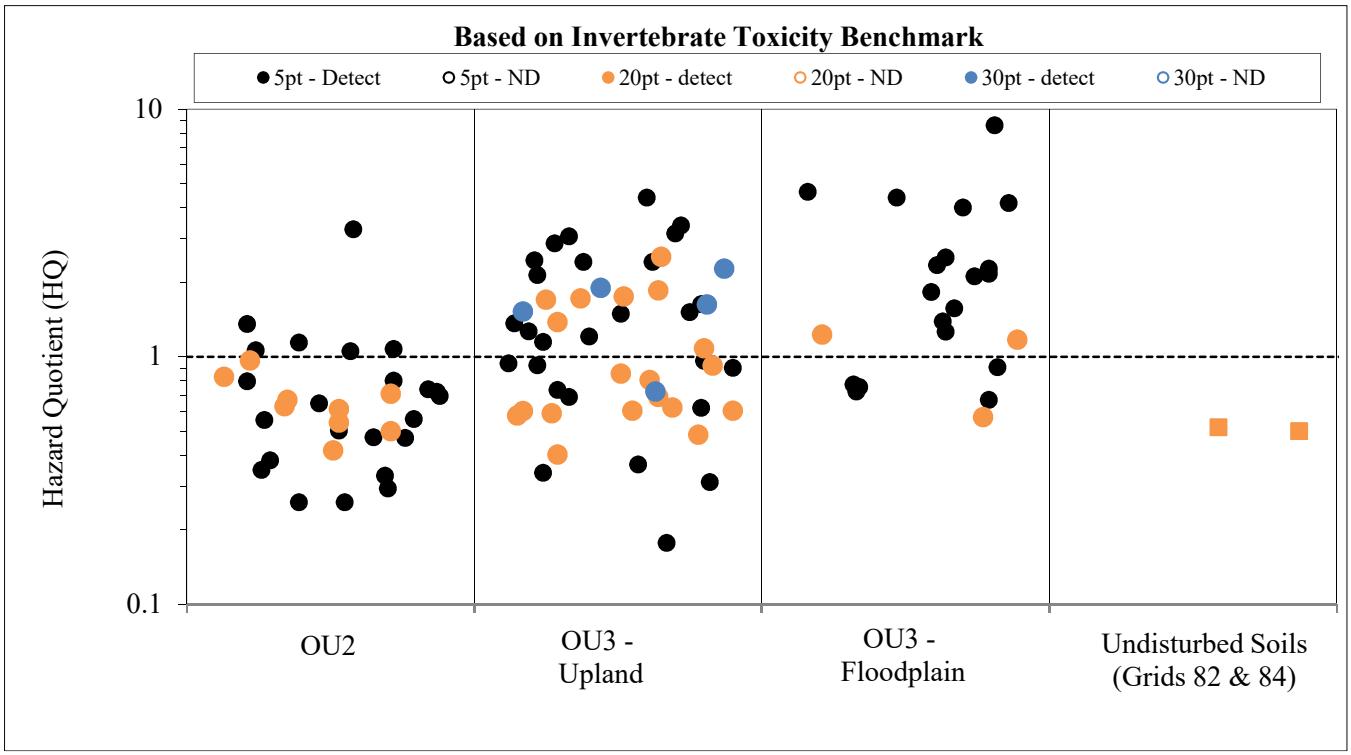
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	188	detect	500	330	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	405	detect	500	330	<1.0	**1.2**
	Grid 94	Grid 94-SSComp-01_20171026_NM	387	detect	500	330	<1.0	**1.2**
	HP13a-1	HP13A-1-SS_4/10/14_NM	458	detect	500	330	<1.0	**1.4**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	239	detect	500	330	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	603	detect	500	330	**1.2**	**1.8**
	SE11-HP11	SE11-HP11-(0-2)c	831	detect	500	330	**1.7**	**2.5**
	SE12-HP12	SE12-HP12-(0-2)c	517	detect	500	330	<1.0	**1.6**
	SE13-HP12	SE13-HP12-(0-2)c	697	detect	500	330	**1.4**	**2.1**
	SE14-HP13	SE14-HP13-(0-2)c	417	detect	500	330	<1.0	**1.3**
	SE15-HP13	SE15-HP13-(0-2)c	1450	detect	500	330	**2.9**	**4.4**
	SE16-HP13	SE16-HP13-(0-2)c	773	detect	500	330	**1.5**	**2.3**
	SE17-HP13a	SE17-HP13a-(0-2)c	1380	detect	500	330	**2.8**	**4.2**
	SE1-HP1a	SE1-HP1a-(0-2)c	1530	detect	500	330	**3.1**	**4.6**
	SE2-HP1a	SE2-HP1a-(0-2)c	2840	detect	500	330	**5.7**	**8.6**
	SE3-HP1	SE3-HP1-(0-2)c	221	detect	500	330	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	249	detect	500	330	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	713	detect	500	330	**1.4**	**2.2**
	SE6-HP7	SE6-HP7-(0-2)c	749	detect	500	330	**1.5**	**2.3**
	SE7-HP7	SE7-HP7-(0-2)c	299	detect	500	330	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	255	detect	500	330	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	1320	detect	500	330	**2.6**	**4.0**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	171	detect	500	330	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	165	detect	500	330	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

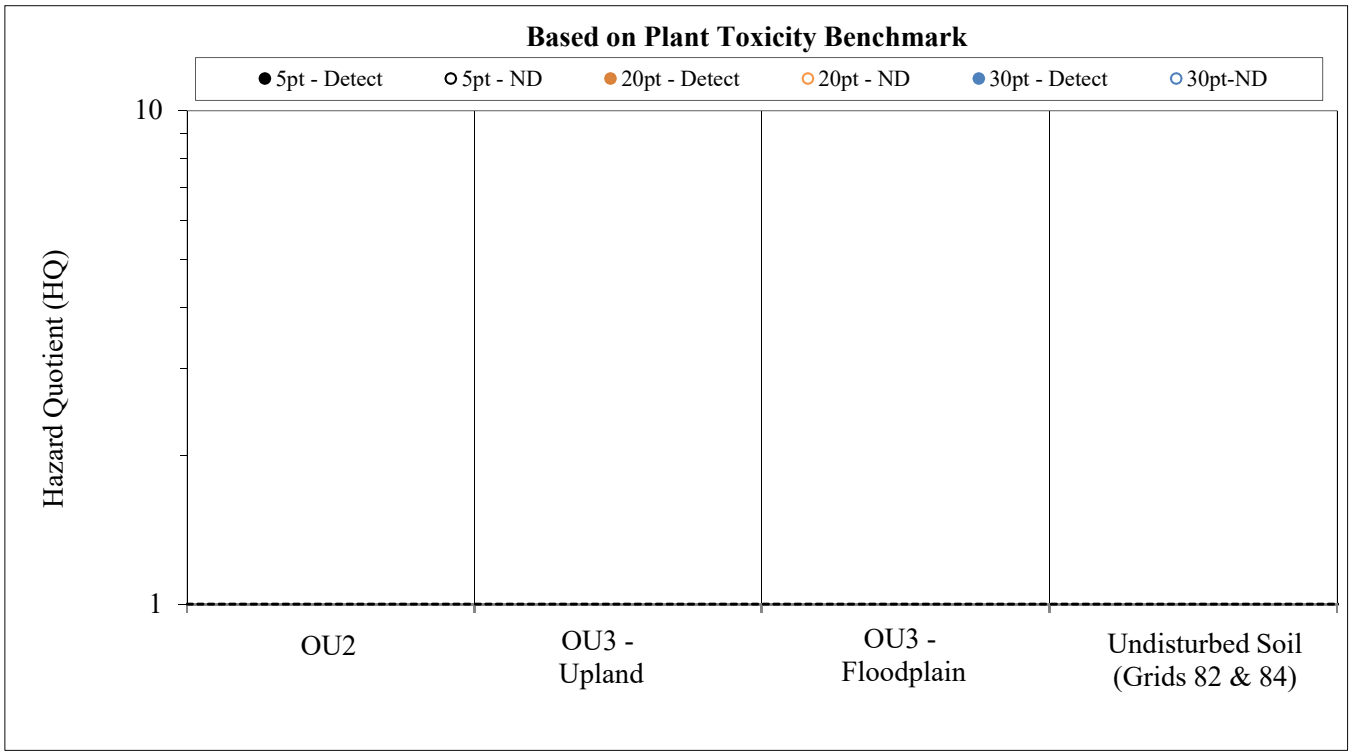
Appendix F

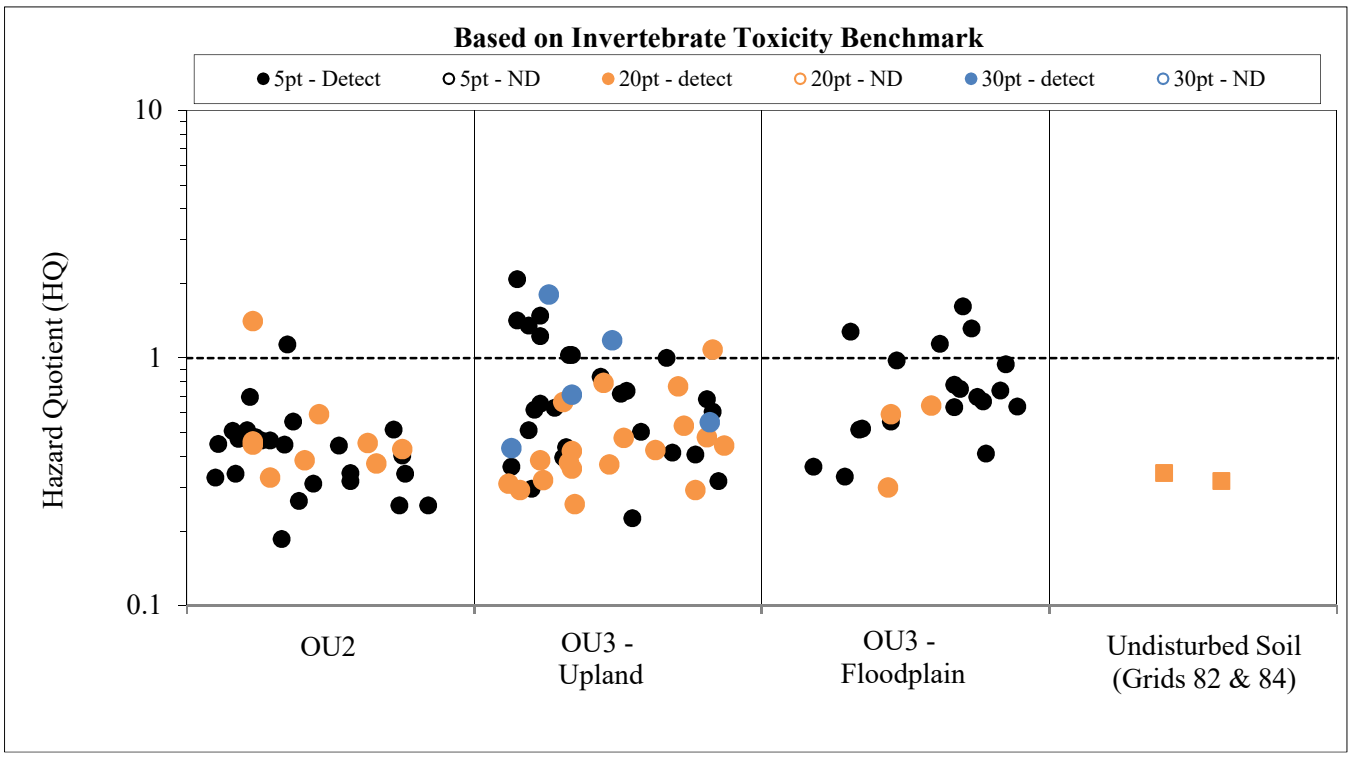
No Effect Hazard Quotients for Plants and Soil Invertebrates from Direct Contact with Barium in Surface Soils





APPENDIX F
Hazard Quotients for Plants and Soil Organisms from Direct Contact with Surface Soil
(Based on the Low Effect ESV)
Chromium





APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil
(Based on Low-Effect ESV)

Chromium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	12.5	detect	NA	28	no benchmark	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	12	detect	NA	28	no benchmark	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	16.6	detect	NA	28	no benchmark	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	10.5	detect	NA	28	no benchmark	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	12.7	detect	NA	28	no benchmark	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	12.9	detect	NA	28	no benchmark	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	9.2	detect	NA	28	no benchmark	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	39.5	detect	NA	28	no benchmark	**1.4**
	Grid 9	Grid 9-SSComp-01_20171018_NM	10.8	detect	NA	28	no benchmark	<1.0
	LF-1	LF-1-SS_4/18/14_NM	19.5	detect	NA	28	no benchmark	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	5.2	detect	NA	28	no benchmark	<1.0
	SS10-IN	SS10-IN-(0-2)c	7.1	detect	NA	28	no benchmark	<1.0
	SS11-IN	SS11-IN-(0-2)c	9.6	detect	NA	28	no benchmark	<1.0
	SS12-IN	SS12-IN-(0-2)c	9.2	detect	NA	28	no benchmark	<1.0
	SS13-IN	SS13-IN-(0-2)c	13.2	detect	NA	28	no benchmark	<1.0
	SS14-IN	SS14-IN-(0-2)c	11.3	detect	NA	28	no benchmark	<1.0
	SS15-IN	SS15-IN-(0-2)c	14.3	detect	NA	28	no benchmark	<1.0
	SS16-IN	SS16-IN-(0-2)c	13	detect	NA	28	no benchmark	<1.0
	SS17-IN	SS17-IN-(0-2)c	12.6	detect	NA	28	no benchmark	<1.0
	SS1-IN	SS1-IN-(0-2)c	15.5	detect	NA	28	no benchmark	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	NA	28	no benchmark	#N/A
	SS2-IN	SS2-IN-(0-2)c	7.4	detect	NA	28	no benchmark	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	NA	28	no benchmark	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	NA	28	no benchmark	#N/A
	SS32-IN	SS32-IN-(0-2)c	31.8	detect	NA	28	no benchmark	**1.1**
	SS33-IN	SS33-IN-(0-2)c	14.4	detect	NA	28	no benchmark	<1.0
	SS3-IN	SS3-IN-(0-2)c	14.2	detect	NA	28	no benchmark	<1.0
	SS4-IN	SS4-IN-(0-2)c	8.9	detect	NA	28	no benchmark	<1.0
	SS5-IN	SS5-IN-(0-2)c	12.5	detect	NA	28	no benchmark	<1.0
	SS6-IN	SS6-IN-(0-2)c	12.4	detect	NA	28	no benchmark	<1.0
	SS7-IN	SS7-IN-(0-2)c	13.4	detect	NA	28	no benchmark	<1.0
	SS8-IN	SS8-IN-(0-2)c	8.7	detect	NA	28	no benchmark	<1.0
	SS9-IN	SS9-IN-(0-2)c	13	detect	NA	28	no benchmark	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	9.533333	detect	NA	28	no benchmark	<1.0
	TSB-SS	BACKFILL-TSB-SS	9.533333	detect	NA	28	no benchmark	<1.0
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	33	detect	NA	28	no benchmark	**1.2**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	37.9	detect	NA	28	no benchmark	**1.4**
	CRP-1	CRP-1-SS_4/10/14_NM	18.3	detect	NA	28	no benchmark	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	8.7	detect	NA	28	no benchmark	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	7.2	detect	NA	28	no benchmark	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	10.8	detect	NA	28	no benchmark	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	10	detect	NA	28	no benchmark	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	10.6	detect	NA	28	no benchmark	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	8.2	detect	NA	28	no benchmark	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	9	detect	NA	28	no benchmark	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	11.9	detect	NA	28	no benchmark	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	13.3	detect	NA	28	no benchmark	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	10.4	detect	NA	28	no benchmark	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	22.2	detect	NA	28	no benchmark	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	21.5	detect	NA	28	no benchmark	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	14.9	detect	NA	28	no benchmark	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	12.4	detect	NA	28	no benchmark	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	11.8	detect	NA	28	no benchmark	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	30.3	detect	NA	28	no benchmark	**1.1**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	13.4	detect	NA	28	no benchmark	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	8.2	detect	NA	28	no benchmark	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	17.6	detect	NA	28	no benchmark	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	12.2	detect	NA	28	no benchmark	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	20.1	detect	NA	28	no benchmark	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	8.9	detect	NA	28	no benchmark	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	6.3	detect	NA	28	no benchmark	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	NA	28	no benchmark	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	9	detect	NA	28	no benchmark	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	39.7	detect	NA	28	no benchmark	**1.4**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	8.3	detect	NA	28	no benchmark	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	17	detect	NA	28	no benchmark	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	58.2	detect	NA	28	no benchmark	**2.1**
	P17-BH1	P17-BH1-SS_4/3/14_NM	28	detect	NA	28	no benchmark	<1.0
	P3	P3-SSComp-01_20171020_NM	18.6	detect	NA	28	no benchmark	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	19.1	detect	NA	28	no benchmark	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	11.4	detect	NA	28	no benchmark	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	34.3	detect	NA	28	no benchmark	**1.2**
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	14.1	detect	NA	28	no benchmark	<1.0
	P8	P8-SSComp-01_20171025_NM	15.4	detect	NA	28	no benchmark	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	19.9	detect	NA	28	no benchmark	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	23.5	detect	NA	28	no benchmark	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	41.5	detect	NA	28	no benchmark	**1.5**
	SPP	SPP-SSComp-01_20171025_NM	50.5	detect	NA	28	no benchmark	**1.8**
	SS1,2-HP18	SS1-HP18-(0-2)c	11.6	detect	NA	28	no benchmark	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	10.2	detect	NA	28	no benchmark	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	28.8	detect	NA	28	no benchmark	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	28.8	detect	NA	28	no benchmark	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	14.3	detect	NA	28	no benchmark	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	11.1	detect	NA	28	no benchmark	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	20.6	detect	NA	28	no benchmark	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	17.3	detect	NA	28	no benchmark	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	12.1	detect	NA	28	no benchmark	<1.0

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil
(Based on Low-Effect ESV)

Chromium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	8.4	detect	NA	28	no benchmark	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	16.6	detect	NA	28	no benchmark	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	18	detect	NA	28	no benchmark	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	19.5	detect	NA	28	no benchmark	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	9.3	detect	NA	28	no benchmark	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	35.8	detect	NA	28	no benchmark	**1.3**
	SE11-HP11	SE11-HP11-(0-2)c	18.7	detect	NA	28	no benchmark	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	20.7	detect	NA	28	no benchmark	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	36.9	detect	NA	28	no benchmark	**1.3**
	SE14-HP13	SE14-HP13-(0-2)c	17.8	detect	NA	28	no benchmark	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	26.4	detect	NA	28	no benchmark	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	15.5	detect	NA	28	no benchmark	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	21.8	detect	NA	28	no benchmark	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	17.7	detect	NA	28	no benchmark	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	21	detect	NA	28	no benchmark	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	11.5	detect	NA	28	no benchmark	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	14.5	detect	NA	28	no benchmark	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	27.4	detect	NA	28	no benchmark	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	45.2	detect	NA	28	no benchmark	**1.6**
	SE7-HP7	SE7-HP7-(0-2)c	10.2	detect	NA	28	no benchmark	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	14.4	detect	NA	28	no benchmark	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	31.9	detect	NA	28	no benchmark	**1.1**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	9.6	detect	NA	28	no benchmark	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	8.9	detect	NA	28	no benchmark	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

Chromium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	12.5	detect	1	0	**12.5**	**31.3**
	Grid 13	Grid 13-SSComp-01_20171019_NM	12	detect	1	0	**12.0**	**30.0**
	Grid 14	Grid 14-SSComp-01_20171017_NM	16.6	detect	1	0	**16.6**	**41.5**
	Grid 2	Grid 2-SSComp-01_20171016_NM	10.5	detect	1	0	**10.5**	**26.3**
	Grid 22	Grid 22-SSComp-01_20171018_NM	12.7	detect	1	0	**12.7**	**31.8**
	Grid 23	Grid 23-SSComp-01_20171018_NM	12.9	detect	1	0	**12.9**	**32.3**
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	9.2	detect	1	0	**9.2**	**23.0**
	Grid 8	Grid 8-SSComp-01_20171018_NM	39.5	detect	1	0	**39.5**	**98.8**
	Grid 9	Grid 9-SSComp-01_20171018_NM	10.8	detect	1	0	**10.8**	**27.0**
	LF-1	LF-1-SS_4/18/14_NM	19.5	detect	1	0	**19.5**	**48.8**
	SB2a,3a-IN	SB2a-IN-(0-2)	5.2	detect	1	0	**5.2**	**13.0**
	SS10-IN	SS10-IN-(0-2)c	7.1	detect	1	0	**7.1**	**17.8**
	SS11-IN	SS11-IN-(0-2)c	9.6	detect	1	0	**9.6**	**24.0**
	SS12-IN	SS12-IN-(0-2)c	9.2	detect	1	0	**9.2**	**23.0**
	SS13-IN	SS13-IN-(0-2)c	13.2	detect	1	0	**13.2**	**33.0**
	SS14-IN	SS14-IN-(0-2)c	11.3	detect	1	0	**11.3**	**28.3**
	SS15-IN	SS15-IN-(0-2)c	14.3	detect	1	0	**14.3**	**35.8**
	SS16-IN	SS16-IN-(0-2)c	13	detect	1	0	**13.0**	**32.5**
	SS17-IN	SS17-IN-(0-2)c	12.6	detect	1	0	**12.6**	**31.5**
	SS1-IN	SS1-IN-(0-2)c	15.5	detect	1	0	**15.5**	**38.8**
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	7.4	detect	1	0	**7.4**	**18.5**
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	31.8	detect	1	0	**31.8**	**79.5**
	SS33-IN	SS33-IN-(0-2)c	14.4	detect	1	0	**14.4**	**36.0**
	SS3-IN	SS3-IN-(0-2)c	14.2	detect	1	0	**14.2**	**35.5**
	SS4-IN	SS4-IN-(0-2)c	8.9	detect	1	0	**8.9**	**22.3**
	SS5-IN	SS5-IN-(0-2)c	12.5	detect	1	0	**12.5**	**31.3**
	SS6-IN	SS6-IN-(0-2)c	12.4	detect	1	0	**12.4**	**31.0**
	SS7-IN	SS7-IN-(0-2)c	13.4	detect	1	0	**13.4**	**33.5**
	SS8-IN	SS8-IN-(0-2)c	8.7	detect	1	0	**8.7**	**21.8**
	SS9-IN	SS9-IN-(0-2)c	13	detect	1	0	**13.0**	**32.5**
	HDPT-SS	BACKFILL-HDPT-SS	9.533333	detect	1	0	**9.5**	**23.8**
	TSB-SS	BACKFILL-TSB-SS	9.533333	detect	1	0	**9.5**	**23.8**

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

Chromium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	33	detect	1	0	**33.0**	**82.5**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	37.9	detect	1	0	**37.9**	**94.8**
	CRP-1	CRP-1-SS_4/10/14_NM	18.3	detect	1	0	**18.3**	**45.8**
	Grid 27	Grid 27-SSComp-01_20171019_NM	8.7	detect	1	0	**8.7**	**21.8**
	Grid 28	Grid 28-SSComp-01_20171019_NM	7.2	detect	1	0	**7.2**	**18.0**
	Grid 29	Grid 29-SSComp-01_20171019_NM	10.8	detect	1	0	**10.8**	**27.0**
	Grid 30	Grid 30-SSComp-01_20171020_NM	10	detect	1	0	**10.0**	**25.0**
	Grid 33	Grid 33-SSComp-01_20171020_NM	10.6	detect	1	0	**10.6**	**26.5**
	Grid 34	Grid 34-SSComp-01_20171019_NM	8.2	detect	1	0	**8.2**	**20.5**
	Grid 37	Grid 37-SSComp-01_20171020_NM	9	detect	1	0	**9.0**	**22.5**
	Grid 39	Grid 39-SSComp-01_20171020_NM	11.9	detect	1	0	**11.9**	**29.8**
	Grid 43	Grid 43-SSComp-01_20171023_NM	13.3	detect	1	0	**13.3**	**33.3**
	Grid 44	Grid 44-SSComp-01_20171023_NM	10.4	detect	1	0	**10.4**	**26.0**
	Grid 47	Grid 47-SSComp-01_20171023_NM	22.2	detect	1	0	**22.2**	**55.5**
	Grid 53	Grid 53-SSComp-01_20171020_NM	21.5	detect	1	0	**21.5**	**53.8**
	Grid 60	Grid 60-SSComp-01_20171023_NM	14.9	detect	1	0	**14.9**	**37.3**
	Grid 61	Grid 61-SSComp-01_20171023_NM	12.4	detect	1	0	**12.4**	**31.0**
	Grid 64	Grid 64-SSComp-01_20171024_NM	11.8	detect	1	0	**11.8**	**29.5**
	Grid 74	Grid 74-SSComp-01_20171023_NM	30.3	detect	1	0	**30.3**	**75.8**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	13.4	detect	1	0	**13.4**	**33.5**
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	8.2	detect	1	0	**8.2**	**20.5**
	HP16-1	HP16-1-SS_4/10/14_NM	17.6	detect	1	0	**17.6**	**44.0**
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	12.2	detect	1	0	**12.2**	**30.5**
	HP18-1	HP18-1-SS_4/10/14_NM	20.1	detect	1	0	**20.1**	**50.3**
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	8.9	detect	1	0	**8.9**	**22.3**
	HP18-IB	HP18-SSC-IB_4/10/14_NM	6.3	detect	1	0	**6.3**	**15.8**
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	9	detect	1	0	**9.0**	**22.5**
	HP9-1	HP9-1-SS_4/10/14_NM	39.7	detect	1	0	**39.7**	**99.3**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	8.3	detect	1	0	**8.3**	**20.8**
	IBK-1	IBK-1-SS_4/16/14_NM	17	detect	1	0	**17.0**	**42.5**
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	58.2	detect	1	0	**58.2**	**145.5**
	P17-BH1	P17-BH1-SS_4/3/14_NM	28	detect	1	0	**28.0**	**70.0**
	P3	P3-SSComp-01_20171020_NM	18.6	detect	1	0	**18.6**	**46.5**
	P3-BH1	P3-BH1-SS_4/3/14_NM	19.1	detect	1	0	**19.1**	**47.8**
	P4-BH1	P4-BH1-SS_4/4/14_NM	11.4	detect	1	0	**11.4**	**28.5**
	P5-BH2	P5-BH2-SS_4/3/14_NM	34.3	detect	1	0	**34.3**	**85.8**
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	14.1	detect	1	0	**14.1**	**35.3**
	P8	P8-SSComp-01_20171025_NM	15.4	detect	1	0	**15.4**	**38.5**
	P8dc	P8dc-SSComp-01_20171024_NM	19.9	detect	1	0	**19.9**	**49.8**
	P8-TP3	P8-TP3-SS_4/4/14_NM	23.5	detect	1	0	**23.5**	**58.8**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	41.5	detect	1	0	**41.5**	**103.8**
	SPP	SPP-SSComp-01_20171025_NM	50.5	detect	1	0	**50.5**	**126.3**
	SS1,2-HP18	SS1-HP18-(0-2)c	11.6	detect	1	0	**11.6**	**29.0**
	SS11,12-IBK	SS11-IBK-(0-2)c	10.2	detect	1	0	**10.2**	**25.5**
	SS13,14-HP9	SS13-HP9-(0-2)c	28.8	detect	1	0	**28.8**	**72.0**
	SS15,16-HP9	SS15-HP9-(0-2)c	28.8	detect	1	0	**28.8**	**72.0**
	SS3,4-HP16	SS3-HP16-(0-2)c	14.3	detect	1	0	**14.3**	**35.8**
	SS5,6-IBJ	SS5-IBJ-(0-2)c	11.1	detect	1	0	**11.1**	**27.8**
	SS7,8-HP13	SS7-HP13-(0-2)c	20.6	detect	1	0	**20.6**	**51.5**
	SS9,10-HP12	SS9-HP12-(0-2)c	17.3	detect	1	0	**17.3**	**43.3**
	SWBA	SWBA-SSComp-01_20171024_NM	12.1	detect	1	0	**12.1**	**30.3**

APPENDIX F
Sample-Specific Hazard Quotients for Plants and Soil Organisms from Direct Contact with Surface Soil

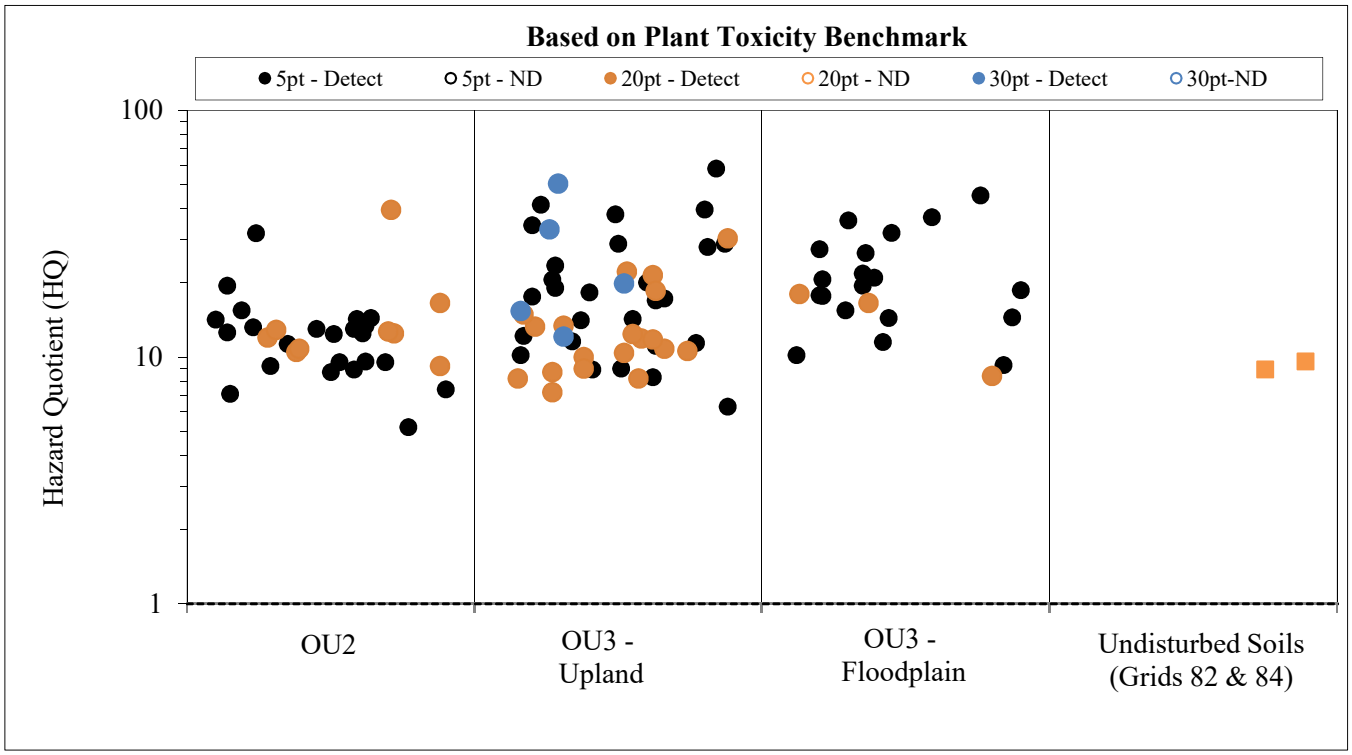
Chromium

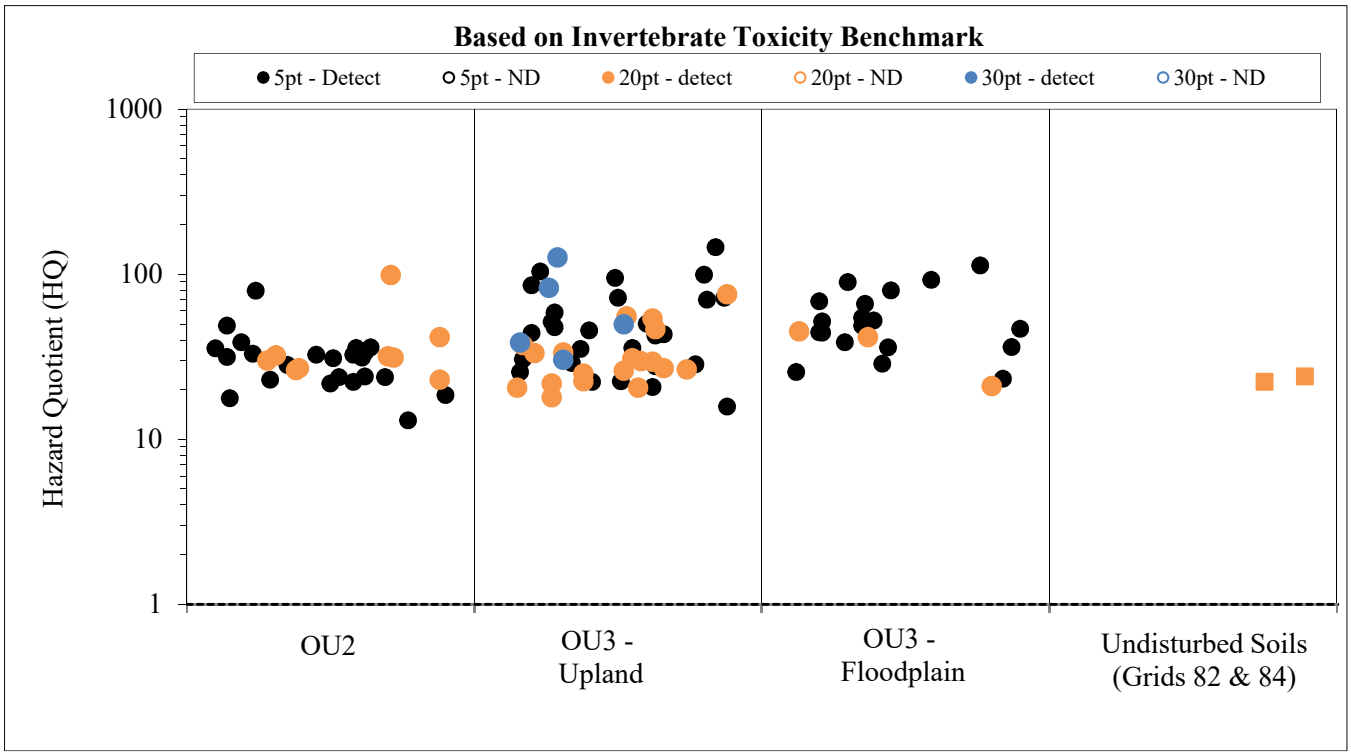
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	8.4	detect	1	0	**8.4**	**21.0**
	Grid 89	Grid 89-SSComp-01_20171026_NM	16.6	detect	1	0	**16.6**	**41.5**
	Grid 94	Grid 94-SSComp-01_20171026_NM	18	detect	1	0	**18.0**	**45.0**
	HP13a-1	HP13A-1-SS_4/10/14_NM	19.5	detect	1	0	**19.5**	**48.8**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	9.3	detect	1	0	**9.3**	**23.3**
	SE10-HP11	SE10-HP11-(0-2)c	35.8	detect	1	0	**35.8**	**89.5**
	SE11-HP11	SE11-HP11-(0-2)c	18.7	detect	1	0	**18.7**	**46.8**
	SE12-HP12	SE12-HP12-(0-2)c	20.7	detect	1	0	**20.7**	**51.8**
	SE13-HP12	SE13-HP12-(0-2)c	36.9	detect	1	0	**36.9**	**92.3**
	SE14-HP13	SE14-HP13-(0-2)c	17.8	detect	1	0	**17.8**	**44.5**
	SE15-HP13	SE15-HP13-(0-2)c	26.4	detect	1	0	**26.4**	**66.0**
	SE16-HP13	SE16-HP13-(0-2)c	15.5	detect	1	0	**15.5**	**38.8**
	SE17-HP13a	SE17-HP13a-(0-2)c	21.8	detect	1	0	**21.8**	**54.5**
	SE1-HP1a	SE1-HP1a-(0-2)c	17.7	detect	1	0	**17.7**	**44.3**
	SE2-HP1a	SE2-HP1a-(0-2)c	21	detect	1	0	**21.0**	**52.5**
	SE3-HP1	SE3-HP1-(0-2)c	11.5	detect	1	0	**11.5**	**28.8**
	SE4-HP1	SE4-HP1-(0-2)c	14.5	detect	1	0	**14.5**	**36.3**
	SE5-HP2	SE5-HP2-(0-2)c	27.4	detect	1	0	**27.4**	**68.5**
	SE6-HP7	SE6-HP7-(0-2)c	45.2	detect	1	0	**45.2**	**113.0**
	SE7-HP7	SE7-HP7-(0-2)c	10.2	detect	1	0	**10.2**	**25.5**
	SE8-HP10	SE8-HP10-(0-2)c	14.4	detect	1	0	**14.4**	**36.0**
	SE9-HP10	SE9-HP10-(0-2)c	31.9	detect	1	0	**31.9**	**79.8**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	9.6	detect	1	0	**9.6**	**24.0**
	Grid 84	Grid 84-SSComp-01_20171026_NM	8.9	detect	1	0	**8.9**	**22.3**

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

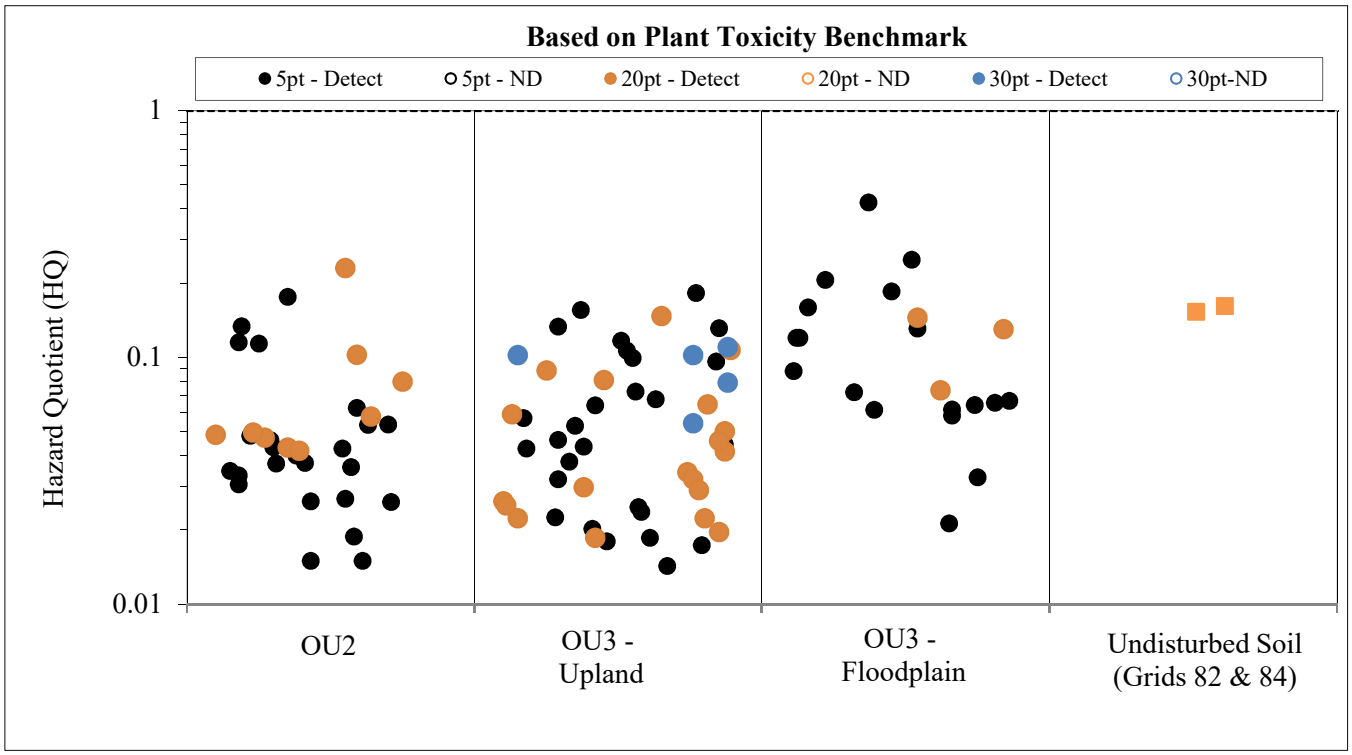
Appendix F

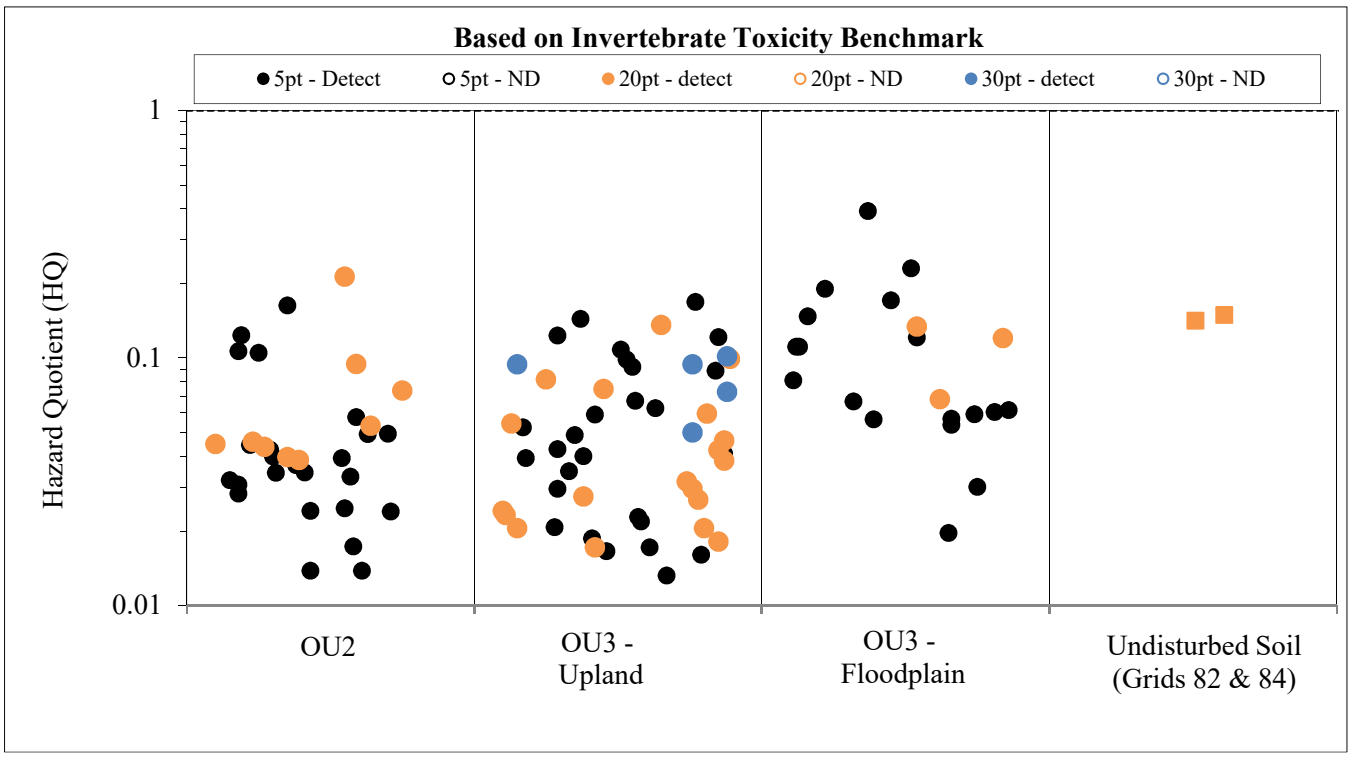
No Effect Hazard Quotients for Plants and Soil Invertebrates from Direct Contact with Chromium in Surface Soils





APPENDIX F
Hazard Quotients for Plants and Soil Organisms from Direct Contact with Surface Soil
(Based on the Low Effect ESV)
Copper





APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil
(Based on Low-Effect ESV)

Copper

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	28.2	detect	490	530	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	23.2	detect	490	530	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	113	detect	490	530	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	24.3	detect	490	530	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	50.2	detect	490	530	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	23.8	detect	490	530	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	21.1	detect	490	530	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	39.1	detect	490	530	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	20.5	detect	490	530	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	30.6	detect	490	530	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	9.2	detect	490	530	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	12.7	detect	490	530	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	20.9	detect	490	530	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	17	detect	490	530	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	18.3	detect	490	530	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	23.6	detect	490	530	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	26.2	detect	490	530	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	55.7	detect	490	530	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	19.6	detect	490	530	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	18.2	detect	490	530	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	490	530	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	13.1	detect	490	530	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	490	530	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	490	530	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	65.6	detect	490	530	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	56.5	detect	490	530	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	21.2	detect	490	530	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	15	detect	490	530	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	86.3	detect	490	530	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	17.6	detect	490	530	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	26.1	detect	490	530	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	12.8	detect	490	530	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	22.6	detect	490	530	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	7.333333	detect	490	530	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	7.333333	detect	490	530	<1.0	<1.0
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	50	detect	490	530	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	33.2	detect	490	530	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	18.5	detect	490	530	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	9.1	detect	490	530	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	9.6	detect	490	530	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	10.9	detect	490	530	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	12.8	detect	490	530	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	16.8	detect	490	530	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	10.9	detect	490	530	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	15.7	detect	490	530	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	14.2	detect	490	530	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	14.6	detect	490	530	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	24.6	detect	490	530	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	52.5	detect	490	530	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	39.7	detect	490	530	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	28.8	detect	490	530	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	20.4	detect	490	530	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	31.6	detect	490	530	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	72.1	detect	490	530	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	22.5	detect	490	530	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	12.3	detect	490	530	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	21.3	detect	490	530	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	21.7	detect	490	530	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	31.3	detect	490	530	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	15.7	detect	490	530	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	9.1	detect	490	530	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	490	530	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	7	detect	490	530	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	65.3	detect	490	530	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	8.8	detect	490	530	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	25.9	detect	490	530	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	57.3	detect	490	530	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	89.4	detect	490	530	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	43.4	detect	490	530	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	48.8	detect	490	530	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	9.9	detect	490	530	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	20.9	detect	490	530	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	27.8	detect	490	530	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	38.7	detect	490	530	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	50	detect	490	530	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	64.4	detect	490	530	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	52.2	detect	490	530	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	53.9	detect	490	530	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	11	detect	490	530	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	12.1	detect	490	530	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	76.2	detect	490	530	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	47.1	detect	490	530	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	11.6	detect	490	530	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	8.5	detect	490	530	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	35.6	detect	490	530	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	22.7	detect	490	530	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	26.5	detect	490	530	<1.0	<1.0

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil
(Based on Low-Effect ESV)

Copper

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	36.1	detect	490	530	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	63.8	detect	490	530	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	71.1	detect	490	530	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	43.1	detect	490	530	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	10.4	detect	490	530	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	208	detect	490	530	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	63.4	detect	490	530	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	31.4	detect	490	530	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	90.6	detect	490	530	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	32.1	detect	490	530	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	78.2	detect	490	530	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	32.7	detect	490	530	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	28.5	detect	490	530	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	30	detect	490	530	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	35.4	detect	490	530	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	16	detect	490	530	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	30.1	detect	490	530	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	101	detect	490	530	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	122	detect	490	530	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	58.8	detect	490	530	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	58.9	detect	490	530	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	64.1	detect	490	530	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	79	detect	490	530	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	74.9	detect	490	530	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

Copper

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	28.2	detect	70	80	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	23.2	detect	70	80	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	113	detect	70	80	**1.6**	**1.4**
	Grid 2	Grid 2-SSComp-01_20171016_NM	24.3	detect	70	80	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	50.2	detect	70	80	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	23.8	detect	70	80	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	21.1	detect	70	80	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	39.1	detect	70	80	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	20.5	detect	70	80	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	30.6	detect	70	80	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	9.2	detect	70	80	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	12.7	detect	70	80	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	20.9	detect	70	80	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	17	detect	70	80	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	18.3	detect	70	80	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	23.6	detect	70	80	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	26.2	detect	70	80	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	55.7	detect	70	80	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	19.6	detect	70	80	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	18.2	detect	70	80	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	70	80	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	13.1	detect	70	80	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	70	80	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	70	80	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	65.6	detect	70	80	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	56.5	detect	70	80	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	21.2	detect	70	80	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	15	detect	70	80	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	86.3	detect	70	80	**1.2**	**1.1**
	SS6-IN	SS6-IN-(0-2)c	17.6	detect	70	80	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	26.1	detect	70	80	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	12.8	detect	70	80	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	22.6	detect	70	80	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	7.333333	detect	70	80	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	7.333333	detect	70	80	<1.0	<1.0

APPENDIX F
Sample-Specific Hazard Quotients for Plants and Soil Organisms from Direct Contact with Surface Soil

Copper

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	50	detect	70	80	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	33.2	detect	70	80	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	18.5	detect	70	80	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	9.1	detect	70	80	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	9.6	detect	70	80	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	10.9	detect	70	80	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	12.8	detect	70	80	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	16.8	detect	70	80	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	10.9	detect	70	80	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	15.7	detect	70	80	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	14.2	detect	70	80	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	14.6	detect	70	80	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	24.6	detect	70	80	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	52.5	detect	70	80	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	39.7	detect	70	80	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	28.8	detect	70	80	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	20.4	detect	70	80	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	31.6	detect	70	80	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	72.1	detect	70	80	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	22.5	detect	70	80	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	12.3	detect	70	80	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	21.3	detect	70	80	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	21.7	detect	70	80	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	31.3	detect	70	80	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	15.7	detect	70	80	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	9.1	detect	70	80	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	70	80	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	7	detect	70	80	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	65.3	detect	70	80	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	8.8	detect	70	80	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	25.9	detect	70	80	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	57.3	detect	70	80	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	89.4	detect	70	80	**1.3**	**1.1**
	P3	P3-SSComp-01_20171020_NM	43.4	detect	70	80	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	48.8	detect	70	80	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	9.9	detect	70	80	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	20.9	detect	70	80	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	27.8	detect	70	80	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	38.7	detect	70	80	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	50	detect	70	80	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	64.4	detect	70	80	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	52.2	detect	70	80	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	53.9	detect	70	80	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	11	detect	70	80	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	12.1	detect	70	80	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	76.2	detect	70	80	**1.1**	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	47.1	detect	70	80	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	11.6	detect	70	80	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	8.5	detect	70	80	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	35.6	detect	70	80	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	22.7	detect	70	80	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	26.5	detect	70	80	<1.0	<1.0

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

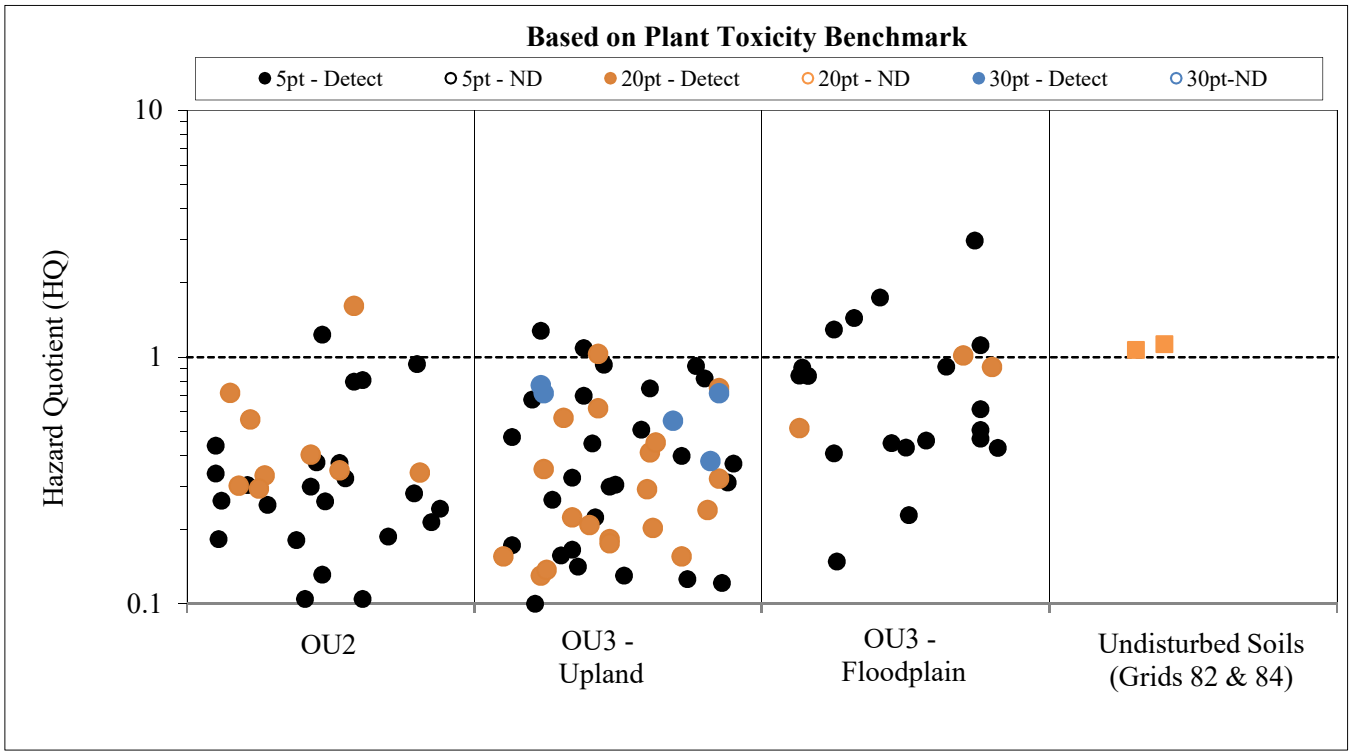
Copper

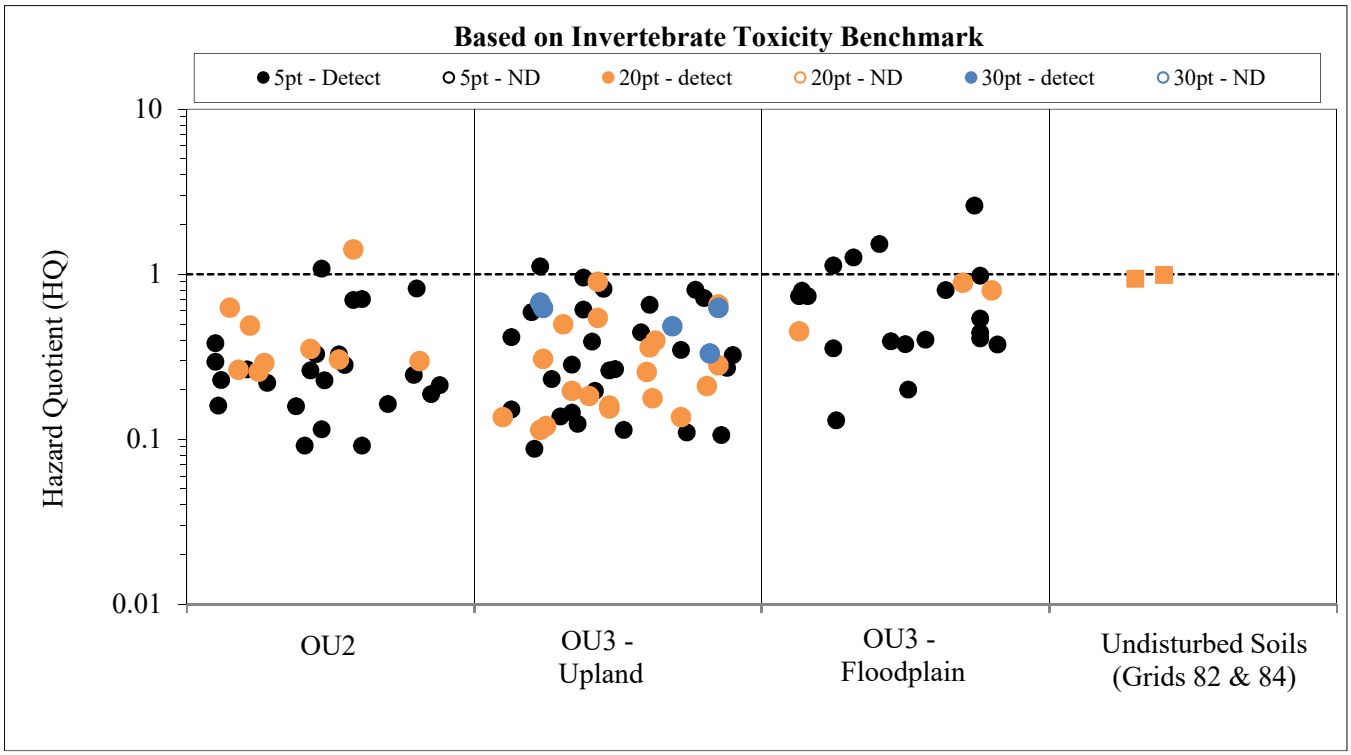
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	36.1	detect	70	80	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	63.8	detect	70	80	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	71.1	detect	70	80	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	43.1	detect	70	80	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	10.4	detect	70	80	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	208	detect	70	80	**3.0**	**2.6**
	SE11-HP11	SE11-HP11-(0-2)c	63.4	detect	70	80	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	31.4	detect	70	80	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	90.6	detect	70	80	**1.3**	**1.1**
	SE14-HP13	SE14-HP13-(0-2)c	32.1	detect	70	80	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	78.2	detect	70	80	**1.1**	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	32.7	detect	70	80	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	28.5	detect	70	80	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	30	detect	70	80	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	35.4	detect	70	80	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	16	detect	70	80	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	30.1	detect	70	80	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	101	detect	70	80	**1.4**	**1.3**
	SE6-HP7	SE6-HP7-(0-2)c	122	detect	70	80	**1.7**	**1.5**
	SE7-HP7	SE7-HP7-(0-2)c	58.8	detect	70	80	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	58.9	detect	70	80	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	64.1	detect	70	80	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	79	detect	70	80	**1.1**	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	74.9	detect	70	80	**1.1**	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

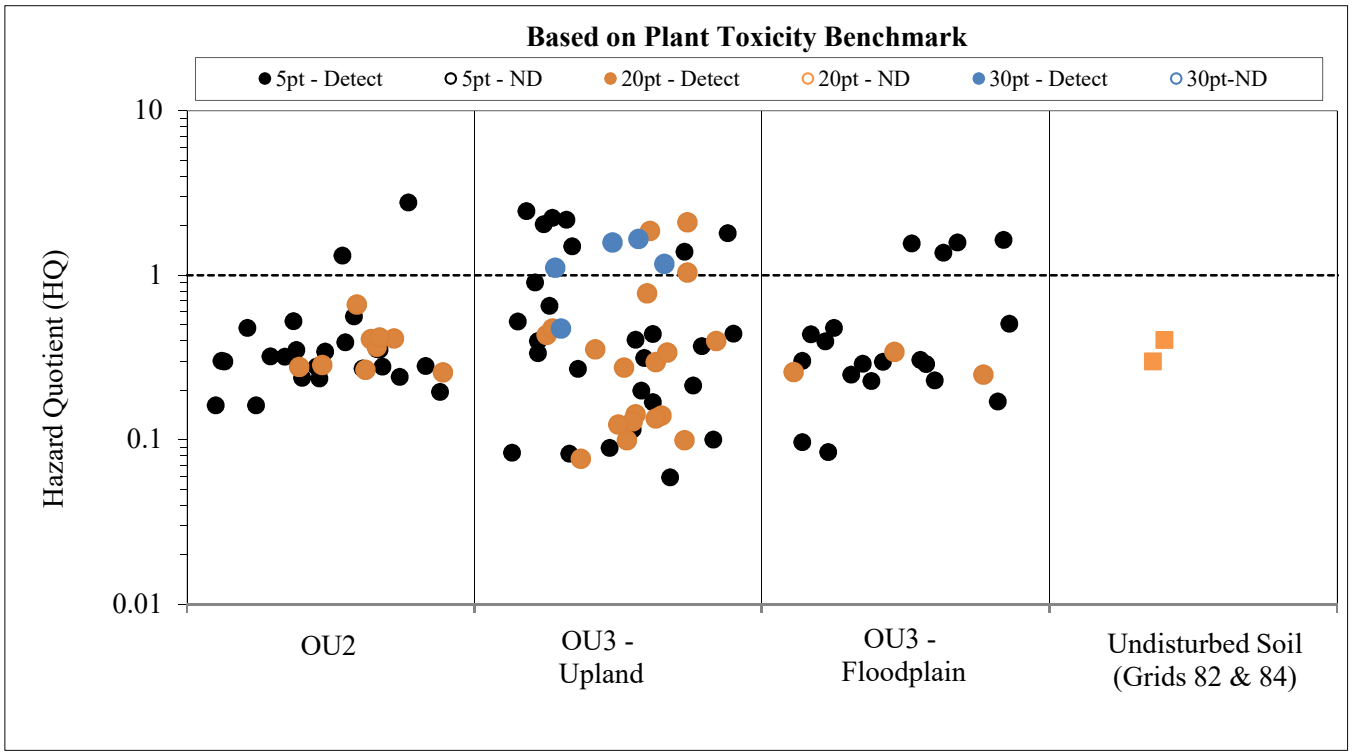
Appendix F

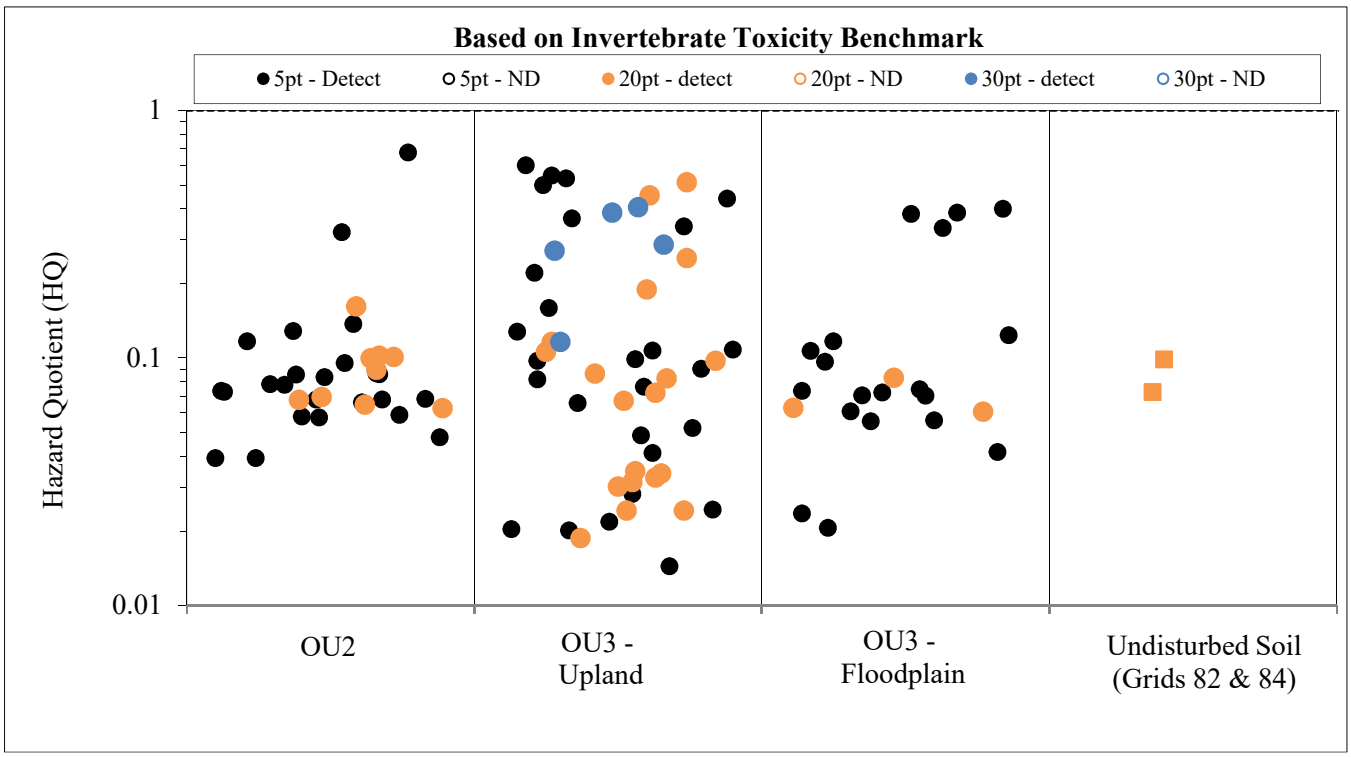
No Effect Hazard Quotients for Plants and Soil Invertebrates from Direct Contact with Copper in Surface Soils





APPENDIX F
Hazard Quotients for Plants and Soil Organisms from Direct Contact with Surface Soil
(Based on the Low Effect ESV)
Manganese





APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil
(Based on Low-Effect ESV)

Manganese

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	728	detect	1100	4500	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	454	detect	1100	4500	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	305	detect	1100	4500	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	292	detect	1100	4500	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	449	detect	1100	4500	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	403	detect	1100	4500	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	313	detect	1100	4500	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	460	detect	1100	4500	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	282	detect	1100	4500	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	387	detect	1100	4500	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	261	detect	1100	4500	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	377	detect	1100	4500	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	618	detect	1100	4500	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	306	detect	1100	4500	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	215	detect	1100	4500	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	331	detect	1100	4500	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	429	detect	1100	4500	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	525	detect	1100	4500	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	306	detect	1100	4500	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	265	detect	1100	4500	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1100	4500	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	298	detect	1100	4500	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1100	4500	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1100	4500	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	3040	detect	1100	4500	**2.8**	<1.0
	SS33-IN	SS33-IN-(0-2)c	1450	detect	1100	4500	**1.3**	<1.0
	SS3-IN	SS3-IN-(0-2)c	351	detect	1100	4500	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	259	detect	1100	4500	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	386	detect	1100	4500	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	353	detect	1100	4500	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	329	detect	1100	4500	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	308	detect	1100	4500	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	391	detect	1100	4500	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	177.6667	detect	1100	4500	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	177.6667	detect	1100	4500	<1.0	<1.0
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	1220	detect	1100	4500	**1.1**	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	2390	detect	1100	4500	**2.2**	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	369	detect	1100	4500	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	109	detect	1100	4500	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	84.3	detect	1100	4500	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	154	detect	1100	4500	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	109	detect	1100	4500	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	389	detect	1100	4500	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	157	detect	1100	4500	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	302	detect	1100	4500	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	142	detect	1100	4500	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	148	detect	1100	4500	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	326	detect	1100	4500	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	1140	detect	1100	4500	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	438	detect	1100	4500	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	852	detect	1100	4500	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	476	detect	1100	4500	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	522	detect	1100	4500	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	2310	detect	1100	4500	**2.1**	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	372	detect	1100	4500	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	136	detect	1100	4500	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	407	detect	1100	4500	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	98.2	detect	1100	4500	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	483	detect	1100	4500	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	486	detect	1100	4500	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	90.5	detect	1100	4500	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1100	4500	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	64.8	detect	1100	4500	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1530	detect	1100	4500	**1.4**	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	127	detect	1100	4500	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	438	detect	1100	4500	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	1650	detect	1100	4500	**1.5**	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	2460	detect	1100	4500	**2.2**	<1.0
	P3	P3-SSComp-01_20171020_NM	2040	detect	1100	4500	**1.9**	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	2250	detect	1100	4500	**2.0**	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	445	detect	1100	4500	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	716	detect	1100	4500	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	995	detect	1100	4500	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	1290	detect	1100	4500	**1.2**	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	1830	detect	1100	4500	**1.7**	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	1980	detect	1100	4500	**1.8**	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	2700	detect	1100	4500	**2.5**	<1.0
	SPP	SPP-SSComp-01_20171025_NM	1740	detect	1100	4500	**1.6**	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	186	detect	1100	4500	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	219	detect	1100	4500	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	575	detect	1100	4500	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	345	detect	1100	4500	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	110	detect	1100	4500	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	91.7	detect	1100	4500	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	296	detect	1100	4500	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	235	detect	1100	4500	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	522	detect	1100	4500	<1.0	<1.0

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil
(Based on Low-Effect ESV)

Manganese

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	283	detect	1100	4500	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	375	detect	1100	4500	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	273	detect	1100	4500	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	557	detect	1100	4500	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	92.6	detect	1100	4500	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	1510	detect	1100	4500	**1.4**	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	435	detect	1100	4500	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	318	detect	1100	4500	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	1800	detect	1100	4500	**1.6**	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	336	detect	1100	4500	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	525	detect	1100	4500	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	274	detect	1100	4500	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	331	detect	1100	4500	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	252	detect	1100	4500	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	327	detect	1100	4500	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	188	detect	1100	4500	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	317	detect	1100	4500	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	1720	detect	1100	4500	**1.6**	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	1740	detect	1100	4500	**1.6**	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	106	detect	1100	4500	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	250	detect	1100	4500	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	481	detect	1100	4500	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	444	detect	1100	4500	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	328	detect	1100	4500	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

Manganese

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	728	detect	220	450	**3.3**	**1.6**
	Grid 13	Grid 13-SSComp-01_20171019_NM	454	detect	220	450	**2.1**	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	305	detect	220	450	**1.4**	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	292	detect	220	450	**1.3**	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	449	detect	220	450	**2.0**	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	403	detect	220	450	**1.8**	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	313	detect	220	450	**1.4**	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	460	detect	220	450	**2.1**	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	282	detect	220	450	**1.3**	<1.0
	LF-1	LF-1-SS_4/18/14_NM	387	detect	220	450	**1.8**	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	261	detect	220	450	**1.2**	<1.0
	SS10-IN	SS10-IN-(0-2)c	377	detect	220	450	**1.7**	<1.0
	SS11-IN	SS11-IN-(0-2)c	618	detect	220	450	**2.8**	**1.4**
	SS12-IN	SS12-IN-(0-2)c	306	detect	220	450	**1.4**	<1.0
	SS13-IN	SS13-IN-(0-2)c	215	detect	220	450	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	331	detect	220	450	**1.5**	<1.0
	SS15-IN	SS15-IN-(0-2)c	429	detect	220	450	**2.0**	<1.0
	SS16-IN	SS16-IN-(0-2)c	525	detect	220	450	**2.4**	**1.2**
	SS17-IN	SS17-IN-(0-2)c	306	detect	220	450	**1.4**	<1.0
	SS1-IN	SS1-IN-(0-2)c	265	detect	220	450	**1.2**	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	220	450	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	298	detect	220	450	**1.4**	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	220	450	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	220	450	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	3040	detect	220	450	**13.8**	**6.8**
	SS33-IN	SS33-IN-(0-2)c	1450	detect	220	450	**6.6**	**3.2**
	SS3-IN	SS3-IN-(0-2)c	351	detect	220	450	**1.6**	<1.0
	SS4-IN	SS4-IN-(0-2)c	259	detect	220	450	**1.2**	<1.0
	SS5-IN	SS5-IN-(0-2)c	386	detect	220	450	**1.8**	<1.0
	SS6-IN	SS6-IN-(0-2)c	353	detect	220	450	**1.6**	<1.0
	SS7-IN	SS7-IN-(0-2)c	329	detect	220	450	**1.5**	<1.0
	SS8-IN	SS8-IN-(0-2)c	308	detect	220	450	**1.4**	<1.0
	SS9-IN	SS9-IN-(0-2)c	391	detect	220	450	**1.8**	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	177.6667	detect	220	450	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	177.6667	detect	220	450	<1.0	<1.0

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

Manganese

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	1220	detect	220	450	**5.5**	**2.7**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	2390	detect	220	450	**10.9**	**5.3**
	CRP-1	CRP-1-SS_4/10/14_NM	369	detect	220	450	**1.7**	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	109	detect	220	450	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	84.3	detect	220	450	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	154	detect	220	450	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	109	detect	220	450	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	389	detect	220	450	**1.8**	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	157	detect	220	450	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	302	detect	220	450	**1.4**	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	142	detect	220	450	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	148	detect	220	450	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	326	detect	220	450	**1.5**	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	1140	detect	220	450	**5.2**	**2.5**
	Grid 53	Grid 53-SSComp-01_20171020_NM	438	detect	220	450	**2.0**	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	852	detect	220	450	**3.9**	**1.9**
	Grid 61	Grid 61-SSComp-01_20171023_NM	476	detect	220	450	**2.2**	**1.1**
	Grid 64	Grid 64-SSComp-01_20171024_NM	522	detect	220	450	**2.4**	**1.2**
	Grid 74	Grid 74-SSComp-01_20171023_NM	2310	detect	220	450	**10.5**	**5.1**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	372	detect	220	450	**1.7**	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	136	detect	220	450	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	407	detect	220	450	**1.9**	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	98.2	detect	220	450	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	483	detect	220	450	**2.2**	**1.1**
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	486	detect	220	450	**2.2**	**1.1**
	HP18-IB	HP18-SSC-IB_4/10/14_NM	90.5	detect	220	450	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	220	450	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	64.8	detect	220	450	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1530	detect	220	450	**7.0**	**3.4**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	127	detect	220	450	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	438	detect	220	450	**2.0**	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	1650	detect	220	450	**7.5**	**3.7**
	P17-BH1	P17-BH1-SS_4/3/14_NM	2460	detect	220	450	**11.2**	**5.5**
	P3	P3-SSComp-01_20171020_NM	2040	detect	220	450	**9.3**	**4.5**
	P3-BH1	P3-BH1-SS_4/3/14_NM	2250	detect	220	450	**10.2**	**5.0**
	P4-BH1	P4-BH1-SS_4/4/14_NM	445	detect	220	450	**2.0**	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	716	detect	220	450	**3.3**	**1.6**
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	995	detect	220	450	**4.5**	**2.2**
	P8	P8-SSComp-01_20171025_NM	1290	detect	220	450	**5.9**	**2.9**
	P8dc	P8dc-SSComp-01_20171024_NM	1830	detect	220	450	**8.3**	**4.1**
	P8-TP3	P8-TP3-SS_4/4/14_NM	1980	detect	220	450	**9.0**	**4.4**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	2700	detect	220	450	**12.3**	**6.0**
	SPP	SPP-SSComp-01_20171025_NM	1740	detect	220	450	**7.9**	**3.9**
	SS1,2-HP18	SS1-HP18-(0-2)c	186	detect	220	450	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	219	detect	220	450	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	575	detect	220	450	**2.6**	**1.3**
	SS15,16-HP9	SS15-HP9-(0-2)c	345	detect	220	450	**1.6**	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	110	detect	220	450	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	91.7	detect	220	450	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	296	detect	220	450	**1.3**	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	235	detect	220	450	**1.1**	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	522	detect	220	450	**2.4**	**1.2**

APPENDIX F
Sample-Specific Hazard Quotients for Plants and Soil Organisms from Direct Contact with Surface Soil

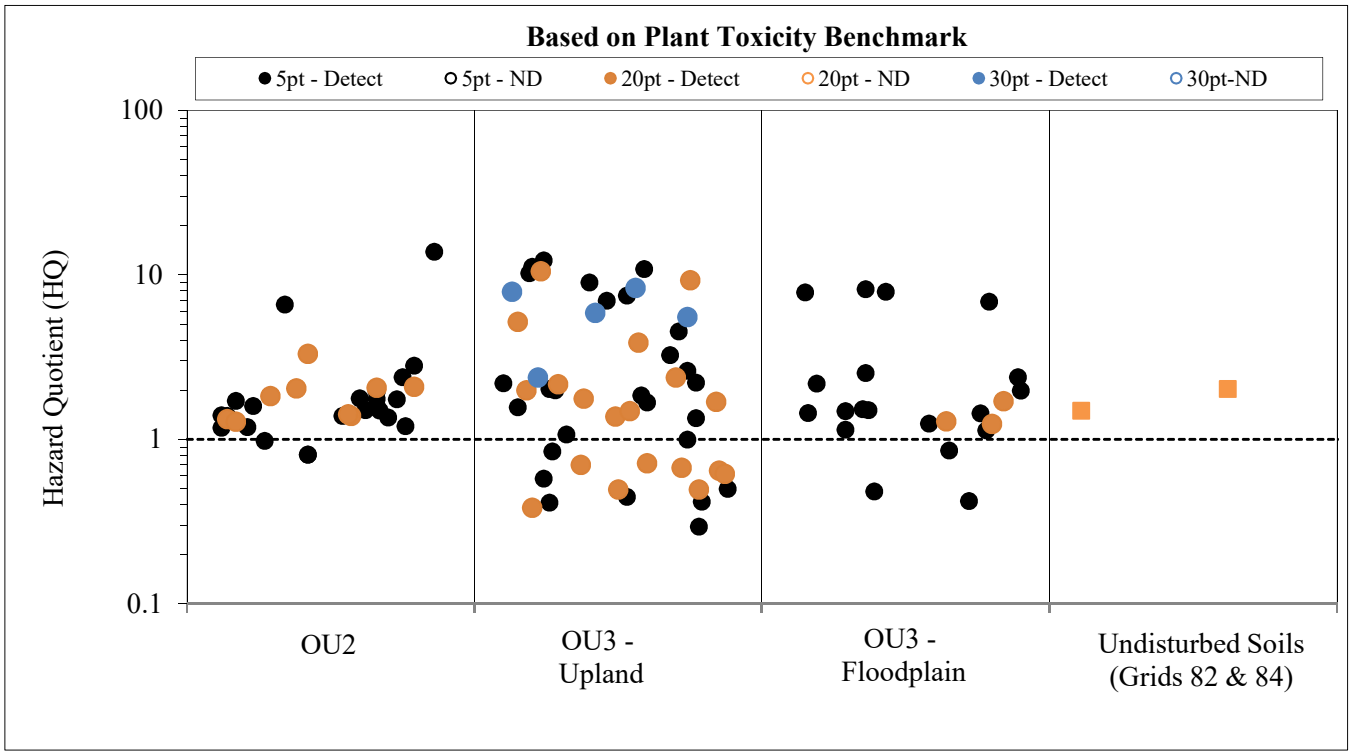
Manganese

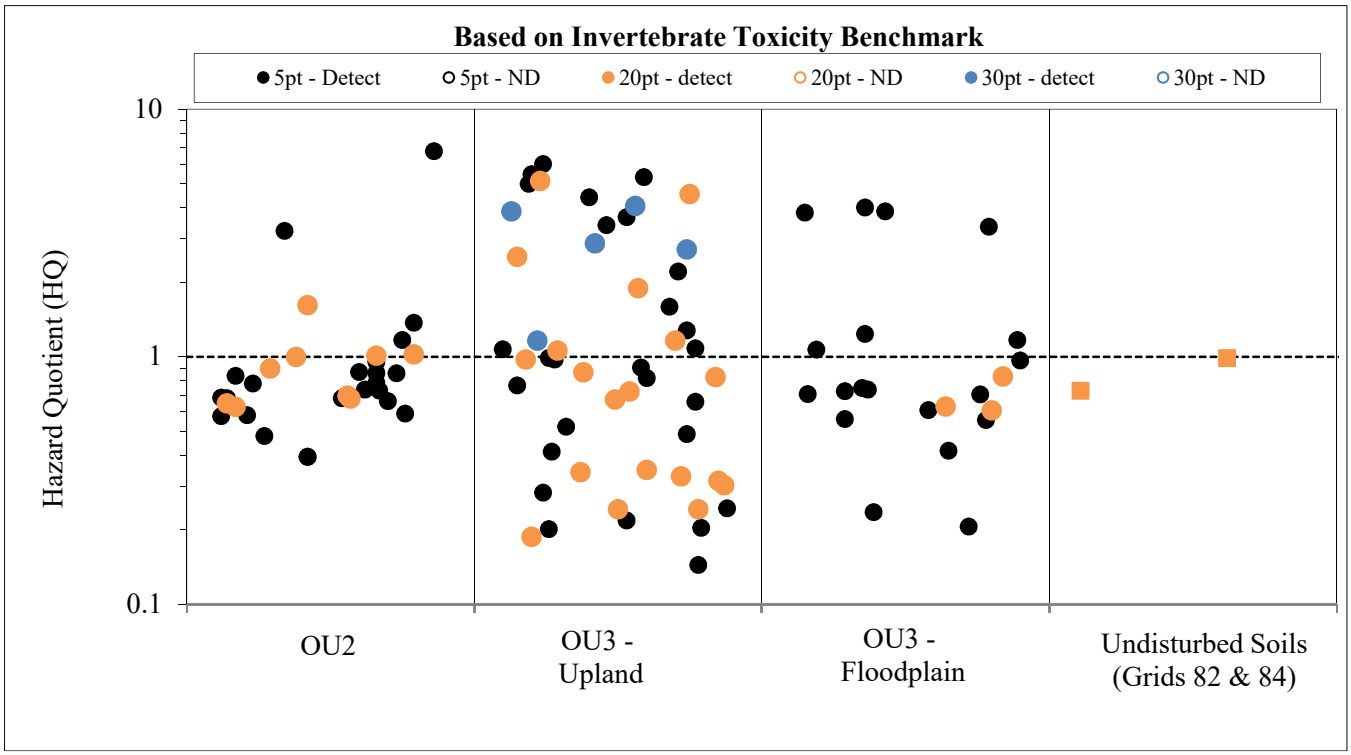
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	283	detect	220	450	**1.3**	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	375	detect	220	450	**1.7**	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	273	detect	220	450	**1.2**	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	557	detect	220	450	**2.5**	**1.2**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	92.6	detect	220	450	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	1510	detect	220	450	**6.9**	**3.4**
	SE11-HP11	SE11-HP11-(0-2)c	435	detect	220	450	**2.0**	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	318	detect	220	450	**1.4**	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	1800	detect	220	450	**8.2**	**4.0**
	SE14-HP13	SE14-HP13-(0-2)c	336	detect	220	450	**1.5**	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	525	detect	220	450	**2.4**	**1.2**
	SE16-HP13	SE16-HP13-(0-2)c	274	detect	220	450	**1.2**	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	331	detect	220	450	**1.5**	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	252	detect	220	450	**1.1**	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	327	detect	220	450	**1.5**	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	188	detect	220	450	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	317	detect	220	450	**1.4**	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	1720	detect	220	450	**7.8**	**3.8**
	SE6-HP7	SE6-HP7-(0-2)c	1740	detect	220	450	**7.9**	**3.9**
	SE7-HP7	SE7-HP7-(0-2)c	106	detect	220	450	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	250	detect	220	450	**1.1**	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	481	detect	220	450	**2.2**	**1.1**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	444	detect	220	450	**2.0**	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	328	detect	220	450	**1.5**	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

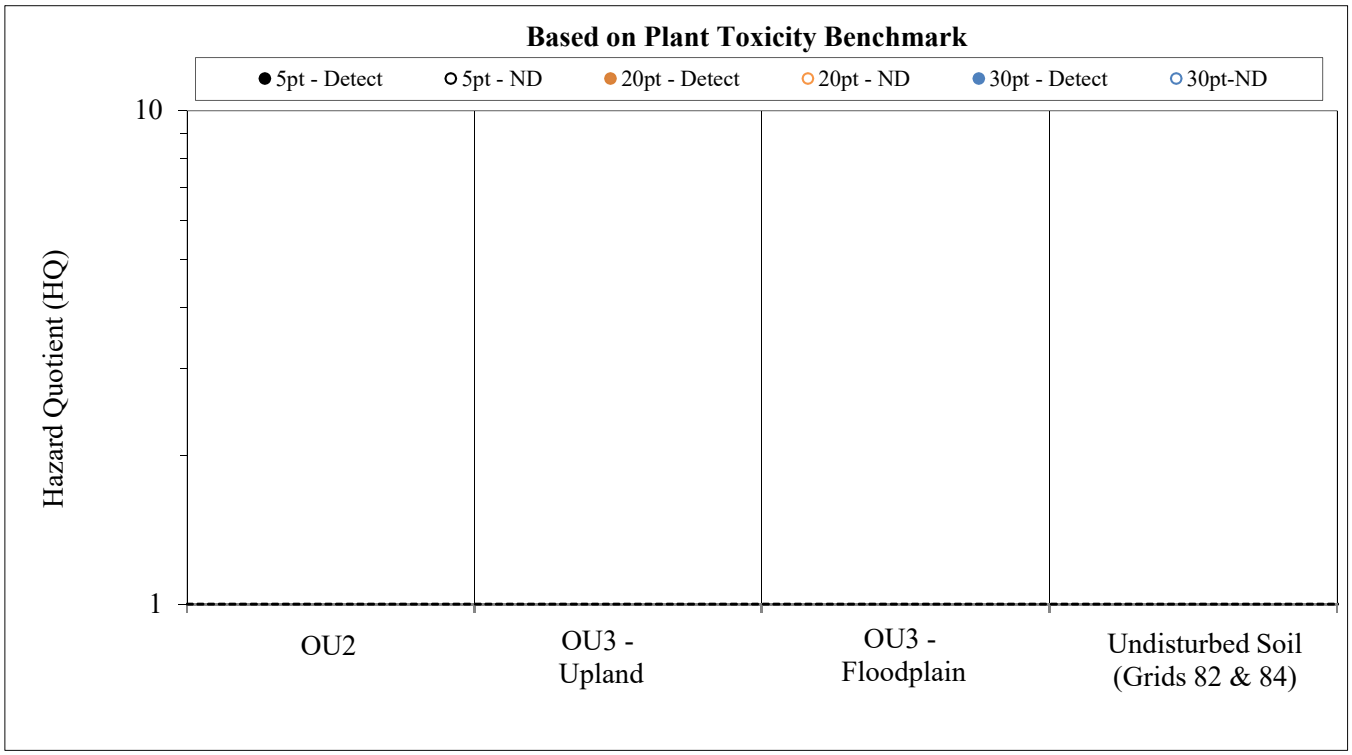
Appendix F

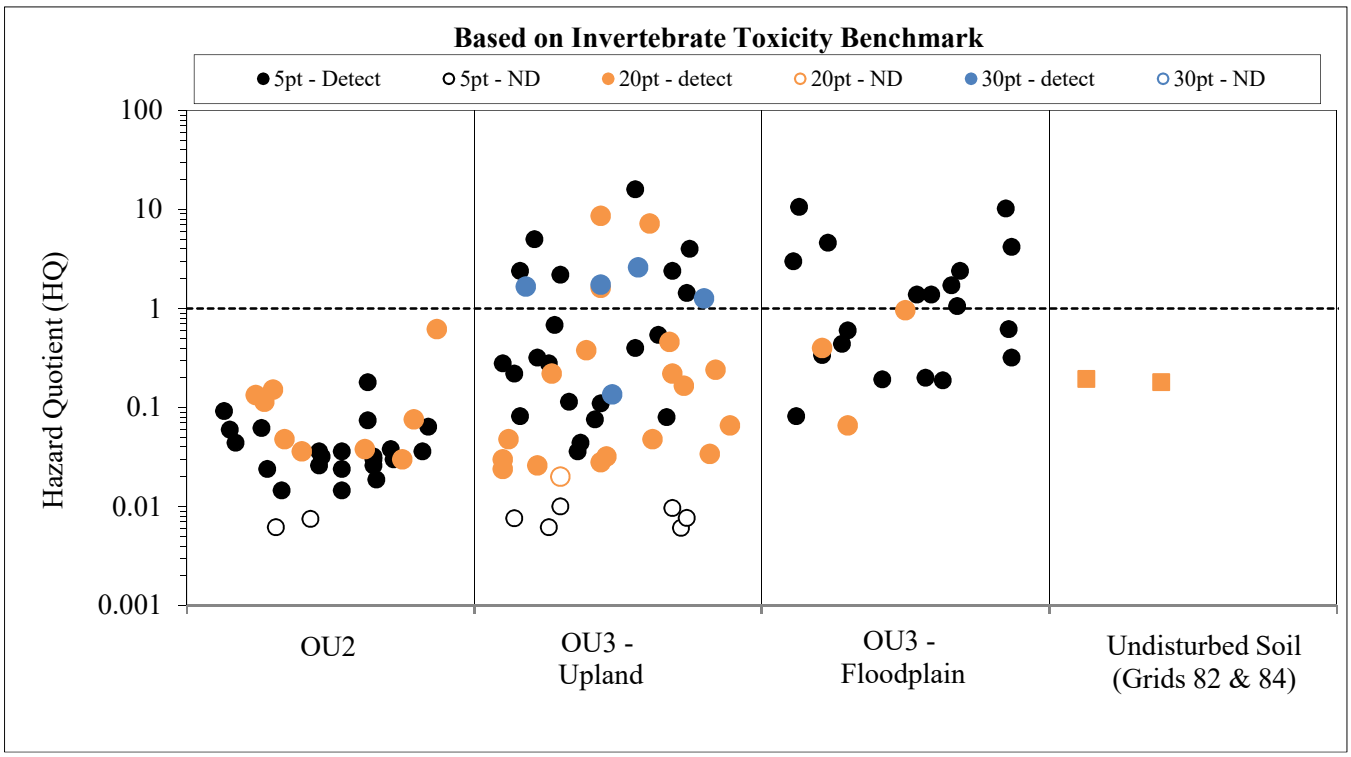
No Effect Hazard Quotients for Plants and Soil Invertebrates from Direct Contact with Manganese in Surface Soils





APPENDIX F
Hazard Quotients for Plants and Soil Organisms from Direct Contact with Surface Soil
(Based on the Low Effect ESV)
Mercury





APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil
(Based on Low-Effect ESV)

Mercury

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.31	detect	NA	1	no benchmark	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.024	detect	NA	1	no benchmark	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.076	detect	NA	1	no benchmark	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.057	detect	NA	1	no benchmark	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.038	detect	NA	1	no benchmark	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.019	detect	NA	1	no benchmark	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.018	detect	NA	1	no benchmark	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.067	detect	NA	1	no benchmark	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.015	detect	NA	1	no benchmark	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.032	detect	NA	1	no benchmark	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.018	detect	NA	1	no benchmark	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.013	detect	NA	1	no benchmark	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.09	detect	NA	1	no benchmark	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.013	detect	NA	1	no benchmark	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.012	detect	NA	1	no benchmark	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.031	detect	NA	1	no benchmark	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.019	detect	NA	1	no benchmark	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.037	detect	NA	1	no benchmark	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.022	detect	NA	1	no benchmark	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.012	detect	NA	1	no benchmark	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	NA	1	no benchmark	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.03	detect	NA	1	no benchmark	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	NA	1	no benchmark	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	NA	1	no benchmark	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.016	detect	NA	1	no benchmark	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.0031	ND	NA	1	no benchmark	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.018	detect	NA	1	no benchmark	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.0094	detect	NA	1	no benchmark	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.018	detect	NA	1	no benchmark	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.016	detect	NA	1	no benchmark	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.046	detect	NA	1	no benchmark	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.015	detect	NA	1	no benchmark	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.015	detect	NA	1	no benchmark	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.007283	detect	NA	1	no benchmark	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.007283	detect	NA	1	no benchmark	<1.0
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.63	detect	NA	1	no benchmark	**1.3**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	1.2	detect	NA	1	no benchmark	**2.4**
	CRP-1	CRP-1-SS_4/10/14_NM	0.34	detect	NA	1	no benchmark	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.012	detect	NA	1	no benchmark	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.016	detect	NA	1	no benchmark	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.033	detect	NA	1	no benchmark	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.024	detect	NA	1	no benchmark	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.017	detect	NA	1	no benchmark	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.013	detect	NA	1	no benchmark	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.015	detect	NA	1	no benchmark	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.083	detect	NA	1	no benchmark	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.12	detect	NA	1	no benchmark	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.11	detect	NA	1	no benchmark	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.81	detect	NA	1	no benchmark	**1.6**
	Grid 53	Grid 53-SSComp-01_20171020_NM	4.3	detect	NA	1	no benchmark	**8.6**
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.19	detect	NA	1	no benchmark	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.11	detect	NA	1	no benchmark	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	3.6	detect	NA	1	no benchmark	**7.2**
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.23	detect	NA	1	no benchmark	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.014	detect	NA	1	no benchmark	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.024	detect	NA	1	no benchmark	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.27	detect	NA	1	no benchmark	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.038	detect	NA	1	no benchmark	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.14	detect	NA	1	no benchmark	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.018	detect	NA	1	no benchmark	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.0031	ND	NA	1	no benchmark	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	NA	1	no benchmark	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.00305	ND	NA	1	no benchmark	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1.2	detect	NA	1	no benchmark	**2.4**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.057	detect	NA	1	no benchmark	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.022	detect	NA	1	no benchmark	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	2.5	detect	NA	1	no benchmark	**5.0**
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.2	detect	NA	1	no benchmark	<1.0
	P3	P3-SSComp-01_20171020_NM	0.01	ND	NA	1	no benchmark	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.00485	ND	NA	1	no benchmark	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.055	detect	NA	1	no benchmark	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.005	ND	NA	1	no benchmark	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.11	detect	NA	1	no benchmark	<1.0
	P8	P8-SSComp-01_20171025_NM	0.87	detect	NA	1	no benchmark	**1.7**
	P8dc	P8dc-SSComp-01_20171024_NM	0.83	detect	NA	1	no benchmark	**1.7**
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.72	detect	NA	1	no benchmark	**1.4**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1.1	detect	NA	1	no benchmark	**2.2**
	SPP	SPP-SSComp-01_20171025_NM	1.3	detect	NA	1	no benchmark	**2.6**
	SS1,2-HP18	SS1-HP18-(0-2)c	0.0038	ND	NA	1	no benchmark	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.00385	ND	NA	1	no benchmark	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	8	detect	NA	1	no benchmark	**16.0**
	SS15,16-HP9	SS15-HP9-(0-2)c	2	detect	NA	1	no benchmark	**4.0**
	SS3,4-HP16	SS3-HP16-(0-2)c	0.14	detect	NA	1	no benchmark	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.04	detect	NA	1	no benchmark	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.16	detect	NA	1	no benchmark	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.041	detect	NA	1	no benchmark	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.068	detect	NA	1	no benchmark	<1.0

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil
(Based on Low-Effect ESV)

Mercury

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.033	detect	NA	1	no benchmark	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.2	detect	NA	1	no benchmark	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.48	detect	NA	1	no benchmark	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.53	detect	NA	1	no benchmark	**1.1**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.041	detect	NA	1	no benchmark	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	5.1	detect	NA	1	no benchmark	**10.2**
	SE11-HP11	SE11-HP11-(0-2)c	0.69	detect	NA	1	no benchmark	**1.4**
	SE12-HP12	SE12-HP12-(0-2)c	0.16	detect	NA	1	no benchmark	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	2.3	detect	NA	1	no benchmark	**4.6**
	SE14-HP13	SE14-HP13-(0-2)c	0.096	detect	NA	1	no benchmark	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.69	detect	NA	1	no benchmark	**1.4**
	SE16-HP13	SE16-HP13-(0-2)c	0.1	detect	NA	1	no benchmark	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.094	detect	NA	1	no benchmark	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.31	detect	NA	1	no benchmark	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.3	detect	NA	1	no benchmark	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.17	detect	NA	1	no benchmark	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	2.1	detect	NA	1	no benchmark	**4.2**
	SE5-HP2	SE5-HP2-(0-2)c	0.86	detect	NA	1	no benchmark	**1.7**
	SE6-HP7	SE6-HP7-(0-2)c	5.3	detect	NA	1	no benchmark	**10.6**
	SE7-HP7	SE7-HP7-(0-2)c	0.22	detect	NA	1	no benchmark	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	1.2	detect	NA	1	no benchmark	**2.4**
	SE9-HP10	SE9-HP10-(0-2)c	1.5	detect	NA	1	no benchmark	**3.0**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.097	detect	NA	1	no benchmark	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.09	detect	NA	1	no benchmark	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

Mercury

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.31	detect	0	0	<1.0	**3.1**
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.024	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.076	detect	0	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.057	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.038	detect	0	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.019	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.018	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.067	detect	0	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.015	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.032	detect	0	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.018	detect	0	0	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.013	detect	0	0	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.09	detect	0	0	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.013	detect	0	0	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.012	detect	0	0	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.031	detect	0	0	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.019	detect	0	0	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.037	detect	0	0	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.022	detect	0	0	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.012	detect	0	0	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.03	detect	0	0	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.016	detect	0	0	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.0031	ND	0	0	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.018	detect	0	0	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.0094	detect	0	0	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.018	detect	0	0	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.016	detect	0	0	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.046	detect	0	0	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.015	detect	0	0	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.015	detect	0	0	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.007283	detect	0	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.007283	detect	0	0	<1.0	<1.0

APPENDIX F
Sample-Specific Hazard Quotients for Plants and Soil Organisms from Direct Contact with Surface Soil

Mercury

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.63	detect	0	0	**2.1**	**6.3**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	1.2	detect	0	0	**4.0**	**12.0**
	CRP-1	CRP-1-SS_4/10/14_NM	0.34	detect	0	0	**1.1**	**3.4**
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.012	detect	0	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.016	detect	0	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.033	detect	0	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.024	detect	0	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.017	detect	0	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.013	detect	0	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.015	detect	0	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.083	detect	0	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.12	detect	0	0	<1.0	**1.2**
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.11	detect	0	0	<1.0	**1.1**
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.81	detect	0	0	**2.7**	**8.1**
	Grid 53	Grid 53-SSComp-01_20171020_NM	4.3	detect	0	0	**14.3**	**43.0**
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.19	detect	0	0	<1.0	**1.9**
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.11	detect	0	0	<1.0	**1.1**
	Grid 64	Grid 64-SSComp-01_20171024_NM	3.6	detect	0	0	**12.0**	**36.0**
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.23	detect	0	0	<1.0	**2.3**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.014	detect	0	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.024	detect	0	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.27	detect	0	0	<1.0	**2.7**
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.038	detect	0	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.14	detect	0	0	<1.0	**1.4**
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.018	detect	0	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.0031	ND	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.00305	ND	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1.2	detect	0	0	**4.0**	**12.0**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.057	detect	0	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.022	detect	0	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	2.5	detect	0	0	**8.3**	**25.0**
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.2	detect	0	0	<1.0	**2.0**
	P3	P3-SSComp-01_20171020_NM	0.01	ND	0	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.00485	ND	0	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.055	detect	0	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.005	ND	0	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.11	detect	0	0	<1.0	**1.1**
	P8	P8-SSComp-01_20171025_NM	0.87	detect	0	0	**2.9**	**8.7**
	P8dc	P8dc-SSComp-01_20171024_NM	0.83	detect	0	0	**2.8**	**8.3**
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.72	detect	0	0	**2.4**	**7.2**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1.1	detect	0	0	**3.7**	**11.0**
	SPP	SPP-SSComp-01_20171025_NM	1.3	detect	0	0	**4.3**	**13.0**
	SS1,2-HP18	SS1-HP18-(0-2)c	0.0038	ND	0	0	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.00385	ND	0	0	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	8	detect	0	0	**26.7**	**80.0**
	SS15,16-HP9	SS15-HP9-(0-2)c	2	detect	0	0	**6.7**	**20.0**
	SS3,4-HP16	SS3-HP16-(0-2)c	0.14	detect	0	0	<1.0	**1.4**
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.04	detect	0	0	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.16	detect	0	0	<1.0	**1.6**
	SS9,10-HP12	SS9-HP12-(0-2)c	0.041	detect	0	0	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.068	detect	0	0	<1.0	<1.0

APPENDIX F
Sample-Specific Hazard Quotients for Plants and Soil Organisms from Direct Contact with Surface Soil

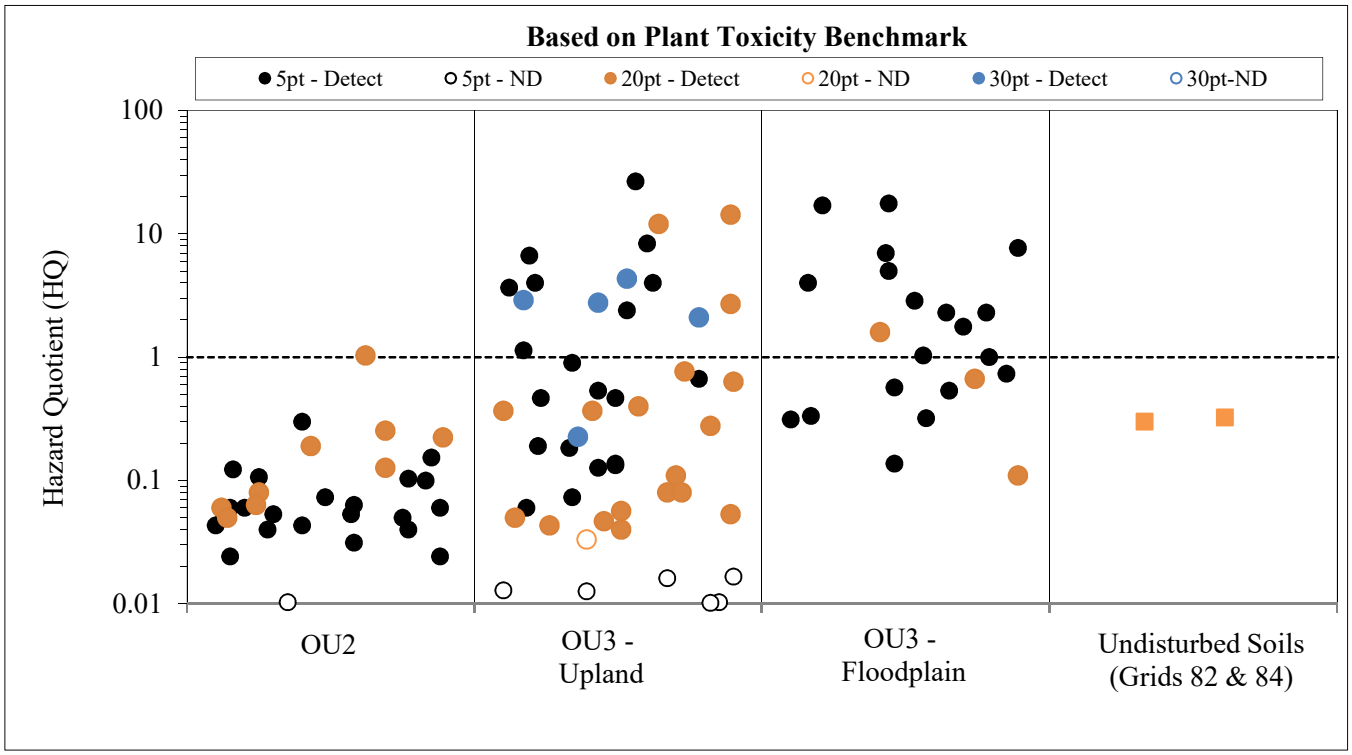
Mercury

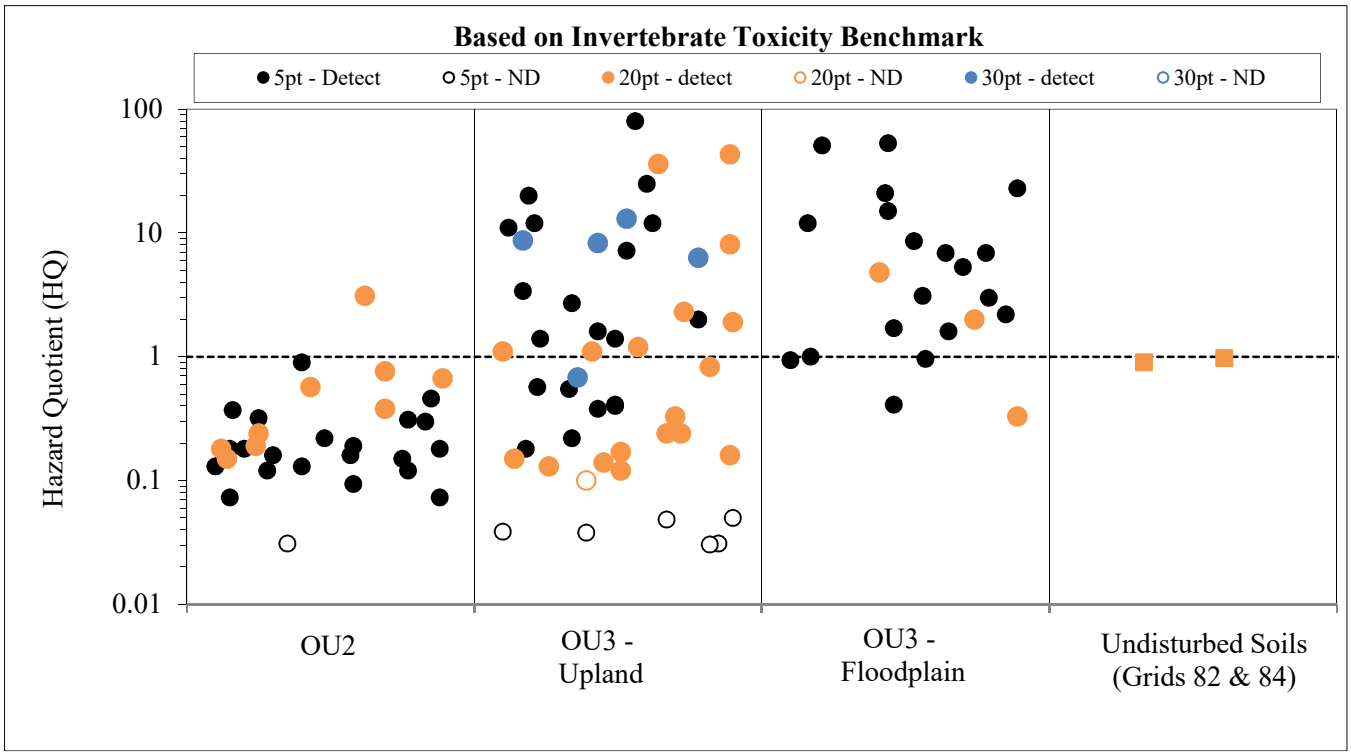
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.033	detect	0	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.2	detect	0	0	<1.0	**2.0**
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.48	detect	0	0	**1.6**	**4.8**
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.53	detect	0	0	**1.8**	**5.3**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.041	detect	0	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	5.1	detect	0	0	**17.0**	**51.0**
	SE11-HP11	SE11-HP11-(0-2)c	0.69	detect	0	0	**2.3**	**6.9**
	SE12-HP12	SE12-HP12-(0-2)c	0.16	detect	0	0	<1.0	**1.6**
	SE13-HP12	SE13-HP12-(0-2)c	2.3	detect	0	0	**7.7**	**23.0**
	SE14-HP13	SE14-HP13-(0-2)c	0.096	detect	0	0	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.69	detect	0	0	**2.3**	**6.9**
	SE16-HP13	SE16-HP13-(0-2)c	0.1	detect	0	0	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.094	detect	0	0	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.31	detect	0	0	<1.0	**3.1**
	SE2-HP1a	SE2-HP1a-(0-2)c	0.3	detect	0	0	<1.0	**3.0**
	SE3-HP1	SE3-HP1-(0-2)c	0.17	detect	0	0	<1.0	**1.7**
	SE4-HP1	SE4-HP1-(0-2)c	2.1	detect	0	0	**7.0**	**21.0**
	SE5-HP2	SE5-HP2-(0-2)c	0.86	detect	0	0	**2.9**	**8.6**
	SE6-HP7	SE6-HP7-(0-2)c	5.3	detect	0	0	**17.7**	**53.0**
	SE7-HP7	SE7-HP7-(0-2)c	0.22	detect	0	0	<1.0	**2.2**
	SE8-HP10	SE8-HP10-(0-2)c	1.2	detect	0	0	**4.0**	**12.0**
	SE9-HP10	SE9-HP10-(0-2)c	1.5	detect	0	0	**5.0**	**15.0**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.097	detect	0	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.09	detect	0	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

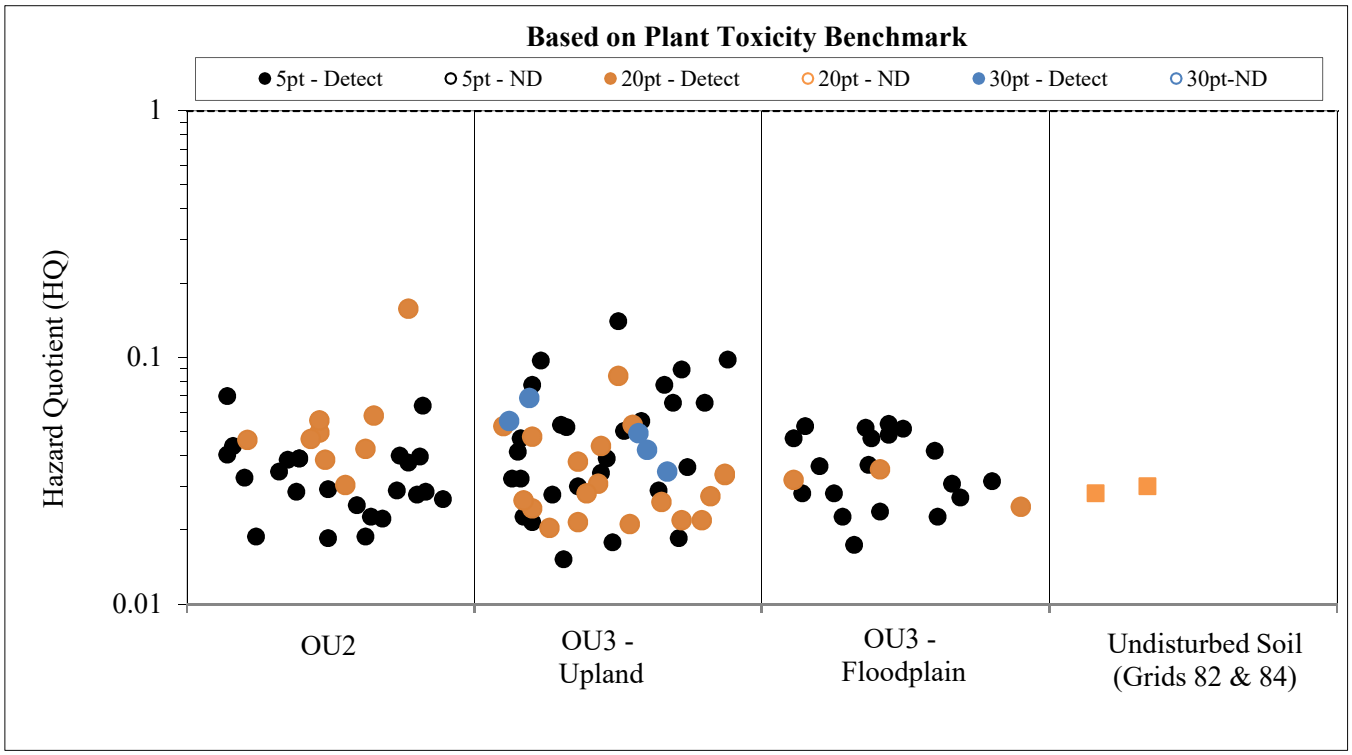
Appendix F

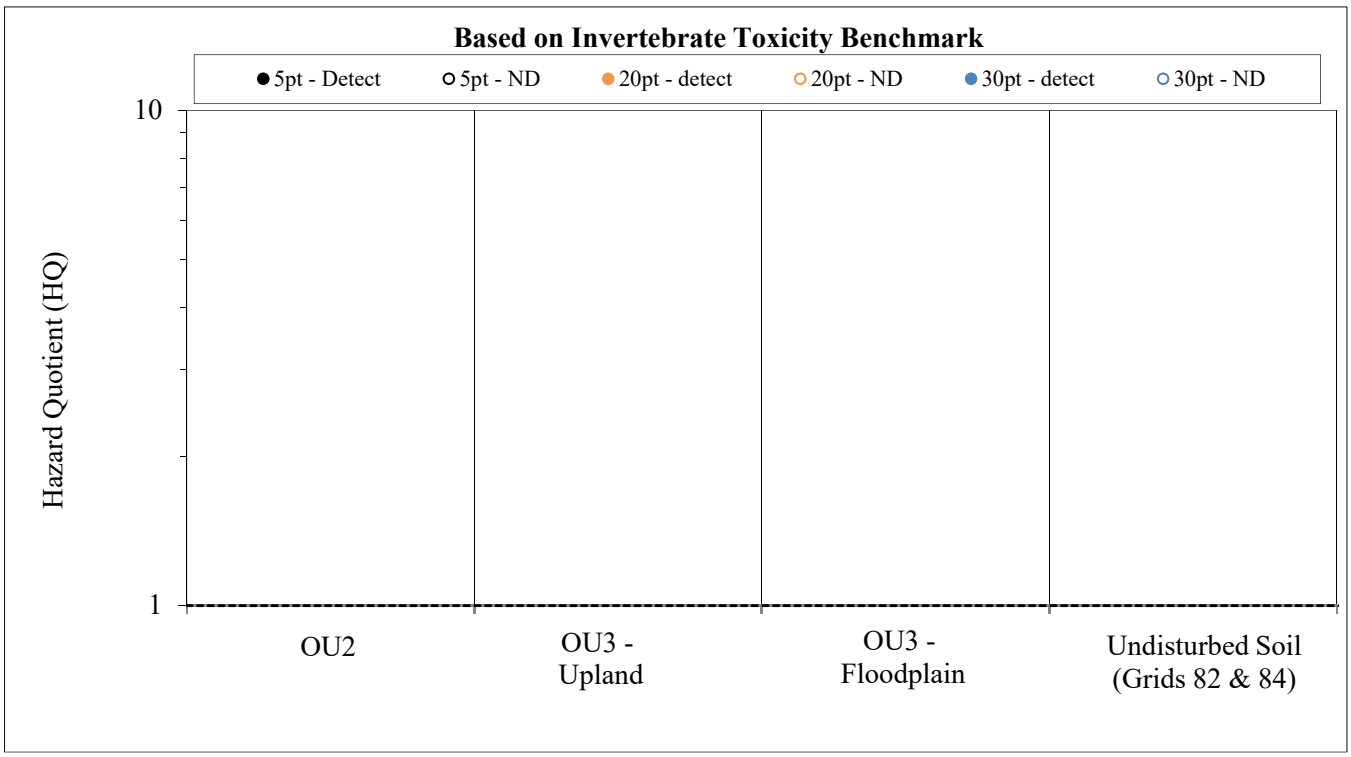
No Effect Hazard Quotients for Plants and Soil Invertebrates from Direct Contact with Mercury in Surface Soils





APPENDIX F
Hazard Quotients for Plants and Soil Organisms from Direct Contact with Surface Soil
(Based on the Low Effect ESV)
Nickel





APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil
(Based on Low-Effect ESV)

Nickel

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	13.4	detect	270	NA	<1.0	no benchmark
	Grid 13	Grid 13-SSComp-01_20171019_NM	11.5	detect	270	NA	<1.0	no benchmark
	Grid 14	Grid 14-SSComp-01_20171017_NM	15.7	detect	270	NA	<1.0	no benchmark
	Grid 2	Grid 2-SSComp-01_20171016_NM	12.5	detect	270	NA	<1.0	no benchmark
	Grid 22	Grid 22-SSComp-01_20171018_NM	15	detect	270	NA	<1.0	no benchmark
	Grid 23	Grid 23-SSComp-01_20171018_NM	12.6	detect	270	NA	<1.0	no benchmark
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	8.2	detect	270	NA	<1.0	no benchmark
	Grid 8	Grid 8-SSComp-01_20171018_NM	42.5	detect	270	NA	<1.0	no benchmark
	Grid 9	Grid 9-SSComp-01_20171018_NM	10.4	detect	270	NA	<1.0	no benchmark
	LF-1	LF-1-SS_4/18/14_NM	17.2	detect	270	NA	<1.0	no benchmark
	SB2a,3a-IN	SB2a-IN-(0-2)	5	detect	270	NA	<1.0	no benchmark
	SS10-IN	SS10-IN-(0-2)c	7.7	detect	270	NA	<1.0	no benchmark
	SS11-IN	SS11-IN-(0-2)c	7.9	detect	270	NA	<1.0	no benchmark
	SS12-IN	SS12-IN-(0-2)c	7.7	detect	270	NA	<1.0	no benchmark
	SS13-IN	SS13-IN-(0-2)c	8.8	detect	270	NA	<1.0	no benchmark
	SS14-IN	SS14-IN-(0-2)c	7.8	detect	270	NA	<1.0	no benchmark
	SS15-IN	SS15-IN-(0-2)c	11.8	detect	270	NA	<1.0	no benchmark
	SS16-IN	SS16-IN-(0-2)c	10.1	detect	270	NA	<1.0	no benchmark
	SS17-IN	SS17-IN-(0-2)c	10.8	detect	270	NA	<1.0	no benchmark
	SS1-IN	SS1-IN-(0-2)c	10.5	detect	270	NA	<1.0	no benchmark
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	270	NA	#N/A	no benchmark
	SS2-IN	SS2-IN-(0-2)c	6	detect	270	NA	<1.0	no benchmark
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	270	NA	#N/A	no benchmark
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	270	NA	#N/A	no benchmark
	SS32-IN	SS32-IN-(0-2)c	18.8	detect	270	NA	<1.0	no benchmark
	SS33-IN	SS33-IN-(0-2)c	9.3	detect	270	NA	<1.0	no benchmark
	SS3-IN	SS3-IN-(0-2)c	10.4	detect	270	NA	<1.0	no benchmark
	SS4-IN	SS4-IN-(0-2)c	7.5	detect	270	NA	<1.0	no benchmark
	SS5-IN	SS5-IN-(0-2)c	10.5	detect	270	NA	<1.0	no benchmark
	SS6-IN	SS6-IN-(0-2)c	7.2	detect	270	NA	<1.0	no benchmark
	SS7-IN	SS7-IN-(0-2)c	10.9	detect	270	NA	<1.0	no benchmark
	SS8-IN	SS8-IN-(0-2)c	6.8	detect	270	NA	<1.0	no benchmark
	SS9-IN	SS9-IN-(0-2)c	10.7	detect	270	NA	<1.0	no benchmark
	HDPT-SS	BACKFILL-HDPT-SS	5.066667	detect	270	NA	<1.0	no benchmark
	TSB-SS	BACKFILL-TSB-SS	5.066667	detect	270	NA	<1.0	no benchmark
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	14.9	detect	270	NA	<1.0	no benchmark
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	24.1	detect	270	NA	<1.0	no benchmark
	CRP-1	CRP-1-SS_4/10/14_NM	14.9	detect	270	NA	<1.0	no benchmark
	Grid 27	Grid 27-SSComp-01_20171019_NM	5.5	detect	270	NA	<1.0	no benchmark
	Grid 28	Grid 28-SSComp-01_20171019_NM	5.7	detect	270	NA	<1.0	no benchmark
	Grid 29	Grid 29-SSComp-01_20171019_NM	6.6	detect	270	NA	<1.0	no benchmark
	Grid 30	Grid 30-SSComp-01_20171020_NM	5.9	detect	270	NA	<1.0	no benchmark
	Grid 33	Grid 33-SSComp-01_20171020_NM	8.3	detect	270	NA	<1.0	no benchmark
	Grid 34	Grid 34-SSComp-01_20171019_NM	5.8	detect	270	NA	<1.0	no benchmark
	Grid 37	Grid 37-SSComp-01_20171020_NM	7.1	detect	270	NA	<1.0	no benchmark
	Grid 39	Grid 39-SSComp-01_20171020_NM	7	detect	270	NA	<1.0	no benchmark
	Grid 43	Grid 43-SSComp-01_20171023_NM	7.4	detect	270	NA	<1.0	no benchmark
	Grid 44	Grid 44-SSComp-01_20171023_NM	7.6	detect	270	NA	<1.0	no benchmark
	Grid 47	Grid 47-SSComp-01_20171023_NM	14.4	detect	270	NA	<1.0	no benchmark
	Grid 53	Grid 53-SSComp-01_20171020_NM	10.2	detect	270	NA	<1.0	no benchmark
	Grid 60	Grid 60-SSComp-01_20171023_NM	11.8	detect	270	NA	<1.0	no benchmark
	Grid 61	Grid 61-SSComp-01_20171023_NM	9	detect	270	NA	<1.0	no benchmark
	Grid 64	Grid 64-SSComp-01_20171024_NM	9.1	detect	270	NA	<1.0	no benchmark
	Grid 74	Grid 74-SSComp-01_20171023_NM	22.7	detect	270	NA	<1.0	no benchmark
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	12.9	detect	270	NA	<1.0	no benchmark
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	5.9	detect	270	NA	<1.0	no benchmark
	HP16-1	HP16-1-SS_4/10/14_NM	11.2	detect	270	NA	<1.0	no benchmark
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	8.7	detect	270	NA	<1.0	no benchmark
	HP18-1	HP18-1-SS_4/10/14_NM	14.1	detect	270	NA	<1.0	no benchmark
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	7.5	detect	270	NA	<1.0	no benchmark
	HP18-IB	HP18-SSC-IB_4/10/14_NM	5	detect	270	NA	<1.0	no benchmark
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	270	NA	#N/A	no benchmark
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	4.8	detect	270	NA	<1.0	no benchmark
	HP9-1	HP9-1-SS_4/10/14_NM	13.6	detect	270	NA	<1.0	no benchmark
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	4.1	detect	270	NA	<1.0	no benchmark
	IBK-1	IBK-1-SS_4/16/14_NM	17.7	detect	270	NA	<1.0	no benchmark
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	20.9	detect	270	NA	<1.0	no benchmark
	P17-BH1	P17-BH1-SS_4/3/14_NM	26.2	detect	270	NA	<1.0	no benchmark
	P3	P3-SSComp-01_20171020_NM	14.2	detect	270	NA	<1.0	no benchmark
	P3-BH1	P3-BH1-SS_4/3/14_NM	37.9	detect	270	NA	<1.0	no benchmark
	P4-BH1	P4-BH1-SS_4/4/14_NM	5.8	detect	270	NA	<1.0	no benchmark
	P5-BH2	P5-BH2-SS_4/3/14_NM	26.5	detect	270	NA	<1.0	no benchmark
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	20.9	detect	270	NA	<1.0	no benchmark
	P8	P8-SSComp-01_20171025_NM	9.3	detect	270	NA	<1.0	no benchmark
	P8dc	P8dc-SSComp-01_20171024_NM	13.3	detect	270	NA	<1.0	no benchmark
	P8-TP3	P8-TP3-SS_4/4/14_NM	14.4	detect	270	NA	<1.0	no benchmark
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	17.7	detect	270	NA	<1.0	no benchmark
	SPP	SPP-SSComp-01_20171025_NM	18.5	detect	270	NA	<1.0	no benchmark
	SS1,2-HP18	SS1-HP18-(0-2)c	8.1	detect	270	NA	<1.0	no benchmark
	SS11,12-IBK	SS11-IBK-(0-2)c	7.8	detect	270	NA	<1.0	no benchmark
	SS13,14-HP9	SS13-HP9-(0-2)c	9.7	detect	270	NA	<1.0	no benchmark
	SS15,16-HP9	SS15-HP9-(0-2)c	9.2	detect	270	NA	<1.0	no benchmark
	SS3,4-HP16	SS3-HP16-(0-2)c	8.7	detect	270	NA	<1.0	no benchmark
	SS5,6-IBJ	SS5-IBJ-(0-2)c	6.1	detect	270	NA	<1.0	no benchmark
	SS7,8-HP13	SS7-HP13-(0-2)c	12.7	detect	270	NA	<1.0	no benchmark
	SS9,10-HP12	SS9-HP12-(0-2)c	10.5	detect	270	NA	<1.0	no benchmark
	SWBA	SWBA-SSComp-01_20171024_NM	11.4	detect	270	NA	<1.0	no benchmark

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil
(Based on Low-Effect ESV)

Nickel

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	6.7	detect	270	NA	<1.0	no benchmark
	Grid 89	Grid 89-SSComp-01_20171026_NM	9.5	detect	270	NA	<1.0	no benchmark
	Grid 94	Grid 94-SSComp-01_20171026_NM	8.6	detect	270	NA	<1.0	no benchmark
	HP13a-1	HP13A-1-SS_4/10/14_NM	13.9	detect	270	NA	<1.0	no benchmark
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	4.7	detect	270	NA	<1.0	no benchmark
	SE10-HP11	SE10-HP11-(0-2)c	13.1	detect	270	NA	<1.0	no benchmark
	SE11-HP11	SE11-HP11-(0-2)c	7.6	detect	270	NA	<1.0	no benchmark
	SE12-HP12	SE12-HP12-(0-2)c	14.2	detect	270	NA	<1.0	no benchmark
	SE13-HP12	SE13-HP12-(0-2)c	14	detect	270	NA	<1.0	no benchmark
	SE14-HP13	SE14-HP13-(0-2)c	12.7	detect	270	NA	<1.0	no benchmark
	SE15-HP13	SE15-HP13-(0-2)c	7.6	detect	270	NA	<1.0	no benchmark
	SE16-HP13	SE16-HP13-(0-2)c	8.5	detect	270	NA	<1.0	no benchmark
	SE17-HP13a	SE17-HP13a-(0-2)c	11.3	detect	270	NA	<1.0	no benchmark
	SE1-HP1a	SE1-HP1a-(0-2)c	8.3	detect	270	NA	<1.0	no benchmark
	SE2-HP1a	SE2-HP1a-(0-2)c	9.9	detect	270	NA	<1.0	no benchmark
	SE3-HP1	SE3-HP1-(0-2)c	6.1	detect	270	NA	<1.0	no benchmark
	SE4-HP1	SE4-HP1-(0-2)c	7.3	detect	270	NA	<1.0	no benchmark
	SE5-HP2	SE5-HP2-(0-2)c	14.5	detect	270	NA	<1.0	no benchmark
	SE6-HP7	SE6-HP7-(0-2)c	12.7	detect	270	NA	<1.0	no benchmark
	SE7-HP7	SE7-HP7-(0-2)c	6.4	detect	270	NA	<1.0	no benchmark
	SE8-HP10	SE8-HP10-(0-2)c	6.1	detect	270	NA	<1.0	no benchmark
	SE9-HP10	SE9-HP10-(0-2)c	9.8	detect	270	NA	<1.0	no benchmark
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	8.1	detect	270	NA	<1.0	no benchmark
	Grid 84	Grid 84-SSComp-01_20171026_NM	7.6	detect	270	NA	<1.0	no benchmark

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

Nickel

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	13.4	detect	38	280	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	11.5	detect	38	280	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	15.7	detect	38	280	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	12.5	detect	38	280	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	15	detect	38	280	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	12.6	detect	38	280	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	8.2	detect	38	280	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	42.5	detect	38	280	**1.1**	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	10.4	detect	38	280	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	17.2	detect	38	280	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	5	detect	38	280	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	7.7	detect	38	280	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	7.9	detect	38	280	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	7.7	detect	38	280	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	8.8	detect	38	280	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	7.8	detect	38	280	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	11.8	detect	38	280	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	10.1	detect	38	280	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	10.8	detect	38	280	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	10.5	detect	38	280	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	38	280	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	6	detect	38	280	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	38	280	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	38	280	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	18.8	detect	38	280	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	9.3	detect	38	280	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	10.4	detect	38	280	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	7.5	detect	38	280	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	10.5	detect	38	280	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	7.2	detect	38	280	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	10.9	detect	38	280	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	6.8	detect	38	280	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	10.7	detect	38	280	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	5.066667	detect	38	280	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	5.066667	detect	38	280	<1.0	<1.0

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

Nickel

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	14.9	detect	38	280	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	24.1	detect	38	280	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	14.9	detect	38	280	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	5.5	detect	38	280	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	5.7	detect	38	280	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	6.6	detect	38	280	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	5.9	detect	38	280	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	8.3	detect	38	280	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	5.8	detect	38	280	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	7.1	detect	38	280	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	7	detect	38	280	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	7.4	detect	38	280	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	7.6	detect	38	280	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	14.4	detect	38	280	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	10.2	detect	38	280	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	11.8	detect	38	280	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	9	detect	38	280	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	9.1	detect	38	280	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	22.7	detect	38	280	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	12.9	detect	38	280	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	5.9	detect	38	280	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	11.2	detect	38	280	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	8.7	detect	38	280	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	14.1	detect	38	280	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	7.5	detect	38	280	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	5	detect	38	280	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	38	280	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	4.8	detect	38	280	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	13.6	detect	38	280	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	4.1	detect	38	280	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	17.7	detect	38	280	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	20.9	detect	38	280	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	26.2	detect	38	280	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	14.2	detect	38	280	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	37.9	detect	38	280	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	5.8	detect	38	280	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	26.5	detect	38	280	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	20.9	detect	38	280	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	9.3	detect	38	280	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	13.3	detect	38	280	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	14.4	detect	38	280	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	17.7	detect	38	280	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	18.5	detect	38	280	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	8.1	detect	38	280	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	7.8	detect	38	280	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	9.7	detect	38	280	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	9.2	detect	38	280	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	8.7	detect	38	280	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	6.1	detect	38	280	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	12.7	detect	38	280	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	10.5	detect	38	280	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	11.4	detect	38	280	<1.0	<1.0

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

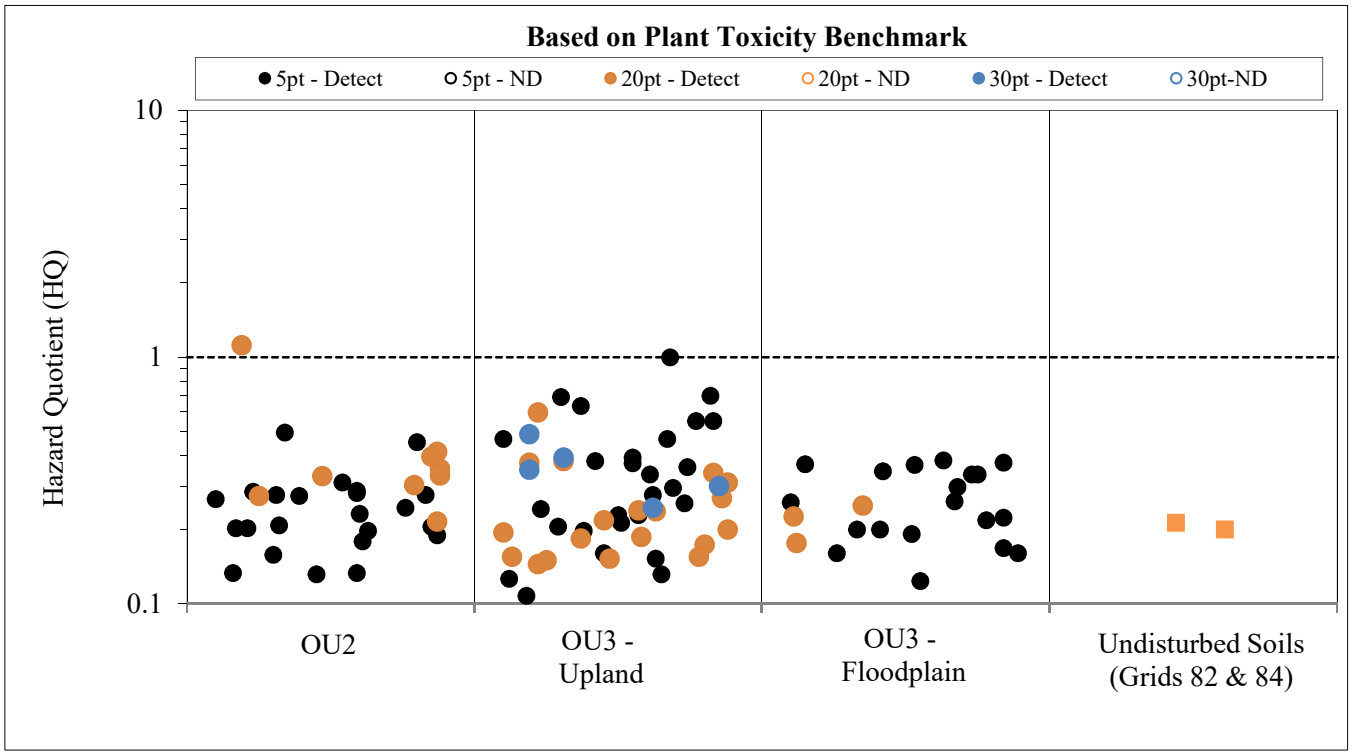
Nickel

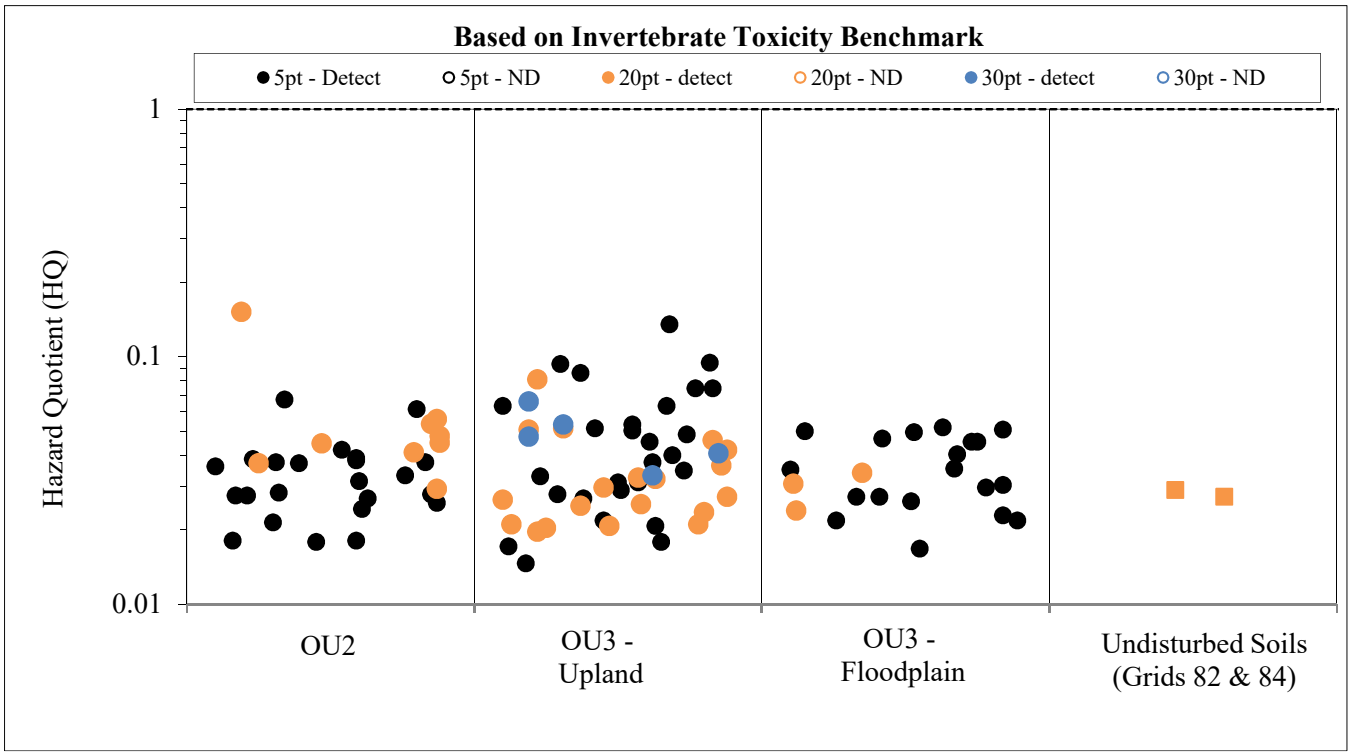
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	6.7	detect	38	280	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	9.5	detect	38	280	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	8.6	detect	38	280	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	13.9	detect	38	280	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	4.7	detect	38	280	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	13.1	detect	38	280	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	7.6	detect	38	280	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	14.2	detect	38	280	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	14	detect	38	280	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	12.7	detect	38	280	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	7.6	detect	38	280	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	8.5	detect	38	280	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	11.3	detect	38	280	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	8.3	detect	38	280	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	9.9	detect	38	280	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	6.1	detect	38	280	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	7.3	detect	38	280	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	14.5	detect	38	280	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	12.7	detect	38	280	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	6.4	detect	38	280	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	6.1	detect	38	280	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	9.8	detect	38	280	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	8.1	detect	38	280	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	7.6	detect	38	280	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

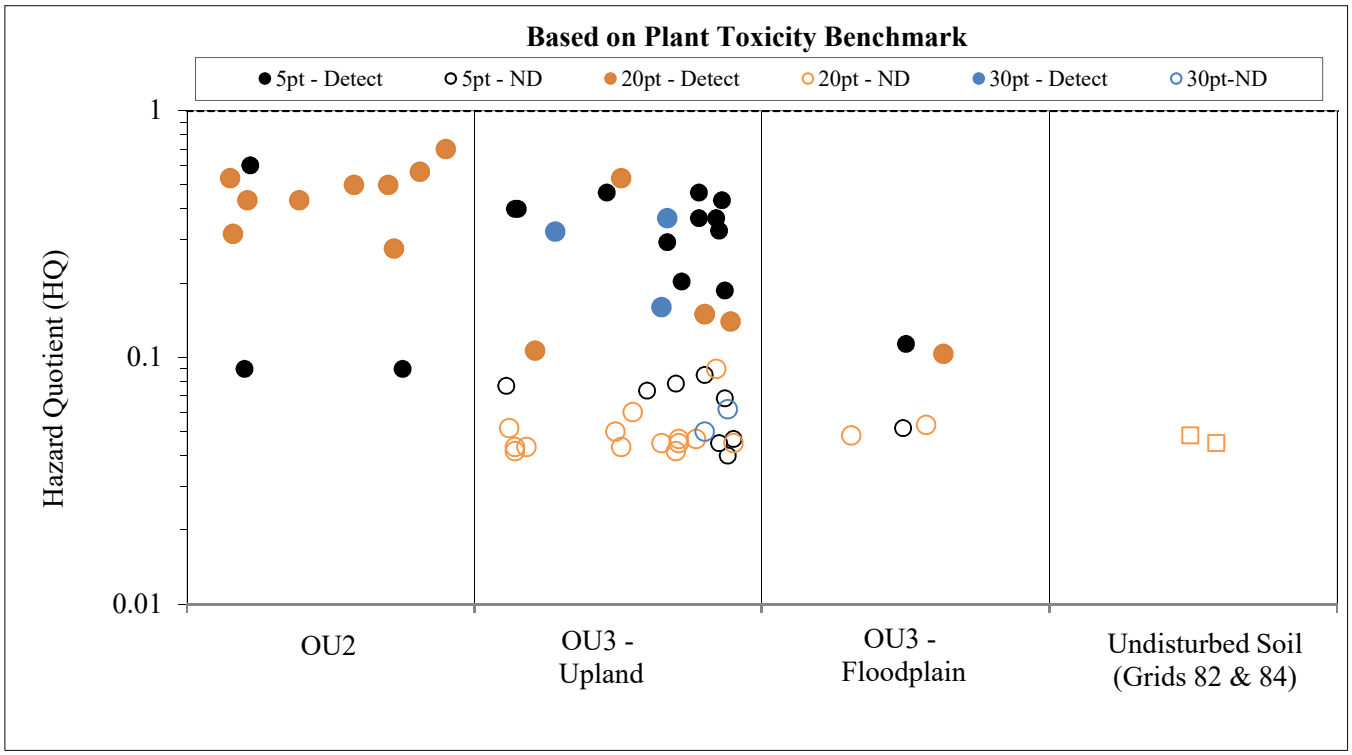
Appendix F

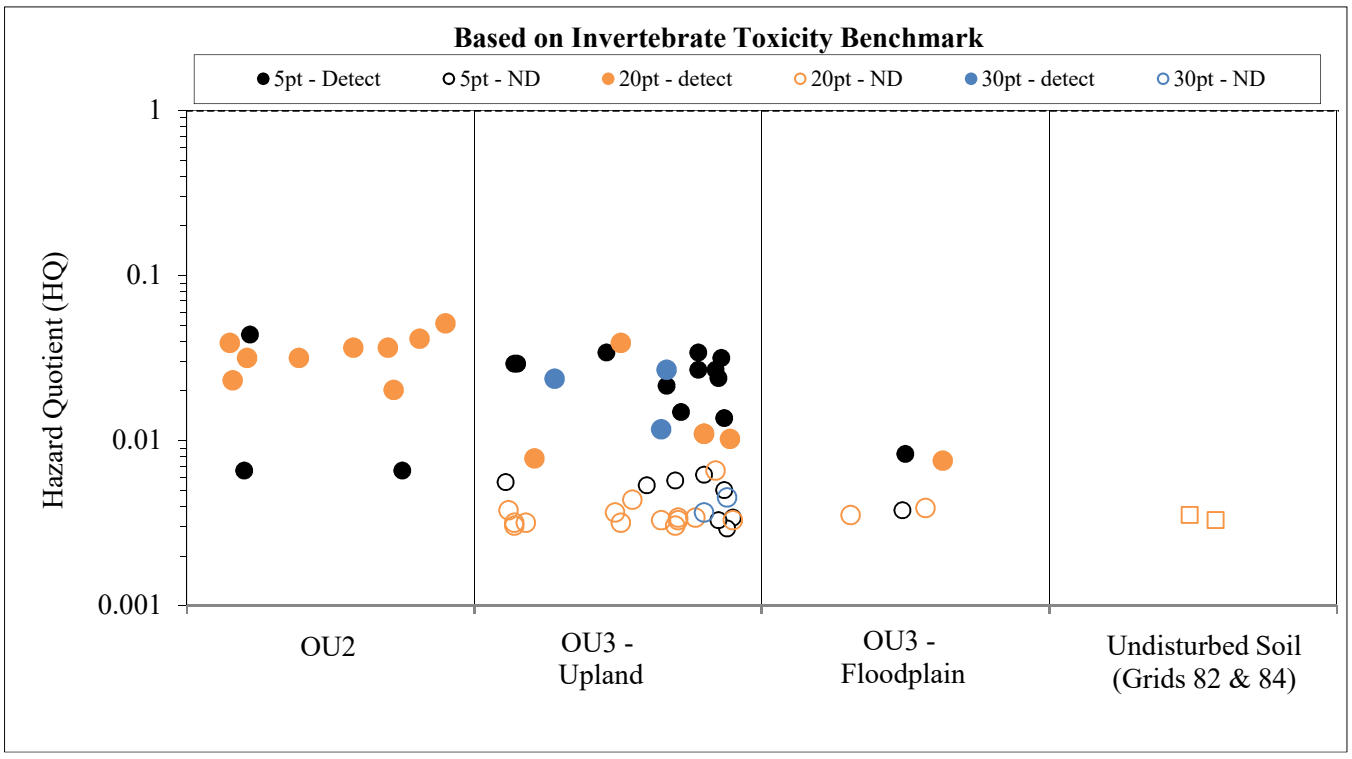
No Effect Hazard Quotients for Plants and Soil Invertebrates from Direct Contact with Nickel in Surface Soils





APPENDIX F
Hazard Quotients for Plants and Soil Organisms from Direct Contact with Surface Soil
(Based on the Low Effect ESV)
Selenium





APPENDIX F
Sample-Specific Hazard Quotients for Plants and Soil Organisms from Direct Contact with Surface Soil (Based on Low-Effect ESV)

Selenium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.95	detect	3	41	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	1.5	detect	3	41	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	1.3	detect	3	41	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.83	detect	3	41	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	1.7	detect	3	41	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	2.1	detect	3	41	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	1.3	detect	3	41	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	1.5	detect	3	41	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	1.6	detect	3	41	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	1.8	detect	3	41	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	3	41	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.27	detect	3	41	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.27	detect	3	41	<1.0	<1.0
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	1.1	detect	3	41	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.22	ND	3	41	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	1.2	detect	3	41	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.13	ND	3	41	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.13	ND	3	41	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.135	ND	3	41	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.13	ND	3	41	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.135	ND	3	41	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.125	ND	3	41	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.125	ND	3	41	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.18	ND	3	41	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.45	detect	3	41	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.32	detect	3	41	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	1.6	detect	3	41	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.45	detect	3	41	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.155	ND	3	41	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.14	ND	3	41	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.15	ND	3	41	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.42	detect	3	41	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.14	ND	3	41	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.135	ND	3	41	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.56	detect	3	41	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	1.4	detect	3	41	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.88	detect	3	41	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.14	ND	3	41	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.12	ND	3	41	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	3	41	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.61	detect	3	41	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1.1	detect	3	41	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.135	ND	3	41	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	1.2	detect	3	41	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	1.4	detect	3	41	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	1.3	detect	3	41	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.27	ND	3	41	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.205	ND	3	41	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.23	ND	3	41	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.235	ND	3	41	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.255	ND	3	41	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.185	ND	3	41	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.48	detect	3	41	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.98	detect	3	41	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1.1	detect	3	41	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.97	detect	3	41	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	0.15	ND	3	41	<1.0	<1.0

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil
(Based on Low-Effect ESV)

Selenium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.145	ND	3	41	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.31	detect	3	41	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.16	ND	3	41	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.34	detect	3	41	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.155	ND	3	41	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	3	41	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.145	ND	3	41	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.135	ND	3	41	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

Selenium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.95	detect	1	4	**1.8**	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	1.5	detect	1	4	**2.9**	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	1.3	detect	1	4	**2.5**	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.83	detect	1	4	**1.6**	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	1.7	detect	1	4	**3.3**	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	2.1	detect	1	4	**4.0**	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	1.3	detect	1	4	**2.5**	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	1.5	detect	1	4	**2.9**	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	1.6	detect	1	4	**3.1**	<1.0
	LF-1	LF-1-SS_4/18/14_NM	1.8	detect	1	4	**3.5**	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	4	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.27	detect	1	4	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.27	detect	1	4	<1.0	<1.0

APPENDIX F
Sample-Specific Hazard Quotients for Plants and Soil Organisms from Direct Contact with Surface Soil

Selenium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	1.1	detect	1	4	**2.1**	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.22	ND	1	4	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	1.2	detect	1	4	**2.3**	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.13	ND	1	4	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.13	ND	1	4	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.135	ND	1	4	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.13	ND	1	4	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.135	ND	1	4	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.125	ND	1	4	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.125	ND	1	4	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.18	ND	1	4	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.45	detect	1	4	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.32	detect	1	4	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	1.6	detect	1	4	**3.1**	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.45	detect	1	4	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.155	ND	1	4	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.14	ND	1	4	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.15	ND	1	4	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.42	detect	1	4	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.14	ND	1	4	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.135	ND	1	4	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.56	detect	1	4	**1.1**	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	1.4	detect	1	4	**2.7**	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.88	detect	1	4	**1.7**	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.14	ND	1	4	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.12	ND	1	4	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	4	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.61	detect	1	4	**1.2**	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1.1	detect	1	4	**2.1**	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.135	ND	1	4	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	1.2	detect	1	4	**2.3**	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	1.4	detect	1	4	**2.7**	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	1.3	detect	1	4	**2.5**	<1.0
	P3	P3-SSComp-01_20171020_NM	0.27	ND	1	4	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.205	ND	1	4	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.23	ND	1	4	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.235	ND	1	4	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.255	ND	1	4	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.185	ND	1	4	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.48	detect	1	4	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.98	detect	1	4	**1.9**	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1.1	detect	1	4	**2.1**	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.97	detect	1	4	**1.9**	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	0.15	ND	1	4	<1.0	<1.0

APPENDIX F
Sample-Specific Hazard Quotients for Plants and Soil Organisms from Direct Contact with Surface Soil

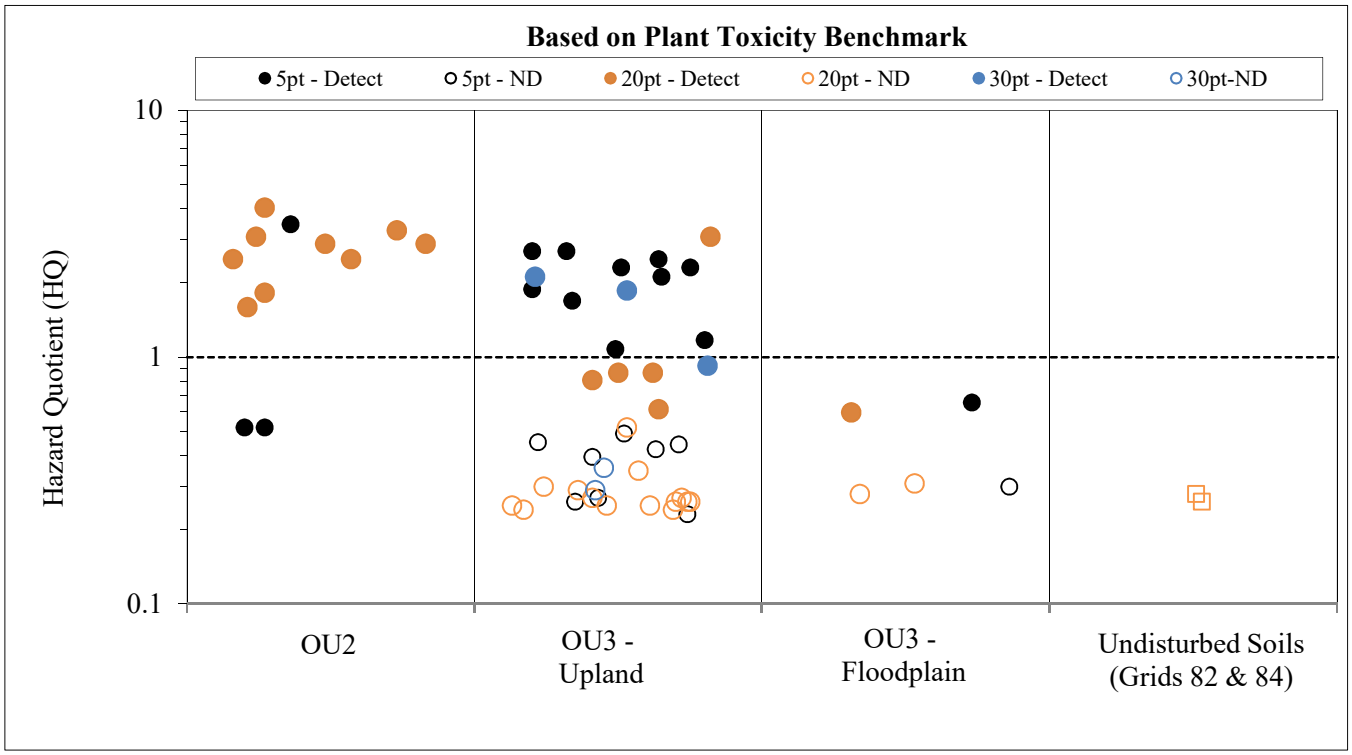
Selenium

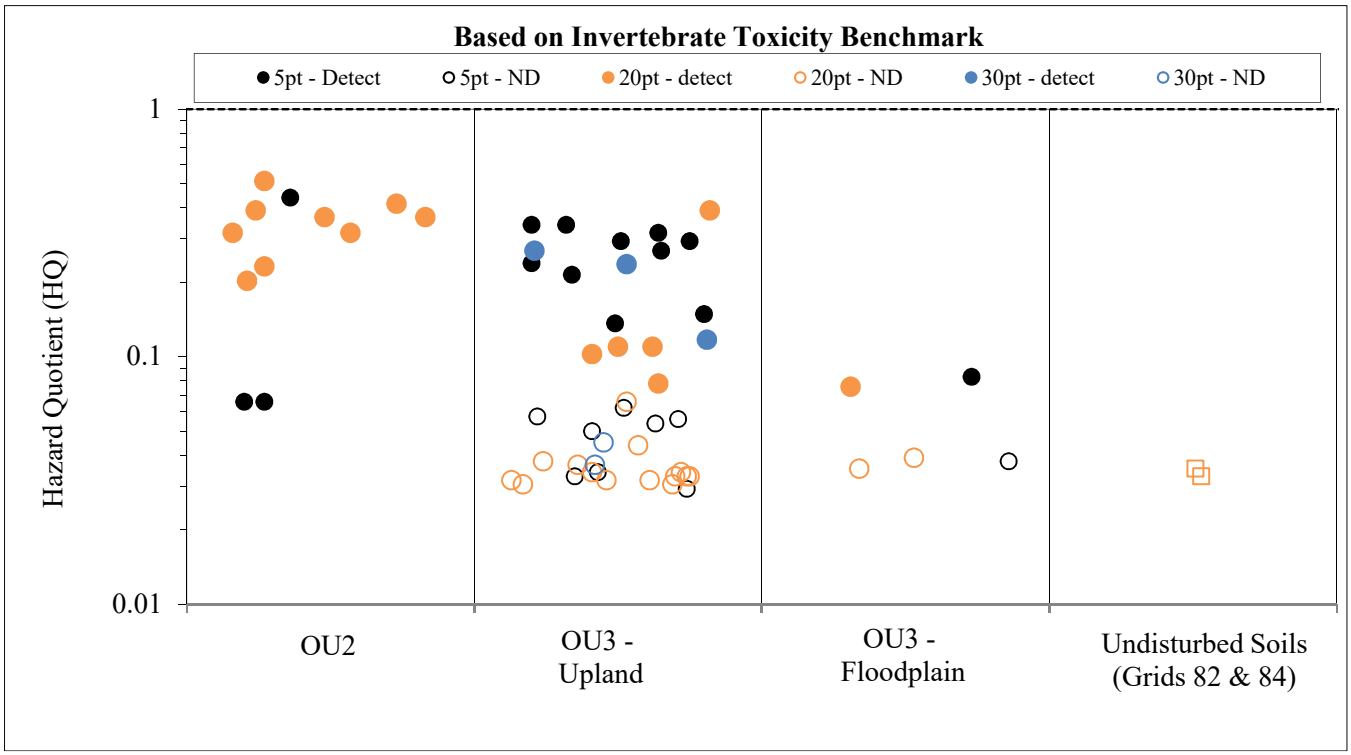
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.145	ND	1	4	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.31	detect	1	4	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.16	ND	1	4	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.34	detect	1	4	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.155	ND	1	4	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	4	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.145	ND	1	4	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.135	ND	1	4	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix F

No Effect Hazard Quotients for Plants and Soil Invertebrates from Direct Contact with Selenium in Surface Soils





APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

Total PCBs (ND=1/2RL)

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.2153	detect	40	251	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.016098	detect	40	251	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.073668	detect	40	251	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.031651	detect	40	251	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.108693	detect	40	251	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.007675	detect	40	251	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.125414	detect	40	251	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	1.125173	detect	40	251	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.035534	detect	40	251	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	#N/A	#N/A	40	251	#N/A	#N/A
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	40	251	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	#N/A	#N/A	40	251	#N/A	#N/A
	TSB-SS	BACKFILL-TSB-SS	#N/A	#N/A	40	251	#N/A	#N/A

APPENDIX F
Sample-Specific Hazard Quotients for Plants and Soil Organisms from Direct Contact with Surface Soil

Total PCBs (ND=1/2RL)

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	40	251	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	#N/A	#N/A	40	251	#N/A	#N/A
	CRP-1	CRP-1-SS_4/10/14_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	40	251	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	#N/A	#N/A	40	251	#N/A	#N/A
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	#N/A	#N/A	40	251	#N/A	#N/A
	HP18-1	HP18-1-SS_4/10/14_NM	#N/A	#N/A	40	251	#N/A	#N/A
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	#N/A	#N/A	40	251	#N/A	#N/A
	HP18-IB	HP18-SSC-IB_4/10/14_NM	#N/A	#N/A	40	251	#N/A	#N/A
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	40	251	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	#N/A	#N/A	40	251	#N/A	#N/A
	HP9-1	HP9-1-SS_4/10/14_NM	#N/A	#N/A	40	251	#N/A	#N/A
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	#N/A	#N/A	40	251	#N/A	#N/A
	IBK-1	IBK-1-SS_4/16/14_NM	#N/A	#N/A	40	251	#N/A	#N/A
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	#N/A	#N/A	40	251	#N/A	#N/A
	P17-BH1	P17-BH1-SS_4/3/14_NM	#N/A	#N/A	40	251	#N/A	#N/A
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	40	251	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	#N/A	#N/A	40	251	#N/A	#N/A
	P4-BH1	P4-BH1-SS_4/4/14_NM	#N/A	#N/A	40	251	#N/A	#N/A
	P5-BH2	P5-BH2-SS_4/3/14_NM	#N/A	#N/A	40	251	#N/A	#N/A
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	#N/A	#N/A	40	251	#N/A	#N/A
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	40	251	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	40	251	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	#N/A	#N/A	40	251	#N/A	#N/A
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	#N/A	#N/A	40	251	#N/A	#N/A
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	40	251	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	40	251	#N/A	#N/A

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

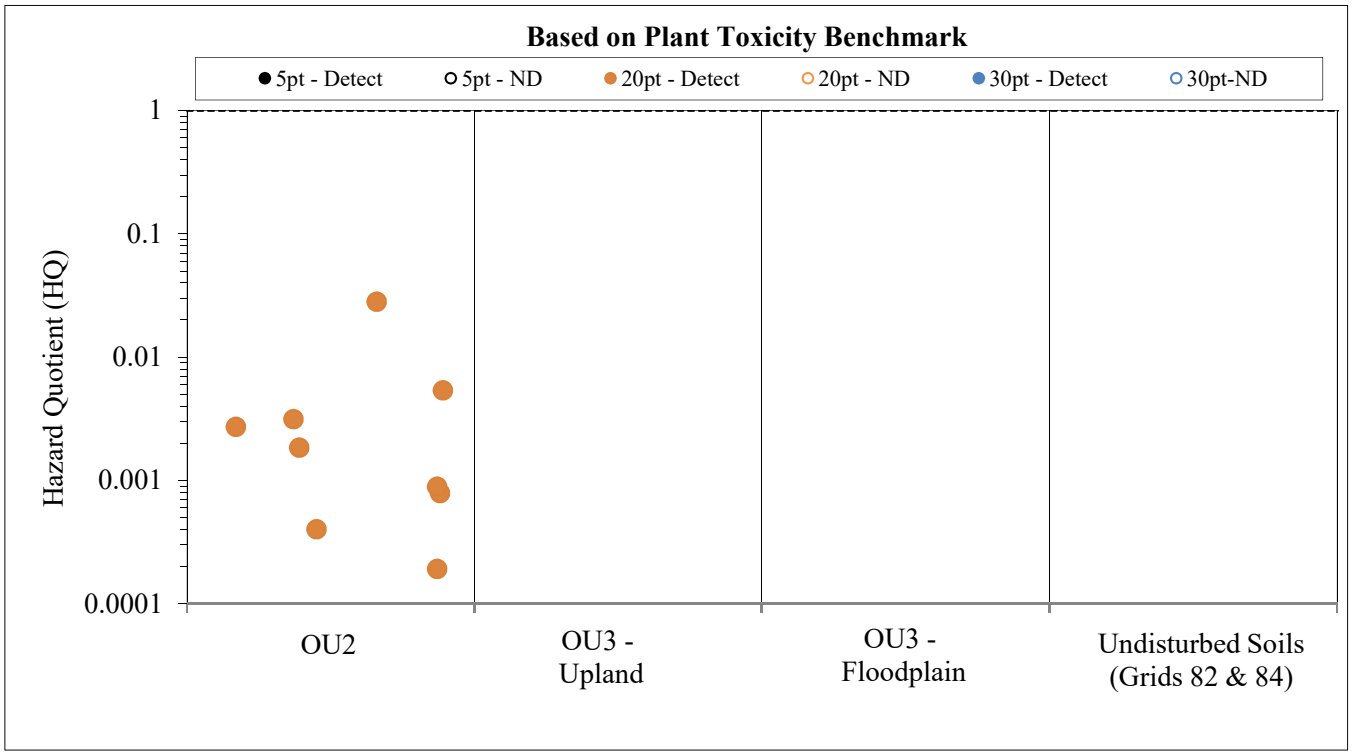
Total PCBs (ND=1/2RL)

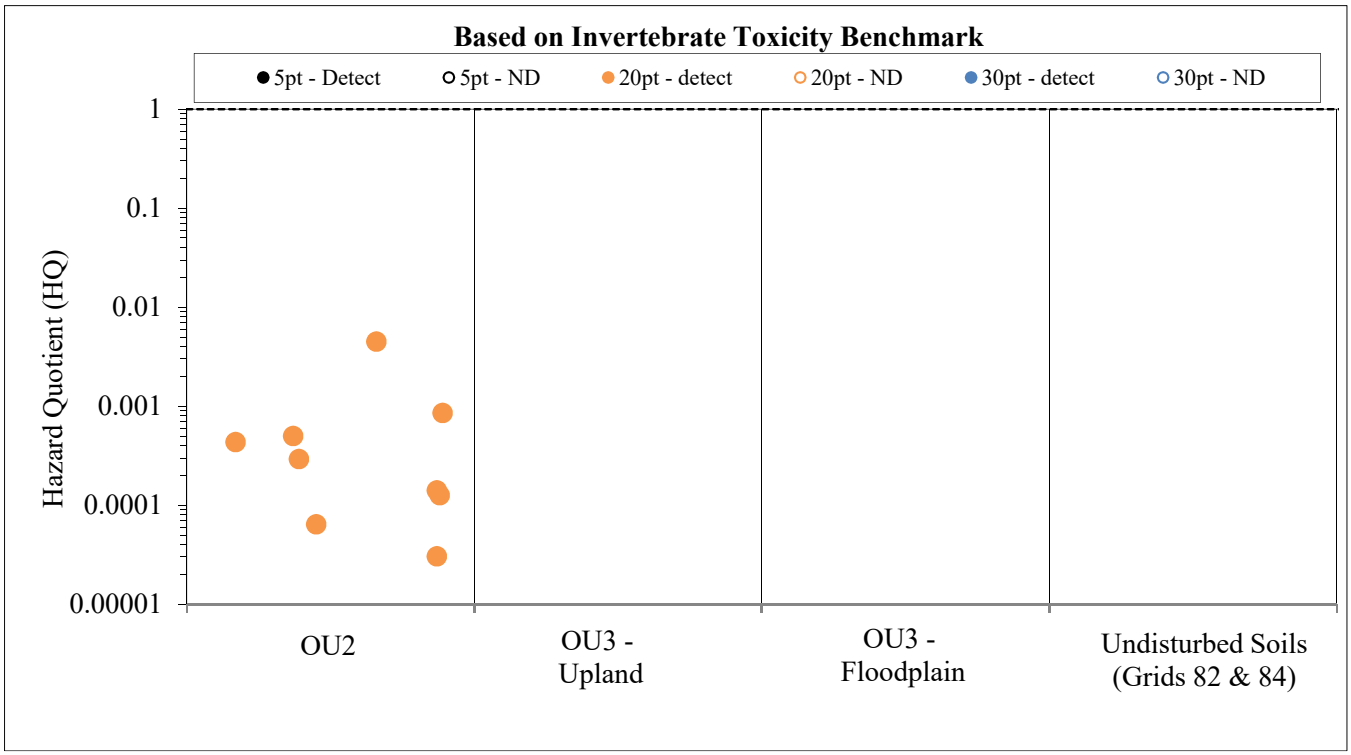
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	40	251	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	#N/A	#N/A	40	251	#N/A	#N/A
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	#N/A	#N/A	40	251	#N/A	#N/A
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	40	251	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	40	251	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	40	251	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

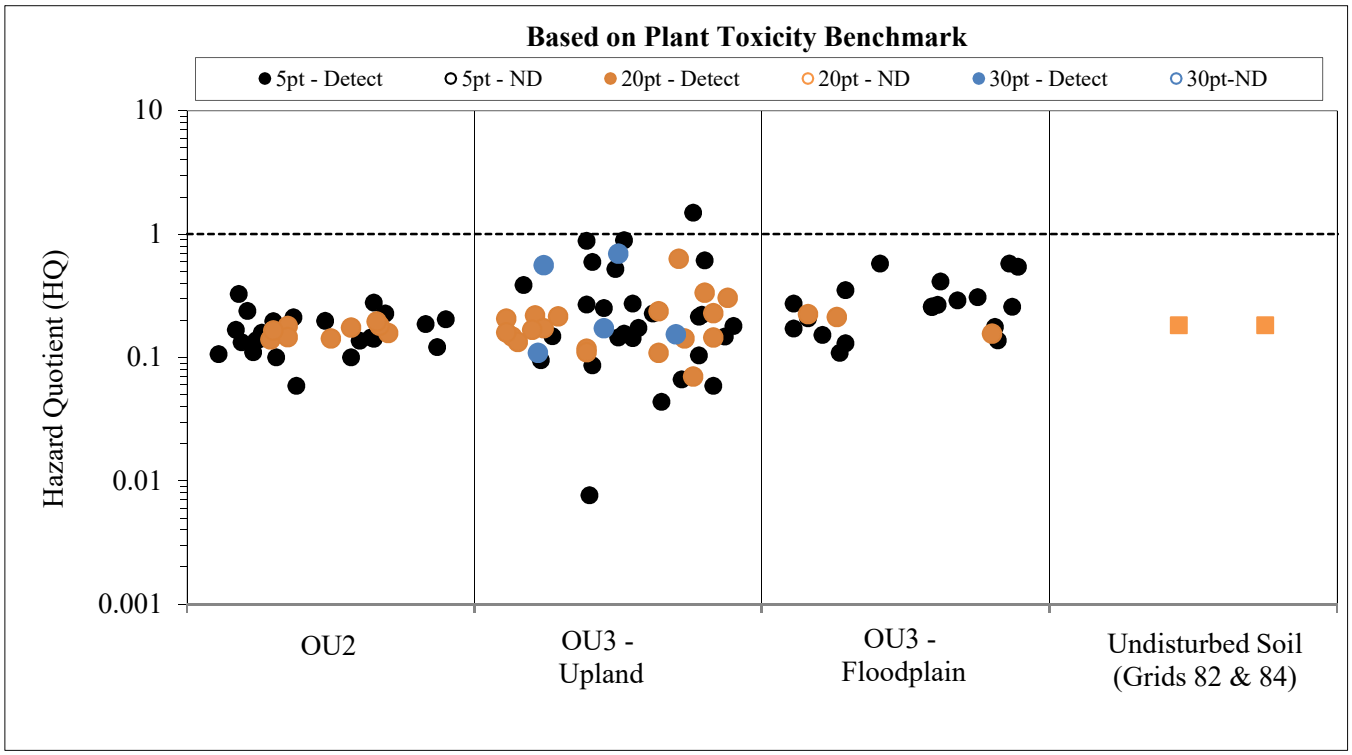
Appendix F

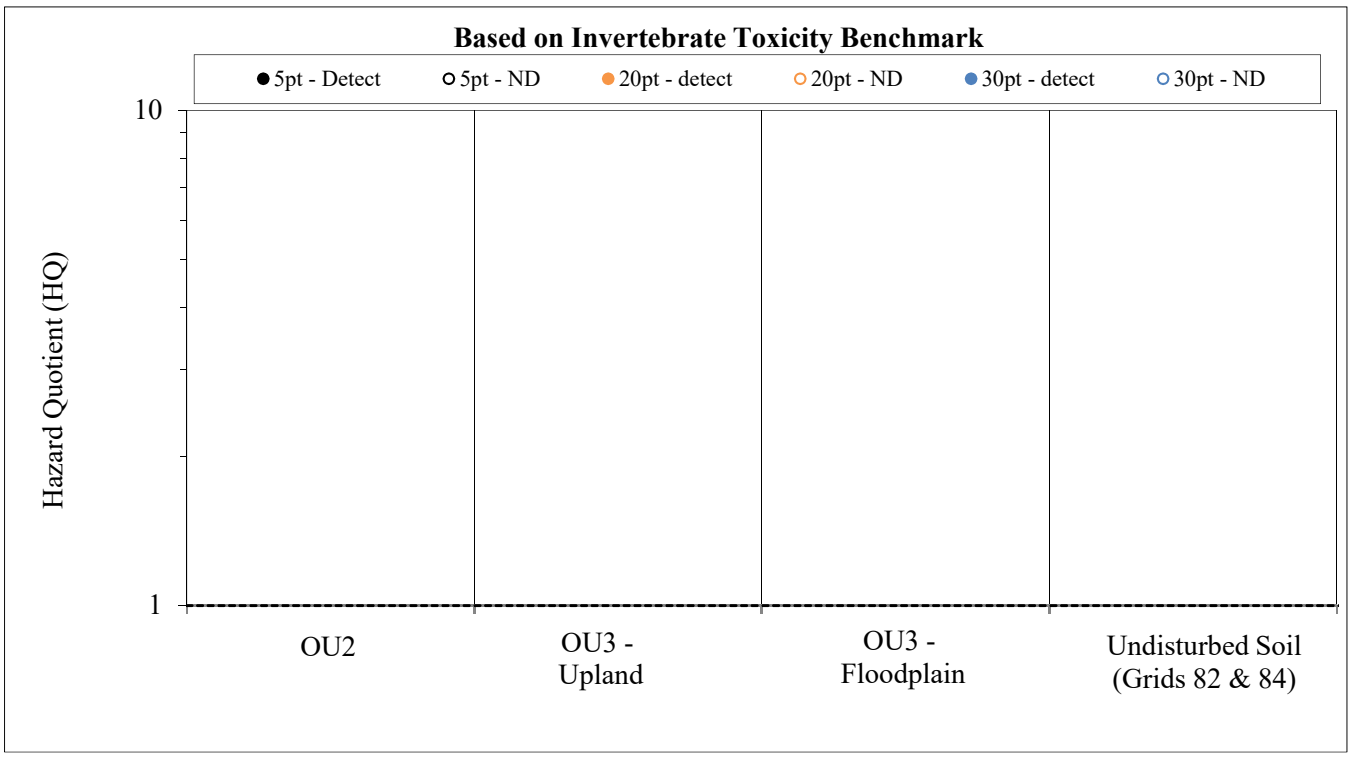
No Effect Hazard Quotients for Plants and Soil Invertebrates from Direct Contact with Total PCBs (ND=1/2RL) in Surface Soils





APPENDIX F
Hazard Quotients for Plants and Soil Organisms from Direct Contact with Surface Soil
(Based on the Low Effect ESV)
Vanadium





APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil
(Based on Low-Effect ESV)

Vanadium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	12.6	detect	80	NA	<1.0	no benchmark
	Grid 13	Grid 13-SSComp-01_20171019_NM	14.5	detect	80	NA	<1.0	no benchmark
	Grid 14	Grid 14-SSComp-01_20171017_NM	11.4	detect	80	NA	<1.0	no benchmark
	Grid 2	Grid 2-SSComp-01_20171016_NM	11.2	detect	80	NA	<1.0	no benchmark
	Grid 22	Grid 22-SSComp-01_20171018_NM	14.4	detect	80	NA	<1.0	no benchmark
	Grid 23	Grid 23-SSComp-01_20171018_NM	15.6	detect	80	NA	<1.0	no benchmark
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	11.7	detect	80	NA	<1.0	no benchmark
	Grid 8	Grid 8-SSComp-01_20171018_NM	14	detect	80	NA	<1.0	no benchmark
	Grid 9	Grid 9-SSComp-01_20171018_NM	13.2	detect	80	NA	<1.0	no benchmark
	LF-1	LF-1-SS_4/18/14_NM	22.3	detect	80	NA	<1.0	no benchmark
	SB2a,3a-IN	SB2a-IN-(0-2)	4.7	detect	80	NA	<1.0	no benchmark
	SS10-IN	SS10-IN-(0-2)c	11.8	detect	80	NA	<1.0	no benchmark
	SS11-IN	SS11-IN-(0-2)c	10.9	detect	80	NA	<1.0	no benchmark
	SS12-IN	SS12-IN-(0-2)c	11.2	detect	80	NA	<1.0	no benchmark
	SS13-IN	SS13-IN-(0-2)c	8.5	detect	80	NA	<1.0	no benchmark
	SS14-IN	SS14-IN-(0-2)c	11	detect	80	NA	<1.0	no benchmark
	SS15-IN	SS15-IN-(0-2)c	14.9	detect	80	NA	<1.0	no benchmark
	SS16-IN	SS16-IN-(0-2)c	13.4	detect	80	NA	<1.0	no benchmark
	SS17-IN	SS17-IN-(0-2)c	16.3	detect	80	NA	<1.0	no benchmark
	SS1-IN	SS1-IN-(0-2)c	11.3	detect	80	NA	<1.0	no benchmark
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	80	NA	#N/A	no benchmark
	SS2-IN	SS2-IN-(0-2)c	9.7	detect	80	NA	<1.0	no benchmark
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	80	NA	#N/A	no benchmark
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	80	NA	#N/A	no benchmark
	SS32-IN	SS32-IN-(0-2)c	26.2	detect	80	NA	<1.0	no benchmark
	SS33-IN	SS33-IN-(0-2)c	19.1	detect	80	NA	<1.0	no benchmark
	SS3-IN	SS3-IN-(0-2)c	16.9	detect	80	NA	<1.0	no benchmark
	SS4-IN	SS4-IN-(0-2)c	11.6	detect	80	NA	<1.0	no benchmark
	SS5-IN	SS5-IN-(0-2)c	15.8	detect	80	NA	<1.0	no benchmark
	SS6-IN	SS6-IN-(0-2)c	12.7	detect	80	NA	<1.0	no benchmark
	SS7-IN	SS7-IN-(0-2)c	15.7	detect	80	NA	<1.0	no benchmark
	SS8-IN	SS8-IN-(0-2)c	8.8	detect	80	NA	<1.0	no benchmark
	SS9-IN	SS9-IN-(0-2)c	18.2	detect	80	NA	<1.0	no benchmark
	HDPT-SS	BACKFILL-HDPT-SS	8	detect	80	NA	<1.0	no benchmark
	TSB-SS	BACKFILL-TSB-SS	8	detect	80	NA	<1.0	no benchmark
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	44.7	detect	80	NA	<1.0	no benchmark
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	71.5	detect	80	NA	<1.0	no benchmark
	CRP-1	CRP-1-SS_4/10/14_NM	119	detect	80	NA	**1.5**	no benchmark
	Grid 27	Grid 27-SSComp-01_20171019_NM	9.4	detect	80	NA	<1.0	no benchmark
	Grid 28	Grid 28-SSComp-01_20171019_NM	8.7	detect	80	NA	<1.0	no benchmark
	Grid 29	Grid 29-SSComp-01_20171019_NM	18.9	detect	80	NA	<1.0	no benchmark
	Grid 30	Grid 30-SSComp-01_20171020_NM	11.8	detect	80	NA	<1.0	no benchmark
	Grid 33	Grid 33-SSComp-01_20171020_NM	16.5	detect	80	NA	<1.0	no benchmark
	Grid 34	Grid 34-SSComp-01_20171019_NM	10.7	detect	80	NA	<1.0	no benchmark
	Grid 37	Grid 37-SSComp-01_20171020_NM	11.4	detect	80	NA	<1.0	no benchmark
	Grid 39	Grid 39-SSComp-01_20171020_NM	18.3	detect	80	NA	<1.0	no benchmark
	Grid 43	Grid 43-SSComp-01_20171023_NM	26.8	detect	80	NA	<1.0	no benchmark
	Grid 44	Grid 44-SSComp-01_20171023_NM	12.8	detect	80	NA	<1.0	no benchmark
	Grid 47	Grid 47-SSComp-01_20171023_NM	50.6	detect	80	NA	<1.0	no benchmark
	Grid 53	Grid 53-SSComp-01_20171020_NM	17.5	detect	80	NA	<1.0	no benchmark
	Grid 60	Grid 60-SSComp-01_20171023_NM	13.8	detect	80	NA	<1.0	no benchmark
	Grid 61	Grid 61-SSComp-01_20171023_NM	13.4	detect	80	NA	<1.0	no benchmark
	Grid 64	Grid 64-SSComp-01_20171024_NM	11.6	detect	80	NA	<1.0	no benchmark
	Grid 74	Grid 74-SSComp-01_20171023_NM	24.4	detect	80	NA	<1.0	no benchmark
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	17.2	detect	80	NA	<1.0	no benchmark
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	8.8	detect	80	NA	<1.0	no benchmark
	HP16-1	HP16-1-SS_4/10/14_NM	31	detect	80	NA	<1.0	no benchmark
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	17.1	detect	80	NA	<1.0	no benchmark
	HP18-1	HP18-1-SS_4/10/14_NM	41.6	detect	80	NA	<1.0	no benchmark
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	11.6	detect	80	NA	<1.0	no benchmark
	HP18-IB	HP18-SSC-IB_4/10/14_NM	8.3	detect	80	NA	<1.0	no benchmark
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	80	NA	#N/A	no benchmark
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	6.9	detect	80	NA	<1.0	no benchmark
	HP9-1	HP9-1-SS_4/10/14_NM	47.4	detect	80	NA	<1.0	no benchmark
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	5.3	detect	80	NA	<1.0	no benchmark
	IBK-1	IBK-1-SS_4/16/14_NM	21.5	detect	80	NA	<1.0	no benchmark
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	70.6	detect	80	NA	<1.0	no benchmark
	P17-BH1	P17-BH1-SS_4/3/14_NM	14.4	detect	80	NA	<1.0	no benchmark
	P3	P3-SSComp-01_20171020_NM	5.6	detect	80	NA	<1.0	no benchmark
	P3-BH1	P3-BH1-SS_4/3/14_NM	4.7	detect	80	NA	<1.0	no benchmark
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.61	detect	80	NA	<1.0	no benchmark
	P5-BH2	P5-BH2-SS_4/3/14_NM	3.5	detect	80	NA	<1.0	no benchmark
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	11.5	detect	80	NA	<1.0	no benchmark
	P8	P8-SSComp-01_20171025_NM	12.3	detect	80	NA	<1.0	no benchmark
	P8dc	P8dc-SSComp-01_20171024_NM	13.8	detect	80	NA	<1.0	no benchmark
	P8-TP3	P8-TP3-SS_4/4/14_NM	13.9	detect	80	NA	<1.0	no benchmark
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	48.9	detect	80	NA	<1.0	no benchmark
	SPP	SPP-SSComp-01_20171025_NM	55.4	detect	80	NA	<1.0	no benchmark
	SS1,2-HP18	SS1-HP18-(0-2)c	11.9	detect	80	NA	<1.0	no benchmark
	SS11,12-IBK	SS11-IBK-(0-2)c	12.5	detect	80	NA	<1.0	no benchmark
	SS13,14-HP9	SS13-HP9-(0-2)c	21.9	detect	80	NA	<1.0	no benchmark
	SS15,16-HP9	SS15-HP9-(0-2)c	20.1	detect	80	NA	<1.0	no benchmark
	SS3,4-HP16	SS3-HP16-(0-2)c	11.8	detect	80	NA	<1.0	no benchmark
	SS5,6-IBJ	SS5-IBJ-(0-2)c	7.6	detect	80	NA	<1.0	no benchmark
	SS7,8-HP13	SS7-HP13-(0-2)c	18.2	detect	80	NA	<1.0	no benchmark
	SS9,10-HP12	SS9-HP12-(0-2)c	17.7	detect	80	NA	<1.0	no benchmark
	SWBA	SWBA-SSComp-01_20171024_NM	8.7	detect	80	NA	<1.0	no benchmark

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil
(Based on Low-Effect ESV)

Vanadium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	12.5	detect	80	NA	<1.0	no benchmark
	Grid 89	Grid 89-SSComp-01_20171026_NM	18	detect	80	NA	<1.0	no benchmark
	Grid 94	Grid 94-SSComp-01_20171026_NM	17	detect	80	NA	<1.0	no benchmark
	HP13a-1	HP13A-1-SS_4/10/14_NM	21.4	detect	80	NA	<1.0	no benchmark
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	8.7	detect	80	NA	<1.0	no benchmark
	SE10-HP11	SE10-HP11-(0-2)c	46.2	detect	80	NA	<1.0	no benchmark
	SE11-HP11	SE11-HP11-(0-2)c	16.6	detect	80	NA	<1.0	no benchmark
	SE12-HP12	SE12-HP12-(0-2)c	24.7	detect	80	NA	<1.0	no benchmark
	SE13-HP12	SE13-HP12-(0-2)c	46.1	detect	80	NA	<1.0	no benchmark
	SE14-HP13	SE14-HP13-(0-2)c	23.2	detect	80	NA	<1.0	no benchmark
	SE15-HP13	SE15-HP13-(0-2)c	13.7	detect	80	NA	<1.0	no benchmark
	SE16-HP13	SE16-HP13-(0-2)c	20.6	detect	80	NA	<1.0	no benchmark
	SE17-HP13a	SE17-HP13a-(0-2)c	20.5	detect	80	NA	<1.0	no benchmark
	SE1-HP1a	SE1-HP1a-(0-2)c	21.8	detect	80	NA	<1.0	no benchmark
	SE2-HP1a	SE2-HP1a-(0-2)c	20.7	detect	80	NA	<1.0	no benchmark
	SE3-HP1	SE3-HP1-(0-2)c	12.2	detect	80	NA	<1.0	no benchmark
	SE4-HP1	SE4-HP1-(0-2)c	14.1	detect	80	NA	<1.0	no benchmark
	SE5-HP2	SE5-HP2-(0-2)c	43.5	detect	80	NA	<1.0	no benchmark
	SE6-HP7	SE6-HP7-(0-2)c	33.1	detect	80	NA	<1.0	no benchmark
	SE7-HP7	SE7-HP7-(0-2)c	10.4	detect	80	NA	<1.0	no benchmark
	SE8-HP10	SE8-HP10-(0-2)c	11	detect	80	NA	<1.0	no benchmark
	SE9-HP10	SE9-HP10-(0-2)c	28.1	detect	80	NA	<1.0	no benchmark
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	14.6	detect	80	NA	<1.0	no benchmark
	Grid 84	Grid 84-SSComp-01_20171026_NM	14.6	detect	80	NA	<1.0	no benchmark

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

Vanadium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	12.6	detect	2	NA	**6.3**	no benchmark
	Grid 13	Grid 13-SSComp-01_20171019_NM	14.5	detect	2	NA	**7.3**	no benchmark
	Grid 14	Grid 14-SSComp-01_20171017_NM	11.4	detect	2	NA	**5.7**	no benchmark
	Grid 2	Grid 2-SSComp-01_20171016_NM	11.2	detect	2	NA	**5.6**	no benchmark
	Grid 22	Grid 22-SSComp-01_20171018_NM	14.4	detect	2	NA	**7.2**	no benchmark
	Grid 23	Grid 23-SSComp-01_20171018_NM	15.6	detect	2	NA	**7.8**	no benchmark
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	11.7	detect	2	NA	**5.9**	no benchmark
	Grid 8	Grid 8-SSComp-01_20171018_NM	14	detect	2	NA	**7.0**	no benchmark
	Grid 9	Grid 9-SSComp-01_20171018_NM	13.2	detect	2	NA	**6.6**	no benchmark
	LF-1	LF-1-SS_4/18/14_NM	22.3	detect	2	NA	**11.2**	no benchmark
	SB2a,3a-IN	SB2a-IN-(0-2)	4.7	detect	2	NA	**2.4**	no benchmark
	SS10-IN	SS10-IN-(0-2)c	11.8	detect	2	NA	**5.9**	no benchmark
	SS11-IN	SS11-IN-(0-2)c	10.9	detect	2	NA	**5.5**	no benchmark
	SS12-IN	SS12-IN-(0-2)c	11.2	detect	2	NA	**5.6**	no benchmark
	SS13-IN	SS13-IN-(0-2)c	8.5	detect	2	NA	**4.3**	no benchmark
	SS14-IN	SS14-IN-(0-2)c	11	detect	2	NA	**5.5**	no benchmark
	SS15-IN	SS15-IN-(0-2)c	14.9	detect	2	NA	**7.5**	no benchmark
	SS16-IN	SS16-IN-(0-2)c	13.4	detect	2	NA	**6.7**	no benchmark
	SS17-IN	SS17-IN-(0-2)c	16.3	detect	2	NA	**8.2**	no benchmark
	SS1-IN	SS1-IN-(0-2)c	11.3	detect	2	NA	**5.7**	no benchmark
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	2	NA	#N/A	no benchmark
	SS2-IN	SS2-IN-(0-2)c	9.7	detect	2	NA	**4.9**	no benchmark
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	2	NA	#N/A	no benchmark
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	2	NA	#N/A	no benchmark
	SS32-IN	SS32-IN-(0-2)c	26.2	detect	2	NA	**13.1**	no benchmark
	SS33-IN	SS33-IN-(0-2)c	19.1	detect	2	NA	**9.6**	no benchmark
	SS3-IN	SS3-IN-(0-2)c	16.9	detect	2	NA	**8.5**	no benchmark
	SS4-IN	SS4-IN-(0-2)c	11.6	detect	2	NA	**5.8**	no benchmark
	SS5-IN	SS5-IN-(0-2)c	15.8	detect	2	NA	**7.9**	no benchmark
	SS6-IN	SS6-IN-(0-2)c	12.7	detect	2	NA	**6.4**	no benchmark
	SS7-IN	SS7-IN-(0-2)c	15.7	detect	2	NA	**7.9**	no benchmark
	SS8-IN	SS8-IN-(0-2)c	8.8	detect	2	NA	**4.4**	no benchmark
	SS9-IN	SS9-IN-(0-2)c	18.2	detect	2	NA	**9.1**	no benchmark
	HDPT-SS	BACKFILL-HDPT-SS	8	detect	2	NA	**4.0**	no benchmark
	TSB-SS	BACKFILL-TSB-SS	8	detect	2	NA	**4.0**	no benchmark

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

Vanadium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	44.7	detect	2	NA	**22.4**	no benchmark
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	71.5	detect	2	NA	**35.8**	no benchmark
	CRP-1	CRP-1-SS_4/10/14_NM	119	detect	2	NA	**59.5**	no benchmark
	Grid 27	Grid 27-SSComp-01_20171019_NM	9.4	detect	2	NA	**4.7**	no benchmark
	Grid 28	Grid 28-SSComp-01_20171019_NM	8.7	detect	2	NA	**4.4**	no benchmark
	Grid 29	Grid 29-SSComp-01_20171019_NM	18.9	detect	2	NA	**9.5**	no benchmark
	Grid 30	Grid 30-SSComp-01_20171020_NM	11.8	detect	2	NA	**5.9**	no benchmark
	Grid 33	Grid 33-SSComp-01_20171020_NM	16.5	detect	2	NA	**8.3**	no benchmark
	Grid 34	Grid 34-SSComp-01_20171019_NM	10.7	detect	2	NA	**5.4**	no benchmark
	Grid 37	Grid 37-SSComp-01_20171020_NM	11.4	detect	2	NA	**5.7**	no benchmark
	Grid 39	Grid 39-SSComp-01_20171020_NM	18.3	detect	2	NA	**9.2**	no benchmark
	Grid 43	Grid 43-SSComp-01_20171023_NM	26.8	detect	2	NA	**13.4**	no benchmark
	Grid 44	Grid 44-SSComp-01_20171023_NM	12.8	detect	2	NA	**6.4**	no benchmark
	Grid 47	Grid 47-SSComp-01_20171023_NM	50.6	detect	2	NA	**25.3**	no benchmark
	Grid 53	Grid 53-SSComp-01_20171020_NM	17.5	detect	2	NA	**8.8**	no benchmark
	Grid 60	Grid 60-SSComp-01_20171023_NM	13.8	detect	2	NA	**6.9**	no benchmark
	Grid 61	Grid 61-SSComp-01_20171023_NM	13.4	detect	2	NA	**6.7**	no benchmark
	Grid 64	Grid 64-SSComp-01_20171024_NM	11.6	detect	2	NA	**5.8**	no benchmark
	Grid 74	Grid 74-SSComp-01_20171023_NM	24.4	detect	2	NA	**12.2**	no benchmark
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	17.2	detect	2	NA	**8.6**	no benchmark
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	8.8	detect	2	NA	**4.4**	no benchmark
	HP16-1	HP16-1-SS_4/10/14_NM	31	detect	2	NA	**15.5**	no benchmark
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	17.1	detect	2	NA	**8.6**	no benchmark
	HP18-1	HP18-1-SS_4/10/14_NM	41.6	detect	2	NA	**20.8**	no benchmark
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	11.6	detect	2	NA	**5.8**	no benchmark
	HP18-IB	HP18-SSC-IB_4/10/14_NM	8.3	detect	2	NA	**4.2**	no benchmark
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	2	NA	#N/A	no benchmark
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	6.9	detect	2	NA	**3.5**	no benchmark
	HP9-1	HP9-1-SS_4/10/14_NM	47.4	detect	2	NA	**23.7**	no benchmark
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	5.3	detect	2	NA	**2.7**	no benchmark
	IBK-1	IBK-1-SS_4/16/14_NM	21.5	detect	2	NA	**10.8**	no benchmark
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	70.6	detect	2	NA	**35.3**	no benchmark
	P17-BH1	P17-BH1-SS_4/3/14_NM	14.4	detect	2	NA	**7.2**	no benchmark
	P3	P3-SSComp-01_20171020_NM	5.6	detect	2	NA	**2.8**	no benchmark
	P3-BH1	P3-BH1-SS_4/3/14_NM	4.7	detect	2	NA	**2.4**	no benchmark
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.61	detect	2	NA	<1.0	no benchmark
	P5-BH2	P5-BH2-SS_4/3/14_NM	3.5	detect	2	NA	**1.8**	no benchmark
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	11.5	detect	2	NA	**5.8**	no benchmark
	P8	P8-SSComp-01_20171025_NM	12.3	detect	2	NA	**6.2**	no benchmark
	P8dc	P8dc-SSComp-01_20171024_NM	13.8	detect	2	NA	**6.9**	no benchmark
	P8-TP3	P8-TP3-SS_4/4/14_NM	13.9	detect	2	NA	**7.0**	no benchmark
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	48.9	detect	2	NA	**24.5**	no benchmark
	SPP	SPP-SSComp-01_20171025_NM	55.4	detect	2	NA	**27.7**	no benchmark
	SS1,2-HP18	SS1-HP18-(0-2)c	11.9	detect	2	NA	**6.0**	no benchmark
	SS11,12-IBK	SS11-IBK-(0-2)c	12.5	detect	2	NA	**6.3**	no benchmark
	SS13,14-HP9	SS13-HP9-(0-2)c	21.9	detect	2	NA	**11.0**	no benchmark
	SS15,16-HP9	SS15-HP9-(0-2)c	20.1	detect	2	NA	**10.1**	no benchmark
	SS3,4-HP16	SS3-HP16-(0-2)c	11.8	detect	2	NA	**5.9**	no benchmark
	SS5,6-IBJ	SS5-IBJ-(0-2)c	7.6	detect	2	NA	**3.8**	no benchmark
	SS7,8-HP13	SS7-HP13-(0-2)c	18.2	detect	2	NA	**9.1**	no benchmark
	SS9,10-HP12	SS9-HP12-(0-2)c	17.7	detect	2	NA	**8.9**	no benchmark
	SWBA	SWBA-SSComp-01_20171024_NM	8.7	detect	2	NA	**4.4**	no benchmark

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

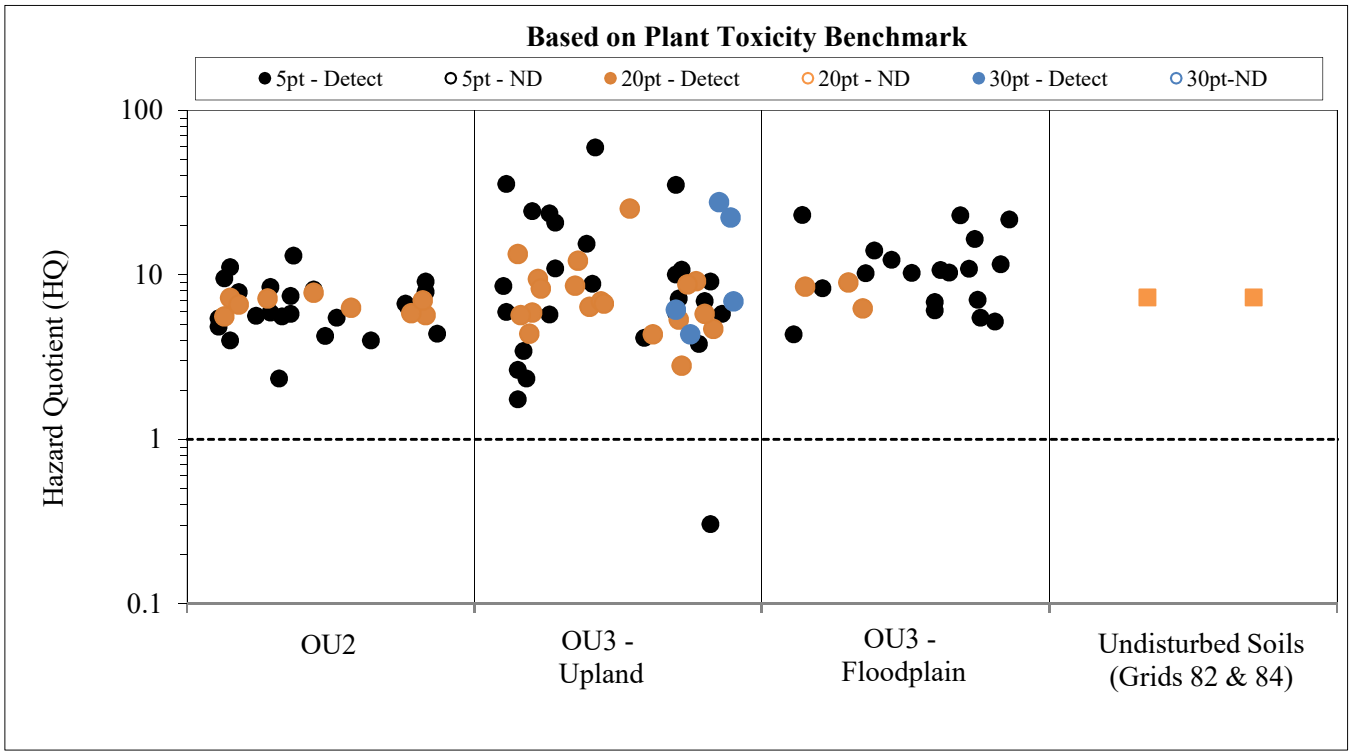
Vanadium

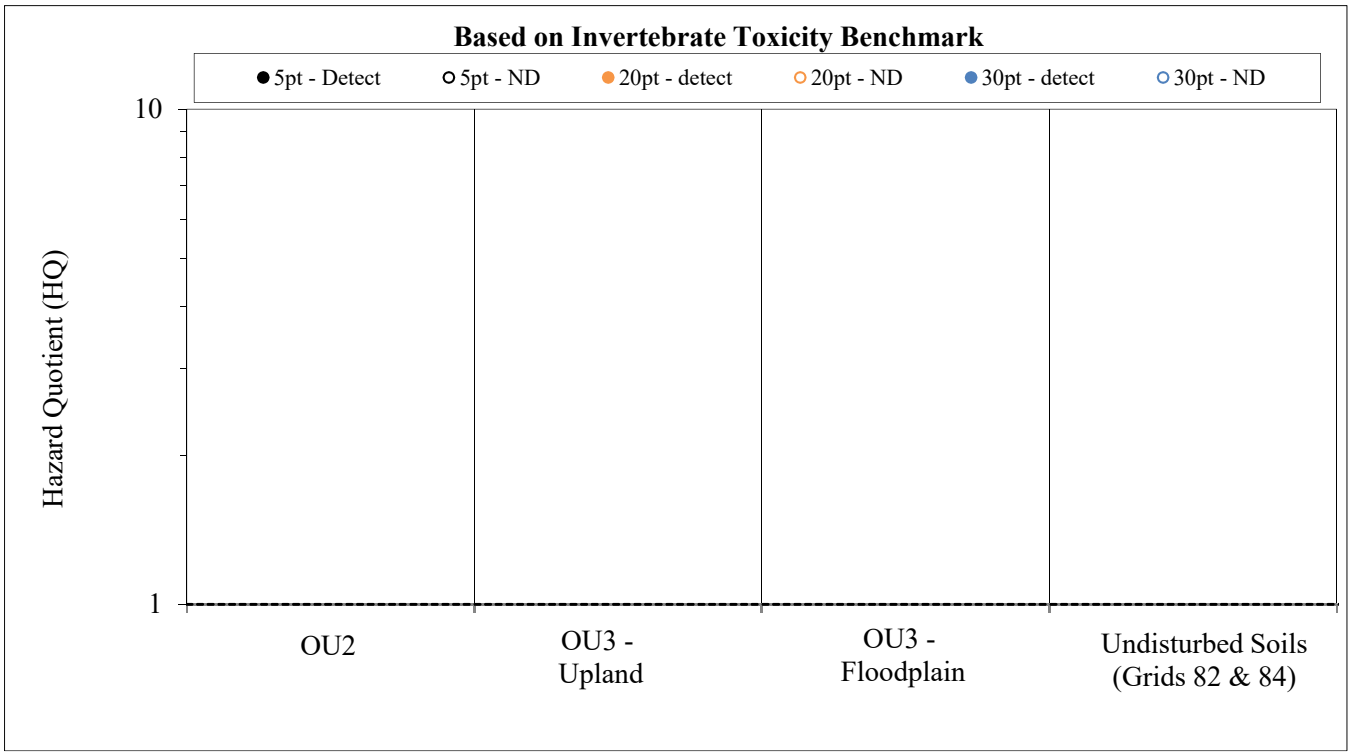
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	12.5	detect	2	NA	**6.3**	no benchmark
	Grid 89	Grid 89-SSComp-01_20171026_NM	18	detect	2	NA	**9.0**	no benchmark
	Grid 94	Grid 94-SSComp-01_20171026_NM	17	detect	2	NA	**8.5**	no benchmark
	HP13a-1	HP13A-1-SS_4/10/14_NM	21.4	detect	2	NA	**10.7**	no benchmark
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	8.7	detect	2	NA	**4.4**	no benchmark
	SE10-HP11	SE10-HP11-(0-2)c	46.2	detect	2	NA	**23.1**	no benchmark
	SE11-HP11	SE11-HP11-(0-2)c	16.6	detect	2	NA	**8.3**	no benchmark
	SE12-HP12	SE12-HP12-(0-2)c	24.7	detect	2	NA	**12.4**	no benchmark
	SE13-HP12	SE13-HP12-(0-2)c	46.1	detect	2	NA	**23.1**	no benchmark
	SE14-HP13	SE14-HP13-(0-2)c	23.2	detect	2	NA	**11.6**	no benchmark
	SE15-HP13	SE15-HP13-(0-2)c	13.7	detect	2	NA	**6.9**	no benchmark
	SE16-HP13	SE16-HP13-(0-2)c	20.6	detect	2	NA	**10.3**	no benchmark
	SE17-HP13a	SE17-HP13a-(0-2)c	20.5	detect	2	NA	**10.3**	no benchmark
	SE1-HP1a	SE1-HP1a-(0-2)c	21.8	detect	2	NA	**10.9**	no benchmark
	SE2-HP1a	SE2-HP1a-(0-2)c	20.7	detect	2	NA	**10.4**	no benchmark
	SE3-HP1	SE3-HP1-(0-2)c	12.2	detect	2	NA	**6.1**	no benchmark
	SE4-HP1	SE4-HP1-(0-2)c	14.1	detect	2	NA	**7.1**	no benchmark
	SE5-HP2	SE5-HP2-(0-2)c	43.5	detect	2	NA	**21.8**	no benchmark
	SE6-HP7	SE6-HP7-(0-2)c	33.1	detect	2	NA	**16.6**	no benchmark
	SE7-HP7	SE7-HP7-(0-2)c	10.4	detect	2	NA	**5.2**	no benchmark
	SE8-HP10	SE8-HP10-(0-2)c	11	detect	2	NA	**5.5**	no benchmark
	SE9-HP10	SE9-HP10-(0-2)c	28.1	detect	2	NA	**14.1**	no benchmark
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	14.6	detect	2	NA	**7.3**	no benchmark
	Grid 84	Grid 84-SSComp-01_20171026_NM	14.6	detect	2	NA	**7.3**	no benchmark

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

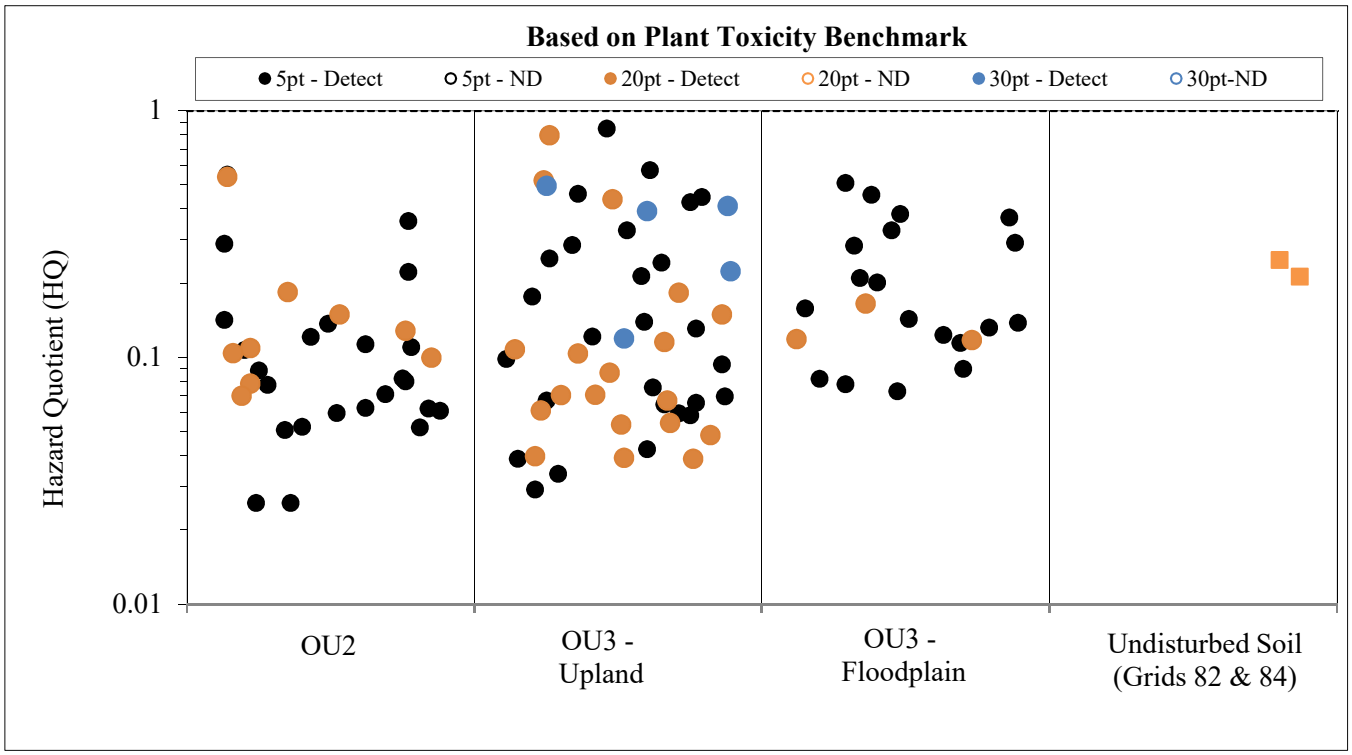
Appendix F

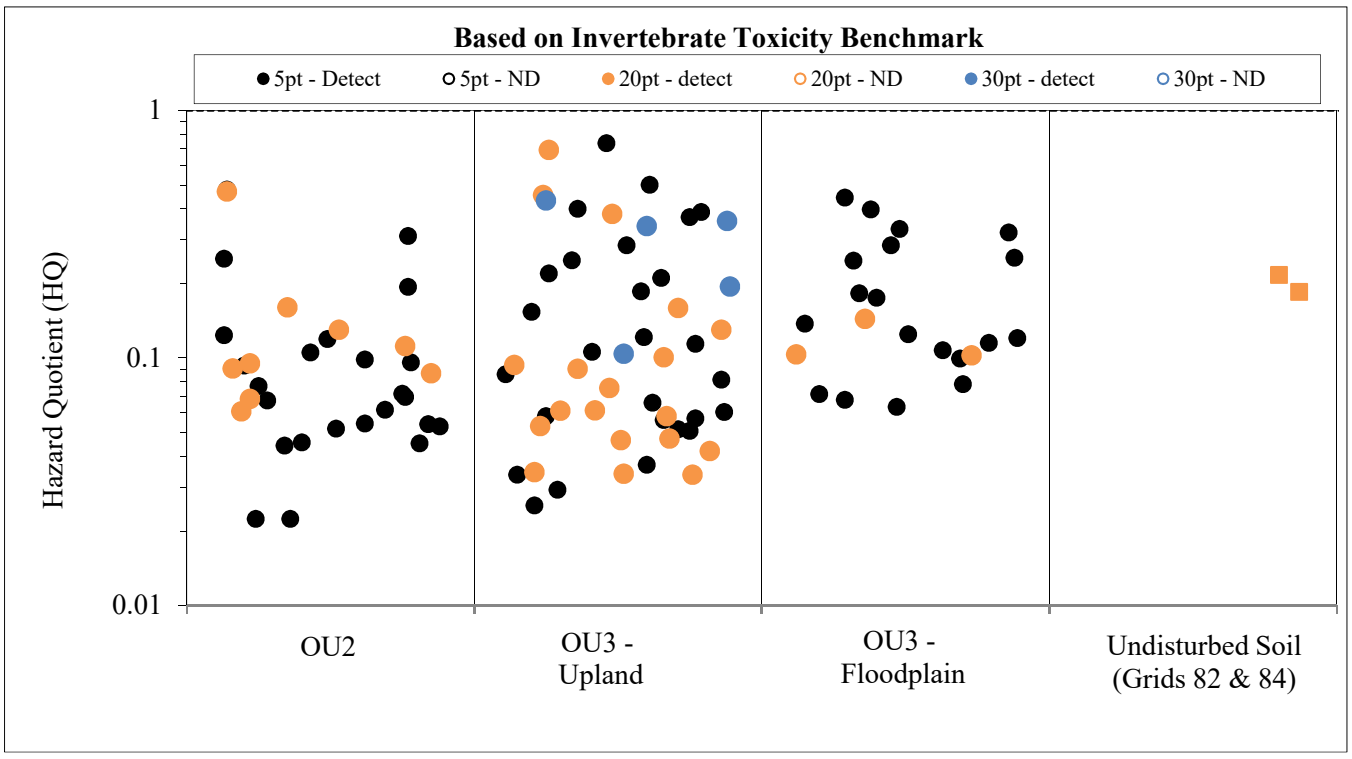
No Effect Hazard Quotients for Plants and Soil Invertebrates from Direct Contact with Vanadium in Surface Soils





APPENDIX F
Hazard Quotients for Plants and Soil Organisms from Direct Contact with Surface Soil
(Based on the Low Effect ESV)
Zinc





APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil
(Based on Low-Effect ESV)

Zinc

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	149	detect	810	930	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	88.5	detect	810	930	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	104	detect	810	930	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	84.3	detect	810	930	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	121	detect	810	930	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	63.5	detect	810	930	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	56.7	detect	810	930	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	437	detect	810	930	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	80.7	detect	810	930	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	86.7	detect	810	930	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	41.2	detect	810	930	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	48.2	detect	810	930	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	115	detect	810	930	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	66.6	detect	810	930	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	64.7	detect	810	930	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	91.7	detect	810	930	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	98	detect	810	930	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	289	detect	810	930	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	42.1	detect	810	930	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	42.4	detect	810	930	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	810	930	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	50.2	detect	810	930	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	810	930	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	810	930	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	446	detect	810	930	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	234	detect	810	930	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	49.2	detect	810	930	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	50.6	detect	810	930	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	57.5	detect	810	930	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	71.7	detect	810	930	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	89.3	detect	810	930	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	180	detect	810	930	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	62.7	detect	810	930	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	20.83333	detect	810	930	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	20.83333	detect	810	930	<1.0	<1.0
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	333	detect	810	930	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	265	detect	810	930	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	173	detect	810	930	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	31.4	detect	810	930	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	32.2	detect	810	930	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	39.2	detect	810	930	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	44	detect	810	930	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	43.3	detect	810	930	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	31.7	detect	810	930	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	54.2	detect	810	930	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	57.2	detect	810	930	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	70.3	detect	810	930	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	93.6	detect	810	930	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	355	detect	810	930	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	121	detect	810	930	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	148	detect	810	930	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	84.1	detect	810	930	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	87.3	detect	810	930	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	644	detect	810	930	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	56.9	detect	810	930	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	49.4	detect	810	930	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	98.4	detect	810	930	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	48	detect	810	930	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	113	detect	810	930	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	56.3	detect	810	930	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	23.6	detect	810	930	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	810	930	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	27.3	detect	810	930	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	345	detect	810	930	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	53	detect	810	930	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	61.3	detect	810	930	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	466	detect	810	930	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	686	detect	810	930	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	423	detect	810	930	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	231	detect	810	930	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	52.2	detect	810	930	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	106	detect	810	930	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	143	detect	810	930	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	181	detect	810	930	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	317	detect	810	930	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	373	detect	810	930	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	362	detect	810	930	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	402	detect	810	930	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	31.4	detect	810	930	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	34.4	detect	810	930	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	204	detect	810	930	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	196	detect	810	930	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	54.1	detect	810	930	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	47.2	detect	810	930	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	79.9	detect	810	930	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	76	detect	810	930	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	96.8	detect	810	930	<1.0	<1.0

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil
(Based on Low-Effect ESV)

Zinc

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	95.3	detect	810	930	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	96.2	detect	810	930	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	134	detect	810	930	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	107	detect	810	930	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	63	detect	810	930	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	370	detect	810	930	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	170	detect	810	930	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	100	detect	810	930	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	309	detect	810	930	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	72.9	detect	810	930	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	236	detect	810	930	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	128	detect	810	930	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	116	detect	810	930	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	163	detect	810	930	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	230	detect	810	930	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	66.4	detect	810	930	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	92.6	detect	810	930	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	299	detect	810	930	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	413	detect	810	930	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	59	detect	810	930	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	112	detect	810	930	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	265	detect	810	930	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	201	detect	810	930	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	172	detect	810	930	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

Zinc

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	149	detect	160	120	<1.0	**1.2**
	Grid 13	Grid 13-SSComp-01_20171019_NM	88.5	detect	160	120	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	104	detect	160	120	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	84.3	detect	160	120	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	121	detect	160	120	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	63.5	detect	160	120	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	56.7	detect	160	120	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	437	detect	160	120	**2.7**	**3.6**
	Grid 9	Grid 9-SSComp-01_20171018_NM	80.7	detect	160	120	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	86.7	detect	160	120	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	41.2	detect	160	120	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	48.2	detect	160	120	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	115	detect	160	120	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	66.6	detect	160	120	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	64.7	detect	160	120	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	91.7	detect	160	120	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	98	detect	160	120	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	289	detect	160	120	**1.8**	**2.4**
	SS17-IN	SS17-IN-(0-2)c	42.1	detect	160	120	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	42.4	detect	160	120	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	160	120	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	50.2	detect	160	120	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	160	120	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	160	120	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	446	detect	160	120	**2.8**	**3.7**
	SS33-IN	SS33-IN-(0-2)c	234	detect	160	120	**1.5**	**2.0**
	SS3-IN	SS3-IN-(0-2)c	49.2	detect	160	120	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	50.6	detect	160	120	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	57.5	detect	160	120	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	71.7	detect	160	120	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	89.3	detect	160	120	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	180	detect	160	120	**1.1**	**1.5**
	SS9-IN	SS9-IN-(0-2)c	62.7	detect	160	120	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	20.83333	detect	160	120	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	20.83333	detect	160	120	<1.0	<1.0

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

Zinc

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	333	detect	160	120	**2.1**	**2.8**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	265	detect	160	120	**1.7**	**2.2**
	CRP-1	CRP-1-SS_4/10/14_NM	173	detect	160	120	**1.1**	**1.4**
	Grid 27	Grid 27-SSComp-01_20171019_NM	31.4	detect	160	120	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	32.2	detect	160	120	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	39.2	detect	160	120	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	44	detect	160	120	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	43.3	detect	160	120	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	31.7	detect	160	120	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	54.2	detect	160	120	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	57.2	detect	160	120	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	70.3	detect	160	120	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	93.6	detect	160	120	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	355	detect	160	120	**2.2**	**3.0**
	Grid 53	Grid 53-SSComp-01_20171020_NM	121	detect	160	120	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	148	detect	160	120	<1.0	**1.2**
	Grid 61	Grid 61-SSComp-01_20171023_NM	84.1	detect	160	120	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	87.3	detect	160	120	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	644	detect	160	120	**4.0**	**5.4**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	56.9	detect	160	120	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	49.4	detect	160	120	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	98.4	detect	160	120	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	48	detect	160	120	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	113	detect	160	120	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	56.3	detect	160	120	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	23.6	detect	160	120	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	160	120	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	27.3	detect	160	120	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	345	detect	160	120	**2.2**	**2.9**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	53	detect	160	120	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	61.3	detect	160	120	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	466	detect	160	120	**2.9**	**3.9**
	P17-BH1	P17-BH1-SS_4/3/14_NM	686	detect	160	120	**4.3**	**5.7**
	P3	P3-SSComp-01_20171020_NM	423	detect	160	120	**2.6**	**3.5**
	P3-BH1	P3-BH1-SS_4/3/14_NM	231	detect	160	120	**1.4**	**1.9**
	P4-BH1	P4-BH1-SS_4/4/14_NM	52.2	detect	160	120	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	106	detect	160	120	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	143	detect	160	120	<1.0	**1.2**
	P8	P8-SSComp-01_20171025_NM	181	detect	160	120	**1.1**	**1.5**
	P8dc	P8dc-SSComp-01_20171024_NM	317	detect	160	120	**2.0**	**2.6**
	P8-TP3	P8-TP3-SS_4/4/14_NM	373	detect	160	120	**2.3**	**3.1**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	362	detect	160	120	**2.3**	**3.0**
	SPP	SPP-SSComp-01_20171025_NM	402	detect	160	120	**2.5**	**3.4**
	SS1,2-HP18	SS1-HP18-(0-2)c	31.4	detect	160	120	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	34.4	detect	160	120	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	204	detect	160	120	**1.3**	**1.7**
	SS15,16-HP9	SS15-HP9-(0-2)c	196	detect	160	120	**1.2**	**1.6**
	SS3,4-HP16	SS3-HP16-(0-2)c	54.1	detect	160	120	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	47.2	detect	160	120	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	79.9	detect	160	120	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	76	detect	160	120	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	96.8	detect	160	120	<1.0	<1.0

APPENDIX F
Sample-Specific Hazard Quotients for Plants and
Soil Organisms from Direct Contact with Surface Soil

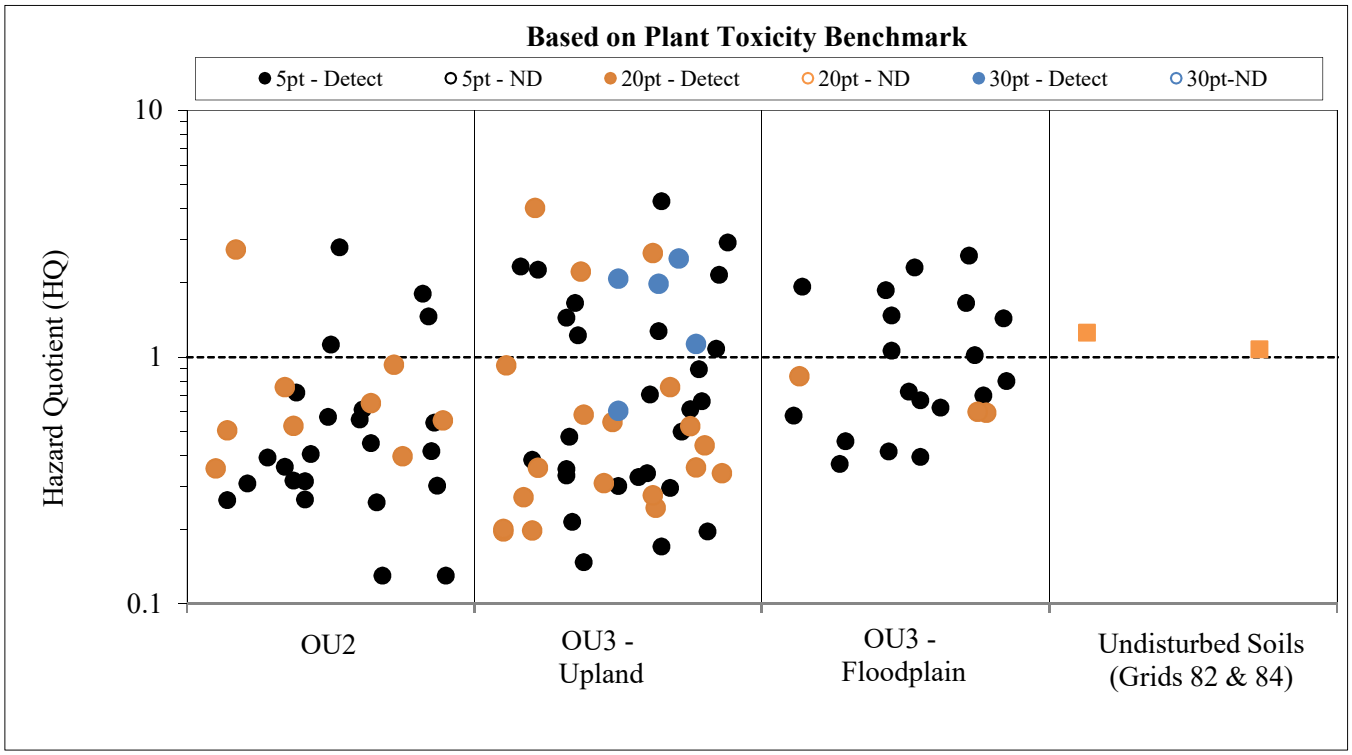
Zinc

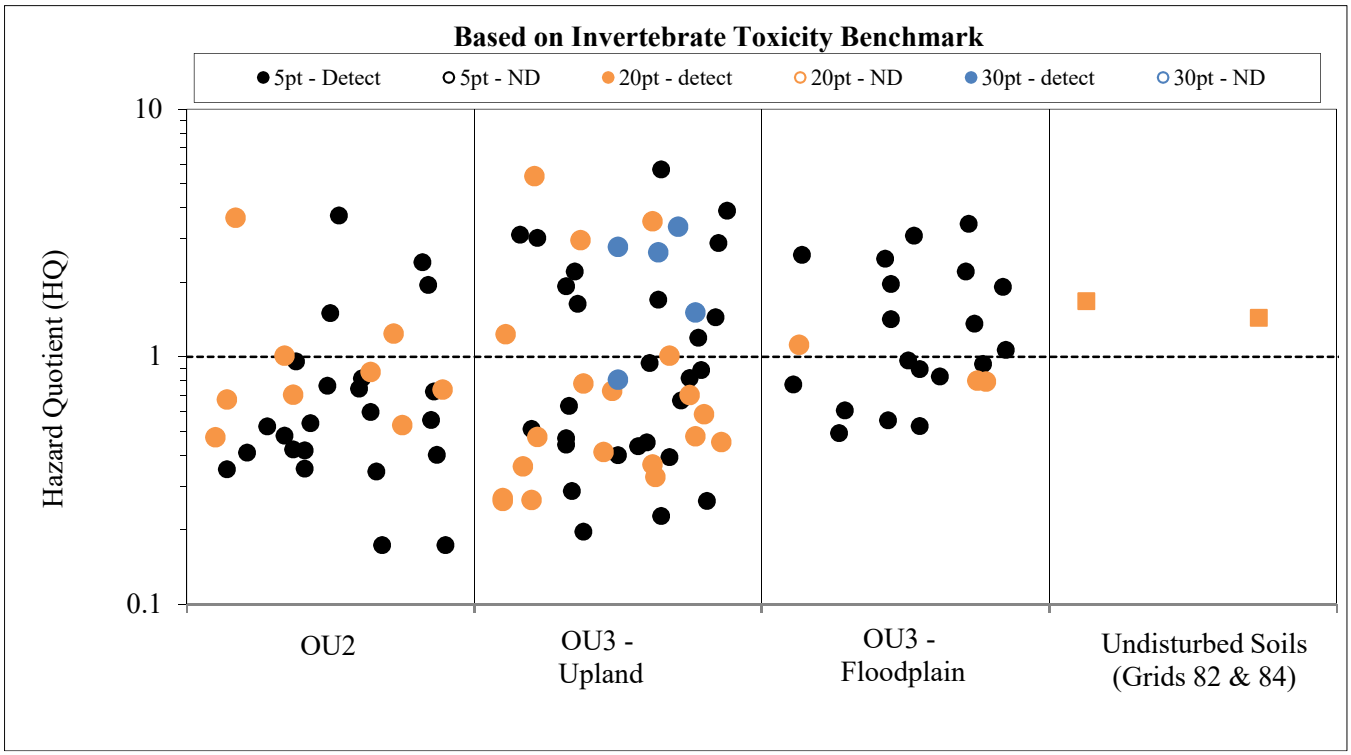
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					Plant	Invert	Plant	Invert
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	95.3	detect	160	120	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	96.2	detect	160	120	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	134	detect	160	120	<1.0	**1.1**
	HP13a-1	HP13A-1-SS_4/10/14_NM	107	detect	160	120	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	63	detect	160	120	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	370	detect	160	120	**2.3**	**3.1**
	SE11-HP11	SE11-HP11-(0-2)c	170	detect	160	120	**1.1**	**1.4**
	SE12-HP12	SE12-HP12-(0-2)c	100	detect	160	120	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	309	detect	160	120	**1.9**	**2.6**
	SE14-HP13	SE14-HP13-(0-2)c	72.9	detect	160	120	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	236	detect	160	120	**1.5**	**2.0**
	SE16-HP13	SE16-HP13-(0-2)c	128	detect	160	120	<1.0	**1.1**
	SE17-HP13a	SE17-HP13a-(0-2)c	116	detect	160	120	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	163	detect	160	120	<1.0	**1.4**
	SE2-HP1a	SE2-HP1a-(0-2)c	230	detect	160	120	**1.4**	**1.9**
	SE3-HP1	SE3-HP1-(0-2)c	66.4	detect	160	120	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	92.6	detect	160	120	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	299	detect	160	120	**1.9**	**2.5**
	SE6-HP7	SE6-HP7-(0-2)c	413	detect	160	120	**2.6**	**3.4**
	SE7-HP7	SE7-HP7-(0-2)c	59	detect	160	120	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	112	detect	160	120	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	265	detect	160	120	**1.7**	**2.2**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	201	detect	160	120	**1.3**	**1.7**
	Grid 84	Grid 84-SSComp-01_20171026_NM	172	detect	160	120	**1.1**	**1.4**

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix F

No Effect Hazard Quotients for Plants and Soil Invertebrates from Direct Contact with Zinc in Surface Soils





APPENDIX G
HQ CALCULATIONS FOR BIRDS AND MAMMALS

OU2/OU3 Smurfit-Stone/Frenchtown Mill Site
Baseline Ecological Risk Assessment

APPENDIX G1
HQ RESULTS FOR AQUATIC-DEPENDENT RECEPTORS

OU2/OU3 Smurfit-Stone/Frenchtown Mill Site
Baseline Ecological Risk Assessment

Calculated Doses for Wildlife Receptors from Ingestion Pathways

RECEPTOR **Dipper**

Medium	Surface Water	Sediment	BMI	Fish
Intake rate	0.154	0.005	0.502	0.000
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day

Location	COPC	Media-Specific Dose (mg/kg-d)				Total Dose mg/kg-day
		Surface Water	Sediment	BMI	Fish	
O'Keefe Creek	TEQ	4.59E-10	7.65E-09	1.98E-07		2.06E-07
	Aluminum	3.91E-02	6.55E+01	1.39E+02		2.05E+02
	Antimony	3.23E-05	NC	4.32E-02		4.32E-02
	Arsenic	4.77E-04	2.20E-02	3.41E-01		3.64E-01
	Barium	2.23E-02	1.11E+00	5.67E+01		5.79E+01
	Chromium	5.24E-05	5.97E-02	NC		5.97E-02
	Copper	3.54E-04	1.42E-01	1.45E+01		1.46E+01
	Lead	4.16E-05	6.60E-02	2.16E-01		2.82E-01
	Manganese	1.25E-03	1.61E+00	2.15E+01		2.31E+01
	Mercury	NC	1.85E-04	2.71E-02		2.73E-02
	Methyl Mercury	NC	NC	2.98E-02		2.98E-02
	Nickel	5.54E-05	5.65E-02	NC		5.66E-02
	Selenium	NC	1.75E-03	1.51E-01		1.52E-01
	Thallium	5.08E-06	9.35E-04	4.32E-02		4.41E-02
	Vanadium	1.46E-04	7.92E-02	2.46E-01		3.25E-01
	Zinc	6.93E-04	4.48E-01	1.17E+01		1.21E+01
Lavalle Creek	TEQ	3.76E-10	1.63E-08	1.74E-07		1.91E-07
	Aluminum	4.70E-02	5.84E+01	2.92E+02		3.51E+02
	Antimony	2.62E-05	3.10E-03	NC		3.13E-03
	Arsenic	5.39E-04	5.71E-02	6.85E-01		7.42E-01
	Barium	3.85E-02	1.25E+00	4.95E+01		5.08E+01
	Chromium	7.85E-05	6.69E-02	3.74E-01		4.41E-01
	Copper	3.70E-04	4.97E-01	1.85E+01		1.90E+01
	Lead	5.24E-05	1.17E-01	4.22E-01		5.39E-01
	Manganese	1.97E-02	1.57E+00	6.83E+01		6.99E+01
	Mercury	4.62E-06	6.40E-04	2.68E-02		2.74E-02
	Methyl Mercury	NC	3.80E-05	2.93E-02		2.93E-02
	Nickel	6.01E-05	5.40E-02	2.46E-01		3.00E-01
	Selenium	NC	6.50E-03	1.15E-01		1.22E-01
	Thallium	NC	9.30E-04	NC		9.30E-04
	Vanadium	1.85E-04	1.04E-01	4.06E-01		5.10E-01
	Zinc	8.16E-04	1.05E+00	1.18E+01		1.29E+01
On-Site Ponds	TEQ	3.44E-10	5.00E-07	7.81E-07		1.28E-06
	Aluminum	2.39E-02	6.34E+01	3.97E+02		4.60E+02
	Antimony	2.79E-04	9.27E-03	9.11E-02		1.01E-01
	Arsenic	2.19E-03	5.03E-02	5.13E-01		5.66E-01
	Barium	1.77E-02	3.53E+00	2.33E+01		2.69E+01
	Chromium	1.65E-04	1.07E-01	7.56E-01		8.64E-01
	Copper	1.43E-03	3.21E-01	3.75E+00		4.07E+00
	Lead	1.18E-04	8.97E-02	6.79E-01		7.68E-01
	Manganese	3.02E-01	7.53E+00	1.91E+02		1.99E+02
	Mercury	NC	8.04E-03	1.90E-02		2.70E-02
	Methyl Mercury	NC	8.45E-05	1.15E-02		1.16E-02
	Nickel	1.31E-03	6.52E-02	3.99E-01		4.66E-01
	Selenium	1.58E-04	4.59E-03	1.13E-01		1.18E-01
	Thallium	NC	1.05E-03	NC		1.05E-03
	Vanadium	7.70E-04	1.84E-01	1.26E+00		1.45E+00
	Zinc	2.18E-03	1.26E+00	1.34E+01		1.47E+01

Summary of LOAEL-Based HQs for Wildlife Receptors

RECEPTOR	**Dipper**
TRV	**LOAEL**

Location	Analyte	LOAEL TRV		LOAEL-Based HQ				*Total HQ* = ∑ *HQ*
				Surface Water	Sediment	BMI	Fish	
O'Keefe Creek	TEQ	2.5E-05		2E-05	3E-04	8E-03		8E-03
	Aluminum	1.1E+03		4E-05	6E-02	1E-01		2E-01
	Antimony	NA		NA	NA	NA		NC
	Arsenic	4.5E+00		1E-04	5E-03	8E-02		8E-02
	Barium	4.2E+01		5E-04	3E-02	1E+00		1E+00
	Chromium	1.6E+01		3E-06	4E-03	NC		4E-03
	Copper	1.2E+01		3E-05	1E-02	1E+00		1E+00
	Lead	3.3E+00		1E-05	2E-02	7E-02		9E-02
	Manganese	3.8E+02		3E-06	4E-03	6E-02		6E-02
	Mercury	9.0E-01		NC	2E-04	4E-01		4E-01
	Methyl Mercury	6.4E-02		NC	NC	5E-01		5E-01
	Nickel	1.9E+01		3E-06	3E-03	NC		3E-03
	Selenium	5.8E-01		NC	3E-03	3E-01		3E-01
	Thallium	NA		NA	NA	NA		NC
	Vanadium	6.9E-01		2E-04	1E-01	4E-01		5E-01
	Zinc	1.7E+02		4E-06	3E-03	7E-02		7E-02
Lavalle Creek	TEQ	2.5E-05		2E-05	7E-04	7E-03		8E-03
	Aluminum	1.1E+03		4E-05	5E-02	3E-01		3E-01
	Antimony	NA		NA	NA	NA		NC
	Arsenic	4.5E+00		1E-04	1E-02	2E-01		2E-01
	Barium	4.2E+01		9E-04	3E-02	1E+00		1E+00
	Chromium	1.6E+01		5E-06	4E-03	2E-02		3E-02
	Copper	1.2E+01		3E-05	4E-02	2E+00		2E+00
	Lead	3.3E+00		2E-05	4E-02	1E-01		2E-01
	Manganese	3.8E+02		5E-05	4E-03	2E-01		2E-01
	Mercury	9.0E-01		5E-06	7E-04	4E-01		4E-01
	Methyl Mercury	6.4E-02		NC	6E-04	5E-01		5E-01
	Nickel	1.9E+01		3E-06	3E-03	1E-02		2E-02
	Selenium	5.8E-01		NC	1E-02	2E-01		2E-01
	Thallium	NA		NA	NA	NA		NC
	Vanadium	6.9E-01		3E-04	2E-01	6E-01		7E-01
	Zinc	1.7E+02		5E-06	6E-03	7E-02		8E-02
On-Site Ponds	TEQ	2.5E-05		1E-05	2E-02	3E-02		5E-02
	Aluminum	1.1E+03		2E-05	6E-02	4E-01		4E-01
	Antimony	NA		NA	NA	NA		NC
	Arsenic	4.5E+00		5E-04	1E-02	1E-01		1E-01
	Barium	4.2E+01		4E-04	8E-02	6E-01		6E-01
	Chromium	1.6E+01		1E-05	7E-03	5E-02		6E-02
	Copper	1.2E+01		1E-04	3E-02	3E-01		3E-01
	Lead	3.3E+00		4E-05	3E-02	2E-01		2E-01
	Manganese	3.8E+02		8E-04	2E-02	5E-01		5E-01
	Mercury	9.0E-01		NC	9E-03	3E-01		3E-01
	Methyl Mercury	6.4E-02		NC	1E-03	2E-01		2E-01
	Nickel	1.9E+01		7E-05	4E-03	2E-02		3E-02
	Selenium	5.8E-01		3E-04	8E-03	2E-01		2E-01
	Thallium	NA		NA	NA	NA		NC
	Vanadium	6.9E-01		1E-03	3E-01	2E+00		2E+00
	Zinc	1.7E+02		1E-05	7E-03	8E-02		9E-02

Summary of NOAEL-Based HQs for Wildlife Receptors

RECEPTOR	**Dipper**
TRV	**NOAEL**

Location	Analyte	NOAEL TRV	NOAEL-Based HQ				*Total HQ* = ∑ *HQ*
			Surface Water	Sediment	BMI	Fish	
O'Keefe Creek	TEQ	2.5E-06	2E-04	3E-03	8E-02		8.3E-02
	Aluminum	1.1E+02	4E-04	6E-01	1E+00		1.9E+00
	Antimony	NA	NA	NA	NA		NC
	Arsenic	2.2E+00	2E-04	1E-02	2E-01		1.6E-01
	Barium	2.1E+01	1E-03	5E-02	3E+00		2.8E+00
	Chromium	2.7E+00	2E-05	2E-02	NC		2.2E-02
	Copper	4.1E+00	9E-05	3E-02	4E+00		3.6E+00
	Lead	1.6E+00	3E-05	4E-02	1E-01		1.7E-01
	Manganese	1.8E+02	7E-06	9E-03	1E-01		1.3E-01
	Mercury	4.5E-01	NC	4E-04	4E+00		4.2E+00
	Methyl Mercury	6.4E-03	NC	NC	5E+00		4.7E+00
	Nickel	6.7E+00	8E-06	8E-03	NC		8.4E-03
	Selenium	2.9E-01	NC	6E-03	5E-01		5.3E-01
	Thallium	NA	NA	NA	NA		NC
	Vanadium	3.4E-01	4E-04	2E-01	7E-01		9.5E-01
	Zinc	6.6E+01	1E-05	7E-03	2E-01		1.8E-01
Lavalle Creek	TEQ	2.5E-06	2E-04	7E-03	7E-02		8E-02
	Aluminum	1.1E+02	4E-04	5E-01	3E+00		3E+00
	Antimony	NA	NA	NA	NA		NC
	Arsenic	2.2E+00	2E-04	3E-02	3E-01		3E-01
	Barium	2.1E+01	2E-03	6E-02	2E+00		2E+00
	Chromium	2.7E+00	3E-05	3E-02	1E-01		2E-01
	Copper	4.1E+00	9E-05	1E-01	5E+00		5E+00
	Lead	1.6E+00	3E-05	7E-02	3E-01		3E-01
	Manganese	1.8E+02	1E-04	9E-03	4E-01		4E-01
	Mercury	4.5E-01	1E-05	1E-03	4E+00		4E+00
	Methyl Mercury	6.4E-03	NC	6E-03	5E+00		5E+00
	Nickel	6.7E+00	9E-06	8E-03	4E-02		4E-02
	Selenium	2.9E-01	NC	2E-02	4E-01		4E-01
	Thallium	NA	NA	NA	NA		NC
	Vanadium	3.4E-01	5E-04	3E-01	1E+00		1E+00
	Zinc	6.6E+01	1E-05	2E-02	2E-01		2E-01
On-Site Ponds	TEQ	2.5E-06	1E-04	2E-01	3E-01		5E-01
	Aluminum	1.1E+02	2E-04	6E-01	4E+00		4E+00
	Antimony	NA	NA	NA	NA		NC
	Arsenic	2.2E+00	1E-03	2E-02	2E-01		3E-01
	Barium	2.1E+01	9E-04	2E-01	1E+00		1E+00
	Chromium	2.7E+00	6E-05	4E-02	3E-01		3E-01
	Copper	4.1E+00	4E-04	8E-02	9E-01		1E+00
	Lead	1.6E+00	7E-05	6E-02	4E-01		5E-01
	Manganese	1.8E+02	2E-03	4E-02	1E+00		1E+00
	Mercury	4.5E-01	NC	2E-02	3E+00		3E+00
	Methyl Mercury	6.4E-03	NC	1E-02	2E+00		2E+00
	Nickel	6.7E+00	2E-04	1E-02	6E-02		7E-02
	Selenium	2.9E-01	5E-04	2E-02	4E-01		4E-01
	Thallium	NA	NA	NA	NA		NC
	Vanadium	3.4E-01	2E-03	5E-01	4E+00		4E+00
	Zinc	6.6E+01	3E-05	2E-02	2E-01		2E-01

Calculated Doses for Wildlife Receptors from Ingestion Pathways

RECEPTOR **Kingfisher**

Medium	Surface Water	Sediment	BMI	Fish
Intake rate	0.109	0.001	0.000	0.390
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day

Location	COPC	Media-Specific Dose (mg/kg-d)				Total Dose mg/kg-day
		Surface Water	Sediment	BMI	Fish	
CFR (Site)	TEQ	2.02E-10	1.14E-09		4.67E-07	4.68E-07
	Aluminum	2.69E-02	1.05E+01		5.60E+00	1.61E+01
	Antimony	2.75E-05	6.55E-04		NC	6.83E-04
	Arsenic	9.54E-04	1.65E-02		4.60E-02	6.35E-02
	Barium	1.32E-02	2.56E-01		4.29E+00	4.56E+00
	Chromium	3.14E-05	1.25E-02		3.94E-02	5.19E-02
	Copper	1.51E-03	1.77E-01		7.90E-01	9.68E-01
	Lead	8.57E-05	3.61E-02		1.51E-02	5.13E-02
	Manganese	1.79E-02	7.03E-01		4.31E+00	5.03E+00
	Mercury	NC	2.72E-04		2.11E-02	2.14E-02
	Methyl Mercury	NC	1.16E-05		1.69E-02	1.69E-02
	Nickel	5.43E-05	1.08E-02		NC	1.09E-02
	Selenium	1.53E-05	7.59E-04		1.65E-01	1.66E-01
	Thallium	NC	2.10E-04		NC	2.10E-04
	Vanadium	9.49E-05	2.03E-02		NC	2.04E-02
	Zinc	1.40E-03	3.41E-01		1.76E+01	1.79E+01

Summary of LOAEL-Based HQs for Wildlife Receptors

RECEPTOR	**Kingfisher**
TRV	**LOAEL**

Location	Analyte	LOAEL TRV		LOAEL-Based HQ				*Total HQ* = ∑ *HQ*
				Surface Water	Sediment	BMI	Fish	
CFR (Site)	TEQ	1.2E-03		2E-07	1E-06		4E-04	4E-04
	Aluminum	1.1E+03		2E-05	1E-02		5E-03	1E-02
	Antimony	NA		NA	NA		NA	NC
	Arsenic	4.5E+00		2E-04	4E-03		1E-02	1E-02
	Barium	4.2E+01		3E-04	6E-03		1E-01	1E-01
	Chromium	1.6E+01		2E-06	8E-04		3E-03	3E-03
	Copper	1.2E+01		1E-04	1E-02		7E-02	8E-02
	Lead	3.3E+00		3E-05	1E-02		5E-03	2E-02
	Manganese	3.8E+02		5E-05	2E-03		1E-02	1E-02
	Mercury	9.0E-01		NC	3E-04		3E-01	3E-01
	Methyl Mercury	6.4E-02		NC	2E-04		3E-01	3E-01
	Nickel	1.9E+01		3E-06	6E-04		NC	6E-04
	Selenium	5.8E-01		3E-05	1E-03		3E-01	3E-01
	Thallium	NA		NA	NA		NA	NC
	Vanadium	6.9E-01		1E-04	3E-02		NC	3E-02
	Zinc	1.7E+02		8E-06	2E-03		1E-01	1E-01

Summary of NOAEL-Based HQs for Wildlife Receptors

RECEPTOR	**Kingfisher**
TRV	**NOAEL**

Location	Analyte	NOAEL TRV		NOAEL-Based HQ				*Total HQ* = ∑ *HQ*
				Surface Water	Sediment	BMI	Fish	
CFR (Site)	TEQ	1.2E-04		2E-06	1E-05		4E-03	4.1E-03
	Aluminum	1.1E+02		2E-04	1E-01		5E-02	1.5E-01
	Antimony	NA		NA	NA		NA	NC
	Arsenic	2.2E+00		4E-04	7E-03		2E-02	2.8E-02
	Barium	2.1E+01		6E-04	1E-02		2E-01	2.2E-01
	Chromium	2.7E+00		1E-05	5E-03		1E-02	2.0E-02
	Copper	4.1E+00		4E-04	4E-02		2E-01	2.4E-01
	Lead	1.6E+00		5E-05	2E-02		9E-03	3.1E-02
	Manganese	1.8E+02		1E-04	4E-03		2E-02	2.8E-02
	Mercury	4.5E-01		NC	6E-04		3E+00	3.3E+00
	Methyl Mercury	6.4E-03		NC	2E-03		3E+00	2.6E+00
	Nickel	6.7E+00		8E-06	2E-03		NC	1.6E-03
	Selenium	2.9E-01		5E-05	3E-03		6E-01	5.7E-01
	Thallium	NA		NA	NA		NA	NC
	Vanadium	3.4E-01		3E-04	6E-02		NC	5.9E-02
	Zinc	6.6E+01		2E-05	5E-03		3E-01	2.7E-01

Calculated Doses for Wildlife Receptors from Ingestion Pathways

RECEPTOR **Mallard**

Medium	Surface Water	Sediment	BMI	Fish
Intake rate	0.056	0.003	0.310	0.000
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day

Location	COPC	Media-Specific Dose (mg/kg-d)				Total Dose mg/kg-day
		Surface Water	Sediment	BMI	Fish	
O'Keefe Creek	TEQ	1.67E-10	4.13E-09	1.22E-07		1.27E-07
	Aluminum	1.42E-02	3.54E+01	8.59E+01		1.21E+02
	Antimony	1.18E-05	NC	2.67E-02		2.67E-02
	Arsenic	1.74E-04	1.19E-02	2.11E-01		2.23E-01
	Barium	8.12E-03	5.97E-01	3.50E+01		3.56E+01
	Chromium	1.90E-05	3.22E-02	NC		3.22E-02
	Copper	1.29E-04	7.64E-02	8.96E+00		9.04E+00
	Lead	1.51E-05	3.56E-02	1.33E-01		1.69E-01
	Manganese	4.54E-04	8.69E-01	1.33E+01		1.41E+01
	Mercury	NC	9.99E-05	1.67E-02		1.68E-02
	Methyl Mercury	NC	NC	1.84E-02		1.84E-02
	Nickel	2.02E-05	3.05E-02	NC		3.05E-02
	Selenium	NC	9.45E-04	9.30E-02		9.39E-02
	Thallium	1.85E-06	5.05E-04	2.67E-02		2.72E-02
	Vanadium	5.32E-05	4.28E-02	1.52E-01		1.95E-01
	Zinc	2.52E-04	2.42E-01	7.22E+00		7.46E+00
Lavalle Creek	TEQ	1.37E-10	8.82E-09	1.08E-07		1.17E-07
	Aluminum	1.71E-02	3.15E+01	1.81E+02		2.12E+02
	Antimony	9.52E-06	1.67E-03	NC		1.68E-03
	Arsenic	1.96E-04	3.08E-02	4.23E-01		4.54E-01
	Barium	1.40E-02	6.77E-01	3.06E+01		3.13E+01
	Chromium	2.86E-05	3.61E-02	2.31E-01		2.67E-01
	Copper	1.34E-04	2.68E-01	1.14E+01		1.17E+01
	Lead	1.90E-05	6.34E-02	2.60E-01		3.24E-01
	Manganese	7.17E-03	8.48E-01	4.22E+01		4.30E+01
	Mercury	1.68E-06	3.46E-04	1.65E-02		1.69E-02
	Methyl Mercury	NC	2.05E-05	1.81E-02		1.81E-02
	Nickel	2.18E-05	2.91E-02	1.52E-01		1.81E-01
	Selenium	NC	3.51E-03	7.13E-02		7.48E-02
	Thallium	NC	5.02E-04	NC		5.02E-04
	Vanadium	6.72E-05	5.62E-02	2.50E-01		3.07E-01
	Zinc	2.97E-04	5.69E-01	7.29E+00		7.85E+00
On-Site Ponds	TEQ	1.25E-10	2.70E-07	4.40E-07		7.10E-07
	Aluminum	8.70E-03	3.42E+01	2.51E+02		2.85E+02
	Antimony	1.02E-04	5.00E-03	5.80E-02		6.31E-02
	Arsenic	7.97E-04	2.71E-02	3.23E-01		3.51E-01
	Barium	6.45E-03	1.90E+00	1.47E+01		1.66E+01
	Chromium	6.01E-05	5.78E-02	4.76E-01		5.34E-01
	Copper	5.19E-04	1.73E-01	2.37E+00		2.54E+00
	Lead	4.30E-05	4.84E-02	4.29E-01		4.78E-01
	Manganese	1.10E-01	4.06E+00	1.20E+02		1.24E+02
	Mercury	NC	4.34E-03	1.12E-02		1.55E-02
	Methyl Mercury	NC	4.56E-05	3.29E-03		3.33E-03
	Nickel	4.78E-04	3.52E-02	2.49E-01		2.84E-01
	Selenium	5.73E-05	2.48E-03	7.13E-02		7.38E-02
	Thallium	NC	5.67E-04	#VALUE!		#VALUE!
	Vanadium	2.80E-04	9.92E-02	7.98E-01		8.97E-01
	Zinc	7.93E-04	6.80E-01	8.18E+00		8.86E+00

Summary of LOAEL-Based HQs for Wildlife Receptors

RECEPTOR	**Mallard**
TRV	**LOAEL**

Location	Analyte	LOAEL TRV		LOAEL-Based HQ				*Total HQ* = ∑ *HQ*
				Surface Water	Sediment	BMI	Fish	
O'Keefe Creek	TEQ	1.2E-03		1E-07	4E-06	1E-04		1E-04
	Aluminum	1.1E+03		1E-05	3E-02	8E-02		1E-01
	Antimony	NA		NA	NA	NA		NC
	Arsenic	4.5E+00		4E-05	3E-03	5E-02		5E-02
	Barium	4.2E+01		2E-04	1E-02	8E-01		9E-01
	Chromium	1.6E+01		1E-06	2E-03	NC		2E-03
	Copper	1.2E+01		1E-05	6E-03	7E-01		7E-01
	Lead	3.3E+00		5E-06	1E-02	4E-02		5E-02
	Manganese	3.8E+02		1E-06	2E-03	4E-02		4E-02
	Mercury	9.0E-01		NC	1E-04	3E-01		3E-01
	Methyl Mercury	6.4E-02		NC	NC	3E-01		3E-01
	Nickel	1.9E+01		1E-06	2E-03	NC		2E-03
	Selenium	5.8E-01		NC	2E-03	2E-01		2E-01
	Thallium	NA		NA	NA	NA		NC
	Vanadium	6.9E-01		8E-05	6E-02	2E-01		3E-01
	Zinc	1.7E+02		1E-06	1E-03	4E-02		4E-02
Lavalle Creek	TEQ	1.2E-03		1E-07	8E-06	9E-05		1E-04
	Aluminum	1.1E+03		2E-05	3E-02	2E-01		2E-01
	Antimony	NA		NA	NA	NA		NC
	Arsenic	4.5E+00		4E-05	7E-03	9E-02		1E-01
	Barium	4.2E+01		3E-04	2E-02	7E-01		7E-01
	Chromium	1.6E+01		2E-06	2E-03	1E-02		2E-02
	Copper	1.2E+01		1E-05	2E-02	9E-01		1E+00
	Lead	3.3E+00		6E-06	2E-02	8E-02		1E-01
	Manganese	3.8E+02		2E-05	2E-03	1E-01		1E-01
	Mercury	9.0E-01		2E-06	4E-04	3E-01		3E-01
	Methyl Mercury	6.4E-02		NC	3E-04	3E-01		3E-01
	Nickel	1.9E+01		1E-06	2E-03	8E-03		1E-02
	Selenium	5.8E-01		NC	6E-03	1E-01		1E-01
	Thallium	NA		NA	NA	NA		NC
	Vanadium	6.9E-01		1E-04	8E-02	4E-01		4E-01
	Zinc	1.7E+02		2E-06	3E-03	4E-02		5E-02
On-Site Ponds	TEQ	1.2E-03		1E-07	2E-04	4E-04		6E-04
	Aluminum	1.1E+03		8E-06	3E-02	2E-01		3E-01
	Antimony	NA		NA	NA	NA		NC
	Arsenic	4.5E+00		2E-04	6E-03	7E-02		8E-02
	Barium	4.2E+01		2E-04	5E-02	4E-01		4E-01
	Chromium	1.6E+01		4E-06	4E-03	3E-02		3E-02
	Copper	1.2E+01		4E-05	1E-02	2E-01		2E-01
	Lead	3.3E+00		1E-05	1E-02	1E-01		1E-01
	Manganese	3.8E+02		3E-04	1E-02	3E-01		3E-01
	Mercury	9.0E-01		NC	5E-03	2E-01		2E-01
	Methyl Mercury	6.4E-02		NC	7E-04	5E-02		5E-02
	Nickel	1.9E+01		3E-05	2E-03	1E-02		2E-02
	Selenium	5.8E-01		1E-04	4E-03	1E-01		1E-01
	Thallium	NA		NA	NA	NA		NC
	Vanadium	6.9E-01		4E-04	1E-01	1E+00		1E+00
	Zinc	1.7E+02		5E-06	4E-03	5E-02		5E-02

Summary of NOAEL-Based HQs for Wildlife Receptors

RECEPTOR	**Mallard**
TRV	**NOAEL**

Location	Analyte	NOAEL TRV		NOAEL-Based HQ				*Total HQ* = ∑ *HQ*
				Surface Water	Sediment	BMI	Fish	
O'Keefe Creek	TEQ	1.2E-04		1E-06	4E-05	1E-03		1.1E-03
	Aluminum	1.1E+02		1E-04	3E-01	8E-01		1.1E+00
	Antimony	NA		NA	NA	NA		NC
	Arsenic	2.2E+00		8E-05	5E-03	9E-02		9.9E-02
	Barium	2.1E+01		4E-04	3E-02	2E+00		1.7E+00
	Chromium	2.7E+00		7E-06	1E-02	NC		1.2E-02
	Copper	4.1E+00		3E-05	2E-02	2E+00		2.2E+00
	Lead	1.6E+00		9E-06	2E-02	8E-02		1.0E-01
	Manganese	1.8E+02		3E-06	5E-03	7E-02		7.9E-02
	Mercury	4.5E-01		NC	2E-04	3E+00		2.6E+00
	Methyl Mercury	6.4E-03		NC	NC	3E+00		2.9E+00
	Nickel	6.7E+00		3E-06	5E-03	NC		4.5E-03
	Selenium	2.9E-01		NC	3E-03	3E-01		3.2E-01
	Thallium	NA		NA	NA	NA		NC
	Vanadium	3.4E-01		2E-04	1E-01	4E-01		5.7E-01
	Zinc	6.6E+01		4E-06	4E-03	1E-01		1.1E-01
Lavalle Creek	TEQ	1.2E-04		1E-06	8E-05	9E-04		1E-03
	Aluminum	1.1E+02		2E-04	3E-01	2E+00		2E+00
	Antimony	NA		NA	NA	NA		NC
	Arsenic	2.2E+00		9E-05	1E-02	2E-01		2E-01
	Barium	2.1E+01		7E-04	3E-02	1E+00		2E+00
	Chromium	2.7E+00		1E-05	1E-02	9E-02		1E-01
	Copper	4.1E+00		3E-05	7E-02	3E+00		3E+00
	Lead	1.6E+00		1E-05	4E-02	2E-01		2E-01
	Manganese	1.8E+02		4E-05	5E-03	2E-01		2E-01
	Mercury	4.5E-01		4E-06	8E-04	3E+00		3E+00
	Methyl Mercury	6.4E-03		NC	3E-03	3E+00		3E+00
	Nickel	6.7E+00		3E-06	4E-03	2E-02		3E-02
	Selenium	2.9E-01		NC	1E-02	2E-01		3E-01
	Thallium	NA		NA	NA	NA		NC
	Vanadium	3.4E-01		2E-04	2E-01	7E-01		9E-01
	Zinc	6.6E+01		4E-06	9E-03	1E-01		1E-01
On-Site Ponds	TEQ	1.2E-04		1E-06	2E-03	4E-03		6E-03
	Aluminum	1.1E+02		8E-05	3E-01	2E+00		3E+00
	Antimony	NA		NA	NA	NA		NC
	Arsenic	2.2E+00		4E-04	1E-02	1E-01		2E-01
	Barium	2.1E+01		3E-04	9E-02	7E-01		8E-01
	Chromium	2.7E+00		2E-05	2E-02	2E-01		2E-01
	Copper	4.1E+00		1E-04	4E-02	6E-01		6E-01
	Lead	1.6E+00		3E-05	3E-02	3E-01		3E-01
	Manganese	1.8E+02		6E-04	2E-02	7E-01		7E-01
	Mercury	4.5E-01		NC	1E-02	2E+00		2E+00
	Methyl Mercury	6.4E-03		NC	7E-03	5E-01		5E-01
	Nickel	6.7E+00		7E-05	5E-03	4E-02		4E-02
	Selenium	2.9E-01		2E-04	9E-03	2E-01		3E-01
	Thallium	NA		NA	NA	NA		NC
	Vanadium	3.4E-01		8E-04	3E-01	2E+00		3E+00
	Zinc	6.6E+01		1E-05	1E-02	1E-01		1E-01

Calculated Doses for Wildlife Receptors from Ingestion Pathways

RECEPTOR **Mink**

Medium	Surface Water	Sediment	Fish	Small Mammals
Intake rate	0.066	0.002	0.149	0.050
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day

Location	COPC	Media-Specific Dose (mg/kg-d)				**Total Dose mg/kg-day**
		Surface Water	Sediment	Fish	Small Mammals	
CFR (Site)	TEQ	9.05E-11	1.31E-08	6.46E-08	8.69E-09	8.65E-08
	Aluminum	1.64E-02	1.37E+01	2.13E+00	8.15E-01	1.66E+01
	Antimony	1.67E-05	7.03E-04	NC	9.41E-04	1.66E-03
	Arsenic	5.81E-04	1.57E-02	1.75E-02	1.83E-03	3.56E-02
	Barium	8.07E-03	5.90E-01	1.63E+00	6.07E-01	2.84E+00
	Chromium	1.91E-05	1.85E-02	1.50E-02	5.40E-03	3.89E-02
	Copper	9.22E-04	1.69E-01	3.01E-01	1.39E-01	6.10E-01
	Lead	5.22E-05	3.63E-02	5.75E-03	1.24E-02	5.44E-02
	Manganese	1.09E-02	8.07E-01	1.64E+00	1.31E-01	2.59E+00
	Mercury	NC	6.80E-04	8.03E-03	1.14E-03	9.85E-03
	Methyl Mercury	NC	1.25E-05	6.44E-03	NC	6.46E-03
	Nickel	3.31E-05	1.26E-02	NC	1.34E-02	2.60E-02
	Selenium	9.30E-06	7.34E-04	6.30E-02	4.41E-03	6.81E-02
	Thallium	NC	2.32E-04	NC	NC	2.32E-04
	Vanadium	5.78E-05	2.52E-02	NC	NC	2.53E-02
	Zinc	8.55E-04	3.46E-01	6.68E+00	2.20E+00	9.23E+00

Summary of LOAEL-Based HQs for Wildlife Receptors

RECEPTOR	**Mink**
TRV	**LOAEL**

Location	Analyte	LOAEL TRV	LOAEL-Based HQ				*Total HQ* = ∑ *HQ*
			Surface Water	Sediment	Fish	Small Mammals	
CFR (Site)	TEQ	2.2E-06	4E-05	6E-03	3E-02	4E-03	4E-02
	Aluminum	1.9E+01	9E-04	7E-01	1E-01	4E-02	9E-01
	Antimony	5.9E-01	3E-05	1E-03	NC	2E-03	3E-03
	Arsenic	1.7E+00	3E-04	9E-03	1E-02	1E-03	2E-02
	Barium	8.3E+01	1E-04	7E-03	2E-02	7E-03	3E-02
	Chromium	5.8E+01	3E-07	3E-04	3E-04	9E-05	7E-04
	Copper	9.3E+00	1E-04	2E-02	3E-02	1E-02	7E-02
	Lead	8.9E+00	6E-06	4E-03	6E-04	1E-03	6E-03
	Manganese	1.5E+02	7E-05	6E-03	1E-02	9E-04	2E-02
	Mercury	2.5E-01	NC	3E-03	5E-02	7E-03	6E-02
	Methyl Mercury	1.6E-01	NC	8E-05	4E-02	NC	4E-02
	Nickel	3.4E+00	1E-05	4E-03	NC	4E-03	8E-03
	Selenium	2.2E-01	4E-05	3E-03	3E-01	2E-02	3E-01
	Thallium	7.4E-02	NC	3E-03	NC	NC	3E-03
	Vanadium	8.3E+00	7E-06	3E-03	NC	NC	3E-03
	Zinc	3.0E+02	3E-06	1E-03	2E-02	7E-03	3E-02

Summary of NOAEL-Based HQs for Wildlife Receptors

RECEPTOR	**Mink**
TRV	**NOAEL**

Location	Analyte	NOAEL TRV		NOAEL-Based HQ				*Total HQ* = $\sum$ *HQ*
				Surface Water	Sediment	Fish	Small Mammals	
CFR (Site)	TEQ	2.2E-07		4E-04	6E-02	3E-01	4E-02	3.9E-01
	Aluminum	1.9E+00		9E-03	7E+00	1E+00	4E-01	8.6E+00
	Antimony	5.9E-02		3E-04	1E-02	NC	2E-02	2.8E-02
	Arsenic	1.0E+00		6E-04	2E-02	2E-02	2E-03	3.4E-02
	Barium	5.2E+01		2E-04	1E-02	3E-02	1E-02	5.5E-02
	Chromium	2.4E+00		8E-06	8E-03	6E-03	2E-03	1.6E-02
	Copper	5.6E+00		2E-04	3E-02	5E-02	2E-02	1.1E-01
	Lead	4.7E+00		1E-05	8E-03	1E-03	3E-03	1.2E-02
	Manganese	5.2E+01		2E-04	2E-02	3E-02	3E-03	5.0E-02
	Mercury	2.5E-02		NC	3E-02	3E-01	4E-02	3.1E-01
	Methyl Mercury	3.2E-02		NC	4E-04	2E-01	NC	2.0E-01
	Nickel	1.7E+00		2E-05	7E-03	NC	8E-03	1.5E-02
	Selenium	1.4E-01		7E-05	5E-03	4E-01	3E-02	4.8E-01
	Thallium	7.4E-03		NC	3E-02	NC	NC	3.1E-02
	Vanadium	4.2E+00		1E-05	6E-03	NC	NC	6.1E-03
	Zinc	7.5E+01		1E-05	5E-03	9E-02	3E-02	1.2E-01

Calculated Doses for Wildlife Receptors from Ingestion Pathways

RECEPTOR **Osprey**

Medium	Surface Water	Sediment	BMI	Fish
Intake rate	0.050	0.000	0.000	0.221
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day

Location	COPC	Media-Specific Dose (mg/kg-d)				Total Dose mg/kg-day
		Surface Water	Sediment	BMI	Fish	
CFR (Site)	TEQ	9.27E-11	8.11E-11		2.65E-07	2.65E-07
	Aluminum	1.24E-02	7.51E-01		3.17E+00	3.94E+00
	Antimony	1.26E-05	4.68E-05		NC	5.94E-05
	Arsenic	4.37E-04	1.18E-03		2.61E-02	2.77E-02
	Barium	6.08E-03	1.83E-02		2.43E+00	2.45E+00
	Chromium	1.44E-05	8.90E-04		2.23E-02	2.32E-02
	Copper	6.94E-04	1.26E-02		4.48E-01	4.61E-01
	Lead	3.93E-05	2.58E-03		8.55E-03	1.12E-02
	Manganese	8.22E-03	5.02E-02		2.44E+00	2.50E+00
	Mercury	NC	1.94E-05		1.20E-02	1.20E-02
	Methyl Mercury	NC	8.30E-07		9.59E-03	9.59E-03
	Nickel	2.49E-05	7.74E-04		NC	7.99E-04
	Selenium	7.00E-06	5.42E-05		9.37E-02	9.38E-02
	Thallium	NC	1.50E-05		NC	1.50E-05
	Vanadium	4.36E-05	1.45E-03		NC	1.49E-03
	Zinc	6.44E-04	2.44E-02		9.95E+00	9.97E+00

Summary of LOAEL-Based HQs for Wildlife Receptors

RECEPTOR	**Osprey**
TRV	**LOAEL**

Location	Analyte	LOAEL TRV		LOAEL-Based HQ				*Total HQ* = ∑ *HQ*
				Surface Water	Sediment	BMI	Fish	
CFR (Site)	TEQ	1.2E-03		8E-08	7E-08		2E-04	2E-04
	Aluminum	1.1E+03		1E-05	7E-04		3E-03	4E-03
	Antimony	NA		NA	NA		NA	NC
	Arsenic	4.5E+00		1E-04	3E-04		6E-03	6E-03
	Barium	4.2E+01		1E-04	4E-04		6E-02	6E-02
	Chromium	1.6E+01		9E-07	6E-05		1E-03	1E-03
	Copper	1.2E+01		6E-05	1E-03		4E-02	4E-02
	Lead	3.3E+00		1E-05	8E-04		3E-03	3E-03
	Manganese	3.8E+02		2E-05	1E-04		6E-03	7E-03
	Mercury	9.0E-01		NC	2E-05		2E-01	2E-01
	Methyl Mercury	6.4E-02		NC	1E-05		1E-01	1E-01
	Nickel	1.9E+01		1E-06	4E-05		NC	4E-05
	Selenium	5.8E-01		1E-05	9E-05		2E-01	2E-01
	Thallium	NA		NA	NA		NA	NC
	Vanadium	6.9E-01		6E-05	2E-03		NC	2E-03
	Zinc	1.7E+02		4E-06	1E-04		6E-02	6E-02

Summary of NOAEL-Based HQs for Wildlife Receptors

RECEPTOR	**Osprey**
TRV	**NOAEL**

Location	Analyte	NOAEL TRV		NOAEL-Based HQ				*Total HQ* = ∑ *HQ*
				Surface Water	Sediment	BMI	Fish	
CFR (Site)	TEQ	1.2E-04		8E-07	7E-07		2E-03	2.3E-03
	Aluminum	1.1E+02		1E-04	7E-03		3E-02	3.6E-02
	Antimony	NA		NA	NA		NA	NC
	Arsenic	2.2E+00		2E-04	5E-04		1E-02	1.2E-02
	Barium	2.1E+01		3E-04	9E-04		1E-01	1.2E-01
	Chromium	2.7E+00		5E-06	3E-04		8E-03	8.7E-03
	Copper	4.1E+00		2E-04	3E-03		1E-01	1.1E-01
	Lead	1.6E+00		2E-05	2E-03		5E-03	6.9E-03
	Manganese	1.8E+02		5E-05	3E-04		1E-02	1.4E-02
	Mercury	4.5E-01		NC	4E-05		2E+00	1.9E+00
	Methyl Mercury	6.4E-03		NC	1E-04		1E+00	1.5E+00
	Nickel	6.7E+00		4E-06	1E-04		NC	1.2E-04
	Selenium	2.9E-01		2E-05	2E-04		3E-01	3.2E-01
	Thallium	NA		NA	NA		NA	NC
	Vanadium	3.4E-01		1E-04	4E-03		NC	4.3E-03
	Zinc	6.6E+01		1E-05	4E-04		2E-01	1.5E-01

Calculated Doses for Wildlife Receptors from Ingestion Pathways

RECEPTOR **Otter**

Medium	Surface Water	Sediment	BMI	Fish
Intake rate	0.080	0.000	0.000	0.163
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day

Location	COPC	Media-Specific Dose (mg/kg-d)				Total Dose mg/kg-day
		Surface Water	Sediment	BMI	Fish	
CFR (Site)	TEQ	1.09E-10	2.01E-10		7.09E-08	7.12E-08
	Aluminum	1.98E-02	2.25E+00		2.34E+00	4.61E+00
	Antimony	2.02E-05	1.40E-04		NC	1.61E-04
	Arsenic	7.00E-04	3.53E-03		1.92E-02	2.35E-02
	Barium	9.72E-03	5.48E-02		1.79E+00	1.86E+00
	Chromium	2.30E-05	2.67E-03		1.65E-02	1.92E-02
	Copper	1.11E-03	3.78E-02		3.30E-01	3.69E-01
	Lead	6.29E-05	7.74E-03		6.31E-03	1.41E-02
	Manganese	1.31E-02	1.51E-01		1.80E+00	1.97E+00
	Mercury	NC	5.82E-05		8.82E-03	8.88E-03
	Methyl Mercury	NC	2.49E-06		7.07E-03	7.08E-03
	Nickel	3.98E-05	2.32E-03		NC	2.36E-03
	Selenium	1.12E-05	1.63E-04		6.91E-02	6.93E-02
	Thallium	NC	4.50E-05		NC	4.50E-05
	Vanadium	6.97E-05	4.34E-03		NC	4.41E-03
	Zinc	1.03E-03	7.32E-02		7.34E+00	7.41E+00

Summary of LOAEL-Based HQs for Wildlife Receptors

RECEPTOR	**Otter**
TRV	**LOAEL**

Location	Analyte	LOAEL TRV		LOAEL-Based HQ				*Total HQ* = ∑ *HQ*
				Surface Water	Sediment	BMI	Fish	
CFR (Site)	TEQ	1.0E-05		1E-05	2E-05		7E-03	7E-03
	Aluminum	1.9E+01		1E-03	1E-01		1E-01	2E-01
	Antimony	5.9E-01		3E-05	2E-04		NC	3E-04
	Arsenic	1.7E+00		4E-04	2E-03		1E-02	1E-02
	Barium	8.3E+01		1E-04	7E-04		2E-02	2E-02
	Chromium	5.8E+01		4E-07	5E-05		3E-04	3E-04
	Copper	9.3E+00		1E-04	4E-03		4E-02	4E-02
	Lead	8.9E+00		7E-06	9E-04		7E-04	2E-03
	Manganese	1.5E+02		9E-05	1E-03		1E-02	1E-02
	Mercury	2.5E-01		NC	2E-04		6E-02	6E-02
	Methyl Mercury	1.6E-01		NC	2E-05		4E-02	4E-02
	Nickel	3.4E+00		1E-05	7E-04		NC	7E-04
	Selenium	2.2E-01		5E-05	8E-04		3E-01	3E-01
	Thallium	7.4E-02		NC	6E-04		NC	6E-04
	Vanadium	8.3E+00		8E-06	5E-04		NC	5E-04
	Zinc	3.0E+02		3E-06	2E-04		2E-02	2E-02

Summary of NOAEL-Based HQs for Wildlife Receptors

RECEPTOR	**Otter**
TRV	**NOAEL**

Location	Analyte	NOAEL TRV		NOAEL-Based HQ				*Total HQ* = ∑ *HQ*
				Surface Water	Sediment	BMI	Fish	
CFR (Site)	TEQ	1.0E-06		1E-04	2E-04		7E-02	7.1E-02
	Aluminum	1.9E+00		1E-02	1E+00		1E+00	2.4E+00
	Antimony	5.9E-02		3E-04	2E-03		NC	2.7E-03
	Arsenic	1.0E+00		7E-04	3E-03		2E-02	2.3E-02
	Barium	5.2E+01		2E-04	1E-03		3E-02	3.6E-02
	Chromium	2.4E+00		1E-05	1E-03		7E-03	8.0E-03
	Copper	5.6E+00		2E-04	7E-03		6E-02	6.6E-02
	Lead	4.7E+00		1E-05	2E-03		1E-03	3.0E-03
	Manganese	5.2E+01		3E-04	3E-03		4E-02	3.8E-02
	Mercury	2.5E-02		NC	2E-03		3E-01	2.8E-01
	Methyl Mercury	3.2E-02		NC	8E-05		2E-01	2.2E-01
	Nickel	1.7E+00		2E-05	1E-03		NC	1.4E-03
	Selenium	1.4E-01		8E-05	1E-03		5E-01	4.8E-01
	Thallium	7.4E-03		NC	6E-03		NC	6.1E-03
	Vanadium	4.2E+00		2E-05	1E-03		NC	1.1E-03
	Zinc	7.5E+01		1E-05	1E-03		1E-01	9.8E-02

Calculated Doses for Wildlife Receptors from Ingestion Pathways

RECEPTOR **Swallow**

Medium	Surface Water	Sediment	BMI	Fish
Intake rate	0.220	0.000	0.228	0.000
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day

Location	COPC	Media-Specific Dose (mg/kg-d)				Total Dose mg/kg-day
		Surface Water	Sediment	BMI	Fish	
O'Keefe Creek	TEQ	6.56E-10		9.01E-08		9.07E-08
	Aluminum	5.59E-02		6.32E+01		6.32E+01
	Antimony	4.62E-05		1.96E-02		1.97E-02
	Arsenic	6.82E-04		1.55E-01		1.56E-01
	Barium	3.19E-02		2.58E+01		2.58E+01
	Chromium	7.48E-05		NC		7.48E-05
	Copper	5.06E-04		6.59E+00		6.59E+00
	Lead	5.94E-05		9.80E-02		9.81E-02
	Manganese	1.78E-03		9.76E+00		9.76E+00
	Mercury	NC		1.23E-02		1.23E-02
	Methyl Mercury	NC		1.35E-02		1.35E-02
	Nickel	7.92E-05		NC		7.92E-05
	Selenium	NC		6.84E-02		6.84E-02
	Thallium	7.26E-06		1.96E-02		1.96E-02
	Vanadium	2.09E-04		1.12E-01		1.12E-01
	Zinc	9.90E-04		5.31E+00		5.31E+00
Lavalle Creek	TEQ	5.37E-10		7.91E-08		7.97E-08
	Aluminum	6.71E-02		1.33E+02		1.33E+02
	Antimony	3.74E-05		NC		3.74E-05
	Arsenic	7.70E-04		3.11E-01		3.12E-01
	Barium	5.50E-02		2.25E+01		2.25E+01
	Chromium	1.12E-04		1.70E-01		1.70E-01
	Copper	5.28E-04		8.41E+00		8.41E+00
	Lead	7.48E-05		1.92E-01		1.92E-01
	Manganese	2.82E-02		3.10E+01		3.11E+01
	Mercury	6.60E-06		1.22E-02		1.22E-02
	Methyl Mercury	NC		1.33E-02		1.33E-02
	Nickel	8.58E-05		1.12E-01		1.12E-01
	Selenium	NC		5.24E-02		5.24E-02
	Thallium	NC		NC		NC
	Vanadium	2.64E-04		1.84E-01		1.84E-01
	Zinc	1.17E-03		5.36E+00		5.36E+00
On-Site Ponds	TEQ	4.92E-10		9.44E-07		9.45E-07
	Aluminum	3.42E-02		1.02E+02		1.02E+02
	Antimony	3.99E-04		1.78E-02		1.82E-02
	Arsenic	3.13E-03		1.43E-01		1.46E-01
	Barium	2.53E-02		6.69E+00		6.71E+00
	Chromium	2.36E-04		2.17E-01		2.18E-01
	Copper	2.04E-03		9.51E-01		9.53E-01
	Lead	1.69E-04		1.64E-01		1.64E-01
	Manganese	4.32E-01		5.57E+01		5.61E+01
	Mercury	NC		1.66E-02		1.66E-02
	Methyl Mercury	NC		5.84E-02		5.84E-02
	Nickel	1.88E-03		1.50E-01		1.52E-01
	Selenium	2.25E-04		2.99E-02		3.01E-02
	Thallium	NC		NC		NC
	Vanadium	1.10E-03		3.16E-01		3.17E-01
	Zinc	3.12E-03		7.55E+00		7.55E+00

Summary of LOAEL-Based HQs for Wildlife Receptors

RECEPTOR	**Swallow**
TRV	**LOAEL**

Location	Analyte	LOAEL TRV		LOAEL-Based HQ				*Total HQ* = ∑ *HQ*
				Surface Water	Sediment	BMI	Fish	
O'Keefe Creek	TEQ	1.4E-04		5E-06		6E-04		6E-04
	Aluminum	1.1E+03		5E-05		6E-02		6E-02
	Antimony	NA		NA		NA		NC
	Arsenic	4.5E+00		2E-04		3E-02		3E-02
	Barium	4.2E+01		8E-04		6E-01		6E-01
	Chromium	1.6E+01		5E-06		NC		5E-06
	Copper	1.2E+01		4E-05		5E-01		5E-01
	Lead	3.3E+00		2E-05		3E-02		3E-02
	Manganese	3.8E+02		5E-06		3E-02		3E-02
	Mercury	9.0E-01		NC		2E-01		2E-01
	Methyl Mercury	6.4E-02		NC		2E-01		2E-01
	Nickel	1.9E+01		4E-06		NC		4E-06
	Selenium	5.8E-01		NC		1E-01		1E-01
	Thallium	NA		NA		NA		NC
	Vanadium	6.9E-01		3E-04		2E-01		2E-01
	Zinc	1.7E+02		6E-06		3E-02		3E-02
Lavalle Creek	TEQ	1.4E-04		4E-06		6E-04		6E-04
	Aluminum	1.1E+03		6E-05		1E-01		1E-01
	Antimony	NA		NA		NA		NC
	Arsenic	4.5E+00		2E-04		7E-02		7E-02
	Barium	4.2E+01		1E-03		5E-01		5E-01
	Chromium	1.6E+01		7E-06		1E-02		1E-02
	Copper	1.2E+01		4E-05		7E-01		7E-01
	Lead	3.3E+00		2E-05		6E-02		6E-02
	Manganese	3.8E+02		7E-05		8E-02		8E-02
	Mercury	9.0E-01		7E-06		2E-01		2E-01
	Methyl Mercury	6.4E-02		NC		2E-01		2E-01
	Nickel	1.9E+01		5E-06		6E-03		6E-03
	Selenium	5.8E-01		NC		9E-02		9E-02
	Thallium	NA		NA		NA		NC
	Vanadium	6.9E-01		4E-04		3E-01		3E-01
	Zinc	1.7E+02		7E-06		3E-02		3E-02
On-Site Ponds	TEQ	1.4E-04		3E-06		7E-03		7E-03
	Aluminum	1.1E+03		3E-05		9E-02		9E-02
	Antimony	NA		NA		NA		NC
	Arsenic	4.5E+00		7E-04		3E-02		3E-02
	Barium	4.2E+01		6E-04		2E-01		2E-01
	Chromium	1.6E+01		2E-05		1E-02		1E-02
	Copper	1.2E+01		2E-04		8E-02		8E-02
	Lead	3.3E+00		5E-05		5E-02		5E-02
	Manganese	3.8E+02		1E-03		1E-01		1E-01
	Mercury	9.0E-01		NC		3E-01		3E-01
	Methyl Mercury	6.4E-02		NC		9E-01		9E-01
	Nickel	1.9E+01		1E-04		8E-03		8E-03
	Selenium	5.8E-01		4E-04		5E-02		5E-02
	Thallium	NA		NA		NA		NC
	Vanadium	6.9E-01		2E-03		5E-01		5E-01
	Zinc	1.7E+02		2E-05		4E-02		4E-02

Summary of NOAEL-Based HQs for Wildlife Receptors

RECEPTOR	**Swallow**
TRV	**NOAEL**

Location	Analyte	NOAEL TRV	NOAEL-Based HQ				*Total HQ* = ∑ *HQ*
			Surface Water	Sediment	BMI	Fish	
O'Keefe Creek	TEQ	1.4E-05	5E-05		6E-03		6.3E-03
	Aluminum	1.1E+02	5E-04		6E-01		5.8E-01
	Antimony	NA	NA		NA		NC
	Arsenic	2.2E+00	3E-04		7E-02		7.0E-02
	Barium	2.1E+01	2E-03		1E+00		1.2E+00
	Chromium	2.7E+00	3E-05		NC		2.8E-05
	Copper	4.1E+00	1E-04		2E+00		1.6E+00
	Lead	1.6E+00	4E-05		6E-02		6.0E-02
	Manganese	1.8E+02	1E-05		5E-02		5.5E-02
	Mercury	4.5E-01	NC		2E+00		1.9E+00
	Methyl Mercury	6.4E-03	NC		2E+00		2.1E+00
	Nickel	6.7E+00	1E-05		NC		1.2E-05
	Selenium	2.9E-01	NC		2E-01		2.4E-01
	Thallium	NA	NA		NA		NC
	Vanadium	3.4E-01	6E-04		3E-01		3.3E-01
	Zinc	6.6E+01	1E-05		8E-02		8.0E-02
Lavalle Creek	TEQ	1.4E-05	4E-05		6E-03		6E-03
	Aluminum	1.1E+02	6E-04		1E+00		1E+00
	Antimony	NA	NA		NA		NC
	Arsenic	2.2E+00	3E-04		1E-01		1E-01
	Barium	2.1E+01	3E-03		1E+00		1E+00
	Chromium	2.7E+00	4E-05		6E-02		6E-02
	Copper	4.1E+00	1E-04		2E+00		2E+00
	Lead	1.6E+00	5E-05		1E-01		1E-01
	Manganese	1.8E+02	2E-04		2E-01		2E-01
	Mercury	4.5E-01	1E-05		2E+00		2E+00
	Methyl Mercury	6.4E-03	NC		2E+00		2E+00
	Nickel	6.7E+00	1E-05		2E-02		2E-02
	Selenium	2.9E-01	NC		2E-01		2E-01
	Thallium	NA	NA		NA		NC
	Vanadium	3.4E-01	8E-04		5E-01		5E-01
	Zinc	6.6E+01	2E-05		8E-02		8E-02
On-Site Ponds	TEQ	1.4E-05	3E-05		7E-02		7E-02
	Aluminum	1.1E+02	3E-04		9E-01		9E-01
	Antimony	NA	NA		NA		NC
	Arsenic	2.2E+00	1E-03		6E-02		7E-02
	Barium	2.1E+01	1E-03		3E-01		3E-01
	Chromium	2.7E+00	9E-05		8E-02		8E-02
	Copper	4.1E+00	5E-04		2E-01		2E-01
	Lead	1.6E+00	1E-04		1E-01		1E-01
	Manganese	1.8E+02	2E-03		3E-01		3E-01
	Mercury	4.5E-01	NC		3E+00		3E+00
	Methyl Mercury	6.4E-03	NC		9E+00		9E+00
	Nickel	6.7E+00	3E-04		2E-02		2E-02
	Selenium	2.9E-01	8E-04		1E-01		1E-01
	Thallium	NA	NA		NA		NC
	Vanadium	3.4E-01	3E-03		9E-01		9E-01
	Zinc	6.6E+01	5E-05		1E-01		1E-01

APPENDIX G2
HQ RESULTS FOR LARGE HOME RANGE TERRESTRIAL RECEPTORS

OU2/OU3 Smurfit-Stone/Frenchtown Mill Site
Baseline Ecological Risk Assessment

Receptor **Bat**

Intake Rates

Water L/kg-day	Soil/Sed. kg/kg-day	Food kg ww/kg-day
0.15	0	0.44

AUF

0.07

Dietary Type	Aerial Inverts	Small Mammals	Plants
Diet Fraction (%)	100	0	0
Intake kg ww/kg-d	0.44	0	0

	Exposure Medium				
	Water	Soil/Sed.	Aerial Invertebrate	Small Mammals	Plants
Intake rate	0.15	0	0.44	0	0
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day	kg ww/kg-day

DOSE CALCULATION

Location	COPC	Media-Specific Dose (mg/kg-d)					Total Dose mg/kg-day
		Water	Soil	Aerial Invertebrate	Small Mammals	Plants	
Site wide	TEQ	2.22E-10		1.07E-05			7.47E-07
	Aluminum	2.41E-02		8.13E+02			5.69E+01
	Antimony	1.88E-04		6.83E-02			4.79E-03
	Arsenic	1.58E-03		6.21E-02			4.46E-03
	Barium	1.90E-02		3.26E+00			2.29E-01
	Chromium	8.52E-05		4.18E-01			2.93E-02
	Copper	1.45E-03		1.47E+00			1.03E-01
	Lead	7.02E-05		5.50E-01			3.85E-02
	Manganese	1.34E-01		3.35E+00			2.44E-01
	Mercury	4.50E-06		8.00E-02			5.60E-03
	Nickel	5.61E-04		9.02E-01			6.32E-02
	Selenium	7.94E-05		5.25E-02			3.68E-03
	Thallium	4.95E-06		1.20E-02			8.38E-04
	Vanadium	4.81E-04		6.14E-02			4.33E-03
	Zinc	2.01E-03		3.29E+01			2.30E+00

LOAEL-BASED HQ CALCULATION

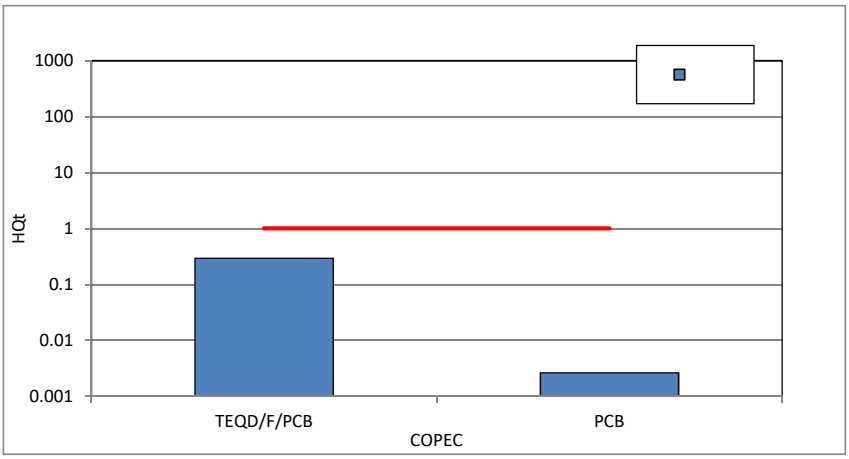
Location	Analyte	LOAEL TRV		LOAEL-Based HQ					LOAEL HQt
				Water	Soil	Aerial Invertebrate	Small Mammals	Plants	
Site wide	TEQ	1.0E-05		2.2E-05		1.1E+00			1.1E+00
	Aluminum	1.9E+01		1.2E-03		4.2E+01			4.2E+01
	Antimony	5.9E-01		3.2E-04		1.2E-01			1.2E-01
	Arsenic	1.7E+00		9.5E-04		3.7E-02			3.8E-02
	Barium	8.3E+01		2.3E-04		3.9E-02			4.0E-02
	Chromium	5.8E+01		1.5E-06		7.2E-03			7.2E-03
	Copper	9.3E+00		1.6E-04		1.6E-01			1.6E-01
	Lead	8.9E+00		7.9E-06		6.2E-02			6.2E-02
	Manganese	1.5E+02		9.2E-04		2.3E-02			2.4E-02
	Mercury	2.5E-01	1.6E-01	1.8E-05		5.0E-01			5.0E-01
	Nickel	3.4E+00		1.7E-04		2.7E-01			2.7E-01
	Selenium	2.2E-01		3.7E-04		2.4E-01			2.4E-01
	Thallium	7.4E-02		6.7E-05		1.6E-01			1.6E-01
	Vanadium	8.3E+00		5.8E-05		7.4E-03			7.5E-03
	Zinc	3.0E+02		6.8E-06		1.1E-01			1.1E-01

NOAEL-BASED HQ CALCULATION

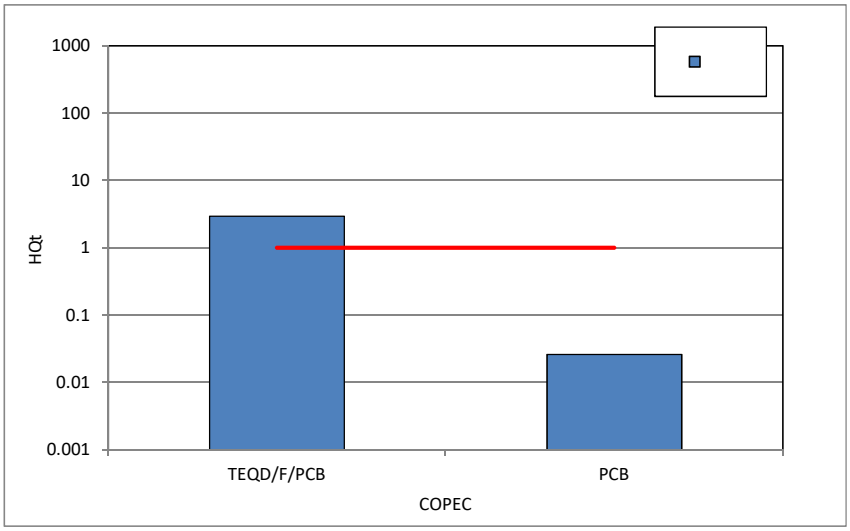
Location	Analyte	NOAEL TRV		NOAEL-Based HQ					NOAEL HQt
				Water	Soil	Aerial Invertebrate	Small Mammals	Plants	
Site wide	TEQ	1.0E-06		2.2E-04		1.1E+01			1.1E+01
	Aluminum	1.9E+00		1.2E-02		4.2E+02			4.2E+02
	Antimony	5.9E-02		3.2E-03		1.2E+00			1.2E+00
	Arsenic	1.0E+00		1.5E-03		6.0E-02			6.1E-02
	Barium	5.2E+01		3.7E-04		6.3E-02			6.3E-02
	Chromium	2.4E+00		3.6E-05		1.7E-01			1.7E-01
	Copper	5.6E+00		2.6E-04		2.6E-01			2.6E-01
	Lead	4.7E+00		1.5E-05		1.2E-01			1.2E-01
	Manganese	5.2E+01		2.6E-03		6.5E-02			6.8E-02
	Mercury	2.5E-02	3.2E-02	1.8E-04		2.5E+00			2.5E+00
	Nickel	1.7E+00		3.3E-04		5.3E-01			5.3E-01
	Selenium	1.4E-01		5.5E-04		3.7E-01			3.7E-01
	Thallium	7.4E-03		6.7E-04		1.6E+00			1.6E+00
	Vanadium	4.2E+00		1.2E-04		1.5E-02			1.5E-02
	Zinc	7.5E+01		2.7E-05		4.4E-01			4.4E-01

PCB HQ Summary for Big Brown Bat

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values



Receptor **Fox**

Intake Rates

Water L/kg-day	Soil/Sed. kg/kg-day	Food kg ww/kg-day
0.085	0.0008	0.106

AUF
0.76

Dietary Type	Soil Invertebrate	Small Mammals	Plants
Diet Fraction (%)		75	25
Intake kg ww/kg-d	0	0.0795	0.0265

	Exposure Medium				
	Water	Soil/Sed.	Earthworm	Small Mammals	Plants
Intake rate	0.085	0.0008	0	0.0795	0.0265
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day	kg ww/kg-day

DOSE CALCULATION

Location	COPC	Media-Specific Dose (mg/kg-d)					Total Dose mg/kg-day
		Water	Soil	Soil Invertebrate	Small Mammals	Plants	
Site wide	TEQ	1.26E-10	2.36E-08		7.32E-08	1.17E-07	1.63E-07
	Aluminum	1.37E-02	9.23E+00		3.44E+00	4.59E+01	4.45E+01
	Antimony	1.06E-04	7.76E-04		2.90E-03	1.52E-04	2.99E-03
	Arsenic	8.95E-04	5.02E-03		4.91E-03	9.35E-04	8.94E-03
	Barium	1.08E-02	4.06E-01		6.68E-01	3.15E-01	1.06E+00
	Chromium	4.83E-05	1.55E-02		1.03E-02	3.16E-03	2.20E-02
	Copper	8.24E-04	3.24E-02		2.14E-01	3.33E-02	2.13E-01
	Lead	3.98E-05	1.34E-02		1.44E-02	5.12E-03	2.50E-02
	Manganese	7.59E-02	7.54E-01		1.94E-01	2.96E-01	1.00E+00
	Mercury	2.55E-06	9.28E-04		1.18E-03	1.65E-03	2.86E-03
	Nickel	3.18E-04	1.02E-02		1.92E-02	2.90E-03	2.48E-02
	Selenium	4.50E-05	5.94E-04		1.24E-02	1.45E-03	1.10E-02
	Thallium	2.81E-06	1.36E-04		3.98E-03	6.76E-04	3.64E-03
	Vanadium	2.73E-04	1.66E-02		3.90E-03	4.01E-04	1.61E-02
	Zinc	1.14E-03	1.42E-01		3.58E+00	3.38E-01	3.09E+00

LOAEL-BASED HQ CALCULATION

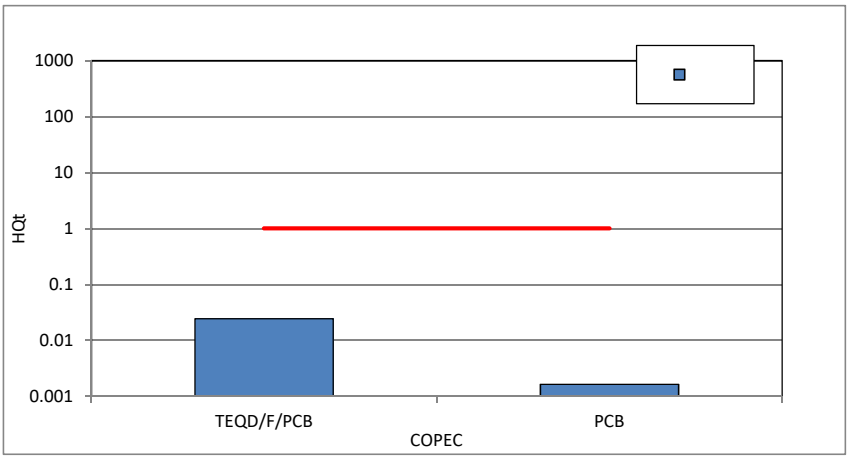
Location	Analyte	LOAEL TRV		LOAEL-Based HQ					LOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
Site wide	TEQ	1.0E-05		1.3E-05	2.4E-03		7.3E-03	1.2E-02	2.1E-02
	Aluminum	1.9E+01		7.1E-04	4.8E-01		1.8E-01	2.4E+00	3.0E+00
	Antimony	5.9E-01		1.8E-04	1.3E-03		4.9E-03	2.6E-04	6.7E-03
	Arsenic	1.7E+00		5.4E-04	3.0E-03		3.0E-03	5.6E-04	7.1E-03
	Barium	8.3E+01		1.3E-04	4.9E-03		8.1E-03	3.8E-03	1.7E-02
	Chromium	5.8E+01		8.3E-07	2.7E-04		1.8E-04	5.4E-05	5.0E-04
	Copper	9.3E+00		8.8E-05	3.5E-03		2.3E-02	3.6E-03	3.0E-02
	Lead	8.9E+00		4.5E-06	1.5E-03		1.6E-03	5.8E-04	3.7E-03
	Manganese	1.5E+02		5.2E-04	5.2E-03		1.3E-03	2.0E-03	9.0E-03
	Mercury	2.5E-01	1.6E-01	1.0E-05	3.7E-03		7.4E-03	1.0E-02	2.1E-02
	Nickel	3.4E+00		9.4E-05	3.0E-03		5.6E-03	8.5E-04	9.6E-03
	Selenium	2.2E-01		2.1E-04	2.8E-03		5.8E-02	6.8E-03	6.7E-02
	Thallium	7.4E-02		3.8E-05	1.8E-03		5.4E-02	9.1E-03	6.5E-02
	Vanadium	8.3E+00		3.3E-05	2.0E-03		4.7E-04	4.8E-05	2.6E-03
	Zinc	3.0E+02		3.8E-06	4.8E-04		1.2E-02	1.1E-03	1.4E-02

NOAEL-BASED HQ CALCULATION

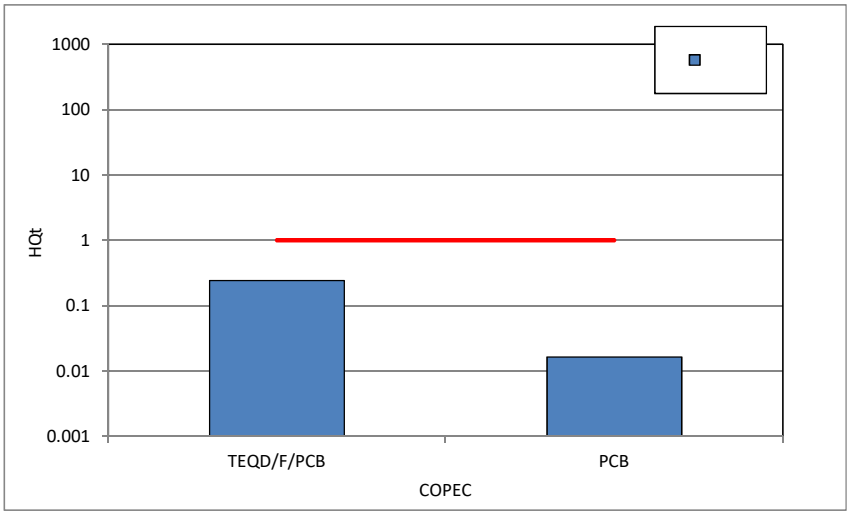
Location	Analyte	NOAEL TRV		NOAEL-Based HQ					NOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
Site wide	TEQ	1.0E-06		1.3E-04	2.4E-02		7.3E-02	1.2E-01	2.1E-01
	Aluminum	1.9E+00		7.1E-03	4.8E+00		1.8E+00	2.4E+01	3.0E+01
	Antimony	5.9E-02		1.8E-03	1.3E-02		4.9E-02	2.6E-03	6.7E-02
	Arsenic	1.0E+00		8.6E-04	4.8E-03		4.7E-03	9.0E-04	1.1E-02
	Barium	5.2E+01		2.1E-04	7.8E-03		1.3E-02	6.1E-03	2.7E-02
	Chromium	2.4E+00		2.0E-05	6.5E-03		4.3E-03	1.3E-03	1.2E-02
	Copper	5.6E+00		1.5E-04	5.8E-03		3.8E-02	5.9E-03	5.0E-02
	Lead	4.7E+00		8.5E-06	2.8E-03		3.1E-03	1.1E-03	7.0E-03
	Manganese	5.2E+01		1.5E-03	1.5E-02		3.8E-03	5.8E-03	2.6E-02
	Mercury	2.5E-02	3.2E-02	1.0E-04	3.7E-02		3.7E-02	5.2E-02	1.3E-01
	Nickel	1.7E+00		1.9E-04	6.0E-03		1.1E-02	1.7E-03	1.9E-02
	Selenium	1.4E-01		3.1E-04	4.2E-03		8.7E-02	1.0E-02	1.0E-01
	Thallium	7.4E-03		3.8E-04	1.8E-02		5.4E-01	9.1E-02	6.5E-01
	Vanadium	4.2E+00		6.6E-05	4.0E-03		9.4E-04	9.6E-05	5.1E-03
	Zinc	7.5E+01		1.5E-05	1.9E-03		4.8E-02	4.5E-03	5.4E-02

PCB HQ Summary for Red Fox

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values



Receptor **Fox**

Intake Rates

Water L/kg-day	Soil/Sed. kg/kg-day	Food kg ww/kg-day
0.085	0.0008	0.106

AUF

0.76

Dietary Type	Soil Invertebrate	Small Mammals	Plants
Diet Fraction (%)		75	25
Intake kg ww/kg-d	0	0.0795	0.0265

	Exposure Medium				
	Water	Soil/Sed.	Earthworm	Small Mammals	Plants
Intake rate	0.085	0.0008	0	0.0795	0.0265
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day	kg ww/kg-day

DOSE CALCULATION

Location	COPC	Media-Specific Dose (mg/kg-d)					**Total Dose mg/kg-day**
		Water	Soil	Soil Invertebrate	Small Mammals	Plants	
Site wide	TEQ	1.26E-10	2.36E-08		7.32E-08	1.17E-07	1.63E-07
	Aluminum	1.37E-02	9.23E+00		3.44E+00	4.59E+01	4.45E+01
	Antimony	1.06E-04	7.76E-04		2.90E-03	1.52E-04	2.99E-03
	Arsenic	8.95E-04	5.02E-03		4.91E-03	9.35E-04	8.94E-03
	Barium	1.08E-02	4.06E-01		6.68E-01	3.15E-01	1.06E+00
	Chromium	4.83E-05	1.55E-02		1.03E-02	3.16E-03	2.20E-02
	Copper	8.24E-04	3.24E-02		2.14E-01	3.33E-02	2.13E-01
	Lead	3.98E-05	1.34E-02		1.44E-02	5.12E-03	2.50E-02
	Manganese	7.59E-02	7.54E-01		1.94E-01	2.96E-01	1.00E+00
	Mercury	2.55E-06	9.28E-04		1.18E-03	1.65E-03	2.86E-03
	Nickel	3.18E-04	1.02E-02		1.92E-02	2.90E-03	2.48E-02
	Selenium	4.50E-05	5.94E-04		1.24E-02	1.45E-03	1.10E-02
	Thallium	2.81E-06	1.36E-04		3.98E-03	6.76E-04	3.64E-03
	Vanadium	2.73E-04	1.66E-02		3.90E-03	4.01E-04	1.61E-02
	Zinc	1.14E-03	1.42E-01		3.58E+00	3.38E-01	3.09E+00
Undisturbed Floodplain Area (Grid 82&84)	TEQ	1.16E-10	2.81E-10		1.13E-08	1.40E-09	9.94E-09
	Aluminum	2.10E-02	6.48E+00		3.12E+00	3.22E+01	3.18E+01
	Antimony	2.14E-05	2.96E-04		2.31E-03	6.17E-05	2.04E-03
	Arsenic	7.44E-04	8.16E-03		NA	1.52E-03	7.92E-03
	Barium	1.03E-02	1.37E-01		3.50E-01	1.06E-01	4.58E-01
	Chromium	2.45E-05	7.68E-03		9.54E-03	1.56E-03	1.43E-02
	Copper	1.18E-03	6.32E-02		1.67E-01	4.34E-02	2.09E-01
	Lead	6.68E-05	1.45E-02		8.75E-03	5.35E-03	2.18E-02
	Manganese	1.40E-02	3.55E-01		1.75E-01	1.39E-01	5.19E-01
	Mercury	NA	7.76E-05		7.95E-03	4.35E-04	6.43E-03
	Nickel	4.23E-05	6.48E-03		1.75E-02	2.06E-03	1.98E-02
	Selenium	1.19E-05	NA		1.35E-02	NA	1.03E-02
	Thallium	NA	1.52E-04		NA	7.55E-04	6.90E-04
	Vanadium	7.40E-05	1.17E-02		NA	2.81E-04	9.15E-03
	Zinc	1.09E-03	1.61E-01		3.62E+00	3.63E-01	3.15E+00

LOAEL-BASED HQ CALCULATION

Location	Analyte	LOAEL TRV		LOAEL-Based HQ					LOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
Site wide	TEQ	1.0E-05		1.3E-05	2.4E-03		7.3E-03	1.2E-02	2.1E-02
	Aluminum	1.9E+01		7.1E-04	4.8E-01		1.8E-01	2.4E+00	3.0E+00
	Antimony	5.9E-01		1.8E-04	1.3E-03		4.9E-03	2.6E-04	6.7E-03
	Arsenic	1.7E+00		5.4E-04	3.0E-03		3.0E-03	5.6E-04	7.1E-03
	Barium	8.3E+01		1.3E-04	4.9E-03		8.1E-03	3.8E-03	1.7E-02
	Chromium	5.8E+01		8.3E-07	2.7E-04		1.8E-04	5.4E-05	5.0E-04
	Copper	9.3E+00		8.8E-05	3.5E-03		2.3E-02	3.6E-03	3.0E-02
	Lead	8.9E+00		4.5E-06	1.5E-03		1.6E-03	5.8E-04	3.7E-03
	Manganese	1.5E+02		5.2E-04	5.2E-03		1.3E-03	2.0E-03	9.0E-03
	Mercury	2.5E-01	1.6E-01	1.0E-05	3.7E-03		7.4E-03	1.0E-02	2.1E-02
	Nickel	3.4E+00		9.4E-05	3.0E-03		5.6E-03	8.5E-04	9.6E-03
	Selenium	2.2E-01		2.1E-04	2.8E-03		5.8E-02	6.8E-03	6.7E-02
	Thallium	7.4E-02		3.8E-05	1.8E-03		5.4E-02	9.1E-03	6.5E-02
	Vanadium	8.3E+00		3.3E-05	2.0E-03		4.7E-04	4.8E-05	2.6E-03
	Zinc	3.0E+02		3.8E-06	4.8E-04		1.2E-02	1.1E-03	1.4E-02
Undisturbed Floodplain Area (Grid 82&84)	TEQ	1.0E-05		1.2E-05	2.8E-05		1.1E-03	1.4E-04	1.3E-03
	Aluminum	1.9E+01		1.1E-03	3.4E-01		1.6E-01	1.7E+00	2.2E+00
	Antimony	5.9E-01		3.6E-05	5.0E-04		3.9E-03	1.0E-04	4.6E-03
	Arsenic	1.7E+00		4.5E-04	4.9E-03		NA	9.2E-04	6.3E-03
	Barium	8.3E+01		1.2E-04	1.7E-03		4.2E-03	1.3E-03	7.3E-03
	Chromium	5.8E+01		4.2E-07	1.3E-04		1.6E-04	2.7E-05	3.2E-04
	Copper	9.3E+00		1.3E-04	6.8E-03		1.8E-02	4.6E-03	2.9E-02
	Lead	8.9E+00		7.5E-06	1.6E-03		9.8E-04	6.0E-04	3.2E-03
	Manganese	1.5E+02		9.6E-05	2.4E-03		1.2E-03	9.5E-04	4.7E-03
	Mercury	2.5E-01	1.6E-01	NA	3.1E-04		5.0E-02	2.7E-03	5.3E-02
	Nickel	3.4E+00		1.2E-05	1.9E-03		5.1E-03	6.1E-04	7.7E-03
	Selenium	2.2E-01		5.5E-05	NA		6.3E-02	NA	6.3E-02
	Thallium	7.4E-02		NA	2.1E-03		NA	1.0E-02	1.2E-02
	Vanadium	8.3E+00		8.9E-06	1.4E-03		NA	3.4E-05	1.4E-03
	Zinc	3.0E+02		3.7E-06	5.4E-04		1.2E-02	1.2E-03	1.4E-02

NOAEL-BASED HQ CALCULATION

Location	Analyte	NOAEL TRV		NOAEL-Based HQ					NOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
Site wide	TEQ	1.0E-06		1.3E-04	2.4E-02		7.3E-02	1.2E-01	2.1E-01
	Aluminum	1.9E+00		7.1E-03	4.8E+00		1.8E+00	2.4E+01	3.0E+01
	Antimony	5.9E-02		1.8E-03	1.3E-02		4.9E-02	2.6E-03	6.7E-02
	Arsenic	1.0E+00		8.6E-04	4.8E-03		4.7E-03	9.0E-04	1.1E-02
	Barium	5.2E+01		2.1E-04	7.8E-03		1.3E-02	6.1E-03	2.7E-02
	Chromium	2.4E+00		2.0E-05	6.5E-03		4.3E-03	1.3E-03	1.2E-02
	Copper	5.6E+00		1.5E-04	5.8E-03		3.8E-02	5.9E-03	5.0E-02
	Lead	4.7E+00		8.5E-06	2.8E-03		3.1E-03	1.1E-03	7.0E-03
	Manganese	5.2E+01		1.5E-03	1.5E-02		3.8E-03	5.8E-03	2.6E-02
	Mercury	2.5E-02	3.2E-02	1.0E-04	3.7E-02		3.7E-02	5.2E-02	1.3E-01
	Nickel	1.7E+00		1.9E-04	6.0E-03		1.1E-02	1.7E-03	1.9E-02
	Selenium	1.4E-01		3.1E-04	4.2E-03		8.7E-02	1.0E-02	1.0E-01
	Thallium	7.4E-03		3.8E-04	1.8E-02		5.4E-01	9.1E-02	6.5E-01
	Vanadium	4.2E+00		6.6E-05	4.0E-03		9.4E-04	9.6E-05	5.1E-03
	Zinc	7.5E+01		1.5E-05	1.9E-03		4.8E-02	4.5E-03	5.4E-02
Undisturbed Floodplain Area (Grid 82&84)	TEQ	1.0E-06		1.2E-04	2.8E-04		1.1E-02	1.4E-03	1.3E-02
	Aluminum	1.9E+00		1.1E-02	3.4E+00		1.6E+00	1.7E+01	2.2E+01
	Antimony	5.9E-02		3.6E-04	5.0E-03		3.9E-02	1.0E-03	4.6E-02
	Arsenic	1.0E+00		7.2E-04	7.8E-03		NA	1.5E-03	1.0E-02
	Barium	5.2E+01		2.0E-04	2.6E-03		6.8E-03	2.0E-03	1.2E-02
	Chromium	2.4E+00		1.0E-05	3.2E-03		4.0E-03	6.5E-04	7.8E-03
	Copper	5.6E+00		2.1E-04	1.1E-02		3.0E-02	7.7E-03	4.9E-02
	Lead	4.7E+00		1.4E-05	3.1E-03		1.9E-03	1.1E-03	6.1E-03
	Manganese	5.2E+01		2.7E-04	6.9E-03		3.4E-03	2.7E-03	1.3E-02
	Mercury	2.5E-02	3.2E-02	NA	3.1E-03		2.5E-01	1.4E-02	2.7E-01
	Nickel	1.7E+00		2.5E-05	3.8E-03		1.0E-02	1.2E-03	1.5E-02
	Selenium	1.4E-01		8.3E-05	NA		9.5E-02	NA	9.5E-02
	Thallium	7.4E-03		NA	2.1E-02		NA	1.0E-01	1.2E-01
	Vanadium	4.2E+00		1.8E-05	2.8E-03		NA	6.8E-05	2.9E-03
	Zinc	7.5E+01		1.5E-05	2.1E-03		4.8E-02	4.8E-03	5.5E-02

ND = not detected; NA = not available; NC = not calculated; LOAEL = lowest-observed-adverse-effect-level; NOAEL = no-observed-adverse-effect-level; HQt = total hazard quotient; TRV = toxicity reference value; TEQ = toxicity equivalence.

Receptor **Bat**

Intake Rates

Water L/kg-day	Soil/Sed. kg/kg-day	Food kg ww/kg-day
0.15	0	0.44

AUF

0.07

Dietary Type	Aerial Inverts	Small Mammals	Plants
Diet Fraction (%)	100	0	0
Intake kg ww/kg-d	0.44	0	0

	Exposure Medium				
	Water	Soil/Sed.	Aerial Invertebrate	Small Mammals	Plants
Intake rate	0.15	0	0.44	0	0
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day	kg ww/kg-day

DOSE CALCULATION

Location	COPC	Media-Specific Dose (mg/kg-d)					Total Dose mg/kg-day
		Water	Soil	Aerial Invertebrate	Small Mammals	Plants	
Site wide	TEQ	2.22E-10		1.07E-05			7.47E-07
	Aluminum	2.41E-02		8.13E+02			5.69E+01
	Antimony	1.88E-04		6.83E-02			4.79E-03
	Arsenic	1.58E-03		6.21E-02			4.46E-03
	Barium	1.90E-02		3.26E+00			2.29E-01
	Chromium	8.52E-05		4.18E-01			2.93E-02
	Copper	1.45E-03		1.47E+00			1.03E-01
	Lead	7.02E-05		5.50E-01			3.85E-02
	Manganese	1.34E-01		3.35E+00			2.44E-01
	Mercury	4.50E-06		8.00E-02			5.60E-03
	Nickel	5.61E-04		9.02E-01			6.32E-02
	Selenium	7.94E-05		5.25E-02			3.68E-03
	Thallium	4.95E-06		1.20E-02			8.38E-04
	Vanadium	4.81E-04		6.14E-02			4.33E-03
	Zinc	2.01E-03		3.29E+01			2.30E+00
Undisturbed Floodplain Area (Grid 82&84)	TEQ	2.05E-10		5.67E-08			3.98E-09
	Aluminum	3.71E-02		5.70E+02			3.99E+01
	Antimony	3.78E-05		2.60E-02			1.83E-03
	Arsenic	1.31E-03		8.76E-02			6.22E-03
	Barium	1.82E-02		1.10E+00			7.80E-02
	Chromium	4.32E-05		2.07E-01			1.45E-02
	Copper	2.08E-03		2.86E+00			2.01E-01
	Lead	1.18E-04		5.86E-01			4.10E-02
	Manganese	2.46E-02		2.00E+00			1.42E-01
	Mercury	NA		3.47E-02			2.43E-03
	Nickel	7.47E-05		5.70E-01			3.99E-02
	Selenium	2.10E-05		NA			1.47E-06
	Thallium	NA		1.34E-02			9.36E-04
	Vanadium	1.31E-04		4.32E-02			3.03E-03
	Zinc	1.93E-03		3.43E+01			2.40E+00

LOAEL-BASED HQ CALCULATION

Location	Analyte	LOAEL TRV		LOAEL-Based HQ					LOAEL HQt
				Water	Soil	Aerial Invertebrate	Small Mammals	Plants	
Site wide	TEQ	1.0E-05		2.2E-05		1.1E+00			1.1E+00
	Aluminum	1.9E+01		1.2E-03		4.2E+01			4.2E+01
	Antimony	5.9E-01		3.2E-04		1.2E-01			1.2E-01
	Arsenic	1.7E+00		9.5E-04		3.7E-02			3.8E-02
	Barium	8.3E+01		2.3E-04		3.9E-02			4.0E-02
	Chromium	5.8E+01		1.5E-06		7.2E-03			7.2E-03
	Copper	9.3E+00		1.6E-04		1.6E-01			1.6E-01
	Lead	8.9E+00		7.9E-06		6.2E-02			6.2E-02
	Manganese	1.5E+02		9.2E-04		2.3E-02			2.4E-02
	Mercury	2.5E-01	1.6E-01	1.8E-05		5.0E-01			5.0E-01
	Nickel	3.4E+00		1.7E-04		2.7E-01			2.7E-01
	Selenium	2.2E-01		3.7E-04		2.4E-01			2.4E-01
	Thallium	7.4E-02		6.7E-05		1.6E-01			1.6E-01
	Vanadium	8.3E+00		5.8E-05		7.4E-03			7.5E-03
	Zinc	3.0E+02		6.8E-06		1.1E-01			1.1E-01
Undisturbed Floodplain Area (Grid 82&84)	TEQ	1.0E-05		2.0E-05		5.7E-03			5.7E-03
	Aluminum	1.9E+01		1.9E-03		3.0E+01			3.0E+01
	Antimony	5.9E-01		6.4E-05		4.4E-02			4.4E-02
	Arsenic	1.7E+00		7.9E-04		5.3E-02			5.4E-02
	Barium	8.3E+01		2.2E-04		1.3E-02			1.3E-02
	Chromium	5.8E+01		7.4E-07		3.6E-03			3.6E-03
	Copper	9.3E+00		2.2E-04		3.1E-01			3.1E-01
	Lead	8.9E+00		1.3E-05		6.6E-02			6.6E-02
	Manganese	1.5E+02		1.7E-04		1.4E-02			1.4E-02
	Mercury	2.5E-01	1.6E-01	NA		2.2E-01			2.2E-01
	Nickel	3.4E+00		2.2E-05		1.7E-01			1.7E-01
	Selenium	2.2E-01		9.8E-05		NA			9.8E-05
	Thallium	7.4E-02		NA		1.8E-01			1.8E-01
	Vanadium	8.3E+00		1.6E-05		5.2E-03			5.2E-03
	Zinc	3.0E+02		6.5E-06		1.2E-01			1.2E-01

NOAEL-BASED HQ CALCULATION

Location	Analyte	NOAEL TRV		NOAEL-Based HQ					NOAEL HQt
				Water	Soil	Aerial Invertebrate	Small Mammals	Plants	
Site wide	TEQ	1.0E-06		2.2E-04		1.1E+01			1.1E+01
	Aluminum	1.9E+00		1.2E-02		4.2E+02			4.2E+02
	Antimony	5.9E-02		3.2E-03		1.2E+00			1.2E+00
	Arsenic	1.0E+00		1.5E-03		6.0E-02			6.1E-02
	Barium	5.2E+01		3.7E-04		6.3E-02			6.3E-02
	Chromium	2.4E+00		3.6E-05		1.7E-01			1.7E-01
	Copper	5.6E+00		2.6E-04		2.6E-01			2.6E-01
	Lead	4.7E+00		1.5E-05		1.2E-01			1.2E-01
	Manganese	5.2E+01		2.6E-03		6.5E-02			6.8E-02
	Mercury	2.5E-02	3.2E-02	1.8E-04		2.5E+00			2.5E+00
	Nickel	1.7E+00		3.3E-04		5.3E-01			5.3E-01
	Selenium	1.4E-01		5.5E-04		3.7E-01			3.7E-01
	Thallium	7.4E-03		6.7E-04		1.6E+00			1.6E+00
	Vanadium	4.2E+00		1.2E-04		1.5E-02			1.5E-02
	Zinc	7.5E+01		2.7E-05		4.4E-01			4.4E-01
Undisturbed Floodplain Area (Grid 82&84)	TEQ	1.0E-06		2.0E-04		5.7E-02			5.7E-02
	Aluminum	1.9E+00		1.9E-02		3.0E+02			3.0E+02
	Antimony	5.9E-02		6.4E-04		4.4E-01			4.4E-01
	Arsenic	1.0E+00		1.3E-03		8.4E-02			8.5E-02
	Barium	5.2E+01		3.5E-04		2.1E-02			2.2E-02
	Chromium	2.4E+00		1.8E-05		8.6E-02			8.6E-02
	Copper	5.6E+00		3.7E-04		5.1E-01			5.1E-01
	Lead	4.7E+00		2.5E-05		1.2E-01			1.2E-01
	Manganese	5.2E+01		4.8E-04		3.9E-02			3.9E-02
	Mercury	2.5E-02	3.2E-02	NA		1.1E+00			1.1E+00
	Nickel	1.7E+00		4.4E-05		3.4E-01			3.4E-01
	Selenium	1.4E-01		1.5E-04		NA			1.5E-04
	Thallium	7.4E-03		NA		1.8E+00			1.8E+00
	Vanadium	4.2E+00		3.1E-05		1.0E-02			1.0E-02
	Zinc	7.5E+01		2.6E-05		4.5E-01			4.5E-01

ND = not detected; NA = not available; NC = not calculated; LOAEL = lowest-observed-adverse-effect-level; NOAEL = no-observed-adverse-effect-level; HQt = total hazard quotient; TRV = toxicity reference value; TEQ = toxicity equivalence.

APPENDIX G3
HQ RESULTS FOR MEDIUM HOME RANGE TERRESTRIAL RECEPTORS

OU2/OU3 Smurfit-Stone/Frenchtown Mill Site
Baseline Ecological Risk Assessment

Receptor	Intake Rates		
	Water L/kg-day	Soil/Sed. kg/kg-day	Food kg ww/kg-day
Grouse	0.056	0.00096	0.146

Dietary Type	Soil Inverts	Small Mammals	Plants
Diet Fraction (%)			100
Intake kg ww/kg-d	0	0	0.146

	Exposure Medium				
	Water	Soil/Sed.	Soil Inverts	Small Mammals	Plants
Intake rate	0.056	0.00096	0	0	0.146
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day	kg ww/kg-day

DOSE CALCULATION

Location	COPC	Media-Specific Dose (mg/kg-d)					**Total Dose mg/kg-day**
		Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	1.67E-10	8.01E-09			1.83E-07	1.91E-07
	TEQD/F/P	NA	1.06E-07			2.42E-06	2.53E-06
	Total PCB	NA	6.61E-04			1.51E-02	1.58E-02
	Aluminum	1.71E-02	1.30E+01			2.97E+02	3.11E+02
	Antimony	1.02E-04	2.71E-04			2.63E-04	6.36E-04
	Arsenic	7.97E-04	4.46E-03			3.82E-03	9.07E-03
	Barium	1.40E-02	2.74E-01			9.74E-01	1.26E+00
	Chromium	6.01E-05	1.58E-02			1.48E-02	3.07E-02
	Copper	5.19E-04	4.18E-02			1.89E-01	2.31E-01
	Lead	4.30E-05	1.54E-02			2.75E-02	4.30E-02
	Manganese	1.10E-01	5.50E-01			9.91E-01	1.65E+00
	Mercury	1.68E-06	5.74E-05			9.35E-02	9.36E-02
	Nickel	4.78E-04	1.47E-02			1.83E-02	3.35E-02
	Selenium	5.73E-05	1.47E-03			1.78E-02	1.93E-02
	Thallium	1.85E-06	1.34E-04			3.07E-03	3.20E-03
	Vanadium	2.80E-04	1.36E-02			1.51E-03	1.54E-02
	Zinc	7.93E-04	1.48E-01			1.72E+00	1.87E+00

LOAEL-BASED HQ CALCULATION

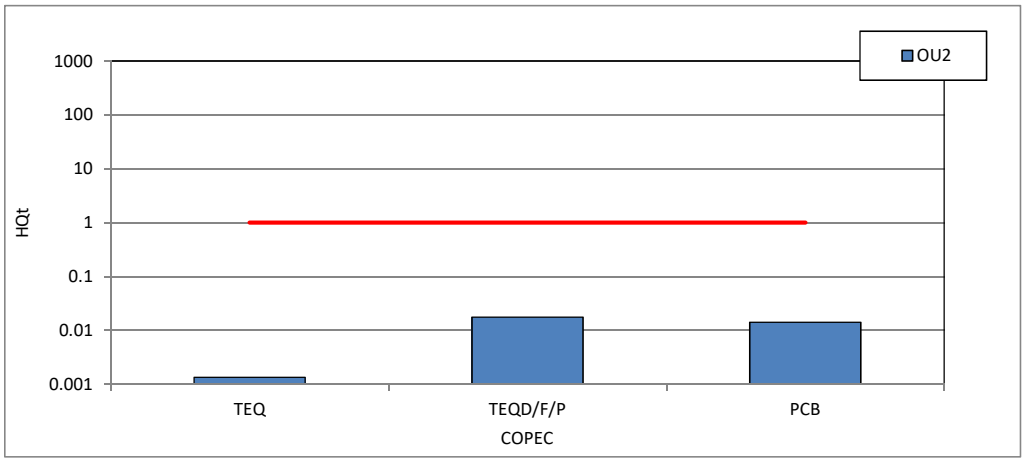
Location	Analyte	LOAEL TRV		LOAEL-Based HQ					LOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	1.4E-04		1.2E-06	5.6E-05			1.3E-03	1.3E-03
	TEQD/F/P	1.4E-04		NA	7.4E-04			1.7E-02	1.8E-02
	Total PCB	1.1E+00		NA	5.9E-04			1.3E-02	1.4E-02
	Aluminum	1.1E+03		1.6E-05	1.2E-02			2.7E-01	2.8E-01
	Antimony	NA		NA	NA			NA	NC
	Arsenic	4.5E+00		1.8E-04	9.9E-04			8.5E-04	2.0E-03
	Barium	4.2E+01		3.4E-04	6.6E-03			2.3E-02	3.0E-02
	Chromium	1.6E+01		3.9E-06	1.0E-03			9.5E-04	2.0E-03
	Copper	1.2E+01		4.3E-05	3.5E-03			1.6E-02	1.9E-02
	Lead	3.3E+00		1.3E-05	4.7E-03			8.4E-03	1.3E-02
	Manganese	3.8E+02		2.9E-04	1.5E-03			2.6E-03	4.4E-03
	Mercury	9.0E-01	6.4E-02	1.9E-06	6.4E-05			1.5E+00	1.5E+00
	Nickel	1.9E+01		2.6E-05	7.9E-04			9.8E-04	1.8E-03
	Selenium	5.8E-01		9.9E-05	2.5E-03			3.1E-02	3.3E-02
	Thallium	NA		NA	NA			NA	NC
	Vanadium	6.9E-01		4.1E-04	2.0E-02			2.2E-03	2.2E-02
	Zinc	1.7E+02		4.6E-06	8.6E-04			1.0E-02	1.1E-02

NOAEL-BASED HQ CALCULATION

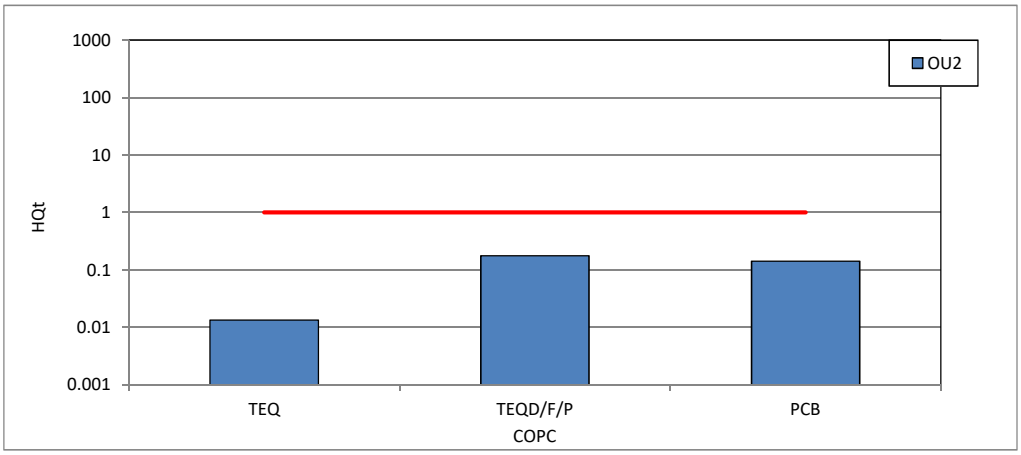
Location	Analyte	NOAEL TRV		NOAEL-Based HQ					NOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	1.4E-05		1.2E-05	5.6E-04			1.3E-02	1.3E-02
	TEQD/F/P	1.4E-05		NA	7.4E-03			1.7E-01	1.8E-01
	Total PCB	1.1E-01		NA	5.9E-03			1.3E-01	1.4E-01
	Aluminum	1.1E+02		1.6E-04	1.2E-01			2.7E+00	2.8E+00
	Antimony	NA		NA	NA			NA	NC
	Arsenic	2.2E+00		3.6E-04	2.0E-03			1.7E-03	4.0E-03
	Barium	2.1E+01		6.7E-04	1.3E-02			4.7E-02	6.1E-02
	Chromium	2.7E+00		2.3E-05	5.9E-03			5.6E-03	1.2E-02
	Copper	4.1E+00		1.3E-04	1.0E-02			4.7E-02	5.7E-02
	Lead	1.6E+00		2.6E-05	9.4E-03			1.7E-02	2.6E-02
	Manganese	1.8E+02		6.1E-04	3.1E-03			5.5E-03	9.2E-03
	Mercury	4.5E-01	6.4E-03	3.7E-06	1.3E-04			1.5E+01	1.5E+01
	Nickel	6.7E+00		7.1E-05	2.2E-03			2.7E-03	5.0E-03
	Selenium	2.9E-01		2.0E-04	5.1E-03			6.1E-02	6.7E-02
	Thallium	NA		NA	NA			NA	NC
	Vanadium	3.4E-01		8.1E-04	4.0E-02			4.4E-03	4.5E-02
	Zinc	6.6E+01		1.2E-05	2.2E-03			2.6E-02	2.8E-02

PCB HQ Summary for Grouse

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values



Receptor	Intake Rates		
	Water L/kg-day	Soil/Sed. kg/kg-day	Food kg ww/kg-day
Kestrel	0.012	0.001	0.324

Dietary Type	Soil Inverts	Small Mammals	Plants
Diet Fraction (%)	40	60	0
Intake kg ww/kg-d	0.1296	0.1944	0

	Exposure Medium				
	Water	Soil/Sed.	Soil Inverts	Small Mammals	Plants
Intake rate	0.012	0.001	0.1296	0.1944	0
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day	kg ww/kg-day

DOSE CALCULATION

Location	COPC	Media-Specific Dose (mg/kg-d)					**Total Dose mg/kg-day**
		Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	3.58E-11	8.35E-09	7.05E-07	7.81E-07		1.49E-06
	TEQD/F/P	NA	1.11E-07	1.49E-05	NA		1.51E-05
	Total PCB	NA	6.89E-04	7.68E-02	NA		7.75E-02
	Aluminum	3.66E-03	1.36E+01	2.82E+02	2.37E+00		2.98E+02
	Antimony	2.18E-05	2.82E-04	5.85E-03	4.47E-03		1.06E-02
	Arsenic	1.71E-04	4.64E-03	1.48E-02	NA		1.96E-02
	Barium	3.00E-03	2.85E-01	5.38E-01	9.14E-01		1.74E+00
	Chromium	1.29E-05	1.65E-02	1.05E-01	1.94E-02		1.41E-01
	Copper	1.11E-04	4.35E-02	4.65E-01	3.89E-01		8.97E-01
	Lead	9.20E-06	1.60E-02	1.57E-01	2.53E-02		1.98E-01
	Manganese	2.36E-02	5.73E-01	7.02E-01	3.11E-01		1.61E+00
	Mercury	3.60E-07	5.98E-05	8.68E-03	3.30E-03		1.20E-02
	Nickel	1.02E-04	1.54E-02	3.19E-01	3.11E-02		3.65E-01
	Selenium	1.23E-05	1.53E-03	2.63E-02	4.28E-02		7.06E-02
	Thallium	3.96E-07	1.40E-04	2.90E-03	NA		3.04E-03
	Vanadium	6.00E-05	1.42E-02	1.23E-02	NA		2.66E-02
	Zinc	1.70E-04	1.54E-01	9.25E+00	8.57E+00		1.80E+01

LOAEL-BASED HQ CALCULATION

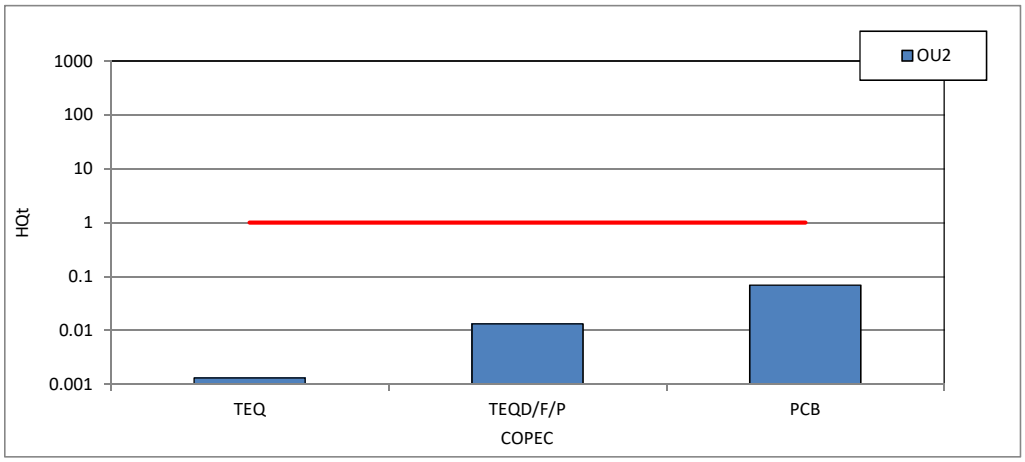
Location	Analyte	LOAEL TRV		LOAEL-Based HQ					LOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	1.2E-03		3.1E-08	7.3E-06	6.1E-04	6.8E-04		1.3E-03
	TEQD/F/P	1.2E-03		NA	9.6E-05	1.3E-02	NA		1.3E-02
	Total PCB	1.1E+00		NA	6.2E-04	6.9E-02	NA		6.9E-02
	Aluminum	1.1E+03		3.3E-06	1.2E-02	2.6E-01	2.2E-03		2.7E-01
	Antimony	NA		NA	NA	NA	NA		NC
	Arsenic	4.5E+00		3.8E-05	1.0E-03	3.3E-03	NA		4.4E-03
	Barium	4.2E+01		7.2E-05	6.8E-03	1.3E-02	2.2E-02		4.2E-02
	Chromium	1.6E+01		8.3E-07	1.1E-03	6.7E-03	1.2E-03		9.0E-03
	Copper	1.2E+01		9.2E-06	3.6E-03	3.8E-02	3.2E-02		7.4E-02
	Lead	3.3E+00		2.8E-06	4.9E-03	4.8E-02	7.8E-03		6.1E-02
	Manganese	3.8E+02		6.3E-05	1.5E-03	1.9E-03	8.3E-04		4.3E-03
	Mercury	9.0E-01	6.4E-02	4.0E-07	6.6E-05	1.4E-01	5.2E-02		1.9E-01
	Nickel	1.9E+01		5.5E-06	8.3E-04	1.7E-02	1.7E-03		2.0E-02
	Selenium	5.8E-01		2.1E-05	2.6E-03	4.5E-02	7.4E-02		1.2E-01
	Thallium	NA		NA	NA	NA	NA		NC
	Vanadium	6.9E-01		8.7E-05	2.1E-02	1.8E-02	NA		3.9E-02
	Zinc	1.7E+02		9.9E-07	9.0E-04	5.4E-02	5.0E-02		1.1E-01

NOAEL-BASED HQ CALCULATION

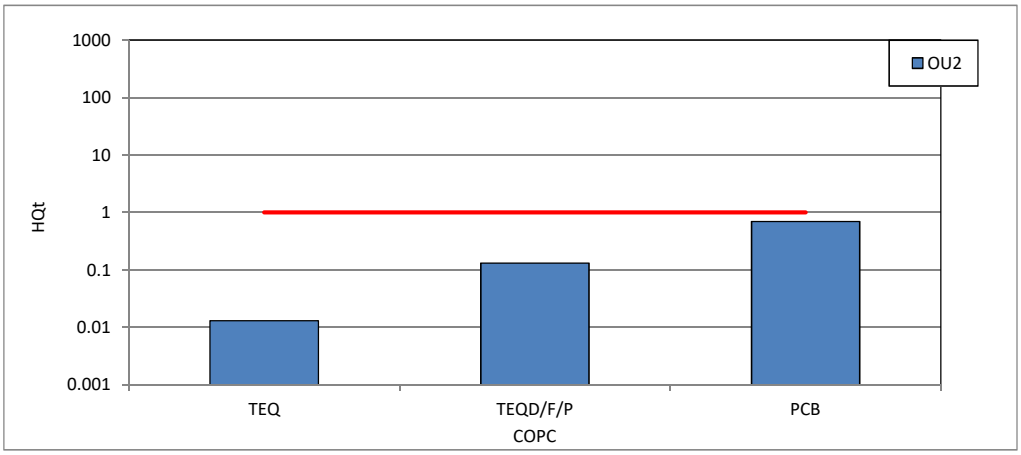
Location	Analyte	NOAEL TRV		NOAEL-Based HQ					NOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	1.2E-04		3.1E-07	7.3E-05	6.1E-03	6.8E-03		1.3E-02
	TEQD/F/P	1.2E-04		NA	9.6E-04	1.3E-01	NA		1.3E-01
	Total PCB	1.1E-01		NA	6.2E-03	6.9E-01	NA		6.9E-01
	Aluminum	1.1E+02		3.3E-05	1.2E-01	2.6E+00	2.2E-02		2.7E+00
	Antimony	NA		NA	NA	NA	NA		NC
	Arsenic	2.2E+00		7.6E-05	2.1E-03	6.6E-03	NA		8.8E-03
	Barium	2.1E+01		1.4E-04	1.4E-02	2.6E-02	4.4E-02		8.4E-02
	Chromium	2.7E+00		4.8E-06	6.2E-03	3.9E-02	7.3E-03		5.3E-02
	Copper	4.1E+00		2.7E-05	1.1E-02	1.1E-01	9.6E-02		2.2E-01
	Lead	1.6E+00		5.6E-06	9.8E-03	9.6E-02	1.6E-02		1.2E-01
	Manganese	1.8E+02		1.3E-04	3.2E-03	3.9E-03	1.7E-03		9.0E-03
	Mercury	4.5E-01	6.4E-03	8.0E-07	1.3E-04	1.4E+00	5.2E-01		1.9E+00
	Nickel	6.7E+00		1.5E-05	2.3E-03	4.7E-02	4.6E-03		5.4E-02
	Selenium	2.9E-01		4.2E-05	5.3E-03	9.1E-02	1.5E-01		2.4E-01
	Thallium	NA		NA	NA	NA	NA		NC
	Vanadium	3.4E-01		1.7E-04	4.1E-02	3.6E-02	NA		7.7E-02
	Zinc	6.6E+01		2.6E-06	2.3E-03	1.4E-01	1.3E-01		2.7E-01

PCB HQ Summary for Kestrel

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values



Receptor	Intake Rates		
	Water L/kg-day	Soil/Sed. kg/kg-day	Food kg ww/kg-day
Flicker	0.113	0.0079	0.381

Dietary Type	Soil Inverts	Small Mammals	Plants
Diet Fraction (%)	70	0	30
Intake kg ww/kg-d	0.2667	0	0.1143

	Exposure Medium				
	Water	Soil/Sed.	Soil Inverts	Small Mammals	Plants
Intake rate	0.113	0.0079	0.2667	0	0.1143
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day	kg ww/kg-day

DOSE CALCULATION

Location	COPC	Media-Specific Dose (mg/kg-d)					Total Dose mg/kg-day
		Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	3.37E-10	6.59E-08	1.45E-06		1.43E-07	1.66E-06
	TEQD/F/P	NA	8.73E-07	3.08E-05		1.89E-06	3.35E-05
	Total PCB	NA	5.44E-03	1.58E-01		1.18E-02	1.75E-01
	Aluminum	3.45E-02	1.07E+02	5.80E+02		2.33E+02	9.20E+02
	Antimony	2.05E-04	2.23E-03	1.20E-02		2.06E-04	1.47E-02
	Arsenic	1.61E-03	3.67E-02	3.05E-02		2.99E-03	7.17E-02
	Barium	2.83E-02	2.25E+00	1.11E+00		7.63E-01	4.15E+00
	Chromium	1.21E-04	1.30E-01	2.15E-01		1.16E-02	3.57E-01
	Copper	1.05E-03	3.44E-01	9.56E-01		1.48E-01	1.45E+00
	Lead	8.67E-05	1.27E-01	3.22E-01		2.16E-02	4.71E-01
	Manganese	2.22E-01	4.52E+00	1.44E+00		7.76E-01	6.97E+00
	Mercury	3.39E-06	4.72E-04	1.79E-02		7.32E-02	9.16E-02
	Nickel	9.64E-04	1.21E-01	6.55E-01		1.43E-02	7.92E-01
	Selenium	1.16E-04	1.21E-02	5.41E-02		1.39E-02	8.02E-02
	Thallium	3.73E-06	1.11E-03	5.97E-03		2.40E-03	9.48E-03
	Vanadium	5.65E-04	1.12E-01	2.54E-02		1.18E-03	1.39E-01
	Zinc	1.60E-03	1.21E+00	1.90E+01		1.35E+00	2.16E+01

LOAEL-BASED HQ CALCULATION

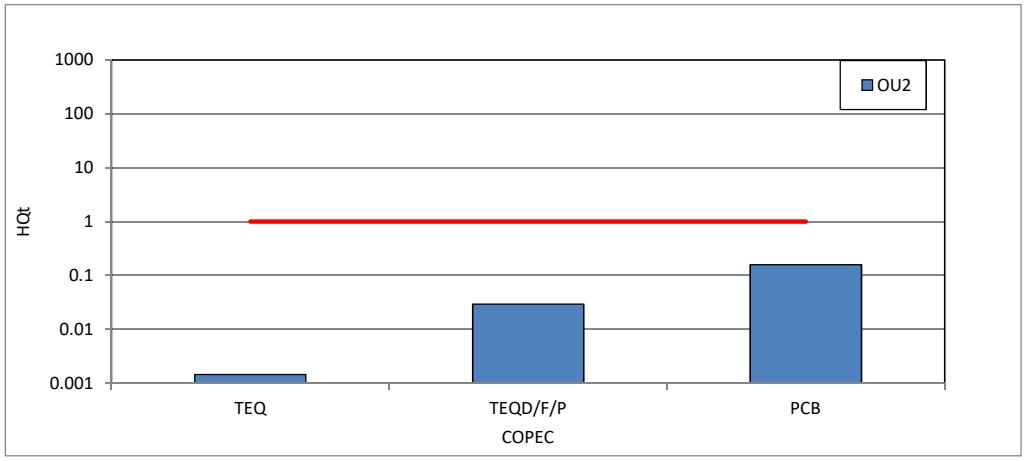
Location	Analyte	LOAEL TRV		LOAEL-Based HQ					LOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	1.2E-03		2.9E-07	5.7E-05	1.3E-03		1.2E-04	1.4E-03
	TEQD/F/P	1.2E-03		NA	7.6E-04	2.7E-02		1.6E-03	2.9E-02
	Total PCB	1.1E+00		NA	4.9E-03	1.4E-01		1.1E-02	1.6E-01
	Aluminum	1.1E+03		3.1E-05	9.8E-02	5.3E-01		2.1E-01	8.4E-01
	Antimony	NA		NA	NA	NA		NA	NC
	Arsenic	4.5E+00		3.6E-04	8.2E-03	6.8E-03		6.6E-04	1.6E-02
	Barium	4.2E+01		6.8E-04	5.4E-02	2.7E-02		1.8E-02	1.0E-01
	Chromium	1.6E+01		7.8E-06	8.3E-03	1.4E-02		7.4E-04	2.3E-02
	Copper	1.2E+01		8.7E-05	2.8E-02	7.9E-02		1.2E-02	1.2E-01
	Lead	3.3E+00		2.7E-05	3.9E-02	9.9E-02		6.6E-03	1.4E-01
	Manganese	3.8E+02		5.9E-04	1.2E-02	3.8E-03		2.1E-03	1.8E-02
	Mercury	9.0E-01	6.4E-02	3.8E-06	5.2E-04	2.8E-01		1.1E+00	1.4E+00
	Nickel	1.9E+01		5.2E-05	6.5E-03	3.5E-02		7.7E-04	4.3E-02
	Selenium	5.8E-01		2.0E-04	2.1E-02	9.3E-02		2.4E-02	1.4E-01
	Thallium	NA		NA	NA	NA		NA	NC
	Vanadium	6.9E-01		8.2E-04	1.6E-01	3.7E-02		1.7E-03	2.0E-01
	Zinc	1.7E+02		9.4E-06	7.1E-03	1.1E-01		7.9E-03	1.3E-01

NOAEL-BASED HQ CALCULATION

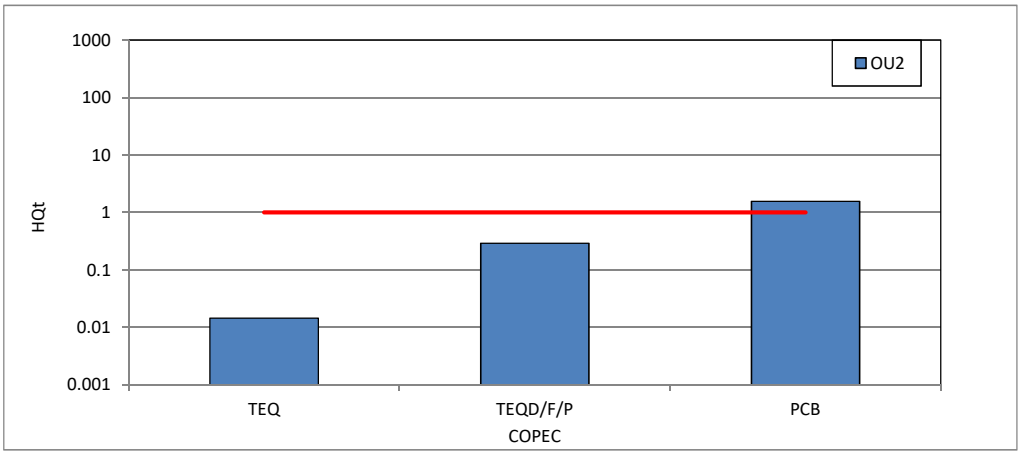
Location	Analyte	NOAEL TRV		NOAEL-Based HQ					NOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	1.2E-04		2.9E-06	5.7E-04	1.3E-02		1.2E-03	1.4E-02
	TEQD/F/P	1.2E-04		NA	7.6E-03	2.7E-01		1.6E-02	2.9E-01
	Total PCB	1.1E-01		NA	4.9E-02	1.4E+00		1.1E-01	1.6E+00
	Aluminum	1.1E+02		3.1E-04	9.8E-01	5.3E+00		2.1E+00	8.4E+00
	Antimony	NA		NA	NA	NA		NA	NC
	Arsenic	2.2E+00		7.2E-04	1.6E-02	1.4E-02		1.3E-03	3.2E-02
	Barium	2.1E+01		1.4E-03	1.1E-01	5.3E-02		3.7E-02	2.0E-01
	Chromium	2.7E+00		4.6E-05	4.9E-02	8.1E-02		4.4E-03	1.3E-01
	Copper	4.1E+00		2.6E-04	8.5E-02	2.4E-01		3.7E-02	3.6E-01
	Lead	1.6E+00		5.3E-05	7.8E-02	2.0E-01		1.3E-02	2.9E-01
	Manganese	1.8E+02		1.2E-03	2.5E-02	8.1E-03		4.3E-03	3.9E-02
	Mercury	4.5E-01	6.4E-03	7.5E-06	1.0E-03	2.8E+00		1.1E+01	1.4E+01
	Nickel	6.7E+00		1.4E-04	1.8E-02	9.8E-02		2.1E-03	1.2E-01
	Selenium	2.9E-01		4.0E-04	4.2E-02	1.9E-01		4.8E-02	2.8E-01
	Thallium	NA		NA	NA	NA		NA	NC
	Vanadium	3.4E-01		1.6E-03	3.3E-01	7.4E-02		3.4E-03	4.0E-01
	Zinc	6.6E+01		2.4E-05	1.8E-02	2.9E-01		2.0E-02	3.3E-01

PCB HQ Summary for Northern Flicker

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values



Receptor	Intake Rates		
	Water L/kg-day	Soil/Sed. kg/kg-day	Food kg ww/kg-day
Nutcracker	0.115	0.0026	0.356

Dietary Type	Soil Inverts	Small Mammals	Plants
Diet Fraction (%)	15	0	85
Intake kg ww/kg-d	0.0534	0	0.3026

	Exposure Medium				
	Water	Soil/Sed.	Soil Inverts	Small Mammals	Plants
Intake rate	0.115	0.0026	0.0534	0	0.3026
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day	kg ww/kg-day

DOSE CALCULATION

Location	COPC	Media-Specific Dose (mg/kg-d)					**Total Dose mg/kg-day**
		Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	3.43E-10	2.17E-08	2.91E-07		3.79E-07	6.91E-07
	TEQD/F/P	NA	2.87E-07	6.16E-06		5.02E-06	1.15E-05
	Total PCB	NA	1.79E-03	3.16E-02		3.13E-02	6.47E-02
	Aluminum	3.51E-02	3.53E+01	1.16E+02		6.17E+02	7.68E+02
	Antimony	2.09E-04	7.33E-04	2.41E-03		5.46E-04	3.90E-03
	Arsenic	1.64E-03	1.21E-02	6.10E-03		7.91E-03	2.77E-02
	Barium	2.88E-02	7.42E-01	2.22E-01		2.02E+00	3.01E+00
	Chromium	1.23E-04	4.28E-02	4.31E-02		3.07E-02	1.17E-01
	Copper	1.07E-03	1.13E-01	1.91E-01		3.91E-01	6.97E-01
	Lead	8.82E-05	4.17E-02	6.45E-02		5.71E-02	1.63E-01
	Manganese	2.26E-01	1.49E+00	2.89E-01		2.05E+00	4.06E+00
	Mercury	3.45E-06	1.55E-04	3.58E-03		1.94E-01	1.98E-01
	Nickel	9.81E-04	3.99E-02	1.31E-01		3.79E-02	2.10E-01
	Selenium	1.18E-04	3.98E-03	1.08E-02		3.69E-02	5.18E-02
	Thallium	3.80E-06	3.64E-04	1.20E-03		6.35E-03	7.92E-03
	Vanadium	5.75E-04	3.68E-02	5.08E-03		3.12E-03	4.56E-02
	Zinc	1.63E-03	4.00E-01	3.81E+00		3.57E+00	7.78E+00

LOAEL-BASED HQ CALCULATION

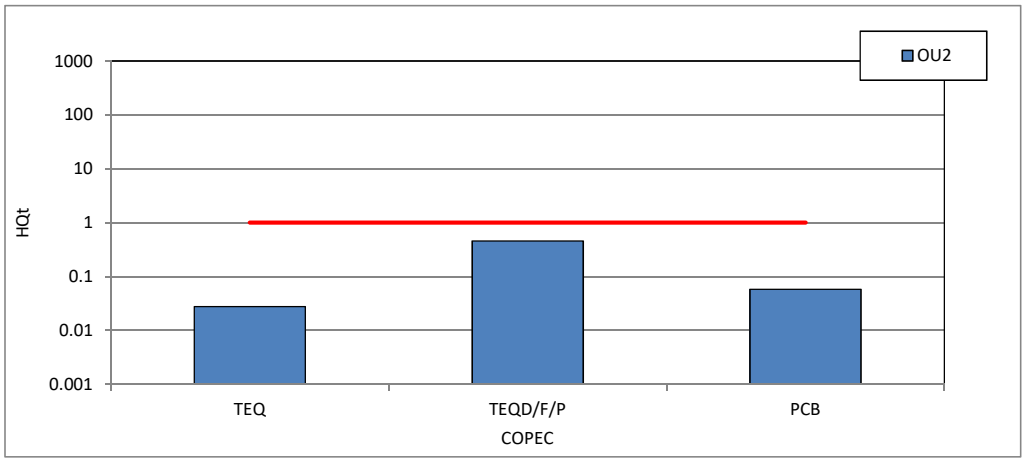
Location	Analyte	LOAEL TRV		LOAEL-Based HQ					LOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	2.5E-05		1.4E-05	8.7E-04	1.2E-02		1.5E-02	2.8E-02
	TEQD/F/P	2.5E-05		NA	1.1E-02	2.5E-01		2.0E-01	4.6E-01
	Total PCB	1.1E+00		NA	1.6E-03	2.8E-02		2.8E-02	5.8E-02
	Aluminum	1.1E+03		3.2E-05	3.2E-02	1.1E-01		5.6E-01	7.0E-01
	Antimony	NA		NA	NA	NA		NA	NC
	Arsenic	4.5E+00		3.6E-04	2.7E-03	1.4E-03		1.8E-03	6.2E-03
	Barium	4.2E+01		6.9E-04	1.8E-02	5.3E-03		4.8E-02	7.2E-02
	Chromium	1.6E+01		7.9E-06	2.7E-03	2.8E-03		2.0E-03	7.5E-03
	Copper	1.2E+01		8.8E-05	9.3E-03	1.6E-02		3.2E-02	5.8E-02
	Lead	3.3E+00		2.7E-05	1.3E-02	2.0E-02		1.8E-02	5.0E-02
	Manganese	3.8E+02		6.0E-04	3.9E-03	7.7E-04		5.4E-03	1.1E-02
	Mercury	9.0E-01	6.4E-02	3.8E-06	1.7E-04	5.6E-02		3.0E+00	3.1E+00
	Nickel	1.9E+01		5.3E-05	2.1E-03	7.1E-03		2.0E-03	1.1E-02
	Selenium	5.8E-01		2.0E-04	6.9E-03	1.9E-02		6.4E-02	8.9E-02
	Thallium	NA		NA	NA	NA		NA	NC
	Vanadium	6.9E-01		8.4E-04	5.4E-02	7.4E-03		4.5E-03	6.6E-02
	Zinc	1.7E+02		9.5E-06	2.3E-03	2.2E-02		2.1E-02	4.5E-02

NOAEL-BASED HQ CALCULATION

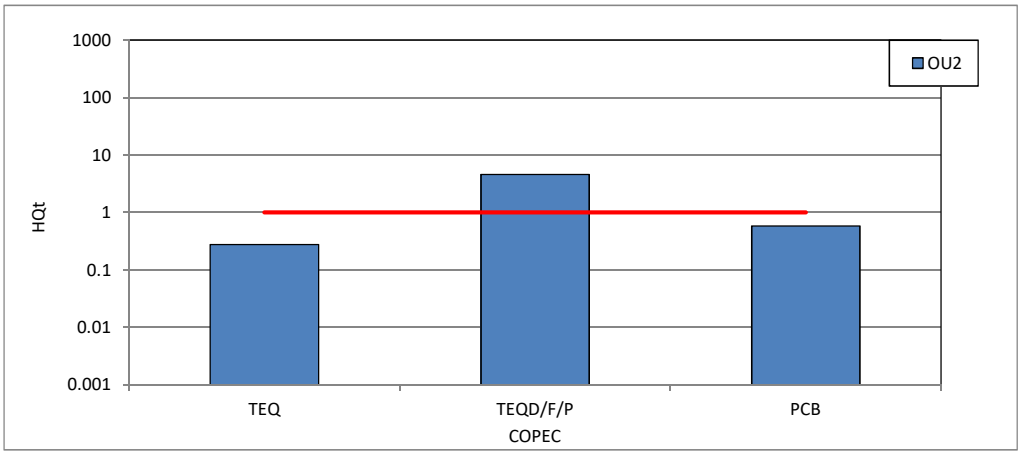
Location	Analyte	NOAEL TRV		NOAEL-Based HQ					NOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	2.5E-06		1.4E-04	8.7E-03	1.2E-01		1.5E-01	2.8E-01
	TEQD/F/P	2.5E-06		NA	1.1E-01	2.5E+00		2.0E+00	4.6E+00
	Total PCB	1.1E-01		NA	1.6E-02	2.8E-01		2.8E-01	5.8E-01
	Aluminum	1.1E+02		3.2E-04	3.2E-01	1.1E+00		5.6E+00	7.0E+00
	Antimony	NA		NA	NA	NA		NA	NC
	Arsenic	2.2E+00		7.3E-04	5.4E-03	2.7E-03		3.5E-03	1.2E-02
	Barium	2.1E+01		1.4E-03	3.6E-02	1.1E-02		9.7E-02	1.4E-01
	Chromium	2.7E+00		4.6E-05	1.6E-02	1.6E-02		1.2E-02	4.4E-02
	Copper	4.1E+00		2.6E-04	2.8E-02	4.7E-02		9.7E-02	1.7E-01
	Lead	1.6E+00		5.4E-05	2.6E-02	4.0E-02		3.5E-02	1.0E-01
	Manganese	1.8E+02		1.3E-03	8.3E-03	1.6E-03		1.1E-02	2.3E-02
	Mercury	4.5E-01	6.4E-03	7.7E-06	3.5E-04	5.6E-01		3.0E+01	3.1E+01
	Nickel	6.7E+00		1.5E-04	6.0E-03	2.0E-02		5.7E-03	3.1E-02
	Selenium	2.9E-01		4.1E-04	1.4E-02	3.7E-02		1.3E-01	1.8E-01
	Thallium	NA		NA	NA	NA		NA	NC
	Vanadium	3.4E-01		1.7E-03	1.1E-01	1.5E-02		9.1E-03	1.3E-01
	Zinc	6.6E+01		2.5E-05	6.0E-03	5.8E-02		5.4E-02	1.2E-01

PCB HQ Summary for Clark's Nutcracker

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values



Receptor	Intake Rates		
	Water L/kg-day	Soil/Sed. kg/kg-day	Food kg ww/kg-day
Deer	0.065	0.0006	0.03

Dietary Type	Soil Inverts	Small Mammals	Plants
Diet Fraction (%)	0	0	100
Intake kg ww/kg-d	0	0	0.03

	Exposure Medium				
	Water	Soil/Sed.	Soil Inverts	Small Mammals	Plants
Intake rate	0.065	0.0006	0	0	0.03
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day	kg ww/kg-day

DOSE CALCULATION

Location	COPC	Media-Specific Dose (mg/kg-d)					Total Dose mg/kg-day
		Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	1.94E-10	5.01E-09			3.76E-08	4.28E-08
	TEQD/F/P	NA	6.63E-08			4.97E-07	5.64E-07
	Total PCB	NA	4.13E-04			3.10E-03	3.51E-03
	Aluminum	1.98E-02	8.15E+00			6.11E+01	6.93E+01
	Antimony	1.18E-04	1.69E-04			5.41E-05	3.41E-04
	Arsenic	9.26E-04	2.79E-03			7.84E-04	4.50E-03
	Barium	1.63E-02	1.71E-01			2.00E-01	3.88E-01
	Chromium	6.97E-05	9.89E-03			3.04E-03	1.30E-02
	Copper	6.02E-04	2.61E-02			3.88E-02	6.55E-02
	Lead	4.99E-05	9.62E-03			5.66E-03	1.53E-02
	Manganese	1.28E-01	3.44E-01			2.04E-01	6.75E-01
	Mercury	1.95E-06	3.59E-05			1.92E-02	1.93E-02
	Nickel	5.55E-04	9.22E-03			3.76E-03	1.35E-02
	Selenium	6.66E-05	9.18E-04			3.66E-03	4.64E-03
	Thallium	2.15E-06	8.40E-05			6.30E-04	7.16E-04
	Vanadium	3.25E-04	8.50E-03			3.09E-04	9.14E-03
	Zinc	9.20E-04	9.22E-02			3.54E-01	4.47E-01

LOAEL-BASED HQ CALCULATION

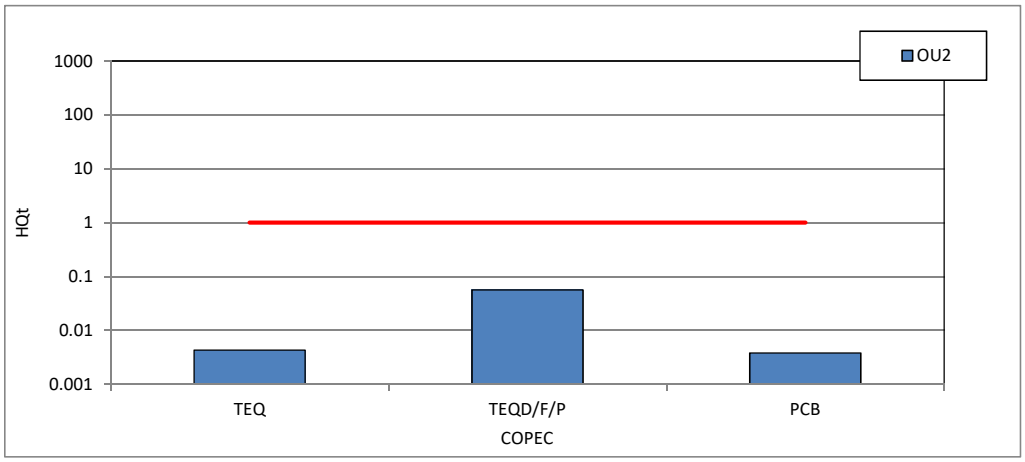
Location	Analyte	LOAEL TRV		LOAEL-Based HQ					LOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	1.0E-05		1.9E-05	5.0E-04			3.8E-03	4.3E-03
	TEQD/F/P	1.0E-05		NA	6.6E-03			5.0E-02	5.6E-02
	Total PCB	9.3E-01		NA	4.4E-04			3.3E-03	3.8E-03
	Aluminum	1.9E+01		1.0E-03	4.2E-01			3.2E+00	3.6E+00
	Antimony	5.9E-01		2.0E-04	2.9E-04			9.2E-05	5.8E-04
	Arsenic	1.7E+00		5.6E-04	1.7E-03			4.7E-04	2.7E-03
	Barium	8.3E+01		2.0E-04	2.1E-03			2.4E-03	4.7E-03
	Chromium	5.8E+01		1.2E-06	1.7E-04			5.2E-05	2.2E-04
	Copper	9.3E+00		6.4E-05	2.8E-03			4.2E-03	7.0E-03
	Lead	8.9E+00		5.6E-06	1.1E-03			6.4E-04	1.7E-03
	Manganese	1.5E+02		8.7E-04	2.4E-03			1.4E-03	4.6E-03
	Mercury	2.5E-01	1.6E-01	7.8E-06	1.4E-04			1.2E-01	1.2E-01
	Nickel	3.4E+00		1.6E-04	2.7E-03			1.1E-03	4.0E-03
	Selenium	2.2E-01		3.1E-04	4.3E-03			1.7E-02	2.2E-02
	Thallium	7.4E-02		2.9E-05	1.1E-03			8.5E-03	9.7E-03
	Vanadium	8.3E+00		3.9E-05	1.0E-03			3.7E-05	1.1E-03
	Zinc	3.0E+02		3.1E-06	3.1E-04			1.2E-03	1.5E-03

NOAEL-BASED HQ CALCULATION

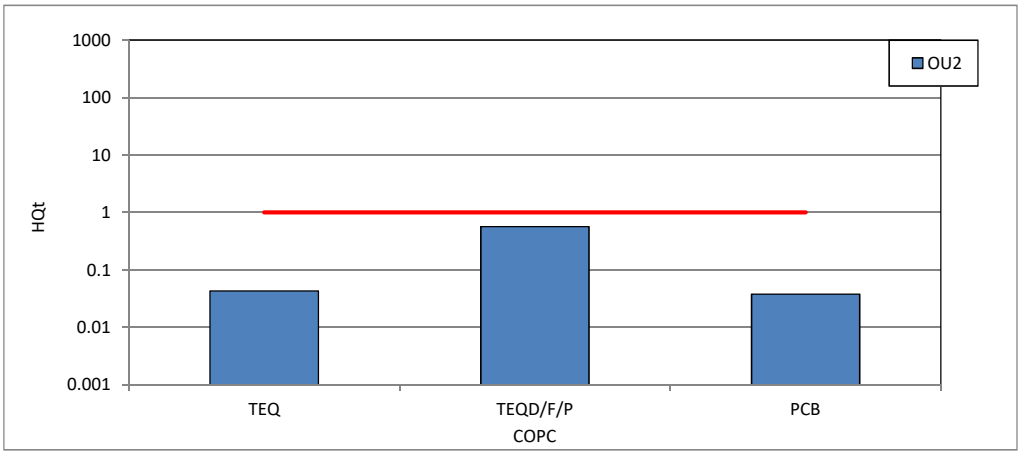
Location	Analyte	NOAEL TRV		NOAEL-Based HQ					NOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	1.0E-06		1.9E-04	5.0E-03			3.8E-02	4.3E-02
	TEQD/F/P	1.0E-06		NA	6.6E-02			5.0E-01	5.6E-01
	Total PCB	9.3E-02		NA	4.4E-03			3.3E-02	3.8E-02
	Aluminum	1.9E+00		1.0E-02	4.2E+00			3.2E+01	3.6E+01
	Antimony	5.9E-02		2.0E-03	2.9E-03			9.2E-04	5.8E-03
	Arsenic	1.0E+00		8.9E-04	2.7E-03			7.5E-04	4.3E-03
	Barium	5.2E+01		3.1E-04	3.3E-03			3.9E-03	7.5E-03
	Chromium	2.4E+00		2.9E-05	4.1E-03			1.3E-03	5.4E-03
	Copper	5.6E+00		1.1E-04	4.7E-03			6.9E-03	1.2E-02
	Lead	4.7E+00		1.1E-05	2.0E-03			1.2E-03	3.3E-03
	Manganese	5.2E+01		2.5E-03	6.7E-03			4.0E-03	1.3E-02
	Mercury	2.5E-02	3.2E-02	7.8E-05	1.4E-03			6.0E-01	6.0E-01
	Nickel	1.7E+00		3.3E-04	5.4E-03			2.2E-03	8.0E-03
	Selenium	1.4E-01		4.7E-04	6.4E-03			2.6E-02	3.2E-02
	Thallium	7.4E-03		2.9E-04	1.1E-02			8.5E-02	9.7E-02
	Vanadium	4.2E+00		7.8E-05	2.0E-03			7.4E-05	2.2E-03
	Zinc	7.5E+01		1.2E-05	1.2E-03			4.7E-03	5.9E-03

PCB HQ Summary for Deer

Panel A: LOAEL-Based HQ Values



Panel B: NOAEL-Based HQ Values



Receptor	Intake Rates		
	Water L/kg-day	Soil/Sed. kg/kg-day	Food kg ww/kg-day
Grouse	0.056	0.00096	0.146

Dietary Type	Soil Inverts	Small Mammals	Plants
Diet Fraction (%)			100
Intake kg ww/kg-d	0	0	0.146

	Exposure Medium				
	Water	Soil/Sed.	Soil Inverts	Small Mammals	Plants
Intake rate	0.056	0.00096	0	0	0.146
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day	kg ww/kg-day

DOSE CALCULATION

Location	COPC	Media-Specific Dose (mg/kg-d)					Total Dose mg/kg-day
		Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	1.67E-10	8.01E-09			1.83E-07	1.91E-07
	Aluminum	1.71E-02	1.30E+01			2.97E+02	3.11E+02
	Antimony	1.02E-04	2.71E-04			2.63E-04	6.36E-04
	Arsenic	7.97E-04	4.46E-03			3.82E-03	9.07E-03
	Barium	1.40E-02	2.74E-01			9.74E-01	1.26E+00
	Chromium	6.01E-05	1.58E-02			1.48E-02	3.07E-02
	Copper	5.19E-04	4.18E-02			1.89E-01	2.31E-01
	Lead	4.30E-05	1.54E-02			2.75E-02	4.30E-02
	Manganese	1.10E-01	5.50E-01			9.91E-01	1.65E+00
	Mercury	1.68E-06	5.74E-05			9.35E-02	9.36E-02
	Nickel	4.78E-04	1.47E-02			1.83E-02	3.35E-02
	Selenium	5.73E-05	1.47E-03			1.78E-02	1.93E-02
	Thallium	1.85E-06	1.34E-04			3.07E-03	3.20E-03
	Vanadium	2.80E-04	1.36E-02			1.51E-03	1.54E-02
	Zinc	7.93E-04	1.48E-01			1.72E+00	1.87E+00
OU3 Uplands	TEQ	1.67E-10	1.09E-07			2.49E-06	2.60E-06
	Aluminum	1.71E-02	1.05E+01			2.40E+02	2.50E+02
	Antimony	1.02E-04	1.04E-03			9.28E-04	2.06E-03
	Arsenic	7.97E-04	7.49E-03			6.41E-03	1.47E-02
	Barium	1.40E-02	5.14E-01			1.83E+00	2.36E+00
	Chromium	6.01E-05	2.10E-02			1.96E-02	4.07E-02
	Copper	5.19E-04	3.51E-02			1.76E-01	2.12E-01
	Lead	4.30E-05	1.77E-02			2.98E-02	4.75E-02
	Manganese	1.10E-01	9.66E-01			1.74E+00	2.82E+00
	Mercury	1.68E-06	1.66E-03			1.65E-02	1.82E-02
	Nickel	4.78E-04	1.32E-02			1.68E-02	3.05E-02
	Selenium	5.73E-05	5.93E-04			6.54E-03	7.19E-03
	Thallium	1.85E-06	1.94E-04			4.42E-03	4.62E-03
	Vanadium	2.80E-04	2.48E-02			2.74E-03	2.78E-02
	Zinc	7.93E-04	2.14E-01			2.12E+00	2.33E+00
OU3 Floodplain	TEQ	1.67E-10	4.06E-08			9.26E-07	9.67E-07
	Aluminum	1.71E-02	1.33E+01			3.03E+02	3.17E+02
	Antimony	1.02E-04	4.51E-04			4.25E-04	9.78E-04
	Arsenic	7.97E-04	6.16E-03			5.28E-03	1.22E-02
	Barium	1.40E-02	9.84E-01			3.50E+00	4.50E+00
	Chromium	6.01E-05	2.18E-02			2.04E-02	4.22E-02
	Copper	5.19E-04	6.96E-02			2.31E-01	3.01E-01
	Lead	4.30E-05	1.85E-02			3.05E-02	4.91E-02
	Manganese	1.10E-01	6.19E-01			1.12E+00	1.85E+00
	Mercury	1.68E-06	1.18E-03			1.97E-02	2.09E-02
	Nickel	4.78E-04	1.01E-02			1.38E-02	2.43E-02
	Selenium	5.73E-05	3.19E-04			3.29E-03	3.67E-03
	Thallium	1.85E-06	1.61E-04			3.68E-03	3.84E-03
	Vanadium	2.80E-04	2.29E-02			2.53E-03	2.57E-02
	Zinc	7.93E-04	1.82E-01			1.93E+00	2.12E+00
Undisturbed Floodplain Area	TEQ	7.64E-11	4.04E-10			9.22E-09	9.70E-09
	Aluminum	1.38E-02	7.78E+00			1.77E+02	1.85E+02
	Antimony	1.41E-05	3.55E-04			3.40E-04	7.09E-04
	Arsenic	4.90E-04	9.79E-03			8.38E-03	1.87E-02
	Barium	6.80E-03	1.64E-01			5.84E-01	7.55E-01
	Chromium	1.61E-05	9.22E-03			8.62E-03	1.79E-02
	Copper	7.77E-04	7.58E-02			2.39E-01	3.16E-01
	Lead	4.40E-05	1.74E-02			2.95E-02	4.69E-02
	Manganese	9.20E-03	4.26E-01			7.68E-01	1.20E+00
	Mercury	NA	9.31E-05			7.29E-02	7.30E-02
	Nickel	2.79E-05	7.78E-03			1.13E-02	1.91E-02
	Selenium	7.84E-06	ND			NA	7.84E-06
	Thallium	NA	1.82E-04			4.16E-03	4.34E-03
	Vanadium	4.88E-05	1.40E-02			1.55E-03	1.56E-02
	Zinc	7.21E-04	1.93E-01			2.00E+00	2.19E+00

LOAEL-BASED HQ CALCULATION

Location	Analyte	LOAEL TRV		LOAEL-Based HQ					LOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	1.4E-04		1.2E-06	5.6E-05			1.3E-03	1.3E-03
	Aluminum	1.1E+03		1.6E-05	1.2E-02			2.7E-01	2.8E-01
	Antimony	NA		NA	NA			NA	NC
	Arsenic	4.5E+00		1.8E-04	9.9E-04			8.5E-04	2.0E-03
	Barium	4.2E+01		3.4E-04	6.6E-03			2.3E-02	3.0E-02
	Chromium	1.6E+01		3.9E-06	1.0E-03			9.5E-04	2.0E-03
	Copper	1.2E+01		4.3E-05	3.5E-03			1.6E-02	1.9E-02
	Lead	3.3E+00		1.3E-05	4.7E-03			8.4E-03	1.3E-02
	Manganese	3.8E+02		2.9E-04	1.5E-03			2.6E-03	4.4E-03
	Mercury	9.0E-01	6.4E-02	1.9E-06	6.4E-05			1.5E+00	1.5E+00
	Nickel	1.9E+01		2.6E-05	7.9E-04			9.8E-04	1.8E-03
	Selenium	5.8E-01		9.9E-05	2.5E-03			3.1E-02	3.3E-02
	Thallium	NA		NA	NA			NA	NC
	Vanadium	6.9E-01		4.1E-04	2.0E-02			2.2E-03	2.2E-02
	Zinc	1.7E+02		4.6E-06	8.6E-04			1.0E-02	1.1E-02
OU3 Uplands	TEQ	1.4E-04		1.2E-06	7.6E-04			1.7E-02	1.8E-02
	Aluminum	1.1E+03		1.6E-05	9.6E-03			2.2E-01	2.3E-01
	Antimony	NA		NA	NA			NA	NC
	Arsenic	4.5E+00		1.8E-04	1.7E-03			1.4E-03	3.3E-03
	Barium	4.2E+01		3.4E-04	1.2E-02			4.4E-02	5.7E-02
	Chromium	1.6E+01		3.9E-06	1.3E-03			1.3E-03	2.6E-03
	Copper	1.2E+01		4.3E-05	2.9E-03			1.5E-02	1.8E-02
	Lead	3.3E+00		1.3E-05	5.4E-03			9.1E-03	1.5E-02
	Manganese	3.8E+02		2.9E-04	2.6E-03			4.6E-03	7.5E-03
	Mercury	9.0E-01	6.4E-02	1.9E-06	1.8E-03			2.6E-01	2.6E-01
	Nickel	1.9E+01		2.6E-05	7.1E-04			9.1E-04	1.6E-03
	Selenium	5.8E-01		9.9E-05	1.0E-03			1.1E-02	1.2E-02
	Thallium	NA		NA	NA			NA	NC
	Vanadium	6.9E-01		4.1E-04	3.6E-02			4.0E-03	4.0E-02
	Zinc	1.7E+02		4.6E-06	1.3E-03			1.2E-02	1.4E-02
OU3 Floodplain	TEQ	1.4E-04		1.2E-06	2.8E-04			6.5E-03	6.8E-03
	Aluminum	1.1E+03		1.6E-05	1.2E-02			2.8E-01	2.9E-01
	Antimony	NA		NA	NA			NA	NC
	Arsenic	4.5E+00		1.8E-04	1.4E-03			1.2E-03	2.7E-03
	Barium	4.2E+01		3.4E-04	2.4E-02			8.4E-02	1.1E-01
	Chromium	1.6E+01		3.9E-06	1.4E-03			1.3E-03	2.7E-03
	Copper	1.2E+01		4.3E-05	5.8E-03			1.9E-02	2.5E-02
	Lead	3.3E+00		1.3E-05	5.7E-03			9.4E-03	1.5E-02
	Manganese	3.8E+02		2.9E-04	1.6E-03			3.0E-03	4.9E-03
	Mercury	9.0E-01	6.4E-02	1.9E-06	1.3E-03			3.1E-01	3.1E-01
	Nickel	1.9E+01		2.6E-05	5.4E-04			7.4E-04	1.3E-03
	Selenium	5.8E-01		9.9E-05	5.5E-04			5.7E-03	6.3E-03
	Thallium	NA		NA	NA			NA	NC
	Vanadium	6.9E-01		4.1E-04	3.3E-02			3.7E-03	3.7E-02
	Zinc	1.7E+02		4.6E-06	1.1E-03			1.1E-02	1.2E-02
Undisturbed Floodplain Area	TEQ	1.4E-04		5.3E-07	2.8E-06			6.4E-05	6.8E-05
	Aluminum	1.1E+03		1.3E-05	7.1E-03			1.6E-01	1.7E-01
	Antimony	NA		NA	NA			NA	NC
	Arsenic	4.5E+00		1.1E-04	2.2E-03			1.9E-03	4.1E-03
	Barium	4.2E+01		1.6E-04	3.9E-03			1.4E-02	1.8E-02
	Chromium	1.6E+01		1.0E-06	5.9E-04			5.5E-04	1.1E-03
	Copper	1.2E+01		6.4E-05	6.3E-03			2.0E-02	2.6E-02
	Lead	3.3E+00		1.4E-05	5.3E-03			9.0E-03	1.4E-02
	Manganese	3.8E+02		2.4E-05	1.1E-03			2.0E-03	3.2E-03
	Mercury	9.0E-01	6.4E-02	NA	1.0E-04			1.1E+00	1.1E+00
	Nickel	1.9E+01		1.5E-06	4.2E-04			6.1E-04	1.0E-03
	Selenium	5.8E-01		1.4E-05	ND			NA	1.4E-05
	Thallium	NA		NA	NA			NA	NC
	Vanadium	6.9E-01		7.1E-05	2.0E-02			2.3E-03	2.3E-02
	Zinc	1.7E+02		4.2E-06	1.1E-03			1.2E-02	1.3E-02

NOAEL-BASED HQ CALCULATION

Location	Analyte	NOAEL TRV		NOAEL-Based HQ					NOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	1.4E-05		1.2E-05	5.6E-04			1.3E-02	1.3E-02
	Aluminum	1.1E+02		1.6E-04	1.2E-01			2.7E+00	2.8E+00
	Antimony	NA		NA	NA			NA	NC
	Arsenic	2.2E+00		3.6E-04	2.0E-03			1.7E-03	4.0E-03
	Barium	2.1E+01		6.7E-04	1.3E-02			4.7E-02	6.1E-02
	Chromium	2.7E+00		2.3E-05	5.9E-03			5.6E-03	1.2E-02
	Copper	4.1E+00		1.3E-04	1.0E-02			4.7E-02	5.7E-02
	Lead	1.6E+00		2.6E-05	9.4E-03			1.7E-02	2.6E-02
	Manganese	1.8E+02		6.1E-04	3.1E-03			5.5E-03	9.2E-03
	Mercury	4.5E-01	6.4E-03	3.7E-06	1.3E-04			1.5E+01	1.5E+01
	Nickel	6.7E+00		7.1E-05	2.2E-03			2.7E-03	5.0E-03
	Selenium	2.9E-01		2.0E-04	5.1E-03			6.1E-02	6.7E-02
	Thallium	NA		NA	NA			NA	NC
	Vanadium	3.4E-01		8.1E-04	4.0E-02			4.4E-03	4.5E-02
	Zinc	6.6E+01		1.2E-05	2.2E-03			2.6E-02	2.8E-02
OU3 Uplands	TEQ	1.4E-05		1.2E-05	7.6E-03			1.7E-01	1.8E-01
	Aluminum	1.1E+02		1.6E-04	9.6E-02			2.2E+00	2.3E+00
	Antimony	NA		NA	NA			NA	NC
	Arsenic	2.2E+00		3.6E-04	3.3E-03			2.9E-03	6.6E-03
	Barium	2.1E+01		6.7E-04	2.5E-02			8.8E-02	1.1E-01
	Chromium	2.7E+00		2.3E-05	7.9E-03			7.4E-03	1.5E-02
	Copper	4.1E+00		1.3E-04	8.7E-03			4.4E-02	5.2E-02
	Lead	1.6E+00		2.6E-05	1.1E-02			1.8E-02	2.9E-02
	Manganese	1.8E+02		6.1E-04	5.4E-03			9.7E-03	1.6E-02
	Mercury	4.5E-01	6.4E-03	3.7E-06	3.7E-03			2.6E+00	2.6E+00
	Nickel	6.7E+00		7.1E-05	2.0E-03			2.5E-03	4.5E-03
	Selenium	2.9E-01		2.0E-04	2.0E-03			2.3E-02	2.5E-02
	Thallium	NA		NA	NA			NA	NC
	Vanadium	3.4E-01		8.1E-04	7.2E-02			8.0E-03	8.1E-02
	Zinc	6.6E+01		1.2E-05	3.2E-03			3.2E-02	3.5E-02
OU3 Floodplain	TEQ	1.4E-05		1.2E-05	2.8E-03			6.5E-02	6.8E-02
	Aluminum	1.1E+02		1.6E-04	1.2E-01			2.8E+00	2.9E+00
	Antimony	NA		NA	NA			NA	NC
	Arsenic	2.2E+00		3.6E-04	2.8E-03			2.4E-03	5.5E-03
	Barium	2.1E+01		6.7E-04	4.7E-02			1.7E-01	2.2E-01
	Chromium	2.7E+00		2.3E-05	8.2E-03			7.7E-03	1.6E-02
	Copper	4.1E+00		1.3E-04	1.7E-02			5.7E-02	7.4E-02
	Lead	1.6E+00		2.6E-05	1.1E-02			1.9E-02	3.0E-02
	Manganese	1.8E+02		6.1E-04	3.5E-03			6.2E-03	1.0E-02
	Mercury	4.5E-01	6.4E-03	3.7E-06	2.6E-03			3.1E+00	3.1E+00
	Nickel	6.7E+00		7.1E-05	1.5E-03			2.1E-03	3.6E-03
	Selenium	2.9E-01		2.0E-04	1.1E-03			1.1E-02	1.3E-02
	Thallium	NA		NA	NA			NA	NC
	Vanadium	3.4E-01		8.1E-04	6.6E-02			7.4E-03	7.5E-02
	Zinc	6.6E+01		1.2E-05	2.8E-03			2.9E-02	3.2E-02
Undisturbed Floodplain Area	TEQ	1.4E-05		5.3E-06	2.8E-05			6.4E-04	6.8E-04
	Aluminum	1.1E+02		1.3E-04	7.1E-02			1.6E+00	1.7E+00
	Antimony	NA		NA	NA			NA	NC
	Arsenic	2.2E+00		2.2E-04	4.4E-03			3.7E-03	8.3E-03
	Barium	2.1E+01		3.3E-04	7.9E-03			2.8E-02	3.6E-02
	Chromium	2.7E+00		6.1E-06	3.5E-03			3.2E-03	6.7E-03
	Copper	4.1E+00		1.9E-04	1.9E-02			5.9E-02	7.8E-02
	Lead	1.6E+00		2.7E-05	1.1E-02			1.8E-02	2.9E-02
	Manganese	1.8E+02		5.1E-05	2.4E-03			4.3E-03	6.7E-03
	Mercury	4.5E-01	6.4E-03	NA	2.1E-04			1.1E+01	1.1E+01
	Nickel	6.7E+00		4.2E-06	1.2E-03			1.7E-03	2.9E-03
	Selenium	2.9E-01		2.7E-05	ND			NA	2.7E-05
	Thallium	NA		NA	NA			NA	NC
	Vanadium	3.4E-01		1.4E-04	4.1E-02			4.5E-03	4.5E-02
	Zinc	6.6E+01		1.1E-05	2.9E-03			3.0E-02	3.3E-02

ND = not detected; NA = not available; NC = not calculated; LOAEL = lowest-observed-adverse-effect-level; NOAEL = no-observed-adverse-effect-level; HQt = total hazard quotient; TRV = toxicity reference value; TEQ = toxicity equivalence.

Receptor	Intake Rates		
	Water L/kg-day	Soil/Sed. kg/kg-day	Food kg ww/kg-day
Kestrel	0.012	0.001	0.324

Dietary Type	Earthworm	Small Mammals	Plants
Diet Fraction (%)	40	60	0
Intake kg ww/kg-d	0.1296	0.1944	0

	Exposure Medium				
	Water	Soil/Sed.	Earthworm	Small Mammals	Plants
Intake rate	0.012	0.001	0.1296	0.1944	0
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day	kg ww/kg-day

DOSE CALCULATION

Location	COPC	Media-Specific Dose (mg/kg-d)					Total Dose mg/kg-day
		Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	3.58E-11	8.35E-09	7.05E-07	7.81E-07		1.49E-06
	Aluminum	3.66E-03	1.36E+01	2.82E+02	2.37E+00		2.98E+02
	Antimony	2.18E-05	2.82E-04	5.85E-03	4.47E-03		1.06E-02
	Arsenic	1.71E-04	4.64E-03	1.48E-02	NA		1.96E-02
	Barium	3.00E-03	2.85E-01	5.38E-01	9.14E-01		1.74E+00
	Chromium	1.29E-05	1.65E-02	1.05E-01	1.94E-02		1.41E-01
	Copper	1.11E-04	4.35E-02	4.65E-01	3.89E-01		8.97E-01
	Lead	9.20E-06	1.60E-02	1.57E-01	2.53E-02		1.98E-01
	Manganese	2.36E-02	5.73E-01	7.02E-01	3.11E-01		1.61E+00
	Mercury	3.60E-07	5.98E-05	8.68E-03	3.30E-03		1.20E-02
	Nickel	1.02E-04	1.54E-02	3.19E-01	3.11E-02		3.65E-01
	Selenium	1.23E-05	1.53E-03	2.63E-02	4.28E-02		7.06E-02
	Thallium	3.96E-07	1.40E-04	2.90E-03	NA		3.04E-03
	Vanadium	6.00E-05	1.42E-02	1.23E-02	NA		2.66E-02
	Zinc	1.70E-04	1.54E-01	9.25E+00	8.57E+00		1.80E+01
OU3 Uplands	TEQ	3.58E-11	1.14E-07	1.55E-05	9.14E-08		1.57E-05
	Aluminum	3.66E-03	1.10E+01	2.27E+02	1.48E+01		2.53E+02
	Antimony	2.18E-05	1.08E-03	2.24E-02	1.21E-02		3.55E-02
	Arsenic	1.71E-04	7.81E-03	2.14E-02	1.91E-02		4.84E-02
	Barium	3.00E-03	5.36E-01	1.01E+00	1.77E+00		3.32E+00
	Chromium	1.29E-05	2.19E-02	1.39E-01	3.11E-02		1.92E-01
	Copper	1.11E-04	3.66E-02	3.90E-01	6.03E-01		1.03E+00
	Lead	9.20E-06	1.84E-02	1.75E-01	4.28E-02		2.36E-01
	Manganese	2.36E-02	1.01E+00	1.03E+00	5.25E-01		2.59E+00
	Mercury	3.60E-07	1.73E-03	2.70E-02	1.52E-03		3.02E-02
	Nickel	1.02E-04	1.37E-02	2.85E-01	4.86E-02		3.47E-01
	Selenium	1.23E-05	6.18E-04	1.35E-02	3.30E-02		4.72E-02
	Thallium	3.96E-07	2.02E-04	4.19E-03	9.72E-03		1.41E-02
	Vanadium	6.00E-05	2.58E-02	2.25E-02	9.53E-03		5.79E-02
	Zinc	1.70E-04	2.23E-01	1.05E+01	9.41E+00		2.01E+01
OU3 Floodplain	TEQ	3.58E-11	4.23E-08	4.80E-06	3.41E-08		4.88E-06
	Aluminum	3.66E-03	1.39E+01	2.87E+02	3.20E+00		3.04E+02
	Antimony	2.18E-05	4.70E-04	9.75E-03	3.69E-03		1.39E-02
	Arsenic	1.71E-04	6.42E-03	1.86E-02	7.19E-03		3.24E-02
	Barium	3.00E-03	1.03E+00	1.93E+00	2.39E+00		5.35E+00
	Chromium	1.29E-05	2.27E-02	1.44E-01	2.12E-02		1.88E-01
	Copper	1.11E-04	7.25E-02	7.75E-01	5.47E-01		1.39E+00
	Lead	9.20E-06	1.93E-02	1.82E-01	4.86E-02		2.49E-01
	Manganese	2.36E-02	6.45E-01	7.61E-01	5.15E-01		1.95E+00
	Mercury	3.60E-07	1.23E-03	2.41E-02	4.47E-03		2.98E-02
	Nickel	1.02E-04	1.05E-02	2.18E-01	5.25E-02		2.81E-01
	Selenium	1.23E-05	3.32E-04	8.57E-03	1.73E-02		2.62E-02
	Thallium	3.96E-07	1.68E-04	3.48E-03	NA		3.65E-03
	Vanadium	6.00E-05	2.38E-02	2.07E-02	NA		4.46E-02
	Zinc	1.70E-04	1.90E-01	9.91E+00	8.66E+00		1.88E+01
Undisturbed Floodplain Area	TEQ	1.64E-11	4.21E-10	2.07E-08	2.76E-08		4.87E-08
	Aluminum	2.97E-03	8.10E+00	1.68E+02	7.62E+00		1.84E+02
	Antimony	3.02E-06	3.70E-04	7.67E-03	5.64E-03		1.37E-02
	Arsenic	1.05E-04	1.02E-02	2.58E-02	ND		3.61E-02
	Barium	1.46E-03	1.71E-01	3.23E-01	8.55E-01		1.35E+00
	Chromium	3.46E-06	9.60E-03	6.09E-02	2.33E-02		9.38E-02
	Copper	1.67E-04	7.90E-02	8.44E-01	4.08E-01		1.33E+00
	Lead	9.43E-06	1.81E-02	1.73E-01	2.14E-02		2.12E-01
	Manganese	1.97E-03	4.44E-01	5.90E-01	4.28E-01		1.46E+00
	Mercury	NA	9.70E-05	1.02E-02	1.94E-02		2.98E-02
	Nickel	5.98E-06	8.10E-03	1.68E-01	4.28E-02		2.19E-01
	Selenium	1.68E-06	ND	NA	3.30E-02		3.30E-02
	Thallium	NA	1.90E-04	3.94E-03	NA		4.13E-03
	Vanadium	1.05E-05	1.46E-02	1.27E-02	NA		2.73E-02
	Zinc	1.54E-04	2.01E-01	1.01E+01	8.85E+00		1.91E+01

LOAEL-BASED HQ CALCULATION

Location	Analyte	LOAEL TRV		LOAEL-Based HQ					LOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	1.2E-03		3.1E-08	7.3E-06	6.1E-04	6.8E-04		1.3E-03
	Aluminum	1.1E+03		3.3E-06	1.2E-02	2.6E-01	2.2E-03		2.7E-01
	Antimony	NA		NA	NA	NA	NA		NC
	Arsenic	4.5E+00		3.8E-05	1.0E-03	3.3E-03	NA		4.4E-03
	Barium	4.2E+01		7.2E-05	6.8E-03	1.3E-02	2.2E-02		4.2E-02
	Chromium	1.6E+01		8.3E-07	1.1E-03	6.7E-03	1.2E-03		9.0E-03
	Copper	1.2E+01		9.2E-06	3.6E-03	3.8E-02	3.2E-02		7.4E-02
	Lead	3.3E+00		2.8E-06	4.9E-03	4.8E-02	7.8E-03		6.1E-02
	Manganese	3.8E+02		6.3E-05	1.5E-03	1.9E-03	8.3E-04		4.3E-03
	Mercury	9.0E-01	6.4E-02	4.0E-07	6.6E-05	1.4E-01	5.2E-02		1.9E-01
	Nickel	1.9E+01		5.5E-06	8.3E-04	1.7E-02	1.7E-03		2.0E-02
	Selenium	5.8E-01		2.1E-05	2.6E-03	4.5E-02	7.4E-02		1.2E-01
	Thallium	NA		NA	NA	NA	NA		NC
	Vanadium	6.9E-01		8.7E-05	2.1E-02	1.8E-02	NA		3.9E-02
	Zinc	1.7E+02		9.9E-07	9.0E-04	5.4E-02	5.0E-02		1.1E-01
OU3 Uplands	TEQ	1.2E-03		3.1E-08	9.9E-05	1.3E-02	7.9E-05		1.4E-02
	Aluminum	1.1E+03		3.3E-06	1.0E-02	2.1E-01	1.3E-02		2.3E-01
	Antimony	NA		NA	NA	NA	NA		NC
	Arsenic	4.5E+00		3.8E-05	1.7E-03	4.7E-03	4.2E-03		1.1E-02
	Barium	4.2E+01		7.2E-05	1.3E-02	2.4E-02	4.2E-02		8.0E-02
	Chromium	1.6E+01		8.3E-07	1.4E-03	8.9E-03	2.0E-03		1.2E-02
	Copper	1.2E+01		9.2E-06	3.0E-03	3.2E-02	5.0E-02		8.5E-02
	Lead	3.3E+00		2.8E-06	5.7E-03	5.4E-02	1.3E-02		7.3E-02
	Manganese	3.8E+02		6.3E-05	2.7E-03	2.7E-03	1.4E-03		6.9E-03
	Mercury	9.0E-01	6.4E-02	4.0E-07	1.9E-03	4.2E-01	2.4E-02		4.5E-01
	Nickel	1.9E+01		5.5E-06	7.4E-04	1.5E-02	2.6E-03		1.9E-02
	Selenium	5.8E-01		2.1E-05	1.1E-03	2.3E-02	5.7E-02		8.2E-02
	Thallium	NA		NA	NA	NA	NA		NC
	Vanadium	6.9E-01		8.7E-05	3.8E-02	3.3E-02	1.4E-02		8.4E-02
	Zinc	1.7E+02		9.9E-07	1.3E-03	6.1E-02	5.5E-02		1.2E-01
OU3 Floodplain	TEQ	1.2E-03		3.1E-08	3.7E-05	4.2E-03	3.0E-05		4.2E-03
	Aluminum	1.1E+03		3.3E-06	1.3E-02	2.6E-01	2.9E-03		2.8E-01
	Antimony	NA		NA	NA	NA	NA		NC
	Arsenic	4.5E+00		3.8E-05	1.4E-03	4.1E-03	1.6E-03		7.2E-03
	Barium	4.2E+01		7.2E-05	2.5E-02	4.6E-02	5.7E-02		1.3E-01
	Chromium	1.6E+01		8.3E-07	1.5E-03	9.2E-03	1.4E-03		1.2E-02
	Copper	1.2E+01		9.2E-06	6.0E-03	6.4E-02	4.5E-02		1.2E-01
	Lead	3.3E+00		2.8E-06	5.9E-03	5.6E-02	1.5E-02		7.7E-02
	Manganese	3.8E+02		6.3E-05	1.7E-03	2.0E-03	1.4E-03		5.2E-03
	Mercury	9.0E-01	6.4E-02	4.0E-07	1.4E-03	3.8E-01	7.0E-02		4.5E-01
	Nickel	1.9E+01		5.5E-06	5.6E-04	1.2E-02	2.8E-03		1.5E-02
	Selenium	5.8E-01		2.1E-05	5.7E-04	1.5E-02	3.0E-02		4.5E-02
	Thallium	NA		NA	NA	NA	NA		NC
	Vanadium	6.9E-01		8.7E-05	3.5E-02	3.0E-02	NA		6.5E-02
	Zinc	1.7E+02		9.9E-07	1.1E-03	5.8E-02	5.1E-02		1.1E-01
Undisturbed Floodplain Area	TEQ	1.2E-03		1.4E-08	3.7E-07	1.8E-05	2.4E-05		4.2E-05
	Aluminum	1.1E+03		2.7E-06	7.4E-03	1.5E-01	6.9E-03		1.7E-01
	Antimony	NA		NA	NA	NA	NA		NC
	Arsenic	4.5E+00		2.3E-05	2.3E-03	5.7E-03	ND		8.0E-03
	Barium	4.2E+01		3.5E-05	4.1E-03	7.7E-03	2.1E-02		3.2E-02
	Chromium	1.6E+01		2.2E-07	6.2E-04	3.9E-03	1.5E-03		6.0E-03
	Copper	1.2E+01		1.4E-05	6.5E-03	7.0E-02	3.4E-02		1.1E-01
	Lead	3.3E+00		2.9E-06	5.6E-03	5.3E-02	6.6E-03		6.5E-02
	Manganese	3.8E+02		5.2E-06	1.2E-03	1.6E-03	1.1E-03		3.9E-03
	Mercury	9.0E-01	6.4E-02	NA	1.1E-04	1.6E-01	3.0E-01		4.6E-01
	Nickel	1.9E+01		3.2E-07	4.4E-04	9.0E-03	2.3E-03		1.2E-02
	Selenium	5.8E-01		2.9E-06	ND	NA	5.7E-02		5.7E-02
	Thallium	NA		NA	NA	NA	NA		NC
	Vanadium	6.9E-01		1.5E-05	2.1E-02	1.8E-02	NA		4.0E-02
	Zinc	1.7E+02		9.0E-07	1.2E-03	5.9E-02	5.2E-02		1.1E-01

NOAEL-BASED HQ CALCULATION

Location	Analyte	NOAEL TRV		NOAEL-Based HQ					NOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	1.2E-04		3.1E-07	7.3E-05	6.1E-03	6.8E-03		1.3E-02
	Aluminum	1.1E+02		3.3E-05	1.2E-01	2.6E+00	2.2E-02		2.7E+00
	Antimony	NA		NA	NA	NA	NA		NC
	Arsenic	2.2E+00		7.6E-05	2.1E-03	6.6E-03	NA		8.8E-03
	Barium	2.1E+01		1.4E-04	1.4E-02	2.6E-02	4.4E-02		8.4E-02
	Chromium	2.7E+00		4.8E-06	6.2E-03	3.9E-02	7.3E-03		5.3E-02
	Copper	4.1E+00		2.7E-05	1.1E-02	1.1E-01	9.6E-02		2.2E-01
	Lead	1.6E+00		5.6E-06	9.8E-03	9.6E-02	1.6E-02		1.2E-01
	Manganese	1.8E+02		1.3E-04	3.2E-03	3.9E-03	1.7E-03		9.0E-03
	Mercury	4.5E-01	6.4E-03	8.0E-07	1.3E-04	1.4E+00	5.2E-01		1.9E+00
	Nickel	6.7E+00		1.5E-05	2.3E-03	4.7E-02	4.6E-03		5.4E-02
	Selenium	2.9E-01		4.2E-05	5.3E-03	9.1E-02	1.5E-01		2.4E-01
	Thallium	NA		NA	NA	NA	NA		NC
	Vanadium	3.4E-01		1.7E-04	4.1E-02	3.6E-02	NA		7.7E-02
	Zinc	6.6E+01		2.6E-06	2.3E-03	1.4E-01	1.3E-01		2.7E-01
OU3 Uplands	TEQ	1.2E-04		3.1E-07	9.9E-04	1.3E-01	7.9E-04		1.4E-01
	Aluminum	1.1E+02		3.3E-05	1.0E-01	2.1E+00	1.3E-01		2.3E+00
	Antimony	NA		NA	NA	NA	NA		NC
	Arsenic	2.2E+00		7.6E-05	3.5E-03	9.5E-03	8.5E-03		2.2E-02
	Barium	2.1E+01		1.4E-04	2.6E-02	4.9E-02	8.5E-02		1.6E-01
	Chromium	2.7E+00		4.8E-06	8.2E-03	5.2E-02	1.2E-02		7.2E-02
	Copper	4.1E+00		2.7E-05	9.0E-03	9.6E-02	1.5E-01		2.5E-01
	Lead	1.6E+00		5.6E-06	1.1E-02	1.1E-01	2.6E-02		1.5E-01
	Manganese	1.8E+02		1.3E-04	5.6E-03	5.8E-03	2.9E-03		1.4E-02
	Mercury	4.5E-01	6.4E-03	8.0E-07	3.9E-03	4.2E+00	2.4E-01		4.5E+00
	Nickel	6.7E+00		1.5E-05	2.0E-03	4.2E-02	7.2E-03		5.2E-02
	Selenium	2.9E-01		4.2E-05	2.1E-03	4.7E-02	1.1E-01		1.6E-01
	Thallium	NA		NA	NA	NA	NA		NC
	Vanadium	3.4E-01		1.7E-04	7.5E-02	6.5E-02	2.8E-02		1.7E-01
	Zinc	6.6E+01		2.6E-06	3.4E-03	1.6E-01	1.4E-01		3.0E-01
OU3 Floodplain	TEQ	1.2E-04		3.1E-07	3.7E-04	4.2E-02	3.0E-04		4.2E-02
	Aluminum	1.1E+02		3.3E-05	1.3E-01	2.6E+00	2.9E-02		2.8E+00
	Antimony	NA		NA	NA	NA	NA		NC
	Arsenic	2.2E+00		7.6E-05	2.9E-03	8.3E-03	3.2E-03		1.4E-02
	Barium	2.1E+01		1.4E-04	4.9E-02	9.3E-02	1.1E-01		2.6E-01
	Chromium	2.7E+00		4.8E-06	8.5E-03	5.4E-02	8.0E-03		7.1E-02
	Copper	4.1E+00		2.7E-05	1.8E-02	1.9E-01	1.4E-01		3.4E-01
	Lead	1.6E+00		5.6E-06	1.2E-02	1.1E-01	3.0E-02		1.5E-01
	Manganese	1.8E+02		1.3E-04	3.6E-03	4.3E-03	2.9E-03		1.1E-02
	Mercury	4.5E-01	6.4E-03	8.0E-07	2.7E-03	3.8E+00	7.0E-01		4.5E+00
	Nickel	6.7E+00		1.5E-05	1.6E-03	3.2E-02	7.8E-03		4.2E-02
	Selenium	2.9E-01		4.2E-05	1.1E-03	3.0E-02	6.0E-02		9.0E-02
	Thallium	NA		NA	NA	NA	NA		NC
	Vanadium	3.4E-01		1.7E-04	6.9E-02	6.0E-02	NA		1.3E-01
	Zinc	6.6E+01		2.6E-06	2.9E-03	1.5E-01	1.3E-01		2.8E-01
Undisturbed Floodplain Area	TEQ	1.2E-04		1.4E-07	3.7E-06	1.8E-04	2.4E-04		4.2E-04
	Aluminum	1.1E+02		2.7E-05	7.4E-02	1.5E+00	6.9E-02		1.7E+00
	Antimony	NA		NA	NA	NA	NA		NC
	Arsenic	2.2E+00		4.7E-05	4.6E-03	1.2E-02	ND		1.6E-02
	Barium	2.1E+01		7.0E-05	8.2E-03	1.6E-02	4.1E-02		6.5E-02
	Chromium	2.7E+00		1.3E-06	3.6E-03	2.3E-02	8.8E-03		3.5E-02
	Copper	4.1E+00		4.1E-05	2.0E-02	2.1E-01	1.0E-01		3.3E-01
	Lead	1.6E+00		5.8E-06	1.1E-02	1.1E-01	1.3E-02		1.3E-01
	Manganese	1.8E+02		1.1E-05	2.5E-03	3.3E-03	2.4E-03		8.2E-03
	Mercury	4.5E-01	6.4E-03	NA	2.2E-04	1.6E+00	3.0E+00		4.6E+00
	Nickel	6.7E+00		8.9E-07	1.2E-03	2.5E-02	6.4E-03		3.3E-02
	Selenium	2.9E-01		5.8E-06	ND	NA	1.1E-01		1.1E-01
	Thallium	NA		NA	NA	NA	NA		NC
	Vanadium	3.4E-01		3.0E-05	4.2E-02	3.7E-02	NA		7.9E-02
	Zinc	6.6E+01		2.3E-06	3.0E-03	1.5E-01	1.3E-01		2.9E-01

ND = not detected; NA = not available; NC = not calculated; LOAEL = lowest-observed-adverse-effect-level; NOAEL = no-observed-adverse-effect-level; HQt = total hazard quotient; TRV = toxicity reference value; TEQ = toxicity equivalence.

Receptor	Intake Rates		
	Water L/kg-day	Soil/Sed. kg/kg-day	Food kg ww/kg-day
Flicker	0.113	0.0079	0.381

Dietary Type	Invertebrates	Small Mammals	Plants
Diet Fraction (%)	70	0	30
Intake kg ww/kg-d	0.2667	0	0.1143

	Exposure Medium				
	Water	Soil/Sed.	Invertebrates	Small Mammals	Plants
Intake rate	0.113	0.0079	0.2667	0	0.1143
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day	kg ww/kg-day

DOSE CALCULATION

Location	COPC	Media-Specific Dose (mg/kg-d)					Total Dose mg/kg-day
		Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	3.37E-10	6.59E-08	1.45E-06		1.43E-07	1.66E-06
	Aluminum	3.45E-02	1.07E+02	5.80E+02		2.33E+02	9.20E+02
	Antimony	2.05E-04	2.23E-03	1.20E-02		2.06E-04	1.47E-02
	Arsenic	1.61E-03	3.67E-02	3.05E-02		2.99E-03	7.17E-02
	Barium	2.83E-02	2.25E+00	1.11E+00		7.63E-01	4.15E+00
	Chromium	1.21E-04	1.30E-01	2.15E-01		1.16E-02	3.57E-01
	Copper	1.05E-03	3.44E-01	9.56E-01		1.48E-01	1.45E+00
	Lead	8.67E-05	1.27E-01	3.22E-01		2.16E-02	4.71E-01
	Manganese	2.22E-01	4.52E+00	1.44E+00		7.76E-01	6.97E+00
	Mercury	3.39E-06	4.72E-04	1.79E-02		7.32E-02	9.16E-02
	Nickel	9.64E-04	1.21E-01	6.55E-01		1.43E-02	7.92E-01
	Selenium	1.16E-04	1.21E-02	5.41E-02		1.39E-02	8.02E-02
	Thallium	3.73E-06	1.11E-03	5.97E-03		2.40E-03	9.48E-03
	Vanadium	5.65E-04	1.12E-01	2.54E-02		1.18E-03	1.39E-01
	Zinc	1.60E-03	1.21E+00	1.90E+01		1.35E+00	2.16E+01
OU3 Uplands	TEQ	3.37E-10	8.99E-07	3.18E-05		1.95E-06	3.47E-05
	Aluminum	3.45E-02	8.65E+01	4.67E+02		1.88E+02	7.42E+02
	Antimony	2.05E-04	8.52E-03	4.60E-02		7.26E-04	5.55E-02
	Arsenic	1.61E-03	6.17E-02	4.40E-02		5.02E-03	1.12E-01
	Barium	2.83E-02	4.23E+00	2.08E+00		1.43E+00	7.77E+00
	Chromium	1.21E-04	1.73E-01	2.85E-01		1.54E-02	4.73E-01
	Copper	1.05E-03	2.89E-01	8.03E-01		1.38E-01	1.23E+00
	Lead	8.67E-05	1.46E-01	3.61E-01		2.33E-02	5.30E-01
	Manganese	2.22E-01	7.95E+00	2.12E+00		1.36E+00	1.17E+01
	Mercury	3.39E-06	1.37E-02	5.55E-02		1.29E-02	8.21E-02
	Nickel	9.64E-04	1.09E-01	5.86E-01		1.32E-02	7.09E-01
	Selenium	1.16E-04	4.88E-03	2.78E-02		5.12E-03	3.79E-02
	Thallium	3.73E-06	1.60E-03	8.62E-03		3.46E-03	1.37E-02
	Vanadium	5.65E-04	2.04E-01	4.63E-02		2.15E-03	2.53E-01
	Zinc	1.60E-03	1.76E+00	2.15E+01		1.66E+00	2.49E+01
OU3 Floodplain	TEQ	3.37E-10	3.34E-07	9.88E-06		7.25E-07	1.09E-05
	Aluminum	3.45E-02	1.09E+02	5.91E+02		2.38E+02	9.38E+02
	Antimony	2.05E-04	3.71E-03	2.01E-02		3.33E-04	2.43E-02
	Arsenic	1.61E-03	5.07E-02	3.83E-02		4.13E-03	9.48E-02
	Barium	2.83E-02	8.10E+00	3.98E+00		2.74E+00	1.48E+01
	Chromium	1.21E-04	1.79E-01	2.96E-01		1.59E-02	4.91E-01
	Copper	1.05E-03	5.73E-01	1.59E+00		1.81E-01	2.35E+00
	Lead	8.67E-05	1.52E-01	3.74E-01		2.39E-02	5.50E-01
	Manganese	2.22E-01	5.10E+00	1.57E+00		8.74E-01	7.76E+00
	Mercury	3.39E-06	9.73E-03	4.95E-02		1.54E-02	7.46E-02
	Nickel	9.64E-04	8.29E-02	4.48E-01		1.08E-02	5.42E-01
	Selenium	1.16E-04	2.62E-03	1.76E-02		2.58E-03	2.30E-02
	Thallium	3.73E-06	1.33E-03	7.17E-03		2.88E-03	1.14E-02
	Vanadium	5.65E-04	1.88E-01	4.27E-02		1.98E-03	2.33E-01
	Zinc	1.60E-03	1.50E+00	2.04E+01		1.51E+00	2.34E+01
Undisturbed Floodplain Area	TEQ	1.54E-10	3.33E-09	4.25E-08		7.22E-09	5.32E-08
	Aluminum	2.79E-02	6.40E+01	3.46E+02		1.39E+02	5.49E+02
	Antimony	2.85E-05	2.92E-03	1.58E-02		2.66E-04	1.90E-02
	Arsenic	9.89E-04	8.06E-02	5.31E-02		6.56E-03	1.41E-01
	Barium	1.37E-02	1.35E+00	6.64E-01		4.57E-01	2.49E+00
	Chromium	3.25E-05	7.58E-02	1.25E-01		6.75E-03	2.08E-01
	Copper	1.57E-03	6.24E-01	1.74E+00		1.87E-01	2.55E+00
	Lead	8.88E-05	1.43E-01	3.55E-01		2.31E-02	5.21E-01
	Manganese	1.86E-02	3.51E+00	1.21E+00		6.01E-01	5.34E+00
	Mercury	NA	7.66E-04	2.10E-02		5.71E-02	7.89E-02
	Nickel	5.63E-05	6.40E-02	3.46E-01		8.88E-03	4.19E-01
	Selenium	1.58E-05	ND	NA		NA	1.58E-05
	Thallium	NA	1.50E-03	8.11E-03		3.26E-03	1.29E-02
	Vanadium	9.84E-05	1.15E-01	2.62E-02		1.21E-03	1.43E-01
	Zinc	1.45E-03	1.59E+00	2.08E+01		1.56E+00	2.39E+01

LOAEL-BASED HQ CALCULATION

Location	Analyte	LOAEL TRV		LOAEL-Based HQ					LOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	1.2E-03		2.9E-07	5.7E-05	1.3E-03		1.2E-04	1.4E-03
	Aluminum	1.1E+03		3.1E-05	9.8E-02	5.3E-01		2.1E-01	8.4E-01
	Antimony	NA		NA	NA	NA		NA	NC
	Arsenic	4.5E+00		3.6E-04	8.2E-03	6.8E-03		6.6E-04	1.6E-02
	Barium	4.2E+01		6.8E-04	5.4E-02	2.7E-02		1.8E-02	1.0E-01
	Chromium	1.6E+01		7.8E-06	8.3E-03	1.4E-02		7.4E-04	2.3E-02
	Copper	1.2E+01		8.7E-05	2.8E-02	7.9E-02		1.2E-02	1.2E-01
	Lead	3.3E+00		2.7E-05	3.9E-02	9.9E-02		6.6E-03	1.4E-01
	Manganese	3.8E+02		5.9E-04	1.2E-02	3.8E-03		2.1E-03	1.8E-02
	Mercury	9.0E-01	6.4E-02	3.8E-06	5.2E-04	2.8E-01		1.1E+00	1.4E+00
	Nickel	1.9E+01		5.2E-05	6.5E-03	3.5E-02		7.7E-04	4.3E-02
	Selenium	5.8E-01		2.0E-04	2.1E-02	9.3E-02		2.4E-02	1.4E-01
	Thallium	NA		NA	NA	NA		NA	NC
	Vanadium	6.9E-01		8.2E-04	1.6E-01	3.7E-02		1.7E-03	2.0E-01
	Zinc	1.7E+02		9.4E-06	7.1E-03	1.1E-01		7.9E-03	1.3E-01
OU3 Uplands	TEQ	1.2E-03		2.9E-07	7.8E-04	2.8E-02		1.7E-03	3.0E-02
	Aluminum	1.1E+03		3.1E-05	7.9E-02	4.3E-01		1.7E-01	6.8E-01
	Antimony	NA		NA	NA	NA		NA	NC
	Arsenic	4.5E+00		3.6E-04	1.4E-02	9.8E-03		1.1E-03	2.5E-02
	Barium	4.2E+01		6.8E-04	1.0E-01	5.0E-02		3.4E-02	1.9E-01
	Chromium	1.6E+01		7.8E-06	1.1E-02	1.8E-02		9.8E-04	3.0E-02
	Copper	1.2E+01		8.7E-05	2.4E-02	6.6E-02		1.1E-02	1.0E-01
	Lead	3.3E+00		2.7E-05	4.5E-02	1.1E-01		7.1E-03	1.6E-01
	Manganese	3.8E+02		5.9E-04	2.1E-02	5.6E-03		3.6E-03	3.1E-02
	Mercury	9.0E-01	6.4E-02	3.8E-06	1.5E-02	8.7E-01		2.0E-01	1.1E+00
	Nickel	1.9E+01		5.2E-05	5.8E-03	3.2E-02		7.1E-04	3.8E-02
	Selenium	5.8E-01		2.0E-04	8.4E-03	4.8E-02		8.8E-03	6.6E-02
	Thallium	NA		NA	NA	NA		NA	NC
	Vanadium	6.9E-01		8.2E-04	3.0E-01	6.7E-02		3.1E-03	3.7E-01
	Zinc	1.7E+02		9.4E-06	1.0E-02	1.3E-01		9.7E-03	1.5E-01
OU3 Floodplain	TEQ	1.2E-03		2.9E-07	2.9E-04	8.6E-03		6.3E-04	9.5E-03
	Aluminum	1.1E+03		3.1E-05	1.0E-01	5.4E-01		2.2E-01	8.6E-01
	Antimony	NA		NA	NA	NA		NA	NC
	Arsenic	4.5E+00		3.6E-04	1.1E-02	8.5E-03		9.2E-04	2.1E-02
	Barium	4.2E+01		6.8E-04	1.9E-01	9.5E-02		6.6E-02	3.6E-01
	Chromium	1.6E+01		7.8E-06	1.1E-02	1.9E-02		1.0E-03	3.1E-02
	Copper	1.2E+01		8.7E-05	4.7E-02	1.3E-01		1.5E-02	1.9E-01
	Lead	3.3E+00		2.7E-05	4.7E-02	1.1E-01		7.3E-03	1.7E-01
	Manganese	3.8E+02		5.9E-04	1.4E-02	4.2E-03		2.3E-03	2.1E-02
	Mercury	9.0E-01	6.4E-02	3.8E-06	1.1E-02	7.7E-01		2.4E-01	1.0E+00
	Nickel	1.9E+01		5.2E-05	4.5E-03	2.4E-02		5.8E-04	2.9E-02
	Selenium	5.8E-01		2.0E-04	4.5E-03	3.0E-02		4.5E-03	4.0E-02
	Thallium	NA		NA	NA	NA		NA	NC
	Vanadium	6.9E-01		8.2E-04	2.7E-01	6.2E-02		2.9E-03	3.4E-01
	Zinc	1.7E+02		9.4E-06	8.8E-03	1.2E-01		8.9E-03	1.4E-01
Undisturbed Floodplain Area	TEQ	1.2E-03		1.3E-07	2.9E-06	3.7E-05		6.3E-06	4.6E-05
	Aluminum	1.1E+03		2.5E-05	5.8E-02	3.2E-01		1.3E-01	5.0E-01
	Antimony	NA		NA	NA	NA		NA	NC
	Arsenic	4.5E+00		2.2E-04	1.8E-02	1.2E-02		1.5E-03	3.1E-02
	Barium	4.2E+01		3.3E-04	3.2E-02	1.6E-02		1.1E-02	6.0E-02
	Chromium	1.6E+01		2.1E-06	4.9E-03	8.0E-03		4.3E-04	1.3E-02
	Copper	1.2E+01		1.3E-04	5.2E-02	1.4E-01		1.5E-02	2.1E-01
	Lead	3.3E+00		2.7E-05	4.4E-02	1.1E-01		7.1E-03	1.6E-01
	Manganese	3.8E+02		4.9E-05	9.3E-03	3.2E-03		1.6E-03	1.4E-02
	Mercury	9.0E-01	6.4E-02	NA	8.5E-04	3.3E-01		8.9E-01	1.2E+00
	Nickel	1.9E+01		3.0E-06	3.4E-03	1.9E-02		4.8E-04	2.3E-02
	Selenium	5.8E-01		2.7E-05	ND	NA		NA	2.7E-05
	Thallium	NA		NA	NA	NA		NA	NC
	Vanadium	6.9E-01		1.4E-04	1.7E-01	3.8E-02		1.8E-03	2.1E-01
	Zinc	1.7E+02		8.5E-06	9.3E-03	1.2E-01		9.1E-03	1.4E-01

NOAEL-BASED HQ CALCULATION

Location	Analyte	NOAEL TRV		NOAEL-Based HQ					NOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	1.2E-04		2.9E-06	5.7E-04	1.3E-02		1.2E-03	1.4E-02
	Aluminum	1.1E+02		3.1E-04	9.8E-01	5.3E+00		2.1E+00	8.4E+00
	Antimony	NA		NA	NA	NA		NA	NC
	Arsenic	2.2E+00		7.2E-04	1.6E-02	1.4E-02		1.3E-03	3.2E-02
	Barium	2.1E+01		1.4E-03	1.1E-01	5.3E-02		3.7E-02	2.0E-01
	Chromium	2.7E+00		4.6E-05	4.9E-02	8.1E-02		4.4E-03	1.3E-01
	Copper	4.1E+00		2.6E-04	8.5E-02	2.4E-01		3.7E-02	3.6E-01
	Lead	1.6E+00		5.3E-05	7.8E-02	2.0E-01		1.3E-02	2.9E-01
	Manganese	1.8E+02		1.2E-03	2.5E-02	8.1E-03		4.3E-03	3.9E-02
	Mercury	4.5E-01	6.4E-03	7.5E-06	1.0E-03	2.8E+00		1.1E+01	1.4E+01
	Nickel	6.7E+00		1.4E-04	1.8E-02	9.8E-02		2.1E-03	1.2E-01
	Selenium	2.9E-01		4.0E-04	4.2E-02	1.9E-01		4.8E-02	2.8E-01
	Thallium	NA		NA	NA	NA		NA	NC
	Vanadium	3.4E-01		1.6E-03	3.3E-01	7.4E-02		3.4E-03	4.0E-01
	Zinc	6.6E+01		2.4E-05	1.8E-02	2.9E-01		2.0E-02	3.3E-01
OU3 Uplands	TEQ	1.2E-04		2.9E-06	7.8E-03	2.8E-01		1.7E-02	3.0E-01
	Aluminum	1.1E+02		3.1E-04	7.9E-01	4.3E+00		1.7E+00	6.8E+00
	Antimony	NA		NA	NA	NA		NA	NC
	Arsenic	2.2E+00		7.2E-04	2.8E-02	2.0E-02		2.2E-03	5.0E-02
	Barium	2.1E+01		1.4E-03	2.0E-01	1.0E-01		6.9E-02	3.7E-01
	Chromium	2.7E+00		4.6E-05	6.5E-02	1.1E-01		5.8E-03	1.8E-01
	Copper	4.1E+00		2.6E-04	7.1E-02	2.0E-01		3.4E-02	3.0E-01
	Lead	1.6E+00		5.3E-05	8.9E-02	2.2E-01		1.4E-02	3.2E-01
	Manganese	1.8E+02		1.2E-03	4.4E-02	1.2E-02		7.6E-03	6.5E-02
	Mercury	4.5E-01	6.4E-03	7.5E-06	3.0E-02	8.7E+00		2.0E+00	1.1E+01
	Nickel	6.7E+00		1.4E-04	1.6E-02	8.7E-02		2.0E-03	1.1E-01
	Selenium	2.9E-01		4.0E-04	1.7E-02	9.6E-02		1.8E-02	1.3E-01
	Thallium	NA		NA	NA	NA		NA	NC
	Vanadium	3.4E-01		1.6E-03	5.9E-01	1.3E-01		6.2E-03	7.4E-01
	Zinc	6.6E+01		2.4E-05	2.7E-02	3.3E-01		2.5E-02	3.8E-01
OU3 Floodplain	TEQ	1.2E-04		2.9E-06	2.9E-03	8.6E-02		6.3E-03	9.5E-02
	Aluminum	1.1E+02		3.1E-04	1.0E+00	5.4E+00		2.2E+00	8.6E+00
	Antimony	NA		NA	NA	NA		NA	NC
	Arsenic	2.2E+00		7.2E-04	2.3E-02	1.7E-02		1.8E-03	4.2E-02
	Barium	2.1E+01		1.4E-03	3.9E-01	1.9E-01		1.3E-01	7.1E-01
	Chromium	2.7E+00		4.6E-05	6.7E-02	1.1E-01		6.0E-03	1.8E-01
	Copper	4.1E+00		2.6E-04	1.4E-01	3.9E-01		4.5E-02	5.8E-01
	Lead	1.6E+00		5.3E-05	9.3E-02	2.3E-01		1.5E-02	3.4E-01
	Manganese	1.8E+02		1.2E-03	2.8E-02	8.8E-03		4.9E-03	4.3E-02
	Mercury	4.5E-01	6.4E-03	7.5E-06	2.2E-02	7.7E+00		2.4E+00	1.0E+01
	Nickel	6.7E+00		1.4E-04	1.2E-02	6.7E-02		1.6E-03	8.1E-02
	Selenium	2.9E-01		4.0E-04	9.0E-03	6.1E-02		8.9E-03	7.9E-02
	Thallium	NA		NA	NA	NA		NA	NC
	Vanadium	3.4E-01		1.6E-03	5.5E-01	1.2E-01		5.8E-03	6.8E-01
	Zinc	6.6E+01		2.4E-05	2.3E-02	3.1E-01		2.3E-02	3.5E-01
Undisturbed Floodplain Area	TEQ	1.2E-04		1.3E-06	2.9E-05	3.7E-04		6.3E-05	4.6E-04
	Aluminum	1.1E+02		2.5E-04	5.8E-01	3.2E+00		1.3E+00	5.0E+00
	Antimony	NA		NA	NA	NA		NA	NC
	Arsenic	2.2E+00		4.4E-04	3.6E-02	2.4E-02		2.9E-03	6.3E-02
	Barium	2.1E+01		6.6E-04	6.5E-02	3.2E-02		2.2E-02	1.2E-01
	Chromium	2.7E+00		1.2E-05	2.9E-02	4.7E-02		2.5E-03	7.8E-02
	Copper	4.1E+00		3.9E-04	1.5E-01	4.3E-01		4.6E-02	6.3E-01
	Lead	1.6E+00		5.4E-05	8.8E-02	2.2E-01		1.4E-02	3.2E-01
	Manganese	1.8E+02		1.0E-04	2.0E-02	6.8E-03		3.4E-03	3.0E-02
	Mercury	4.5E-01	6.4E-03	NA	1.7E-03	3.3E+00		8.9E+00	1.2E+01
	Nickel	6.7E+00		8.4E-06	9.5E-03	5.2E-02		1.3E-03	6.2E-02
	Selenium	2.9E-01		5.5E-05	ND	NA		NA	5.5E-05
	Thallium	NA		NA	NA	NA		NA	NC
	Vanadium	3.4E-01		2.9E-04	3.4E-01	7.6E-02		3.5E-03	4.2E-01
	Zinc	6.6E+01		2.2E-05	2.4E-02	3.1E-01		2.4E-02	3.6E-01

ND = not detected; NA = not available; NC = not calculated; LOAEL = lowest-observed-adverse-effect-level; NOAEL = no-observed-adverse-effect-level; HQt = total hazard quotient; TRV = toxicity reference value; TEQ = toxicity equivalence.

Receptor	Intake Rates		
	Water L/kg-day	Soil/Sed. kg/kg-day	Food kg ww/kg-day
Nutcracker	0.115	0.0026	0.356

Dietary Type	Invertebrates	Small Mammals	Plants
Diet Fraction (%)	15	0	85
Intake kg ww/kg-d	0.0534	0	0.3026

	Exposure Medium				
	Water	Soil/Sed.	Invertebrates	Small Mammals	Plants
Intake rate	0.115	0.0026	0.0534	0	0.3026
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day	kg ww/kg-day

DOSE CALCULATION

Location	COPC	Media-Specific Dose (mg/kg-d)					Total Dose mg/kg-day
		Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	3.43E-10	2.17E-08	2.91E-07		3.79E-07	6.91E-07
	Aluminum	3.51E-02	3.53E+01	1.16E+02		6.17E+02	7.68E+02
	Antimony	2.09E-04	7.33E-04	2.41E-03		5.46E-04	3.90E-03
	Arsenic	1.64E-03	1.21E-02	6.10E-03		7.91E-03	2.77E-02
	Barium	2.88E-02	7.42E-01	2.22E-01		2.02E+00	3.01E+00
	Chromium	1.23E-04	4.28E-02	4.31E-02		3.07E-02	1.17E-01
	Copper	1.07E-03	1.13E-01	1.91E-01		3.91E-01	6.97E-01
	Lead	8.82E-05	4.17E-02	6.45E-02		5.71E-02	1.63E-01
	Manganese	2.26E-01	1.49E+00	2.89E-01		2.05E+00	4.06E+00
	Mercury	3.45E-06	1.55E-04	3.58E-03		1.94E-01	1.98E-01
	Nickel	9.81E-04	3.99E-02	1.31E-01		3.79E-02	2.10E-01
	Selenium	1.18E-04	3.98E-03	1.08E-02		3.69E-02	5.18E-02
	Thallium	3.80E-06	3.64E-04	1.20E-03		6.35E-03	7.92E-03
	Vanadium	5.75E-04	3.68E-02	5.08E-03		3.12E-03	4.56E-02
	Zinc	1.63E-03	4.00E-01	3.81E+00		3.57E+00	7.78E+00
OU3 Uplands	TEQ	3.43E-10	2.96E-07	6.38E-06		5.17E-06	1.18E-05
	Aluminum	3.51E-02	2.85E+01	9.36E+01		4.97E+02	6.19E+02
	Antimony	2.09E-04	2.81E-03	9.22E-03		1.92E-03	1.42E-02
	Arsenic	1.64E-03	2.03E-02	8.80E-03		1.33E-02	4.40E-02
	Barium	2.88E-02	1.39E+00	4.16E-01		3.79E+00	5.63E+00
	Chromium	1.23E-04	5.68E-02	5.71E-02		4.07E-02	1.55E-01
	Copper	1.07E-03	9.51E-02	1.61E-01		3.66E-01	6.22E-01
	Lead	8.82E-05	4.79E-02	7.22E-02		6.17E-02	1.82E-01
	Manganese	2.26E-01	2.62E+00	4.25E-01		3.61E+00	6.87E+00
	Mercury	3.45E-06	4.51E-03	1.11E-02		3.42E-02	4.98E-02
	Nickel	9.81E-04	3.57E-02	1.17E-01		3.49E-02	1.89E-01
	Selenium	1.18E-04	1.61E-03	5.57E-03		1.36E-02	2.09E-02
	Thallium	3.80E-06	5.25E-04	1.73E-03		9.17E-03	1.14E-02
	Vanadium	5.75E-04	6.71E-02	9.26E-03		5.68E-03	8.26E-02
	Zinc	1.63E-03	5.80E-01	4.31E+00		4.39E+00	9.27E+00
OU3 Floodplain	TEQ	3.43E-10	1.10E-07	1.98E-06		1.92E-06	4.01E-06
	Aluminum	3.51E-02	3.60E+01	1.18E+02		6.29E+02	7.83E+02
	Antimony	2.09E-04	1.22E-03	4.02E-03		8.82E-04	6.33E-03
	Arsenic	1.64E-03	1.67E-02	7.67E-03		1.09E-02	3.69E-02
	Barium	2.88E-02	2.67E+00	7.97E-01		7.26E+00	1.07E+01
	Chromium	1.23E-04	5.90E-02	5.93E-02		4.22E-02	1.61E-01
	Copper	1.07E-03	1.89E-01	3.19E-01		4.79E-01	9.88E-01
	Lead	8.82E-05	5.01E-02	7.48E-02		6.32E-02	1.88E-01
	Manganese	2.26E-01	1.68E+00	3.14E-01		2.31E+00	4.53E+00
	Mercury	3.45E-06	3.20E-03	9.91E-03		4.08E-02	5.39E-02
	Nickel	9.81E-04	2.73E-02	8.96E-02		2.85E-02	1.46E-01
	Selenium	1.18E-04	8.63E-04	3.53E-03		6.83E-03	1.13E-02
	Thallium	3.80E-06	4.37E-04	1.44E-03		7.63E-03	9.50E-03
	Vanadium	5.75E-04	6.19E-02	8.55E-03		5.24E-03	7.63E-02
	Zinc	1.63E-03	4.93E-01	4.08E+00		4.01E+00	8.59E+00
Undisturbed Floodplain Area	TEQ	1.57E-10	1.09E-09	8.51E-09		1.91E-08	2.89E-08
	Aluminum	2.84E-02	2.11E+01	6.92E+01		3.68E+02	4.58E+02
	Antimony	2.90E-05	9.62E-04	3.16E-03		7.04E-04	4.86E-03
	Arsenic	1.01E-03	2.65E-02	1.06E-02		1.74E-02	5.55E-02
	Barium	1.40E-02	4.45E-01	1.33E-01		1.21E+00	1.80E+00
	Chromium	3.31E-05	2.50E-02	2.51E-02		1.79E-02	6.80E-02
	Copper	1.60E-03	2.05E-01	3.48E-01		4.95E-01	1.05E+00
	Lead	9.04E-05	4.71E-02	7.11E-02		6.11E-02	1.79E-01
	Manganese	1.89E-02	1.15E+00	2.43E-01		1.59E+00	3.01E+00
	Mercury	NA	2.52E-04	4.21E-03		1.51E-01	1.56E-01
	Nickel	5.73E-05	2.11E-02	6.92E-02		2.35E-02	1.14E-01
	Selenium	1.61E-05	ND	NA		NA	1.61E-05
	Thallium	NA	4.94E-04	1.62E-03		8.62E-03	1.07E-02
	Vanadium	1.00E-04	3.80E-02	5.24E-03		3.21E-03	4.65E-02
	Zinc	1.48E-03	5.23E-01	4.16E+00		4.14E+00	8.83E+00

LOAEL-BASED HQ CALCULATION

Location	Analyte	LOAEL TRV		LOAEL-Based HQ					LOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	2.5E-05		1.4E-05	8.7E-04	1.2E-02		1.5E-02	2.8E-02
	Aluminum	1.1E+03		3.2E-05	3.2E-02	1.1E-01		5.6E-01	7.0E-01
	Antimony	NA		NA	NA	NA		NA	NC
	Arsenic	4.5E+00		3.6E-04	2.7E-03	1.4E-03		1.8E-03	6.2E-03
	Barium	4.2E+01		6.9E-04	1.8E-02	5.3E-03		4.8E-02	7.2E-02
	Chromium	1.6E+01		7.9E-06	2.7E-03	2.8E-03		2.0E-03	7.5E-03
	Copper	1.2E+01		8.8E-05	9.3E-03	1.6E-02		3.2E-02	5.8E-02
	Lead	3.3E+00		2.7E-05	1.3E-02	2.0E-02		1.8E-02	5.0E-02
	Manganese	3.8E+02		6.0E-04	3.9E-03	7.7E-04		5.4E-03	1.1E-02
	Mercury	9.0E-01	6.4E-02	3.8E-06	1.7E-04	5.6E-02		3.0E+00	3.1E+00
	Nickel	1.9E+01		5.3E-05	2.1E-03	7.1E-03		2.0E-03	1.1E-02
	Selenium	5.8E-01		2.0E-04	6.9E-03	1.9E-02		6.4E-02	8.9E-02
	Thallium	NA		NA	NA	NA		NA	NC
	Vanadium	6.9E-01		8.4E-04	5.4E-02	7.4E-03		4.5E-03	6.6E-02
	Zinc	1.7E+02		9.5E-06	2.3E-03	2.2E-02		2.1E-02	4.5E-02
OU3 Uplands	TEQ	2.5E-05		1.4E-05	1.2E-02	2.6E-01		2.1E-01	4.7E-01
	Aluminum	1.1E+03		3.2E-05	2.6E-02	8.5E-02		4.5E-01	5.6E-01
	Antimony	NA		NA	NA	NA		NA	NC
	Arsenic	4.5E+00		3.6E-04	4.5E-03	2.0E-03		3.0E-03	9.8E-03
	Barium	4.2E+01		6.9E-04	3.3E-02	1.0E-02		9.1E-02	1.4E-01
	Chromium	1.6E+01		7.9E-06	3.6E-03	3.7E-03		2.6E-03	9.9E-03
	Copper	1.2E+01		8.8E-05	7.9E-03	1.3E-02		3.0E-02	5.1E-02
	Lead	3.3E+00		2.7E-05	1.5E-02	2.2E-02		1.9E-02	5.6E-02
	Manganese	3.8E+02		6.0E-04	6.9E-03	1.1E-03		9.6E-03	1.8E-02
	Mercury	9.0E-01	6.4E-02	3.8E-06	5.0E-03	1.7E-01		5.3E-01	7.1E-01
	Nickel	1.9E+01		5.3E-05	1.9E-03	6.3E-03		1.9E-03	1.0E-02
	Selenium	5.8E-01		2.0E-04	2.8E-03	9.6E-03		2.3E-02	3.6E-02
	Thallium	NA		NA	NA	NA		NA	NC
	Vanadium	6.9E-01		8.4E-04	9.8E-02	1.3E-02		8.3E-03	1.2E-01
	Zinc	1.7E+02		9.5E-06	3.4E-03	2.5E-02		2.6E-02	5.4E-02
OU3 Floodplain	TEQ	2.5E-05		1.4E-05	4.4E-03	7.9E-02		7.7E-02	1.6E-01
	Aluminum	1.1E+03		3.2E-05	3.3E-02	1.1E-01		5.7E-01	7.1E-01
	Antimony	NA		NA	NA	NA		NA	NC
	Arsenic	4.5E+00		3.6E-04	3.7E-03	1.7E-03		2.4E-03	8.2E-03
	Barium	4.2E+01		6.9E-04	6.4E-02	1.9E-02		1.7E-01	2.6E-01
	Chromium	1.6E+01		7.9E-06	3.8E-03	3.8E-03		2.7E-03	1.0E-02
	Copper	1.2E+01		8.8E-05	1.6E-02	2.6E-02		4.0E-02	8.2E-02
	Lead	3.3E+00		2.7E-05	1.5E-02	2.3E-02		1.9E-02	5.8E-02
	Manganese	3.8E+02		6.0E-04	4.4E-03	8.3E-04		6.1E-03	1.2E-02
	Mercury	9.0E-01	6.4E-02	3.8E-06	3.6E-03	1.5E-01		6.4E-01	8.0E-01
	Nickel	1.9E+01		5.3E-05	1.5E-03	4.8E-03		1.5E-03	7.9E-03
	Selenium	5.8E-01		2.0E-04	1.5E-03	6.1E-03		1.2E-02	2.0E-02
	Thallium	NA		NA	NA	NA		NA	NC
	Vanadium	6.9E-01		8.4E-04	9.0E-02	1.2E-02		7.6E-03	1.1E-01
	Zinc	1.7E+02		9.5E-06	2.9E-03	2.4E-02		2.3E-02	5.0E-02
Undisturbed Floodplain Area	TEQ	2.5E-05		6.3E-06	4.4E-05	3.4E-04		7.6E-04	1.2E-03
	Aluminum	1.1E+03		2.6E-05	1.9E-02	6.3E-02		3.4E-01	4.2E-01
	Antimony	NA		NA	NA	NA		NA	NC
	Arsenic	4.5E+00		2.2E-04	5.9E-03	2.4E-03		3.9E-03	1.2E-02
	Barium	4.2E+01		3.4E-04	1.1E-02	3.2E-03		2.9E-02	4.3E-02
	Chromium	1.6E+01		2.1E-06	1.6E-03	1.6E-03		1.1E-03	4.4E-03
	Copper	1.2E+01		1.3E-04	1.7E-02	2.9E-02		4.1E-02	8.7E-02
	Lead	3.3E+00		2.8E-05	1.4E-02	2.2E-02		1.9E-02	5.5E-02
	Manganese	3.8E+02		5.0E-05	3.1E-03	6.4E-04		4.2E-03	8.0E-03
	Mercury	9.0E-01	6.4E-02	NA	2.8E-04	6.6E-02		2.4E+00	2.4E+00
	Nickel	1.9E+01		3.1E-06	1.1E-03	3.7E-03		1.3E-03	6.1E-03
	Selenium	5.8E-01		2.8E-05	ND	NA		NA	2.8E-05
	Thallium	NA		NA	NA	NA		NA	NC
	Vanadium	6.9E-01		1.5E-04	5.5E-02	7.6E-03		4.7E-03	6.8E-02
	Zinc	1.7E+02		8.7E-06	3.1E-03	2.4E-02		2.4E-02	5.2E-02

NOAEL-BASED HQ CALCULATION

Location	Analyte	NOAEL TRV		NOAEL-Based HQ					NOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	2.5E-06		1.4E-04	8.7E-03	1.2E-01		1.5E-01	2.8E-01
	Aluminum	1.1E+02		3.2E-04	3.2E-01	1.1E+00		5.6E+00	7.0E+00
	Antimony	NA		NA	NA	NA		NA	NC
	Arsenic	2.2E+00		7.3E-04	5.4E-03	2.7E-03		3.5E-03	1.2E-02
	Barium	2.1E+01		1.4E-03	3.6E-02	1.1E-02		9.7E-02	1.4E-01
	Chromium	2.7E+00		4.6E-05	1.6E-02	1.6E-02		1.2E-02	4.4E-02
	Copper	4.1E+00		2.6E-04	2.8E-02	4.7E-02		9.7E-02	1.7E-01
	Lead	1.6E+00		5.4E-05	2.6E-02	4.0E-02		3.5E-02	1.0E-01
	Manganese	1.8E+02		1.3E-03	8.3E-03	1.6E-03		1.1E-02	2.3E-02
	Mercury	4.5E-01	6.4E-03	7.7E-06	3.5E-04	5.6E-01		3.0E+01	3.1E+01
	Nickel	6.7E+00		1.5E-04	6.0E-03	2.0E-02		5.7E-03	3.1E-02
	Selenium	2.9E-01		4.1E-04	1.4E-02	3.7E-02		1.3E-01	1.8E-01
	Thallium	NA		NA	NA	NA		NA	NC
	Vanadium	3.4E-01		1.7E-03	1.1E-01	1.5E-02		9.1E-03	1.3E-01
	Zinc	6.6E+01		2.5E-05	6.0E-03	5.8E-02		5.4E-02	1.2E-01
OU3 Uplands	TEQ	2.5E-06		1.4E-04	1.2E-01	2.6E+00		2.1E+00	4.7E+00
	Aluminum	1.1E+02		3.2E-04	2.6E-01	8.5E-01		4.5E+00	5.6E+00
	Antimony	NA		NA	NA	NA		NA	NC
	Arsenic	2.2E+00		7.3E-04	9.1E-03	3.9E-03		5.9E-03	2.0E-02
	Barium	2.1E+01		1.4E-03	6.7E-02	2.0E-02		1.8E-01	2.7E-01
	Chromium	2.7E+00		4.6E-05	2.1E-02	2.1E-02		1.5E-02	5.8E-02
	Copper	4.1E+00		2.6E-04	2.3E-02	4.0E-02		9.0E-02	1.5E-01
	Lead	1.6E+00		5.4E-05	2.9E-02	4.4E-02		3.8E-02	1.1E-01
	Manganese	1.8E+02		1.3E-03	1.5E-02	2.4E-03		2.0E-02	3.8E-02
	Mercury	4.5E-01	6.4E-03	7.7E-06	1.0E-02	1.7E+00		5.3E+00	7.1E+00
	Nickel	6.7E+00		1.5E-04	5.3E-03	1.7E-02		5.2E-03	2.8E-02
	Selenium	2.9E-01		4.1E-04	5.5E-03	1.9E-02		4.7E-02	7.2E-02
	Thallium	NA		NA	NA	NA		NA	NC
	Vanadium	3.4E-01		1.7E-03	2.0E-01	2.7E-02		1.7E-02	2.4E-01
	Zinc	6.6E+01		2.5E-05	8.8E-03	6.5E-02		6.6E-02	1.4E-01
OU3 Floodplain	TEQ	2.5E-06		1.4E-04	4.4E-02	7.9E-01		7.7E-01	1.6E+00
	Aluminum	1.1E+02		3.2E-04	3.3E-01	1.1E+00		5.7E+00	7.1E+00
	Antimony	NA		NA	NA	NA		NA	NC
	Arsenic	2.2E+00		7.3E-04	7.5E-03	3.4E-03		4.9E-03	1.6E-02
	Barium	2.1E+01		1.4E-03	1.3E-01	3.8E-02		3.5E-01	5.2E-01
	Chromium	2.7E+00		4.6E-05	2.2E-02	2.2E-02		1.6E-02	6.0E-02
	Copper	4.1E+00		2.6E-04	4.7E-02	7.9E-02		1.2E-01	2.4E-01
	Lead	1.6E+00		5.4E-05	3.1E-02	4.6E-02		3.9E-02	1.2E-01
	Manganese	1.8E+02		1.3E-03	9.4E-03	1.8E-03		1.3E-02	2.5E-02
	Mercury	4.5E-01	6.4E-03	7.7E-06	7.1E-03	1.5E+00		6.4E+00	7.9E+00
	Nickel	6.7E+00		1.5E-04	4.1E-03	1.3E-02		4.2E-03	2.2E-02
	Selenium	2.9E-01		4.1E-04	3.0E-03	1.2E-02		2.4E-02	3.9E-02
	Thallium	NA		NA	NA	NA		NA	NC
	Vanadium	3.4E-01		1.7E-03	1.8E-01	2.5E-02		1.5E-02	2.2E-01
	Zinc	6.6E+01		2.5E-05	7.5E-03	6.2E-02		6.1E-02	1.3E-01
Undisturbed Floodplain Area	TEQ	2.5E-06		6.3E-05	4.4E-04	3.4E-03		7.6E-03	1.2E-02
	Aluminum	1.1E+02		2.6E-04	1.9E-01	6.3E-01		3.4E+00	4.2E+00
	Antimony	NA		NA	NA	NA		NA	NC
	Arsenic	2.2E+00		4.5E-04	1.2E-02	4.7E-03		7.8E-03	2.5E-02
	Barium	2.1E+01		6.7E-04	2.1E-02	6.4E-03		5.8E-02	8.7E-02
	Chromium	2.7E+00		1.2E-05	9.4E-03	9.4E-03		6.7E-03	2.6E-02
	Copper	4.1E+00		3.9E-04	5.1E-02	8.6E-02		1.2E-01	2.6E-01
	Lead	1.6E+00		5.5E-05	2.9E-02	4.4E-02		3.7E-02	1.1E-01
	Manganese	1.8E+02		1.1E-04	6.4E-03	1.4E-03		8.9E-03	1.7E-02
	Mercury	4.5E-01	6.4E-03	NA	5.6E-04	6.6E-01		2.4E+01	2.4E+01
	Nickel	6.7E+00		8.5E-06	3.1E-03	1.0E-02		3.5E-03	1.7E-02
	Selenium	2.9E-01		5.6E-05	ND	NA		NA	5.6E-05
	Thallium	NA		NA	NA	NA		NA	NC
	Vanadium	3.4E-01		2.9E-04	1.1E-01	1.5E-02		9.3E-03	1.4E-01
	Zinc	6.6E+01		2.2E-05	7.9E-03	6.3E-02		6.3E-02	1.3E-01

ND = not detected; NA = not available; NC = not calculated; LOAEL = lowest-observed-adverse-effect-level; NOAEL = no-observed-adverse-effect-level; HQt = total hazard quotient; TRV = toxicity reference value; TEQ = toxicity equivalence.

Receptor	Intake Rates		
	Water L/kg-day	Soil/Sed. kg/kg-day	Food kg ww/kg-day
Deer	0.065	0.0006	0.03

Dietary Type	Invertebrates	Small Mammals	Plants
Diet Fraction (%)	0	0	100
Intake kg ww/kg-d	0	0	0.03

	Exposure Medium				
	Water	Soil/Sed.	Invertebrates	Small Mammals	Plants
Intake rate	0.065	0.0006	0	0	0.03
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day	kg ww/kg-day

DOSE CALCULATION

Location	COPC	Media-Specific Dose (mg/kg-d)					Total Dose mg/kg-day
		Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	1.39E-10	5.82E-09			4.37E-08	4.96E-08
	Aluminum	1.98E-02	8.15E+00			6.11E+01	6.93E+01
	Antimony	1.18E-04	1.69E-04			5.41E-05	3.41E-04
	Arsenic	9.26E-04	2.79E-03			7.84E-04	4.50E-03
	Barium	1.63E-02	1.71E-01			2.00E-01	3.88E-01
	Chromium	6.97E-05	9.89E-03			3.04E-03	1.30E-02
	Copper	6.02E-04	2.61E-02			3.88E-02	6.55E-02
	Lead	4.99E-05	9.62E-03			5.66E-03	1.53E-02
	Manganese	1.28E-01	3.44E-01			2.04E-01	6.75E-01
	Mercury	1.95E-06	3.59E-05			1.92E-02	1.93E-02
	Nickel	5.55E-04	9.22E-03			3.76E-03	1.35E-02
	Selenium	6.66E-05	9.18E-04			3.66E-03	4.64E-03
	Thallium	2.15E-06	8.40E-05			6.30E-04	7.16E-04
	Vanadium	3.25E-04	8.50E-03			3.09E-04	9.14E-03
	Zinc	9.20E-04	9.22E-02			3.54E-01	4.47E-01
OU3 Uplands	TEQ	1.39E-10	3.44E-08			2.58E-07	2.93E-07
	Aluminum	1.98E-02	6.57E+00			4.93E+01	5.59E+01
	Antimony	1.18E-04	6.47E-04			1.91E-04	9.56E-04
	Arsenic	9.26E-04	4.68E-03			1.32E-03	6.93E-03
	Barium	1.63E-02	3.21E-01			3.76E-01	7.14E-01
	Chromium	6.97E-05	1.31E-02			4.03E-03	1.72E-02
	Copper	6.02E-04	2.19E-02			3.62E-02	5.88E-02
	Lead	4.99E-05	1.11E-02			6.12E-03	1.72E-02
	Manganese	1.28E-01	6.04E-01			3.58E-01	1.09E+00
	Mercury	1.95E-06	1.04E-03			3.39E-03	4.43E-03
	Nickel	5.55E-04	8.24E-03			3.46E-03	1.23E-02
	Selenium	6.66E-05	3.71E-04			1.34E-03	1.78E-03
	Thallium	2.15E-06	1.21E-04			9.09E-04	1.03E-03
	Vanadium	3.25E-04	1.55E-02			5.63E-04	1.64E-02
	Zinc	9.20E-04	1.34E-01			4.35E-01	5.70E-01
OU3 Floodplain	TEQ	1.39E-10	1.98E-08			1.49E-07	1.68E-07
	Aluminum	1.98E-02	8.31E+00			6.24E+01	7.07E+01
	Antimony	1.18E-04	2.82E-04			8.74E-05	4.87E-04
	Arsenic	9.26E-04	3.85E-03			1.08E-03	5.86E-03
	Barium	1.63E-02	6.15E-01			7.20E-01	1.35E+00
	Chromium	6.97E-05	1.36E-02			4.18E-03	1.79E-02
	Copper	6.02E-04	4.35E-02			4.75E-02	9.16E-02
	Lead	4.99E-05	1.16E-02			6.27E-03	1.79E-02
	Manganese	1.28E-01	3.87E-01			2.29E-01	7.44E-01
	Mercury	1.95E-06	7.39E-04			4.04E-03	4.78E-03
	Nickel	5.55E-04	6.29E-03			2.83E-03	9.68E-03
	Selenium	6.66E-05	1.99E-04			6.77E-04	9.43E-04
	Thallium	2.15E-06	1.01E-04			7.56E-04	8.59E-04
	Vanadium	3.25E-04	1.43E-02			5.20E-04	1.51E-02
	Zinc	9.20E-04	1.14E-01			3.97E-01	5.12E-01
Undisturbed Floodplain Area	TEQ	1.39E-10	2.11E-10			1.58E-09	1.93E-09
	Aluminum	1.61E-02	4.86E+00			3.65E+01	4.13E+01
	Antimony	1.64E-05	2.22E-04			6.98E-05	3.08E-04
	Arsenic	5.69E-04	6.12E-03			1.72E-03	8.41E-03
	Barium	7.90E-03	1.03E-01			1.20E-01	2.31E-01
	Chromium	1.87E-05	5.76E-03			1.77E-03	7.55E-03
	Copper	9.02E-04	4.74E-02			4.91E-02	9.74E-02
	Lead	5.11E-05	1.09E-02			6.05E-03	1.70E-02
	Manganese	1.07E-02	2.66E-01			1.58E-01	4.35E-01
	Mercury	NA	5.82E-05			1.50E-02	1.50E-02
	Nickel	3.24E-05	4.86E-03			2.33E-03	7.22E-03
	Selenium	9.10E-06	ND			NA	9.10E-06
	Thallium	NA	1.14E-04			8.55E-04	9.69E-04
	Vanadium	5.66E-05	8.76E-03			3.19E-04	9.14E-03
	Zinc	8.37E-04	1.21E-01			4.10E-01	5.32E-01

LOAEL-BASED HQ CALCULATION

Location	Analyte	LOAEL TRV		LOAEL-Based HQ					LOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	1.0E-05		1.4E-05	5.8E-04			4.4E-03	5.0E-03
	Aluminum	1.9E+01		1.0E-03	4.2E-01			3.2E+00	3.6E+00
	Antimony	5.9E-01		2.0E-04	2.9E-04			9.2E-05	5.8E-04
	Arsenic	1.7E+00		5.6E-04	1.7E-03			4.7E-04	2.7E-03
	Barium	8.3E+01		2.0E-04	2.1E-03			2.4E-03	4.7E-03
	Chromium	5.8E+01		1.2E-06	1.7E-04			5.2E-05	2.2E-04
	Copper	9.3E+00		6.4E-05	2.8E-03			4.2E-03	7.0E-03
	Lead	8.9E+00		5.6E-06	1.1E-03			6.4E-04	1.7E-03
	Manganese	1.5E+02		8.7E-04	2.4E-03			1.4E-03	4.6E-03
	Mercury	2.5E-01	1.6E-01	7.8E-06	1.4E-04			1.2E-01	1.2E-01
	Nickel	3.4E+00		1.6E-04	2.7E-03			1.1E-03	4.0E-03
	Selenium	2.2E-01		3.1E-04	4.3E-03			1.7E-02	2.2E-02
	Thallium	7.4E-02		2.9E-05	1.1E-03			8.5E-03	9.7E-03
	Vanadium	8.3E+00		3.9E-05	1.0E-03			3.7E-05	1.1E-03
	Zinc	3.0E+02		3.1E-06	3.1E-04			1.2E-03	1.5E-03
OU3 Uplands	TEQ	1.0E-05		1.4E-05	3.4E-03			2.6E-02	2.9E-02
	Aluminum	1.9E+01		1.0E-03	3.4E-01			2.6E+00	2.9E+00
	Antimony	5.9E-01		2.0E-04	1.1E-03			3.2E-04	1.6E-03
	Arsenic	1.7E+00		5.6E-04	2.8E-03			7.9E-04	4.2E-03
	Barium	8.3E+01		2.0E-04	3.9E-03			4.5E-03	8.6E-03
	Chromium	5.8E+01		1.2E-06	2.3E-04			6.9E-05	3.0E-04
	Copper	9.3E+00		6.4E-05	2.3E-03			3.9E-03	6.3E-03
	Lead	8.9E+00		5.6E-06	1.2E-03			6.9E-04	1.9E-03
	Manganese	1.5E+02		8.7E-04	4.1E-03			2.4E-03	7.5E-03
	Mercury	2.5E-01	1.6E-01	7.8E-06	4.2E-03			2.1E-02	2.5E-02
	Nickel	3.4E+00		1.6E-04	2.4E-03			1.0E-03	3.6E-03
	Selenium	2.2E-01		3.1E-04	1.7E-03			6.3E-03	8.3E-03
	Thallium	7.4E-02		2.9E-05	1.6E-03			1.2E-02	1.4E-02
	Vanadium	8.3E+00		3.9E-05	1.9E-03			6.8E-05	2.0E-03
	Zinc	3.0E+02		3.1E-06	4.5E-04			1.5E-03	1.9E-03
OU3 Floodplain	TEQ	1.0E-05		1.4E-05	2.0E-03			1.5E-02	1.7E-02
	Aluminum	1.9E+01		1.0E-03	4.3E-01			3.2E+00	3.7E+00
	Antimony	5.9E-01		2.0E-04	4.8E-04			1.5E-04	8.3E-04
	Arsenic	1.7E+00		5.6E-04	2.3E-03			6.5E-04	3.5E-03
	Barium	8.3E+01		2.0E-04	7.4E-03			8.7E-03	1.6E-02
	Chromium	5.8E+01		1.2E-06	2.3E-04			7.2E-05	3.1E-04
	Copper	9.3E+00		6.4E-05	4.7E-03			5.1E-03	9.8E-03
	Lead	8.9E+00		5.6E-06	1.3E-03			7.0E-04	2.0E-03
	Manganese	1.5E+02		8.7E-04	2.7E-03			1.6E-03	5.1E-03
	Mercury	2.5E-01	1.6E-01	7.8E-06	3.0E-03			2.5E-02	2.8E-02
	Nickel	3.4E+00		1.6E-04	1.9E-03			8.3E-04	2.8E-03
	Selenium	2.2E-01		3.1E-04	9.3E-04			3.1E-03	4.4E-03
	Thallium	7.4E-02		2.9E-05	1.4E-03			1.0E-02	1.2E-02
	Vanadium	8.3E+00		3.9E-05	1.7E-03			6.3E-05	1.8E-03
	Zinc	3.0E+02		3.1E-06	3.8E-04			1.3E-03	1.7E-03
Undisturbed Floodplain Area	TEQ	1.0E-05		1.4E-05	2.1E-05			1.6E-04	1.9E-04
	Aluminum	1.9E+01		8.3E-04	2.5E-01			1.9E+00	2.1E+00
	Antimony	5.9E-01		2.8E-05	3.8E-04			1.2E-04	5.2E-04
	Arsenic	1.7E+00		3.4E-04	3.7E-03			1.0E-03	5.1E-03
	Barium	8.3E+01		9.5E-05	1.2E-03			1.5E-03	2.8E-03
	Chromium	5.8E+01		3.2E-07	9.9E-05			3.0E-05	1.3E-04
	Copper	9.3E+00		9.7E-05	5.1E-03			5.3E-03	1.0E-02
	Lead	8.9E+00		5.7E-06	1.2E-03			6.8E-04	1.9E-03
	Manganese	1.5E+02		7.3E-05	1.8E-03			1.1E-03	3.0E-03
	Mercury	2.5E-01	1.6E-01	NA	2.3E-04			9.4E-02	9.4E-02
	Nickel	3.4E+00		9.5E-06	1.4E-03			6.9E-04	2.1E-03
	Selenium	2.2E-01		4.2E-05	ND			NA	4.2E-05
	Thallium	7.4E-02		NA	1.5E-03			1.2E-02	1.3E-02
	Vanadium	8.3E+00		6.8E-06	1.1E-03			3.8E-05	1.1E-03
	Zinc	3.0E+02		2.8E-06	4.0E-04			1.4E-03	1.8E-03

NOAEL-BASED HQ CALCULATION

Location	Analyte	NOAEL TRV		NOAEL-Based HQ					NOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	1.0E-06		1.4E-04	5.8E-03			4.4E-02	5.0E-02
	Aluminum	1.9E+00		1.0E-02	4.2E+00			3.2E+01	3.6E+01
	Antimony	5.9E-02		2.0E-03	2.9E-03			9.2E-04	5.8E-03
	Arsenic	1.0E+00		8.9E-04	2.7E-03			7.5E-04	4.3E-03
	Barium	5.2E+01		3.1E-04	3.3E-03			3.9E-03	7.5E-03
	Chromium	2.4E+00		2.9E-05	4.1E-03			1.3E-03	5.4E-03
	Copper	5.6E+00		1.1E-04	4.7E-03			6.9E-03	1.2E-02
	Lead	4.7E+00		1.1E-05	2.0E-03			1.2E-03	3.3E-03
	Manganese	5.2E+01		2.5E-03	6.7E-03			4.0E-03	1.3E-02
	Mercury	2.5E-02	3.2E-02	7.8E-05	1.4E-03			6.0E-01	6.0E-01
	Nickel	1.7E+00		3.3E-04	5.4E-03			2.2E-03	8.0E-03
	Selenium	1.4E-01		4.7E-04	6.4E-03			2.6E-02	3.2E-02
	Thallium	7.4E-03		2.9E-04	1.1E-02			8.5E-02	9.7E-02
	Vanadium	4.2E+00		7.8E-05	2.0E-03			7.4E-05	2.2E-03
	Zinc	7.5E+01		1.2E-05	1.2E-03			4.7E-03	5.9E-03
OU3 Uplands	TEQ	1.0E-06		1.4E-04	3.4E-02			2.6E-01	2.9E-01
	Aluminum	1.9E+00		1.0E-02	3.4E+00			2.6E+01	2.9E+01
	Antimony	5.9E-02		2.0E-03	1.1E-02			3.2E-03	1.6E-02
	Arsenic	1.0E+00		8.9E-04	4.5E-03			1.3E-03	6.7E-03
	Barium	5.2E+01		3.1E-04	6.2E-03			7.3E-03	1.4E-02
	Chromium	2.4E+00		2.9E-05	5.5E-03			1.7E-03	7.2E-03
	Copper	5.6E+00		1.1E-04	3.9E-03			6.5E-03	1.0E-02
	Lead	4.7E+00		1.1E-05	2.4E-03			1.3E-03	3.7E-03
	Manganese	5.2E+01		2.5E-03	1.2E-02			6.9E-03	2.1E-02
	Mercury	2.5E-02	3.2E-02	7.8E-05	4.2E-02			1.1E-01	1.5E-01
	Nickel	1.7E+00		3.3E-04	4.8E-03			2.0E-03	7.2E-03
	Selenium	1.4E-01		4.7E-04	2.6E-03			9.4E-03	1.2E-02
	Thallium	7.4E-03		2.9E-04	1.6E-02			1.2E-01	1.4E-01
	Vanadium	4.2E+00		7.8E-05	3.7E-03			1.4E-04	3.9E-03
	Zinc	7.5E+01		1.2E-05	1.8E-03			5.8E-03	7.6E-03
OU3 Floodplain	TEQ	1.0E-06		1.4E-04	2.0E-02			1.5E-01	1.7E-01
	Aluminum	1.9E+00		1.0E-02	4.3E+00			3.2E+01	3.7E+01
	Antimony	5.9E-02		2.0E-03	4.8E-03			1.5E-03	8.3E-03
	Arsenic	1.0E+00		8.9E-04	3.7E-03			1.0E-03	5.6E-03
	Barium	5.2E+01		3.1E-04	1.2E-02			1.4E-02	2.6E-02
	Chromium	2.4E+00		2.9E-05	5.7E-03			1.7E-03	7.4E-03
	Copper	5.6E+00		1.1E-04	7.8E-03			8.5E-03	1.6E-02
	Lead	4.7E+00		1.1E-05	2.5E-03			1.3E-03	3.8E-03
	Manganese	5.2E+01		2.5E-03	7.5E-03			4.5E-03	1.4E-02
	Mercury	2.5E-02	3.2E-02	7.8E-05	3.0E-02			1.3E-01	1.6E-01
	Nickel	1.7E+00		3.3E-04	3.7E-03			1.7E-03	5.7E-03
	Selenium	1.4E-01		4.7E-04	1.4E-03			4.7E-03	6.6E-03
	Thallium	7.4E-03		2.9E-04	1.4E-02			1.0E-01	1.2E-01
	Vanadium	4.2E+00		7.8E-05	3.4E-03			1.2E-04	3.6E-03
	Zinc	7.5E+01		1.2E-05	1.5E-03			5.3E-03	6.8E-03
Undisturbed Floodplain Area	TEQ	1.0E-06		1.4E-04	2.1E-04			1.6E-03	1.9E-03
	Aluminum	1.9E+00		8.3E-03	2.5E+00			1.9E+01	2.1E+01
	Antimony	5.9E-02		2.8E-04	3.8E-03			1.2E-03	5.2E-03
	Arsenic	1.0E+00		5.5E-04	5.9E-03			1.7E-03	8.1E-03
	Barium	5.2E+01		1.5E-04	2.0E-03			2.3E-03	4.5E-03
	Chromium	2.4E+00		7.8E-06	2.4E-03			7.4E-04	3.1E-03
	Copper	5.6E+00		1.6E-04	8.5E-03			8.8E-03	1.7E-02
	Lead	4.7E+00		1.1E-05	2.3E-03			1.3E-03	3.6E-03
	Manganese	5.2E+01		2.1E-04	5.2E-03			3.1E-03	8.4E-03
	Mercury	2.5E-02	3.2E-02	NA	2.3E-03			4.7E-01	4.7E-01
	Nickel	1.7E+00		1.9E-05	2.9E-03			1.4E-03	4.2E-03
	Selenium	1.4E-01		6.4E-05	ND			NA	6.4E-05
	Thallium	7.4E-03		NA	1.5E-02			1.2E-01	1.3E-01
	Vanadium	4.2E+00		1.4E-05	2.1E-03			7.7E-05	2.2E-03
	Zinc	7.5E+01		1.1E-05	1.6E-03			5.4E-03	7.1E-03

ND = not detected; NA = not available; NC = not calculated; LOAEL = lowest-observed-adverse-effect-level; NOAEL = no-observed-adverse-effect-level; HQt = total hazard quotient; TRV = toxicity reference value; TEQ = toxicity equivalence.

APPENDIX G4
HQ RESULTS FOR SMALL HOME RANGE TERRESTRIAL RECEPTORS

OU2/OU3 Smurfit-Stone/Frenchtown Mill Site
Baseline Ecological Risk Assessment

Receptor	Intake Rates		
	Water L/kg-day	Soil/Sed. kg/kg-day	Food kg ww/kg-day
Robin	0.136	0.025	1.205

Dietary Type	Soil Inverts	Small Mammals	Plants
Diet Fraction (%)	50		50
Intake kg ww/kg-d	0.6025	0	0.6025

	Exposure Medium				
	Water	Soil/Sed.	Soil Inverts	Small Mammals	Plants
Intake rate	0.136	0.025	0.6025	0	0.6025
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day	kg ww/kg-day

DOSE CALCULATION

Location	COPC	Media-Specific Dose (mg/kg-d)					Total Dose mg/kg-day
		Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	4.06E-10	2.09E-07	3.28E-06		7.54E-07	4.24E-06
	TEQD/F/P	NA	2.76E-06	6.95E-05		9.99E-06	8.22E-05
	Total PCB	NA	1.72E-02	3.57E-01		6.23E-02	4.37E-01
	Aluminum	4.15E-02	3.40E+02	1.31E+03		1.23E+03	2.88E+03
	Antimony	2.47E-04	7.05E-03	2.72E-02		1.09E-03	3.56E-02
	Arsenic	1.94E-03	1.16E-01	6.88E-02		1.57E-02	2.03E-01
	Barium	3.40E-02	7.13E+00	2.50E+00		4.02E+00	1.37E+01
	Chromium	1.46E-04	4.12E-01	4.86E-01		6.11E-02	9.59E-01
	Copper	1.26E-03	1.09E+00	2.16E+00		7.79E-01	4.03E+00
	Lead	1.04E-04	4.01E-01	7.28E-01		1.14E-01	1.24E+00
	Manganese	2.67E-01	1.43E+01	3.26E+00		4.09E+00	2.19E+01
	Mercury	4.08E-06	1.50E-03	4.04E-02		3.86E-01	4.28E-01
	Nickel	1.16E-03	3.84E-01	1.48E+00		7.55E-02	1.94E+00
	Selenium	1.39E-04	3.83E-02	1.22E-01		7.34E-02	2.34E-01
	Thallium	4.49E-06	3.50E-03	1.35E-02		1.27E-02	2.97E-02
	Vanadium	6.80E-04	3.54E-01	5.74E-02		6.21E-03	4.19E-01
	Zinc	1.93E-03	3.84E+00	4.30E+01		7.10E+00	5.39E+01

LOAEL-BASED HQ CALCULATION

Location	Analyte	LOAEL TRV		LOAEL-Based HQ					LOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	1.4E-04		2.9E-06	1.5E-03	2.3E-02		5.4E-03	3.0E-02
	TEQD/F/P	1.4E-04		NA	2.0E-02	5.0E-01		7.1E-02	5.9E-01
	Total PCB	1.1E+00		NA	1.5E-02	3.2E-01		5.6E-02	3.9E-01
	Aluminum	1.1E+03		3.8E-05	3.1E-01	1.2E+00		1.1E+00	2.6E+00
	Antimony	NA		NA	NA	NA		NA	NC
	Arsenic	4.5E+00		4.3E-04	2.6E-02	1.5E-02		3.5E-03	4.5E-02
	Barium	4.2E+01		8.2E-04	1.7E-01	6.0E-02		9.6E-02	3.3E-01
	Chromium	1.6E+01		9.4E-06	2.6E-02	3.1E-02		3.9E-03	6.1E-02
	Copper	1.2E+01		1.0E-04	9.0E-02	1.8E-01		6.4E-02	3.3E-01
	Lead	3.3E+00		3.2E-05	1.2E-01	2.2E-01		3.5E-02	3.8E-01
	Manganese	3.8E+02		7.1E-04	3.8E-02	8.7E-03		1.1E-02	5.8E-02
	Mercury	9.0E-01	6.4E-02	4.5E-06	1.7E-03	6.3E-01		6.0E+00	6.7E+00
	Nickel	1.9E+01		6.2E-05	2.1E-02	8.0E-02		4.1E-03	1.0E-01
	Selenium	5.8E-01		2.4E-04	6.6E-02	2.1E-01		1.3E-01	4.0E-01
	Thallium	NA		NA	NA	NA		NA	NC
	Vanadium	6.9E-01		9.9E-04	5.1E-01	8.3E-02		9.0E-03	6.1E-01
	Zinc	1.7E+02		1.1E-05	2.2E-02	2.5E-01		4.2E-02	3.2E-01

NOAEL-BASED HQ CALCULATION

Location	Analyte	NOAEL TRV		NOAEL-Based HQ					NOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	1.4E-05		2.9E-05	1.5E-02	2.3E-01		5.4E-02	3.0E-01
	TEQD/F/P	1.4E-05		NA	2.0E-01	5.0E+00		7.1E-01	5.9E+00
	Total PCB	1.1E-01		NA	1.5E-01	3.2E+00		5.6E-01	3.9E+00
	Aluminum	1.1E+02		3.8E-04	3.1E+00	1.2E+01		1.1E+01	2.6E+01
	Antimony	NA		NA	NA	NA		NA	NC
	Arsenic	2.2E+00		8.6E-04	5.2E-02	3.1E-02		7.0E-03	9.0E-02
	Barium	2.1E+01		1.6E-03	3.4E-01	1.2E-01		1.9E-01	6.6E-01
	Chromium	2.7E+00		5.5E-05	1.5E-01	1.8E-01		2.3E-02	3.6E-01
	Copper	4.1E+00		3.1E-04	2.7E-01	5.3E-01		1.9E-01	9.9E-01
	Lead	1.6E+00		6.4E-05	2.5E-01	4.5E-01		7.0E-02	7.6E-01
	Manganese	1.8E+02		1.5E-03	8.0E-02	1.8E-02		2.3E-02	1.2E-01
	Mercury	4.5E-01	6.4E-03	9.1E-06	3.3E-03	6.3E+00		6.0E+01	6.7E+01
	Nickel	6.7E+00		1.7E-04	5.7E-02	2.2E-01		1.1E-02	2.9E-01
	Selenium	2.9E-01		4.8E-04	1.3E-01	4.2E-01		2.5E-01	8.1E-01
	Thallium	NA		NA	NA	NA		NA	NC
	Vanadium	3.4E-01		2.0E-03	1.0E+00	1.7E-01		1.8E-02	1.2E+00
	Zinc	6.6E+01		2.9E-05	5.8E-02	6.5E-01		1.1E-01	8.2E-01

Receptor	Intake Rates		
	Water L/kg-day	Soil/Sed. kg/kg-day	Food kg ww/kg-day
Catbird	0.171	0.025	0.574

Dietary Type	Soil Inverts	Small Mammals	Plants
Diet Fraction (%)	50	0	50
Intake kg ww/kg-d	0.287	0	0.287

	Exposure Medium				
	Water	Soil/Sed.	Soil Inverts	Small Mammals	Plants
Intake rate	0.171	0.025	0.287	0	0.287
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day	kg ww/kg-day

DOSE CALCULATION

Location	COPC	Media-Specific Dose (mg/kg-d)					Total Dose mg/kg-day
		Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	5.10E-10	2.09E-07	1.56E-06		3.59E-07	2.13E-06
	TEQD/F/P	NA	2.76E-06	3.31E-05		4.76E-06	4.06E-05
	Total PCB	NA	1.72E-02	1.70E-01		2.97E-02	2.17E-01
	Aluminum	5.22E-02	3.40E+02	6.24E+02		5.85E+02	1.55E+03
	Antimony	3.10E-04	7.05E-03	1.29E-02		5.18E-04	2.08E-02
	Arsenic	2.44E-03	1.16E-01	3.28E-02		7.50E-03	1.59E-01
	Barium	4.28E-02	7.13E+00	1.19E+00		1.92E+00	1.03E+01
	Chromium	1.83E-04	4.12E-01	2.32E-01		2.91E-02	6.73E-01
	Copper	1.58E-03	1.09E+00	1.03E+00		3.71E-01	2.49E+00
	Lead	1.31E-04	4.01E-01	3.47E-01		5.41E-02	8.02E-01
	Manganese	3.36E-01	1.43E+01	1.55E+00		1.95E+00	1.82E+01
	Mercury	5.13E-06	1.50E-03	1.92E-02		1.84E-01	2.05E-01
	Nickel	1.46E-03	3.84E-01	7.05E-01		3.60E-02	1.13E+00
	Selenium	1.75E-04	3.83E-02	5.82E-02		3.50E-02	1.32E-01
	Thallium	5.64E-06	3.50E-03	6.43E-03		6.03E-03	1.60E-02
	Vanadium	8.55E-04	3.54E-01	2.73E-02		2.96E-03	3.85E-01
	Zinc	2.42E-03	3.84E+00	2.05E+01		3.38E+00	2.77E+01

LOAEL-BASED HQ CALCULATION

Location	Analyte	LOAEL TRV		LOAEL-Based HQ					LOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	2.1E-05		2.4E-05	9.9E-03	7.4E-02		1.7E-02	1.0E-01
	TEQD/F/P	2.1E-05		NA	1.3E-01	1.6E+00		2.3E-01	1.9E+00
	Total PCB	1.1E+00		NA	1.5E-02	1.5E-01		2.6E-02	1.9E-01
	Aluminum	1.1E+03		4.8E-05	3.1E-01	5.7E-01		5.3E-01	1.4E+00
	Antimony	NA		NA	NA	NA		NA	NC
	Arsenic	4.5E+00		5.4E-04	2.6E-02	7.3E-03		1.7E-03	3.5E-02
	Barium	4.2E+01		1.0E-03	1.7E-01	2.9E-02		4.6E-02	2.5E-01
	Chromium	1.6E+01		1.2E-05	2.6E-02	1.5E-02		1.9E-03	4.3E-02
	Copper	1.2E+01		1.3E-04	9.0E-02	8.5E-02		3.1E-02	2.1E-01
	Lead	3.3E+00		4.0E-05	1.2E-01	1.1E-01		1.7E-02	2.5E-01
	Manganese	3.8E+02		8.9E-04	3.8E-02	4.1E-03		5.2E-03	4.8E-02
	Mercury	9.0E-01	6.4E-02	5.7E-06	1.7E-03	3.0E-01		2.9E+00	3.2E+00
	Nickel	1.9E+01		7.8E-05	2.1E-02	3.8E-02		1.9E-03	6.1E-02
	Selenium	5.8E-01		3.0E-04	6.6E-02	1.0E-01		6.0E-02	2.3E-01
	Thallium	NA		NA	NA	NA		NA	NC
	Vanadium	6.9E-01		1.2E-03	5.1E-01	4.0E-02		4.3E-03	5.6E-01
	Zinc	1.7E+02		1.4E-05	2.2E-02	1.2E-01		2.0E-02	1.6E-01

NOAEL-BASED HQ CALCULATION

Location	Analyte	NOAEL TRV		NOAEL-Based HQ					NOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	2.1E-06		2.4E-04	9.9E-02	7.4E-01		1.7E-01	1.0E+00
	TEQD/F/P	2.1E-06		NA	1.3E+00	1.6E+01		2.3E+00	1.9E+01
	Total PCB	1.1E-01		NA	1.5E-01	1.5E+00		2.6E-01	1.9E+00
	Aluminum	1.1E+02		4.8E-04	3.1E+00	5.7E+00		5.3E+00	1.4E+01
	Antimony	NA		NA	NA	NA		NA	NC
	Arsenic	2.2E+00		1.1E-03	5.2E-02	1.5E-02		3.3E-03	7.1E-02
	Barium	2.1E+01		2.1E-03	3.4E-01	5.7E-02		9.2E-02	4.9E-01
	Chromium	2.7E+00		6.9E-05	1.5E-01	8.7E-02		1.1E-02	2.5E-01
	Copper	4.1E+00		3.9E-04	2.7E-01	2.5E-01		9.2E-02	6.1E-01
	Lead	1.6E+00		8.0E-05	2.5E-01	2.1E-01		3.3E-02	4.9E-01
	Manganese	1.8E+02		1.9E-03	8.0E-02	8.7E-03		1.1E-02	1.0E-01
	Mercury	4.5E-01	6.4E-03	1.1E-05	3.3E-03	3.0E+00		2.9E+01	3.2E+01
	Nickel	6.7E+00		2.2E-04	5.7E-02	1.1E-01		5.4E-03	1.7E-01
	Selenium	2.9E-01		6.0E-04	1.3E-01	2.0E-01		1.2E-01	4.5E-01
	Thallium	NA		NA	NA	NA		NA	NC
	Vanadium	3.4E-01		2.5E-03	1.0E+00	7.9E-02		8.6E-03	1.1E+00
	Zinc	6.6E+01		3.7E-05	5.8E-02	3.1E-01		5.1E-02	4.2E-01

Receptor	Intake Rates		
	Water L/kg-day	Soil/Sed. kg/kg-day	Food kg ww/kg-day
Shrew	0.17	0.04	0.95

Dietary Type	Soil Inverts	Small Mammals	Plants
Diet Fraction (%)	100	0	0
Intake kg ww/kg-d	0.95	0	0

	Exposure Medium				
	Water	Soil/Sed.	Soil Inverts	Small Mammals	Plants
Intake rate	0.17	0.04	0.95	0	0
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day	kg ww/kg-day

DOSE CALCULATION

Location	COPC	Media-Specific Dose (mg/kg-d)					**Total Dose mg/kg-day**
		Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	3.63E-10	3.88E-07	6.18E-06			6.57E-06
	TEQD/F/P	NA	9.73E-07	1.83E-05			1.93E-05
	Total PCB	NA	2.76E-02	5.63E-01			5.91E-01
	Aluminum	5.19E-02	5.43E+02	2.06E+03			2.61E+03
	Antimony	3.08E-04	1.13E-02	4.29E-02			5.45E-02
	Arsenic	2.42E-03	1.86E-01	1.09E-01			2.97E-01
	Barium	4.25E-02	1.14E+01	3.94E+00			1.54E+01
	Chromium	1.82E-04	6.59E-01	7.67E-01			1.43E+00
	Copper	1.58E-03	1.74E+00	3.41E+00			5.15E+00
	Lead	1.30E-04	6.42E-01	1.15E+00			1.79E+00
	Manganese	3.34E-01	2.29E+01	5.14E+00			2.84E+01
	Mercury	5.10E-06	2.39E-03	6.36E-02			6.60E-02
	Nickel	1.45E-03	6.14E-01	2.33E+00			2.95E+00
	Selenium	1.74E-04	6.12E-02	1.93E-01			2.54E-01
	Thallium	5.61E-06	5.60E-03	2.13E-02			2.69E-02
	Vanadium	8.50E-04	5.67E-01	9.05E-02			6.58E-01
	Zinc	2.41E-03	6.15E+00	6.78E+01			7.40E+01

LOAEL-BASED HQ CALCULATION

Location	Analyte	LOAEL TRV		LOAEL-Based HQ					LOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	1.0E-05		3.6E-05	3.9E-02	6.2E-01			6.6E-01
	TEQD/F/P	1.0E-05		NA	9.7E-02	1.8E+00			1.9E+00
	Total PCB	9.3E-01		NA	3.0E-02	6.1E-01			6.4E-01
	Aluminum	1.9E+01		2.7E-03	2.8E+01	1.1E+02			1.4E+02
	Antimony	5.9E-01		5.2E-04	1.9E-02	7.3E-02			9.2E-02
	Arsenic	1.7E+00		1.5E-03	1.1E-01	6.5E-02			1.8E-01
	Barium	8.3E+01		5.1E-04	1.4E-01	4.8E-02			1.9E-01
	Chromium	5.8E+01		3.1E-06	1.1E-02	1.3E-02			2.5E-02
	Copper	9.3E+00		1.7E-04	1.9E-01	3.6E-01			5.5E-01
	Lead	8.9E+00		1.5E-05	7.2E-02	1.3E-01			2.0E-01
	Manganese	1.5E+02		2.3E-03	1.6E-01	3.5E-02			1.9E-01
	Mercury	2.5E-01	1.6E-01	2.0E-05	9.6E-03	4.0E-01			4.1E-01
	Nickel	3.4E+00		4.3E-04	1.8E-01	6.9E-01			8.7E-01
	Selenium	2.2E-01		8.1E-04	2.8E-01	9.0E-01			1.2E+00
	Thallium	7.4E-02		7.6E-05	7.6E-02	2.9E-01			3.6E-01
	Vanadium	8.3E+00		1.0E-04	6.8E-02	1.1E-02			7.9E-02
	Zinc	3.0E+02		8.1E-06	2.1E-02	2.3E-01			2.5E-01

NOAEL-BASED HQ CALCULATION

Location	Analyte	NOAEL TRV		NOAEL-Based HQ					NOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	1.0E-06		3.6E-04	3.9E-01	6.2E+00			6.6E+00
	TEQD/F/P	1.0E-06		NA	9.7E-01	1.8E+01			1.9E+01
	Total PCB	9.3E-02		NA	3.0E-01	6.1E+00			6.4E+00
	Aluminum	1.9E+00		2.7E-02	2.8E+02	1.1E+03			1.4E+03
	Antimony	5.9E-02		5.2E-03	1.9E-01	7.3E-01			9.2E-01
	Arsenic	1.0E+00		2.3E-03	1.8E-01	1.0E-01			2.9E-01
	Barium	5.2E+01		8.2E-04	2.2E-01	7.6E-02			3.0E-01
	Chromium	2.4E+00		7.6E-05	2.7E-01	3.2E-01			5.9E-01
	Copper	5.6E+00		2.8E-04	3.1E-01	6.1E-01			9.2E-01
	Lead	4.7E+00		2.8E-05	1.4E-01	2.4E-01			3.8E-01
	Manganese	5.2E+01		6.5E-03	4.4E-01	1.0E-01			5.5E-01
	Mercury	2.5E-02	3.2E-02	2.0E-04	9.6E-02	2.0E+00			2.1E+00
	Nickel	1.7E+00		8.5E-04	3.6E-01	1.4E+00			1.7E+00
	Selenium	1.4E-01		1.2E-03	4.3E-01	1.3E+00			1.8E+00
	Thallium	7.4E-03		7.6E-04	7.6E-01	2.9E+00			3.6E+00
	Vanadium	4.2E+00		2.0E-04	1.4E-01	2.2E-02			1.6E-01
	Zinc	7.5E+01		3.2E-05	8.2E-02	9.0E-01			9.8E-01

Receptor	Intake Rates		
	Water L/kg-day	Soil/Sed. kg/kg-day	Food kg ww/kg-day
Vole	0.13	0.00023	0.36

Dietary Type	Soil Inverts	Small Mammals	Plants
Diet Fraction (%)	0	0	100
Intake kg ww/kg-d	0	0	0.36

	Exposure Medium				
	Water	Soil/Sed.	Soil Inverts	Small Mammals	Plants
Intake rate	0.13	0.00023	0	0	0.36
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day	kg ww/kg-day

DOSE CALCULATION

Location	COPC	Media-Specific Dose (mg/kg-d)					**Total Dose mg/kg-day**
		Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	2.78E-10	2.23E-09			5.24E-07	5.27E-07
	TEQD/F/P	NA	5.59E-09			1.31E-06	1.32E-06
	Total PCB	NA	1.58E-04			3.72E-02	3.74E-02
	Aluminum	3.97E-02	3.12E+00			7.33E+02	7.37E+02
	Antimony	2.36E-04	6.49E-05			6.50E-04	9.50E-04
	Arsenic	1.85E-03	1.07E-03			9.41E-03	1.23E-02
	Barium	3.25E-02	6.56E-02			2.40E+00	2.50E+00
	Chromium	1.39E-04	3.79E-03			3.65E-02	4.04E-02
	Copper	1.20E-03	1.00E-02			4.66E-01	4.77E-01
	Lead	9.97E-05	3.69E-03			6.79E-02	7.17E-02
	Manganese	2.55E-01	1.32E-01			2.44E+00	2.83E+00
	Mercury	3.90E-06	1.38E-05			2.31E-01	2.31E-01
	Nickel	1.11E-03	3.53E-03			4.51E-02	4.98E-02
	Selenium	1.33E-04	3.52E-04			4.39E-02	4.44E-02
	Thallium	4.29E-06	3.22E-05			7.56E-03	7.60E-03
	Vanadium	6.50E-04	3.26E-03			3.71E-03	7.62E-03
	Zinc	1.84E-03	3.54E-02			4.24E+00	4.28E+00

LOAEL-BASED HQ CALCULATION

Location	Analyte	LOAEL TRV		LOAEL-Based HQ					LOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	1.0E-05		2.8E-05	2.2E-04			5.2E-02	5.3E-02
	TEQD/F/P	1.0E-05		NA	5.6E-04			1.3E-01	1.3E-01
	Total PCB	9.3E-01		NA	1.7E-04			4.0E-02	4.0E-02
	Aluminum	1.9E+01		2.1E-03	1.6E-01			3.8E+01	3.8E+01
	Antimony	5.9E-01		4.0E-04	1.1E-04			1.1E-03	1.6E-03
	Arsenic	1.7E+00		1.1E-03	6.4E-04			5.7E-03	7.4E-03
	Barium	8.3E+01		3.9E-04	7.9E-04			2.9E-02	3.0E-02
	Chromium	5.8E+01		2.4E-06	6.5E-05			6.3E-04	6.9E-04
	Copper	9.3E+00		1.3E-04	1.1E-03			5.0E-02	5.1E-02
	Lead	8.9E+00		1.1E-05	4.1E-04			7.6E-03	8.1E-03
	Manganese	1.5E+02		1.7E-03	9.0E-04			1.7E-02	1.9E-02
	Mercury	2.5E-01	1.6E-01	1.6E-05	5.5E-05			1.4E+00	1.4E+00
	Nickel	3.4E+00		3.3E-04	1.0E-03			1.3E-02	1.5E-02
	Selenium	2.2E-01		6.2E-04	1.6E-03			2.0E-01	2.1E-01
	Thallium	7.4E-02		5.8E-05	4.4E-04			1.0E-01	1.0E-01
	Vanadium	8.3E+00		7.8E-05	3.9E-04			4.5E-04	9.2E-04
	Zinc	3.0E+02		6.2E-06	1.2E-04			1.4E-02	1.4E-02

NOAEL-BASED HQ CALCULATION

Location	Analyte	NOAEL TRV		NOAEL-Based HQ					NOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	1.0E-06		2.8E-04	2.2E-03			5.2E-01	5.3E-01
	TEQD/F/P	1.0E-06		NA	5.6E-03			1.3E+00	1.3E+00
	Total PCB	9.3E-02		NA	1.7E-03			4.0E-01	4.0E-01
	Aluminum	1.9E+00		2.1E-02	1.6E+00			3.8E+02	3.8E+02
	Antimony	5.9E-02		4.0E-03	1.1E-03			1.1E-02	1.6E-02
	Arsenic	1.0E+00		1.8E-03	1.0E-03			9.0E-03	1.2E-02
	Barium	5.2E+01		6.3E-04	1.3E-03			4.6E-02	4.8E-02
	Chromium	2.4E+00		5.8E-05	1.6E-03			1.5E-02	1.7E-02
	Copper	5.6E+00		2.2E-04	1.8E-03			8.3E-02	8.5E-02
	Lead	4.7E+00		2.1E-05	7.8E-04			1.4E-02	1.5E-02
	Manganese	5.2E+01		5.0E-03	2.6E-03			4.7E-02	5.5E-02
	Mercury	2.5E-02	3.2E-02	1.6E-04	5.5E-04			7.2E+00	7.2E+00
	Nickel	1.7E+00		6.5E-04	2.1E-03			2.7E-02	2.9E-02
	Selenium	1.4E-01		9.3E-04	2.5E-03			3.1E-01	3.1E-01
	Thallium	7.4E-03		5.8E-04	4.4E-03			1.0E+00	1.0E+00
	Vanadium	4.2E+00		1.6E-04	7.8E-04			8.9E-04	1.8E-03
	Zinc	7.5E+01		2.4E-05	4.7E-04			5.6E-02	5.7E-02

Receptor	Intake Rates		
	Water L/kg-day	Soil/Sed. kg/kg-day	Food kg ww/kg-day
Mouse	0.15	0.0018	0.268

Dietary Type	Soil Inverts	Small Mammals	Plants
Diet Fraction (%)	50	0	50
Intake kg ww/kg-d	0.134	0	0.134

	Exposure Medium				
	Water	Soil/Sed.	Soil Inverts	Small Mammals	Plants
Intake rate	0.15	0.0018	0.134	0	0.134
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day	kg ww/kg-day

DOSE CALCULATION

Location	COPC	Media-Specific Dose (mg/kg-d)					Total Dose mg/kg-day
		Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	3.20E-10	1.75E-08	8.71E-07		1.95E-07	1.08E-06
	TEQD/F/P	NA	4.38E-08	2.58E-06		4.89E-07	3.11E-06
	Total PCB	NA	1.24E-03	7.94E-02		1.38E-02	9.45E-02
	Aluminum	4.58E-02	2.44E+01	2.91E+02		2.73E+02	5.89E+02
	Antimony	2.72E-04	5.08E-04	6.05E-03		2.42E-04	7.07E-03
	Arsenic	2.14E-03	8.36E-03	1.53E-02		3.50E-03	2.93E-02
	Barium	3.75E-02	5.13E-01	5.56E-01		8.94E-01	2.00E+00
	Chromium	1.61E-04	2.97E-02	1.08E-01		1.36E-02	1.52E-01
	Copper	1.39E-03	7.83E-02	4.80E-01		1.73E-01	7.33E-01
	Lead	1.15E-04	2.89E-02	1.62E-01		2.53E-02	2.16E-01
	Manganese	2.95E-01	1.03E+00	7.26E-01		9.09E-01	2.96E+00
	Mercury	4.50E-06	1.08E-04	8.97E-03		8.58E-02	9.49E-02
	Nickel	1.28E-03	2.76E-02	3.29E-01		1.68E-02	3.75E-01
	Selenium	1.54E-04	2.75E-03	2.72E-02		1.63E-02	4.64E-02
	Thallium	4.95E-06	2.52E-04	3.00E-03		2.81E-03	6.07E-03
	Vanadium	7.50E-04	2.55E-02	1.28E-02		1.38E-03	4.04E-02
	Zinc	2.12E-03	2.77E-01	9.56E+00		1.58E+00	1.14E+01

LOAEL-BASED HQ CALCULATION

Location	Analyte	LOAEL TRV		LOAEL-Based HQ					LOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	1.0E-05		3.2E-05	1.7E-03	8.7E-02		2.0E-02	1.1E-01
	TEQD/F/P	1.0E-05		NA	4.4E-03	2.6E-01		4.9E-02	3.1E-01
	Total PCB	9.3E-01		NA	1.3E-03	8.5E-02		1.5E-02	1.0E-01
	Aluminum	1.9E+01		2.4E-03	1.3E+00	1.5E+01		1.4E+01	3.1E+01
	Antimony	5.9E-01		4.6E-04	8.6E-04	1.0E-02		4.1E-04	1.2E-02
	Arsenic	1.7E+00		1.3E-03	5.0E-03	9.2E-03		2.1E-03	1.8E-02
	Barium	8.3E+01		4.5E-04	6.2E-03	6.7E-03		1.1E-02	2.4E-02
	Chromium	5.8E+01		2.8E-06	5.1E-04	1.9E-03		2.3E-04	2.6E-03
	Copper	9.3E+00		1.5E-04	8.4E-03	5.1E-02		1.9E-02	7.9E-02
	Lead	8.9E+00		1.3E-05	3.2E-03	1.8E-02		2.8E-03	2.4E-02
	Manganese	1.5E+02		2.0E-03	7.1E-03	5.0E-03		6.2E-03	2.0E-02
	Mercury	2.5E-01	1.6E-01	1.8E-05	4.3E-04	5.6E-02		5.4E-01	5.9E-01
	Nickel	3.4E+00		3.8E-04	8.1E-03	9.7E-02		4.9E-03	1.1E-01
	Selenium	2.2E-01		7.1E-04	1.3E-02	1.3E-01		7.6E-02	2.2E-01
	Thallium	7.4E-02		6.7E-05	3.4E-03	4.1E-02		3.8E-02	8.2E-02
	Vanadium	8.3E+00		9.0E-05	3.1E-03	1.5E-03		1.7E-04	4.9E-03
	Zinc	3.0E+02		7.1E-06	9.3E-04	3.2E-02		5.3E-03	3.8E-02

NOAEL-BASED HQ CALCULATION

Location	Analyte	NOAEL TRV		NOAEL-Based HQ					NOAEL HQt
				Water	Soil	Soil Invertebrate	Small Mammals	Plants	
OU2	TEQ	1.0E-06		3.2E-04	1.7E-02	8.7E-01		2.0E-01	1.1E+00
	TEQD/F/P	1.0E-06		NA	4.4E-02	2.6E+00		4.9E-01	3.1E+00
	Total PCB	9.3E-02		NA	1.3E-02	8.5E-01		1.5E-01	1.0E+00
	Aluminum	1.9E+00		2.4E-02	1.3E+01	1.5E+02		1.4E+02	3.1E+02
	Antimony	5.9E-02		4.6E-03	8.6E-03	1.0E-01		4.1E-03	1.2E-01
	Arsenic	1.0E+00		2.1E-03	8.0E-03	1.5E-02		3.4E-03	2.8E-02
	Barium	5.2E+01		7.2E-04	9.9E-03	1.1E-02		1.7E-02	3.9E-02
	Chromium	2.4E+00		6.7E-05	1.2E-02	4.5E-02		5.7E-03	6.3E-02
	Copper	5.6E+00		2.5E-04	1.4E-02	8.6E-02		3.1E-02	1.3E-01
	Lead	4.7E+00		2.4E-05	6.1E-03	3.4E-02		5.4E-03	4.6E-02
	Manganese	5.2E+01		5.7E-03	2.0E-02	1.4E-02		1.8E-02	5.7E-02
	Mercury	2.5E-02	3.2E-02	1.8E-04	4.3E-03	2.8E-01		2.7E+00	3.0E+00
	Nickel	1.7E+00		7.5E-04	1.6E-02	1.9E-01		9.9E-03	2.2E-01
	Selenium	1.4E-01		1.1E-03	1.9E-02	1.9E-01		1.1E-01	3.2E-01
	Thallium	7.4E-03		6.7E-04	3.4E-02	4.1E-01		3.8E-01	8.2E-01
	Vanadium	4.2E+00		1.8E-04	6.1E-03	3.1E-03		3.3E-04	9.7E-03
	Zinc	7.5E+01		2.8E-05	3.7E-03	1.3E-01		2.1E-02	1.5E-01

Receptor	Intake Rates		
	Water L/kg-day	Soil/Sed. kg/kg-day	Food kg ww/kg-day
Robin	0.136	0.025	1.205

Dietary Type	Soil Inverts	Plants
Diet Fraction (%)	50	50
Intake kg ww/kg-d	0.6025	0.6025

	Exposure Medium			
	Water	Soil/Sed.	Soil Inverts	Plants
Intake rate	0.136	0.025	0.6025	0.6025
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day

DOSE CALCULATION

Location	COPC	Media-Specific Dose (mg/kg-d)				Total Dose mg/kg-day
		Water	Soil	Soil Invertebrate	Plants	
OU2	TEQ	4.06E-10	2.09E-07	3.28E-06	7.54E-07	4.24E-06
	Aluminum	4.15E-02	3.40E+02	1.31E+03	1.23E+03	2.88E+03
	Antimony	2.47E-04	7.05E-03	2.72E-02	1.09E-03	3.56E-02
	Arsenic	1.94E-03	1.16E-01	6.88E-02	1.57E-02	2.03E-01
	Barium	3.40E-02	7.13E+00	2.50E+00	4.02E+00	1.37E+01
	Chromium	1.46E-04	4.12E-01	4.86E-01	6.11E-02	9.59E-01
	Copper	1.26E-03	1.09E+00	2.16E+00	7.79E-01	4.03E+00
	Lead	1.04E-04	4.01E-01	7.28E-01	1.14E-01	1.24E+00
	Manganese	2.67E-01	1.43E+01	3.26E+00	4.09E+00	2.19E+01
	Mercury	4.08E-06	1.50E-03	4.04E-02	3.86E-01	4.28E-01
	Nickel	1.16E-03	3.84E-01	1.48E+00	7.55E-02	1.94E+00
	Selenium	1.39E-04	3.83E-02	1.22E-01	7.34E-02	2.34E-01
	Thallium	4.49E-06	3.50E-03	1.35E-02	1.27E-02	2.97E-02
	Vanadium	6.80E-04	3.54E-01	5.74E-02	6.21E-03	4.19E-01
	Zinc	1.93E-03	3.84E+00	4.30E+01	7.10E+00	5.39E+01
OU3 Uplands	TEQ	4.06E-10	2.85E-06	7.19E-05	1.03E-05	8.51E-05
	Aluminum	4.15E-02	2.74E+02	1.06E+03	9.90E+02	2.32E+03
	Antimony	2.47E-04	2.70E-02	1.04E-01	3.83E-03	1.35E-01
	Arsenic	1.94E-03	1.95E-01	9.93E-02	2.65E-02	3.23E-01
	Barium	3.40E-02	1.34E+01	4.70E+00	7.55E+00	2.57E+01
	Chromium	1.46E-04	5.46E-01	6.45E-01	8.10E-02	1.27E+00
	Copper	1.26E-03	9.14E-01	1.82E+00	7.28E-01	3.46E+00
	Lead	1.04E-04	4.61E-01	8.14E-01	1.23E-01	1.40E+00
	Manganese	2.67E-01	2.52E+01	4.79E+00	7.18E+00	3.74E+01
	Mercury	4.08E-06	4.33E-02	1.25E-01	6.81E-02	2.37E-01
	Nickel	1.16E-03	3.44E-01	1.32E+00	6.95E-02	1.74E+00
	Selenium	1.39E-04	1.55E-02	6.28E-02	2.70E-02	1.05E-01
	Thallium	4.49E-06	5.05E-03	1.95E-02	1.83E-02	4.28E-02
	Vanadium	6.80E-04	6.45E-01	1.04E-01	1.13E-02	7.62E-01
	Zinc	1.93E-03	5.58E+00	4.86E+01	8.73E+00	6.29E+01
OU3 Floodplain	TEQ	4.06E-10	1.06E-06	2.23E-05	3.82E-06	2.72E-05
	Aluminum	4.15E-02	3.46E+02	1.34E+03	1.25E+03	2.93E+03
	Antimony	2.47E-04	1.18E-02	4.53E-02	1.76E-03	5.91E-02
	Arsenic	1.94E-03	1.61E-01	8.65E-02	2.18E-02	2.71E-01
	Barium	3.40E-02	2.56E+01	8.99E+00	1.45E+01	4.91E+01
	Chromium	1.46E-04	5.67E-01	6.69E-01	8.40E-02	1.32E+00
	Copper	1.26E-03	1.81E+00	3.60E+00	9.53E-01	6.37E+00
	Lead	1.04E-04	4.82E-01	8.44E-01	1.26E-01	1.45E+00
	Manganese	2.67E-01	1.61E+01	3.54E+00	4.61E+00	2.45E+01
	Mercury	4.08E-06	3.08E-02	1.12E-01	8.12E-02	2.24E-01
	Nickel	1.16E-03	2.62E-01	1.01E+00	5.68E-02	1.33E+00
	Selenium	1.39E-04	8.30E-03	3.99E-02	1.36E-02	6.19E-02
	Thallium	4.49E-06	4.20E-03	1.62E-02	1.52E-02	3.56E-02
	Vanadium	6.80E-04	5.96E-01	9.64E-02	1.04E-02	7.03E-01
	Zinc	1.93E-03	4.74E+00	4.61E+01	7.98E+00	5.88E+01
Undisturbed Floodplain Area	TEQ	1.85E-10	1.05E-08	9.60E-08	3.81E-08	1.45E-07
	Aluminum	3.36E-02	2.03E+02	7.81E+02	7.32E+02	1.72E+03
	Antimony	3.43E-05	9.25E-03	3.57E-02	1.40E-03	4.64E-02
	Arsenic	1.19E-03	2.55E-01	1.20E-01	3.46E-02	4.11E-01
	Barium	1.65E-02	4.28E+00	1.50E+00	2.41E+00	8.20E+00
	Chromium	3.92E-05	2.40E-01	2.83E-01	3.56E-02	5.59E-01
	Copper	1.89E-03	1.98E+00	3.92E+00	9.86E-01	6.88E+00
	Lead	1.07E-04	4.53E-01	8.02E-01	1.22E-01	1.38E+00
	Manganese	2.23E-02	1.11E+01	2.74E+00	3.17E+00	1.70E+01
	Mercury	NA	2.43E-03	4.75E-02	3.01E-01	3.51E-01
	Nickel	6.77E-05	2.03E-01	7.81E-01	4.68E-02	1.03E+00
	Selenium	1.90E-05	ND	NA	NA	1.90E-05
	Thallium	NA	4.75E-03	1.83E-02	1.72E-02	4.02E-02
	Vanadium	1.18E-04	3.65E-01	5.91E-02	6.40E-03	4.31E-01
	Zinc	1.75E-03	5.03E+00	4.70E+01	8.24E+00	6.02E+01

LOAEL-BASED HQ CALCULATION

Location	Analyte	LOAEL TRV		LOAEL-Based HQ				LOAEL HQt
				Water	Soil	Soil Invertebrate	Plants	
OU2	TEQ	1.4E-04		2.8E-06	1.5E-03	2.3E-02	5.3E-03	3.0E-02
	Aluminum	1.1E+03		3.8E-05	3.1E-01	1.2E+00	1.1E+00	2.6E+00
	Antimony	NA		NA	NA	NA	NA	NC
	Arsenic	4.5E+00		4.3E-04	2.6E-02	1.5E-02	3.5E-03	4.5E-02
	Barium	4.2E+01		8.2E-04	1.7E-01	6.0E-02	9.6E-02	3.3E-01
	Chromium	1.6E+01		9.4E-06	2.6E-02	3.1E-02	3.9E-03	6.1E-02
	Copper	1.2E+01		1.0E-04	9.0E-02	1.8E-01	6.4E-02	3.3E-01
	Lead	3.3E+00		3.2E-05	1.2E-01	2.2E-01	3.5E-02	3.8E-01
	Manganese	3.8E+02		7.1E-04	3.8E-02	8.7E-03	1.1E-02	5.8E-02
	Mercury	9.0E-01	6.4E-02	4.5E-06	1.7E-03	6.3E-01	6.0E+00	6.7E+00
	Nickel	1.9E+01		6.2E-05	2.1E-02	8.0E-02	4.1E-03	1.0E-01
	Selenium	5.8E-01		2.4E-04	6.6E-02	2.1E-01	1.3E-01	4.0E-01
	Thallium	NA		NA	NA	NA	NA	NC
	Vanadium	6.9E-01		9.9E-04	5.1E-01	8.3E-02	9.0E-03	6.1E-01
	Zinc	1.7E+02		1.1E-05	2.2E-02	2.5E-01	4.2E-02	3.2E-01
OU3 Uplands	TEQ	1.4E-04		2.8E-06	2.0E-02	5.0E-01	7.2E-02	5.9E-01
	Aluminum	1.1E+03		3.8E-05	2.5E-01	9.6E-01	9.0E-01	2.1E+00
	Antimony	NA		NA	NA	NA	NA	NC
	Arsenic	4.5E+00		4.3E-04	4.3E-02	2.2E-02	5.9E-03	7.2E-02
	Barium	4.2E+01		8.2E-04	3.2E-01	1.1E-01	1.8E-01	6.2E-01
	Chromium	1.6E+01		9.4E-06	3.5E-02	4.1E-02	5.2E-03	8.2E-02
	Copper	1.2E+01		1.0E-04	7.6E-02	1.5E-01	6.0E-02	2.9E-01
	Lead	3.3E+00		3.2E-05	1.4E-01	2.5E-01	3.8E-02	4.3E-01
	Manganese	3.8E+02		7.1E-04	6.7E-02	1.3E-02	1.9E-02	9.9E-02
	Mercury	9.0E-01	6.4E-02	4.5E-06	4.8E-02	2.0E+00	1.1E+00	3.1E+00
	Nickel	1.9E+01		6.2E-05	1.8E-02	7.1E-02	3.7E-03	9.3E-02
	Selenium	5.8E-01		2.4E-04	2.7E-02	1.1E-01	4.7E-02	1.8E-01
	Thallium	NA		NA	NA	NA	NA	NC
	Vanadium	6.9E-01		9.9E-04	9.4E-01	1.5E-01	1.6E-02	1.1E+00
	Zinc	1.7E+02		1.1E-05	3.3E-02	2.8E-01	5.1E-02	3.7E-01
OU3 Floodplain	TEQ	1.4E-04		2.8E-06	7.4E-03	1.6E-01	2.7E-02	1.9E-01
	Aluminum	1.1E+03		3.8E-05	3.2E-01	1.2E+00	1.1E+00	2.7E+00
	Antimony	NA		NA	NA	NA	NA	NC
	Arsenic	4.5E+00		4.3E-04	3.6E-02	1.9E-02	4.8E-03	6.0E-02
	Barium	4.2E+01		8.2E-04	6.1E-01	2.2E-01	3.5E-01	1.2E+00
	Chromium	1.6E+01		9.4E-06	3.6E-02	4.3E-02	5.4E-03	8.5E-02
	Copper	1.2E+01		1.0E-04	1.5E-01	3.0E-01	7.9E-02	5.3E-01
	Lead	3.3E+00		3.2E-05	1.5E-01	2.6E-01	3.9E-02	4.5E-01
	Manganese	3.8E+02		7.1E-04	4.3E-02	9.4E-03	1.2E-02	6.5E-02
	Mercury	9.0E-01	6.4E-02	4.5E-06	3.4E-02	1.7E+00	1.3E+00	3.0E+00
	Nickel	1.9E+01		6.2E-05	1.4E-02	5.4E-02	3.1E-03	7.2E-02
	Selenium	5.8E-01		2.4E-04	1.4E-02	6.9E-02	2.3E-02	1.1E-01
	Thallium	NA		NA	NA	NA	NA	NC
	Vanadium	6.9E-01		9.9E-04	8.7E-01	1.4E-01	1.5E-02	1.0E+00
	Zinc	1.7E+02		1.1E-05	2.8E-02	2.7E-01	4.7E-02	3.4E-01
Undisturbed Floodplain Area	TEQ	1.4E-04		1.3E-06	7.4E-05	6.7E-04	2.7E-04	1.0E-03
	Aluminum	1.1E+03		3.1E-05	1.8E-01	7.1E-01	6.7E-01	1.6E+00
	Antimony	NA		NA	NA	NA	NA	NC
	Arsenic	4.5E+00		2.6E-04	5.7E-02	2.7E-02	7.7E-03	9.1E-02
	Barium	4.2E+01		4.0E-04	1.0E-01	3.6E-02	5.8E-02	2.0E-01
	Chromium	1.6E+01		2.5E-06	1.5E-02	1.8E-02	2.3E-03	3.6E-02
	Copper	1.2E+01		1.6E-04	1.6E-01	3.2E-01	8.1E-02	5.7E-01
	Lead	3.3E+00		3.3E-05	1.4E-01	2.5E-01	3.7E-02	4.2E-01
	Manganese	3.8E+02		5.9E-05	2.9E-02	7.3E-03	8.4E-03	4.5E-02
	Mercury	9.0E-01	6.4E-02	NA	2.7E-03	7.4E-01	4.7E+00	5.4E+00
	Nickel	1.9E+01		3.6E-06	1.1E-02	4.2E-02	2.5E-03	5.5E-02
	Selenium	5.8E-01		3.3E-05	ND	NA	NA	3.3E-05
	Thallium	NA		NA	NA	NA	NA	NC
	Vanadium	6.9E-01		1.7E-04	5.3E-01	8.6E-02	9.3E-03	6.3E-01
	Zinc	1.7E+02		1.0E-05	2.9E-02	2.7E-01	4.8E-02	3.5E-01

Robin

NOAEL-BASED HQ CALCULATION

Location	Analyte	NOAEL TRV		NOAEL-Based HQ				NOAEL HQt
				Water	Soil	Soil Invertebrate	Plants	
OU2	TEQ	1.4E-05		2.8E-05	1.5E-02	2.3E-01	5.3E-02	3.0E-01
	Aluminum	1.1E+02		3.8E-04	3.1E+00	1.2E+01	1.1E+01	2.6E+01
	Antimony	NA		NA	NA	NA	NA	NC
	Arsenic	2.2E+00		8.6E-04	5.2E-02	3.1E-02	7.0E-03	9.0E-02
	Barium	2.1E+01		1.6E-03	3.4E-01	1.2E-01	1.9E-01	6.6E-01
	Chromium	2.7E+00		5.5E-05	1.5E-01	1.8E-01	2.3E-02	3.6E-01
	Copper	4.1E+00		3.1E-04	2.7E-01	5.3E-01	1.9E-01	9.9E-01
	Lead	1.6E+00		6.4E-05	2.5E-01	4.5E-01	7.0E-02	7.6E-01
	Manganese	1.8E+02		1.5E-03	8.0E-02	1.8E-02	2.3E-02	1.2E-01
	Mercury	4.5E-01	6.4E-03	9.1E-06	3.3E-03	6.3E+00	6.0E+01	6.7E+01
	Nickel	6.7E+00		1.7E-04	5.7E-02	2.2E-01	1.1E-02	2.9E-01
	Selenium	2.9E-01		4.8E-04	1.3E-01	4.2E-01	2.5E-01	8.1E-01
	Thallium	NA		NA	NA	NA	NA	NC
	Vanadium	3.4E-01		2.0E-03	1.0E+00	1.7E-01	1.8E-02	1.2E+00
	Zinc	6.6E+01		2.9E-05	5.8E-02	6.5E-01	1.1E-01	8.2E-01
OU3 Uplands	TEQ	1.4E-05		2.8E-05	2.0E-01	5.0E+00	7.2E-01	5.9E+00
	Aluminum	1.1E+02		3.8E-04	2.5E+00	9.6E+00	9.0E+00	2.1E+01
	Antimony	NA		NA	NA	NA	NA	NC
	Arsenic	2.2E+00		8.6E-04	8.7E-02	4.4E-02	1.2E-02	1.4E-01
	Barium	2.1E+01		1.6E-03	6.4E-01	2.3E-01	3.6E-01	1.2E+00
	Chromium	2.7E+00		5.5E-05	2.1E-01	2.4E-01	3.0E-02	4.8E-01
	Copper	4.1E+00		3.1E-04	2.3E-01	4.5E-01	1.8E-01	8.5E-01
	Lead	1.6E+00		6.4E-05	2.8E-01	5.0E-01	7.5E-02	8.6E-01
	Manganese	1.8E+02		1.5E-03	1.4E-01	2.7E-02	4.0E-02	2.1E-01
	Mercury	4.5E-01	6.4E-03	9.1E-06	9.6E-02	2.0E+01	1.1E+01	3.0E+01
	Nickel	6.7E+00		1.7E-04	5.1E-02	2.0E-01	1.0E-02	2.6E-01
	Selenium	2.9E-01		4.8E-04	5.3E-02	2.2E-01	9.3E-02	3.6E-01
	Thallium	NA		NA	NA	NA	NA	NC
	Vanadium	3.4E-01		2.0E-03	1.9E+00	3.0E-01	3.3E-02	2.2E+00
	Zinc	6.6E+01		2.9E-05	8.4E-02	7.4E-01	1.3E-01	9.5E-01
OU3 Floodplain	TEQ	1.4E-05		2.8E-05	7.4E-02	1.6E+00	2.7E-01	1.9E+00
	Aluminum	1.1E+02		3.8E-04	3.2E+00	1.2E+01	1.1E+01	2.7E+01
	Antimony	NA		NA	NA	NA	NA	NC
	Arsenic	2.2E+00		8.6E-04	7.2E-02	3.9E-02	9.7E-03	1.2E-01
	Barium	2.1E+01		1.6E-03	1.2E+00	4.3E-01	6.9E-01	2.4E+00
	Chromium	2.7E+00		5.5E-05	2.1E-01	2.5E-01	3.2E-02	5.0E-01
	Copper	4.1E+00		3.1E-04	4.5E-01	8.9E-01	2.4E-01	1.6E+00
	Lead	1.6E+00		6.4E-05	3.0E-01	5.2E-01	7.7E-02	8.9E-01
	Manganese	1.8E+02		1.5E-03	9.0E-02	2.0E-02	2.6E-02	1.4E-01
	Mercury	4.5E-01	6.4E-03	9.1E-06	6.8E-02	1.7E+01	1.3E+01	3.0E+01
	Nickel	6.7E+00		1.7E-04	3.9E-02	1.5E-01	8.5E-03	2.0E-01
	Selenium	2.9E-01		4.8E-04	2.9E-02	1.4E-01	4.7E-02	2.1E-01
	Thallium	NA		NA	NA	NA	NA	NC
	Vanadium	3.4E-01		2.0E-03	1.7E+00	2.8E-01	3.0E-02	2.0E+00
	Zinc	6.6E+01		2.9E-05	7.2E-02	7.0E-01	1.2E-01	8.9E-01
Undisturbed Floodplain Area	TEQ	1.4E-05		1.3E-05	7.4E-04	6.7E-03	2.7E-03	1.0E-02
	Aluminum	1.1E+02		3.1E-04	1.8E+00	7.1E+00	6.7E+00	1.6E+01
	Antimony	NA		NA	NA	NA	NA	NC
	Arsenic	2.2E+00		5.3E-04	1.1E-01	5.4E-02	1.5E-02	1.8E-01
	Barium	2.1E+01		7.9E-04	2.1E-01	7.2E-02	1.2E-01	3.9E-01
	Chromium	2.7E+00		1.5E-05	9.0E-02	1.1E-01	1.3E-02	2.1E-01
	Copper	4.1E+00		4.7E-04	4.9E-01	9.7E-01	2.4E-01	1.7E+00
	Lead	1.6E+00		6.6E-05	2.8E-01	4.9E-01	7.5E-02	8.4E-01
	Manganese	1.8E+02		1.2E-04	6.2E-02	1.5E-02	1.8E-02	9.5E-02
	Mercury	4.5E-01	6.4E-03	NA	5.4E-03	7.4E+00	4.7E+01	5.4E+01
	Nickel	6.7E+00		1.0E-05	3.0E-02	1.2E-01	7.0E-03	1.5E-01
	Selenium	2.9E-01		6.6E-05	ND	NA	NA	6.6E-05
	Thallium	NA		NA	NA	NA	NA	NC
	Vanadium	3.4E-01		3.4E-04	1.1E+00	1.7E-01	1.9E-02	1.3E+00
	Zinc	6.6E+01		2.6E-05	7.6E-02	7.1E-01	1.2E-01	9.1E-01

ND = not detected; NA = not available; NC = not calculated; LOAEL = lowest-observed-adverse-effect-level; NOAEL = no-observed-adverse-effect-level; HQt = total hazard quotient; TRV = toxicity reference value; TEQ = toxicity equivalence.

Receptor	Intake Rates		
	Water L/kg-day	Soil/Sed. kg/kg-day	Food kg ww/kg-day
Catbird	0.171	0.025	0.574

Dietary Type	Soil Inverts	Plants
Diet Fraction (%)	50	50
Intake kg ww/kg-d	0.287	0.287

	Exposure Medium			
	Water	Soil/Sed.	Soil Inverts	Plants
Intake rate	0.171	0.025	0.287	0.287
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day

DOSE CALCULATION

Location	COPC	Media-Specific Dose (mg/kg-d)				Total Dose mg/kg-day
		Water	Soil	Soil Invertebrate	Plants	
OU2	TEQ	5.10E-10	2.09E-07	1.56E-06	3.59E-07	2.13E-06
	Aluminum	5.22E-02	3.40E+02	6.24E+02	5.85E+02	1.55E+03
	Antimony	3.10E-04	7.05E-03	1.29E-02	5.18E-04	2.08E-02
	Arsenic	2.44E-03	1.16E-01	3.28E-02	7.50E-03	1.59E-01
	Barium	4.28E-02	7.13E+00	1.19E+00	1.92E+00	1.03E+01
	Chromium	1.83E-04	4.12E-01	2.32E-01	2.91E-02	6.73E-01
	Copper	1.58E-03	1.09E+00	1.03E+00	3.71E-01	2.49E+00
	Lead	1.31E-04	4.01E-01	3.47E-01	5.41E-02	8.02E-01
	Manganese	3.36E-01	1.43E+01	1.55E+00	1.95E+00	1.82E+01
	Mercury	5.13E-06	1.50E-03	1.92E-02	1.84E-01	2.05E-01
	Nickel	1.46E-03	3.84E-01	7.05E-01	3.60E-02	1.13E+00
	Selenium	1.75E-04	3.83E-02	5.82E-02	3.50E-02	1.32E-01
	Thallium	5.64E-06	3.50E-03	6.43E-03	6.03E-03	1.60E-02
	Vanadium	8.55E-04	3.54E-01	2.73E-02	2.96E-03	3.85E-01
	Zinc	2.42E-03	3.84E+00	2.05E+01	3.38E+00	2.77E+01
OU3 Uplands	TEQ	5.10E-10	2.85E-06	3.43E-05	4.90E-06	4.20E-05
	Aluminum	5.22E-02	2.74E+02	5.03E+02	4.72E+02	1.25E+03
	Antimony	3.10E-04	2.70E-02	4.95E-02	1.82E-03	7.87E-02
	Arsenic	2.44E-03	1.95E-01	4.73E-02	1.26E-02	2.58E-01
	Barium	4.28E-02	1.34E+01	2.24E+00	3.60E+00	1.93E+01
	Chromium	1.83E-04	5.46E-01	3.07E-01	3.86E-02	8.92E-01
	Copper	1.58E-03	9.14E-01	8.65E-01	3.47E-01	2.13E+00
	Lead	1.31E-04	4.61E-01	3.88E-01	5.85E-02	9.08E-01
	Manganese	3.36E-01	2.52E+01	2.28E+00	3.42E+00	3.12E+01
	Mercury	5.13E-06	4.33E-02	5.98E-02	3.24E-02	1.36E-01
	Nickel	1.46E-03	3.44E-01	6.31E-01	3.31E-02	1.01E+00
	Selenium	1.75E-04	1.55E-02	2.99E-02	1.29E-02	5.84E-02
	Thallium	5.64E-06	5.05E-03	9.28E-03	8.70E-03	2.30E-02
	Vanadium	8.55E-04	6.45E-01	4.98E-02	5.39E-03	7.01E-01
	Zinc	2.42E-03	5.58E+00	2.31E+01	4.16E+00	3.29E+01
OU3 Floodplain	TEQ	5.10E-10	1.06E-06	1.06E-05	1.82E-06	1.35E-05
	Aluminum	5.22E-02	3.46E+02	6.36E+02	5.97E+02	1.58E+03
	Antimony	3.10E-04	1.18E-02	2.16E-02	8.36E-04	3.45E-02
	Arsenic	2.44E-03	1.61E-01	4.12E-02	1.04E-02	2.15E-01
	Barium	4.28E-02	2.56E+01	4.28E+00	6.88E+00	3.68E+01
	Chromium	1.83E-04	5.67E-01	3.19E-01	4.00E-02	9.26E-01
	Copper	1.58E-03	1.81E+00	1.72E+00	4.54E-01	3.98E+00
	Lead	1.31E-04	4.82E-01	4.02E-01	6.00E-02	9.44E-01
	Manganese	3.36E-01	1.61E+01	1.69E+00	2.19E+00	2.03E+01
	Mercury	5.13E-06	3.08E-02	5.33E-02	3.87E-02	1.23E-01
	Nickel	1.46E-03	2.62E-01	4.82E-01	2.70E-02	7.72E-01
	Selenium	1.75E-04	8.30E-03	1.90E-02	6.48E-03	3.39E-02
	Thallium	5.64E-06	4.20E-03	7.71E-03	7.23E-03	1.92E-02
	Vanadium	8.55E-04	5.96E-01	4.59E-02	4.97E-03	6.47E-01
	Zinc	2.42E-03	4.74E+00	2.19E+01	3.80E+00	3.05E+01
Undisturbed Floodplain Area	TEQ	2.33E-10	1.05E-08	4.57E-08	1.81E-08	7.46E-08
	Aluminum	4.23E-02	2.03E+02	3.72E+02	3.49E+02	9.23E+02
	Antimony	4.31E-05	9.25E-03	1.70E-02	6.68E-04	2.70E-02
	Arsenic	1.50E-03	2.55E-01	5.71E-02	1.65E-02	3.30E-01
	Barium	2.08E-02	4.28E+00	7.15E-01	1.15E+00	6.16E+00
	Chromium	4.92E-05	2.40E-01	1.35E-01	1.69E-02	3.92E-01
	Copper	2.37E-03	1.98E+00	1.87E+00	4.70E-01	4.32E+00
	Lead	1.34E-04	4.53E-01	3.82E-01	5.79E-02	8.93E-01
	Manganese	2.81E-02	1.11E+01	1.31E+00	1.51E+00	1.39E+01
	Mercury	NA	2.43E-03	2.26E-02	1.43E-01	1.68E-01
	Nickel	8.52E-05	2.03E-01	3.72E-01	2.23E-02	5.97E-01
	Selenium	2.39E-05	ND	NA	NA	2.39E-05
	Thallium	NA	4.75E-03	8.72E-03	8.18E-03	2.17E-02
	Vanadium	1.49E-04	3.65E-01	2.82E-02	3.05E-03	3.96E-01
	Zinc	2.20E-03	5.03E+00	2.24E+01	3.93E+00	3.13E+01

LOAEL-BASED HQ CALCULATION

Location	Analyte	LOAEL TRV		LOAEL-Based HQ				LOAEL HQt
				Water	Soil	Soil Invertebrate	Plants	
OU2	TEQ	2.5E-05		2.0E-05	8.3E-03	6.2E-02	1.4E-02	8.5E-02
	Aluminum	1.1E+03		4.8E-05	3.1E-01	5.7E-01	5.3E-01	1.4E+00
	Antimony	NA		NA	NA	NA	NA	NC
	Arsenic	4.5E+00		5.4E-04	2.6E-02	7.3E-03	1.7E-03	3.5E-02
	Barium	4.2E+01		1.0E-03	1.7E-01	2.9E-02	4.6E-02	2.5E-01
	Chromium	1.6E+01		1.2E-05	2.6E-02	1.5E-02	1.9E-03	4.3E-02
	Copper	1.2E+01		1.3E-04	9.0E-02	8.5E-02	3.1E-02	2.1E-01
	Lead	3.3E+00		4.0E-05	1.2E-01	1.1E-01	1.7E-02	2.5E-01
	Manganese	3.8E+02		8.9E-04	3.8E-02	4.1E-03	5.2E-03	4.8E-02
	Mercury	9.0E-01	6.4E-02	5.7E-06	1.7E-03	3.0E-01	2.9E+00	3.2E+00
	Nickel	1.9E+01		7.8E-05	2.1E-02	3.8E-02	1.9E-03	6.1E-02
	Selenium	5.8E-01		3.0E-04	6.6E-02	1.0E-01	6.0E-02	2.3E-01
	Thallium	NA		NA	NA	NA	NA	NC
	Vanadium	6.9E-01		1.2E-03	5.1E-01	4.0E-02	4.3E-03	5.6E-01
	Zinc	1.7E+02		1.4E-05	2.2E-02	1.2E-01	2.0E-02	1.6E-01
OU3 Uplands	TEQ	2.5E-05		2.0E-05	1.1E-01	1.4E+00	2.0E-01	1.7E+00
	Aluminum	1.1E+03		4.8E-05	2.5E-01	4.6E-01	4.3E-01	1.1E+00
	Antimony	NA		NA	NA	NA	NA	NC
	Arsenic	4.5E+00		5.4E-04	4.3E-02	1.1E-02	2.8E-03	5.7E-02
	Barium	4.2E+01		1.0E-03	3.2E-01	5.4E-02	8.6E-02	4.6E-01
	Chromium	1.6E+01		1.2E-05	3.5E-02	2.0E-02	2.5E-03	5.7E-02
	Copper	1.2E+01		1.3E-04	7.6E-02	7.1E-02	2.9E-02	1.8E-01
	Lead	3.3E+00		4.0E-05	1.4E-01	1.2E-01	1.8E-02	2.8E-01
	Manganese	3.8E+02		8.9E-04	6.7E-02	6.1E-03	9.1E-03	8.3E-02
	Mercury	9.0E-01	6.4E-02	5.7E-06	4.8E-02	9.3E-01	5.1E-01	1.5E+00
	Nickel	1.9E+01		7.8E-05	1.8E-02	3.4E-02	1.8E-03	5.4E-02
	Selenium	5.8E-01		3.0E-04	2.7E-02	5.2E-02	2.2E-02	1.0E-01
	Thallium	NA		NA	NA	NA	NA	NC
	Vanadium	6.9E-01		1.2E-03	9.4E-01	7.2E-02	7.8E-03	1.0E+00
	Zinc	1.7E+02		1.4E-05	3.3E-02	1.4E-01	2.4E-02	1.9E-01
OU3 Floodplain	TEQ	2.5E-05		2.0E-05	4.2E-02	4.3E-01	7.3E-02	5.4E-01
	Aluminum	1.1E+03		4.8E-05	3.2E-01	5.8E-01	5.4E-01	1.4E+00
	Antimony	NA		NA	NA	NA	NA	NC
	Arsenic	4.5E+00		5.4E-04	3.6E-02	9.2E-03	2.3E-03	4.8E-02
	Barium	4.2E+01		1.0E-03	6.1E-01	1.0E-01	1.7E-01	8.8E-01
	Chromium	1.6E+01		1.2E-05	3.6E-02	2.0E-02	2.6E-03	5.9E-02
	Copper	1.2E+01		1.3E-04	1.5E-01	1.4E-01	3.8E-02	3.3E-01
	Lead	3.3E+00		4.0E-05	1.5E-01	1.2E-01	1.8E-02	2.9E-01
	Manganese	3.8E+02		8.9E-04	4.3E-02	4.5E-03	5.8E-03	5.4E-02
	Mercury	9.0E-01	6.4E-02	5.7E-06	3.4E-02	8.3E-01	6.0E-01	1.5E+00
	Nickel	1.9E+01		7.8E-05	1.4E-02	2.6E-02	1.5E-03	4.2E-02
	Selenium	5.8E-01		3.0E-04	1.4E-02	3.3E-02	1.1E-02	5.9E-02
	Thallium	NA		NA	NA	NA	NA	NC
	Vanadium	6.9E-01		1.2E-03	8.7E-01	6.7E-02	7.2E-03	9.4E-01
	Zinc	1.7E+02		1.4E-05	2.8E-02	1.3E-01	2.2E-02	1.8E-01
Undisturbed Floodplain Area	TEQ	2.5E-05		9.3E-06	4.2E-04	1.8E-03	7.3E-04	3.0E-03
	Aluminum	1.1E+03		3.9E-05	1.8E-01	3.4E-01	3.2E-01	8.4E-01
	Antimony	NA		NA	NA	NA	NA	NC
	Arsenic	4.5E+00		3.3E-04	5.7E-02	1.3E-02	3.7E-03	7.3E-02
	Barium	4.2E+01		5.0E-04	1.0E-01	1.7E-02	2.8E-02	1.5E-01
	Chromium	1.6E+01		3.2E-06	1.5E-02	8.6E-03	1.1E-03	2.5E-02
	Copper	1.2E+01		2.0E-04	1.6E-01	1.5E-01	3.9E-02	3.6E-01
	Lead	3.3E+00		4.1E-05	1.4E-01	1.2E-01	1.8E-02	2.7E-01
	Manganese	3.8E+02		7.5E-05	2.9E-02	3.5E-03	4.0E-03	3.7E-02
	Mercury	9.0E-01	6.4E-02	NA	2.7E-03	3.5E-01	2.2E+00	2.6E+00
	Nickel	1.9E+01		4.6E-06	1.1E-02	2.0E-02	1.2E-03	3.2E-02
	Selenium	5.8E-01		4.1E-05	ND	NA	NA	4.1E-05
	Thallium	NA		NA	NA	NA	NA	NC
	Vanadium	6.9E-01		2.2E-04	5.3E-01	4.1E-02	4.4E-03	5.8E-01
	Zinc	1.7E+02		1.3E-05	2.9E-02	1.3E-01	2.3E-02	1.8E-01

NOAEL-BASED HQ CALCULATION

Location	Analyte	NOAEL TRV		NOAEL-Based HQ				NOAEL HQt
				Water	Soil	Soil Invertebrate	Plants	
OU2	TEQ	2.5E-06		2.0E-04	8.3E-02	6.2E-01	1.4E-01	8.5E-01
	Aluminum	1.1E+02		4.8E-04	3.1E+00	5.7E+00	5.3E+00	1.4E+01
	Antimony	NA		NA	NA	NA	NA	NC
	Arsenic	2.2E+00		1.1E-03	5.2E-02	1.5E-02	3.3E-03	7.1E-02
	Barium	2.1E+01		2.1E-03	3.4E-01	5.7E-02	9.2E-02	4.9E-01
	Chromium	2.7E+00		6.9E-05	1.5E-01	8.7E-02	1.1E-02	2.5E-01
	Copper	4.1E+00		3.9E-04	2.7E-01	2.5E-01	9.2E-02	6.1E-01
	Lead	1.6E+00		8.0E-05	2.5E-01	2.1E-01	3.3E-02	4.9E-01
	Manganese	1.8E+02		1.9E-03	8.0E-02	8.7E-03	1.1E-02	1.0E-01
	Mercury	4.5E-01	6.4E-03	1.1E-05	3.3E-03	3.0E+00	2.9E+01	3.2E+01
	Nickel	6.7E+00		2.2E-04	5.7E-02	1.1E-01	5.4E-03	1.7E-01
	Selenium	2.9E-01		6.0E-04	1.3E-01	2.0E-01	1.2E-01	4.5E-01
	Thallium	NA		NA	NA	NA	NA	NC
	Vanadium	3.4E-01		2.5E-03	1.0E+00	7.9E-02	8.6E-03	1.1E+00
	Zinc	6.6E+01		3.7E-05	5.8E-02	3.1E-01	5.1E-02	4.2E-01
OU3 Uplands	TEQ	2.5E-06		2.0E-04	1.1E+00	1.4E+01	2.0E+00	1.7E+01
	Aluminum	1.1E+02		4.8E-04	2.5E+00	4.6E+00	4.3E+00	1.1E+01
	Antimony	NA		NA	NA	NA	NA	NC
	Arsenic	2.2E+00		1.1E-03	8.7E-02	2.1E-02	5.6E-03	1.1E-01
	Barium	2.1E+01		2.1E-03	6.4E-01	1.1E-01	1.7E-01	9.3E-01
	Chromium	2.7E+00		6.9E-05	2.1E-01	1.2E-01	1.4E-02	3.4E-01
	Copper	4.1E+00		3.9E-04	2.3E-01	2.1E-01	8.6E-02	5.3E-01
	Lead	1.6E+00		8.0E-05	2.8E-01	2.4E-01	3.6E-02	5.6E-01
	Manganese	1.8E+02		1.9E-03	1.4E-01	1.3E-02	1.9E-02	1.7E-01
	Mercury	4.5E-01	6.4E-03	1.1E-05	9.6E-02	9.3E+00	5.1E+00	1.4E+01
	Nickel	6.7E+00		2.2E-04	5.1E-02	9.4E-02	4.9E-03	1.5E-01
	Selenium	2.9E-01		6.0E-04	5.3E-02	1.0E-01	4.4E-02	2.0E-01
	Thallium	NA		NA	NA	NA	NA	NC
	Vanadium	3.4E-01		2.5E-03	1.9E+00	1.4E-01	1.6E-02	2.0E+00
	Zinc	6.6E+01		3.7E-05	8.4E-02	3.5E-01	6.3E-02	5.0E-01
OU3 Floodplain	TEQ	2.5E-06		2.0E-04	4.2E-01	4.3E+00	7.3E-01	5.4E+00
	Aluminum	1.1E+02		4.8E-04	3.2E+00	5.8E+00	5.4E+00	1.4E+01
	Antimony	NA		NA	NA	NA	NA	NC
	Arsenic	2.2E+00		1.1E-03	7.2E-02	1.8E-02	4.6E-03	9.6E-02
	Barium	2.1E+01		2.1E-03	1.2E+00	2.1E-01	3.3E-01	1.8E+00
	Chromium	2.7E+00		6.9E-05	2.1E-01	1.2E-01	1.5E-02	3.5E-01
	Copper	4.1E+00		3.9E-04	4.5E-01	4.2E-01	1.1E-01	9.8E-01
	Lead	1.6E+00		8.0E-05	3.0E-01	2.5E-01	3.7E-02	5.8E-01
	Manganese	1.8E+02		1.9E-03	9.0E-02	9.4E-03	1.2E-02	1.1E-01
	Mercury	4.5E-01	6.4E-03	1.1E-05	6.8E-02	8.3E+00	6.0E+00	1.4E+01
	Nickel	6.7E+00		2.2E-04	3.9E-02	7.2E-02	4.0E-03	1.2E-01
	Selenium	2.9E-01		6.0E-04	2.9E-02	6.5E-02	2.2E-02	1.2E-01
	Thallium	NA		NA	NA	NA	NA	NC
	Vanadium	3.4E-01		2.5E-03	1.7E+00	1.3E-01	1.4E-02	1.9E+00
	Zinc	6.6E+01		3.7E-05	7.2E-02	3.3E-01	5.8E-02	4.6E-01
Undisturbed Floodplain Area	TEQ	2.5E-06		9.3E-05	4.2E-03	1.8E-02	7.3E-03	3.0E-02
	Aluminum	1.1E+02		3.9E-04	1.8E+00	3.4E+00	3.2E+00	8.4E+00
	Antimony	NA		NA	NA	NA	NA	NC
	Arsenic	2.2E+00		6.7E-04	1.1E-01	2.6E-02	7.4E-03	1.5E-01
	Barium	2.1E+01		1.0E-03	2.1E-01	3.4E-02	5.5E-02	3.0E-01
	Chromium	2.7E+00		1.9E-05	9.0E-02	5.1E-02	6.4E-03	1.5E-01
	Copper	4.1E+00		5.9E-04	4.9E-01	4.6E-01	1.2E-01	1.1E+00
	Lead	1.6E+00		8.2E-05	2.8E-01	2.3E-01	3.6E-02	5.5E-01
	Manganese	1.8E+02		1.6E-04	6.2E-02	7.3E-03	8.4E-03	7.8E-02
	Mercury	4.5E-01	6.4E-03	NA	5.4E-03	3.5E+00	2.2E+01	2.6E+01
	Nickel	6.7E+00		1.3E-05	3.0E-02	5.5E-02	3.3E-03	8.9E-02
	Selenium	2.9E-01		8.3E-05	ND	NA	NA	8.3E-05
	Thallium	NA		NA	NA	NA	NA	NC
	Vanadium	3.4E-01		4.3E-04	1.1E+00	8.2E-02	8.9E-03	1.2E+00
	Zinc	6.6E+01		3.3E-05	7.6E-02	3.4E-01	5.9E-02	4.7E-01

ND = not detected; NA = not available; NC = not calculated; LOAEL = lowest-observed-adverse-effect-level; NOAEL = no-observed-adverse-effect-level; HQt = total hazard quotient; TRV = toxicity reference value; TEQ = toxicity equivalence.

Receptor	Intake Rates		
	Water L/kg-day	Soil/Sed. kg/kg-day	Food kg ww/kg-day
Shrew	0.17	0.04	0.95

Dietary Type	Invertebrates	Plants
Diet Fraction (%)	100	0
Intake kg ww/kg-d	0.95	0

	Exposure Medium			
	Water	Soil/Sed.	Invertebrates	Plants
Intake rate	0.17	0.04	0.95	0
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day

DOSE CALCULATION

Location	COPC	Media-Specific Dose (mg/kg-d)				Total Dose mg/kg-day
		Water	Soil	Soil Invertebrate	Plants	
OU2	TEQ	3.63E-10	3.88E-07	6.18E-06		6.57E-06
	Aluminum	5.19E-02	5.43E+02	2.06E+03		2.61E+03
	Antimony	3.08E-04	1.13E-02	4.29E-02		5.45E-02
	Arsenic	2.42E-03	1.86E-01	1.09E-01		2.97E-01
	Barium	4.25E-02	1.14E+01	3.94E+00		1.54E+01
	Chromium	1.82E-04	6.59E-01	7.67E-01		1.43E+00
	Copper	1.58E-03	1.74E+00	3.41E+00		5.15E+00
	Lead	1.30E-04	6.42E-01	1.15E+00		1.79E+00
	Manganese	3.34E-01	2.29E+01	5.14E+00		2.84E+01
	Mercury	5.10E-06	2.39E-03	6.36E-02		6.60E-02
	Nickel	1.45E-03	6.14E-01	2.33E+00		2.95E+00
	Selenium	1.74E-04	6.12E-02	1.93E-01		2.54E-01
	Thallium	5.61E-06	5.60E-03	2.13E-02		2.69E-02
	Vanadium	8.50E-04	5.67E-01	9.05E-02		6.58E-01
	Zinc	2.41E-03	6.15E+00	6.78E+01		7.40E+01
OU3 Uplands	TEQ	3.63E-10	2.30E-06	5.05E-05		5.28E-05
	Aluminum	5.19E-02	4.38E+02	1.67E+03		2.10E+03
	Antimony	3.08E-04	4.32E-02	1.64E-01		2.07E-01
	Arsenic	2.42E-03	3.12E-01	1.57E-01		4.71E-01
	Barium	4.25E-02	2.14E+01	7.41E+00		2.89E+01
	Chromium	1.82E-04	8.74E-01	1.02E+00		1.89E+00
	Copper	1.58E-03	1.46E+00	2.86E+00		4.33E+00
	Lead	1.30E-04	7.38E-01	1.28E+00		2.02E+00
	Manganese	3.34E-01	4.02E+01	7.56E+00		4.81E+01
	Mercury	5.10E-06	6.93E-02	1.98E-01		2.67E-01
	Nickel	1.45E-03	5.50E-01	2.09E+00		2.64E+00
	Selenium	1.74E-04	2.47E-02	9.91E-02		1.24E-01
	Thallium	5.61E-06	8.08E-03	3.07E-02		3.88E-02
	Vanadium	8.50E-04	1.03E+00	1.65E-01		1.20E+00
	Zinc	2.41E-03	8.92E+00	7.66E+01		8.55E+01
OU3 Floodplain	TEQ	3.63E-10	1.32E-06	2.63E-05		2.76E-05
	Aluminum	5.19E-02	5.54E+02	2.11E+03		2.66E+03
	Antimony	3.08E-04	1.88E-02	7.14E-02		9.05E-02
	Arsenic	2.42E-03	2.57E-01	1.36E-01		3.96E-01
	Barium	4.25E-02	4.10E+01	1.42E+01		5.52E+01
	Chromium	1.82E-04	9.07E-01	1.05E+00		1.96E+00
	Copper	1.58E-03	2.90E+00	5.68E+00		8.58E+00
	Lead	1.30E-04	7.71E-01	1.33E+00		2.10E+00
	Manganese	3.34E-01	2.58E+01	5.58E+00		3.17E+01
	Mercury	5.10E-06	4.93E-02	1.76E-01		2.26E-01
	Nickel	1.45E-03	4.20E-01	1.59E+00		2.02E+00
	Selenium	1.74E-04	1.33E-02	6.28E-02		7.63E-02
	Thallium	5.61E-06	6.72E-03	2.55E-02		3.23E-02
	Vanadium	8.50E-04	9.53E-01	1.52E-01		1.11E+00
	Zinc	2.41E-03	7.59E+00	7.26E+01		8.02E+01
Undisturbed Floodplain Area	TEQ	3.63E-10	1.41E-08	1.22E-07		1.37E-07
	Aluminum	4.20E-02	3.24E+02	1.23E+03		1.56E+03
	Antimony	4.28E-05	1.48E-02	5.62E-02		7.11E-02
	Arsenic	1.49E-03	4.08E-01	1.89E-01		5.99E-01
	Barium	2.07E-02	6.84E+00	2.37E+00		9.23E+00
	Chromium	4.90E-05	3.84E-01	4.47E-01		8.31E-01
	Copper	2.36E-03	3.16E+00	6.18E+00		9.35E+00
	Lead	1.34E-04	7.24E-01	1.27E+00		1.99E+00
	Manganese	2.79E-02	1.78E+01	4.33E+00		2.21E+01
	Mercury	NA	3.88E-03	7.49E-02		7.88E-02
	Nickel	8.47E-05	3.24E-01	1.23E+00		1.56E+00
	Selenium	2.38E-05	ND	NA		2.38E-05
	Thallium	NA	7.60E-03	2.89E-02		3.65E-02
	Vanadium	1.48E-04	5.84E-01	9.32E-02		6.77E-01
	Zinc	2.19E-03	8.04E+00	7.40E+01		8.21E+01

LOAEL-BASED HQ CALCULATION

Location	Analyte	LOAEL TRV		LOAEL-Based HQ				LOAEL HQt
				Water	Soil	Soil Invertebrate	Plants	
OU2	TEQ	1.0E-05		3.6E-05	3.9E-02	6.2E-01		6.6E-01
	Aluminum	1.9E+01		2.7E-03	2.8E+01	1.1E+02		1.4E+02
	Antimony	5.9E-01		5.2E-04	1.9E-02	7.3E-02		9.2E-02
	Arsenic	1.7E+00		1.5E-03	1.1E-01	6.5E-02		1.8E-01
	Barium	8.3E+01		5.1E-04	1.4E-01	4.8E-02		1.9E-01
	Chromium	5.8E+01		3.1E-06	1.1E-02	1.3E-02		2.5E-02
	Copper	9.3E+00		1.7E-04	1.9E-01	3.6E-01		5.5E-01
	Lead	8.9E+00		1.5E-05	7.2E-02	1.3E-01		2.0E-01
	Manganese	1.5E+02		2.3E-03	1.6E-01	3.5E-02		1.9E-01
	Mercury	2.5E-01	1.6E-01	2.0E-05	9.6E-03	4.0E-01		4.1E-01
	Nickel	3.4E+00		4.3E-04	1.8E-01	6.9E-01		8.7E-01
	Selenium	2.2E-01		8.1E-04	2.8E-01	9.0E-01		1.2E+00
	Thallium	7.4E-02		7.6E-05	7.6E-02	2.9E-01		3.6E-01
	Vanadium	8.3E+00		1.0E-04	6.8E-02	1.1E-02		7.9E-02
	Zinc	3.0E+02		8.1E-06	2.1E-02	2.3E-01		2.5E-01
OU3 Uplands	TEQ	1.0E-05		3.6E-05	2.3E-01	5.1E+00		5.3E+00
	Aluminum	1.9E+01		2.7E-03	2.3E+01	8.6E+01		1.1E+02
	Antimony	5.9E-01		5.2E-04	7.3E-02	2.8E-01		3.5E-01
	Arsenic	1.7E+00		1.5E-03	1.9E-01	9.4E-02		2.8E-01
	Barium	8.3E+01		5.1E-04	2.6E-01	9.0E-02		3.5E-01
	Chromium	5.8E+01		3.1E-06	1.5E-02	1.7E-02		3.2E-02
	Copper	9.3E+00		1.7E-04	1.6E-01	3.1E-01		4.6E-01
	Lead	8.9E+00		1.5E-05	8.3E-02	1.4E-01		2.3E-01
	Manganese	1.5E+02		2.3E-03	2.8E-01	5.2E-02		3.3E-01
	Mercury	2.5E-01	1.6E-01	2.0E-05	2.8E-01	1.2E+00		1.5E+00
	Nickel	3.4E+00		4.3E-04	1.6E-01	6.1E-01		7.8E-01
	Selenium	2.2E-01		8.1E-04	1.1E-01	4.6E-01		5.8E-01
	Thallium	7.4E-02		7.6E-05	1.1E-01	4.1E-01		5.2E-01
	Vanadium	8.3E+00		1.0E-04	1.2E-01	2.0E-02		1.4E-01
	Zinc	3.0E+02		8.1E-06	3.0E-02	2.6E-01		2.9E-01
OU3 Floodplain	TEQ	1.0E-05		3.6E-05	1.3E-01	2.6E+00		2.8E+00
	Aluminum	1.9E+01		2.7E-03	2.9E+01	1.1E+02		1.4E+02
	Antimony	5.9E-01		5.2E-04	3.2E-02	1.2E-01		1.5E-01
	Arsenic	1.7E+00		1.5E-03	1.5E-01	8.2E-02		2.4E-01
	Barium	8.3E+01		5.1E-04	5.0E-01	1.7E-01		6.7E-01
	Chromium	5.8E+01		3.1E-06	1.6E-02	1.8E-02		3.4E-02
	Copper	9.3E+00		1.7E-04	3.1E-01	6.1E-01		9.2E-01
	Lead	8.9E+00		1.5E-05	8.7E-02	1.5E-01		2.4E-01
	Manganese	1.5E+02		2.3E-03	1.8E-01	3.8E-02		2.2E-01
	Mercury	2.5E-01	1.6E-01	2.0E-05	2.0E-01	1.1E+00		1.3E+00
	Nickel	3.4E+00		4.3E-04	1.2E-01	4.7E-01		5.9E-01
	Selenium	2.2E-01		8.1E-04	6.2E-02	2.9E-01		3.5E-01
	Thallium	7.4E-02		7.6E-05	9.1E-02	3.5E-01		4.4E-01
	Vanadium	8.3E+00		1.0E-04	1.1E-01	1.8E-02		1.3E-01
	Zinc	3.0E+02		8.1E-06	2.5E-02	2.4E-01		2.7E-01
Undisturbed Floodplain Area	TEQ	1.0E-05		3.6E-05	1.4E-03	1.2E-02		1.4E-02
	Aluminum	1.9E+01		2.2E-03	1.7E+01	6.4E+01		8.1E+01
	Antimony	5.9E-01		7.3E-05	2.5E-02	9.5E-02		1.2E-01
	Arsenic	1.7E+00		9.0E-04	2.5E-01	1.1E-01		3.6E-01
	Barium	8.3E+01		2.5E-04	8.3E-02	2.9E-02		1.1E-01
	Chromium	5.8E+01		8.4E-07	6.6E-03	7.7E-03		1.4E-02
	Copper	9.3E+00		2.5E-04	3.4E-01	6.6E-01		1.0E+00
	Lead	8.9E+00		1.5E-05	8.1E-02	1.4E-01		2.2E-01
	Manganese	1.5E+02		1.9E-04	1.2E-01	3.0E-02		1.5E-01
	Mercury	2.5E-01	1.6E-01	NA	1.6E-02	4.7E-01		4.8E-01
	Nickel	3.4E+00		2.5E-05	9.5E-02	3.6E-01		4.6E-01
	Selenium	2.2E-01		1.1E-04	ND	NA		1.1E-04
	Thallium	7.4E-02		NA	1.0E-01	3.9E-01		4.9E-01
	Vanadium	8.3E+00		1.8E-05	7.0E-02	1.1E-02		8.2E-02
	Zinc	3.0E+02		7.3E-06	2.7E-02	2.5E-01		2.8E-01

NOAEL-BASED HQ CALCULATION

Location	Analyte	NOAEL TRV		NOAEL-Based HQ				NOAEL HQt
				Water	Soil	Soil Invertebrate	Plants	
OU2	TEQ	1.0E-06		3.6E-04	3.9E-01	6.2E+00		6.6E+00
	Aluminum	1.9E+00		2.7E-02	2.8E+02	1.1E+03		1.4E+03
	Antimony	5.9E-02		5.2E-03	1.9E-01	7.3E-01		9.2E-01
	Arsenic	1.0E+00		2.3E-03	1.8E-01	1.0E-01		2.9E-01
	Barium	5.2E+01		8.2E-04	2.2E-01	7.6E-02		3.0E-01
	Chromium	2.4E+00		7.6E-05	2.7E-01	3.2E-01		5.9E-01
	Copper	5.6E+00		2.8E-04	3.1E-01	6.1E-01		9.2E-01
	Lead	4.7E+00		2.8E-05	1.4E-01	2.4E-01		3.8E-01
	Manganese	5.2E+01		6.5E-03	4.4E-01	1.0E-01		5.5E-01
	Mercury	2.5E-02	3.2E-02	2.0E-04	9.6E-02	2.0E+00		2.1E+00
	Nickel	1.7E+00		8.5E-04	3.6E-01	1.4E+00		1.7E+00
	Selenium	1.4E-01		1.2E-03	4.3E-01	1.3E+00		1.8E+00
	Thallium	7.4E-03		7.6E-04	7.6E-01	2.9E+00		3.6E+00
	Vanadium	4.2E+00		2.0E-04	1.4E-01	2.2E-02		1.6E-01
	Zinc	7.5E+01		3.2E-05	8.2E-02	9.0E-01		9.8E-01
OU3 Uplands	TEQ	1.0E-06		3.6E-04	2.3E+00	5.1E+01		5.3E+01
	Aluminum	1.9E+00		2.7E-02	2.3E+02	8.6E+02		1.1E+03
	Antimony	5.9E-02		5.2E-03	7.3E-01	2.8E+00		3.5E+00
	Arsenic	1.0E+00		2.3E-03	3.0E-01	1.5E-01		4.5E-01
	Barium	5.2E+01		8.2E-04	4.1E-01	1.4E-01		5.6E-01
	Chromium	2.4E+00		7.6E-05	3.6E-01	4.2E-01		7.9E-01
	Copper	5.6E+00		2.8E-04	2.6E-01	5.1E-01		7.7E-01
	Lead	4.7E+00		2.8E-05	1.6E-01	2.7E-01		4.3E-01
	Manganese	5.2E+01		6.5E-03	7.8E-01	1.5E-01		9.3E-01
	Mercury	2.5E-02	3.2E-02	2.0E-04	2.8E+00	6.2E+00		9.0E+00
	Nickel	1.7E+00		8.5E-04	3.2E-01	1.2E+00		1.6E+00
	Selenium	1.4E-01		1.2E-03	1.7E-01	6.9E-01		8.7E-01
	Thallium	7.4E-03		7.6E-04	1.1E+00	4.1E+00		5.2E+00
	Vanadium	4.2E+00		2.0E-04	2.5E-01	4.0E-02		2.9E-01
	Zinc	7.5E+01		3.2E-05	1.2E-01	1.0E+00		1.1E+00
OU3 Floodplain	TEQ	1.0E-06		3.6E-04	1.3E+00	2.6E+01		2.8E+01
	Aluminum	1.9E+00		2.7E-02	2.9E+02	1.1E+03		1.4E+03
	Antimony	5.9E-02		5.2E-03	3.2E-01	1.2E+00		1.5E+00
	Arsenic	1.0E+00		2.3E-03	2.5E-01	1.3E-01		3.8E-01
	Barium	5.2E+01		8.2E-04	7.9E-01	2.7E-01		1.1E+00
	Chromium	2.4E+00		7.6E-05	3.8E-01	4.4E-01		8.2E-01
	Copper	5.6E+00		2.8E-04	5.2E-01	1.0E+00		1.5E+00
	Lead	4.7E+00		2.8E-05	1.6E-01	2.8E-01		4.5E-01
	Manganese	5.2E+01		6.5E-03	5.0E-01	1.1E-01		6.2E-01
	Mercury	2.5E-02	3.2E-02	2.0E-04	2.0E+00	5.5E+00		7.5E+00
	Nickel	1.7E+00		8.5E-04	2.5E-01	9.4E-01		1.2E+00
	Selenium	1.4E-01		1.2E-03	9.3E-02	4.4E-01		5.3E-01
	Thallium	7.4E-03		7.6E-04	9.1E-01	3.5E+00		4.4E+00
	Vanadium	4.2E+00		2.0E-04	2.3E-01	3.7E-02		2.7E-01
	Zinc	7.5E+01		3.2E-05	1.0E-01	9.6E-01		1.1E+00
Undisturbed Floodplain Area	TEQ	1.0E-06		3.6E-04	1.4E-02	1.2E-01		1.4E-01
	Aluminum	1.9E+00		2.2E-02	1.7E+02	6.4E+02		8.1E+02
	Antimony	5.9E-02		7.3E-04	2.5E-01	9.5E-01		1.2E+00
	Arsenic	1.0E+00		1.4E-03	3.9E-01	1.8E-01		5.8E-01
	Barium	5.2E+01		4.0E-04	1.3E-01	4.6E-02		1.8E-01
	Chromium	2.4E+00		2.0E-05	1.6E-01	1.9E-01		3.5E-01
	Copper	5.6E+00		4.2E-04	5.6E-01	1.1E+00		1.7E+00
	Lead	4.7E+00		2.8E-05	1.5E-01	2.7E-01		4.2E-01
	Manganese	5.2E+01		5.4E-04	3.4E-01	8.4E-02		4.3E-01
	Mercury	2.5E-02	3.2E-02	NA	1.6E-01	2.3E+00		2.5E+00
	Nickel	1.7E+00		5.0E-05	1.9E-01	7.2E-01		9.1E-01
	Selenium	1.4E-01		1.7E-04	ND	NA		1.7E-04
	Thallium	7.4E-03		NA	1.0E+00	3.9E+00		4.9E+00
	Vanadium	4.2E+00		3.6E-05	1.4E-01	2.2E-02		1.6E-01
	Zinc	7.5E+01		2.9E-05	1.1E-01	9.8E-01		1.1E+00

ND = not detected; NA = not available; NC = not calculated; LOAEL = lowest-observed-adverse-effect-level; NOAEL = no-observed-adverse-effect-level; HQt = total hazard quotient; TRV = toxicity reference value; TEQ = toxicity equivalence.

Receptor	Intake Rates		
	Water L/kg-day	Soil/Sed. kg/kg-day	Food kg ww/kg-day
Vole	0.13	0.00023	0.36

Dietary Type	Invertebrates	Plants
Diet Fraction (%)	0	100
Intake kg ww/kg-d	0	0.36

	Exposure Medium			
	Water	Soil/Sed.	Invertebrates	Plants
Intake rate	0.13	0.00023	0	0.36
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day

DOSE CALCULATION

Location	COPC	Media-Specific Dose (mg/kg-d)				Total Dose mg/kg-day
		Water	Soil	Soil Invertebrate	Plants	
OU2	TEQ	2.78E-10	2.23E-09		5.24E-07	5.27E-07
	Aluminum	3.97E-02	3.12E+00		7.33E+02	7.37E+02
	Antimony	2.36E-04	6.49E-05		6.50E-04	9.50E-04
	Arsenic	1.85E-03	1.07E-03		9.41E-03	1.23E-02
	Barium	3.25E-02	6.56E-02		2.40E+00	2.50E+00
	Chromium	1.39E-04	3.79E-03		3.65E-02	4.04E-02
	Copper	1.20E-03	1.00E-02		4.66E-01	4.77E-01
	Lead	9.97E-05	3.69E-03		6.79E-02	7.17E-02
	Manganese	2.55E-01	1.32E-01		2.44E+00	2.83E+00
	Mercury	3.90E-06	1.38E-05		2.31E-01	2.31E-01
	Nickel	1.11E-03	3.53E-03		4.51E-02	4.98E-02
	Selenium	1.33E-04	3.52E-04		4.39E-02	4.44E-02
	Thallium	4.29E-06	3.22E-05		7.56E-03	7.60E-03
	Vanadium	6.50E-04	3.26E-03		3.71E-03	7.62E-03
	Zinc	1.84E-03	3.54E-02		4.24E+00	4.28E+00
OU3 Uplands	TEQ	2.78E-10	1.32E-08		3.10E-06	3.11E-06
	Aluminum	3.97E-02	2.52E+00		5.92E+02	5.94E+02
	Antimony	2.36E-04	2.48E-04		2.29E-03	2.77E-03
	Arsenic	1.85E-03	1.80E-03		1.58E-02	1.95E-02
	Barium	3.25E-02	1.23E-01		4.51E+00	4.67E+00
	Chromium	1.39E-04	5.03E-03		4.84E-02	5.35E-02
	Copper	1.20E-03	8.41E-03		4.35E-01	4.44E-01
	Lead	9.97E-05	4.24E-03		7.34E-02	7.77E-02
	Manganese	2.55E-01	2.31E-01		4.29E+00	4.78E+00
	Mercury	3.90E-06	3.99E-04		4.07E-02	4.11E-02
	Nickel	1.11E-03	3.16E-03		4.15E-02	4.58E-02
	Selenium	1.33E-04	1.42E-04		1.61E-02	1.64E-02
	Thallium	4.29E-06	4.65E-05		1.09E-02	1.10E-02
	Vanadium	6.50E-04	5.94E-03		6.76E-03	1.33E-02
	Zinc	1.84E-03	5.13E-02		5.22E+00	5.27E+00
OU3 Floodplain	TEQ	2.78E-10	7.59E-09		1.78E-06	1.79E-06
	Aluminum	3.97E-02	3.19E+00		7.48E+02	7.52E+02
	Antimony	2.36E-04	1.08E-04		1.05E-03	1.39E-03
	Arsenic	1.85E-03	1.48E-03		1.30E-02	1.63E-02
	Barium	3.25E-02	2.36E-01		8.63E+00	8.90E+00
	Chromium	1.39E-04	5.22E-03		5.02E-02	5.56E-02
	Copper	1.20E-03	1.67E-02		5.70E-01	5.87E-01
	Lead	9.97E-05	4.43E-03		7.52E-02	7.98E-02
	Manganese	2.55E-01	1.48E-01		2.75E+00	3.16E+00
	Mercury	3.90E-06	2.83E-04		4.85E-02	4.88E-02
	Nickel	1.11E-03	2.41E-03		3.39E-02	3.74E-02
	Selenium	1.33E-04	7.64E-05		8.12E-03	8.33E-03
	Thallium	4.29E-06	3.86E-05		9.07E-03	9.11E-03
	Vanadium	6.50E-04	5.48E-03		6.24E-03	1.24E-02
	Zinc	1.84E-03	4.36E-02		4.77E+00	4.81E+00
Undisturbed Floodplain Area	TEQ	2.78E-10	8.09E-11		1.90E-08	1.94E-08
	Aluminum	3.21E-02	1.86E+00		4.37E+02	4.39E+02
	Antimony	3.28E-05	8.51E-05		8.38E-04	9.56E-04
	Arsenic	1.14E-03	2.35E-03		2.07E-02	2.41E-02
	Barium	1.58E-02	3.93E-02		1.44E+00	1.50E+00
	Chromium	3.74E-05	2.21E-03		2.13E-02	2.35E-02
	Copper	1.80E-03	1.82E-02		5.89E-01	6.09E-01
	Lead	1.02E-04	4.16E-03		7.26E-02	7.69E-02
	Manganese	2.14E-02	1.02E-01		1.89E+00	2.02E+00
	Mercury	NA	2.23E-05		1.80E-01	1.80E-01
	Nickel	6.47E-05	1.86E-03		2.80E-02	2.99E-02
	Selenium	1.82E-05	ND		NA	1.82E-05
	Thallium	NA	4.37E-05		1.03E-02	1.03E-02
	Vanadium	1.13E-04	3.36E-03		3.82E-03	7.29E-03
	Zinc	1.67E-03	4.62E-02		4.92E+00	4.97E+00

LOAEL-BASED HQ CALCULATION

Location	Analyte	LOAEL TRV		LOAEL-Based HQ				LOAEL HQt
				Water	Soil	Soil Invertebrate	Plants	
OU2	TEQ	1.0E-05		2.8E-05	2.2E-04		5.2E-02	5.3E-02
	Aluminum	1.9E+01		2.1E-03	1.6E-01		3.8E+01	3.8E+01
	Antimony	5.9E-01		4.0E-04	1.1E-04		1.1E-03	1.6E-03
	Arsenic	1.7E+00		1.1E-03	6.4E-04		5.7E-03	7.4E-03
	Barium	8.3E+01		3.9E-04	7.9E-04		2.9E-02	3.0E-02
	Chromium	5.8E+01		2.4E-06	6.5E-05		6.3E-04	6.9E-04
	Copper	9.3E+00		1.3E-04	1.1E-03		5.0E-02	5.1E-02
	Lead	8.9E+00		1.1E-05	4.1E-04		7.6E-03	8.1E-03
	Manganese	1.5E+02		1.7E-03	9.0E-04		1.7E-02	1.9E-02
	Mercury	2.5E-01	1.6E-01	1.6E-05	5.5E-05		1.4E+00	1.4E+00
	Nickel	3.4E+00		3.3E-04	1.0E-03		1.3E-02	1.5E-02
	Selenium	2.2E-01		6.2E-04	1.6E-03		2.0E-01	2.1E-01
	Thallium	7.4E-02		5.8E-05	4.4E-04		1.0E-01	1.0E-01
	Vanadium	8.3E+00		7.8E-05	3.9E-04		4.5E-04	9.2E-04
	Zinc	3.0E+02		6.2E-06	1.2E-04		1.4E-02	1.4E-02
OU3 Uplands	TEQ	1.0E-05		2.8E-05	1.3E-03		3.1E-01	3.1E-01
	Aluminum	1.9E+01		2.1E-03	1.3E-01		3.1E+01	3.1E+01
	Antimony	5.9E-01		4.0E-04	4.2E-04		3.9E-03	4.7E-03
	Arsenic	1.7E+00		1.1E-03	1.1E-03		9.5E-03	1.2E-02
	Barium	8.3E+01		3.9E-04	1.5E-03		5.5E-02	5.6E-02
	Chromium	5.8E+01		2.4E-06	8.6E-05		8.3E-04	9.2E-04
	Copper	9.3E+00		1.3E-04	9.0E-04		4.7E-02	4.8E-02
	Lead	8.9E+00		1.1E-05	4.8E-04		8.2E-03	8.7E-03
	Manganese	1.5E+02		1.7E-03	1.6E-03		2.9E-02	3.3E-02
	Mercury	2.5E-01	1.6E-01	1.6E-05	1.6E-03		2.5E-01	2.6E-01
	Nickel	3.4E+00		3.3E-04	9.3E-04		1.2E-02	1.3E-02
	Selenium	2.2E-01		6.2E-04	6.6E-04		7.5E-02	7.6E-02
	Thallium	7.4E-02		5.8E-05	6.3E-04		1.5E-01	1.5E-01
	Vanadium	8.3E+00		7.8E-05	7.1E-04		8.1E-04	1.6E-03
	Zinc	3.0E+02		6.2E-06	1.7E-04		1.8E-02	1.8E-02
OU3 Floodplain	TEQ	1.0E-05		2.8E-05	7.6E-04		1.8E-01	1.8E-01
	Aluminum	1.9E+01		2.1E-03	1.7E-01		3.9E+01	3.9E+01
	Antimony	5.9E-01		4.0E-04	1.8E-04		1.8E-03	2.4E-03
	Arsenic	1.7E+00		1.1E-03	8.9E-04		7.8E-03	9.8E-03
	Barium	8.3E+01		3.9E-04	2.9E-03		1.0E-01	1.1E-01
	Chromium	5.8E+01		2.4E-06	9.0E-05		8.6E-04	9.5E-04
	Copper	9.3E+00		1.3E-04	1.8E-03		6.1E-02	6.3E-02
	Lead	8.9E+00		1.1E-05	5.0E-04		8.5E-03	9.0E-03
	Manganese	1.5E+02		1.7E-03	1.0E-03		1.9E-02	2.2E-02
	Mercury	2.5E-01	1.6E-01	1.6E-05	1.1E-03		3.0E-01	3.0E-01
	Nickel	3.4E+00		3.3E-04	7.1E-04		1.0E-02	1.1E-02
	Selenium	2.2E-01		6.2E-04	3.6E-04		3.8E-02	3.9E-02
	Thallium	7.4E-02		5.8E-05	5.2E-04		1.2E-01	1.2E-01
	Vanadium	8.3E+00		7.8E-05	6.6E-04		7.5E-04	1.5E-03
	Zinc	3.0E+02		6.2E-06	1.5E-04		1.6E-02	1.6E-02
Undisturbed Floodplain Area	TEQ	1.0E-05		2.8E-05	8.1E-06		1.9E-03	1.9E-03
	Aluminum	1.9E+01		1.7E-03	9.7E-02		2.3E+01	2.3E+01
	Antimony	5.9E-01		5.6E-05	1.4E-04		1.4E-03	1.6E-03
	Arsenic	1.7E+00		6.9E-04	1.4E-03		1.2E-02	1.5E-02
	Barium	8.3E+01		1.9E-04	4.8E-04		1.7E-02	1.8E-02
	Chromium	5.8E+01		6.4E-07	3.8E-05		3.7E-04	4.0E-04
	Copper	9.3E+00		1.9E-04	1.9E-03		6.3E-02	6.5E-02
	Lead	8.9E+00		1.1E-05	4.7E-04		8.2E-03	8.6E-03
	Manganese	1.5E+02		1.5E-04	7.0E-04		1.3E-02	1.4E-02
	Mercury	2.5E-01	1.6E-01	NA	8.9E-05		1.1E+00	1.1E+00
	Nickel	3.4E+00		1.9E-05	5.5E-04		8.2E-03	8.8E-03
	Selenium	2.2E-01		8.5E-05	ND		NA	8.5E-05
	Thallium	7.4E-02		NA	5.9E-04		1.4E-01	1.4E-01
	Vanadium	8.3E+00		1.4E-05	4.0E-04		4.6E-04	8.8E-04
	Zinc	3.0E+02		5.6E-06	1.6E-04		1.7E-02	1.7E-02

NOAEL-BASED HQ CALCULATION

Location	Analyte	NOAEL TRV		NOAEL-Based HQ				NOAEL HQt
				Water	Soil	Soil Invertebrate	Plants	
OU2	TEQ	1.0E-06		2.8E-04	2.2E-03		5.2E-01	5.3E-01
	Aluminum	1.9E+00		2.1E-02	1.6E+00		3.8E+02	3.8E+02
	Antimony	5.9E-02		4.0E-03	1.1E-03		1.1E-02	1.6E-02
	Arsenic	1.0E+00		1.8E-03	1.0E-03		9.0E-03	1.2E-02
	Barium	5.2E+01		6.3E-04	1.3E-03		4.6E-02	4.8E-02
	Chromium	2.4E+00		5.8E-05	1.6E-03		1.5E-02	1.7E-02
	Copper	5.6E+00		2.2E-04	1.8E-03		8.3E-02	8.5E-02
	Lead	4.7E+00		2.1E-05	7.8E-04		1.4E-02	1.5E-02
	Manganese	5.2E+01		5.0E-03	2.6E-03		4.7E-02	5.5E-02
	Mercury	2.5E-02	3.2E-02	1.6E-04	5.5E-04		7.2E+00	7.2E+00
	Nickel	1.7E+00		6.5E-04	2.1E-03		2.7E-02	2.9E-02
	Selenium	1.4E-01		9.3E-04	2.5E-03		3.1E-01	3.1E-01
	Thallium	7.4E-03		5.8E-04	4.4E-03		1.0E+00	1.0E+00
	Vanadium	4.2E+00		1.6E-04	7.8E-04		8.9E-04	1.8E-03
	Zinc	7.5E+01		2.4E-05	4.7E-04		5.6E-02	5.7E-02
OU3 Uplands	TEQ	1.0E-06		2.8E-04	1.3E-02		3.1E+00	3.1E+00
	Aluminum	1.9E+00		2.1E-02	1.3E+00		3.1E+02	3.1E+02
	Antimony	5.9E-02		4.0E-03	4.2E-03		3.9E-02	4.7E-02
	Arsenic	1.0E+00		1.8E-03	1.7E-03		1.5E-02	1.9E-02
	Barium	5.2E+01		6.3E-04	2.4E-03		8.7E-02	9.0E-02
	Chromium	2.4E+00		5.8E-05	2.1E-03		2.0E-02	2.2E-02
	Copper	5.6E+00		2.2E-04	1.5E-03		7.8E-02	7.9E-02
	Lead	4.7E+00		2.1E-05	9.0E-04		1.6E-02	1.7E-02
	Manganese	5.2E+01		5.0E-03	4.5E-03		8.3E-02	9.3E-02
	Mercury	2.5E-02	3.2E-02	1.6E-04	1.6E-02		1.3E+00	1.3E+00
	Nickel	1.7E+00		6.5E-04	1.9E-03		2.4E-02	2.7E-02
	Selenium	1.4E-01		9.3E-04	9.9E-04		1.1E-01	1.1E-01
	Thallium	7.4E-03		5.8E-04	6.3E-03		1.5E+00	1.5E+00
	Vanadium	4.2E+00		1.6E-04	1.4E-03		1.6E-03	3.2E-03
	Zinc	7.5E+01		2.4E-05	6.8E-04		6.9E-02	7.0E-02
OU3 Floodplain	TEQ	1.0E-06		2.8E-04	7.6E-03		1.8E+00	1.8E+00
	Aluminum	1.9E+00		2.1E-02	1.7E+00		3.9E+02	3.9E+02
	Antimony	5.9E-02		4.0E-03	1.8E-03		1.8E-02	2.4E-02
	Arsenic	1.0E+00		1.8E-03	1.4E-03		1.3E-02	1.6E-02
	Barium	5.2E+01		6.3E-04	4.6E-03		1.7E-01	1.7E-01
	Chromium	2.4E+00		5.8E-05	2.2E-03		2.1E-02	2.3E-02
	Copper	5.6E+00		2.2E-04	3.0E-03		1.0E-01	1.0E-01
	Lead	4.7E+00		2.1E-05	9.4E-04		1.6E-02	1.7E-02
	Manganese	5.2E+01		5.0E-03	2.9E-03		5.3E-02	6.1E-02
	Mercury	2.5E-02	3.2E-02	1.6E-04	1.1E-02		1.5E+00	1.5E+00
	Nickel	1.7E+00		6.5E-04	1.4E-03		2.0E-02	2.2E-02
	Selenium	1.4E-01		9.3E-04	5.3E-04		5.7E-02	5.8E-02
	Thallium	7.4E-03		5.8E-04	5.2E-03		1.2E+00	1.2E+00
	Vanadium	4.2E+00		1.6E-04	1.3E-03		1.5E-03	3.0E-03
	Zinc	7.5E+01		2.4E-05	5.8E-04		6.3E-02	6.4E-02
Undisturbed Floodplain Area	TEQ	1.0E-06		2.8E-04	8.1E-05		1.9E-02	1.9E-02
	Aluminum	1.9E+00		1.7E-02	9.7E-01		2.3E+02	2.3E+02
	Antimony	5.9E-02		5.6E-04	1.4E-03		1.4E-02	1.6E-02
	Arsenic	1.0E+00		1.1E-03	2.3E-03		2.0E-02	2.3E-02
	Barium	5.2E+01		3.0E-04	7.6E-04		2.8E-02	2.9E-02
	Chromium	2.4E+00		1.6E-05	9.2E-04		8.9E-03	9.8E-03
	Copper	5.6E+00		3.2E-04	3.2E-03		1.1E-01	1.1E-01
	Lead	4.7E+00		2.2E-05	8.9E-04		1.5E-02	1.6E-02
	Manganese	5.2E+01		4.1E-04	2.0E-03		3.7E-02	3.9E-02
	Mercury	2.5E-02	3.2E-02	NA	8.9E-04		5.6E+00	5.6E+00
	Nickel	1.7E+00		3.8E-05	1.1E-03		1.6E-02	1.8E-02
	Selenium	1.4E-01		1.3E-04	ND		NA	1.3E-04
	Thallium	7.4E-03		NA	5.9E-03		1.4E+00	1.4E+00
	Vanadium	4.2E+00		2.7E-05	8.1E-04		9.2E-04	1.8E-03
	Zinc	7.5E+01		2.2E-05	6.1E-04		6.5E-02	6.6E-02

ND = not detected; NA = not available; NC = not calculated; LOAEL = lowest-observed-adverse-effect-level; NOAEL = no-observed-adverse-effect-level; HQt = total hazard quotient; TRV = toxicity reference value; TEQ = toxicity equivalence.

Receptor	Intake Rates		
	Water L/kg-day	Soil/Sed. kg/kg-day	Food kg ww/kg-day
Mouse	0.15	0.0018	0.268

Dietary Type	Invertebrates	Plants
Diet Fraction (%)	50	50
Intake kg ww/kg-d	0.134	0.134

	Exposure Medium			
	Water	Soil/Sed.	Invertebrates	Plants
Intake rate	0.15	0.0018	0.134	0.134
	L/kg-day	kg/kg-day	kg ww/kg-day	kg ww/kg-day

DOSE CALCULATION

Location	COPC	Media-Specific Dose (mg/kg-d)				Total Dose mg/kg-day
		Water	Soil	Soil Invertebrate	Plants	
OU2	TEQ	3.20E-10	1.75E-08	8.71E-07	1.95E-07	1.08E-06
	Aluminum	4.58E-02	2.44E+01	2.91E+02	2.73E+02	5.89E+02
	Antimony	2.72E-04	5.08E-04	6.05E-03	2.42E-04	7.07E-03
	Arsenic	2.14E-03	8.36E-03	1.53E-02	3.50E-03	2.93E-02
	Barium	3.75E-02	5.13E-01	5.56E-01	8.94E-01	2.00E+00
	Chromium	1.61E-04	2.97E-02	1.08E-01	1.36E-02	1.52E-01
	Copper	1.39E-03	7.83E-02	4.80E-01	1.73E-01	7.33E-01
	Lead	1.15E-04	2.89E-02	1.62E-01	2.53E-02	2.16E-01
	Manganese	2.95E-01	1.03E+00	7.26E-01	9.09E-01	2.96E+00
	Mercury	4.50E-06	1.08E-04	8.97E-03	8.58E-02	9.49E-02
	Nickel	1.28E-03	2.76E-02	3.29E-01	1.68E-02	3.75E-01
	Selenium	1.54E-04	2.75E-03	2.72E-02	1.63E-02	4.64E-02
	Thallium	4.95E-06	2.52E-04	3.00E-03	2.81E-03	6.07E-03
	Vanadium	7.50E-04	2.55E-02	1.28E-02	1.38E-03	4.04E-02
	Zinc	2.12E-03	2.77E-01	9.56E+00	1.58E+00	1.14E+01
OU3 Uplands	TEQ	3.20E-10	1.03E-07	7.12E-06	1.15E-06	8.38E-06
	Aluminum	4.58E-02	1.97E+01	2.35E+02	2.20E+02	4.75E+02
	Antimony	2.72E-04	1.94E-03	2.31E-02	8.51E-04	2.62E-02
	Arsenic	2.14E-03	1.41E-02	2.21E-02	5.89E-03	4.42E-02
	Barium	3.75E-02	9.64E-01	1.04E+00	1.68E+00	3.73E+00
	Chromium	1.61E-04	3.93E-02	1.43E-01	1.80E-02	2.01E-01
	Copper	1.39E-03	6.58E-02	4.04E-01	1.62E-01	6.33E-01
	Lead	1.15E-04	3.32E-02	1.81E-01	2.73E-02	2.42E-01
	Manganese	2.95E-01	1.81E+00	1.07E+00	1.60E+00	4.77E+00
	Mercury	4.50E-06	3.12E-03	2.79E-02	1.51E-02	4.62E-02
	Nickel	1.28E-03	2.47E-02	2.95E-01	1.55E-02	3.36E-01
	Selenium	1.54E-04	1.11E-03	1.40E-02	6.00E-03	2.12E-02
	Thallium	4.95E-06	3.64E-04	4.33E-03	4.06E-03	8.76E-03
	Vanadium	7.50E-04	4.65E-02	2.32E-02	2.52E-03	7.30E-02
	Zinc	2.12E-03	4.02E-01	1.08E+01	1.94E+00	1.32E+01
OU3 Floodplain	TEQ	3.20E-10	5.94E-08	3.70E-06	6.63E-07	4.43E-06
	Aluminum	4.58E-02	2.49E+01	2.97E+02	2.79E+02	6.01E+02
	Antimony	2.72E-04	8.46E-04	1.01E-02	3.90E-04	1.16E-02
	Arsenic	2.14E-03	1.16E-02	1.92E-02	4.84E-03	3.78E-02
	Barium	3.75E-02	1.85E+00	2.00E+00	3.21E+00	7.10E+00
	Chromium	1.61E-04	4.08E-02	1.49E-01	1.87E-02	2.08E-01
	Copper	1.39E-03	1.31E-01	8.01E-01	2.12E-01	1.14E+00
	Lead	1.15E-04	3.47E-02	1.88E-01	2.80E-02	2.51E-01
	Manganese	2.95E-01	1.16E+00	7.87E-01	1.02E+00	3.27E+00
	Mercury	4.50E-06	2.22E-03	2.49E-02	1.81E-02	4.51E-02
	Nickel	1.28E-03	1.89E-02	2.25E-01	1.26E-02	2.58E-01
	Selenium	1.54E-04	5.98E-04	8.86E-03	3.02E-03	1.26E-02
	Thallium	4.95E-06	3.02E-04	3.60E-03	3.38E-03	7.29E-03
	Vanadium	7.50E-04	4.29E-02	2.14E-02	2.32E-03	6.74E-02
	Zinc	2.12E-03	3.41E-01	1.02E+01	1.78E+00	1.24E+01
Undisturbed Floodplain Area	TEQ	3.20E-10	6.33E-10	1.73E-08	7.07E-09	2.53E-08
	Aluminum	3.71E-02	1.46E+01	1.74E+02	1.63E+02	3.51E+02
	Antimony	3.78E-05	6.66E-04	7.93E-03	3.12E-04	8.95E-03
	Arsenic	1.31E-03	1.84E-02	2.67E-02	7.69E-03	5.40E-02
	Barium	1.82E-02	3.08E-01	3.34E-01	5.36E-01	1.20E+00
	Chromium	4.32E-05	1.73E-02	6.30E-02	7.91E-03	8.82E-02
	Copper	2.08E-03	1.42E-01	8.72E-01	2.19E-01	1.24E+00
	Lead	1.18E-04	3.26E-02	1.78E-01	2.70E-02	2.38E-01
	Manganese	2.46E-02	7.99E-01	6.10E-01	7.05E-01	2.14E+00
	Mercury	NA	1.75E-04	1.06E-02	6.69E-02	7.76E-02
	Nickel	7.47E-05	1.46E-02	1.74E-01	1.04E-02	1.99E-01
	Selenium	2.10E-05	ND	NA	NA	2.10E-05
	Thallium	NA	3.42E-04	4.07E-03	3.82E-03	8.23E-03
	Vanadium	1.31E-04	2.63E-02	1.31E-02	1.42E-03	4.10E-02
	Zinc	1.93E-03	3.62E-01	1.04E+01	1.83E+00	1.26E+01

LOAEL-BASED HQ CALCULATION

Location	Analyte	LOAEL TRV		LOAEL-Based HQ				LOAEL HQt
				Water	Soil	Soil Invertebrate	Plants	
OU2	TEQ	1.0E-05		3.2E-05	1.7E-03	8.7E-02	2.0E-02	1.1E-01
	Aluminum	1.9E+01		2.4E-03	1.3E+00	1.5E+01	1.4E+01	3.1E+01
	Antimony	5.9E-01		4.6E-04	8.6E-04	1.0E-02	4.1E-04	1.2E-02
	Arsenic	1.7E+00		1.3E-03	5.0E-03	9.2E-03	2.1E-03	1.8E-02
	Barium	8.3E+01		4.5E-04	6.2E-03	6.7E-03	1.1E-02	2.4E-02
	Chromium	5.8E+01		2.8E-06	5.1E-04	1.9E-03	2.3E-04	2.6E-03
	Copper	9.3E+00		1.5E-04	8.4E-03	5.1E-02	1.9E-02	7.9E-02
	Lead	8.9E+00		1.3E-05	3.2E-03	1.8E-02	2.8E-03	2.4E-02
	Manganese	1.5E+02		2.0E-03	7.1E-03	5.0E-03	6.2E-03	2.0E-02
	Mercury	2.5E-01	1.6E-01	1.8E-05	4.3E-04	5.6E-02	5.4E-01	5.9E-01
	Nickel	3.4E+00		3.8E-04	8.1E-03	9.7E-02	4.9E-03	1.1E-01
	Selenium	2.2E-01		7.1E-04	1.3E-02	1.3E-01	7.6E-02	2.2E-01
	Thallium	7.4E-02		6.7E-05	3.4E-03	4.1E-02	3.8E-02	8.2E-02
	Vanadium	8.3E+00		9.0E-05	3.1E-03	1.5E-03	1.7E-04	4.9E-03
	Zinc	3.0E+02		7.1E-06	9.3E-04	3.2E-02	5.3E-03	3.8E-02
OU3 Uplands	TEQ	1.0E-05		3.2E-05	1.0E-02	7.1E-01	1.2E-01	8.4E-01
	Aluminum	1.9E+01		2.4E-03	1.0E+00	1.2E+01	1.1E+01	2.5E+01
	Antimony	5.9E-01		4.6E-04	3.3E-03	3.9E-02	1.4E-03	4.4E-02
	Arsenic	1.7E+00		1.3E-03	8.5E-03	1.3E-02	3.5E-03	2.7E-02
	Barium	8.3E+01		4.5E-04	1.2E-02	1.3E-02	2.0E-02	4.5E-02
	Chromium	5.8E+01		2.8E-06	6.8E-04	2.5E-03	3.1E-04	3.5E-03
	Copper	9.3E+00		1.5E-04	7.0E-03	4.3E-02	1.7E-02	6.8E-02
	Lead	8.9E+00		1.3E-05	3.7E-03	2.0E-02	3.1E-03	2.7E-02
	Manganese	1.5E+02		2.0E-03	1.2E-02	7.3E-03	1.1E-02	3.3E-02
	Mercury	2.5E-01	1.6E-01	1.8E-05	1.2E-02	1.7E-01	9.5E-02	2.8E-01
	Nickel	3.4E+00		3.8E-04	7.3E-03	8.7E-02	4.5E-03	9.9E-02
	Selenium	2.2E-01		7.1E-04	5.2E-03	6.5E-02	2.8E-02	9.9E-02
	Thallium	7.4E-02		6.7E-05	4.9E-03	5.9E-02	5.5E-02	1.2E-01
	Vanadium	8.3E+00		9.0E-05	5.6E-03	2.8E-03	3.0E-04	8.8E-03
	Zinc	3.0E+02		7.1E-06	1.3E-03	3.6E-02	6.5E-03	4.4E-02
OU3 Floodplain	TEQ	1.0E-05		3.2E-05	5.9E-03	3.7E-01	6.6E-02	4.4E-01
	Aluminum	1.9E+01		2.4E-03	1.3E+00	1.5E+01	1.4E+01	3.1E+01
	Antimony	5.9E-01		4.6E-04	1.4E-03	1.7E-02	6.6E-04	2.0E-02
	Arsenic	1.7E+00		1.3E-03	7.0E-03	1.2E-02	2.9E-03	2.3E-02
	Barium	8.3E+01		4.5E-04	2.2E-02	2.4E-02	3.9E-02	8.6E-02
	Chromium	5.8E+01		2.8E-06	7.0E-04	2.6E-03	3.2E-04	3.6E-03
	Copper	9.3E+00		1.5E-04	1.4E-02	8.6E-02	2.3E-02	1.2E-01
	Lead	8.9E+00		1.3E-05	3.9E-03	2.1E-02	3.1E-03	2.8E-02
	Manganese	1.5E+02		2.0E-03	8.0E-03	5.4E-03	7.0E-03	2.2E-02
	Mercury	2.5E-01	1.6E-01	1.8E-05	8.9E-03	1.6E-01	1.1E-01	2.8E-01
	Nickel	3.4E+00		3.8E-04	5.6E-03	6.6E-02	3.7E-03	7.6E-02
	Selenium	2.2E-01		7.1E-04	2.8E-03	4.1E-02	1.4E-02	5.9E-02
	Thallium	7.4E-02		6.7E-05	4.1E-03	4.9E-02	4.6E-02	9.8E-02
	Vanadium	8.3E+00		9.0E-05	5.2E-03	2.6E-03	2.8E-04	8.1E-03
	Zinc	3.0E+02		7.1E-06	1.1E-03	3.4E-02	6.0E-03	4.1E-02
Undisturbed Floodplain Area	TEQ	1.0E-05		3.2E-05	6.3E-05	1.7E-03	7.1E-04	2.5E-03
	Aluminum	1.9E+01		1.9E-03	7.6E-01	9.0E+00	8.4E+00	1.8E+01
	Antimony	5.9E-01		6.4E-05	1.1E-03	1.3E-02	5.3E-04	1.5E-02
	Arsenic	1.7E+00		7.9E-04	1.1E-02	1.6E-02	4.6E-03	3.3E-02
	Barium	8.3E+01		2.2E-04	3.7E-03	4.0E-03	6.5E-03	1.4E-02
	Chromium	5.8E+01		7.4E-07	3.0E-04	1.1E-03	1.4E-04	1.5E-03
	Copper	9.3E+00		2.2E-04	1.5E-02	9.3E-02	2.3E-02	1.3E-01
	Lead	8.9E+00		1.3E-05	3.7E-03	2.0E-02	3.0E-03	2.7E-02
	Manganese	1.5E+02		1.7E-04	5.5E-03	4.2E-03	4.8E-03	1.5E-02
	Mercury	2.5E-01	1.6E-01	NA	7.0E-04	6.6E-02	4.2E-01	4.8E-01
	Nickel	3.4E+00		2.2E-05	4.3E-03	5.1E-02	3.1E-03	5.8E-02
	Selenium	2.2E-01		9.8E-05	ND	NA	NA	9.8E-05
	Thallium	7.4E-02		NA	4.6E-03	5.5E-02	5.2E-02	1.1E-01
	Vanadium	8.3E+00		1.6E-05	3.2E-03	1.6E-03	1.7E-04	4.9E-03
	Zinc	3.0E+02		6.5E-06	1.2E-03	3.5E-02	6.2E-03	4.2E-02

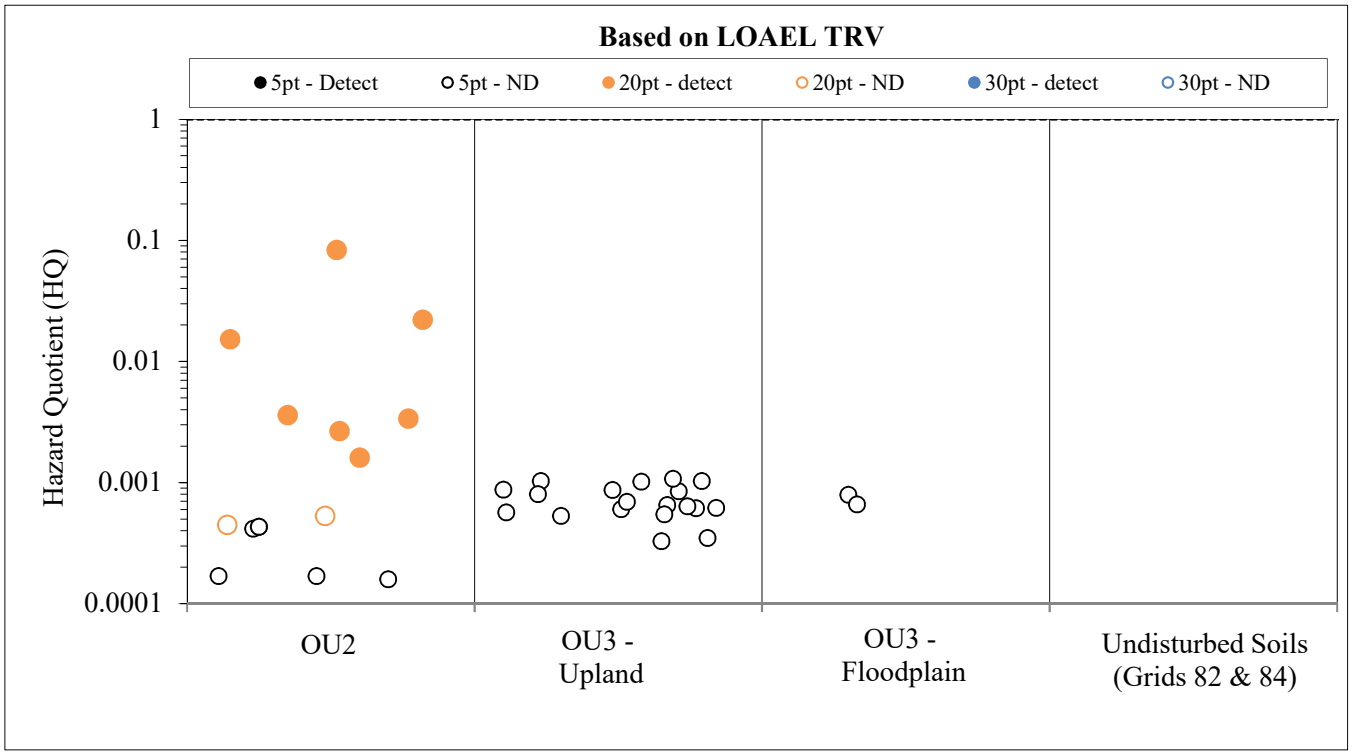
NOAEL-BASED HQ CALCULATION

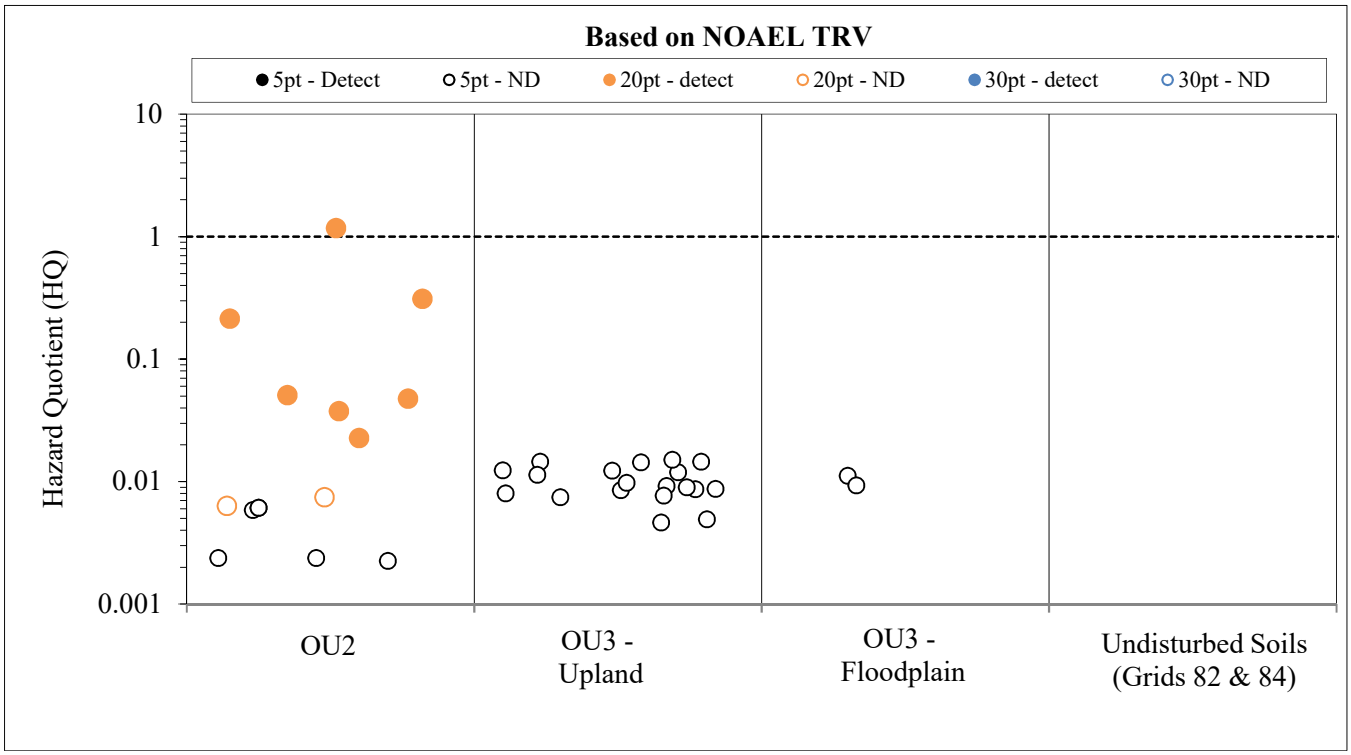
Location	Analyte	NOAEL TRV		NOAEL-Based HQ				NOAEL HQt
				Water	Soil	Soil Invertebrate	Plants	
OU2	TEQ	1.0E-06		3.2E-04	1.7E-02	8.7E-01	2.0E-01	1.1E+00
	Aluminum	1.9E+00		2.4E-02	1.3E+01	1.5E+02	1.4E+02	3.1E+02
	Antimony	5.9E-02		4.6E-03	8.6E-03	1.0E-01	4.1E-03	1.2E-01
	Arsenic	1.0E+00		2.1E-03	8.0E-03	1.5E-02	3.4E-03	2.8E-02
	Barium	5.2E+01		7.2E-04	9.9E-03	1.1E-02	1.7E-02	3.9E-02
	Chromium	2.4E+00		6.7E-05	1.2E-02	4.5E-02	5.7E-03	6.3E-02
	Copper	5.6E+00		2.5E-04	1.4E-02	8.6E-02	3.1E-02	1.3E-01
	Lead	4.7E+00		2.4E-05	6.1E-03	3.4E-02	5.4E-03	4.6E-02
	Manganese	5.2E+01		5.7E-03	2.0E-02	1.4E-02	1.8E-02	5.7E-02
	Mercury	2.5E-02	3.2E-02	1.8E-04	4.3E-03	2.8E-01	2.7E+00	3.0E+00
	Nickel	1.7E+00		7.5E-04	1.6E-02	1.9E-01	9.9E-03	2.2E-01
	Selenium	1.4E-01		1.1E-03	1.9E-02	1.9E-01	1.1E-01	3.2E-01
	Thallium	7.4E-03		6.7E-04	3.4E-02	4.1E-01	3.8E-01	8.2E-01
	Vanadium	4.2E+00		1.8E-04	6.1E-03	3.1E-03	3.3E-04	9.7E-03
	Zinc	7.5E+01		2.8E-05	3.7E-03	1.3E-01	2.1E-02	1.5E-01
OU3 Uplands	TEQ	1.0E-06		3.2E-04	1.0E-01	7.1E+00	1.2E+00	8.4E+00
	Aluminum	1.9E+00		2.4E-02	1.0E+01	1.2E+02	1.1E+02	2.5E+02
	Antimony	5.9E-02		4.6E-03	3.3E-02	3.9E-01	1.4E-02	4.4E-01
	Arsenic	1.0E+00		2.1E-03	1.4E-02	2.1E-02	5.7E-03	4.2E-02
	Barium	5.2E+01		7.2E-04	1.9E-02	2.0E-02	3.2E-02	7.2E-02
	Chromium	2.4E+00		6.7E-05	1.6E-02	6.0E-02	7.5E-03	8.4E-02
	Copper	5.6E+00		2.5E-04	1.2E-02	7.2E-02	2.9E-02	1.1E-01
	Lead	4.7E+00		2.4E-05	7.1E-03	3.9E-02	5.8E-03	5.1E-02
	Manganese	5.2E+01		5.7E-03	3.5E-02	2.1E-02	3.1E-02	9.3E-02
	Mercury	2.5E-02	3.2E-02	1.8E-04	1.2E-01	8.7E-01	4.7E-01	1.5E+00
	Nickel	1.7E+00		7.5E-04	1.5E-02	1.7E-01	9.1E-03	2.0E-01
	Selenium	1.4E-01		1.1E-03	7.8E-03	9.8E-02	4.2E-02	1.5E-01
	Thallium	7.4E-03		6.7E-04	4.9E-02	5.9E-01	5.5E-01	1.2E+00
	Vanadium	4.2E+00		1.8E-04	1.1E-02	5.6E-03	6.0E-04	1.8E-02
	Zinc	7.5E+01		2.8E-05	5.3E-03	1.4E-01	2.6E-02	1.7E-01
OU3 Floodplain	TEQ	1.0E-06		3.2E-04	5.9E-02	3.7E+00	6.6E-01	4.4E+00
	Aluminum	1.9E+00		2.4E-02	1.3E+01	1.5E+02	1.4E+02	3.1E+02
	Antimony	5.9E-02		4.6E-03	1.4E-02	1.7E-01	6.6E-03	2.0E-01
	Arsenic	1.0E+00		2.1E-03	1.1E-02	1.9E-02	4.7E-03	3.6E-02
	Barium	5.2E+01		7.2E-04	3.6E-02	3.9E-02	6.2E-02	1.4E-01
	Chromium	2.4E+00		6.7E-05	1.7E-02	6.2E-02	7.8E-03	8.7E-02
	Copper	5.6E+00		2.5E-04	2.3E-02	1.4E-01	3.8E-02	2.0E-01
	Lead	4.7E+00		2.4E-05	7.4E-03	4.0E-02	6.0E-03	5.3E-02
	Manganese	5.2E+01		5.7E-03	2.3E-02	1.5E-02	2.0E-02	6.3E-02
	Mercury	2.5E-02	3.2E-02	1.8E-04	8.9E-02	7.8E-01	5.6E-01	1.4E+00
	Nickel	1.7E+00		7.5E-04	1.1E-02	1.3E-01	7.4E-03	1.5E-01
	Selenium	1.4E-01		1.1E-03	4.2E-03	6.2E-02	2.1E-02	8.8E-02
	Thallium	7.4E-03		6.7E-04	4.1E-02	4.9E-01	4.6E-01	9.8E-01
	Vanadium	4.2E+00		1.8E-04	1.0E-02	5.2E-03	5.6E-04	1.6E-02
	Zinc	7.5E+01		2.8E-05	4.5E-03	1.4E-01	2.4E-02	1.6E-01
Undisturbed Floodplain Area	TEQ	1.0E-06		3.2E-04	6.3E-04	1.7E-02	7.1E-03	2.5E-02
	Aluminum	1.9E+00		1.9E-02	7.6E+00	9.0E+01	8.4E+01	1.8E+02
	Antimony	5.9E-02		6.4E-04	1.1E-02	1.3E-01	5.3E-03	1.5E-01
	Arsenic	1.0E+00		1.3E-03	1.8E-02	2.6E-02	7.4E-03	5.2E-02
	Barium	5.2E+01		3.5E-04	5.9E-03	6.4E-03	1.0E-02	2.3E-02
	Chromium	2.4E+00		1.8E-05	7.2E-03	2.6E-02	3.3E-03	3.7E-02
	Copper	5.6E+00		3.7E-04	2.5E-02	1.6E-01	3.9E-02	2.2E-01
	Lead	4.7E+00		2.5E-05	6.9E-03	3.8E-02	5.8E-03	5.1E-02
	Manganese	5.2E+01		4.8E-04	1.6E-02	1.2E-02	1.4E-02	4.2E-02
	Mercury	2.5E-02	3.2E-02	NA	7.0E-03	3.3E-01	2.1E+00	2.4E+00
	Nickel	1.7E+00		4.4E-05	8.6E-03	1.0E-01	6.1E-03	1.2E-01
	Selenium	1.4E-01		1.5E-04	ND	NA	NA	1.5E-04
	Thallium	7.4E-03		NA	4.6E-02	5.5E-01	5.2E-01	1.1E+00
	Vanadium	4.2E+00		3.1E-05	6.3E-03	3.2E-03	3.4E-04	9.9E-03
	Zinc	7.5E+01		2.6E-05	4.8E-03	1.4E-01	2.4E-02	1.7E-01

ND = not detected; NA = not available; NC = not calculated; LOAEL = lowest-observed-adverse-effect-level; NOAEL = no-observed-adverse-effect-level; HQt = total hazard quotient; TRV = toxicity reference value; TEQ = toxicity equivalence.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Food by Exposure Unit/Soil Type

Aroclor-1254





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Aroclor-1254

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.048799	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.001171	ND	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.033605	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.005887	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.007465	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.000991	ND	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.007975	detect	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.184026	detect	1	0	<1.0	**1.2**
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.003555	detect	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.00092	ND	1	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	0.000352	ND	1	0	<1.0	<1.0
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	0.000372	ND	1	0	<1.0	<1.0
	SS31-IN	SS31-IN-(0-2)c	0.000372	ND	1	0	<1.0	<1.0
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.000956	ND	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.000956	ND	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Aroclor-1254

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.002272	ND	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.001331	ND	1	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	0.001936	ND	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.001444	ND	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.002272	ND	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.001356	ND	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.001171	ND	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.000725	ND	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.00187	ND	1	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.001257	ND	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.000771	ND	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.002368	ND	1	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.001778	ND	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.001208	ND	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.001368	ND	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.001406	ND	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.001532	ND	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.001922	ND	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.002245	ND	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

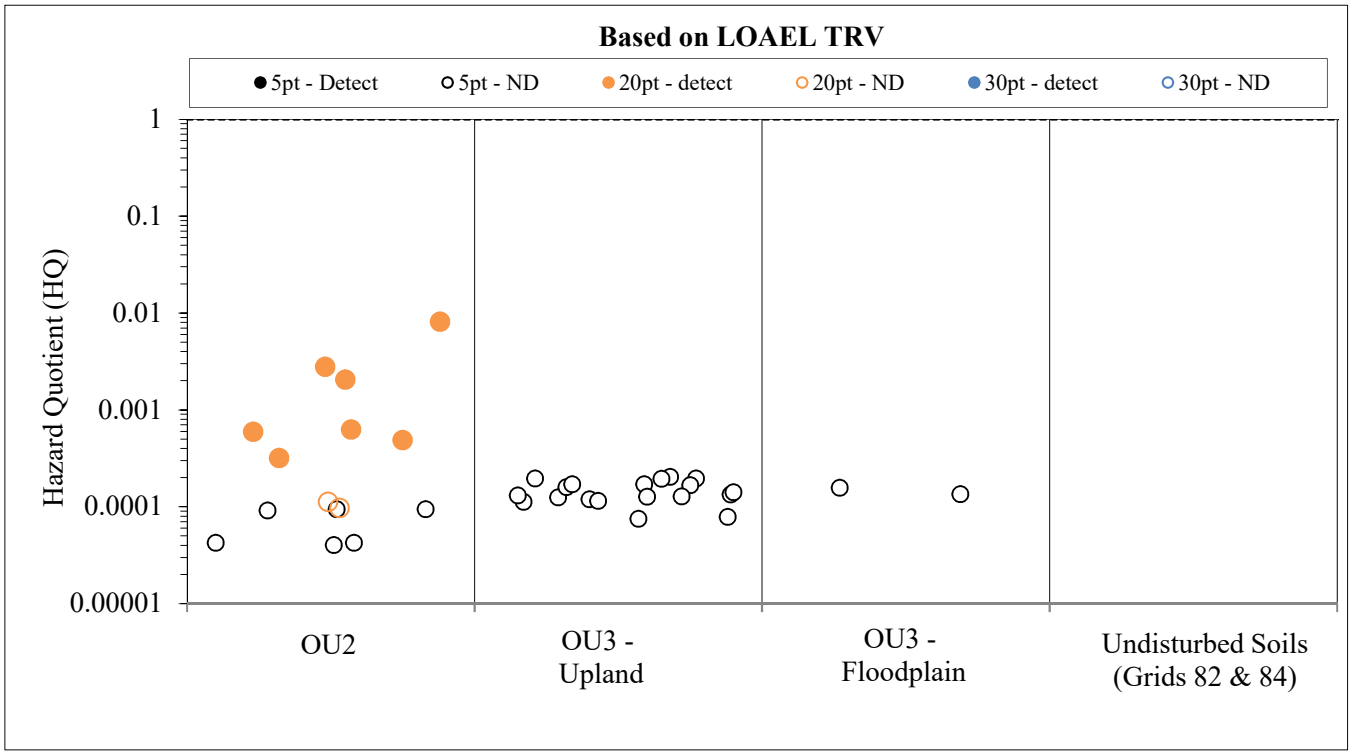
Aroclor-1254

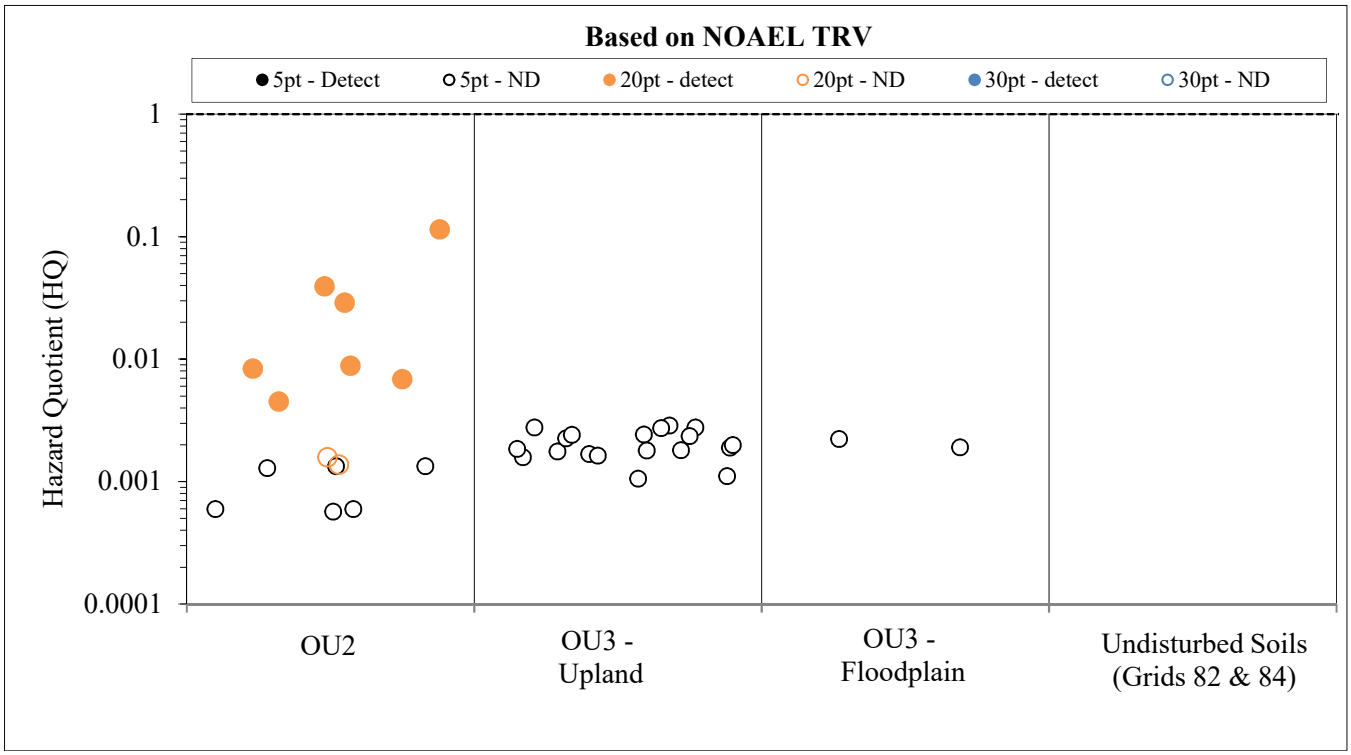
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.001752	ND	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.001456	ND	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Surface Soil by Exposure Unit/Soil Type

Aroclor-1254





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Aroclor-1254

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.141	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.0057	ND	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.104	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.0247	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.0301	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.00495	ND	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.0318	detect	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.413	detect	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.0162	detect	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.00465	ND	1	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	0.00205	ND	1	0	<1.0	<1.0
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	0.00215	ND	1	0	<1.0	<1.0
	SS31-IN	SS31-IN-(0-2)c	0.00215	ND	1	0	<1.0	<1.0
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.0048	ND	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.0048	ND	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Aroclor-1254

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.00995	ND	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.00635	ND	1	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	0.0087	ND	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.0068	ND	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.00995	ND	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.00645	ND	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.0057	ND	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.0038	ND	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.00845	ND	1	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.00605	ND	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.004	ND	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.0103	ND	1	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.0081	ND	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.00585	ND	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.0065	ND	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.00665	ND	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.00715	ND	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.00865	ND	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.00985	ND	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

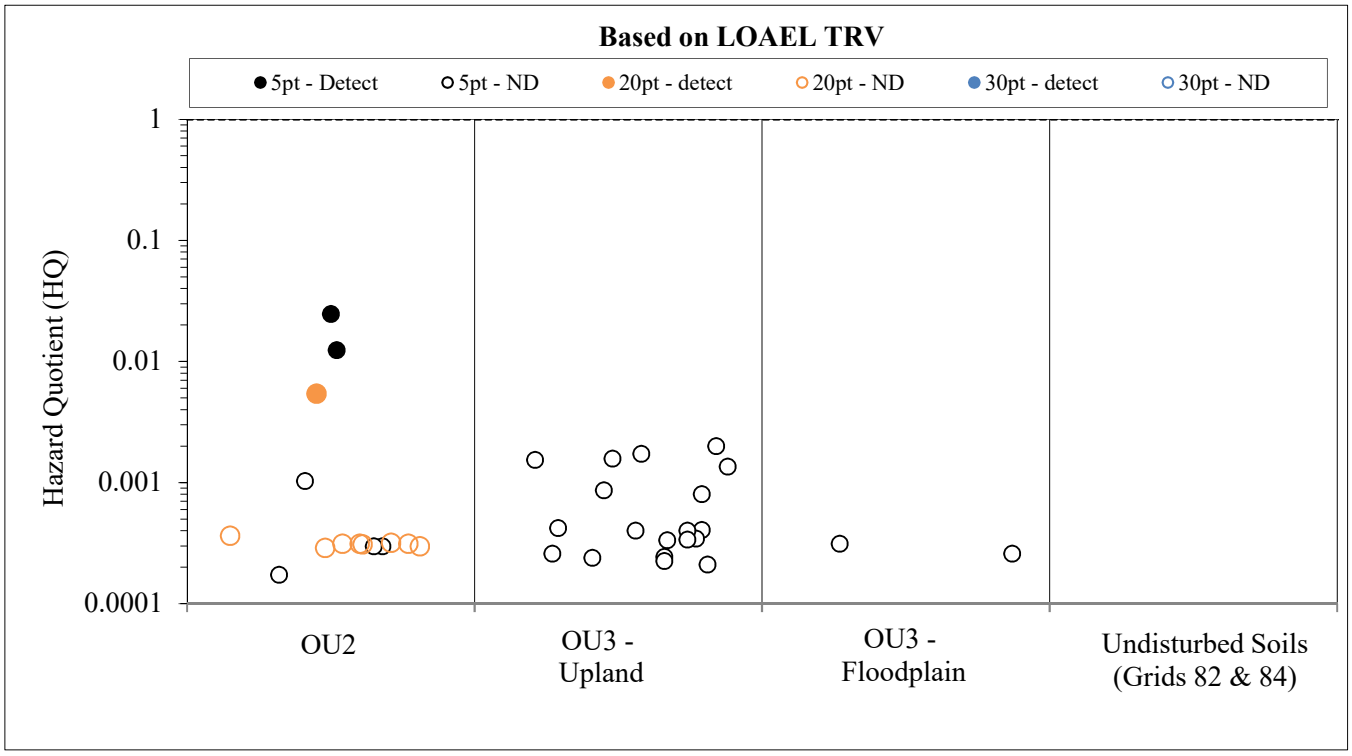
Aroclor-1254

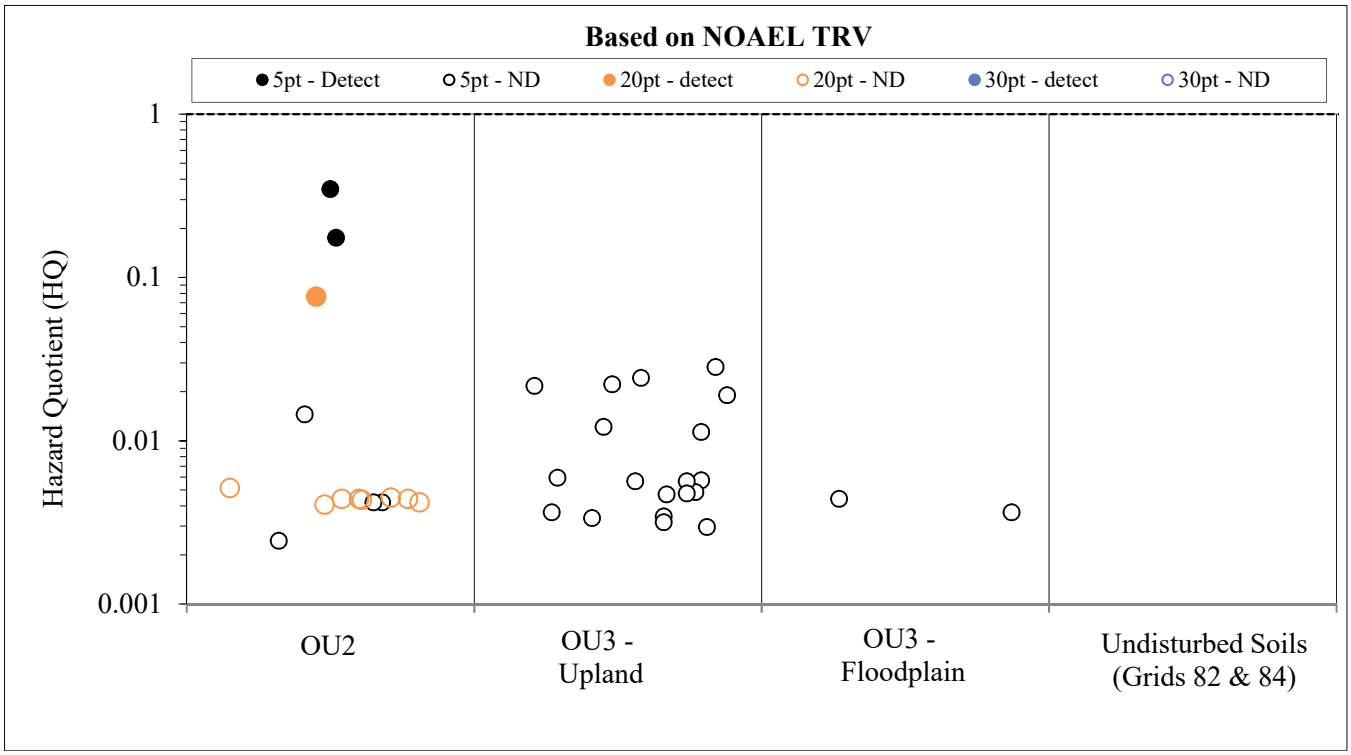
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.008	ND	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.00685	ND	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Food by Exposure Unit/Soil Type

Aroclor-1260





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Aroclor-1260

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.000659	ND	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.000805	ND	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.000637	ND	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.000692	ND	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.011963	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.000681	ND	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.000692	ND	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.000692	ND	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.000703	ND	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.002272	ND	1	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	0.054383	detect	1	0	<1.0	<1.0
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	0.000383	ND	1	0	<1.0	<1.0
	SS31-IN	SS31-IN-(0-2)c	0.027437	detect	1	0	<1.0	<1.0
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.000659	ND	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.000659	ND	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Aroclor-1260

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.000897	ND	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.000528	ND	1	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	0.000759	ND	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.000571	ND	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.000885	ND	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.000539	ND	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.000465	ND	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.001778	ND	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.000737	ND	1	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.000496	ND	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.001909	ND	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.000932	ND	1	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.004429	ND	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.002986	ND	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.003407	ND	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.00348	ND	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.003807	ND	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.000748	ND	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.000885	ND	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

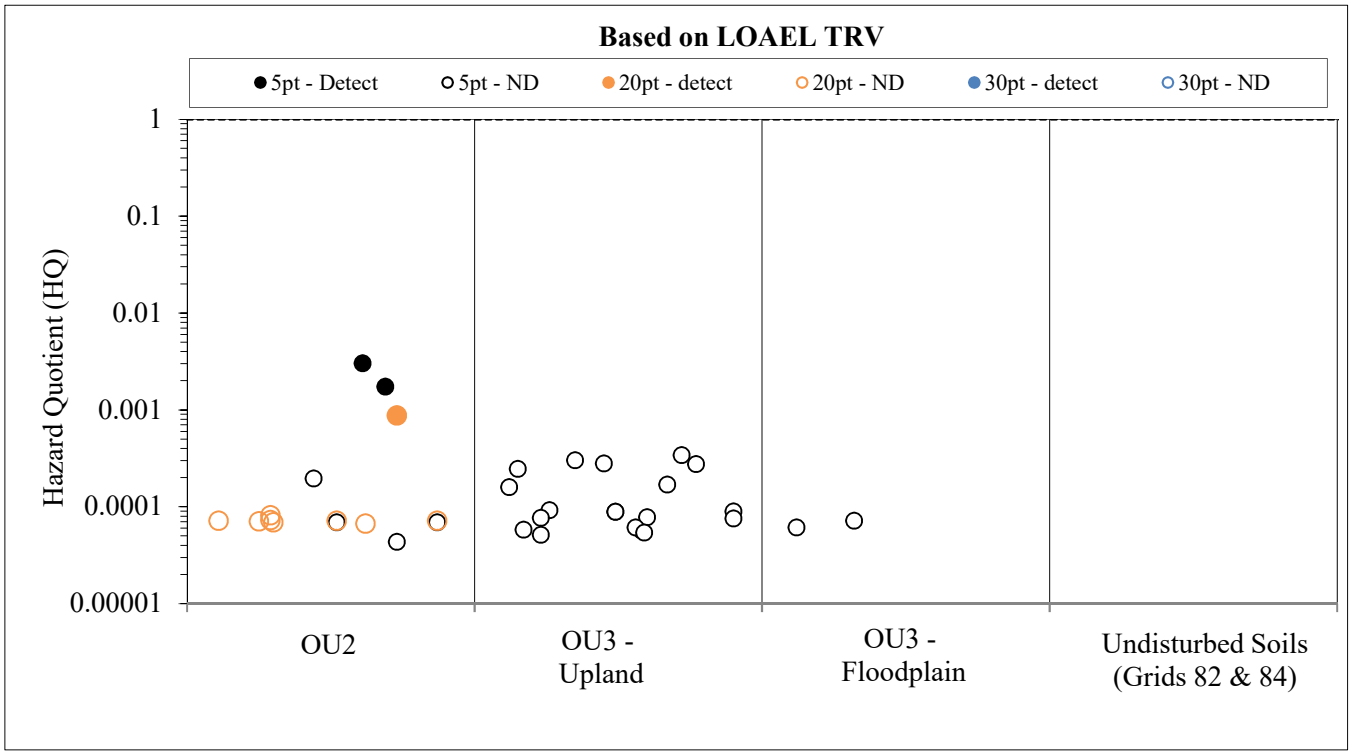
Aroclor-1260

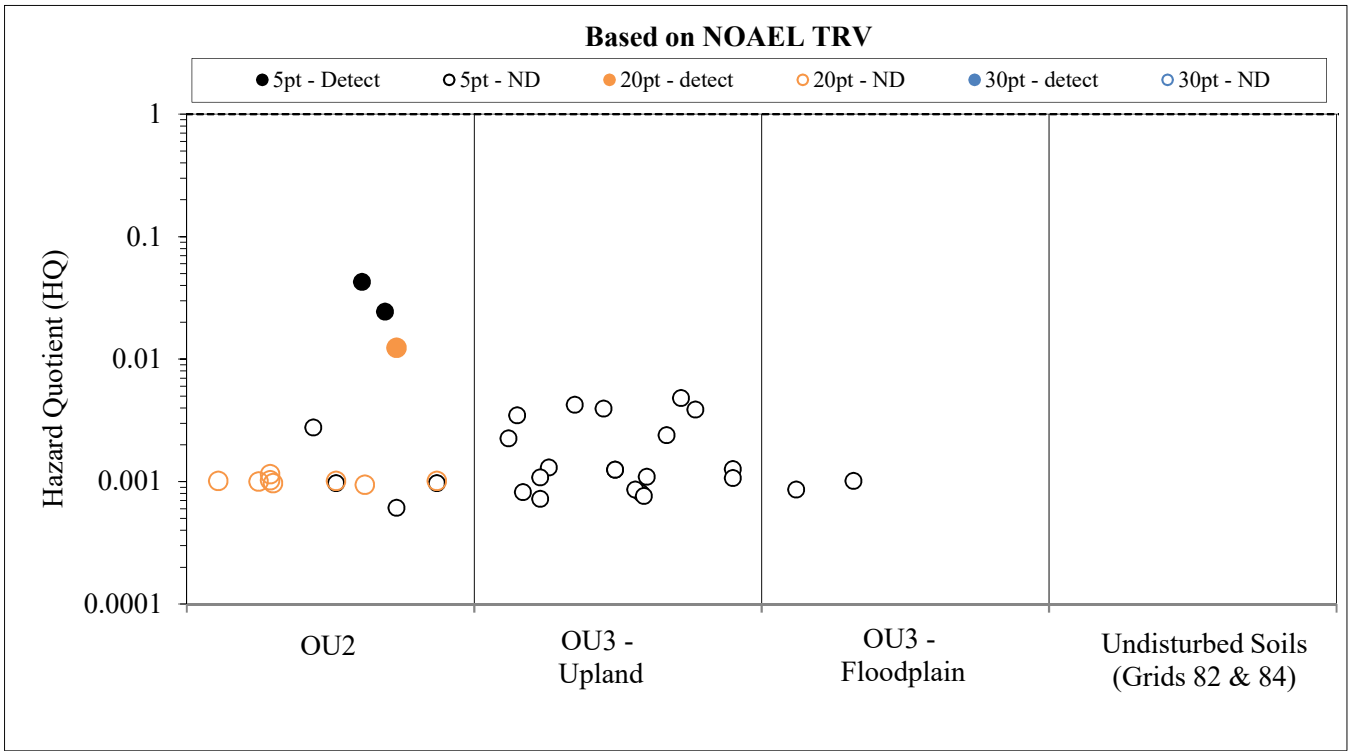
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.000692	ND	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.000571	ND	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Surface Soil by Exposure Unit/Soil Type

Aroclor-1260





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Aroclor-1260

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.0035	ND	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.00415	ND	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.0034	ND	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.00365	ND	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.0445	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.0036	ND	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.00365	ND	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.00365	ND	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.0037	ND	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.00995	ND	1	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	0.154	detect	1	0	<1.0	<1.0
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	0.0022	ND	1	0	<1.0	<1.0
	SS31-IN	SS31-IN-(0-2)c	0.0881	detect	1	0	<1.0	<1.0
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.0035	ND	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.0035	ND	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Aroclor-1260

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.00455	ND	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.0029	ND	1	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	0.00395	ND	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.0031	ND	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.0045	ND	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.00295	ND	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.0026	ND	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.0081	ND	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.00385	ND	1	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.00275	ND	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.0086	ND	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.0047	ND	1	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.01735	ND	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.0125	ND	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.01395	ND	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.0142	ND	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.0153	ND	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.0039	ND	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.0045	ND	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

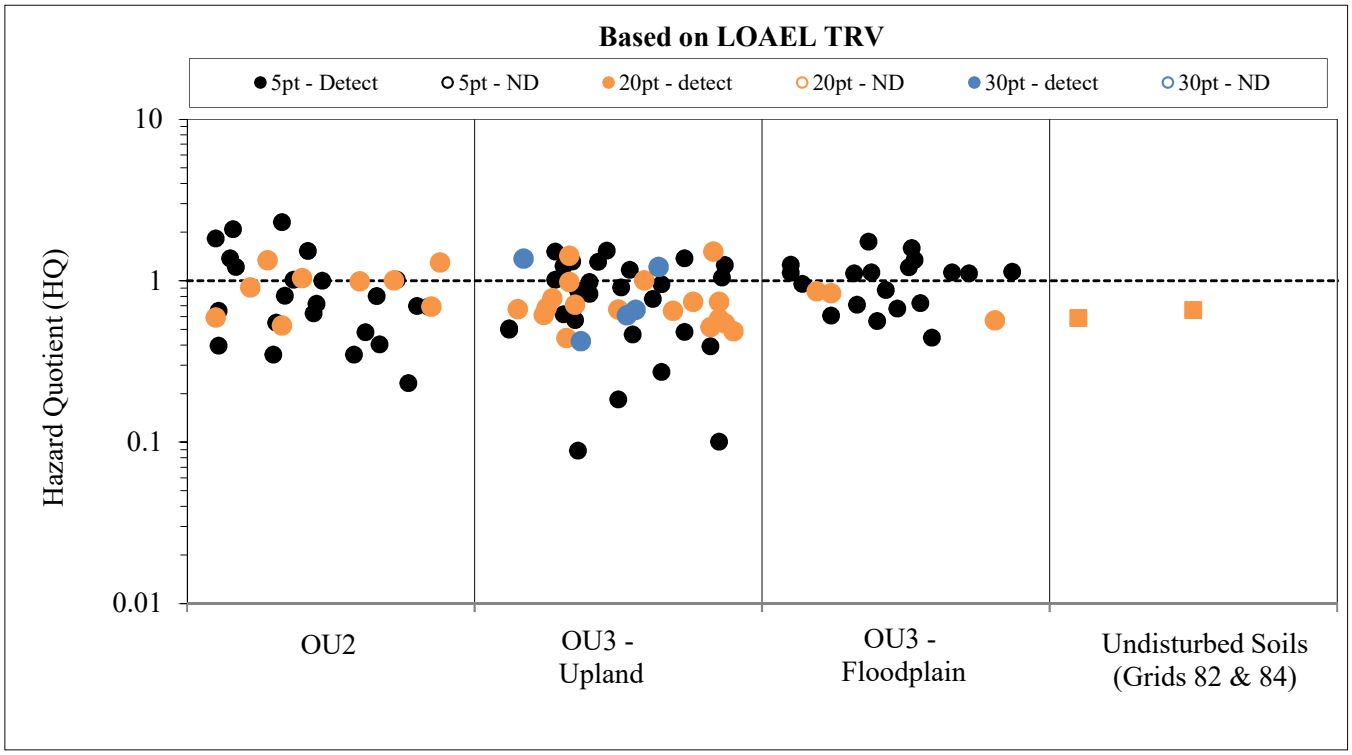
Aroclor-1260

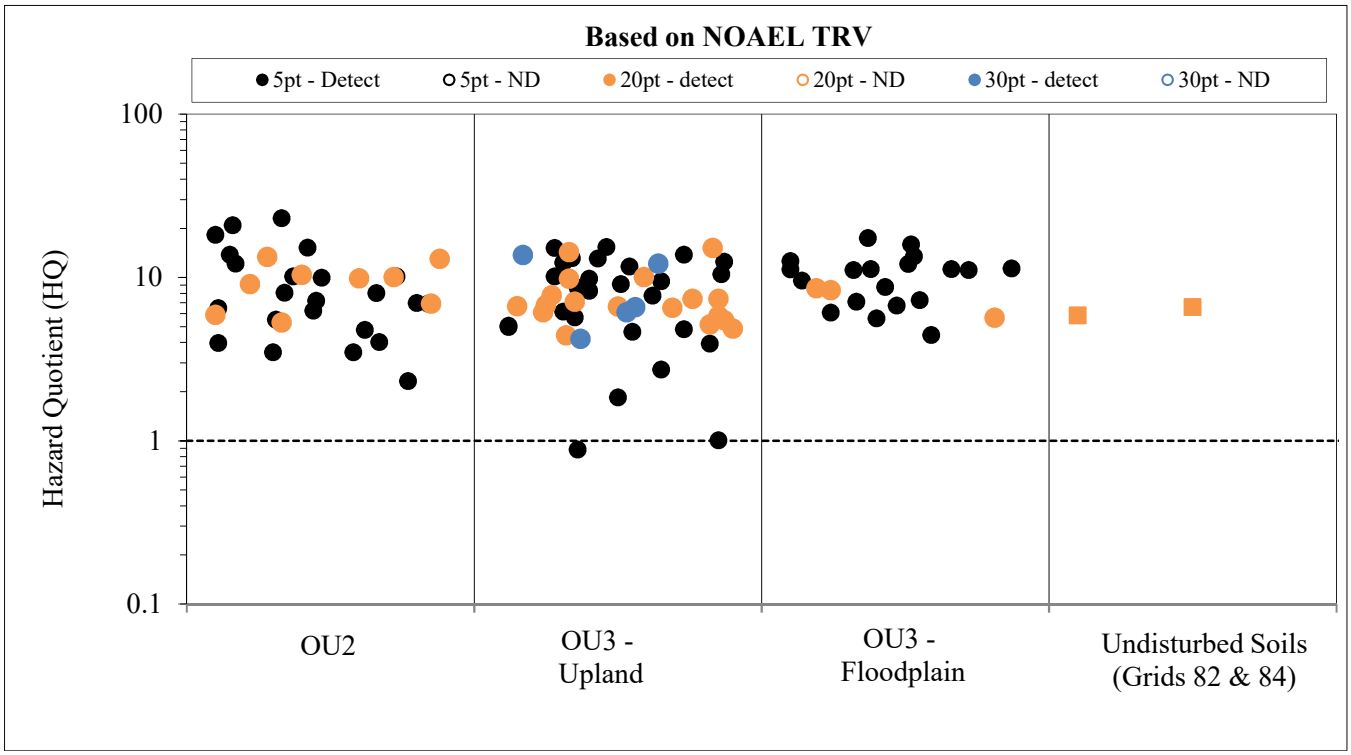
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.00365	ND	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.0031	ND	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Food by Exposure Unit/Soil Type

Aluminum





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Aluminum

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	1129.95	detect	1097	110	<1.0	**5.9**
	Grid 13	Grid 13-SSComp-01_20171019_NM	2480	detect	1097	110	**1.3**	**13.0**
	Grid 14	Grid 14-SSComp-01_20171017_NM	1319.05	detect	1097	110	<1.0	**6.9**
	Grid 2	Grid 2-SSComp-01_20171016_NM	1010.6	detect	1097	110	<1.0	**5.3**
	Grid 22	Grid 22-SSComp-01_20171018_NM	1922	detect	1097	110	<1.0	**10.1**
	Grid 23	Grid 23-SSComp-01_20171018_NM	2557.5	detect	1097	110	**1.3**	**13.4**
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	1736	detect	1097	110	<1.0	**9.1**
	Grid 8	Grid 8-SSComp-01_20171018_NM	1984	detect	1097	110	<1.0	**10.4**
	Grid 9	Grid 9-SSComp-01_20171018_NM	1891	detect	1097	110	<1.0	**9.9**
	LF-1	LF-1-SS_4/18/14_NM	4402	detect	1097	110	**2.3**	**23.0**
	SB2a,3a-IN	SB2a-IN-(0-2)	443.3	detect	1097	110	<1.0	**2.3**
	SS10-IN	SS10-IN-(0-2)c	770.35	detect	1097	110	<1.0	**4.0**
	SS11-IN	SS11-IN-(0-2)c	1319.05	detect	1097	110	<1.0	**6.9**
	SS12-IN	SS12-IN-(0-2)c	1241.55	detect	1097	110	<1.0	**6.5**
	SS13-IN	SS13-IN-(0-2)c	914.5	detect	1097	110	<1.0	**4.8**
	SS14-IN	SS14-IN-(0-2)c	1532.95	detect	1097	110	<1.0	**8.0**
	SS15-IN	SS15-IN-(0-2)c	3487.5	detect	1097	110	**1.8**	**18.2**
	SS16-IN	SS16-IN-(0-2)c	2325	detect	1097	110	**1.2**	**12.2**
	SS17-IN	SS17-IN-(0-2)c	1542.25	detect	1097	110	<1.0	**8.1**
	SS1-IN	SS1-IN-(0-2)c	1198.15	detect	1097	110	<1.0	**6.3**
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1097	110	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	1052.45	detect	1097	110	<1.0	**5.5**
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1097	110	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1097	110	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	3983.5	detect	1097	110	**2.1**	**20.8**
	SS33-IN	SS33-IN-(0-2)c	1937.5	detect	1097	110	<1.0	**10.1**
	SS3-IN	SS3-IN-(0-2)c	1937.5	detect	1097	110	<1.0	**10.1**
	SS4-IN	SS4-IN-(0-2)c	1333	detect	1097	110	<1.0	**7.0**
	SS5-IN	SS5-IN-(0-2)c	2914	detect	1097	110	**1.5**	**15.2**
	SS6-IN	SS6-IN-(0-2)c	1373.3	detect	1097	110	<1.0	**7.2**
	SS7-IN	SS7-IN-(0-2)c	1906.5	detect	1097	110	<1.0	**10.0**
	SS8-IN	SS8-IN-(0-2)c	757.95	detect	1097	110	<1.0	**4.0**
	SS9-IN	SS9-IN-(0-2)c	2635	detect	1097	110	**1.4**	**13.8**
	HDPT-SS	BACKFILL-HDPT-SS	666.5	detect	1097	110	<1.0	**3.5**
	TSB-SS	BACKFILL-TSB-SS	666.5	detect	1097	110	<1.0	**3.5**

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Aluminum

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	2325	detect	1097	110	**1.2**	**12.2**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	1581	detect	1097	110	<1.0	**8.3**
	CRP-1	CRP-1-SS_4/10/14_NM	1736	detect	1097	110	<1.0	**9.1**
	Grid 27	Grid 27-SSComp-01_20171019_NM	1043.15	detect	1097	110	<1.0	**5.5**
	Grid 28	Grid 28-SSComp-01_20171019_NM	985.8	detect	1097	110	<1.0	**5.2**
	Grid 29	Grid 29-SSComp-01_20171019_NM	1171.8	detect	1097	110	<1.0	**6.1**
	Grid 30	Grid 30-SSComp-01_20171020_NM	1272.55	detect	1097	110	<1.0	**6.7**
	Grid 33	Grid 33-SSComp-01_20171020_NM	1357.8	detect	1097	110	<1.0	**7.1**
	Grid 34	Grid 34-SSComp-01_20171019_NM	1111.35	detect	1097	110	<1.0	**5.8**
	Grid 37	Grid 37-SSComp-01_20171020_NM	1297.35	detect	1097	110	<1.0	**6.8**
	Grid 39	Grid 39-SSComp-01_20171020_NM	1413.6	detect	1097	110	<1.0	**7.4**
	Grid 43	Grid 43-SSComp-01_20171023_NM	1412.05	detect	1097	110	<1.0	**7.4**
	Grid 44	Grid 44-SSComp-01_20171023_NM	1484.9	detect	1097	110	<1.0	**7.8**
	Grid 47	Grid 47-SSComp-01_20171023_NM	2728	detect	1097	110	**1.4**	**14.3**
	Grid 53	Grid 53-SSComp-01_20171020_NM	1875.5	detect	1097	110	<1.0	**9.8**
	Grid 60	Grid 60-SSComp-01_20171023_NM	1246.2	detect	1097	110	<1.0	**6.5**
	Grid 61	Grid 61-SSComp-01_20171023_NM	1269.45	detect	1097	110	<1.0	**6.6**
	Grid 64	Grid 64-SSComp-01_20171024_NM	1178	detect	1097	110	<1.0	**6.2**
	Grid 74	Grid 74-SSComp-01_20171023_NM	2898.5	detect	1097	110	**1.5**	**15.2**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	1922	detect	1097	110	<1.0	**10.1**
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	844.75	detect	1097	110	<1.0	**4.4**
	HP16-1	HP16-1-SS_4/10/14_NM	1937.5	detect	1097	110	<1.0	**10.1**
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	1875.5	detect	1097	110	<1.0	**9.8**
	HP18-1	HP18-1-SS_4/10/14_NM	2929.5	detect	1097	110	**1.5**	**15.3**
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	1475.6	detect	1097	110	<1.0	**7.7**
	HP18-IB	HP18-SSC-IB_4/10/14_NM	750.2	detect	1097	110	<1.0	**3.9**
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1097	110	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	968.75	detect	1097	110	<1.0	**5.1**
	HP9-1	HP9-1-SS_4/10/14_NM	2495.5	detect	1097	110	**1.3**	**13.1**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	888.15	detect	1097	110	<1.0	**4.6**
	IBK-1	IBK-1-SS_4/16/14_NM	2635	detect	1097	110	**1.4**	**13.8**
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	2898.5	detect	1097	110	**1.5**	**15.2**
	P17-BH1	P17-BH1-SS_4/3/14_NM	2511	detect	1097	110	**1.3**	**13.1**
	P3	P3-SSComp-01_20171020_NM	928.45	detect	1097	110	<1.0	**4.9**
	P3-BH1	P3-BH1-SS_4/3/14_NM	351.85	detect	1097	110	<1.0	**1.8**
	P4-BH1	P4-BH1-SS_4/4/14_NM	192.2	detect	1097	110	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	168.95	detect	1097	110	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	520.8	detect	1097	110	<1.0	**2.7**
	P8	P8-SSComp-01_20171025_NM	1258.6	detect	1097	110	<1.0	**6.6**
	P8dc	P8dc-SSComp-01_20171024_NM	1167.15	detect	1097	110	<1.0	**6.1**
	P8-TP3	P8-TP3-SS_4/4/14_NM	1658.5	detect	1097	110	<1.0	**8.7**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	2387	detect	1097	110	**1.2**	**12.5**
	SPP	SPP-SSComp-01_20171025_NM	2619.5	detect	1097	110	**1.4**	**13.7**
	SS1,2-HP18	SS1-HP18-(0-2)c	1089.65	detect	1097	110	<1.0	**5.7**
	SS11,12-IBK	SS11-IBK-(0-2)c	1181.1	detect	1097	110	<1.0	**6.2**
	SS13,14-HP9	SS13-HP9-(0-2)c	2232	detect	1097	110	**1.2**	**11.7**
	SS15,16-HP9	SS15-HP9-(0-2)c	2356	detect	1097	110	**1.2**	**12.3**
	SS3,4-HP16	SS3-HP16-(0-2)c	951.7	detect	1097	110	<1.0	**5.0**
	SS5,6-IBJ	SS5-IBJ-(0-2)c	922.25	detect	1097	110	<1.0	**4.8**
	SS7,8-HP13	SS7-HP13-(0-2)c	1999.5	detect	1097	110	<1.0	**10.5**
	SS9,10-HP12	SS9-HP12-(0-2)c	1813.5	detect	1097	110	<1.0	**9.5**
	SWBA	SWBA-SSComp-01_20171024_NM	806	detect	1097	110	<1.0	**4.2**

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Aluminum

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	1085	detect	1097	110	<1.0	**5.7**
	Grid 89	Grid 89-SSComp-01_20171026_NM	1643	detect	1097	110	<1.0	**8.6**
	Grid 94	Grid 94-SSComp-01_20171026_NM	1596.5	detect	1097	110	<1.0	**8.4**
	HP13a-1	HP13A-1-SS_4/10/14_NM	3038	detect	1097	110	**1.6**	**15.9**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	1074.15	detect	1097	110	<1.0	**5.6**
	SE10-HP11	SE10-HP11-(0-2)c	3332.5	detect	1097	110	**1.7**	**17.4**
	SE11-HP11	SE11-HP11-(0-2)c	1284.95	detect	1097	110	<1.0	**6.7**
	SE12-HP12	SE12-HP12-(0-2)c	2402.5	detect	1097	110	**1.3**	**12.6**
	SE13-HP12	SE13-HP12-(0-2)c	2170	detect	1097	110	**1.1**	**11.4**
	SE14-HP13	SE14-HP13-(0-2)c	2154.5	detect	1097	110	**1.1**	**11.3**
	SE15-HP13	SE15-HP13-(0-2)c	1829	detect	1097	110	<1.0	**9.6**
	SE16-HP13	SE16-HP13-(0-2)c	1674	detect	1097	110	<1.0	**8.8**
	SE17-HP13a	SE17-HP13a-(0-2)c	2123.5	detect	1097	110	**1.1**	**11.1**
	SE1-HP1a	SE1-HP1a-(0-2)c	2123.5	detect	1097	110	**1.1**	**11.1**
	SE2-HP1a	SE2-HP1a-(0-2)c	2573	detect	1097	110	**1.3**	**13.5**
	SE3-HP1	SE3-HP1-(0-2)c	847.85	detect	1097	110	<1.0	**4.4**
	SE4-HP1	SE4-HP1-(0-2)c	1387.25	detect	1097	110	<1.0	**7.3**
	SE5-HP2	SE5-HP2-(0-2)c	2309.5	detect	1097	110	**1.2**	**12.1**
	SE6-HP7	SE6-HP7-(0-2)c	2139	detect	1097	110	**1.1**	**11.2**
	SE7-HP7	SE7-HP7-(0-2)c	1162.5	detect	1097	110	<1.0	**6.1**
	SE8-HP10	SE8-HP10-(0-2)c	1357.8	detect	1097	110	<1.0	**7.1**
	SE9-HP10	SE9-HP10-(0-2)c	2154.5	detect	1097	110	**1.1**	**11.3**
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	1255.5	detect	1097	110	<1.0	**6.6**
	Grid 84	Grid 84-SSComp-01_20171026_NM	1117.55	detect	1097	110	<1.0	**5.8**

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Clark Fork River from Ingestion of River Surface Water

Aluminum

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Adjacent to Site	50-CFR	SW50-CFR	0.0366	detect	109.7	1097	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0873	detect	109.7	1097	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.747	detect	109.7	1097	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0303	detect	109.7	1097	<1.0	<1.0
	51-CFR	SW51-CFR	0.0376	detect	109.7	1097	<1.0	<1.0
	52-CFR	SW52-CFR	0.116	detect	109.7	1097	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0073	detect	109.7	1097	<1.0	<1.0
	54-CFR	SW54-CFR	0.044	detect	109.7	1097	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0248	detect	109.7	1097	<1.0	<1.0
	55-CFR	SW55-CFR	0.0499	detect	109.7	1097	<1.0	<1.0
	56-CFR	SW56-CFR	0.0515	detect	109.7	1097	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0284	detect	109.7	1097	<1.0	<1.0
	57-CFR	SW57-CFR	0.0392	detect	109.7	1097	<1.0	<1.0
	58-CFR	SW58-CFR	0.0561	detect	109.7	1097	<1.0	<1.0
	59-CFR	SW59-CFR	0.03	detect	109.7	1097	<1.0	<1.0
	60-CFR	SW60-CFR	0.0882	detect	109.7	1097	<1.0	<1.0
	61-CFR	SW61-CFR	0.0583	detect	109.7	1097	<1.0	<1.0
	62-CFR	SW62-CFR	0.0478	detect	109.7	1097	<1.0	<1.0
	63-CFR	SW63-CFR	0.0279	detect	109.7	1097	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects (ND) are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Catbird from Ingestion of Creek Surface Water

Aluminum

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.254	detect	109.7	1097	<1.0	<1.0
	43-OK	SW43-OK	0.215	detect	109.7	1097	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.275	detect	109.7	1097	<1.0	<1.0
	37-LV	SW37-LV	0.305	detect	109.7	1097	<1.0	<1.0
	39-LV	SW39-LV	0.188	detect	109.7	1097	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Catbird from Ingestion of Pond Surface Water

Aluminum

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0165	detect	109.7	1097	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.218	detect	109.7	1097	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0479	detect	109.7	1097	<1.0	<1.0
73-P5	SW73-P5	0.171	detect	109.7	1097	<1.0	<1.0
71-HP7	SW71-HP7	0.271	detect	109.7	1097	<1.0	<1.0
72-HP2	SW72-HP2	0.0758	detect	109.7	1097	<1.0	<1.0
75-HP10	SW75-HP10	0.137	detect	109.7	1097	<1.0	<1.0
67-HP12	SW67-HP12	0.101	detect	109.7	1097	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0174	detect	109.7	1097	<1.0	<1.0
66-HP13	SW66-HP13	0.0998	detect	109.7	1097	<1.0	<1.0
65-HP13a	SW65-HP13a	0.195	detect	109.7	1097	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.138	detect	109.7	1097	<1.0	<1.0
70-CWD	SW70-CWD	0.0552	detect	109.7	1097	<1.0	<1.0
64-HP18	SW64-HP18	0.13	detect	109.7	1097	<1.0	<1.0

#N/A = not analyzed

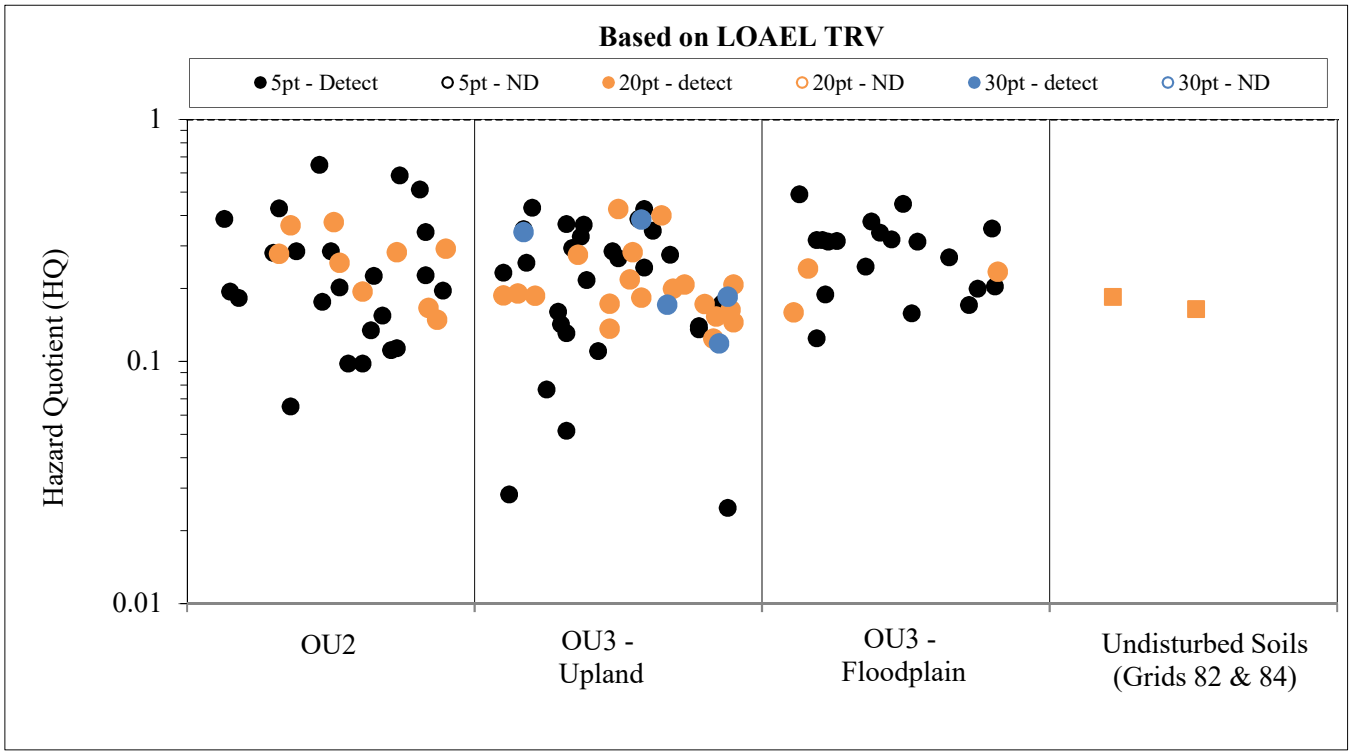
(a) Non-detects are evaluated at 1/2 the reported value.

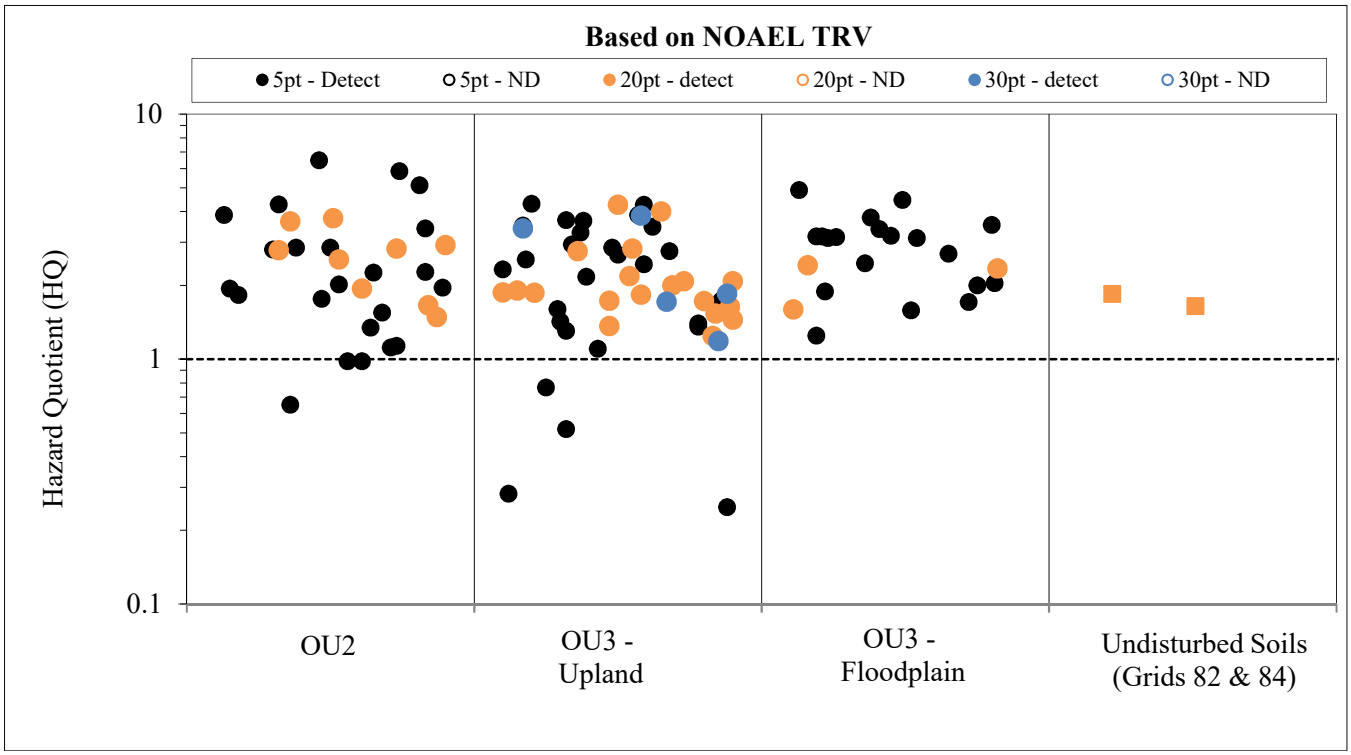
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Surface Soil by Exposure Unit/Soil Type

Aluminum





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Aluminum

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	7290	detect	1097	110	<1.0	**1.7**
	Grid 13	Grid 13-SSComp-01_20171019_NM	16000	detect	1097	110	<1.0	**3.6**
	Grid 14	Grid 14-SSComp-01_20171017_NM	8510	detect	1097	110	<1.0	**1.9**
	Grid 2	Grid 2-SSComp-01_20171016_NM	6520	detect	1097	110	<1.0	**1.5**
	Grid 22	Grid 22-SSComp-01_20171018_NM	12400	detect	1097	110	<1.0	**2.8**
	Grid 23	Grid 23-SSComp-01_20171018_NM	16500	detect	1097	110	<1.0	**3.8**
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	11200	detect	1097	110	<1.0	**2.6**
	Grid 8	Grid 8-SSComp-01_20171018_NM	12800	detect	1097	110	<1.0	**2.9**
	Grid 9	Grid 9-SSComp-01_20171018_NM	12200	detect	1097	110	<1.0	**2.8**
	LF-1	LF-1-SS_4/18/14_NM	28400	detect	1097	110	<1.0	**6.5**
	SB2a,3a-IN	SB2a-IN-(0-2)	2860	detect	1097	110	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	4970	detect	1097	110	<1.0	**1.1**
	SS11-IN	SS11-IN-(0-2)c	8510	detect	1097	110	<1.0	**1.9**
	SS12-IN	SS12-IN-(0-2)c	8010	detect	1097	110	<1.0	**1.8**
	SS13-IN	SS13-IN-(0-2)c	5900	detect	1097	110	<1.0	**1.3**
	SS14-IN	SS14-IN-(0-2)c	9890	detect	1097	110	<1.0	**2.3**
	SS15-IN	SS15-IN-(0-2)c	22500	detect	1097	110	<1.0	**5.1**
	SS16-IN	SS16-IN-(0-2)c	15000	detect	1097	110	<1.0	**3.4**
	SS17-IN	SS17-IN-(0-2)c	9950	detect	1097	110	<1.0	**2.3**
	SS1-IN	SS1-IN-(0-2)c	7730	detect	1097	110	<1.0	**1.8**
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1097	110	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	6790	detect	1097	110	<1.0	**1.5**
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1097	110	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1097	110	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	25700	detect	1097	110	<1.0	**5.9**
	SS33-IN	SS33-IN-(0-2)c	12500	detect	1097	110	<1.0	**2.8**
	SS3-IN	SS3-IN-(0-2)c	12500	detect	1097	110	<1.0	**2.8**
	SS4-IN	SS4-IN-(0-2)c	8600	detect	1097	110	<1.0	**2.0**
	SS5-IN	SS5-IN-(0-2)c	18800	detect	1097	110	<1.0	**4.3**
	SS6-IN	SS6-IN-(0-2)c	8860	detect	1097	110	<1.0	**2.0**
	SS7-IN	SS7-IN-(0-2)c	12300	detect	1097	110	<1.0	**2.8**
	SS8-IN	SS8-IN-(0-2)c	4890	detect	1097	110	<1.0	**1.1**
	SS9-IN	SS9-IN-(0-2)c	17000	detect	1097	110	<1.0	**3.9**
	HDPT-SS	BACKFILL-HDPT-SS	4300	detect	1097	110	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	4300	detect	1097	110	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Aluminum

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	15000	detect	1097	110	<1.0	**3.4**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	10200	detect	1097	110	<1.0	**2.3**
	CRP-1	CRP-1-SS_4/10/14_NM	11200	detect	1097	110	<1.0	**2.6**
	Grid 27	Grid 27-SSComp-01_20171019_NM	6730	detect	1097	110	<1.0	**1.5**
	Grid 28	Grid 28-SSComp-01_20171019_NM	6360	detect	1097	110	<1.0	**1.4**
	Grid 29	Grid 29-SSComp-01_20171019_NM	7560	detect	1097	110	<1.0	**1.7**
	Grid 30	Grid 30-SSComp-01_20171020_NM	8210	detect	1097	110	<1.0	**1.9**
	Grid 33	Grid 33-SSComp-01_20171020_NM	8760	detect	1097	110	<1.0	**2.0**
	Grid 34	Grid 34-SSComp-01_20171019_NM	7170	detect	1097	110	<1.0	**1.6**
	Grid 37	Grid 37-SSComp-01_20171020_NM	8370	detect	1097	110	<1.0	**1.9**
	Grid 39	Grid 39-SSComp-01_20171020_NM	9120	detect	1097	110	<1.0	**2.1**
	Grid 43	Grid 43-SSComp-01_20171023_NM	9110	detect	1097	110	<1.0	**2.1**
	Grid 44	Grid 44-SSComp-01_20171023_NM	9580	detect	1097	110	<1.0	**2.2**
	Grid 47	Grid 47-SSComp-01_20171023_NM	17600	detect	1097	110	<1.0	**4.0**
	Grid 53	Grid 53-SSComp-01_20171020_NM	12100	detect	1097	110	<1.0	**2.8**
	Grid 60	Grid 60-SSComp-01_20171023_NM	8040	detect	1097	110	<1.0	**1.8**
	Grid 61	Grid 61-SSComp-01_20171023_NM	8190	detect	1097	110	<1.0	**1.9**
	Grid 64	Grid 64-SSComp-01_20171024_NM	7600	detect	1097	110	<1.0	**1.7**
	Grid 74	Grid 74-SSComp-01_20171023_NM	18700	detect	1097	110	<1.0	**4.3**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	12400	detect	1097	110	<1.0	**2.8**
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	5450	detect	1097	110	<1.0	**1.2**
	HP16-1	HP16-1-SS_4/10/14_NM	12500	detect	1097	110	<1.0	**2.8**
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	12100	detect	1097	110	<1.0	**2.8**
	HP18-1	HP18-1-SS_4/10/14_NM	18900	detect	1097	110	<1.0	**4.3**
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	9520	detect	1097	110	<1.0	**2.2**
	HP18-IB	HP18-SSC-IB_4/10/14_NM	4840	detect	1097	110	<1.0	**1.1**
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1097	110	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	6250	detect	1097	110	<1.0	**1.4**
	HP9-1	HP9-1-SS_4/10/14_NM	16100	detect	1097	110	<1.0	**3.7**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	5730	detect	1097	110	<1.0	**1.3**
	IBK-1	IBK-1-SS_4/16/14_NM	17000	detect	1097	110	<1.0	**3.9**
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	18700	detect	1097	110	<1.0	**4.3**
	P17-BH1	P17-BH1-SS_4/3/14_NM	16200	detect	1097	110	<1.0	**3.7**
	P3	P3-SSComp-01_20171020_NM	5990	detect	1097	110	<1.0	**1.4**
	P3-BH1	P3-BH1-SS_4/3/14_NM	2270	detect	1097	110	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	1240	detect	1097	110	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	1090	detect	1097	110	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	3360	detect	1097	110	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	8120	detect	1097	110	<1.0	**1.9**
	P8dc	P8dc-SSComp-01_20171024_NM	7530	detect	1097	110	<1.0	**1.7**
	P8-TP3	P8-TP3-SS_4/4/14_NM	10700	detect	1097	110	<1.0	**2.4**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	15400	detect	1097	110	<1.0	**3.5**
	SPP	SPP-SSComp-01_20171025_NM	16900	detect	1097	110	<1.0	**3.9**
	SS1,2-HP18	SS1-HP18-(0-2)c	7030	detect	1097	110	<1.0	**1.6**
	SS11,12-IBK	SS11-IBK-(0-2)c	7620	detect	1097	110	<1.0	**1.7**
	SS13,14-HP9	SS13-HP9-(0-2)c	14400	detect	1097	110	<1.0	**3.3**
	SS15,16-HP9	SS15-HP9-(0-2)c	15200	detect	1097	110	<1.0	**3.5**
	SS3,4-HP16	SS3-HP16-(0-2)c	6140	detect	1097	110	<1.0	**1.4**
	SS5,6-IBJ	SS5-IBJ-(0-2)c	5950	detect	1097	110	<1.0	**1.4**
	SS7,8-HP13	SS7-HP13-(0-2)c	12900	detect	1097	110	<1.0	**2.9**
	SS9,10-HP12	SS9-HP12-(0-2)c	11700	detect	1097	110	<1.0	**2.7**
	SWBA	SWBA-SSComp-01_20171024_NM	5200	detect	1097	110	<1.0	**1.2**

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

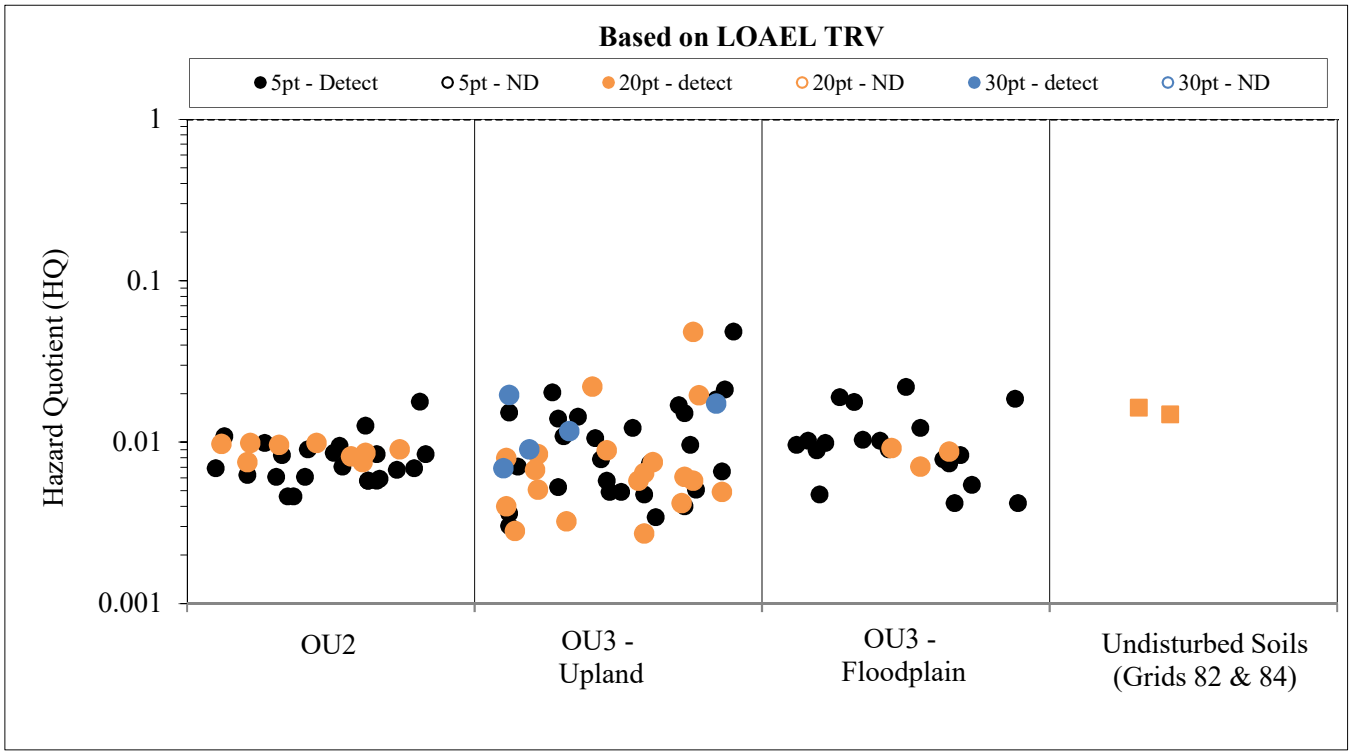
Aluminum

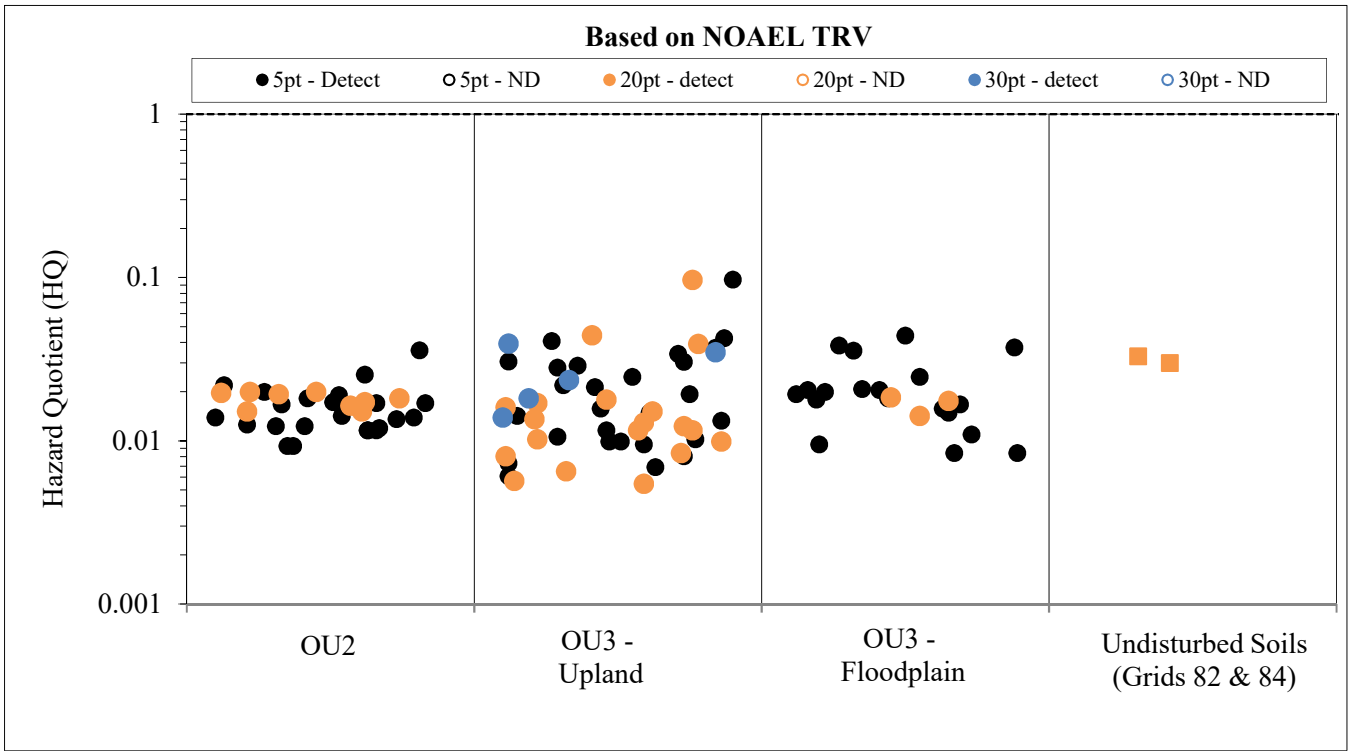
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	7000	detect	1097	110	<1.0	**1.6**
	Grid 89	Grid 89-SSComp-01_20171026_NM	10600	detect	1097	110	<1.0	**2.4**
	Grid 94	Grid 94-SSComp-01_20171026_NM	10300	detect	1097	110	<1.0	**2.3**
	HP13a-1	HP13A-1-SS_4/10/14_NM	19600	detect	1097	110	<1.0	**4.5**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	6930	detect	1097	110	<1.0	**1.6**
	SE10-HP11	SE10-HP11-(0-2)c	21500	detect	1097	110	<1.0	**4.9**
	SE11-HP11	SE11-HP11-(0-2)c	8290	detect	1097	110	<1.0	**1.9**
	SE12-HP12	SE12-HP12-(0-2)c	15500	detect	1097	110	<1.0	**3.5**
	SE13-HP12	SE13-HP12-(0-2)c	14000	detect	1097	110	<1.0	**3.2**
	SE14-HP13	SE14-HP13-(0-2)c	13900	detect	1097	110	<1.0	**3.2**
	SE15-HP13	SE15-HP13-(0-2)c	11800	detect	1097	110	<1.0	**2.7**
	SE16-HP13	SE16-HP13-(0-2)c	10800	detect	1097	110	<1.0	**2.5**
	SE17-HP13a	SE17-HP13a-(0-2)c	13700	detect	1097	110	<1.0	**3.1**
	SE1-HP1a	SE1-HP1a-(0-2)c	13700	detect	1097	110	<1.0	**3.1**
	SE2-HP1a	SE2-HP1a-(0-2)c	16600	detect	1097	110	<1.0	**3.8**
	SE3-HP1	SE3-HP1-(0-2)c	5470	detect	1097	110	<1.0	**1.2**
	SE4-HP1	SE4-HP1-(0-2)c	8950	detect	1097	110	<1.0	**2.0**
	SE5-HP2	SE5-HP2-(0-2)c	14900	detect	1097	110	<1.0	**3.4**
	SE6-HP7	SE6-HP7-(0-2)c	13800	detect	1097	110	<1.0	**3.1**
	SE7-HP7	SE7-HP7-(0-2)c	7500	detect	1097	110	<1.0	**1.7**
	SE8-HP10	SE8-HP10-(0-2)c	8760	detect	1097	110	<1.0	**2.0**
	SE9-HP10	SE9-HP10-(0-2)c	13900	detect	1097	110	<1.0	**3.2**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	8100	detect	1097	110	<1.0	**1.8**
	Grid 84	Grid 84-SSComp-01_20171026_NM	7210	detect	1097	110	<1.0	**1.6**

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Food by Exposure Unit/Soil Type

Arsenic





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Arsenic

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.075376	detect	5	2	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.076499	detect	5	2	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.063847	detect	5	2	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.059065	detect	5	2	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.077618	detect	5	2	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.077618	detect	5	2	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.059065	detect	5	2	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.070831	detect	5	2	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.067365	detect	5	2	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.085328	detect	5	2	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.045242	detect	5	2	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.066199	detect	5	2	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.074247	detect	5	2	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.054164	detect	5	2	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.045242	detect	5	2	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.046547	detect	5	2	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.066199	detect	5	2	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.067365	detect	5	2	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.077618	detect	5	2	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.055401	detect	5	2	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	5	2	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.045242	detect	5	2	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	5	2	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	5	2	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.139759	detect	5	2	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.09915	detect	5	2	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.070831	detect	5	2	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.047842	detect	5	2	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.047842	detect	5	2	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.052918	detect	5	2	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.054164	detect	5	2	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.049125	detect	5	2	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.065026	detect	5	2	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.036208	detect	5	2	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.036208	detect	5	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Arsenic

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.135952	detect	5	2	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.11245	detect	5	2	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.118442	detect	5	2	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.022132	detect	5	2	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.021304	detect	5	2	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.03288	detect	5	2	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.025348	detect	5	2	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.062662	detect	5	2	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.031422	detect	5	2	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.045242	detect	5	2	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.039897	detect	5	2	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.047842	detect	5	2	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.052918	detect	5	2	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.152874	detect	5	2	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.045242	detect	5	2	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.069681	detect	5	2	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.059065	detect	5	2	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.050399	detect	5	2	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.377491	detect	5	2	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.066199	detect	5	2	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.038526	detect	5	2	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.075376	detect	5	2	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.037141	detect	5	2	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.119433	detect	5	2	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.038526	detect	5	2	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.023758	detect	5	2	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	5	2	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.031422	detect	5	2	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.144479	detect	5	2	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.026907	detect	5	2	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.109421	detect	5	2	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.165699	detect	5	2	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.378972	detect	5	2	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.172911	detect	5	2	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.096011	detect	5	2	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.045242	detect	5	2	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.083146	detect	5	2	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.085328	detect	5	2	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.070831	detect	5	2	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.09178	detect	5	2	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.133078	detect	5	2	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.15932	detect	5	2	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.1538	detect	5	2	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.038526	detect	5	2	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.055401	detect	5	2	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	0.057851	detect	5	2	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	0.06147	detect	5	2	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.039897	detect	5	2	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.028437	detect	5	2	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.051663	detect	5	2	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.041253	detect	5	2	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.054164	detect	5	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

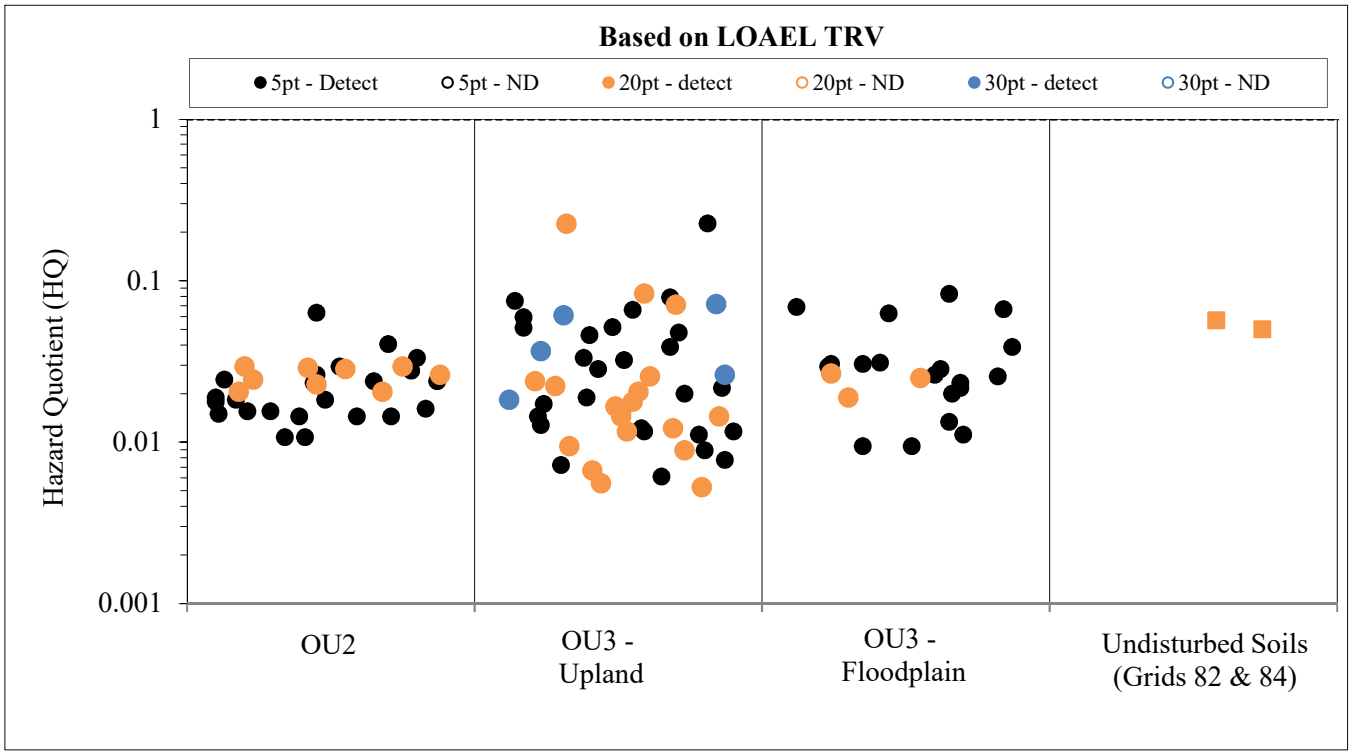
Arsenic

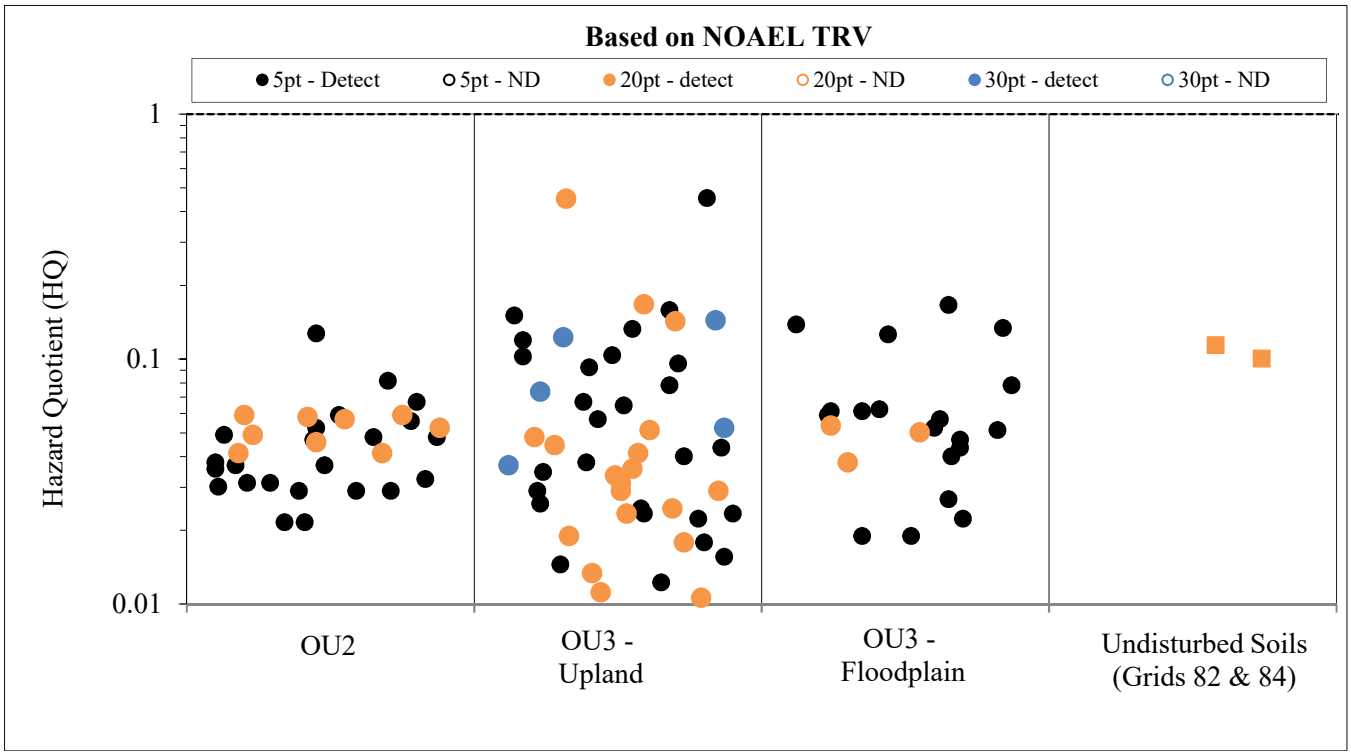
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.068526	detect	5	2	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.071975	detect	5	2	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.055401	detect	5	2	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.069681	detect	5	2	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.03288	detect	5	2	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	0.145418	detect	5	2	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	0.075376	detect	5	2	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	0.080948	detect	5	2	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	0.172014	detect	5	2	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	0.077618	detect	5	2	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.079843	detect	5	2	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	0.070831	detect	5	2	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.06147	detect	5	2	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.065026	detect	5	2	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.079843	detect	5	2	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.042595	detect	5	2	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.037141	detect	5	2	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	0.149159	detect	5	2	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	0.13881	detect	5	2	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	0.03288	detect	5	2	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.057851	detect	5	2	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	0.096011	detect	5	2	<1.0	<1.0
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	0.12825	detect	5	2	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.116454	detect	5	2	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Surface Soil by Exposure Unit/Soil Type

Arsenic





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Arsenic

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	5.1	detect	5	2	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	5.2	detect	5	2	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	4.1	detect	5	2	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	3.7	detect	5	2	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	5.3	detect	5	2	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	5.3	detect	5	2	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	3.7	detect	5	2	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	4.7	detect	5	2	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	4.4	detect	5	2	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	6	detect	5	2	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	2.6	detect	5	2	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	4.3	detect	5	2	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	5	detect	5	2	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	3.3	detect	5	2	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	2.6	detect	5	2	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	2.7	detect	5	2	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	4.3	detect	5	2	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	4.4	detect	5	2	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	5.3	detect	5	2	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	3.4	detect	5	2	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	5	2	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	2.6	detect	5	2	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	5	2	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	5	2	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	11.4	detect	5	2	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	7.3	detect	5	2	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	4.7	detect	5	2	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	2.8	detect	5	2	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	2.8	detect	5	2	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	3.2	detect	5	2	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	3.3	detect	5	2	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	2.9	detect	5	2	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	4.2	detect	5	2	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	1.933333	detect	5	2	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	1.933333	detect	5	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Arsenic

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	11	detect	5	2	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	8.6	detect	5	2	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	9.2	detect	5	2	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	1	detect	5	2	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.95	detect	5	2	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	1.7	detect	5	2	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	1.2	detect	5	2	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	4	detect	5	2	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	1.6	detect	5	2	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	2.6	detect	5	2	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	2.2	detect	5	2	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	2.8	detect	5	2	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	3.2	detect	5	2	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	12.8	detect	5	2	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	2.6	detect	5	2	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	4.6	detect	5	2	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	3.7	detect	5	2	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	3	detect	5	2	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	40.5	detect	5	2	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	4.3	detect	5	2	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	2.1	detect	5	2	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	5.1	detect	5	2	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	2	detect	5	2	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	9.3	detect	5	2	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	2.1	detect	5	2	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	1.1	detect	5	2	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	5	2	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	1.6	detect	5	2	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	11.9	detect	5	2	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	1.3	detect	5	2	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	8.3	detect	5	2	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	14.2	detect	5	2	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	40.7	detect	5	2	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	15	detect	5	2	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	7	detect	5	2	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	2.6	detect	5	2	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	5.8	detect	5	2	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	6	detect	5	2	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	4.7	detect	5	2	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	6.6	detect	5	2	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	10.7	detect	5	2	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	13.5	detect	5	2	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	12.9	detect	5	2	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	2.1	detect	5	2	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	3.4	detect	5	2	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	3.6	detect	5	2	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	3.9	detect	5	2	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	2.2	detect	5	2	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	1.4	detect	5	2	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	3.1	detect	5	2	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	2.3	detect	5	2	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	3.3	detect	5	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Arsenic

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	4.5	detect	5	2	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	4.8	detect	5	2	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	3.4	detect	5	2	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	4.6	detect	5	2	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	1.7	detect	5	2	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	12	detect	5	2	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	5.1	detect	5	2	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	5.6	detect	5	2	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	14.9	detect	5	2	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	5.3	detect	5	2	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	5.5	detect	5	2	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	4.7	detect	5	2	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	3.9	detect	5	2	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	4.2	detect	5	2	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	5.5	detect	5	2	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	2.4	detect	5	2	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	2	detect	5	2	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	12.4	detect	5	2	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	11.3	detect	5	2	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	1.7	detect	5	2	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	3.6	detect	5	2	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	7	detect	5	2	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	10.2	detect	5	2	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	9	detect	5	2	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Clark Fork River from Ingestion of River Surface Water

Arsenic

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Adjacent to Site	50-CFR	SW50-CFR	0.0029	detect	2.24	4.5	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0222	detect	2.24	4.5	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0073	detect	2.24	4.5	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0022	detect	2.24	4.5	<1.0	<1.0
	51-CFR	SW51-CFR	0.0029	detect	2.24	4.5	<1.0	<1.0
	52-CFR	SW52-CFR	0.0033	detect	2.24	4.5	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0031	detect	2.24	4.5	<1.0	<1.0
	54-CFR	SW54-CFR	0.0034	detect	2.24	4.5	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0022	detect	2.24	4.5	<1.0	<1.0
	55-CFR	SW55-CFR	0.0028	detect	2.24	4.5	<1.0	<1.0
	56-CFR	SW56-CFR	0.0027	detect	2.24	4.5	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0021	detect	2.24	4.5	<1.0	<1.0
	57-CFR	SW57-CFR	0.0045	detect	2.24	4.5	<1.0	<1.0
	58-CFR	SW58-CFR	0.0031	detect	2.24	4.5	<1.0	<1.0
	59-CFR	SW59-CFR	0.0033	detect	2.24	4.5	<1.0	<1.0
	60-CFR	SW60-CFR	0.0031	detect	2.24	4.5	<1.0	<1.0
	61-CFR	SW61-CFR	0.0031	detect	2.24	4.5	<1.0	<1.0
	62-CFR	SW62-CFR	0.0037	detect	2.24	4.5	<1.0	<1.0
	63-CFR	SW63-CFR	0.0031	detect	2.24	4.5	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects (ND) are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Catbird from Ingestion of Creek Surface Water

Arsenic

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.003	detect	2.24	4.5	<1.0	<1.0
	43-OK	SW43-OK	0.003	detect	2.24	4.5	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.002	detect	2.24	4.5	<1.0	<1.0
	37-LV	SW37-LV	0.003	detect	2.24	4.5	<1.0	<1.0
	39-LV	SW39-LV	0.004	detect	2.24	4.5	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Catbird from Ingestion of Pond Surface Water

Arsenic

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0024	detect	2.24	4.5	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0054	detect	2.24	4.5	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0084	detect	2.24	4.5	<1.0	<1.0
73-P5	SW73-P5	0.0071	detect	2.24	4.5	<1.0	<1.0
71-HP7	SW71-HP7	0.0044	detect	2.24	4.5	<1.0	<1.0
72-HP2	SW72-HP2	0.0109	detect	2.24	4.5	<1.0	<1.0
75-HP10	SW75-HP10	0.005	detect	2.24	4.5	<1.0	<1.0
67-HP12	SW67-HP12	0.0073	detect	2.24	4.5	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0024	detect	2.24	4.5	<1.0	<1.0
66-HP13	SW66-HP13	0.033	detect	2.24	4.5	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0152	detect	2.24	4.5	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0162	detect	2.24	4.5	<1.0	<1.0
70-CWD	SW70-CWD	0.0034	detect	2.24	4.5	<1.0	<1.0
64-HP18	SW64-HP18	0.0076	detect	2.24	4.5	<1.0	<1.0

#N/A = not analyzed

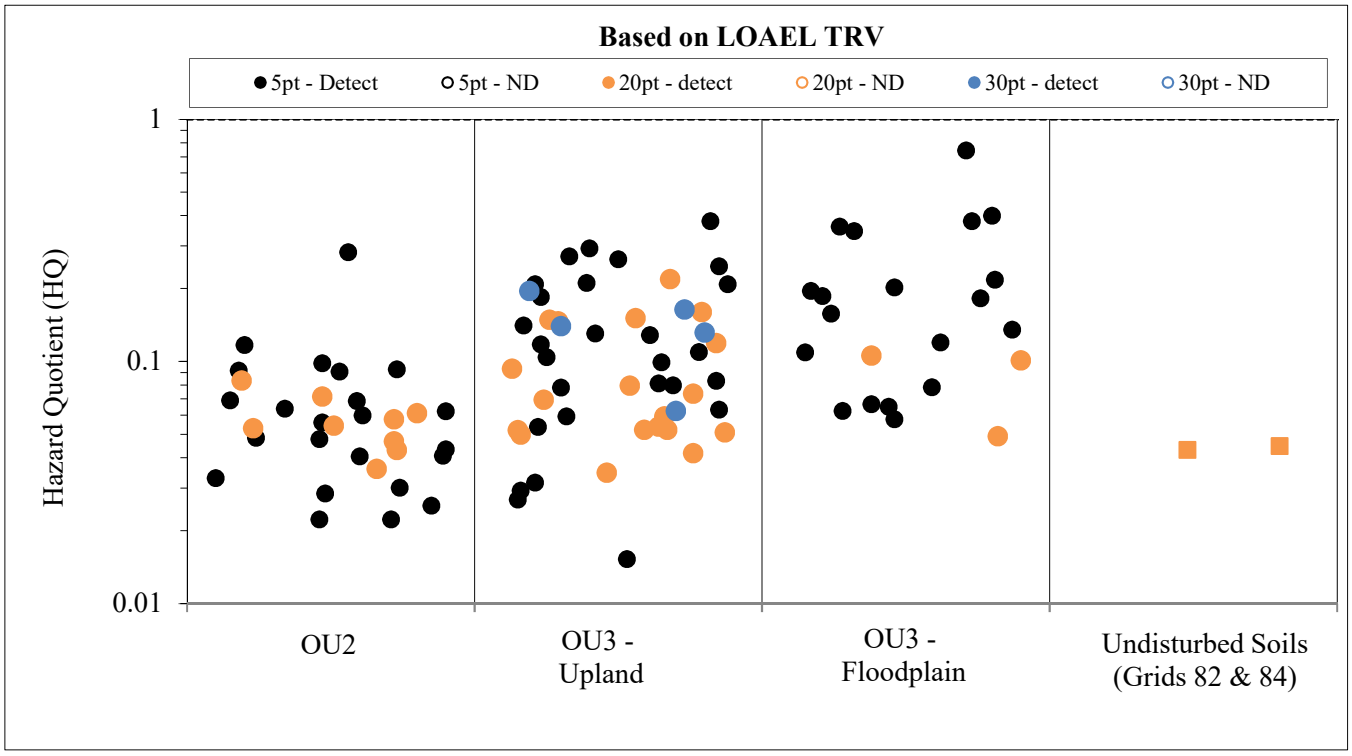
(a) Non-detects are evaluated at 1/2 the reported value.

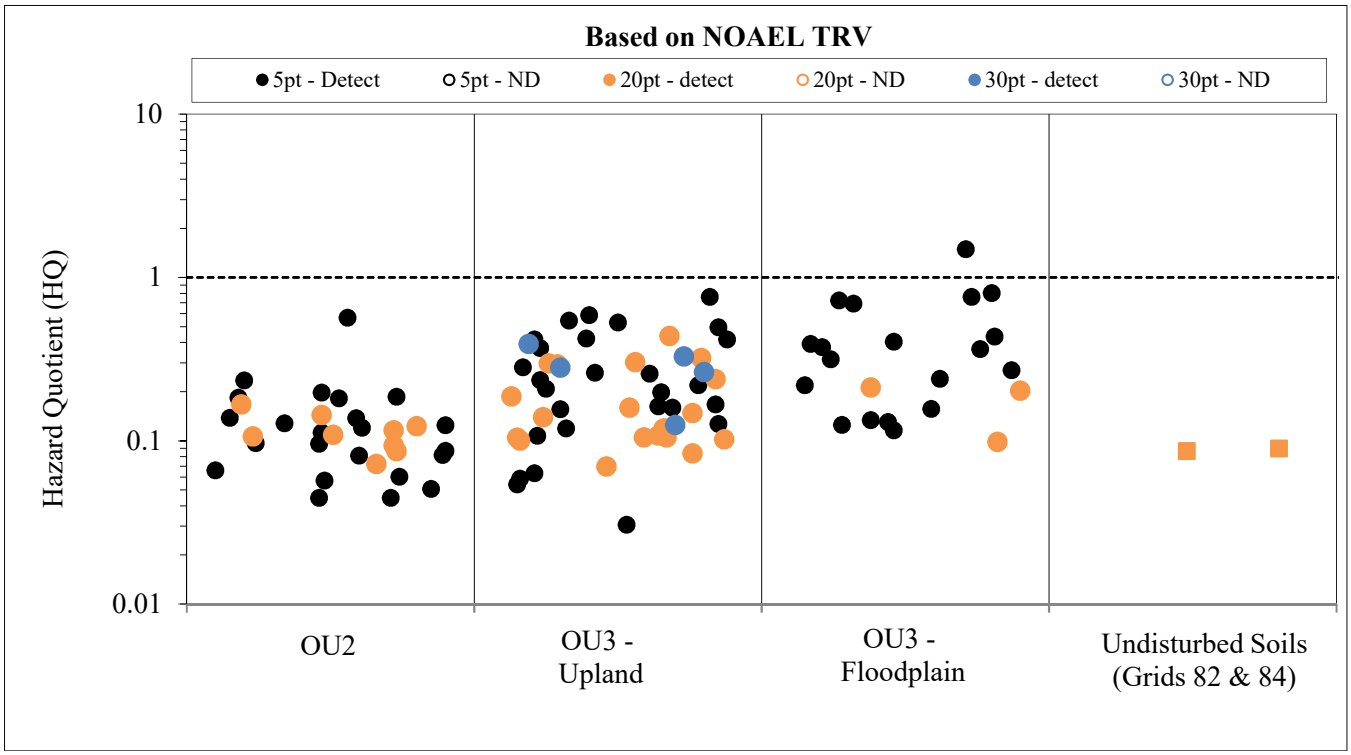
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Food by Exposure Unit/Soil Type

Barium





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Barium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	3.85294	detect	42	21	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	4.44132	detect	42	21	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	3.1317	detect	42	21	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	2.61924	detect	42	21	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	6.05462	detect	42	21	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	5.20052	detect	42	21	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	4.19458	detect	42	21	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	3.94784	detect	42	21	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	3.39742	detect	42	21	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	6.7379	detect	42	21	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	2.9419	detect	42	21	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	5.01072	detect	42	21	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	4.34642	detect	42	21	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	3.15068	detect	42	21	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	7.13648	detect	42	21	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	3.47334	detect	42	21	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	6.58606	detect	42	21	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	4.99174	detect	42	21	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	3.5113	detect	42	21	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	2.06882	detect	42	21	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	42	21	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	2.39148	detect	42	21	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	42	21	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	42	21	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	20.4984	detect	42	21	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	8.48406	detect	42	21	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	4.51724	detect	42	21	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	2.1827	detect	42	21	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	6.66198	detect	42	21	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	2.96088	detect	42	21	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	4.06172	detect	42	21	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	1.84106	detect	42	21	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	4.63112	detect	42	21	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	1.616463	detect	42	21	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	1.616463	detect	42	21	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Barium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	10.17328	detect	42	21	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	17.95508	detect	42	21	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	4.59316	detect	42	21	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	3.796	detect	42	21	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	3.796	detect	42	21	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	3.62518	detect	42	21	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	6.77586	detect	42	21	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	4.30846	detect	42	21	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	3.77702	detect	42	21	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	3.0368	detect	42	21	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	8.65488	detect	42	21	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	10.97044	detect	42	21	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	5.76992	detect	42	21	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	10.64778	detect	42	21	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	10.78064	detect	42	21	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	5.35236	detect	42	21	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	3.7011	detect	42	21	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	5.04868	detect	42	21	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	15.88626	detect	42	21	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	3.90988	detect	42	21	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	2.52434	detect	42	21	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	9.33816	detect	42	21	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	5.7889	detect	42	21	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	19.7392	detect	42	21	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	4.30846	detect	42	21	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	2.29658	detect	42	21	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	42	21	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	1.11033	detect	42	21	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	15.14604	detect	42	21	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	6.03564	detect	42	21	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	5.8838	detect	42	21	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	15.14604	detect	42	21	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	15.33584	detect	42	21	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	11.61576	detect	42	21	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	10.21124	detect	42	21	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	7.55404	detect	42	21	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	9.47102	detect	42	21	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	8.541	detect	42	21	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	9.54694	detect	42	21	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	11.90046	detect	42	21	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	13.3809	detect	42	21	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	21.2576	detect	42	21	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	14.21602	detect	42	21	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	2.12576	detect	42	21	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	1.95494	detect	42	21	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	19.1698	detect	42	21	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	27.521	detect	42	21	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	7.19342	detect	42	21	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	3.8909	detect	42	21	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	5.65604	detect	42	21	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	7.93364	detect	42	21	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	4.53622	detect	42	21	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

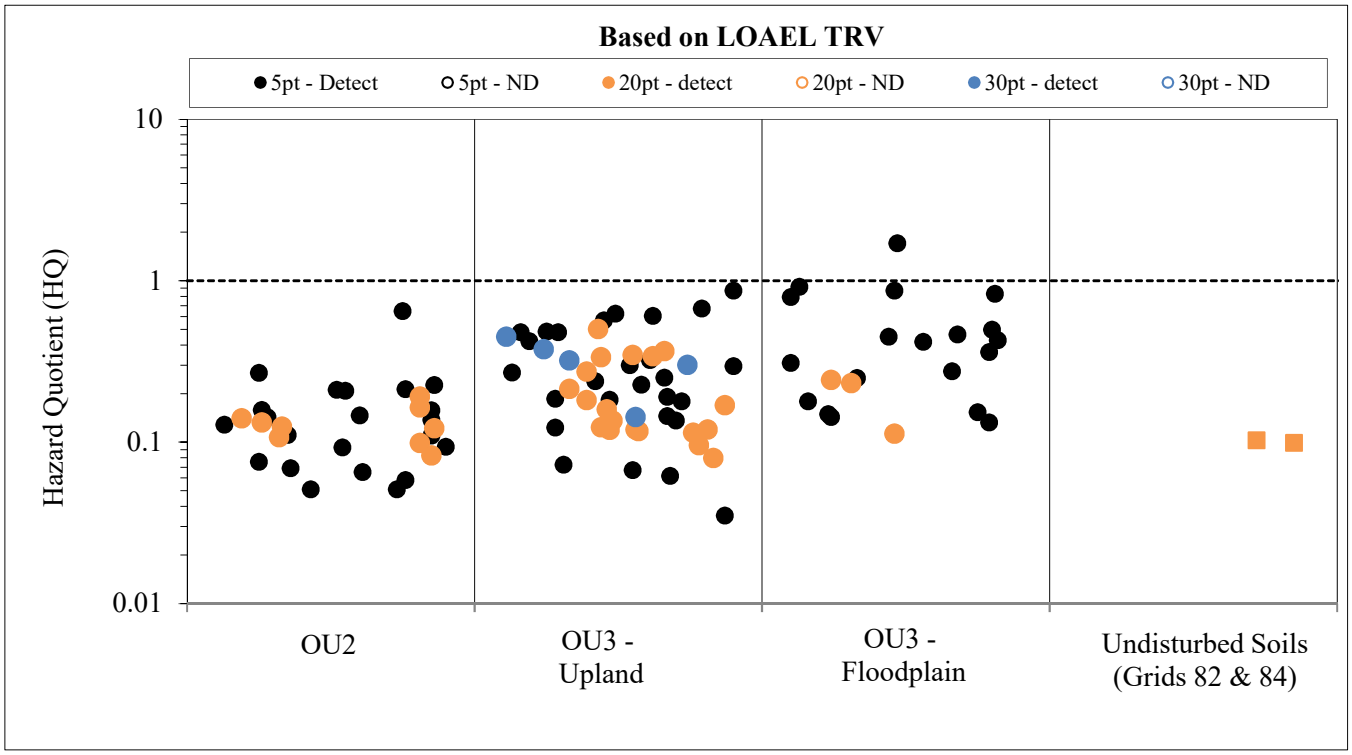
Barium

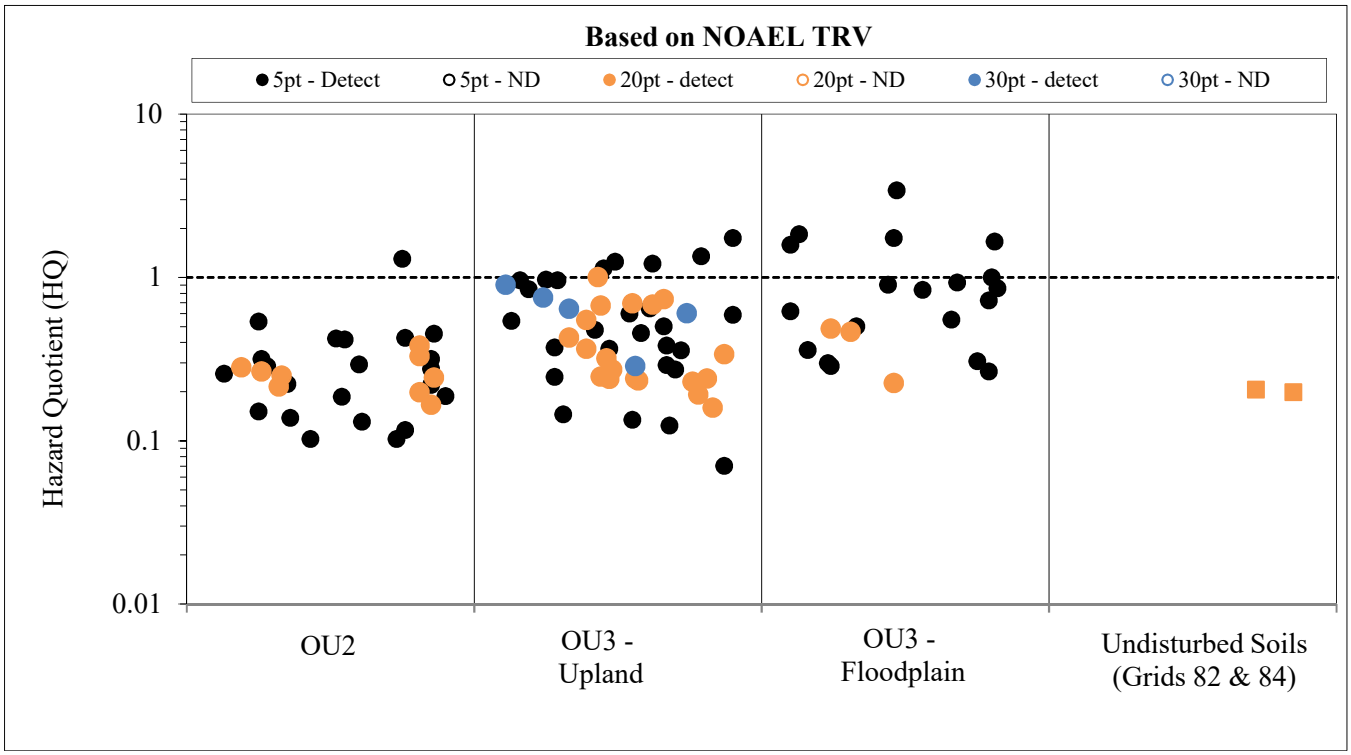
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	3.56824	detect	42	21	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	7.6869	detect	42	21	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	7.34526	detect	42	21	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	8.69284	detect	42	21	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	4.53622	detect	42	21	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	11.44494	detect	42	21	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	15.77238	detect	42	21	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	9.81266	detect	42	21	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	13.22906	detect	42	21	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	7.91466	detect	42	21	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	27.521	detect	42	21	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	14.67154	detect	42	21	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	26.1924	detect	42	21	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	29.0394	detect	42	21	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	53.9032	detect	42	21	<1.0	**1.5**
	SE3-HP1	SE3-HP1-(0-2)c	4.19458	detect	42	21	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	4.72602	detect	42	21	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	13.53274	detect	42	21	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	14.21602	detect	42	21	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	5.67502	detect	42	21	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	4.8399	detect	42	21	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	25.0536	detect	42	21	<1.0	<1.0
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	3.24558	detect	42	21	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	3.1317	detect	42	21	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Surface Soil by Exposure Unit/Soil Type

Barium





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Barium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	203	detect	42	21	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	234	detect	42	21	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	165	detect	42	21	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	138	detect	42	21	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	319	detect	42	21	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	274	detect	42	21	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	221	detect	42	21	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	208	detect	42	21	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	179	detect	42	21	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	355	detect	42	21	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	155	detect	42	21	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	264	detect	42	21	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	229	detect	42	21	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	166	detect	42	21	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	376	detect	42	21	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	183	detect	42	21	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	347	detect	42	21	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	263	detect	42	21	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	185	detect	42	21	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	109	detect	42	21	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	42	21	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	126	detect	42	21	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	42	21	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	42	21	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	1080	detect	42	21	<1.0	**1.3**
	SS33-IN	SS33-IN-(0-2)c	447	detect	42	21	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	238	detect	42	21	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	115	detect	42	21	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	351	detect	42	21	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	156	detect	42	21	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	214	detect	42	21	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	97	detect	42	21	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	244	detect	42	21	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	85.16667	detect	42	21	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	85.16667	detect	42	21	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Barium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	536	detect	42	21	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	946	detect	42	21	<1.0	**1.1**
	CRP-1	CRP-1-SS_4/10/14_NM	242	detect	42	21	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	200	detect	42	21	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	200	detect	42	21	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	191	detect	42	21	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	357	detect	42	21	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	227	detect	42	21	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	199	detect	42	21	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	160	detect	42	21	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	456	detect	42	21	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	578	detect	42	21	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	304	detect	42	21	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	561	detect	42	21	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	568	detect	42	21	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	282	detect	42	21	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	195	detect	42	21	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	266	detect	42	21	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	837	detect	42	21	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	206	detect	42	21	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	133	detect	42	21	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	492	detect	42	21	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	305	detect	42	21	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	1040	detect	42	21	<1.0	**1.3**
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	227	detect	42	21	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	121	detect	42	21	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	42	21	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	58.5	detect	42	21	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	798	detect	42	21	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	318	detect	42	21	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	310	detect	42	21	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	798	detect	42	21	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	808	detect	42	21	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	612	detect	42	21	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	538	detect	42	21	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	398	detect	42	21	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	499	detect	42	21	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	450	detect	42	21	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	503	detect	42	21	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	627	detect	42	21	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	705	detect	42	21	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1120	detect	42	21	<1.0	**1.3**
	SPP	SPP-SSComp-01_20171025_NM	749	detect	42	21	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	112	detect	42	21	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	103	detect	42	21	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	1010	detect	42	21	<1.0	**1.2**
	SS15,16-HP9	SS15-HP9-(0-2)c	1450	detect	42	21	<1.0	**1.7**
	SS3,4-HP16	SS3-HP16-(0-2)c	379	detect	42	21	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	205	detect	42	21	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	298	detect	42	21	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	418	detect	42	21	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	239	detect	42	21	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Barium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	188	detect	42	21	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	405	detect	42	21	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	387	detect	42	21	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	458	detect	42	21	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	239	detect	42	21	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	603	detect	42	21	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	831	detect	42	21	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	517	detect	42	21	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	697	detect	42	21	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	417	detect	42	21	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	1450	detect	42	21	<1.0	**1.7**
	SE16-HP13	SE16-HP13-(0-2)c	773	detect	42	21	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	1380	detect	42	21	<1.0	**1.7**
	SE1-HP1a	SE1-HP1a-(0-2)c	1530	detect	42	21	<1.0	**1.8**
	SE2-HP1a	SE2-HP1a-(0-2)c	2840	detect	42	21	**1.7**	**3.4**
	SE3-HP1	SE3-HP1-(0-2)c	221	detect	42	21	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	249	detect	42	21	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	713	detect	42	21	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	749	detect	42	21	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	299	detect	42	21	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	255	detect	42	21	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	1320	detect	42	21	<1.0	**1.6**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	171	detect	42	21	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	165	detect	42	21	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Clark Fork River from Ingestion of River Surface Water

Barium

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Adjacent to Site	50-CFR	SW50-CFR	0.126	detect	20.8	41.7	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.127	detect	20.8	41.7	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0818	detect	20.8	41.7	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0932	detect	20.8	41.7	<1.0	<1.0
	51-CFR	SW51-CFR	0.129	detect	20.8	41.7	<1.0	<1.0
	52-CFR	SW52-CFR	0.124	detect	20.8	41.7	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.105	detect	20.8	41.7	<1.0	<1.0
	54-CFR	SW54-CFR	0.106	detect	20.8	41.7	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0982	detect	20.8	41.7	<1.0	<1.0
	55-CFR	SW55-CFR	0.123	detect	20.8	41.7	<1.0	<1.0
	56-CFR	SW56-CFR	0.12	detect	20.8	41.7	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0982	detect	20.8	41.7	<1.0	<1.0
	57-CFR	SW57-CFR	0.118	detect	20.8	41.7	<1.0	<1.0
	58-CFR	SW58-CFR	0.124	detect	20.8	41.7	<1.0	<1.0
	59-CFR	SW59-CFR	0.121	detect	20.8	41.7	<1.0	<1.0
	60-CFR	SW60-CFR	0.123	detect	20.8	41.7	<1.0	<1.0
	61-CFR	SW61-CFR	0.126	detect	20.8	41.7	<1.0	<1.0
	62-CFR	SW62-CFR	0.133	detect	20.8	41.7	<1.0	<1.0
	63-CFR	SW63-CFR	0.125	detect	20.8	41.7	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects (ND) are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Catbird from Ingestion of Creek Surface Water

Barium

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.145	detect	20.8	41.7	<1.0	<1.0
	43-OK	SW43-OK	0.142	detect	20.8	41.7	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.25	detect	20.8	41.7	<1.0	<1.0
	37-LV	SW37-LV	0.158	detect	20.8	41.7	<1.0	<1.0
	39-LV	SW39-LV	0.163	detect	20.8	41.7	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Catbird from Ingestion of Pond Surface Water

Barium

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0725	detect	20.8	41.7	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.105	detect	20.8	41.7	<1.0	<1.0
69-HP1a	SW69-HP1a	0.204	detect	20.8	41.7	<1.0	<1.0
73-P5	SW73-P5	0.0417	detect	20.8	41.7	<1.0	<1.0
71-HP7	SW71-HP7	0.0563	detect	20.8	41.7	<1.0	<1.0
72-HP2	SW72-HP2	0.0414	detect	20.8	41.7	<1.0	<1.0
75-HP10	SW75-HP10	0.0226	detect	20.8	41.7	<1.0	<1.0
67-HP12	SW67-HP12	0.0272	detect	20.8	41.7	<1.0	<1.0
68-IBJ	SW68-IBJ	0.133	detect	20.8	41.7	<1.0	<1.0
66-HP13	SW66-HP13	0.0142	detect	20.8	41.7	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0606	detect	20.8	41.7	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0903	detect	20.8	41.7	<1.0	<1.0
70-CWD	SW70-CWD	0.161	detect	20.8	41.7	<1.0	<1.0
64-HP18	SW64-HP18	0.177	detect	20.8	41.7	<1.0	<1.0

#N/A = not analyzed

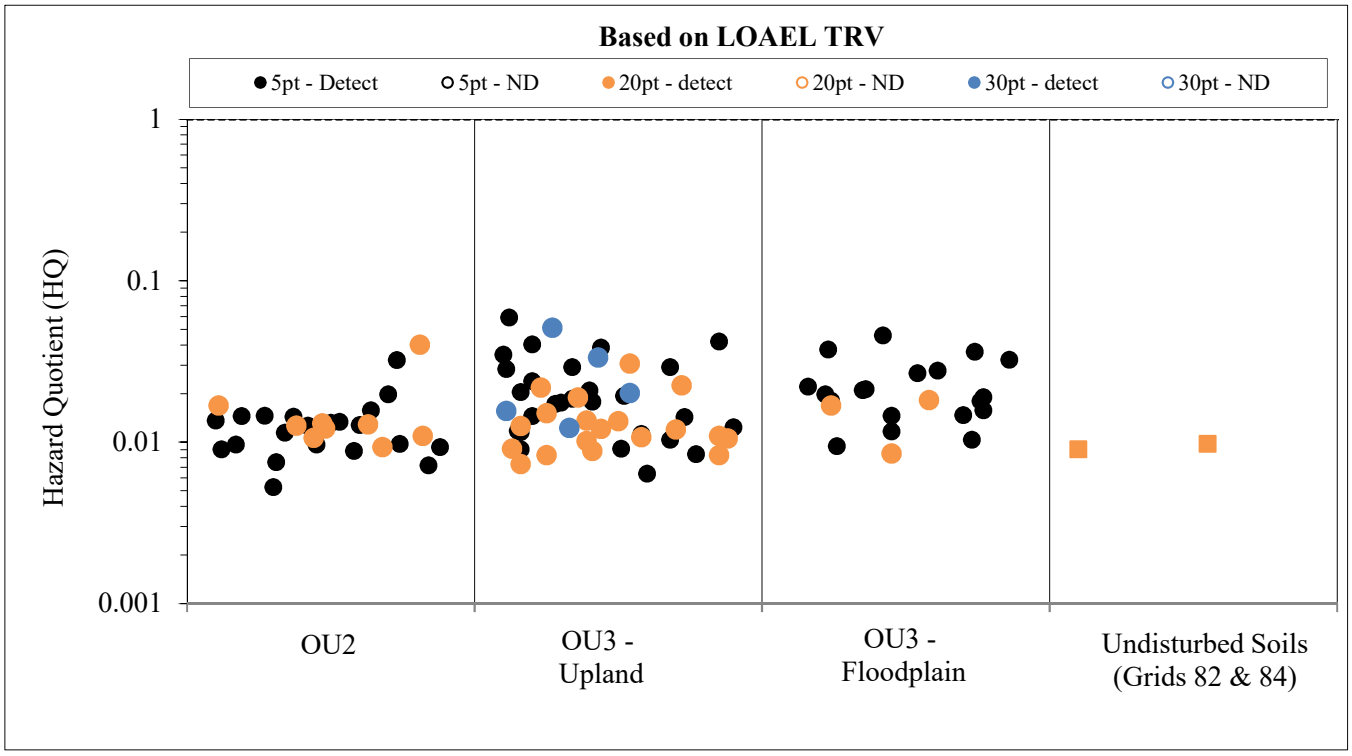
(a) Non-detects are evaluated at 1/2 the reported value.

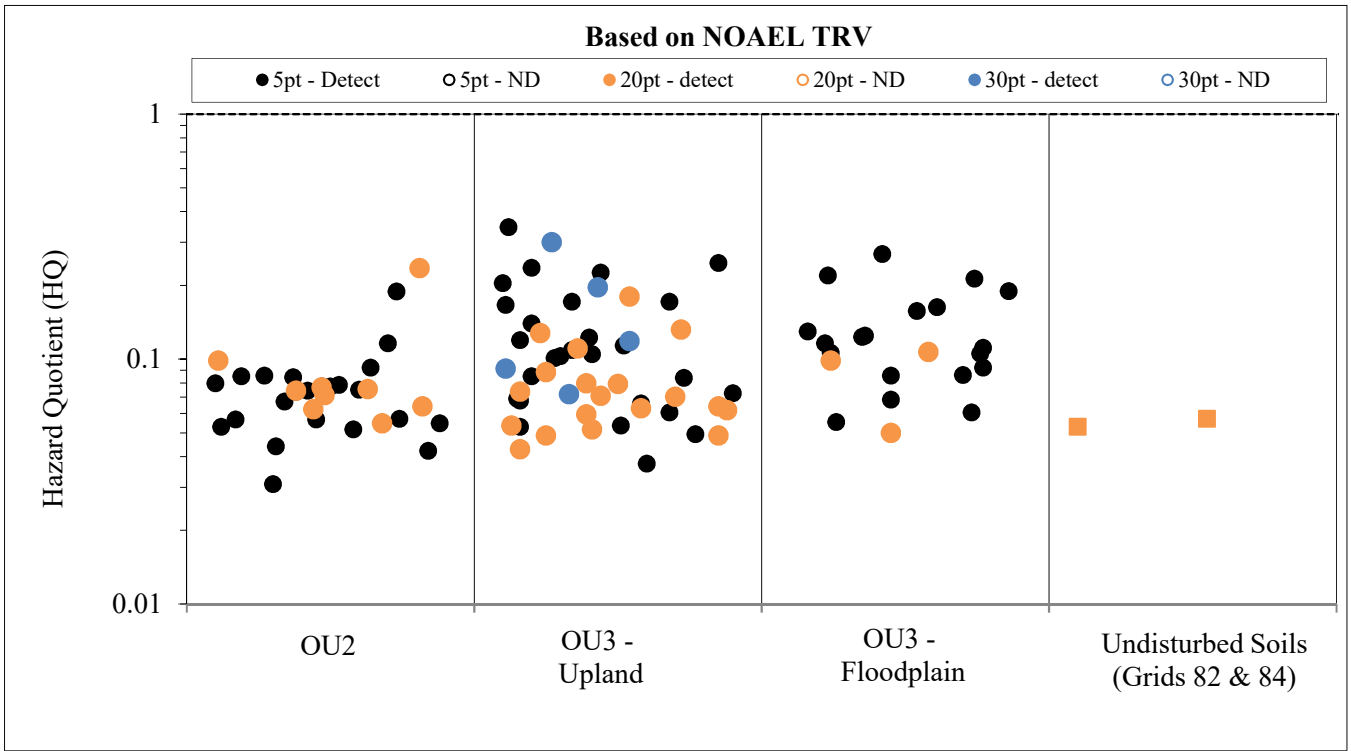
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Food by Exposure Unit/Soil Type

Chromium





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Chromium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.344438	detect	16	3	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.33066	detect	16	3	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.457413	detect	16	3	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.289328	detect	16	3	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.349949	detect	16	3	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.35546	detect	16	3	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.253506	detect	16	3	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	1.088423	detect	16	3	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.297594	detect	16	3	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.537323	detect	16	3	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.143286	detect	16	3	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.195641	detect	16	3	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.264528	detect	16	3	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.253506	detect	16	3	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.363726	detect	16	3	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.311372	detect	16	3	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.394037	detect	16	3	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.358215	detect	16	3	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.347193	detect	16	3	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.427103	detect	16	3	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	16	3	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.203907	detect	16	3	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	16	3	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	16	3	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.876249	detect	16	3	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.396792	detect	16	3	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.391281	detect	16	3	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.24524	detect	16	3	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.344438	detect	16	3	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.341682	detect	16	3	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.369237	detect	16	3	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.239729	detect	16	3	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.358215	detect	16	3	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.262691	detect	16	3	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.262691	detect	16	3	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Chromium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.909315	detect	16	3	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	1.044335	detect	16	3	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.504257	detect	16	3	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.239729	detect	16	3	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.198396	detect	16	3	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.297594	detect	16	3	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.27555	detect	16	3	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.292083	detect	16	3	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.225951	detect	16	3	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.247995	detect	16	3	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.327905	detect	16	3	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.366482	detect	16	3	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.286572	detect	16	3	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.611721	detect	16	3	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.592433	detect	16	3	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.41057	detect	16	3	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.341682	detect	16	3	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.325149	detect	16	3	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.834917	detect	16	3	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.369237	detect	16	3	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.225951	detect	16	3	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.484968	detect	16	3	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.336171	detect	16	3	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.553856	detect	16	3	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.24524	detect	16	3	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.173597	detect	16	3	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	16	3	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.247995	detect	16	3	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1.093934	detect	16	3	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.228707	detect	16	3	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.468435	detect	16	3	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	1.603701	detect	16	3	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.77154	detect	16	3	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.512523	detect	16	3	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.526301	detect	16	3	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.314127	detect	16	3	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.945137	detect	16	3	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.388526	detect	16	3	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.424347	detect	16	3	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.548345	detect	16	3	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.647543	detect	16	3	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1.143533	detect	16	3	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	1.391528	detect	16	3	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.319638	detect	16	3	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.281061	detect	16	3	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	0.793584	detect	16	3	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	0.793584	detect	16	3	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.394037	detect	16	3	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.305861	detect	16	3	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.567633	detect	16	3	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.476702	detect	16	3	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.333416	detect	16	3	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

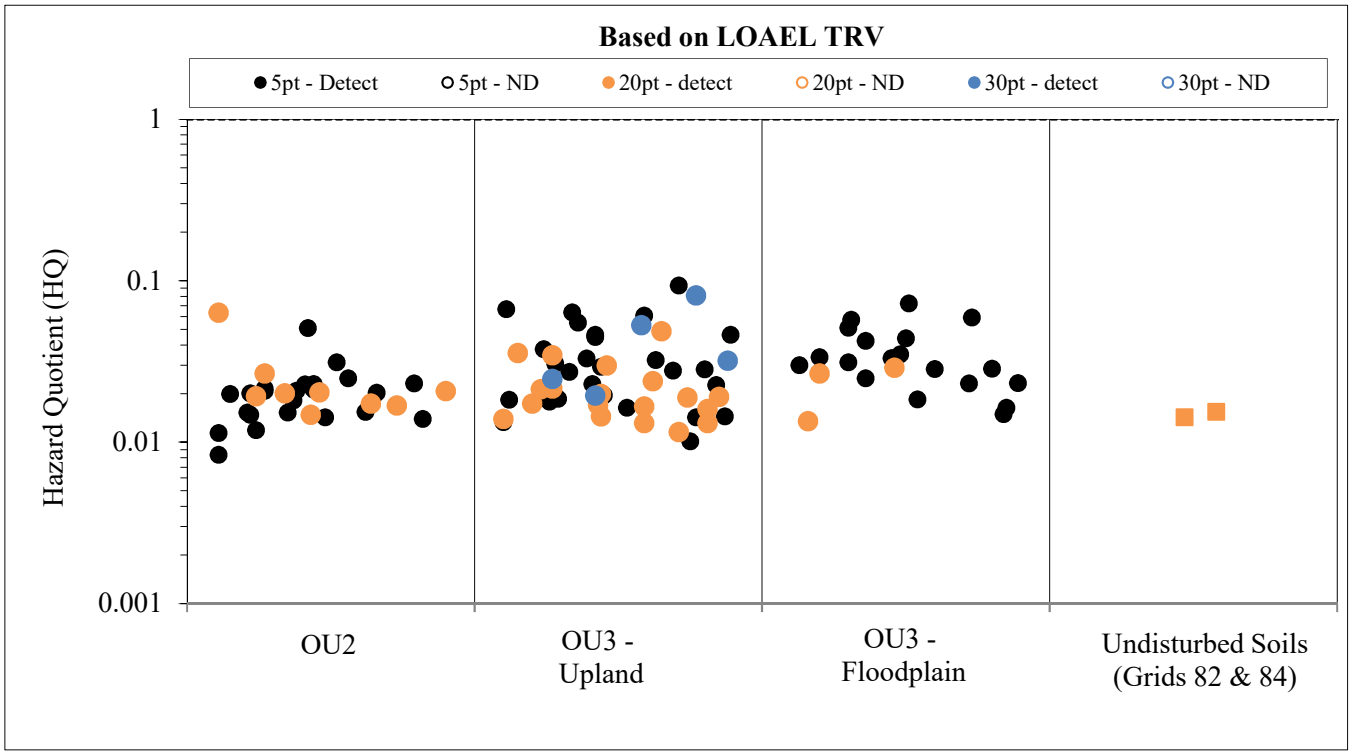
Chromium

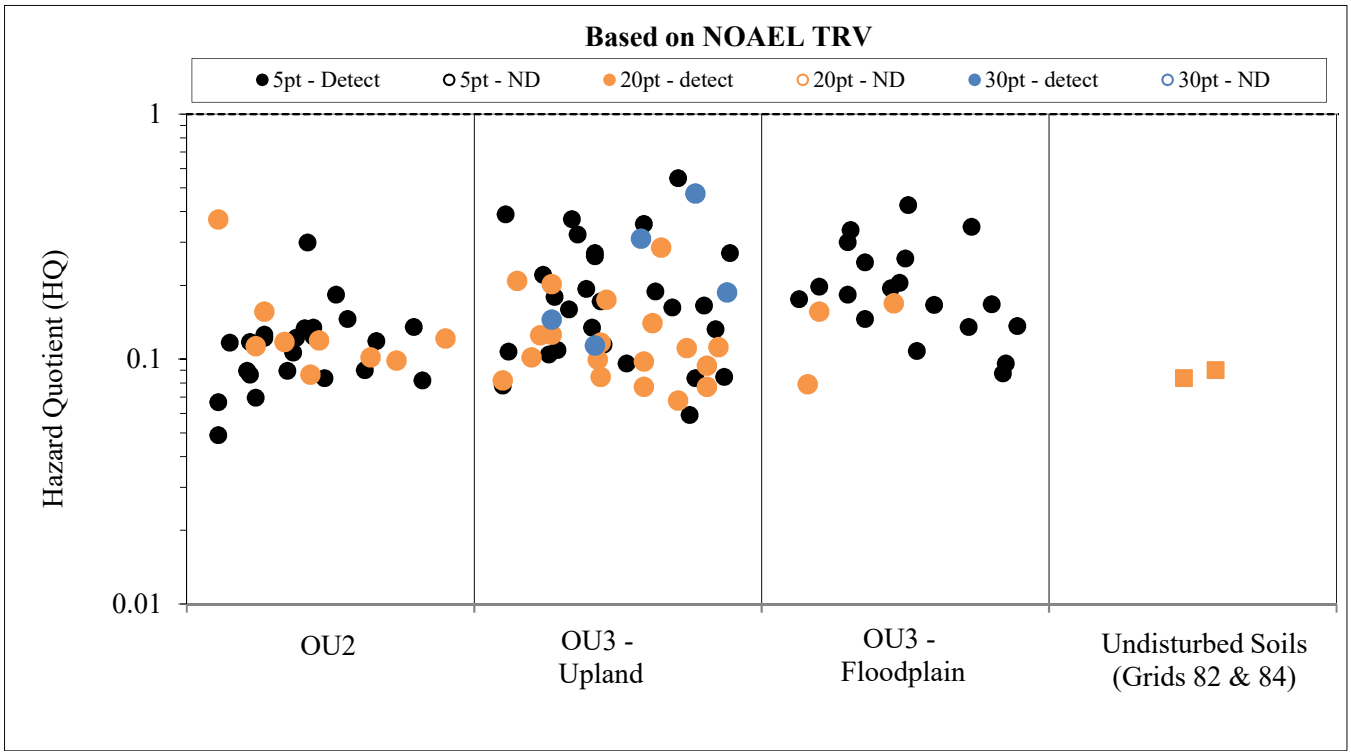
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.231462	detect	16	3	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.457413	detect	16	3	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.49599	detect	16	3	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.537323	detect	16	3	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.256262	detect	16	3	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	0.986469	detect	16	3	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	0.515279	detect	16	3	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	0.570389	detect	16	3	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	1.01678	detect	16	3	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	0.490479	detect	16	3	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.727452	detect	16	3	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	0.427103	detect	16	3	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.600699	detect	16	3	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.487724	detect	16	3	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.578655	detect	16	3	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.316883	detect	16	3	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.399548	detect	16	3	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	0.755007	detect	16	3	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	1.245486	detect	16	3	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	0.281061	detect	16	3	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.396792	detect	16	3	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	0.879005	detect	16	3	<1.0	<1.0
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	0.264528	detect	16	3	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.24524	detect	16	3	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Surface Soil by Exposure Unit/Soil Type

Chromium





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Chromium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	12.5	detect	16	3	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	12	detect	16	3	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	16.6	detect	16	3	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	10.5	detect	16	3	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	12.7	detect	16	3	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	12.9	detect	16	3	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	9.2	detect	16	3	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	39.5	detect	16	3	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	10.8	detect	16	3	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	19.5	detect	16	3	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	5.2	detect	16	3	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	7.1	detect	16	3	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	9.6	detect	16	3	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	9.2	detect	16	3	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	13.2	detect	16	3	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	11.3	detect	16	3	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	14.3	detect	16	3	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	13	detect	16	3	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	12.6	detect	16	3	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	15.5	detect	16	3	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	16	3	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	7.4	detect	16	3	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	16	3	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	16	3	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	31.8	detect	16	3	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	14.4	detect	16	3	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	14.2	detect	16	3	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	8.9	detect	16	3	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	12.5	detect	16	3	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	12.4	detect	16	3	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	13.4	detect	16	3	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	8.7	detect	16	3	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	13	detect	16	3	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	9.533333	detect	16	3	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	9.533333	detect	16	3	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Chromium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	33	detect	16	3	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	37.9	detect	16	3	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	18.3	detect	16	3	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	8.7	detect	16	3	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	7.2	detect	16	3	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	10.8	detect	16	3	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	10	detect	16	3	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	10.6	detect	16	3	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	8.2	detect	16	3	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	9	detect	16	3	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	11.9	detect	16	3	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	13.3	detect	16	3	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	10.4	detect	16	3	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	22.2	detect	16	3	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	21.5	detect	16	3	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	14.9	detect	16	3	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	12.4	detect	16	3	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	11.8	detect	16	3	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	30.3	detect	16	3	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	13.4	detect	16	3	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	8.2	detect	16	3	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	17.6	detect	16	3	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	12.2	detect	16	3	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	20.1	detect	16	3	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	8.9	detect	16	3	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	6.3	detect	16	3	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	16	3	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	9	detect	16	3	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	39.7	detect	16	3	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	8.3	detect	16	3	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	17	detect	16	3	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	58.2	detect	16	3	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	28	detect	16	3	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	18.6	detect	16	3	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	19.1	detect	16	3	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	11.4	detect	16	3	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	34.3	detect	16	3	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	14.1	detect	16	3	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	15.4	detect	16	3	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	19.9	detect	16	3	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	23.5	detect	16	3	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	41.5	detect	16	3	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	50.5	detect	16	3	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	11.6	detect	16	3	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	10.2	detect	16	3	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	28.8	detect	16	3	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	28.8	detect	16	3	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	14.3	detect	16	3	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	11.1	detect	16	3	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	20.6	detect	16	3	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	17.3	detect	16	3	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	12.1	detect	16	3	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Chromium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	8.4	detect	16	3	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	16.6	detect	16	3	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	18	detect	16	3	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	19.5	detect	16	3	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	9.3	detect	16	3	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	35.8	detect	16	3	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	18.7	detect	16	3	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	20.7	detect	16	3	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	36.9	detect	16	3	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	17.8	detect	16	3	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	26.4	detect	16	3	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	15.5	detect	16	3	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	21.8	detect	16	3	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	17.7	detect	16	3	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	21	detect	16	3	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	11.5	detect	16	3	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	14.5	detect	16	3	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	27.4	detect	16	3	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	45.2	detect	16	3	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	10.2	detect	16	3	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	14.4	detect	16	3	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	31.9	detect	16	3	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	9.6	detect	16	3	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	8.9	detect	16	3	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Clark Fork River from Ingestion of River Surface Water

Chromium

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Adjacent to Site	50-CFR	SW50-CFR	0.0002	detect	2.66	15.6	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0004	ND	2.66	15.6	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0008	detect	2.66	15.6	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0005	ND	2.66	15.6	<1.0	<1.0
	51-CFR	SW51-CFR	0.0002	detect	2.66	15.6	<1.0	<1.0
	52-CFR	SW52-CFR	0.0002	ND	2.66	15.6	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0002	ND	2.66	15.6	<1.0	<1.0
	54-CFR	SW54-CFR	0.0002	ND	2.66	15.6	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0005	ND	2.66	15.6	<1.0	<1.0
	55-CFR	SW55-CFR	0.0002	ND	2.66	15.6	<1.0	<1.0
	56-CFR	SW56-CFR	0.0002	ND	2.66	15.6	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0005	ND	2.66	15.6	<1.0	<1.0
	57-CFR	SW57-CFR	0.0002	ND	2.66	15.6	<1.0	<1.0
	58-CFR	SW58-CFR	0.0002	ND	2.66	15.6	<1.0	<1.0
	59-CFR	SW59-CFR	0.0002	ND	2.66	15.6	<1.0	<1.0
	60-CFR	SW60-CFR	0.0002	detect	2.66	15.6	<1.0	<1.0
	61-CFR	SW61-CFR	0.0002	detect	2.66	15.6	<1.0	<1.0
	62-CFR	SW62-CFR	0.0002	ND	2.66	15.6	<1.0	<1.0
	63-CFR	SW63-CFR	0.0003	detect	2.66	15.6	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects (ND) are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Catbird from Ingestion of Creek Surface Water

Chromium

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	3E-04	detect	2.66	15.6	<1.0	<1.0
	43-OK	SW43-OK	3E-04	detect	2.66	15.6	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	5E-04	detect	2.66	15.6	<1.0	<1.0
	37-LV	SW37-LV	3E-04	detect	2.66	15.6	<1.0	<1.0
	39-LV	SW39-LV	2E-04	detect	2.66	15.6	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Catbird from Ingestion of Pond Surface Water

Chromium

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0002	ND	2.66	15.6	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0016	detect	2.66	15.6	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0013	detect	2.66	15.6	<1.0	<1.0
73-P5	SW73-P5	0.0016	ND	2.66	15.6	<1.0	<1.0
71-HP7	SW71-HP7	0.0011	detect	2.66	15.6	<1.0	<1.0
72-HP2	SW72-HP2	0.0011	detect	2.66	15.6	<1.0	<1.0
75-HP10	SW75-HP10	0.0008	ND	2.66	15.6	<1.0	<1.0
67-HP12	SW67-HP12	0.0011	detect	2.66	15.6	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0002	detect	2.66	15.6	<1.0	<1.0
66-HP13	SW66-HP13	0.001	detect	2.66	15.6	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0009	detect	2.66	15.6	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0015	detect	2.66	15.6	<1.0	<1.0
70-CWD	SW70-CWD	0.0002	ND	2.66	15.6	<1.0	<1.0
64-HP18	SW64-HP18	0.0008	ND	2.66	15.6	<1.0	<1.0

#N/A = not analyzed

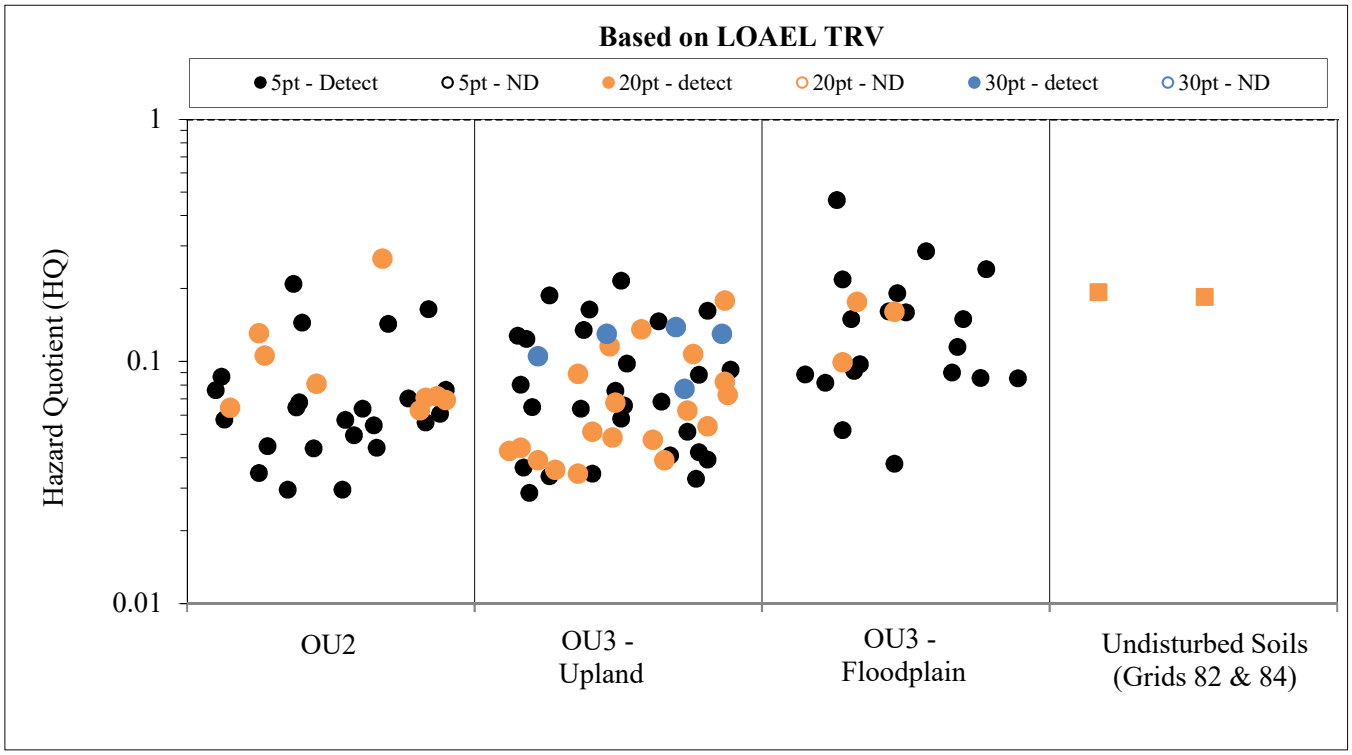
(a) Non-detects are evaluated at 1/2 the reported value.

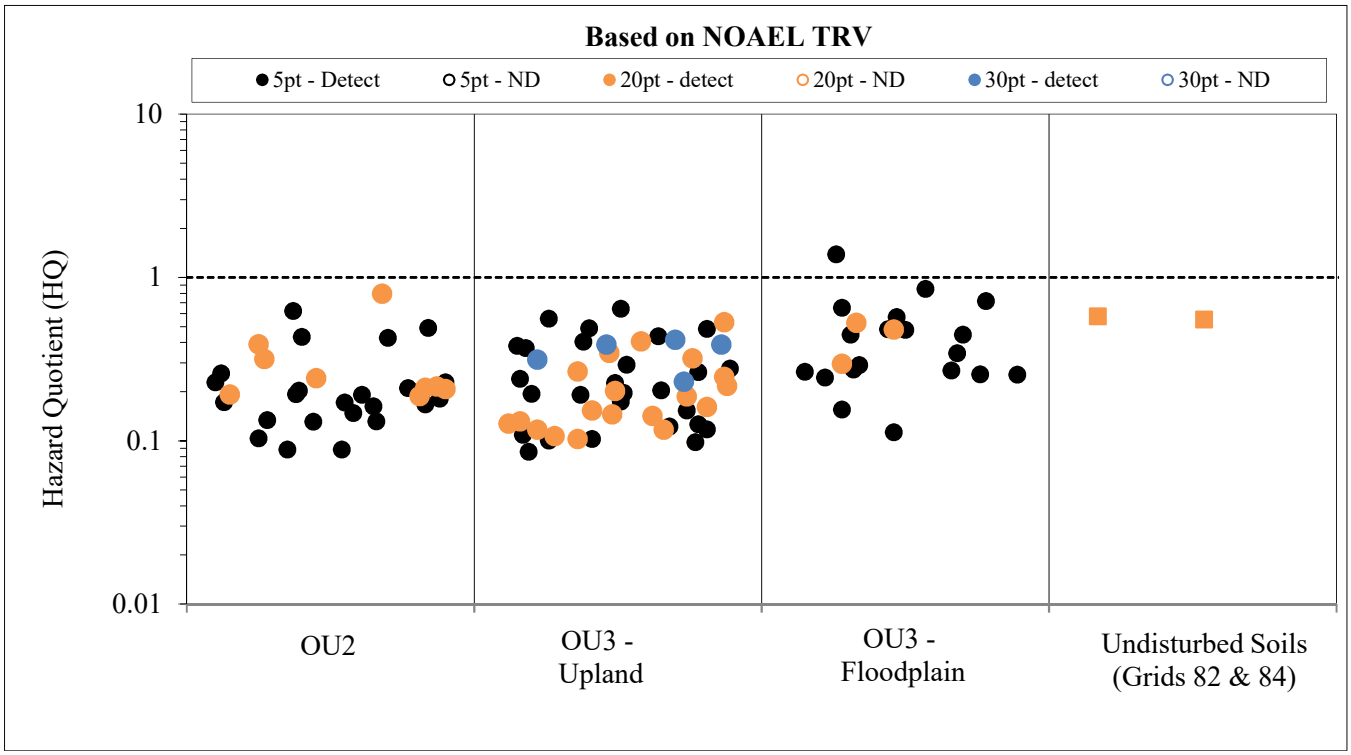
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Food by Exposure Unit/Soil Type

Copper





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Copper

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	1.707055	detect	12	4	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	1.460701	detect	12	4	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	5.597669	detect	12	4	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	1.515321	detect	12	4	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	2.752541	detect	12	4	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	1.490526	detect	12	4	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	1.355657	detect	12	4	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	2.231057	detect	12	4	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	1.32544	detect	12	4	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	1.823766	detect	12	4	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.729713	detect	12	4	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.92141	detect	12	4	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	1.345595	detect	12	4	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	1.14705	detect	12	4	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	1.213767	detect	12	4	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	1.480593	detect	12	4	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	1.60908	detect	12	4	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	3.007754	detect	12	4	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	1.27993	detect	12	4	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	1.208656	detect	12	4	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	12	4	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.942785	detect	12	4	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	12	4	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	12	4	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	3.463099	detect	12	4	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	3.044731	detect	12	4	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	1.360684	detect	12	4	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	1.043158	detect	12	4	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	4.402706	detect	12	4	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	1.177915	detect	12	4	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	1.604162	detect	12	4	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.926762	detect	12	4	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	1.430796	detect	12	4	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.622833	detect	12	4	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.622833	detect	12	4	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Copper

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	2.743226	detect	12	4	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	1.949271	detect	12	4	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	1.223981	detect	12	4	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.724086	detect	12	4	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.752123	detect	12	4	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.82398	detect	12	4	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.926762	detect	12	4	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	1.136732	detect	12	4	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.82398	detect	12	4	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	1.079707	detect	12	4	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	1.001115	detect	12	4	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	1.022174	detect	12	4	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	1.530172	detect	12	4	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	2.859487	detect	12	4	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	2.259509	detect	12	4	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	1.736317	detect	12	4	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	1.320395	detect	12	4	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	1.872146	detect	12	4	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	3.759737	detect	12	4	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	1.425804	detect	12	4	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.899941	detect	12	4	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	1.365708	detect	12	4	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	1.38578	detect	12	4	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	1.857646	detect	12	4	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	1.079707	detect	12	4	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.724086	detect	12	4	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	12	4	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.603275	detect	12	4	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	3.449367	detect	12	4	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.707145	detect	12	4	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	1.594322	detect	12	4	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	3.081673	detect	12	4	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	4.542288	detect	12	4	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	2.434241	detect	12	4	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	2.687277	detect	12	4	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.768833	detect	12	4	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	1.345595	detect	12	4	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	1.687515	detect	12	4	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	2.21207	detect	12	4	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	2.743226	detect	12	4	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	3.408148	detect	12	4	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	2.845556	detect	12	4	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	2.924426	detect	12	4	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.829452	detect	12	4	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.88917	detect	12	4	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	3.946044	detect	12	4	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	2.607849	detect	12	4	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.862128	detect	12	4	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.690108	detect	12	4	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	2.064362	detect	12	4	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	1.435786	detect	12	4	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	1.623821	detect	12	4	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

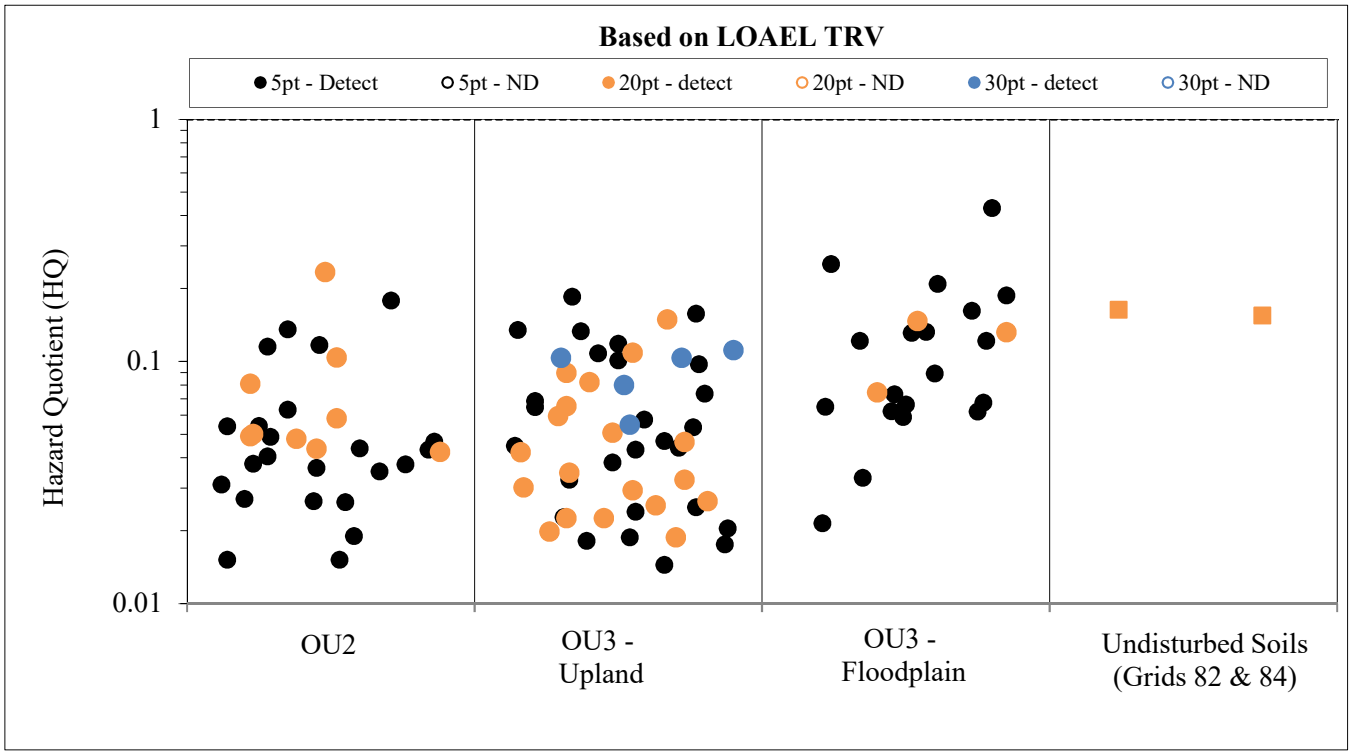
Copper

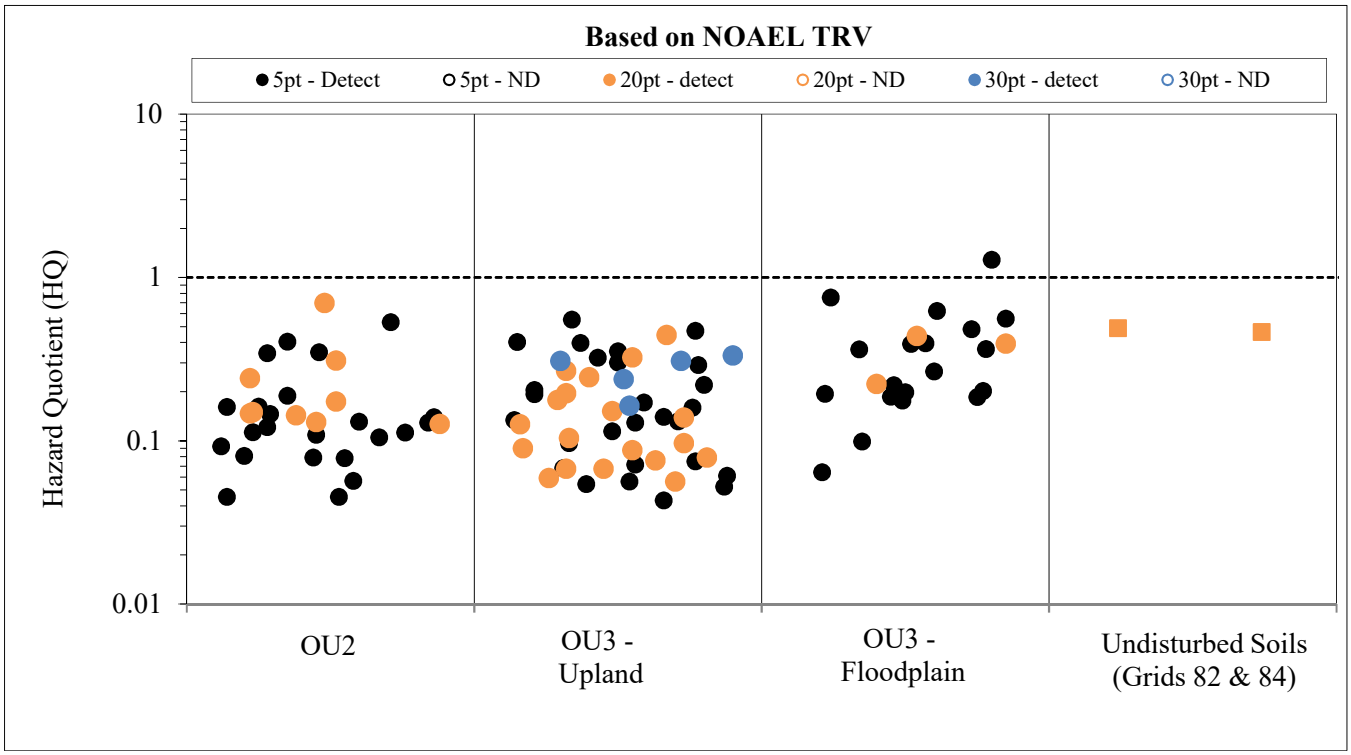
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	2.088255	detect	12	4	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	3.380649	detect	12	4	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	3.714206	detect	12	4	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	2.420118	detect	12	4	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.796508	detect	12	4	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	9.767683	detect	12	4	<1.0	**1.4**
	SE11-HP11	SE11-HP11-(0-2)c	3.362308	detect	12	4	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	1.862481	detect	12	4	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	4.596252	detect	12	4	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	1.896284	detect	12	4	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	4.03672	detect	12	4	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	1.925205	detect	12	4	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	1.721693	detect	12	4	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	1.794671	detect	12	4	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	2.054797	detect	12	4	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	1.095307	detect	12	4	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	1.799523	detect	12	4	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	5.062507	detect	12	4	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	5.997348	detect	12	4	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	3.15085	detect	12	4	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	3.155458	detect	12	4	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	3.394401	detect	12	4	<1.0	<1.0
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	4.072954	detect	12	4	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	3.887034	detect	12	4	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Surface Soil by Exposure Unit/Soil Type

Copper





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Copper

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	28.2	detect	12	4	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	23.2	detect	12	4	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	113	detect	12	4	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	24.3	detect	12	4	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	50.2	detect	12	4	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	23.8	detect	12	4	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	21.1	detect	12	4	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	39.1	detect	12	4	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	20.5	detect	12	4	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	30.6	detect	12	4	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	9.2	detect	12	4	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	12.7	detect	12	4	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	20.9	detect	12	4	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	17	detect	12	4	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	18.3	detect	12	4	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	23.6	detect	12	4	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	26.2	detect	12	4	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	55.7	detect	12	4	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	19.6	detect	12	4	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	18.2	detect	12	4	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	12	4	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	13.1	detect	12	4	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	12	4	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	12	4	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	65.6	detect	12	4	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	56.5	detect	12	4	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	21.2	detect	12	4	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	15	detect	12	4	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	86.3	detect	12	4	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	17.6	detect	12	4	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	26.1	detect	12	4	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	12.8	detect	12	4	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	22.6	detect	12	4	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	7.333333	detect	12	4	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	7.333333	detect	12	4	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Copper

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	50	detect	12	4	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	33.2	detect	12	4	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	18.5	detect	12	4	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	9.1	detect	12	4	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	9.6	detect	12	4	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	10.9	detect	12	4	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	12.8	detect	12	4	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	16.8	detect	12	4	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	10.9	detect	12	4	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	15.7	detect	12	4	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	14.2	detect	12	4	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	14.6	detect	12	4	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	24.6	detect	12	4	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	52.5	detect	12	4	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	39.7	detect	12	4	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	28.8	detect	12	4	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	20.4	detect	12	4	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	31.6	detect	12	4	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	72.1	detect	12	4	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	22.5	detect	12	4	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	12.3	detect	12	4	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	21.3	detect	12	4	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	21.7	detect	12	4	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	31.3	detect	12	4	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	15.7	detect	12	4	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	9.1	detect	12	4	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	12	4	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	7	detect	12	4	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	65.3	detect	12	4	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	8.8	detect	12	4	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	25.9	detect	12	4	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	57.3	detect	12	4	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	89.4	detect	12	4	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	43.4	detect	12	4	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	48.8	detect	12	4	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	9.9	detect	12	4	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	20.9	detect	12	4	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	27.8	detect	12	4	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	38.7	detect	12	4	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	50	detect	12	4	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	64.4	detect	12	4	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	52.2	detect	12	4	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	53.9	detect	12	4	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	11	detect	12	4	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	12.1	detect	12	4	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	76.2	detect	12	4	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	47.1	detect	12	4	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	11.6	detect	12	4	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	8.5	detect	12	4	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	35.6	detect	12	4	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	22.7	detect	12	4	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	26.5	detect	12	4	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Copper

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	36.1	detect	12	4	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	63.8	detect	12	4	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	71.1	detect	12	4	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	43.1	detect	12	4	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	10.4	detect	12	4	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	208	detect	12	4	<1.0	**1.3**
	SE11-HP11	SE11-HP11-(0-2)c	63.4	detect	12	4	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	31.4	detect	12	4	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	90.6	detect	12	4	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	32.1	detect	12	4	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	78.2	detect	12	4	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	32.7	detect	12	4	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	28.5	detect	12	4	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	30	detect	12	4	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	35.4	detect	12	4	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	16	detect	12	4	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	30.1	detect	12	4	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	101	detect	12	4	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	122	detect	12	4	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	58.8	detect	12	4	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	58.9	detect	12	4	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	64.1	detect	12	4	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	79	detect	12	4	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	74.9	detect	12	4	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Clark Fork River from Ingestion of River Surface Water

Copper

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Adjacent to Site	50-CFR	SW50-CFR	0.002	detect	4.05	12.1	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0254	detect	4.05	12.1	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0131	detect	4.05	12.1	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.002	detect	4.05	12.1	<1.0	<1.0
	51-CFR	SW51-CFR	0.0021	detect	4.05	12.1	<1.0	<1.0
	52-CFR	SW52-CFR	0.0043	detect	4.05	12.1	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0299	detect	4.05	12.1	<1.0	<1.0
	54-CFR	SW54-CFR	0.0032	detect	4.05	12.1	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0015	detect	4.05	12.1	<1.0	<1.0
	55-CFR	SW55-CFR	0.0025	detect	4.05	12.1	<1.0	<1.0
	56-CFR	SW56-CFR	0.0023	detect	4.05	12.1	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0014	detect	4.05	12.1	<1.0	<1.0
	57-CFR	SW57-CFR	0.0027	detect	4.05	12.1	<1.0	<1.0
	58-CFR	SW58-CFR	0.0027	detect	4.05	12.1	<1.0	<1.0
	59-CFR	SW59-CFR	0.0026	detect	4.05	12.1	<1.0	<1.0
	60-CFR	SW60-CFR	0.0029	detect	4.05	12.1	<1.0	<1.0
	61-CFR	SW61-CFR	0.003	detect	4.05	12.1	<1.0	<1.0
	62-CFR	SW62-CFR	0.0026	detect	4.05	12.1	<1.0	<1.0
	63-CFR	SW63-CFR	0.0026	detect	4.05	12.1	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects (ND) are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Catbird from Ingestion of Creek Surface Water

Copper

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.002	detect	4.05	12.1	<1.0	<1.0
	43-OK	SW43-OK	0.002	detect	4.05	12.1	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	9E-04	detect	4.05	12.1	<1.0	<1.0
	37-LV	SW37-LV	0.002	detect	4.05	12.1	<1.0	<1.0
	39-LV	SW39-LV	0.002	detect	4.05	12.1	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Catbird from Ingestion of Pond Surface Water

Copper

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0007	detect	4.05	12.1	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0138	detect	4.05	12.1	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0036	detect	4.05	12.1	<1.0	<1.0
73-P5	SW73-P5	0.0014	detect	4.05	12.1	<1.0	<1.0
71-HP7	SW71-HP7	0.0025	detect	4.05	12.1	<1.0	<1.0
72-HP2	SW72-HP2	0.0035	detect	4.05	12.1	<1.0	<1.0
75-HP10	SW75-HP10	0.0018	detect	4.05	12.1	<1.0	<1.0
67-HP12	SW67-HP12	0.0018	detect	4.05	12.1	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0006	detect	4.05	12.1	<1.0	<1.0
66-HP13	SW66-HP13	0.0033	detect	4.05	12.1	<1.0	<1.0
65-HP13a	SW65-HP13a	0.006	detect	4.05	12.1	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0196	detect	4.05	12.1	<1.0	<1.0
70-CWD	SW70-CWD	0.0016	detect	4.05	12.1	<1.0	<1.0
64-HP18	SW64-HP18	0.0024	detect	4.05	12.1	<1.0	<1.0

#N/A = not analyzed

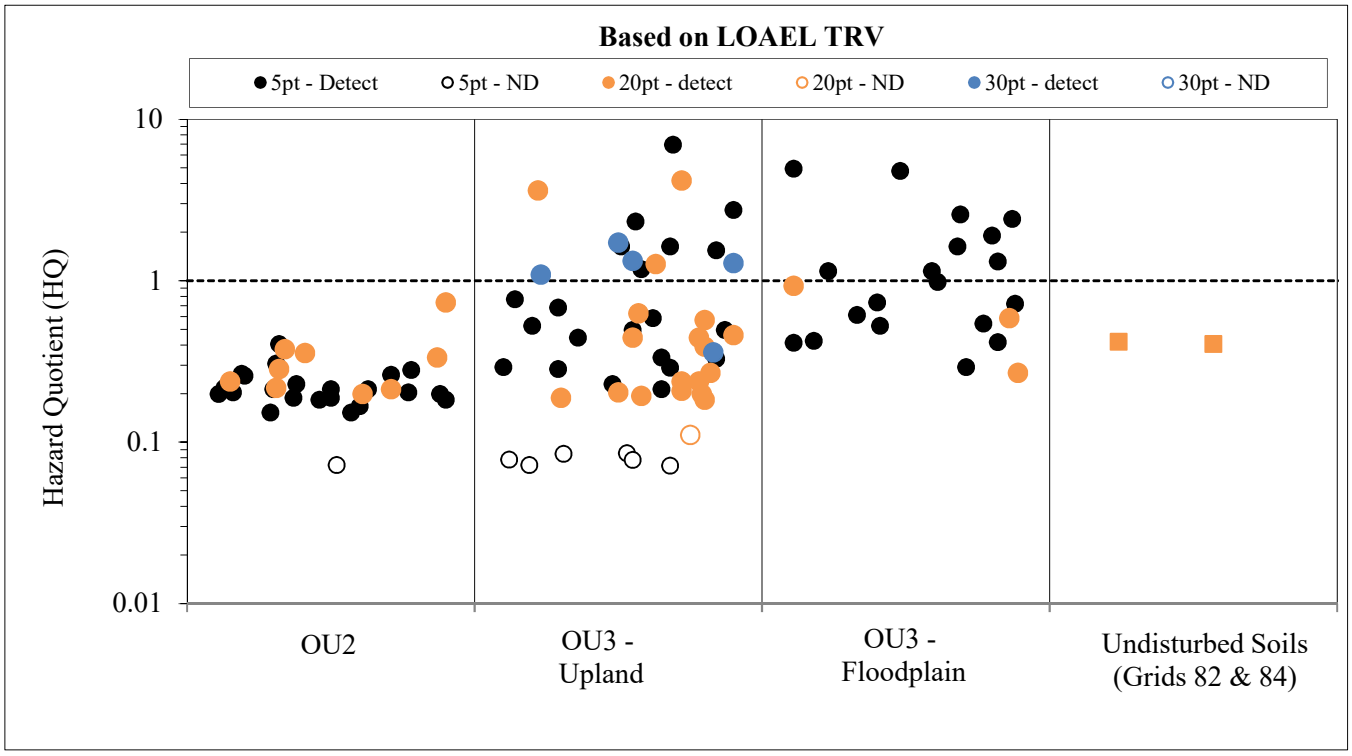
(a) Non-detects are evaluated at 1/2 the reported value.

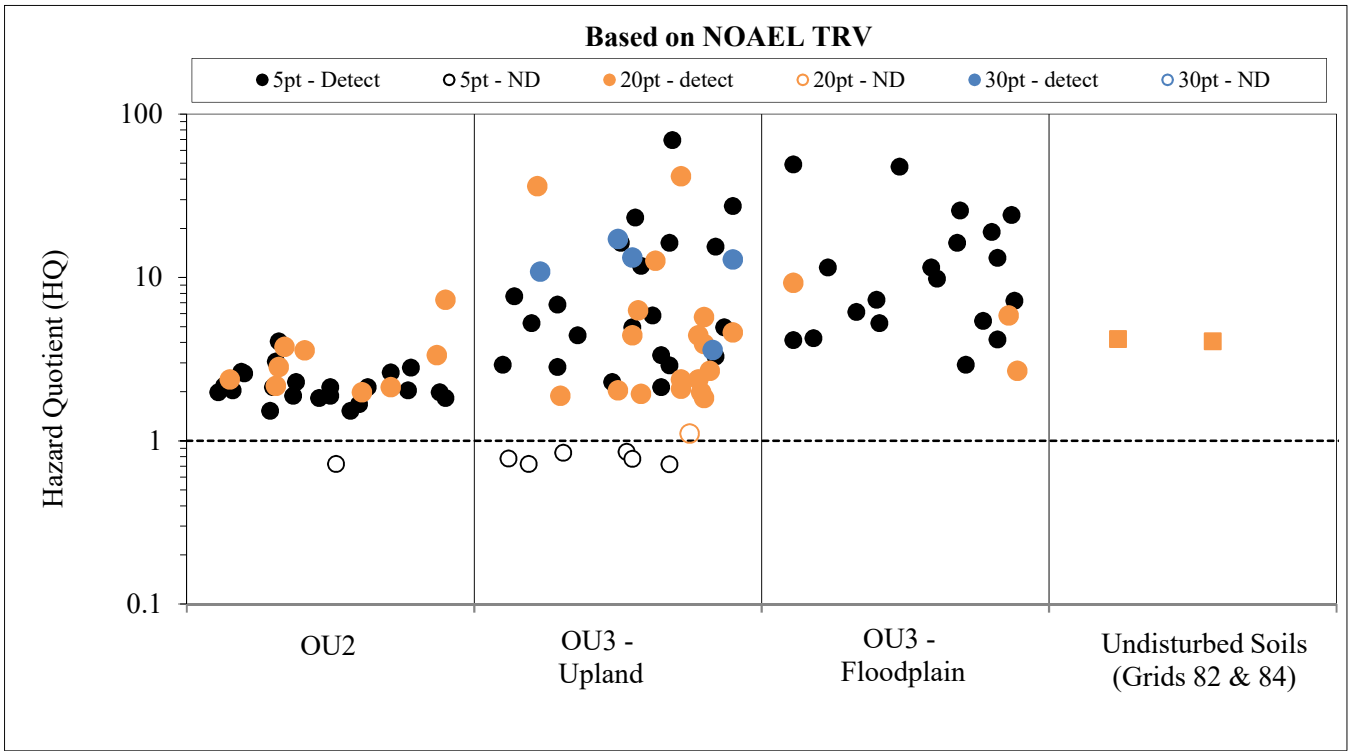
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Food by Exposure Unit/Soil Type

Mercury





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Mercury

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.081547	detect	0	0	<1.0	**7.3**
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.026421	detect	0	0	<1.0	**2.4**
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.042004	detect	0	0	<1.0	**3.8**
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.037226	detect	0	0	<1.0	**3.3**
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.031593	detect	0	0	<1.0	**2.8**
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.024182	detect	0	0	<1.0	**2.2**
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.023697	detect	0	0	<1.0	**2.1**
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.03982	detect	0	0	<1.0	**3.6**
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.02214	detect	0	0	<1.0	**2.0**
	LF-1	LF-1-SS_4/18/14_NM	0.029526	detect	0	0	<1.0	**2.6**
	SB2a,3a-IN	SB2a-IN-(0-2)	0.023697	detect	0	0	<1.0	**2.1**
	SS10-IN	SS10-IN-(0-2)c	0.021001	detect	0	0	<1.0	**1.9**
	SS11-IN	SS11-IN-(0-2)c	0.045182	detect	0	0	<1.0	**4.1**
	SS12-IN	SS12-IN-(0-2)c	0.021001	detect	0	0	<1.0	**1.9**
	SS13-IN	SS13-IN-(0-2)c	0.020393	detect	0	0	<1.0	**1.8**
	SS14-IN	SS14-IN-(0-2)c	0.029163	detect	0	0	<1.0	**2.6**
	SS15-IN	SS15-IN-(0-2)c	0.024182	detect	0	0	<1.0	**2.2**
	SS16-IN	SS16-IN-(0-2)c	0.031261	detect	0	0	<1.0	**2.8**
	SS17-IN	SS17-IN-(0-2)c	0.02556	detect	0	0	<1.0	**2.3**
	SS1-IN	SS1-IN-(0-2)c	0.020393	detect	0	0	<1.0	**1.8**
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.028793	detect	0	0	<1.0	**2.6**
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.022677	detect	0	0	<1.0	**2.0**
	SS33-IN	SS33-IN-(0-2)c	0.008035	ND	0	0	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.023697	detect	0	0	<1.0	**2.1**
	SS4-IN	SS4-IN-(0-2)c	0.018659	detect	0	0	<1.0	**1.7**
	SS5-IN	SS5-IN-(0-2)c	0.023697	detect	0	0	<1.0	**2.1**
	SS6-IN	SS6-IN-(0-2)c	0.022677	detect	0	0	<1.0	**2.0**
	SS7-IN	SS7-IN-(0-2)c	0.034104	detect	0	0	<1.0	**3.1**
	SS8-IN	SS8-IN-(0-2)c	0.02214	detect	0	0	<1.0	**2.0**
	SS9-IN	SS9-IN-(0-2)c	0.02214	detect	0	0	<1.0	**2.0**
	HDPT-SS	BACKFILL-HDPT-SS	0.017021	detect	0	0	<1.0	**1.5**
	TSB-SS	BACKFILL-TSB-SS	0.017021	detect	0	0	<1.0	**1.5**

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Mercury

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.12128	detect	0	0	**1.1**	**10.9**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.181978	detect	0	0	**1.6**	**16.3**
	CRP-1	CRP-1-SS_4/10/14_NM	0.08564	detect	0	0	<1.0	**7.7**
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.020393	detect	0	0	<1.0	**1.8**
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.022677	detect	0	0	<1.0	**2.0**
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.029884	detect	0	0	<1.0	**2.7**
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.026421	detect	0	0	<1.0	**2.4**
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.023195	detect	0	0	<1.0	**2.1**
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.021001	detect	0	0	<1.0	**1.9**
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.02214	detect	0	0	<1.0	**2.0**
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.043623	detect	0	0	<1.0	**3.9**
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.051343	detect	0	0	<1.0	**4.6**
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.04937	detect	0	0	<1.0	**4.4**
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.141321	detect	0	0	**1.3**	**12.7**
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.463892	detect	0	0	**4.2**	**41.6**
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.063683	detect	0	0	<1.0	**5.7**
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.04937	detect	0	0	<1.0	**4.4**
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.403176	detect	0	0	**3.6**	**36.2**
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.06997	detect	0	0	<1.0	**6.3**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.021582	detect	0	0	<1.0	**1.9**
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.026421	detect	0	0	<1.0	**2.4**
	HP16-1	HP16-1-SS_4/10/14_NM	0.075896	detect	0	0	<1.0	**6.8**
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.031593	detect	0	0	<1.0	**2.8**
	HP18-1	HP18-1-SS_4/10/14_NM	0.0551	detect	0	0	<1.0	**4.9**
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.023697	detect	0	0	<1.0	**2.1**
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.008035	ND	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.007989	ND	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.181978	detect	0	0	**1.6**	**16.3**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.037226	detect	0	0	<1.0	**3.3**
	IBK-1	IBK-1-SS_4/16/14_NM	0.02556	detect	0	0	<1.0	**2.3**
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.305281	detect	0	0	**2.7**	**27.4**
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.065295	detect	0	0	<1.0	**5.9**
	P3	P3-SSComp-01_20171020_NM	0.012327	ND	0	0	<1.0	**1.1**
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.009436	ND	0	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.036681	detect	0	0	<1.0	**3.3**
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.009541	ND	0	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.04937	detect	0	0	<1.0	**4.4**
	P8	P8-SSComp-01_20171025_NM	0.147784	detect	0	0	**1.3**	**13.3**
	P8dc	P8dc-SSComp-01_20171024_NM	0.143485	detect	0	0	**1.3**	**12.9**
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.131436	detect	0	0	**1.2**	**11.8**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.171821	detect	0	0	**1.5**	**15.4**
	SPP	SPP-SSComp-01_20171025_NM	0.191992	detect	0	0	**1.7**	**17.2**
	SS1,2-HP18	SS1-HP18-(0-2)c	0.008642	ND	0	0	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.008682	ND	0	0	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	0.774285	detect	0	0	**6.9**	**69.4**
	SS15,16-HP9	SS15-HP9-(0-2)c	0.259251	detect	0	0	**2.3**	**23.3**
	SS3,4-HP16	SS3-HP16-(0-2)c	0.0551	detect	0	0	<1.0	**4.9**
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.032244	detect	0	0	<1.0	**2.9**
	SS7,8-HP13	SS7-HP13-(0-2)c	0.058653	detect	0	0	<1.0	**5.3**
	SS9,10-HP12	SS9-HP12-(0-2)c	0.032564	detect	0	0	<1.0	**2.9**
	SWBA	SWBA-SSComp-01_20171024_NM	0.040069	detect	0	0	<1.0	**3.6**

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

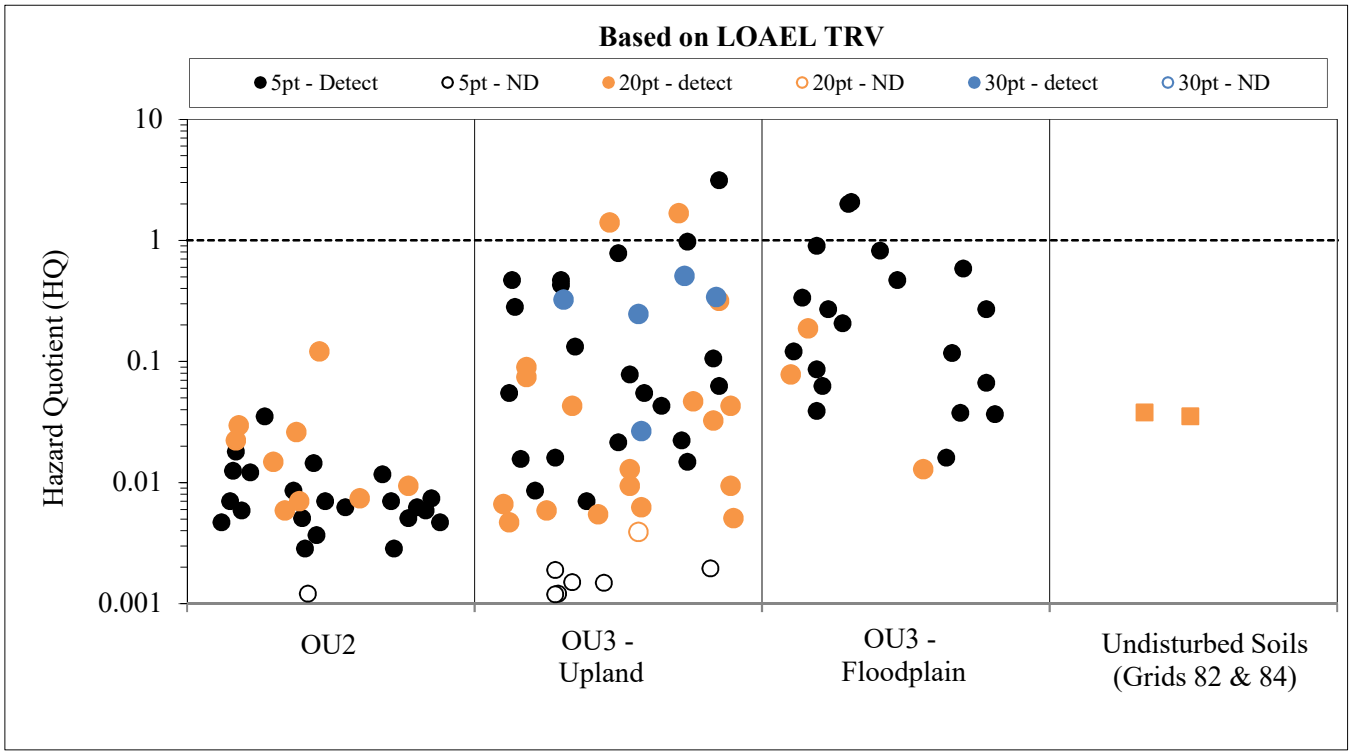
Mercury

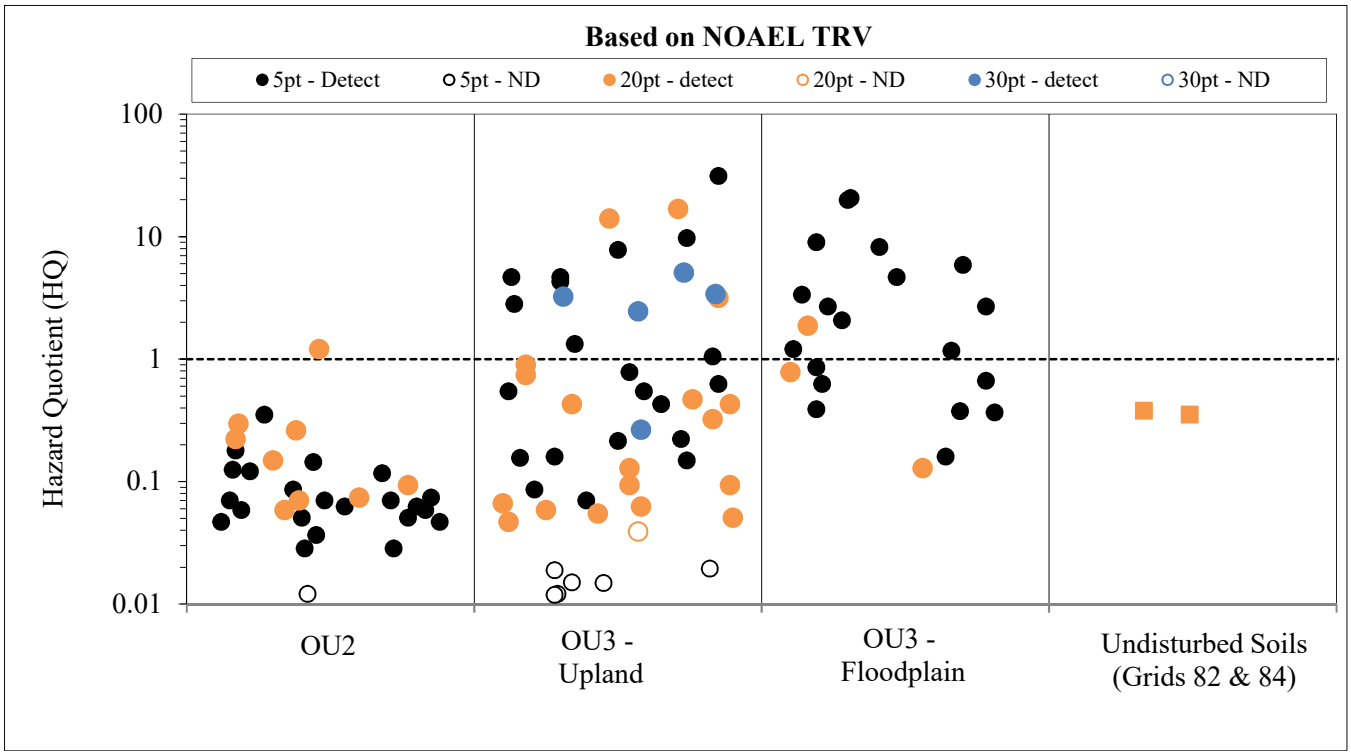
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.029884	detect	0	0	<1.0	**2.7**
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.065295	detect	0	0	<1.0	**5.9**
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.103549	detect	0	0	<1.0	**9.3**
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.109592	detect	0	0	<1.0	**9.8**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.032564	detect	0	0	<1.0	**2.9**
	SE10-HP11	SE10-HP11-(0-2)c	0.532258	detect	0	0	**4.8**	**47.7**
	SE11-HP11	SE11-HP11-(0-2)c	0.128084	detect	0	0	**1.1**	**11.5**
	SE12-HP12	SE12-HP12-(0-2)c	0.058653	detect	0	0	<1.0	**5.3**
	SE13-HP12	SE13-HP12-(0-2)c	0.287018	detect	0	0	**2.6**	**25.7**
	SE14-HP13	SE14-HP13-(0-2)c	0.046477	detect	0	0	<1.0	**4.2**
	SE15-HP13	SE15-HP13-(0-2)c	0.128084	detect	0	0	**1.1**	**11.5**
	SE16-HP13	SE16-HP13-(0-2)c	0.047321	detect	0	0	<1.0	**4.2**
	SE17-HP13a	SE17-HP13a-(0-2)c	0.046049	detect	0	0	<1.0	**4.1**
	SE1-HP1a	SE1-HP1a-(0-2)c	0.081547	detect	0	0	<1.0	**7.3**
	SE2-HP1a	SE2-HP1a-(0-2)c	0.080157	detect	0	0	<1.0	**7.2**
	SE3-HP1	SE3-HP1-(0-2)c	0.060365	detect	0	0	<1.0	**5.4**
	SE4-HP1	SE4-HP1-(0-2)c	0.268562	detect	0	0	**2.4**	**24.1**
	SE5-HP2	SE5-HP2-(0-2)c	0.146713	detect	0	0	**1.3**	**13.2**
	SE6-HP7	SE6-HP7-(0-2)c	0.549211	detect	0	0	**4.9**	**49.3**
	SE7-HP7	SE7-HP7-(0-2)c	0.068436	detect	0	0	<1.0	**6.1**
	SE8-HP10	SE8-HP10-(0-2)c	0.181978	detect	0	0	**1.6**	**16.3**
	SE9-HP10	SE9-HP10-(0-2)c	0.211659	detect	0	0	**1.9**	**19.0**
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	0.046689	detect	0	0	<1.0	**4.2**
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.045182	detect	0	0	<1.0	**4.1**

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Surface Soil by Exposure Unit/Soil Type

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APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

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EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.31	detect	0	0	<1.0	**1.2**
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.024	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.076	detect	0	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.057	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.038	detect	0	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.019	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.018	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.067	detect	0	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.015	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.032	detect	0	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.018	detect	0	0	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.013	detect	0	0	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.09	detect	0	0	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.013	detect	0	0	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.012	detect	0	0	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.031	detect	0	0	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.019	detect	0	0	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.037	detect	0	0	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.022	detect	0	0	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.012	detect	0	0	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.03	detect	0	0	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.016	detect	0	0	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.0031	ND	0	0	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.018	detect	0	0	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.0094	detect	0	0	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.018	detect	0	0	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.016	detect	0	0	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.046	detect	0	0	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.015	detect	0	0	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.015	detect	0	0	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.007283	detect	0	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.007283	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

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EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.63	detect	0	0	<1.0	**2.5**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	1.2	detect	0	0	<1.0	**4.7**
	CRP-1	CRP-1-SS_4/10/14_NM	0.34	detect	0	0	<1.0	**1.3**
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.012	detect	0	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.016	detect	0	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.033	detect	0	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.024	detect	0	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.017	detect	0	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.013	detect	0	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.015	detect	0	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.083	detect	0	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.12	detect	0	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.11	detect	0	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.81	detect	0	0	<1.0	**3.2**
	Grid 53	Grid 53-SSComp-01_20171020_NM	4.3	detect	0	0	**1.7**	**16.8**
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.19	detect	0	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.11	detect	0	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	3.6	detect	0	0	**1.4**	**14.1**
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.23	detect	0	0	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.014	detect	0	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.024	detect	0	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.27	detect	0	0	<1.0	**1.1**
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.038	detect	0	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.14	detect	0	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.018	detect	0	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.0031	ND	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.00305	ND	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1.2	detect	0	0	<1.0	**4.7**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.057	detect	0	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.022	detect	0	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	2.5	detect	0	0	<1.0	**9.8**
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.2	detect	0	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.01	ND	0	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.00485	ND	0	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.055	detect	0	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.005	ND	0	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.11	detect	0	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.87	detect	0	0	<1.0	**3.4**
	P8dc	P8dc-SSComp-01_20171024_NM	0.83	detect	0	0	<1.0	**3.2**
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.72	detect	0	0	<1.0	**2.8**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1.1	detect	0	0	<1.0	**4.3**
	SPP	SPP-SSComp-01_20171025_NM	1.3	detect	0	0	<1.0	**5.1**
	SS1,2-HP18	SS1-HP18-(0-2)c	0.0038	ND	0	0	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.00385	ND	0	0	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	8	detect	0	0	**3.1**	**31.3**
	SS15,16-HP9	SS15-HP9-(0-2)c	2	detect	0	0	<1.0	**7.8**
	SS3,4-HP16	SS3-HP16-(0-2)c	0.14	detect	0	0	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.04	detect	0	0	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.16	detect	0	0	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.041	detect	0	0	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.068	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

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EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.033	detect	0	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.2	detect	0	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.48	detect	0	0	<1.0	**1.9**
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.53	detect	0	0	<1.0	**2.1**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.041	detect	0	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	5.1	detect	0	0	**2.0**	**19.9**
	SE11-HP11	SE11-HP11-(0-2)c	0.69	detect	0	0	<1.0	**2.7**
	SE12-HP12	SE12-HP12-(0-2)c	0.16	detect	0	0	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	2.3	detect	0	0	<1.0	**9.0**
	SE14-HP13	SE14-HP13-(0-2)c	0.096	detect	0	0	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.69	detect	0	0	<1.0	**2.7**
	SE16-HP13	SE16-HP13-(0-2)c	0.1	detect	0	0	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.094	detect	0	0	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.31	detect	0	0	<1.0	**1.2**
	SE2-HP1a	SE2-HP1a-(0-2)c	0.3	detect	0	0	<1.0	**1.2**
	SE3-HP1	SE3-HP1-(0-2)c	0.17	detect	0	0	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	2.1	detect	0	0	<1.0	**8.2**
	SE5-HP2	SE5-HP2-(0-2)c	0.86	detect	0	0	<1.0	**3.4**
	SE6-HP7	SE6-HP7-(0-2)c	5.3	detect	0	0	**2.1**	**20.7**
	SE7-HP7	SE7-HP7-(0-2)c	0.22	detect	0	0	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	1.2	detect	0	0	<1.0	**4.7**
	SE9-HP10	SE9-HP10-(0-2)c	1.5	detect	0	0	<1.0	**5.9**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.097	detect	0	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.09	detect	0	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Clark Fork River from Ingestion of River Surface Water

Mercury

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Adjacent to Site	50-CFR	SW50-CFR	8E-05	ND	0.0064	0.064	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	8E-05	ND	0.0064	0.064	<1.0	<1.0
	CFR2	CFR2_20180523_NM	8E-05	ND	0.0064	0.064	<1.0	<1.0
	SW3-CFR	SW3-CFR	2E-05	ND	0.0064	0.064	<1.0	<1.0
	51-CFR	SW51-CFR	8E-05	ND	0.0064	0.064	<1.0	<1.0
	52-CFR	SW52-CFR	8E-05	ND	0.0064	0.064	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	8E-05	ND	0.0064	0.064	<1.0	<1.0
	54-CFR	SW54-CFR	8E-05	ND	0.0064	0.064	<1.0	<1.0
	SW2-CFR	SW2-CFR	2E-05	ND	0.0064	0.064	<1.0	<1.0
	55-CFR	SW55-CFR	8E-05	ND	0.0064	0.064	<1.0	<1.0
	56-CFR	SW56-CFR	8E-05	ND	0.0064	0.064	<1.0	<1.0
	SW1-CFR	SW1-CFR	2E-05	ND	0.0064	0.064	<1.0	<1.0
	57-CFR	SW57-CFR	8E-05	ND	0.0064	0.064	<1.0	<1.0
	58-CFR	SW58-CFR	8E-05	ND	0.0064	0.064	<1.0	<1.0
	59-CFR	SW59-CFR	8E-05	ND	0.0064	0.064	<1.0	<1.0
	60-CFR	SW60-CFR	8E-05	ND	0.0064	0.064	<1.0	<1.0
	61-CFR	SW61-CFR	8E-05	ND	0.0064	0.064	<1.0	<1.0
	62-CFR	SW62-CFR	8E-05	ND	0.0064	0.064	<1.0	<1.0
	63-CFR	SW63-CFR	8E-05	ND	0.0064	0.064	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects (ND) are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Catbird from Ingestion of Creek Surface Water

Mercury

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	8E-05	ND	0.0064	0.064	<1.0	<1.0
	43-OK	SW43-OK	8E-05	ND	0.0064	0.064	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	3E-05	detect	0.0064	0.064	<1.0	<1.0
	37-LV	SW37-LV	8E-05	ND	0.0064	0.064	<1.0	<1.0
	39-LV	SW39-LV	8E-05	ND	0.0064	0.064	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Catbird from Ingestion of Pond Surface Water

Mercury

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	8E-05	ND	0.0064	0.064	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	8E-05	ND	0.0064	0.064	<1.0	<1.0
69-HP1a	SW69-HP1a	8E-05	ND	0.0064	0.064	<1.0	<1.0
73-P5	SW73-P5	8E-05	ND	0.0064	0.064	<1.0	<1.0
71-HP7	SW71-HP7	8E-05	ND	0.0064	0.064	<1.0	<1.0
72-HP2	SW72-HP2	8E-05	ND	0.0064	0.064	<1.0	<1.0
75-HP10	SW75-HP10	8E-05	ND	0.0064	0.064	<1.0	<1.0
67-HP12	SW67-HP12	8E-05	ND	0.0064	0.064	<1.0	<1.0
68-IBJ	SW68-IBJ	8E-05	ND	0.0064	0.064	<1.0	<1.0
66-HP13	SW66-HP13	8E-05	ND	0.0064	0.064	<1.0	<1.0
65-HP13a	SW65-HP13a	8E-05	ND	0.0064	0.064	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	8E-05	ND	0.0064	0.064	<1.0	<1.0
70-CWD	SW70-CWD	8E-05	ND	0.0064	0.064	<1.0	<1.0
64-HP18	SW64-HP18	8E-05	ND	0.0064	0.064	<1.0	<1.0

#N/A = not analyzed

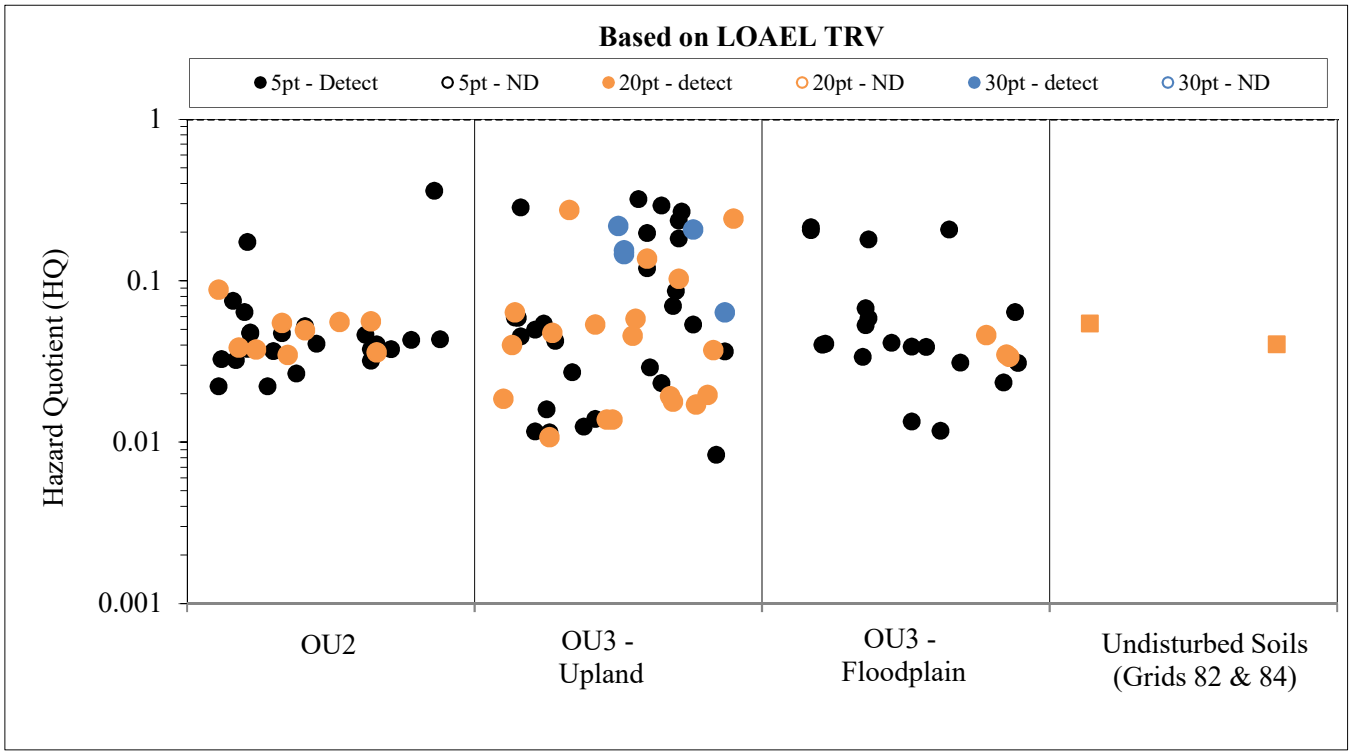
(a) Non-detects are evaluated at 1/2 the reported value.

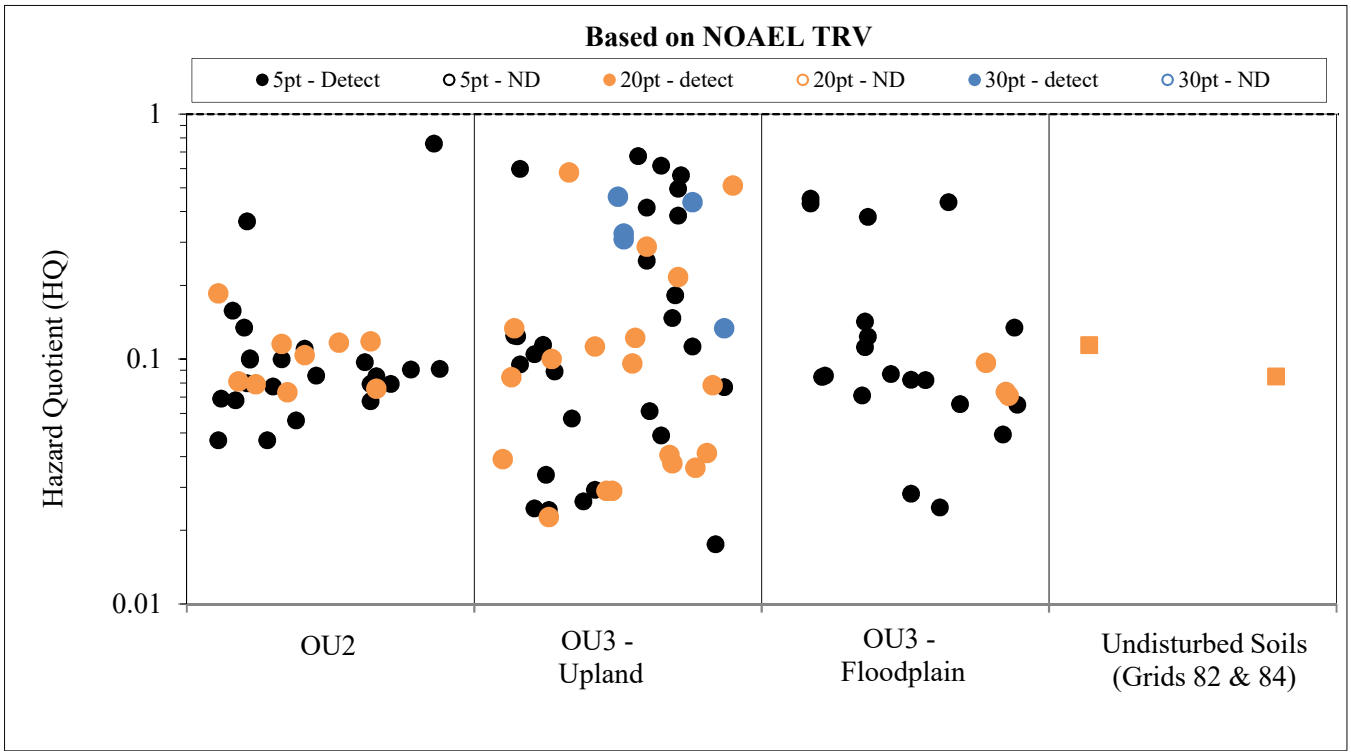
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Food by Exposure Unit/Soil Type

Manganese





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Manganese

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	57.78948	detect	377	179	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	36.36131	detect	377	179	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	24.63713	detect	377	179	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	23.61055	detect	377	179	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	35.96892	detect	377	179	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	32.3559	detect	377	179	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	25.26852	detect	377	179	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	36.8321	detect	377	179	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	22.82038	detect	377	179	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	31.09783	detect	377	179	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	21.15951	detect	377	179	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	30.31115	detect	377	179	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	49.20233	detect	377	179	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	24.71607	detect	377	179	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	17.51325	detect	377	179	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	26.68824	detect	377	179	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	34.39873	detect	377	179	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	41.92708	detect	377	179	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	24.71607	detect	377	179	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	21.47603	detect	377	179	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	377	179	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	24.08445	detect	377	179	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	377	179	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	377	179	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	236.4541	detect	377	179	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	113.8527	detect	377	179	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	28.2643	detect	377	179	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	21.00122	detect	377	179	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	31.01918	detect	377	179	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	28.42183	detect	377	179	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	26.53055	detect	377	179	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	24.87393	detect	377	179	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	31.41242	detect	377	179	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	14.54393	detect	377	179	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	14.54393	detect	377	179	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Manganese

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	96.03569	detect	377	179	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	186.4249	detect	377	179	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	29.68159	detect	377	179	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	9.048516	detect	377	179	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	7.055595	detect	377	179	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	12.65569	detect	377	179	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	9.048516	detect	377	179	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	31.25513	detect	377	179	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	12.89534	detect	377	179	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	24.40029	detect	377	179	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	11.69618	detect	377	179	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	12.17613	detect	377	179	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	26.294	detect	377	179	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	89.83067	detect	377	179	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	35.10544	detect	377	179	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	67.45063	detect	377	179	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	38.08712	detect	377	179	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	41.69213	detect	377	179	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	180.2602	detect	377	179	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	29.9177	detect	377	179	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	11.21583	detect	377	179	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	32.67031	detect	377	179	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	8.178515	detect	377	179	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	38.636	detect	377	179	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	38.87121	detect	377	179	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	7.556949	detect	377	179	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	377	179	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	5.472689	detect	377	179	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	120.043	detect	377	179	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	10.49448	detect	377	179	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	35.10544	detect	377	179	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	129.3228	detect	377	179	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	191.8175	detect	377	179	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	159.4404	detect	377	179	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	175.6355	detect	377	179	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	35.65496	detect	377	179	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	56.85353	detect	377	179	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	78.57195	detect	377	179	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	101.4616	detect	377	179	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	143.2305	detect	377	179	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	154.8106	detect	377	179	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	210.2971	detect	377	179	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	136.2783	detect	377	179	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	15.20763	detect	377	179	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	17.83082	detect	377	179	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	45.84043	detect	377	179	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	27.79163	detect	377	179	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	9.128973	detect	377	179	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	7.653893	detect	377	179	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	23.9265	detect	377	179	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	19.10007	detect	377	179	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	41.69213	detect	377	179	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

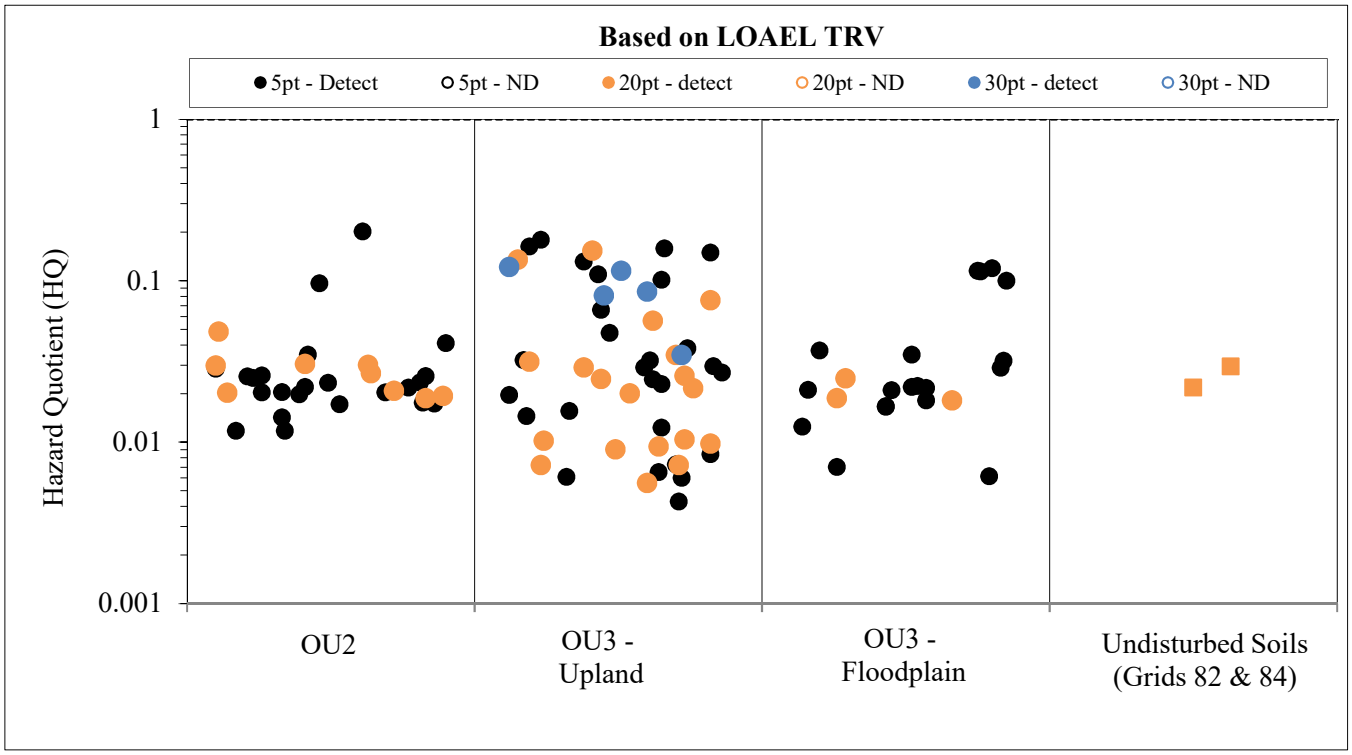
Manganese

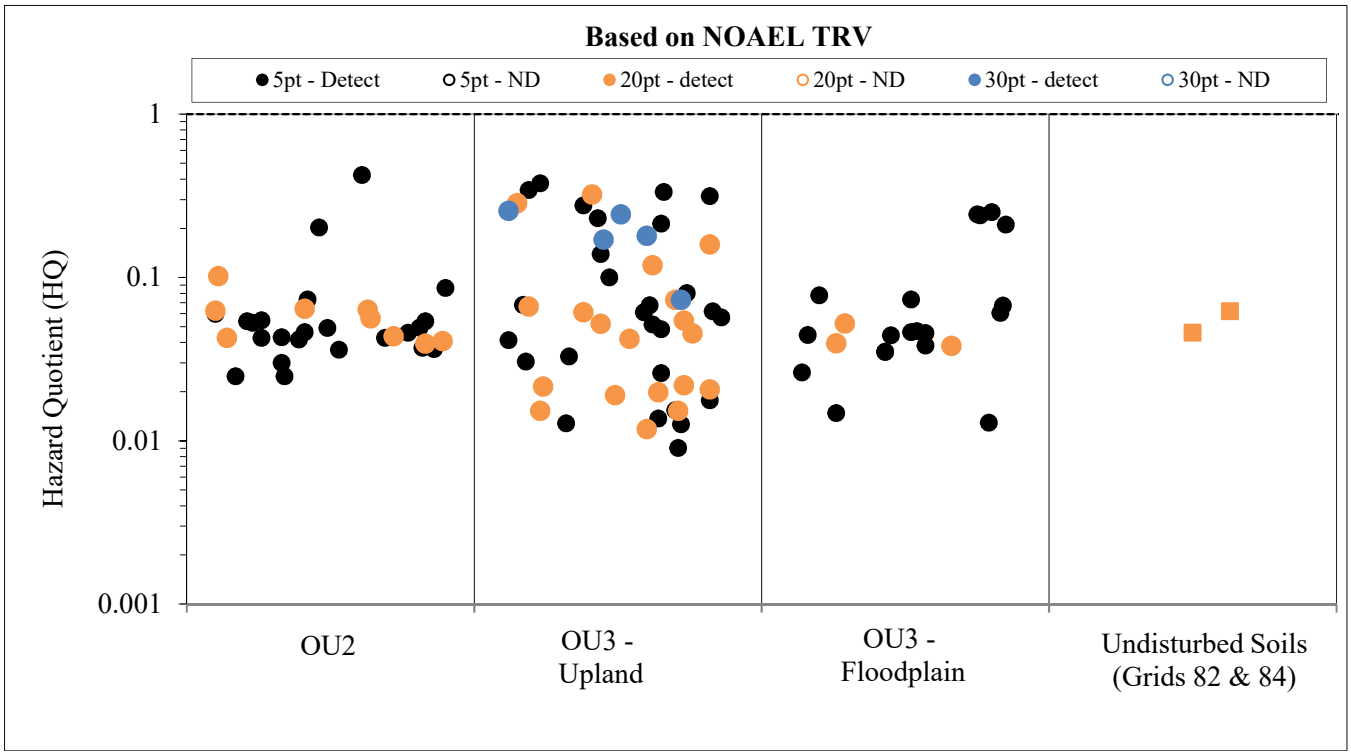
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	22.89942	detect	377	179	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	30.15378	detect	377	179	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	22.10884	detect	377	179	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	44.43217	detect	377	179	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	7.726582	detect	377	179	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	118.4958	detect	377	179	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	34.86989	detect	377	179	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	25.66301	detect	377	179	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	140.9135	detect	377	179	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	27.08239	detect	377	179	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	41.92708	detect	377	179	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	22.18792	detect	377	179	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	26.68824	detect	377	179	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	20.44704	detect	377	179	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	26.37285	detect	377	179	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	15.36684	detect	377	179	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	25.58412	detect	377	179	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	134.7329	detect	377	179	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	136.2783	detect	377	179	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	8.807046	detect	377	179	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	20.28865	detect	377	179	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	38.47919	detect	377	179	<1.0	<1.0
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	35.57646	detect	377	179	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	26.4517	detect	377	179	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Surface Soil by Exposure Unit/Soil Type

Manganese





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Manganese

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	728	detect	377	179	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	454	detect	377	179	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	305	detect	377	179	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	292	detect	377	179	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	449	detect	377	179	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	403	detect	377	179	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	313	detect	377	179	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	460	detect	377	179	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	282	detect	377	179	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	387	detect	377	179	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	261	detect	377	179	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	377	detect	377	179	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	618	detect	377	179	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	306	detect	377	179	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	215	detect	377	179	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	331	detect	377	179	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	429	detect	377	179	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	525	detect	377	179	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	306	detect	377	179	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	265	detect	377	179	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	377	179	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	298	detect	377	179	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	377	179	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	377	179	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	3040	detect	377	179	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	1450	detect	377	179	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	351	detect	377	179	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	259	detect	377	179	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	386	detect	377	179	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	353	detect	377	179	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	329	detect	377	179	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	308	detect	377	179	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	391	detect	377	179	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	177.6667	detect	377	179	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	177.6667	detect	377	179	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Manganese

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	1220	detect	377	179	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	2390	detect	377	179	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	369	detect	377	179	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	109	detect	377	179	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	84.3	detect	377	179	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	154	detect	377	179	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	109	detect	377	179	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	389	detect	377	179	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	157	detect	377	179	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	302	detect	377	179	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	142	detect	377	179	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	148	detect	377	179	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	326	detect	377	179	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	1140	detect	377	179	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	438	detect	377	179	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	852	detect	377	179	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	476	detect	377	179	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	522	detect	377	179	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	2310	detect	377	179	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	372	detect	377	179	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	136	detect	377	179	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	407	detect	377	179	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	98.2	detect	377	179	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	483	detect	377	179	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	486	detect	377	179	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	90.5	detect	377	179	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	377	179	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	64.8	detect	377	179	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1530	detect	377	179	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	127	detect	377	179	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	438	detect	377	179	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	1650	detect	377	179	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	2460	detect	377	179	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	2040	detect	377	179	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	2250	detect	377	179	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	445	detect	377	179	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	716	detect	377	179	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	995	detect	377	179	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	1290	detect	377	179	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	1830	detect	377	179	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	1980	detect	377	179	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	2700	detect	377	179	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	1740	detect	377	179	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	186	detect	377	179	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	219	detect	377	179	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	575	detect	377	179	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	345	detect	377	179	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	110	detect	377	179	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	91.7	detect	377	179	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	296	detect	377	179	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	235	detect	377	179	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	522	detect	377	179	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Manganese

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	283	detect	377	179	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	375	detect	377	179	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	273	detect	377	179	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	557	detect	377	179	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	92.6	detect	377	179	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	1510	detect	377	179	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	435	detect	377	179	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	318	detect	377	179	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	1800	detect	377	179	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	336	detect	377	179	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	525	detect	377	179	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	274	detect	377	179	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	331	detect	377	179	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	252	detect	377	179	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	327	detect	377	179	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	188	detect	377	179	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	317	detect	377	179	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	1720	detect	377	179	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	1740	detect	377	179	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	106	detect	377	179	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	250	detect	377	179	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	481	detect	377	179	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	444	detect	377	179	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	328	detect	377	179	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Clark Fork River from Ingestion of River Surface Water

Manganese

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Adjacent to Site	50-CFR	SW50-CFR	0.0169	detect	179	377	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.287	detect	179	377	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.163	detect	179	377	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0151	detect	179	377	<1.0	<1.0
	51-CFR	SW51-CFR	0.0192	detect	179	377	<1.0	<1.0
	52-CFR	SW52-CFR	0.0893	detect	179	377	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0752	detect	179	377	<1.0	<1.0
	54-CFR	SW54-CFR	0.084	detect	179	377	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0119	detect	179	377	<1.0	<1.0
	55-CFR	SW55-CFR	0.0181	detect	179	377	<1.0	<1.0
	56-CFR	SW56-CFR	0.0205	detect	179	377	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0117	detect	179	377	<1.0	<1.0
	57-CFR	SW57-CFR	0.33	detect	179	377	<1.0	<1.0
	58-CFR	SW58-CFR	0.0184	detect	179	377	<1.0	<1.0
	59-CFR	SW59-CFR	0.0388	detect	179	377	<1.0	<1.0
	60-CFR	SW60-CFR	0.0213	detect	179	377	<1.0	<1.0
	61-CFR	SW61-CFR	0.0228	detect	179	377	<1.0	<1.0
	62-CFR	SW62-CFR	0.0951	detect	179	377	<1.0	<1.0
	63-CFR	SW63-CFR	0.0136	detect	179	377	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects (ND) are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Catbird from Ingestion of Creek Surface Water

Manganese

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.008	detect	179	377	<1.0	<1.0
	43-OK	SW43-OK	0.008	detect	179	377	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.007	detect	179	377	<1.0	<1.0
	37-LV	SW37-LV	0.008	detect	179	377	<1.0	<1.0
	39-LV	SW39-LV	0.128	detect	179	377	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Catbird from Ingestion of Pond Surface Water

Manganese

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0316	detect	179	377	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.428	detect	179	377	<1.0	<1.0
69-HP1a	SW69-HP1a	0.383	detect	179	377	<1.0	<1.0
73-P5	SW73-P5	0.0716	detect	179	377	<1.0	<1.0
71-HP7	SW71-HP7	1.94	detect	179	377	<1.0	<1.0
72-HP2	SW72-HP2	0.99	detect	179	377	<1.0	<1.0
75-HP10	SW75-HP10	3.69	detect	179	377	<1.0	<1.0
67-HP12	SW67-HP12	2.15	detect	179	377	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0714	detect	179	377	<1.0	<1.0
66-HP13	SW66-HP13	0.654	detect	179	377	<1.0	<1.0
65-HP13a	SW65-HP13a	0.768	detect	179	377	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.953	detect	179	377	<1.0	<1.0
70-CWD	SW70-CWD	0.0101	detect	179	377	<1.0	<1.0
64-HP18	SW64-HP18	0.281	detect	179	377	<1.0	<1.0

#N/A = not analyzed

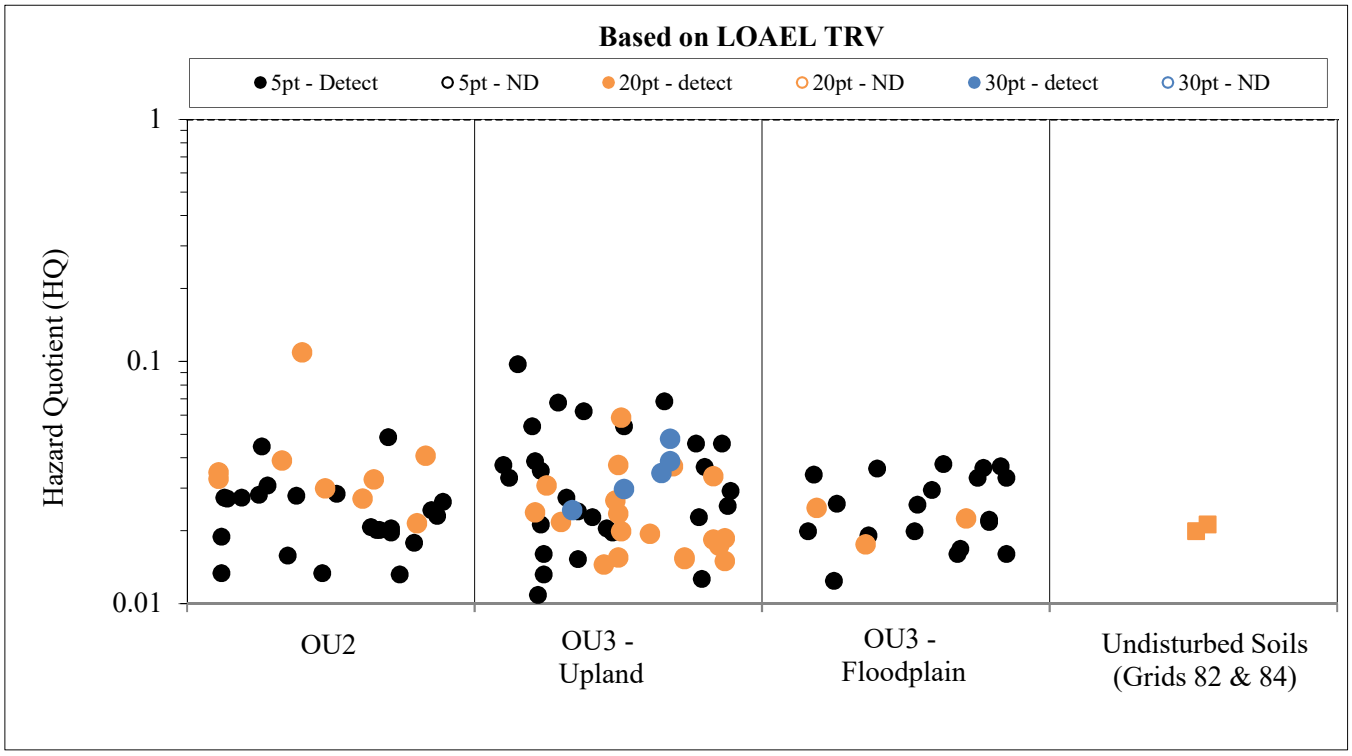
(a) Non-detects are evaluated at 1/2 the reported value.

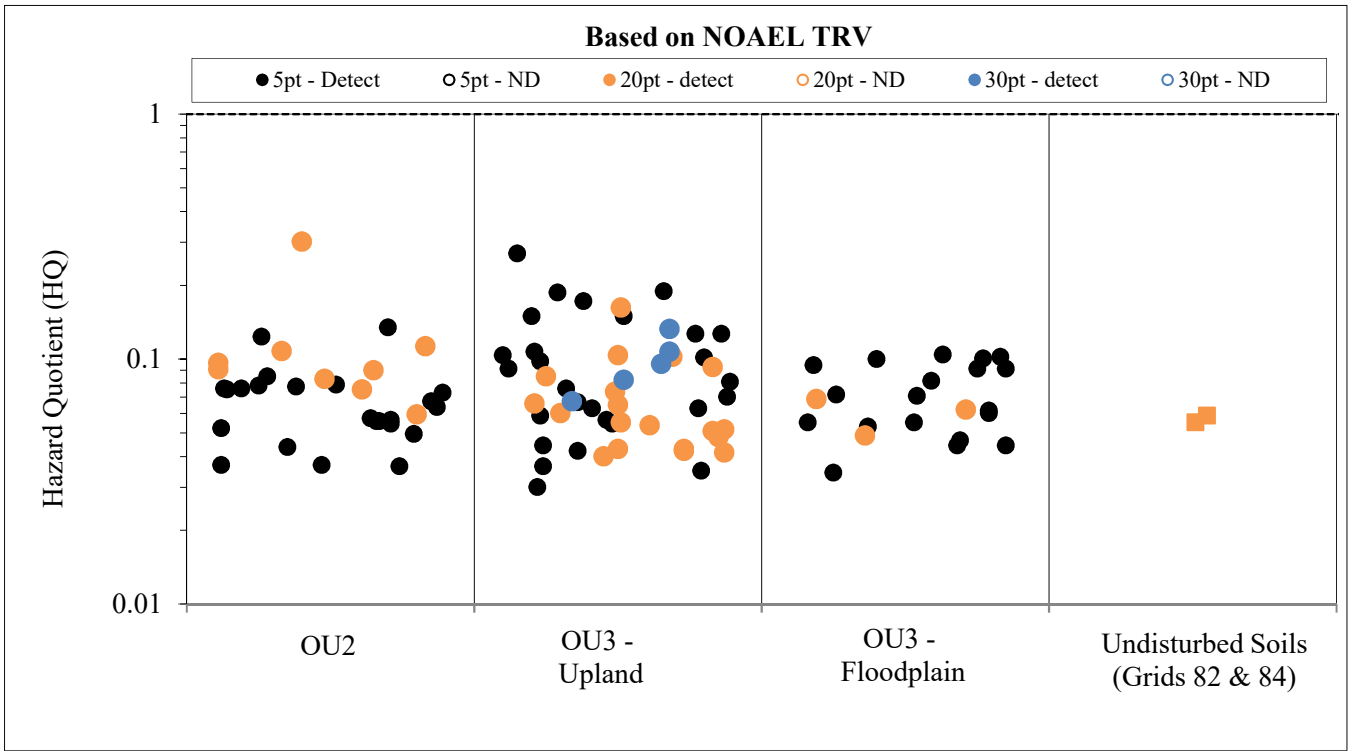
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Food by Exposure Unit/Soil Type

Nickel





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Nickel

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	1.128585	detect	19	7	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.970469	detect	19	7	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	1.319703	detect	19	7	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	1.053717	detect	19	7	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	1.261566	detect	19	7	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	1.062038	detect	19	7	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.695188	detect	19	7	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	3.534171	detect	19	7	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.878813	detect	19	7	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	1.444202	detect	19	7	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.427068	detect	19	7	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.653387	detect	19	7	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.670111	detect	19	7	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.653387	detect	19	7	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.745314	detect	19	7	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.66175	detect	19	7	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.995451	detect	19	7	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.853799	detect	19	7	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.912153	detect	19	7	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.887149	detect	19	7	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	19	7	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.511023	detect	19	7	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	19	7	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	19	7	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	1.576894	detect	19	7	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.787058	detect	19	7	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.878813	detect	19	7	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.636658	detect	19	7	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.887149	detect	19	7	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.611556	detect	19	7	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.920486	detect	19	7	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.578068	detect	19	7	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.903819	detect	19	7	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.432671	detect	19	7	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.432671	detect	19	7	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Nickel

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	1.253259	detect	19	7	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	2.015776	detect	19	7	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	1.253259	detect	19	7	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.469068	detect	19	7	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.485855	detect	19	7	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.561315	detect	19	7	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.502635	detect	19	7	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.703545	detect	19	7	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.494246	detect	19	7	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.603186	detect	19	7	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.594814	detect	19	7	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.628292	detect	19	7	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.645023	detect	19	7	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	1.211714	detect	19	7	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.862138	detect	19	7	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.995451	detect	19	7	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.762014	detect	19	7	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.770363	detect	19	7	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	1.899933	detect	19	7	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	1.086998	detect	19	7	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.502635	detect	19	7	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.945481	detect	19	7	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.736962	detect	19	7	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	1.186781	detect	19	7	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.636658	detect	19	7	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.427068	detect	19	7	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	19	7	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.410254	detect	19	7	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1.145215	detect	19	7	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.351334	detect	19	7	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	1.48568	detect	19	7	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	1.750903	detect	19	7	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	2.189436	detect	19	7	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	1.195093	detect	19	7	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	3.155154	detect	19	7	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.494246	detect	19	7	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	2.214235	detect	19	7	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	1.750903	detect	19	7	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.787058	detect	19	7	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	1.120269	detect	19	7	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	1.211714	detect	19	7	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1.48568	detect	19	7	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	1.552023	detect	19	7	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.68683	detect	19	7	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.66175	detect	19	7	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	0.820435	detect	19	7	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	0.778711	detect	19	7	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.736962	detect	19	7	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.519409	detect	19	7	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	1.070359	detect	19	7	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.887149	detect	19	7	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.962141	detect	19	7	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

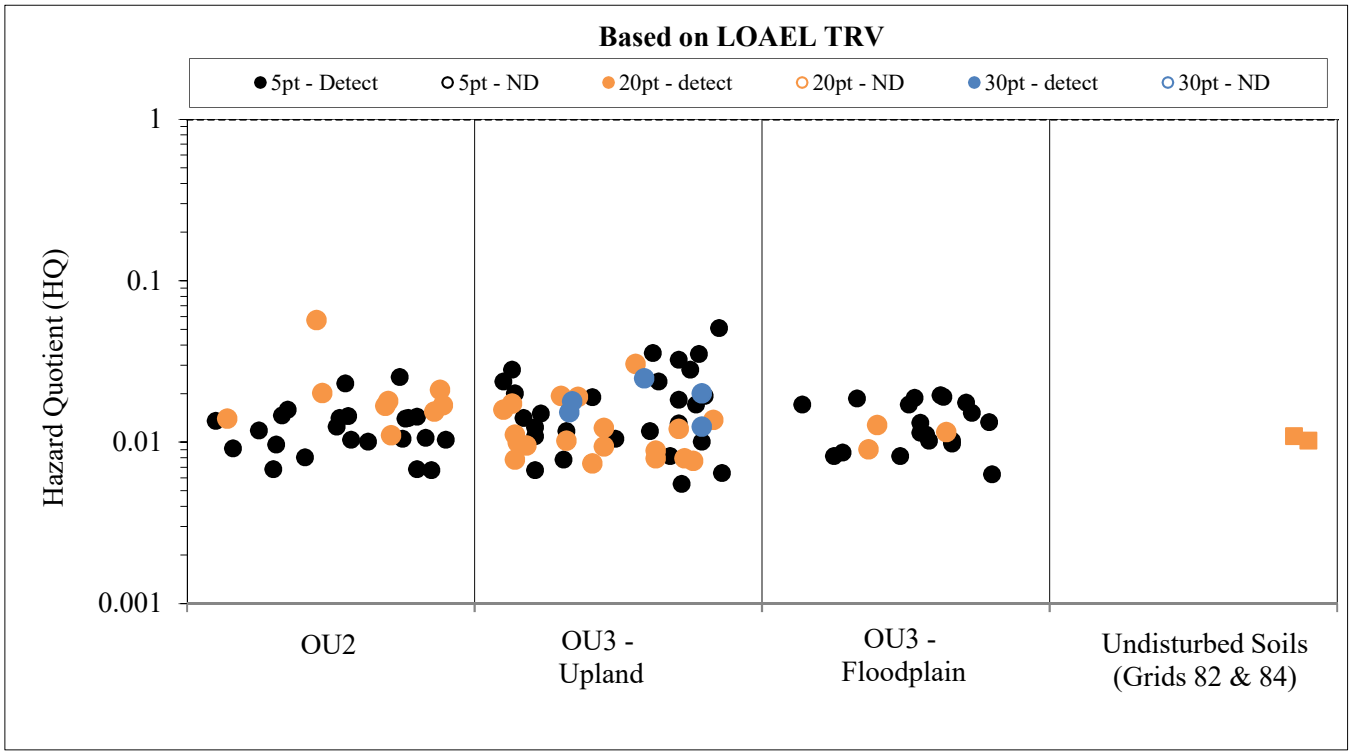
Nickel

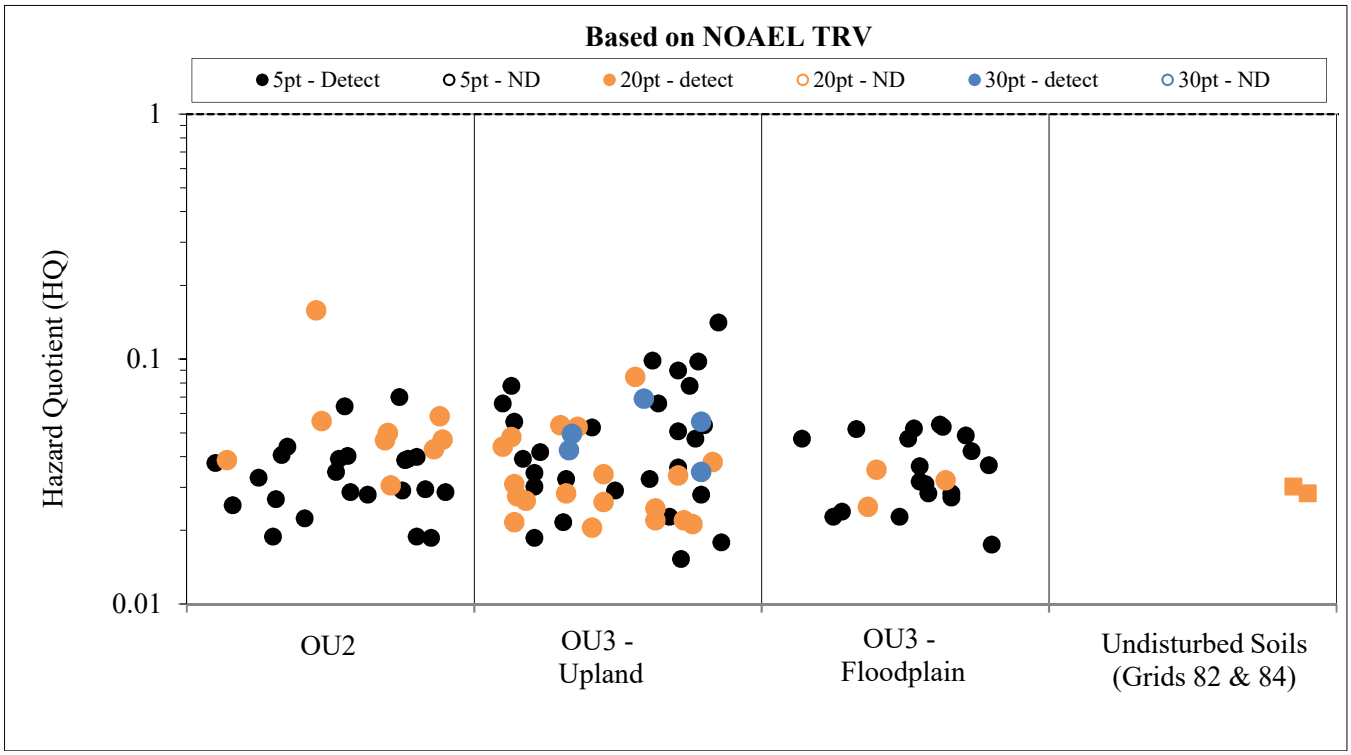
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.569692	detect	19	7	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.803748	detect	19	7	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.72861	detect	19	7	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	1.170157	detect	19	7	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.401844	detect	19	7	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	1.103634	detect	19	7	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	0.645023	detect	19	7	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	1.195093	detect	19	7	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	1.178469	detect	19	7	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	1.070359	detect	19	7	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.645023	detect	19	7	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	0.720256	detect	19	7	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.953811	detect	19	7	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.703545	detect	19	7	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.837119	detect	19	7	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.519409	detect	19	7	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.619924	detect	19	7	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	1.220024	detect	19	7	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	1.070359	detect	19	7	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	0.544557	detect	19	7	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.519409	detect	19	7	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	0.828778	detect	19	7	<1.0	<1.0
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	0.68683	detect	19	7	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.645023	detect	19	7	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Surface Soil by Exposure Unit/Soil Type

Nickel





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Nickel

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	13.4	detect	19	7	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	11.5	detect	19	7	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	15.7	detect	19	7	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	12.5	detect	19	7	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	15	detect	19	7	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	12.6	detect	19	7	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	8.2	detect	19	7	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	42.5	detect	19	7	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	10.4	detect	19	7	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	17.2	detect	19	7	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	5	detect	19	7	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	7.7	detect	19	7	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	7.9	detect	19	7	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	7.7	detect	19	7	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	8.8	detect	19	7	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	7.8	detect	19	7	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	11.8	detect	19	7	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	10.1	detect	19	7	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	10.8	detect	19	7	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	10.5	detect	19	7	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	19	7	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	6	detect	19	7	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	19	7	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	19	7	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	18.8	detect	19	7	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	9.3	detect	19	7	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	10.4	detect	19	7	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	7.5	detect	19	7	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	10.5	detect	19	7	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	7.2	detect	19	7	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	10.9	detect	19	7	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	6.8	detect	19	7	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	10.7	detect	19	7	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	5.066667	detect	19	7	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	5.066667	detect	19	7	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Nickel

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	14.9	detect	19	7	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	24.1	detect	19	7	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	14.9	detect	19	7	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	5.5	detect	19	7	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	5.7	detect	19	7	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	6.6	detect	19	7	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	5.9	detect	19	7	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	8.3	detect	19	7	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	5.8	detect	19	7	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	7.1	detect	19	7	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	7	detect	19	7	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	7.4	detect	19	7	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	7.6	detect	19	7	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	14.4	detect	19	7	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	10.2	detect	19	7	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	11.8	detect	19	7	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	9	detect	19	7	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	9.1	detect	19	7	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	22.7	detect	19	7	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	12.9	detect	19	7	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	5.9	detect	19	7	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	11.2	detect	19	7	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	8.7	detect	19	7	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	14.1	detect	19	7	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	7.5	detect	19	7	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	5	detect	19	7	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	19	7	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	4.8	detect	19	7	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	13.6	detect	19	7	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	4.1	detect	19	7	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	17.7	detect	19	7	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	20.9	detect	19	7	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	26.2	detect	19	7	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	14.2	detect	19	7	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	37.9	detect	19	7	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	5.8	detect	19	7	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	26.5	detect	19	7	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	20.9	detect	19	7	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	9.3	detect	19	7	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	13.3	detect	19	7	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	14.4	detect	19	7	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	17.7	detect	19	7	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	18.5	detect	19	7	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	8.1	detect	19	7	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	7.8	detect	19	7	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	9.7	detect	19	7	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	9.2	detect	19	7	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	8.7	detect	19	7	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	6.1	detect	19	7	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	12.7	detect	19	7	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	10.5	detect	19	7	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	11.4	detect	19	7	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Nickel

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	6.7	detect	19	7	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	9.5	detect	19	7	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	8.6	detect	19	7	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	13.9	detect	19	7	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	4.7	detect	19	7	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	13.1	detect	19	7	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	7.6	detect	19	7	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	14.2	detect	19	7	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	14	detect	19	7	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	12.7	detect	19	7	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	7.6	detect	19	7	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	8.5	detect	19	7	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	11.3	detect	19	7	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	8.3	detect	19	7	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	9.9	detect	19	7	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	6.1	detect	19	7	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	7.3	detect	19	7	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	14.5	detect	19	7	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	12.7	detect	19	7	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	6.4	detect	19	7	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	6.1	detect	19	7	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	9.8	detect	19	7	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	8.1	detect	19	7	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	7.6	detect	19	7	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Clark Fork River from Ingestion of River Surface Water

Nickel

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Adjacent to Site	50-CFR	SW50-CFR	0.0002	detect	6.71	18.6	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0009	detect	6.71	18.6	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0009	detect	6.71	18.6	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0002	ND	6.71	18.6	<1.0	<1.0
	51-CFR	SW51-CFR	0.0002	detect	6.71	18.6	<1.0	<1.0
	52-CFR	SW52-CFR	0.0002	detect	6.71	18.6	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0003	detect	6.71	18.6	<1.0	<1.0
	54-CFR	SW54-CFR	0.0002	detect	6.71	18.6	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0002	detect	6.71	18.6	<1.0	<1.0
	55-CFR	SW55-CFR	0.0001	detect	6.71	18.6	<1.0	<1.0
	56-CFR	SW56-CFR	0.0001	detect	6.71	18.6	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0002	detect	6.71	18.6	<1.0	<1.0
	57-CFR	SW57-CFR	0.0003	detect	6.71	18.6	<1.0	<1.0
	58-CFR	SW58-CFR	0.0002	detect	6.71	18.6	<1.0	<1.0
	59-CFR	SW59-CFR	0.0002	detect	6.71	18.6	<1.0	<1.0
	60-CFR	SW60-CFR	0.0002	detect	6.71	18.6	<1.0	<1.0
	61-CFR	SW61-CFR	0.0002	detect	6.71	18.6	<1.0	<1.0
	62-CFR	SW62-CFR	0.0002	detect	6.71	18.6	<1.0	<1.0
	63-CFR	SW63-CFR	0.0002	detect	6.71	18.6	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects (ND) are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Catbird from Ingestion of Creek Surface Water

Nickel

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	4E-04	detect	6.71	18.6	<1.0	<1.0
	43-OK	SW43-OK	3E-04	detect	6.71	18.6	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	3E-04	detect	6.71	18.6	<1.0	<1.0
	37-LV	SW37-LV	4E-04	detect	6.71	18.6	<1.0	<1.0
	39-LV	SW39-LV	4E-04	detect	6.71	18.6	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Catbird from Ingestion of Pond Surface Water

Nickel

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0002	detect	6.71	18.6	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0043	detect	6.71	18.6	<1.0	<1.0
69-HP1a	SW69-HP1a	0.003	detect	6.71	18.6	<1.0	<1.0
73-P5	SW73-P5	0.0171	detect	6.71	18.6	<1.0	<1.0
71-HP7	SW71-HP7	0.0044	detect	6.71	18.6	<1.0	<1.0
72-HP2	SW72-HP2	0.0029	detect	6.71	18.6	<1.0	<1.0
75-HP10	SW75-HP10	0.0029	detect	6.71	18.6	<1.0	<1.0
67-HP12	SW67-HP12	0.0027	detect	6.71	18.6	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0009	detect	6.71	18.6	<1.0	<1.0
66-HP13	SW66-HP13	0.0046	detect	6.71	18.6	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0037	detect	6.71	18.6	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0034	detect	6.71	18.6	<1.0	<1.0
70-CWD	SW70-CWD	0.0001	ND	6.71	18.6	<1.0	<1.0
64-HP18	SW64-HP18	0.0019	detect	6.71	18.6	<1.0	<1.0

#N/A = not analyzed

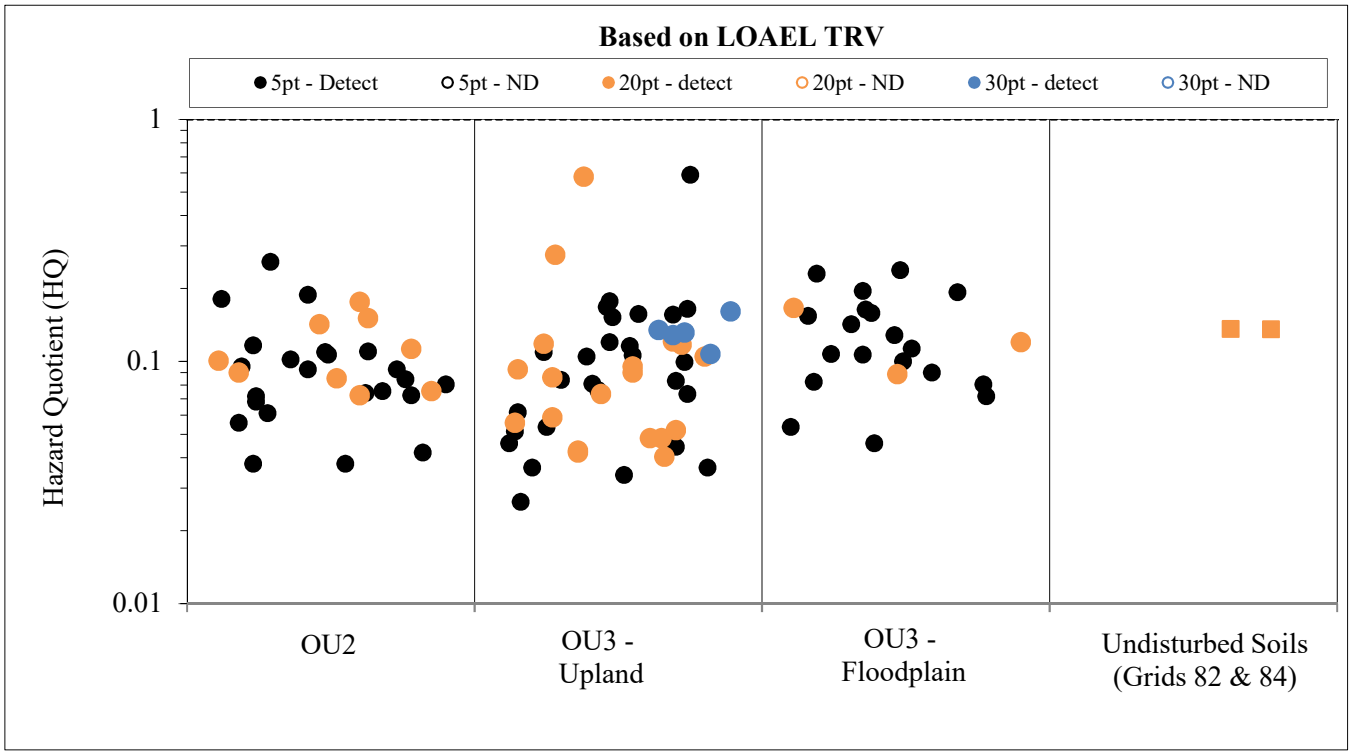
(a) Non-detects are evaluated at 1/2 the reported value.

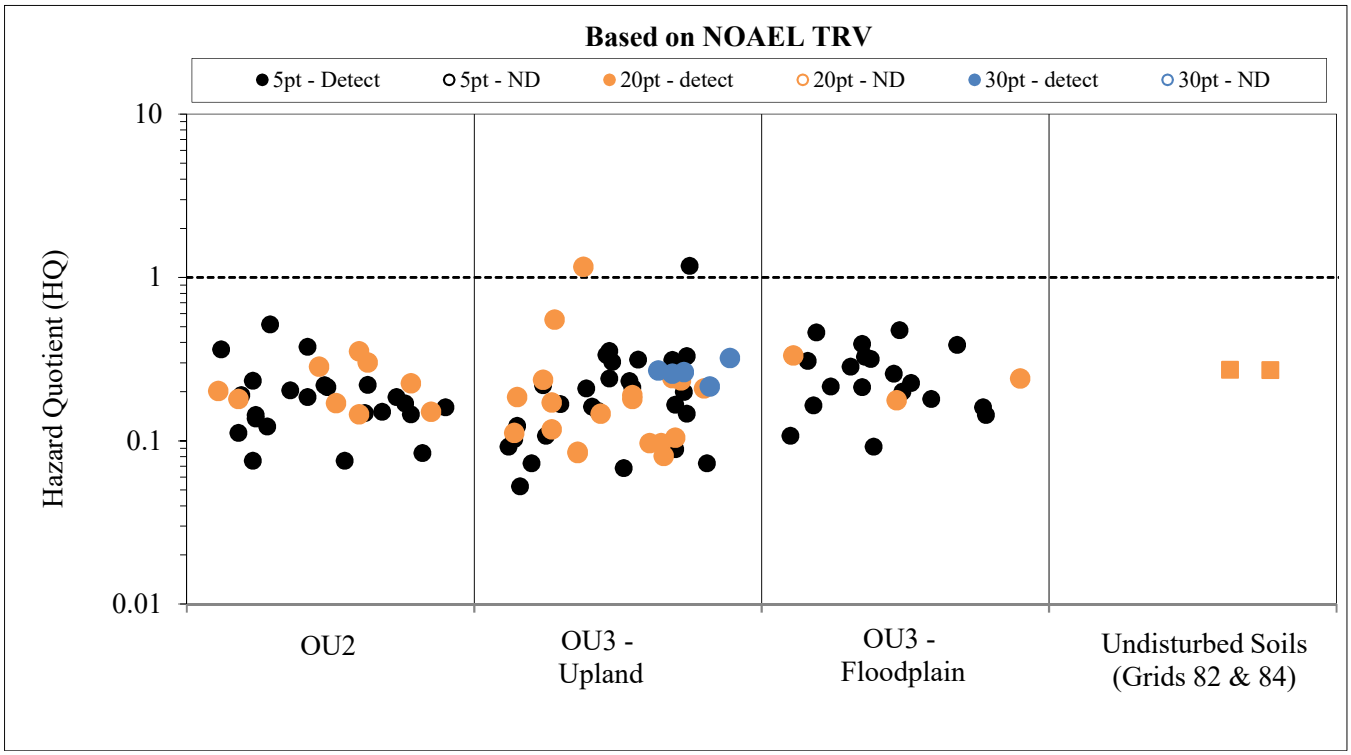
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Food by Exposure Unit/Soil Type

Lead





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Lead

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.510644	detect	3	2	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.857668	detect	3	2	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.638941	detect	3	2	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.428199	detect	3	2	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.808524	detect	3	2	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.57172	detect	3	2	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.412151	detect	3	2	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	1.002045	detect	3	2	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.483476	detect	3	2	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.620413	detect	3	2	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.238727	detect	3	2	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.624127	detect	3	2	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.579262	detect	3	2	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.42019	detect	3	2	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.412151	detect	3	2	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.47957	detect	3	2	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.605512	detect	3	2	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	1.029082	detect	3	2	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.40812	detect	3	2	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.317197	detect	3	2	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	3	2	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.346631	detect	3	2	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	3	2	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	3	2	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	1.461862	detect	3	2	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	1.069386	detect	3	2	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.456003	detect	3	2	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.387842	detect	3	2	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.541351	detect	3	2	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.661038	detect	3	2	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.526041	detect	3	2	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.428199	detect	3	2	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.526041	detect	3	2	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.21451	detect	3	2	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.21451	detect	3	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Lead

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.7301	detect	3	2	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.59429	detect	3	2	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.47174	detect	3	2	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.229707	detect	3	2	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.238727	detect	3	2	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.274158	detect	3	2	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.295835	detect	3	2	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.416175	detect	3	2	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.274158	detect	3	2	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.672032	detect	3	2	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.33408	detect	3	2	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.317197	detect	3	2	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.664706	detect	3	2	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.686637	detect	3	2	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.59429	detect	3	2	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.510644	detect	3	2	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.541351	detect	3	2	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.487375	detect	3	2	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	3.291885	detect	3	2	<1.0	**1.2**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.526041	detect	3	2	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.243212	detect	3	2	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.459947	detect	3	2	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.432193	detect	3	2	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.620413	detect	3	2	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.416175	detect	3	2	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.192855	detect	3	2	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	3	2	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.252131	detect	3	2	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.937261	detect	3	2	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.206829	detect	3	2	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.564158	detect	3	2	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	1.005432	detect	3	2	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	3.346181	detect	3	2	<1.0	**1.2**
	P3	P3-SSComp-01_20171020_NM	1.565302	detect	3	2	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.657365	detect	3	2	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.14957	detect	3	2	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.304416	detect	3	2	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.892441	detect	3	2	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.609244	detect	3	2	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.748061	detect	3	2	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.954391	detect	3	2	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.864644	detect	3	2	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.91318	detect	3	2	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.291526	detect	3	2	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.350795	detect	3	2	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	0.885507	detect	3	2	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	0.682992	detect	3	2	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.260987	detect	3	2	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.206829	detect	3	2	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.601776	detect	3	2	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.475658	detect	3	2	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.765939	detect	3	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

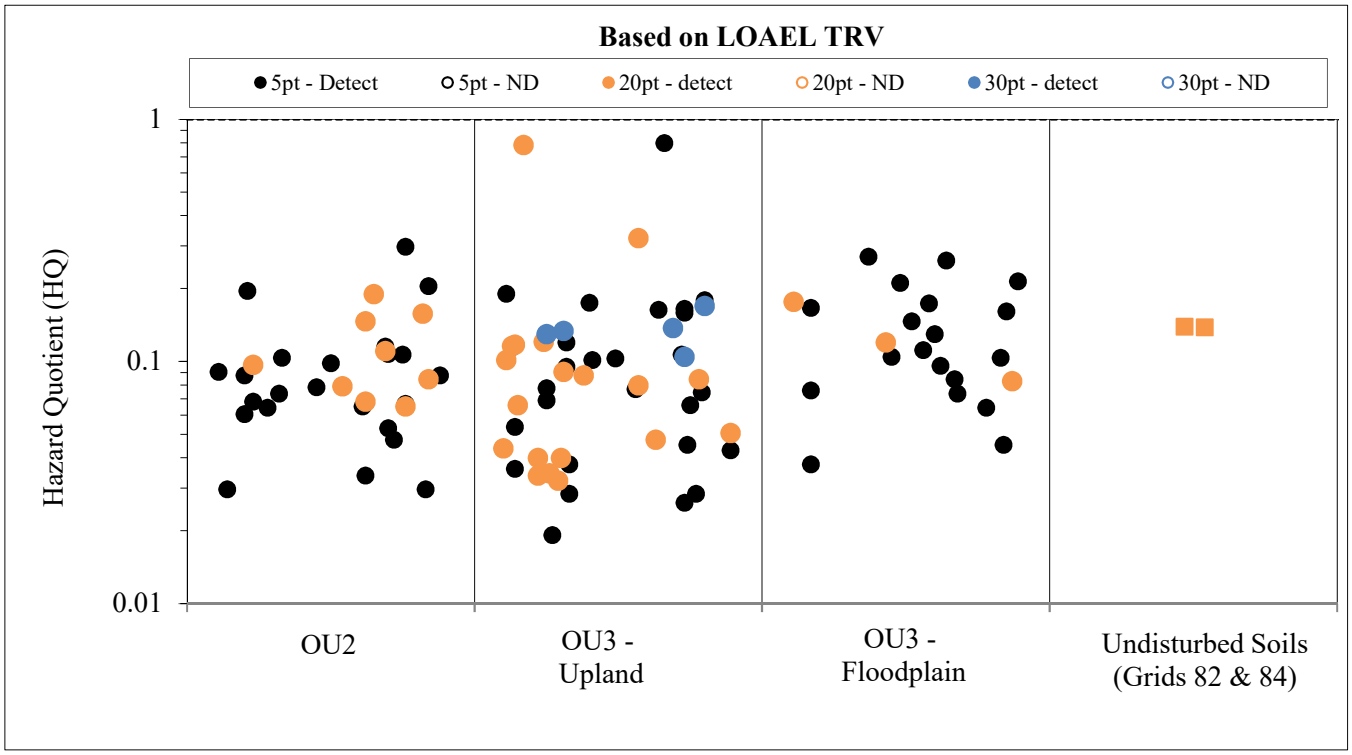
Lead

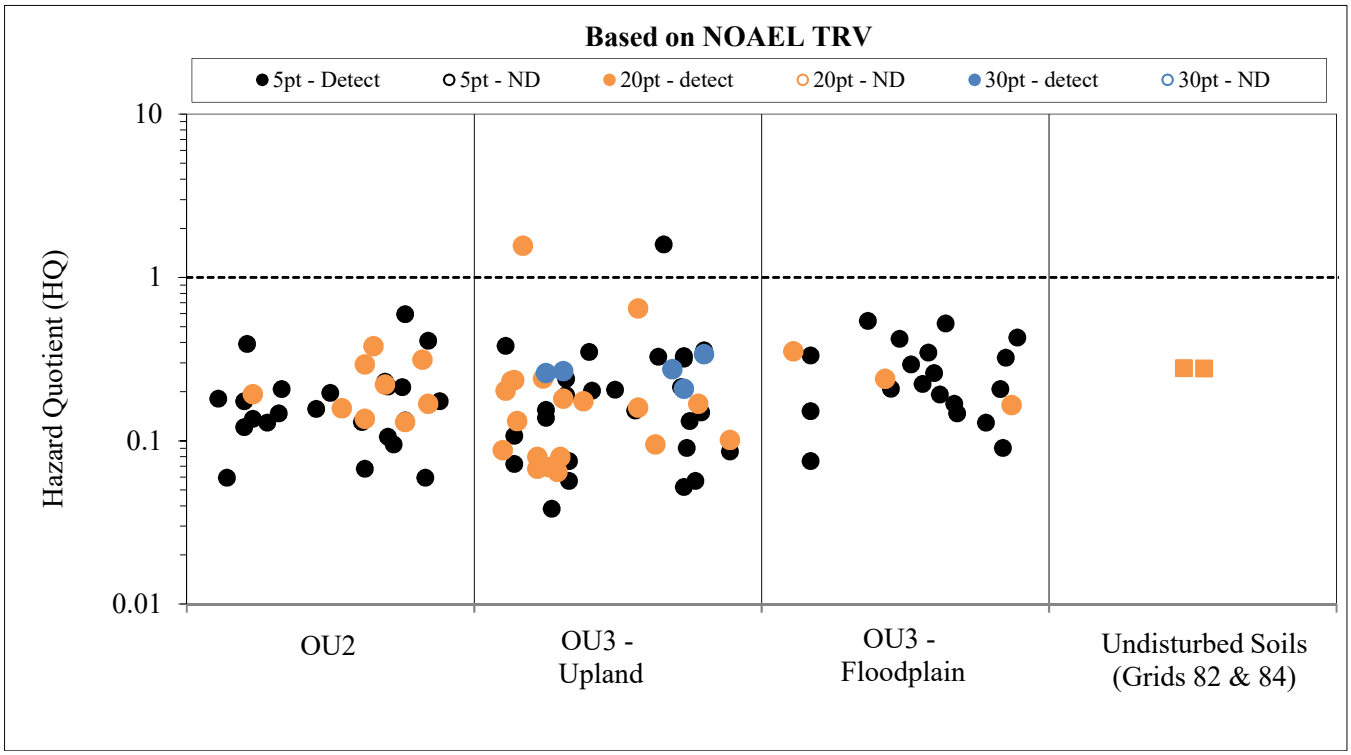
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.502911	detect	3	2	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.682992	detect	3	2	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.94412	detect	3	2	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.7301	detect	3	2	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.304416	detect	3	2	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	1.350632	detect	3	2	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	0.808524	detect	3	2	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	0.642634	detect	3	2	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	1.096096	detect	3	2	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	0.605512	detect	3	2	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.875088	detect	3	2	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	0.567941	detect	3	2	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.456003	detect	3	2	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.510644	detect	3	2	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.609244	detect	3	2	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.260987	detect	3	2	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.40812	detect	3	2	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	1.109404	detect	3	2	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	1.308883	detect	3	2	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	0.930393	detect	3	2	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.467816	detect	3	2	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	0.899364	detect	3	2	<1.0	<1.0
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	0.769505	detect	3	2	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.773068	detect	3	2	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Surface Soil by Exposure Unit/Soil Type

Lead





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Lead

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	11	detect	3	2	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	20.5	detect	3	2	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	14.4	detect	3	2	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	8.9	detect	3	2	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	19.1	detect	3	2	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	12.6	detect	3	2	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	8.5	detect	3	2	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	24.7	detect	3	2	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	10.3	detect	3	2	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	13.9	detect	3	2	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	4.4	detect	3	2	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	14	detect	3	2	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	12.8	detect	3	2	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	8.7	detect	3	2	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	8.5	detect	3	2	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	10.2	detect	3	2	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	13.5	detect	3	2	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	25.5	detect	3	2	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	8.4	detect	3	2	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	6.2	detect	3	2	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	3	2	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	6.9	detect	3	2	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	3	2	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	3	2	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	38.8	detect	3	2	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	26.7	detect	3	2	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	9.6	detect	3	2	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	7.9	detect	3	2	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	11.8	detect	3	2	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	15	detect	3	2	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	11.4	detect	3	2	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	8.9	detect	3	2	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	11.4	detect	3	2	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	3.866667	detect	3	2	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	3.866667	detect	3	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Lead

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	16.9	detect	3	2	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	13.2	detect	3	2	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	10	detect	3	2	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	4.2	detect	3	2	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	4.4	detect	3	2	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	5.2	detect	3	2	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	5.7	detect	3	2	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	8.6	detect	3	2	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	5.2	detect	3	2	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	15.3	detect	3	2	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	6.6	detect	3	2	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	6.2	detect	3	2	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	15.1	detect	3	2	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	15.7	detect	3	2	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	13.2	detect	3	2	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	11	detect	3	2	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	11.8	detect	3	2	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	10.4	detect	3	2	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	102	detect	3	2	<1.0	**1.6**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	11.4	detect	3	2	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	4.5	detect	3	2	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	9.7	detect	3	2	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	9	detect	3	2	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	13.9	detect	3	2	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	8.6	detect	3	2	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	3.4	detect	3	2	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	3	2	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	4.7	detect	3	2	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	22.8	detect	3	2	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	3.7	detect	3	2	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	12.4	detect	3	2	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	24.8	detect	3	2	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	104	detect	3	2	<1.0	**1.6**
	P3	P3-SSComp-01_20171020_NM	42.1	detect	3	2	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	14.9	detect	3	2	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	2.5	detect	3	2	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	5.9	detect	3	2	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	21.5	detect	3	2	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	13.6	detect	3	2	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	17.4	detect	3	2	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	23.3	detect	3	2	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	20.7	detect	3	2	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	22.1	detect	3	2	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	5.6	detect	3	2	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	7	detect	3	2	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	21.3	detect	3	2	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	15.6	detect	3	2	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	4.9	detect	3	2	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	3.7	detect	3	2	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	13.4	detect	3	2	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	10.1	detect	3	2	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	17.9	detect	3	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Lead

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	10.8	detect	3	2	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	15.6	detect	3	2	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	23	detect	3	2	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	16.9	detect	3	2	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	5.9	detect	3	2	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	35.3	detect	3	2	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	19.1	detect	3	2	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	14.5	detect	3	2	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	27.5	detect	3	2	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	13.5	detect	3	2	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	21	detect	3	2	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	12.5	detect	3	2	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	9.6	detect	3	2	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	11	detect	3	2	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	13.6	detect	3	2	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	4.9	detect	3	2	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	8.4	detect	3	2	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	27.9	detect	3	2	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	34	detect	3	2	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	22.6	detect	3	2	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	9.9	detect	3	2	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	21.7	detect	3	2	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	18	detect	3	2	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	18.1	detect	3	2	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Clark Fork River from Ingestion of River Surface Water

Lead

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Adjacent to Site	50-CFR	SW50-CFR	0.0001	detect	1.63	3.26	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0006	detect	1.63	3.26	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0016	detect	1.63	3.26	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0002	detect	1.63	3.26	<1.0	<1.0
	51-CFR	SW51-CFR	0.0002	detect	1.63	3.26	<1.0	<1.0
	52-CFR	SW52-CFR	0.0004	detect	1.63	3.26	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0015	detect	1.63	3.26	<1.0	<1.0
	54-CFR	SW54-CFR	0.0001	detect	1.63	3.26	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0001	detect	1.63	3.26	<1.0	<1.0
	55-CFR	SW55-CFR	0.0002	detect	1.63	3.26	<1.0	<1.0
	56-CFR	SW56-CFR	0.0002	detect	1.63	3.26	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0001	detect	1.63	3.26	<1.0	<1.0
	57-CFR	SW57-CFR	0.0002	detect	1.63	3.26	<1.0	<1.0
	58-CFR	SW58-CFR	0.0002	detect	1.63	3.26	<1.0	<1.0
	59-CFR	SW59-CFR	0.0002	detect	1.63	3.26	<1.0	<1.0
	60-CFR	SW60-CFR	0.0002	detect	1.63	3.26	<1.0	<1.0
	61-CFR	SW61-CFR	0.0002	detect	1.63	3.26	<1.0	<1.0
	62-CFR	SW62-CFR	0.0002	detect	1.63	3.26	<1.0	<1.0
	63-CFR	SW63-CFR	0.0001	detect	1.63	3.26	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects (ND) are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Catbird from Ingestion of Creek Surface Water

Lead

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	3E-04	detect	1.63	3.26	<1.0	<1.0
	43-OK	SW43-OK	2E-04	detect	1.63	3.26	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	3E-04	detect	1.63	3.26	<1.0	<1.0
	37-LV	SW37-LV	3E-04	detect	1.63	3.26	<1.0	<1.0
	39-LV	SW39-LV	3E-04	detect	1.63	3.26	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Catbird from Ingestion of Pond Surface Water

Lead

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	6E-05	detect	1.63	3.26	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0006	detect	1.63	3.26	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0002	detect	1.63	3.26	<1.0	<1.0
73-P5	SW73-P5	0.0002	ND	1.63	3.26	<1.0	<1.0
71-HP7	SW71-HP7	0.0003	detect	1.63	3.26	<1.0	<1.0
72-HP2	SW72-HP2	0.0004	detect	1.63	3.26	<1.0	<1.0
75-HP10	SW75-HP10	0.0002	detect	1.63	3.26	<1.0	<1.0
67-HP12	SW67-HP12	0.0002	detect	1.63	3.26	<1.0	<1.0
68-IBJ	SW68-IBJ	7E-05	detect	1.63	3.26	<1.0	<1.0
66-HP13	SW66-HP13	0.0008	detect	1.63	3.26	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0014	detect	1.63	3.26	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.001	detect	1.63	3.26	<1.0	<1.0
70-CWD	SW70-CWD	0.0001	detect	1.63	3.26	<1.0	<1.0
64-HP18	SW64-HP18	0.0005	detect	1.63	3.26	<1.0	<1.0

#N/A = not analyzed

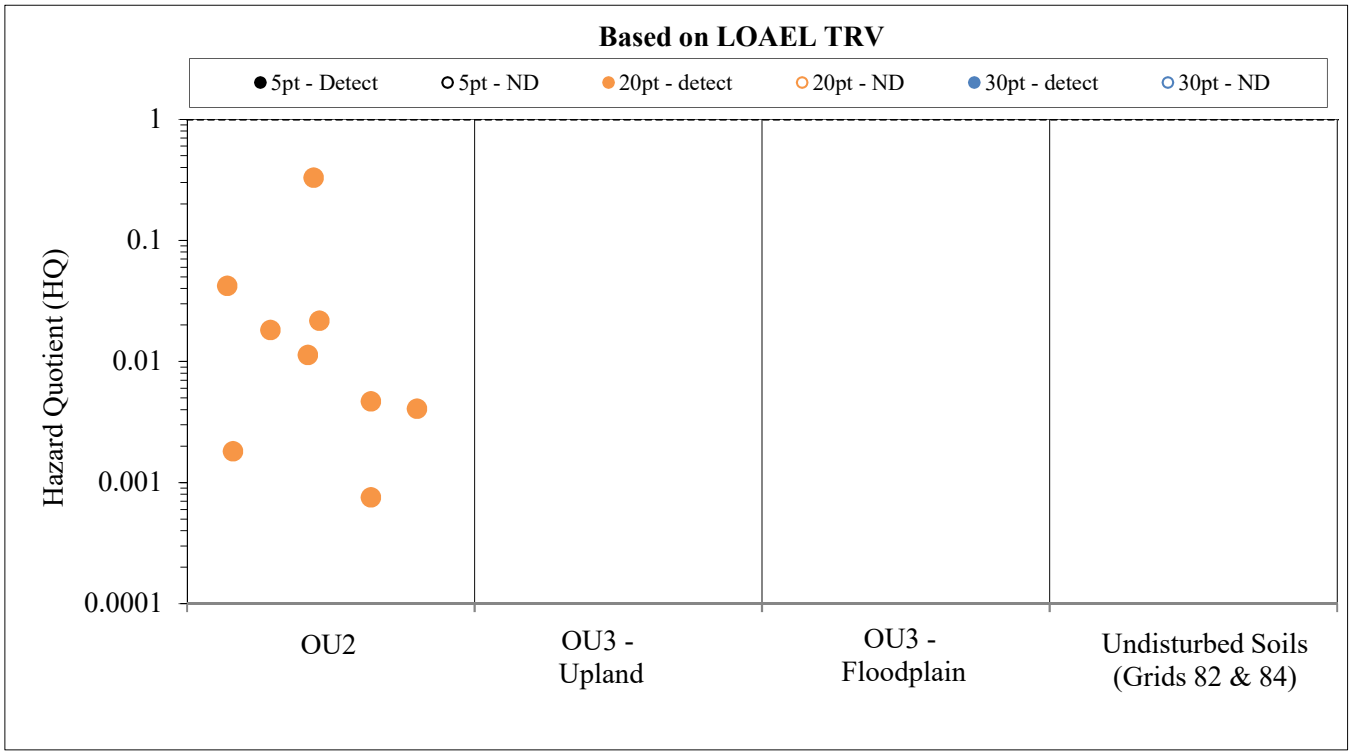
(a) Non-detects are evaluated at 1/2 the reported value.

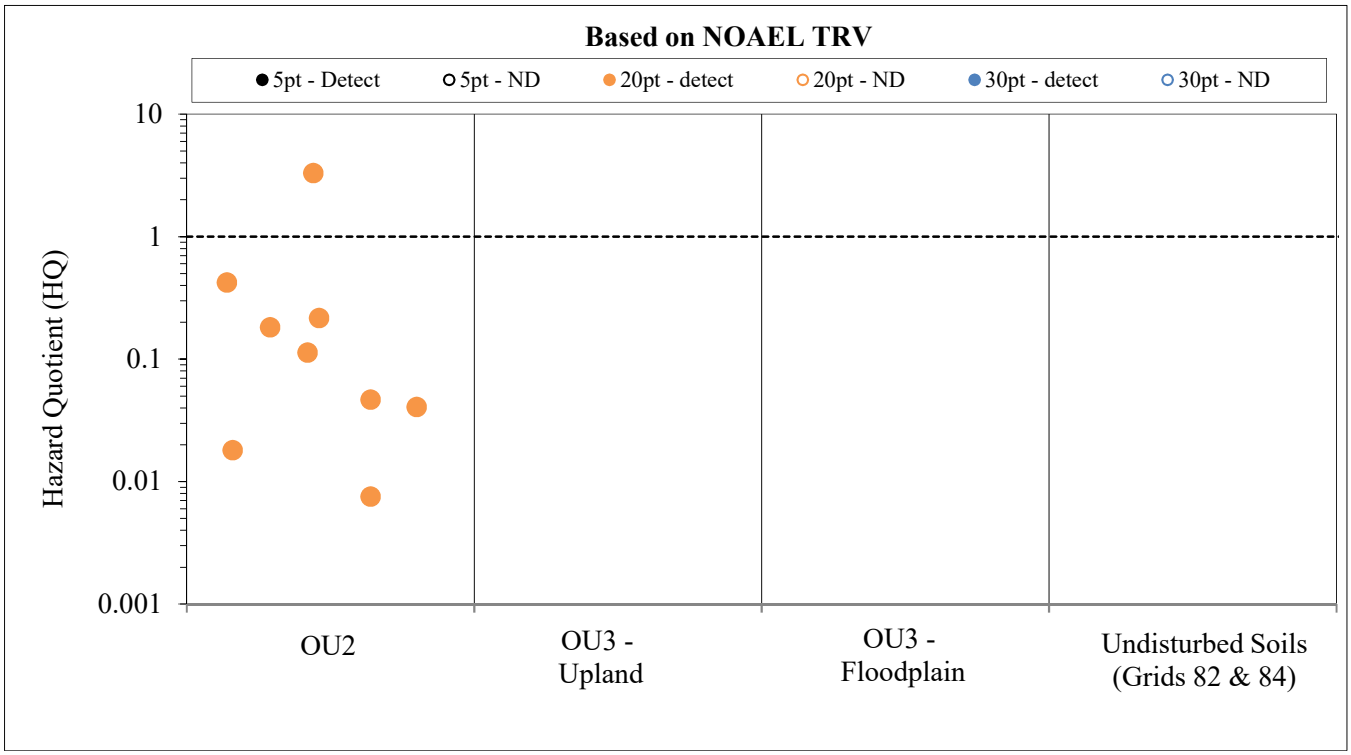
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Food by Exposure Unit/Soil Type

Total PCBs (ND=1/2RL)





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Total PCBs (ND=1/2RL)

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.082161	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.003529	detect	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.022059	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.00793	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.03547	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.001468	detect	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.042266	detect	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.642506	detect	1	0	<1.0	**3.3**
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.009116	detect	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	#N/A	#N/A	1	0	#N/A	#N/A
	TSB-SS	BACKFILL-TSB-SS	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Total PCBs (ND=1/2RL)

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	CRP-1	CRP-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-1	HP18-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-IB	HP18-SSC-IB_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP9-1	HP9-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	IBK-1	IBK-1-SS_4/16/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P17-BH1	P17-BH1-SS_4/3/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P4-BH1	P4-BH1-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P5-BH2	P5-BH2-SS_4/3/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

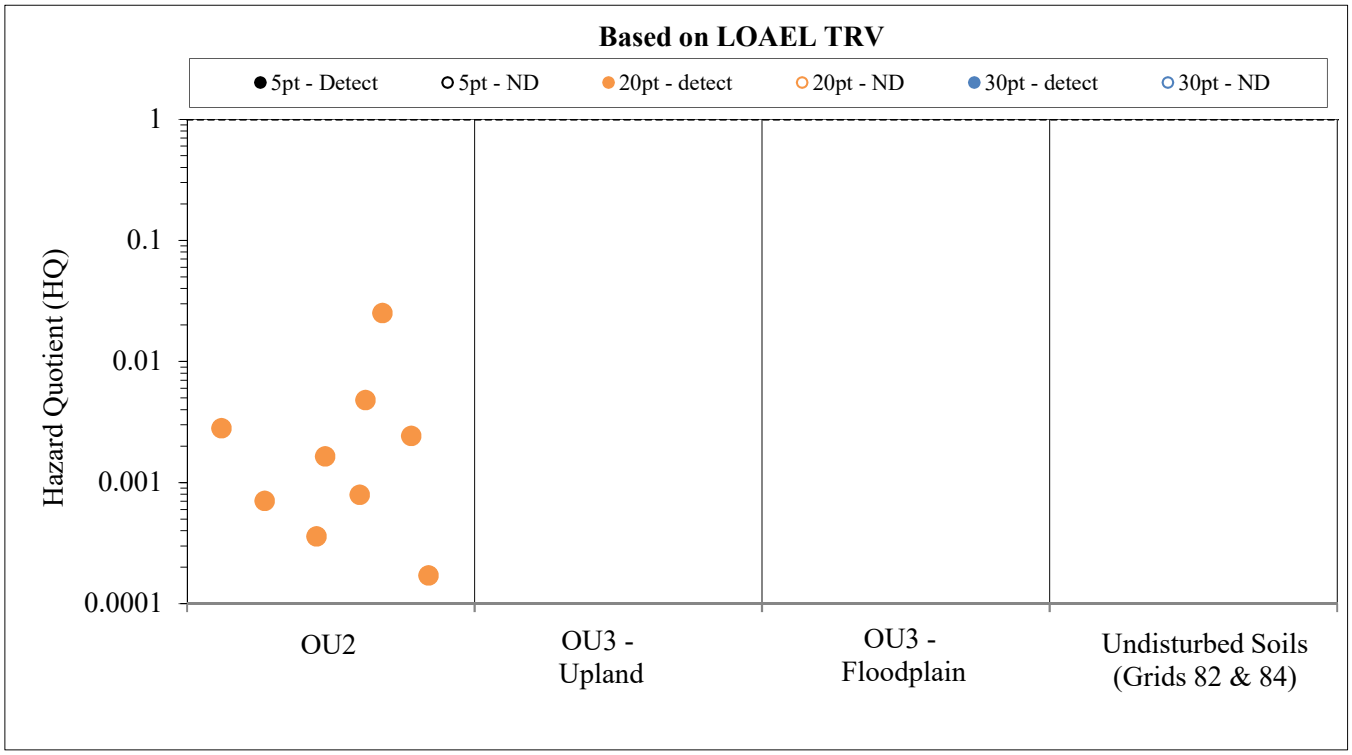
Total PCBs (ND=1/2RL)

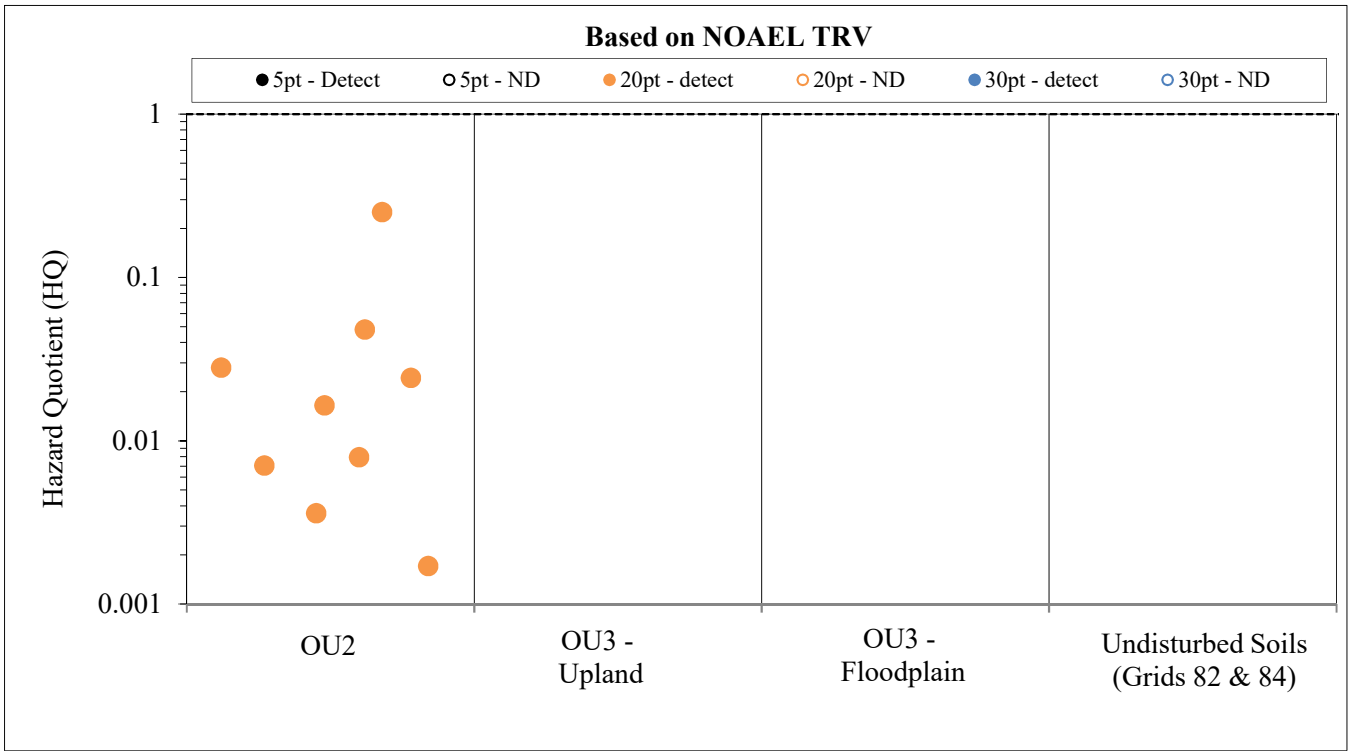
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Surface Soil by Exposure Unit/Soil Type

Total PCBs (ND=1/2RL)





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Total PCBs (ND=1/2RL)

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.2153	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.016098	detect	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.073668	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.031651	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.108693	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.007675	detect	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.125414	detect	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	1.125173	detect	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.035534	detect	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	#N/A	#N/A	1	0	#N/A	#N/A
	TSB-SS	BACKFILL-TSB-SS	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Total PCBs (ND=1/2RL)

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	CRP-1	CRP-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-1	HP18-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-IB	HP18-SSC-IB_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP9-1	HP9-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	IBK-1	IBK-1-SS_4/16/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P17-BH1	P17-BH1-SS_4/3/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P4-BH1	P4-BH1-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P5-BH2	P5-BH2-SS_4/3/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

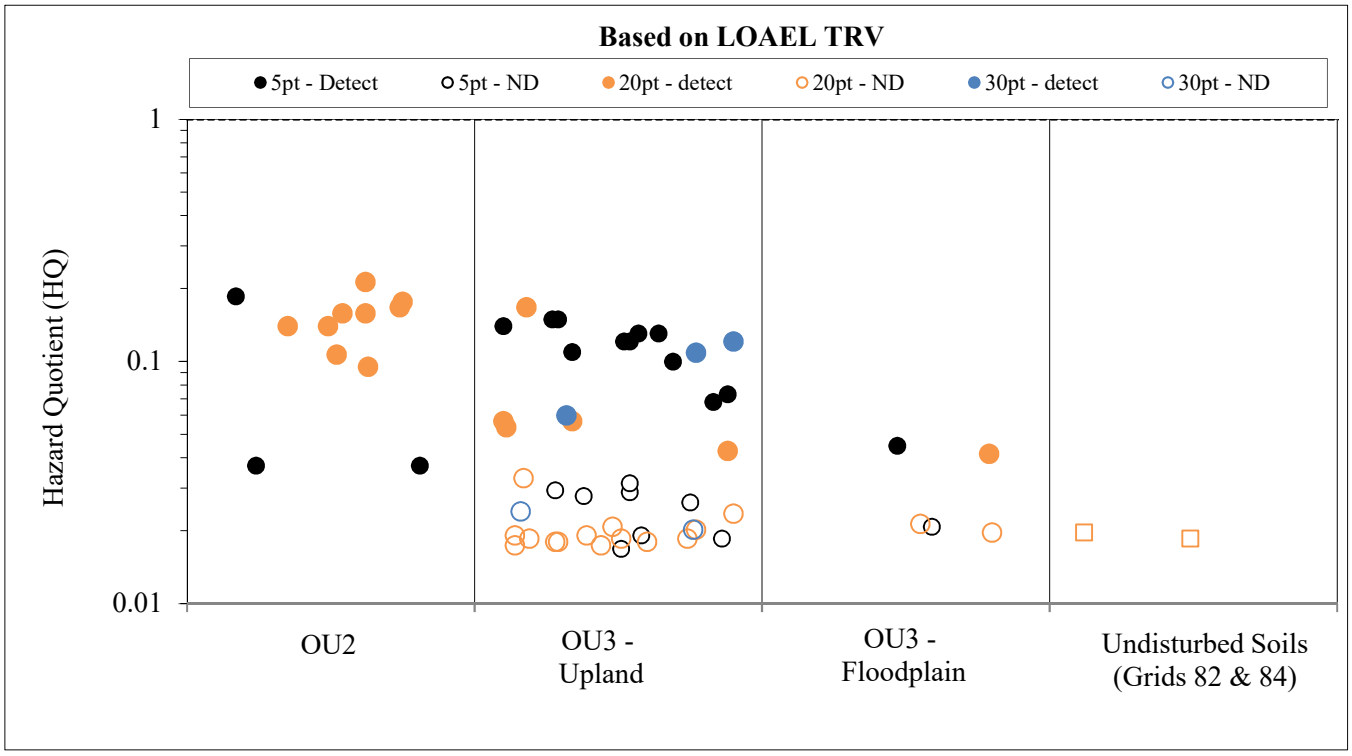
Total PCBs (ND=1/2RL)

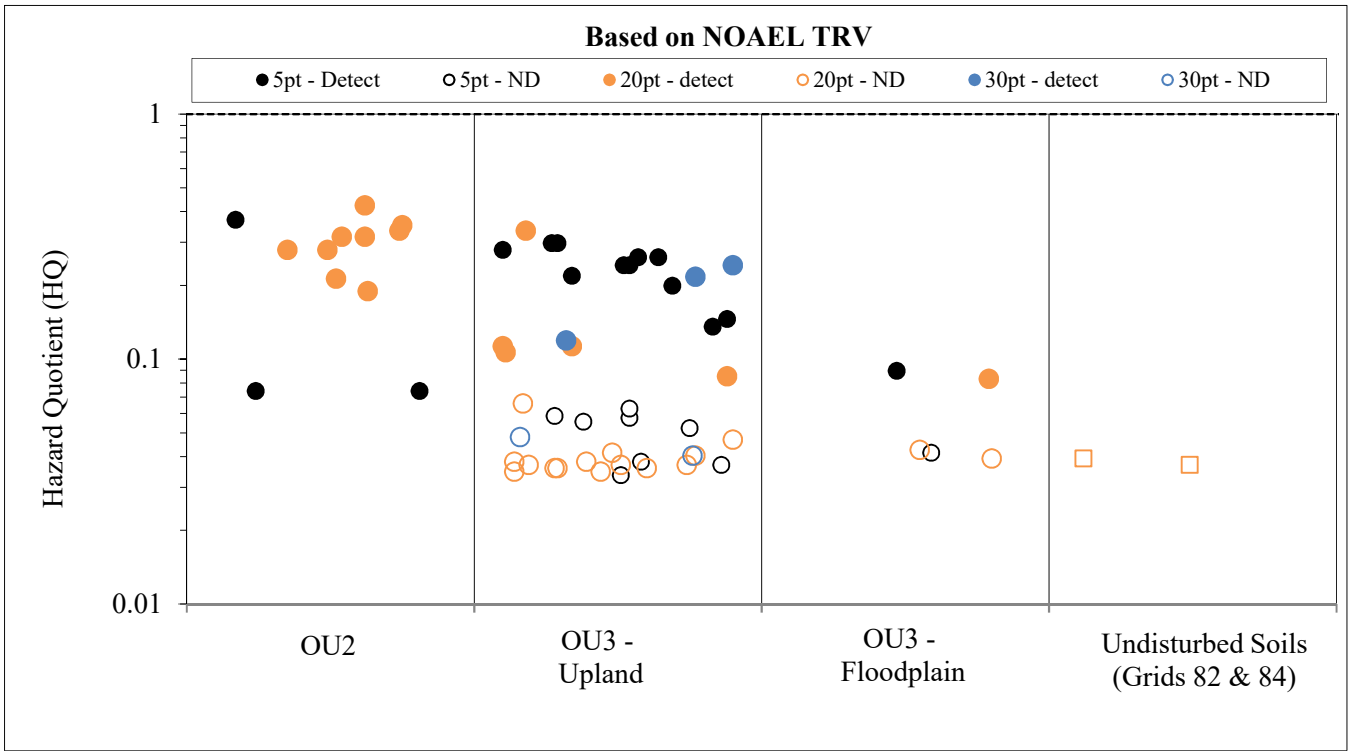
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Food by Exposure Unit/Soil Type

Selenium





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Selenium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.107493	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.159534	detect	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.140872	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.095769	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.177969	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.214303	detect	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.140872	detect	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.159534	detect	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.168777	detect	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.187114	detect	1	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.037405	detect	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.037405	detect	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Selenium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.121929	detect	1	0	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.028028	ND	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.13144	detect	1	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.018132	ND	1	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.018132	ND	1	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.018703	ND	1	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.018132	ND	1	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.018703	ND	1	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.017557	ND	1	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.017557	ND	1	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.023718	ND	1	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.057118	detect	1	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.043028	detect	1	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.168777	detect	1	0	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.057118	detect	1	0	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.020957	ND	1	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.019271	ND	1	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.020398	ND	1	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.053923	detect	1	0	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.019271	ND	1	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.018703	ND	1	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.068615	detect	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.150234	detect	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.100675	detect	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.019271	ND	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.01698	ND	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.073744	detect	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.121929	detect	1	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.018703	ND	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.13144	detect	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.150234	detect	1	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.140872	detect	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.033274	ND	1	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.026425	ND	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.029089	ND	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.029617	ND	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.031714	ND	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.024263	ND	1	0	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.060287	detect	1	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.110398	detect	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.121929	detect	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.109431	detect	1	0	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	0.020398	ND	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

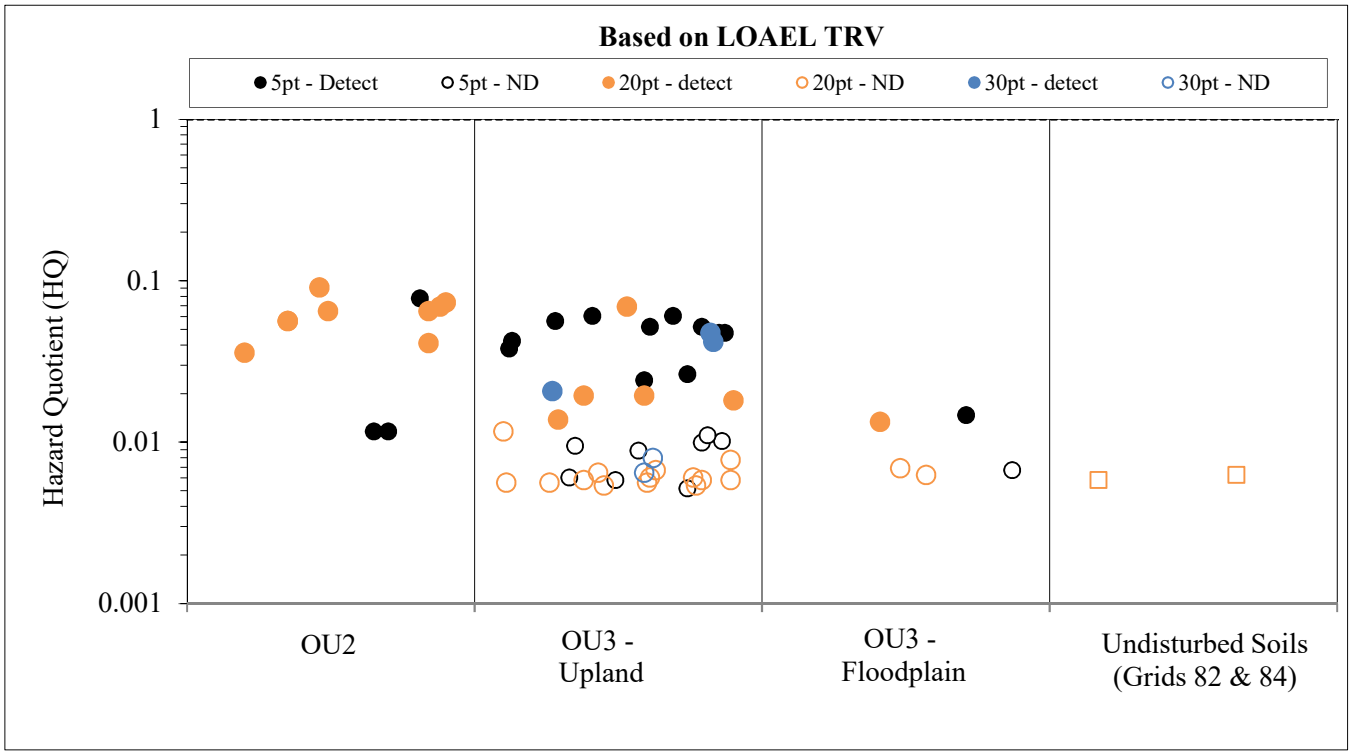
Selenium

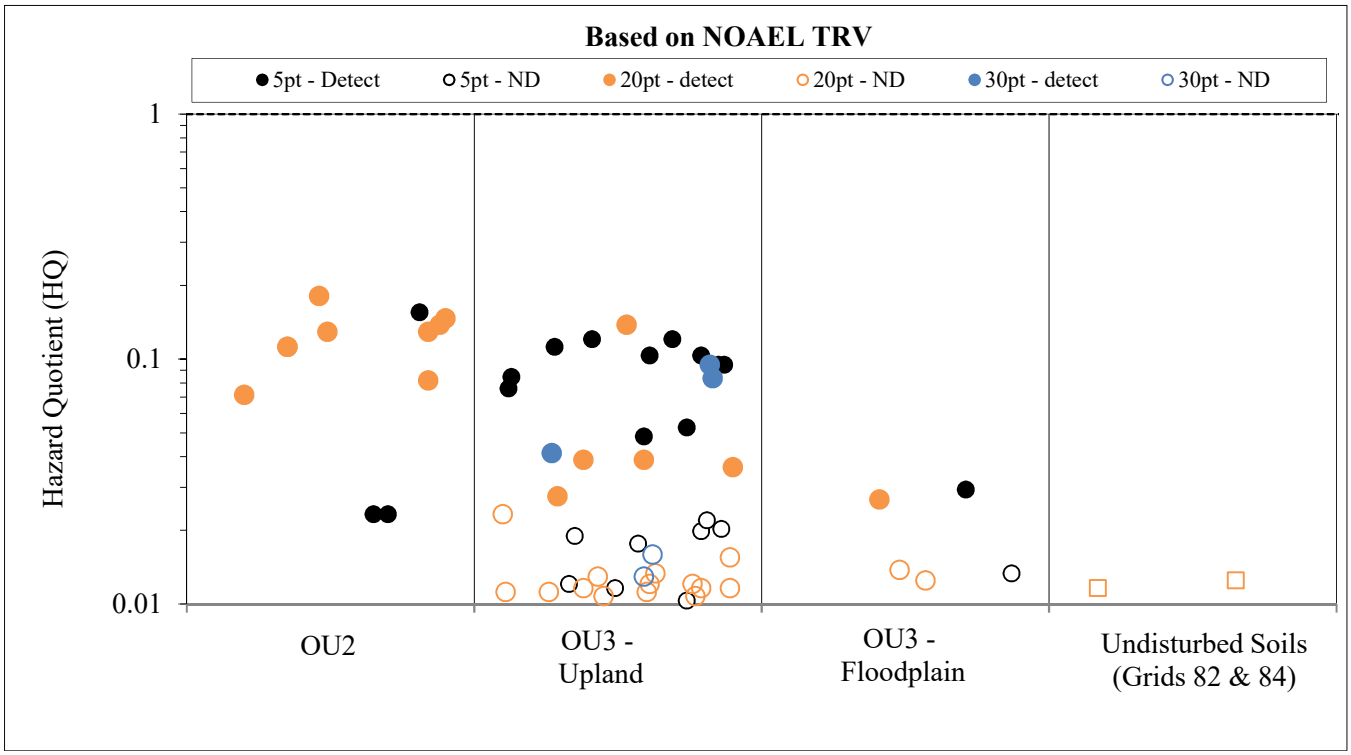
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.019836	ND	1	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.041914	detect	1	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.021514	ND	1	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.045241	detect	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.020957	ND	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	0.019836	ND	1	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.018703	ND	1	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Surface Soil by Exposure Unit/Soil Type

Selenium





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Selenium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.95	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	1.5	detect	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	1.3	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.83	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	1.7	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	2.1	detect	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	1.3	detect	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	1.5	detect	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	1.6	detect	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	1.8	detect	1	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.27	detect	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.27	detect	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Selenium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	1.1	detect	1	0	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.22	ND	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	1.2	detect	1	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.13	ND	1	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.13	ND	1	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.135	ND	1	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.13	ND	1	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.135	ND	1	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.125	ND	1	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.125	ND	1	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.18	ND	1	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.45	detect	1	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.32	detect	1	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	1.6	detect	1	0	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.45	detect	1	0	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.155	ND	1	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.14	ND	1	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.15	ND	1	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.42	detect	1	0	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.14	ND	1	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.135	ND	1	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.56	detect	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	1.4	detect	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.88	detect	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.14	ND	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.12	ND	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.61	detect	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1.1	detect	1	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.135	ND	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	1.2	detect	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	1.4	detect	1	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	1.3	detect	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.27	ND	1	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.205	ND	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.23	ND	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.235	ND	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.255	ND	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.185	ND	1	0	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.48	detect	1	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.98	detect	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1.1	detect	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.97	detect	1	0	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	0.15	ND	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Selenium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.145	ND	1	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.31	detect	1	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.16	ND	1	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.34	detect	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.155	ND	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.145	ND	1	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.135	ND	1	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Clark Fork River from Ingestion of River Surface Water

Selenium

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Adjacent to Site	50-CFR	SW50-CFR	0.0001	ND	0.29	0.579	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0002	ND	0.29	0.579	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0002	ND	0.29	0.579	<1.0	<1.0
	SW3-CFR	SW3-CFR	#N/A	#N/A	0.29	0.579	#N/A	#N/A
	51-CFR	SW51-CFR	0.0001	ND	0.29	0.579	<1.0	<1.0
	52-CFR	SW52-CFR	0.0001	ND	0.29	0.579	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0001	ND	0.29	0.579	<1.0	<1.0
	54-CFR	SW54-CFR	0.0001	ND	0.29	0.579	<1.0	<1.0
	SW2-CFR	SW2-CFR	#N/A	#N/A	0.29	0.579	#N/A	#N/A
	55-CFR	SW55-CFR	0.0001	ND	0.29	0.579	<1.0	<1.0
	56-CFR	SW56-CFR	0.0001	ND	0.29	0.579	<1.0	<1.0
	SW1-CFR	SW1-CFR	#N/A	#N/A	0.29	0.579	#N/A	#N/A
	57-CFR	SW57-CFR	0.0001	ND	0.29	0.579	<1.0	<1.0
	58-CFR	SW58-CFR	0.0001	detect	0.29	0.579	<1.0	<1.0
	59-CFR	SW59-CFR	0.0001	ND	0.29	0.579	<1.0	<1.0
	60-CFR	SW60-CFR	0.0001	ND	0.29	0.579	<1.0	<1.0
	61-CFR	SW61-CFR	0.0001	ND	0.29	0.579	<1.0	<1.0
	62-CFR	SW62-CFR	0.0001	ND	0.29	0.579	<1.0	<1.0
	63-CFR	SW63-CFR	0.0001	ND	0.29	0.579	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects (ND) are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Catbird from Ingestion of Creek Surface Water

Selenium

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	1E-04	ND	0.29	0.579	<1.0	<1.0
	43-OK	SW43-OK	1E-04	ND	0.29	0.579	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	#N/A	#N/A	0.29	0.579	#N/A	#N/A
	37-LV	SW37-LV	1E-04	ND	0.29	0.579	<1.0	<1.0
	39-LV	SW39-LV	1E-04	ND	0.29	0.579	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Catbird from Ingestion of Pond Surface Water

Selenium

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0001	ND	0.29	0.579	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0002	detect	0.29	0.579	<1.0	<1.0
69-HP1a	SW69-HP1a	0.002	detect	0.29	0.579	<1.0	<1.0
73-P5	SW73-P5	0.0018	detect	0.29	0.579	<1.0	<1.0
71-HP7	SW71-HP7	0.0013	detect	0.29	0.579	<1.0	<1.0
72-HP2	SW72-HP2	0.0007	ND	0.29	0.579	<1.0	<1.0
75-HP10	SW75-HP10	0.0014	detect	0.29	0.579	<1.0	<1.0
67-HP12	SW67-HP12	0.0009	detect	0.29	0.579	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0001	ND	0.29	0.579	<1.0	<1.0
66-HP13	SW66-HP13	0.0007	ND	0.29	0.579	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0007	detect	0.29	0.579	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0004	detect	0.29	0.579	<1.0	<1.0
70-CWD	SW70-CWD	0.0001	ND	0.29	0.579	<1.0	<1.0
64-HP18	SW64-HP18	0.0007	ND	0.29	0.579	<1.0	<1.0

#N/A = not analyzed

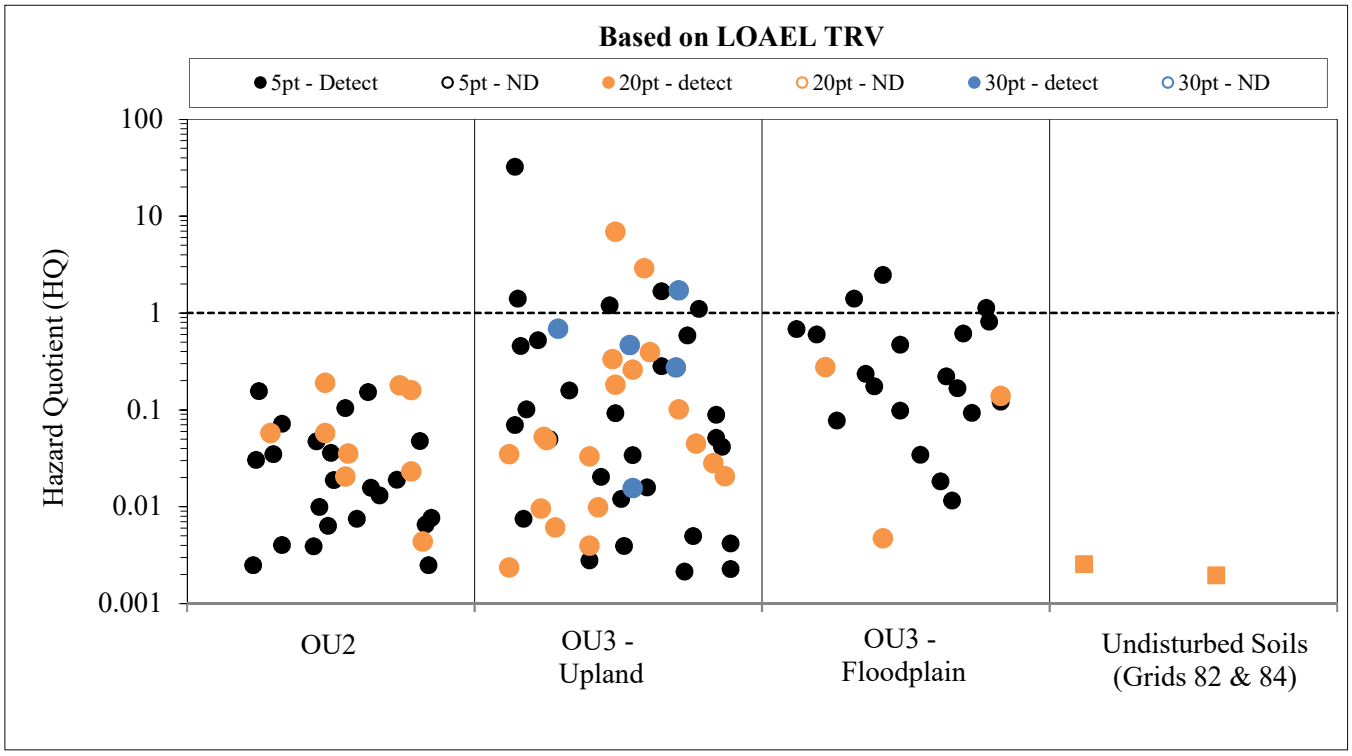
(a) Non-detects are evaluated at 1/2 the reported value.

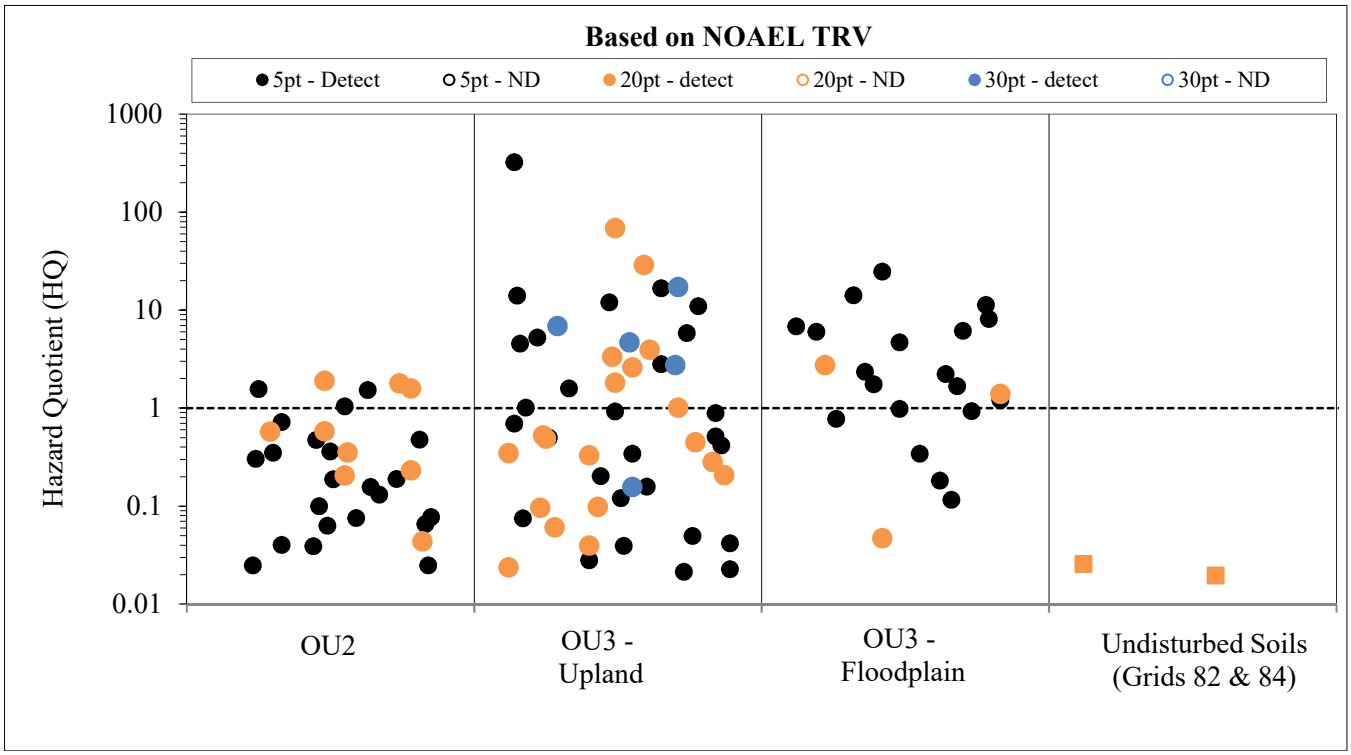
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Food by Exposure Unit/Soil Type

D/F Av TEQ - ND=1/2RL





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

D/F Av TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	2.51E-06	detect	0	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	1.01E-06	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	7.78E-06	detect	0	0	<1.0	**1.8**
	Grid 2	Grid 2-SSComp-01_20171016_NM	1.54E-06	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	8.26E-06	detect	0	0	<1.0	**1.9**
	Grid 23	Grid 23-SSComp-01_20171018_NM	1.9E-07	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	8.94E-07	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	6.94E-06	detect	0	0	<1.0	**1.6**
	Grid 9	Grid 9-SSComp-01_20171018_NM	2.52E-06	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	2.84E-07	detect	0	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	0	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	8.18E-07	detect	0	0	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	1.57E-06	detect	0	0	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	4.54E-06	detect	0	0	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	8.26E-07	detect	0	0	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	1.32E-06	detect	0	0	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	2.07E-06	detect	0	0	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	2.08E-06	detect	0	0	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	2.76E-07	detect	0	0	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	3.28E-07	detect	0	0	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	4.34E-07	detect	0	0	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	6.67E-06	detect	0	0	<1.0	**1.5**
	SS33-IN	SS33-IN-(0-2)c	1.75E-07	detect	0	0	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	6.83E-07	detect	0	0	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	3.35E-07	detect	0	0	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	1.7E-07	detect	0	0	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	6.8E-06	detect	0	0	<1.0	**1.6**
	SS7-IN	SS7-IN-(0-2)c	1.52E-06	detect	0	0	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	3.13E-06	detect	0	0	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	5.69E-07	detect	0	0	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	1.08E-07	detect	0	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	1.08E-07	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

D/F Av TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	3E-05	detect	0	0	<1.0	**6.9**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	4.79E-05	detect	0	0	**1.1**	**11.0**
	CRP-1	CRP-1-SS_4/10/14_NM	1.49E-06	detect	0	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	1.44E-06	detect	0	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	2.65E-07	detect	0	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	1.95E-06	detect	0	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	9E-07	detect	0	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	4.29E-07	detect	0	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	4.18E-07	detect	0	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	1.73E-07	detect	0	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	2.12E-06	detect	0	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	2.3E-06	detect	0	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	1.23E-06	detect	0	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	1.71E-05	detect	0	0	<1.0	**3.9**
	Grid 53	Grid 53-SSComp-01_20171020_NM	1.45E-05	detect	0	0	<1.0	**3.3**
	Grid 60	Grid 60-SSComp-01_20171023_NM	7.93E-06	detect	0	0	<1.0	**1.8**
	Grid 61	Grid 61-SSComp-01_20171023_NM	4.39E-06	detect	0	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	1.13E-05	detect	0	0	<1.0	**2.6**
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.0003	detect	0	0	**6.9**	**68.8**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	1.03E-07	detect	0	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	1.52E-06	detect	0	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	6.92E-06	detect	0	0	<1.0	**1.6**
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	2.16E-07	detect	0	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	4.03E-06	detect	0	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	3.27E-07	detect	0	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	1.82E-07	detect	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	9.33E-08	detect	0	0	<1.0	<1.0
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	5.25E-07	detect	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	7.3E-05	detect	0	0	**1.7**	**16.8**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	2.24E-06	detect	0	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	1.22E-07	detect	0	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	5.23E-05	detect	0	0	**1.2**	**12.0**
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.001407	detect	0	0	**32.3**	**323.0**
	P3	P3-SSComp-01_20171020_NM	0.000126	detect	0	0	**2.9**	**29.0**
	P3-BH1	P3-BH1-SS_4/3/14_NM	2.29E-05	detect	0	0	<1.0	**5.2**
	P4-BH1	P4-BH1-SS_4/4/14_NM	6.88E-07	detect	0	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	8.83E-07	detect	0	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	4.4E-06	detect	0	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	2.04E-05	detect	0	0	<1.0	**4.7**
	P8dc	P8dc-SSComp-01_20171024_NM	1.19E-05	detect	0	0	<1.0	**2.7**
	P8-TP3	P8-TP3-SS_4/4/14_NM	1.23E-05	detect	0	0	<1.0	**2.8**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	6.14E-05	detect	0	0	**1.4**	**14.1**
	SPP	SPP-SSComp-01_20171025_NM	7.49E-05	detect	0	0	**1.7**	**17.2**
	SS1,2-HP18	SS1-HP18-(0-2)c	1.71E-07	detect	0	0	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	9.91E-08	detect	0	0	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	2.55E-05	detect	0	0	<1.0	**5.9**
	SS15,16-HP9	SS15-HP9-(0-2)c	1.98E-05	detect	0	0	<1.0	**4.6**
	SS3,4-HP16	SS3-HP16-(0-2)c	3.87E-06	detect	0	0	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	2.17E-06	detect	0	0	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	3.03E-06	detect	0	0	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	1.81E-06	detect	0	0	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	6.8E-07	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

D/F Av TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	2.05E-07	detect	0	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	6.07E-06	detect	0	0	<1.0	**1.4**
	Grid 94	Grid 94-SSComp-01_20171026_NM	1.2E-05	detect	0	0	<1.0	**2.8**
	HP13a-1	HP13A-1-SS_4/10/14_NM	1.03E-05	detect	0	0	<1.0	**2.4**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	1.49E-06	detect	0	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	4.9E-05	detect	0	0	**1.1**	**11.3**
	SE11-HP11	SE11-HP11-(0-2)c	2.04E-05	detect	0	0	<1.0	**4.7**
	SE12-HP12	SE12-HP12-(0-2)c	4.04E-06	detect	0	0	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	6.15E-05	detect	0	0	**1.4**	**14.1**
	SE14-HP13	SE14-HP13-(0-2)c	5.04E-07	detect	0	0	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	3.54E-05	detect	0	0	<1.0	**8.1**
	SE16-HP13	SE16-HP13-(0-2)c	3.37E-06	detect	0	0	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	4.26E-06	detect	0	0	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	7.62E-06	detect	0	0	<1.0	**1.7**
	SE2-HP1a	SE2-HP1a-(0-2)c	9.67E-06	detect	0	0	<1.0	**2.2**
	SE3-HP1	SE3-HP1-(0-2)c	5.28E-06	detect	0	0	<1.0	**1.2**
	SE4-HP1	SE4-HP1-(0-2)c	2.61E-05	detect	0	0	<1.0	**6.0**
	SE5-HP2	SE5-HP2-(0-2)c	2.68E-05	detect	0	0	<1.0	**6.1**
	SE6-HP7	SE6-HP7-(0-2)c	0.000108	detect	0	0	**2.5**	**24.8**
	SE7-HP7	SE7-HP7-(0-2)c	7.95E-07	detect	0	0	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	7.29E-06	detect	0	0	<1.0	**1.7**
	SE9-HP10	SE9-HP10-(0-2)c	2.97E-05	detect	0	0	<1.0	**6.8**
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	8.49E-08	detect	0	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	1.11E-07	detect	0	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

D/F Av TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	6.49E-06	detect	0	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	2.93E-06	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	1.74E-05	detect	0	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	4.24E-06	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	1.83E-05	detect	0	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	6.76E-07	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	2.63E-06	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	1.57E-05	detect	0	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	6.51E-06	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	9.64E-07	detect	0	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	0	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	2.44E-06	detect	0	0	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	4.31E-06	detect	0	0	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	1.09E-05	detect	0	0	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	2.46E-06	detect	0	0	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	3.71E-06	detect	0	0	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	5.48E-06	detect	0	0	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	5.5E-06	detect	0	0	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	9.38E-07	detect	0	0	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	1.09E-06	detect	0	0	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	1.4E-06	detect	0	0	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	1.52E-05	detect	0	0	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	6.28E-07	detect	0	0	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	2.08E-06	detect	0	0	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	1.11E-06	detect	0	0	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	6.12E-07	detect	0	0	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	1.55E-05	detect	0	0	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	4.2E-06	detect	0	0	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	7.88E-06	detect	0	0	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	1.77E-06	detect	0	0	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	4.11E-07	detect	0	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	4.11E-07	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

D/F Av TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	5.59E-05	detect	0	0	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	8.39E-05	detect	0	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	4.11E-06	detect	0	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	3.99E-06	detect	0	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	9.07E-07	detect	0	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	5.22E-06	detect	0	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	2.65E-06	detect	0	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	1.38E-06	detect	0	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	1.35E-06	detect	0	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	6.21E-07	detect	0	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	5.6E-06	detect	0	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	6.01E-06	detect	0	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	3.48E-06	detect	0	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	3.45E-05	detect	0	0	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	2.99E-05	detect	0	0	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	1.77E-05	detect	0	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	1.06E-05	detect	0	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	2.41E-05	detect	0	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.000407	detect	0	0	<1.0	**4.1**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	3.93E-07	detect	0	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	4.19E-06	detect	0	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	1.57E-05	detect	0	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	7.57E-07	detect	0	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	9.81E-06	detect	0	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	1.09E-06	detect	0	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	6.5E-07	detect	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	3.6E-07	detect	0	0	<1.0	<1.0
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	1.65E-06	detect	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.000121	detect	0	0	<1.0	**1.2**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	5.88E-06	detect	0	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	4.55E-07	detect	0	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	9.05E-05	detect	0	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.001534	detect	0	0	**1.5**	**15.3**
	P3	P3-SSComp-01_20171020_NM	0.000194	detect	0	0	<1.0	**1.9**
	P3-BH1	P3-BH1-SS_4/3/14_NM	4.43E-05	detect	0	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	2.09E-06	detect	0	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	2.61E-06	detect	0	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	1.06E-05	detect	0	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	4.01E-05	detect	0	0	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	2.52E-05	detect	0	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	2.58E-05	detect	0	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.000104	detect	0	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.000123	detect	0	0	<1.0	**1.2**
	SS1,2-HP18	SS1-HP18-(0-2)c	6.15E-07	detect	0	0	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	3.8E-07	detect	0	0	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	4.86E-05	detect	0	0	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	3.91E-05	detect	0	0	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	9.46E-06	detect	0	0	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	5.73E-06	detect	0	0	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	7.65E-06	detect	0	0	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	4.89E-06	detect	0	0	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	2.07E-06	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

D/F Av TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	7.23E-07	detect	0	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	1.4E-05	detect	0	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	2.53E-05	detect	0	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	2.21E-05	detect	0	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	4.13E-06	detect	0	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	8.56E-05	detect	0	0	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	4.02E-05	detect	0	0	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	9.84E-06	detect	0	0	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	0.000104	detect	0	0	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	1.6E-06	detect	0	0	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	6.46E-05	detect	0	0	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	8.41E-06	detect	0	0	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	1.03E-05	detect	0	0	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	1.71E-05	detect	0	0	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	2.1E-05	detect	0	0	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	1.24E-05	detect	0	0	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	4.97E-05	detect	0	0	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	5.07E-05	detect	0	0	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	0.000169	detect	0	0	<1.0	**1.7**
	SE7-HP7	SE7-HP7-(0-2)c	2.38E-06	detect	0	0	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	1.64E-05	detect	0	0	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	5.55E-05	detect	0	0	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	3.31E-07	detect	0	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	4.21E-07	detect	0	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Clark Fork River from Ingestion of River Surface Water

Av TEQ - ND=1/2RL

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Adjacent to Site	50-CFR	SW50-CFR	2E-09	ND	0.000021	0.0000021	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	2E-09	ND	0.000021	0.0000021	<1.0	<1.0
	CFR2	CFR2_20180523_NM	2E-09	detect	0.000021	0.0000021	<1.0	<1.0
	SW3-CFR	SW3-CFR	2E-09	detect	0.000021	0.0000021	<1.0	<1.0
	51-CFR	SW51-CFR	2E-09	ND	0.000021	0.0000021	<1.0	<1.0
	52-CFR	SW52-CFR	2E-09	ND	0.000021	0.0000021	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	2E-09	ND	0.000021	0.0000021	<1.0	<1.0
	54-CFR	SW54-CFR	2E-09	ND	0.000021	0.0000021	<1.0	<1.0
	SW2-CFR	SW2-CFR	2E-09	detect	0.000021	0.0000021	<1.0	<1.0
	55-CFR	SW55-CFR	2E-09	ND	0.000021	0.0000021	<1.0	<1.0
	56-CFR	SW56-CFR	2E-09	ND	0.000021	0.0000021	<1.0	<1.0
	SW1-CFR	SW1-CFR	2E-09	detect	0.000021	0.0000021	<1.0	<1.0
	57-CFR	SW57-CFR	2E-09	ND	0.000021	0.0000021	<1.0	<1.0
	58-CFR	SW58-CFR	2E-09	ND	0.000021	0.0000021	<1.0	<1.0
	59-CFR	SW59-CFR	2E-09	ND	0.000021	0.0000021	<1.0	<1.0
	60-CFR	SW60-CFR	2E-09	ND	0.000021	0.0000021	<1.0	<1.0
	61-CFR	SW61-CFR	2E-09	ND	0.000021	0.0000021	<1.0	<1.0
	62-CFR	SW62-CFR	2E-09	ND	0.000021	0.0000021	<1.0	<1.0
	63-CFR	SW63-CFR	2E-09	ND	0.000021	0.0000021	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects (ND) are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Catbird from Ingestion of Creek Surface Water

Av TEQ - ND=1/2RL

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	#N/A	#N/A	0.000021	0.0000021	#N/A	#N/A
	43-OK	SW43-OK	#N/A	#N/A	0.000021	0.0000021	#N/A	#N/A
LaValle Creek	SW9-LV	SW9-LV	2E-09	detect	0.000021	0.0000021	<1.0	<1.0
	37-LV	SW37-LV	2E-09	detect	0.000021	0.0000021	<1.0	<1.0
	39-LV	SW39-LV	2E-09	detect	0.000021	0.0000021	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Catbird from Ingestion of Pond Surface Water

Av TEQ - ND=1/2RL

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	2E-09	detect	0.000021	0.0000021	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	#N/A	#N/A	0.000021	0.0000021	#N/A	#N/A
69-HP1a	SW69-HP1a	2E-09	detect	0.000021	0.0000021	<1.0	<1.0
73-P5	SW73-P5	3E-09	detect	0.000021	0.0000021	<1.0	<1.0
71-HP7	SW71-HP7	1E-09	detect	0.000021	0.0000021	<1.0	<1.0
72-HP2	SW72-HP2	1E-09	detect	0.000021	0.0000021	<1.0	<1.0
75-HP10	SW75-HP10	1E-09	detect	0.000021	0.0000021	<1.0	<1.0
67-HP12	SW67-HP12	1E-09	detect	0.000021	0.0000021	<1.0	<1.0
68-IBJ	SW68-IBJ	3E-09	detect	0.000021	0.0000021	<1.0	<1.0
66-HP13	SW66-HP13	1E-09	detect	0.000021	0.0000021	<1.0	<1.0
65-HP13a	SW65-HP13a	2E-09	detect	0.000021	0.0000021	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	#N/A	#N/A	0.000021	0.0000021	#N/A	#N/A
70-CWD	SW70-CWD	3E-09	detect	0.000021	0.0000021	<1.0	<1.0
64-HP18	SW64-HP18	2E-09	detect	0.000021	0.0000021	<1.0	<1.0

#N/A = not analyzed

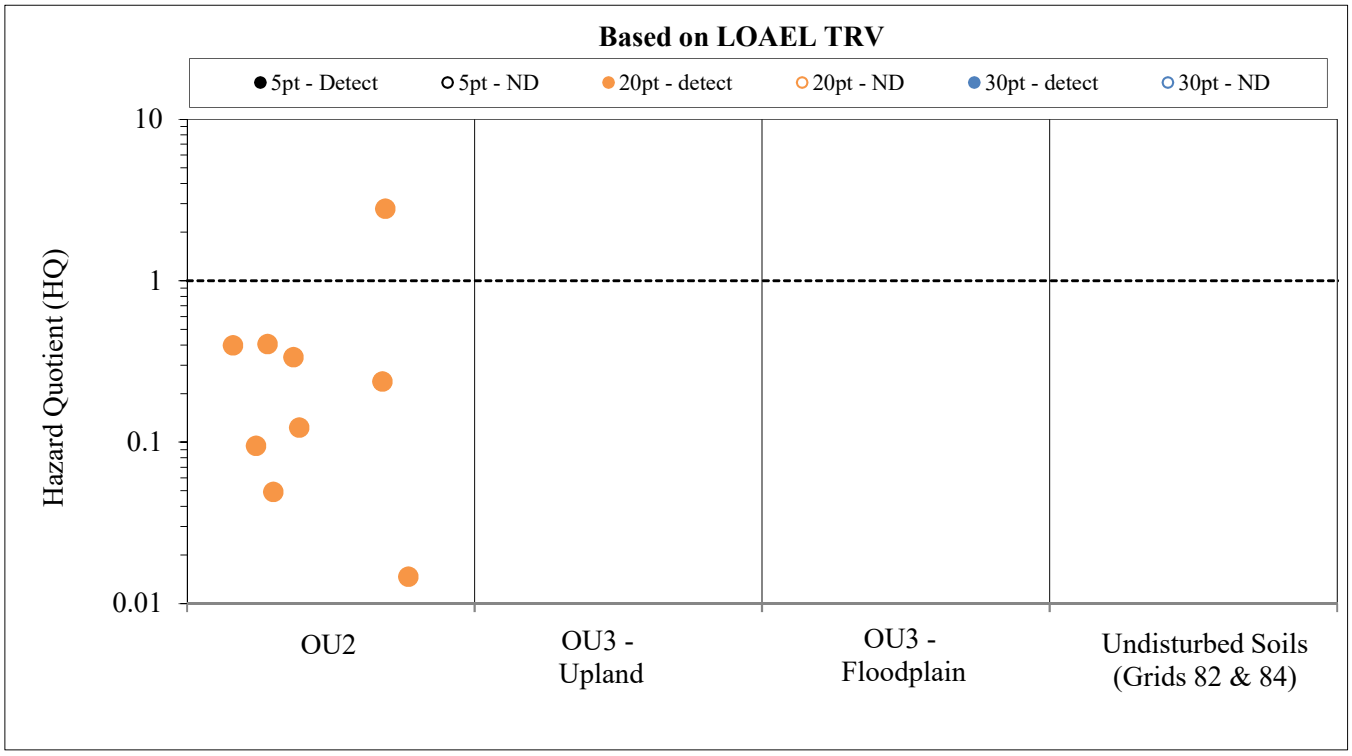
(a) Non-detects are evaluated at 1/2 the reported value.

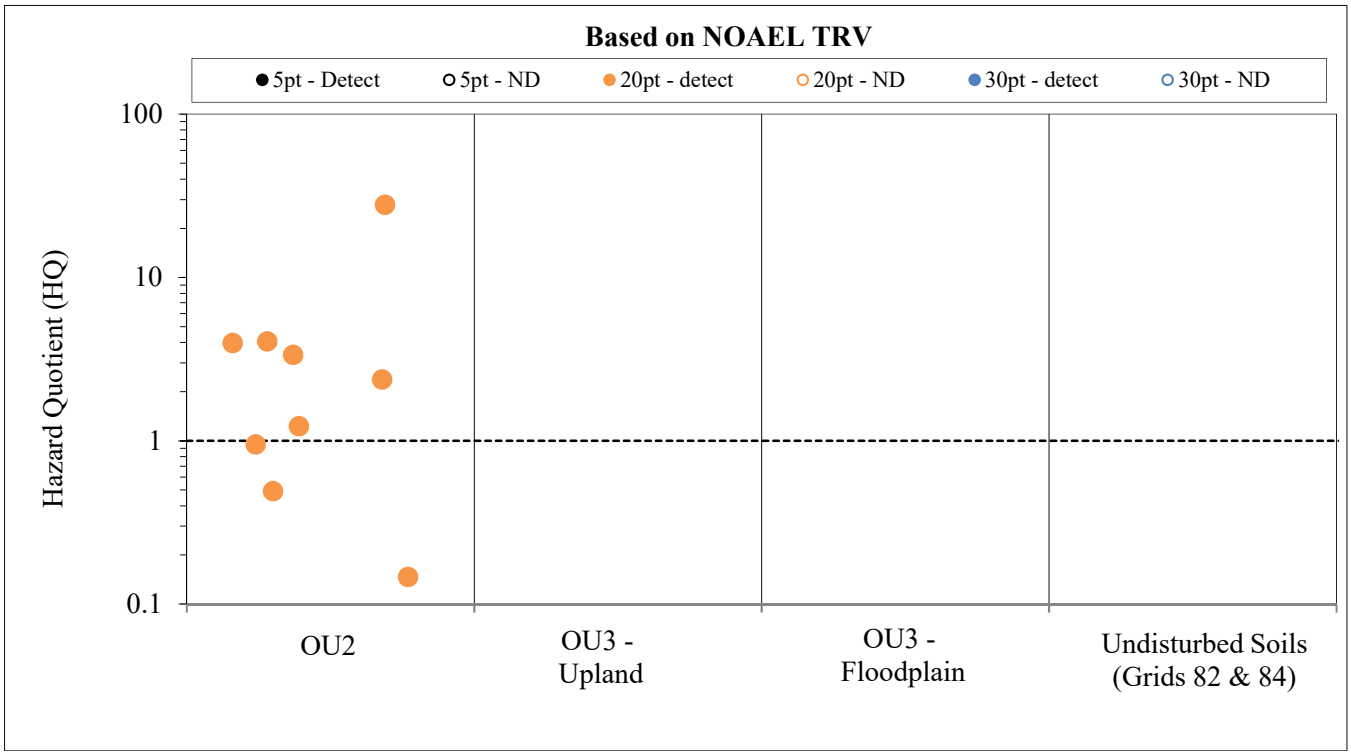
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Food by Exposure Unit/Soil Type

D/F+DL-PCB Av TEQ - ND=1/2RL





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

D/F+DL-PCB Av TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	1.77E-05	detect	0	0	<1.0	**4.1**
	Grid 13	Grid 13-SSComp-01_20171019_NM	2.14E-06	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	1.73E-05	detect	0	0	<1.0	**4.0**
	Grid 2	Grid 2-SSComp-01_20171016_NM	4.14E-06	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	1.47E-05	detect	0	0	<1.0	**3.4**
	Grid 23	Grid 23-SSComp-01_20171018_NM	6.38E-07	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	1.03E-05	detect	0	0	<1.0	**2.4**
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.000121	detect	0	0	**2.8**	**27.8**
	Grid 9	Grid 9-SSComp-01_20171018_NM	5.36E-06	detect	0	0	<1.0	**1.2**
	LF-1	LF-1-SS_4/18/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	0	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	#N/A	#N/A	0	0	#N/A	#N/A
	TSB-SS	BACKFILL-TSB-SS	#N/A	#N/A	0	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

D/F+DL-PCB Av TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	0	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	CRP-1	CRP-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-1	HP18-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-IB	HP18-SSC-IB_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP9-1	HP9-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	IBK-1	IBK-1-SS_4/16/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P17-BH1	P17-BH1-SS_4/3/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P4-BH1	P4-BH1-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P5-BH2	P5-BH2-SS_4/3/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

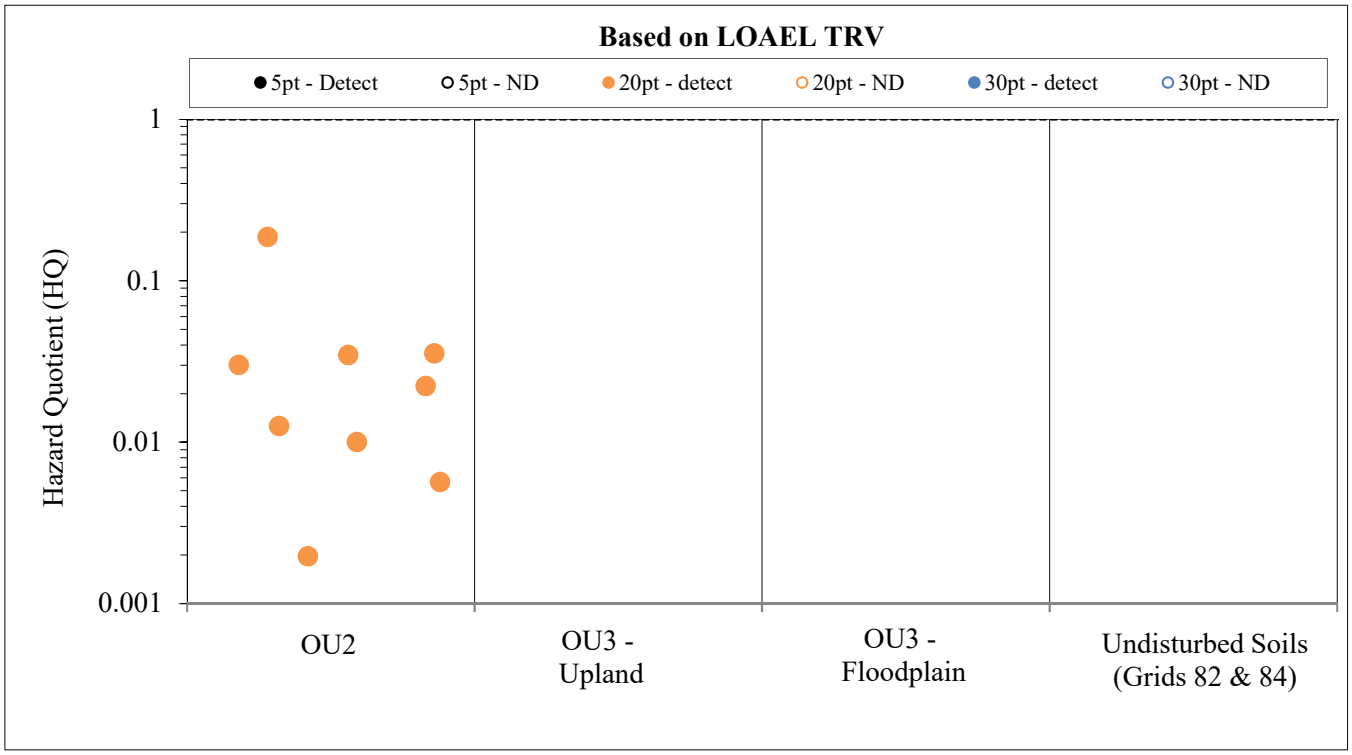
D/F+DL-PCB Av TEQ - ND=1/2RL

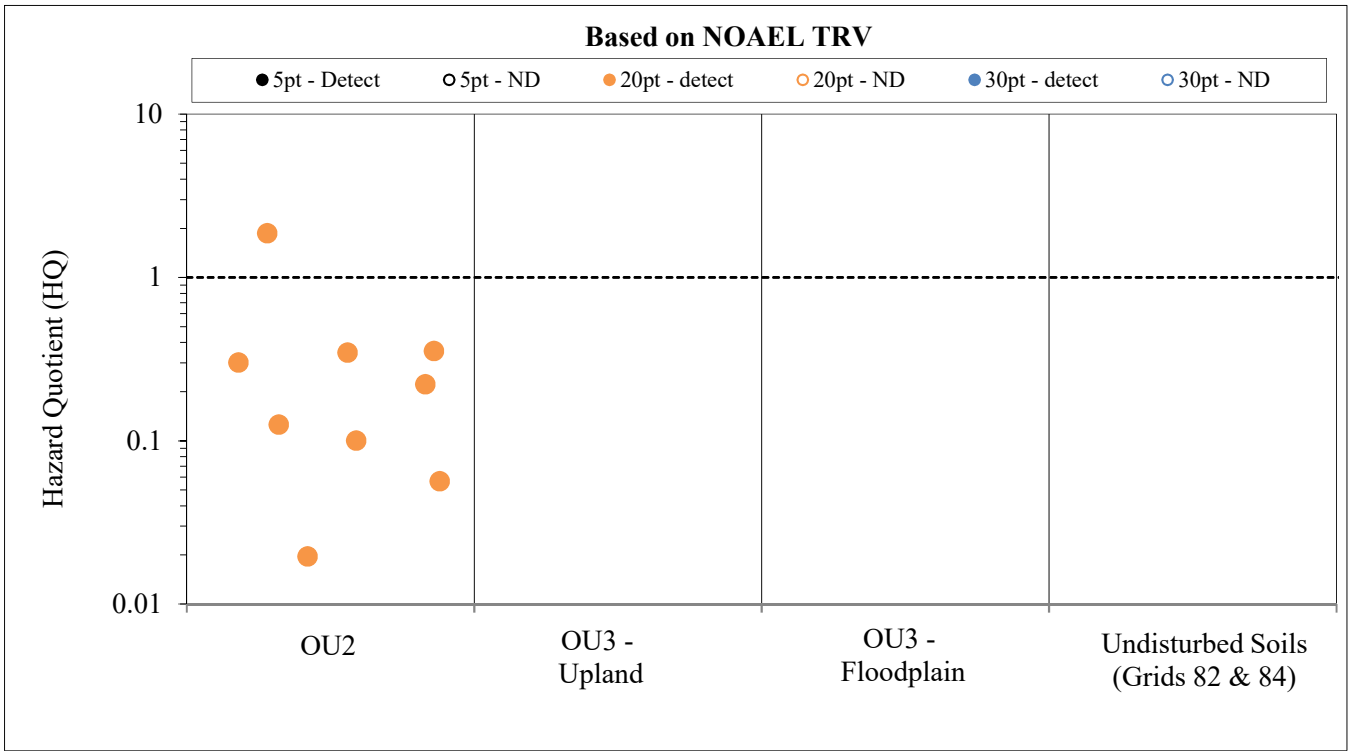
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	0	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Surface Soil by Exposure Unit/Soil Type

D/F+DL-PCB Av TEQ - ND=1/2RL





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

D/F+DL-PCB Av TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	3.54E-05	detect	0	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	5.65E-06	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	3.47E-05	detect	0	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	1E-05	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	3.01E-05	detect	0	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	1.96E-06	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	2.22E-05	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.000187	detect	0	0	<1.0	**1.9**
	Grid 9	Grid 9-SSComp-01_20171018_NM	1.26E-05	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	0	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	#N/A	#N/A	0	0	#N/A	#N/A
	TSB-SS	BACKFILL-TSB-SS	#N/A	#N/A	0	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

D/F+DL-PCB Av TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	0	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	CRP-1	CRP-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-1	HP18-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-IB	HP18-SSC-IB_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP9-1	HP9-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	IBK-1	IBK-1-SS_4/16/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P17-BH1	P17-BH1-SS_4/3/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P4-BH1	P4-BH1-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P5-BH2	P5-BH2-SS_4/3/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

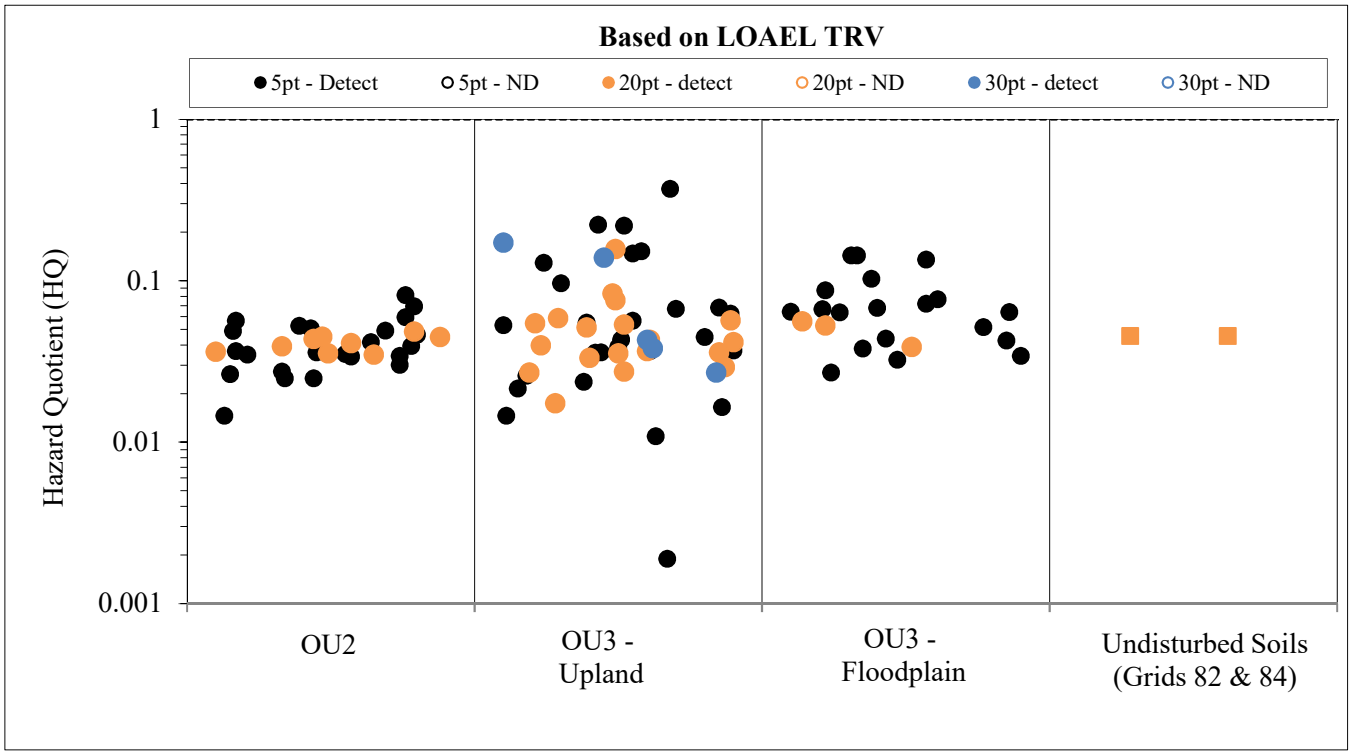
D/F+DL-PCB Av TEQ - ND=1/2RL

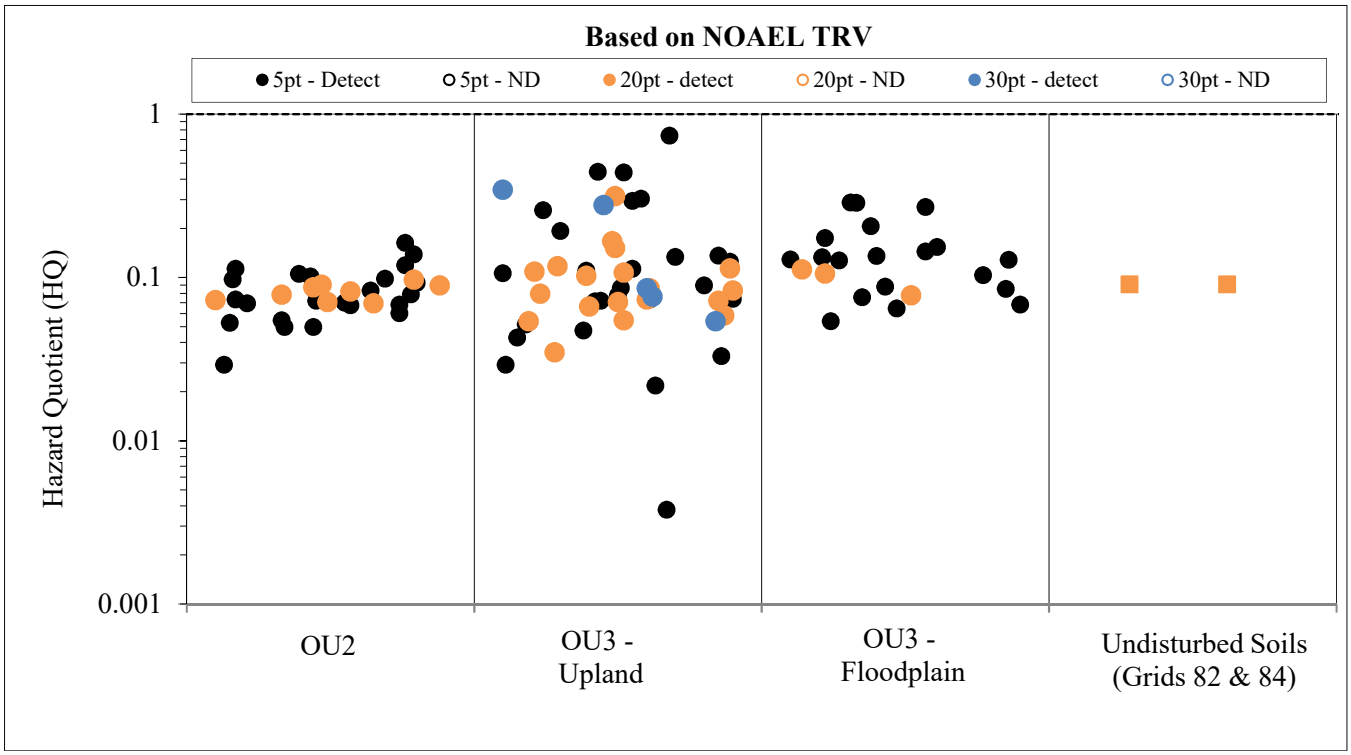
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	0	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Food by Exposure Unit/Soil Type

Vanadium





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Vanadium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.046919	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.053994	detect	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.042451	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.041706	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.053622	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.058091	detect	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.043568	detect	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.052133	detect	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.049154	detect	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.08304	detect	1	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.017502	detect	1	0	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.04394	detect	1	0	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.040589	detect	1	0	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.041706	detect	1	0	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.031652	detect	1	0	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.040961	detect	1	0	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.055484	detect	1	0	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.049898	detect	1	0	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.060697	detect	1	0	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.042078	detect	1	0	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.03612	detect	1	0	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.097562	detect	1	0	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.071124	detect	1	0	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.062931	detect	1	0	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.043196	detect	1	0	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.058835	detect	1	0	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.047292	detect	1	0	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.058463	detect	1	0	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.032769	detect	1	0	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.067772	detect	1	0	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.02979	detect	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.02979	detect	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Vanadium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.166452	detect	1	0	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.266248	detect	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.443126	detect	1	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.035003	detect	1	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.032397	detect	1	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.070379	detect	1	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.04394	detect	1	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.061442	detect	1	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.039844	detect	1	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.042451	detect	1	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.068145	detect	1	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.099797	detect	1	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.047664	detect	1	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.188422	detect	1	0	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.065166	detect	1	0	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.051388	detect	1	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.049898	detect	1	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.043196	detect	1	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.09086	detect	1	0	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.064049	detect	1	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.032769	detect	1	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.115436	detect	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.063676	detect	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.154908	detect	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.043196	detect	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.030907	detect	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.025694	detect	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.176506	detect	1	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.019736	detect	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.080061	detect	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.262897	detect	1	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.053622	detect	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.020853	detect	1	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.017502	detect	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.002271	detect	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.013033	detect	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.042823	detect	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.045802	detect	1	0	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.051388	detect	1	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.05176	detect	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.182091	detect	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.206296	detect	1	0	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.044313	detect	1	0	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.046547	detect	1	0	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	0.08155	detect	1	0	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	0.074847	detect	1	0	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.04394	detect	1	0	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.028301	detect	1	0	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.067772	detect	1	0	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.06591	detect	1	0	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.032397	detect	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

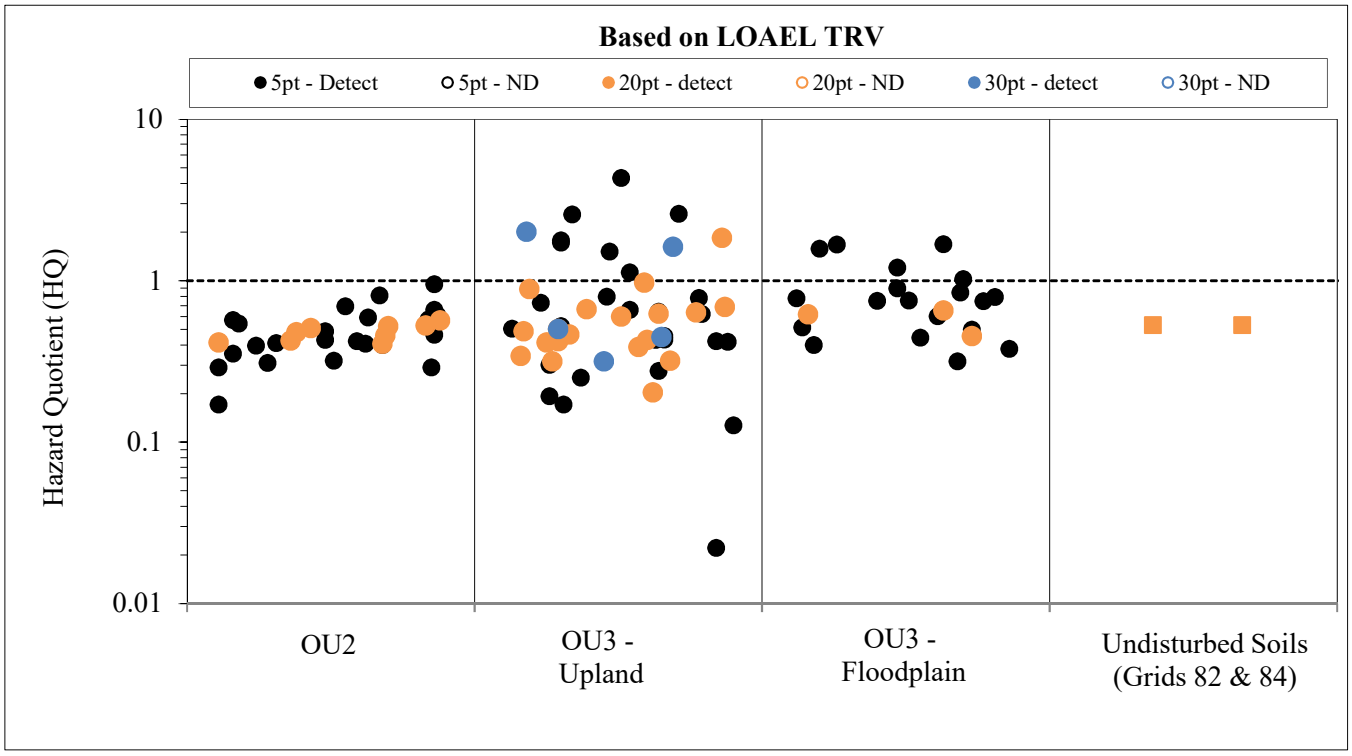
Vanadium

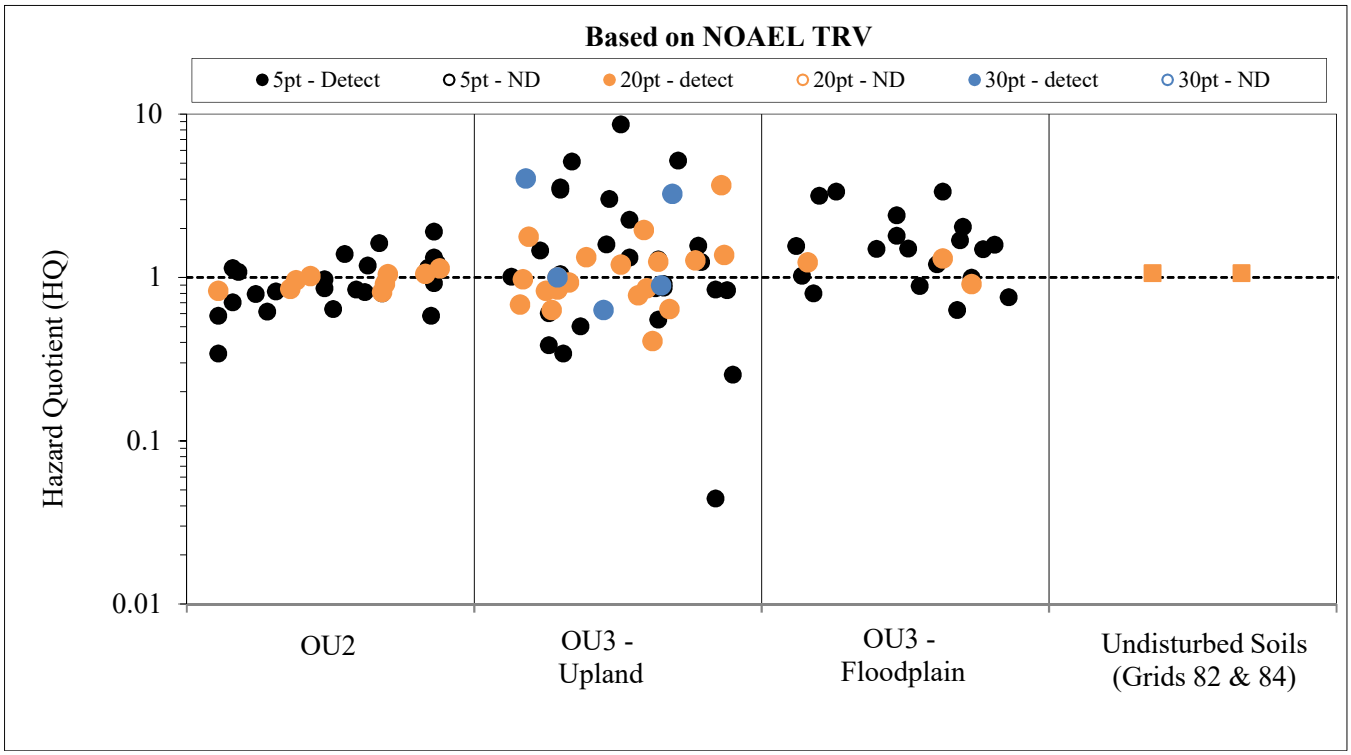
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.046547	detect	1	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.067028	detect	1	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.063304	detect	1	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.079688	detect	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.032397	detect	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	0.172037	detect	1	0	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	0.061814	detect	1	0	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	0.091977	detect	1	0	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	0.171665	detect	1	0	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	0.086391	detect	1	0	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.051015	detect	1	0	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	0.076709	detect	1	0	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.076337	detect	1	0	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.081178	detect	1	0	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.077082	detect	1	0	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.04543	detect	1	0	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.052505	detect	1	0	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	0.161983	detect	1	0	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	0.123256	detect	1	0	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	0.038727	detect	1	0	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.040961	detect	1	0	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	0.104637	detect	1	0	<1.0	<1.0
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	0.054367	detect	1	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.054367	detect	1	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Surface Soil by Exposure Unit/Soil Type

Vanadium





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Vanadium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	12.6	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	14.5	detect	1	0	<1.0	**1.1**
	Grid 14	Grid 14-SSComp-01_20171017_NM	11.4	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	11.2	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	14.4	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	15.6	detect	1	0	<1.0	**1.1**
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	11.7	detect	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	14	detect	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	13.2	detect	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	22.3	detect	1	0	<1.0	**1.6**
	SB2a,3a-IN	SB2a-IN-(0-2)	4.7	detect	1	0	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	11.8	detect	1	0	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	10.9	detect	1	0	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	11.2	detect	1	0	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	8.5	detect	1	0	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	11	detect	1	0	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	14.9	detect	1	0	<1.0	**1.1**
	SS16-IN	SS16-IN-(0-2)c	13.4	detect	1	0	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	16.3	detect	1	0	<1.0	**1.2**
	SS1-IN	SS1-IN-(0-2)c	11.3	detect	1	0	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	9.7	detect	1	0	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	26.2	detect	1	0	<1.0	**1.9**
	SS33-IN	SS33-IN-(0-2)c	19.1	detect	1	0	<1.0	**1.4**
	SS3-IN	SS3-IN-(0-2)c	16.9	detect	1	0	<1.0	**1.2**
	SS4-IN	SS4-IN-(0-2)c	11.6	detect	1	0	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	15.8	detect	1	0	<1.0	**1.1**
	SS6-IN	SS6-IN-(0-2)c	12.7	detect	1	0	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	15.7	detect	1	0	<1.0	**1.1**
	SS8-IN	SS8-IN-(0-2)c	8.8	detect	1	0	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	18.2	detect	1	0	<1.0	**1.3**
	HDPT-SS	BACKFILL-HDPT-SS	8	detect	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	8	detect	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Vanadium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	44.7	detect	1	0	**1.6**	**3.2**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	71.5	detect	1	0	**2.6**	**5.2**
	CRP-1	CRP-1-SS_4/10/14_NM	119	detect	1	0	**4.3**	**8.6**
	Grid 27	Grid 27-SSComp-01_20171019_NM	9.4	detect	1	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	8.7	detect	1	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	18.9	detect	1	0	<1.0	**1.4**
	Grid 30	Grid 30-SSComp-01_20171020_NM	11.8	detect	1	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	16.5	detect	1	0	<1.0	**1.2**
	Grid 34	Grid 34-SSComp-01_20171019_NM	10.7	detect	1	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	11.4	detect	1	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	18.3	detect	1	0	<1.0	**1.3**
	Grid 43	Grid 43-SSComp-01_20171023_NM	26.8	detect	1	0	<1.0	**1.9**
	Grid 44	Grid 44-SSComp-01_20171023_NM	12.8	detect	1	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	50.6	detect	1	0	**1.8**	**3.7**
	Grid 53	Grid 53-SSComp-01_20171020_NM	17.5	detect	1	0	<1.0	**1.3**
	Grid 60	Grid 60-SSComp-01_20171023_NM	13.8	detect	1	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	13.4	detect	1	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	11.6	detect	1	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	24.4	detect	1	0	<1.0	**1.8**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	17.2	detect	1	0	<1.0	**1.3**
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	8.8	detect	1	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	31	detect	1	0	**1.1**	**2.3**
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	17.1	detect	1	0	<1.0	**1.2**
	HP18-1	HP18-1-SS_4/10/14_NM	41.6	detect	1	0	**1.5**	**3.0**
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	11.6	detect	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	8.3	detect	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	6.9	detect	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	47.4	detect	1	0	**1.7**	**3.4**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	5.3	detect	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	21.5	detect	1	0	<1.0	**1.6**
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	70.6	detect	1	0	**2.6**	**5.1**
	P17-BH1	P17-BH1-SS_4/3/14_NM	14.4	detect	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	5.6	detect	1	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	4.7	detect	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.61	detect	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	3.5	detect	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	11.5	detect	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	12.3	detect	1	0	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	13.8	detect	1	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	13.9	detect	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	48.9	detect	1	0	**1.8**	**3.6**
	SPP	SPP-SSComp-01_20171025_NM	55.4	detect	1	0	**2.0**	**4.0**
	SS1,2-HP18	SS1-HP18-(0-2)c	11.9	detect	1	0	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	12.5	detect	1	0	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	21.9	detect	1	0	<1.0	**1.6**
	SS15,16-HP9	SS15-HP9-(0-2)c	20.1	detect	1	0	<1.0	**1.5**
	SS3,4-HP16	SS3-HP16-(0-2)c	11.8	detect	1	0	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	7.6	detect	1	0	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	18.2	detect	1	0	<1.0	**1.3**
	SS9,10-HP12	SS9-HP12-(0-2)c	17.7	detect	1	0	<1.0	**1.3**
	SWBA	SWBA-SSComp-01_20171024_NM	8.7	detect	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Vanadium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	12.5	detect	1	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	18	detect	1	0	<1.0	**1.3**
	Grid 94	Grid 94-SSComp-01_20171026_NM	17	detect	1	0	<1.0	**1.2**
	HP13a-1	HP13A-1-SS_4/10/14_NM	21.4	detect	1	0	<1.0	**1.6**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	8.7	detect	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	46.2	detect	1	0	**1.7**	**3.4**
	SE11-HP11	SE11-HP11-(0-2)c	16.6	detect	1	0	<1.0	**1.2**
	SE12-HP12	SE12-HP12-(0-2)c	24.7	detect	1	0	<1.0	**1.8**
	SE13-HP12	SE13-HP12-(0-2)c	46.1	detect	1	0	**1.7**	**3.4**
	SE14-HP13	SE14-HP13-(0-2)c	23.2	detect	1	0	<1.0	**1.7**
	SE15-HP13	SE15-HP13-(0-2)c	13.7	detect	1	0	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	20.6	detect	1	0	<1.0	**1.5**
	SE17-HP13a	SE17-HP13a-(0-2)c	20.5	detect	1	0	<1.0	**1.5**
	SE1-HP1a	SE1-HP1a-(0-2)c	21.8	detect	1	0	<1.0	**1.6**
	SE2-HP1a	SE2-HP1a-(0-2)c	20.7	detect	1	0	<1.0	**1.5**
	SE3-HP1	SE3-HP1-(0-2)c	12.2	detect	1	0	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	14.1	detect	1	0	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	43.5	detect	1	0	**1.6**	**3.2**
	SE6-HP7	SE6-HP7-(0-2)c	33.1	detect	1	0	**1.2**	**2.4**
	SE7-HP7	SE7-HP7-(0-2)c	10.4	detect	1	0	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	11	detect	1	0	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	28.1	detect	1	0	<1.0	**2.0**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	14.6	detect	1	0	<1.0	**1.1**
	Grid 84	Grid 84-SSComp-01_20171026_NM	14.6	detect	1	0	<1.0	**1.1**

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Clark Fork River from Ingestion of River Surface Water

Vanadium

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Adjacent to Site	50-CFR	SW50-CFR	0.0006	detect	0.344	0.688	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0013	detect	0.344	0.688	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0019	detect	0.344	0.688	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0006	detect	0.344	0.688	<1.0	<1.0
	51-CFR	SW51-CFR	0.0007	detect	0.344	0.688	<1.0	<1.0
	52-CFR	SW52-CFR	0.0008	detect	0.344	0.688	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0003	detect	0.344	0.688	<1.0	<1.0
	54-CFR	SW54-CFR	0.0007	detect	0.344	0.688	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0006	detect	0.344	0.688	<1.0	<1.0
	55-CFR	SW55-CFR	0.0007	detect	0.344	0.688	<1.0	<1.0
	56-CFR	SW56-CFR	0.0007	detect	0.344	0.688	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0007	detect	0.344	0.688	<1.0	<1.0
	57-CFR	SW57-CFR	0.0003	ND	0.344	0.688	<1.0	<1.0
	58-CFR	SW58-CFR	0.0009	detect	0.344	0.688	<1.0	<1.0
	59-CFR	SW59-CFR	0.0006	detect	0.344	0.688	<1.0	<1.0
	60-CFR	SW60-CFR	0.0009	detect	0.344	0.688	<1.0	<1.0
	61-CFR	SW61-CFR	0.0008	detect	0.344	0.688	<1.0	<1.0
	62-CFR	SW62-CFR	0.0008	detect	0.344	0.688	<1.0	<1.0
	63-CFR	SW63-CFR	0.0007	detect	0.344	0.688	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects (ND) are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Catbird from Ingestion of Creek Surface Water

Vanadium

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	9E-04	detect	0.344	0.688	<1.0	<1.0
	43-OK	SW43-OK	1E-03	detect	0.344	0.688	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.001	detect	0.344	0.688	<1.0	<1.0
	37-LV	SW37-LV	0.001	detect	0.344	0.688	<1.0	<1.0
	39-LV	SW39-LV	0.001	detect	0.344	0.688	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Catbird from Ingestion of Pond Surface Water

Vanadium

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0009	detect	0.344	0.688	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0053	detect	0.344	0.688	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0069	detect	0.344	0.688	<1.0	<1.0
73-P5	SW73-P5	0.0036	detect	0.344	0.688	<1.0	<1.0
71-HP7	SW71-HP7	0.0045	detect	0.344	0.688	<1.0	<1.0
72-HP2	SW72-HP2	0.0041	detect	0.344	0.688	<1.0	<1.0
75-HP10	SW75-HP10	0.0032	detect	0.344	0.688	<1.0	<1.0
67-HP12	SW67-HP12	0.0045	detect	0.344	0.688	<1.0	<1.0
68-IBJ	SW68-IBJ	0.001	detect	0.344	0.688	<1.0	<1.0
66-HP13	SW66-HP13	0.0046	detect	0.344	0.688	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0058	detect	0.344	0.688	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0069	detect	0.344	0.688	<1.0	<1.0
70-CWD	SW70-CWD	0.0014	detect	0.344	0.688	<1.0	<1.0
64-HP18	SW64-HP18	0.0077	detect	0.344	0.688	<1.0	<1.0

#N/A = not analyzed

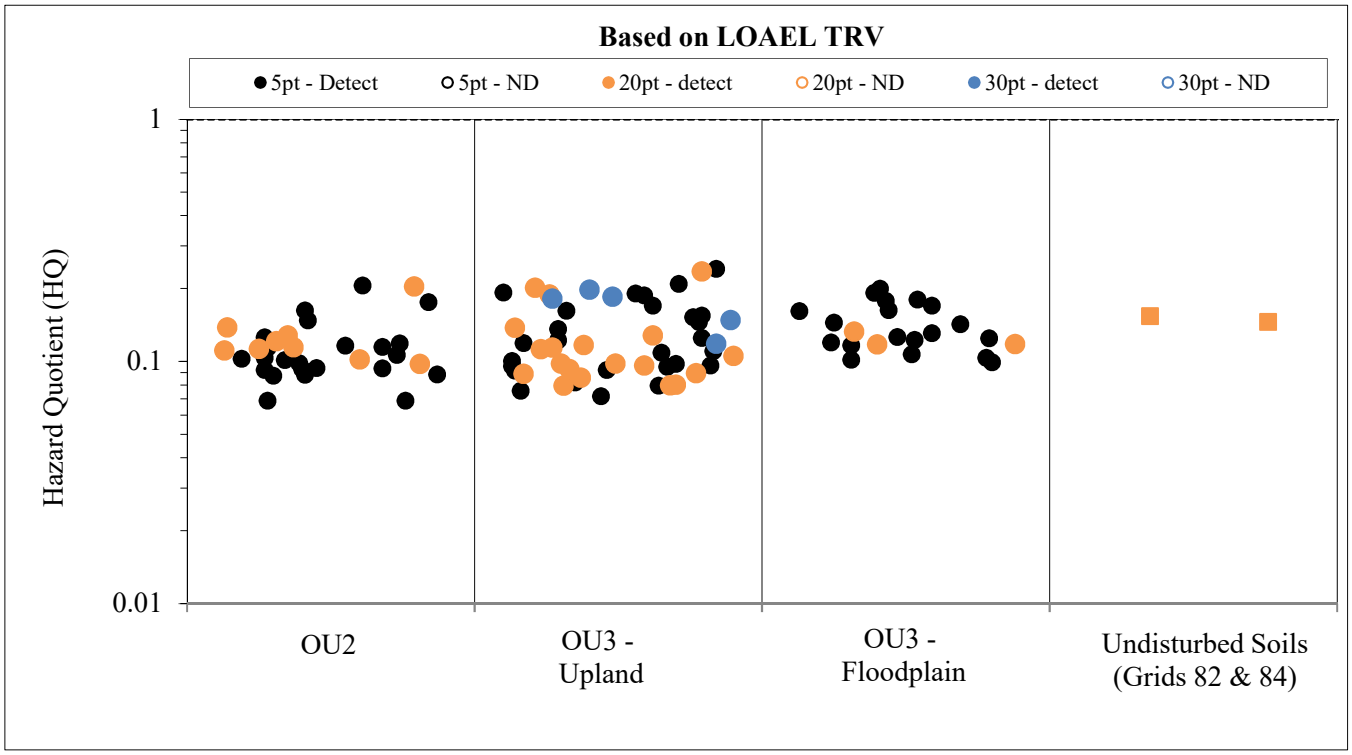
(a) Non-detects are evaluated at 1/2 the reported value.

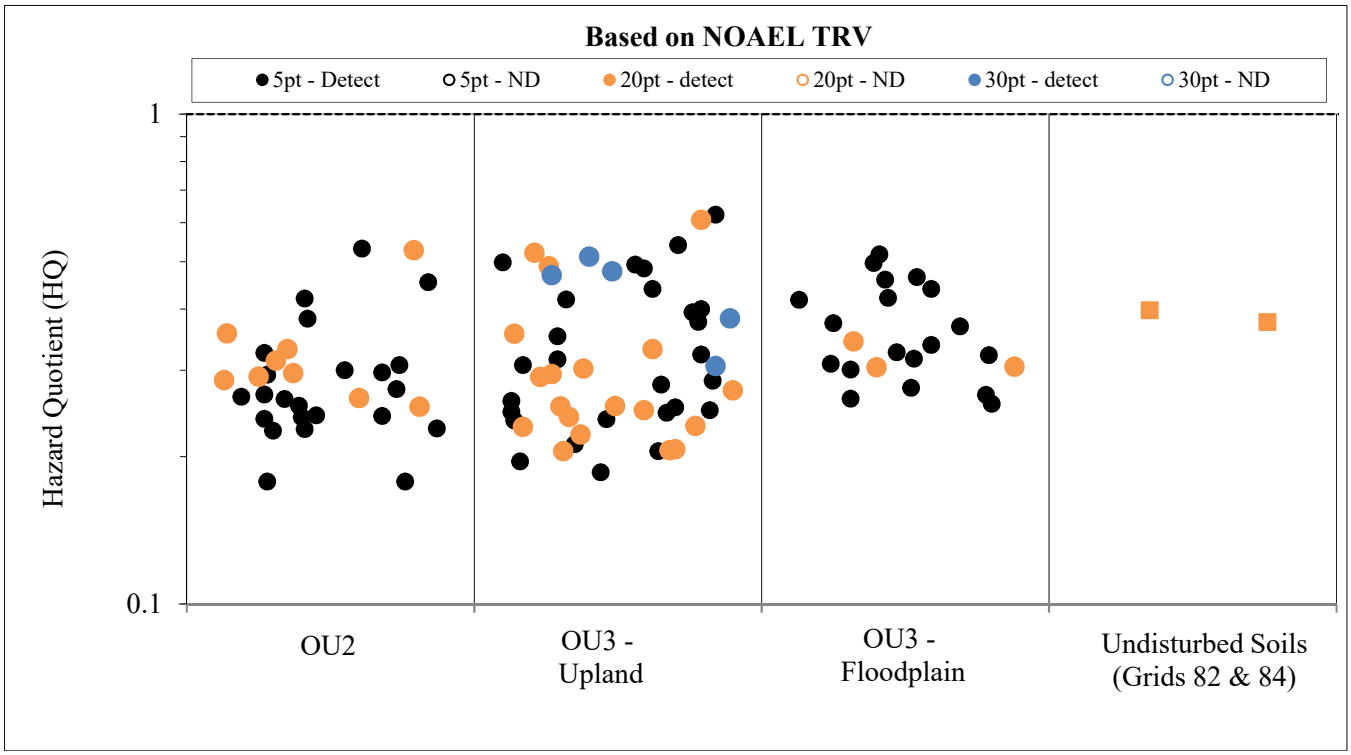
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Food by Exposure Unit/Soil Type

Zinc





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Zinc

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	41.11867	detect	171	66	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	34.11772	detect	171	66	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	36.14247	detect	171	66	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	33.53125	detect	171	66	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	38.15627	detect	171	66	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	30.31651	detect	171	66	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	29.12291	detect	171	66	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	60.79131	detect	171	66	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	33.01377	detect	171	66	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	33.86856	detect	171	66	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	26.01409	detect	171	66	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	27.49613	detect	171	66	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	37.46701	detect	171	66	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	30.83394	detect	171	66	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	30.51865	detect	171	66	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	34.55294	detect	171	66	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	35.38273	detect	171	66	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	52.26156	detect	171	66	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	26.21315	detect	171	66	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	26.2789	detect	171	66	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	171	66	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	27.89426	detect	171	66	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	171	66	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	171	66	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	61.24805	detect	171	66	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	48.40167	detect	171	66	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	27.69648	detect	171	66	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	27.97268	detect	171	66	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	29.26786	detect	171	66	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	31.65318	detect	171	66	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	34.22744	detect	171	66	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	44.01757	detect	171	66	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	30.1804	detect	171	66	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	20.47595	detect	171	66	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	20.47595	detect	171	66	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

Zinc

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	55.03333	detect	171	66	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	50.63861	detect	171	66	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	43.39193	detect	171	66	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	23.64179	detect	171	66	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	23.85175	detect	171	66	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	25.56166	detect	171	66	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	26.6247	detect	171	66	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	26.47441	detect	171	66	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	23.72092	detect	171	66	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	28.66144	detect	171	66	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	29.21365	detect	171	66	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	31.43205	detect	171	66	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	34.80686	detect	171	66	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	56.3349	detect	171	66	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	38.15627	detect	171	66	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	41.01915	detect	171	66	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	33.50287	detect	171	66	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	33.95197	detect	171	66	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	70.13032	detect	171	66	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	29.15927	detect	171	66	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	27.73623	detect	171	66	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	35.43427	detect	171	66	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	27.45575	detect	171	66	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	37.23228	detect	171	66	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	29.04995	detect	171	66	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	21.38877	detect	171	66	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	171	66	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	22.50858	detect	171	66	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	55.74962	detect	171	66	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	28.43515	detect	171	66	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	29.93956	detect	171	66	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	62.24318	detect	171	66	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	71.79019	detect	171	66	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	60.06922	detect	171	66	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	48.17567	detect	171	66	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	28.28249	detect	171	66	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	36.3896	detect	171	66	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	40.51519	detect	171	66	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	44.10571	detect	171	66	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	54.05311	detect	171	66	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	57.36336	detect	171	66	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	56.73858	detect	171	66	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	58.95806	detect	171	66	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	23.64179	detect	171	66	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	24.41258	detect	171	66	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	46.0546	detect	171	66	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	45.39297	detect	171	66	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	28.6427	detect	171	66	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	27.29315	detect	171	66	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	32.89682	detect	171	66	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	32.31587	detect	171	66	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	35.22731	detect	171	66	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Food

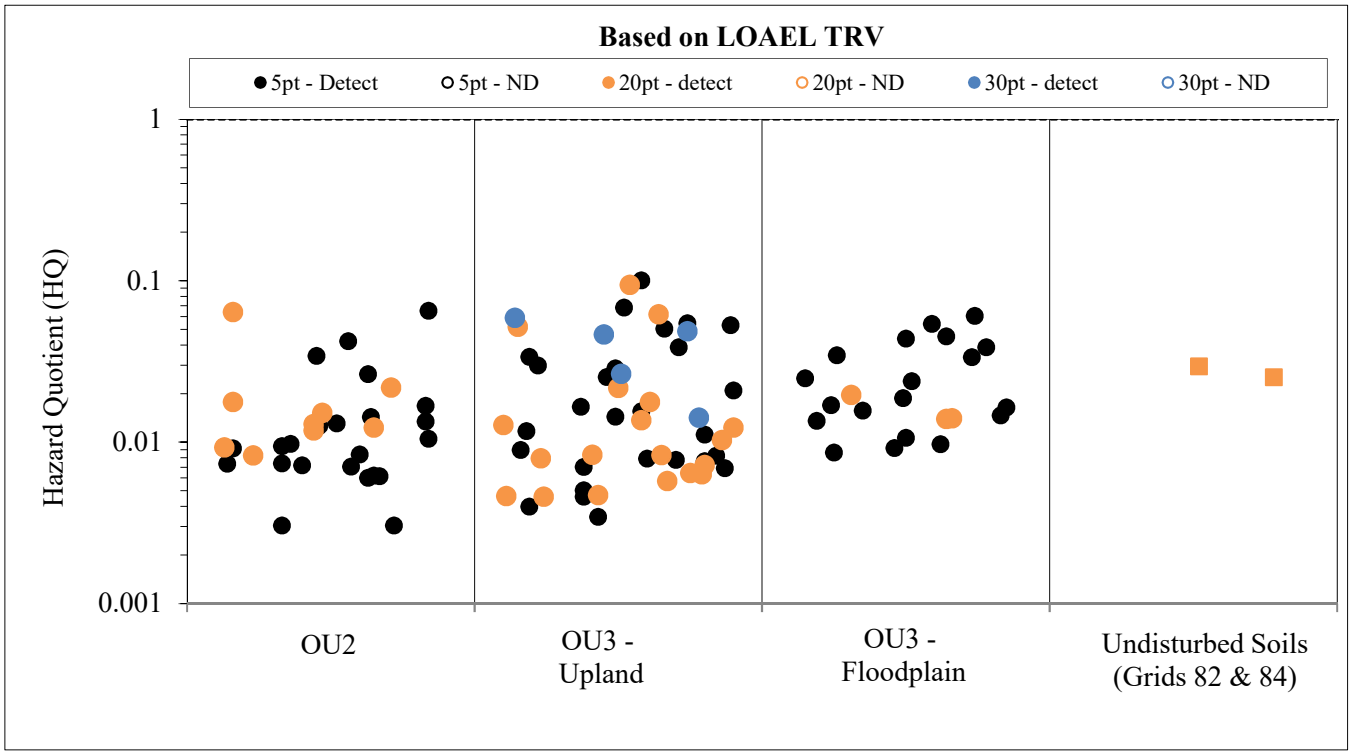
Zinc

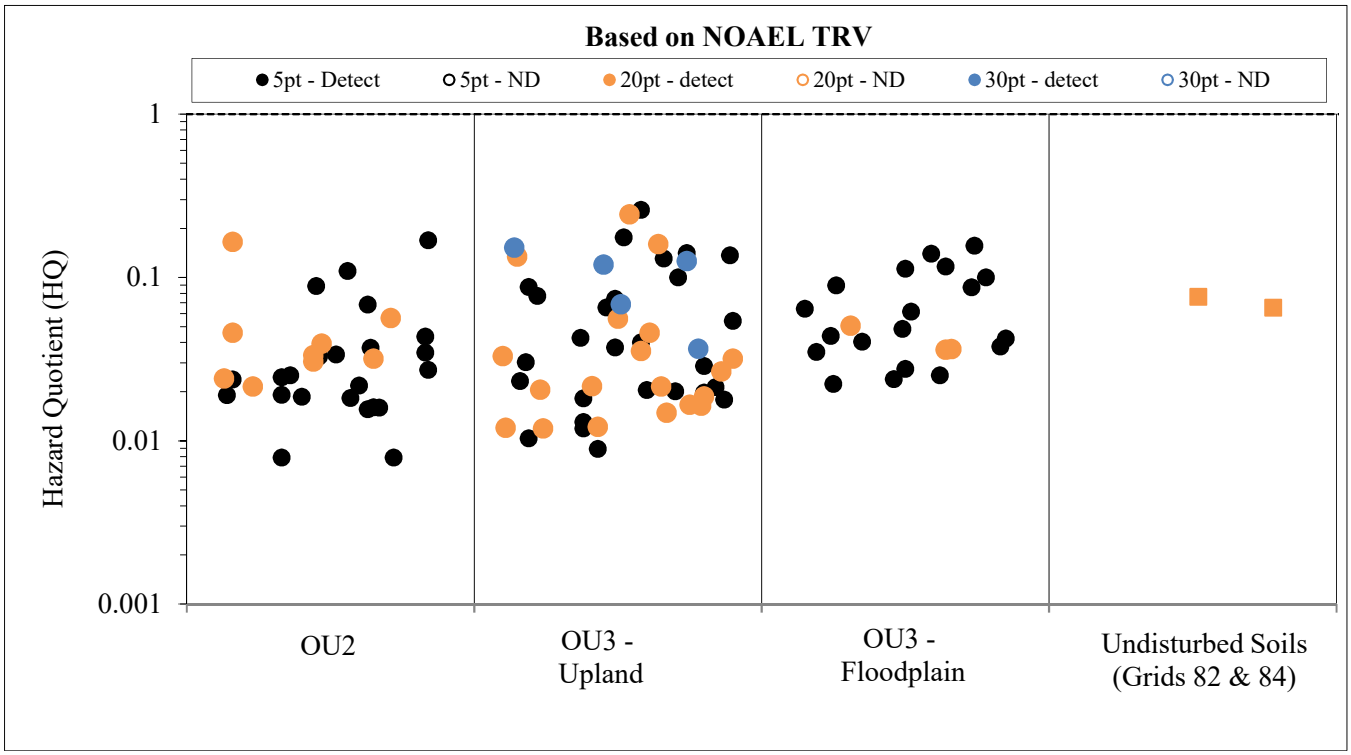
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	35.03133	detect	171	66	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	35.14915	detect	171	66	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	39.57963	detect	171	66	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	36.51207	detect	171	66	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	30.23157	detect	171	66	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	57.19411	detect	171	66	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	43.11897	detect	171	66	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	35.63914	detect	171	66	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	53.55155	detect	171	66	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	31.84058	detect	171	66	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	48.55133	detect	171	66	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	38.93393	detect	171	66	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	37.58342	detect	171	66	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	42.47022	detect	171	66	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	48.09994	detect	171	66	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	30.80102	detect	171	66	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	34.67363	detect	171	66	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	52.9132	detect	171	66	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	59.54442	detect	171	66	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	29.53626	detect	171	66	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	37.11393	detect	171	66	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	50.63861	detect	171	66	<1.0	<1.0
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	45.8084	detect	171	66	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	43.30127	detect	171	66	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Catbird from Ingestion of Surface Soil by Exposure Unit/Soil Type

Zinc





APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Zinc

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	149	detect	171	66	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	88.5	detect	171	66	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	104	detect	171	66	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	84.3	detect	171	66	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	121	detect	171	66	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	63.5	detect	171	66	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	56.7	detect	171	66	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	437	detect	171	66	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	80.7	detect	171	66	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	86.7	detect	171	66	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	41.2	detect	171	66	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	48.2	detect	171	66	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	115	detect	171	66	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	66.6	detect	171	66	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	64.7	detect	171	66	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	91.7	detect	171	66	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	98	detect	171	66	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	289	detect	171	66	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	42.1	detect	171	66	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	42.4	detect	171	66	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	171	66	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	50.2	detect	171	66	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	171	66	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	171	66	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	446	detect	171	66	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	234	detect	171	66	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	49.2	detect	171	66	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	50.6	detect	171	66	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	57.5	detect	171	66	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	71.7	detect	171	66	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	89.3	detect	171	66	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	180	detect	171	66	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	62.7	detect	171	66	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	20.83333	detect	171	66	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	20.83333	detect	171	66	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Zinc

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	333	detect	171	66	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	265	detect	171	66	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	173	detect	171	66	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	31.4	detect	171	66	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	32.2	detect	171	66	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	39.2	detect	171	66	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	44	detect	171	66	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	43.3	detect	171	66	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	31.7	detect	171	66	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	54.2	detect	171	66	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	57.2	detect	171	66	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	70.3	detect	171	66	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	93.6	detect	171	66	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	355	detect	171	66	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	121	detect	171	66	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	148	detect	171	66	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	84.1	detect	171	66	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	87.3	detect	171	66	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	644	detect	171	66	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	56.9	detect	171	66	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	49.4	detect	171	66	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	98.4	detect	171	66	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	48	detect	171	66	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	113	detect	171	66	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	56.3	detect	171	66	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	23.6	detect	171	66	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	171	66	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	27.3	detect	171	66	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	345	detect	171	66	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	53	detect	171	66	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	61.3	detect	171	66	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	466	detect	171	66	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	686	detect	171	66	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	423	detect	171	66	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	231	detect	171	66	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	52.2	detect	171	66	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	106	detect	171	66	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	143	detect	171	66	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	181	detect	171	66	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	317	detect	171	66	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	373	detect	171	66	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	362	detect	171	66	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	402	detect	171	66	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	31.4	detect	171	66	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	34.4	detect	171	66	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	204	detect	171	66	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	196	detect	171	66	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	54.1	detect	171	66	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	47.2	detect	171	66	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	79.9	detect	171	66	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	76	detect	171	66	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	96.8	detect	171	66	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Catbird from Ingestion of Surface Soil

Zinc

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	95.3	detect	171	66	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	96.2	detect	171	66	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	134	detect	171	66	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	107	detect	171	66	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	63	detect	171	66	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	370	detect	171	66	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	170	detect	171	66	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	100	detect	171	66	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	309	detect	171	66	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	72.9	detect	171	66	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	236	detect	171	66	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	128	detect	171	66	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	116	detect	171	66	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	163	detect	171	66	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	230	detect	171	66	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	66.4	detect	171	66	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	92.6	detect	171	66	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	299	detect	171	66	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	413	detect	171	66	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	59	detect	171	66	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	112	detect	171	66	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	265	detect	171	66	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	201	detect	171	66	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	172	detect	171	66	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Clark Fork River from Ingestion of River Surface Water

Zinc

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Adjacent to Site	50-CFR	SW50-CFR	0.0045	detect	66.1	171	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0139	detect	66.1	171	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0153	detect	66.1	171	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0035	detect	66.1	171	<1.0	<1.0
	51-CFR	SW51-CFR	0.0044	detect	66.1	171	<1.0	<1.0
	52-CFR	SW52-CFR	0.0063	detect	66.1	171	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0268	detect	66.1	171	<1.0	<1.0
	54-CFR	SW54-CFR	0.0062	detect	66.1	171	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0026	detect	66.1	171	<1.0	<1.0
	55-CFR	SW55-CFR	0.0041	detect	66.1	171	<1.0	<1.0
	56-CFR	SW56-CFR	0.0039	detect	66.1	171	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0025	detect	66.1	171	<1.0	<1.0
	57-CFR	SW57-CFR	0.0057	detect	66.1	171	<1.0	<1.0
	58-CFR	SW58-CFR	0.0044	detect	66.1	171	<1.0	<1.0
	59-CFR	SW59-CFR	0.0042	detect	66.1	171	<1.0	<1.0
	60-CFR	SW60-CFR	0.0059	detect	66.1	171	<1.0	<1.0
	61-CFR	SW61-CFR	0.005	detect	66.1	171	<1.0	<1.0
	62-CFR	SW62-CFR	0.0092	detect	66.1	171	<1.0	<1.0
	63-CFR	SW63-CFR	0.0036	detect	66.1	171	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects (ND) are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Catbird from Ingestion of Creek Surface Water

Zinc

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.005	detect	66.1	171	<1.0	<1.0
	43-OK	SW43-OK	0.005	detect	66.1	171	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.002	ND	66.1	171	<1.0	<1.0
	37-LV	SW37-LV	0.004	detect	66.1	171	<1.0	<1.0
	39-LV	SW39-LV	0.005	detect	66.1	171	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Catbird from Ingestion of Pond Surface Water

Zinc

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0019	ND	66.1	171	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.022	detect	66.1	171	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0096	ND	66.1	171	<1.0	<1.0
73-P5	SW73-P5	0.0096	ND	66.1	171	<1.0	<1.0
71-HP7	SW71-HP7	0.0132	detect	66.1	171	<1.0	<1.0
72-HP2	SW72-HP2	0.0096	ND	66.1	171	<1.0	<1.0
75-HP10	SW75-HP10	0.0096	ND	66.1	171	<1.0	<1.0
67-HP12	SW67-HP12	0.0096	ND	66.1	171	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0031	detect	66.1	171	<1.0	<1.0
66-HP13	SW66-HP13	0.0096	ND	66.1	171	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0127	detect	66.1	171	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.043	detect	66.1	171	<1.0	<1.0
70-CWD	SW70-CWD	0.0027	detect	66.1	171	<1.0	<1.0
64-HP18	SW64-HP18	0.0096	ND	66.1	171	<1.0	<1.0

#N/A = not analyzed

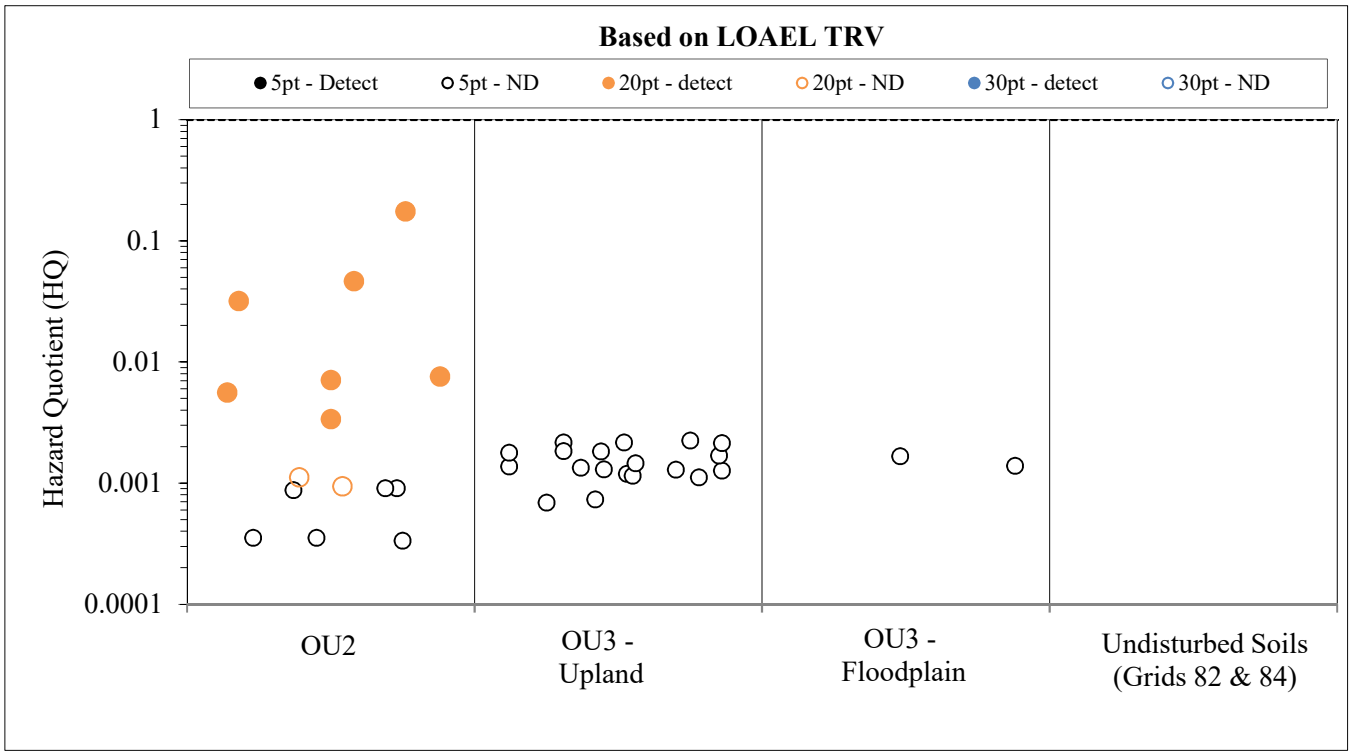
(a) Non-detects are evaluated at 1/2 the reported value.

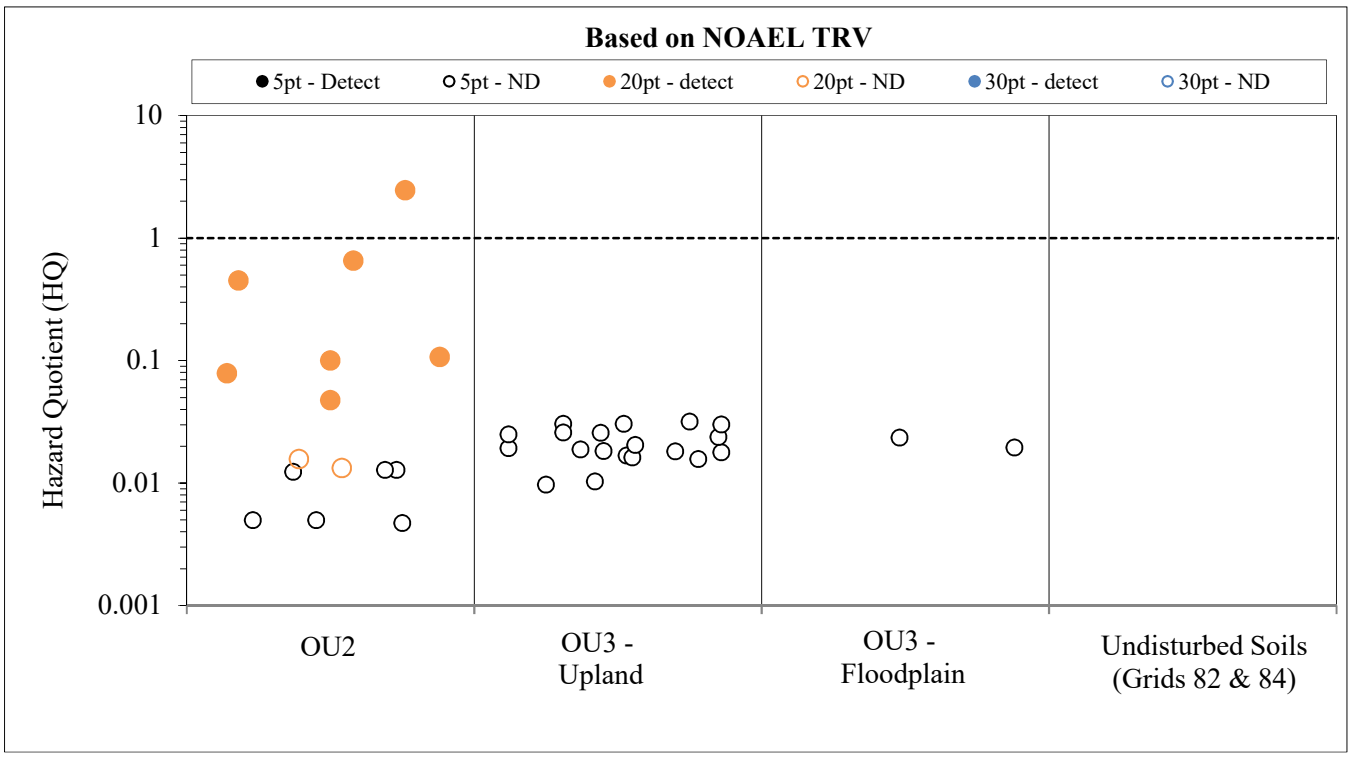
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Food by Exposure Unit/Soil Type

Aroclor-1254





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

Aroclor-1254

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.048799	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.001171	ND	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.033605	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.005887	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.007465	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.000991	ND	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.007975	detect	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.184026	detect	1	0	<1.0	**2.5**
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.003555	detect	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.00092	ND	1	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	0.000352	ND	1	0	<1.0	<1.0
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	0.000372	ND	1	0	<1.0	<1.0
	SS31-IN	SS31-IN-(0-2)c	0.000372	ND	1	0	<1.0	<1.0
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.000956	ND	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.000956	ND	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

Aroclor-1254

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.002272	ND	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.001331	ND	1	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	0.001936	ND	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.001444	ND	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.002272	ND	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.001356	ND	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.001171	ND	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.000725	ND	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.00187	ND	1	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.001257	ND	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.000771	ND	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.002368	ND	1	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.001778	ND	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.001208	ND	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.001368	ND	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.001406	ND	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.001532	ND	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.001922	ND	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.002245	ND	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

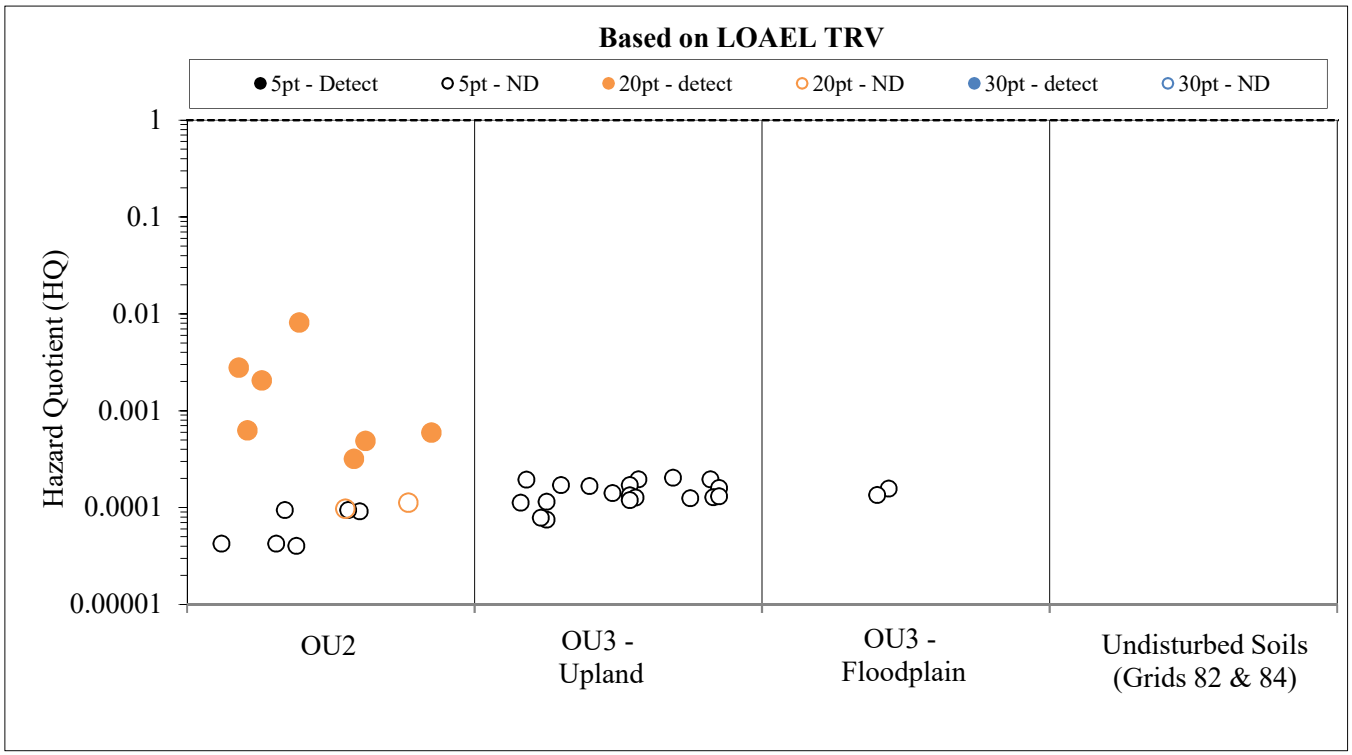
Aroclor-1254

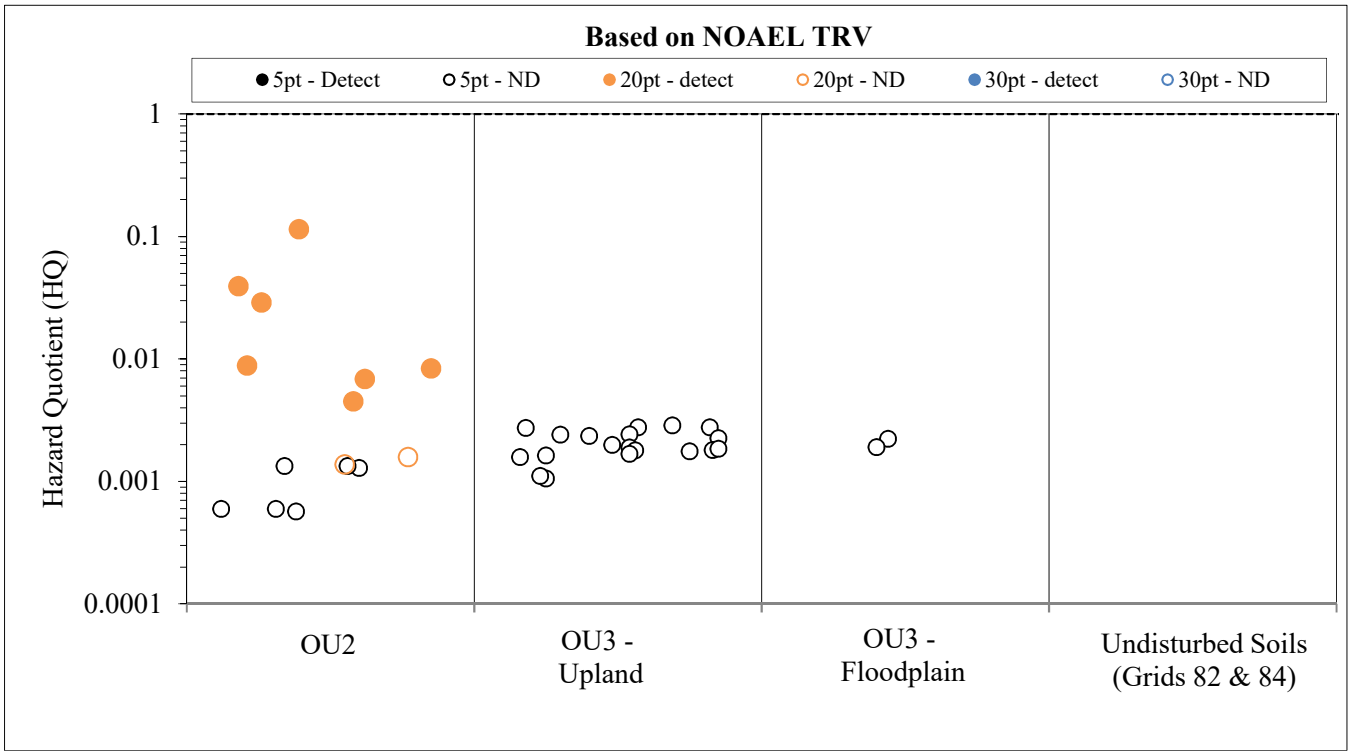
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.001752	ND	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.001456	ND	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Surface Soil by Exposure Unit/Soil Type

Aroclor-1254





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Aroclor-1254

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.141	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.0057	ND	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.104	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.0247	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.0301	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.00495	ND	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.0318	detect	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.413	detect	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.0162	detect	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.00465	ND	1	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	0.00205	ND	1	0	<1.0	<1.0
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	0.00215	ND	1	0	<1.0	<1.0
	SS31-IN	SS31-IN-(0-2)c	0.00215	ND	1	0	<1.0	<1.0
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.0048	ND	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.0048	ND	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Aroclor-1254

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.00995	ND	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.00635	ND	1	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	0.0087	ND	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.0068	ND	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.00995	ND	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.00645	ND	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.0057	ND	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.0038	ND	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.00845	ND	1	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.00605	ND	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.004	ND	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.0103	ND	1	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.0081	ND	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.00585	ND	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.0065	ND	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.00665	ND	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.00715	ND	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.00865	ND	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.00985	ND	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

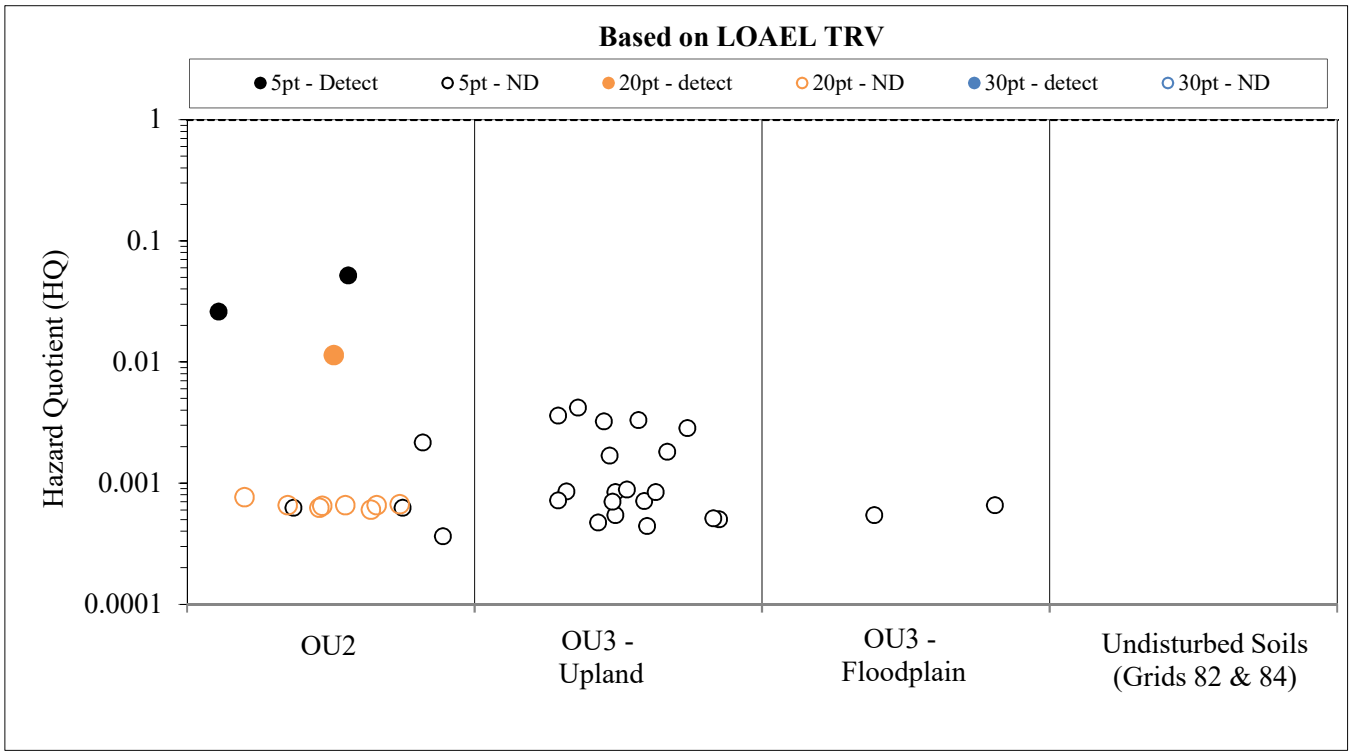
Aroclor-1254

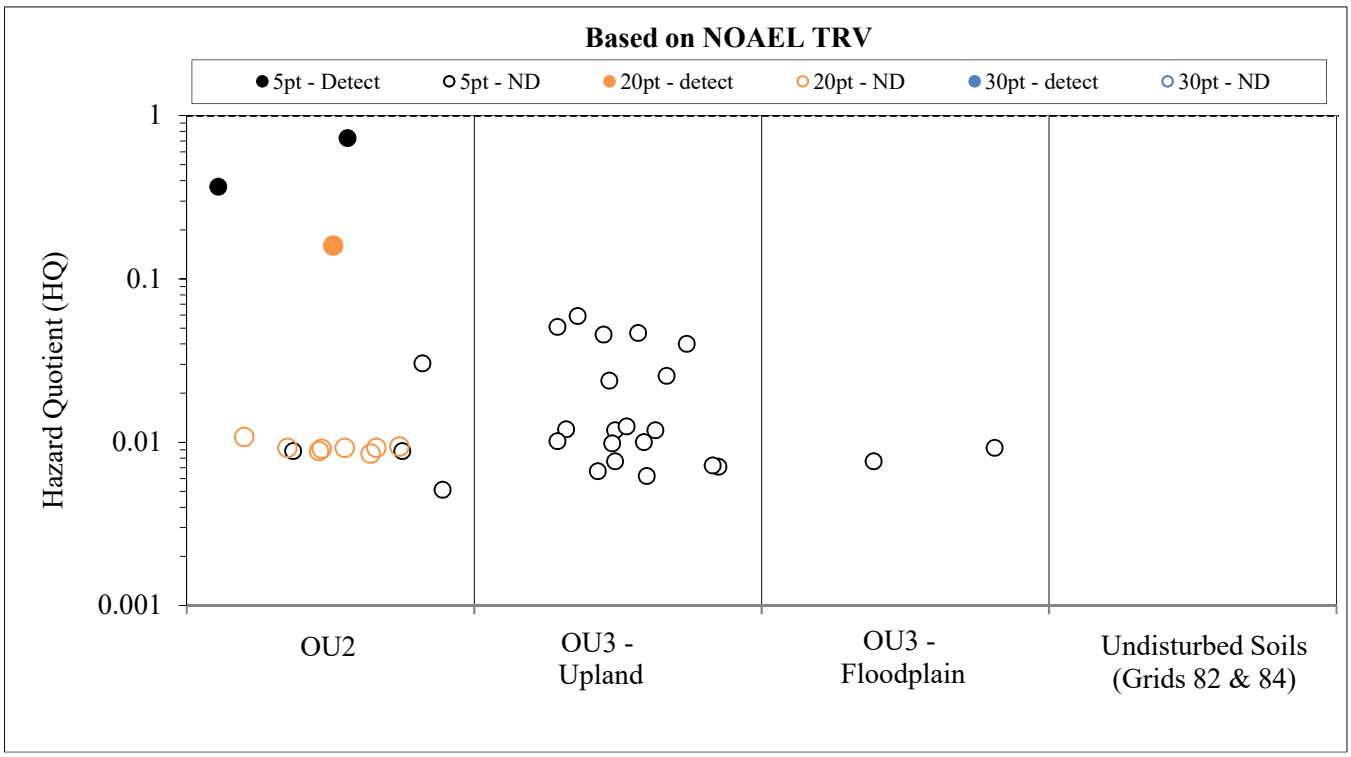
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.008	ND	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.00685	ND	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Food by Exposure Unit/Soil Type

Aroclor-1260





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

Aroclor-1260

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.000659	ND	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.000805	ND	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.000637	ND	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.000692	ND	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.011963	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.000681	ND	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.000692	ND	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.000692	ND	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.000703	ND	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.002272	ND	1	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	0.054383	detect	1	0	<1.0	<1.0
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	0.000383	ND	1	0	<1.0	<1.0
	SS31-IN	SS31-IN-(0-2)c	0.027437	detect	1	0	<1.0	<1.0
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.000659	ND	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.000659	ND	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

Aroclor-1260

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.000897	ND	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.000528	ND	1	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	0.000759	ND	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.000571	ND	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.000885	ND	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.000539	ND	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.000465	ND	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.001778	ND	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.000737	ND	1	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.000496	ND	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.001909	ND	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.000932	ND	1	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.004429	ND	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.002986	ND	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.003407	ND	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.00348	ND	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.003807	ND	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.000748	ND	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.000885	ND	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

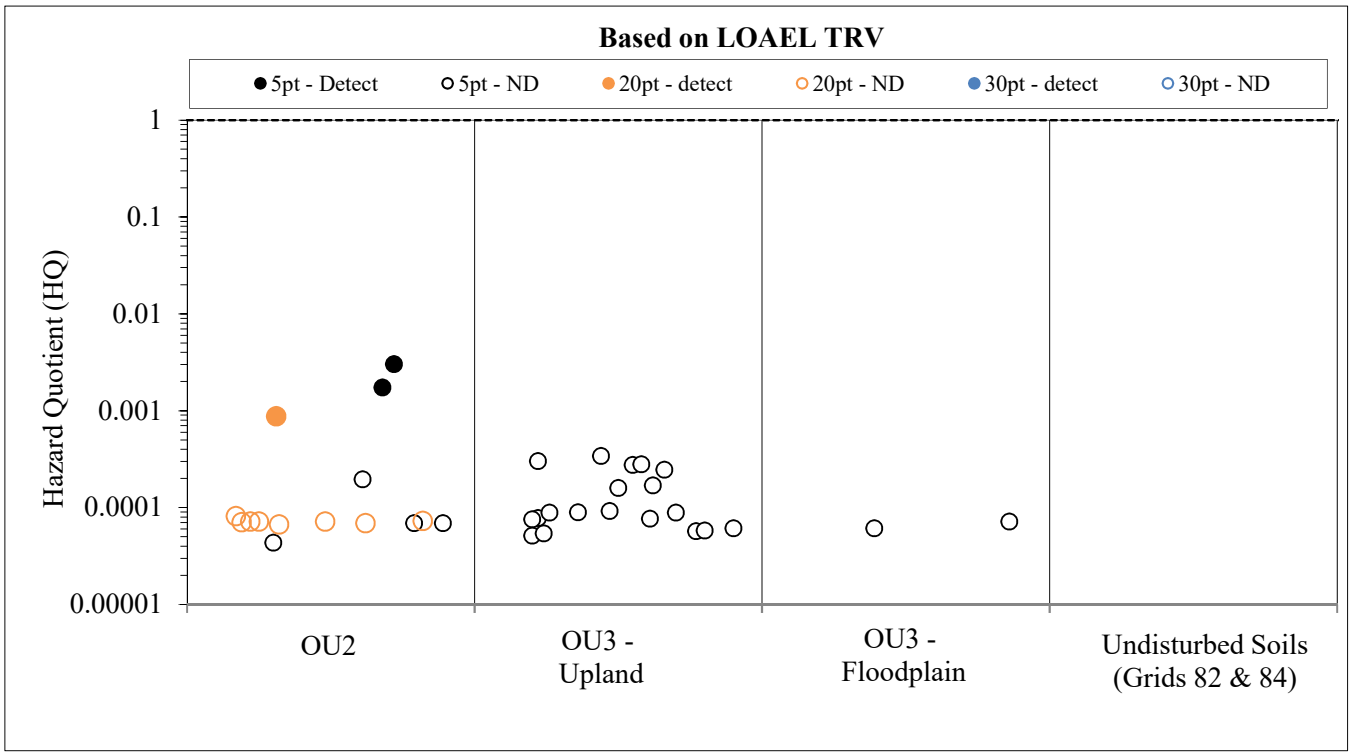
Aroclor-1260

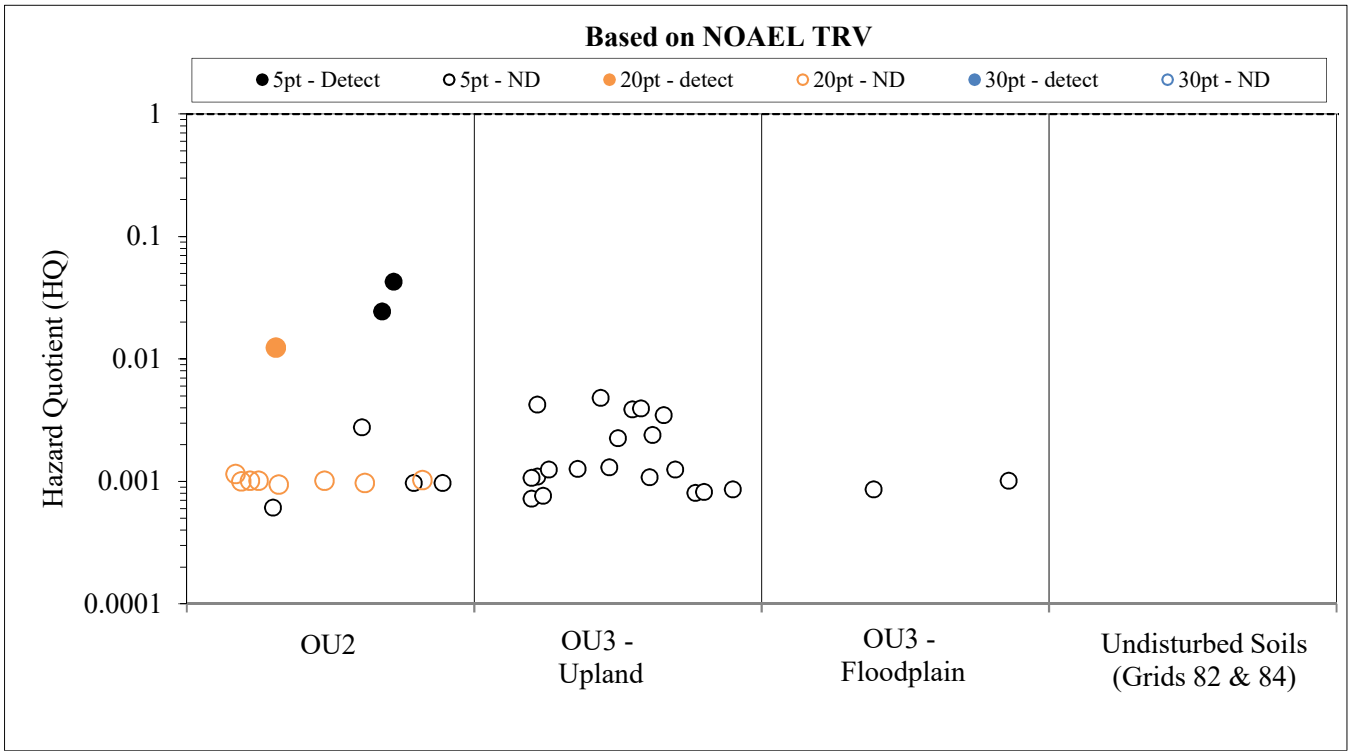
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.000692	ND	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.000571	ND	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Surface Soil by Exposure Unit/Soil Type

Aroclor-1260





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Aroclor-1260

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.0035	ND	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.00415	ND	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.0034	ND	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.00365	ND	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.0445	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.0036	ND	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.00365	ND	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.00365	ND	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.0037	ND	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.00995	ND	1	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	0.154	detect	1	0	<1.0	<1.0
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	0.0022	ND	1	0	<1.0	<1.0
	SS31-IN	SS31-IN-(0-2)c	0.0881	detect	1	0	<1.0	<1.0
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.0035	ND	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.0035	ND	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Aroclor-1260

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.00455	ND	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.0029	ND	1	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	0.00395	ND	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.0031	ND	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.0045	ND	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.00295	ND	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.0026	ND	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.0081	ND	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.00385	ND	1	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.00275	ND	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.0086	ND	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.0047	ND	1	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.01735	ND	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.0125	ND	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.01395	ND	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.0142	ND	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.0153	ND	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.0039	ND	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.0045	ND	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

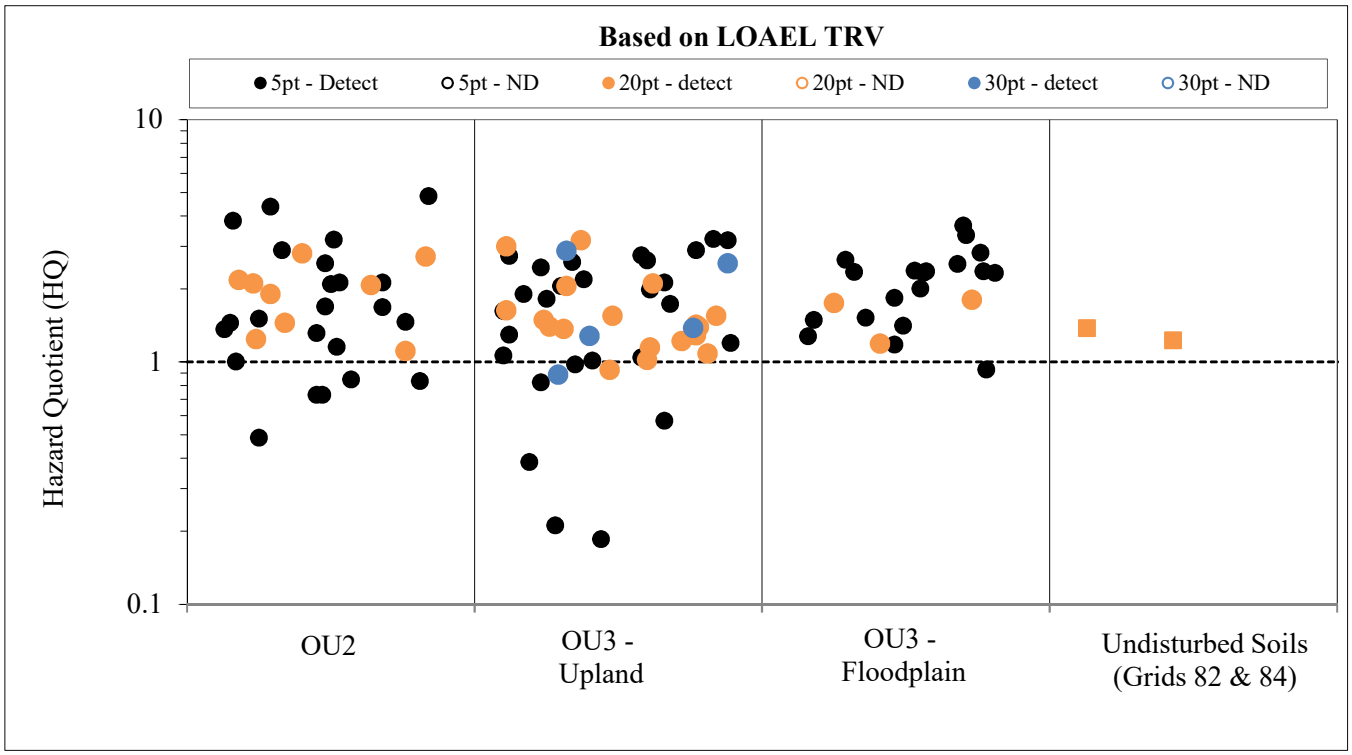
Aroclor-1260

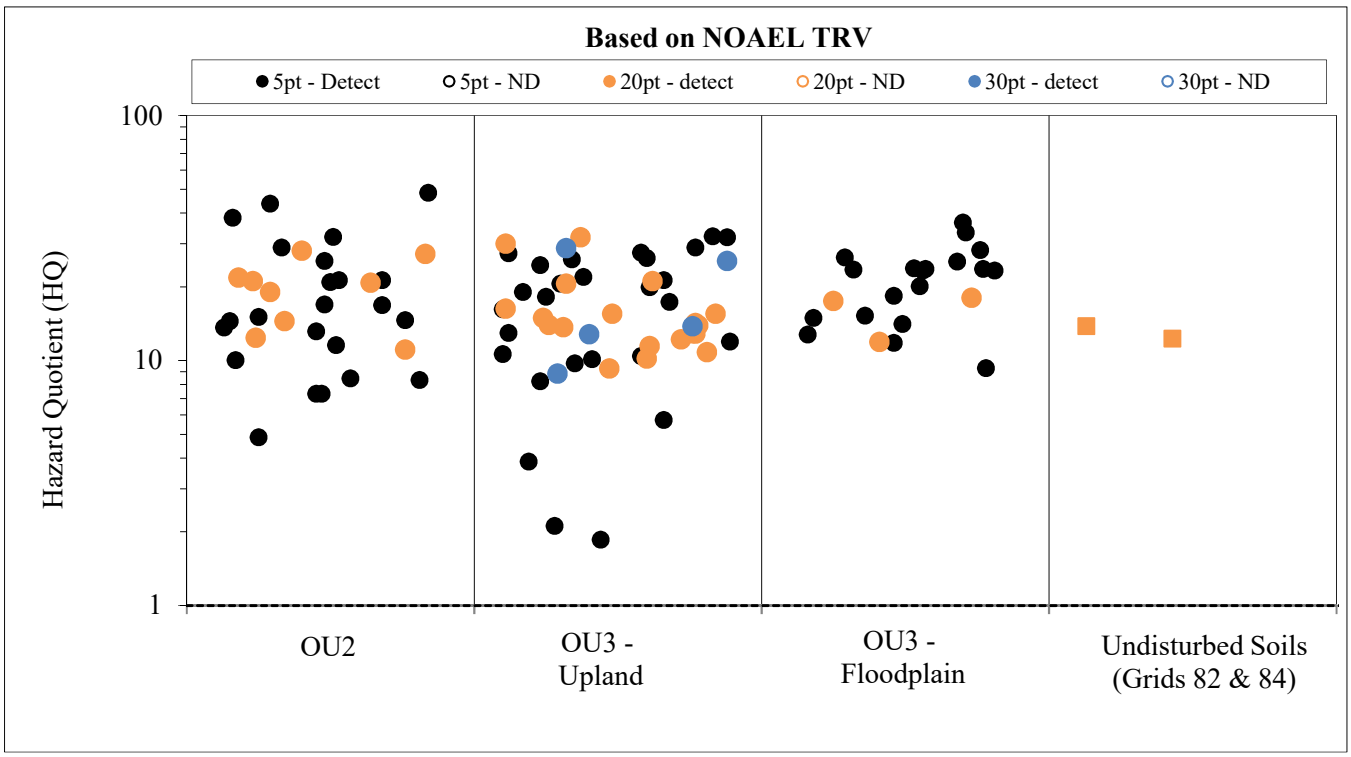
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.00365	ND	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.0031	ND	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Food by Exposure Unit/Soil Type

Aluminum





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

Aluminum

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	1129.95	detect	1097	110	**1.2**	**12.4**
	Grid 13	Grid 13-SSComp-01_20171019_NM	2480	detect	1097	110	**2.7**	**27.2**
	Grid 14	Grid 14-SSComp-01_20171017_NM	1319.05	detect	1097	110	**1.4**	**14.5**
	Grid 2	Grid 2-SSComp-01_20171016_NM	1010.6	detect	1097	110	**1.1**	**11.1**
	Grid 22	Grid 22-SSComp-01_20171018_NM	1922	detect	1097	110	**2.1**	**21.1**
	Grid 23	Grid 23-SSComp-01_20171018_NM	2557.5	detect	1097	110	**2.8**	**28.1**
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	1736	detect	1097	110	**1.9**	**19.1**
	Grid 8	Grid 8-SSComp-01_20171018_NM	1984	detect	1097	110	**2.2**	**21.8**
	Grid 9	Grid 9-SSComp-01_20171018_NM	1891	detect	1097	110	**2.1**	**20.8**
	LF-1	LF-1-SS_4/18/14_NM	4402	detect	1097	110	**4.8**	**48.4**
	SB2a,3a-IN	SB2a-IN-(0-2)	443.3	detect	1097	110	<1.0	**4.9**
	SS10-IN	SS10-IN-(0-2)c	770.35	detect	1097	110	<1.0	**8.5**
	SS11-IN	SS11-IN-(0-2)c	1319.05	detect	1097	110	**1.4**	**14.5**
	SS12-IN	SS12-IN-(0-2)c	1241.55	detect	1097	110	**1.4**	**13.6**
	SS13-IN	SS13-IN-(0-2)c	914.5	detect	1097	110	<1.0	**10.0**
	SS14-IN	SS14-IN-(0-2)c	1532.95	detect	1097	110	**1.7**	**16.8**
	SS15-IN	SS15-IN-(0-2)c	3487.5	detect	1097	110	**3.8**	**38.3**
	SS16-IN	SS16-IN-(0-2)c	2325	detect	1097	110	**2.6**	**25.5**
	SS17-IN	SS17-IN-(0-2)c	1542.25	detect	1097	110	**1.7**	**16.9**
	SS1-IN	SS1-IN-(0-2)c	1198.15	detect	1097	110	**1.3**	**13.2**
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1097	110	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	1052.45	detect	1097	110	**1.2**	**11.6**
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1097	110	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1097	110	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	3983.5	detect	1097	110	**4.4**	**43.8**
	SS33-IN	SS33-IN-(0-2)c	1937.5	detect	1097	110	**2.1**	**21.3**
	SS3-IN	SS3-IN-(0-2)c	1937.5	detect	1097	110	**2.1**	**21.3**
	SS4-IN	SS4-IN-(0-2)c	1333	detect	1097	110	**1.5**	**14.6**
	SS5-IN	SS5-IN-(0-2)c	2914	detect	1097	110	**3.2**	**32.0**
	SS6-IN	SS6-IN-(0-2)c	1373.3	detect	1097	110	**1.5**	**15.1**
	SS7-IN	SS7-IN-(0-2)c	1906.5	detect	1097	110	**2.1**	**20.9**
	SS8-IN	SS8-IN-(0-2)c	757.95	detect	1097	110	<1.0	**8.3**
	SS9-IN	SS9-IN-(0-2)c	2635	detect	1097	110	**2.9**	**28.9**
	HDPT-SS	BACKFILL-HDPT-SS	666.5	detect	1097	110	<1.0	**7.3**
	TSB-SS	BACKFILL-TSB-SS	666.5	detect	1097	110	<1.0	**7.3**

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

Aluminum

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	2325	detect	1097	110	**2.6**	**25.5**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	1581	detect	1097	110	**1.7**	**17.4**
	CRP-1	CRP-1-SS_4/10/14_NM	1736	detect	1097	110	**1.9**	**19.1**
	Grid 27	Grid 27-SSComp-01_20171019_NM	1043.15	detect	1097	110	**1.1**	**11.5**
	Grid 28	Grid 28-SSComp-01_20171019_NM	985.8	detect	1097	110	**1.1**	**10.8**
	Grid 29	Grid 29-SSComp-01_20171019_NM	1171.8	detect	1097	110	**1.3**	**12.9**
	Grid 30	Grid 30-SSComp-01_20171020_NM	1272.55	detect	1097	110	**1.4**	**14.0**
	Grid 33	Grid 33-SSComp-01_20171020_NM	1357.8	detect	1097	110	**1.5**	**14.9**
	Grid 34	Grid 34-SSComp-01_20171019_NM	1111.35	detect	1097	110	**1.2**	**12.2**
	Grid 37	Grid 37-SSComp-01_20171020_NM	1297.35	detect	1097	110	**1.4**	**14.3**
	Grid 39	Grid 39-SSComp-01_20171020_NM	1413.6	detect	1097	110	**1.6**	**15.5**
	Grid 43	Grid 43-SSComp-01_20171023_NM	1412.05	detect	1097	110	**1.6**	**15.5**
	Grid 44	Grid 44-SSComp-01_20171023_NM	1484.9	detect	1097	110	**1.6**	**16.3**
	Grid 47	Grid 47-SSComp-01_20171023_NM	2728	detect	1097	110	**3.0**	**30.0**
	Grid 53	Grid 53-SSComp-01_20171020_NM	1875.5	detect	1097	110	**2.1**	**20.6**
	Grid 60	Grid 60-SSComp-01_20171023_NM	1246.2	detect	1097	110	**1.4**	**13.7**
	Grid 61	Grid 61-SSComp-01_20171023_NM	1269.45	detect	1097	110	**1.4**	**13.9**
	Grid 64	Grid 64-SSComp-01_20171024_NM	1178	detect	1097	110	**1.3**	**12.9**
	Grid 74	Grid 74-SSComp-01_20171023_NM	2898.5	detect	1097	110	**3.2**	**31.8**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	1922	detect	1097	110	**2.1**	**21.1**
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	844.75	detect	1097	110	<1.0	**9.3**
	HP16-1	HP16-1-SS_4/10/14_NM	1937.5	detect	1097	110	**2.1**	**21.3**
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	1875.5	detect	1097	110	**2.1**	**20.6**
	HP18-1	HP18-1-SS_4/10/14_NM	2929.5	detect	1097	110	**3.2**	**32.2**
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	1475.6	detect	1097	110	**1.6**	**16.2**
	HP18-IB	HP18-SSC-IB_4/10/14_NM	750.2	detect	1097	110	<1.0	**8.2**
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1097	110	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	968.75	detect	1097	110	**1.1**	**10.6**
	HP9-1	HP9-1-SS_4/10/14_NM	2495.5	detect	1097	110	**2.7**	**27.4**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	888.15	detect	1097	110	<1.0	**9.8**
	IBK-1	IBK-1-SS_4/16/14_NM	2635	detect	1097	110	**2.9**	**28.9**
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	2898.5	detect	1097	110	**3.2**	**31.8**
	P17-BH1	P17-BH1-SS_4/3/14_NM	2511	detect	1097	110	**2.8**	**27.6**
	P3	P3-SSComp-01_20171020_NM	928.45	detect	1097	110	<1.0	**10.2**
	P3-BH1	P3-BH1-SS_4/3/14_NM	351.85	detect	1097	110	<1.0	**3.9**
	P4-BH1	P4-BH1-SS_4/4/14_NM	192.2	detect	1097	110	<1.0	**2.1**
	P5-BH2	P5-BH2-SS_4/3/14_NM	168.95	detect	1097	110	<1.0	**1.9**
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	520.8	detect	1097	110	<1.0	**5.7**
	P8	P8-SSComp-01_20171025_NM	1258.6	detect	1097	110	**1.4**	**13.8**
	P8dc	P8dc-SSComp-01_20171024_NM	1167.15	detect	1097	110	**1.3**	**12.8**
	P8-TP3	P8-TP3-SS_4/4/14_NM	1658.5	detect	1097	110	**1.8**	**18.2**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	2387	detect	1097	110	**2.6**	**26.2**
	SPP	SPP-SSComp-01_20171025_NM	2619.5	detect	1097	110	**2.9**	**28.8**
	SS1,2-HP18	SS1-HP18-(0-2)c	1089.65	detect	1097	110	**1.2**	**12.0**
	SS11,12-IBK	SS11-IBK-(0-2)c	1181.1	detect	1097	110	**1.3**	**13.0**
	SS13,14-HP9	SS13-HP9-(0-2)c	2232	detect	1097	110	**2.5**	**24.5**
	SS15,16-HP9	SS15-HP9-(0-2)c	2356	detect	1097	110	**2.6**	**25.9**
	SS3,4-HP16	SS3-HP16-(0-2)c	951.7	detect	1097	110	<1.0	**10.5**
	SS5,6-IBJ	SS5-IBJ-(0-2)c	922.25	detect	1097	110	<1.0	**10.1**
	SS7,8-HP13	SS7-HP13-(0-2)c	1999.5	detect	1097	110	**2.2**	**22.0**
	SS9,10-HP12	SS9-HP12-(0-2)c	1813.5	detect	1097	110	**2.0**	**19.9**
	SWBA	SWBA-SSComp-01_20171024_NM	806	detect	1097	110	<1.0	**8.9**

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

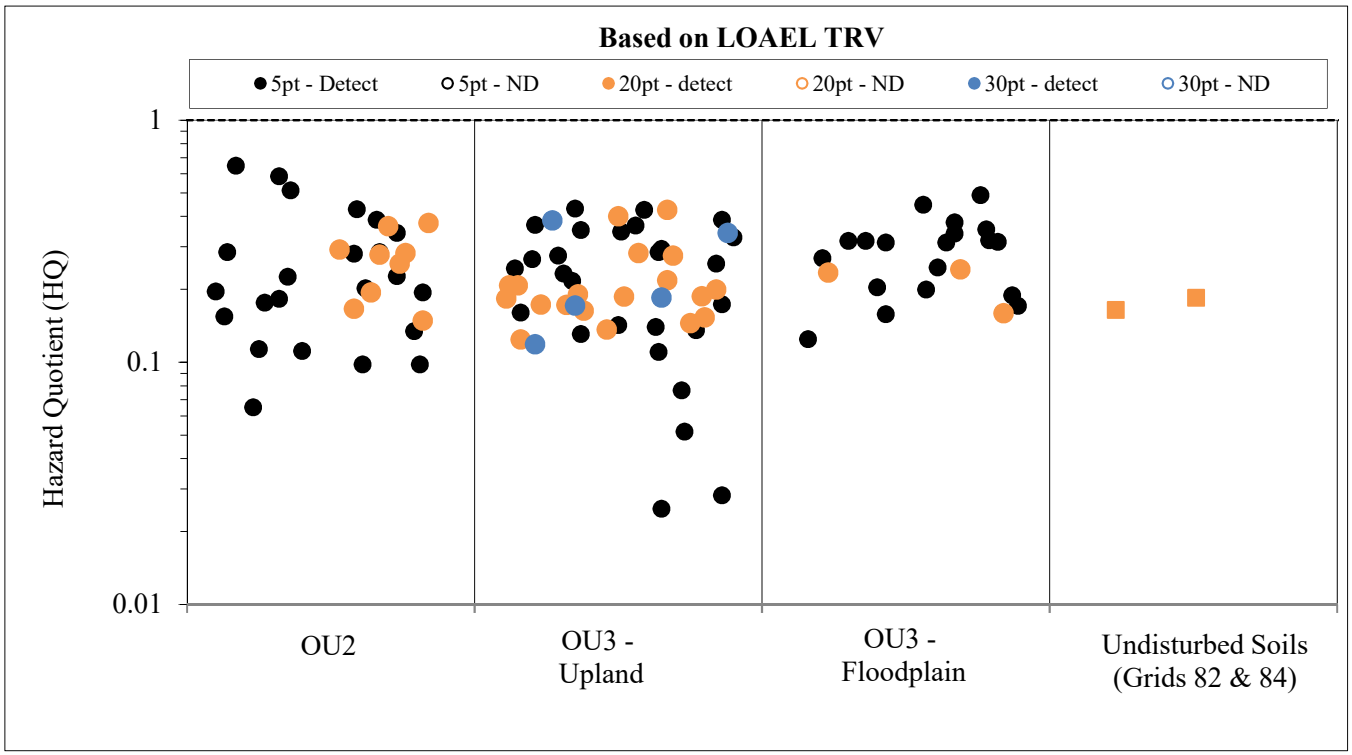
Aluminum

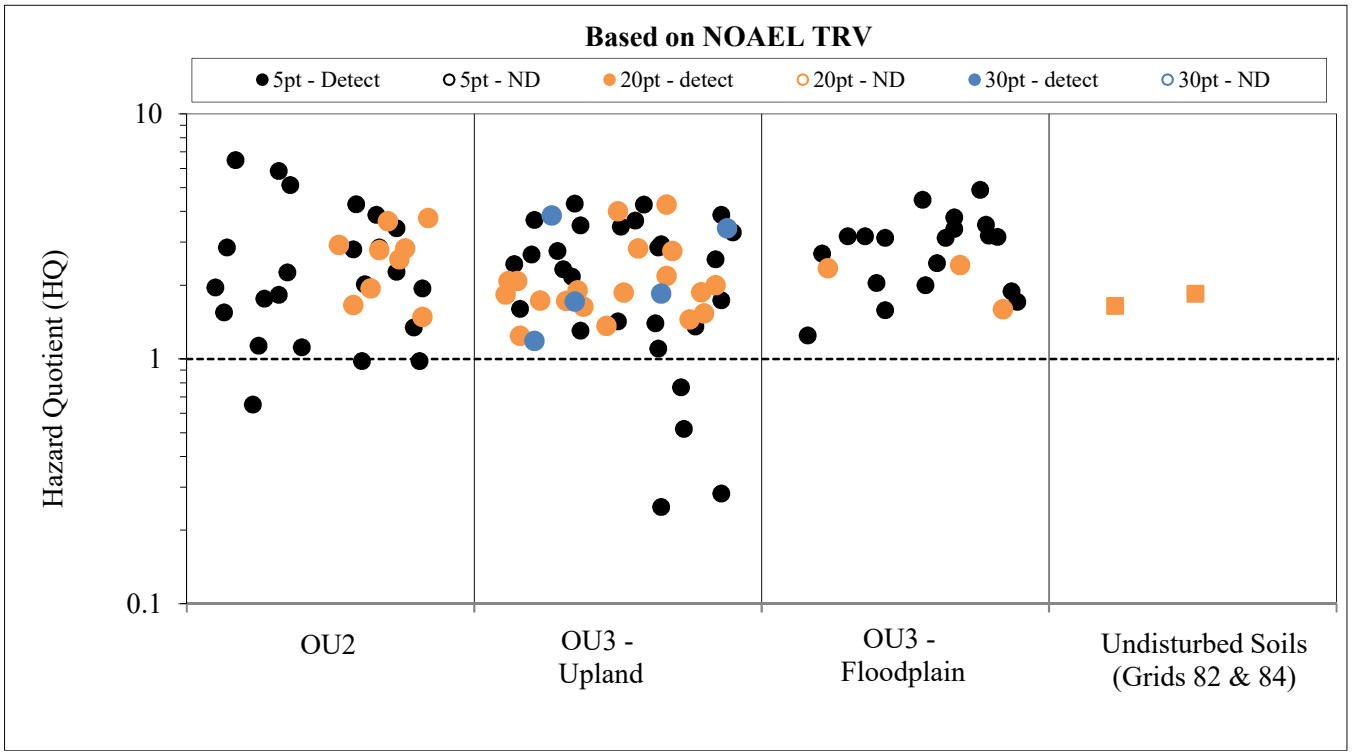
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	1085	detect	1097	110	**1.2**	**11.9**
	Grid 89	Grid 89-SSComp-01_20171026_NM	1643	detect	1097	110	**1.8**	**18.0**
	Grid 94	Grid 94-SSComp-01_20171026_NM	1596.5	detect	1097	110	**1.8**	**17.5**
	HP13a-1	HP13A-1-SS_4/10/14_NM	3038	detect	1097	110	**3.3**	**33.4**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	1074.15	detect	1097	110	**1.2**	**11.8**
	SE10-HP11	SE10-HP11-(0-2)c	3332.5	detect	1097	110	**3.7**	**36.6**
	SE11-HP11	SE11-HP11-(0-2)c	1284.95	detect	1097	110	**1.4**	**14.1**
	SE12-HP12	SE12-HP12-(0-2)c	2402.5	detect	1097	110	**2.6**	**26.4**
	SE13-HP12	SE13-HP12-(0-2)c	2170	detect	1097	110	**2.4**	**23.8**
	SE14-HP13	SE14-HP13-(0-2)c	2154.5	detect	1097	110	**2.4**	**23.7**
	SE15-HP13	SE15-HP13-(0-2)c	1829	detect	1097	110	**2.0**	**20.1**
	SE16-HP13	SE16-HP13-(0-2)c	1674	detect	1097	110	**1.8**	**18.4**
	SE17-HP13a	SE17-HP13a-(0-2)c	2123.5	detect	1097	110	**2.3**	**23.3**
	SE1-HP1a	SE1-HP1a-(0-2)c	2123.5	detect	1097	110	**2.3**	**23.3**
	SE2-HP1a	SE2-HP1a-(0-2)c	2573	detect	1097	110	**2.8**	**28.3**
	SE3-HP1	SE3-HP1-(0-2)c	847.85	detect	1097	110	<1.0	**9.3**
	SE4-HP1	SE4-HP1-(0-2)c	1387.25	detect	1097	110	**1.5**	**15.2**
	SE5-HP2	SE5-HP2-(0-2)c	2309.5	detect	1097	110	**2.5**	**25.4**
	SE6-HP7	SE6-HP7-(0-2)c	2139	detect	1097	110	**2.3**	**23.5**
	SE7-HP7	SE7-HP7-(0-2)c	1162.5	detect	1097	110	**1.3**	**12.8**
	SE8-HP10	SE8-HP10-(0-2)c	1357.8	detect	1097	110	**1.5**	**14.9**
	SE9-HP10	SE9-HP10-(0-2)c	2154.5	detect	1097	110	**2.4**	**23.7**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	1255.5	detect	1097	110	**1.4**	**13.8**
	Grid 84	Grid 84-SSComp-01_20171026_NM	1117.55	detect	1097	110	**1.2**	**12.3**

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Surface Soil by Exposure Unit/Soil Type

Aluminum





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Aluminum

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	7290	detect	1097	110	<1.0	**1.7**
	Grid 13	Grid 13-SSComp-01_20171019_NM	16000	detect	1097	110	<1.0	**3.6**
	Grid 14	Grid 14-SSComp-01_20171017_NM	8510	detect	1097	110	<1.0	**1.9**
	Grid 2	Grid 2-SSComp-01_20171016_NM	6520	detect	1097	110	<1.0	**1.5**
	Grid 22	Grid 22-SSComp-01_20171018_NM	12400	detect	1097	110	<1.0	**2.8**
	Grid 23	Grid 23-SSComp-01_20171018_NM	16500	detect	1097	110	<1.0	**3.8**
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	11200	detect	1097	110	<1.0	**2.6**
	Grid 8	Grid 8-SSComp-01_20171018_NM	12800	detect	1097	110	<1.0	**2.9**
	Grid 9	Grid 9-SSComp-01_20171018_NM	12200	detect	1097	110	<1.0	**2.8**
	LF-1	LF-1-SS_4/18/14_NM	28400	detect	1097	110	<1.0	**6.5**
	SB2a,3a-IN	SB2a-IN-(0-2)	2860	detect	1097	110	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	4970	detect	1097	110	<1.0	**1.1**
	SS11-IN	SS11-IN-(0-2)c	8510	detect	1097	110	<1.0	**1.9**
	SS12-IN	SS12-IN-(0-2)c	8010	detect	1097	110	<1.0	**1.8**
	SS13-IN	SS13-IN-(0-2)c	5900	detect	1097	110	<1.0	**1.3**
	SS14-IN	SS14-IN-(0-2)c	9890	detect	1097	110	<1.0	**2.3**
	SS15-IN	SS15-IN-(0-2)c	22500	detect	1097	110	<1.0	**5.1**
	SS16-IN	SS16-IN-(0-2)c	15000	detect	1097	110	<1.0	**3.4**
	SS17-IN	SS17-IN-(0-2)c	9950	detect	1097	110	<1.0	**2.3**
	SS1-IN	SS1-IN-(0-2)c	7730	detect	1097	110	<1.0	**1.8**
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1097	110	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	6790	detect	1097	110	<1.0	**1.5**
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1097	110	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1097	110	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	25700	detect	1097	110	<1.0	**5.9**
	SS33-IN	SS33-IN-(0-2)c	12500	detect	1097	110	<1.0	**2.8**
	SS3-IN	SS3-IN-(0-2)c	12500	detect	1097	110	<1.0	**2.8**
	SS4-IN	SS4-IN-(0-2)c	8600	detect	1097	110	<1.0	**2.0**
	SS5-IN	SS5-IN-(0-2)c	18800	detect	1097	110	<1.0	**4.3**
	SS6-IN	SS6-IN-(0-2)c	8860	detect	1097	110	<1.0	**2.0**
	SS7-IN	SS7-IN-(0-2)c	12300	detect	1097	110	<1.0	**2.8**
	SS8-IN	SS8-IN-(0-2)c	4890	detect	1097	110	<1.0	**1.1**
	SS9-IN	SS9-IN-(0-2)c	17000	detect	1097	110	<1.0	**3.9**
	HDPT-SS	BACKFILL-HDPT-SS	4300	detect	1097	110	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	4300	detect	1097	110	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Aluminum

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	15000	detect	1097	110	<1.0	**3.4**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	10200	detect	1097	110	<1.0	**2.3**
	CRP-1	CRP-1-SS_4/10/14_NM	11200	detect	1097	110	<1.0	**2.6**
	Grid 27	Grid 27-SSComp-01_20171019_NM	6730	detect	1097	110	<1.0	**1.5**
	Grid 28	Grid 28-SSComp-01_20171019_NM	6360	detect	1097	110	<1.0	**1.4**
	Grid 29	Grid 29-SSComp-01_20171019_NM	7560	detect	1097	110	<1.0	**1.7**
	Grid 30	Grid 30-SSComp-01_20171020_NM	8210	detect	1097	110	<1.0	**1.9**
	Grid 33	Grid 33-SSComp-01_20171020_NM	8760	detect	1097	110	<1.0	**2.0**
	Grid 34	Grid 34-SSComp-01_20171019_NM	7170	detect	1097	110	<1.0	**1.6**
	Grid 37	Grid 37-SSComp-01_20171020_NM	8370	detect	1097	110	<1.0	**1.9**
	Grid 39	Grid 39-SSComp-01_20171020_NM	9120	detect	1097	110	<1.0	**2.1**
	Grid 43	Grid 43-SSComp-01_20171023_NM	9110	detect	1097	110	<1.0	**2.1**
	Grid 44	Grid 44-SSComp-01_20171023_NM	9580	detect	1097	110	<1.0	**2.2**
	Grid 47	Grid 47-SSComp-01_20171023_NM	17600	detect	1097	110	<1.0	**4.0**
	Grid 53	Grid 53-SSComp-01_20171020_NM	12100	detect	1097	110	<1.0	**2.8**
	Grid 60	Grid 60-SSComp-01_20171023_NM	8040	detect	1097	110	<1.0	**1.8**
	Grid 61	Grid 61-SSComp-01_20171023_NM	8190	detect	1097	110	<1.0	**1.9**
	Grid 64	Grid 64-SSComp-01_20171024_NM	7600	detect	1097	110	<1.0	**1.7**
	Grid 74	Grid 74-SSComp-01_20171023_NM	18700	detect	1097	110	<1.0	**4.3**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	12400	detect	1097	110	<1.0	**2.8**
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	5450	detect	1097	110	<1.0	**1.2**
	HP16-1	HP16-1-SS_4/10/14_NM	12500	detect	1097	110	<1.0	**2.8**
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	12100	detect	1097	110	<1.0	**2.8**
	HP18-1	HP18-1-SS_4/10/14_NM	18900	detect	1097	110	<1.0	**4.3**
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	9520	detect	1097	110	<1.0	**2.2**
	HP18-IB	HP18-SSC-IB_4/10/14_NM	4840	detect	1097	110	<1.0	**1.1**
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1097	110	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	6250	detect	1097	110	<1.0	**1.4**
	HP9-1	HP9-1-SS_4/10/14_NM	16100	detect	1097	110	<1.0	**3.7**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	5730	detect	1097	110	<1.0	**1.3**
	IBK-1	IBK-1-SS_4/16/14_NM	17000	detect	1097	110	<1.0	**3.9**
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	18700	detect	1097	110	<1.0	**4.3**
	P17-BH1	P17-BH1-SS_4/3/14_NM	16200	detect	1097	110	<1.0	**3.7**
	P3	P3-SSComp-01_20171020_NM	5990	detect	1097	110	<1.0	**1.4**
	P3-BH1	P3-BH1-SS_4/3/14_NM	2270	detect	1097	110	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	1240	detect	1097	110	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	1090	detect	1097	110	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	3360	detect	1097	110	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	8120	detect	1097	110	<1.0	**1.9**
	P8dc	P8dc-SSComp-01_20171024_NM	7530	detect	1097	110	<1.0	**1.7**
	P8-TP3	P8-TP3-SS_4/4/14_NM	10700	detect	1097	110	<1.0	**2.4**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	15400	detect	1097	110	<1.0	**3.5**
	SPP	SPP-SSComp-01_20171025_NM	16900	detect	1097	110	<1.0	**3.9**
	SS1,2-HP18	SS1-HP18-(0-2)c	7030	detect	1097	110	<1.0	**1.6**
	SS11,12-IBK	SS11-IBK-(0-2)c	7620	detect	1097	110	<1.0	**1.7**
	SS13,14-HP9	SS13-HP9-(0-2)c	14400	detect	1097	110	<1.0	**3.3**
	SS15,16-HP9	SS15-HP9-(0-2)c	15200	detect	1097	110	<1.0	**3.5**
	SS3,4-HP16	SS3-HP16-(0-2)c	6140	detect	1097	110	<1.0	**1.4**
	SS5,6-IBJ	SS5-IBJ-(0-2)c	5950	detect	1097	110	<1.0	**1.4**
	SS7,8-HP13	SS7-HP13-(0-2)c	12900	detect	1097	110	<1.0	**2.9**
	SS9,10-HP12	SS9-HP12-(0-2)c	11700	detect	1097	110	<1.0	**2.7**
	SWBA	SWBA-SSComp-01_20171024_NM	5200	detect	1097	110	<1.0	**1.2**

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Aluminum

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	7000	detect	1097	110	<1.0	**1.6**
	Grid 89	Grid 89-SSComp-01_20171026_NM	10600	detect	1097	110	<1.0	**2.4**
	Grid 94	Grid 94-SSComp-01_20171026_NM	10300	detect	1097	110	<1.0	**2.3**
	HP13a-1	HP13A-1-SS_4/10/14_NM	19600	detect	1097	110	<1.0	**4.5**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	6930	detect	1097	110	<1.0	**1.6**
	SE10-HP11	SE10-HP11-(0-2)c	21500	detect	1097	110	<1.0	**4.9**
	SE11-HP11	SE11-HP11-(0-2)c	8290	detect	1097	110	<1.0	**1.9**
	SE12-HP12	SE12-HP12-(0-2)c	15500	detect	1097	110	<1.0	**3.5**
	SE13-HP12	SE13-HP12-(0-2)c	14000	detect	1097	110	<1.0	**3.2**
	SE14-HP13	SE14-HP13-(0-2)c	13900	detect	1097	110	<1.0	**3.2**
	SE15-HP13	SE15-HP13-(0-2)c	11800	detect	1097	110	<1.0	**2.7**
	SE16-HP13	SE16-HP13-(0-2)c	10800	detect	1097	110	<1.0	**2.5**
	SE17-HP13a	SE17-HP13a-(0-2)c	13700	detect	1097	110	<1.0	**3.1**
	SE1-HP1a	SE1-HP1a-(0-2)c	13700	detect	1097	110	<1.0	**3.1**
	SE2-HP1a	SE2-HP1a-(0-2)c	16600	detect	1097	110	<1.0	**3.8**
	SE3-HP1	SE3-HP1-(0-2)c	5470	detect	1097	110	<1.0	**1.2**
	SE4-HP1	SE4-HP1-(0-2)c	8950	detect	1097	110	<1.0	**2.0**
	SE5-HP2	SE5-HP2-(0-2)c	14900	detect	1097	110	<1.0	**3.4**
	SE6-HP7	SE6-HP7-(0-2)c	13800	detect	1097	110	<1.0	**3.1**
	SE7-HP7	SE7-HP7-(0-2)c	7500	detect	1097	110	<1.0	**1.7**
	SE8-HP10	SE8-HP10-(0-2)c	8760	detect	1097	110	<1.0	**2.0**
	SE9-HP10	SE9-HP10-(0-2)c	13900	detect	1097	110	<1.0	**3.2**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	8100	detect	1097	110	<1.0	**1.8**
	Grid 84	Grid 84-SSComp-01_20171026_NM	7210	detect	1097	110	<1.0	**1.6**

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of River Surface Water

Aluminum

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0366	detect	109.7	1097	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0873	detect	109.7	1097	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.747	detect	109.7	1097	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0303	detect	109.7	1097	<1.0	<1.0
	51-CFR	SW51-CFR	0.0376	detect	109.7	1097	<1.0	<1.0
	52-CFR	SW52-CFR	0.116	detect	109.7	1097	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0073	detect	109.7	1097	<1.0	<1.0
	54-CFR	SW54-CFR	0.044	detect	109.7	1097	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0248	detect	109.7	1097	<1.0	<1.0
	55-CFR	SW55-CFR	0.0499	detect	109.7	1097	<1.0	<1.0
	56-CFR	SW56-CFR	0.0515	detect	109.7	1097	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0284	detect	109.7	1097	<1.0	<1.0
	57-CFR	SW57-CFR	0.0392	detect	109.7	1097	<1.0	<1.0
	58-CFR	SW58-CFR	0.0561	detect	109.7	1097	<1.0	<1.0
	59-CFR	SW59-CFR	0.03	detect	109.7	1097	<1.0	<1.0
	60-CFR	SW60-CFR	0.0882	detect	109.7	1097	<1.0	<1.0
	61-CFR	SW61-CFR	0.0583	detect	109.7	1097	<1.0	<1.0
	62-CFR	SW62-CFR	0.0478	detect	109.7	1097	<1.0	<1.0
	63-CFR	SW63-CFR	0.0279	detect	109.7	1097	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of Creek Surface Water

Aluminum

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.254	detect	109.7	1097	<1.0	<1.0
	43-OK	SW43-OK	0.215	detect	109.7	1097	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.275	detect	109.7	1097	<1.0	<1.0
	37-LV	SW37-LV	0.305	detect	109.7	1097	<1.0	<1.0
	39-LV	SW39-LV	0.188	detect	109.7	1097	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of Pond Surface Water

Aluminum

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0165	detect	109.7	1097	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.218	detect	109.7	1097	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0479	detect	109.7	1097	<1.0	<1.0
73-P5	SW73-P5	0.171	detect	109.7	1097	<1.0	<1.0
71-HP7	SW71-HP7	0.271	detect	109.7	1097	<1.0	<1.0
72-HP2	SW72-HP2	0.0758	detect	109.7	1097	<1.0	<1.0
75-HP10	SW75-HP10	0.137	detect	109.7	1097	<1.0	<1.0
67-HP12	SW67-HP12	0.101	detect	109.7	1097	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0174	detect	109.7	1097	<1.0	<1.0
66-HP13	SW66-HP13	0.0998	detect	109.7	1097	<1.0	<1.0
65-HP13a	SW65-HP13a	0.195	detect	109.7	1097	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.138	detect	109.7	1097	<1.0	<1.0
70-CWD	SW70-CWD	0.0552	detect	109.7	1097	<1.0	<1.0
64-HP18	SW64-HP18	0.13	detect	109.7	1097	<1.0	<1.0

#N/A = not analyzed

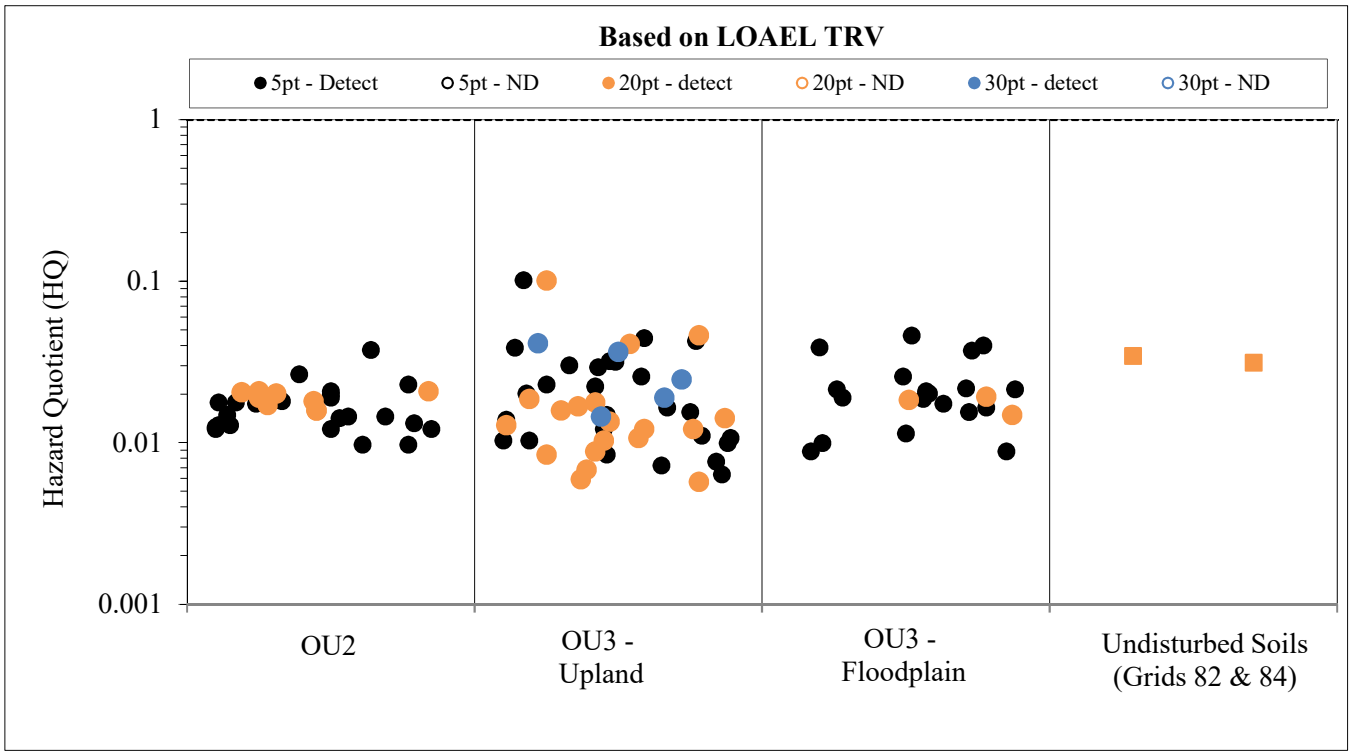
(a) Non-detects are evaluated at 1/2 the reported value.

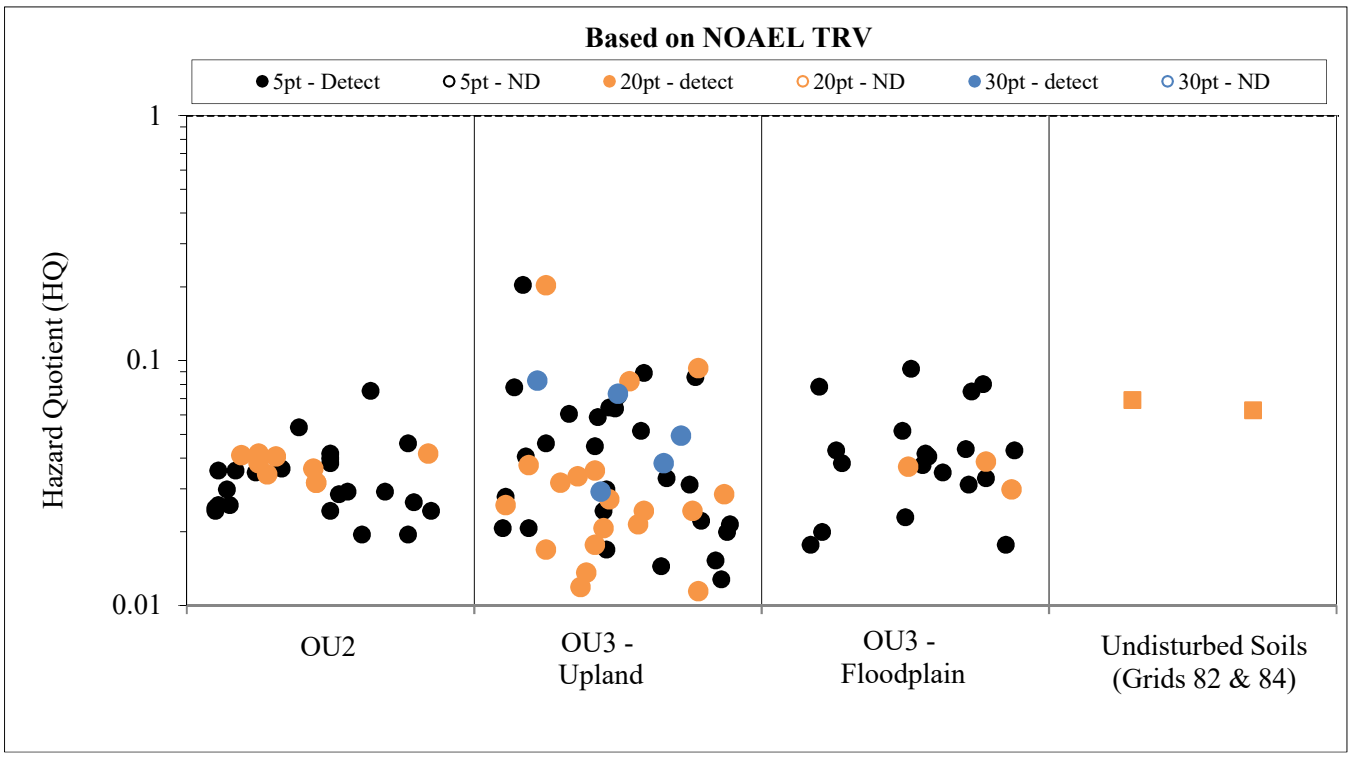
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Food by Exposure Unit/Soil Type

Arsenic





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

Arsenic

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.075376	detect	5	2	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.076499	detect	5	2	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.063847	detect	5	2	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.059065	detect	5	2	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.077618	detect	5	2	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.077618	detect	5	2	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.059065	detect	5	2	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.070831	detect	5	2	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.067365	detect	5	2	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.085328	detect	5	2	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.045242	detect	5	2	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.066199	detect	5	2	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.074247	detect	5	2	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.054164	detect	5	2	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.045242	detect	5	2	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.046547	detect	5	2	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.066199	detect	5	2	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.067365	detect	5	2	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.077618	detect	5	2	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.055401	detect	5	2	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	5	2	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.045242	detect	5	2	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	5	2	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	5	2	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.139759	detect	5	2	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.09915	detect	5	2	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.070831	detect	5	2	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.047842	detect	5	2	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.047842	detect	5	2	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.052918	detect	5	2	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.054164	detect	5	2	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.049125	detect	5	2	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.065026	detect	5	2	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.036208	detect	5	2	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.036208	detect	5	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

Arsenic

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.135952	detect	5	2	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.11245	detect	5	2	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.118442	detect	5	2	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.022132	detect	5	2	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.021304	detect	5	2	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.03288	detect	5	2	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.025348	detect	5	2	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.062662	detect	5	2	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.031422	detect	5	2	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.045242	detect	5	2	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.039897	detect	5	2	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.047842	detect	5	2	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.052918	detect	5	2	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.152874	detect	5	2	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.045242	detect	5	2	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.069681	detect	5	2	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.059065	detect	5	2	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.050399	detect	5	2	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.377491	detect	5	2	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.066199	detect	5	2	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.038526	detect	5	2	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.075376	detect	5	2	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.037141	detect	5	2	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.119433	detect	5	2	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.038526	detect	5	2	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.023758	detect	5	2	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	5	2	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.031422	detect	5	2	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.144479	detect	5	2	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.026907	detect	5	2	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.109421	detect	5	2	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.165699	detect	5	2	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.378972	detect	5	2	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.172911	detect	5	2	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.096011	detect	5	2	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.045242	detect	5	2	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.083146	detect	5	2	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.085328	detect	5	2	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.070831	detect	5	2	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.09178	detect	5	2	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.133078	detect	5	2	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.15932	detect	5	2	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.1538	detect	5	2	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.038526	detect	5	2	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.055401	detect	5	2	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	0.057851	detect	5	2	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	0.06147	detect	5	2	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.039897	detect	5	2	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.028437	detect	5	2	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.051663	detect	5	2	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.041253	detect	5	2	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.054164	detect	5	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

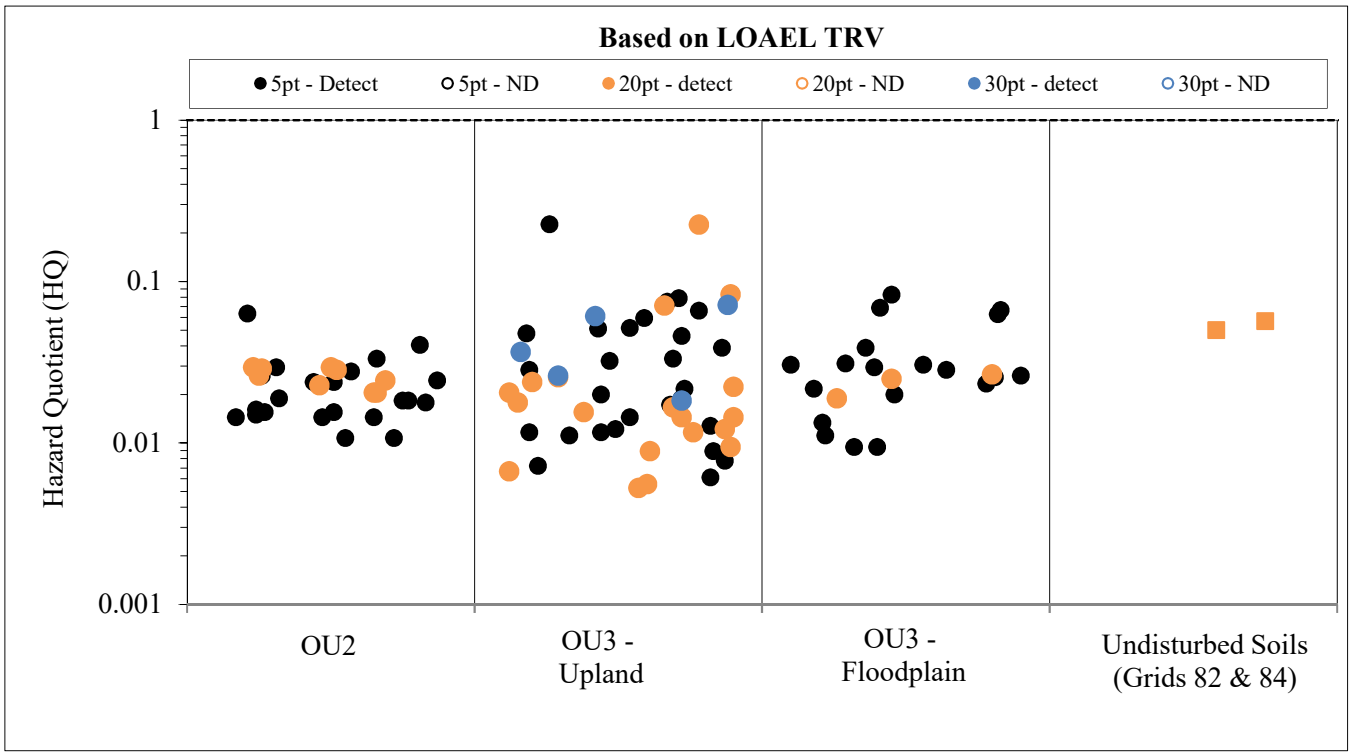
Arsenic

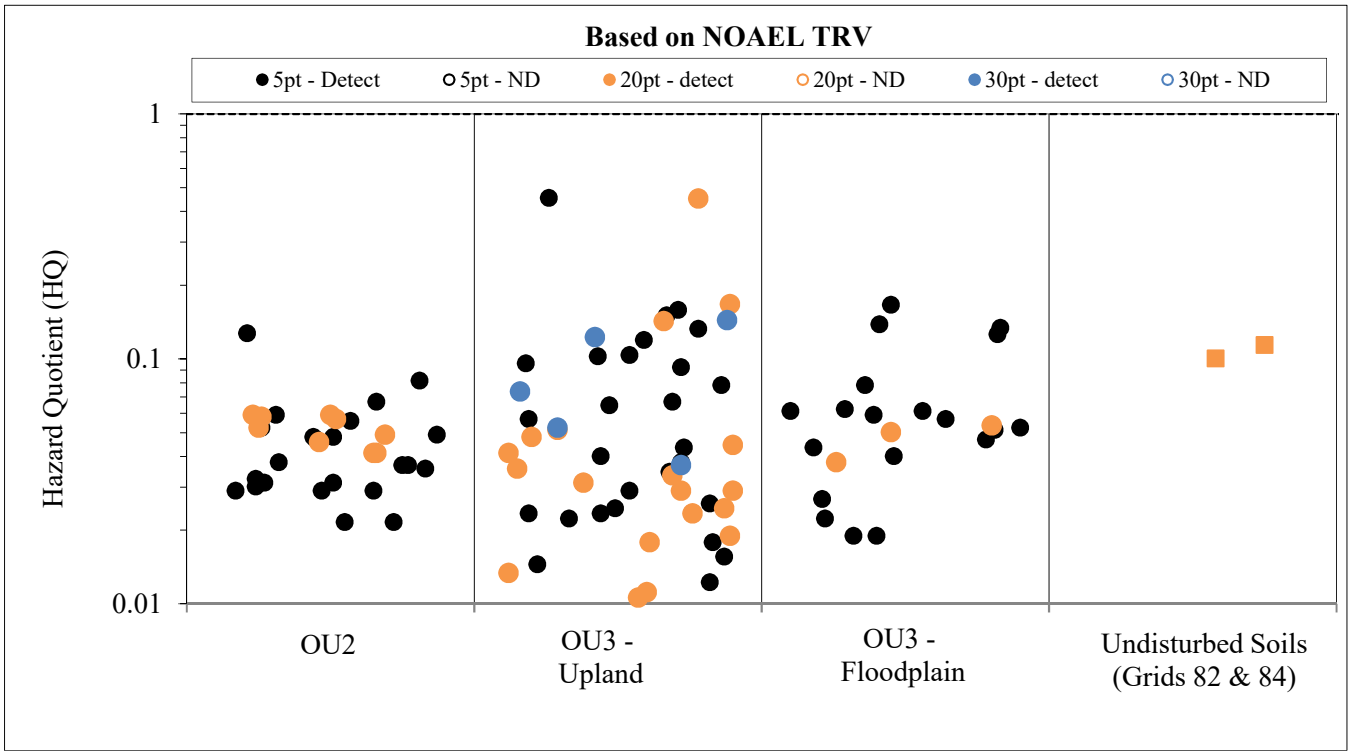
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.068526	detect	5	2	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.071975	detect	5	2	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.055401	detect	5	2	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.069681	detect	5	2	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.03288	detect	5	2	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	0.145418	detect	5	2	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	0.075376	detect	5	2	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	0.080948	detect	5	2	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	0.172014	detect	5	2	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	0.077618	detect	5	2	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.079843	detect	5	2	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	0.070831	detect	5	2	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.06147	detect	5	2	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.065026	detect	5	2	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.079843	detect	5	2	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.042595	detect	5	2	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.037141	detect	5	2	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	0.149159	detect	5	2	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	0.13881	detect	5	2	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	0.03288	detect	5	2	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.057851	detect	5	2	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	0.096011	detect	5	2	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.12825	detect	5	2	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.116454	detect	5	2	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Surface Soil by Exposure Unit/Soil Type

Arsenic





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Arsenic

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	5.1	detect	5	2	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	5.2	detect	5	2	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	4.1	detect	5	2	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	3.7	detect	5	2	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	5.3	detect	5	2	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	5.3	detect	5	2	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	3.7	detect	5	2	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	4.7	detect	5	2	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	4.4	detect	5	2	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	6	detect	5	2	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	2.6	detect	5	2	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	4.3	detect	5	2	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	5	detect	5	2	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	3.3	detect	5	2	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	2.6	detect	5	2	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	2.7	detect	5	2	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	4.3	detect	5	2	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	4.4	detect	5	2	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	5.3	detect	5	2	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	3.4	detect	5	2	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	5	2	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	2.6	detect	5	2	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	5	2	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	5	2	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	11.4	detect	5	2	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	7.3	detect	5	2	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	4.7	detect	5	2	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	2.8	detect	5	2	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	2.8	detect	5	2	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	3.2	detect	5	2	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	3.3	detect	5	2	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	2.9	detect	5	2	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	4.2	detect	5	2	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	1.933333	detect	5	2	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	1.933333	detect	5	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Arsenic

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	11	detect	5	2	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	8.6	detect	5	2	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	9.2	detect	5	2	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	1	detect	5	2	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.95	detect	5	2	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	1.7	detect	5	2	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	1.2	detect	5	2	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	4	detect	5	2	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	1.6	detect	5	2	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	2.6	detect	5	2	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	2.2	detect	5	2	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	2.8	detect	5	2	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	3.2	detect	5	2	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	12.8	detect	5	2	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	2.6	detect	5	2	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	4.6	detect	5	2	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	3.7	detect	5	2	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	3	detect	5	2	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	40.5	detect	5	2	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	4.3	detect	5	2	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	2.1	detect	5	2	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	5.1	detect	5	2	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	2	detect	5	2	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	9.3	detect	5	2	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	2.1	detect	5	2	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	1.1	detect	5	2	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	5	2	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	1.6	detect	5	2	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	11.9	detect	5	2	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	1.3	detect	5	2	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	8.3	detect	5	2	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	14.2	detect	5	2	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	40.7	detect	5	2	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	15	detect	5	2	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	7	detect	5	2	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	2.6	detect	5	2	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	5.8	detect	5	2	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	6	detect	5	2	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	4.7	detect	5	2	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	6.6	detect	5	2	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	10.7	detect	5	2	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	13.5	detect	5	2	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	12.9	detect	5	2	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	2.1	detect	5	2	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	3.4	detect	5	2	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	3.6	detect	5	2	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	3.9	detect	5	2	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	2.2	detect	5	2	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	1.4	detect	5	2	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	3.1	detect	5	2	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	2.3	detect	5	2	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	3.3	detect	5	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Arsenic

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	4.5	detect	5	2	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	4.8	detect	5	2	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	3.4	detect	5	2	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	4.6	detect	5	2	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	1.7	detect	5	2	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	12	detect	5	2	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	5.1	detect	5	2	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	5.6	detect	5	2	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	14.9	detect	5	2	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	5.3	detect	5	2	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	5.5	detect	5	2	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	4.7	detect	5	2	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	3.9	detect	5	2	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	4.2	detect	5	2	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	5.5	detect	5	2	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	2.4	detect	5	2	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	2	detect	5	2	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	12.4	detect	5	2	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	11.3	detect	5	2	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	1.7	detect	5	2	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	3.6	detect	5	2	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	7	detect	5	2	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	10.2	detect	5	2	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	9	detect	5	2	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of River Surface Water

Arsenic

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0029	detect	2.24	4.5	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0222	detect	2.24	4.5	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0073	detect	2.24	4.5	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0022	detect	2.24	4.5	<1.0	<1.0
	51-CFR	SW51-CFR	0.0029	detect	2.24	4.5	<1.0	<1.0
	52-CFR	SW52-CFR	0.0033	detect	2.24	4.5	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0031	detect	2.24	4.5	<1.0	<1.0
	54-CFR	SW54-CFR	0.0034	detect	2.24	4.5	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0022	detect	2.24	4.5	<1.0	<1.0
	55-CFR	SW55-CFR	0.0028	detect	2.24	4.5	<1.0	<1.0
	56-CFR	SW56-CFR	0.0027	detect	2.24	4.5	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0021	detect	2.24	4.5	<1.0	<1.0
	57-CFR	SW57-CFR	0.0045	detect	2.24	4.5	<1.0	<1.0
	58-CFR	SW58-CFR	0.0031	detect	2.24	4.5	<1.0	<1.0
	59-CFR	SW59-CFR	0.0033	detect	2.24	4.5	<1.0	<1.0
	60-CFR	SW60-CFR	0.0031	detect	2.24	4.5	<1.0	<1.0
	61-CFR	SW61-CFR	0.0031	detect	2.24	4.5	<1.0	<1.0
	62-CFR	SW62-CFR	0.0037	detect	2.24	4.5	<1.0	<1.0
	63-CFR	SW63-CFR	0.0031	detect	2.24	4.5	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of Creek Surface Water

Arsenic

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.0031	detect	2.24	4.5	<1.0	<1.0
	43-OK	SW43-OK	0.0031	detect	2.24	4.5	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.0016	detect	2.24	4.5	<1.0	<1.0
	37-LV	SW37-LV	0.0027	detect	2.24	4.5	<1.0	<1.0
	39-LV	SW39-LV	0.0035	detect	2.24	4.5	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of Pond Surface Water

Arsenic

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0024	detect	2.24	4.5	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0054	detect	2.24	4.5	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0084	detect	2.24	4.5	<1.0	<1.0
73-P5	SW73-P5	0.0071	detect	2.24	4.5	<1.0	<1.0
71-HP7	SW71-HP7	0.0044	detect	2.24	4.5	<1.0	<1.0
72-HP2	SW72-HP2	0.0109	detect	2.24	4.5	<1.0	<1.0
75-HP10	SW75-HP10	0.005	detect	2.24	4.5	<1.0	<1.0
67-HP12	SW67-HP12	0.0073	detect	2.24	4.5	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0024	detect	2.24	4.5	<1.0	<1.0
66-HP13	SW66-HP13	0.033	detect	2.24	4.5	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0152	detect	2.24	4.5	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0162	detect	2.24	4.5	<1.0	<1.0
70-CWD	SW70-CWD	0.0034	detect	2.24	4.5	<1.0	<1.0
64-HP18	SW64-HP18	0.0076	detect	2.24	4.5	<1.0	<1.0

#N/A = not analyzed

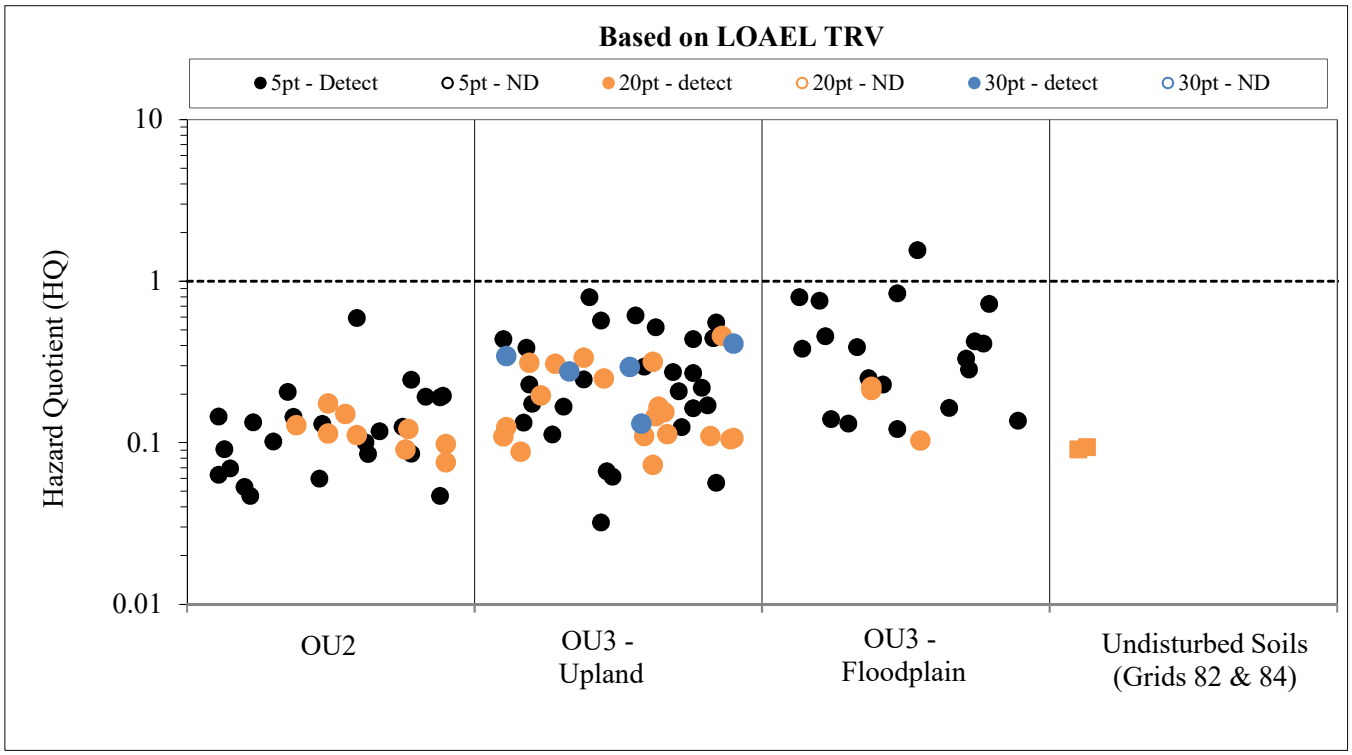
(a) Non-detects are evaluated at 1/2 the reported value.

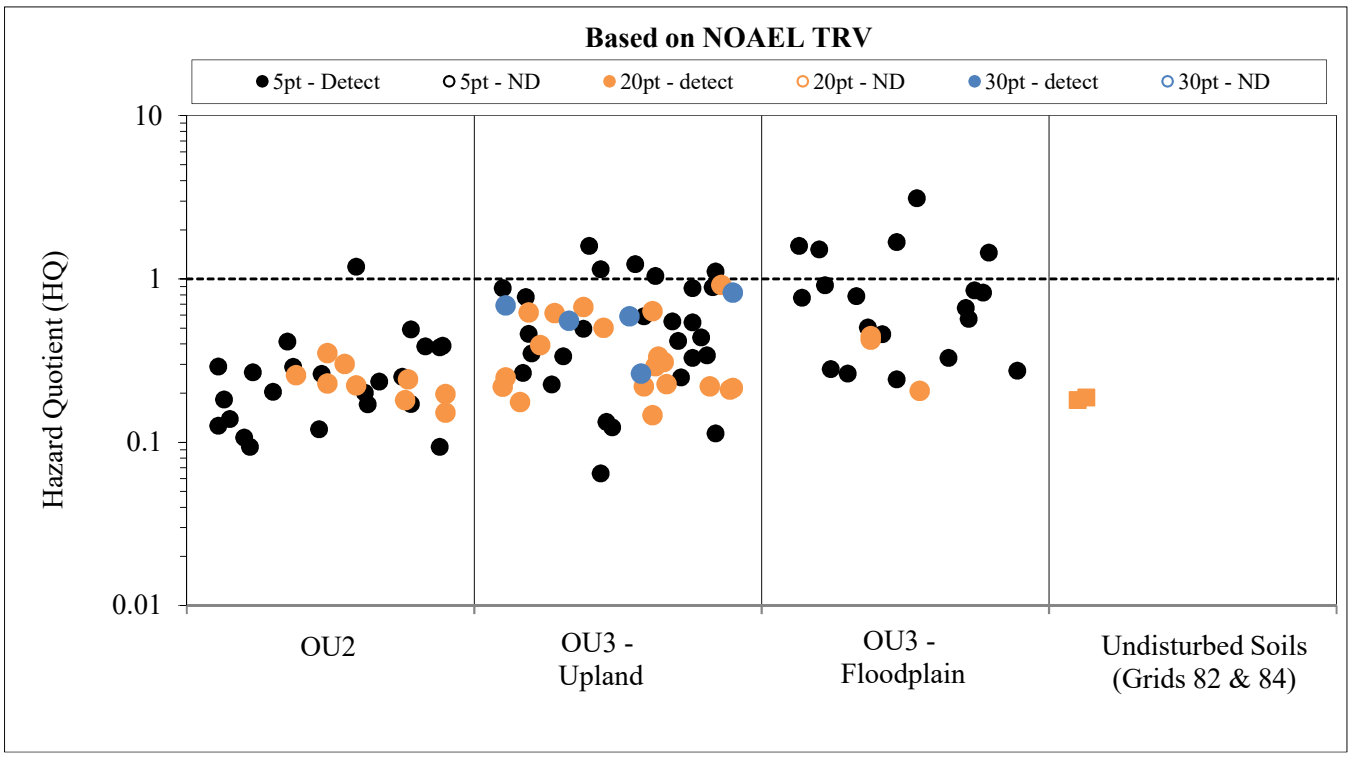
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Food by Exposure Unit/Soil Type

Barium





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

Barium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	3.85294	detect	42	21	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	4.44132	detect	42	21	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	3.1317	detect	42	21	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	2.61924	detect	42	21	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	6.05462	detect	42	21	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	5.20052	detect	42	21	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	4.19458	detect	42	21	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	3.94784	detect	42	21	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	3.39742	detect	42	21	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	6.7379	detect	42	21	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	2.9419	detect	42	21	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	5.01072	detect	42	21	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	4.34642	detect	42	21	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	3.15068	detect	42	21	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	7.13648	detect	42	21	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	3.47334	detect	42	21	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	6.58606	detect	42	21	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	4.99174	detect	42	21	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	3.5113	detect	42	21	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	2.06882	detect	42	21	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	42	21	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	2.39148	detect	42	21	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	42	21	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	42	21	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	20.4984	detect	42	21	<1.0	**1.2**
	SS33-IN	SS33-IN-(0-2)c	8.48406	detect	42	21	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	4.51724	detect	42	21	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	2.1827	detect	42	21	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	6.66198	detect	42	21	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	2.96088	detect	42	21	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	4.06172	detect	42	21	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	1.84106	detect	42	21	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	4.63112	detect	42	21	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	1.616463	detect	42	21	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	1.616463	detect	42	21	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

Barium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	10.17328	detect	42	21	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	17.95508	detect	42	21	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	4.59316	detect	42	21	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	3.796	detect	42	21	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	3.796	detect	42	21	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	3.62518	detect	42	21	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	6.77586	detect	42	21	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	4.30846	detect	42	21	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	3.77702	detect	42	21	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	3.0368	detect	42	21	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	8.65488	detect	42	21	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	10.97044	detect	42	21	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	5.76992	detect	42	21	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	10.64778	detect	42	21	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	10.78064	detect	42	21	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	5.35236	detect	42	21	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	3.7011	detect	42	21	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	5.04868	detect	42	21	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	15.88626	detect	42	21	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	3.90988	detect	42	21	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	2.52434	detect	42	21	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	9.33816	detect	42	21	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	5.7889	detect	42	21	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	19.7392	detect	42	21	<1.0	**1.1**
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	4.30846	detect	42	21	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	2.29658	detect	42	21	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	42	21	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	1.11033	detect	42	21	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	15.14604	detect	42	21	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	6.03564	detect	42	21	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	5.8838	detect	42	21	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	15.14604	detect	42	21	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	15.33584	detect	42	21	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	11.61576	detect	42	21	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	10.21124	detect	42	21	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	7.55404	detect	42	21	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	9.47102	detect	42	21	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	8.541	detect	42	21	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	9.54694	detect	42	21	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	11.90046	detect	42	21	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	13.3809	detect	42	21	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	21.2576	detect	42	21	<1.0	**1.2**
	SPP	SPP-SSComp-01_20171025_NM	14.21602	detect	42	21	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	2.12576	detect	42	21	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	1.95494	detect	42	21	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	19.1698	detect	42	21	<1.0	**1.1**
	SS15,16-HP9	SS15-HP9-(0-2)c	27.521	detect	42	21	<1.0	**1.6**
	SS3,4-HP16	SS3-HP16-(0-2)c	7.19342	detect	42	21	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	3.8909	detect	42	21	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	5.65604	detect	42	21	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	7.93364	detect	42	21	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	4.53622	detect	42	21	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

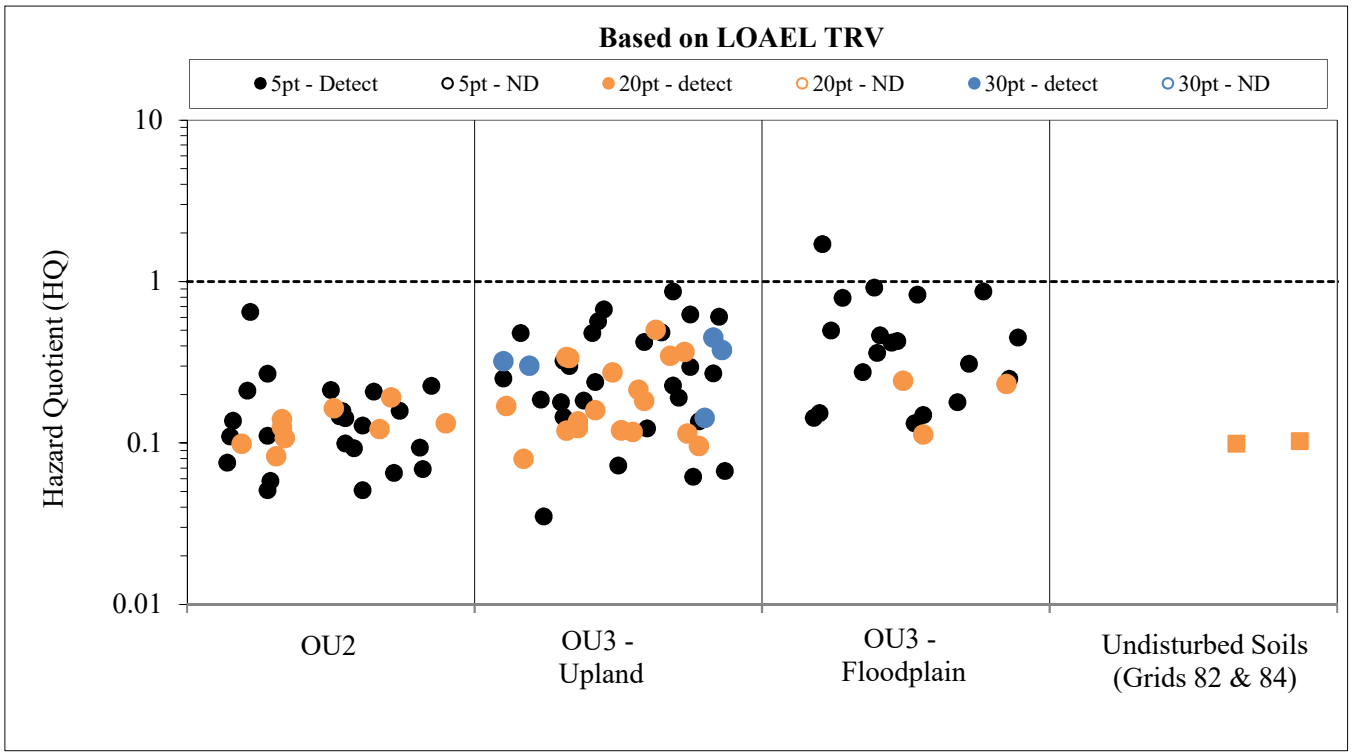
Barium

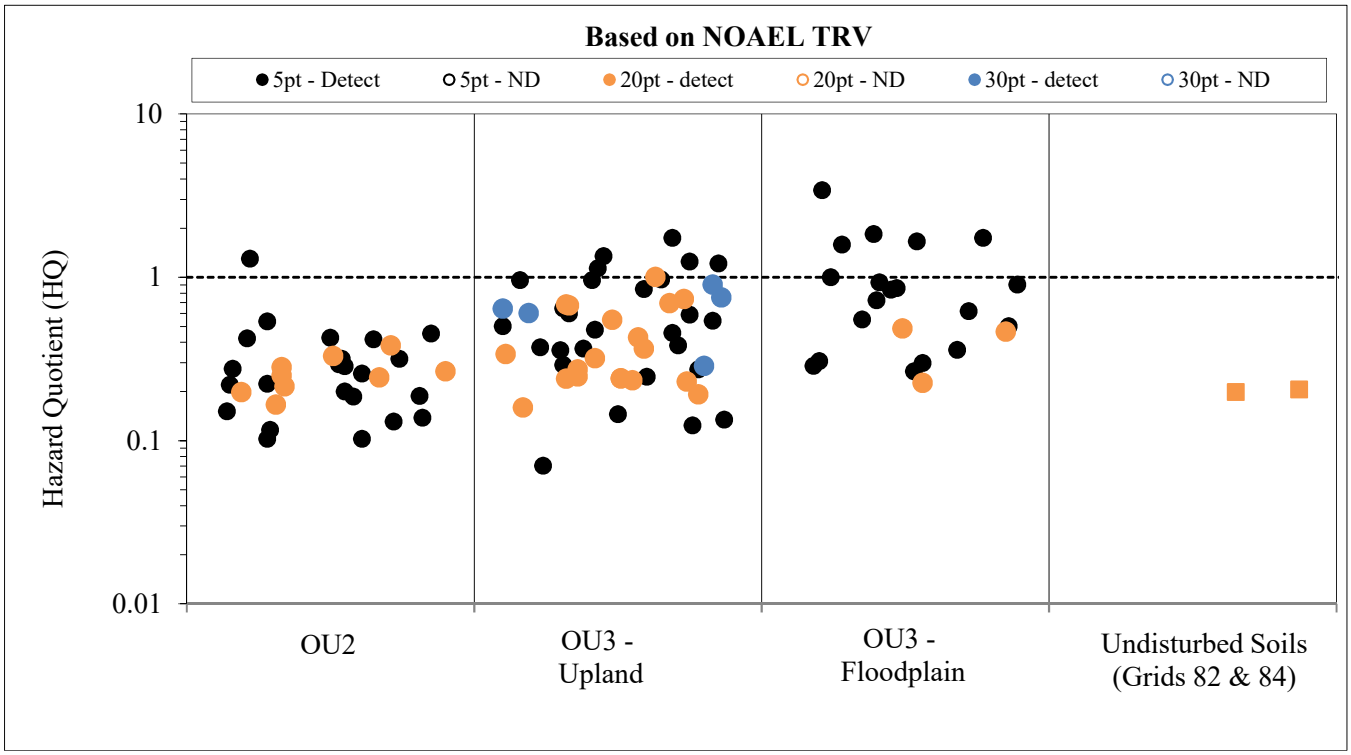
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	3.56824	detect	42	21	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	7.6869	detect	42	21	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	7.34526	detect	42	21	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	8.69284	detect	42	21	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	4.53622	detect	42	21	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	11.44494	detect	42	21	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	15.77238	detect	42	21	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	9.81266	detect	42	21	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	13.22906	detect	42	21	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	7.91466	detect	42	21	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	27.521	detect	42	21	<1.0	**1.6**
	SE16-HP13	SE16-HP13-(0-2)c	14.67154	detect	42	21	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	26.1924	detect	42	21	<1.0	**1.5**
	SE1-HP1a	SE1-HP1a-(0-2)c	29.0394	detect	42	21	<1.0	**1.7**
	SE2-HP1a	SE2-HP1a-(0-2)c	53.9032	detect	42	21	**1.6**	**3.1**
	SE3-HP1	SE3-HP1-(0-2)c	4.19458	detect	42	21	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	4.72602	detect	42	21	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	13.53274	detect	42	21	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	14.21602	detect	42	21	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	5.67502	detect	42	21	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	4.8399	detect	42	21	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	25.0536	detect	42	21	<1.0	**1.5**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	3.24558	detect	42	21	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	3.1317	detect	42	21	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Surface Soil by Exposure Unit/Soil Type

Barium





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Barium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	203	detect	42	21	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	234	detect	42	21	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	165	detect	42	21	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	138	detect	42	21	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	319	detect	42	21	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	274	detect	42	21	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	221	detect	42	21	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	208	detect	42	21	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	179	detect	42	21	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	355	detect	42	21	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	155	detect	42	21	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	264	detect	42	21	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	229	detect	42	21	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	166	detect	42	21	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	376	detect	42	21	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	183	detect	42	21	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	347	detect	42	21	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	263	detect	42	21	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	185	detect	42	21	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	109	detect	42	21	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	42	21	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	126	detect	42	21	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	42	21	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	42	21	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	1080	detect	42	21	<1.0	**1.3**
	SS33-IN	SS33-IN-(0-2)c	447	detect	42	21	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	238	detect	42	21	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	115	detect	42	21	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	351	detect	42	21	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	156	detect	42	21	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	214	detect	42	21	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	97	detect	42	21	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	244	detect	42	21	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	85.16667	detect	42	21	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	85.16667	detect	42	21	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Barium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	536	detect	42	21	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	946	detect	42	21	<1.0	**1.1**
	CRP-1	CRP-1-SS_4/10/14_NM	242	detect	42	21	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	200	detect	42	21	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	200	detect	42	21	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	191	detect	42	21	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	357	detect	42	21	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	227	detect	42	21	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	199	detect	42	21	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	160	detect	42	21	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	456	detect	42	21	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	578	detect	42	21	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	304	detect	42	21	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	561	detect	42	21	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	568	detect	42	21	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	282	detect	42	21	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	195	detect	42	21	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	266	detect	42	21	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	837	detect	42	21	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	206	detect	42	21	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	133	detect	42	21	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	492	detect	42	21	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	305	detect	42	21	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	1040	detect	42	21	<1.0	**1.3**
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	227	detect	42	21	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	121	detect	42	21	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	42	21	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	58.5	detect	42	21	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	798	detect	42	21	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	318	detect	42	21	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	310	detect	42	21	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	798	detect	42	21	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	808	detect	42	21	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	612	detect	42	21	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	538	detect	42	21	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	398	detect	42	21	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	499	detect	42	21	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	450	detect	42	21	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	503	detect	42	21	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	627	detect	42	21	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	705	detect	42	21	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1120	detect	42	21	<1.0	**1.3**
	SPP	SPP-SSComp-01_20171025_NM	749	detect	42	21	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	112	detect	42	21	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	103	detect	42	21	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	1010	detect	42	21	<1.0	**1.2**
	SS15,16-HP9	SS15-HP9-(0-2)c	1450	detect	42	21	<1.0	**1.7**
	SS3,4-HP16	SS3-HP16-(0-2)c	379	detect	42	21	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	205	detect	42	21	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	298	detect	42	21	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	418	detect	42	21	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	239	detect	42	21	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Barium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	188	detect	42	21	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	405	detect	42	21	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	387	detect	42	21	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	458	detect	42	21	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	239	detect	42	21	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	603	detect	42	21	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	831	detect	42	21	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	517	detect	42	21	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	697	detect	42	21	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	417	detect	42	21	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	1450	detect	42	21	<1.0	**1.7**
	SE16-HP13	SE16-HP13-(0-2)c	773	detect	42	21	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	1380	detect	42	21	<1.0	**1.7**
	SE1-HP1a	SE1-HP1a-(0-2)c	1530	detect	42	21	<1.0	**1.8**
	SE2-HP1a	SE2-HP1a-(0-2)c	2840	detect	42	21	**1.7**	**3.4**
	SE3-HP1	SE3-HP1-(0-2)c	221	detect	42	21	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	249	detect	42	21	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	713	detect	42	21	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	749	detect	42	21	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	299	detect	42	21	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	255	detect	42	21	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	1320	detect	42	21	<1.0	**1.6**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	171	detect	42	21	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	165	detect	42	21	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of River Surface Water

Barium

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.126	detect	20.8	41.7	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.127	detect	20.8	41.7	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0818	detect	20.8	41.7	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0932	detect	20.8	41.7	<1.0	<1.0
	51-CFR	SW51-CFR	0.129	detect	20.8	41.7	<1.0	<1.0
	52-CFR	SW52-CFR	0.124	detect	20.8	41.7	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.105	detect	20.8	41.7	<1.0	<1.0
	54-CFR	SW54-CFR	0.106	detect	20.8	41.7	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0982	detect	20.8	41.7	<1.0	<1.0
	55-CFR	SW55-CFR	0.123	detect	20.8	41.7	<1.0	<1.0
	56-CFR	SW56-CFR	0.12	detect	20.8	41.7	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0982	detect	20.8	41.7	<1.0	<1.0
	57-CFR	SW57-CFR	0.118	detect	20.8	41.7	<1.0	<1.0
	58-CFR	SW58-CFR	0.124	detect	20.8	41.7	<1.0	<1.0
	59-CFR	SW59-CFR	0.121	detect	20.8	41.7	<1.0	<1.0
	60-CFR	SW60-CFR	0.123	detect	20.8	41.7	<1.0	<1.0
	61-CFR	SW61-CFR	0.126	detect	20.8	41.7	<1.0	<1.0
	62-CFR	SW62-CFR	0.133	detect	20.8	41.7	<1.0	<1.0
	63-CFR	SW63-CFR	0.125	detect	20.8	41.7	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of Creek Surface Water

Barium

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.145	detect	20.8	41.7	<1.0	<1.0
	43-OK	SW43-OK	0.142	detect	20.8	41.7	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.25	detect	20.8	41.7	<1.0	<1.0
	37-LV	SW37-LV	0.158	detect	20.8	41.7	<1.0	<1.0
	39-LV	SW39-LV	0.163	detect	20.8	41.7	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of Pond Surface Water

Barium

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0725	detect	20.8	41.7	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.105	detect	20.8	41.7	<1.0	<1.0
69-HP1a	SW69-HP1a	0.204	detect	20.8	41.7	<1.0	<1.0
73-P5	SW73-P5	0.0417	detect	20.8	41.7	<1.0	<1.0
71-HP7	SW71-HP7	0.0563	detect	20.8	41.7	<1.0	<1.0
72-HP2	SW72-HP2	0.0414	detect	20.8	41.7	<1.0	<1.0
75-HP10	SW75-HP10	0.0226	detect	20.8	41.7	<1.0	<1.0
67-HP12	SW67-HP12	0.0272	detect	20.8	41.7	<1.0	<1.0
68-IBJ	SW68-IBJ	0.133	detect	20.8	41.7	<1.0	<1.0
66-HP13	SW66-HP13	0.0142	detect	20.8	41.7	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0606	detect	20.8	41.7	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0903	detect	20.8	41.7	<1.0	<1.0
70-CWD	SW70-CWD	0.161	detect	20.8	41.7	<1.0	<1.0
64-HP18	SW64-HP18	0.177	detect	20.8	41.7	<1.0	<1.0

#N/A = not analyzed

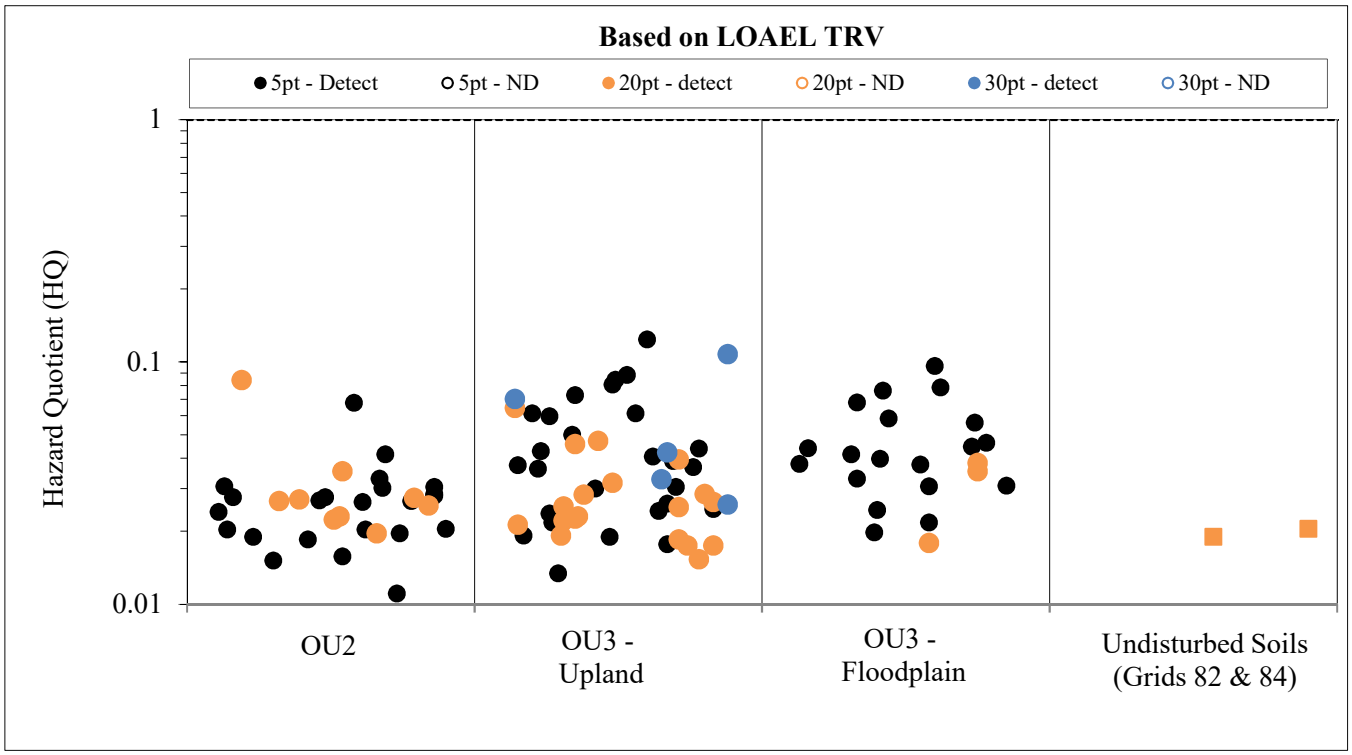
(a) Non-detects are evaluated at 1/2 the reported value.

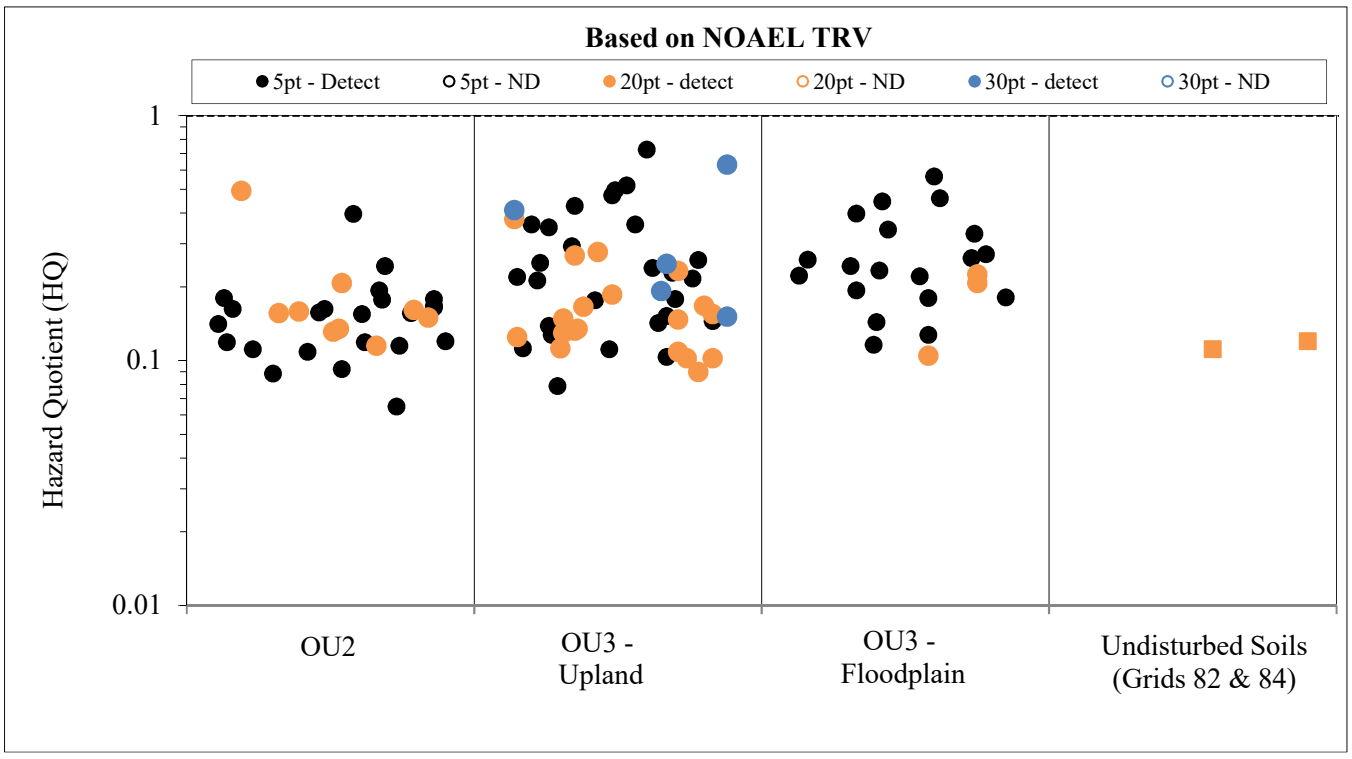
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Food by Exposure Unit/Soil Type

Chromium





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

Chromium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.344438	detect	16	3	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.33066	detect	16	3	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.457413	detect	16	3	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.289328	detect	16	3	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.349949	detect	16	3	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.35546	detect	16	3	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.253506	detect	16	3	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	1.088423	detect	16	3	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.297594	detect	16	3	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.537323	detect	16	3	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.143286	detect	16	3	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.195641	detect	16	3	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.264528	detect	16	3	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.253506	detect	16	3	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.363726	detect	16	3	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.311372	detect	16	3	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.394037	detect	16	3	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.358215	detect	16	3	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.347193	detect	16	3	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.427103	detect	16	3	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	16	3	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.203907	detect	16	3	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	16	3	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	16	3	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.876249	detect	16	3	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.396792	detect	16	3	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.391281	detect	16	3	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.24524	detect	16	3	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.344438	detect	16	3	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.341682	detect	16	3	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.369237	detect	16	3	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.239729	detect	16	3	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.358215	detect	16	3	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.262691	detect	16	3	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.262691	detect	16	3	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

Chromium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.909315	detect	16	3	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	1.044335	detect	16	3	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.504257	detect	16	3	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.239729	detect	16	3	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.198396	detect	16	3	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.297594	detect	16	3	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.27555	detect	16	3	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.292083	detect	16	3	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.225951	detect	16	3	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.247995	detect	16	3	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.327905	detect	16	3	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.366482	detect	16	3	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.286572	detect	16	3	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.611721	detect	16	3	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.592433	detect	16	3	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.41057	detect	16	3	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.341682	detect	16	3	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.325149	detect	16	3	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.834917	detect	16	3	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.369237	detect	16	3	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.225951	detect	16	3	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.484968	detect	16	3	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.336171	detect	16	3	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.553856	detect	16	3	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.24524	detect	16	3	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.173597	detect	16	3	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	16	3	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.247995	detect	16	3	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1.093934	detect	16	3	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.228707	detect	16	3	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.468435	detect	16	3	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	1.603701	detect	16	3	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.77154	detect	16	3	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.512523	detect	16	3	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.526301	detect	16	3	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.314127	detect	16	3	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.945137	detect	16	3	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.388526	detect	16	3	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.424347	detect	16	3	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.548345	detect	16	3	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.647543	detect	16	3	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1.143533	detect	16	3	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	1.391528	detect	16	3	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.319638	detect	16	3	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.281061	detect	16	3	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	0.793584	detect	16	3	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	0.793584	detect	16	3	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.394037	detect	16	3	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.305861	detect	16	3	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.567633	detect	16	3	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.476702	detect	16	3	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.333416	detect	16	3	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

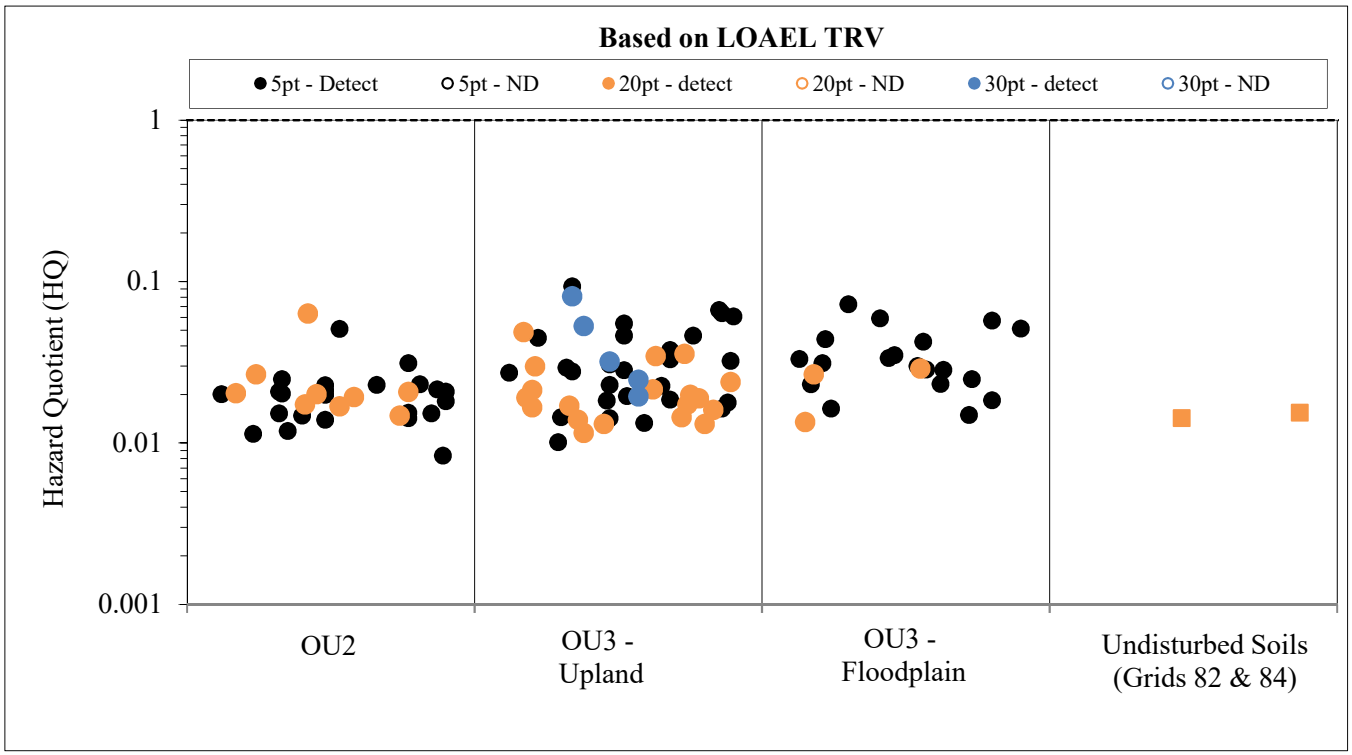
Chromium

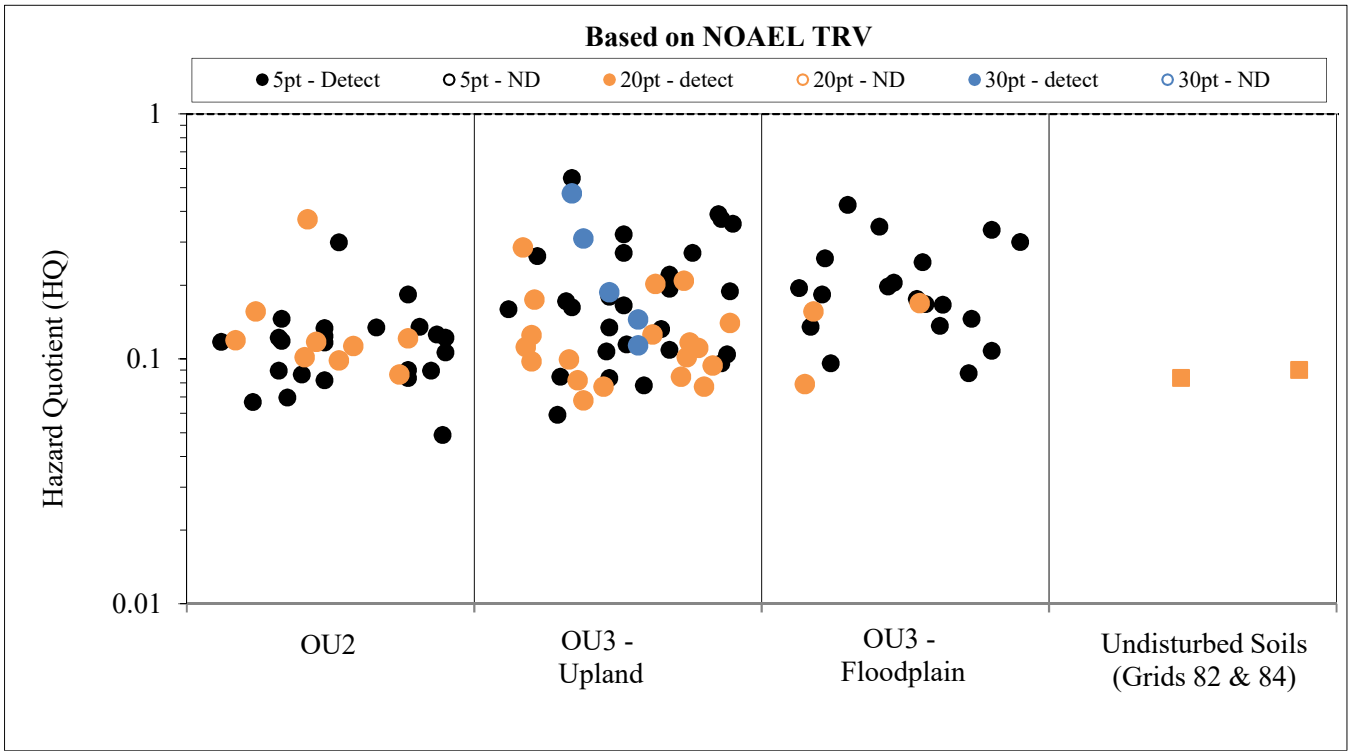
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.231462	detect	16	3	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.457413	detect	16	3	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.49599	detect	16	3	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.537323	detect	16	3	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.256262	detect	16	3	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	0.986469	detect	16	3	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	0.515279	detect	16	3	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	0.570389	detect	16	3	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	1.01678	detect	16	3	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	0.490479	detect	16	3	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.727452	detect	16	3	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	0.427103	detect	16	3	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.600699	detect	16	3	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.487724	detect	16	3	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.578655	detect	16	3	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.316883	detect	16	3	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.399548	detect	16	3	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	0.755007	detect	16	3	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	1.245486	detect	16	3	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	0.281061	detect	16	3	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.396792	detect	16	3	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	0.879005	detect	16	3	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.264528	detect	16	3	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.24524	detect	16	3	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Surface Soil by Exposure Unit/Soil Type

Chromium





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Chromium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	12.5	detect	16	3	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	12	detect	16	3	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	16.6	detect	16	3	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	10.5	detect	16	3	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	12.7	detect	16	3	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	12.9	detect	16	3	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	9.2	detect	16	3	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	39.5	detect	16	3	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	10.8	detect	16	3	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	19.5	detect	16	3	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	5.2	detect	16	3	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	7.1	detect	16	3	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	9.6	detect	16	3	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	9.2	detect	16	3	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	13.2	detect	16	3	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	11.3	detect	16	3	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	14.3	detect	16	3	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	13	detect	16	3	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	12.6	detect	16	3	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	15.5	detect	16	3	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	16	3	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	7.4	detect	16	3	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	16	3	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	16	3	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	31.8	detect	16	3	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	14.4	detect	16	3	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	14.2	detect	16	3	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	8.9	detect	16	3	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	12.5	detect	16	3	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	12.4	detect	16	3	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	13.4	detect	16	3	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	8.7	detect	16	3	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	13	detect	16	3	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	9.533333	detect	16	3	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	9.533333	detect	16	3	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Chromium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	33	detect	16	3	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	37.9	detect	16	3	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	18.3	detect	16	3	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	8.7	detect	16	3	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	7.2	detect	16	3	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	10.8	detect	16	3	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	10	detect	16	3	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	10.6	detect	16	3	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	8.2	detect	16	3	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	9	detect	16	3	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	11.9	detect	16	3	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	13.3	detect	16	3	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	10.4	detect	16	3	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	22.2	detect	16	3	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	21.5	detect	16	3	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	14.9	detect	16	3	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	12.4	detect	16	3	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	11.8	detect	16	3	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	30.3	detect	16	3	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	13.4	detect	16	3	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	8.2	detect	16	3	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	17.6	detect	16	3	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	12.2	detect	16	3	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	20.1	detect	16	3	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	8.9	detect	16	3	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	6.3	detect	16	3	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	16	3	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	9	detect	16	3	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	39.7	detect	16	3	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	8.3	detect	16	3	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	17	detect	16	3	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	58.2	detect	16	3	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	28	detect	16	3	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	18.6	detect	16	3	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	19.1	detect	16	3	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	11.4	detect	16	3	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	34.3	detect	16	3	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	14.1	detect	16	3	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	15.4	detect	16	3	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	19.9	detect	16	3	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	23.5	detect	16	3	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	41.5	detect	16	3	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	50.5	detect	16	3	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	11.6	detect	16	3	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	10.2	detect	16	3	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	28.8	detect	16	3	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	28.8	detect	16	3	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	14.3	detect	16	3	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	11.1	detect	16	3	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	20.6	detect	16	3	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	17.3	detect	16	3	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	12.1	detect	16	3	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Chromium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	8.4	detect	16	3	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	16.6	detect	16	3	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	18	detect	16	3	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	19.5	detect	16	3	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	9.3	detect	16	3	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	35.8	detect	16	3	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	18.7	detect	16	3	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	20.7	detect	16	3	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	36.9	detect	16	3	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	17.8	detect	16	3	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	26.4	detect	16	3	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	15.5	detect	16	3	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	21.8	detect	16	3	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	17.7	detect	16	3	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	21	detect	16	3	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	11.5	detect	16	3	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	14.5	detect	16	3	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	27.4	detect	16	3	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	45.2	detect	16	3	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	10.2	detect	16	3	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	14.4	detect	16	3	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	31.9	detect	16	3	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	9.6	detect	16	3	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	8.9	detect	16	3	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of River Surface Water

Chromium

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0002	detect	2.66	15.6	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0004	ND	2.66	15.6	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0008	detect	2.66	15.6	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0005	ND	2.66	15.6	<1.0	<1.0
	51-CFR	SW51-CFR	0.0002	detect	2.66	15.6	<1.0	<1.0
	52-CFR	SW52-CFR	0.0002	ND	2.66	15.6	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0002	ND	2.66	15.6	<1.0	<1.0
	54-CFR	SW54-CFR	0.0002	ND	2.66	15.6	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0005	ND	2.66	15.6	<1.0	<1.0
	55-CFR	SW55-CFR	0.0002	ND	2.66	15.6	<1.0	<1.0
	56-CFR	SW56-CFR	0.0002	ND	2.66	15.6	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0005	ND	2.66	15.6	<1.0	<1.0
	57-CFR	SW57-CFR	0.0002	ND	2.66	15.6	<1.0	<1.0
	58-CFR	SW58-CFR	0.0002	ND	2.66	15.6	<1.0	<1.0
	59-CFR	SW59-CFR	0.0002	ND	2.66	15.6	<1.0	<1.0
	60-CFR	SW60-CFR	0.0002	detect	2.66	15.6	<1.0	<1.0
	61-CFR	SW61-CFR	0.0002	detect	2.66	15.6	<1.0	<1.0
	62-CFR	SW62-CFR	0.0002	ND	2.66	15.6	<1.0	<1.0
	63-CFR	SW63-CFR	0.0003	detect	2.66	15.6	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of Creek Surface Water

Chromium

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.0003	detect	2.66	15.6	<1.0	<1.0
	43-OK	SW43-OK	0.0003	detect	2.66	15.6	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.0005	detect	2.66	15.6	<1.0	<1.0
	37-LV	SW37-LV	0.0003	detect	2.66	15.6	<1.0	<1.0
	39-LV	SW39-LV	0.0002	detect	2.66	15.6	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of Pond Surface Water

Chromium

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0002	ND	2.66	15.6	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0016	detect	2.66	15.6	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0013	detect	2.66	15.6	<1.0	<1.0
73-P5	SW73-P5	0.0016	ND	2.66	15.6	<1.0	<1.0
71-HP7	SW71-HP7	0.0011	detect	2.66	15.6	<1.0	<1.0
72-HP2	SW72-HP2	0.0011	detect	2.66	15.6	<1.0	<1.0
75-HP10	SW75-HP10	0.0008	ND	2.66	15.6	<1.0	<1.0
67-HP12	SW67-HP12	0.0011	detect	2.66	15.6	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0002	detect	2.66	15.6	<1.0	<1.0
66-HP13	SW66-HP13	0.001	detect	2.66	15.6	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0009	detect	2.66	15.6	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0015	detect	2.66	15.6	<1.0	<1.0
70-CWD	SW70-CWD	0.0002	ND	2.66	15.6	<1.0	<1.0
64-HP18	SW64-HP18	0.0008	ND	2.66	15.6	<1.0	<1.0

#N/A = not analyzed

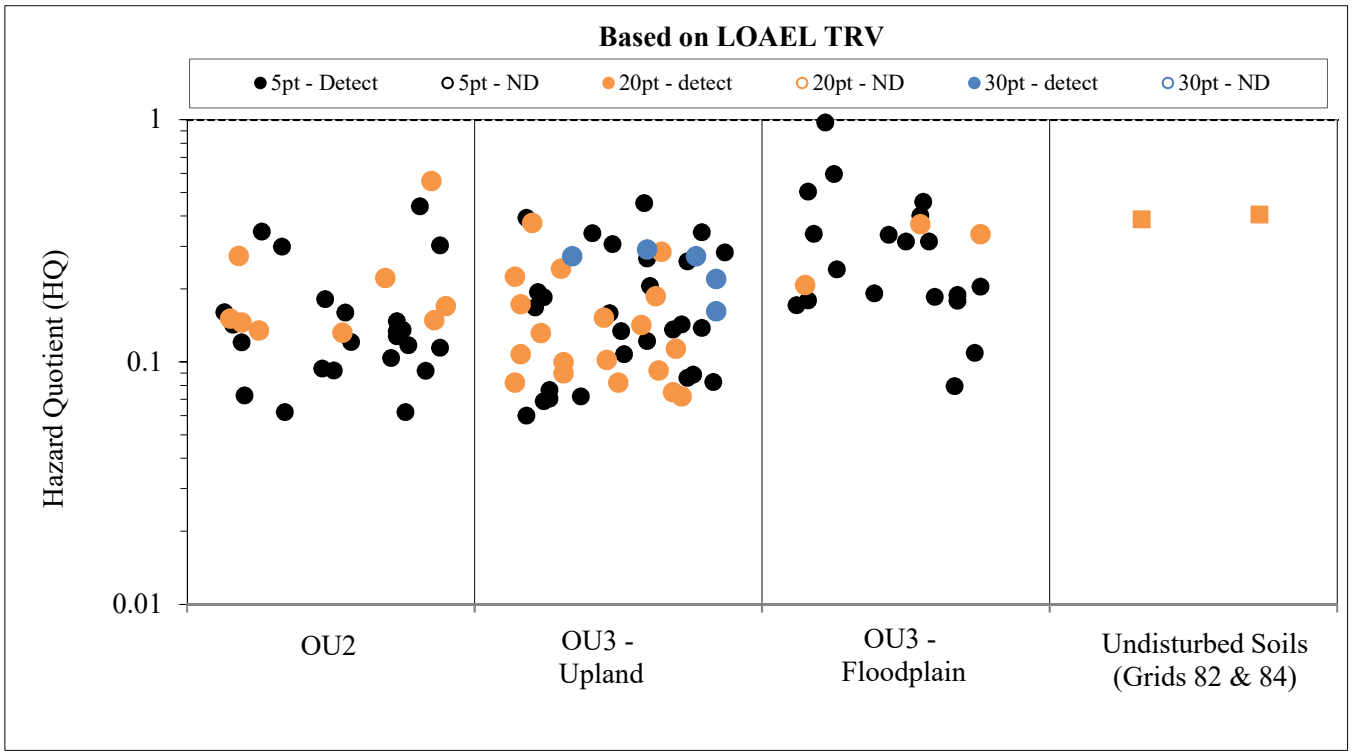
(a) Non-detects are evaluated at 1/2 the reported value.

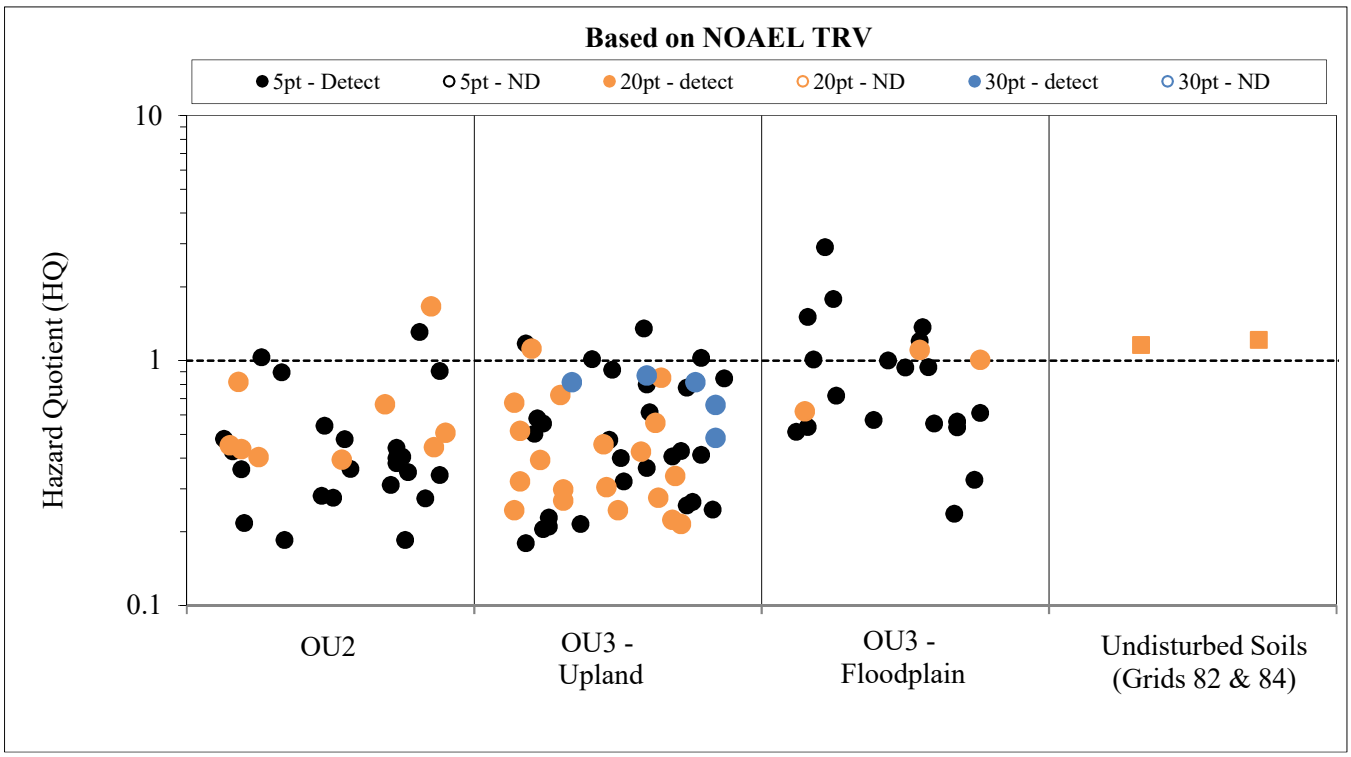
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Food by Exposure Unit/Soil Type

Copper





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

Copper

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	1.707055	detect	12	4	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	1.460701	detect	12	4	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	5.597669	detect	12	4	<1.0	**1.7**
	Grid 2	Grid 2-SSComp-01_20171016_NM	1.515321	detect	12	4	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	2.752541	detect	12	4	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	1.490526	detect	12	4	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	1.355657	detect	12	4	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	2.231057	detect	12	4	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	1.32544	detect	12	4	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	1.823766	detect	12	4	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.729713	detect	12	4	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.92141	detect	12	4	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	1.345595	detect	12	4	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	1.14705	detect	12	4	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	1.213767	detect	12	4	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	1.480593	detect	12	4	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	1.60908	detect	12	4	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	3.007754	detect	12	4	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	1.27993	detect	12	4	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	1.208656	detect	12	4	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	12	4	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.942785	detect	12	4	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	12	4	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	12	4	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	3.463099	detect	12	4	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	3.044731	detect	12	4	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	1.360684	detect	12	4	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	1.043158	detect	12	4	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	4.402706	detect	12	4	<1.0	**1.3**
	SS6-IN	SS6-IN-(0-2)c	1.177915	detect	12	4	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	1.604162	detect	12	4	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.926762	detect	12	4	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	1.430796	detect	12	4	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.622833	detect	12	4	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.622833	detect	12	4	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

Copper

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	2.743226	detect	12	4	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	1.949271	detect	12	4	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	1.223981	detect	12	4	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.724086	detect	12	4	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.752123	detect	12	4	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.82398	detect	12	4	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.926762	detect	12	4	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	1.136732	detect	12	4	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.82398	detect	12	4	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	1.079707	detect	12	4	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	1.001115	detect	12	4	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	1.022174	detect	12	4	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	1.530172	detect	12	4	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	2.859487	detect	12	4	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	2.259509	detect	12	4	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	1.736317	detect	12	4	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	1.320395	detect	12	4	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	1.872146	detect	12	4	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	3.759737	detect	12	4	<1.0	**1.1**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	1.425804	detect	12	4	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.899941	detect	12	4	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	1.365708	detect	12	4	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	1.38578	detect	12	4	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	1.857646	detect	12	4	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	1.079707	detect	12	4	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.724086	detect	12	4	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	12	4	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.603275	detect	12	4	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	3.449367	detect	12	4	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.707145	detect	12	4	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	1.594322	detect	12	4	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	3.081673	detect	12	4	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	4.542288	detect	12	4	<1.0	**1.4**
	P3	P3-SSComp-01_20171020_NM	2.434241	detect	12	4	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	2.687277	detect	12	4	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.768833	detect	12	4	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	1.345595	detect	12	4	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	1.687515	detect	12	4	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	2.21207	detect	12	4	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	2.743226	detect	12	4	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	3.408148	detect	12	4	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	2.845556	detect	12	4	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	2.924426	detect	12	4	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.829452	detect	12	4	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.88917	detect	12	4	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	3.946044	detect	12	4	<1.0	**1.2**
	SS15,16-HP9	SS15-HP9-(0-2)c	2.607849	detect	12	4	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.862128	detect	12	4	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.690108	detect	12	4	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	2.064362	detect	12	4	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	1.435786	detect	12	4	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	1.623821	detect	12	4	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

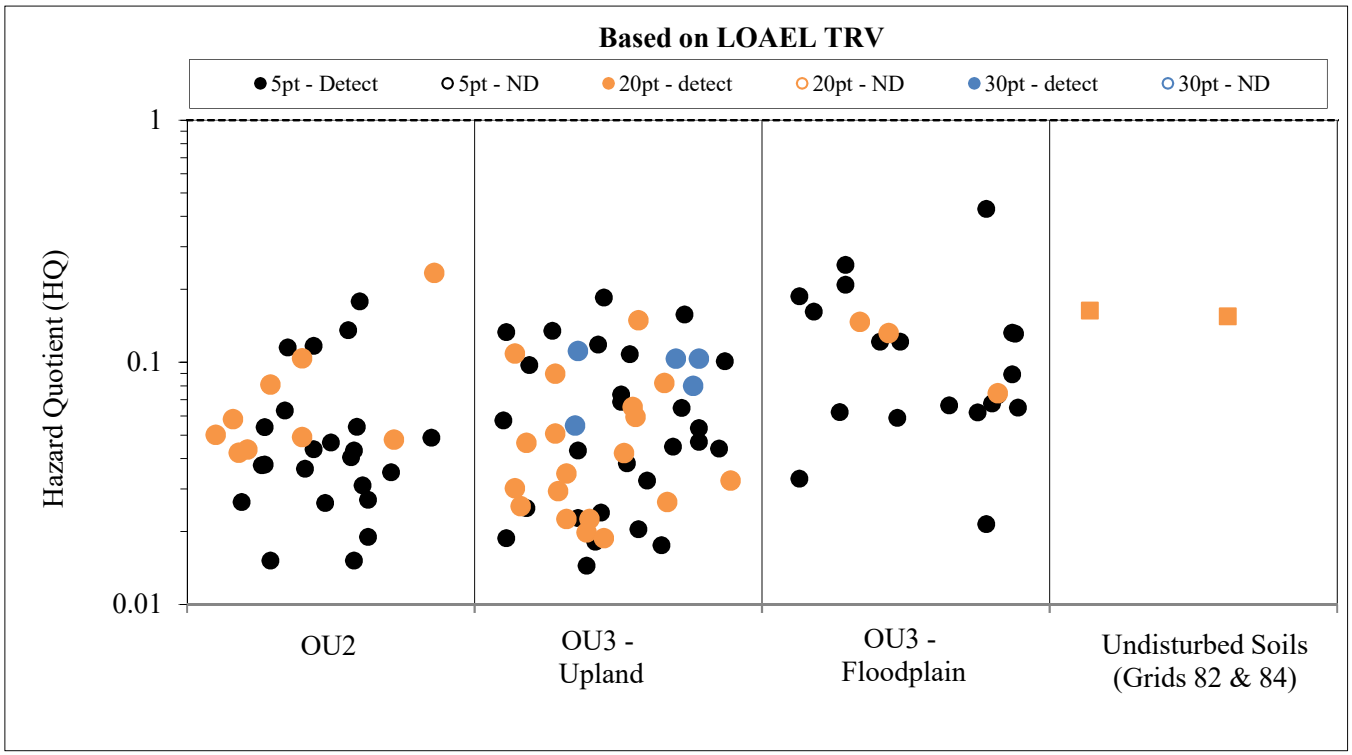
Copper

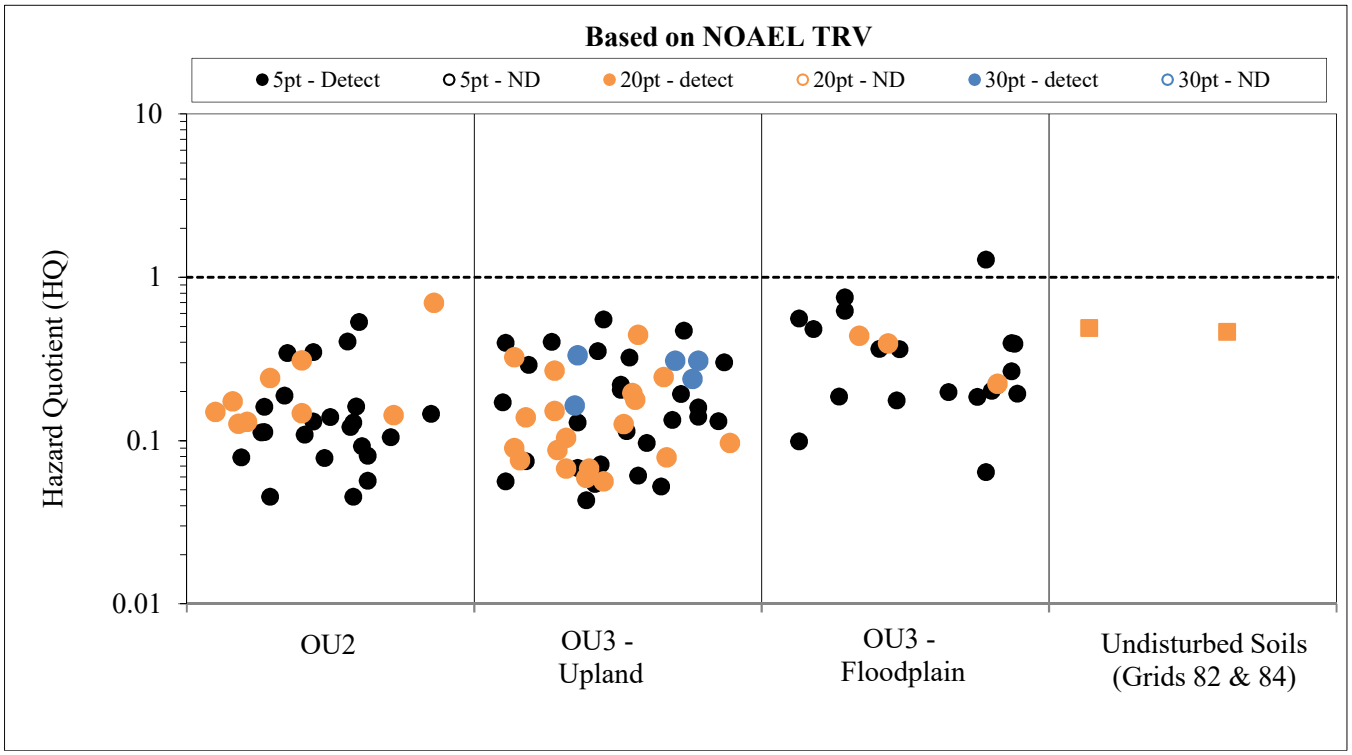
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	2.088255	detect	12	4	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	3.380649	detect	12	4	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	3.714206	detect	12	4	<1.0	**1.1**
	HP13a-1	HP13A-1-SS_4/10/14_NM	2.420118	detect	12	4	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.796508	detect	12	4	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	9.767683	detect	12	4	<1.0	**2.9**
	SE11-HP11	SE11-HP11-(0-2)c	3.362308	detect	12	4	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	1.862481	detect	12	4	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	4.596252	detect	12	4	<1.0	**1.4**
	SE14-HP13	SE14-HP13-(0-2)c	1.896284	detect	12	4	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	4.03672	detect	12	4	<1.0	**1.2**
	SE16-HP13	SE16-HP13-(0-2)c	1.925205	detect	12	4	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	1.721693	detect	12	4	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	1.794671	detect	12	4	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	2.054797	detect	12	4	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	1.095307	detect	12	4	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	1.799523	detect	12	4	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	5.062507	detect	12	4	<1.0	**1.5**
	SE6-HP7	SE6-HP7-(0-2)c	5.997348	detect	12	4	<1.0	**1.8**
	SE7-HP7	SE7-HP7-(0-2)c	3.15085	detect	12	4	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	3.155458	detect	12	4	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	3.394401	detect	12	4	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	4.072954	detect	12	4	<1.0	**1.2**
	Grid 84	Grid 84-SSComp-01_20171026_NM	3.887034	detect	12	4	<1.0	**1.2**

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Surface Soil by Exposure Unit/Soil Type

Copper





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Copper

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	28.2	detect	12	4	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	23.2	detect	12	4	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	113	detect	12	4	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	24.3	detect	12	4	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	50.2	detect	12	4	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	23.8	detect	12	4	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	21.1	detect	12	4	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	39.1	detect	12	4	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	20.5	detect	12	4	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	30.6	detect	12	4	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	9.2	detect	12	4	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	12.7	detect	12	4	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	20.9	detect	12	4	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	17	detect	12	4	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	18.3	detect	12	4	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	23.6	detect	12	4	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	26.2	detect	12	4	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	55.7	detect	12	4	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	19.6	detect	12	4	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	18.2	detect	12	4	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	12	4	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	13.1	detect	12	4	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	12	4	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	12	4	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	65.6	detect	12	4	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	56.5	detect	12	4	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	21.2	detect	12	4	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	15	detect	12	4	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	86.3	detect	12	4	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	17.6	detect	12	4	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	26.1	detect	12	4	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	12.8	detect	12	4	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	22.6	detect	12	4	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	7.333333	detect	12	4	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	7.333333	detect	12	4	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Copper

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	50	detect	12	4	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	33.2	detect	12	4	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	18.5	detect	12	4	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	9.1	detect	12	4	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	9.6	detect	12	4	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	10.9	detect	12	4	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	12.8	detect	12	4	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	16.8	detect	12	4	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	10.9	detect	12	4	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	15.7	detect	12	4	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	14.2	detect	12	4	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	14.6	detect	12	4	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	24.6	detect	12	4	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	52.5	detect	12	4	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	39.7	detect	12	4	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	28.8	detect	12	4	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	20.4	detect	12	4	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	31.6	detect	12	4	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	72.1	detect	12	4	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	22.5	detect	12	4	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	12.3	detect	12	4	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	21.3	detect	12	4	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	21.7	detect	12	4	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	31.3	detect	12	4	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	15.7	detect	12	4	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	9.1	detect	12	4	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	12	4	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	7	detect	12	4	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	65.3	detect	12	4	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	8.8	detect	12	4	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	25.9	detect	12	4	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	57.3	detect	12	4	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	89.4	detect	12	4	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	43.4	detect	12	4	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	48.8	detect	12	4	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	9.9	detect	12	4	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	20.9	detect	12	4	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	27.8	detect	12	4	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	38.7	detect	12	4	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	50	detect	12	4	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	64.4	detect	12	4	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	52.2	detect	12	4	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	53.9	detect	12	4	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	11	detect	12	4	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	12.1	detect	12	4	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	76.2	detect	12	4	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	47.1	detect	12	4	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	11.6	detect	12	4	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	8.5	detect	12	4	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	35.6	detect	12	4	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	22.7	detect	12	4	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	26.5	detect	12	4	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Copper

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	36.1	detect	12	4	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	63.8	detect	12	4	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	71.1	detect	12	4	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	43.1	detect	12	4	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	10.4	detect	12	4	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	208	detect	12	4	<1.0	**1.3**
	SE11-HP11	SE11-HP11-(0-2)c	63.4	detect	12	4	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	31.4	detect	12	4	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	90.6	detect	12	4	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	32.1	detect	12	4	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	78.2	detect	12	4	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	32.7	detect	12	4	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	28.5	detect	12	4	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	30	detect	12	4	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	35.4	detect	12	4	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	16	detect	12	4	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	30.1	detect	12	4	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	101	detect	12	4	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	122	detect	12	4	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	58.8	detect	12	4	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	58.9	detect	12	4	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	64.1	detect	12	4	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	79	detect	12	4	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	74.9	detect	12	4	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of River Surface Water

Copper

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.002	detect	4.05	12.1	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0254	detect	4.05	12.1	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0131	detect	4.05	12.1	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.002	detect	4.05	12.1	<1.0	<1.0
	51-CFR	SW51-CFR	0.0021	detect	4.05	12.1	<1.0	<1.0
	52-CFR	SW52-CFR	0.0043	detect	4.05	12.1	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0299	detect	4.05	12.1	<1.0	<1.0
	54-CFR	SW54-CFR	0.0032	detect	4.05	12.1	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0015	detect	4.05	12.1	<1.0	<1.0
	55-CFR	SW55-CFR	0.0025	detect	4.05	12.1	<1.0	<1.0
	56-CFR	SW56-CFR	0.0023	detect	4.05	12.1	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0014	detect	4.05	12.1	<1.0	<1.0
	57-CFR	SW57-CFR	0.0027	detect	4.05	12.1	<1.0	<1.0
	58-CFR	SW58-CFR	0.0027	detect	4.05	12.1	<1.0	<1.0
	59-CFR	SW59-CFR	0.0026	detect	4.05	12.1	<1.0	<1.0
	60-CFR	SW60-CFR	0.0029	detect	4.05	12.1	<1.0	<1.0
	61-CFR	SW61-CFR	0.003	detect	4.05	12.1	<1.0	<1.0
	62-CFR	SW62-CFR	0.0026	detect	4.05	12.1	<1.0	<1.0
	63-CFR	SW63-CFR	0.0026	detect	4.05	12.1	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of Creek Surface Water

Copper

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.0023	detect	4.05	12.1	<1.0	<1.0
	43-OK	SW43-OK	0.002	detect	4.05	12.1	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.0009	detect	4.05	12.1	<1.0	<1.0
	37-LV	SW37-LV	0.0017	detect	4.05	12.1	<1.0	<1.0
	39-LV	SW39-LV	0.0024	detect	4.05	12.1	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of Pond Surface Water

Copper

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0007	detect	4.05	12.1	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0138	detect	4.05	12.1	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0036	detect	4.05	12.1	<1.0	<1.0
73-P5	SW73-P5	0.0014	detect	4.05	12.1	<1.0	<1.0
71-HP7	SW71-HP7	0.0025	detect	4.05	12.1	<1.0	<1.0
72-HP2	SW72-HP2	0.0035	detect	4.05	12.1	<1.0	<1.0
75-HP10	SW75-HP10	0.0018	detect	4.05	12.1	<1.0	<1.0
67-HP12	SW67-HP12	0.0018	detect	4.05	12.1	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0006	detect	4.05	12.1	<1.0	<1.0
66-HP13	SW66-HP13	0.0033	detect	4.05	12.1	<1.0	<1.0
65-HP13a	SW65-HP13a	0.006	detect	4.05	12.1	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0196	detect	4.05	12.1	<1.0	<1.0
70-CWD	SW70-CWD	0.0016	detect	4.05	12.1	<1.0	<1.0
64-HP18	SW64-HP18	0.0024	detect	4.05	12.1	<1.0	<1.0

#N/A = not analyzed

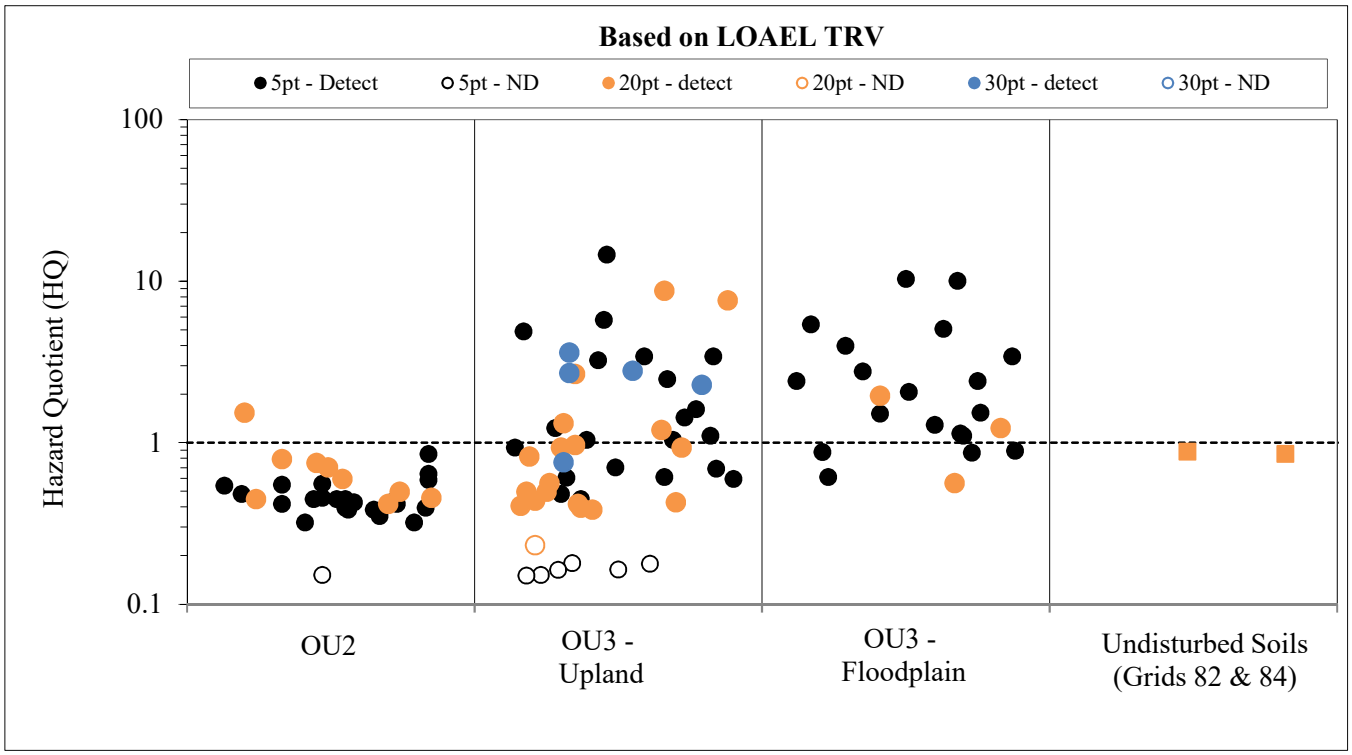
(a) Non-detects are evaluated at 1/2 the reported value.

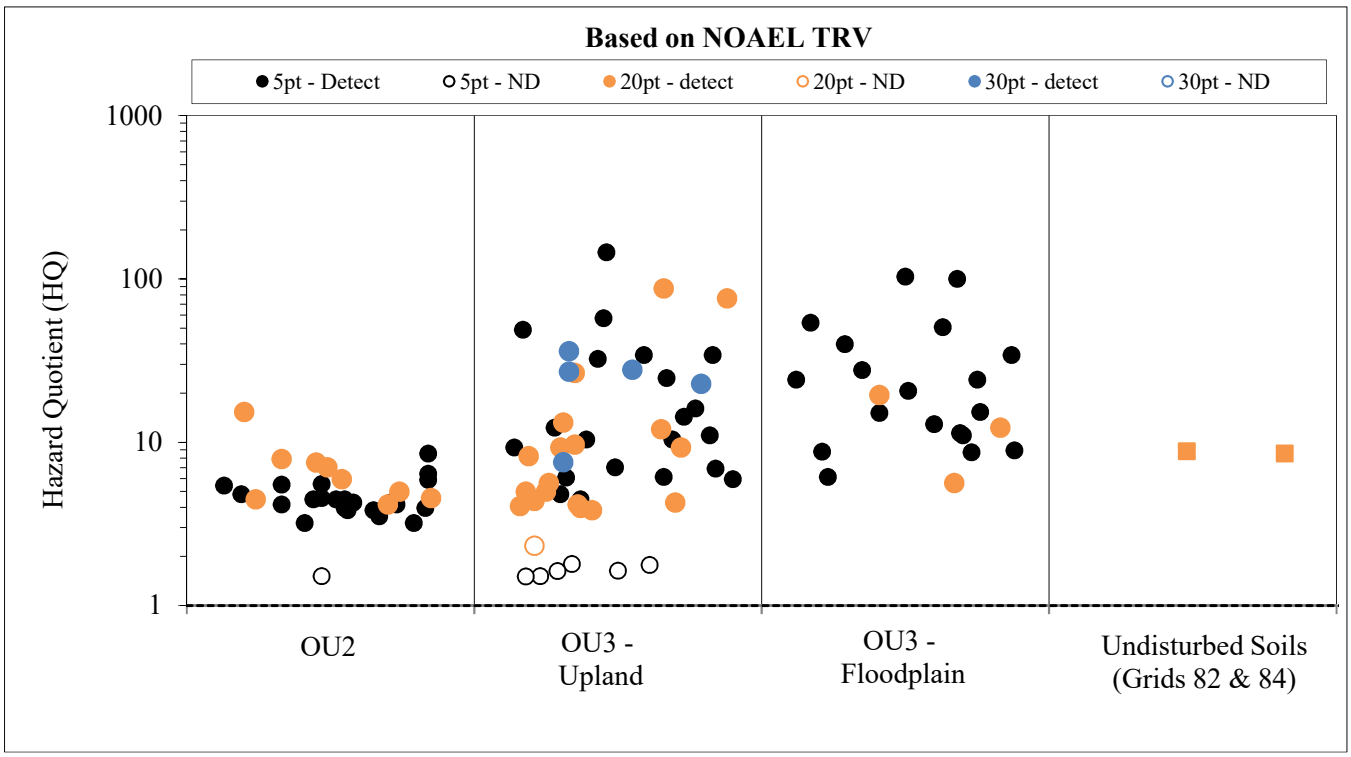
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Food by Exposure Unit/Soil Type

Mercury





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

Mercury

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.081547	detect	0	0	**1.5**	**15.4**
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.026421	detect	0	0	<1.0	**5.0**
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.042004	detect	0	0	<1.0	**7.9**
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.037226	detect	0	0	<1.0	**7.0**
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.031593	detect	0	0	<1.0	**5.9**
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.024182	detect	0	0	<1.0	**4.6**
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.023697	detect	0	0	<1.0	**4.5**
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.03982	detect	0	0	<1.0	**7.5**
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.02214	detect	0	0	<1.0	**4.2**
	LF-1	LF-1-SS_4/18/14_NM	0.029526	detect	0	0	<1.0	**5.6**
	SB2a,3a-IN	SB2a-IN-(0-2)	0.023697	detect	0	0	<1.0	**4.5**
	SS10-IN	SS10-IN-(0-2)c	0.021001	detect	0	0	<1.0	**4.0**
	SS11-IN	SS11-IN-(0-2)c	0.045182	detect	0	0	<1.0	**8.5**
	SS12-IN	SS12-IN-(0-2)c	0.021001	detect	0	0	<1.0	**4.0**
	SS13-IN	SS13-IN-(0-2)c	0.020393	detect	0	0	<1.0	**3.8**
	SS14-IN	SS14-IN-(0-2)c	0.029163	detect	0	0	<1.0	**5.5**
	SS15-IN	SS15-IN-(0-2)c	0.024182	detect	0	0	<1.0	**4.6**
	SS16-IN	SS16-IN-(0-2)c	0.031261	detect	0	0	<1.0	**5.9**
	SS17-IN	SS17-IN-(0-2)c	0.02556	detect	0	0	<1.0	**4.8**
	SS1-IN	SS1-IN-(0-2)c	0.020393	detect	0	0	<1.0	**3.8**
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.028793	detect	0	0	<1.0	**5.4**
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.022677	detect	0	0	<1.0	**4.3**
	SS33-IN	SS33-IN-(0-2)c	0.008035	ND	0	0	<1.0	**1.5**
	SS3-IN	SS3-IN-(0-2)c	0.023697	detect	0	0	<1.0	**4.5**
	SS4-IN	SS4-IN-(0-2)c	0.018659	detect	0	0	<1.0	**3.5**
	SS5-IN	SS5-IN-(0-2)c	0.023697	detect	0	0	<1.0	**4.5**
	SS6-IN	SS6-IN-(0-2)c	0.022677	detect	0	0	<1.0	**4.3**
	SS7-IN	SS7-IN-(0-2)c	0.034104	detect	0	0	<1.0	**6.4**
	SS8-IN	SS8-IN-(0-2)c	0.02214	detect	0	0	<1.0	**4.2**
	SS9-IN	SS9-IN-(0-2)c	0.02214	detect	0	0	<1.0	**4.2**
	HDPT-SS	BACKFILL-HDPT-SS	0.017021	detect	0	0	<1.0	**3.2**
	TSB-SS	BACKFILL-TSB-SS	0.017021	detect	0	0	<1.0	**3.2**

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

Mercury

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.12128	detect	0	0	**2.3**	**22.8**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.181978	detect	0	0	**3.4**	**34.3**
	CRP-1	CRP-1-SS_4/10/14_NM	0.08564	detect	0	0	**1.6**	**16.1**
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.020393	detect	0	0	<1.0	**3.8**
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.022677	detect	0	0	<1.0	**4.3**
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.029884	detect	0	0	<1.0	**5.6**
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.026421	detect	0	0	<1.0	**5.0**
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.023195	detect	0	0	<1.0	**4.4**
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.021001	detect	0	0	<1.0	**4.0**
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.02214	detect	0	0	<1.0	**4.2**
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.043623	detect	0	0	<1.0	**8.2**
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.051343	detect	0	0	<1.0	**9.7**
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.04937	detect	0	0	<1.0	**9.3**
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.141321	detect	0	0	**2.7**	**26.6**
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.463892	detect	0	0	**8.7**	**87.3**
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.063683	detect	0	0	**1.2**	**12.0**
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.04937	detect	0	0	<1.0	**9.3**
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.403176	detect	0	0	**7.6**	**75.9**
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.06997	detect	0	0	**1.3**	**13.2**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.021582	detect	0	0	<1.0	**4.1**
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.026421	detect	0	0	<1.0	**5.0**
	HP16-1	HP16-1-SS_4/10/14_NM	0.075896	detect	0	0	**1.4**	**14.3**
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.031593	detect	0	0	<1.0	**5.9**
	HP18-1	HP18-1-SS_4/10/14_NM	0.0551	detect	0	0	<1.0	**10.4**
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.023697	detect	0	0	<1.0	**4.5**
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.008035	ND	0	0	<1.0	**1.5**
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.007989	ND	0	0	<1.0	**1.5**
	HP9-1	HP9-1-SS_4/10/14_NM	0.181978	detect	0	0	**3.4**	**34.3**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.037226	detect	0	0	<1.0	**7.0**
	IBK-1	IBK-1-SS_4/16/14_NM	0.02556	detect	0	0	<1.0	**4.8**
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.305281	detect	0	0	**5.7**	**57.5**
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.065295	detect	0	0	**1.2**	**12.3**
	P3	P3-SSComp-01_20171020_NM	0.012327	ND	0	0	<1.0	**2.3**
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.009436	ND	0	0	<1.0	**1.8**
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.036681	detect	0	0	<1.0	**6.9**
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.009541	ND	0	0	<1.0	**1.8**
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.04937	detect	0	0	<1.0	**9.3**
	P8	P8-SSComp-01_20171025_NM	0.147784	detect	0	0	**2.8**	**27.8**
	P8dc	P8dc-SSComp-01_20171024_NM	0.143485	detect	0	0	**2.7**	**27.0**
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.131436	detect	0	0	**2.5**	**24.7**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.171821	detect	0	0	**3.2**	**32.4**
	SPP	SPP-SSComp-01_20171025_NM	0.191992	detect	0	0	**3.6**	**36.1**
	SS1,2-HP18	SS1-HP18-(0-2)c	0.008642	ND	0	0	<1.0	**1.6**
	SS11,12-IBK	SS11-IBK-(0-2)c	0.008682	ND	0	0	<1.0	**1.6**
	SS13,14-HP9	SS13-HP9-(0-2)c	0.774285	detect	0	0	**14.6**	**145.8**
	SS15,16-HP9	SS15-HP9-(0-2)c	0.259251	detect	0	0	**4.9**	**48.8**
	SS3,4-HP16	SS3-HP16-(0-2)c	0.0551	detect	0	0	<1.0	**10.4**
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.032244	detect	0	0	<1.0	**6.1**
	SS7,8-HP13	SS7-HP13-(0-2)c	0.058653	detect	0	0	**1.1**	**11.0**
	SS9,10-HP12	SS9-HP12-(0-2)c	0.032564	detect	0	0	<1.0	**6.1**
	SWBA	SWBA-SSComp-01_20171024_NM	0.040069	detect	0	0	<1.0	**7.5**

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

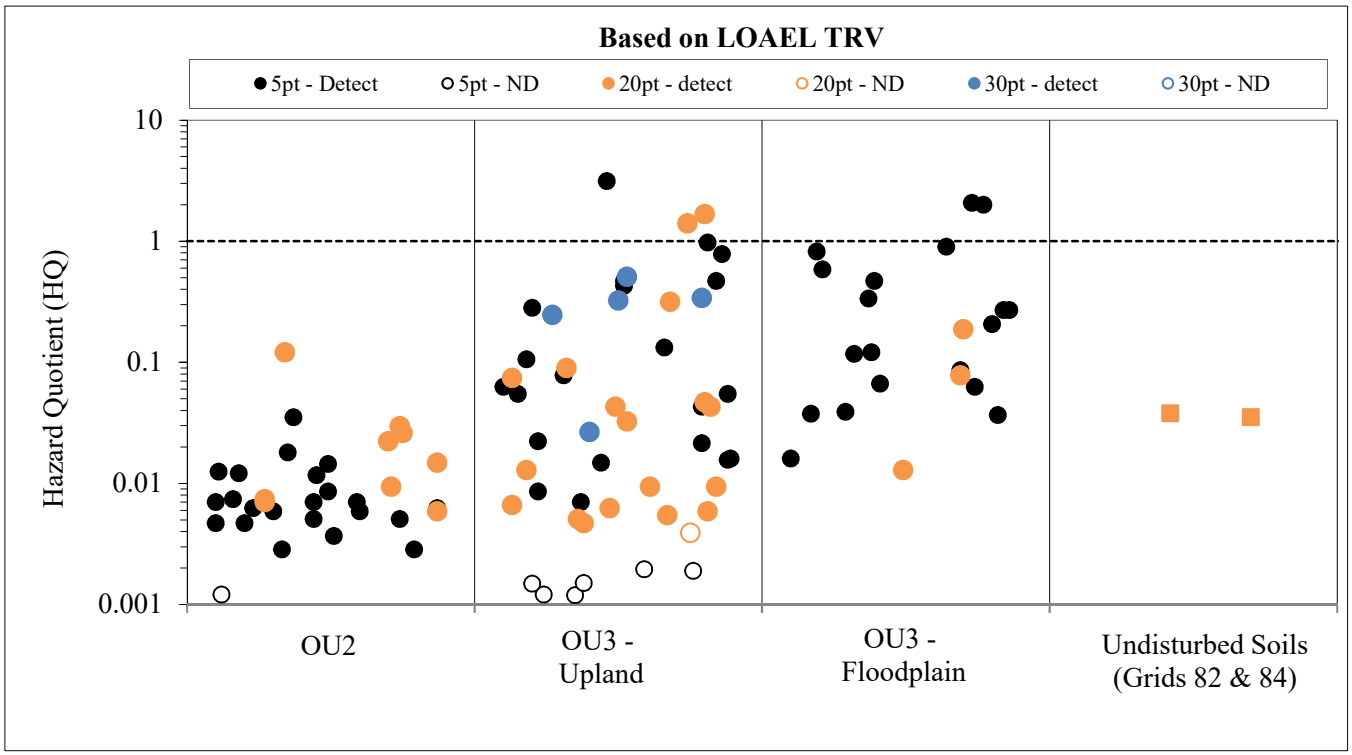
Mercury

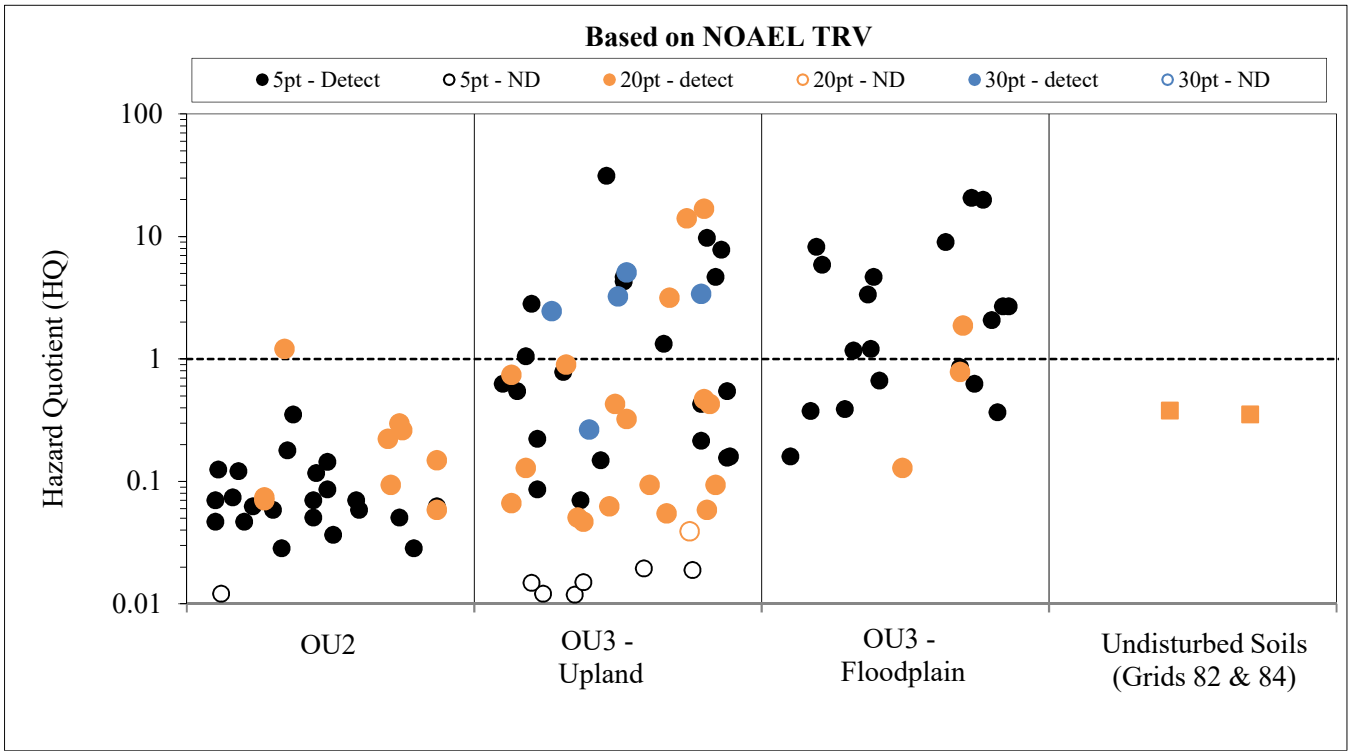
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.029884	detect	0	0	<1.0	**5.6**
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.065295	detect	0	0	**1.2**	**12.3**
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.103549	detect	0	0	**1.9**	**19.5**
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.109592	detect	0	0	**2.1**	**20.6**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.032564	detect	0	0	<1.0	**6.1**
	SE10-HP11	SE10-HP11-(0-2)c	0.532258	detect	0	0	**10.0**	**100.2**
	SE11-HP11	SE11-HP11-(0-2)c	0.128084	detect	0	0	**2.4**	**24.1**
	SE12-HP12	SE12-HP12-(0-2)c	0.058653	detect	0	0	**1.1**	**11.0**
	SE13-HP12	SE13-HP12-(0-2)c	0.287018	detect	0	0	**5.4**	**54.0**
	SE14-HP13	SE14-HP13-(0-2)c	0.046477	detect	0	0	<1.0	**8.8**
	SE15-HP13	SE15-HP13-(0-2)c	0.128084	detect	0	0	**2.4**	**24.1**
	SE16-HP13	SE16-HP13-(0-2)c	0.047321	detect	0	0	<1.0	**8.9**
	SE17-HP13a	SE17-HP13a-(0-2)c	0.046049	detect	0	0	<1.0	**8.7**
	SE1-HP1a	SE1-HP1a-(0-2)c	0.081547	detect	0	0	**1.5**	**15.4**
	SE2-HP1a	SE2-HP1a-(0-2)c	0.080157	detect	0	0	**1.5**	**15.1**
	SE3-HP1	SE3-HP1-(0-2)c	0.060365	detect	0	0	**1.1**	**11.4**
	SE4-HP1	SE4-HP1-(0-2)c	0.268562	detect	0	0	**5.1**	**50.6**
	SE5-HP2	SE5-HP2-(0-2)c	0.146713	detect	0	0	**2.8**	**27.6**
	SE6-HP7	SE6-HP7-(0-2)c	0.549211	detect	0	0	**10.3**	**103.4**
	SE7-HP7	SE7-HP7-(0-2)c	0.068436	detect	0	0	**1.3**	**12.9**
	SE8-HP10	SE8-HP10-(0-2)c	0.181978	detect	0	0	**3.4**	**34.3**
	SE9-HP10	SE9-HP10-(0-2)c	0.211659	detect	0	0	**4.0**	**39.9**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.046689	detect	0	0	<1.0	**8.8**
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.045182	detect	0	0	<1.0	**8.5**

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Surface Soil by Exposure Unit/Soil Type

Mercury





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Mercury

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.31	detect	0	0	<1.0	**1.2**
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.024	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.076	detect	0	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.057	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.038	detect	0	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.019	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.018	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.067	detect	0	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.015	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.032	detect	0	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.018	detect	0	0	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.013	detect	0	0	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.09	detect	0	0	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.013	detect	0	0	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.012	detect	0	0	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.031	detect	0	0	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.019	detect	0	0	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.037	detect	0	0	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.022	detect	0	0	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.012	detect	0	0	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.03	detect	0	0	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.016	detect	0	0	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.0031	ND	0	0	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.018	detect	0	0	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.0094	detect	0	0	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.018	detect	0	0	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.016	detect	0	0	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.046	detect	0	0	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.015	detect	0	0	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.015	detect	0	0	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.007283	detect	0	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.007283	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Mercury

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.63	detect	0	0	<1.0	**2.5**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	1.2	detect	0	0	<1.0	**4.7**
	CRP-1	CRP-1-SS_4/10/14_NM	0.34	detect	0	0	<1.0	**1.3**
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.012	detect	0	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.016	detect	0	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.033	detect	0	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.024	detect	0	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.017	detect	0	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.013	detect	0	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.015	detect	0	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.083	detect	0	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.12	detect	0	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.11	detect	0	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.81	detect	0	0	<1.0	**3.2**
	Grid 53	Grid 53-SSComp-01_20171020_NM	4.3	detect	0	0	**1.7**	**16.8**
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.19	detect	0	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.11	detect	0	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	3.6	detect	0	0	**1.4**	**14.1**
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.23	detect	0	0	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.014	detect	0	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.024	detect	0	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.27	detect	0	0	<1.0	**1.1**
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.038	detect	0	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.14	detect	0	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.018	detect	0	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.0031	ND	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.00305	ND	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1.2	detect	0	0	<1.0	**4.7**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.057	detect	0	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.022	detect	0	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	2.5	detect	0	0	<1.0	**9.8**
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.2	detect	0	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.01	ND	0	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.00485	ND	0	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.055	detect	0	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.005	ND	0	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.11	detect	0	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.87	detect	0	0	<1.0	**3.4**
	P8dc	P8dc-SSComp-01_20171024_NM	0.83	detect	0	0	<1.0	**3.2**
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.72	detect	0	0	<1.0	**2.8**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1.1	detect	0	0	<1.0	**4.3**
	SPP	SPP-SSComp-01_20171025_NM	1.3	detect	0	0	<1.0	**5.1**
	SS1,2-HP18	SS1-HP18-(0-2)c	0.0038	ND	0	0	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.00385	ND	0	0	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	8	detect	0	0	**3.1**	**31.3**
	SS15,16-HP9	SS15-HP9-(0-2)c	2	detect	0	0	<1.0	**7.8**
	SS3,4-HP16	SS3-HP16-(0-2)c	0.14	detect	0	0	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.04	detect	0	0	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.16	detect	0	0	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.041	detect	0	0	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.068	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Mercury

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.033	detect	0	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.2	detect	0	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.48	detect	0	0	<1.0	**1.9**
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.53	detect	0	0	<1.0	**2.1**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.041	detect	0	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	5.1	detect	0	0	**2.0**	**19.9**
	SE11-HP11	SE11-HP11-(0-2)c	0.69	detect	0	0	<1.0	**2.7**
	SE12-HP12	SE12-HP12-(0-2)c	0.16	detect	0	0	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	2.3	detect	0	0	<1.0	**9.0**
	SE14-HP13	SE14-HP13-(0-2)c	0.096	detect	0	0	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.69	detect	0	0	<1.0	**2.7**
	SE16-HP13	SE16-HP13-(0-2)c	0.1	detect	0	0	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.094	detect	0	0	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.31	detect	0	0	<1.0	**1.2**
	SE2-HP1a	SE2-HP1a-(0-2)c	0.3	detect	0	0	<1.0	**1.2**
	SE3-HP1	SE3-HP1-(0-2)c	0.17	detect	0	0	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	2.1	detect	0	0	<1.0	**8.2**
	SE5-HP2	SE5-HP2-(0-2)c	0.86	detect	0	0	<1.0	**3.4**
	SE6-HP7	SE6-HP7-(0-2)c	5.3	detect	0	0	**2.1**	**20.7**
	SE7-HP7	SE7-HP7-(0-2)c	0.22	detect	0	0	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	1.2	detect	0	0	<1.0	**4.7**
	SE9-HP10	SE9-HP10-(0-2)c	1.5	detect	0	0	<1.0	**5.9**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.097	detect	0	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.09	detect	0	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of River Surface Water

Mercury

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	8E-05	ND	0.0064	0.064	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	8E-05	ND	0.0064	0.064	<1.0	<1.0
	CFR2	CFR2_20180523_NM	8E-05	ND	0.0064	0.064	<1.0	<1.0
	SW3-CFR	SW3-CFR	2E-05	ND	0.0064	0.064	<1.0	<1.0
	51-CFR	SW51-CFR	8E-05	ND	0.0064	0.064	<1.0	<1.0
	52-CFR	SW52-CFR	8E-05	ND	0.0064	0.064	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	8E-05	ND	0.0064	0.064	<1.0	<1.0
	54-CFR	SW54-CFR	8E-05	ND	0.0064	0.064	<1.0	<1.0
	SW2-CFR	SW2-CFR	2E-05	ND	0.0064	0.064	<1.0	<1.0
	55-CFR	SW55-CFR	8E-05	ND	0.0064	0.064	<1.0	<1.0
	56-CFR	SW56-CFR	8E-05	ND	0.0064	0.064	<1.0	<1.0
	SW1-CFR	SW1-CFR	2E-05	ND	0.0064	0.064	<1.0	<1.0
	57-CFR	SW57-CFR	8E-05	ND	0.0064	0.064	<1.0	<1.0
	58-CFR	SW58-CFR	8E-05	ND	0.0064	0.064	<1.0	<1.0
	59-CFR	SW59-CFR	8E-05	ND	0.0064	0.064	<1.0	<1.0
	60-CFR	SW60-CFR	8E-05	ND	0.0064	0.064	<1.0	<1.0
	61-CFR	SW61-CFR	8E-05	ND	0.0064	0.064	<1.0	<1.0
	62-CFR	SW62-CFR	8E-05	ND	0.0064	0.064	<1.0	<1.0
	63-CFR	SW63-CFR	8E-05	ND	0.0064	0.064	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of Creek Surface Water

Mercury

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	8E-05	ND	0.0064	0.064	<1.0	<1.0
	43-OK	SW43-OK	8E-05	ND	0.0064	0.064	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	3E-05	detect	0.0064	0.064	<1.0	<1.0
	37-LV	SW37-LV	8E-05	ND	0.0064	0.064	<1.0	<1.0
	39-LV	SW39-LV	8E-05	ND	0.0064	0.064	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of Pond Surface Water

Mercury

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	8E-05	ND	0.0064	0.064	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	8E-05	ND	0.0064	0.064	<1.0	<1.0
69-HP1a	SW69-HP1a	8E-05	ND	0.0064	0.064	<1.0	<1.0
73-P5	SW73-P5	8E-05	ND	0.0064	0.064	<1.0	<1.0
71-HP7	SW71-HP7	8E-05	ND	0.0064	0.064	<1.0	<1.0
72-HP2	SW72-HP2	8E-05	ND	0.0064	0.064	<1.0	<1.0
75-HP10	SW75-HP10	8E-05	ND	0.0064	0.064	<1.0	<1.0
67-HP12	SW67-HP12	8E-05	ND	0.0064	0.064	<1.0	<1.0
68-IBJ	SW68-IBJ	8E-05	ND	0.0064	0.064	<1.0	<1.0
66-HP13	SW66-HP13	8E-05	ND	0.0064	0.064	<1.0	<1.0
65-HP13a	SW65-HP13a	8E-05	ND	0.0064	0.064	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	8E-05	ND	0.0064	0.064	<1.0	<1.0
70-CWD	SW70-CWD	8E-05	ND	0.0064	0.064	<1.0	<1.0
64-HP18	SW64-HP18	8E-05	ND	0.0064	0.064	<1.0	<1.0

#N/A = not analyzed

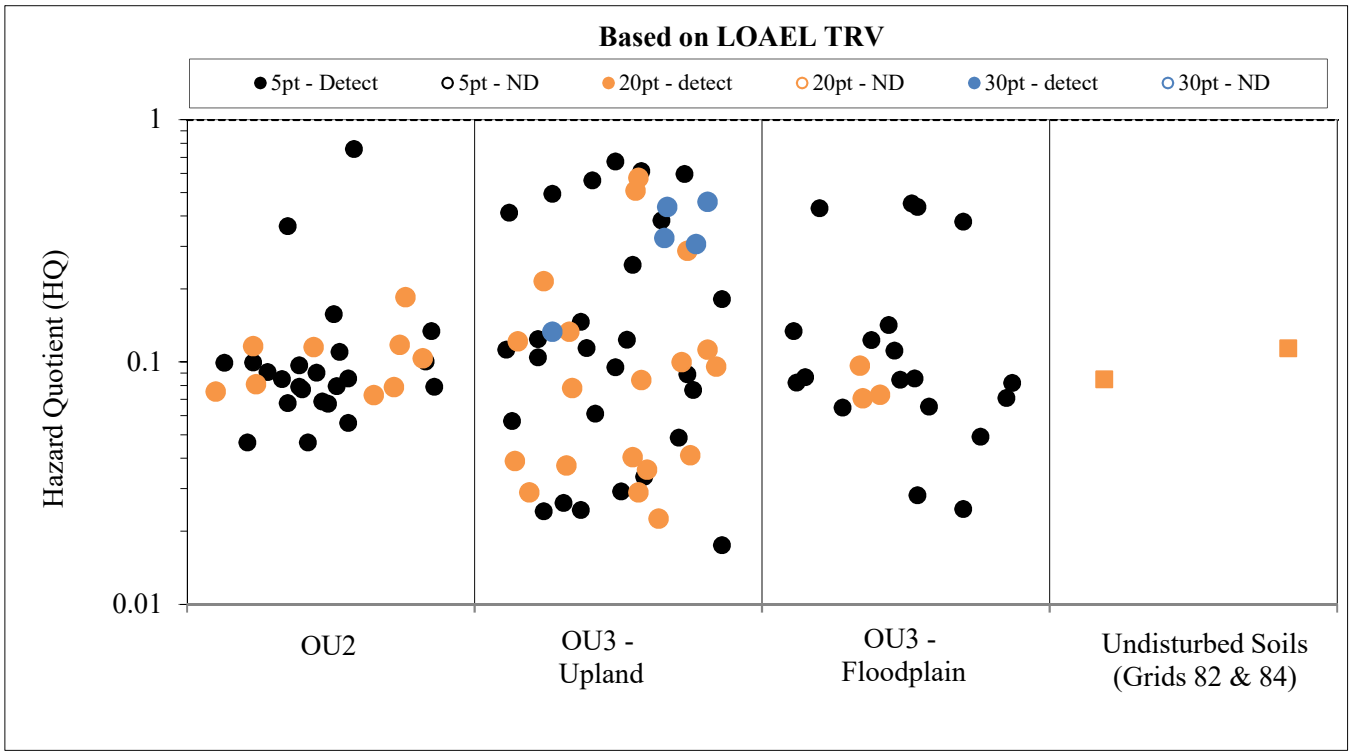
(a) Non-detects are evaluated at 1/2 the reported value.

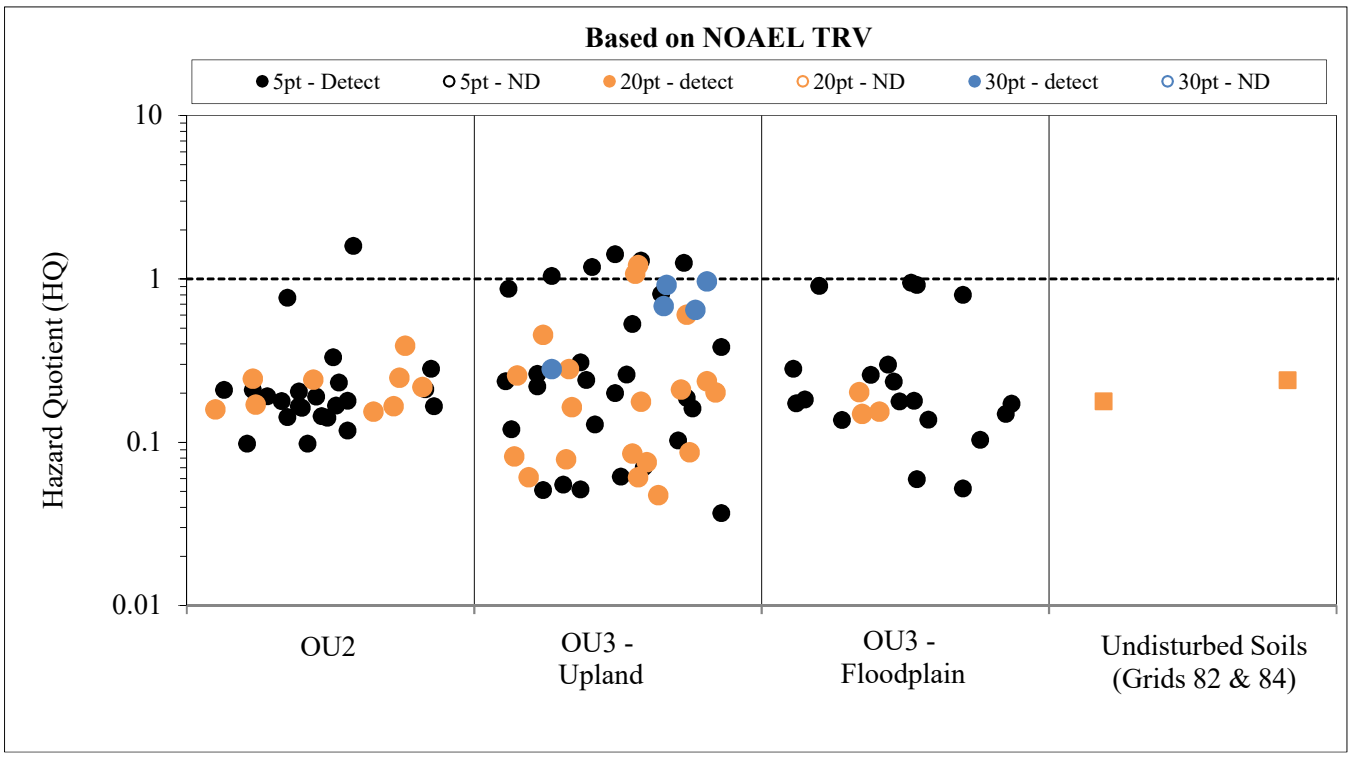
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Food by Exposure Unit/Soil Type

Manganese





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

Manganese

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	57.78948	detect	377	179	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	36.36131	detect	377	179	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	24.63713	detect	377	179	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	23.61055	detect	377	179	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	35.96892	detect	377	179	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	32.3559	detect	377	179	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	25.26852	detect	377	179	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	36.8321	detect	377	179	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	22.82038	detect	377	179	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	31.09783	detect	377	179	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	21.15951	detect	377	179	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	30.31115	detect	377	179	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	49.20233	detect	377	179	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	24.71607	detect	377	179	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	17.51325	detect	377	179	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	26.68824	detect	377	179	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	34.39873	detect	377	179	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	41.92708	detect	377	179	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	24.71607	detect	377	179	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	21.47603	detect	377	179	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	377	179	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	24.08445	detect	377	179	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	377	179	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	377	179	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	236.4541	detect	377	179	<1.0	**1.6**
	SS33-IN	SS33-IN-(0-2)c	113.8527	detect	377	179	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	28.2643	detect	377	179	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	21.00122	detect	377	179	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	31.01918	detect	377	179	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	28.42183	detect	377	179	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	26.53055	detect	377	179	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	24.87393	detect	377	179	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	31.41242	detect	377	179	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	14.54393	detect	377	179	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	14.54393	detect	377	179	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

Manganese

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	96.03569	detect	377	179	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	186.4249	detect	377	179	<1.0	**1.3**
	CRP-1	CRP-1-SS_4/10/14_NM	29.68159	detect	377	179	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	9.048516	detect	377	179	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	7.055595	detect	377	179	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	12.65569	detect	377	179	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	9.048516	detect	377	179	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	31.25513	detect	377	179	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	12.89534	detect	377	179	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	24.40029	detect	377	179	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	11.69618	detect	377	179	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	12.17613	detect	377	179	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	26.294	detect	377	179	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	89.83067	detect	377	179	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	35.10544	detect	377	179	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	67.45063	detect	377	179	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	38.08712	detect	377	179	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	41.69213	detect	377	179	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	180.2602	detect	377	179	<1.0	**1.2**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	29.9177	detect	377	179	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	11.21583	detect	377	179	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	32.67031	detect	377	179	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	8.178515	detect	377	179	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	38.636	detect	377	179	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	38.87121	detect	377	179	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	7.556949	detect	377	179	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	377	179	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	5.472689	detect	377	179	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	120.043	detect	377	179	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	10.49448	detect	377	179	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	35.10544	detect	377	179	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	129.3228	detect	377	179	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	191.8175	detect	377	179	<1.0	**1.3**
	P3	P3-SSComp-01_20171020_NM	159.4404	detect	377	179	<1.0	**1.1**
	P3-BH1	P3-BH1-SS_4/3/14_NM	175.6355	detect	377	179	<1.0	**1.2**
	P4-BH1	P4-BH1-SS_4/4/14_NM	35.65496	detect	377	179	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	56.85353	detect	377	179	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	78.57195	detect	377	179	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	101.4616	detect	377	179	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	143.2305	detect	377	179	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	154.8106	detect	377	179	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	210.2971	detect	377	179	<1.0	**1.4**
	SPP	SPP-SSComp-01_20171025_NM	136.2783	detect	377	179	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	15.20763	detect	377	179	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	17.83082	detect	377	179	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	45.84043	detect	377	179	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	27.79163	detect	377	179	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	9.128973	detect	377	179	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	7.653893	detect	377	179	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	23.9265	detect	377	179	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	19.10007	detect	377	179	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	41.69213	detect	377	179	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

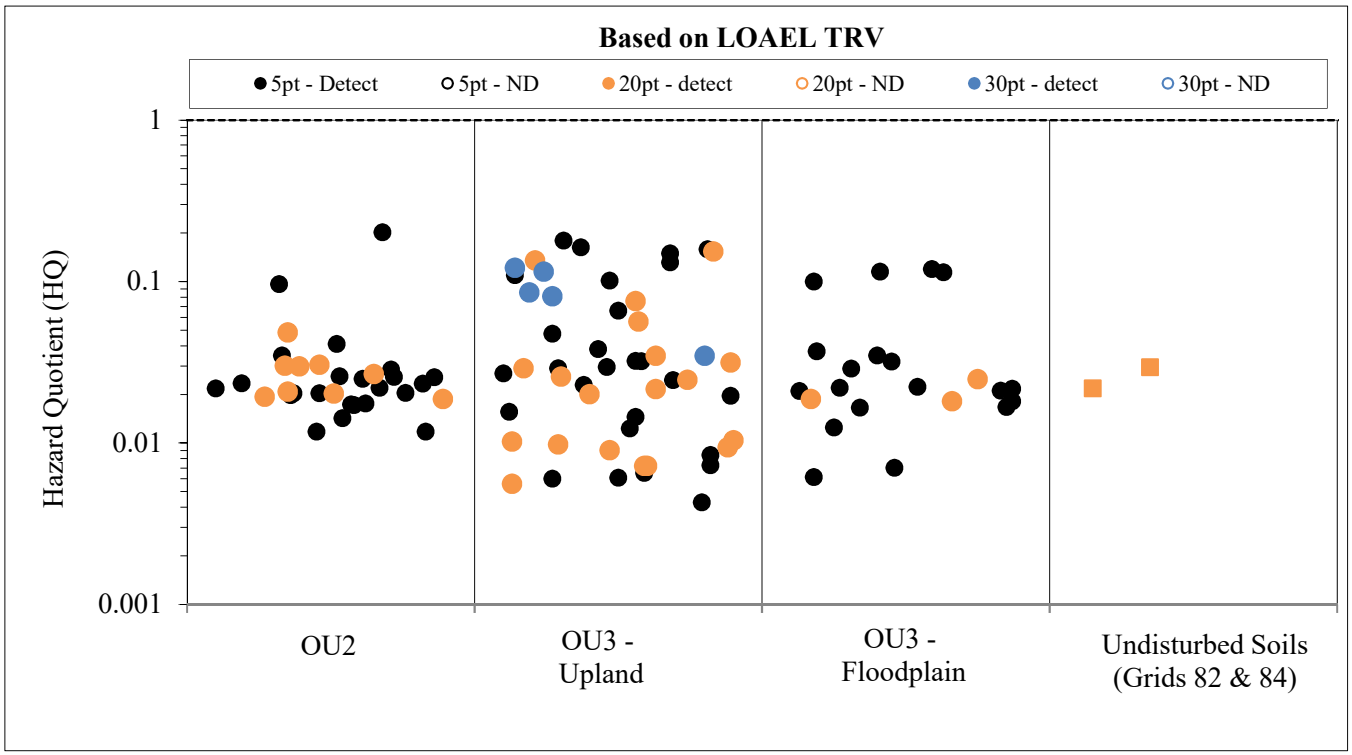
Manganese

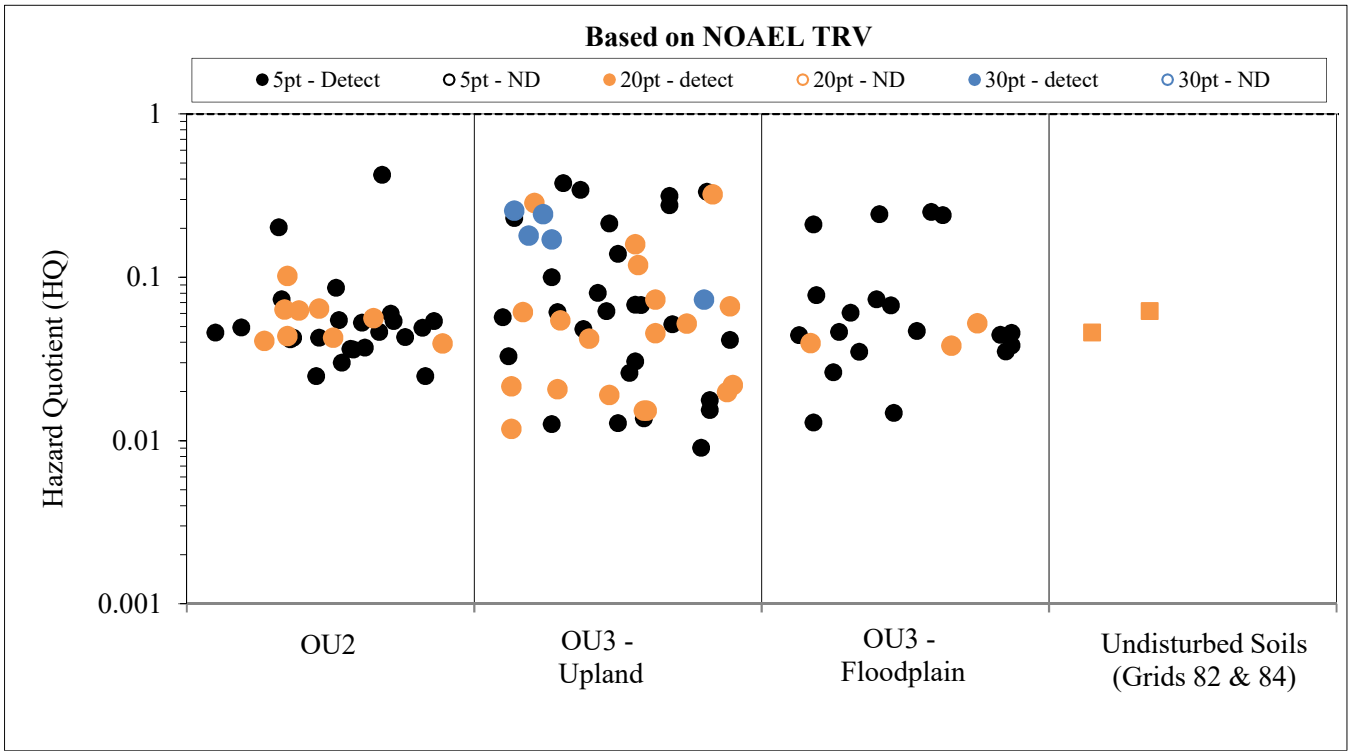
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	22.89942	detect	377	179	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	30.15378	detect	377	179	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	22.10884	detect	377	179	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	44.43217	detect	377	179	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	7.726582	detect	377	179	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	118.4958	detect	377	179	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	34.86989	detect	377	179	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	25.66301	detect	377	179	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	140.9135	detect	377	179	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	27.08239	detect	377	179	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	41.92708	detect	377	179	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	22.18792	detect	377	179	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	26.68824	detect	377	179	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	20.44704	detect	377	179	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	26.37285	detect	377	179	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	15.36684	detect	377	179	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	25.58412	detect	377	179	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	134.7329	detect	377	179	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	136.2783	detect	377	179	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	8.807046	detect	377	179	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	20.28865	detect	377	179	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	38.47919	detect	377	179	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	35.57646	detect	377	179	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	26.4517	detect	377	179	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Surface Soil by Exposure Unit/Soil Type

Manganese





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Manganese

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	728	detect	377	179	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	454	detect	377	179	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	305	detect	377	179	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	292	detect	377	179	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	449	detect	377	179	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	403	detect	377	179	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	313	detect	377	179	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	460	detect	377	179	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	282	detect	377	179	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	387	detect	377	179	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	261	detect	377	179	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	377	detect	377	179	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	618	detect	377	179	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	306	detect	377	179	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	215	detect	377	179	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	331	detect	377	179	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	429	detect	377	179	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	525	detect	377	179	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	306	detect	377	179	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	265	detect	377	179	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	377	179	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	298	detect	377	179	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	377	179	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	377	179	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	3040	detect	377	179	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	1450	detect	377	179	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	351	detect	377	179	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	259	detect	377	179	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	386	detect	377	179	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	353	detect	377	179	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	329	detect	377	179	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	308	detect	377	179	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	391	detect	377	179	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	177.6667	detect	377	179	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	177.6667	detect	377	179	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Manganese

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	1220	detect	377	179	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	2390	detect	377	179	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	369	detect	377	179	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	109	detect	377	179	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	84.3	detect	377	179	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	154	detect	377	179	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	109	detect	377	179	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	389	detect	377	179	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	157	detect	377	179	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	302	detect	377	179	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	142	detect	377	179	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	148	detect	377	179	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	326	detect	377	179	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	1140	detect	377	179	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	438	detect	377	179	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	852	detect	377	179	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	476	detect	377	179	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	522	detect	377	179	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	2310	detect	377	179	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	372	detect	377	179	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	136	detect	377	179	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	407	detect	377	179	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	98.2	detect	377	179	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	483	detect	377	179	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	486	detect	377	179	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	90.5	detect	377	179	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	377	179	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	64.8	detect	377	179	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1530	detect	377	179	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	127	detect	377	179	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	438	detect	377	179	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	1650	detect	377	179	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	2460	detect	377	179	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	2040	detect	377	179	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	2250	detect	377	179	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	445	detect	377	179	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	716	detect	377	179	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	995	detect	377	179	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	1290	detect	377	179	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	1830	detect	377	179	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	1980	detect	377	179	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	2700	detect	377	179	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	1740	detect	377	179	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	186	detect	377	179	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	219	detect	377	179	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	575	detect	377	179	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	345	detect	377	179	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	110	detect	377	179	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	91.7	detect	377	179	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	296	detect	377	179	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	235	detect	377	179	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	522	detect	377	179	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Manganese

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	283	detect	377	179	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	375	detect	377	179	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	273	detect	377	179	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	557	detect	377	179	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	92.6	detect	377	179	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	1510	detect	377	179	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	435	detect	377	179	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	318	detect	377	179	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	1800	detect	377	179	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	336	detect	377	179	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	525	detect	377	179	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	274	detect	377	179	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	331	detect	377	179	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	252	detect	377	179	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	327	detect	377	179	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	188	detect	377	179	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	317	detect	377	179	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	1720	detect	377	179	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	1740	detect	377	179	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	106	detect	377	179	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	250	detect	377	179	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	481	detect	377	179	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	444	detect	377	179	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	328	detect	377	179	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of River Surface Water

Manganese

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0169	detect	179	377	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.287	detect	179	377	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.163	detect	179	377	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0151	detect	179	377	<1.0	<1.0
	51-CFR	SW51-CFR	0.0192	detect	179	377	<1.0	<1.0
	52-CFR	SW52-CFR	0.0893	detect	179	377	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0752	detect	179	377	<1.0	<1.0
	54-CFR	SW54-CFR	0.084	detect	179	377	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0119	detect	179	377	<1.0	<1.0
	55-CFR	SW55-CFR	0.0181	detect	179	377	<1.0	<1.0
	56-CFR	SW56-CFR	0.0205	detect	179	377	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0117	detect	179	377	<1.0	<1.0
	57-CFR	SW57-CFR	0.33	detect	179	377	<1.0	<1.0
	58-CFR	SW58-CFR	0.0184	detect	179	377	<1.0	<1.0
	59-CFR	SW59-CFR	0.0388	detect	179	377	<1.0	<1.0
	60-CFR	SW60-CFR	0.0213	detect	179	377	<1.0	<1.0
	61-CFR	SW61-CFR	0.0228	detect	179	377	<1.0	<1.0
	62-CFR	SW62-CFR	0.0951	detect	179	377	<1.0	<1.0
	63-CFR	SW63-CFR	0.0136	detect	179	377	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of Creek Surface Water

Manganese

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.0079	detect	179	377	<1.0	<1.0
	43-OK	SW43-OK	0.0081	detect	179	377	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.0073	detect	179	377	<1.0	<1.0
	37-LV	SW37-LV	0.0084	detect	179	377	<1.0	<1.0
	39-LV	SW39-LV	0.128	detect	179	377	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of Pond Surface Water

Manganese

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0316	detect	179	377	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.428	detect	179	377	<1.0	<1.0
69-HP1a	SW69-HP1a	0.383	detect	179	377	<1.0	<1.0
73-P5	SW73-P5	0.0716	detect	179	377	<1.0	<1.0
71-HP7	SW71-HP7	1.94	detect	179	377	<1.0	<1.0
72-HP2	SW72-HP2	0.99	detect	179	377	<1.0	<1.0
75-HP10	SW75-HP10	3.69	detect	179	377	<1.0	<1.0
67-HP12	SW67-HP12	2.15	detect	179	377	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0714	detect	179	377	<1.0	<1.0
66-HP13	SW66-HP13	0.654	detect	179	377	<1.0	<1.0
65-HP13a	SW65-HP13a	0.768	detect	179	377	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.953	detect	179	377	<1.0	<1.0
70-CWD	SW70-CWD	0.0101	detect	179	377	<1.0	<1.0
64-HP18	SW64-HP18	0.281	detect	179	377	<1.0	<1.0

#N/A = not analyzed

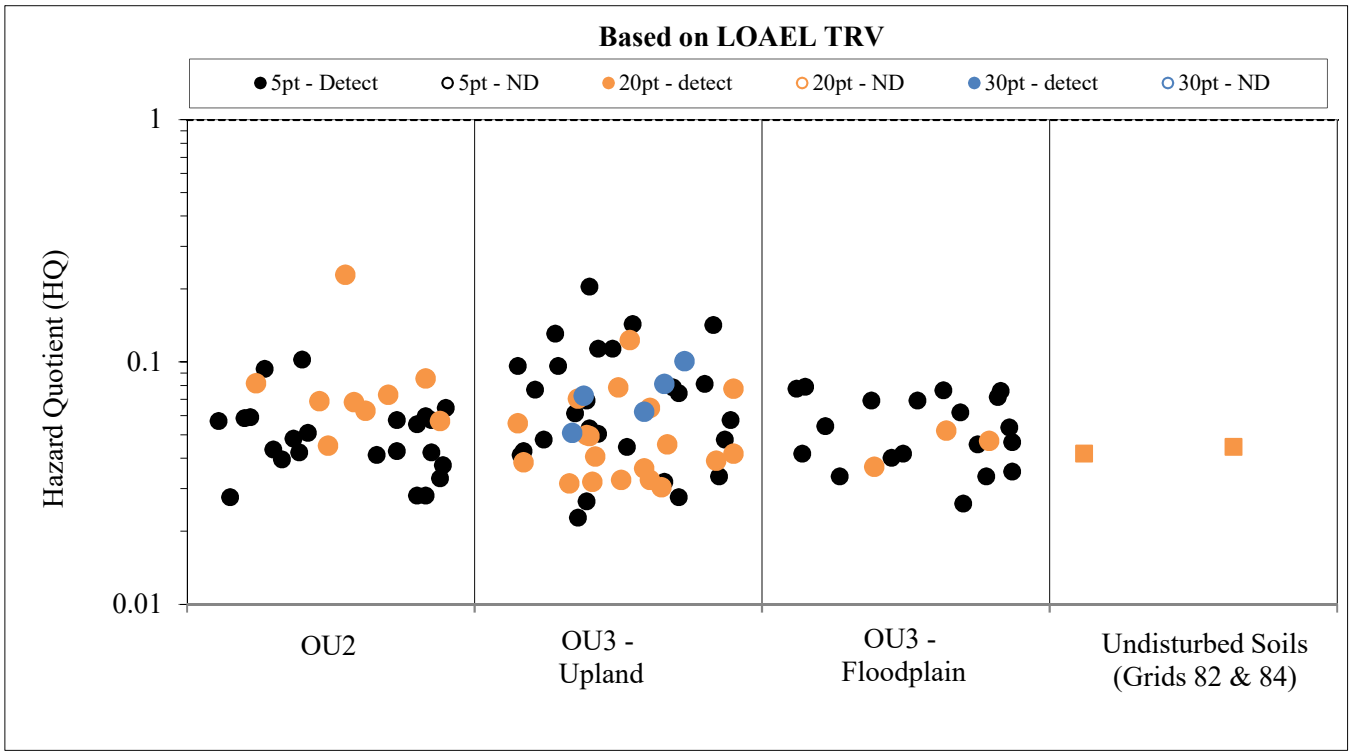
(a) Non-detects are evaluated at 1/2 the reported value.

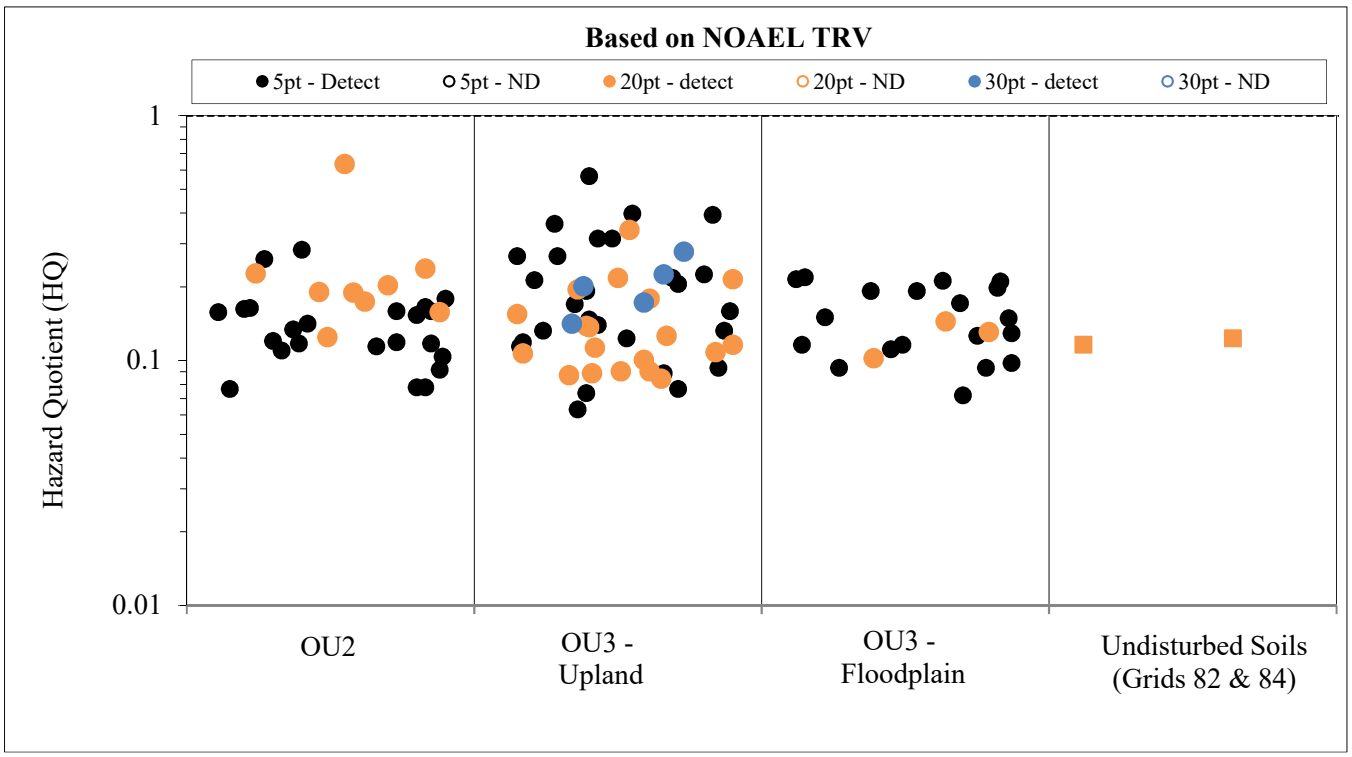
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Food by Exposure Unit/Soil Type

Nickel





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

Nickel

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	1.128585	detect	19	7	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.970469	detect	19	7	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	1.319703	detect	19	7	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	1.053717	detect	19	7	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	1.261566	detect	19	7	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	1.062038	detect	19	7	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.695188	detect	19	7	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	3.534171	detect	19	7	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.878813	detect	19	7	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	1.444202	detect	19	7	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.427068	detect	19	7	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.653387	detect	19	7	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.670111	detect	19	7	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.653387	detect	19	7	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.745314	detect	19	7	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.66175	detect	19	7	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.995451	detect	19	7	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.853799	detect	19	7	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.912153	detect	19	7	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.887149	detect	19	7	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	19	7	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.511023	detect	19	7	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	19	7	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	19	7	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	1.576894	detect	19	7	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.787058	detect	19	7	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.878813	detect	19	7	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.636658	detect	19	7	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.887149	detect	19	7	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.611556	detect	19	7	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.920486	detect	19	7	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.578068	detect	19	7	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.903819	detect	19	7	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.432671	detect	19	7	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.432671	detect	19	7	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

Nickel

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	1.253259	detect	19	7	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	2.015776	detect	19	7	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	1.253259	detect	19	7	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.469068	detect	19	7	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.485855	detect	19	7	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.561315	detect	19	7	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.502635	detect	19	7	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.703545	detect	19	7	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.494246	detect	19	7	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.603186	detect	19	7	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.594814	detect	19	7	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.628292	detect	19	7	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.645023	detect	19	7	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	1.211714	detect	19	7	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.862138	detect	19	7	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.995451	detect	19	7	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.762014	detect	19	7	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.770363	detect	19	7	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	1.899933	detect	19	7	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	1.086998	detect	19	7	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.502635	detect	19	7	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.945481	detect	19	7	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.736962	detect	19	7	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	1.186781	detect	19	7	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.636658	detect	19	7	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.427068	detect	19	7	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	19	7	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.410254	detect	19	7	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1.145215	detect	19	7	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.351334	detect	19	7	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	1.48568	detect	19	7	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	1.750903	detect	19	7	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	2.189436	detect	19	7	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	1.195093	detect	19	7	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	3.155154	detect	19	7	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.494246	detect	19	7	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	2.214235	detect	19	7	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	1.750903	detect	19	7	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.787058	detect	19	7	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	1.120269	detect	19	7	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	1.211714	detect	19	7	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1.48568	detect	19	7	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	1.552023	detect	19	7	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.68683	detect	19	7	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.66175	detect	19	7	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	0.820435	detect	19	7	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	0.778711	detect	19	7	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.736962	detect	19	7	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.519409	detect	19	7	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	1.070359	detect	19	7	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.887149	detect	19	7	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.962141	detect	19	7	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

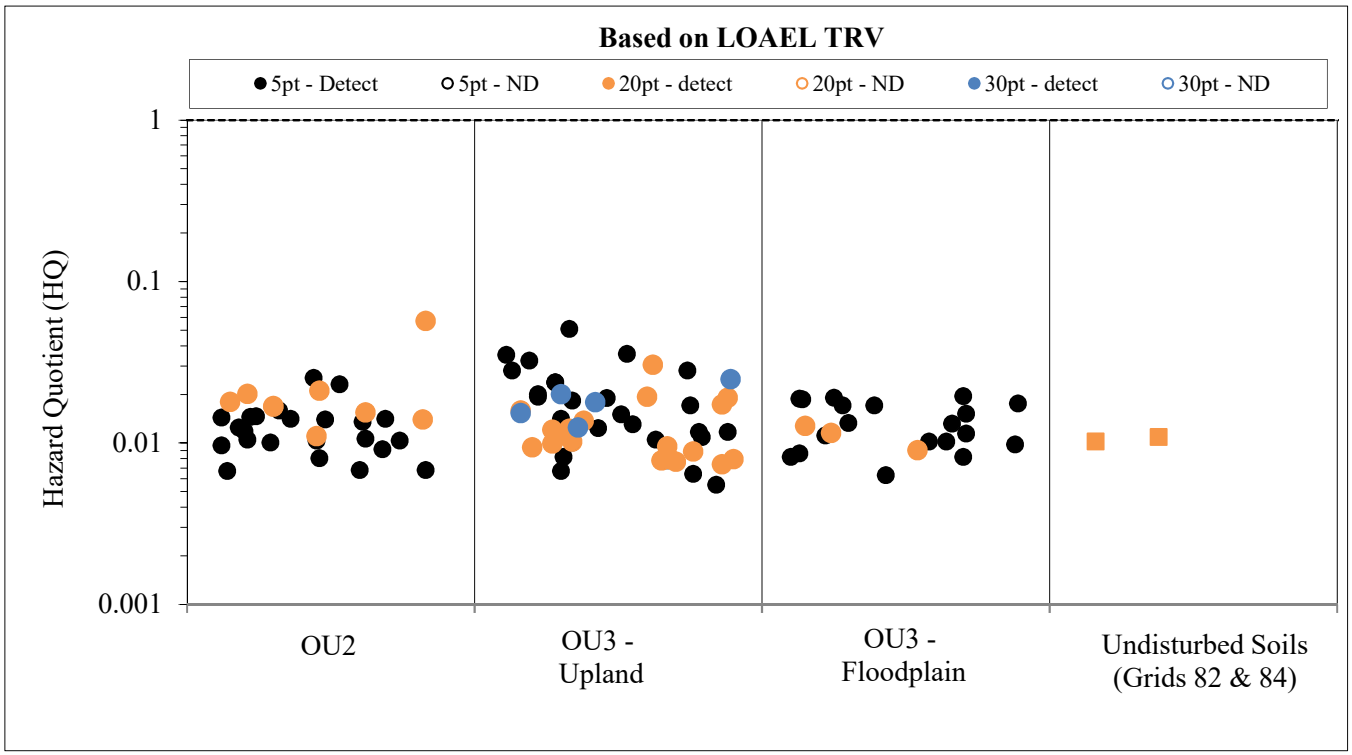
Nickel

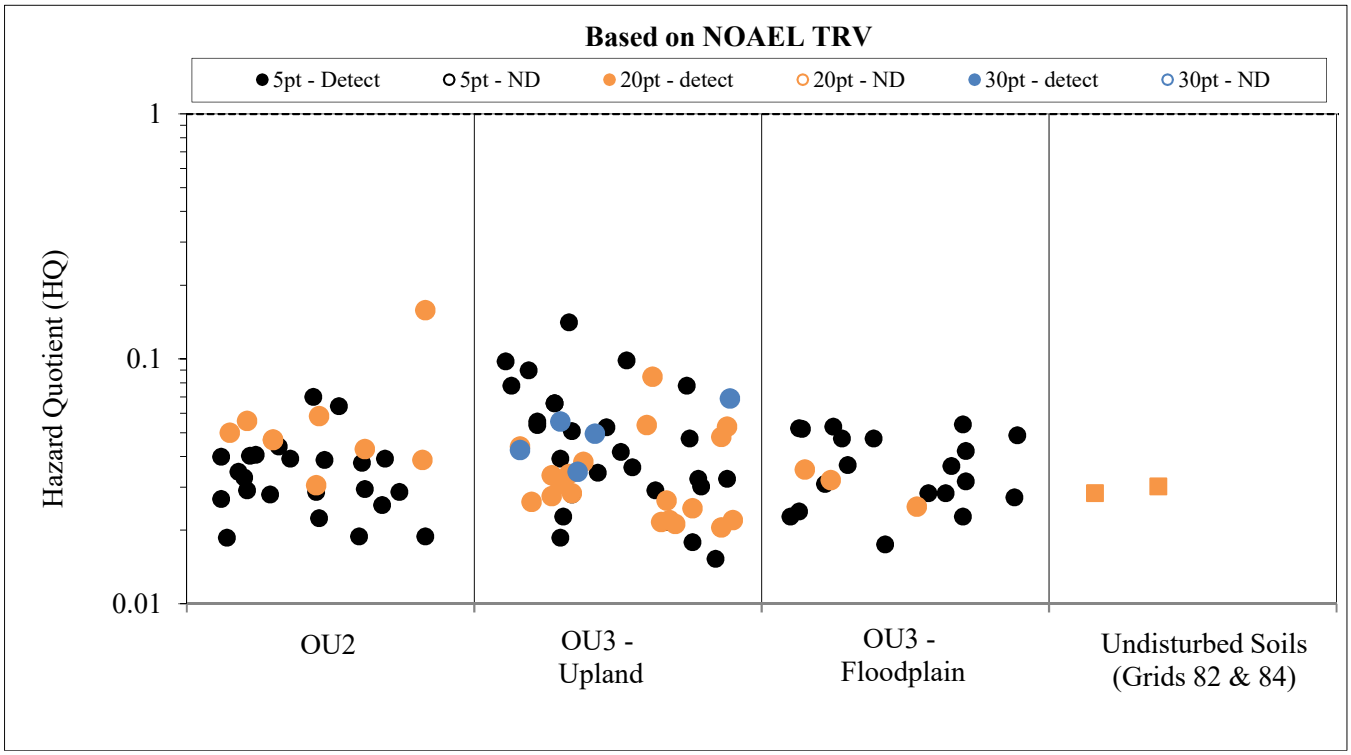
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.569692	detect	19	7	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.803748	detect	19	7	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.72861	detect	19	7	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	1.170157	detect	19	7	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.401844	detect	19	7	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	1.103634	detect	19	7	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	0.645023	detect	19	7	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	1.195093	detect	19	7	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	1.178469	detect	19	7	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	1.070359	detect	19	7	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.645023	detect	19	7	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	0.720256	detect	19	7	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.953811	detect	19	7	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.703545	detect	19	7	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.837119	detect	19	7	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.519409	detect	19	7	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.619924	detect	19	7	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	1.220024	detect	19	7	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	1.070359	detect	19	7	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	0.544557	detect	19	7	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.519409	detect	19	7	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	0.828778	detect	19	7	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.68683	detect	19	7	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.645023	detect	19	7	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Surface Soil by Exposure Unit/Soil Type

Nickel





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Nickel

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	13.4	detect	19	7	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	11.5	detect	19	7	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	15.7	detect	19	7	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	12.5	detect	19	7	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	15	detect	19	7	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	12.6	detect	19	7	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	8.2	detect	19	7	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	42.5	detect	19	7	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	10.4	detect	19	7	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	17.2	detect	19	7	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	5	detect	19	7	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	7.7	detect	19	7	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	7.9	detect	19	7	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	7.7	detect	19	7	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	8.8	detect	19	7	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	7.8	detect	19	7	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	11.8	detect	19	7	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	10.1	detect	19	7	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	10.8	detect	19	7	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	10.5	detect	19	7	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	19	7	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	6	detect	19	7	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	19	7	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	19	7	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	18.8	detect	19	7	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	9.3	detect	19	7	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	10.4	detect	19	7	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	7.5	detect	19	7	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	10.5	detect	19	7	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	7.2	detect	19	7	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	10.9	detect	19	7	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	6.8	detect	19	7	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	10.7	detect	19	7	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	5.066667	detect	19	7	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	5.066667	detect	19	7	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Nickel

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	14.9	detect	19	7	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	24.1	detect	19	7	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	14.9	detect	19	7	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	5.5	detect	19	7	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	5.7	detect	19	7	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	6.6	detect	19	7	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	5.9	detect	19	7	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	8.3	detect	19	7	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	5.8	detect	19	7	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	7.1	detect	19	7	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	7	detect	19	7	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	7.4	detect	19	7	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	7.6	detect	19	7	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	14.4	detect	19	7	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	10.2	detect	19	7	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	11.8	detect	19	7	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	9	detect	19	7	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	9.1	detect	19	7	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	22.7	detect	19	7	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	12.9	detect	19	7	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	5.9	detect	19	7	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	11.2	detect	19	7	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	8.7	detect	19	7	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	14.1	detect	19	7	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	7.5	detect	19	7	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	5	detect	19	7	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	19	7	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	4.8	detect	19	7	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	13.6	detect	19	7	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	4.1	detect	19	7	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	17.7	detect	19	7	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	20.9	detect	19	7	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	26.2	detect	19	7	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	14.2	detect	19	7	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	37.9	detect	19	7	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	5.8	detect	19	7	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	26.5	detect	19	7	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	20.9	detect	19	7	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	9.3	detect	19	7	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	13.3	detect	19	7	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	14.4	detect	19	7	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	17.7	detect	19	7	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	18.5	detect	19	7	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	8.1	detect	19	7	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	7.8	detect	19	7	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	9.7	detect	19	7	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	9.2	detect	19	7	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	8.7	detect	19	7	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	6.1	detect	19	7	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	12.7	detect	19	7	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	10.5	detect	19	7	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	11.4	detect	19	7	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Nickel

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	6.7	detect	19	7	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	9.5	detect	19	7	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	8.6	detect	19	7	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	13.9	detect	19	7	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	4.7	detect	19	7	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	13.1	detect	19	7	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	7.6	detect	19	7	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	14.2	detect	19	7	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	14	detect	19	7	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	12.7	detect	19	7	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	7.6	detect	19	7	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	8.5	detect	19	7	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	11.3	detect	19	7	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	8.3	detect	19	7	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	9.9	detect	19	7	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	6.1	detect	19	7	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	7.3	detect	19	7	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	14.5	detect	19	7	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	12.7	detect	19	7	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	6.4	detect	19	7	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	6.1	detect	19	7	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	9.8	detect	19	7	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	8.1	detect	19	7	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	7.6	detect	19	7	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of River Surface Water

Nickel

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0002	detect	6.71	18.6	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0009	detect	6.71	18.6	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0009	detect	6.71	18.6	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0002	ND	6.71	18.6	<1.0	<1.0
	51-CFR	SW51-CFR	0.0002	detect	6.71	18.6	<1.0	<1.0
	52-CFR	SW52-CFR	0.0002	detect	6.71	18.6	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0003	detect	6.71	18.6	<1.0	<1.0
	54-CFR	SW54-CFR	0.0002	detect	6.71	18.6	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0002	detect	6.71	18.6	<1.0	<1.0
	55-CFR	SW55-CFR	0.0001	detect	6.71	18.6	<1.0	<1.0
	56-CFR	SW56-CFR	0.0001	detect	6.71	18.6	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0002	detect	6.71	18.6	<1.0	<1.0
	57-CFR	SW57-CFR	0.0003	detect	6.71	18.6	<1.0	<1.0
	58-CFR	SW58-CFR	0.0002	detect	6.71	18.6	<1.0	<1.0
	59-CFR	SW59-CFR	0.0002	detect	6.71	18.6	<1.0	<1.0
	60-CFR	SW60-CFR	0.0002	detect	6.71	18.6	<1.0	<1.0
	61-CFR	SW61-CFR	0.0002	detect	6.71	18.6	<1.0	<1.0
	62-CFR	SW62-CFR	0.0002	detect	6.71	18.6	<1.0	<1.0
	63-CFR	SW63-CFR	0.0002	detect	6.71	18.6	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of Creek Surface Water

Nickel

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.0004	detect	6.71	18.6	<1.0	<1.0
	43-OK	SW43-OK	0.0003	detect	6.71	18.6	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.0003	detect	6.71	18.6	<1.0	<1.0
	37-LV	SW37-LV	0.0004	detect	6.71	18.6	<1.0	<1.0
	39-LV	SW39-LV	0.0004	detect	6.71	18.6	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of Pond Surface Water

Nickel

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0002	detect	6.71	18.6	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0043	detect	6.71	18.6	<1.0	<1.0
69-HP1a	SW69-HP1a	0.003	detect	6.71	18.6	<1.0	<1.0
73-P5	SW73-P5	0.0171	detect	6.71	18.6	<1.0	<1.0
71-HP7	SW71-HP7	0.0044	detect	6.71	18.6	<1.0	<1.0
72-HP2	SW72-HP2	0.0029	detect	6.71	18.6	<1.0	<1.0
75-HP10	SW75-HP10	0.0029	detect	6.71	18.6	<1.0	<1.0
67-HP12	SW67-HP12	0.0027	detect	6.71	18.6	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0009	detect	6.71	18.6	<1.0	<1.0
66-HP13	SW66-HP13	0.0046	detect	6.71	18.6	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0037	detect	6.71	18.6	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0034	detect	6.71	18.6	<1.0	<1.0
70-CWD	SW70-CWD	0.0001	ND	6.71	18.6	<1.0	<1.0
64-HP18	SW64-HP18	0.0019	detect	6.71	18.6	<1.0	<1.0

#N/A = not analyzed

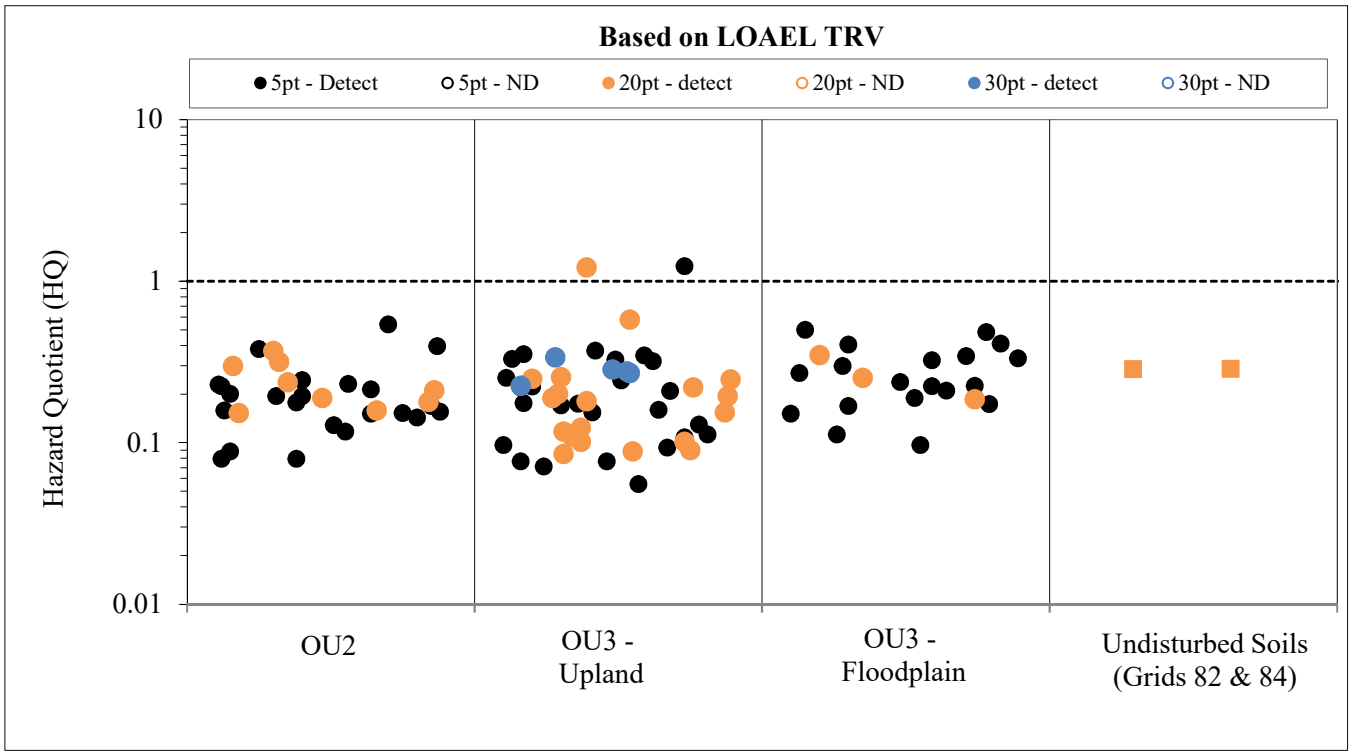
(a) Non-detects are evaluated at 1/2 the reported value.

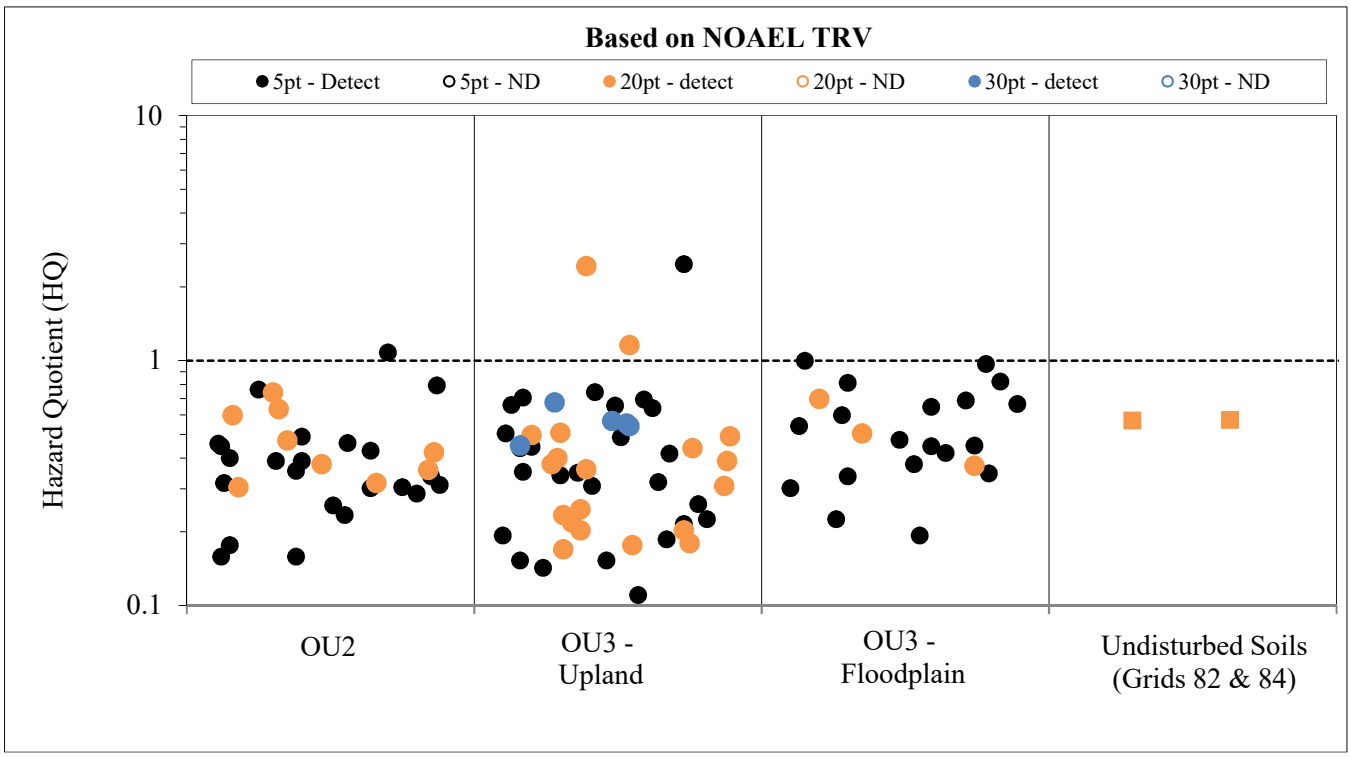
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Food by Exposure Unit/Soil Type

Lead





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

Lead

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.510644	detect	3	2	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.857668	detect	3	2	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.638941	detect	3	2	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.428199	detect	3	2	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.808524	detect	3	2	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.57172	detect	3	2	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.412151	detect	3	2	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	1.002045	detect	3	2	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.483476	detect	3	2	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.620413	detect	3	2	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.238727	detect	3	2	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.624127	detect	3	2	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.579262	detect	3	2	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.42019	detect	3	2	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.412151	detect	3	2	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.47957	detect	3	2	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.605512	detect	3	2	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	1.029082	detect	3	2	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.40812	detect	3	2	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.317197	detect	3	2	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	3	2	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.346631	detect	3	2	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	3	2	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	3	2	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	1.461862	detect	3	2	<1.0	**1.1**
	SS33-IN	SS33-IN-(0-2)c	1.069386	detect	3	2	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.456003	detect	3	2	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.387842	detect	3	2	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.541351	detect	3	2	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.661038	detect	3	2	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.526041	detect	3	2	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.428199	detect	3	2	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.526041	detect	3	2	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.21451	detect	3	2	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.21451	detect	3	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

Lead

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.7301	detect	3	2	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.59429	detect	3	2	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.47174	detect	3	2	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.229707	detect	3	2	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.238727	detect	3	2	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.274158	detect	3	2	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.295835	detect	3	2	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.416175	detect	3	2	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.274158	detect	3	2	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.672032	detect	3	2	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.33408	detect	3	2	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.317197	detect	3	2	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.664706	detect	3	2	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.686637	detect	3	2	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.59429	detect	3	2	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.510644	detect	3	2	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.541351	detect	3	2	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.487375	detect	3	2	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	3.291885	detect	3	2	**1.2**	**2.4**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.526041	detect	3	2	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.243212	detect	3	2	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.459947	detect	3	2	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.432193	detect	3	2	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.620413	detect	3	2	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.416175	detect	3	2	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.192855	detect	3	2	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	3	2	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.252131	detect	3	2	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.937261	detect	3	2	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.206829	detect	3	2	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.564158	detect	3	2	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	1.005432	detect	3	2	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	3.346181	detect	3	2	**1.2**	**2.5**
	P3	P3-SSComp-01_20171020_NM	1.565302	detect	3	2	<1.0	**1.2**
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.657365	detect	3	2	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.14957	detect	3	2	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.304416	detect	3	2	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.892441	detect	3	2	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.609244	detect	3	2	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.748061	detect	3	2	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.954391	detect	3	2	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.864644	detect	3	2	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.91318	detect	3	2	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.291526	detect	3	2	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.350795	detect	3	2	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	0.885507	detect	3	2	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	0.682992	detect	3	2	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.260987	detect	3	2	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.206829	detect	3	2	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.601776	detect	3	2	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.475658	detect	3	2	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.765939	detect	3	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

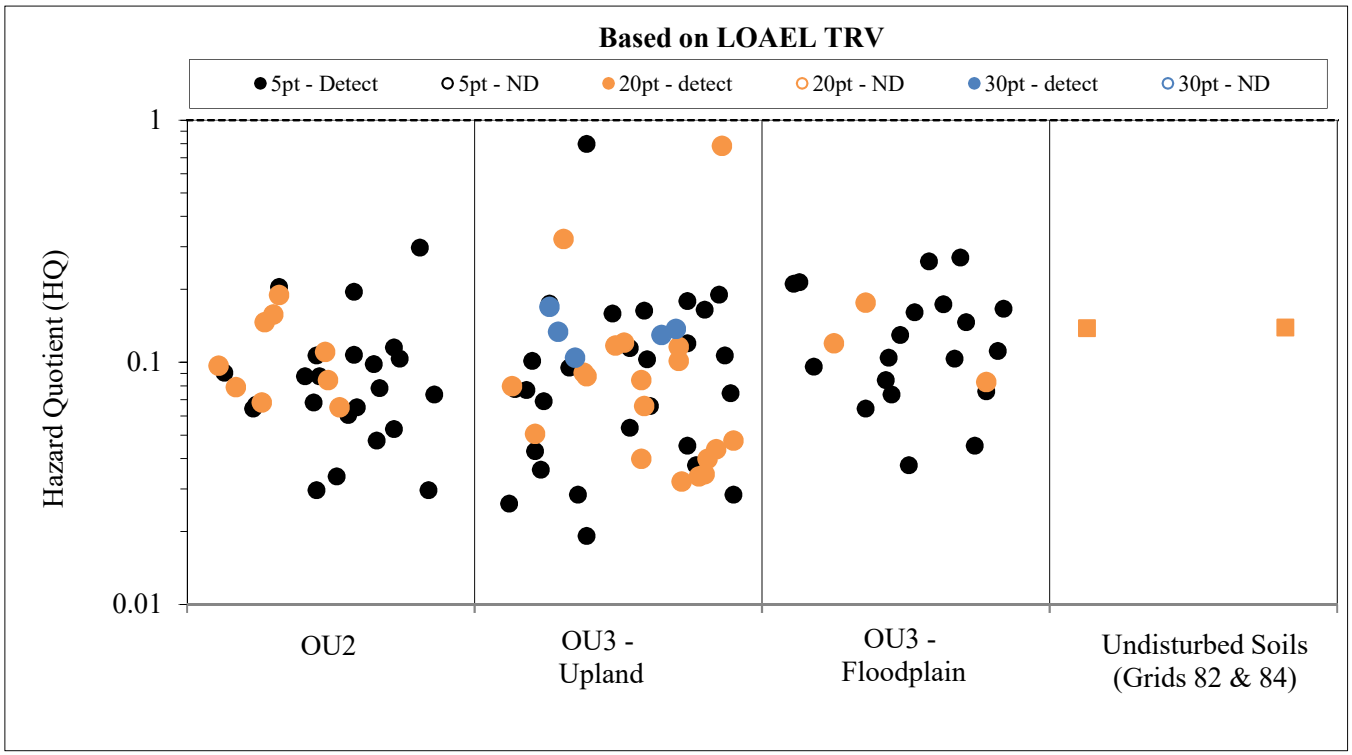
Lead

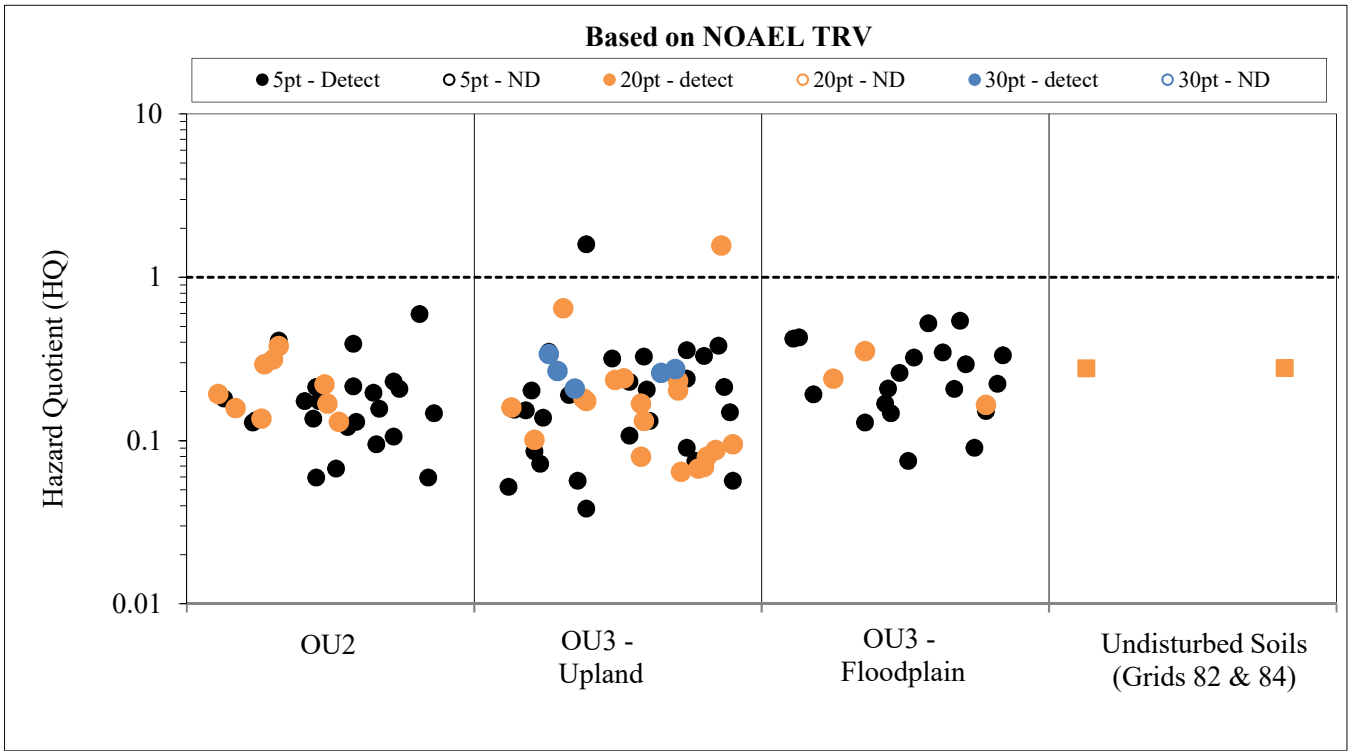
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.502911	detect	3	2	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.682992	detect	3	2	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.94412	detect	3	2	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.7301	detect	3	2	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.304416	detect	3	2	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	1.350632	detect	3	2	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	0.808524	detect	3	2	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	0.642634	detect	3	2	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	1.096096	detect	3	2	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	0.605512	detect	3	2	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.875088	detect	3	2	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	0.567941	detect	3	2	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.456003	detect	3	2	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.510644	detect	3	2	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.609244	detect	3	2	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.260987	detect	3	2	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.40812	detect	3	2	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	1.109404	detect	3	2	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	1.308883	detect	3	2	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	0.930393	detect	3	2	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.467816	detect	3	2	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	0.899364	detect	3	2	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.769505	detect	3	2	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.773068	detect	3	2	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Surface Soil by Exposure Unit/Soil Type

Lead





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Lead

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	11	detect	3	2	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	20.5	detect	3	2	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	14.4	detect	3	2	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	8.9	detect	3	2	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	19.1	detect	3	2	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	12.6	detect	3	2	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	8.5	detect	3	2	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	24.7	detect	3	2	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	10.3	detect	3	2	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	13.9	detect	3	2	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	4.4	detect	3	2	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	14	detect	3	2	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	12.8	detect	3	2	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	8.7	detect	3	2	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	8.5	detect	3	2	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	10.2	detect	3	2	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	13.5	detect	3	2	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	25.5	detect	3	2	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	8.4	detect	3	2	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	6.2	detect	3	2	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	3	2	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	6.9	detect	3	2	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	3	2	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	3	2	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	38.8	detect	3	2	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	26.7	detect	3	2	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	9.6	detect	3	2	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	7.9	detect	3	2	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	11.8	detect	3	2	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	15	detect	3	2	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	11.4	detect	3	2	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	8.9	detect	3	2	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	11.4	detect	3	2	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	3.866667	detect	3	2	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	3.866667	detect	3	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Lead

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	16.9	detect	3	2	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	13.2	detect	3	2	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	10	detect	3	2	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	4.2	detect	3	2	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	4.4	detect	3	2	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	5.2	detect	3	2	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	5.7	detect	3	2	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	8.6	detect	3	2	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	5.2	detect	3	2	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	15.3	detect	3	2	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	6.6	detect	3	2	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	6.2	detect	3	2	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	15.1	detect	3	2	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	15.7	detect	3	2	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	13.2	detect	3	2	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	11	detect	3	2	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	11.8	detect	3	2	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	10.4	detect	3	2	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	102	detect	3	2	<1.0	**1.6**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	11.4	detect	3	2	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	4.5	detect	3	2	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	9.7	detect	3	2	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	9	detect	3	2	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	13.9	detect	3	2	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	8.6	detect	3	2	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	3.4	detect	3	2	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	3	2	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	4.7	detect	3	2	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	22.8	detect	3	2	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	3.7	detect	3	2	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	12.4	detect	3	2	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	24.8	detect	3	2	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	104	detect	3	2	<1.0	**1.6**
	P3	P3-SSComp-01_20171020_NM	42.1	detect	3	2	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	14.9	detect	3	2	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	2.5	detect	3	2	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	5.9	detect	3	2	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	21.5	detect	3	2	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	13.6	detect	3	2	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	17.4	detect	3	2	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	23.3	detect	3	2	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	20.7	detect	3	2	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	22.1	detect	3	2	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	5.6	detect	3	2	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	7	detect	3	2	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	21.3	detect	3	2	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	15.6	detect	3	2	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	4.9	detect	3	2	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	3.7	detect	3	2	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	13.4	detect	3	2	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	10.1	detect	3	2	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	17.9	detect	3	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Lead

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	10.8	detect	3	2	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	15.6	detect	3	2	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	23	detect	3	2	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	16.9	detect	3	2	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	5.9	detect	3	2	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	35.3	detect	3	2	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	19.1	detect	3	2	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	14.5	detect	3	2	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	27.5	detect	3	2	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	13.5	detect	3	2	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	21	detect	3	2	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	12.5	detect	3	2	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	9.6	detect	3	2	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	11	detect	3	2	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	13.6	detect	3	2	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	4.9	detect	3	2	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	8.4	detect	3	2	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	27.9	detect	3	2	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	34	detect	3	2	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	22.6	detect	3	2	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	9.9	detect	3	2	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	21.7	detect	3	2	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	18	detect	3	2	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	18.1	detect	3	2	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of River Surface Water

Lead

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0001	detect	1.63	3.26	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0006	detect	1.63	3.26	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0016	detect	1.63	3.26	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0002	detect	1.63	3.26	<1.0	<1.0
	51-CFR	SW51-CFR	0.0002	detect	1.63	3.26	<1.0	<1.0
	52-CFR	SW52-CFR	0.0004	detect	1.63	3.26	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0015	detect	1.63	3.26	<1.0	<1.0
	54-CFR	SW54-CFR	0.0001	detect	1.63	3.26	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0001	detect	1.63	3.26	<1.0	<1.0
	55-CFR	SW55-CFR	0.0002	detect	1.63	3.26	<1.0	<1.0
	56-CFR	SW56-CFR	0.0002	detect	1.63	3.26	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0001	detect	1.63	3.26	<1.0	<1.0
	57-CFR	SW57-CFR	0.0002	detect	1.63	3.26	<1.0	<1.0
	58-CFR	SW58-CFR	0.0002	detect	1.63	3.26	<1.0	<1.0
	59-CFR	SW59-CFR	0.0002	detect	1.63	3.26	<1.0	<1.0
	60-CFR	SW60-CFR	0.0002	detect	1.63	3.26	<1.0	<1.0
	61-CFR	SW61-CFR	0.0002	detect	1.63	3.26	<1.0	<1.0
	62-CFR	SW62-CFR	0.0002	detect	1.63	3.26	<1.0	<1.0
	63-CFR	SW63-CFR	0.0001	detect	1.63	3.26	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of Creek Surface Water

Lead

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.0003	detect	1.63	3.26	<1.0	<1.0
	43-OK	SW43-OK	0.0002	detect	1.63	3.26	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.0003	detect	1.63	3.26	<1.0	<1.0
	37-LV	SW37-LV	0.0003	detect	1.63	3.26	<1.0	<1.0
	39-LV	SW39-LV	0.0003	detect	1.63	3.26	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of Pond Surface Water

Lead

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	6E-05	detect	1.63	3.26	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0006	detect	1.63	3.26	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0002	detect	1.63	3.26	<1.0	<1.0
73-P5	SW73-P5	0.0002	ND	1.63	3.26	<1.0	<1.0
71-HP7	SW71-HP7	0.0003	detect	1.63	3.26	<1.0	<1.0
72-HP2	SW72-HP2	0.0004	detect	1.63	3.26	<1.0	<1.0
75-HP10	SW75-HP10	0.0002	detect	1.63	3.26	<1.0	<1.0
67-HP12	SW67-HP12	0.0002	detect	1.63	3.26	<1.0	<1.0
68-IBJ	SW68-IBJ	7E-05	detect	1.63	3.26	<1.0	<1.0
66-HP13	SW66-HP13	0.0008	detect	1.63	3.26	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0014	detect	1.63	3.26	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.001	detect	1.63	3.26	<1.0	<1.0
70-CWD	SW70-CWD	0.0001	detect	1.63	3.26	<1.0	<1.0
64-HP18	SW64-HP18	0.0005	detect	1.63	3.26	<1.0	<1.0

#N/A = not analyzed

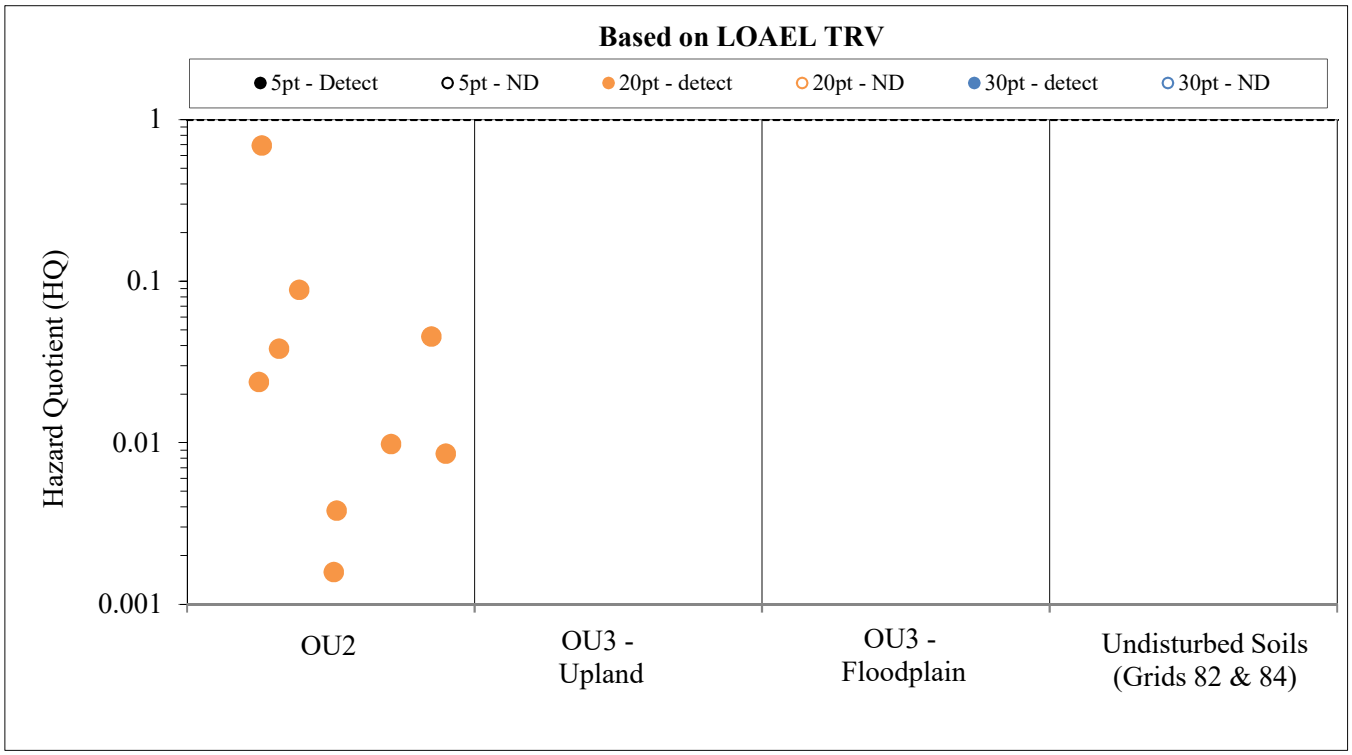
(a) Non-detects are evaluated at 1/2 the reported value.

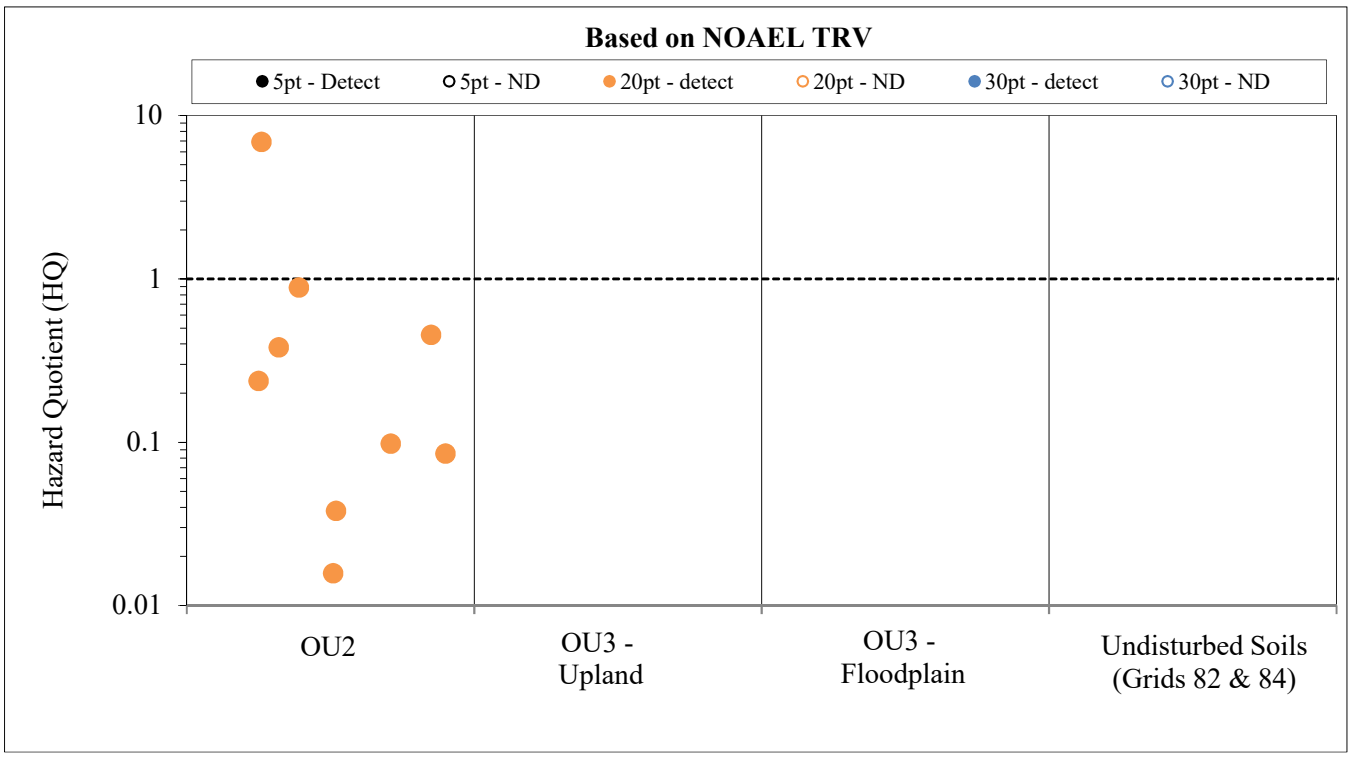
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Food by Exposure Unit/Soil Type

Total PCBs (ND=1/2RL)





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

Total PCBs (ND=1/2RL)

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.082161	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.003529	detect	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.022059	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.00793	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.03547	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.001468	detect	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.042266	detect	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.642506	detect	1	0	<1.0	**6.9**
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.009116	detect	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	#N/A	#N/A	1	0	#N/A	#N/A
	TSB-SS	BACKFILL-TSB-SS	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

Total PCBs (ND=1/2RL)

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	CRP-1	CRP-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-1	HP18-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-IB	HP18-SSC-IB_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP9-1	HP9-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	IBK-1	IBK-1-SS_4/16/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P17-BH1	P17-BH1-SS_4/3/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P4-BH1	P4-BH1-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P5-BH2	P5-BH2-SS_4/3/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

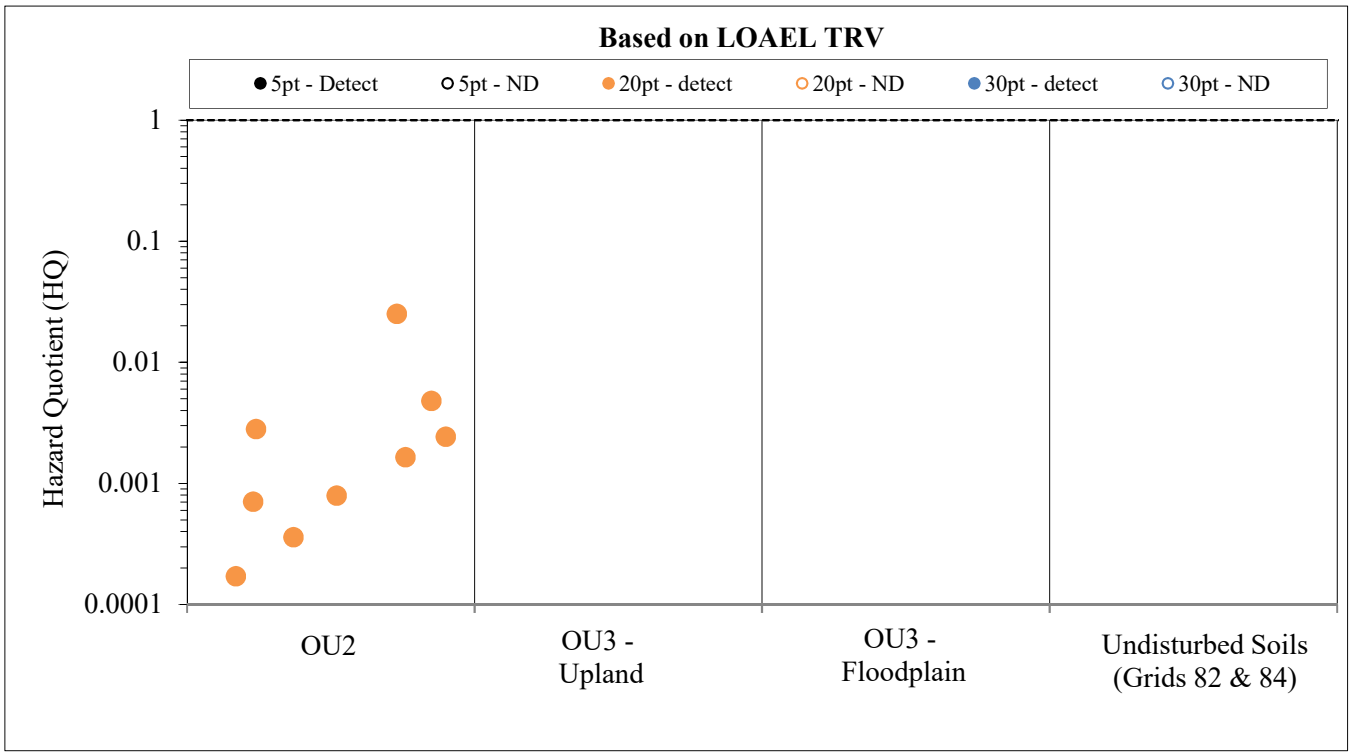
Total PCBs (ND=1/2RL)

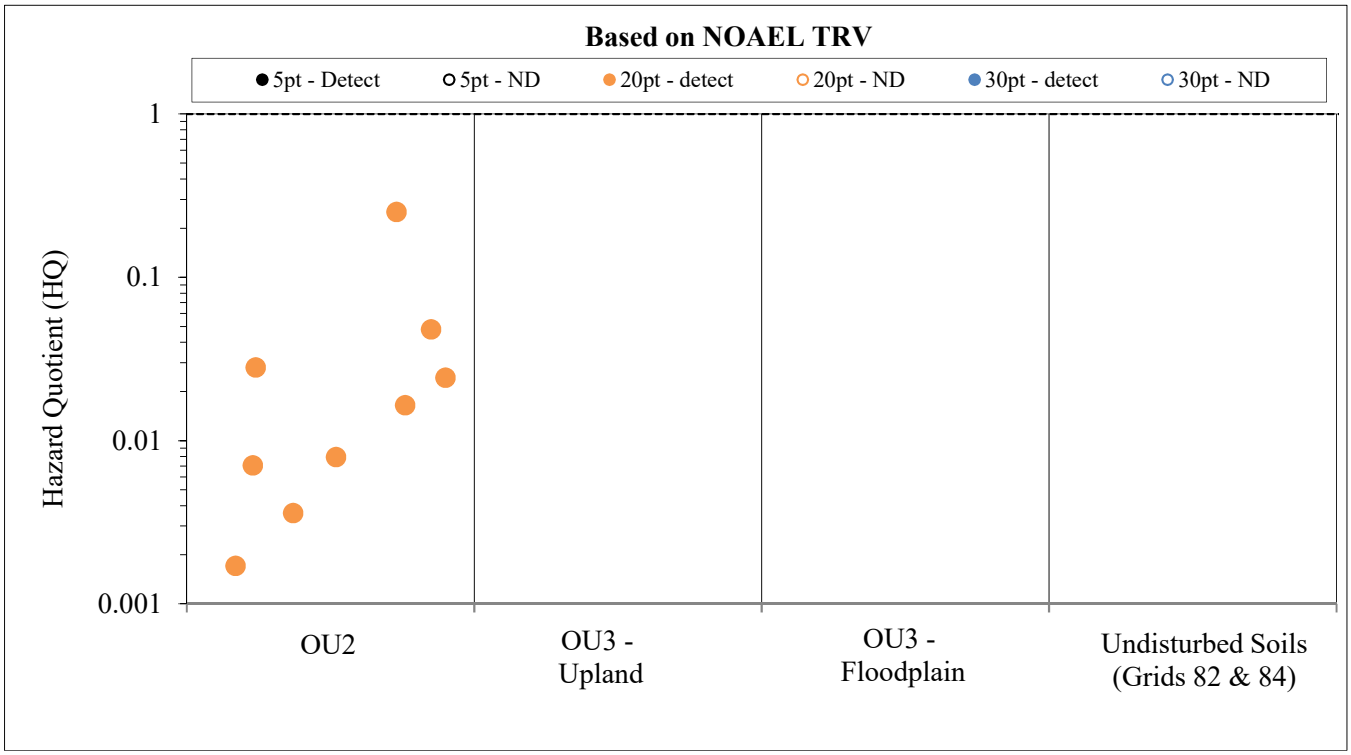
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Surface Soil by Exposure Unit/Soil Type

Total PCBs (ND=1/2RL)





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Total PCBs (ND=1/2RL)

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.2153	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.016098	detect	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.073668	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.031651	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.108693	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.007675	detect	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.125414	detect	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	1.125173	detect	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.035534	detect	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	#N/A	#N/A	1	0	#N/A	#N/A
	TSB-SS	BACKFILL-TSB-SS	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Total PCBs (ND=1/2RL)

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	CRP-1	CRP-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-1	HP18-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-IB	HP18-SSC-IB_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP9-1	HP9-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	IBK-1	IBK-1-SS_4/16/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P17-BH1	P17-BH1-SS_4/3/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P4-BH1	P4-BH1-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P5-BH2	P5-BH2-SS_4/3/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

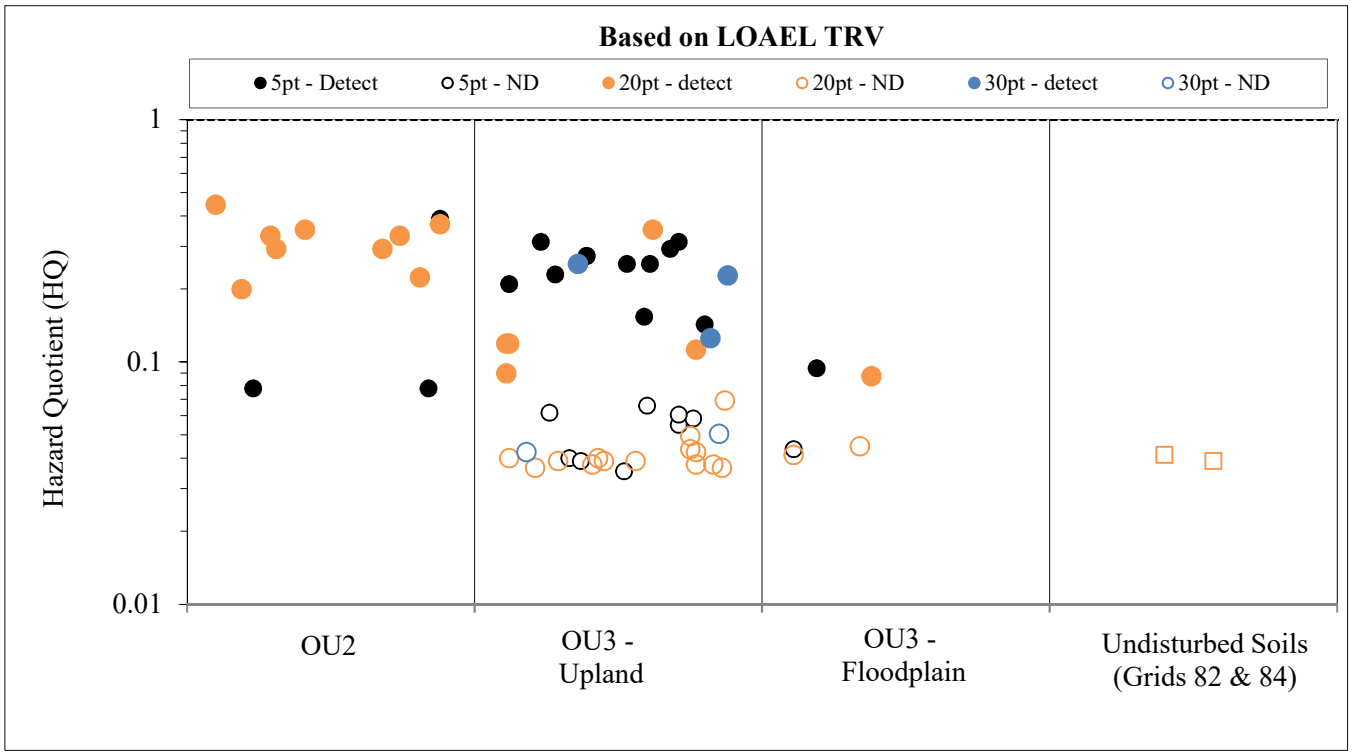
Total PCBs (ND=1/2RL)

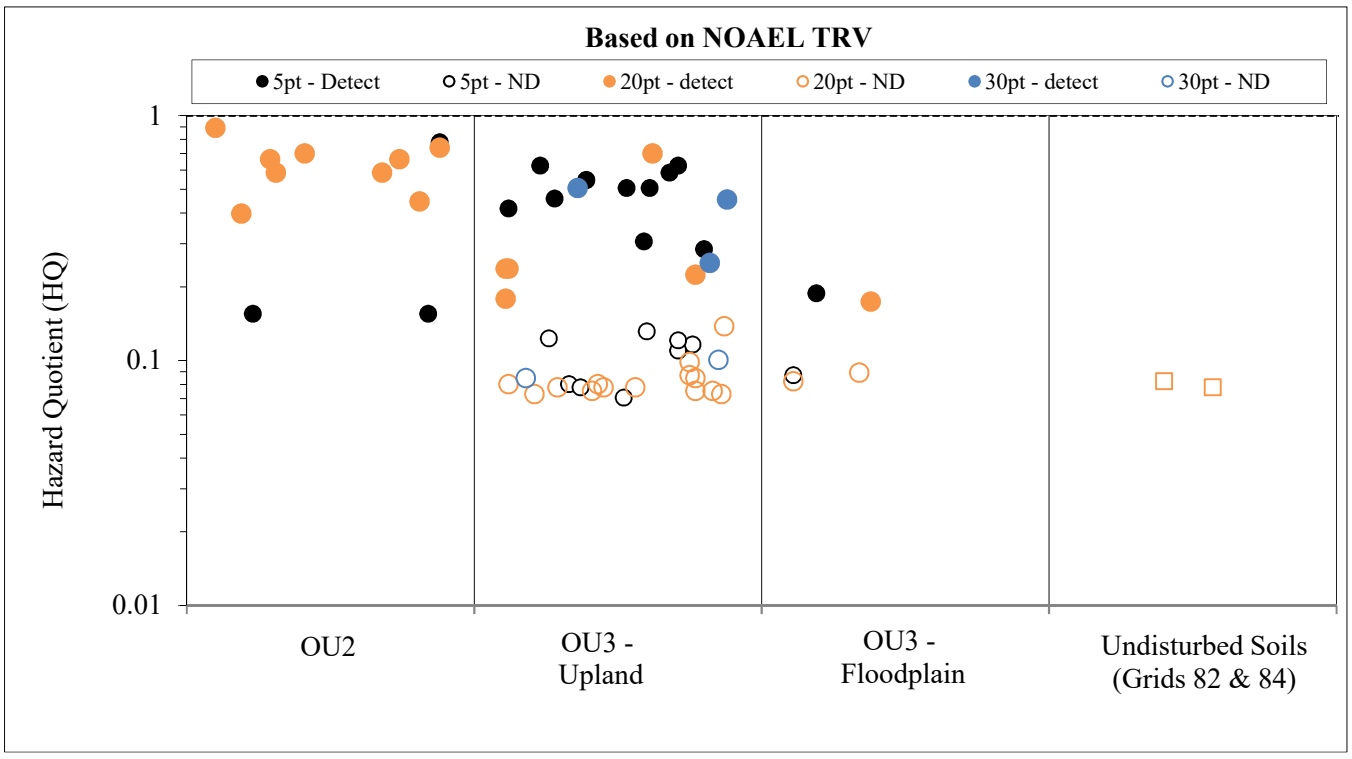
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Food by Exposure Unit/Soil Type

Selenium





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

Selenium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.107493	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.159534	detect	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.140872	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.095769	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.177969	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.214303	detect	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.140872	detect	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.159534	detect	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.168777	detect	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.187114	detect	1	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.037405	detect	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.037405	detect	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

Selenium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.121929	detect	1	0	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.028028	ND	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.13144	detect	1	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.018132	ND	1	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.018132	ND	1	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.018703	ND	1	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.018132	ND	1	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.018703	ND	1	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.017557	ND	1	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.017557	ND	1	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.023718	ND	1	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.057118	detect	1	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.043028	detect	1	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.168777	detect	1	0	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.057118	detect	1	0	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.020957	ND	1	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.019271	ND	1	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.020398	ND	1	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.053923	detect	1	0	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.019271	ND	1	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.018703	ND	1	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.068615	detect	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.150234	detect	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.100675	detect	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.019271	ND	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.01698	ND	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.073744	detect	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.121929	detect	1	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.018703	ND	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.13144	detect	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.150234	detect	1	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.140872	detect	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.033274	ND	1	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.026425	ND	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.029089	ND	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.029617	ND	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.031714	ND	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.024263	ND	1	0	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.060287	detect	1	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.110398	detect	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.121929	detect	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.109431	detect	1	0	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	0.020398	ND	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

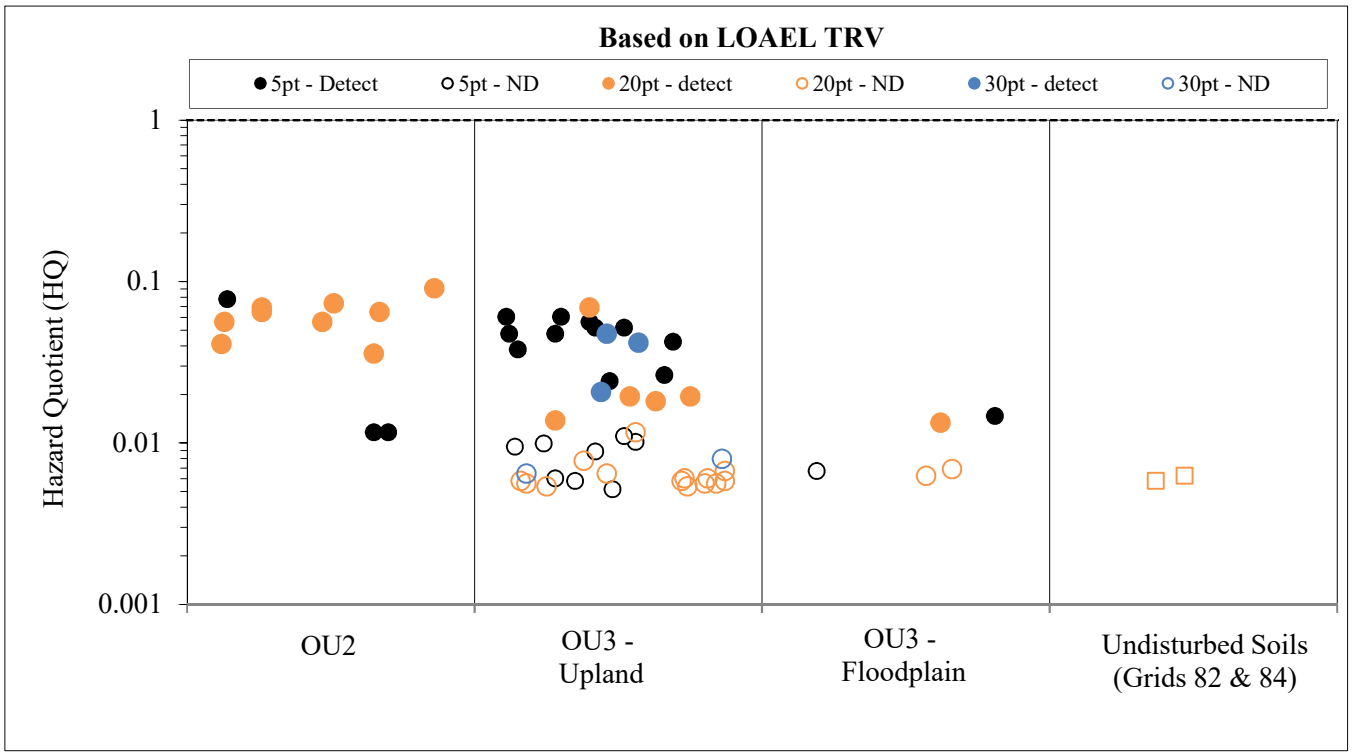
Selenium

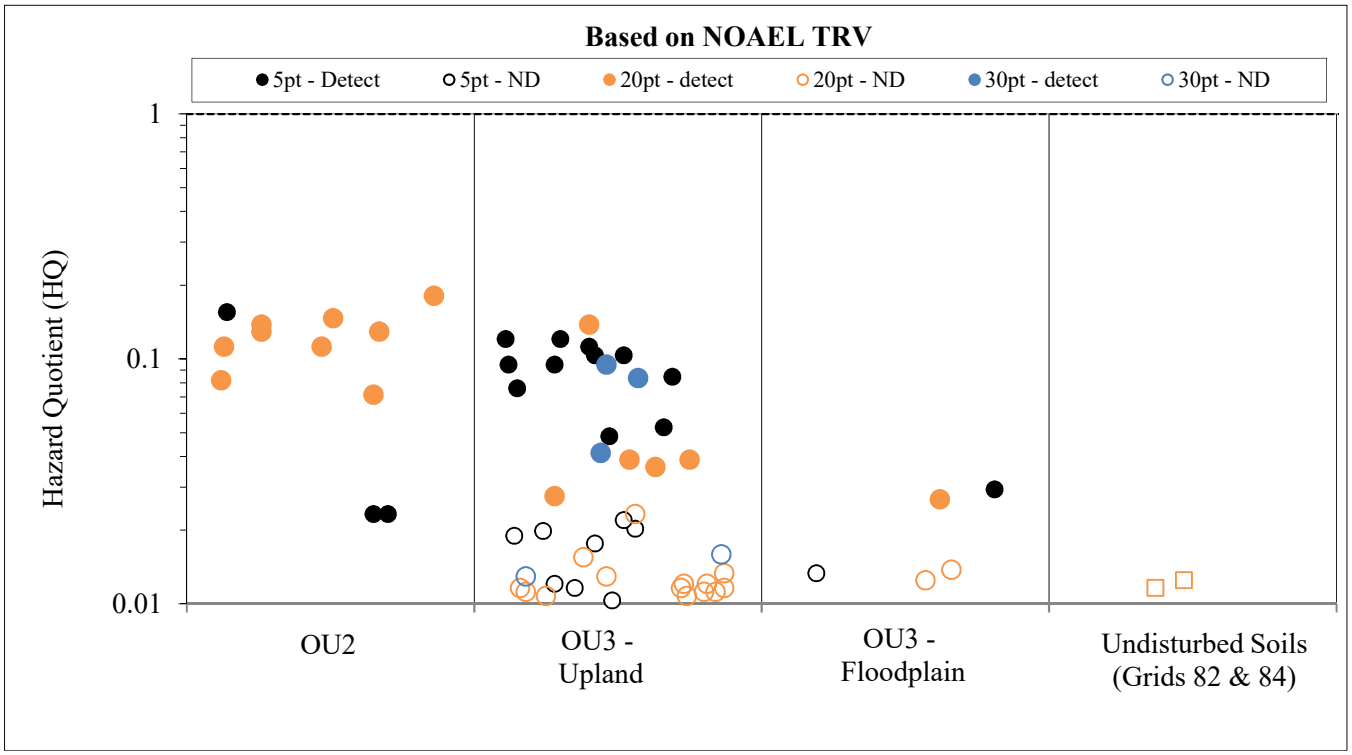
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.019836	ND	1	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.041914	detect	1	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.021514	ND	1	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.045241	detect	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.020957	ND	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.019836	ND	1	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.018703	ND	1	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Surface Soil by Exposure Unit/Soil Type

Selenium





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Selenium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.95	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	1.5	detect	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	1.3	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.83	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	1.7	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	2.1	detect	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	1.3	detect	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	1.5	detect	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	1.6	detect	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	1.8	detect	1	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.27	detect	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.27	detect	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Selenium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	1.1	detect	1	0	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.22	ND	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	1.2	detect	1	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.13	ND	1	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.13	ND	1	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.135	ND	1	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.13	ND	1	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.135	ND	1	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.125	ND	1	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.125	ND	1	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.18	ND	1	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.45	detect	1	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.32	detect	1	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	1.6	detect	1	0	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.45	detect	1	0	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.155	ND	1	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.14	ND	1	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.15	ND	1	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.42	detect	1	0	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.14	ND	1	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.135	ND	1	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.56	detect	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	1.4	detect	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.88	detect	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.14	ND	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.12	ND	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.61	detect	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1.1	detect	1	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.135	ND	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	1.2	detect	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	1.4	detect	1	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	1.3	detect	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.27	ND	1	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.205	ND	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.23	ND	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.235	ND	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.255	ND	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.185	ND	1	0	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.48	detect	1	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.98	detect	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1.1	detect	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.97	detect	1	0	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	0.15	ND	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Selenium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.145	ND	1	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.31	detect	1	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.16	ND	1	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.34	detect	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.155	ND	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.145	ND	1	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.135	ND	1	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of River Surface Water

Selenium

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0001	ND	0.29	0.579	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0002	ND	0.29	0.579	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0002	ND	0.29	0.579	<1.0	<1.0
	SW3-CFR	SW3-CFR	#N/A	#N/A	0.29	0.579	#N/A	#N/A
	51-CFR	SW51-CFR	0.0001	ND	0.29	0.579	<1.0	<1.0
	52-CFR	SW52-CFR	0.0001	ND	0.29	0.579	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0001	ND	0.29	0.579	<1.0	<1.0
	54-CFR	SW54-CFR	0.0001	ND	0.29	0.579	<1.0	<1.0
	SW2-CFR	SW2-CFR	#N/A	#N/A	0.29	0.579	#N/A	#N/A
	55-CFR	SW55-CFR	0.0001	ND	0.29	0.579	<1.0	<1.0
	56-CFR	SW56-CFR	0.0001	ND	0.29	0.579	<1.0	<1.0
	SW1-CFR	SW1-CFR	#N/A	#N/A	0.29	0.579	#N/A	#N/A
	57-CFR	SW57-CFR	0.0001	ND	0.29	0.579	<1.0	<1.0
	58-CFR	SW58-CFR	0.0001	detect	0.29	0.579	<1.0	<1.0
	59-CFR	SW59-CFR	0.0001	ND	0.29	0.579	<1.0	<1.0
	60-CFR	SW60-CFR	0.0001	ND	0.29	0.579	<1.0	<1.0
	61-CFR	SW61-CFR	0.0001	ND	0.29	0.579	<1.0	<1.0
	62-CFR	SW62-CFR	0.0001	ND	0.29	0.579	<1.0	<1.0
	63-CFR	SW63-CFR	0.0001	ND	0.29	0.579	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of Creek Surface Water

Selenium

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.0001	ND	0.29	0.579	<1.0	<1.0
	43-OK	SW43-OK	0.0001	ND	0.29	0.579	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	#N/A	#N/A	0.29	0.579	#N/A	#N/A
	37-LV	SW37-LV	0.0001	ND	0.29	0.579	<1.0	<1.0
	39-LV	SW39-LV	0.0001	ND	0.29	0.579	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of Pond Surface Water

Selenium

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0001	ND	0.29	0.579	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0002	detect	0.29	0.579	<1.0	<1.0
69-HP1a	SW69-HP1a	0.002	detect	0.29	0.579	<1.0	<1.0
73-P5	SW73-P5	0.0018	detect	0.29	0.579	<1.0	<1.0
71-HP7	SW71-HP7	0.0013	detect	0.29	0.579	<1.0	<1.0
72-HP2	SW72-HP2	0.0007	ND	0.29	0.579	<1.0	<1.0
75-HP10	SW75-HP10	0.0014	detect	0.29	0.579	<1.0	<1.0
67-HP12	SW67-HP12	0.0009	detect	0.29	0.579	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0001	ND	0.29	0.579	<1.0	<1.0
66-HP13	SW66-HP13	0.0007	ND	0.29	0.579	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0007	detect	0.29	0.579	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0004	detect	0.29	0.579	<1.0	<1.0
70-CWD	SW70-CWD	0.0001	ND	0.29	0.579	<1.0	<1.0
64-HP18	SW64-HP18	0.0007	ND	0.29	0.579	<1.0	<1.0

#N/A = not analyzed

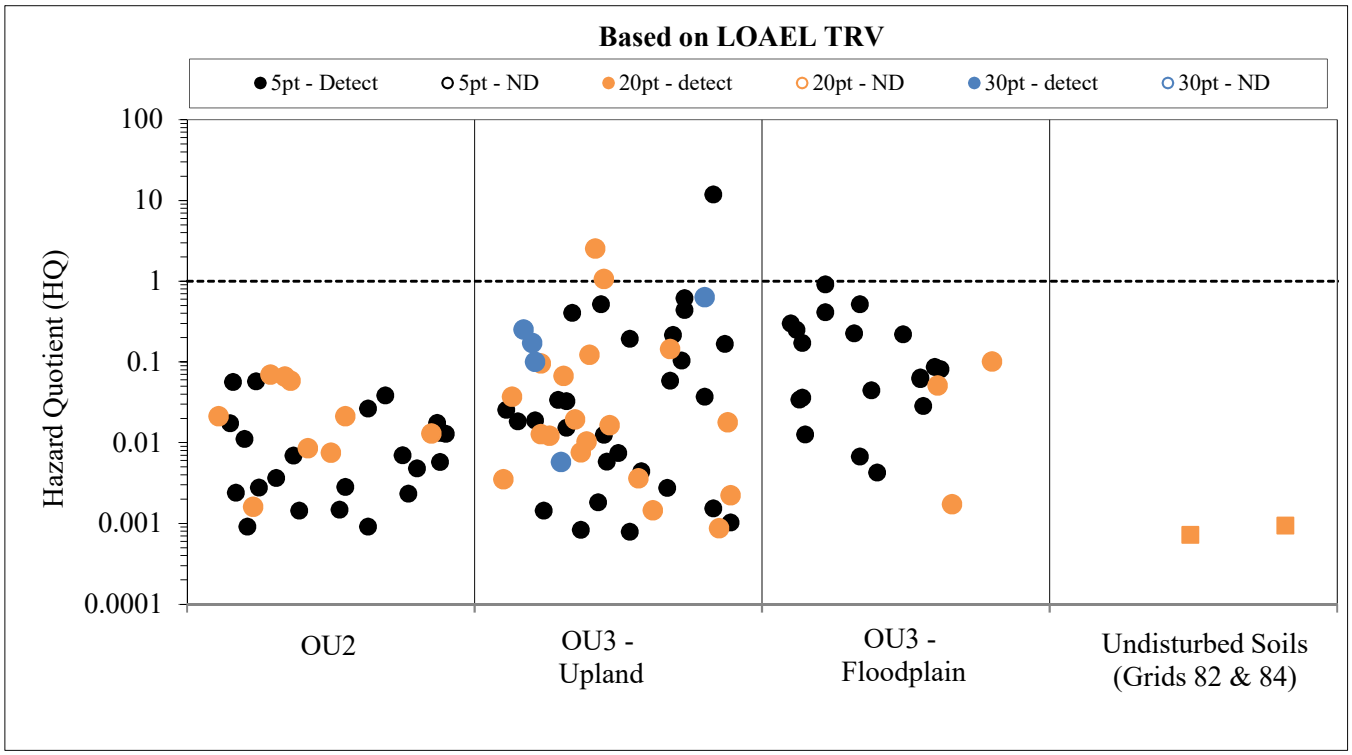
(a) Non-detects are evaluated at 1/2 the reported value.

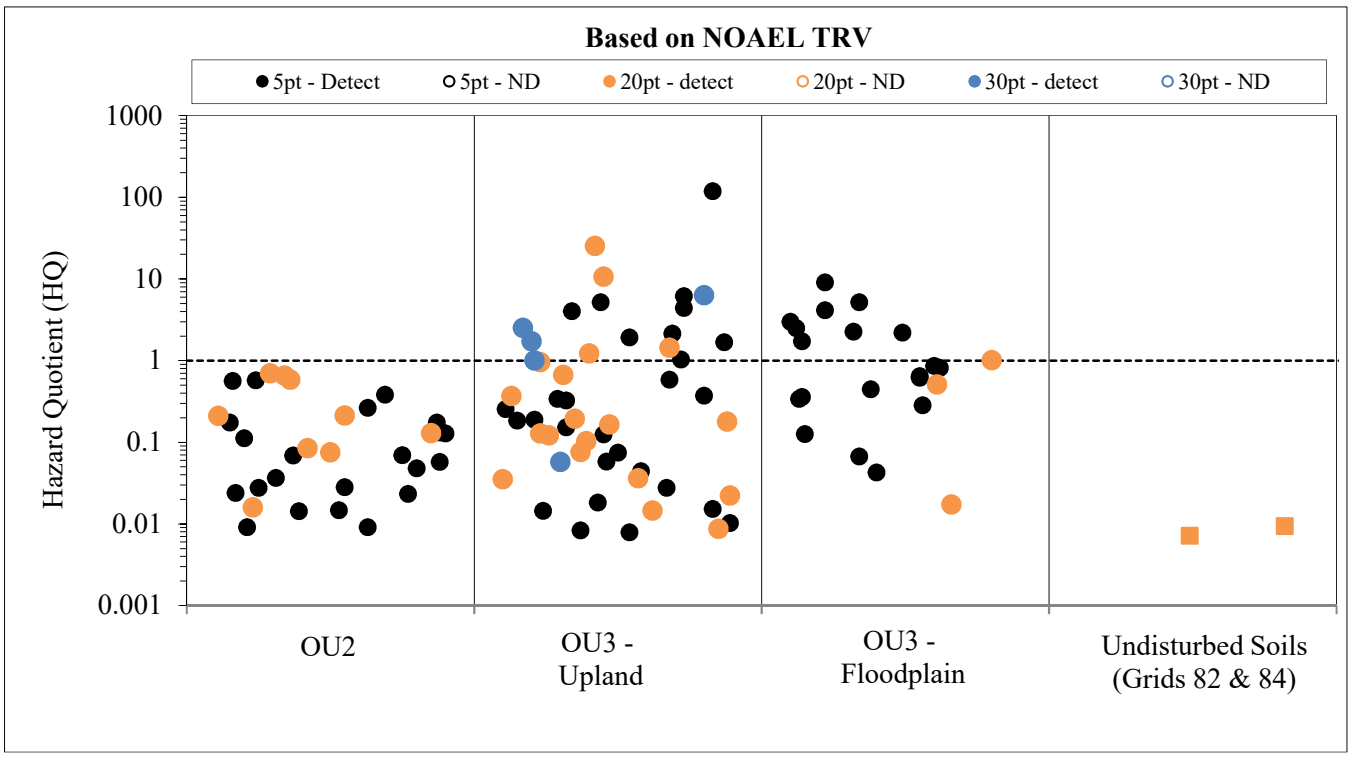
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Food by Exposure Unit/Soil Type

D/F Av TEQ - ND=1/2RL





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

D/F Av TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	2.51E-06	detect	0	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	1.01E-06	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	7.78E-06	detect	0	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	1.54E-06	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	8.26E-06	detect	0	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	1.9E-07	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	8.94E-07	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	6.94E-06	detect	0	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	2.52E-06	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	2.84E-07	detect	0	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	0	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	8.18E-07	detect	0	0	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	1.57E-06	detect	0	0	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	4.54E-06	detect	0	0	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	8.26E-07	detect	0	0	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	1.32E-06	detect	0	0	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	2.07E-06	detect	0	0	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	2.08E-06	detect	0	0	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	2.76E-07	detect	0	0	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	3.28E-07	detect	0	0	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	4.34E-07	detect	0	0	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	6.67E-06	detect	0	0	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	1.75E-07	detect	0	0	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	6.83E-07	detect	0	0	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	3.35E-07	detect	0	0	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	1.7E-07	detect	0	0	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	6.8E-06	detect	0	0	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	1.52E-06	detect	0	0	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	3.13E-06	detect	0	0	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	5.69E-07	detect	0	0	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	1.08E-07	detect	0	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	1.08E-07	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

D/F Av TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	3E-05	detect	0	0	<1.0	**2.5**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	4.79E-05	detect	0	0	<1.0	**4.0**
	CRP-1	CRP-1-SS_4/10/14_NM	1.49E-06	detect	0	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	1.44E-06	detect	0	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	2.65E-07	detect	0	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	1.95E-06	detect	0	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	9E-07	detect	0	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	4.29E-07	detect	0	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	4.18E-07	detect	0	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	1.73E-07	detect	0	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	2.12E-06	detect	0	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	2.3E-06	detect	0	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	1.23E-06	detect	0	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	1.71E-05	detect	0	0	<1.0	**1.4**
	Grid 53	Grid 53-SSComp-01_20171020_NM	1.45E-05	detect	0	0	<1.0	**1.2**
	Grid 60	Grid 60-SSComp-01_20171023_NM	7.93E-06	detect	0	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	4.39E-06	detect	0	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	1.13E-05	detect	0	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.0003	detect	0	0	**2.5**	**25.3**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	1.03E-07	detect	0	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	1.52E-06	detect	0	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	6.92E-06	detect	0	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	2.16E-07	detect	0	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	4.03E-06	detect	0	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	3.27E-07	detect	0	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	1.82E-07	detect	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	9.33E-08	detect	0	0	<1.0	<1.0
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	5.25E-07	detect	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	7.3E-05	detect	0	0	<1.0	**6.1**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	2.24E-06	detect	0	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	1.22E-07	detect	0	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	5.23E-05	detect	0	0	<1.0	**4.4**
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.001407	detect	0	0	**11.9**	**118.5**
	P3	P3-SSComp-01_20171020_NM	0.000126	detect	0	0	**1.1**	**10.6**
	P3-BH1	P3-BH1-SS_4/3/14_NM	2.29E-05	detect	0	0	<1.0	**1.9**
	P4-BH1	P4-BH1-SS_4/4/14_NM	6.88E-07	detect	0	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	8.83E-07	detect	0	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	4.4E-06	detect	0	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	2.04E-05	detect	0	0	<1.0	**1.7**
	P8dc	P8dc-SSComp-01_20171024_NM	1.19E-05	detect	0	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	1.23E-05	detect	0	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	6.14E-05	detect	0	0	<1.0	**5.2**
	SPP	SPP-SSComp-01_20171025_NM	7.49E-05	detect	0	0	<1.0	**6.3**
	SS1,2-HP18	SS1-HP18-(0-2)c	1.71E-07	detect	0	0	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	9.91E-08	detect	0	0	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	2.55E-05	detect	0	0	<1.0	**2.1**
	SS15,16-HP9	SS15-HP9-(0-2)c	1.98E-05	detect	0	0	<1.0	**1.7**
	SS3,4-HP16	SS3-HP16-(0-2)c	3.87E-06	detect	0	0	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	2.17E-06	detect	0	0	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	3.03E-06	detect	0	0	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	1.81E-06	detect	0	0	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	6.8E-07	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

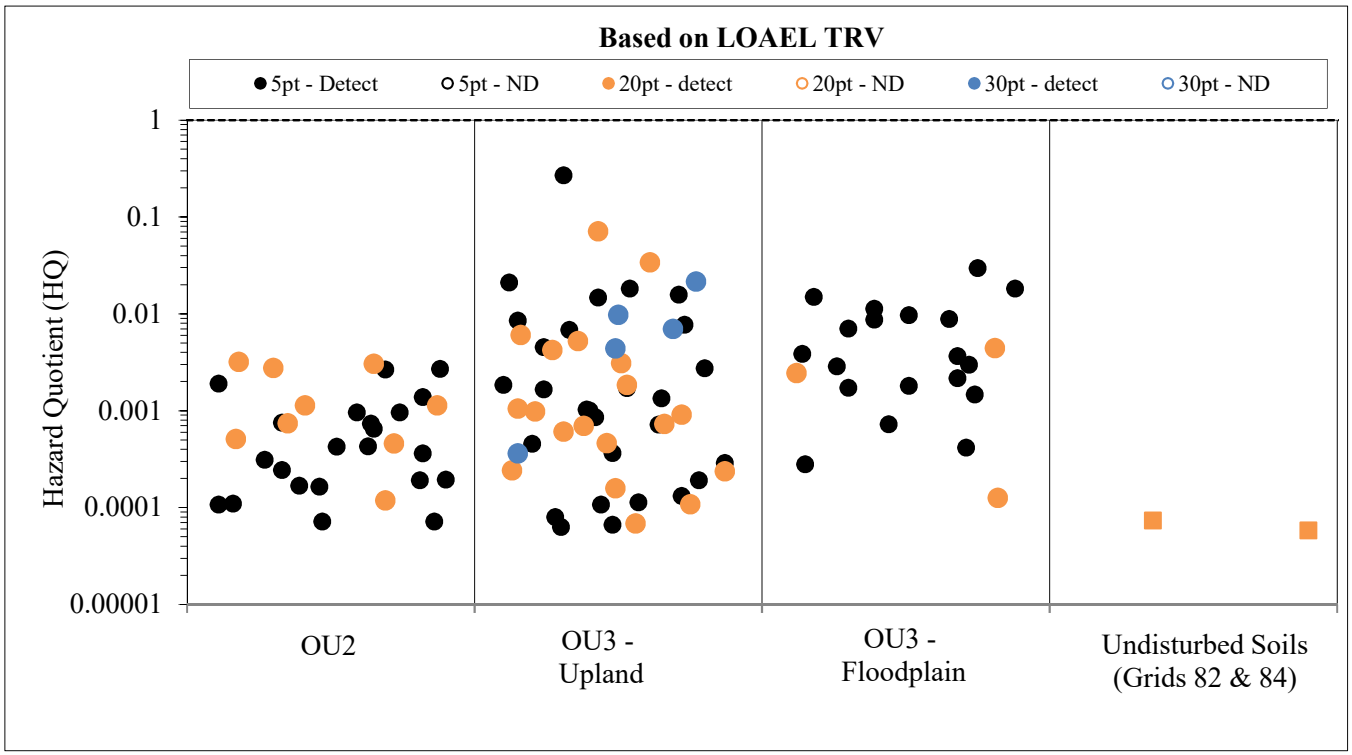
D/F Av TEQ - ND=1/2RL

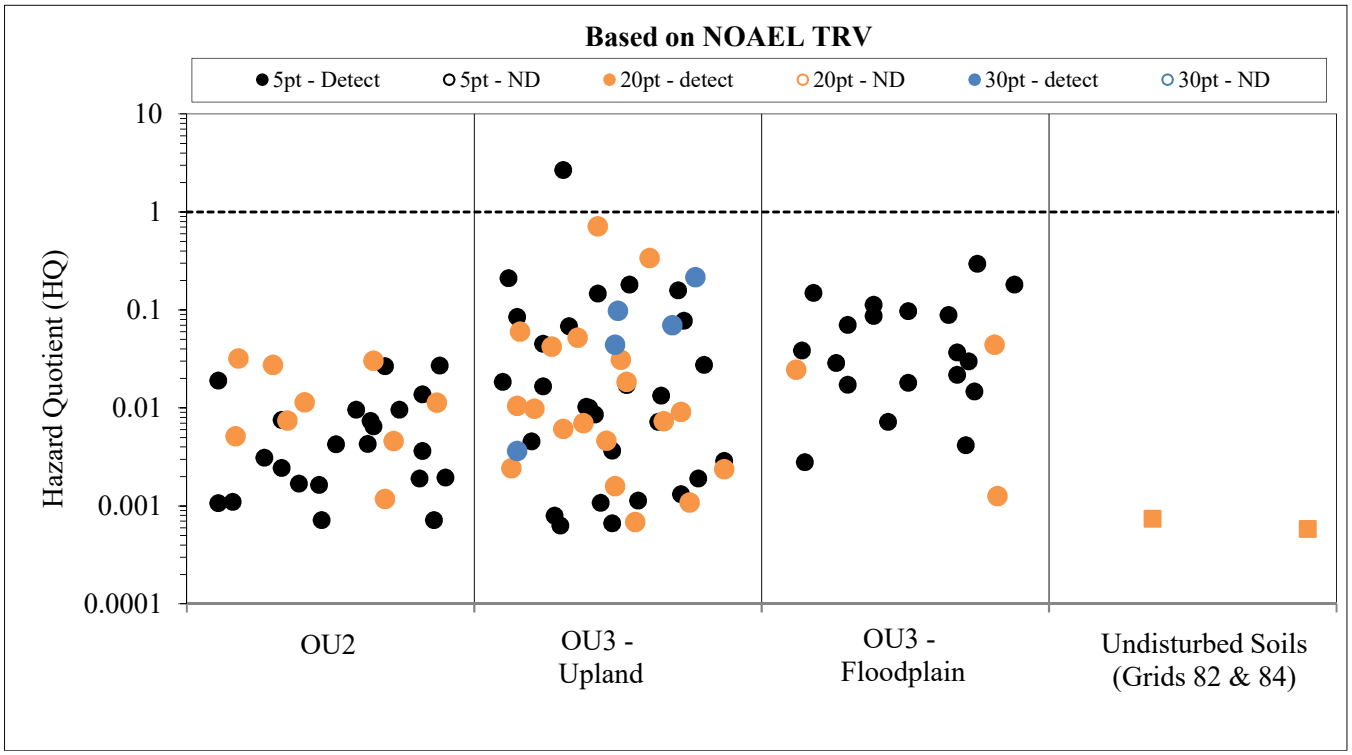
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	2.05E-07	detect	0	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	6.07E-06	detect	0	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	1.2E-05	detect	0	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	1.03E-05	detect	0	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	1.49E-06	detect	0	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	4.9E-05	detect	0	0	<1.0	**4.1**
	SE11-HP11	SE11-HP11-(0-2)c	2.04E-05	detect	0	0	<1.0	**1.7**
	SE12-HP12	SE12-HP12-(0-2)c	4.04E-06	detect	0	0	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	6.15E-05	detect	0	0	<1.0	**5.2**
	SE14-HP13	SE14-HP13-(0-2)c	5.04E-07	detect	0	0	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	3.54E-05	detect	0	0	<1.0	**3.0**
	SE16-HP13	SE16-HP13-(0-2)c	3.37E-06	detect	0	0	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	4.26E-06	detect	0	0	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	7.62E-06	detect	0	0	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	9.67E-06	detect	0	0	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	5.28E-06	detect	0	0	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	2.61E-05	detect	0	0	<1.0	**2.2**
	SE5-HP2	SE5-HP2-(0-2)c	2.68E-05	detect	0	0	<1.0	**2.3**
	SE6-HP7	SE6-HP7-(0-2)c	0.000108	detect	0	0	<1.0	**9.1**
	SE7-HP7	SE7-HP7-(0-2)c	7.95E-07	detect	0	0	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	7.29E-06	detect	0	0	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	2.97E-05	detect	0	0	<1.0	**2.5**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	8.49E-08	detect	0	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	1.11E-07	detect	0	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Surface Soil by Exposure Unit/Soil Type

D/F Av TEQ - ND=1/2RL





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

D/F Av TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	6.49E-06	detect	0	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	2.93E-06	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	1.74E-05	detect	0	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	4.24E-06	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	1.83E-05	detect	0	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	6.76E-07	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	2.63E-06	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	1.57E-05	detect	0	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	6.51E-06	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	9.64E-07	detect	0	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	0	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	2.44E-06	detect	0	0	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	4.31E-06	detect	0	0	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	1.09E-05	detect	0	0	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	2.46E-06	detect	0	0	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	3.71E-06	detect	0	0	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	5.48E-06	detect	0	0	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	5.5E-06	detect	0	0	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	9.38E-07	detect	0	0	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	1.09E-06	detect	0	0	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	1.4E-06	detect	0	0	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	1.52E-05	detect	0	0	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	6.28E-07	detect	0	0	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	2.08E-06	detect	0	0	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	1.11E-06	detect	0	0	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	6.12E-07	detect	0	0	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	1.55E-05	detect	0	0	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	4.2E-06	detect	0	0	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	7.88E-06	detect	0	0	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	1.77E-06	detect	0	0	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	4.11E-07	detect	0	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	4.11E-07	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

D/F Av TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	5.59E-05	detect	0	0	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	8.39E-05	detect	0	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	4.11E-06	detect	0	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	3.99E-06	detect	0	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	9.07E-07	detect	0	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	5.22E-06	detect	0	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	2.65E-06	detect	0	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	1.38E-06	detect	0	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	1.35E-06	detect	0	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	6.21E-07	detect	0	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	5.6E-06	detect	0	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	6.01E-06	detect	0	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	3.48E-06	detect	0	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	3.45E-05	detect	0	0	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	2.99E-05	detect	0	0	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	1.77E-05	detect	0	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	1.06E-05	detect	0	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	2.41E-05	detect	0	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.000407	detect	0	0	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	3.93E-07	detect	0	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	4.19E-06	detect	0	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	1.57E-05	detect	0	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	7.57E-07	detect	0	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	9.81E-06	detect	0	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	1.09E-06	detect	0	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	6.5E-07	detect	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	3.6E-07	detect	0	0	<1.0	<1.0
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	1.65E-06	detect	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.000121	detect	0	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	5.88E-06	detect	0	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	4.55E-07	detect	0	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	9.05E-05	detect	0	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.001534	detect	0	0	<1.0	**2.7**
	P3	P3-SSComp-01_20171020_NM	0.000194	detect	0	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	4.43E-05	detect	0	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	2.09E-06	detect	0	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	2.61E-06	detect	0	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	1.06E-05	detect	0	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	4.01E-05	detect	0	0	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	2.52E-05	detect	0	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	2.58E-05	detect	0	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.000104	detect	0	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.000123	detect	0	0	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	6.15E-07	detect	0	0	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	3.8E-07	detect	0	0	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	4.86E-05	detect	0	0	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	3.91E-05	detect	0	0	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	9.46E-06	detect	0	0	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	5.73E-06	detect	0	0	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	7.65E-06	detect	0	0	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	4.89E-06	detect	0	0	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	2.07E-06	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

D/F Av TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	7.23E-07	detect	0	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	1.4E-05	detect	0	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	2.53E-05	detect	0	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	2.21E-05	detect	0	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	4.13E-06	detect	0	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	8.56E-05	detect	0	0	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	4.02E-05	detect	0	0	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	9.84E-06	detect	0	0	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	0.000104	detect	0	0	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	1.6E-06	detect	0	0	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	6.46E-05	detect	0	0	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	8.41E-06	detect	0	0	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	1.03E-05	detect	0	0	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	1.71E-05	detect	0	0	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	2.1E-05	detect	0	0	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	1.24E-05	detect	0	0	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	4.97E-05	detect	0	0	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	5.07E-05	detect	0	0	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	0.000169	detect	0	0	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	2.38E-06	detect	0	0	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	1.64E-05	detect	0	0	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	5.55E-05	detect	0	0	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	3.31E-07	detect	0	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	4.21E-07	detect	0	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of River Surface Water

Av TEQ - ND=1/2RL

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	2E-09	ND	0.00014	0.000014	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	2E-09	ND	0.00014	0.000014	<1.0	<1.0
	CFR2	CFR2_20180523_NM	2E-09	detect	0.00014	0.000014	<1.0	<1.0
	SW3-CFR	SW3-CFR	2E-09	detect	0.00014	0.000014	<1.0	<1.0
	51-CFR	SW51-CFR	2E-09	ND	0.00014	0.000014	<1.0	<1.0
	52-CFR	SW52-CFR	2E-09	ND	0.00014	0.000014	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	2E-09	ND	0.00014	0.000014	<1.0	<1.0
	54-CFR	SW54-CFR	2E-09	ND	0.00014	0.000014	<1.0	<1.0
	SW2-CFR	SW2-CFR	2E-09	detect	0.00014	0.000014	<1.0	<1.0
	55-CFR	SW55-CFR	2E-09	ND	0.00014	0.000014	<1.0	<1.0
	56-CFR	SW56-CFR	2E-09	ND	0.00014	0.000014	<1.0	<1.0
	SW1-CFR	SW1-CFR	2E-09	detect	0.00014	0.000014	<1.0	<1.0
	57-CFR	SW57-CFR	2E-09	ND	0.00014	0.000014	<1.0	<1.0
	58-CFR	SW58-CFR	2E-09	ND	0.00014	0.000014	<1.0	<1.0
	59-CFR	SW59-CFR	2E-09	ND	0.00014	0.000014	<1.0	<1.0
	60-CFR	SW60-CFR	2E-09	ND	0.00014	0.000014	<1.0	<1.0
	61-CFR	SW61-CFR	2E-09	ND	0.00014	0.000014	<1.0	<1.0
	62-CFR	SW62-CFR	2E-09	ND	0.00014	0.000014	<1.0	<1.0
	63-CFR	SW63-CFR	2E-09	ND	0.00014	0.000014	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of Creek Surface Water

Av TEQ - ND=1/2RL

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	#N/A	#N/A	0.00014	0.000014	#N/A	#N/A
	43-OK	SW43-OK	#N/A	#N/A	0.00014	0.000014	#N/A	#N/A
LaValle Creek	SW9-LV	SW9-LV	2E-09	detect	0.00014	0.000014	<1.0	<1.0
	37-LV	SW37-LV	2E-09	detect	0.00014	0.000014	<1.0	<1.0
	39-LV	SW39-LV	2E-09	detect	0.00014	0.000014	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of Pond Surface Water

Av TEQ - ND=1/2RL

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	2E-09	detect	0.00014	0.000014	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	#N/A	#N/A	0.00014	0.000014	#N/A	#N/A
69-HP1a	SW69-HP1a	2E-09	detect	0.00014	0.000014	<1.0	<1.0
73-P5	SW73-P5	3E-09	detect	0.00014	0.000014	<1.0	<1.0
71-HP7	SW71-HP7	1E-09	detect	0.00014	0.000014	<1.0	<1.0
72-HP2	SW72-HP2	1E-09	detect	0.00014	0.000014	<1.0	<1.0
75-HP10	SW75-HP10	1E-09	detect	0.00014	0.000014	<1.0	<1.0
67-HP12	SW67-HP12	1E-09	detect	0.00014	0.000014	<1.0	<1.0
68-IBJ	SW68-IBJ	3E-09	detect	0.00014	0.000014	<1.0	<1.0
66-HP13	SW66-HP13	1E-09	detect	0.00014	0.000014	<1.0	<1.0
65-HP13a	SW65-HP13a	2E-09	detect	0.00014	0.000014	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	#N/A	#N/A	0.00014	0.000014	#N/A	#N/A
70-CWD	SW70-CWD	3E-09	detect	0.00014	0.000014	<1.0	<1.0
64-HP18	SW64-HP18	2E-09	detect	0.00014	0.000014	<1.0	<1.0

#N/A = not analyzed

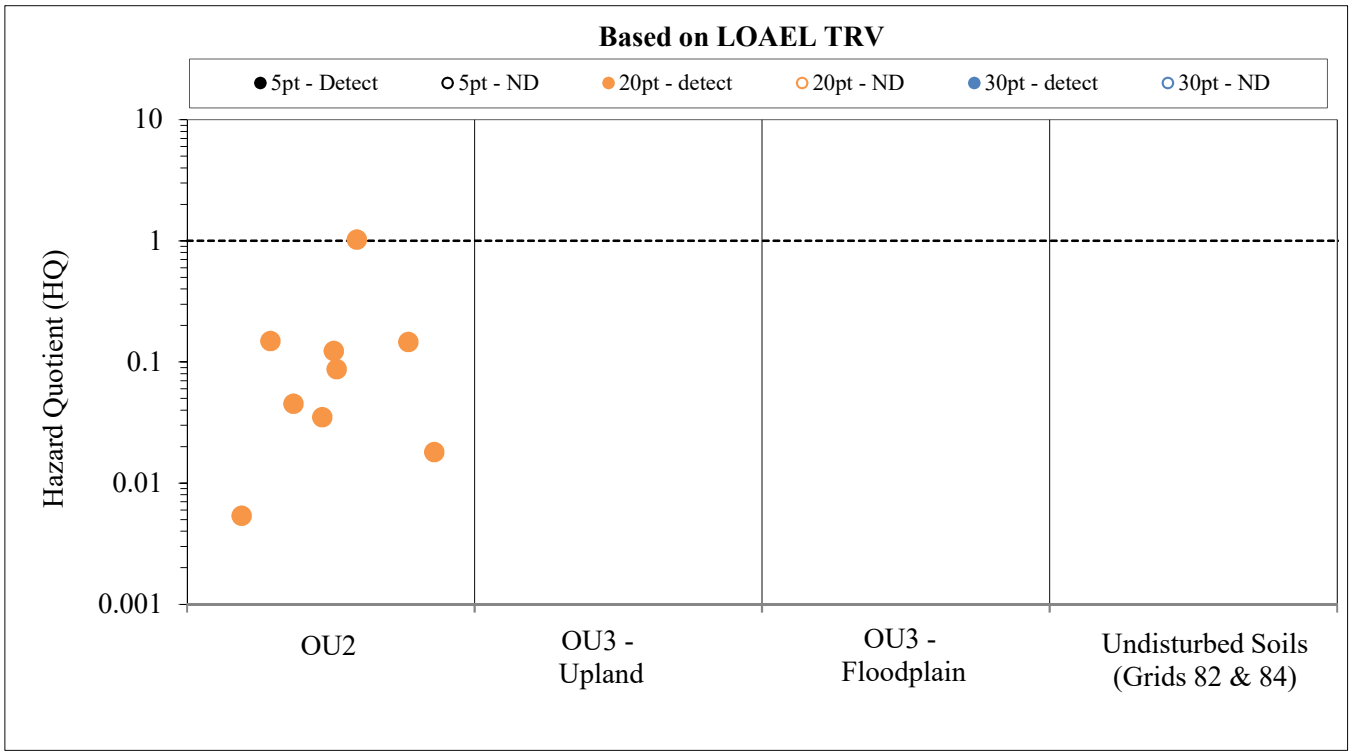
(a) Non-detects are evaluated at 1/2 the reported value.

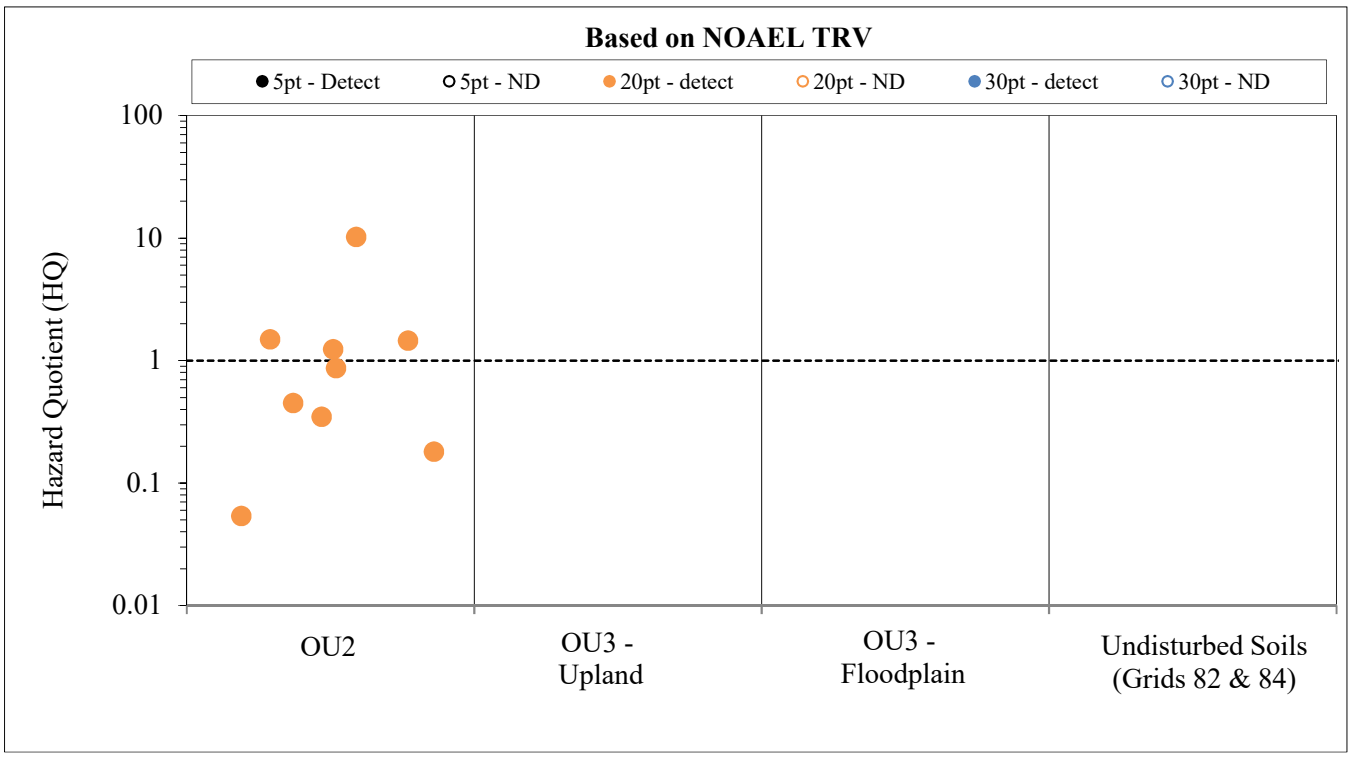
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Food by Exposure Unit/Soil Type

D/F+DL-PCB Av TEQ - ND=1/2RL





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

D/F+DL-PCB Av TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	1.77E-05	detect	0	0	<1.0	**1.5**
	Grid 13	Grid 13-SSComp-01_20171019_NM	2.14E-06	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	1.73E-05	detect	0	0	<1.0	**1.5**
	Grid 2	Grid 2-SSComp-01_20171016_NM	4.14E-06	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	1.47E-05	detect	0	0	<1.0	**1.2**
	Grid 23	Grid 23-SSComp-01_20171018_NM	6.38E-07	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	1.03E-05	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.000121	detect	0	0	<1.0	**10.2**
	Grid 9	Grid 9-SSComp-01_20171018_NM	5.36E-06	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	0	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	#N/A	#N/A	0	0	#N/A	#N/A
	TSB-SS	BACKFILL-TSB-SS	#N/A	#N/A	0	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

D/F+DL-PCB Av TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	0	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	CRP-1	CRP-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-1	HP18-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-IB	HP18-SSC-IB_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP9-1	HP9-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	IBK-1	IBK-1-SS_4/16/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P17-BH1	P17-BH1-SS_4/3/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P4-BH1	P4-BH1-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P5-BH2	P5-BH2-SS_4/3/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

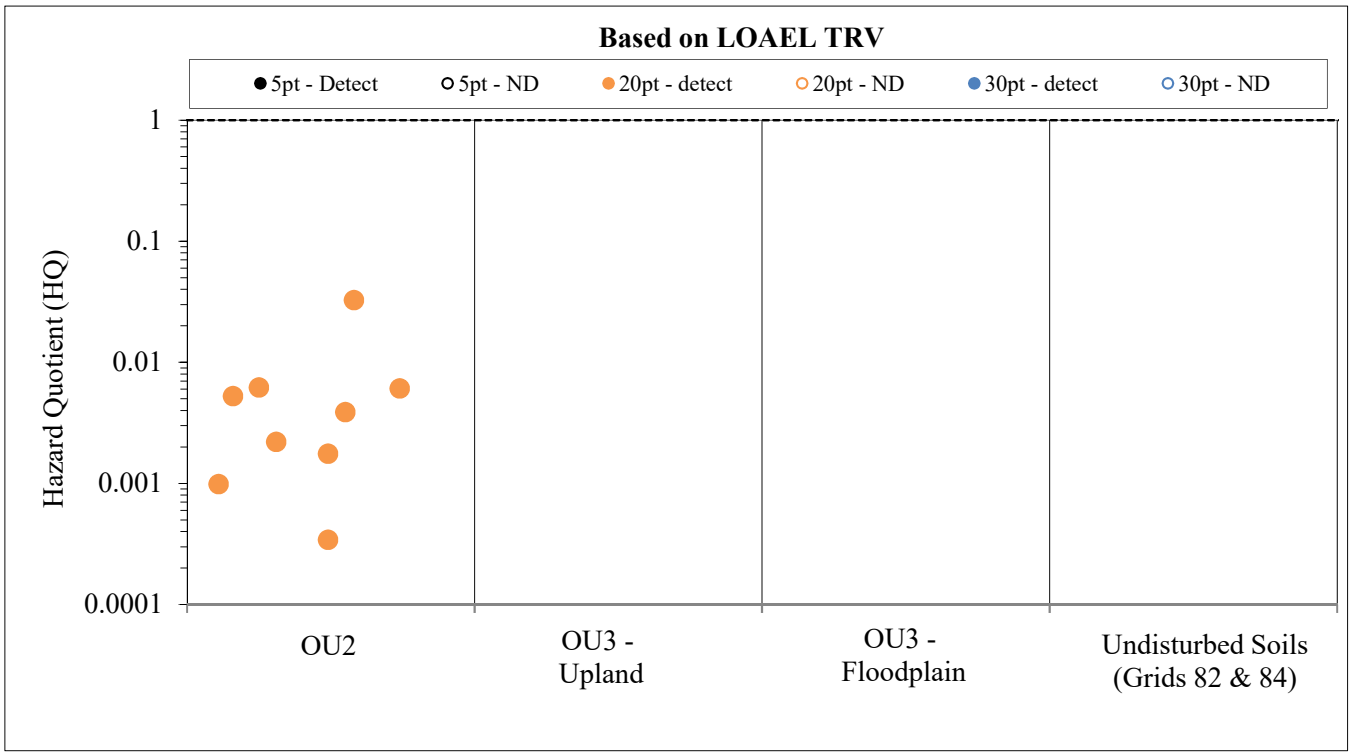
D/F+DL-PCB Av TEQ - ND=1/2RL

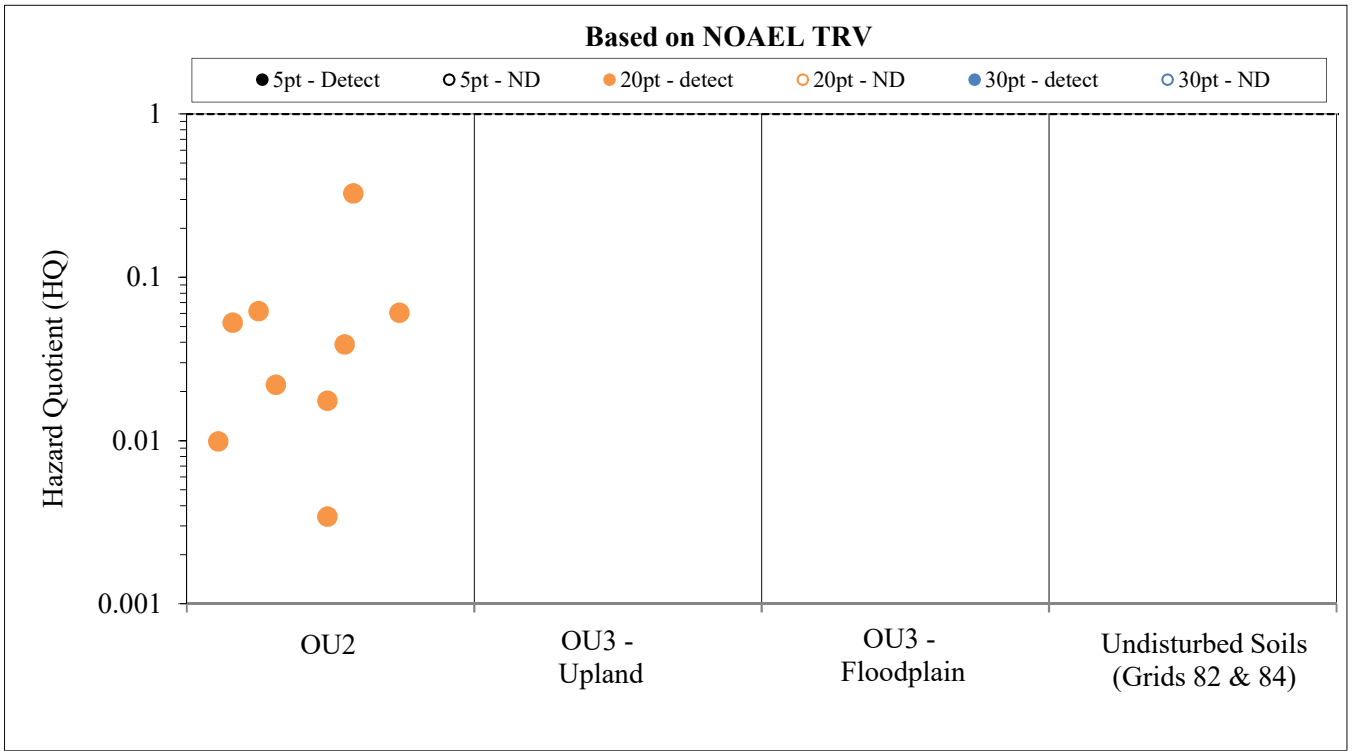
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	0	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Surface Soil by Exposure Unit/Soil Type

D/F+DL-PCB Av TEQ - ND=1/2RL





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

D/F+DL-PCB Av TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	3.54E-05	detect	0	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	5.65E-06	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	3.47E-05	detect	0	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	1E-05	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	3.01E-05	detect	0	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	1.96E-06	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	2.22E-05	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.000187	detect	0	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	1.26E-05	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	0	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	#N/A	#N/A	0	0	#N/A	#N/A
	TSB-SS	BACKFILL-TSB-SS	#N/A	#N/A	0	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

D/F+DL-PCB Av TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	0	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	CRP-1	CRP-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-1	HP18-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-IB	HP18-SSC-IB_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP9-1	HP9-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	IBK-1	IBK-1-SS_4/16/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P17-BH1	P17-BH1-SS_4/3/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P4-BH1	P4-BH1-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P5-BH2	P5-BH2-SS_4/3/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

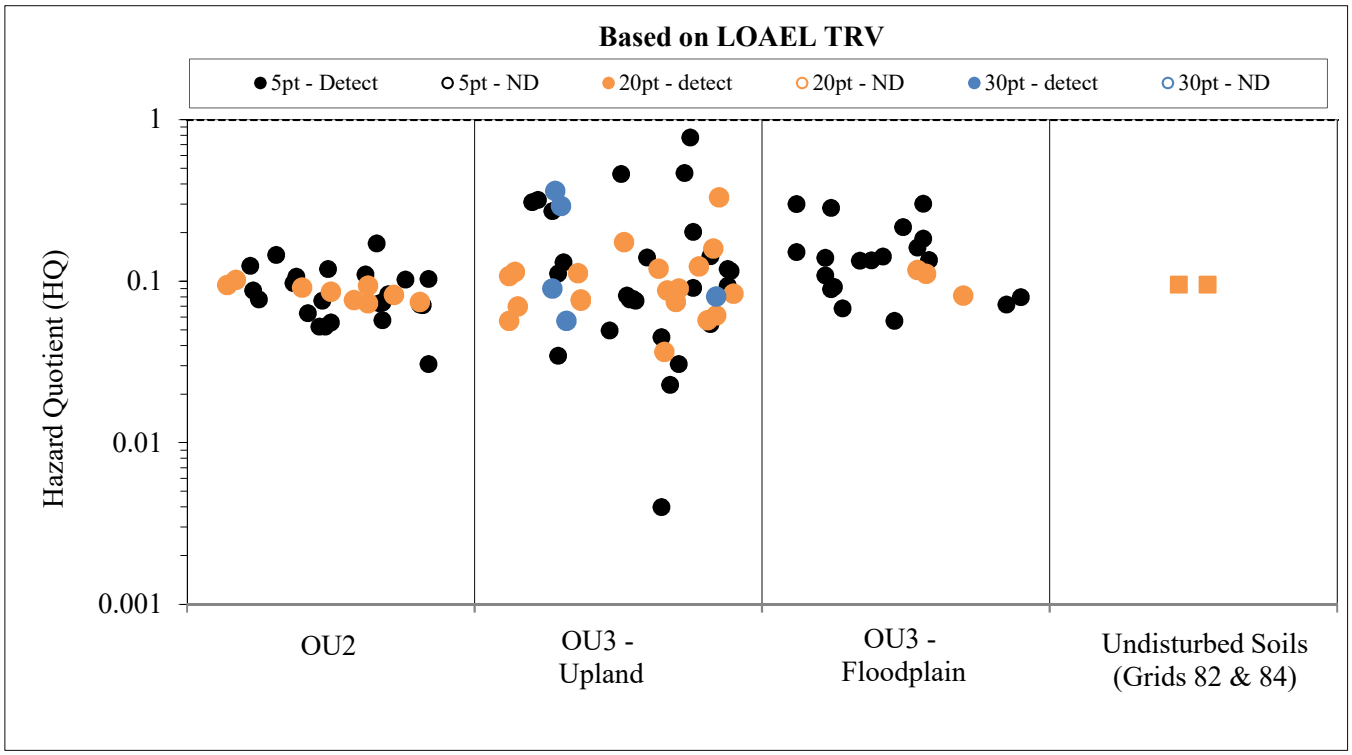
D/F+DL-PCB Av TEQ - ND=1/2RL

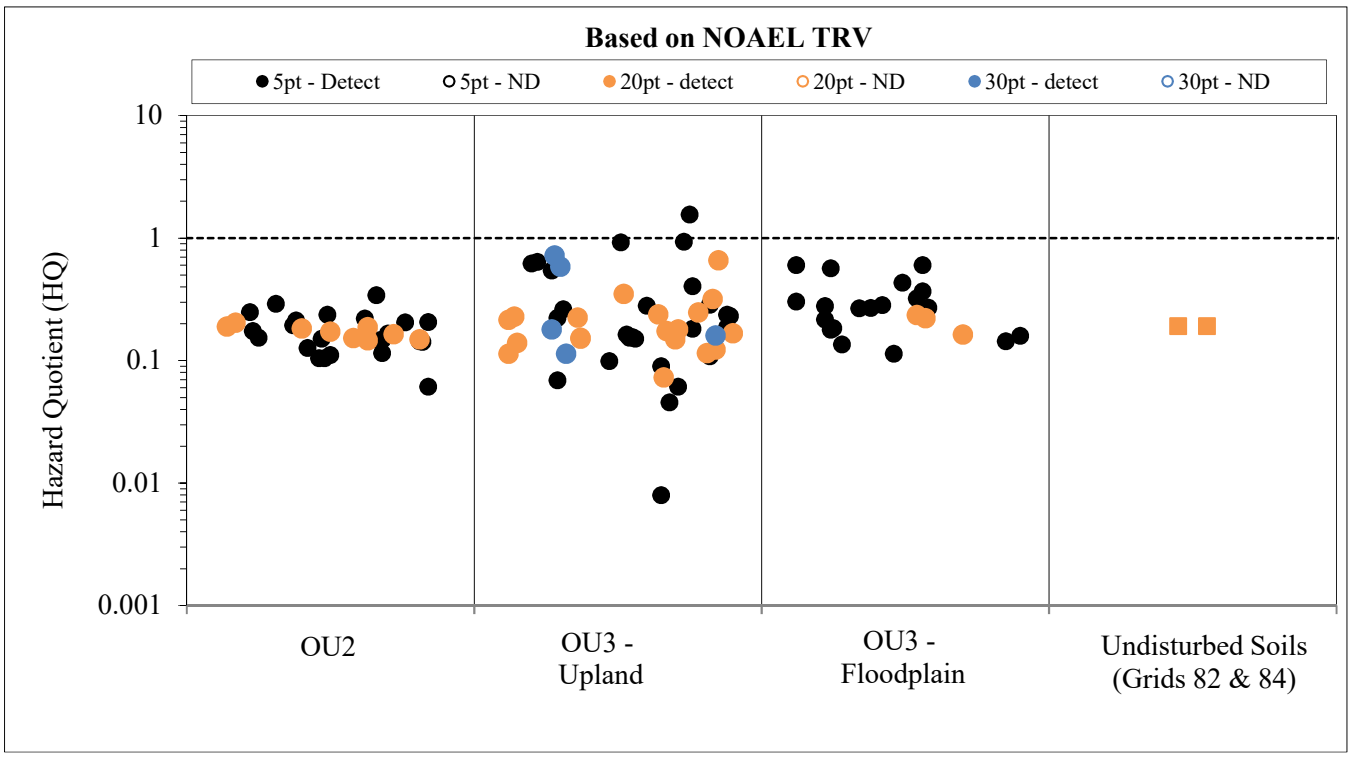
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	0	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Food by Exposure Unit/Soil Type

Vanadium





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

Vanadium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.046919	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.053994	detect	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.042451	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.041706	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.053622	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.058091	detect	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.043568	detect	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.052133	detect	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.049154	detect	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.08304	detect	1	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.017502	detect	1	0	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.04394	detect	1	0	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.040589	detect	1	0	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.041706	detect	1	0	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.031652	detect	1	0	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.040961	detect	1	0	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.055484	detect	1	0	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.049898	detect	1	0	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.060697	detect	1	0	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.042078	detect	1	0	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.03612	detect	1	0	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.097562	detect	1	0	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.071124	detect	1	0	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.062931	detect	1	0	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.043196	detect	1	0	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.058835	detect	1	0	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.047292	detect	1	0	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.058463	detect	1	0	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.032769	detect	1	0	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.067772	detect	1	0	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.02979	detect	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.02979	detect	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

Vanadium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.166452	detect	1	0	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.266248	detect	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.443126	detect	1	0	<1.0	**1.6**
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.035003	detect	1	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.032397	detect	1	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.070379	detect	1	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.04394	detect	1	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.061442	detect	1	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.039844	detect	1	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.042451	detect	1	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.068145	detect	1	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.099797	detect	1	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.047664	detect	1	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.188422	detect	1	0	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.065166	detect	1	0	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.051388	detect	1	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.049898	detect	1	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.043196	detect	1	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.09086	detect	1	0	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.064049	detect	1	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.032769	detect	1	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.115436	detect	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.063676	detect	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.154908	detect	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.043196	detect	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.030907	detect	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.025694	detect	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.176506	detect	1	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.019736	detect	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.080061	detect	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.262897	detect	1	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.053622	detect	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.020853	detect	1	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.017502	detect	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.002271	detect	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.013033	detect	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.042823	detect	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.045802	detect	1	0	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.051388	detect	1	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.05176	detect	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.182091	detect	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.206296	detect	1	0	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.044313	detect	1	0	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.046547	detect	1	0	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	0.08155	detect	1	0	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	0.074847	detect	1	0	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.04394	detect	1	0	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.028301	detect	1	0	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.067772	detect	1	0	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.06591	detect	1	0	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.032397	detect	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

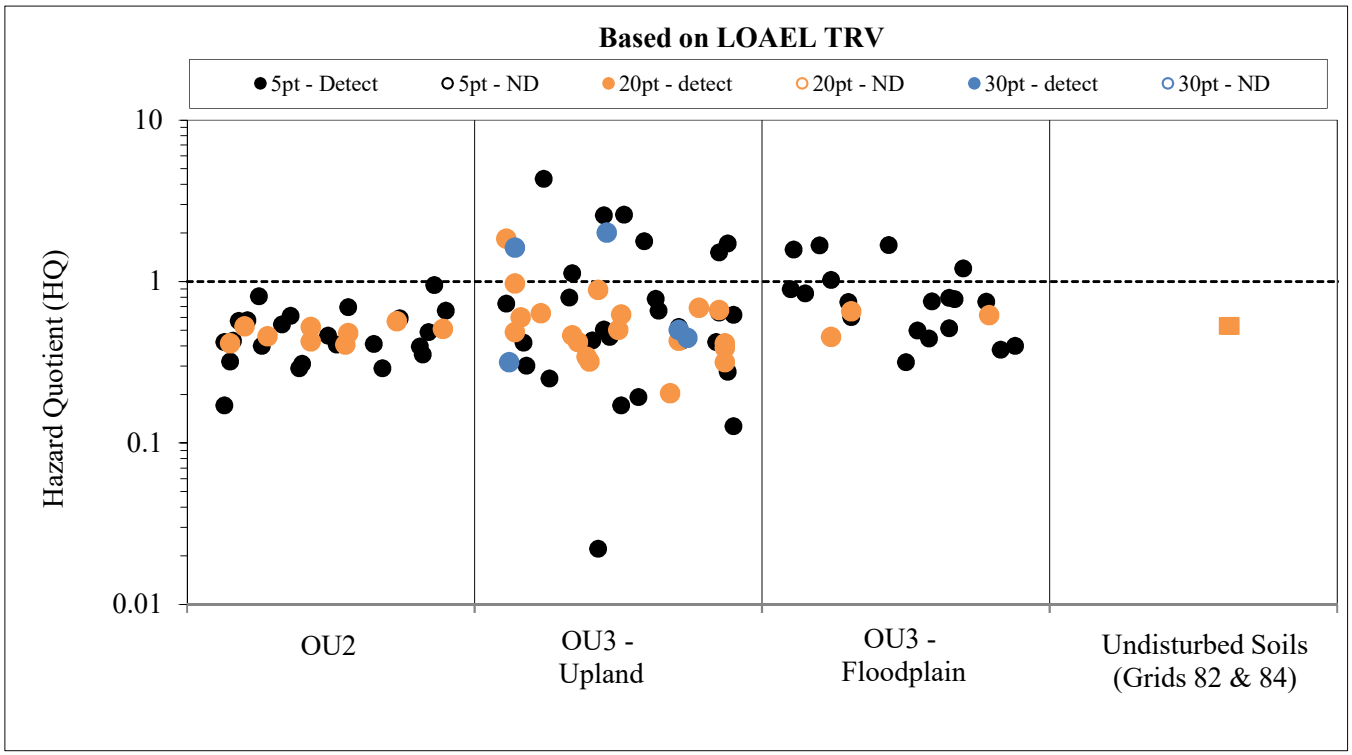
Vanadium

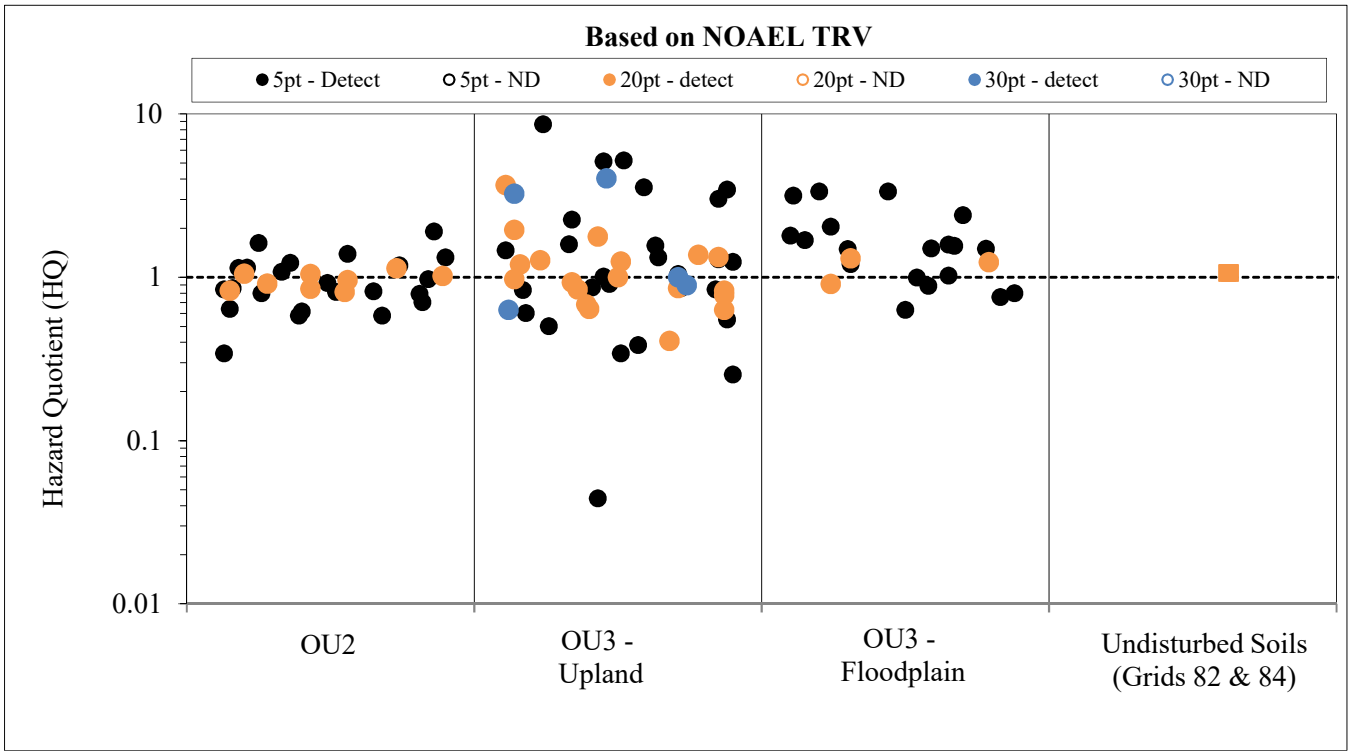
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.046547	detect	1	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.067028	detect	1	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.063304	detect	1	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.079688	detect	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.032397	detect	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	0.172037	detect	1	0	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	0.061814	detect	1	0	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	0.091977	detect	1	0	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	0.171665	detect	1	0	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	0.086391	detect	1	0	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.051015	detect	1	0	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	0.076709	detect	1	0	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.076337	detect	1	0	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.081178	detect	1	0	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.077082	detect	1	0	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.04543	detect	1	0	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.052505	detect	1	0	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	0.161983	detect	1	0	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	0.123256	detect	1	0	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	0.038727	detect	1	0	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.040961	detect	1	0	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	0.104637	detect	1	0	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.054367	detect	1	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.054367	detect	1	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Surface Soil by Exposure Unit/Soil Type

Vanadium





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Vanadium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	12.6	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	14.5	detect	1	0	<1.0	**1.1**
	Grid 14	Grid 14-SSComp-01_20171017_NM	11.4	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	11.2	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	14.4	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	15.6	detect	1	0	<1.0	**1.1**
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	11.7	detect	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	14	detect	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	13.2	detect	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	22.3	detect	1	0	<1.0	**1.6**
	SB2a,3a-IN	SB2a-IN-(0-2)	4.7	detect	1	0	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	11.8	detect	1	0	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	10.9	detect	1	0	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	11.2	detect	1	0	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	8.5	detect	1	0	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	11	detect	1	0	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	14.9	detect	1	0	<1.0	**1.1**
	SS16-IN	SS16-IN-(0-2)c	13.4	detect	1	0	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	16.3	detect	1	0	<1.0	**1.2**
	SS1-IN	SS1-IN-(0-2)c	11.3	detect	1	0	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	9.7	detect	1	0	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	26.2	detect	1	0	<1.0	**1.9**
	SS33-IN	SS33-IN-(0-2)c	19.1	detect	1	0	<1.0	**1.4**
	SS3-IN	SS3-IN-(0-2)c	16.9	detect	1	0	<1.0	**1.2**
	SS4-IN	SS4-IN-(0-2)c	11.6	detect	1	0	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	15.8	detect	1	0	<1.0	**1.1**
	SS6-IN	SS6-IN-(0-2)c	12.7	detect	1	0	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	15.7	detect	1	0	<1.0	**1.1**
	SS8-IN	SS8-IN-(0-2)c	8.8	detect	1	0	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	18.2	detect	1	0	<1.0	**1.3**
	HDPT-SS	BACKFILL-HDPT-SS	8	detect	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	8	detect	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Vanadium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	44.7	detect	1	0	**1.6**	**3.2**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	71.5	detect	1	0	**2.6**	**5.2**
	CRP-1	CRP-1-SS_4/10/14_NM	119	detect	1	0	**4.3**	**8.6**
	Grid 27	Grid 27-SSComp-01_20171019_NM	9.4	detect	1	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	8.7	detect	1	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	18.9	detect	1	0	<1.0	**1.4**
	Grid 30	Grid 30-SSComp-01_20171020_NM	11.8	detect	1	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	16.5	detect	1	0	<1.0	**1.2**
	Grid 34	Grid 34-SSComp-01_20171019_NM	10.7	detect	1	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	11.4	detect	1	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	18.3	detect	1	0	<1.0	**1.3**
	Grid 43	Grid 43-SSComp-01_20171023_NM	26.8	detect	1	0	<1.0	**1.9**
	Grid 44	Grid 44-SSComp-01_20171023_NM	12.8	detect	1	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	50.6	detect	1	0	**1.8**	**3.7**
	Grid 53	Grid 53-SSComp-01_20171020_NM	17.5	detect	1	0	<1.0	**1.3**
	Grid 60	Grid 60-SSComp-01_20171023_NM	13.8	detect	1	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	13.4	detect	1	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	11.6	detect	1	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	24.4	detect	1	0	<1.0	**1.8**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	17.2	detect	1	0	<1.0	**1.3**
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	8.8	detect	1	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	31	detect	1	0	**1.1**	**2.3**
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	17.1	detect	1	0	<1.0	**1.2**
	HP18-1	HP18-1-SS_4/10/14_NM	41.6	detect	1	0	**1.5**	**3.0**
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	11.6	detect	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	8.3	detect	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	6.9	detect	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	47.4	detect	1	0	**1.7**	**3.4**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	5.3	detect	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	21.5	detect	1	0	<1.0	**1.6**
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	70.6	detect	1	0	**2.6**	**5.1**
	P17-BH1	P17-BH1-SS_4/3/14_NM	14.4	detect	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	5.6	detect	1	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	4.7	detect	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.61	detect	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	3.5	detect	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	11.5	detect	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	12.3	detect	1	0	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	13.8	detect	1	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	13.9	detect	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	48.9	detect	1	0	**1.8**	**3.6**
	SPP	SPP-SSComp-01_20171025_NM	55.4	detect	1	0	**2.0**	**4.0**
	SS1,2-HP18	SS1-HP18-(0-2)c	11.9	detect	1	0	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	12.5	detect	1	0	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	21.9	detect	1	0	<1.0	**1.6**
	SS15,16-HP9	SS15-HP9-(0-2)c	20.1	detect	1	0	<1.0	**1.5**
	SS3,4-HP16	SS3-HP16-(0-2)c	11.8	detect	1	0	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	7.6	detect	1	0	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	18.2	detect	1	0	<1.0	**1.3**
	SS9,10-HP12	SS9-HP12-(0-2)c	17.7	detect	1	0	<1.0	**1.3**
	SWBA	SWBA-SSComp-01_20171024_NM	8.7	detect	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Vanadium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	12.5	detect	1	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	18	detect	1	0	<1.0	**1.3**
	Grid 94	Grid 94-SSComp-01_20171026_NM	17	detect	1	0	<1.0	**1.2**
	HP13a-1	HP13A-1-SS_4/10/14_NM	21.4	detect	1	0	<1.0	**1.6**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	8.7	detect	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	46.2	detect	1	0	**1.7**	**3.4**
	SE11-HP11	SE11-HP11-(0-2)c	16.6	detect	1	0	<1.0	**1.2**
	SE12-HP12	SE12-HP12-(0-2)c	24.7	detect	1	0	<1.0	**1.8**
	SE13-HP12	SE13-HP12-(0-2)c	46.1	detect	1	0	**1.7**	**3.4**
	SE14-HP13	SE14-HP13-(0-2)c	23.2	detect	1	0	<1.0	**1.7**
	SE15-HP13	SE15-HP13-(0-2)c	13.7	detect	1	0	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	20.6	detect	1	0	<1.0	**1.5**
	SE17-HP13a	SE17-HP13a-(0-2)c	20.5	detect	1	0	<1.0	**1.5**
	SE1-HP1a	SE1-HP1a-(0-2)c	21.8	detect	1	0	<1.0	**1.6**
	SE2-HP1a	SE2-HP1a-(0-2)c	20.7	detect	1	0	<1.0	**1.5**
	SE3-HP1	SE3-HP1-(0-2)c	12.2	detect	1	0	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	14.1	detect	1	0	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	43.5	detect	1	0	**1.6**	**3.2**
	SE6-HP7	SE6-HP7-(0-2)c	33.1	detect	1	0	**1.2**	**2.4**
	SE7-HP7	SE7-HP7-(0-2)c	10.4	detect	1	0	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	11	detect	1	0	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	28.1	detect	1	0	<1.0	**2.0**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	14.6	detect	1	0	<1.0	**1.1**
	Grid 84	Grid 84-SSComp-01_20171026_NM	14.6	detect	1	0	<1.0	**1.1**

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of River Surface Water

Vanadium

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0006	detect	0.344	0.688	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0013	detect	0.344	0.688	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0019	detect	0.344	0.688	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0006	detect	0.344	0.688	<1.0	<1.0
	51-CFR	SW51-CFR	0.0007	detect	0.344	0.688	<1.0	<1.0
	52-CFR	SW52-CFR	0.0008	detect	0.344	0.688	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0003	detect	0.344	0.688	<1.0	<1.0
	54-CFR	SW54-CFR	0.0007	detect	0.344	0.688	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0006	detect	0.344	0.688	<1.0	<1.0
	55-CFR	SW55-CFR	0.0007	detect	0.344	0.688	<1.0	<1.0
	56-CFR	SW56-CFR	0.0007	detect	0.344	0.688	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0007	detect	0.344	0.688	<1.0	<1.0
	57-CFR	SW57-CFR	0.0003	ND	0.344	0.688	<1.0	<1.0
	58-CFR	SW58-CFR	0.0009	detect	0.344	0.688	<1.0	<1.0
	59-CFR	SW59-CFR	0.0006	detect	0.344	0.688	<1.0	<1.0
	60-CFR	SW60-CFR	0.0009	detect	0.344	0.688	<1.0	<1.0
	61-CFR	SW61-CFR	0.0008	detect	0.344	0.688	<1.0	<1.0
	62-CFR	SW62-CFR	0.0008	detect	0.344	0.688	<1.0	<1.0
	63-CFR	SW63-CFR	0.0007	detect	0.344	0.688	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of Creek Surface Water

Vanadium

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.0009	detect	0.344	0.688	<1.0	<1.0
	43-OK	SW43-OK	0.001	detect	0.344	0.688	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.0012	detect	0.344	0.688	<1.0	<1.0
	37-LV	SW37-LV	0.001	detect	0.344	0.688	<1.0	<1.0
	39-LV	SW39-LV	0.0011	detect	0.344	0.688	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of Pond Surface Water

Vanadium

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0009	detect	0.344	0.688	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0053	detect	0.344	0.688	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0069	detect	0.344	0.688	<1.0	<1.0
73-P5	SW73-P5	0.0036	detect	0.344	0.688	<1.0	<1.0
71-HP7	SW71-HP7	0.0045	detect	0.344	0.688	<1.0	<1.0
72-HP2	SW72-HP2	0.0041	detect	0.344	0.688	<1.0	<1.0
75-HP10	SW75-HP10	0.0032	detect	0.344	0.688	<1.0	<1.0
67-HP12	SW67-HP12	0.0045	detect	0.344	0.688	<1.0	<1.0
68-IBJ	SW68-IBJ	0.001	detect	0.344	0.688	<1.0	<1.0
66-HP13	SW66-HP13	0.0046	detect	0.344	0.688	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0058	detect	0.344	0.688	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0069	detect	0.344	0.688	<1.0	<1.0
70-CWD	SW70-CWD	0.0014	detect	0.344	0.688	<1.0	<1.0
64-HP18	SW64-HP18	0.0077	detect	0.344	0.688	<1.0	<1.0

#N/A = not analyzed

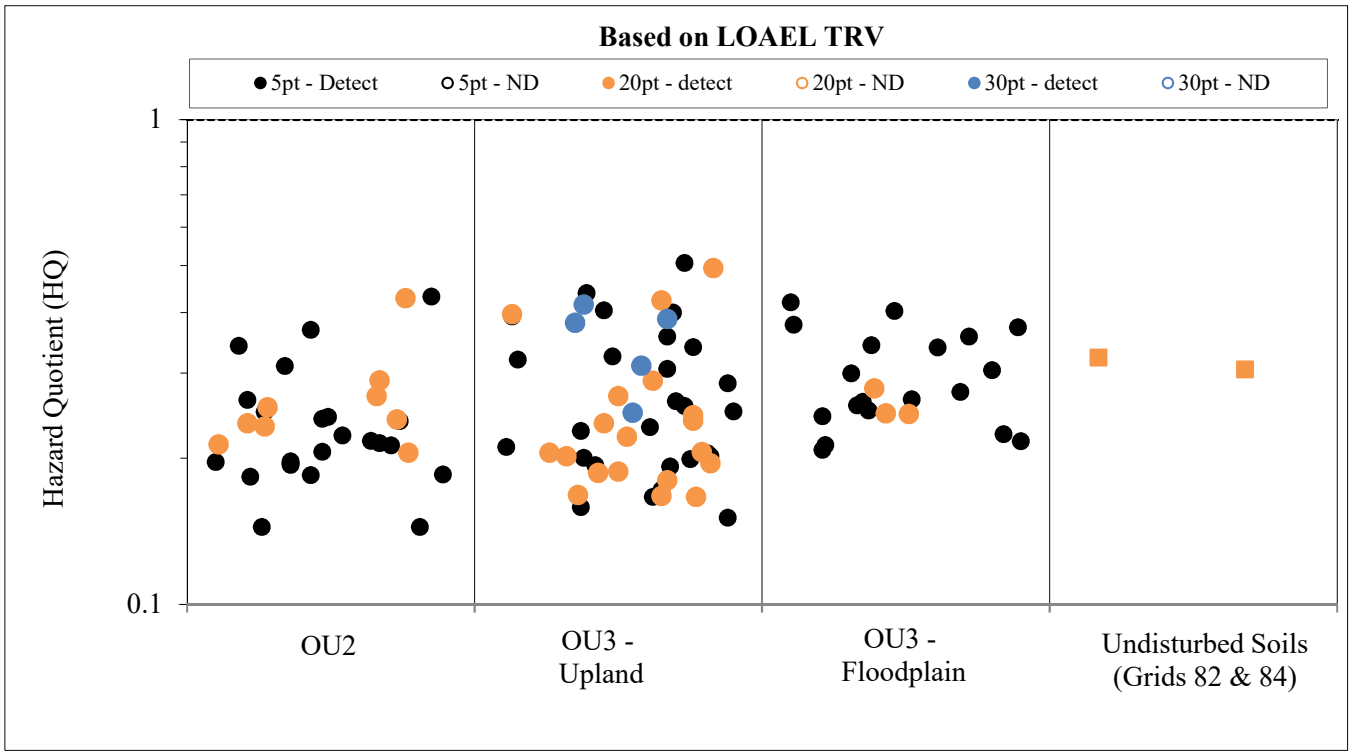
(a) Non-detects are evaluated at 1/2 the reported value.

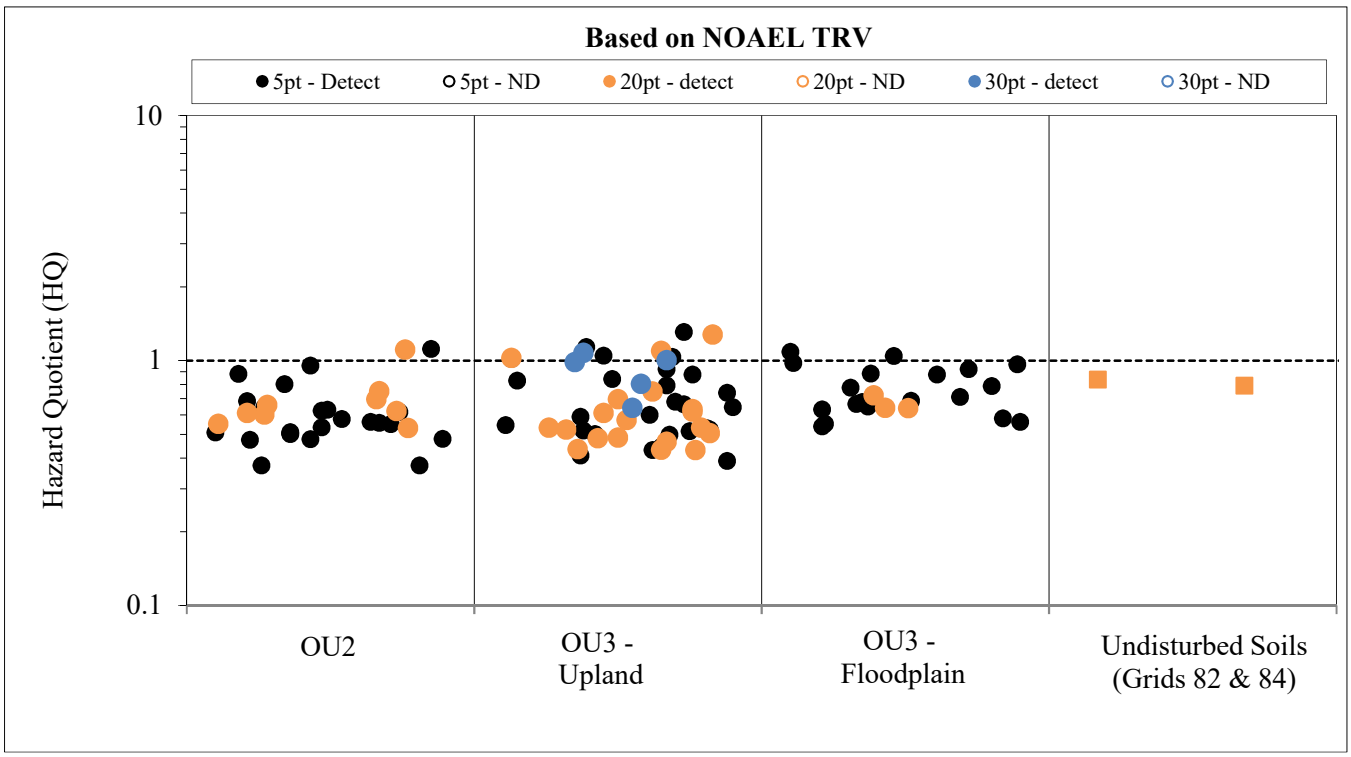
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Food by Exposure Unit/Soil Type

Zinc





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

Zinc

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	41.11867	detect	171	66	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	34.11772	detect	171	66	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	36.14247	detect	171	66	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	33.53125	detect	171	66	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	38.15627	detect	171	66	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	30.31651	detect	171	66	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	29.12291	detect	171	66	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	60.79131	detect	171	66	<1.0	**1.1**
	Grid 9	Grid 9-SSComp-01_20171018_NM	33.01377	detect	171	66	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	33.86856	detect	171	66	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	26.01409	detect	171	66	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	27.49613	detect	171	66	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	37.46701	detect	171	66	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	30.83394	detect	171	66	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	30.51865	detect	171	66	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	34.55294	detect	171	66	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	35.38273	detect	171	66	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	52.26156	detect	171	66	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	26.21315	detect	171	66	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	26.2789	detect	171	66	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	171	66	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	27.89426	detect	171	66	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	171	66	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	171	66	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	61.24805	detect	171	66	<1.0	**1.1**
	SS33-IN	SS33-IN-(0-2)c	48.40167	detect	171	66	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	27.69648	detect	171	66	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	27.97268	detect	171	66	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	29.26786	detect	171	66	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	31.65318	detect	171	66	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	34.22744	detect	171	66	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	44.01757	detect	171	66	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	30.1804	detect	171	66	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	20.47595	detect	171	66	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	20.47595	detect	171	66	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

Zinc

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	55.03333	detect	171	66	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	50.63861	detect	171	66	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	43.39193	detect	171	66	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	23.64179	detect	171	66	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	23.85175	detect	171	66	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	25.56166	detect	171	66	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	26.6247	detect	171	66	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	26.47441	detect	171	66	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	23.72092	detect	171	66	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	28.66144	detect	171	66	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	29.21365	detect	171	66	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	31.43205	detect	171	66	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	34.80686	detect	171	66	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	56.3349	detect	171	66	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	38.15627	detect	171	66	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	41.01915	detect	171	66	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	33.50287	detect	171	66	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	33.95197	detect	171	66	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	70.13032	detect	171	66	<1.0	**1.3**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	29.15927	detect	171	66	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	27.73623	detect	171	66	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	35.43427	detect	171	66	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	27.45575	detect	171	66	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	37.23228	detect	171	66	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	29.04995	detect	171	66	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	21.38877	detect	171	66	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	171	66	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	22.50858	detect	171	66	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	55.74962	detect	171	66	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	28.43515	detect	171	66	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	29.93956	detect	171	66	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	62.24318	detect	171	66	<1.0	**1.1**
	P17-BH1	P17-BH1-SS_4/3/14_NM	71.79019	detect	171	66	<1.0	**1.3**
	P3	P3-SSComp-01_20171020_NM	60.06922	detect	171	66	<1.0	**1.1**
	P3-BH1	P3-BH1-SS_4/3/14_NM	48.17567	detect	171	66	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	28.28249	detect	171	66	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	36.3896	detect	171	66	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	40.51519	detect	171	66	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	44.10571	detect	171	66	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	54.05311	detect	171	66	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	57.36336	detect	171	66	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	56.73858	detect	171	66	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	58.95806	detect	171	66	<1.0	**1.1**
	SS1,2-HP18	SS1-HP18-(0-2)c	23.64179	detect	171	66	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	24.41258	detect	171	66	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	46.0546	detect	171	66	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	45.39297	detect	171	66	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	28.6427	detect	171	66	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	27.29315	detect	171	66	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	32.89682	detect	171	66	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	32.31587	detect	171	66	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	35.22731	detect	171	66	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Food

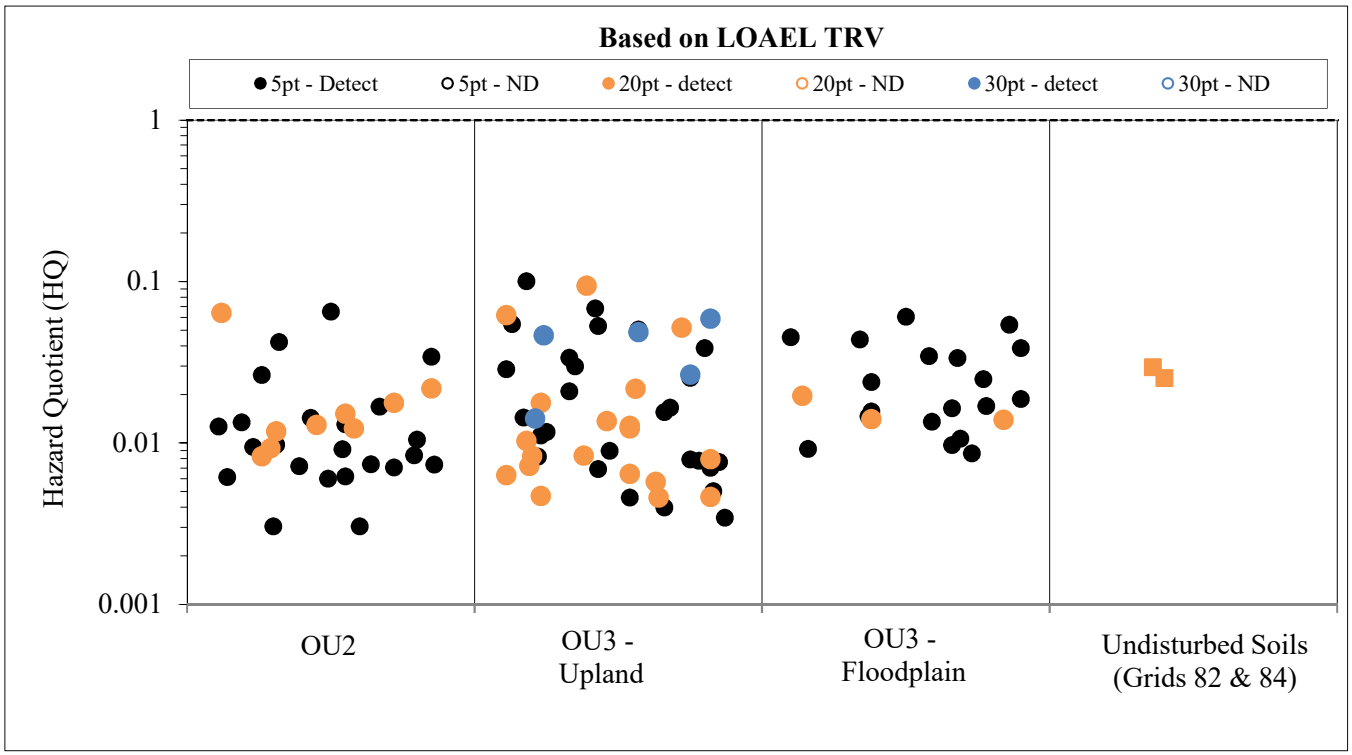
Zinc

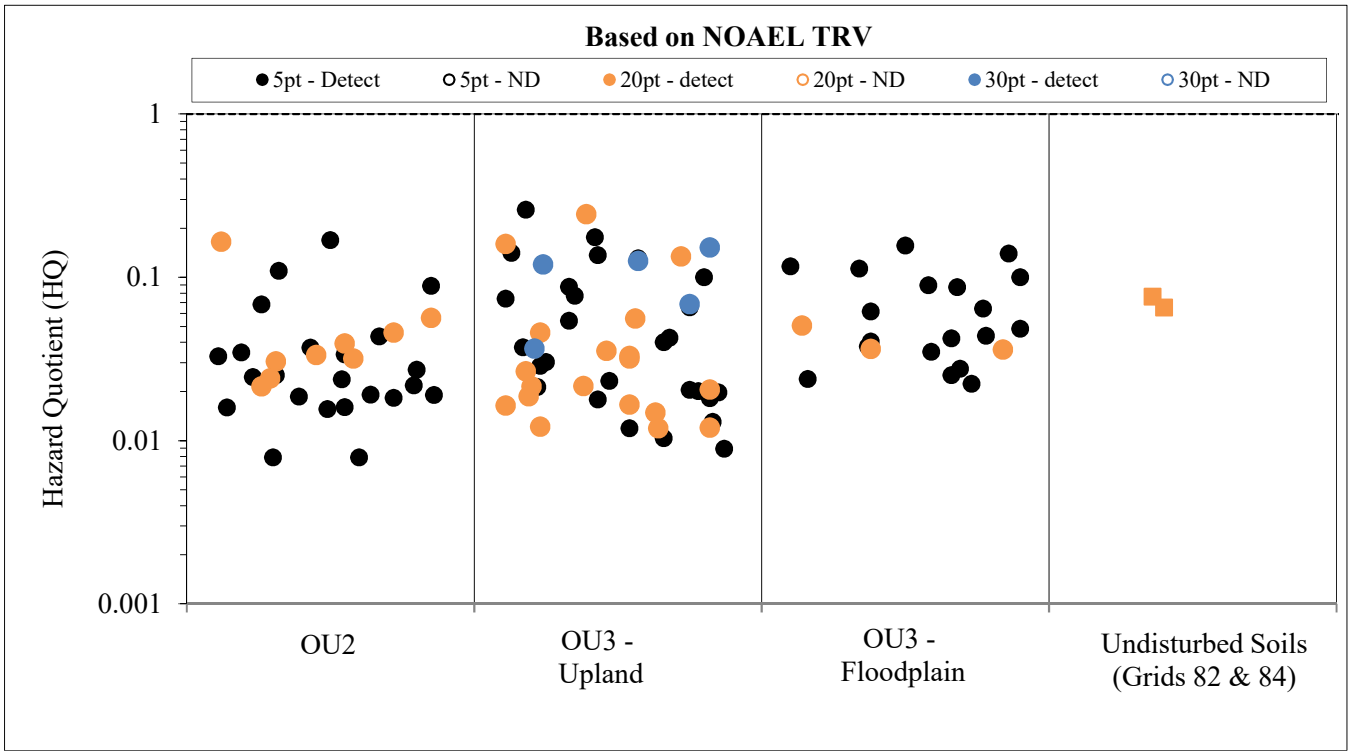
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	35.03133	detect	171	66	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	35.14915	detect	171	66	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	39.57963	detect	171	66	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	36.51207	detect	171	66	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	30.23157	detect	171	66	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	57.19411	detect	171	66	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	43.11897	detect	171	66	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	35.63914	detect	171	66	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	53.55155	detect	171	66	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	31.84058	detect	171	66	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	48.55133	detect	171	66	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	38.93393	detect	171	66	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	37.58342	detect	171	66	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	42.47022	detect	171	66	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	48.09994	detect	171	66	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	30.80102	detect	171	66	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	34.67363	detect	171	66	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	52.9132	detect	171	66	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	59.54442	detect	171	66	<1.0	**1.1**
	SE7-HP7	SE7-HP7-(0-2)c	29.53626	detect	171	66	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	37.11393	detect	171	66	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	50.63861	detect	171	66	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	45.8084	detect	171	66	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	43.30127	detect	171	66	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Robin from Ingestion of Surface Soil by Exposure Unit/Soil Type

Zinc





APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Zinc

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	149	detect	171	66	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	88.5	detect	171	66	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	104	detect	171	66	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	84.3	detect	171	66	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	121	detect	171	66	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	63.5	detect	171	66	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	56.7	detect	171	66	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	437	detect	171	66	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	80.7	detect	171	66	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	86.7	detect	171	66	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	41.2	detect	171	66	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	48.2	detect	171	66	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	115	detect	171	66	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	66.6	detect	171	66	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	64.7	detect	171	66	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	91.7	detect	171	66	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	98	detect	171	66	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	289	detect	171	66	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	42.1	detect	171	66	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	42.4	detect	171	66	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	171	66	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	50.2	detect	171	66	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	171	66	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	171	66	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	446	detect	171	66	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	234	detect	171	66	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	49.2	detect	171	66	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	50.6	detect	171	66	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	57.5	detect	171	66	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	71.7	detect	171	66	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	89.3	detect	171	66	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	180	detect	171	66	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	62.7	detect	171	66	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	20.83333	detect	171	66	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	20.83333	detect	171	66	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Zinc

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	333	detect	171	66	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	265	detect	171	66	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	173	detect	171	66	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	31.4	detect	171	66	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	32.2	detect	171	66	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	39.2	detect	171	66	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	44	detect	171	66	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	43.3	detect	171	66	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	31.7	detect	171	66	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	54.2	detect	171	66	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	57.2	detect	171	66	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	70.3	detect	171	66	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	93.6	detect	171	66	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	355	detect	171	66	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	121	detect	171	66	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	148	detect	171	66	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	84.1	detect	171	66	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	87.3	detect	171	66	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	644	detect	171	66	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	56.9	detect	171	66	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	49.4	detect	171	66	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	98.4	detect	171	66	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	48	detect	171	66	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	113	detect	171	66	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	56.3	detect	171	66	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	23.6	detect	171	66	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	171	66	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	27.3	detect	171	66	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	345	detect	171	66	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	53	detect	171	66	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	61.3	detect	171	66	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	466	detect	171	66	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	686	detect	171	66	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	423	detect	171	66	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	231	detect	171	66	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	52.2	detect	171	66	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	106	detect	171	66	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	143	detect	171	66	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	181	detect	171	66	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	317	detect	171	66	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	373	detect	171	66	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	362	detect	171	66	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	402	detect	171	66	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	31.4	detect	171	66	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	34.4	detect	171	66	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	204	detect	171	66	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	196	detect	171	66	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	54.1	detect	171	66	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	47.2	detect	171	66	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	79.9	detect	171	66	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	76	detect	171	66	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	96.8	detect	171	66	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Robin from Ingestion of Surface Soil

Zinc

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	95.3	detect	171	66	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	96.2	detect	171	66	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	134	detect	171	66	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	107	detect	171	66	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	63	detect	171	66	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	370	detect	171	66	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	170	detect	171	66	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	100	detect	171	66	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	309	detect	171	66	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	72.9	detect	171	66	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	236	detect	171	66	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	128	detect	171	66	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	116	detect	171	66	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	163	detect	171	66	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	230	detect	171	66	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	66.4	detect	171	66	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	92.6	detect	171	66	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	299	detect	171	66	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	413	detect	171	66	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	59	detect	171	66	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	112	detect	171	66	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	265	detect	171	66	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	201	detect	171	66	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	172	detect	171	66	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of River Surface Water

Zinc

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0045	detect	66.1	171	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0139	detect	66.1	171	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0153	detect	66.1	171	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0035	detect	66.1	171	<1.0	<1.0
	51-CFR	SW51-CFR	0.0044	detect	66.1	171	<1.0	<1.0
	52-CFR	SW52-CFR	0.0063	detect	66.1	171	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0268	detect	66.1	171	<1.0	<1.0
	54-CFR	SW54-CFR	0.0062	detect	66.1	171	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0026	detect	66.1	171	<1.0	<1.0
	55-CFR	SW55-CFR	0.0041	detect	66.1	171	<1.0	<1.0
	56-CFR	SW56-CFR	0.0039	detect	66.1	171	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0025	detect	66.1	171	<1.0	<1.0
	57-CFR	SW57-CFR	0.0057	detect	66.1	171	<1.0	<1.0
	58-CFR	SW58-CFR	0.0044	detect	66.1	171	<1.0	<1.0
	59-CFR	SW59-CFR	0.0042	detect	66.1	171	<1.0	<1.0
	60-CFR	SW60-CFR	0.0059	detect	66.1	171	<1.0	<1.0
	61-CFR	SW61-CFR	0.005	detect	66.1	171	<1.0	<1.0
	62-CFR	SW62-CFR	0.0092	detect	66.1	171	<1.0	<1.0
	63-CFR	SW63-CFR	0.0036	detect	66.1	171	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of Creek Surface Water

Zinc

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.0045	detect	66.1	171	<1.0	<1.0
	43-OK	SW43-OK	0.0045	detect	66.1	171	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.0024	ND	66.1	171	<1.0	<1.0
	37-LV	SW37-LV	0.0039	detect	66.1	171	<1.0	<1.0
	39-LV	SW39-LV	0.0053	detect	66.1	171	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Robin from Ingestion of Pond Surface Water

Zinc

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0019	ND	66.1	171	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.022	detect	66.1	171	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0096	ND	66.1	171	<1.0	<1.0
73-P5	SW73-P5	0.0096	ND	66.1	171	<1.0	<1.0
71-HP7	SW71-HP7	0.0132	detect	66.1	171	<1.0	<1.0
72-HP2	SW72-HP2	0.0096	ND	66.1	171	<1.0	<1.0
75-HP10	SW75-HP10	0.0096	ND	66.1	171	<1.0	<1.0
67-HP12	SW67-HP12	0.0096	ND	66.1	171	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0031	detect	66.1	171	<1.0	<1.0
66-HP13	SW66-HP13	0.0096	ND	66.1	171	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0127	detect	66.1	171	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.043	detect	66.1	171	<1.0	<1.0
70-CWD	SW70-CWD	0.0027	detect	66.1	171	<1.0	<1.0
64-HP18	SW64-HP18	0.0096	ND	66.1	171	<1.0	<1.0

#N/A = not analyzed

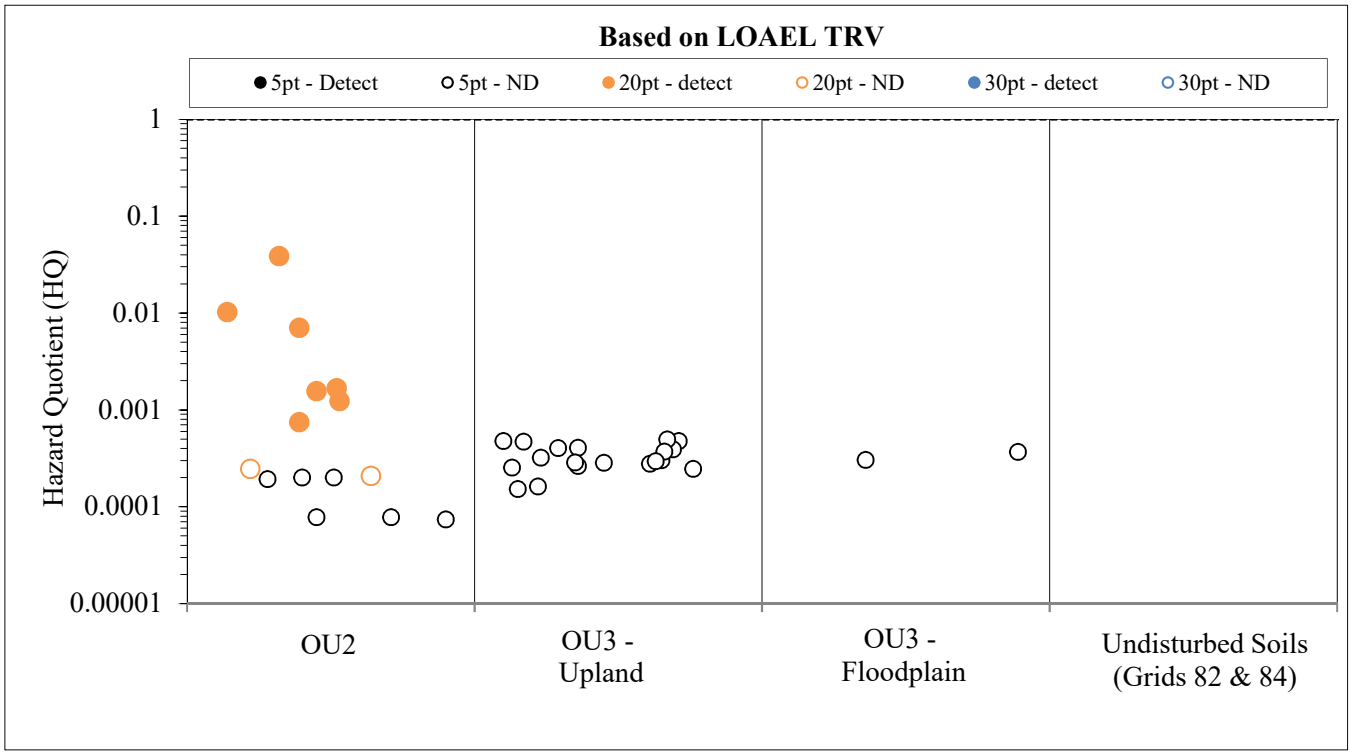
(a) Non-detects are evaluated at 1/2 the reported value.

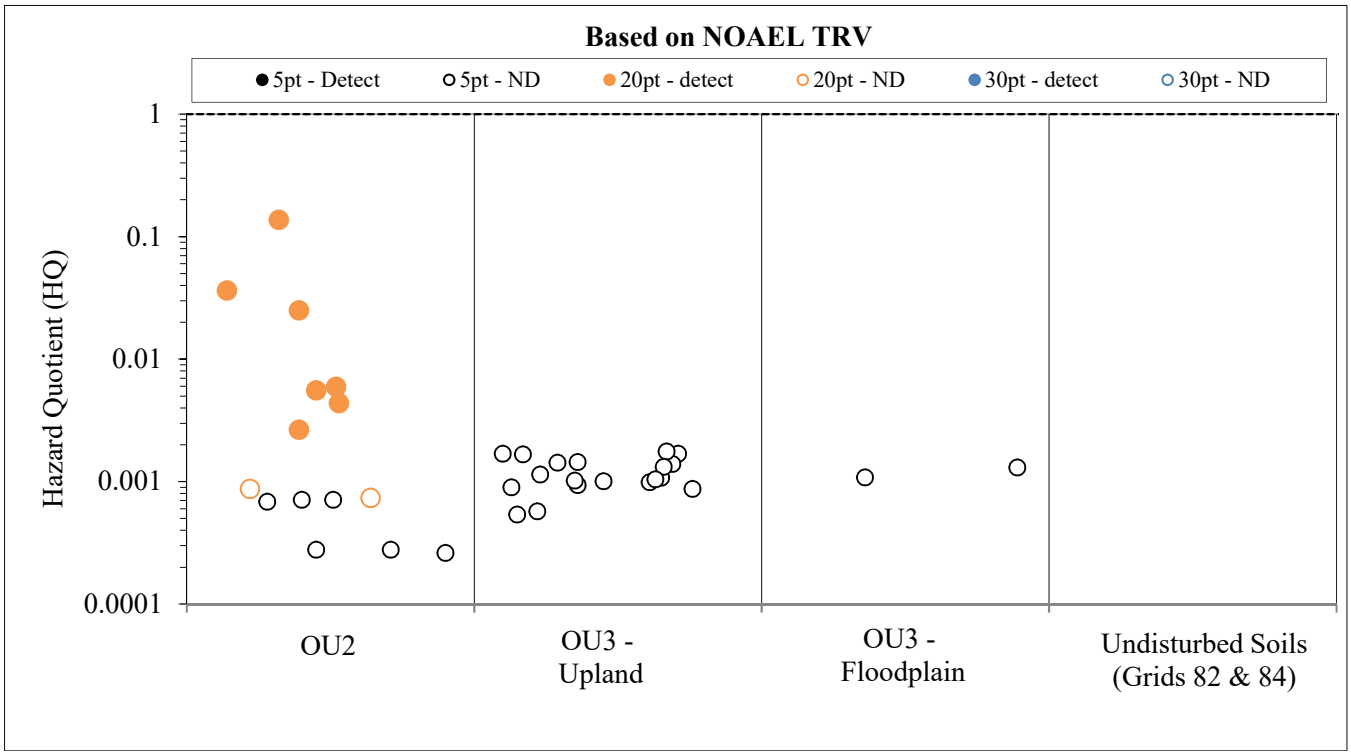
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Food by Exposure Unit/Soil Type

Aroclor-1254





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Aroclor-1254

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.048799	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.001171	ND	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.033605	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.005887	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.007465	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.000991	ND	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.007975	detect	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.184026	detect	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.003555	detect	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.00092	ND	1	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	0.000352	ND	1	0	<1.0	<1.0
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	0.000372	ND	1	0	<1.0	<1.0
	SS31-IN	SS31-IN-(0-2)c	0.000372	ND	1	0	<1.0	<1.0
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.000956	ND	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.000956	ND	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Aroclor-1254

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.002272	ND	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.001331	ND	1	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	0.001936	ND	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.001444	ND	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.002272	ND	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.001356	ND	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.001171	ND	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.000725	ND	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.00187	ND	1	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.001257	ND	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.000771	ND	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.002368	ND	1	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.001778	ND	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.001208	ND	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.001368	ND	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.001406	ND	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.001532	ND	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.001922	ND	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.002245	ND	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

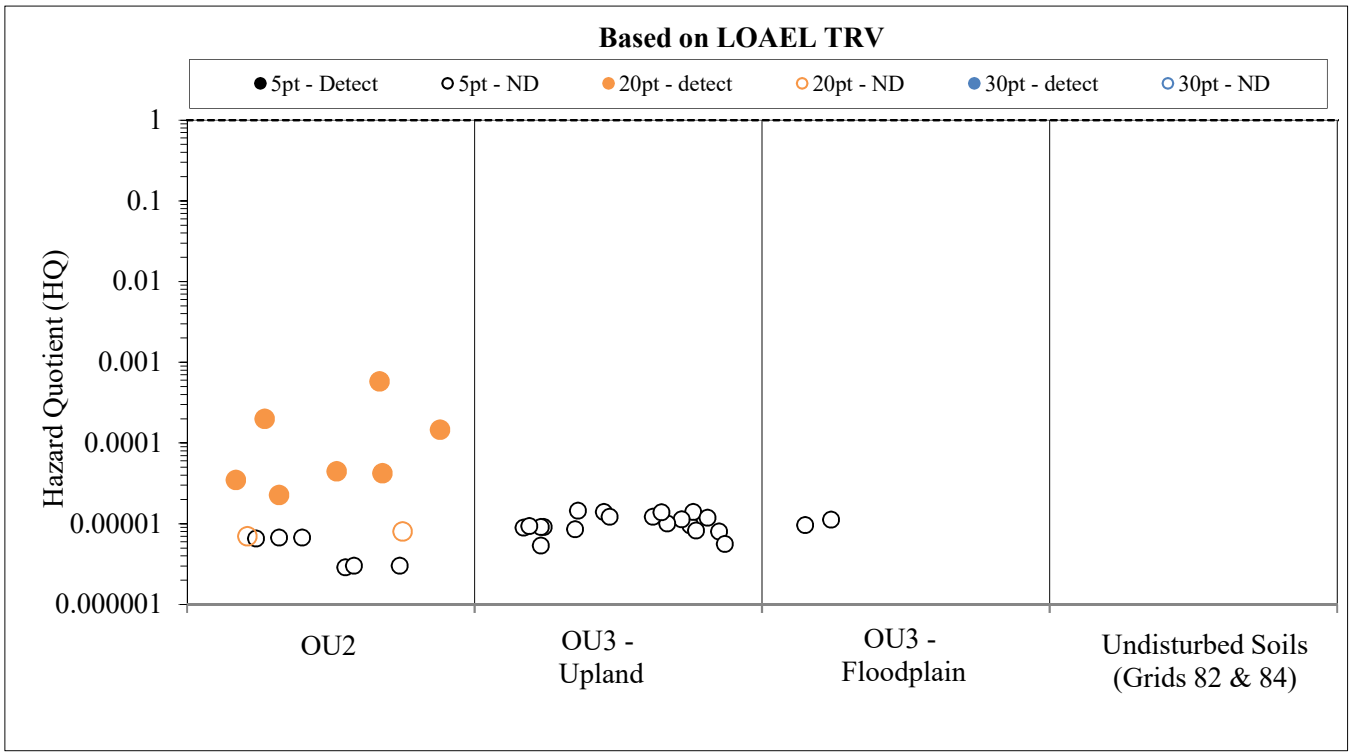
Aroclor-1254

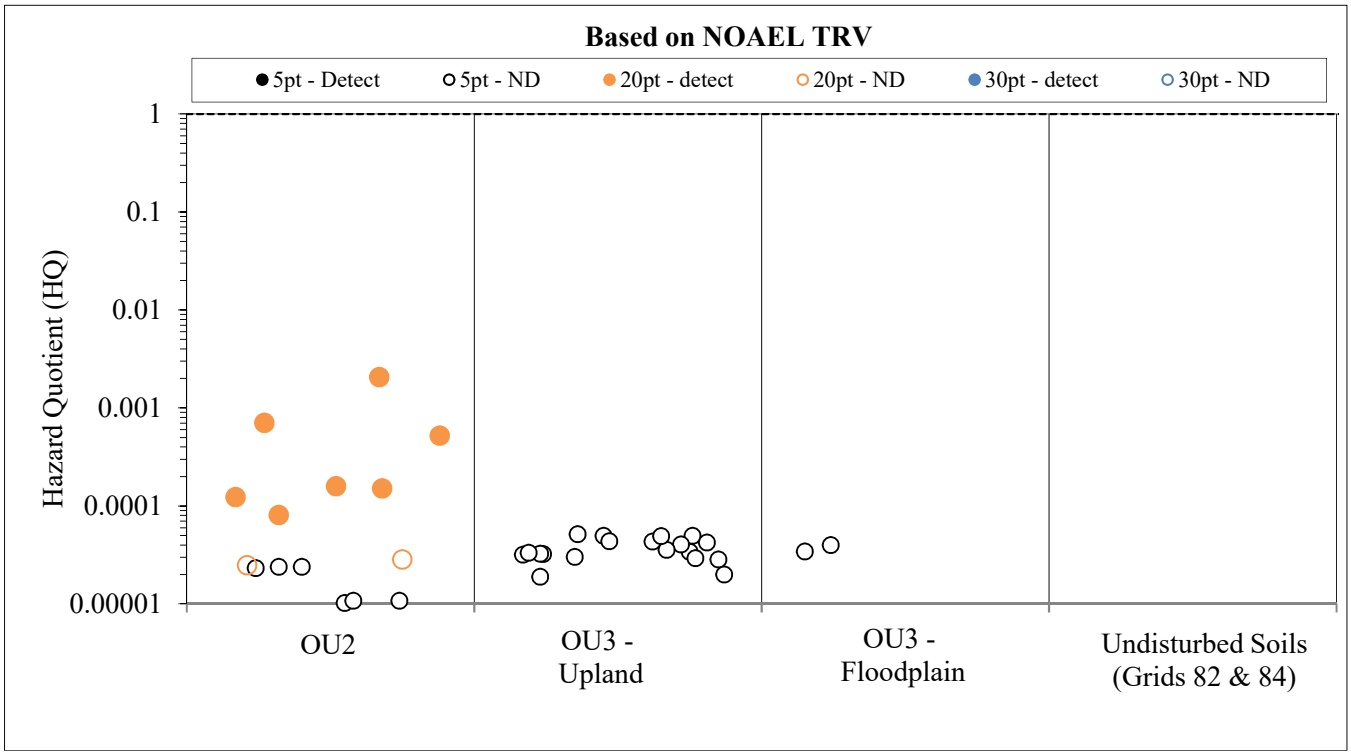
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.001752	ND	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.001456	ND	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Surface Soil by Exposure Unit/Soil Type

Aroclor-1254





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Surface Soil

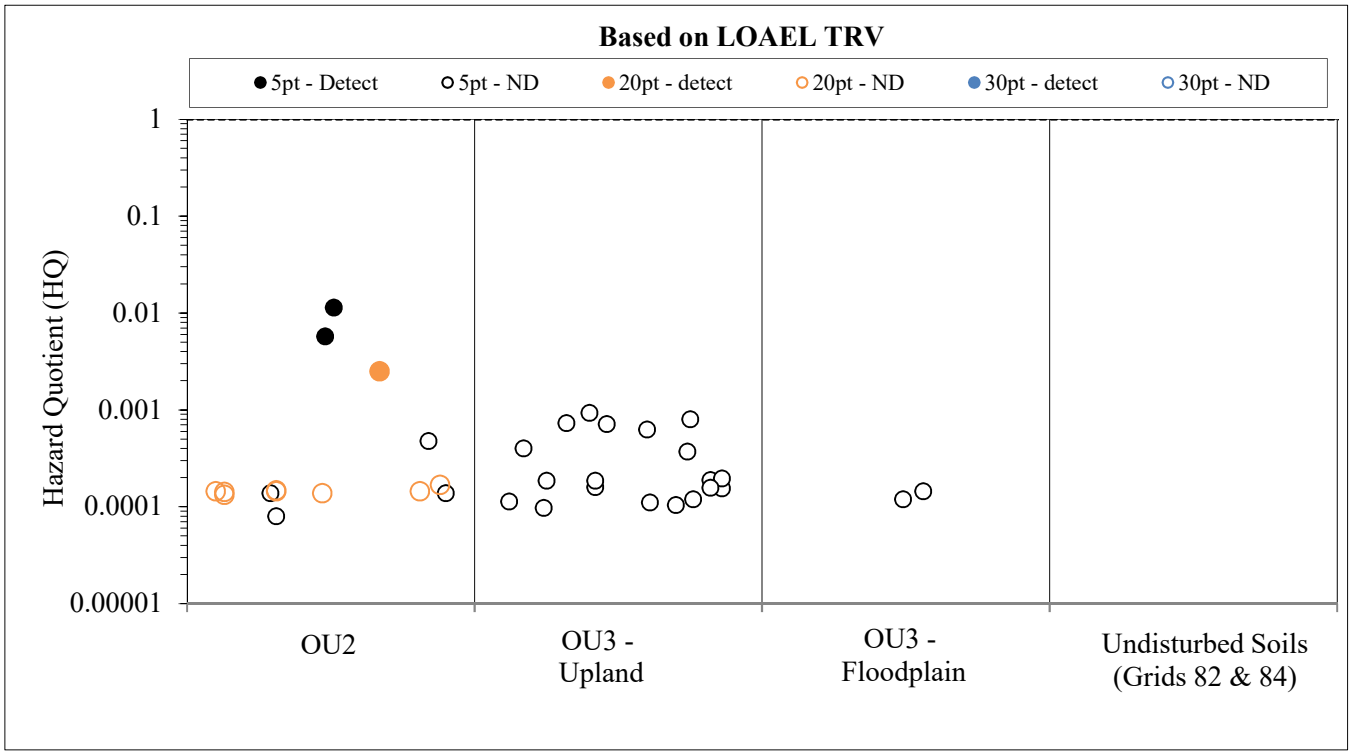
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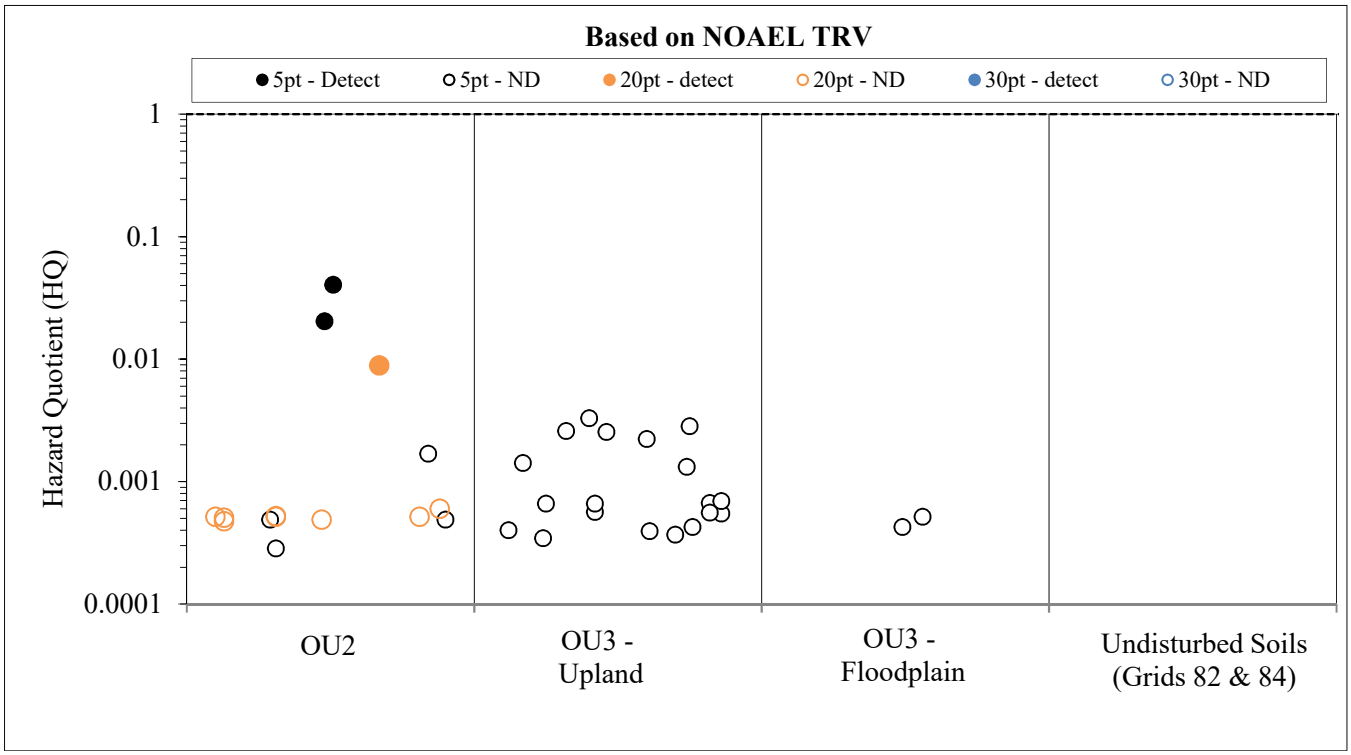
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.141	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.0057	ND	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.104	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.0247	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.0301	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.00495	ND	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.0318	detect	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.413	detect	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.0162	detect	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.00465	ND	1	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	0.00205	ND	1	0	<1.0	<1.0
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	0.00215	ND	1	0	<1.0	<1.0
	SS31-IN	SS31-IN-(0-2)c	0.00215	ND	1	0	<1.0	<1.0
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.0048	ND	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.0048	ND	1	0	<1.0	<1.0
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.00995	ND	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.00635	ND	1	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	0.0087	ND	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.0068	ND	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.00995	ND	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.00645	ND	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.0057	ND	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.0038	ND	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.00845	ND	1	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.00605	ND	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.004	ND	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.0103	ND	1	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.0081	ND	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.00585	ND	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.0065	ND	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.00665	ND	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.00715	ND	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.00865	ND	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.00985	ND	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.008	ND	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.00685	ND	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Food by Exposure Unit/Soil Type

Aroclor-1260





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Aroclor-1260

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.000659	ND	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.000805	ND	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.000637	ND	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.000692	ND	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.011963	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.000681	ND	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.000692	ND	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.000692	ND	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.000703	ND	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.002272	ND	1	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	0.054383	detect	1	0	<1.0	<1.0
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	0.000383	ND	1	0	<1.0	<1.0
	SS31-IN	SS31-IN-(0-2)c	0.027437	detect	1	0	<1.0	<1.0
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.000659	ND	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.000659	ND	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Aroclor-1260

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.000897	ND	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.000528	ND	1	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	0.000759	ND	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.000571	ND	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.000885	ND	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.000539	ND	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.000465	ND	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.001778	ND	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.000737	ND	1	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.000496	ND	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.001909	ND	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.000932	ND	1	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.004429	ND	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.002986	ND	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.003407	ND	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.00348	ND	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.003807	ND	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.000748	ND	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.000885	ND	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

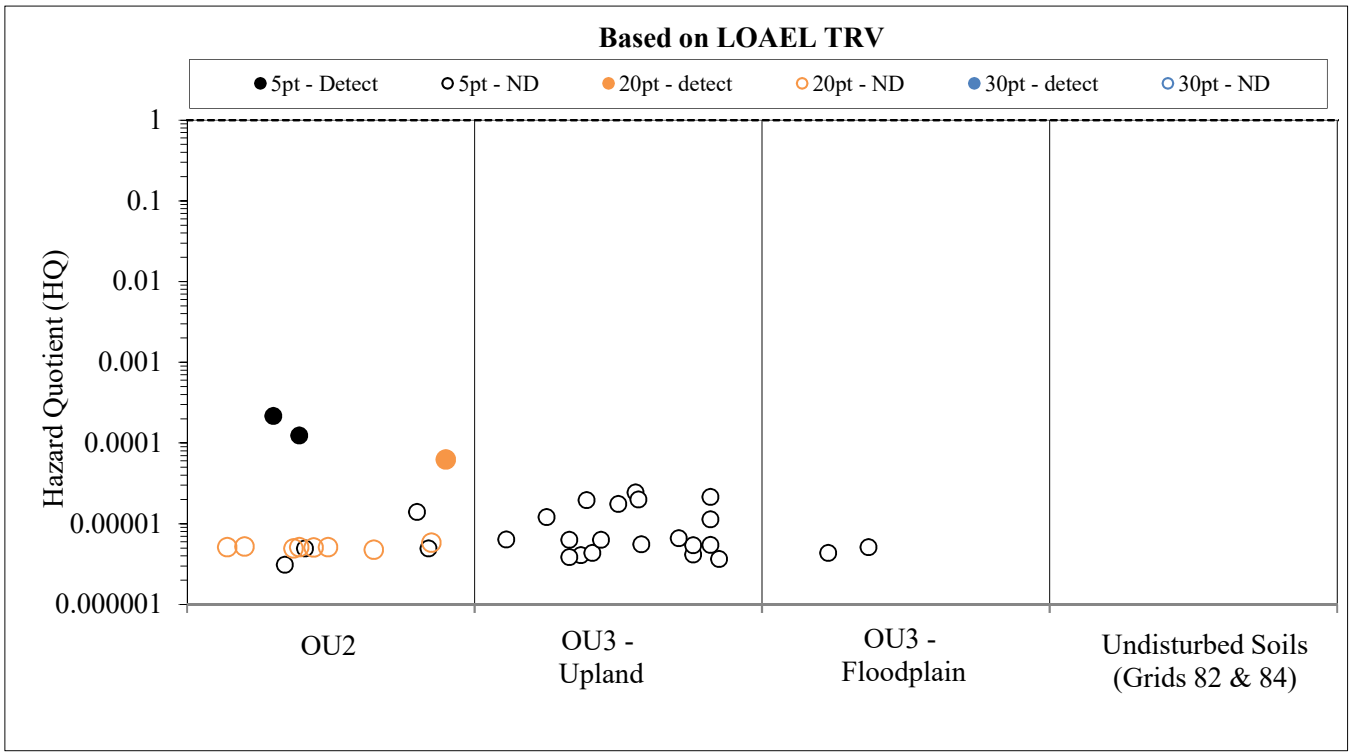
Aroclor-1260

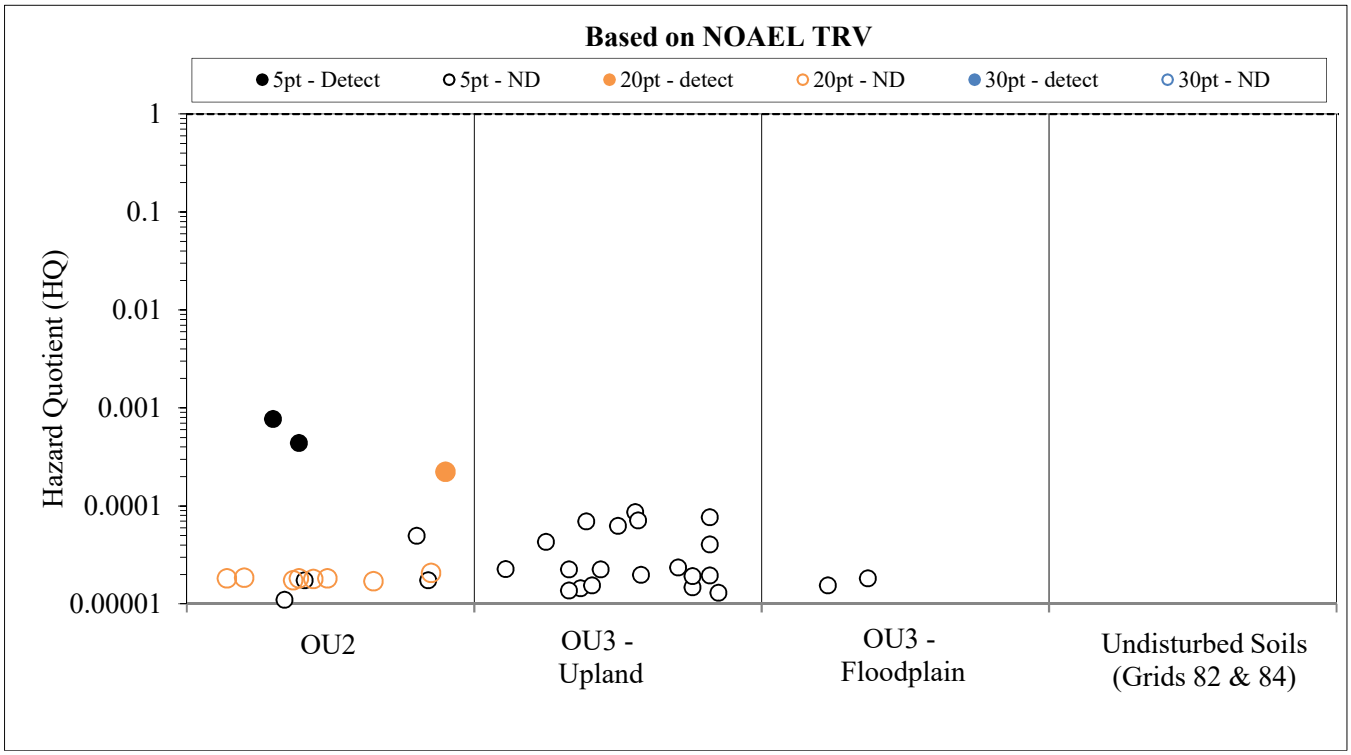
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.000692	ND	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.000571	ND	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Surface Soil by Exposure Unit/Soil Type

Aroclor-1260





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Surface Soil

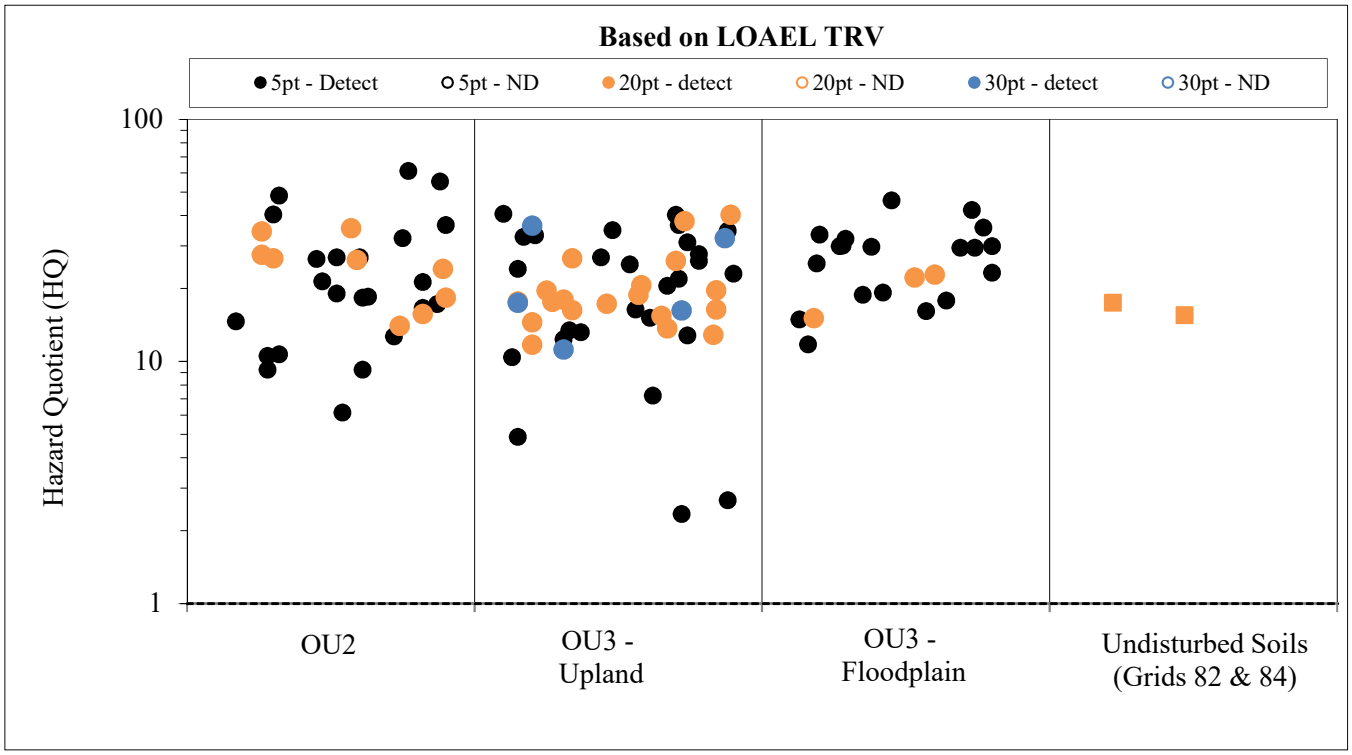
Aroclor-1260

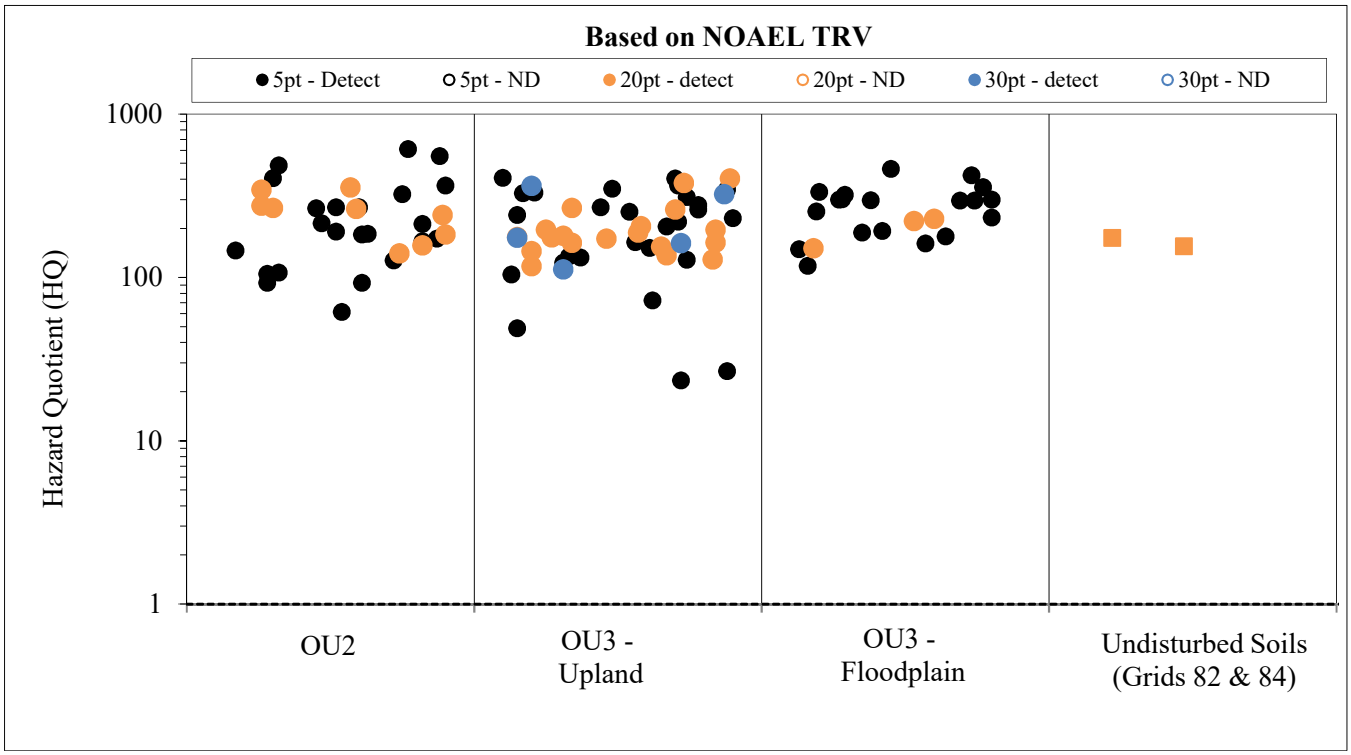
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.0035	ND	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.00415	ND	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.0034	ND	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.00365	ND	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.0445	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.0036	ND	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.00365	ND	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.00365	ND	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.0037	ND	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.00995	ND	1	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	0.154	detect	1	0	<1.0	<1.0
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	0.0022	ND	1	0	<1.0	<1.0
	SS31-IN	SS31-IN-(0-2)c	0.0881	detect	1	0	<1.0	<1.0
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.0035	ND	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.0035	ND	1	0	<1.0	<1.0
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.00455	ND	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.0029	ND	1	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	0.00395	ND	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.0031	ND	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.0045	ND	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.00295	ND	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.0026	ND	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.0081	ND	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.00385	ND	1	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.00275	ND	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.0086	ND	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.0047	ND	1	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.01735	ND	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.0125	ND	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.01395	ND	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.0142	ND	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.0153	ND	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.0039	ND	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.0045	ND	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.00365	ND	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.0031	ND	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Food by Exposure Unit/Soil Type

Aluminum





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Aluminum

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	1129.95	detect	19	2	**15.7**	**156.9**
	Grid 13	Grid 13-SSComp-01_20171019_NM	2480	detect	19	2	**34.4**	**344.4**
	Grid 14	Grid 14-SSComp-01_20171017_NM	1319.05	detect	19	2	**18.3**	**183.2**
	Grid 2	Grid 2-SSComp-01_20171016_NM	1010.6	detect	19	2	**14.0**	**140.3**
	Grid 22	Grid 22-SSComp-01_20171018_NM	1922	detect	19	2	**26.7**	**266.9**
	Grid 23	Grid 23-SSComp-01_20171018_NM	2557.5	detect	19	2	**35.5**	**355.1**
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	1736	detect	19	2	**24.1**	**241.1**
	Grid 8	Grid 8-SSComp-01_20171018_NM	1984	detect	19	2	**27.5**	**275.5**
	Grid 9	Grid 9-SSComp-01_20171018_NM	1891	detect	19	2	**26.3**	**262.6**
	LF-1	LF-1-SS_4/18/14_NM	4402	detect	19	2	**61.1**	**611.3**
	SB2a,3a-IN	SB2a-IN-(0-2)	443.3	detect	19	2	**6.2**	**61.6**
	SS10-IN	SS10-IN-(0-2)c	770.35	detect	19	2	**10.7**	**107.0**
	SS11-IN	SS11-IN-(0-2)c	1319.05	detect	19	2	**18.3**	**183.2**
	SS12-IN	SS12-IN-(0-2)c	1241.55	detect	19	2	**17.2**	**172.4**
	SS13-IN	SS13-IN-(0-2)c	914.5	detect	19	2	**12.7**	**127.0**
	SS14-IN	SS14-IN-(0-2)c	1532.95	detect	19	2	**21.3**	**212.9**
	SS15-IN	SS15-IN-(0-2)c	3487.5	detect	19	2	**48.4**	**484.3**
	SS16-IN	SS16-IN-(0-2)c	2325	detect	19	2	**32.3**	**322.8**
	SS17-IN	SS17-IN-(0-2)c	1542.25	detect	19	2	**21.4**	**214.2**
	SS1-IN	SS1-IN-(0-2)c	1198.15	detect	19	2	**16.6**	**166.4**
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	19	2	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	1052.45	detect	19	2	**14.6**	**146.1**
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	19	2	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	19	2	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	3983.5	detect	19	2	**55.3**	**553.1**
	SS33-IN	SS33-IN-(0-2)c	1937.5	detect	19	2	**26.9**	**269.0**
	SS3-IN	SS3-IN-(0-2)c	1937.5	detect	19	2	**26.9**	**269.0**
	SS4-IN	SS4-IN-(0-2)c	1333	detect	19	2	**18.5**	**185.1**
	SS5-IN	SS5-IN-(0-2)c	2914	detect	19	2	**40.5**	**404.6**
	SS6-IN	SS6-IN-(0-2)c	1373.3	detect	19	2	**19.1**	**190.7**
	SS7-IN	SS7-IN-(0-2)c	1906.5	detect	19	2	**26.5**	**264.7**
	SS8-IN	SS8-IN-(0-2)c	757.95	detect	19	2	**10.5**	**105.2**
	SS9-IN	SS9-IN-(0-2)c	2635	detect	19	2	**36.6**	**365.9**
	HDPT-SS	BACKFILL-HDPT-SS	666.5	detect	19	2	**9.3**	**92.6**
	TSB-SS	BACKFILL-TSB-SS	666.5	detect	19	2	**9.3**	**92.6**

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Aluminum

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	2325	detect	19	2	**32.3**	**322.8**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	1581	detect	19	2	**22.0**	**219.5**
	CRP-1	CRP-1-SS_4/10/14_NM	1736	detect	19	2	**24.1**	**241.1**
	Grid 27	Grid 27-SSComp-01_20171019_NM	1043.15	detect	19	2	**14.5**	**144.9**
	Grid 28	Grid 28-SSComp-01_20171019_NM	985.8	detect	19	2	**13.7**	**136.9**
	Grid 29	Grid 29-SSComp-01_20171019_NM	1171.8	detect	19	2	**16.3**	**162.7**
	Grid 30	Grid 30-SSComp-01_20171020_NM	1272.55	detect	19	2	**17.7**	**176.7**
	Grid 33	Grid 33-SSComp-01_20171020_NM	1357.8	detect	19	2	**18.9**	**188.5**
	Grid 34	Grid 34-SSComp-01_20171019_NM	1111.35	detect	19	2	**15.4**	**154.3**
	Grid 37	Grid 37-SSComp-01_20171020_NM	1297.35	detect	19	2	**18.0**	**180.2**
	Grid 39	Grid 39-SSComp-01_20171020_NM	1413.6	detect	19	2	**19.6**	**196.3**
	Grid 43	Grid 43-SSComp-01_20171023_NM	1412.05	detect	19	2	**19.6**	**196.1**
	Grid 44	Grid 44-SSComp-01_20171023_NM	1484.9	detect	19	2	**20.6**	**206.2**
	Grid 47	Grid 47-SSComp-01_20171023_NM	2728	detect	19	2	**37.9**	**378.8**
	Grid 53	Grid 53-SSComp-01_20171020_NM	1875.5	detect	19	2	**26.0**	**260.4**
	Grid 60	Grid 60-SSComp-01_20171023_NM	1246.2	detect	19	2	**17.3**	**173.0**
	Grid 61	Grid 61-SSComp-01_20171023_NM	1269.45	detect	19	2	**17.6**	**176.3**
	Grid 64	Grid 64-SSComp-01_20171024_NM	1178	detect	19	2	**16.4**	**163.6**
	Grid 74	Grid 74-SSComp-01_20171023_NM	2898.5	detect	19	2	**40.2**	**402.5**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	1922	detect	19	2	**26.7**	**266.9**
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	844.75	detect	19	2	**11.7**	**117.3**
	HP16-1	HP16-1-SS_4/10/14_NM	1937.5	detect	19	2	**26.9**	**269.0**
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	1875.5	detect	19	2	**26.0**	**260.4**
	HP18-1	HP18-1-SS_4/10/14_NM	2929.5	detect	19	2	**40.7**	**406.8**
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	1475.6	detect	19	2	**20.5**	**204.9**
	HP18-IB	HP18-SSC-IB_4/10/14_NM	750.2	detect	19	2	**10.4**	**104.2**
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	19	2	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	968.75	detect	19	2	**13.5**	**134.5**
	HP9-1	HP9-1-SS_4/10/14_NM	2495.5	detect	19	2	**34.7**	**346.5**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	888.15	detect	19	2	**12.3**	**123.3**
	IBK-1	IBK-1-SS_4/16/14_NM	2635	detect	19	2	**36.6**	**365.9**
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	2898.5	detect	19	2	**40.2**	**402.5**
	P17-BH1	P17-BH1-SS_4/3/14_NM	2511	detect	19	2	**34.9**	**348.7**
	P3	P3-SSComp-01_20171020_NM	928.45	detect	19	2	**12.9**	**128.9**
	P3-BH1	P3-BH1-SS_4/3/14_NM	351.85	detect	19	2	**4.9**	**48.9**
	P4-BH1	P4-BH1-SS_4/4/14_NM	192.2	detect	19	2	**2.7**	**26.7**
	P5-BH2	P5-BH2-SS_4/3/14_NM	168.95	detect	19	2	**2.3**	**23.5**
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	520.8	detect	19	2	**7.2**	**72.3**
	P8	P8-SSComp-01_20171025_NM	1258.6	detect	19	2	**17.5**	**174.8**
	P8dc	P8dc-SSComp-01_20171024_NM	1167.15	detect	19	2	**16.2**	**162.1**
	P8-TP3	P8-TP3-SS_4/4/14_NM	1658.5	detect	19	2	**23.0**	**230.3**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	2387	detect	19	2	**33.1**	**331.5**
	SPP	SPP-SSComp-01_20171025_NM	2619.5	detect	19	2	**36.4**	**363.7**
	SS1,2-HP18	SS1-HP18-(0-2)c	1089.65	detect	19	2	**15.1**	**151.3**
	SS11,12-IBK	SS11-IBK-(0-2)c	1181.1	detect	19	2	**16.4**	**164.0**
	SS13,14-HP9	SS13-HP9-(0-2)c	2232	detect	19	2	**31.0**	**309.9**
	SS15,16-HP9	SS15-HP9-(0-2)c	2356	detect	19	2	**32.7**	**327.2**
	SS3,4-HP16	SS3-HP16-(0-2)c	951.7	detect	19	2	**13.2**	**132.2**
	SS5,6-IBJ	SS5-IBJ-(0-2)c	922.25	detect	19	2	**12.8**	**128.1**
	SS7,8-HP13	SS7-HP13-(0-2)c	1999.5	detect	19	2	**27.8**	**277.7**
	SS9,10-HP12	SS9-HP12-(0-2)c	1813.5	detect	19	2	**25.2**	**251.8**
	SWBA	SWBA-SSComp-01_20171024_NM	806	detect	19	2	**11.2**	**111.9**

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

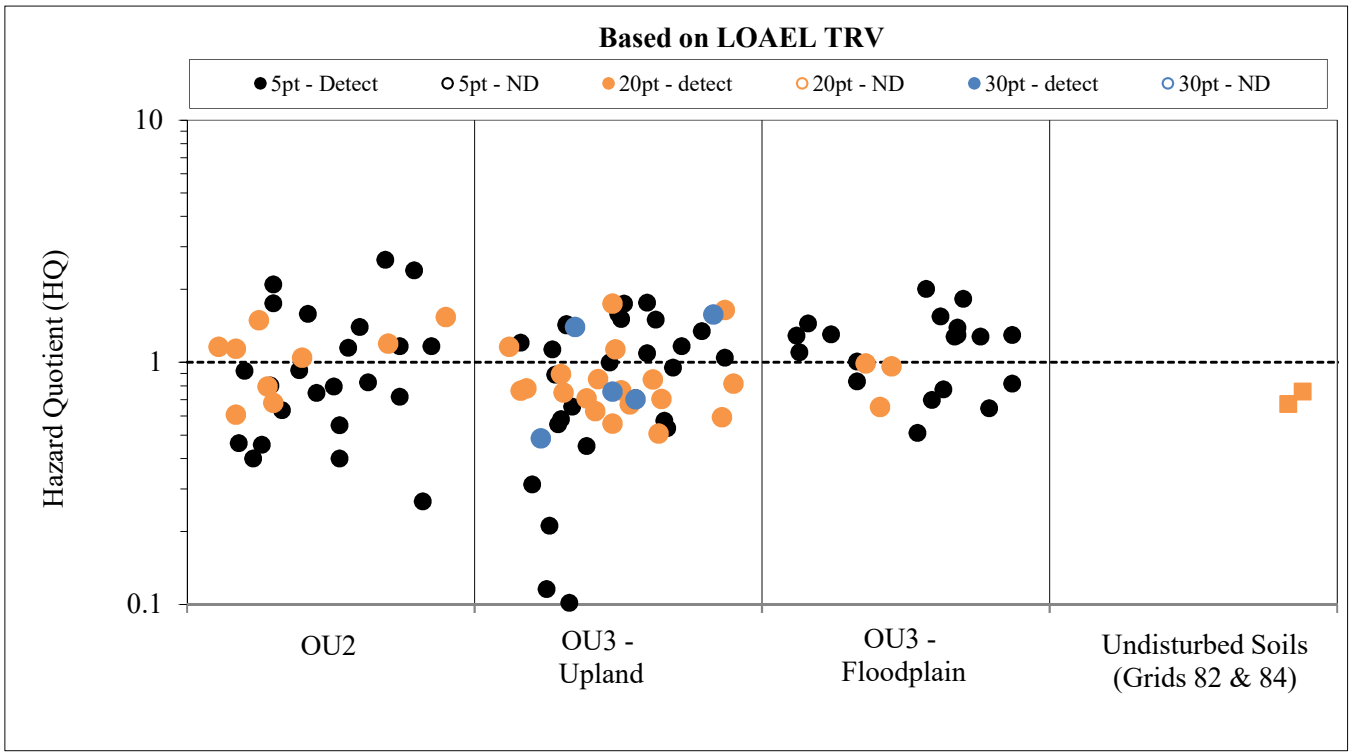
Aluminum

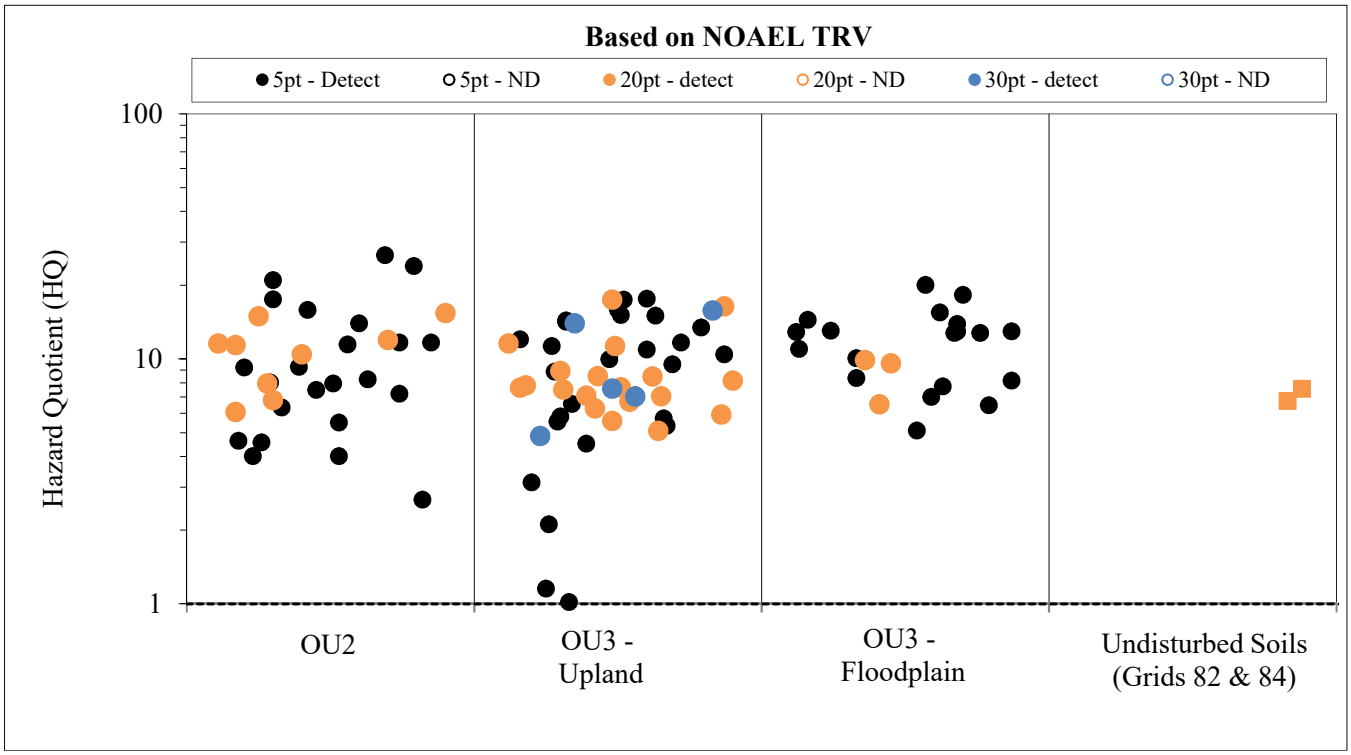
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	1085	detect	19	2	**15.1**	**150.7**
	Grid 89	Grid 89-SSComp-01_20171026_NM	1643	detect	19	2	**22.8**	**228.1**
	Grid 94	Grid 94-SSComp-01_20171026_NM	1596.5	detect	19	2	**22.2**	**221.7**
	HP13a-1	HP13A-1-SS_4/10/14_NM	3038	detect	19	2	**42.2**	**421.9**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	1074.15	detect	19	2	**14.9**	**149.2**
	SE10-HP11	SE10-HP11-(0-2)c	3332.5	detect	19	2	**46.3**	**462.8**
	SE11-HP11	SE11-HP11-(0-2)c	1284.95	detect	19	2	**17.8**	**178.4**
	SE12-HP12	SE12-HP12-(0-2)c	2402.5	detect	19	2	**33.4**	**333.6**
	SE13-HP12	SE13-HP12-(0-2)c	2170	detect	19	2	**30.1**	**301.3**
	SE14-HP13	SE14-HP13-(0-2)c	2154.5	detect	19	2	**29.9**	**299.2**
	SE15-HP13	SE15-HP13-(0-2)c	1829	detect	19	2	**25.4**	**254.0**
	SE16-HP13	SE16-HP13-(0-2)c	1674	detect	19	2	**23.2**	**232.5**
	SE17-HP13a	SE17-HP13a-(0-2)c	2123.5	detect	19	2	**29.5**	**294.9**
	SE1-HP1a	SE1-HP1a-(0-2)c	2123.5	detect	19	2	**29.5**	**294.9**
	SE2-HP1a	SE2-HP1a-(0-2)c	2573	detect	19	2	**35.7**	**357.3**
	SE3-HP1	SE3-HP1-(0-2)c	847.85	detect	19	2	**11.8**	**117.7**
	SE4-HP1	SE4-HP1-(0-2)c	1387.25	detect	19	2	**19.3**	**192.6**
	SE5-HP2	SE5-HP2-(0-2)c	2309.5	detect	19	2	**32.1**	**320.7**
	SE6-HP7	SE6-HP7-(0-2)c	2139	detect	19	2	**29.7**	**297.0**
	SE7-HP7	SE7-HP7-(0-2)c	1162.5	detect	19	2	**16.1**	**161.4**
	SE8-HP10	SE8-HP10-(0-2)c	1357.8	detect	19	2	**18.9**	**188.5**
	SE9-HP10	SE9-HP10-(0-2)c	2154.5	detect	19	2	**29.9**	**299.2**
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	1255.5	detect	19	2	**17.4**	**174.3**
	Grid 84	Grid 84-SSComp-01_20171026_NM	1117.55	detect	19	2	**15.5**	**155.2**

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Surface Soil by Exposure Unit/Soil Type

Aluminum





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Surface Soil

Aluminum

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	7290	detect	19	2	<1.0	**6.8**
	Grid 13	Grid 13-SSComp-01_20171019_NM	16000	detect	19	2	**1.5**	**14.9**
	Grid 14	Grid 14-SSComp-01_20171017_NM	8510	detect	19	2	<1.0	**7.9**
	Grid 2	Grid 2-SSComp-01_20171016_NM	6520	detect	19	2	<1.0	**6.1**
	Grid 22	Grid 22-SSComp-01_20171018_NM	12400	detect	19	2	**1.2**	**11.6**
	Grid 23	Grid 23-SSComp-01_20171018_NM	16500	detect	19	2	**1.5**	**15.4**
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	11200	detect	19	2	<1.0	**10.4**
	Grid 8	Grid 8-SSComp-01_20171018_NM	12800	detect	19	2	**1.2**	**11.9**
	Grid 9	Grid 9-SSComp-01_20171018_NM	12200	detect	19	2	**1.1**	**11.4**
	LF-1	LF-1-SS_4/18/14_NM	28400	detect	19	2	**2.6**	**26.5**
	SB2a,3a-IN	SB2a-IN-(0-2)	2860	detect	19	2	<1.0	**2.7**
	SS10-IN	SS10-IN-(0-2)c	4970	detect	19	2	<1.0	**4.6**
	SS11-IN	SS11-IN-(0-2)c	8510	detect	19	2	<1.0	**7.9**
	SS12-IN	SS12-IN-(0-2)c	8010	detect	19	2	<1.0	**7.5**
	SS13-IN	SS13-IN-(0-2)c	5900	detect	19	2	<1.0	**5.5**
	SS14-IN	SS14-IN-(0-2)c	9890	detect	19	2	<1.0	**9.2**
	SS15-IN	SS15-IN-(0-2)c	22500	detect	19	2	**2.1**	**21.0**
	SS16-IN	SS16-IN-(0-2)c	15000	detect	19	2	**1.4**	**14.0**
	SS17-IN	SS17-IN-(0-2)c	9950	detect	19	2	<1.0	**9.3**
	SS1-IN	SS1-IN-(0-2)c	7730	detect	19	2	<1.0	**7.2**
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	19	2	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	6790	detect	19	2	<1.0	**6.3**
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	19	2	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	19	2	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	25700	detect	19	2	**2.4**	**24.0**
	SS33-IN	SS33-IN-(0-2)c	12500	detect	19	2	**1.2**	**11.7**
	SS3-IN	SS3-IN-(0-2)c	12500	detect	19	2	**1.2**	**11.7**
	SS4-IN	SS4-IN-(0-2)c	8600	detect	19	2	<1.0	**8.0**
	SS5-IN	SS5-IN-(0-2)c	18800	detect	19	2	**1.8**	**17.5**
	SS6-IN	SS6-IN-(0-2)c	8860	detect	19	2	<1.0	**8.3**
	SS7-IN	SS7-IN-(0-2)c	12300	detect	19	2	**1.1**	**11.5**
	SS8-IN	SS8-IN-(0-2)c	4890	detect	19	2	<1.0	**4.6**
	SS9-IN	SS9-IN-(0-2)c	17000	detect	19	2	**1.6**	**15.9**
	HDPT-SS	BACKFILL-HDPT-SS	4300	detect	19	2	<1.0	**4.0**
	TSB-SS	BACKFILL-TSB-SS	4300	detect	19	2	<1.0	**4.0**
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	15000	detect	19	2	**1.4**	**14.0**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	10200	detect	19	2	<1.0	**9.5**
	CRP-1	CRP-1-SS_4/10/14_NM	11200	detect	19	2	<1.0	**10.4**
	Grid 27	Grid 27-SSComp-01_20171019_NM	6730	detect	19	2	<1.0	**6.3**
	Grid 28	Grid 28-SSComp-01_20171019_NM	6360	detect	19	2	<1.0	**5.9**
	Grid 29	Grid 29-SSComp-01_20171019_NM	7560	detect	19	2	<1.0	**7.1**
	Grid 30	Grid 30-SSComp-01_20171020_NM	8210	detect	19	2	<1.0	**7.7**
	Grid 33	Grid 33-SSComp-01_20171020_NM	8760	detect	19	2	<1.0	**8.2**
	Grid 34	Grid 34-SSComp-01_20171019_NM	7170	detect	19	2	<1.0	**6.7**
	Grid 37	Grid 37-SSComp-01_20171020_NM	8370	detect	19	2	<1.0	**7.8**
	Grid 39	Grid 39-SSComp-01_20171020_NM	9120	detect	19	2	<1.0	**8.5**
	Grid 43	Grid 43-SSComp-01_20171023_NM	9110	detect	19	2	<1.0	**8.5**
	Grid 44	Grid 44-SSComp-01_20171023_NM	9580	detect	19	2	<1.0	**8.9**
	Grid 47	Grid 47-SSComp-01_20171023_NM	17600	detect	19	2	**1.6**	**16.4**
	Grid 53	Grid 53-SSComp-01_20171020_NM	12100	detect	19	2	**1.1**	**11.3**
	Grid 60	Grid 60-SSComp-01_20171023_NM	8040	detect	19	2	<1.0	**7.5**
	Grid 61	Grid 61-SSComp-01_20171023_NM	8190	detect	19	2	<1.0	**7.6**
	Grid 64	Grid 64-SSComp-01_20171024_NM	7600	detect	19	2	<1.0	**7.1**
	Grid 74	Grid 74-SSComp-01_20171023_NM	18700	detect	19	2	**1.7**	**17.4**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	12400	detect	19	2	**1.2**	**11.6**
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	5450	detect	19	2	<1.0	**5.1**
	HP16-1	HP16-1-SS_4/10/14_NM	12500	detect	19	2	**1.2**	**11.7**
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	12100	detect	19	2	**1.1**	**11.3**
	HP18-1	HP18-1-SS_4/10/14_NM	18900	detect	19	2	**1.8**	**17.6**
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	9520	detect	19	2	<1.0	**8.9**
	HP18-IB	HP18-SSC-IB_4/10/14_NM	4840	detect	19	2	<1.0	**4.5**
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	19	2	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	6250	detect	19	2	<1.0	**5.8**
	HP9-1	HP9-1-SS_4/10/14_NM	16100	detect	19	2	**1.5**	**15.0**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	5730	detect	19	2	<1.0	**5.3**
	IBK-1	IBK-1-SS_4/16/14_NM	17000	detect	19	2	**1.6**	**15.9**
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	18700	detect	19	2	**1.7**	**17.4**
	P17-BH1	P17-BH1-SS_4/3/14_NM	16200	detect	19	2	**1.5**	**15.1**
	P3	P3-SSComp-01_20171020_NM	5990	detect	19	2	<1.0	**5.6**
	P3-BH1	P3-BH1-SS_4/3/14_NM	2270	detect	19	2	<1.0	**2.1**
	P4-BH1	P4-BH1-SS_4/4/14_NM	1240	detect	19	2	<1.0	**1.2**
	P5-BH2	P5-BH2-SS_4/3/14_NM	1090	detect	19	2	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	3360	detect	19	2	<1.0	**3.1**
	P8	P8-SSComp-01_20171025_NM	8120	detect	19	2	<1.0	**7.6**
	P8dc	P8dc-SSComp-01_20171024_NM	7530	detect	19	2	<1.0	**7.0**
	P8-TP3	P8-TP3-SS_4/4/14_NM	10700	detect	19	2	<1.0	**10.0**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	15400	detect	19	2	**1.4**	**14.4**
	SPP	SPP-SSComp-01_20171025_NM	16900	detect	19	2	**1.6**	**15.8**
	SS1,2-HP18	SS1-HP18-(0-2)c	7030	detect	19	2	<1.0	**6.6**
	SS11,12-IBK	SS11-IBK-(0-2)c	7620	detect	19	2	<1.0	**7.1**
	SS13,14-HP9	SS13-HP9-(0-2)c	14400	detect	19	2	**1.3**	**13.4**
	SS15,16-HP9	SS15-HP9-(0-2)c	15200	detect	19	2	**1.4**	**14.2**
	SS3,4-HP16	SS3-HP16-(0-2)c	6140	detect	19	2	<1.0	**5.7**
	SS5,6-IBJ	SS5-IBJ-(0-2)c	5950	detect	19	2	<1.0	**5.5**
	SS7,8-HP13	SS7-HP13-(0-2)c	12900	detect	19	2	**1.2**	**12.0**
	SS9,10-HP12	SS9-HP12-(0-2)c	11700	detect	19	2	**1.1**	**10.9**
	SWBA	SWBA-SSComp-01_20171024_NM	5200	detect	19	2	<1.0	**4.8**
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	7000	detect	19	2	<1.0	**6.5**
	Grid 89	Grid 89-SSComp-01_20171026_NM	10600	detect	19	2	<1.0	**9.9**
	Grid 94	Grid 94-SSComp-01_20171026_NM	10300	detect	19	2	<1.0	**9.6**
	HP13a-1	HP13A-1-SS_4/10/14_NM	19600	detect	19	2	**1.8**	**18.3**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	6930	detect	19	2	<1.0	**6.5**
	SE10-HP11	SE10-HP11-(0-2)c	21500	detect	19	2	**2.0**	**20.1**
	SE11-HP11	SE11-HP11-(0-2)c	8290	detect	19	2	<1.0	**7.7**
	SE12-HP12	SE12-HP12-(0-2)c	15500	detect	19	2	**1.4**	**14.5**
	SE13-HP12	SE13-HP12-(0-2)c	14000	detect	19	2	**1.3**	**13.1**
	SE14-HP13	SE14-HP13-(0-2)c	13900	detect	19	2	**1.3**	**13.0**
	SE15-HP13	SE15-HP13-(0-2)c	11800	detect	19	2	**1.1**	**11.0**
	SE16-HP13	SE16-HP13-(0-2)c	10800	detect	19	2	<1.0	**10.1**
	SE17-HP13a	SE17-HP13a-(0-2)c	13700	detect	19	2	**1.3**	**12.8**
	SE1-HP1a	SE1-HP1a-(0-2)c	13700	detect	19	2	**1.3**	**12.8**
	SE2-HP1a	SE2-HP1a-(0-2)c	16600	detect	19	2	**1.5**	**15.5**
	SE3-HP1	SE3-HP1-(0-2)c	5470	detect	19	2	<1.0	**5.1**
	SE4-HP1	SE4-HP1-(0-2)c	8950	detect	19	2	<1.0	**8.3**
	SE5-HP2	SE5-HP2-(0-2)c	14900	detect	19	2	**1.4**	**13.9**
	SE6-HP7	SE6-HP7-(0-2)c	13800	detect	19	2	**1.3**	**12.9**
	SE7-HP7	SE7-HP7-(0-2)c	7500	detect	19	2	<1.0	**7.0**
	SE8-HP10	SE8-HP10-(0-2)c	8760	detect	19	2	<1.0	**8.2**
	SE9-HP10	SE9-HP10-(0-2)c	13900	detect	19	2	**1.3**	**13.0**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	8100	detect	19	2	<1.0	**7.6**
	Grid 84	Grid 84-SSComp-01_20171026_NM	7210	detect	19	2	<1.0	**6.7**

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of River Surface Water

Aluminum

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0366	detect	1.93	19.3	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0873	detect	1.93	19.3	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.747	detect	1.93	19.3	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0303	detect	1.93	19.3	<1.0	<1.0
	51-CFR	SW51-CFR	0.0376	detect	1.93	19.3	<1.0	<1.0
	52-CFR	SW52-CFR	0.116	detect	1.93	19.3	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0073	detect	1.93	19.3	<1.0	<1.0
	54-CFR	SW54-CFR	0.044	detect	1.93	19.3	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0248	detect	1.93	19.3	<1.0	<1.0
	55-CFR	SW55-CFR	0.0499	detect	1.93	19.3	<1.0	<1.0
	56-CFR	SW56-CFR	0.0515	detect	1.93	19.3	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0284	detect	1.93	19.3	<1.0	<1.0
	57-CFR	SW57-CFR	0.0392	detect	1.93	19.3	<1.0	<1.0
	58-CFR	SW58-CFR	0.0561	detect	1.93	19.3	<1.0	<1.0
	59-CFR	SW59-CFR	0.03	detect	1.93	19.3	<1.0	<1.0
	60-CFR	SW60-CFR	0.0882	detect	1.93	19.3	<1.0	<1.0
	61-CFR	SW61-CFR	0.0583	detect	1.93	19.3	<1.0	<1.0
	62-CFR	SW62-CFR	0.0478	detect	1.93	19.3	<1.0	<1.0
	63-CFR	SW63-CFR	0.0279	detect	1.93	19.3	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of Creek Surface Water

Aluminum

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.254	detect	1.93	19.3	<1.0	<1.0
	43-OK	SW43-OK	0.215	detect	1.93	19.3	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.275	detect	1.93	19.3	<1.0	<1.0
	37-LV	SW37-LV	0.305	detect	1.93	19.3	<1.0	<1.0
	39-LV	SW39-LV	0.188	detect	1.93	19.3	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of Pond Surface Water

Aluminum

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0165	detect	1.93	19.3	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.218	detect	1.93	19.3	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0479	detect	1.93	19.3	<1.0	<1.0
73-P5	SW73-P5	0.171	detect	1.93	19.3	<1.0	<1.0
71-HP7	SW71-HP7	0.271	detect	1.93	19.3	<1.0	<1.0
72-HP2	SW72-HP2	0.0758	detect	1.93	19.3	<1.0	<1.0
75-HP10	SW75-HP10	0.137	detect	1.93	19.3	<1.0	<1.0
67-HP12	SW67-HP12	0.101	detect	1.93	19.3	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0174	detect	1.93	19.3	<1.0	<1.0
66-HP13	SW66-HP13	0.0998	detect	1.93	19.3	<1.0	<1.0
65-HP13a	SW65-HP13a	0.195	detect	1.93	19.3	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.138	detect	1.93	19.3	<1.0	<1.0
70-CWD	SW70-CWD	0.0552	detect	1.93	19.3	<1.0	<1.0
64-HP18	SW64-HP18	0.13	detect	1.93	19.3	<1.0	<1.0

#N/A = not analyzed

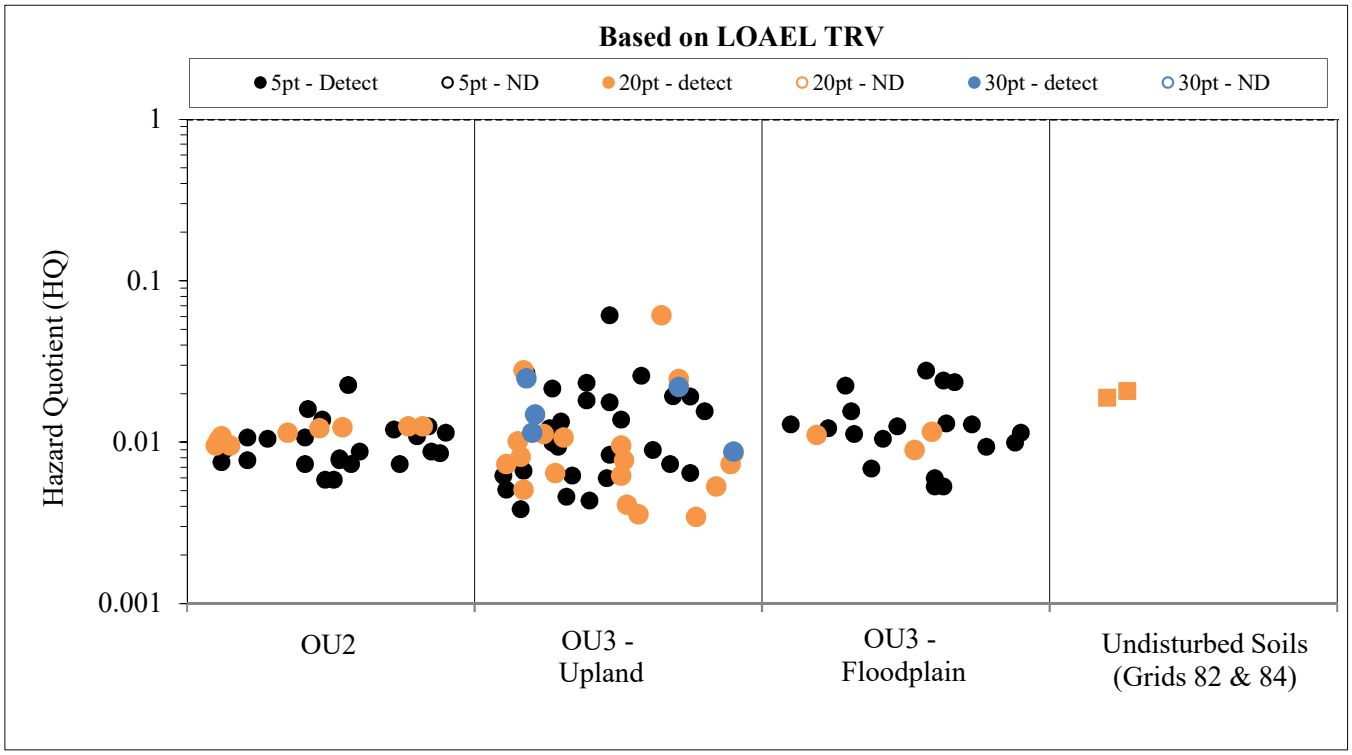
(a) Non-detects are evaluated at 1/2 the reported value.

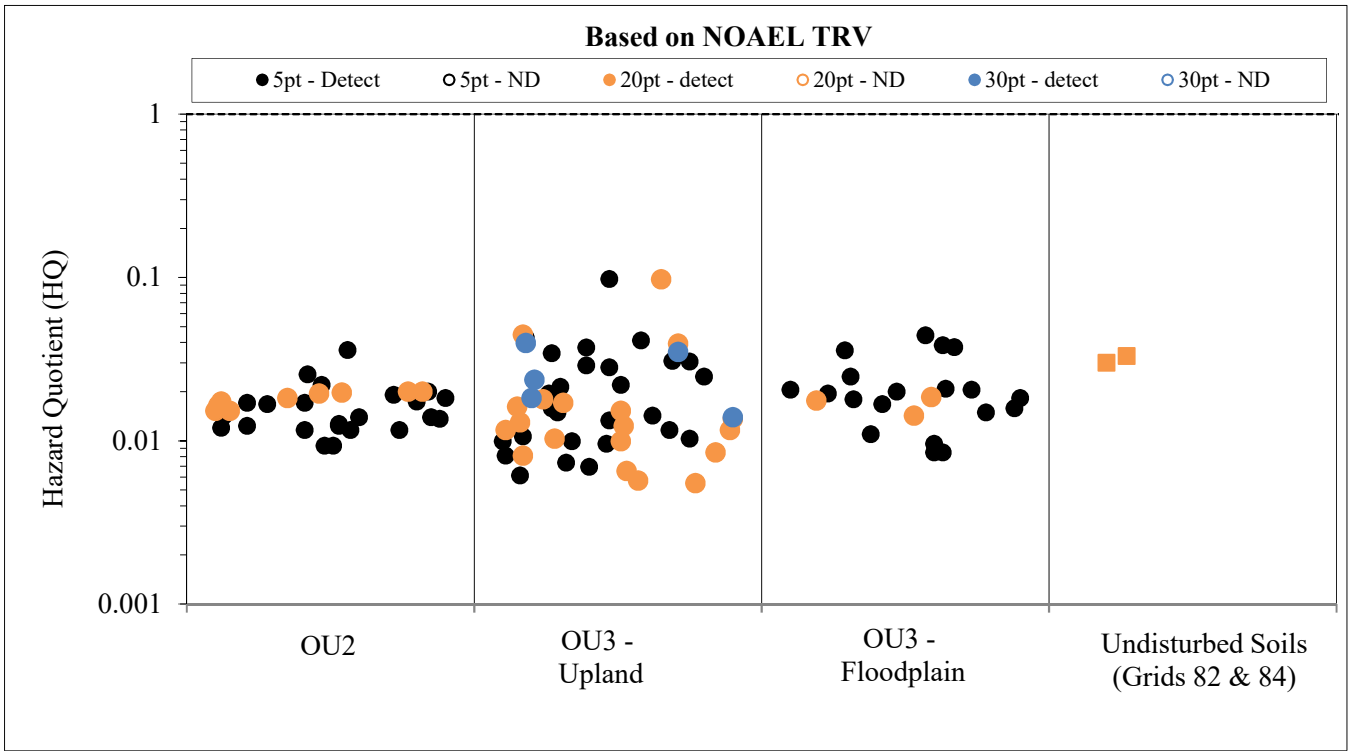
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Food by Exposure Unit/Soil Type

Arsenic





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Arsenic

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.075376	detect	2	1	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.076499	detect	2	1	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.063847	detect	2	1	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.059065	detect	2	1	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.077618	detect	2	1	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.077618	detect	2	1	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.059065	detect	2	1	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.070831	detect	2	1	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.067365	detect	2	1	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.085328	detect	2	1	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.045242	detect	2	1	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.066199	detect	2	1	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.074247	detect	2	1	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.054164	detect	2	1	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.045242	detect	2	1	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.046547	detect	2	1	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.066199	detect	2	1	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.067365	detect	2	1	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.077618	detect	2	1	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.055401	detect	2	1	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	2	1	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.045242	detect	2	1	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	2	1	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	2	1	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.139759	detect	2	1	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.09915	detect	2	1	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.070831	detect	2	1	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.047842	detect	2	1	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.047842	detect	2	1	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.052918	detect	2	1	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.054164	detect	2	1	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.049125	detect	2	1	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.065026	detect	2	1	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.036208	detect	2	1	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.036208	detect	2	1	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Arsenic

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.135952	detect	2	1	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.11245	detect	2	1	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.118442	detect	2	1	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.022132	detect	2	1	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.021304	detect	2	1	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.03288	detect	2	1	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.025348	detect	2	1	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.062662	detect	2	1	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.031422	detect	2	1	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.045242	detect	2	1	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.039897	detect	2	1	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.047842	detect	2	1	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.052918	detect	2	1	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.152874	detect	2	1	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.045242	detect	2	1	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.069681	detect	2	1	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.059065	detect	2	1	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.050399	detect	2	1	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.377491	detect	2	1	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.066199	detect	2	1	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.038526	detect	2	1	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.075376	detect	2	1	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.037141	detect	2	1	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.119433	detect	2	1	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.038526	detect	2	1	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.023758	detect	2	1	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	2	1	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.031422	detect	2	1	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.144479	detect	2	1	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.026907	detect	2	1	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.109421	detect	2	1	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.165699	detect	2	1	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.378972	detect	2	1	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.172911	detect	2	1	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.096011	detect	2	1	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.045242	detect	2	1	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.083146	detect	2	1	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.085328	detect	2	1	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.070831	detect	2	1	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.09178	detect	2	1	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.133078	detect	2	1	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.15932	detect	2	1	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.1538	detect	2	1	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.038526	detect	2	1	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.055401	detect	2	1	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	0.057851	detect	2	1	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	0.06147	detect	2	1	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.039897	detect	2	1	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.028437	detect	2	1	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.051663	detect	2	1	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.041253	detect	2	1	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.054164	detect	2	1	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

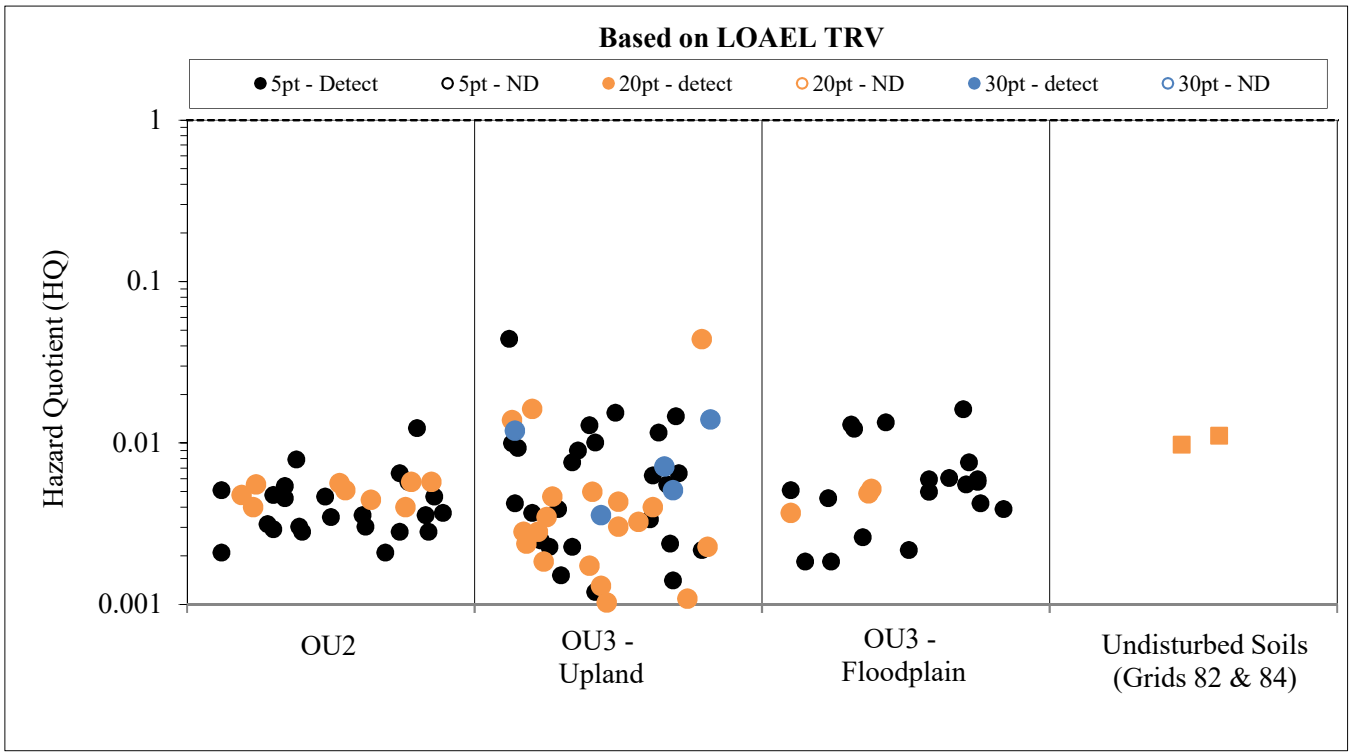
Arsenic

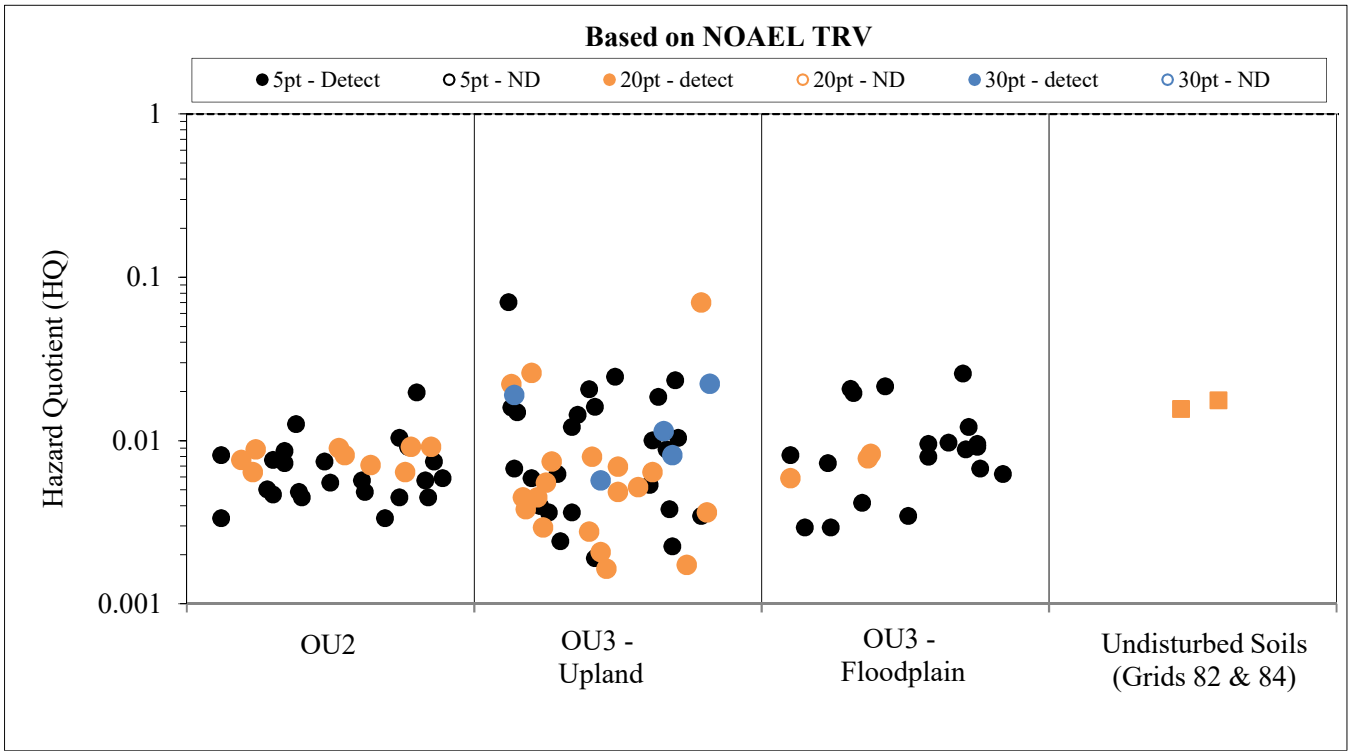
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.068526	detect	2	1	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.071975	detect	2	1	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.055401	detect	2	1	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.069681	detect	2	1	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.03288	detect	2	1	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	0.145418	detect	2	1	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	0.075376	detect	2	1	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	0.080948	detect	2	1	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	0.172014	detect	2	1	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	0.077618	detect	2	1	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.079843	detect	2	1	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	0.070831	detect	2	1	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.06147	detect	2	1	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.065026	detect	2	1	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.079843	detect	2	1	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.042595	detect	2	1	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.037141	detect	2	1	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	0.149159	detect	2	1	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	0.13881	detect	2	1	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	0.03288	detect	2	1	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.057851	detect	2	1	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	0.096011	detect	2	1	<1.0	<1.0
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	0.12825	detect	2	1	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.116454	detect	2	1	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Surface Soil by Exposure Unit/Soil Type

Arsenic





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Surface Soil

Arsenic

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	5.1	detect	2	1	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	5.2	detect	2	1	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	4.1	detect	2	1	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	3.7	detect	2	1	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	5.3	detect	2	1	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	5.3	detect	2	1	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	3.7	detect	2	1	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	4.7	detect	2	1	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	4.4	detect	2	1	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	6	detect	2	1	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	2.6	detect	2	1	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	4.3	detect	2	1	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	5	detect	2	1	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	3.3	detect	2	1	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	2.6	detect	2	1	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	2.7	detect	2	1	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	4.3	detect	2	1	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	4.4	detect	2	1	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	5.3	detect	2	1	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	3.4	detect	2	1	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	2	1	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	2.6	detect	2	1	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	2	1	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	2	1	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	11.4	detect	2	1	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	7.3	detect	2	1	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	4.7	detect	2	1	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	2.8	detect	2	1	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	2.8	detect	2	1	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	3.2	detect	2	1	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	3.3	detect	2	1	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	2.9	detect	2	1	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	4.2	detect	2	1	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	1.933333	detect	2	1	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	1.933333	detect	2	1	<1.0	<1.0
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	11	detect	2	1	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	8.6	detect	2	1	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	9.2	detect	2	1	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	1	detect	2	1	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.95	detect	2	1	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	1.7	detect	2	1	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	1.2	detect	2	1	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	4	detect	2	1	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	1.6	detect	2	1	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	2.6	detect	2	1	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	2.2	detect	2	1	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	2.8	detect	2	1	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	3.2	detect	2	1	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	12.8	detect	2	1	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	2.6	detect	2	1	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	4.6	detect	2	1	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	3.7	detect	2	1	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	3	detect	2	1	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	40.5	detect	2	1	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	4.3	detect	2	1	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	2.1	detect	2	1	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	5.1	detect	2	1	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	2	detect	2	1	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	9.3	detect	2	1	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	2.1	detect	2	1	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	1.1	detect	2	1	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	2	1	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	1.6	detect	2	1	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	11.9	detect	2	1	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	1.3	detect	2	1	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	8.3	detect	2	1	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	14.2	detect	2	1	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	40.7	detect	2	1	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	15	detect	2	1	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	7	detect	2	1	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	2.6	detect	2	1	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	5.8	detect	2	1	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	6	detect	2	1	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	4.7	detect	2	1	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	6.6	detect	2	1	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	10.7	detect	2	1	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	13.5	detect	2	1	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	12.9	detect	2	1	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	2.1	detect	2	1	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	3.4	detect	2	1	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	3.6	detect	2	1	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	3.9	detect	2	1	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	2.2	detect	2	1	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	1.4	detect	2	1	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	3.1	detect	2	1	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	2.3	detect	2	1	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	3.3	detect	2	1	<1.0	<1.0
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	4.5	detect	2	1	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	4.8	detect	2	1	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	3.4	detect	2	1	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	4.6	detect	2	1	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	1.7	detect	2	1	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	12	detect	2	1	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	5.1	detect	2	1	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	5.6	detect	2	1	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	14.9	detect	2	1	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	5.3	detect	2	1	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	5.5	detect	2	1	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	4.7	detect	2	1	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	3.9	detect	2	1	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	4.2	detect	2	1	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	5.5	detect	2	1	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	2.4	detect	2	1	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	2	detect	2	1	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	12.4	detect	2	1	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	11.3	detect	2	1	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	1.7	detect	2	1	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	3.6	detect	2	1	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	7	detect	2	1	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	10.2	detect	2	1	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	9	detect	2	1	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of River Surface Water

Arsenic

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0029	detect	1.04	1.66	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0222	detect	1.04	1.66	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0073	detect	1.04	1.66	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0022	detect	1.04	1.66	<1.0	<1.0
	51-CFR	SW51-CFR	0.0029	detect	1.04	1.66	<1.0	<1.0
	52-CFR	SW52-CFR	0.0033	detect	1.04	1.66	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0031	detect	1.04	1.66	<1.0	<1.0
	54-CFR	SW54-CFR	0.0034	detect	1.04	1.66	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0022	detect	1.04	1.66	<1.0	<1.0
	55-CFR	SW55-CFR	0.0028	detect	1.04	1.66	<1.0	<1.0
	56-CFR	SW56-CFR	0.0027	detect	1.04	1.66	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0021	detect	1.04	1.66	<1.0	<1.0
	57-CFR	SW57-CFR	0.0045	detect	1.04	1.66	<1.0	<1.0
	58-CFR	SW58-CFR	0.0031	detect	1.04	1.66	<1.0	<1.0
	59-CFR	SW59-CFR	0.0033	detect	1.04	1.66	<1.0	<1.0
	60-CFR	SW60-CFR	0.0031	detect	1.04	1.66	<1.0	<1.0
	61-CFR	SW61-CFR	0.0031	detect	1.04	1.66	<1.0	<1.0
	62-CFR	SW62-CFR	0.0037	detect	1.04	1.66	<1.0	<1.0
	63-CFR	SW63-CFR	0.0031	detect	1.04	1.66	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of Creek Surface Water

Arsenic

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.0031	detect	1.04	1.66	<1.0	<1.0
	43-OK	SW43-OK	0.0031	detect	1.04	1.66	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.0016	detect	1.04	1.66	<1.0	<1.0
	37-LV	SW37-LV	0.0027	detect	1.04	1.66	<1.0	<1.0
	39-LV	SW39-LV	0.0035	detect	1.04	1.66	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of Pond Surface Water

Arsenic

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0024	detect	1.04	1.66	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0054	detect	1.04	1.66	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0084	detect	1.04	1.66	<1.0	<1.0
73-P5	SW73-P5	0.0071	detect	1.04	1.66	<1.0	<1.0
71-HP7	SW71-HP7	0.0044	detect	1.04	1.66	<1.0	<1.0
72-HP2	SW72-HP2	0.0109	detect	1.04	1.66	<1.0	<1.0
75-HP10	SW75-HP10	0.005	detect	1.04	1.66	<1.0	<1.0
67-HP12	SW67-HP12	0.0073	detect	1.04	1.66	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0024	detect	1.04	1.66	<1.0	<1.0
66-HP13	SW66-HP13	0.033	detect	1.04	1.66	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0152	detect	1.04	1.66	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0162	detect	1.04	1.66	<1.0	<1.0
70-CWD	SW70-CWD	0.0034	detect	1.04	1.66	<1.0	<1.0
64-HP18	SW64-HP18	0.0076	detect	1.04	1.66	<1.0	<1.0

#N/A = not analyzed

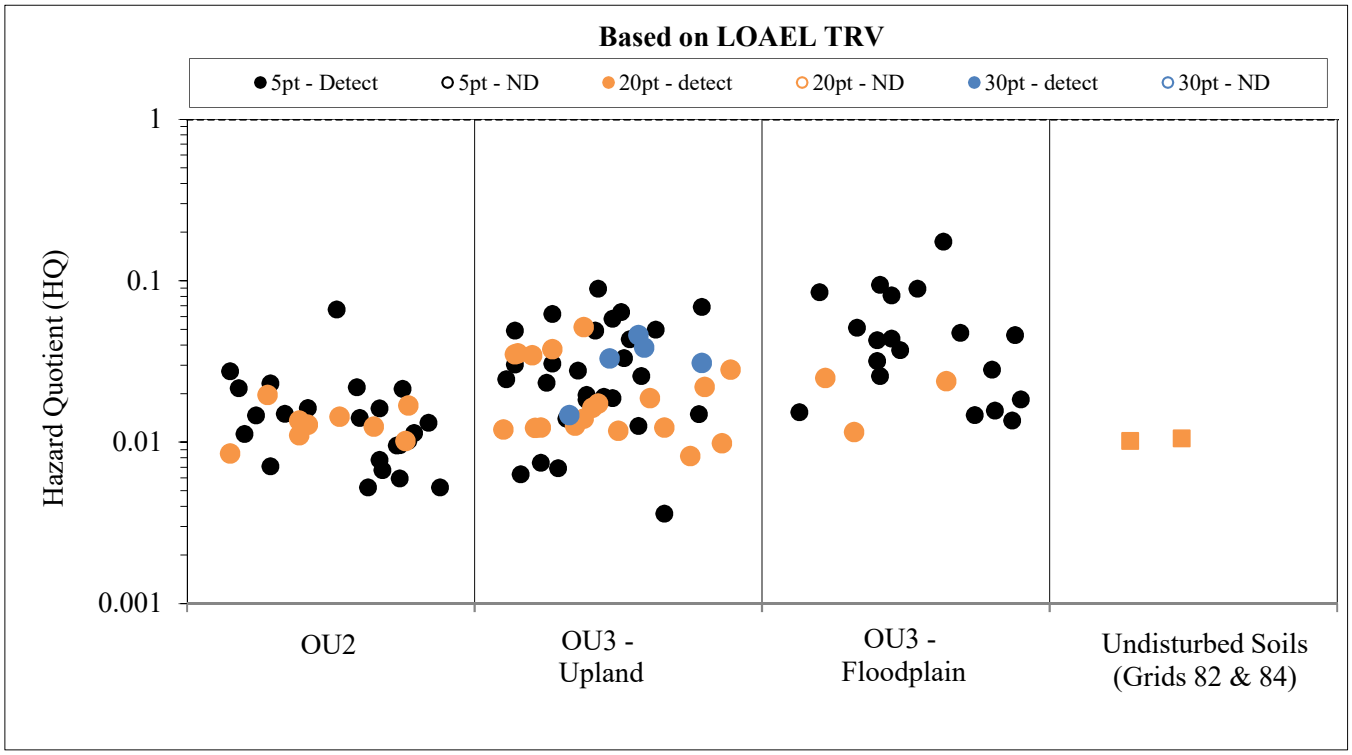
(a) Non-detects are evaluated at 1/2 the reported value.

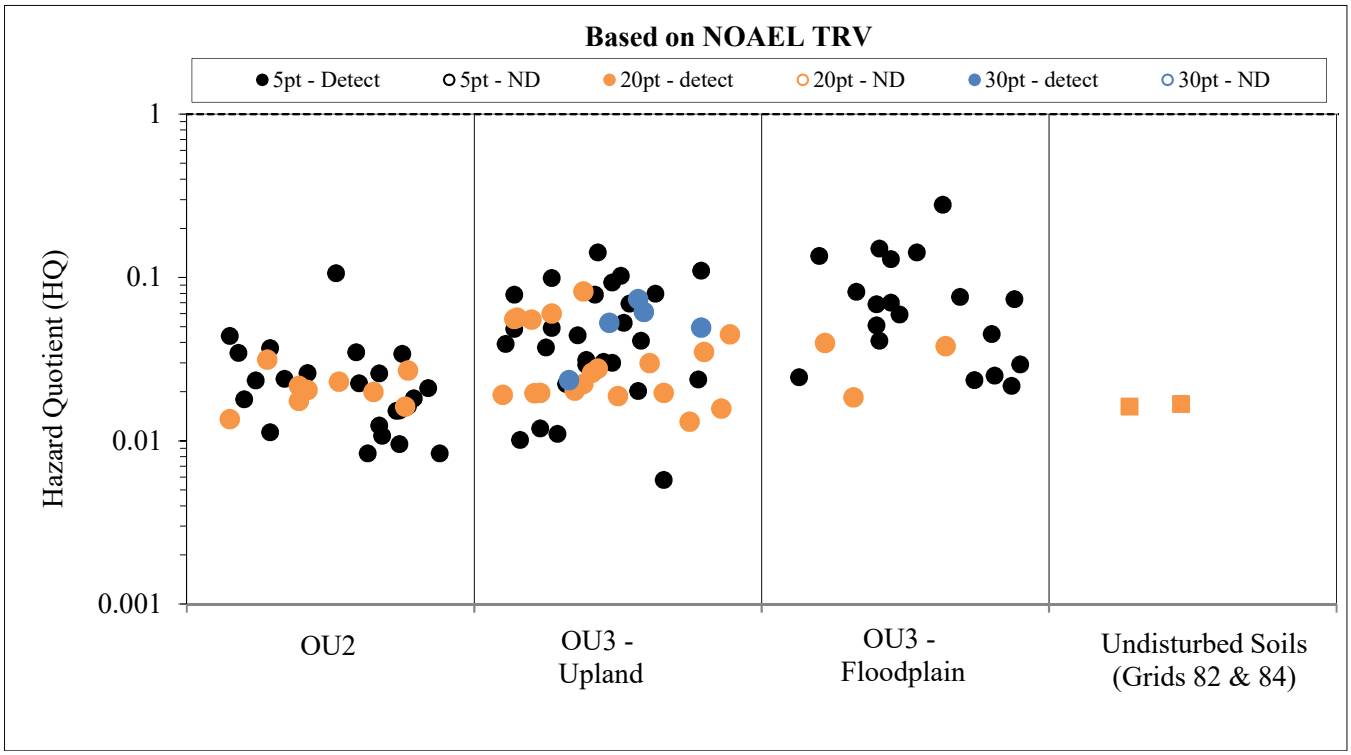
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Food by Exposure Unit/Soil Type

Barium





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Barium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	3.85294	detect	83	52	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	4.44132	detect	83	52	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	3.1317	detect	83	52	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	2.61924	detect	83	52	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	6.05462	detect	83	52	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	5.20052	detect	83	52	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	4.19458	detect	83	52	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	3.94784	detect	83	52	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	3.39742	detect	83	52	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	6.7379	detect	83	52	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	2.9419	detect	83	52	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	5.01072	detect	83	52	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	4.34642	detect	83	52	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	3.15068	detect	83	52	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	7.13648	detect	83	52	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	3.47334	detect	83	52	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	6.58606	detect	83	52	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	4.99174	detect	83	52	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	3.5113	detect	83	52	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	2.06882	detect	83	52	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	83	52	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	2.39148	detect	83	52	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	83	52	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	83	52	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	20.4984	detect	83	52	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	8.48406	detect	83	52	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	4.51724	detect	83	52	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	2.1827	detect	83	52	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	6.66198	detect	83	52	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	2.96088	detect	83	52	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	4.06172	detect	83	52	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	1.84106	detect	83	52	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	4.63112	detect	83	52	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	1.616463	detect	83	52	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	1.616463	detect	83	52	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Barium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	10.17328	detect	83	52	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	17.95508	detect	83	52	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	4.59316	detect	83	52	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	3.796	detect	83	52	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	3.796	detect	83	52	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	3.62518	detect	83	52	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	6.77586	detect	83	52	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	4.30846	detect	83	52	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	3.77702	detect	83	52	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	3.0368	detect	83	52	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	8.65488	detect	83	52	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	10.97044	detect	83	52	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	5.76992	detect	83	52	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	10.64778	detect	83	52	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	10.78064	detect	83	52	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	5.35236	detect	83	52	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	3.7011	detect	83	52	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	5.04868	detect	83	52	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	15.88626	detect	83	52	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	3.90988	detect	83	52	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	2.52434	detect	83	52	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	9.33816	detect	83	52	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	5.7889	detect	83	52	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	19.7392	detect	83	52	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	4.30846	detect	83	52	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	2.29658	detect	83	52	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	83	52	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	1.11033	detect	83	52	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	15.14604	detect	83	52	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	6.03564	detect	83	52	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	5.8838	detect	83	52	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	15.14604	detect	83	52	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	15.33584	detect	83	52	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	11.61576	detect	83	52	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	10.21124	detect	83	52	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	7.55404	detect	83	52	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	9.47102	detect	83	52	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	8.541	detect	83	52	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	9.54694	detect	83	52	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	11.90046	detect	83	52	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	13.3809	detect	83	52	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	21.2576	detect	83	52	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	14.21602	detect	83	52	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	2.12576	detect	83	52	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	1.95494	detect	83	52	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	19.1698	detect	83	52	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	27.521	detect	83	52	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	7.19342	detect	83	52	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	3.8909	detect	83	52	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	5.65604	detect	83	52	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	7.93364	detect	83	52	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	4.53622	detect	83	52	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

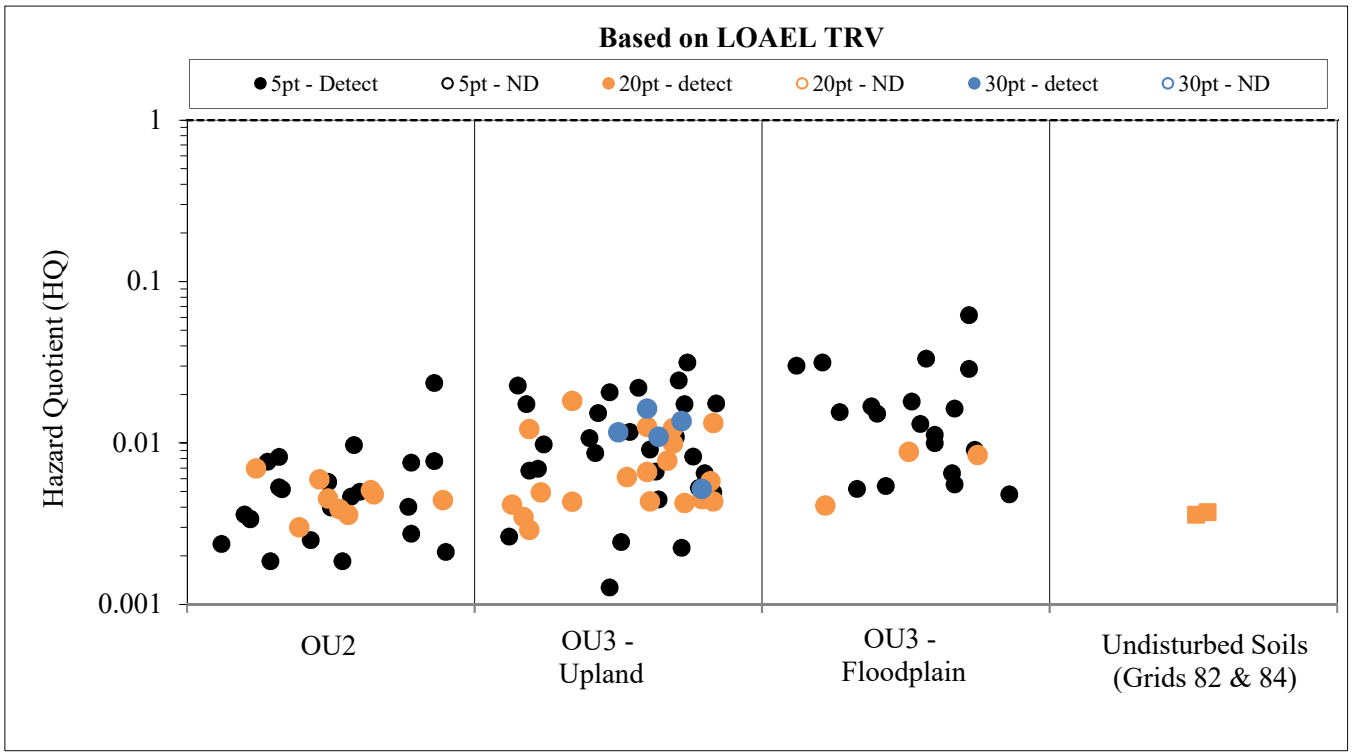
Barium

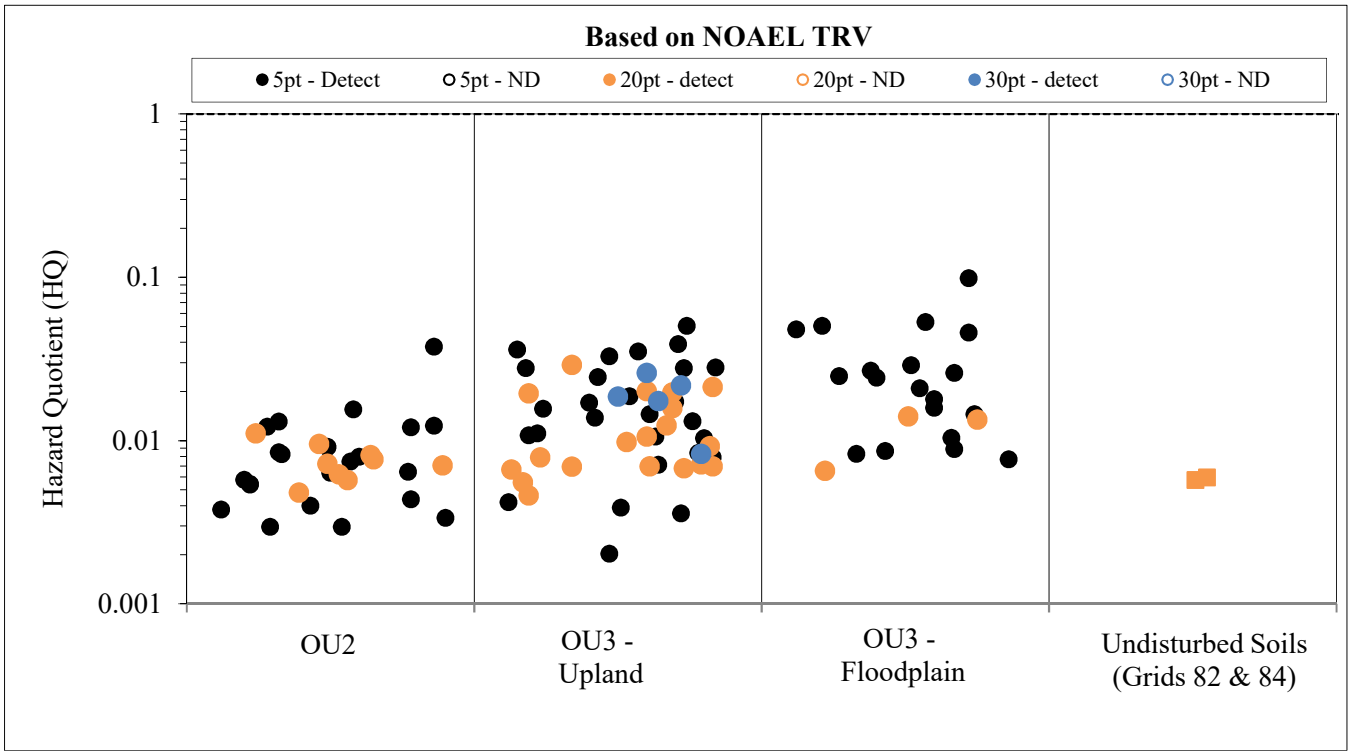
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	3.56824	detect	83	52	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	7.6869	detect	83	52	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	7.34526	detect	83	52	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	8.69284	detect	83	52	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	4.53622	detect	83	52	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	11.44494	detect	83	52	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	15.77238	detect	83	52	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	9.81266	detect	83	52	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	13.22906	detect	83	52	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	7.91466	detect	83	52	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	27.521	detect	83	52	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	14.67154	detect	83	52	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	26.1924	detect	83	52	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	29.0394	detect	83	52	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	53.9032	detect	83	52	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	4.19458	detect	83	52	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	4.72602	detect	83	52	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	13.53274	detect	83	52	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	14.21602	detect	83	52	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	5.67502	detect	83	52	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	4.8399	detect	83	52	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	25.0536	detect	83	52	<1.0	<1.0
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	3.24558	detect	83	52	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	3.1317	detect	83	52	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Surface Soil by Exposure Unit/Soil Type

Barium





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Surface Soil

Barium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	203	detect	83	52	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	234	detect	83	52	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	165	detect	83	52	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	138	detect	83	52	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	319	detect	83	52	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	274	detect	83	52	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	221	detect	83	52	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	208	detect	83	52	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	179	detect	83	52	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	355	detect	83	52	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	155	detect	83	52	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	264	detect	83	52	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	229	detect	83	52	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	166	detect	83	52	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	376	detect	83	52	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	183	detect	83	52	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	347	detect	83	52	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	263	detect	83	52	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	185	detect	83	52	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	109	detect	83	52	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	83	52	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	126	detect	83	52	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	83	52	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	83	52	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	1080	detect	83	52	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	447	detect	83	52	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	238	detect	83	52	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	115	detect	83	52	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	351	detect	83	52	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	156	detect	83	52	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	214	detect	83	52	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	97	detect	83	52	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	244	detect	83	52	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	85.16667	detect	83	52	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	85.16667	detect	83	52	<1.0	<1.0
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	536	detect	83	52	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	946	detect	83	52	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	242	detect	83	52	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	200	detect	83	52	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	200	detect	83	52	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	191	detect	83	52	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	357	detect	83	52	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	227	detect	83	52	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	199	detect	83	52	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	160	detect	83	52	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	456	detect	83	52	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	578	detect	83	52	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	304	detect	83	52	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	561	detect	83	52	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	568	detect	83	52	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	282	detect	83	52	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	195	detect	83	52	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	266	detect	83	52	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	837	detect	83	52	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	206	detect	83	52	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	133	detect	83	52	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	492	detect	83	52	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	305	detect	83	52	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	1040	detect	83	52	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	227	detect	83	52	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	121	detect	83	52	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	83	52	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	58.5	detect	83	52	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	798	detect	83	52	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	318	detect	83	52	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	310	detect	83	52	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	798	detect	83	52	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	808	detect	83	52	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	612	detect	83	52	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	538	detect	83	52	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	398	detect	83	52	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	499	detect	83	52	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	450	detect	83	52	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	503	detect	83	52	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	627	detect	83	52	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	705	detect	83	52	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1120	detect	83	52	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	749	detect	83	52	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	112	detect	83	52	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	103	detect	83	52	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	1010	detect	83	52	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	1450	detect	83	52	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	379	detect	83	52	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	205	detect	83	52	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	298	detect	83	52	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	418	detect	83	52	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	239	detect	83	52	<1.0	<1.0
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	188	detect	83	52	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	405	detect	83	52	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	387	detect	83	52	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	458	detect	83	52	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	239	detect	83	52	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	603	detect	83	52	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	831	detect	83	52	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	517	detect	83	52	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	697	detect	83	52	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	417	detect	83	52	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	1450	detect	83	52	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	773	detect	83	52	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	1380	detect	83	52	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	1530	detect	83	52	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	2840	detect	83	52	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	221	detect	83	52	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	249	detect	83	52	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	713	detect	83	52	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	749	detect	83	52	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	299	detect	83	52	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	255	detect	83	52	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	1320	detect	83	52	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	171	detect	83	52	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	165	detect	83	52	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of River Surface Water

Barium

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.126	detect	51.8	82.7	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.127	detect	51.8	82.7	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0818	detect	51.8	82.7	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0932	detect	51.8	82.7	<1.0	<1.0
	51-CFR	SW51-CFR	0.129	detect	51.8	82.7	<1.0	<1.0
	52-CFR	SW52-CFR	0.124	detect	51.8	82.7	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.105	detect	51.8	82.7	<1.0	<1.0
	54-CFR	SW54-CFR	0.106	detect	51.8	82.7	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0982	detect	51.8	82.7	<1.0	<1.0
	55-CFR	SW55-CFR	0.123	detect	51.8	82.7	<1.0	<1.0
	56-CFR	SW56-CFR	0.12	detect	51.8	82.7	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0982	detect	51.8	82.7	<1.0	<1.0
	57-CFR	SW57-CFR	0.118	detect	51.8	82.7	<1.0	<1.0
	58-CFR	SW58-CFR	0.124	detect	51.8	82.7	<1.0	<1.0
	59-CFR	SW59-CFR	0.121	detect	51.8	82.7	<1.0	<1.0
	60-CFR	SW60-CFR	0.123	detect	51.8	82.7	<1.0	<1.0
	61-CFR	SW61-CFR	0.126	detect	51.8	82.7	<1.0	<1.0
	62-CFR	SW62-CFR	0.133	detect	51.8	82.7	<1.0	<1.0
	63-CFR	SW63-CFR	0.125	detect	51.8	82.7	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of Creek Surface Water

Barium

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.145	detect	51.8	82.7	<1.0	<1.0
	43-OK	SW43-OK	0.142	detect	51.8	82.7	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.25	detect	51.8	82.7	<1.0	<1.0
	37-LV	SW37-LV	0.158	detect	51.8	82.7	<1.0	<1.0
	39-LV	SW39-LV	0.163	detect	51.8	82.7	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of Pond Surface Water

Barium

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0725	detect	51.8	82.7	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.105	detect	51.8	82.7	<1.0	<1.0
69-HP1a	SW69-HP1a	0.204	detect	51.8	82.7	<1.0	<1.0
73-P5	SW73-P5	0.0417	detect	51.8	82.7	<1.0	<1.0
71-HP7	SW71-HP7	0.0563	detect	51.8	82.7	<1.0	<1.0
72-HP2	SW72-HP2	0.0414	detect	51.8	82.7	<1.0	<1.0
75-HP10	SW75-HP10	0.0226	detect	51.8	82.7	<1.0	<1.0
67-HP12	SW67-HP12	0.0272	detect	51.8	82.7	<1.0	<1.0
68-IBJ	SW68-IBJ	0.133	detect	51.8	82.7	<1.0	<1.0
66-HP13	SW66-HP13	0.0142	detect	51.8	82.7	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0606	detect	51.8	82.7	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0903	detect	51.8	82.7	<1.0	<1.0
70-CWD	SW70-CWD	0.161	detect	51.8	82.7	<1.0	<1.0
64-HP18	SW64-HP18	0.177	detect	51.8	82.7	<1.0	<1.0

#N/A = not analyzed

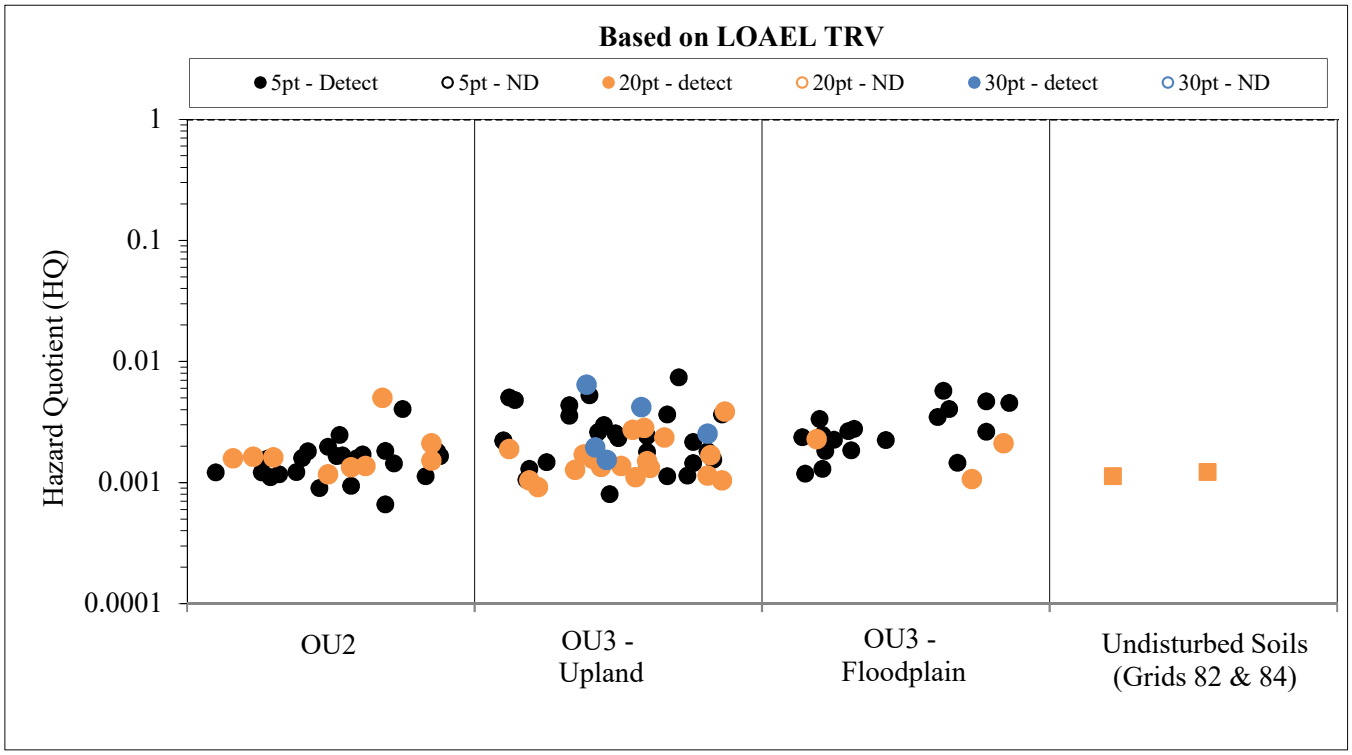
(a) Non-detects are evaluated at 1/2 the reported value.

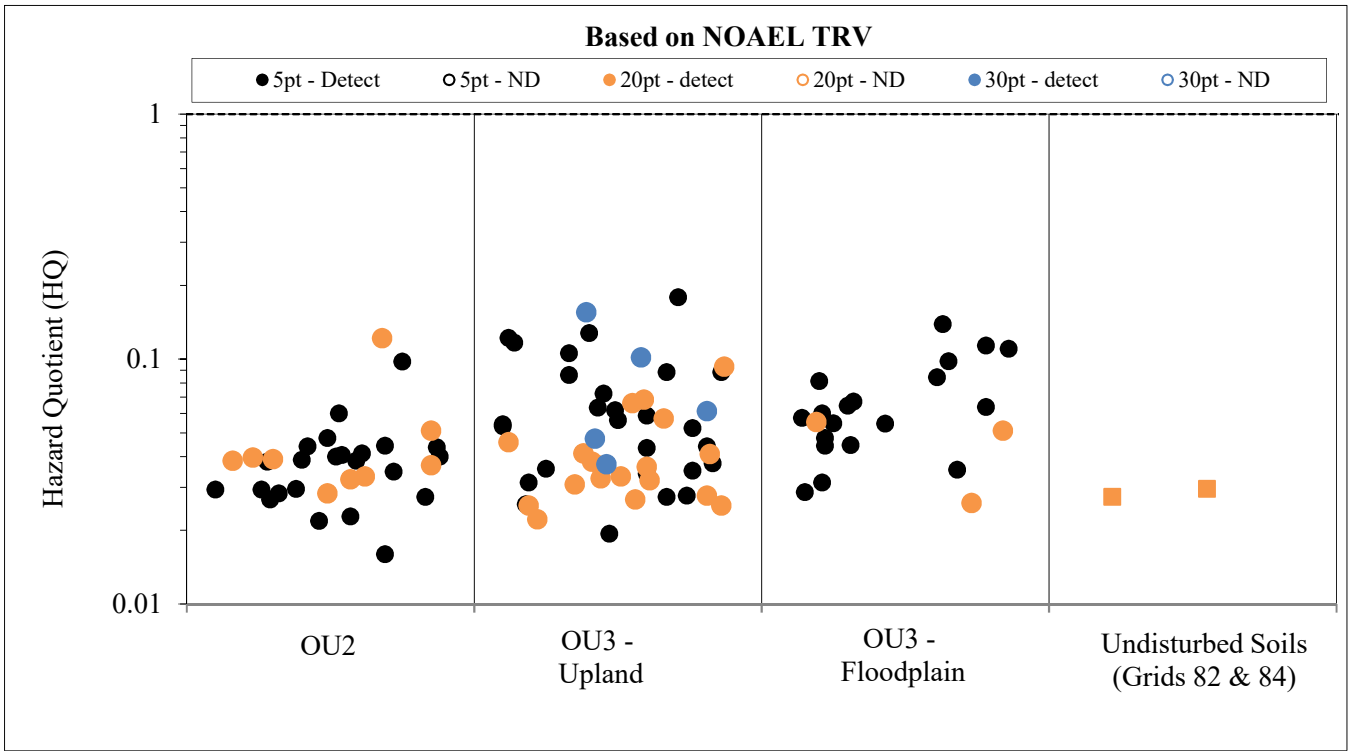
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Food by Exposure Unit/Soil Type

Chromium





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Chromium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.344438	detect	58	2	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.33066	detect	58	2	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.457413	detect	58	2	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.289328	detect	58	2	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.349949	detect	58	2	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.35546	detect	58	2	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.253506	detect	58	2	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	1.088423	detect	58	2	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.297594	detect	58	2	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.537323	detect	58	2	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.143286	detect	58	2	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.195641	detect	58	2	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.264528	detect	58	2	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.253506	detect	58	2	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.363726	detect	58	2	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.311372	detect	58	2	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.394037	detect	58	2	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.358215	detect	58	2	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.347193	detect	58	2	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.427103	detect	58	2	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	58	2	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.203907	detect	58	2	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	58	2	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	58	2	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.876249	detect	58	2	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.396792	detect	58	2	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.391281	detect	58	2	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.24524	detect	58	2	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.344438	detect	58	2	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.341682	detect	58	2	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.369237	detect	58	2	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.239729	detect	58	2	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.358215	detect	58	2	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.262691	detect	58	2	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.262691	detect	58	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Chromium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.909315	detect	58	2	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	1.044335	detect	58	2	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.504257	detect	58	2	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.239729	detect	58	2	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.198396	detect	58	2	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.297594	detect	58	2	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.27555	detect	58	2	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.292083	detect	58	2	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.225951	detect	58	2	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.247995	detect	58	2	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.327905	detect	58	2	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.366482	detect	58	2	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.286572	detect	58	2	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.611721	detect	58	2	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.592433	detect	58	2	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.41057	detect	58	2	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.341682	detect	58	2	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.325149	detect	58	2	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.834917	detect	58	2	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.369237	detect	58	2	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.225951	detect	58	2	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.484968	detect	58	2	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.336171	detect	58	2	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.553856	detect	58	2	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.24524	detect	58	2	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.173597	detect	58	2	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	58	2	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.247995	detect	58	2	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1.093934	detect	58	2	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.228707	detect	58	2	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.468435	detect	58	2	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	1.603701	detect	58	2	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.77154	detect	58	2	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.512523	detect	58	2	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.526301	detect	58	2	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.314127	detect	58	2	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.945137	detect	58	2	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.388526	detect	58	2	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.424347	detect	58	2	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.548345	detect	58	2	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.647543	detect	58	2	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1.143533	detect	58	2	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	1.391528	detect	58	2	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.319638	detect	58	2	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.281061	detect	58	2	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	0.793584	detect	58	2	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	0.793584	detect	58	2	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.394037	detect	58	2	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.305861	detect	58	2	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.567633	detect	58	2	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.476702	detect	58	2	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.333416	detect	58	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

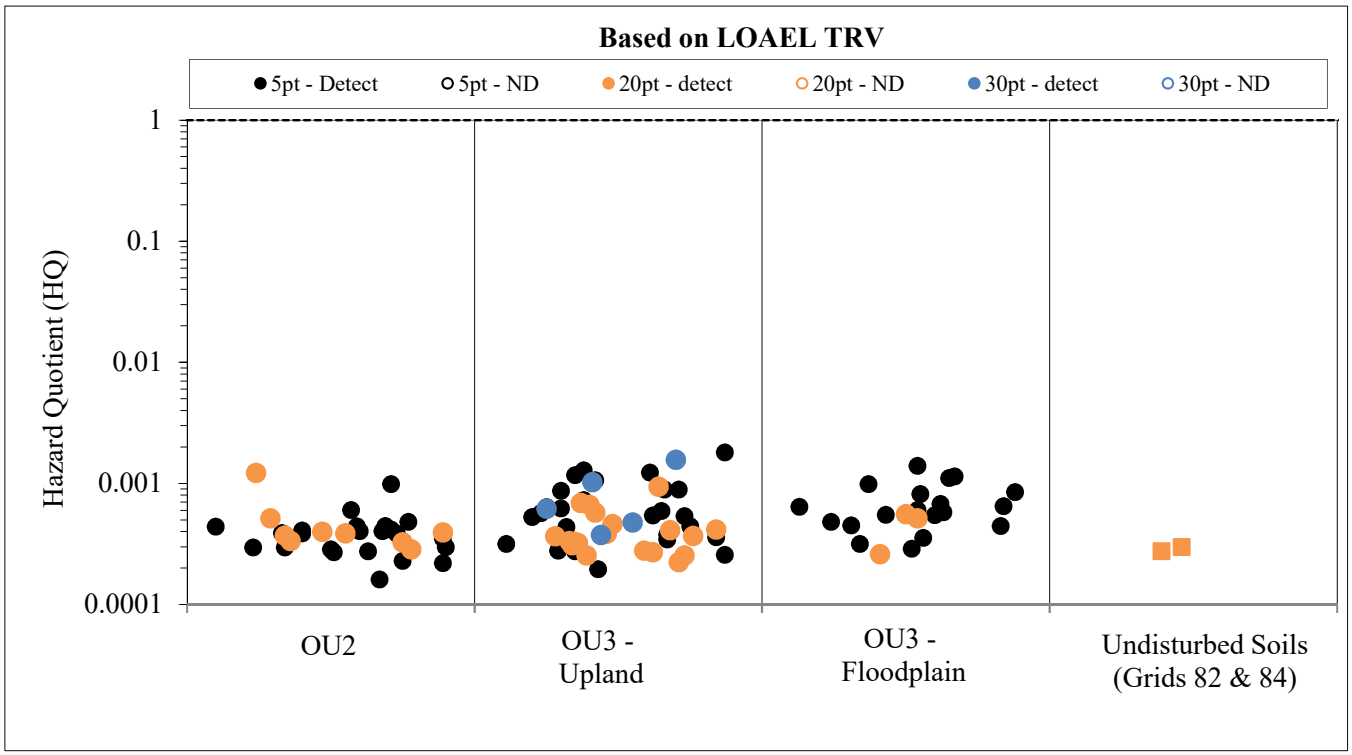
Chromium

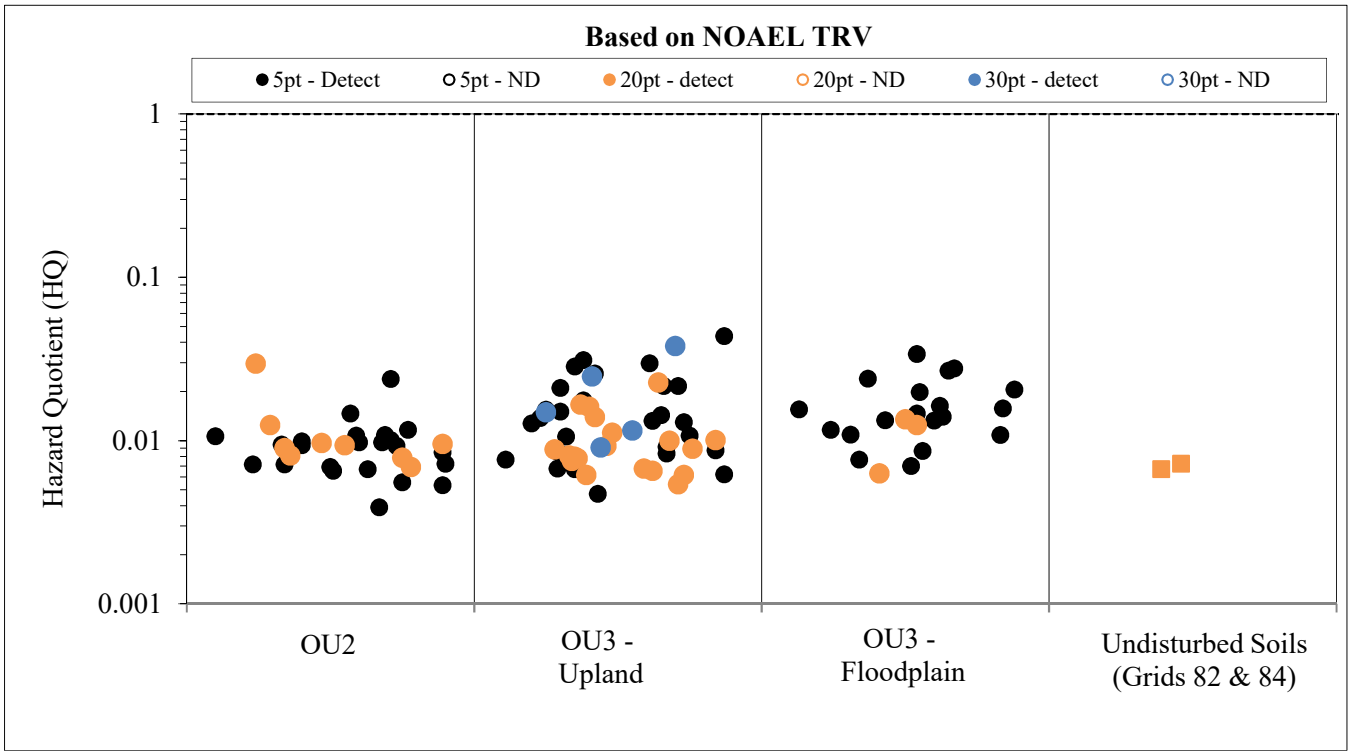
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.231462	detect	58	2	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.457413	detect	58	2	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.49599	detect	58	2	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.537323	detect	58	2	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.256262	detect	58	2	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	0.986469	detect	58	2	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	0.515279	detect	58	2	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	0.570389	detect	58	2	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	1.01678	detect	58	2	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	0.490479	detect	58	2	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.727452	detect	58	2	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	0.427103	detect	58	2	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.600699	detect	58	2	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.487724	detect	58	2	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.578655	detect	58	2	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.316883	detect	58	2	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.399548	detect	58	2	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	0.755007	detect	58	2	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	1.245486	detect	58	2	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	0.281061	detect	58	2	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.396792	detect	58	2	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	0.879005	detect	58	2	<1.0	<1.0
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	0.264528	detect	58	2	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.24524	detect	58	2	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Surface Soil by Exposure Unit/Soil Type

Chromium





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Surface Soil

Chromium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	12.5	detect	58	2	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	12	detect	58	2	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	16.6	detect	58	2	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	10.5	detect	58	2	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	12.7	detect	58	2	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	12.9	detect	58	2	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	9.2	detect	58	2	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	39.5	detect	58	2	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	10.8	detect	58	2	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	19.5	detect	58	2	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	5.2	detect	58	2	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	7.1	detect	58	2	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	9.6	detect	58	2	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	9.2	detect	58	2	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	13.2	detect	58	2	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	11.3	detect	58	2	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	14.3	detect	58	2	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	13	detect	58	2	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	12.6	detect	58	2	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	15.5	detect	58	2	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	58	2	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	7.4	detect	58	2	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	58	2	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	58	2	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	31.8	detect	58	2	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	14.4	detect	58	2	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	14.2	detect	58	2	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	8.9	detect	58	2	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	12.5	detect	58	2	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	12.4	detect	58	2	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	13.4	detect	58	2	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	8.7	detect	58	2	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	13	detect	58	2	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	9.533333	detect	58	2	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	9.533333	detect	58	2	<1.0	<1.0
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	33	detect	58	2	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	37.9	detect	58	2	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	18.3	detect	58	2	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	8.7	detect	58	2	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	7.2	detect	58	2	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	10.8	detect	58	2	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	10	detect	58	2	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	10.6	detect	58	2	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	8.2	detect	58	2	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	9	detect	58	2	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	11.9	detect	58	2	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	13.3	detect	58	2	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	10.4	detect	58	2	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	22.2	detect	58	2	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	21.5	detect	58	2	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	14.9	detect	58	2	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	12.4	detect	58	2	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	11.8	detect	58	2	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	30.3	detect	58	2	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	13.4	detect	58	2	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	8.2	detect	58	2	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	17.6	detect	58	2	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	12.2	detect	58	2	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	20.1	detect	58	2	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	8.9	detect	58	2	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	6.3	detect	58	2	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	58	2	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	9	detect	58	2	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	39.7	detect	58	2	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	8.3	detect	58	2	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	17	detect	58	2	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	58.2	detect	58	2	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	28	detect	58	2	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	18.6	detect	58	2	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	19.1	detect	58	2	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	11.4	detect	58	2	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	34.3	detect	58	2	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	14.1	detect	58	2	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	15.4	detect	58	2	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	19.9	detect	58	2	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	23.5	detect	58	2	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	41.5	detect	58	2	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	50.5	detect	58	2	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	11.6	detect	58	2	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	10.2	detect	58	2	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	28.8	detect	58	2	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	28.8	detect	58	2	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	14.3	detect	58	2	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	11.1	detect	58	2	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	20.6	detect	58	2	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	17.3	detect	58	2	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	12.1	detect	58	2	<1.0	<1.0
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	8.4	detect	58	2	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	16.6	detect	58	2	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	18	detect	58	2	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	19.5	detect	58	2	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	9.3	detect	58	2	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	35.8	detect	58	2	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	18.7	detect	58	2	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	20.7	detect	58	2	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	36.9	detect	58	2	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	17.8	detect	58	2	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	26.4	detect	58	2	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	15.5	detect	58	2	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	21.8	detect	58	2	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	17.7	detect	58	2	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	21	detect	58	2	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	11.5	detect	58	2	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	14.5	detect	58	2	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	27.4	detect	58	2	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	45.2	detect	58	2	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	10.2	detect	58	2	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	14.4	detect	58	2	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	31.9	detect	58	2	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	9.6	detect	58	2	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	8.9	detect	58	2	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of River Surface Water

Chromium

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0002	detect	2.4	58.2	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0004	ND	2.4	58.2	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0008	detect	2.4	58.2	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0005	ND	2.4	58.2	<1.0	<1.0
	51-CFR	SW51-CFR	0.0002	detect	2.4	58.2	<1.0	<1.0
	52-CFR	SW52-CFR	0.0002	ND	2.4	58.2	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0002	ND	2.4	58.2	<1.0	<1.0
	54-CFR	SW54-CFR	0.0002	ND	2.4	58.2	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0005	ND	2.4	58.2	<1.0	<1.0
	55-CFR	SW55-CFR	0.0002	ND	2.4	58.2	<1.0	<1.0
	56-CFR	SW56-CFR	0.0002	ND	2.4	58.2	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0005	ND	2.4	58.2	<1.0	<1.0
	57-CFR	SW57-CFR	0.0002	ND	2.4	58.2	<1.0	<1.0
	58-CFR	SW58-CFR	0.0002	ND	2.4	58.2	<1.0	<1.0
	59-CFR	SW59-CFR	0.0002	ND	2.4	58.2	<1.0	<1.0
	60-CFR	SW60-CFR	0.0002	detect	2.4	58.2	<1.0	<1.0
	61-CFR	SW61-CFR	0.0002	detect	2.4	58.2	<1.0	<1.0
	62-CFR	SW62-CFR	0.0002	ND	2.4	58.2	<1.0	<1.0
	63-CFR	SW63-CFR	0.0003	detect	2.4	58.2	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of Creek Surface Water

Chromium

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.0003	detect	2.4	58.2	<1.0	<1.0
	43-OK	SW43-OK	0.0003	detect	2.4	58.2	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.0005	detect	2.4	58.2	<1.0	<1.0
	37-LV	SW37-LV	0.0003	detect	2.4	58.2	<1.0	<1.0
	39-LV	SW39-LV	0.0002	detect	2.4	58.2	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of Pond Surface Water

Chromium

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0002	ND	2.4	58.2	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0016	detect	2.4	58.2	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0013	detect	2.4	58.2	<1.0	<1.0
73-P5	SW73-P5	0.0016	ND	2.4	58.2	<1.0	<1.0
71-HP7	SW71-HP7	0.0011	detect	2.4	58.2	<1.0	<1.0
72-HP2	SW72-HP2	0.0011	detect	2.4	58.2	<1.0	<1.0
75-HP10	SW75-HP10	0.0008	ND	2.4	58.2	<1.0	<1.0
67-HP12	SW67-HP12	0.0011	detect	2.4	58.2	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0002	detect	2.4	58.2	<1.0	<1.0
66-HP13	SW66-HP13	0.001	detect	2.4	58.2	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0009	detect	2.4	58.2	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0015	detect	2.4	58.2	<1.0	<1.0
70-CWD	SW70-CWD	0.0002	ND	2.4	58.2	<1.0	<1.0
64-HP18	SW64-HP18	0.0008	ND	2.4	58.2	<1.0	<1.0

#N/A = not analyzed

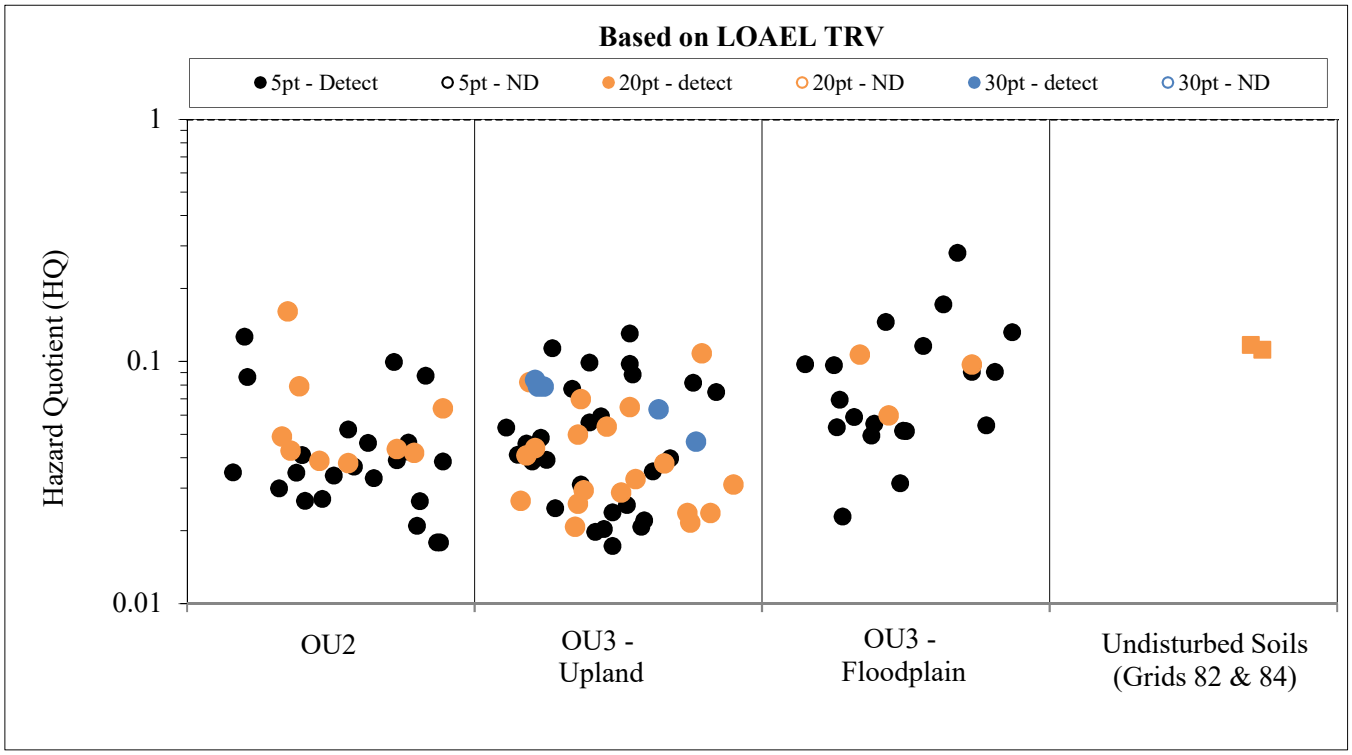
(a) Non-detects are evaluated at 1/2 the reported value.

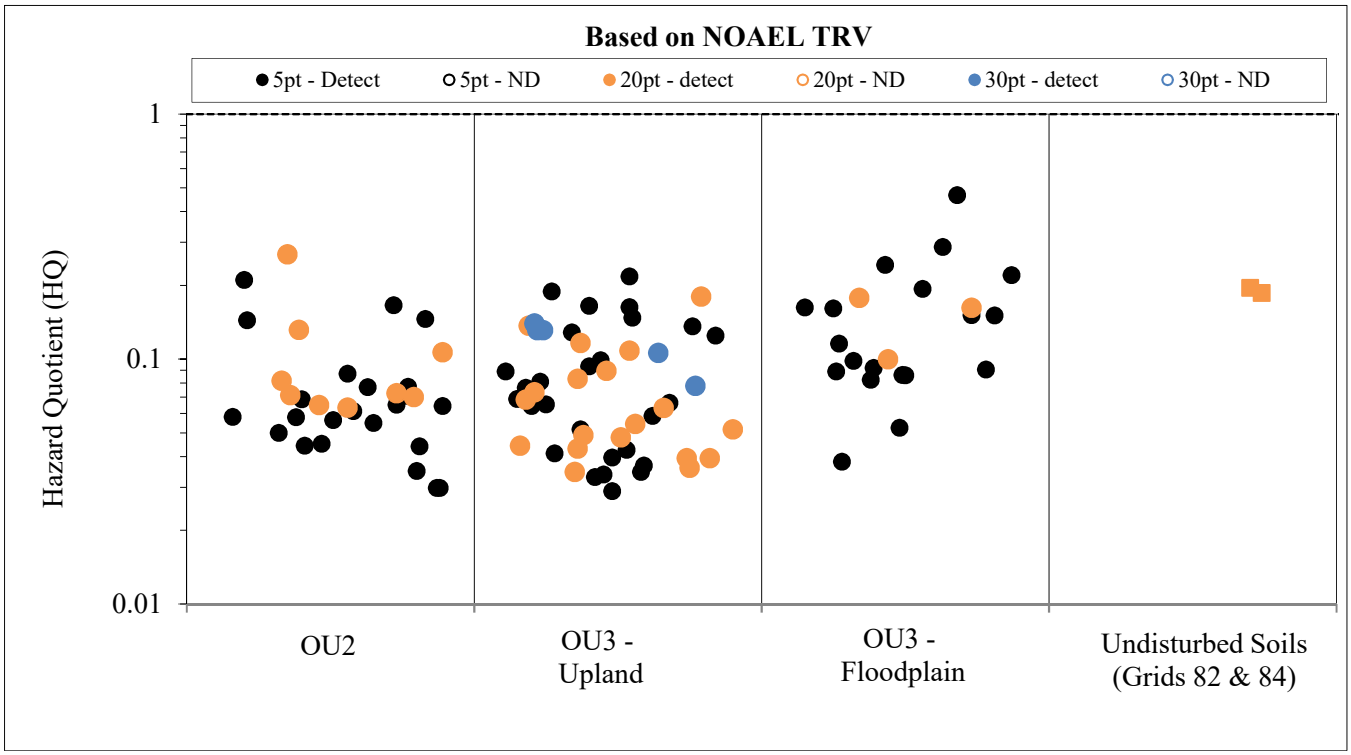
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Food by Exposure Unit/Soil Type

Copper





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Copper

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	1.707055	detect	9	6	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	1.460701	detect	9	6	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	5.597669	detect	9	6	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	1.515321	detect	9	6	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	2.752541	detect	9	6	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	1.490526	detect	9	6	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	1.355657	detect	9	6	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	2.231057	detect	9	6	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	1.32544	detect	9	6	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	1.823766	detect	9	6	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.729713	detect	9	6	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.92141	detect	9	6	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	1.345595	detect	9	6	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	1.14705	detect	9	6	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	1.213767	detect	9	6	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	1.480593	detect	9	6	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	1.60908	detect	9	6	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	3.007754	detect	9	6	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	1.27993	detect	9	6	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	1.208656	detect	9	6	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	9	6	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.942785	detect	9	6	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	9	6	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	9	6	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	3.463099	detect	9	6	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	3.044731	detect	9	6	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	1.360684	detect	9	6	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	1.043158	detect	9	6	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	4.402706	detect	9	6	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	1.177915	detect	9	6	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	1.604162	detect	9	6	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.926762	detect	9	6	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	1.430796	detect	9	6	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.622833	detect	9	6	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.622833	detect	9	6	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Copper

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	2.743226	detect	9	6	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	1.949271	detect	9	6	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	1.223981	detect	9	6	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.724086	detect	9	6	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.752123	detect	9	6	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.82398	detect	9	6	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.926762	detect	9	6	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	1.136732	detect	9	6	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.82398	detect	9	6	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	1.079707	detect	9	6	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	1.001115	detect	9	6	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	1.022174	detect	9	6	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	1.530172	detect	9	6	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	2.859487	detect	9	6	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	2.259509	detect	9	6	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	1.736317	detect	9	6	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	1.320395	detect	9	6	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	1.872146	detect	9	6	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	3.759737	detect	9	6	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	1.425804	detect	9	6	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.899941	detect	9	6	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	1.365708	detect	9	6	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	1.38578	detect	9	6	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	1.857646	detect	9	6	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	1.079707	detect	9	6	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.724086	detect	9	6	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	9	6	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.603275	detect	9	6	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	3.449367	detect	9	6	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.707145	detect	9	6	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	1.594322	detect	9	6	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	3.081673	detect	9	6	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	4.542288	detect	9	6	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	2.434241	detect	9	6	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	2.687277	detect	9	6	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.768833	detect	9	6	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	1.345595	detect	9	6	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	1.687515	detect	9	6	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	2.21207	detect	9	6	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	2.743226	detect	9	6	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	3.408148	detect	9	6	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	2.845556	detect	9	6	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	2.924426	detect	9	6	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.829452	detect	9	6	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.88917	detect	9	6	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	3.946044	detect	9	6	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	2.607849	detect	9	6	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.862128	detect	9	6	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.690108	detect	9	6	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	2.064362	detect	9	6	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	1.435786	detect	9	6	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	1.623821	detect	9	6	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

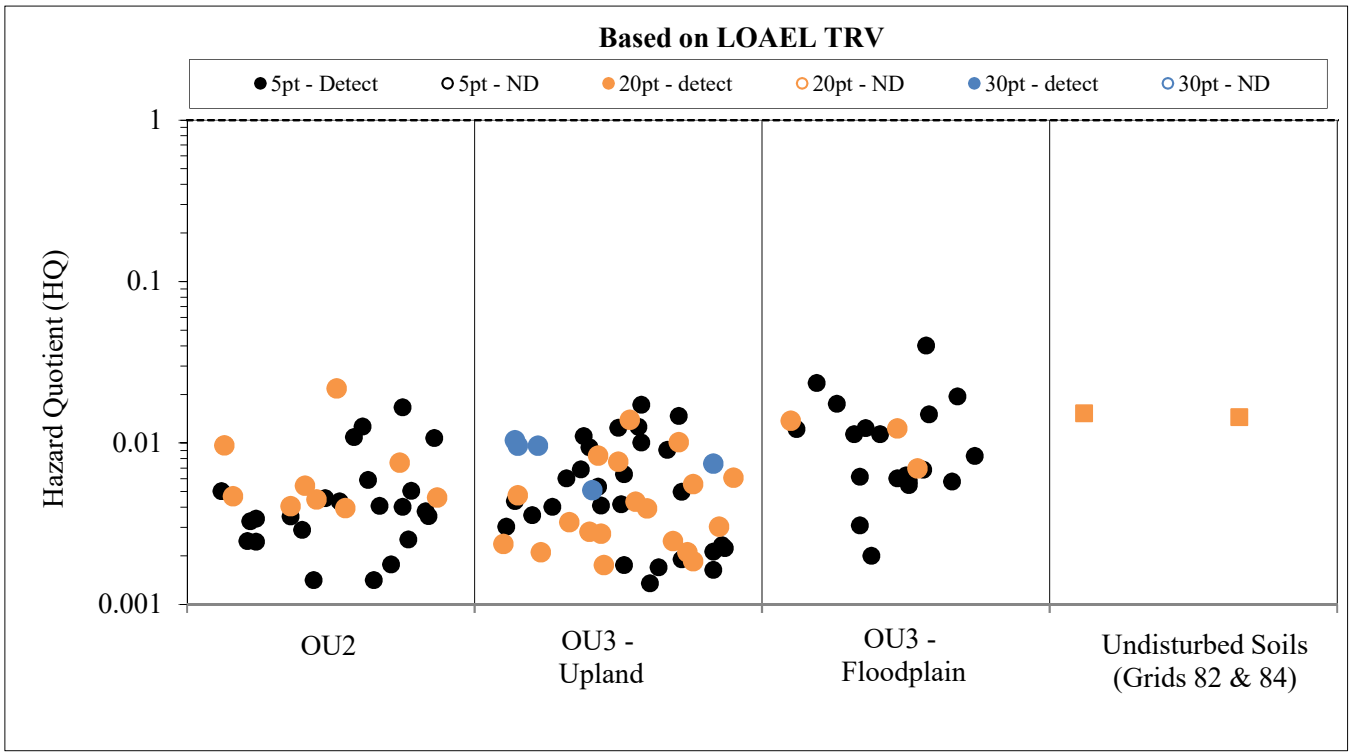
Copper

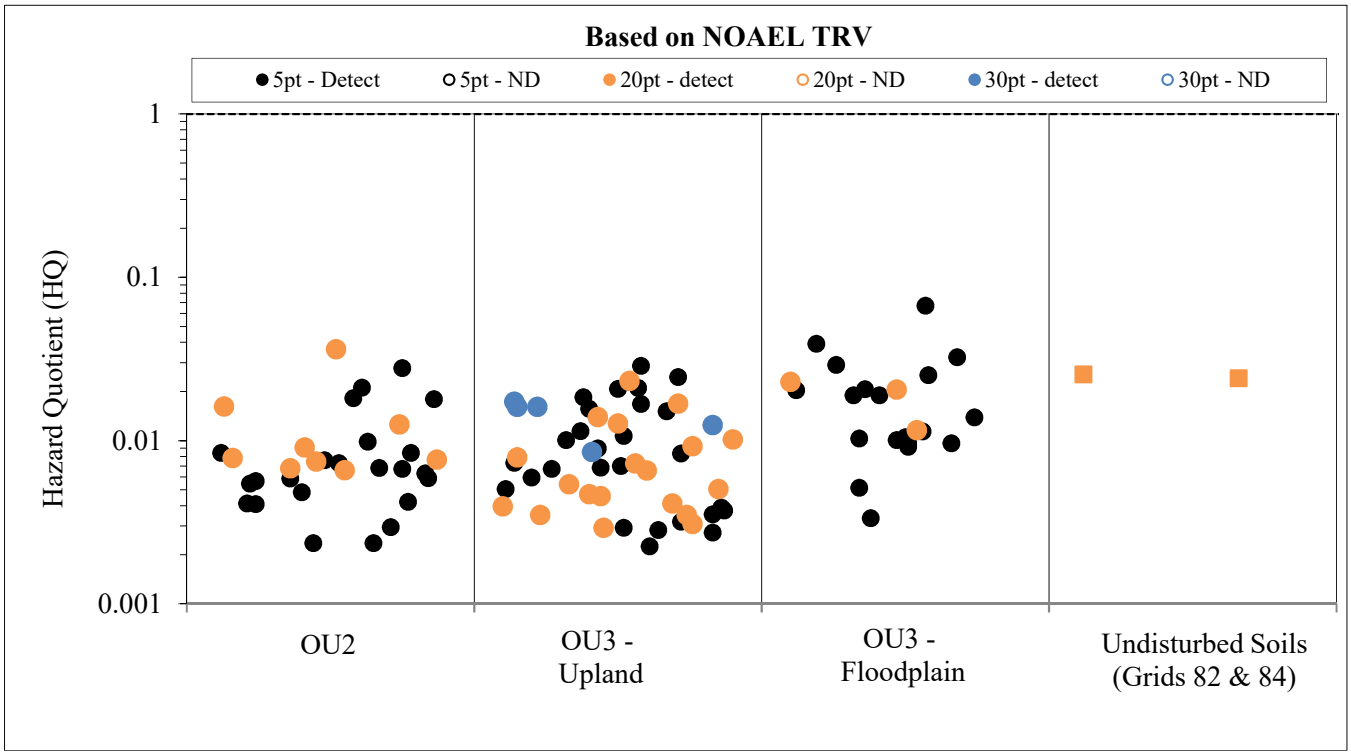
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	2.088255	detect	9	6	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	3.380649	detect	9	6	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	3.714206	detect	9	6	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	2.420118	detect	9	6	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.796508	detect	9	6	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	9.767683	detect	9	6	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	3.362308	detect	9	6	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	1.862481	detect	9	6	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	4.596252	detect	9	6	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	1.896284	detect	9	6	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	4.03672	detect	9	6	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	1.925205	detect	9	6	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	1.721693	detect	9	6	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	1.794671	detect	9	6	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	2.054797	detect	9	6	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	1.095307	detect	9	6	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	1.799523	detect	9	6	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	5.062507	detect	9	6	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	5.997348	detect	9	6	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	3.15085	detect	9	6	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	3.155458	detect	9	6	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	3.394401	detect	9	6	<1.0	<1.0
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	4.072954	detect	9	6	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	3.887034	detect	9	6	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Surface Soil by Exposure Unit/Soil Type

Copper





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Surface Soil

Copper

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	28.2	detect	9	6	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	23.2	detect	9	6	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	113	detect	9	6	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	24.3	detect	9	6	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	50.2	detect	9	6	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	23.8	detect	9	6	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	21.1	detect	9	6	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	39.1	detect	9	6	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	20.5	detect	9	6	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	30.6	detect	9	6	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	9.2	detect	9	6	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	12.7	detect	9	6	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	20.9	detect	9	6	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	17	detect	9	6	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	18.3	detect	9	6	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	23.6	detect	9	6	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	26.2	detect	9	6	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	55.7	detect	9	6	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	19.6	detect	9	6	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	18.2	detect	9	6	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	9	6	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	13.1	detect	9	6	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	9	6	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	9	6	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	65.6	detect	9	6	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	56.5	detect	9	6	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	21.2	detect	9	6	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	15	detect	9	6	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	86.3	detect	9	6	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	17.6	detect	9	6	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	26.1	detect	9	6	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	12.8	detect	9	6	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	22.6	detect	9	6	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	7.333333	detect	9	6	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	7.333333	detect	9	6	<1.0	<1.0
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	50	detect	9	6	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	33.2	detect	9	6	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	18.5	detect	9	6	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	9.1	detect	9	6	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	9.6	detect	9	6	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	10.9	detect	9	6	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	12.8	detect	9	6	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	16.8	detect	9	6	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	10.9	detect	9	6	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	15.7	detect	9	6	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	14.2	detect	9	6	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	14.6	detect	9	6	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	24.6	detect	9	6	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	52.5	detect	9	6	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	39.7	detect	9	6	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	28.8	detect	9	6	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	20.4	detect	9	6	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	31.6	detect	9	6	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	72.1	detect	9	6	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	22.5	detect	9	6	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	12.3	detect	9	6	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	21.3	detect	9	6	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	21.7	detect	9	6	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	31.3	detect	9	6	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	15.7	detect	9	6	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	9.1	detect	9	6	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	9	6	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	7	detect	9	6	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	65.3	detect	9	6	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	8.8	detect	9	6	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	25.9	detect	9	6	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	57.3	detect	9	6	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	89.4	detect	9	6	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	43.4	detect	9	6	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	48.8	detect	9	6	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	9.9	detect	9	6	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	20.9	detect	9	6	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	27.8	detect	9	6	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	38.7	detect	9	6	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	50	detect	9	6	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	64.4	detect	9	6	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	52.2	detect	9	6	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	53.9	detect	9	6	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	11	detect	9	6	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	12.1	detect	9	6	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	76.2	detect	9	6	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	47.1	detect	9	6	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	11.6	detect	9	6	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	8.5	detect	9	6	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	35.6	detect	9	6	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	22.7	detect	9	6	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	26.5	detect	9	6	<1.0	<1.0
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	36.1	detect	9	6	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	63.8	detect	9	6	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	71.1	detect	9	6	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	43.1	detect	9	6	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	10.4	detect	9	6	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	208	detect	9	6	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	63.4	detect	9	6	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	31.4	detect	9	6	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	90.6	detect	9	6	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	32.1	detect	9	6	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	78.2	detect	9	6	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	32.7	detect	9	6	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	28.5	detect	9	6	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	30	detect	9	6	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	35.4	detect	9	6	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	16	detect	9	6	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	30.1	detect	9	6	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	101	detect	9	6	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	122	detect	9	6	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	58.8	detect	9	6	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	58.9	detect	9	6	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	64.1	detect	9	6	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	79	detect	9	6	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	74.9	detect	9	6	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of River Surface Water

Copper

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.002	detect	5.6	9.34	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0254	detect	5.6	9.34	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0131	detect	5.6	9.34	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.002	detect	5.6	9.34	<1.0	<1.0
	51-CFR	SW51-CFR	0.0021	detect	5.6	9.34	<1.0	<1.0
	52-CFR	SW52-CFR	0.0043	detect	5.6	9.34	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0299	detect	5.6	9.34	<1.0	<1.0
	54-CFR	SW54-CFR	0.0032	detect	5.6	9.34	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0015	detect	5.6	9.34	<1.0	<1.0
	55-CFR	SW55-CFR	0.0025	detect	5.6	9.34	<1.0	<1.0
	56-CFR	SW56-CFR	0.0023	detect	5.6	9.34	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0014	detect	5.6	9.34	<1.0	<1.0
	57-CFR	SW57-CFR	0.0027	detect	5.6	9.34	<1.0	<1.0
	58-CFR	SW58-CFR	0.0027	detect	5.6	9.34	<1.0	<1.0
	59-CFR	SW59-CFR	0.0026	detect	5.6	9.34	<1.0	<1.0
	60-CFR	SW60-CFR	0.0029	detect	5.6	9.34	<1.0	<1.0
	61-CFR	SW61-CFR	0.003	detect	5.6	9.34	<1.0	<1.0
	62-CFR	SW62-CFR	0.0026	detect	5.6	9.34	<1.0	<1.0
	63-CFR	SW63-CFR	0.0026	detect	5.6	9.34	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of Creek Surface Water

Copper

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.0023	detect	5.6	9.34	<1.0	<1.0
	43-OK	SW43-OK	0.002	detect	5.6	9.34	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.0009	detect	5.6	9.34	<1.0	<1.0
	37-LV	SW37-LV	0.0017	detect	5.6	9.34	<1.0	<1.0
	39-LV	SW39-LV	0.0024	detect	5.6	9.34	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of Pond Surface Water

Copper

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0007	detect	5.6	9.34	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0138	detect	5.6	9.34	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0036	detect	5.6	9.34	<1.0	<1.0
73-P5	SW73-P5	0.0014	detect	5.6	9.34	<1.0	<1.0
71-HP7	SW71-HP7	0.0025	detect	5.6	9.34	<1.0	<1.0
72-HP2	SW72-HP2	0.0035	detect	5.6	9.34	<1.0	<1.0
75-HP10	SW75-HP10	0.0018	detect	5.6	9.34	<1.0	<1.0
67-HP12	SW67-HP12	0.0018	detect	5.6	9.34	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0006	detect	5.6	9.34	<1.0	<1.0
66-HP13	SW66-HP13	0.0033	detect	5.6	9.34	<1.0	<1.0
65-HP13a	SW65-HP13a	0.006	detect	5.6	9.34	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0196	detect	5.6	9.34	<1.0	<1.0
70-CWD	SW70-CWD	0.0016	detect	5.6	9.34	<1.0	<1.0
64-HP18	SW64-HP18	0.0024	detect	5.6	9.34	<1.0	<1.0

#N/A = not analyzed

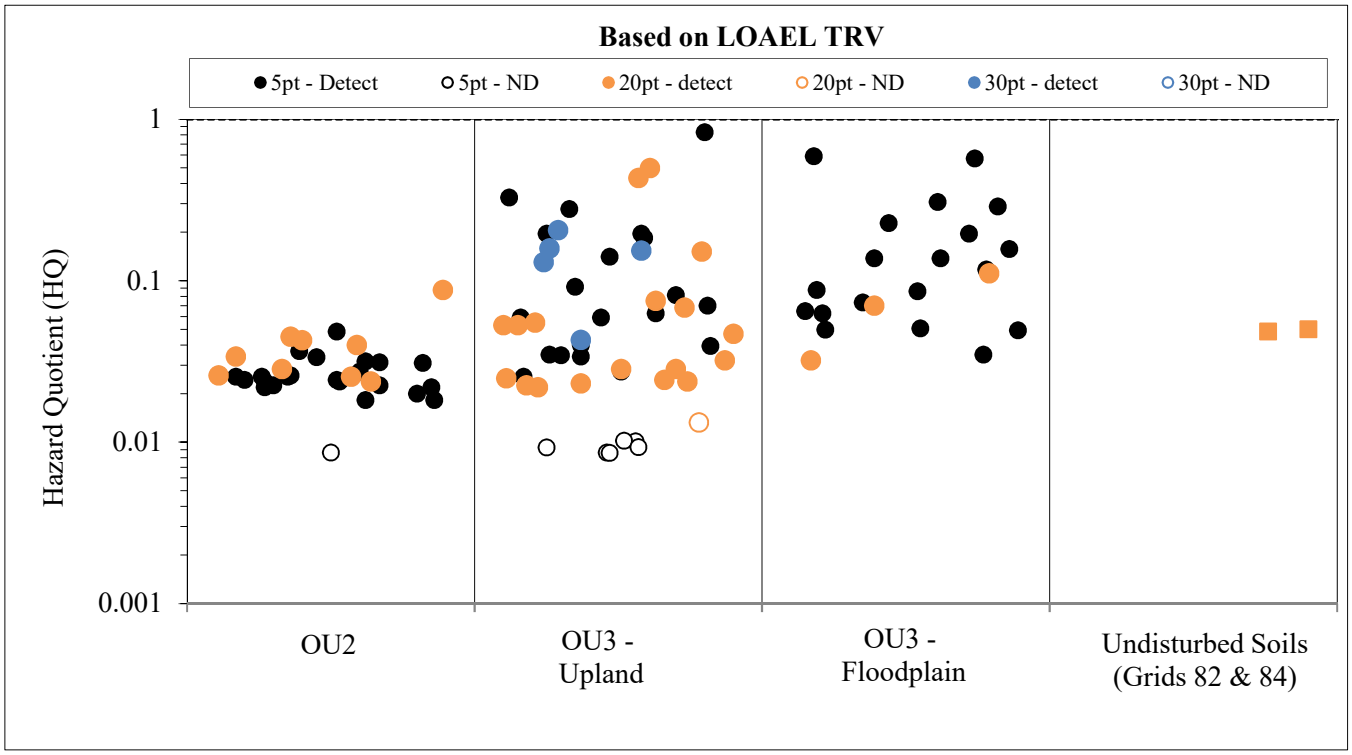
(a) Non-detects are evaluated at 1/2 the reported value.

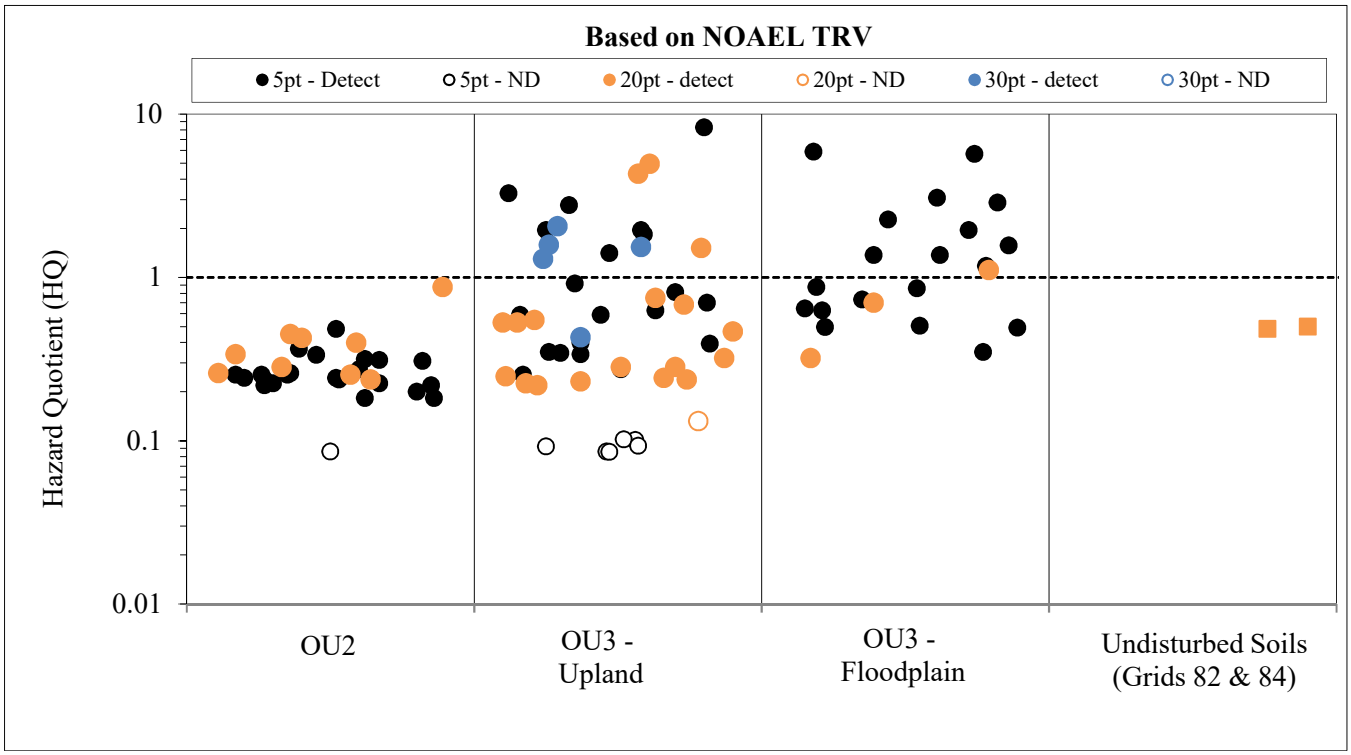
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Food by Exposure Unit/Soil Type

Mercury





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Mercury

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.081547	detect	0	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.026421	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.042004	detect	0	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.037226	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.031593	detect	0	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.024182	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.023697	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.03982	detect	0	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.02214	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.029526	detect	0	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.023697	detect	0	0	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.021001	detect	0	0	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.045182	detect	0	0	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.021001	detect	0	0	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.020393	detect	0	0	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.029163	detect	0	0	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.024182	detect	0	0	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.031261	detect	0	0	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.02556	detect	0	0	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.020393	detect	0	0	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.028793	detect	0	0	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.022677	detect	0	0	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.008035	ND	0	0	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.023697	detect	0	0	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.018659	detect	0	0	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.023697	detect	0	0	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.022677	detect	0	0	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.034104	detect	0	0	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.02214	detect	0	0	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.02214	detect	0	0	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.017021	detect	0	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.017021	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Mercury

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.12128	detect	0	0	<1.0	**1.3**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.181978	detect	0	0	<1.0	**2.0**
	CRP-1	CRP-1-SS_4/10/14_NM	0.08564	detect	0	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.020393	detect	0	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.022677	detect	0	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.029884	detect	0	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.026421	detect	0	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.023195	detect	0	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.021001	detect	0	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.02214	detect	0	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.043623	detect	0	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.051343	detect	0	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.04937	detect	0	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.141321	detect	0	0	<1.0	**1.5**
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.463892	detect	0	0	<1.0	**5.0**
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.063683	detect	0	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.04937	detect	0	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.403176	detect	0	0	<1.0	**4.3**
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.06997	detect	0	0	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.021582	detect	0	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.026421	detect	0	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.075896	detect	0	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.031593	detect	0	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.0551	detect	0	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.023697	detect	0	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.008035	ND	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.007989	ND	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.181978	detect	0	0	<1.0	**2.0**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.037226	detect	0	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.02556	detect	0	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.305281	detect	0	0	<1.0	**3.3**
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.065295	detect	0	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.012327	ND	0	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.009436	ND	0	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.036681	detect	0	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.009541	ND	0	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.04937	detect	0	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.147784	detect	0	0	<1.0	**1.6**
	P8dc	P8dc-SSComp-01_20171024_NM	0.143485	detect	0	0	<1.0	**1.5**
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.131436	detect	0	0	<1.0	**1.4**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.171821	detect	0	0	<1.0	**1.8**
	SPP	SPP-SSComp-01_20171025_NM	0.191992	detect	0	0	<1.0	**2.1**
	SS1,2-HP18	SS1-HP18-(0-2)c	0.008642	ND	0	0	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.008682	ND	0	0	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	0.774285	detect	0	0	<1.0	**8.3**
	SS15,16-HP9	SS15-HP9-(0-2)c	0.259251	detect	0	0	<1.0	**2.8**
	SS3,4-HP16	SS3-HP16-(0-2)c	0.0551	detect	0	0	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.032244	detect	0	0	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.058653	detect	0	0	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.032564	detect	0	0	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.040069	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

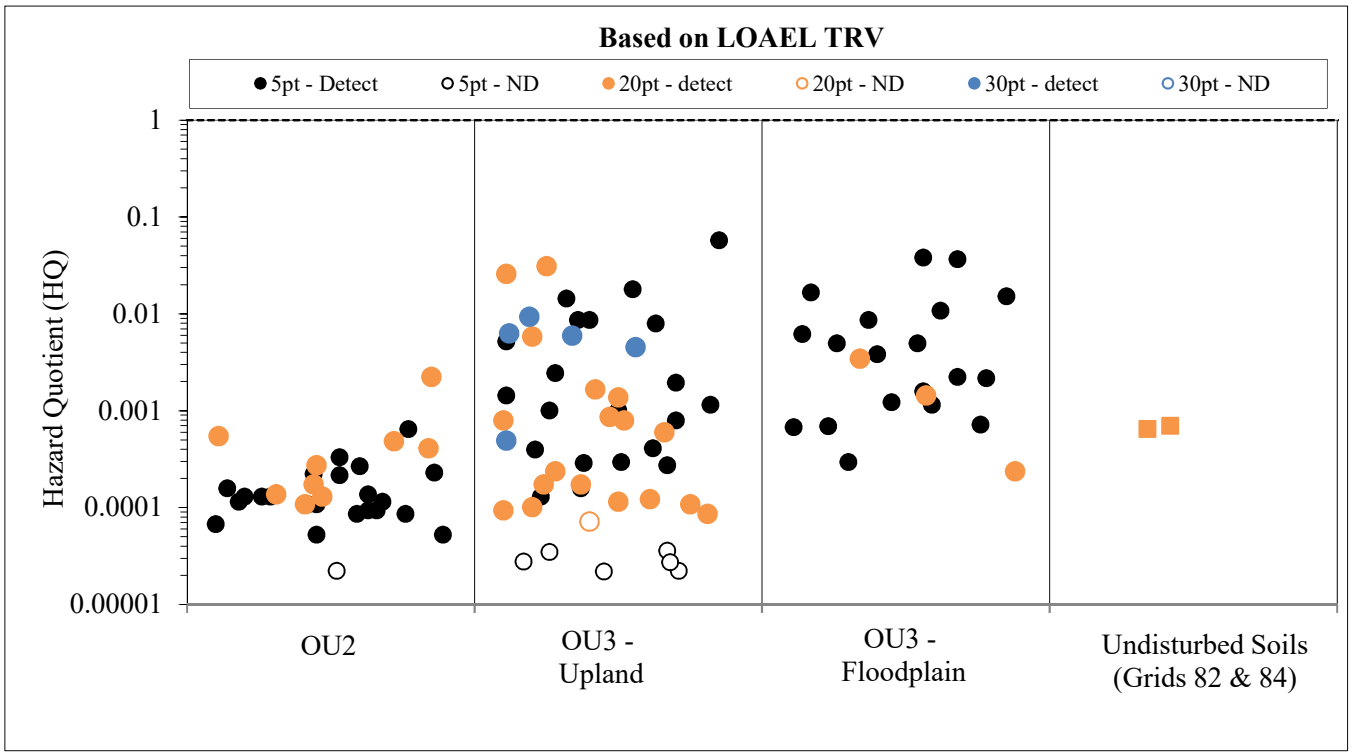
Mercury

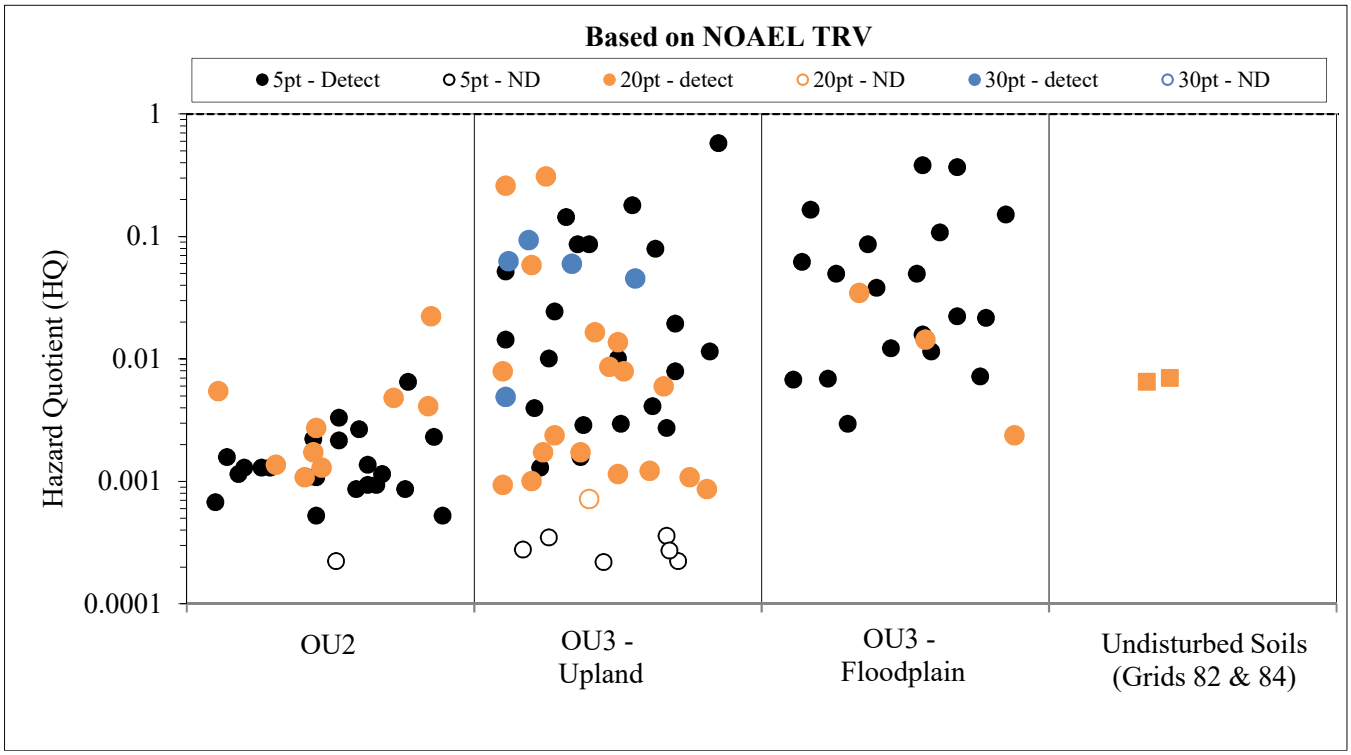
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.029884	detect	0	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.065295	detect	0	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.103549	detect	0	0	<1.0	**1.1**
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.109592	detect	0	0	<1.0	**1.2**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.032564	detect	0	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	0.532258	detect	0	0	<1.0	**5.7**
	SE11-HP11	SE11-HP11-(0-2)c	0.128084	detect	0	0	<1.0	**1.4**
	SE12-HP12	SE12-HP12-(0-2)c	0.058653	detect	0	0	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	0.287018	detect	0	0	<1.0	**3.1**
	SE14-HP13	SE14-HP13-(0-2)c	0.046477	detect	0	0	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.128084	detect	0	0	<1.0	**1.4**
	SE16-HP13	SE16-HP13-(0-2)c	0.047321	detect	0	0	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.046049	detect	0	0	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.081547	detect	0	0	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.080157	detect	0	0	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.060365	detect	0	0	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.268562	detect	0	0	<1.0	**2.9**
	SE5-HP2	SE5-HP2-(0-2)c	0.146713	detect	0	0	<1.0	**1.6**
	SE6-HP7	SE6-HP7-(0-2)c	0.549211	detect	0	0	<1.0	**5.9**
	SE7-HP7	SE7-HP7-(0-2)c	0.068436	detect	0	0	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.181978	detect	0	0	<1.0	**2.0**
	SE9-HP10	SE9-HP10-(0-2)c	0.211659	detect	0	0	<1.0	**2.3**
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	0.046689	detect	0	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.045182	detect	0	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Surface Soil by Exposure Unit/Soil Type

Mercury





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Surface Soil

Mercury

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.31	detect	0	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.024	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.076	detect	0	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.057	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.038	detect	0	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.019	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.018	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.067	detect	0	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.015	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.032	detect	0	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.018	detect	0	0	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.013	detect	0	0	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.09	detect	0	0	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.013	detect	0	0	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.012	detect	0	0	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.031	detect	0	0	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.019	detect	0	0	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.037	detect	0	0	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.022	detect	0	0	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.012	detect	0	0	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.03	detect	0	0	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.016	detect	0	0	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.0031	ND	0	0	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.018	detect	0	0	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.0094	detect	0	0	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.018	detect	0	0	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.016	detect	0	0	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.046	detect	0	0	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.015	detect	0	0	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.015	detect	0	0	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.007283	detect	0	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.007283	detect	0	0	<1.0	<1.0
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.63	detect	0	0	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	1.2	detect	0	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.34	detect	0	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.012	detect	0	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.016	detect	0	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.033	detect	0	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.024	detect	0	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.017	detect	0	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.013	detect	0	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.015	detect	0	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.083	detect	0	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.12	detect	0	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.11	detect	0	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.81	detect	0	0	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	4.3	detect	0	0	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.19	detect	0	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.11	detect	0	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	3.6	detect	0	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.23	detect	0	0	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.014	detect	0	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.024	detect	0	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.27	detect	0	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.038	detect	0	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.14	detect	0	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.018	detect	0	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.0031	ND	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.00305	ND	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1.2	detect	0	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.057	detect	0	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.022	detect	0	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	2.5	detect	0	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.2	detect	0	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.01	ND	0	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.00485	ND	0	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.055	detect	0	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.005	ND	0	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.11	detect	0	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.87	detect	0	0	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.83	detect	0	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.72	detect	0	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1.1	detect	0	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	1.3	detect	0	0	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.0038	ND	0	0	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.00385	ND	0	0	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	8	detect	0	0	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	2	detect	0	0	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.14	detect	0	0	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.04	detect	0	0	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.16	detect	0	0	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.041	detect	0	0	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.068	detect	0	0	<1.0	<1.0
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.033	detect	0	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.2	detect	0	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.48	detect	0	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.53	detect	0	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.041	detect	0	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	5.1	detect	0	0	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	0.69	detect	0	0	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	0.16	detect	0	0	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	2.3	detect	0	0	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	0.096	detect	0	0	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.69	detect	0	0	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	0.1	detect	0	0	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.094	detect	0	0	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.31	detect	0	0	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.3	detect	0	0	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.17	detect	0	0	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	2.1	detect	0	0	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	0.86	detect	0	0	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	5.3	detect	0	0	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	0.22	detect	0	0	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	1.2	detect	0	0	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	1.5	detect	0	0	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.097	detect	0	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.09	detect	0	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of River Surface Water

Mercury

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	8E-05	ND	0.032	0.16	<1.0	<1.0
	CFR2	CFR2_20180523_NM	8E-05	ND	0.032	0.16	<1.0	<1.0
	SW3-CFR	SW3-CFR	2E-05	ND	0.032	0.16	<1.0	<1.0
	51-CFR	SW51-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	52-CFR	SW52-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	54-CFR	SW54-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	SW2-CFR	SW2-CFR	2E-05	ND	0.032	0.16	<1.0	<1.0
	55-CFR	SW55-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	56-CFR	SW56-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	SW1-CFR	SW1-CFR	2E-05	ND	0.032	0.16	<1.0	<1.0
	57-CFR	SW57-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	58-CFR	SW58-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	59-CFR	SW59-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	60-CFR	SW60-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	61-CFR	SW61-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	62-CFR	SW62-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	63-CFR	SW63-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of Creek Surface Water

Mercury

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	8E-05	ND	0.032	0.16	<1.0	<1.0
	43-OK	SW43-OK	8E-05	ND	0.032	0.16	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	3E-05	detect	0.032	0.16	<1.0	<1.0
	37-LV	SW37-LV	8E-05	ND	0.032	0.16	<1.0	<1.0
	39-LV	SW39-LV	8E-05	ND	0.032	0.16	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of Pond Surface Water

Mercury

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	8E-05	ND	0.032	0.16	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	8E-05	ND	0.032	0.16	<1.0	<1.0
69-HP1a	SW69-HP1a	8E-05	ND	0.032	0.16	<1.0	<1.0
73-P5	SW73-P5	8E-05	ND	0.032	0.16	<1.0	<1.0
71-HP7	SW71-HP7	8E-05	ND	0.032	0.16	<1.0	<1.0
72-HP2	SW72-HP2	8E-05	ND	0.032	0.16	<1.0	<1.0
75-HP10	SW75-HP10	8E-05	ND	0.032	0.16	<1.0	<1.0
67-HP12	SW67-HP12	8E-05	ND	0.032	0.16	<1.0	<1.0
68-IBJ	SW68-IBJ	8E-05	ND	0.032	0.16	<1.0	<1.0
66-HP13	SW66-HP13	8E-05	ND	0.032	0.16	<1.0	<1.0
65-HP13a	SW65-HP13a	8E-05	ND	0.032	0.16	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	8E-05	ND	0.032	0.16	<1.0	<1.0
70-CWD	SW70-CWD	8E-05	ND	0.032	0.16	<1.0	<1.0
64-HP18	SW64-HP18	8E-05	ND	0.032	0.16	<1.0	<1.0

#N/A = not analyzed

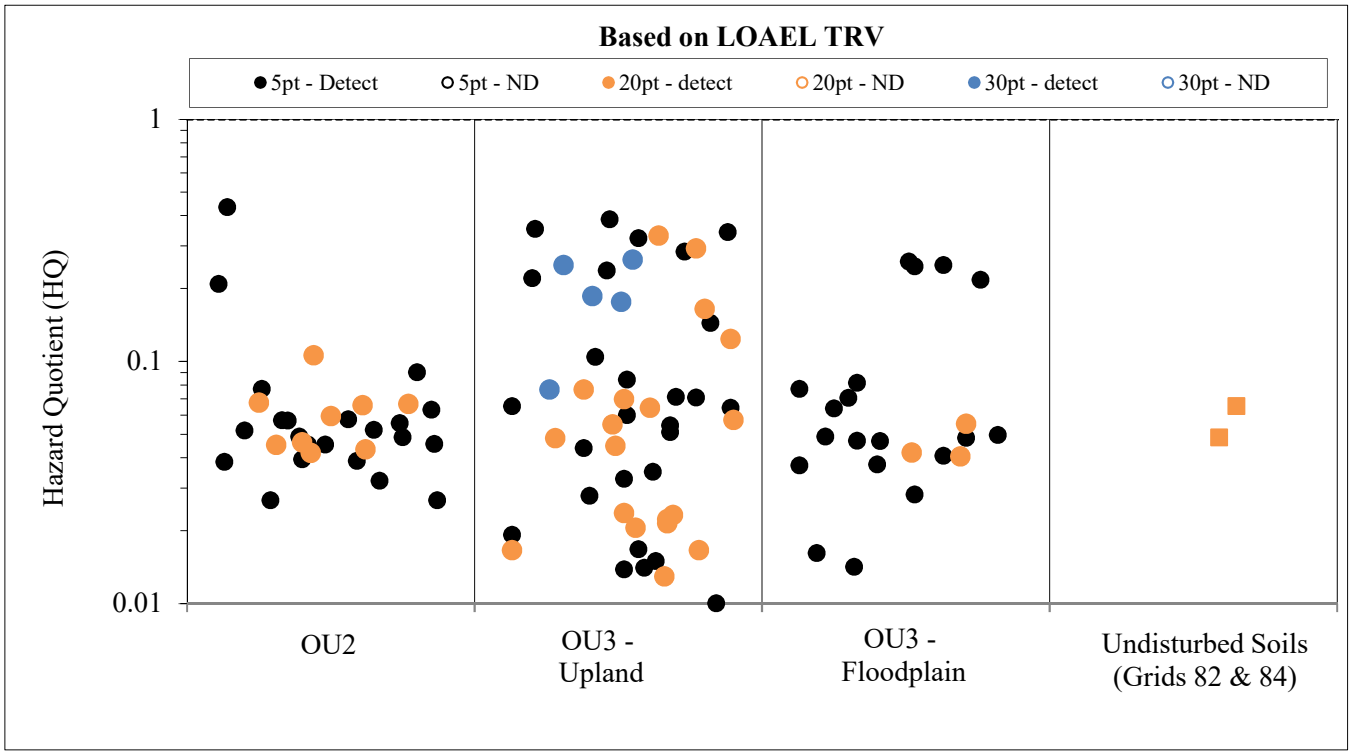
(a) Non-detects are evaluated at 1/2 the reported value.

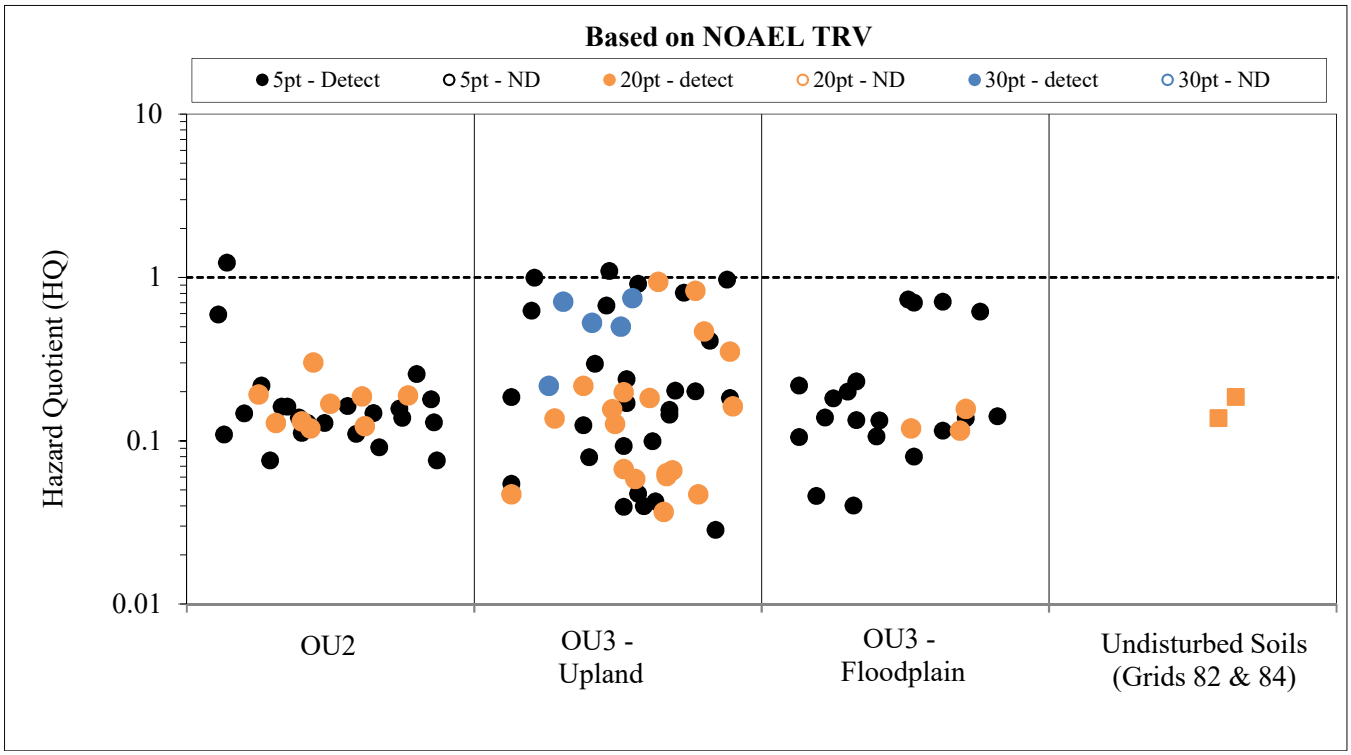
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Food by Exposure Unit/Soil Type

Manganese





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Manganese

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	57.78948	detect	146	52	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	36.36131	detect	146	52	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	24.63713	detect	146	52	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	23.61055	detect	146	52	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	35.96892	detect	146	52	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	32.3559	detect	146	52	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	25.26852	detect	146	52	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	36.8321	detect	146	52	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	22.82038	detect	146	52	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	31.09783	detect	146	52	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	21.15951	detect	146	52	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	30.31115	detect	146	52	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	49.20233	detect	146	52	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	24.71607	detect	146	52	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	17.51325	detect	146	52	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	26.68824	detect	146	52	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	34.39873	detect	146	52	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	41.92708	detect	146	52	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	24.71607	detect	146	52	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	21.47603	detect	146	52	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	146	52	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	24.08445	detect	146	52	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	146	52	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	146	52	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	236.4541	detect	146	52	<1.0	**1.2**
	SS33-IN	SS33-IN-(0-2)c	113.8527	detect	146	52	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	28.2643	detect	146	52	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	21.00122	detect	146	52	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	31.01918	detect	146	52	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	28.42183	detect	146	52	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	26.53055	detect	146	52	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	24.87393	detect	146	52	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	31.41242	detect	146	52	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	14.54393	detect	146	52	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	14.54393	detect	146	52	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Manganese

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	96.03569	detect	146	52	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	186.4249	detect	146	52	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	29.68159	detect	146	52	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	9.048516	detect	146	52	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	7.055595	detect	146	52	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	12.65569	detect	146	52	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	9.048516	detect	146	52	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	31.25513	detect	146	52	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	12.89534	detect	146	52	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	24.40029	detect	146	52	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	11.69618	detect	146	52	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	12.17613	detect	146	52	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	26.294	detect	146	52	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	89.83067	detect	146	52	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	35.10544	detect	146	52	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	67.45063	detect	146	52	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	38.08712	detect	146	52	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	41.69213	detect	146	52	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	180.2602	detect	146	52	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	29.9177	detect	146	52	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	11.21583	detect	146	52	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	32.67031	detect	146	52	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	8.178515	detect	146	52	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	38.636	detect	146	52	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	38.87121	detect	146	52	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	7.556949	detect	146	52	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	146	52	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	5.472689	detect	146	52	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	120.043	detect	146	52	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	10.49448	detect	146	52	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	35.10544	detect	146	52	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	129.3228	detect	146	52	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	191.8175	detect	146	52	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	159.4404	detect	146	52	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	175.6355	detect	146	52	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	35.65496	detect	146	52	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	56.85353	detect	146	52	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	78.57195	detect	146	52	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	101.4616	detect	146	52	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	143.2305	detect	146	52	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	154.8106	detect	146	52	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	210.2971	detect	146	52	<1.0	**1.1**
	SPP	SPP-SSComp-01_20171025_NM	136.2783	detect	146	52	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	15.20763	detect	146	52	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	17.83082	detect	146	52	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	45.84043	detect	146	52	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	27.79163	detect	146	52	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	9.128973	detect	146	52	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	7.653893	detect	146	52	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	23.9265	detect	146	52	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	19.10007	detect	146	52	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	41.69213	detect	146	52	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

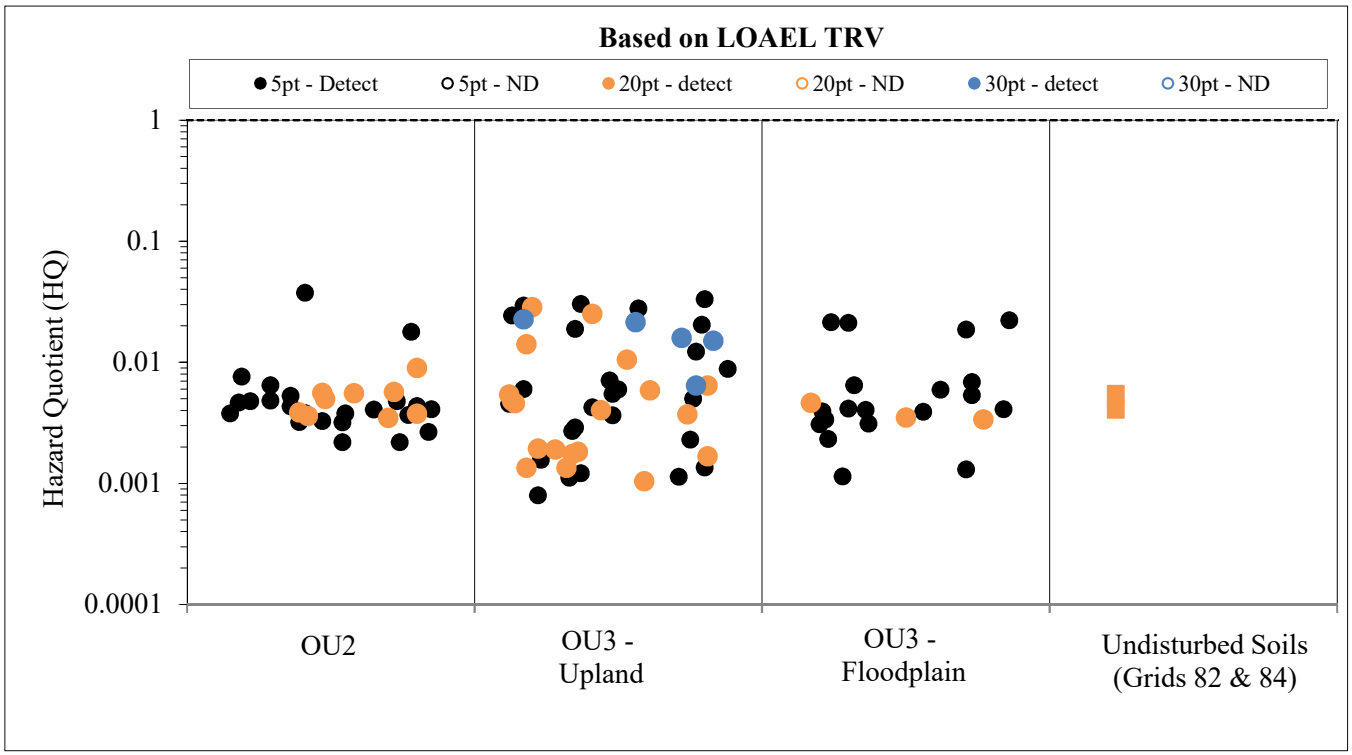
Manganese

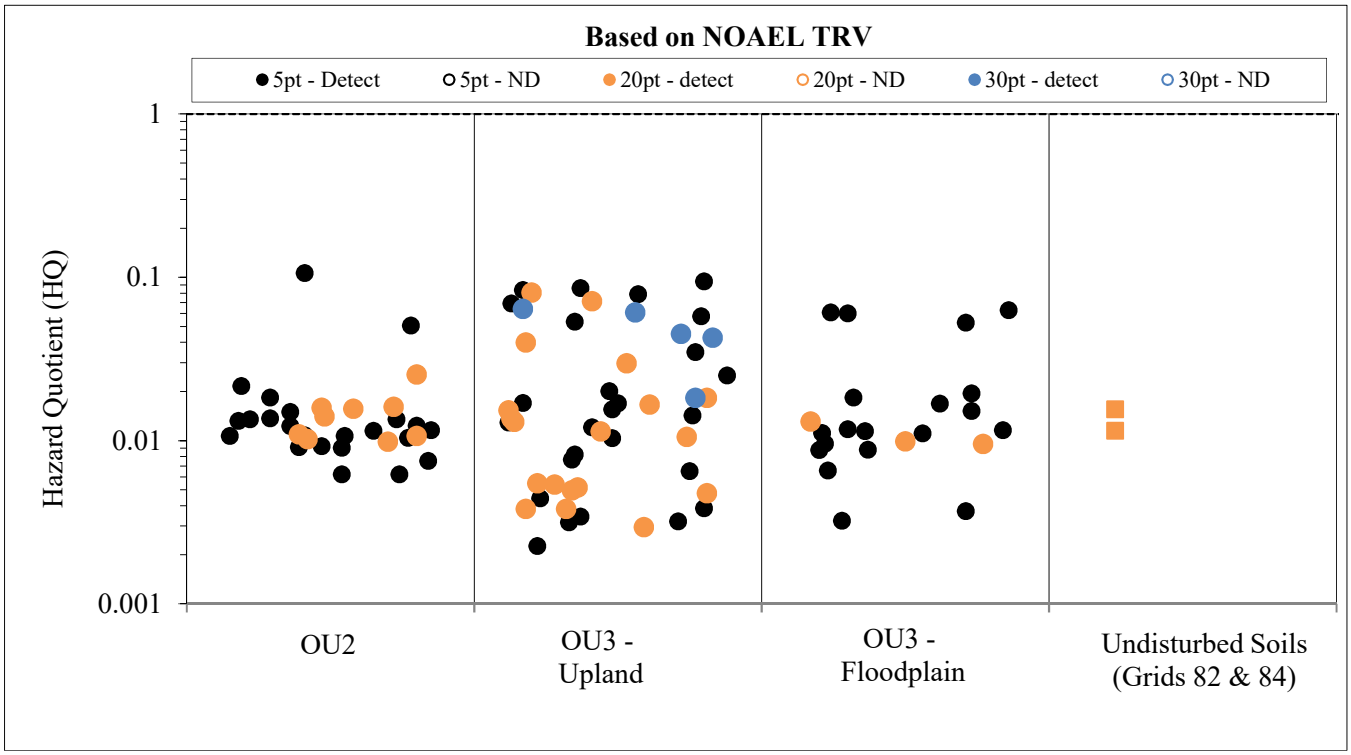
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	22.89942	detect	146	52	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	30.15378	detect	146	52	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	22.10884	detect	146	52	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	44.43217	detect	146	52	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	7.726582	detect	146	52	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	118.4958	detect	146	52	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	34.86989	detect	146	52	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	25.66301	detect	146	52	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	140.9135	detect	146	52	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	27.08239	detect	146	52	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	41.92708	detect	146	52	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	22.18792	detect	146	52	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	26.68824	detect	146	52	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	20.44704	detect	146	52	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	26.37285	detect	146	52	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	15.36684	detect	146	52	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	25.58412	detect	146	52	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	134.7329	detect	146	52	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	136.2783	detect	146	52	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	8.807046	detect	146	52	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	20.28865	detect	146	52	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	38.47919	detect	146	52	<1.0	<1.0
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	35.57646	detect	146	52	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	26.4517	detect	146	52	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Surface Soil by Exposure Unit/Soil Type

Manganese





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Surface Soil

Manganese

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	728	detect	146	52	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	454	detect	146	52	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	305	detect	146	52	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	292	detect	146	52	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	449	detect	146	52	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	403	detect	146	52	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	313	detect	146	52	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	460	detect	146	52	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	282	detect	146	52	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	387	detect	146	52	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	261	detect	146	52	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	377	detect	146	52	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	618	detect	146	52	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	306	detect	146	52	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	215	detect	146	52	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	331	detect	146	52	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	429	detect	146	52	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	525	detect	146	52	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	306	detect	146	52	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	265	detect	146	52	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	146	52	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	298	detect	146	52	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	146	52	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	146	52	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	3040	detect	146	52	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	1450	detect	146	52	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	351	detect	146	52	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	259	detect	146	52	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	386	detect	146	52	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	353	detect	146	52	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	329	detect	146	52	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	308	detect	146	52	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	391	detect	146	52	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	177.6667	detect	146	52	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	177.6667	detect	146	52	<1.0	<1.0
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	1220	detect	146	52	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	2390	detect	146	52	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	369	detect	146	52	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	109	detect	146	52	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	84.3	detect	146	52	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	154	detect	146	52	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	109	detect	146	52	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	389	detect	146	52	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	157	detect	146	52	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	302	detect	146	52	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	142	detect	146	52	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	148	detect	146	52	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	326	detect	146	52	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	1140	detect	146	52	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	438	detect	146	52	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	852	detect	146	52	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	476	detect	146	52	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	522	detect	146	52	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	2310	detect	146	52	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	372	detect	146	52	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	136	detect	146	52	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	407	detect	146	52	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	98.2	detect	146	52	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	483	detect	146	52	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	486	detect	146	52	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	90.5	detect	146	52	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	146	52	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	64.8	detect	146	52	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1530	detect	146	52	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	127	detect	146	52	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	438	detect	146	52	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	1650	detect	146	52	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	2460	detect	146	52	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	2040	detect	146	52	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	2250	detect	146	52	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	445	detect	146	52	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	716	detect	146	52	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	995	detect	146	52	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	1290	detect	146	52	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	1830	detect	146	52	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	1980	detect	146	52	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	2700	detect	146	52	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	1740	detect	146	52	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	186	detect	146	52	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	219	detect	146	52	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	575	detect	146	52	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	345	detect	146	52	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	110	detect	146	52	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	91.7	detect	146	52	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	296	detect	146	52	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	235	detect	146	52	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	522	detect	146	52	<1.0	<1.0
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	283	detect	146	52	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	375	detect	146	52	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	273	detect	146	52	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	557	detect	146	52	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	92.6	detect	146	52	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	1510	detect	146	52	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	435	detect	146	52	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	318	detect	146	52	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	1800	detect	146	52	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	336	detect	146	52	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	525	detect	146	52	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	274	detect	146	52	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	331	detect	146	52	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	252	detect	146	52	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	327	detect	146	52	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	188	detect	146	52	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	317	detect	146	52	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	1720	detect	146	52	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	1740	detect	146	52	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	106	detect	146	52	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	250	detect	146	52	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	481	detect	146	52	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	444	detect	146	52	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	328	detect	146	52	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of River Surface Water

Manganese

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0169	detect	51.5	146	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.287	detect	51.5	146	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.163	detect	51.5	146	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0151	detect	51.5	146	<1.0	<1.0
	51-CFR	SW51-CFR	0.0192	detect	51.5	146	<1.0	<1.0
	52-CFR	SW52-CFR	0.0893	detect	51.5	146	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0752	detect	51.5	146	<1.0	<1.0
	54-CFR	SW54-CFR	0.084	detect	51.5	146	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0119	detect	51.5	146	<1.0	<1.0
	55-CFR	SW55-CFR	0.0181	detect	51.5	146	<1.0	<1.0
	56-CFR	SW56-CFR	0.0205	detect	51.5	146	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0117	detect	51.5	146	<1.0	<1.0
	57-CFR	SW57-CFR	0.33	detect	51.5	146	<1.0	<1.0
	58-CFR	SW58-CFR	0.0184	detect	51.5	146	<1.0	<1.0
	59-CFR	SW59-CFR	0.0388	detect	51.5	146	<1.0	<1.0
	60-CFR	SW60-CFR	0.0213	detect	51.5	146	<1.0	<1.0
	61-CFR	SW61-CFR	0.0228	detect	51.5	146	<1.0	<1.0
	62-CFR	SW62-CFR	0.0951	detect	51.5	146	<1.0	<1.0
	63-CFR	SW63-CFR	0.0136	detect	51.5	146	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of Creek Surface Water

Manganese

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.0079	detect	51.5	146	<1.0	<1.0
	43-OK	SW43-OK	0.0081	detect	51.5	146	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.0073	detect	51.5	146	<1.0	<1.0
	37-LV	SW37-LV	0.0084	detect	51.5	146	<1.0	<1.0
	39-LV	SW39-LV	0.128	detect	51.5	146	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of Pond Surface Water

Manganese

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0316	detect	51.5	146	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.428	detect	51.5	146	<1.0	<1.0
69-HP1a	SW69-HP1a	0.383	detect	51.5	146	<1.0	<1.0
73-P5	SW73-P5	0.0716	detect	51.5	146	<1.0	<1.0
71-HP7	SW71-HP7	1.94	detect	51.5	146	<1.0	<1.0
72-HP2	SW72-HP2	0.99	detect	51.5	146	<1.0	<1.0
75-HP10	SW75-HP10	3.69	detect	51.5	146	<1.0	<1.0
67-HP12	SW67-HP12	2.15	detect	51.5	146	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0714	detect	51.5	146	<1.0	<1.0
66-HP13	SW66-HP13	0.654	detect	51.5	146	<1.0	<1.0
65-HP13a	SW65-HP13a	0.768	detect	51.5	146	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.953	detect	51.5	146	<1.0	<1.0
70-CWD	SW70-CWD	0.0101	detect	51.5	146	<1.0	<1.0
64-HP18	SW64-HP18	0.281	detect	51.5	146	<1.0	<1.0

#N/A = not analyzed

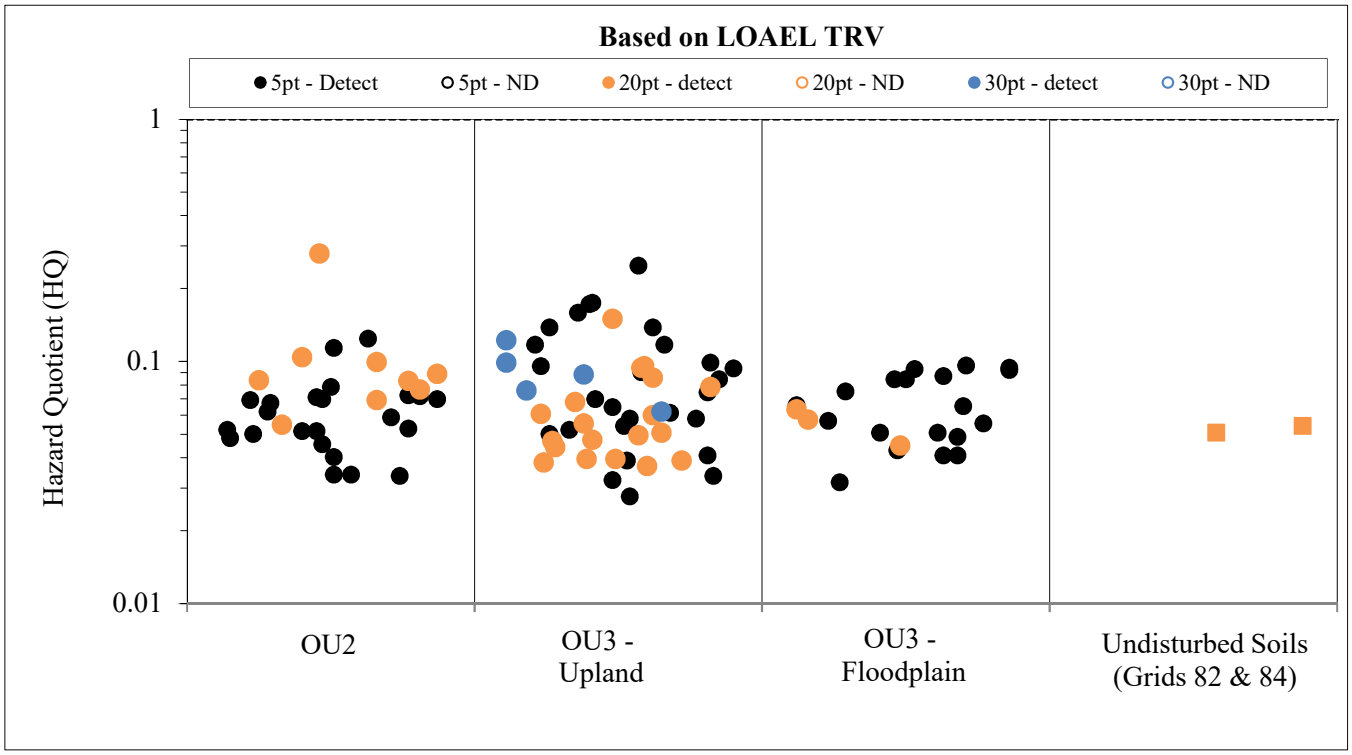
(a) Non-detects are evaluated at 1/2 the reported value.

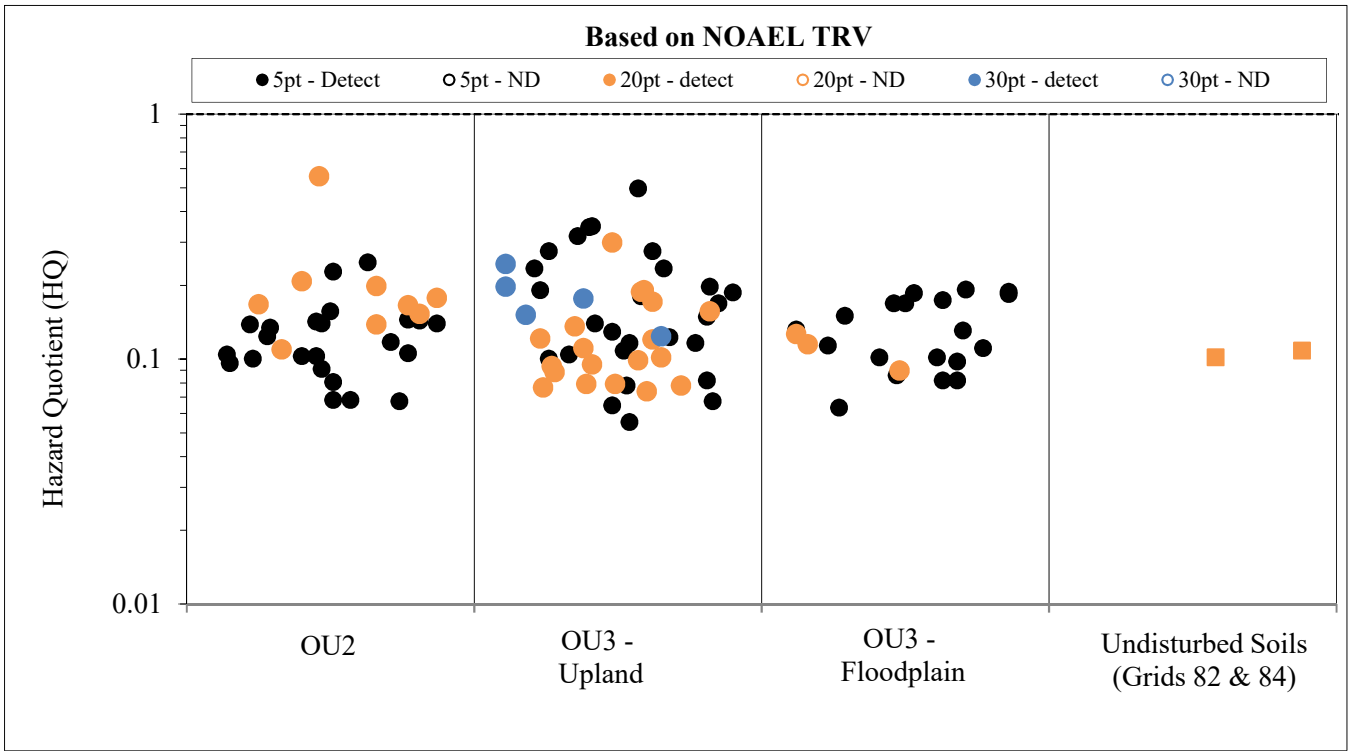
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Food by Exposure Unit/Soil Type

Nickel





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Nickel

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	1.128585	detect	3	2	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.970469	detect	3	2	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	1.319703	detect	3	2	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	1.053717	detect	3	2	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	1.261566	detect	3	2	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	1.062038	detect	3	2	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.695188	detect	3	2	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	3.534171	detect	3	2	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.878813	detect	3	2	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	1.444202	detect	3	2	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.427068	detect	3	2	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.653387	detect	3	2	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.670111	detect	3	2	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.653387	detect	3	2	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.745314	detect	3	2	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.66175	detect	3	2	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.995451	detect	3	2	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.853799	detect	3	2	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.912153	detect	3	2	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.887149	detect	3	2	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	3	2	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.511023	detect	3	2	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	3	2	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	3	2	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	1.576894	detect	3	2	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.787058	detect	3	2	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.878813	detect	3	2	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.636658	detect	3	2	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.887149	detect	3	2	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.611556	detect	3	2	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.920486	detect	3	2	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.578068	detect	3	2	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.903819	detect	3	2	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.432671	detect	3	2	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.432671	detect	3	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Nickel

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	1.253259	detect	3	2	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	2.015776	detect	3	2	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	1.253259	detect	3	2	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.469068	detect	3	2	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.485855	detect	3	2	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.561315	detect	3	2	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.502635	detect	3	2	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.703545	detect	3	2	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.494246	detect	3	2	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.603186	detect	3	2	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.594814	detect	3	2	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.628292	detect	3	2	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.645023	detect	3	2	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	1.211714	detect	3	2	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.862138	detect	3	2	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.995451	detect	3	2	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.762014	detect	3	2	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.770363	detect	3	2	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	1.899933	detect	3	2	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	1.086998	detect	3	2	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.502635	detect	3	2	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.945481	detect	3	2	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.736962	detect	3	2	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	1.186781	detect	3	2	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.636658	detect	3	2	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.427068	detect	3	2	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	3	2	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.410254	detect	3	2	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1.145215	detect	3	2	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.351334	detect	3	2	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	1.48568	detect	3	2	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	1.750903	detect	3	2	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	2.189436	detect	3	2	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	1.195093	detect	3	2	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	3.155154	detect	3	2	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.494246	detect	3	2	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	2.214235	detect	3	2	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	1.750903	detect	3	2	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.787058	detect	3	2	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	1.120269	detect	3	2	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	1.211714	detect	3	2	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1.48568	detect	3	2	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	1.552023	detect	3	2	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.68683	detect	3	2	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.66175	detect	3	2	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	0.820435	detect	3	2	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	0.778711	detect	3	2	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.736962	detect	3	2	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.519409	detect	3	2	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	1.070359	detect	3	2	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.887149	detect	3	2	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.962141	detect	3	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

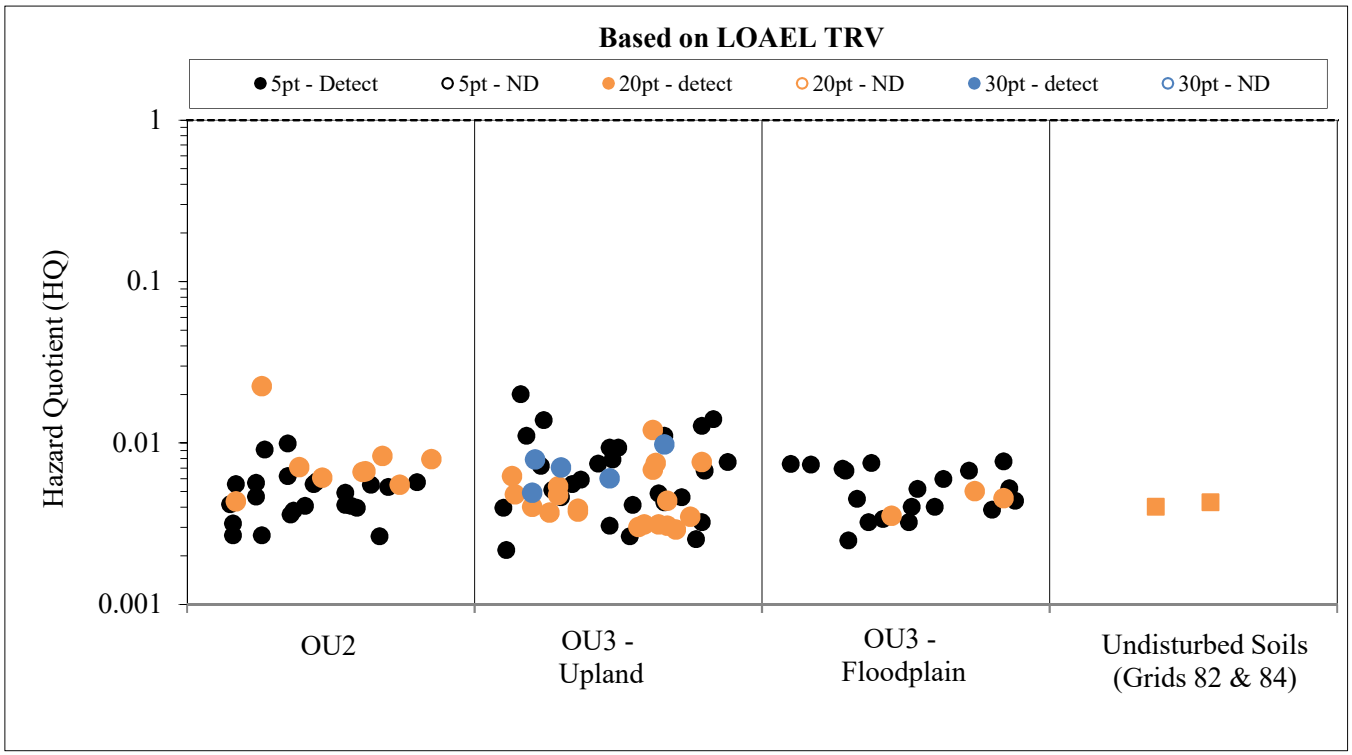
Nickel

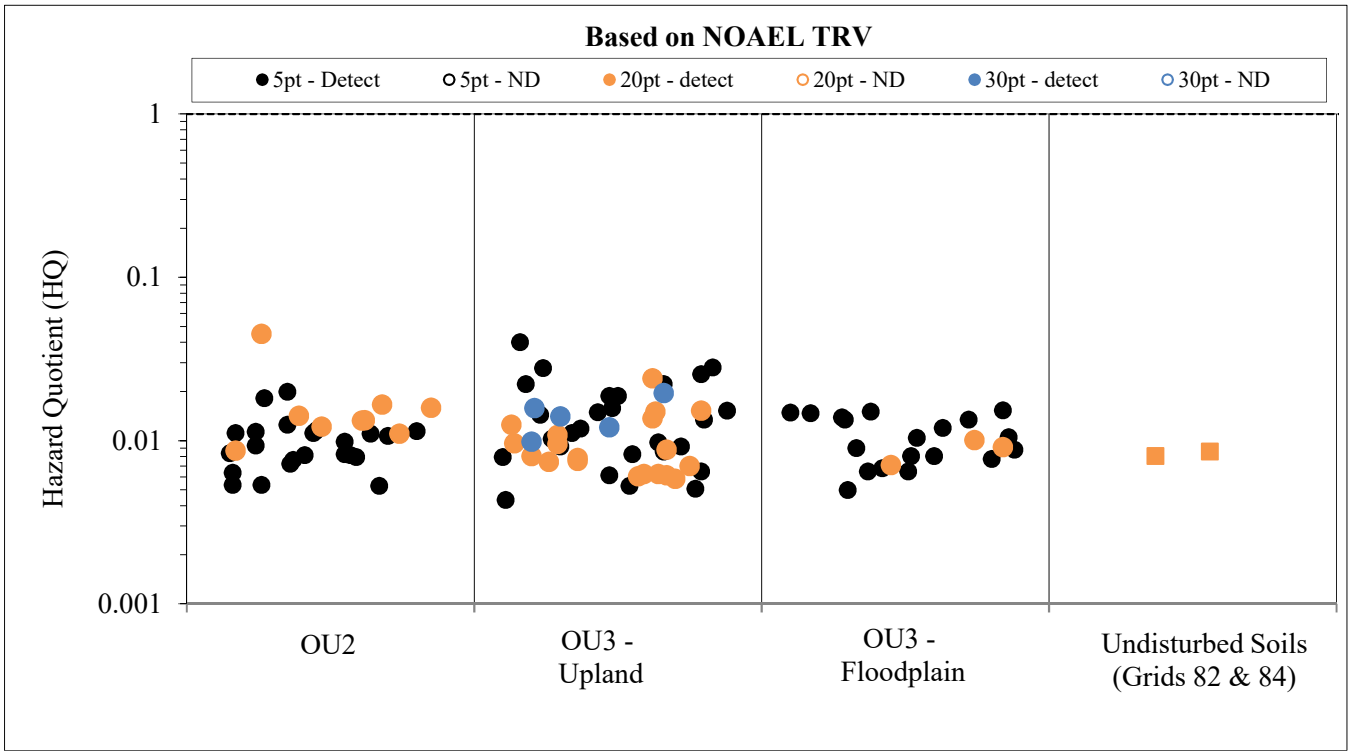
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.569692	detect	3	2	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.803748	detect	3	2	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.72861	detect	3	2	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	1.170157	detect	3	2	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.401844	detect	3	2	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	1.103634	detect	3	2	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	0.645023	detect	3	2	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	1.195093	detect	3	2	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	1.178469	detect	3	2	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	1.070359	detect	3	2	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.645023	detect	3	2	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	0.720256	detect	3	2	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.953811	detect	3	2	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.703545	detect	3	2	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.837119	detect	3	2	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.519409	detect	3	2	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.619924	detect	3	2	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	1.220024	detect	3	2	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	1.070359	detect	3	2	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	0.544557	detect	3	2	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.519409	detect	3	2	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	0.828778	detect	3	2	<1.0	<1.0
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	0.68683	detect	3	2	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.645023	detect	3	2	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Surface Soil by Exposure Unit/Soil Type

Nickel





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Surface Soil

Nickel

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	13.4	detect	3	2	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	11.5	detect	3	2	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	15.7	detect	3	2	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	12.5	detect	3	2	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	15	detect	3	2	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	12.6	detect	3	2	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	8.2	detect	3	2	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	42.5	detect	3	2	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	10.4	detect	3	2	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	17.2	detect	3	2	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	5	detect	3	2	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	7.7	detect	3	2	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	7.9	detect	3	2	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	7.7	detect	3	2	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	8.8	detect	3	2	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	7.8	detect	3	2	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	11.8	detect	3	2	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	10.1	detect	3	2	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	10.8	detect	3	2	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	10.5	detect	3	2	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	3	2	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	6	detect	3	2	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	3	2	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	3	2	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	18.8	detect	3	2	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	9.3	detect	3	2	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	10.4	detect	3	2	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	7.5	detect	3	2	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	10.5	detect	3	2	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	7.2	detect	3	2	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	10.9	detect	3	2	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	6.8	detect	3	2	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	10.7	detect	3	2	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	5.066667	detect	3	2	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	5.066667	detect	3	2	<1.0	<1.0
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	14.9	detect	3	2	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	24.1	detect	3	2	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	14.9	detect	3	2	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	5.5	detect	3	2	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	5.7	detect	3	2	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	6.6	detect	3	2	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	5.9	detect	3	2	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	8.3	detect	3	2	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	5.8	detect	3	2	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	7.1	detect	3	2	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	7	detect	3	2	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	7.4	detect	3	2	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	7.6	detect	3	2	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	14.4	detect	3	2	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	10.2	detect	3	2	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	11.8	detect	3	2	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	9	detect	3	2	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	9.1	detect	3	2	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	22.7	detect	3	2	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	12.9	detect	3	2	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	5.9	detect	3	2	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	11.2	detect	3	2	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	8.7	detect	3	2	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	14.1	detect	3	2	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	7.5	detect	3	2	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	5	detect	3	2	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	3	2	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	4.8	detect	3	2	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	13.6	detect	3	2	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	4.1	detect	3	2	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	17.7	detect	3	2	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	20.9	detect	3	2	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	26.2	detect	3	2	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	14.2	detect	3	2	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	37.9	detect	3	2	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	5.8	detect	3	2	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	26.5	detect	3	2	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	20.9	detect	3	2	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	9.3	detect	3	2	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	13.3	detect	3	2	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	14.4	detect	3	2	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	17.7	detect	3	2	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	18.5	detect	3	2	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	8.1	detect	3	2	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	7.8	detect	3	2	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	9.7	detect	3	2	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	9.2	detect	3	2	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	8.7	detect	3	2	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	6.1	detect	3	2	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	12.7	detect	3	2	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	10.5	detect	3	2	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	11.4	detect	3	2	<1.0	<1.0
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	6.7	detect	3	2	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	9.5	detect	3	2	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	8.6	detect	3	2	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	13.9	detect	3	2	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	4.7	detect	3	2	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	13.1	detect	3	2	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	7.6	detect	3	2	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	14.2	detect	3	2	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	14	detect	3	2	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	12.7	detect	3	2	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	7.6	detect	3	2	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	8.5	detect	3	2	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	11.3	detect	3	2	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	8.3	detect	3	2	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	9.9	detect	3	2	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	6.1	detect	3	2	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	7.3	detect	3	2	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	14.5	detect	3	2	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	12.7	detect	3	2	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	6.4	detect	3	2	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	6.1	detect	3	2	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	9.8	detect	3	2	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	8.1	detect	3	2	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	7.6	detect	3	2	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of River Surface Water

Nickel

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0009	detect	1.7	3.4	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0009	detect	1.7	3.4	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0002	ND	1.7	3.4	<1.0	<1.0
	51-CFR	SW51-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
	52-CFR	SW52-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0003	detect	1.7	3.4	<1.0	<1.0
	54-CFR	SW54-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
	55-CFR	SW55-CFR	0.0001	detect	1.7	3.4	<1.0	<1.0
	56-CFR	SW56-CFR	0.0001	detect	1.7	3.4	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
	57-CFR	SW57-CFR	0.0003	detect	1.7	3.4	<1.0	<1.0
	58-CFR	SW58-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
	59-CFR	SW59-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
	60-CFR	SW60-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
	61-CFR	SW61-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
	62-CFR	SW62-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
	63-CFR	SW63-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of Creek Surface Water

Nickel

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.0004	detect	1.7	3.4	<1.0	<1.0
	43-OK	SW43-OK	0.0003	detect	1.7	3.4	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.0003	detect	1.7	3.4	<1.0	<1.0
	37-LV	SW37-LV	0.0004	detect	1.7	3.4	<1.0	<1.0
	39-LV	SW39-LV	0.0004	detect	1.7	3.4	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of Pond Surface Water

Nickel

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0002	detect	1.7	3.4	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0043	detect	1.7	3.4	<1.0	<1.0
69-HP1a	SW69-HP1a	0.003	detect	1.7	3.4	<1.0	<1.0
73-P5	SW73-P5	0.0171	detect	1.7	3.4	<1.0	<1.0
71-HP7	SW71-HP7	0.0044	detect	1.7	3.4	<1.0	<1.0
72-HP2	SW72-HP2	0.0029	detect	1.7	3.4	<1.0	<1.0
75-HP10	SW75-HP10	0.0029	detect	1.7	3.4	<1.0	<1.0
67-HP12	SW67-HP12	0.0027	detect	1.7	3.4	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0009	detect	1.7	3.4	<1.0	<1.0
66-HP13	SW66-HP13	0.0046	detect	1.7	3.4	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0037	detect	1.7	3.4	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0034	detect	1.7	3.4	<1.0	<1.0
70-CWD	SW70-CWD	0.0001	ND	1.7	3.4	<1.0	<1.0
64-HP18	SW64-HP18	0.0019	detect	1.7	3.4	<1.0	<1.0

#N/A = not analyzed

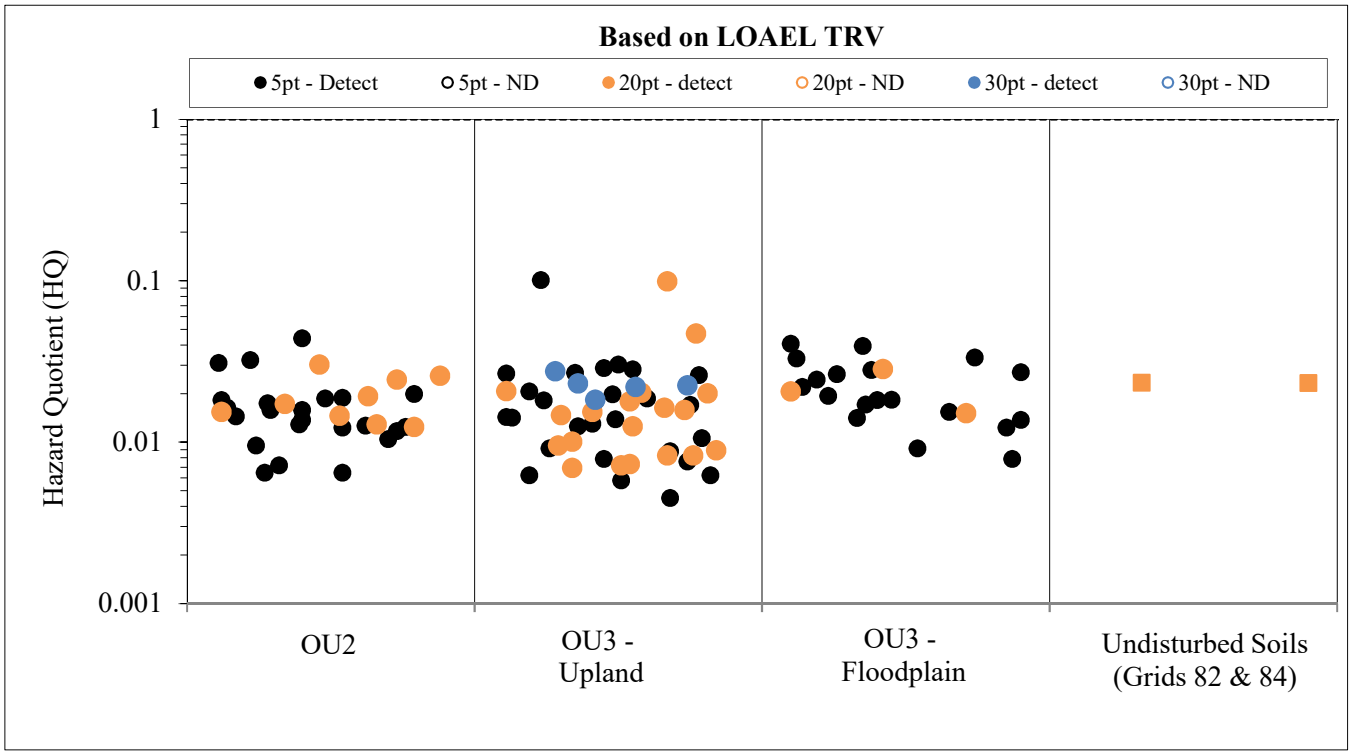
(a) Non-detects are evaluated at 1/2 the reported value.

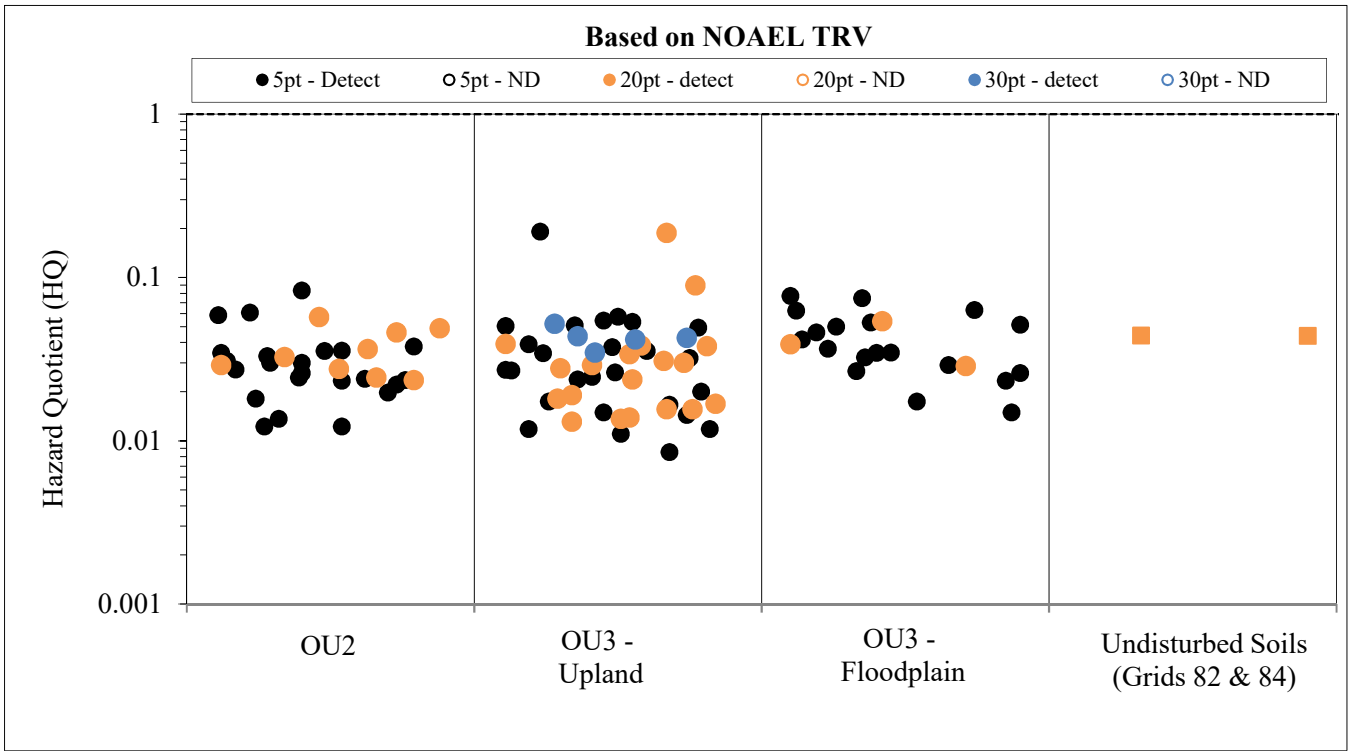
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Food by Exposure Unit/Soil Type

Lead





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Lead

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.510644	detect	9	5	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.857668	detect	9	5	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.638941	detect	9	5	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.428199	detect	9	5	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.808524	detect	9	5	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.57172	detect	9	5	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.412151	detect	9	5	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	1.002045	detect	9	5	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.483476	detect	9	5	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.620413	detect	9	5	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.238727	detect	9	5	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.624127	detect	9	5	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.579262	detect	9	5	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.42019	detect	9	5	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.412151	detect	9	5	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.47957	detect	9	5	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.605512	detect	9	5	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	1.029082	detect	9	5	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.40812	detect	9	5	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.317197	detect	9	5	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	9	5	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.346631	detect	9	5	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	9	5	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	9	5	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	1.461862	detect	9	5	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	1.069386	detect	9	5	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.456003	detect	9	5	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.387842	detect	9	5	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.541351	detect	9	5	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.661038	detect	9	5	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.526041	detect	9	5	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.428199	detect	9	5	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.526041	detect	9	5	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.21451	detect	9	5	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.21451	detect	9	5	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Lead

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.7301	detect	9	5	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.59429	detect	9	5	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.47174	detect	9	5	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.229707	detect	9	5	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.238727	detect	9	5	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.274158	detect	9	5	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.295835	detect	9	5	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.416175	detect	9	5	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.274158	detect	9	5	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.672032	detect	9	5	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.33408	detect	9	5	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.317197	detect	9	5	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.664706	detect	9	5	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.686637	detect	9	5	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.59429	detect	9	5	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.510644	detect	9	5	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.541351	detect	9	5	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.487375	detect	9	5	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	3.291885	detect	9	5	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.526041	detect	9	5	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.243212	detect	9	5	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.459947	detect	9	5	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.432193	detect	9	5	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.620413	detect	9	5	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.416175	detect	9	5	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.192855	detect	9	5	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	9	5	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.252131	detect	9	5	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.937261	detect	9	5	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.206829	detect	9	5	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.564158	detect	9	5	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	1.005432	detect	9	5	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	3.346181	detect	9	5	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	1.565302	detect	9	5	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.657365	detect	9	5	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.14957	detect	9	5	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.304416	detect	9	5	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.892441	detect	9	5	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.609244	detect	9	5	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.748061	detect	9	5	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.954391	detect	9	5	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.864644	detect	9	5	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.91318	detect	9	5	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.291526	detect	9	5	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.350795	detect	9	5	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	0.885507	detect	9	5	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	0.682992	detect	9	5	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.260987	detect	9	5	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.206829	detect	9	5	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.601776	detect	9	5	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.475658	detect	9	5	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.765939	detect	9	5	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

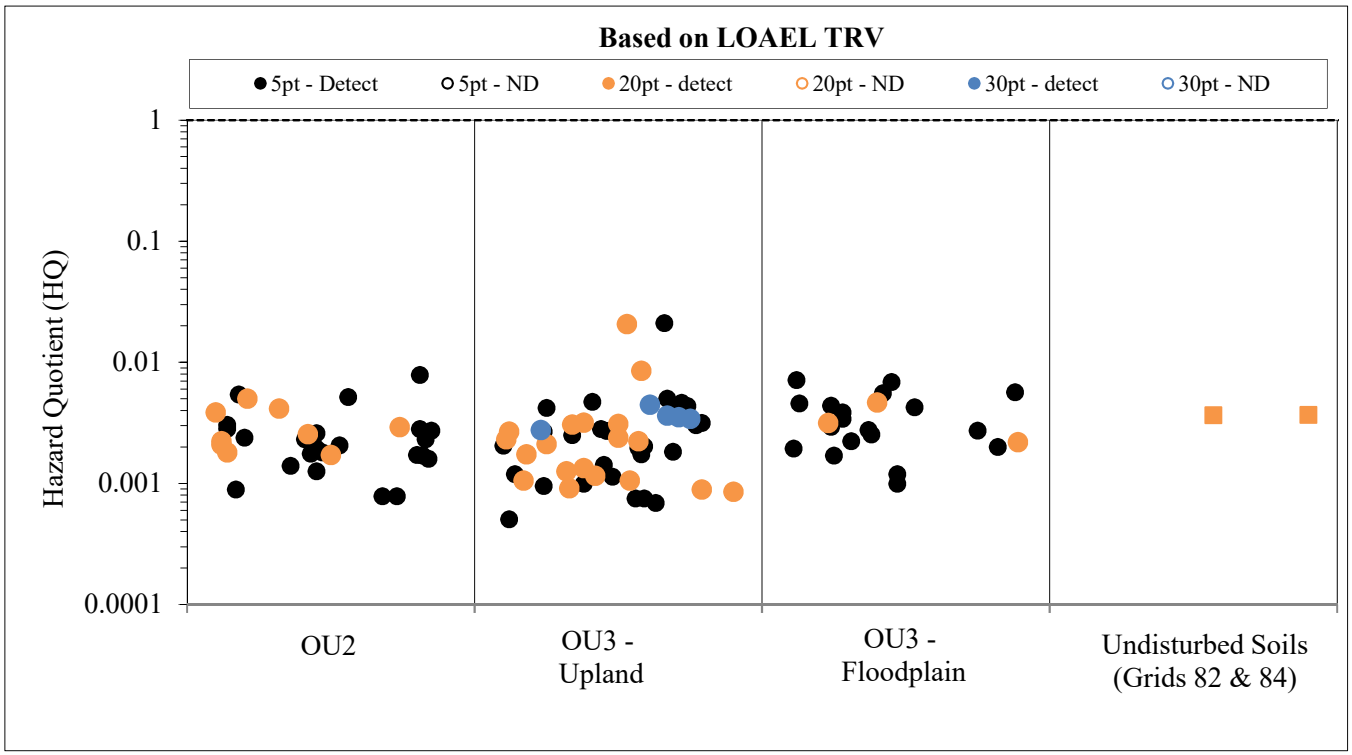
Lead

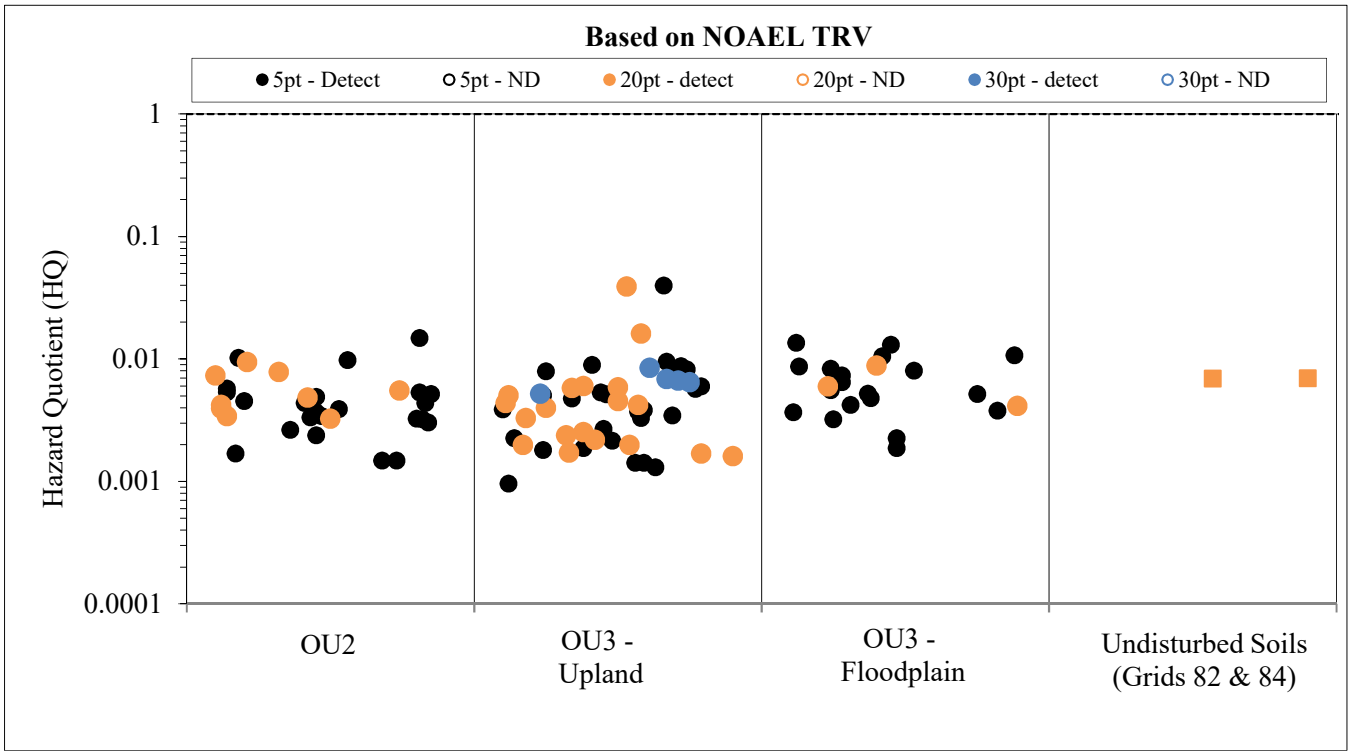
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.502911	detect	9	5	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.682992	detect	9	5	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.94412	detect	9	5	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.7301	detect	9	5	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.304416	detect	9	5	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	1.350632	detect	9	5	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	0.808524	detect	9	5	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	0.642634	detect	9	5	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	1.096096	detect	9	5	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	0.605512	detect	9	5	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.875088	detect	9	5	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	0.567941	detect	9	5	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.456003	detect	9	5	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.510644	detect	9	5	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.609244	detect	9	5	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.260987	detect	9	5	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.40812	detect	9	5	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	1.109404	detect	9	5	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	1.308883	detect	9	5	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	0.930393	detect	9	5	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.467816	detect	9	5	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	0.899364	detect	9	5	<1.0	<1.0
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	0.769505	detect	9	5	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.773068	detect	9	5	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Surface Soil by Exposure Unit/Soil Type

Lead





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Surface Soil

Lead

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	11	detect	9	5	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	20.5	detect	9	5	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	14.4	detect	9	5	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	8.9	detect	9	5	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	19.1	detect	9	5	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	12.6	detect	9	5	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	8.5	detect	9	5	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	24.7	detect	9	5	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	10.3	detect	9	5	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	13.9	detect	9	5	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	4.4	detect	9	5	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	14	detect	9	5	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	12.8	detect	9	5	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	8.7	detect	9	5	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	8.5	detect	9	5	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	10.2	detect	9	5	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	13.5	detect	9	5	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	25.5	detect	9	5	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	8.4	detect	9	5	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	6.2	detect	9	5	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	9	5	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	6.9	detect	9	5	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	9	5	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	9	5	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	38.8	detect	9	5	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	26.7	detect	9	5	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	9.6	detect	9	5	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	7.9	detect	9	5	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	11.8	detect	9	5	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	15	detect	9	5	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	11.4	detect	9	5	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	8.9	detect	9	5	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	11.4	detect	9	5	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	3.866667	detect	9	5	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	3.866667	detect	9	5	<1.0	<1.0
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	16.9	detect	9	5	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	13.2	detect	9	5	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	10	detect	9	5	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	4.2	detect	9	5	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	4.4	detect	9	5	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	5.2	detect	9	5	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	5.7	detect	9	5	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	8.6	detect	9	5	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	5.2	detect	9	5	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	15.3	detect	9	5	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	6.6	detect	9	5	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	6.2	detect	9	5	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	15.1	detect	9	5	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	15.7	detect	9	5	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	13.2	detect	9	5	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	11	detect	9	5	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	11.8	detect	9	5	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	10.4	detect	9	5	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	102	detect	9	5	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	11.4	detect	9	5	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	4.5	detect	9	5	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	9.7	detect	9	5	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	9	detect	9	5	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	13.9	detect	9	5	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	8.6	detect	9	5	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	3.4	detect	9	5	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	9	5	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	4.7	detect	9	5	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	22.8	detect	9	5	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	3.7	detect	9	5	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	12.4	detect	9	5	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	24.8	detect	9	5	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	104	detect	9	5	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	42.1	detect	9	5	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	14.9	detect	9	5	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	2.5	detect	9	5	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	5.9	detect	9	5	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	21.5	detect	9	5	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	13.6	detect	9	5	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	17.4	detect	9	5	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	23.3	detect	9	5	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	20.7	detect	9	5	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	22.1	detect	9	5	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	5.6	detect	9	5	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	7	detect	9	5	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	21.3	detect	9	5	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	15.6	detect	9	5	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	4.9	detect	9	5	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	3.7	detect	9	5	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	13.4	detect	9	5	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	10.1	detect	9	5	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	17.9	detect	9	5	<1.0	<1.0
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	10.8	detect	9	5	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	15.6	detect	9	5	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	23	detect	9	5	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	16.9	detect	9	5	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	5.9	detect	9	5	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	35.3	detect	9	5	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	19.1	detect	9	5	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	14.5	detect	9	5	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	27.5	detect	9	5	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	13.5	detect	9	5	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	21	detect	9	5	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	12.5	detect	9	5	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	9.6	detect	9	5	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	11	detect	9	5	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	13.6	detect	9	5	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	4.9	detect	9	5	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	8.4	detect	9	5	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	27.9	detect	9	5	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	34	detect	9	5	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	22.6	detect	9	5	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	9.9	detect	9	5	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	21.7	detect	9	5	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	18	detect	9	5	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	18.1	detect	9	5	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of River Surface Water

Lead

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0001	detect	4.7	8.9	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0006	detect	4.7	8.9	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0016	detect	4.7	8.9	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0002	detect	4.7	8.9	<1.0	<1.0
	51-CFR	SW51-CFR	0.0002	detect	4.7	8.9	<1.0	<1.0
	52-CFR	SW52-CFR	0.0004	detect	4.7	8.9	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0015	detect	4.7	8.9	<1.0	<1.0
	54-CFR	SW54-CFR	0.0001	detect	4.7	8.9	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0001	detect	4.7	8.9	<1.0	<1.0
	55-CFR	SW55-CFR	0.0002	detect	4.7	8.9	<1.0	<1.0
	56-CFR	SW56-CFR	0.0002	detect	4.7	8.9	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0001	detect	4.7	8.9	<1.0	<1.0
	57-CFR	SW57-CFR	0.0002	detect	4.7	8.9	<1.0	<1.0
	58-CFR	SW58-CFR	0.0002	detect	4.7	8.9	<1.0	<1.0
	59-CFR	SW59-CFR	0.0002	detect	4.7	8.9	<1.0	<1.0
	60-CFR	SW60-CFR	0.0002	detect	4.7	8.9	<1.0	<1.0
	61-CFR	SW61-CFR	0.0002	detect	4.7	8.9	<1.0	<1.0
	62-CFR	SW62-CFR	0.0002	detect	4.7	8.9	<1.0	<1.0
	63-CFR	SW63-CFR	0.0001	detect	4.7	8.9	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of Creek Surface Water

Lead

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.0003	detect	4.7	8.9	<1.0	<1.0
	43-OK	SW43-OK	0.0002	detect	4.7	8.9	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.0003	detect	4.7	8.9	<1.0	<1.0
	37-LV	SW37-LV	0.0003	detect	4.7	8.9	<1.0	<1.0
	39-LV	SW39-LV	0.0003	detect	4.7	8.9	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of Pond Surface Water

Lead

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	6E-05	detect	4.7	8.9	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0006	detect	4.7	8.9	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0002	detect	4.7	8.9	<1.0	<1.0
73-P5	SW73-P5	0.0002	ND	4.7	8.9	<1.0	<1.0
71-HP7	SW71-HP7	0.0003	detect	4.7	8.9	<1.0	<1.0
72-HP2	SW72-HP2	0.0004	detect	4.7	8.9	<1.0	<1.0
75-HP10	SW75-HP10	0.0002	detect	4.7	8.9	<1.0	<1.0
67-HP12	SW67-HP12	0.0002	detect	4.7	8.9	<1.0	<1.0
68-IBJ	SW68-IBJ	7E-05	detect	4.7	8.9	<1.0	<1.0
66-HP13	SW66-HP13	0.0008	detect	4.7	8.9	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0014	detect	4.7	8.9	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.001	detect	4.7	8.9	<1.0	<1.0
70-CWD	SW70-CWD	0.0001	detect	4.7	8.9	<1.0	<1.0
64-HP18	SW64-HP18	0.0005	detect	4.7	8.9	<1.0	<1.0

#N/A = not analyzed

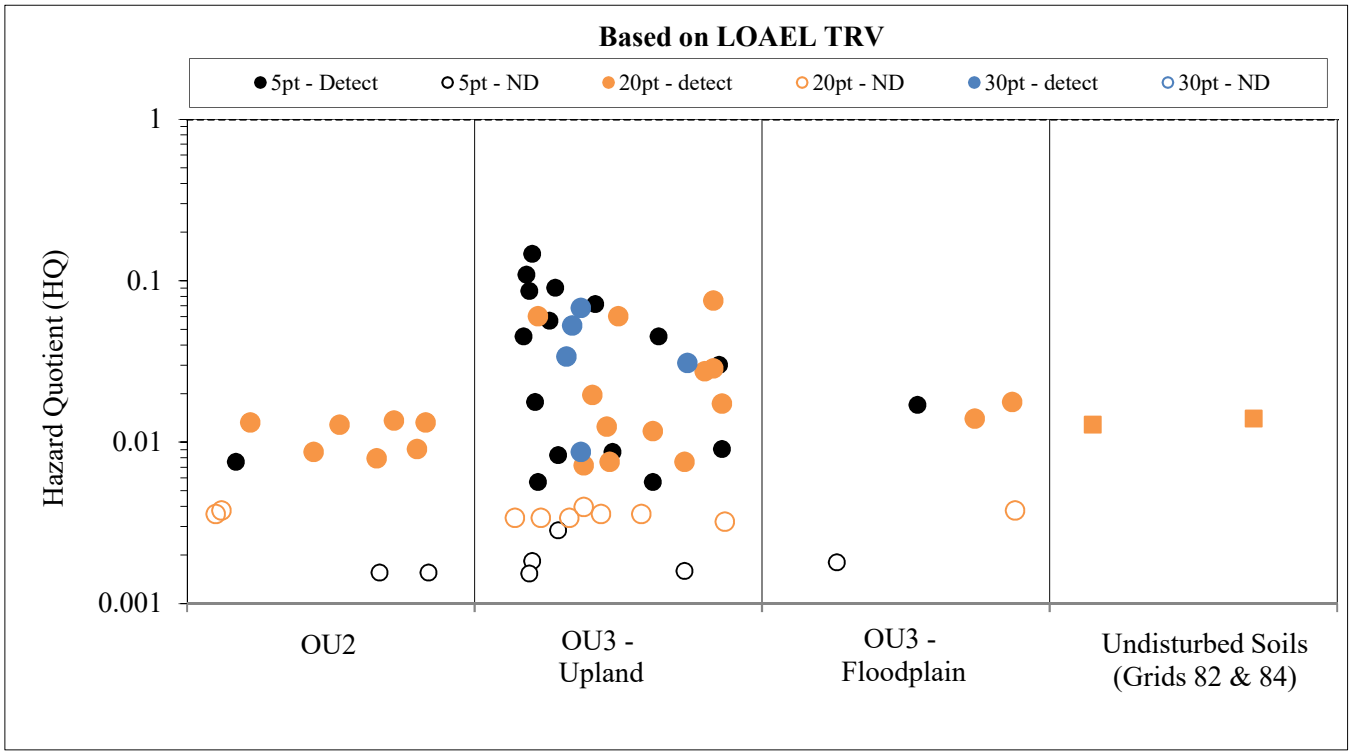
(a) Non-detects are evaluated at 1/2 the reported value.

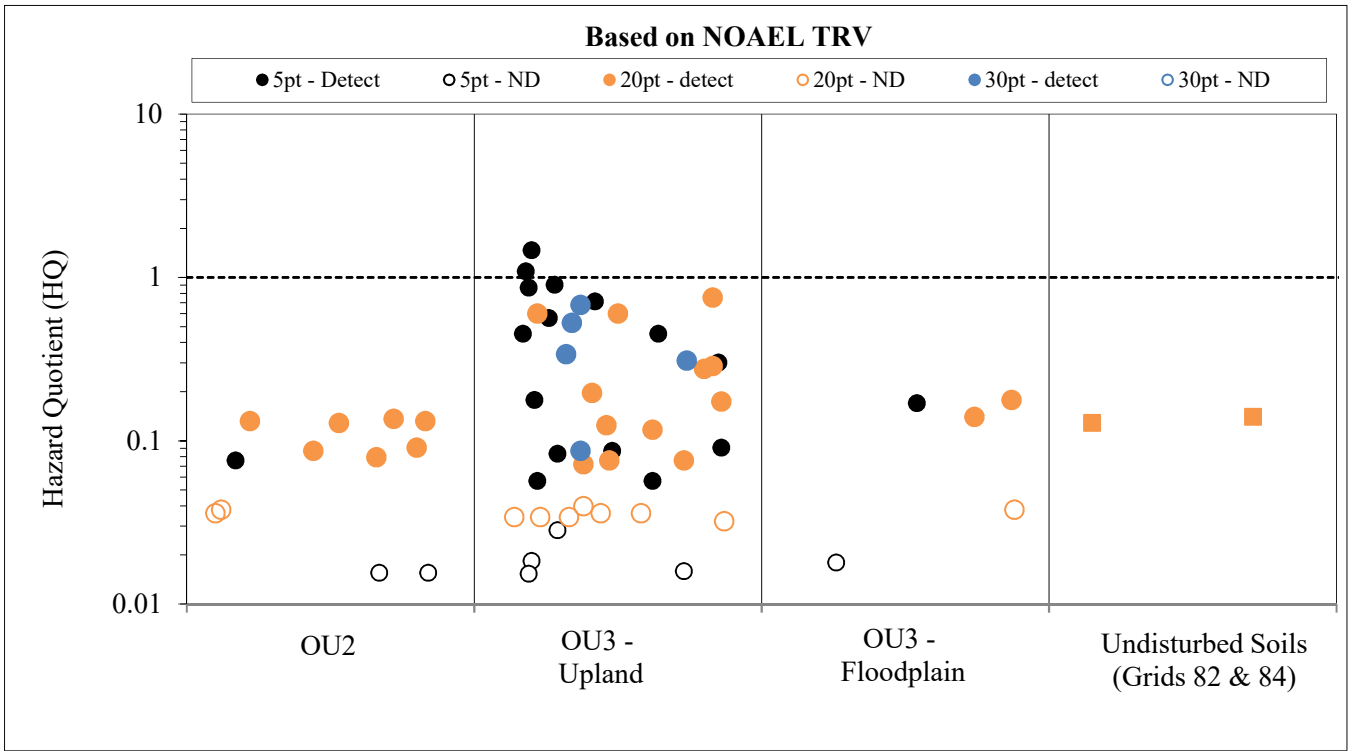
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Food by Exposure Unit/Soil Type

Antimony





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Antimony

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.029105	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.019145	detect	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.028275	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.019976	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.029105	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.017484	detect	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.007911	ND	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.029934	detect	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.008327	ND	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.016654	detect	1	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.003422	ND	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.003422	ND	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Antimony

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.116056	detect	1	0	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.09951	detect	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.24003	detect	1	0	<1.0	**1.1**
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.007496	ND	1	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.007496	ND	1	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.015823	detect	1	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.016654	detect	1	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.007496	ND	1	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.007081	ND	1	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.027446	detect	1	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.043202	detect	1	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.063087	detect	1	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.060602	detect	1	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.132597	detect	1	0	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.038228	detect	1	0	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.025786	detect	1	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.016654	detect	1	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.008742	ND	1	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.165667	detect	1	0	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.007911	ND	1	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.007911	ND	1	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.066399	detect	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.004046	ND	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.124327	detect	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.019145	detect	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.012499	detect	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.00338	ND	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.190461	detect	1	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.003505	ND	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.018315	detect	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.198724	detect	1	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.322602	detect	1	0	<1.0	**1.5**
	P3	P3-SSComp-01_20171020_NM	0.132597	detect	1	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.019976	detect	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.012499	detect	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.00625	ND	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.039057	detect	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.07468	detect	1	0	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.068056	detect	1	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.157401	detect	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.09951	detect	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.149134	detect	1	0	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	0.019145	detect	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

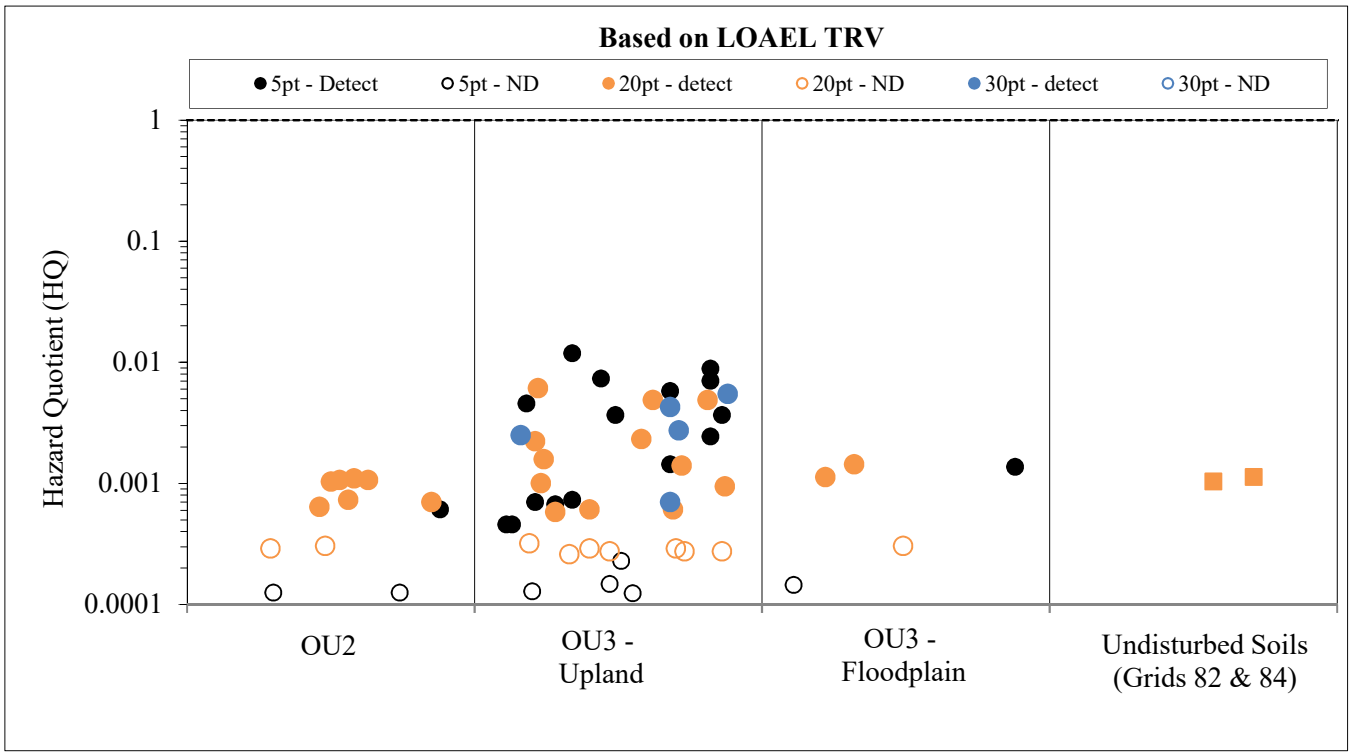
Antimony

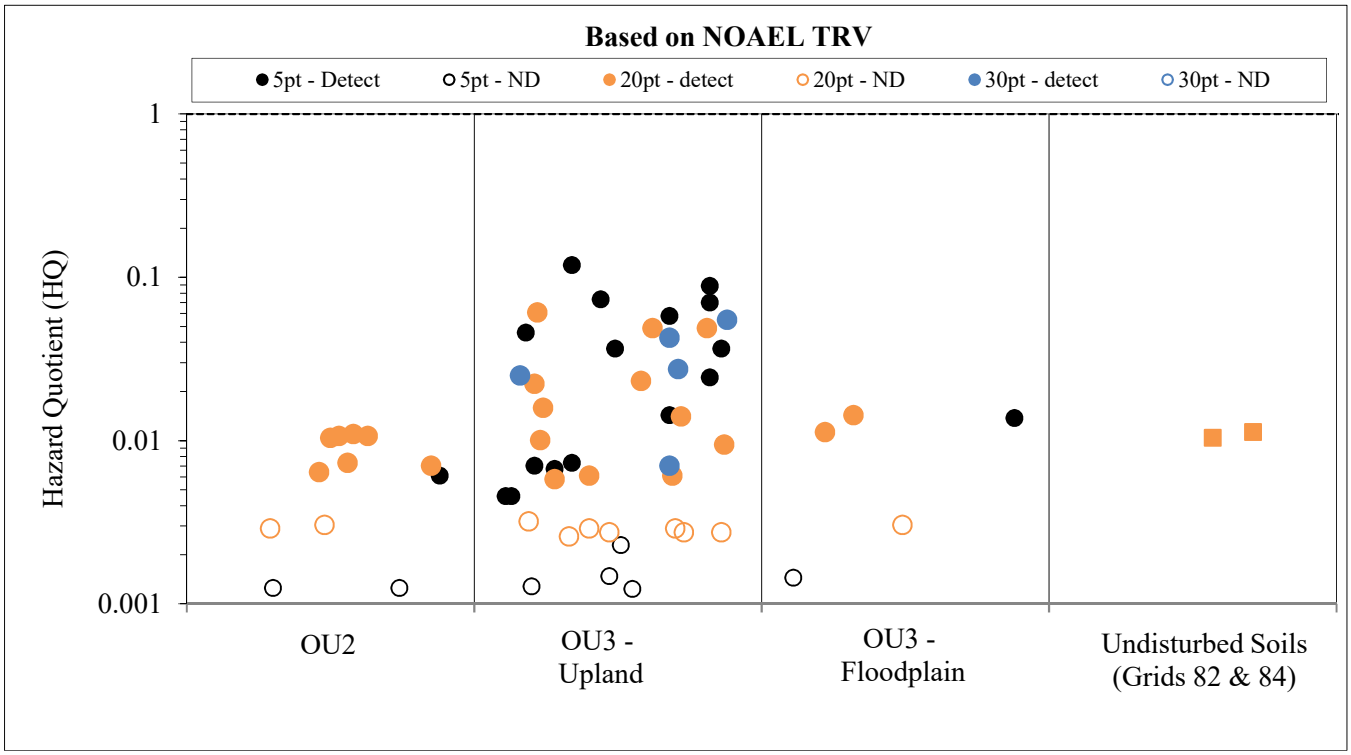
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.008327	ND	1	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.030764	detect	1	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.039057	detect	1	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.037399	detect	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.003963	ND	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	0.030764	detect	1	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.028275	detect	1	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Surface Soil by Exposure Unit/Soil Type

Antimony





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Surface Soil

Antimony

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.35	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.23	detect	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.34	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.24	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.35	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.21	detect	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.095	ND	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.36	detect	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.1	ND	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.2	detect	1	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.041	ND	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.041	ND	1	0	<1.0	<1.0
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	1.4	detect	1	0	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	1.2	detect	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	2.9	detect	1	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.09	ND	1	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.09	ND	1	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.19	detect	1	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.2	detect	1	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.09	ND	1	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.085	ND	1	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.33	detect	1	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.52	detect	1	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.76	detect	1	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.73	detect	1	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	1.6	detect	1	0	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.46	detect	1	0	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.31	detect	1	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.2	detect	1	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.105	ND	1	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	2	detect	1	0	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.095	ND	1	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.095	ND	1	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.8	detect	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.0485	ND	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	1.5	detect	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.23	detect	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.15	detect	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.0405	ND	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	2.3	detect	1	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.042	ND	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.22	detect	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	2.4	detect	1	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	3.9	detect	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	1.6	detect	1	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.24	detect	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.15	detect	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.075	ND	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.47	detect	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.9	detect	1	0	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.82	detect	1	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	1.9	detect	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1.2	detect	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	1.8	detect	1	0	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	0.23	detect	1	0	<1.0	<1.0
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.1	ND	1	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.37	detect	1	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.47	detect	1	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.45	detect	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.0475	ND	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.37	detect	1	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.34	detect	1	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of River Surface Water

Antimony

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0006	detect	0.059	0.59	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0003	detect	0.059	0.59	<1.0	<1.0
	SW3-CFR	SW3-CFR	#N/A	#N/A	0.059	0.59	#N/A	#N/A
	51-CFR	SW51-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
	52-CFR	SW52-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0001	detect	0.059	0.59	<1.0	<1.0
	54-CFR	SW54-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
	SW2-CFR	SW2-CFR	#N/A	#N/A	0.059	0.59	#N/A	#N/A
	55-CFR	SW55-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
	56-CFR	SW56-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
	SW1-CFR	SW1-CFR	#N/A	#N/A	0.059	0.59	#N/A	#N/A
	57-CFR	SW57-CFR	8E-05	detect	0.059	0.59	<1.0	<1.0
	58-CFR	SW58-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
	59-CFR	SW59-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
	60-CFR	SW60-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
	61-CFR	SW61-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
	62-CFR	SW62-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
	63-CFR	SW63-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of Creek Surface Water

Antimony

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.0002	detect	0.059	0.59	<1.0	<1.0
	43-OK	SW43-OK	0.0002	detect	0.059	0.59	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	#N/A	#N/A	0.059	0.59	#N/A	#N/A
	37-LV	SW37-LV	0.0002	detect	0.059	0.59	<1.0	<1.0
	39-LV	SW39-LV	0.0002	detect	0.059	0.59	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of Pond Surface Water

Antimony

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0001	detect	0.059	0.59	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0013	detect	0.059	0.59	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0033	detect	0.059	0.59	<1.0	<1.0
73-P5	SW73-P5	0.0029	detect	0.059	0.59	<1.0	<1.0
71-HP7	SW71-HP7	0.0015	detect	0.059	0.59	<1.0	<1.0
72-HP2	SW72-HP2	0.0017	detect	0.059	0.59	<1.0	<1.0
75-HP10	SW75-HP10	0.001	detect	0.059	0.59	<1.0	<1.0
67-HP12	SW67-HP12	0.001	detect	0.059	0.59	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0003	detect	0.059	0.59	<1.0	<1.0
66-HP13	SW66-HP13	0.0014	detect	0.059	0.59	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0012	detect	0.059	0.59	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0014	detect	0.059	0.59	<1.0	<1.0
70-CWD	SW70-CWD	0.0002	detect	0.059	0.59	<1.0	<1.0
64-HP18	SW64-HP18	0.001	detect	0.059	0.59	<1.0	<1.0

#N/A = not analyzed

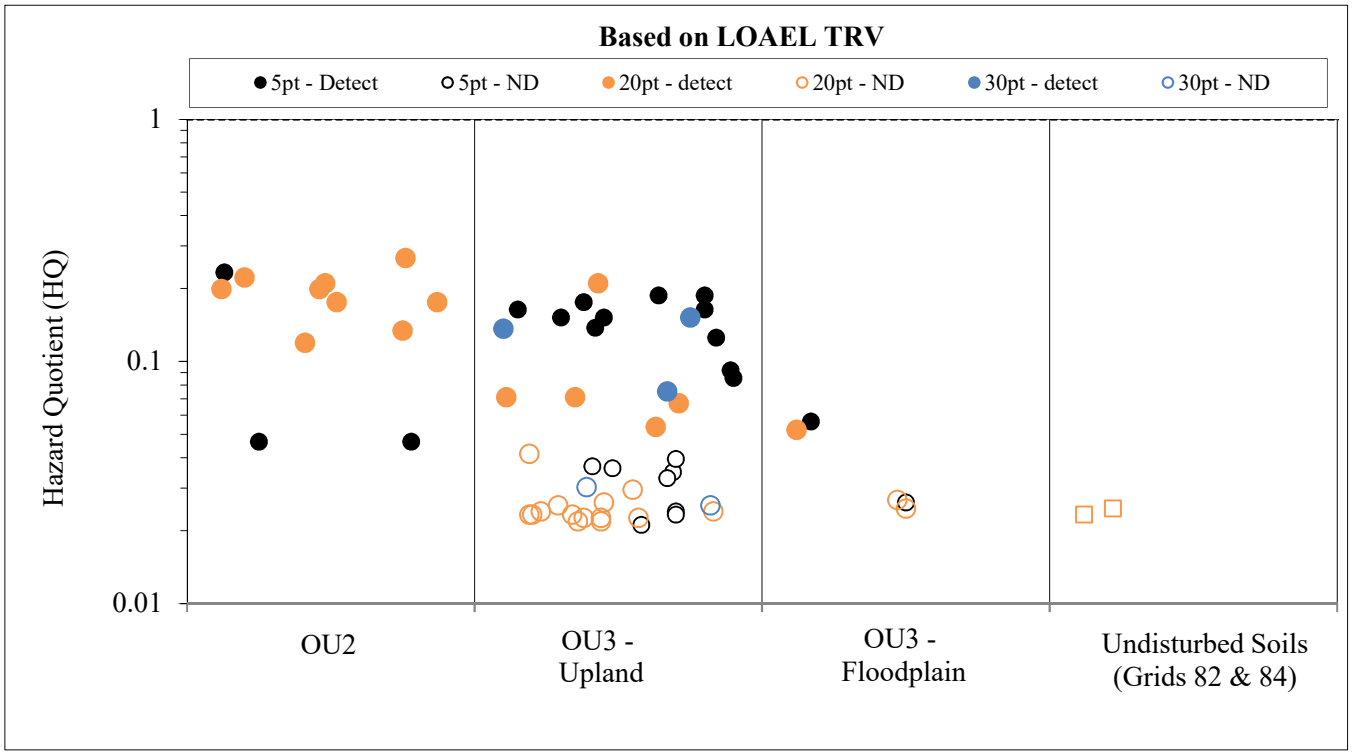
(a) Non-detects are evaluated at 1/2 the reported value.

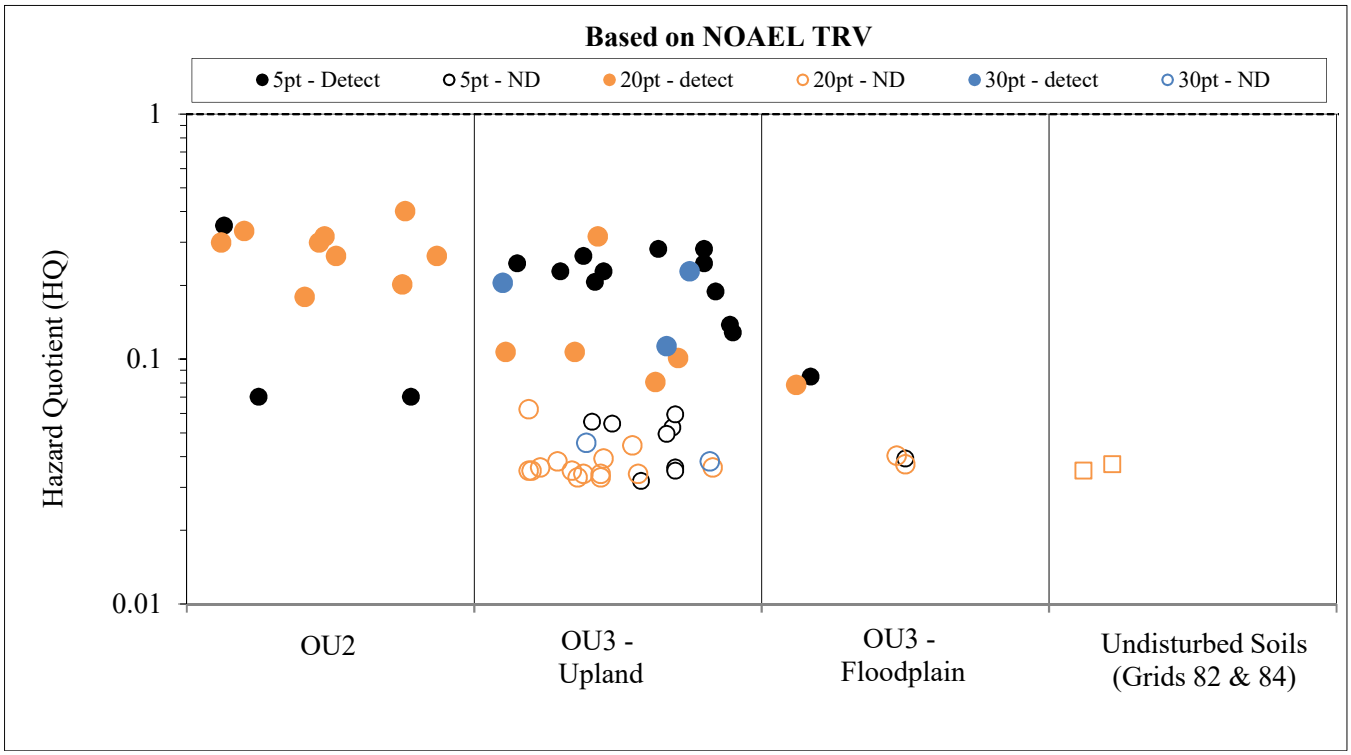
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Food by Exposure Unit/Soil Type

Selenium





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Selenium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.107493	detect	0	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.159534	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.140872	detect	0	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.095769	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.177969	detect	0	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.214303	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.140872	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.159534	detect	0	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.168777	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.187114	detect	0	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	0	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.037405	detect	0	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.037405	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Selenium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.121929	detect	0	0	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.028028	ND	0	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.13144	detect	0	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.018132	ND	0	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.018132	ND	0	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.018703	ND	0	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.018132	ND	0	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.018703	ND	0	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.017557	ND	0	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.017557	ND	0	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.023718	ND	0	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.057118	detect	0	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.043028	detect	0	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.168777	detect	0	0	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.057118	detect	0	0	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.020957	ND	0	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.019271	ND	0	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.020398	ND	0	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.053923	detect	0	0	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.019271	ND	0	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.018703	ND	0	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.068615	detect	0	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.150234	detect	0	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.100675	detect	0	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.019271	ND	0	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.01698	ND	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.073744	detect	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.121929	detect	0	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.018703	ND	0	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.13144	detect	0	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.150234	detect	0	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.140872	detect	0	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.033274	ND	0	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.026425	ND	0	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.029089	ND	0	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.029617	ND	0	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.031714	ND	0	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.024263	ND	0	0	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.060287	detect	0	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.110398	detect	0	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.121929	detect	0	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.109431	detect	0	0	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	0.020398	ND	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

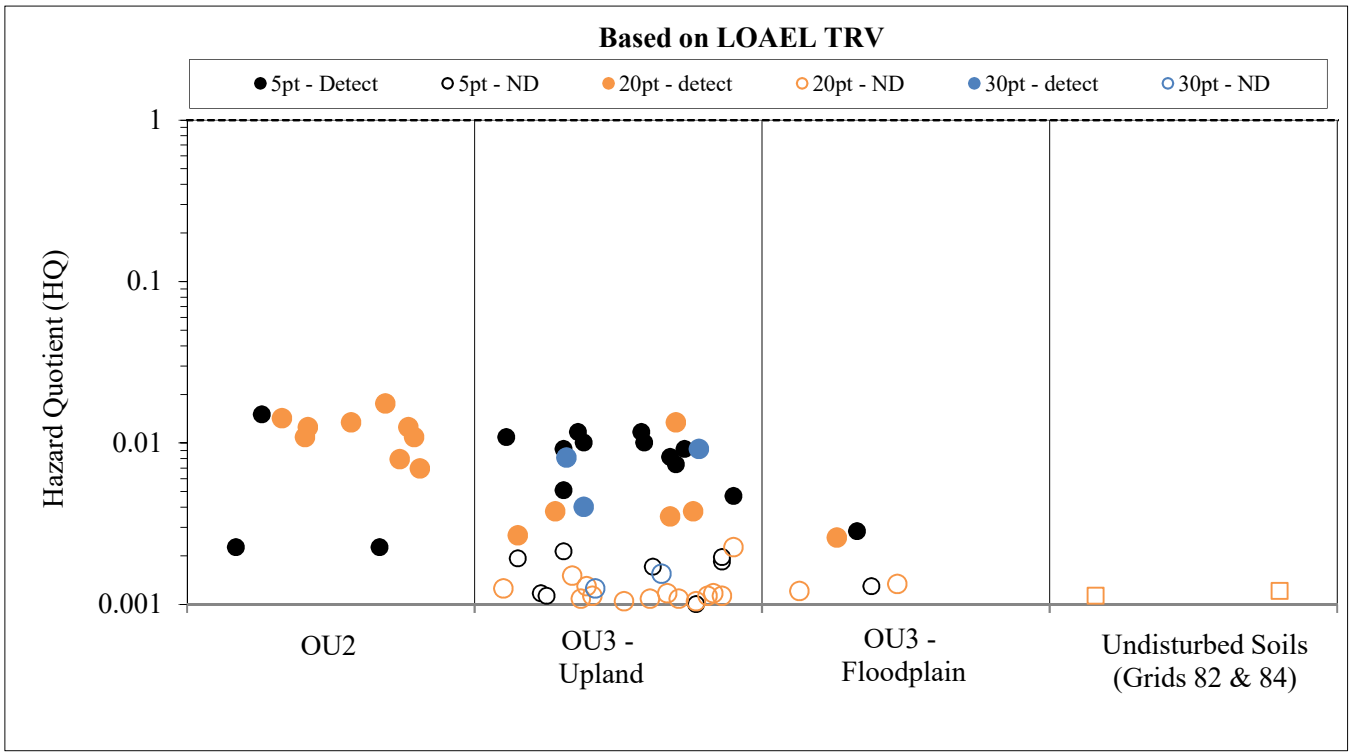
Selenium

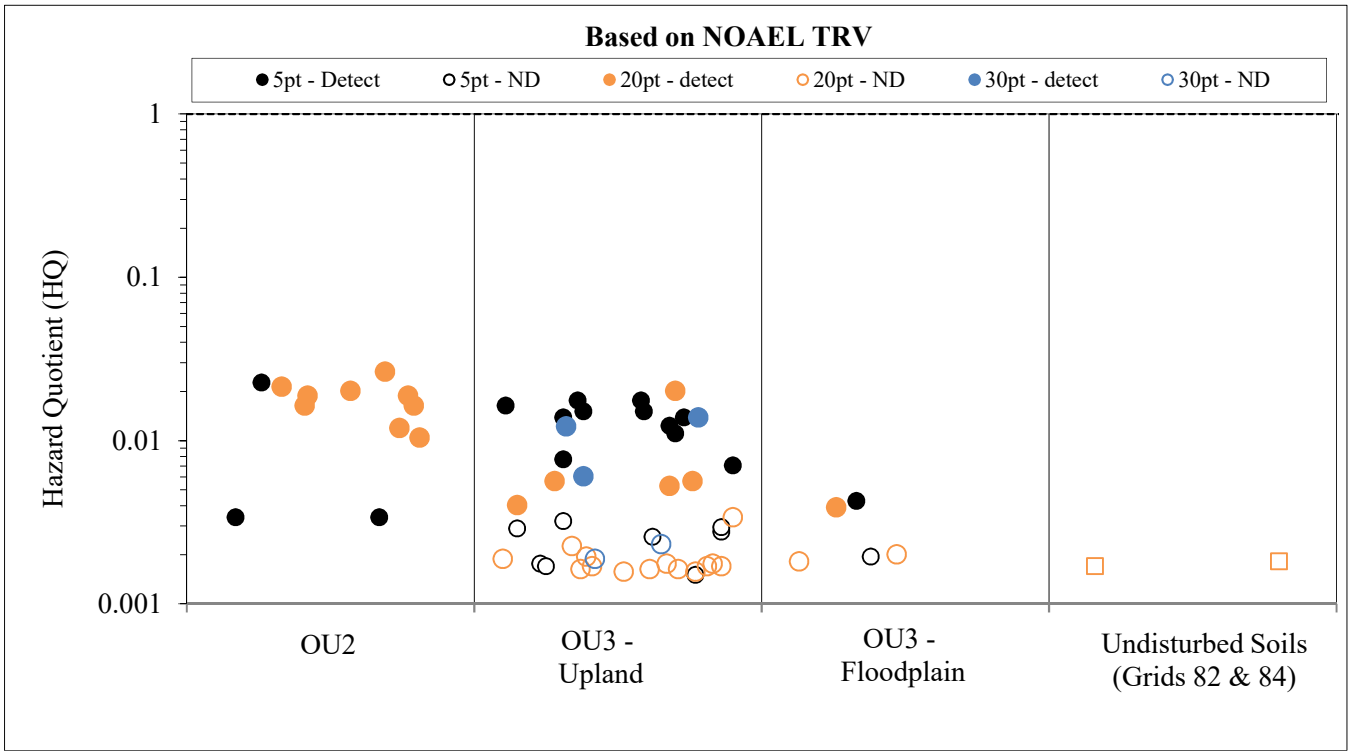
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.019836	ND	0	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.041914	detect	0	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.021514	ND	0	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.045241	detect	0	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.020957	ND	0	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	0.019836	ND	0	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.018703	ND	0	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Surface Soil by Exposure Unit/Soil Type

Selenium





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Surface Soil

Selenium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.95	detect	0	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	1.5	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	1.3	detect	0	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.83	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	1.7	detect	0	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	2.1	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	1.3	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	1.5	detect	0	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	1.6	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	1.8	detect	0	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	0	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.27	detect	0	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.27	detect	0	0	<1.0	<1.0
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	1.1	detect	0	0	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.22	ND	0	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	1.2	detect	0	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.13	ND	0	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.13	ND	0	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.135	ND	0	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.13	ND	0	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.135	ND	0	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.125	ND	0	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.125	ND	0	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.18	ND	0	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.45	detect	0	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.32	detect	0	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	1.6	detect	0	0	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.45	detect	0	0	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.155	ND	0	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.14	ND	0	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.15	ND	0	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.42	detect	0	0	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.14	ND	0	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.135	ND	0	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.56	detect	0	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	1.4	detect	0	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.88	detect	0	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.14	ND	0	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.12	ND	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.61	detect	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1.1	detect	0	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.135	ND	0	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	1.2	detect	0	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	1.4	detect	0	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	1.3	detect	0	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.27	ND	0	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.205	ND	0	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.23	ND	0	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.235	ND	0	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.255	ND	0	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.185	ND	0	0	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.48	detect	0	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.98	detect	0	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1.1	detect	0	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.97	detect	0	0	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	0.15	ND	0	0	<1.0	<1.0
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.145	ND	0	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.31	detect	0	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.16	ND	0	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.34	detect	0	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.155	ND	0	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.145	ND	0	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.135	ND	0	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of River Surface Water

Selenium

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0002	ND	0.143	0.215	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0002	ND	0.143	0.215	<1.0	<1.0
	SW3-CFR	SW3-CFR	#N/A	#N/A	0.143	0.215	#N/A	#N/A
	51-CFR	SW51-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	52-CFR	SW52-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	54-CFR	SW54-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	SW2-CFR	SW2-CFR	#N/A	#N/A	0.143	0.215	#N/A	#N/A
	55-CFR	SW55-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	56-CFR	SW56-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	SW1-CFR	SW1-CFR	#N/A	#N/A	0.143	0.215	#N/A	#N/A
	57-CFR	SW57-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	58-CFR	SW58-CFR	0.0001	detect	0.143	0.215	<1.0	<1.0
	59-CFR	SW59-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	60-CFR	SW60-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	61-CFR	SW61-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	62-CFR	SW62-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	63-CFR	SW63-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of Creek Surface Water

Selenium

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.0001	ND	0.143	0.215	<1.0	<1.0
	43-OK	SW43-OK	0.0001	ND	0.143	0.215	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	#N/A	#N/A	0.143	0.215	#N/A	#N/A
	37-LV	SW37-LV	0.0001	ND	0.143	0.215	<1.0	<1.0
	39-LV	SW39-LV	0.0001	ND	0.143	0.215	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of Pond Surface Water

Selenium

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0001	ND	0.143	0.215	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0002	detect	0.143	0.215	<1.0	<1.0
69-HP1a	SW69-HP1a	0.002	detect	0.143	0.215	<1.0	<1.0
73-P5	SW73-P5	0.0018	detect	0.143	0.215	<1.0	<1.0
71-HP7	SW71-HP7	0.0013	detect	0.143	0.215	<1.0	<1.0
72-HP2	SW72-HP2	0.0007	ND	0.143	0.215	<1.0	<1.0
75-HP10	SW75-HP10	0.0014	detect	0.143	0.215	<1.0	<1.0
67-HP12	SW67-HP12	0.0009	detect	0.143	0.215	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0001	ND	0.143	0.215	<1.0	<1.0
66-HP13	SW66-HP13	0.0007	ND	0.143	0.215	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0007	detect	0.143	0.215	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0004	detect	0.143	0.215	<1.0	<1.0
70-CWD	SW70-CWD	0.0001	ND	0.143	0.215	<1.0	<1.0
64-HP18	SW64-HP18	0.0007	ND	0.143	0.215	<1.0	<1.0

#N/A = not analyzed

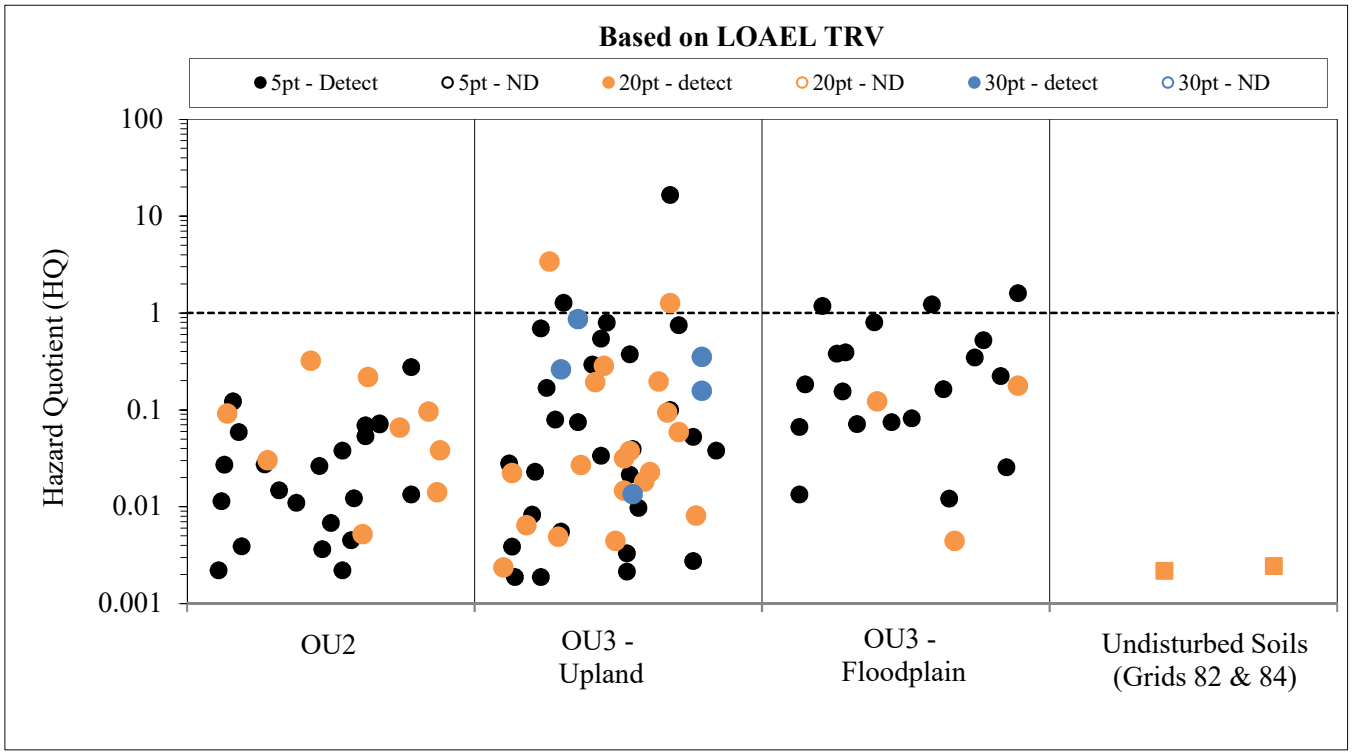
(a) Non-detects are evaluated at 1/2 the reported value.

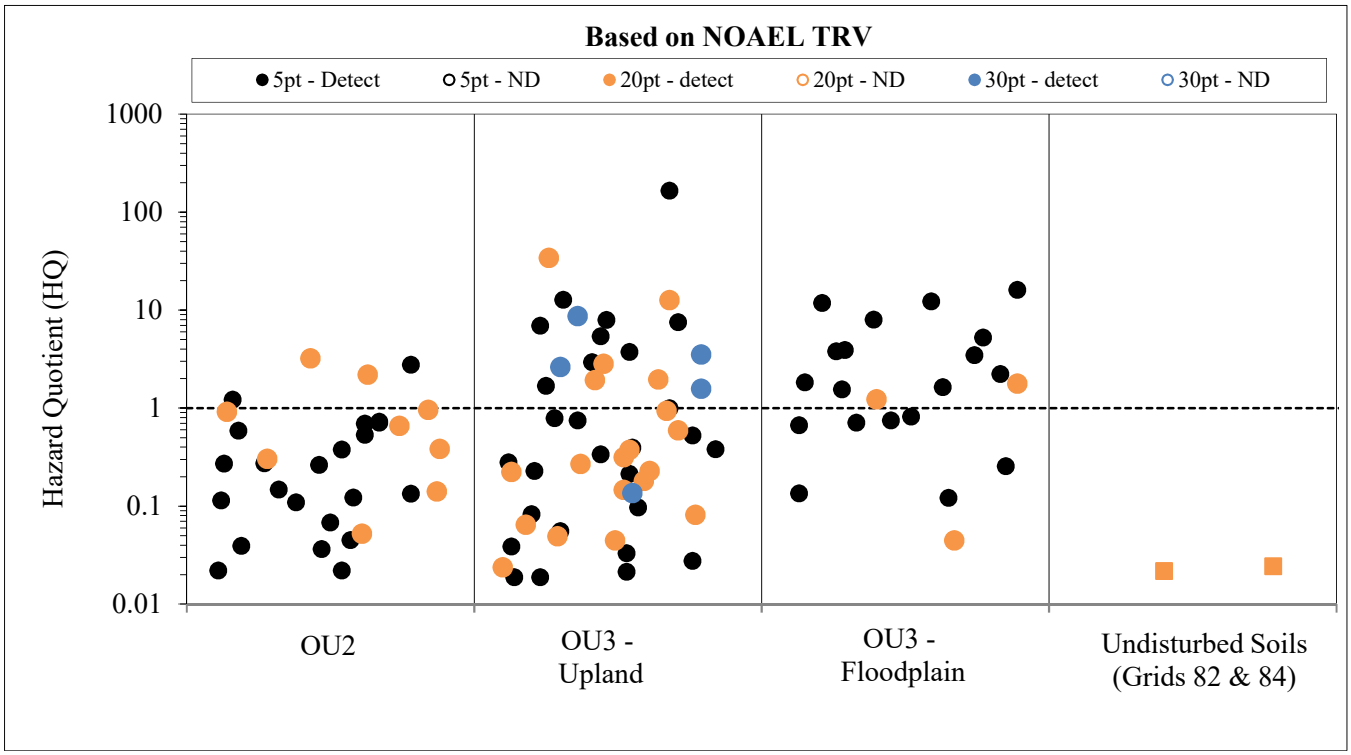
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Food by Exposure Unit/Soil Type

D/F Mam TEQ - ND=1/2RL





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

D/F Mam TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	2.45E-06	detect	0	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	1.13E-06	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	1.2E-05	detect	0	0	<1.0	**3.2**
	Grid 2	Grid 2-SSComp-01_20171016_NM	1.43E-06	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	8.16E-06	detect	0	0	<1.0	**2.2**
	Grid 23	Grid 23-SSComp-01_20171018_NM	1.95E-07	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	5.28E-07	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	3.57E-06	detect	0	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	3.43E-06	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	2.53E-07	detect	0	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	0	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	1.02E-06	detect	0	0	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	2.71E-06	detect	0	0	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	1.99E-06	detect	0	0	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	9.84E-07	detect	0	0	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	1.41E-06	detect	0	0	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	1.01E-06	detect	0	0	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	2.64E-06	detect	0	0	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	1.36E-07	detect	0	0	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	4.09E-07	detect	0	0	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	5.52E-07	detect	0	0	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	2.58E-06	detect	0	0	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	1.46E-07	detect	0	0	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	4.27E-07	detect	0	0	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	4.55E-07	detect	0	0	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	1.68E-07	detect	0	0	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	1.03E-05	detect	0	0	<1.0	**2.8**
	SS7-IN	SS7-IN-(0-2)c	2.2E-06	detect	0	0	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	4.56E-06	detect	0	0	<1.0	**1.2**
	SS9-IN	SS9-IN-(0-2)c	4.99E-07	detect	0	0	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	8.23E-08	detect	0	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	8.23E-08	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

D/F Mam TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	1.32E-05	detect	0	0	<1.0	**3.5**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	2.8E-05	detect	0	0	<1.0	**7.5**
	CRP-1	CRP-1-SS_4/10/14_NM	8.54E-07	detect	0	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	8.5E-07	detect	0	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	1.84E-07	detect	0	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	1.01E-06	detect	0	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	5.45E-07	detect	0	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	3.03E-07	detect	0	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	2.41E-07	detect	0	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	1.66E-07	detect	0	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	1.18E-06	detect	0	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	1.4E-06	detect	0	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	6.75E-07	detect	0	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	7.19E-06	detect	0	0	<1.0	**1.9**
	Grid 53	Grid 53-SSComp-01_20171020_NM	1.06E-05	detect	0	0	<1.0	**2.8**
	Grid 60	Grid 60-SSComp-01_20171023_NM	3.5E-06	detect	0	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	2.21E-06	detect	0	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	7.29E-06	detect	0	0	<1.0	**2.0**
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.000127	detect	0	0	**3.4**	**34.1**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	8.82E-08	detect	0	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	8.3E-07	detect	0	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	3.72E-06	detect	0	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	1.23E-07	detect	0	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	2.79E-06	detect	0	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	2.06E-07	detect	0	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	1.44E-07	detect	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	7E-08	detect	0	0	<1.0	<1.0
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	3.09E-07	detect	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	4.76E-05	detect	0	0	**1.3**	**12.8**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	1.42E-06	detect	0	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	7.01E-08	detect	0	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	2.59E-05	detect	0	0	<1.0	**6.9**
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.000617	detect	0	0	**16.5**	**165.3**
	P3	P3-SSComp-01_20171020_NM	4.71E-05	detect	0	0	**1.3**	**12.6**
	P3-BH1	P3-BH1-SS_4/3/14_NM	1.09E-05	detect	0	0	<1.0	**2.9**
	P4-BH1	P4-BH1-SS_4/4/14_NM	3.62E-07	detect	0	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	7.99E-07	detect	0	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	1.47E-06	detect	0	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	9.79E-06	detect	0	0	<1.0	**2.6**
	P8dc	P8dc-SSComp-01_20171024_NM	5.89E-06	detect	0	0	<1.0	**1.6**
	P8-TP3	P8-TP3-SS_4/4/14_NM	6.28E-06	detect	0	0	<1.0	**1.7**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	2.96E-05	detect	0	0	<1.0	**7.9**
	SPP	SPP-SSComp-01_20171025_NM	3.23E-05	detect	0	0	<1.0	**8.7**
	SS1,2-HP18	SS1-HP18-(0-2)c	1.03E-07	detect	0	0	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	7.99E-08	detect	0	0	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	2.02E-05	detect	0	0	<1.0	**5.4**
	SS15,16-HP9	SS15-HP9-(0-2)c	1.4E-05	detect	0	0	<1.0	**3.8**
	SS3,4-HP16	SS3-HP16-(0-2)c	1.97E-06	detect	0	0	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	1.26E-06	detect	0	0	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	2.95E-06	detect	0	0	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	1.04E-06	detect	0	0	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	5.05E-07	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

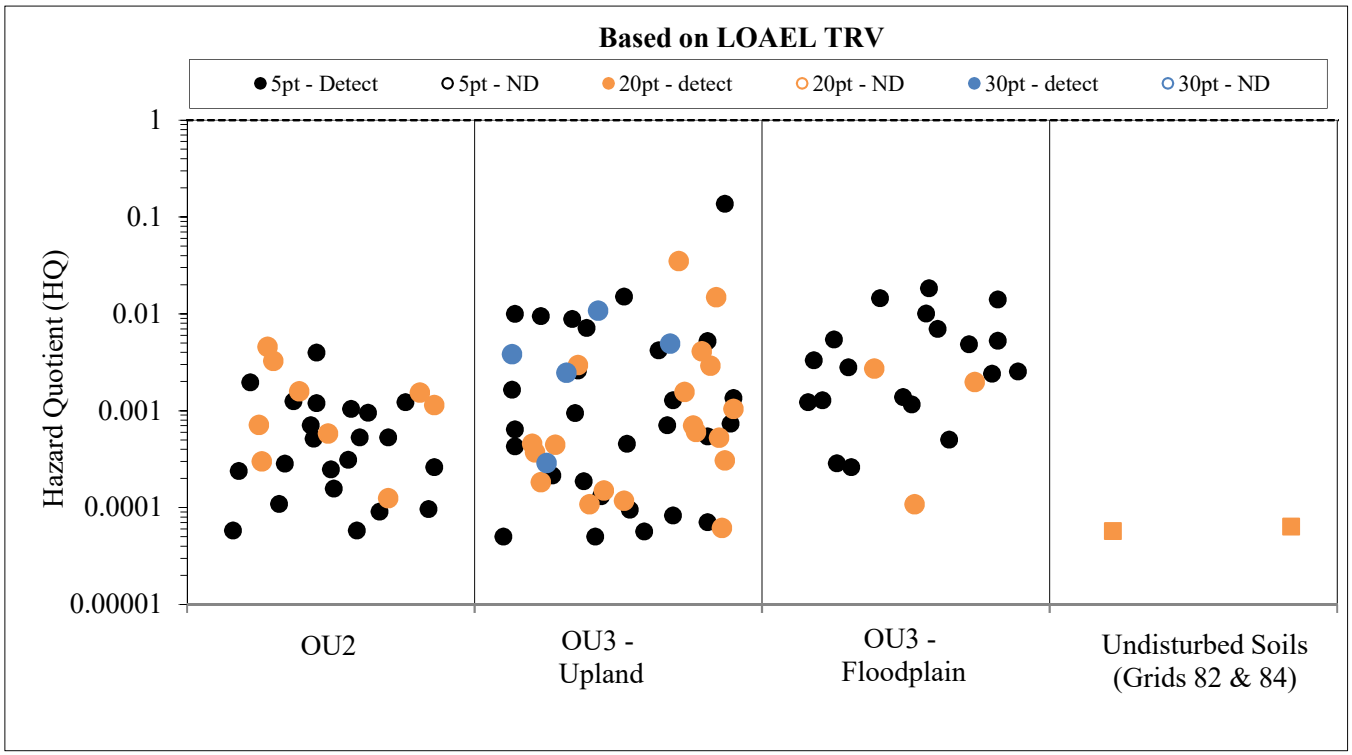
D/F Mam TEQ - ND=1/2RL

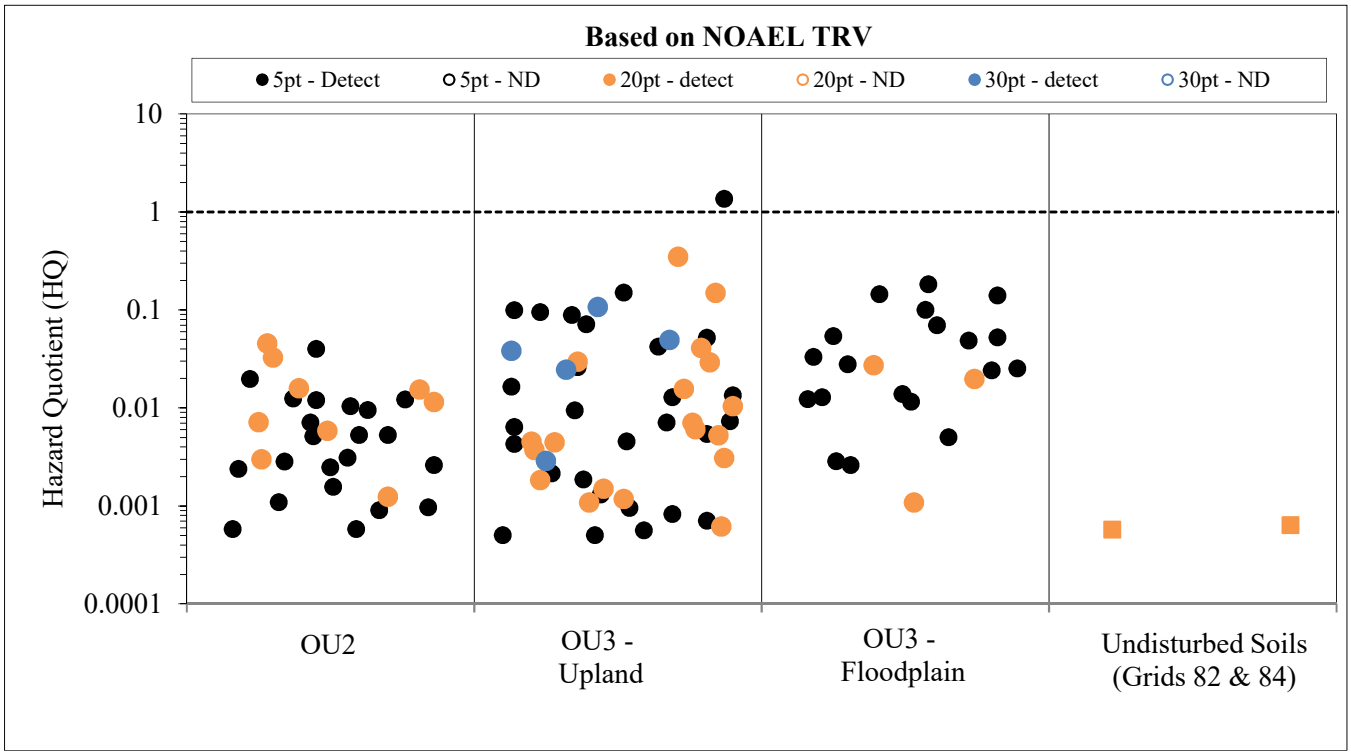
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	1.66E-07	detect	0	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	4.58E-06	detect	0	0	<1.0	**1.2**
	Grid 94	Grid 94-SSComp-01_20171026_NM	6.65E-06	detect	0	0	<1.0	**1.8**
	HP13a-1	HP13A-1-SS_4/10/14_NM	8.33E-06	detect	0	0	<1.0	**2.2**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	9.52E-07	detect	0	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	4.41E-05	detect	0	0	**1.2**	**11.8**
	SE11-HP11	SE11-HP11-(0-2)c	1.46E-05	detect	0	0	<1.0	**3.9**
	SE12-HP12	SE12-HP12-(0-2)c	2.49E-06	detect	0	0	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	4.58E-05	detect	0	0	**1.2**	**12.3**
	SE14-HP13	SE14-HP13-(0-2)c	5.01E-07	detect	0	0	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	2.98E-05	detect	0	0	<1.0	**8.0**
	SE16-HP13	SE16-HP13-(0-2)c	2.65E-06	detect	0	0	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	3.05E-06	detect	0	0	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	5.77E-06	detect	0	0	<1.0	**1.5**
	SE2-HP1a	SE2-HP1a-(0-2)c	6.84E-06	detect	0	0	<1.0	**1.8**
	SE3-HP1	SE3-HP1-(0-2)c	2.79E-06	detect	0	0	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	1.29E-05	detect	0	0	<1.0	**3.5**
	SE5-HP2	SE5-HP2-(0-2)c	1.41E-05	detect	0	0	<1.0	**3.8**
	SE6-HP7	SE6-HP7-(0-2)c	5.99E-05	detect	0	0	**1.6**	**16.0**
	SE7-HP7	SE7-HP7-(0-2)c	4.52E-07	detect	0	0	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	6.11E-06	detect	0	0	<1.0	**1.6**
	SE9-HP10	SE9-HP10-(0-2)c	1.96E-05	detect	0	0	<1.0	**5.2**
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	9.08E-08	detect	0	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	8.11E-08	detect	0	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Surface Soil by Exposure Unit/Soil Type

D/F Mam TEQ - ND=1/2RL





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Surface Soil

D/F Mam TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	6.37E-06	detect	0	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	3.24E-06	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	2.53E-05	detect	0	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	3.97E-06	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	1.81E-05	detect	0	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	6.92E-07	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	1.66E-06	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	8.82E-06	detect	0	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	8.53E-06	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	8.69E-07	detect	0	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	0	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	2.95E-06	detect	0	0	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	6.94E-06	detect	0	0	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	5.31E-06	detect	0	0	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	2.87E-06	detect	0	0	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	3.93E-06	detect	0	0	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	2.94E-06	detect	0	0	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	6.79E-06	detect	0	0	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	5.04E-07	detect	0	0	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	1.33E-06	detect	0	0	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	1.73E-06	detect	0	0	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	6.66E-06	detect	0	0	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	5.36E-07	detect	0	0	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	1.38E-06	detect	0	0	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	1.46E-06	detect	0	0	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	6.05E-07	detect	0	0	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	2.22E-05	detect	0	0	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	5.78E-06	detect	0	0	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	1.09E-05	detect	0	0	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	1.58E-06	detect	0	0	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	3.22E-07	detect	0	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	3.22E-07	detect	0	0	<1.0	<1.0
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	2.74E-05	detect	0	0	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	5.27E-05	detect	0	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	2.53E-06	detect	0	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	2.52E-06	detect	0	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	6.55E-07	detect	0	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	2.92E-06	detect	0	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	1.71E-06	detect	0	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	1.02E-06	detect	0	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	8.33E-07	detect	0	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	6E-07	detect	0	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	3.36E-06	detect	0	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	3.9E-06	detect	0	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	2.06E-06	detect	0	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	1.62E-05	detect	0	0	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	2.27E-05	detect	0	0	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	8.67E-06	detect	0	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	5.8E-06	detect	0	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	1.64E-05	detect	0	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.000195	detect	0	0	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	3.43E-07	detect	0	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	2.47E-06	detect	0	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	9.15E-06	detect	0	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	4.61E-07	detect	0	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	7.12E-06	detect	0	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	7.27E-07	detect	0	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	5.3E-07	detect	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	2.79E-07	detect	0	0	<1.0	<1.0
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	1.04E-06	detect	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	8.35E-05	detect	0	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	3.94E-06	detect	0	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	2.79E-07	detect	0	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	4.92E-05	detect	0	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.000756	detect	0	0	<1.0	**1.4**
	P3	P3-SSComp-01_20171020_NM	8.26E-05	detect	0	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	2.34E-05	detect	0	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	1.19E-06	detect	0	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	2.39E-06	detect	0	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	4.08E-06	detect	0	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	2.12E-05	detect	0	0	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	1.36E-05	detect	0	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	1.44E-05	detect	0	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	5.54E-05	detect	0	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	5.96E-05	detect	0	0	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	3.92E-07	detect	0	0	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	3.14E-07	detect	0	0	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	3.98E-05	detect	0	0	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	2.9E-05	detect	0	0	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	5.25E-06	detect	0	0	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	3.55E-06	detect	0	0	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	7.48E-06	detect	0	0	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	3.01E-06	detect	0	0	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	1.6E-06	detect	0	0	<1.0	<1.0
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	6.01E-07	detect	0	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	1.1E-05	detect	0	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	1.52E-05	detect	0	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	1.84E-05	detect	0	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	2.78E-06	detect	0	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	7.81E-05	detect	0	0	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	3.01E-05	detect	0	0	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	6.45E-06	detect	0	0	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	8.06E-05	detect	0	0	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	1.59E-06	detect	0	0	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	5.57E-05	detect	0	0	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	6.82E-06	detect	0	0	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	7.71E-06	detect	0	0	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	1.34E-05	detect	0	0	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	1.56E-05	detect	0	0	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	7.13E-06	detect	0	0	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	2.7E-05	detect	0	0	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	2.92E-05	detect	0	0	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	0.000102	detect	0	0	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	1.45E-06	detect	0	0	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	1.41E-05	detect	0	0	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	3.87E-05	detect	0	0	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	3.52E-07	detect	0	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	3.18E-07	detect	0	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of River Surface Water

Mam TEQ - ND=1/2RL

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	1E-09	ND	0.000001	0.00001	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	1E-09	ND	0.000001	0.00001	<1.0	<1.0
	CFR2	CFR2_20180523_NM	1E-09	detect	0.000001	0.00001	<1.0	<1.0
	SW3-CFR	SW3-CFR	1E-09	detect	0.000001	0.00001	<1.0	<1.0
	51-CFR	SW51-CFR	2E-09	ND	0.000001	0.00001	<1.0	<1.0
	52-CFR	SW52-CFR	1E-09	ND	0.000001	0.00001	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	1E-09	ND	0.000001	0.00001	<1.0	<1.0
	54-CFR	SW54-CFR	1E-09	ND	0.000001	0.00001	<1.0	<1.0
	SW2-CFR	SW2-CFR	2E-09	detect	0.000001	0.00001	<1.0	<1.0
	55-CFR	SW55-CFR	1E-09	ND	0.000001	0.00001	<1.0	<1.0
	56-CFR	SW56-CFR	1E-09	ND	0.000001	0.00001	<1.0	<1.0
	SW1-CFR	SW1-CFR	2E-09	detect	0.000001	0.00001	<1.0	<1.0
	57-CFR	SW57-CFR	2E-09	ND	0.000001	0.00001	<1.0	<1.0
	58-CFR	SW58-CFR	2E-09	ND	0.000001	0.00001	<1.0	<1.0
	59-CFR	SW59-CFR	1E-09	ND	0.000001	0.00001	<1.0	<1.0
	60-CFR	SW60-CFR	2E-09	ND	0.000001	0.00001	<1.0	<1.0
	61-CFR	SW61-CFR	2E-09	ND	0.000001	0.00001	<1.0	<1.0
	62-CFR	SW62-CFR	2E-09	ND	0.000001	0.00001	<1.0	<1.0
	63-CFR	SW63-CFR	2E-09	ND	0.000001	0.00001	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of Creek Surface Water

Mam TEQ - ND=1/2RL

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	2E-09	detect	0.000001	0.00001	<1.0	<1.0
	43-OK	SW43-OK	2E-09	detect	0.000001	0.00001	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	2E-09	detect	0.000001	0.00001	<1.0	<1.0
	37-LV	SW37-LV	2E-09	detect	0.000001	0.00001	<1.0	<1.0
	39-LV	SW39-LV	2E-09	detect	0.000001	0.00001	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of Pond Surface Water

Mam TEQ - ND=1/2RL

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	2E-09	detect	0.000001	0.00001	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	1E-09	detect	0.000001	0.00001	<1.0	<1.0
69-HP1a	SW69-HP1a	1E-09	detect	0.000001	0.00001	<1.0	<1.0
73-P5	SW73-P5	2E-09	detect	0.000001	0.00001	<1.0	<1.0
71-HP7	SW71-HP7	1E-09	detect	0.000001	0.00001	<1.0	<1.0
72-HP2	SW72-HP2	1E-09	detect	0.000001	0.00001	<1.0	<1.0
75-HP10	SW75-HP10	8E-10	detect	0.000001	0.00001	<1.0	<1.0
67-HP12	SW67-HP12	1E-09	detect	0.000001	0.00001	<1.0	<1.0
68-IBJ	SW68-IBJ	2E-09	detect	0.000001	0.00001	<1.0	<1.0
66-HP13	SW66-HP13	1E-09	detect	0.000001	0.00001	<1.0	<1.0
65-HP13a	SW65-HP13a	1E-09	detect	0.000001	0.00001	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	2E-09	detect	0.000001	0.00001	<1.0	<1.0
70-CWD	SW70-CWD	2E-09	detect	0.000001	0.00001	<1.0	<1.0
64-HP18	SW64-HP18	1E-09	detect	0.000001	0.00001	<1.0	<1.0

#N/A = not analyzed

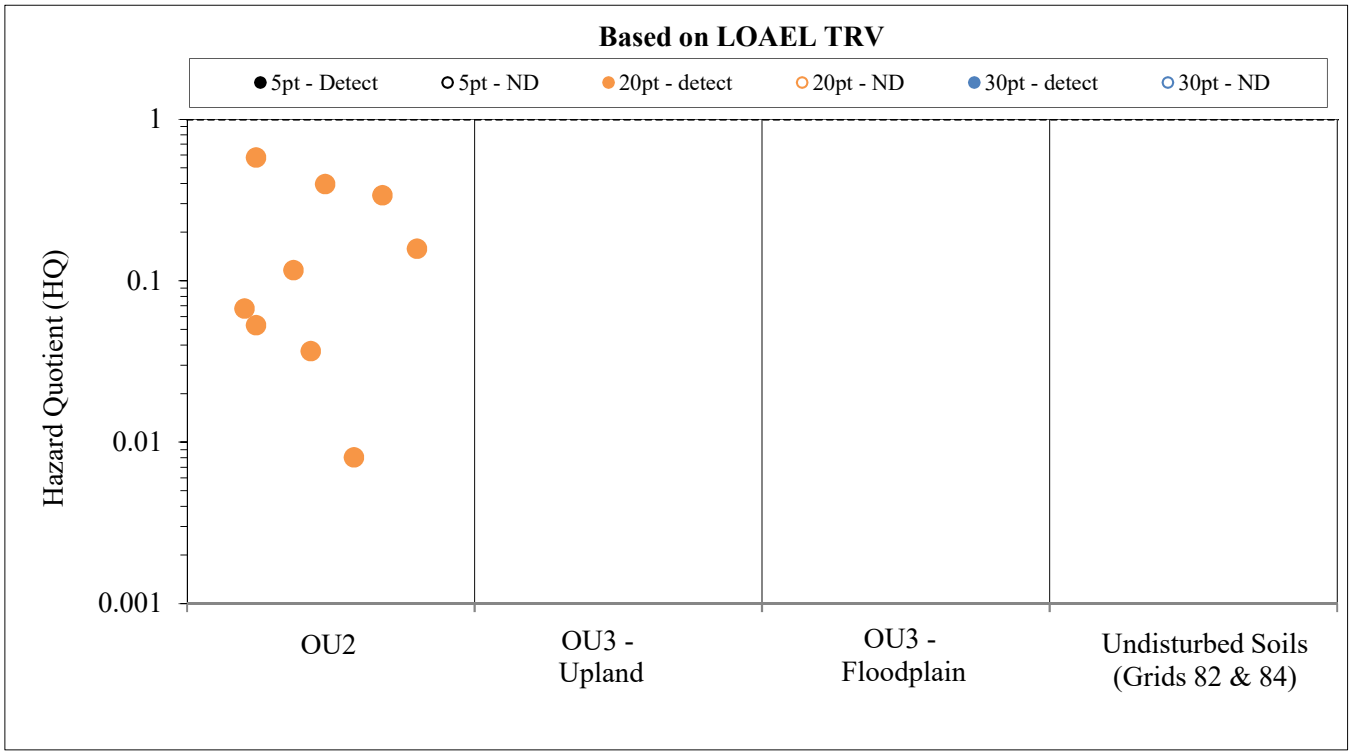
(a) Non-detects are evaluated at 1/2 the reported value.

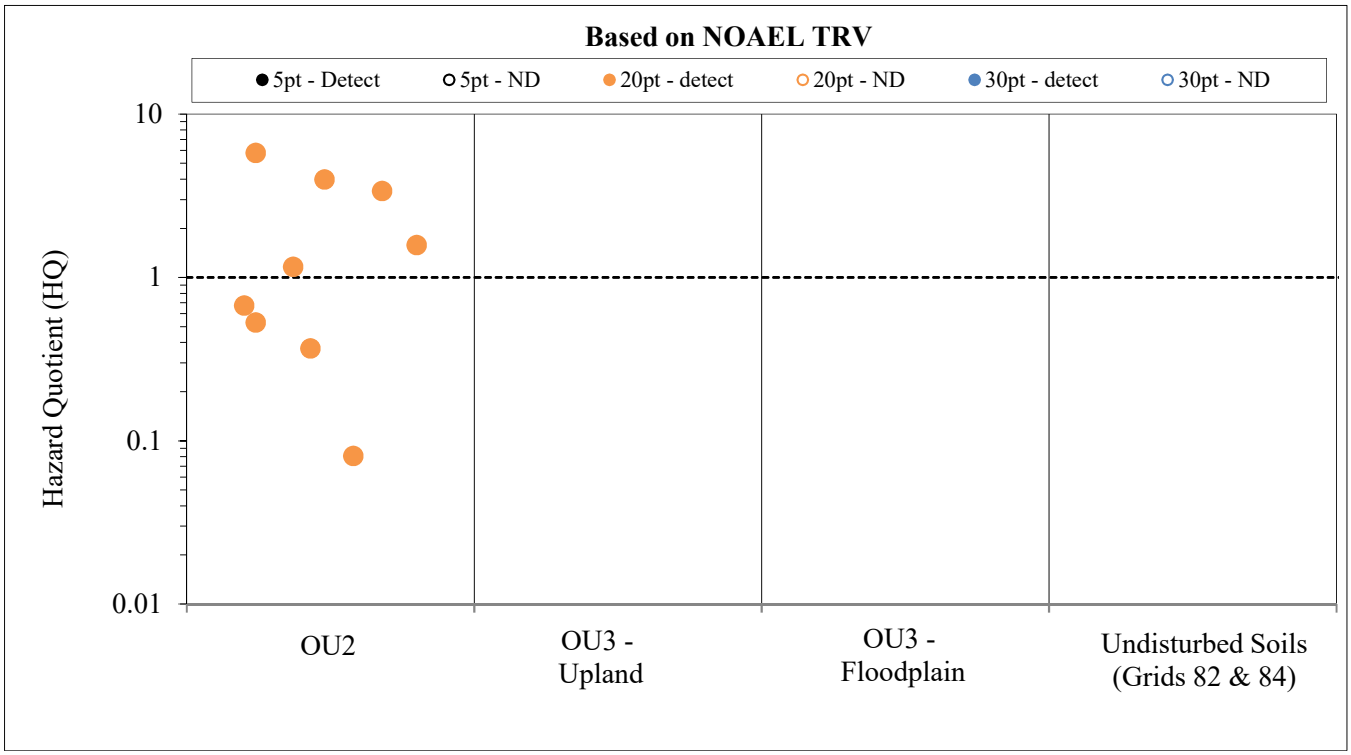
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Food by Exposure Unit/Soil Type

D/F+DL-PCB Mam TEQ - ND=1/2RL





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

D/F+DL-PCB Mam TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	5.89E-06	detect	0	0	<1.0	**1.6**
	Grid 13	Grid 13-SSComp-01_20171019_NM	1.37E-06	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	1.48E-05	detect	0	0	<1.0	**4.0**
	Grid 2	Grid 2-SSComp-01_20171016_NM	1.98E-06	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	1.26E-05	detect	0	0	<1.0	**3.4**
	Grid 23	Grid 23-SSComp-01_20171018_NM	3.01E-07	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	2.51E-06	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	2.16E-05	detect	0	0	<1.0	**5.8**
	Grid 9	Grid 9-SSComp-01_20171018_NM	4.33E-06	detect	0	0	<1.0	**1.2**
	LF-1	LF-1-SS_4/18/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	0	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	#N/A	#N/A	0	0	#N/A	#N/A
	TSB-SS	BACKFILL-TSB-SS	#N/A	#N/A	0	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

D/F+DL-PCB Mam TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	0	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	CRP-1	CRP-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-1	HP18-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-IB	HP18-SSC-IB_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP9-1	HP9-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	IBK-1	IBK-1-SS_4/16/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P17-BH1	P17-BH1-SS_4/3/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P4-BH1	P4-BH1-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P5-BH2	P5-BH2-SS_4/3/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

D/F+DL-PCB Mam TEQ - ND=1/2RL

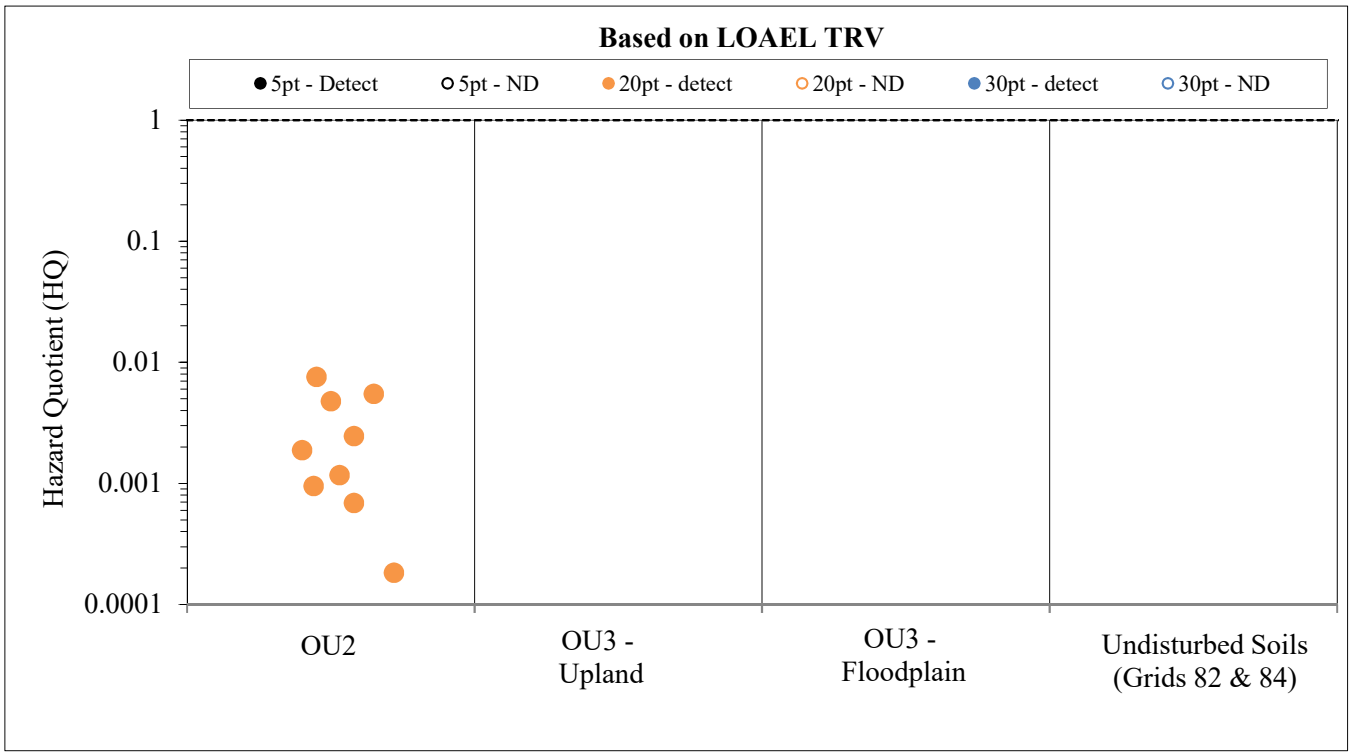
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	0	0	#N/A	#N/A

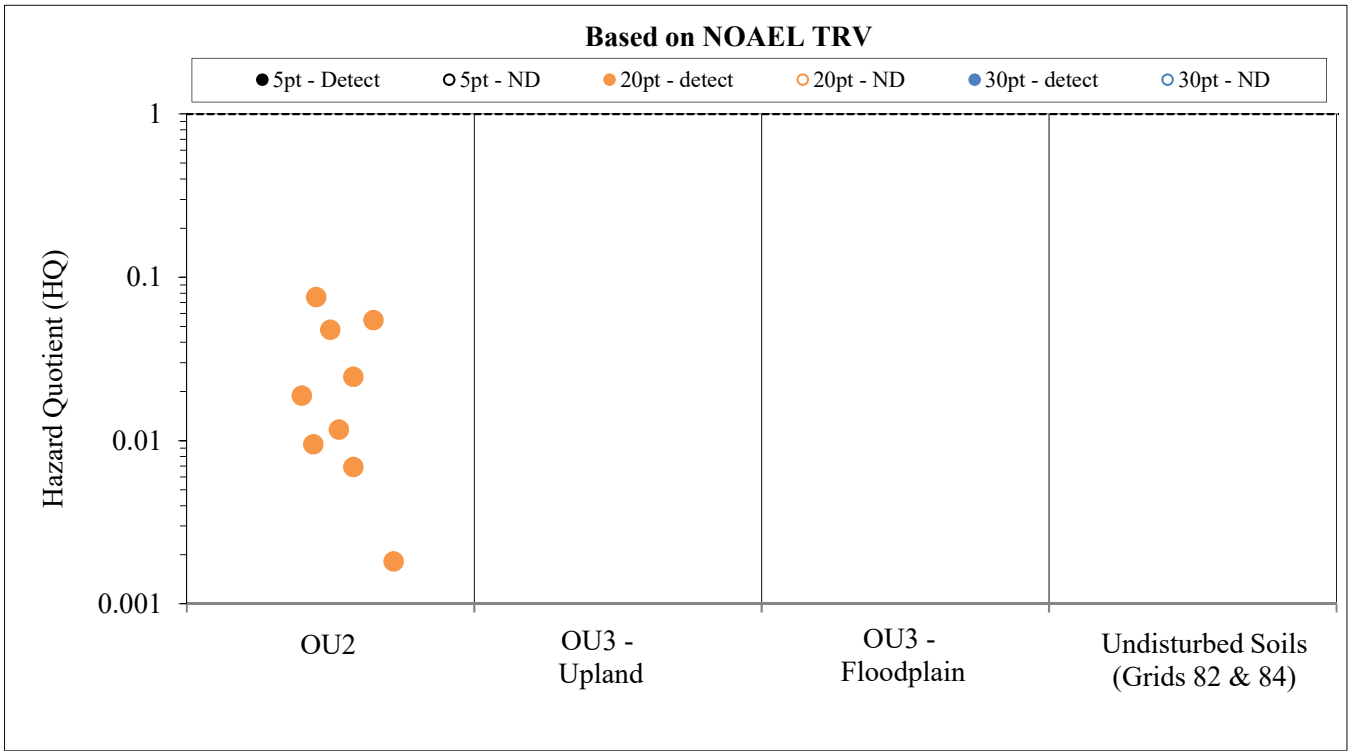
#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4

Hazard Quotients for Mouse from Ingestion of Surface Soil by Exposure Unit/Soil Type

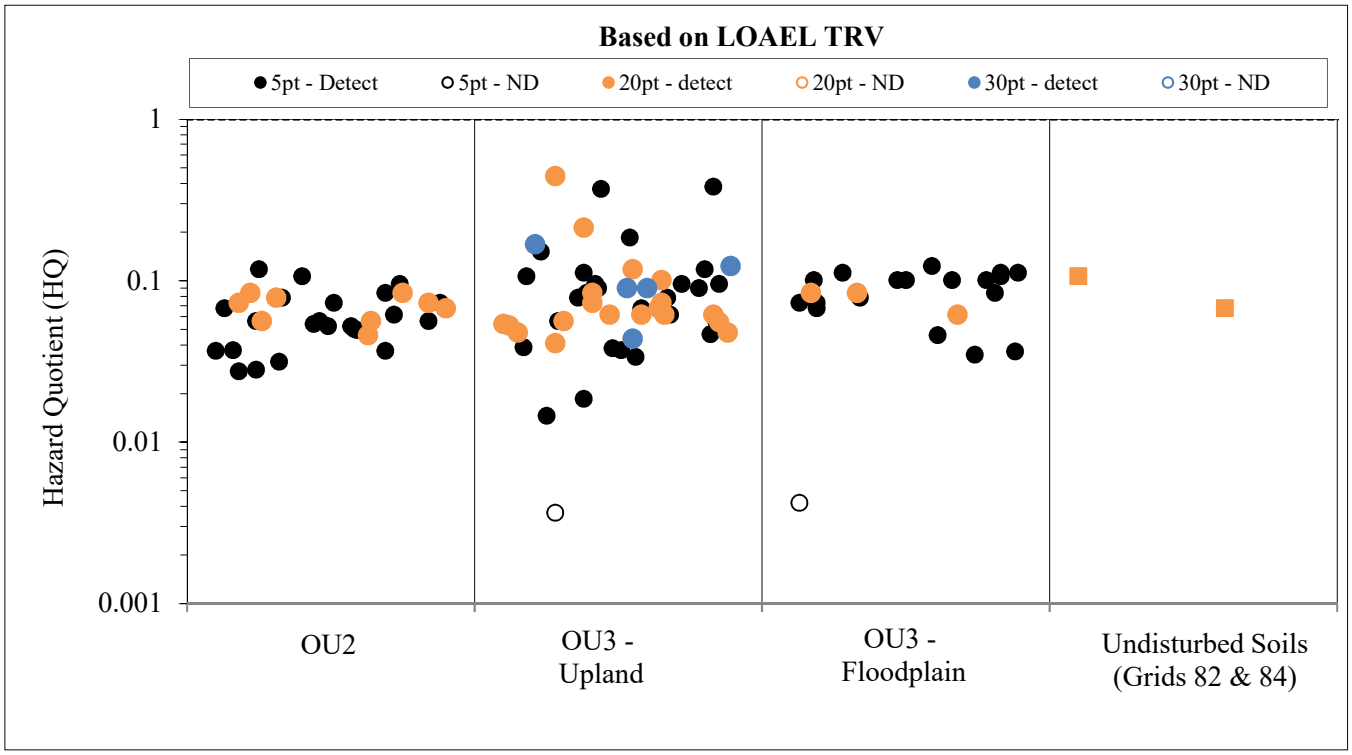
D/F+DL-PCB Mam TEQ - ND=1/2RL

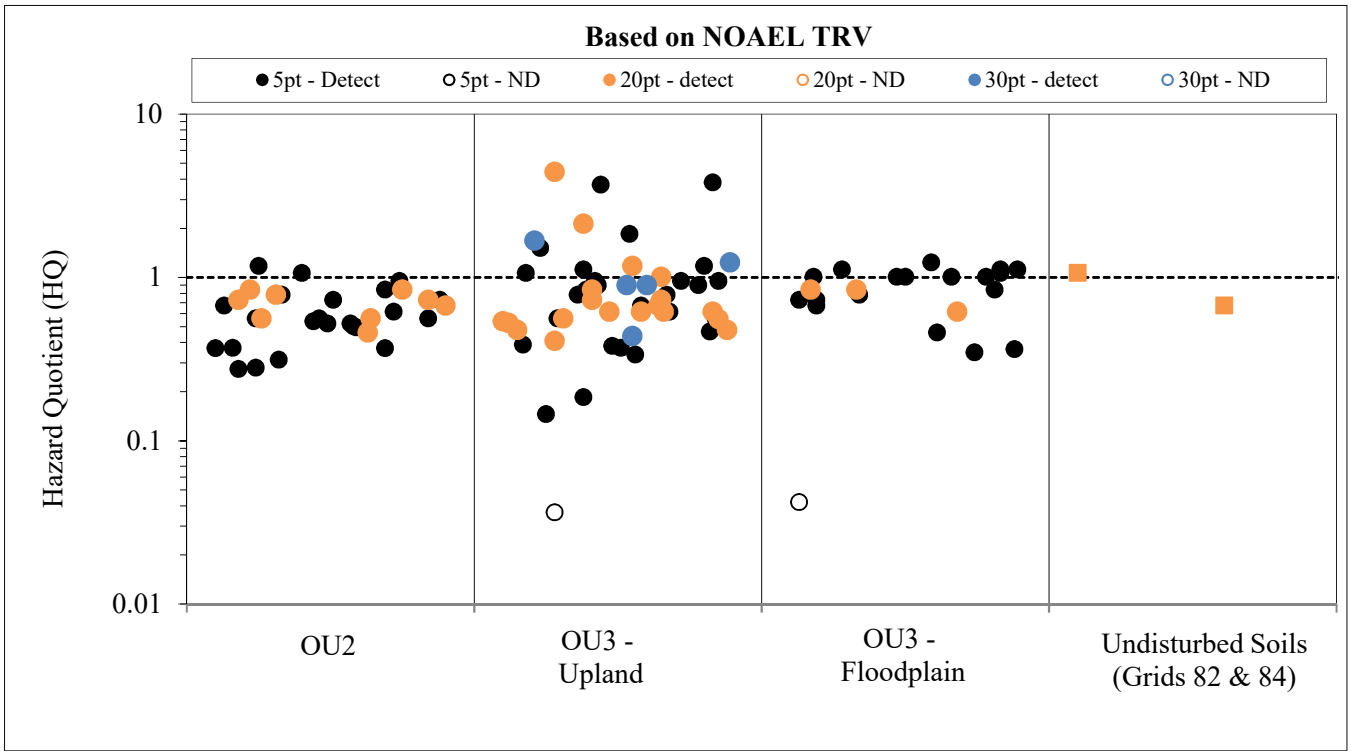




APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Food by Exposure Unit/Soil Type

Thallium





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Thallium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.01271	detect	0	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.0217	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.0155	detect	0	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.0155	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.02015	detect	0	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.02325	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.0186	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.02325	detect	0	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.02015	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.03255	detect	0	0	<1.0	**1.2**
	SB2a,3a-IN	SB2a-IN-(0-2)	0.00775	detect	0	0	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.0155	detect	0	0	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.0155	detect	0	0	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.0155	detect	0	0	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.01023	detect	0	0	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.01488	detect	0	0	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.02945	detect	0	0	<1.0	**1.1**
	SS16-IN	SS16-IN-(0-2)c	0.0217	detect	0	0	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.01705	detect	0	0	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.01364	detect	0	0	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.014415	detect	0	0	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.0186	detect	0	0	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.007595	detect	0	0	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.02015	detect	0	0	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.014415	detect	0	0	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.02325	detect	0	0	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.01395	detect	0	0	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.02015	detect	0	0	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.00868	detect	0	0	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.02635	detect	0	0	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.010178	detect	0	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.010178	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Thallium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.0341	detect	0	0	<1.0	**1.2**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.1023	detect	0	0	<1.0	**3.7**
	CRP-1	CRP-1-SS_4/10/14_NM	0.005115	detect	0	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.013175	detect	0	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.013175	detect	0	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.01705	detect	0	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.0186	detect	0	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.02015	detect	0	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.015345	detect	0	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.01457	detect	0	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.02015	detect	0	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.01488	detect	0	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.01705	detect	0	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.03255	detect	0	0	<1.0	**1.2**
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.02325	detect	0	0	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.01705	detect	0	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.01705	detect	0	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.0155	detect	0	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.12245	detect	0	0	<1.0	**4.4**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.0279	detect	0	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.011315	detect	0	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.0217	detect	0	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.02325	detect	0	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.03255	detect	0	0	<1.0	**1.2**
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.0186	detect	0	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.010695	detect	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.0155	detect	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.031	detect	0	0	<1.0	**1.1**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.001008	ND	0	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.02635	detect	0	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.05115	detect	0	0	<1.0	**1.9**
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.1054	detect	0	0	<1.0	**3.8**
	P3	P3-SSComp-01_20171020_NM	0.0589	detect	0	0	<1.0	**2.1**
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.01023	detect	0	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.00403	detect	0	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.012865	detect	0	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.0217	detect	0	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.0248	detect	0	0	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.0248	detect	0	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.02945	detect	0	0	<1.0	**1.1**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.04185	detect	0	0	<1.0	**1.5**
	SPP	SPP-SSComp-01_20171025_NM	0.0465	detect	0	0	<1.0	**1.7**
	SS1,2-HP18	SS1-HP18-(0-2)c	0.01705	detect	0	0	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.0155	detect	0	0	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	0.0248	detect	0	0	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	0.02635	detect	0	0	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.0093	detect	0	0	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.01054	detect	0	0	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.02635	detect	0	0	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.0248	detect	0	0	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.01209	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

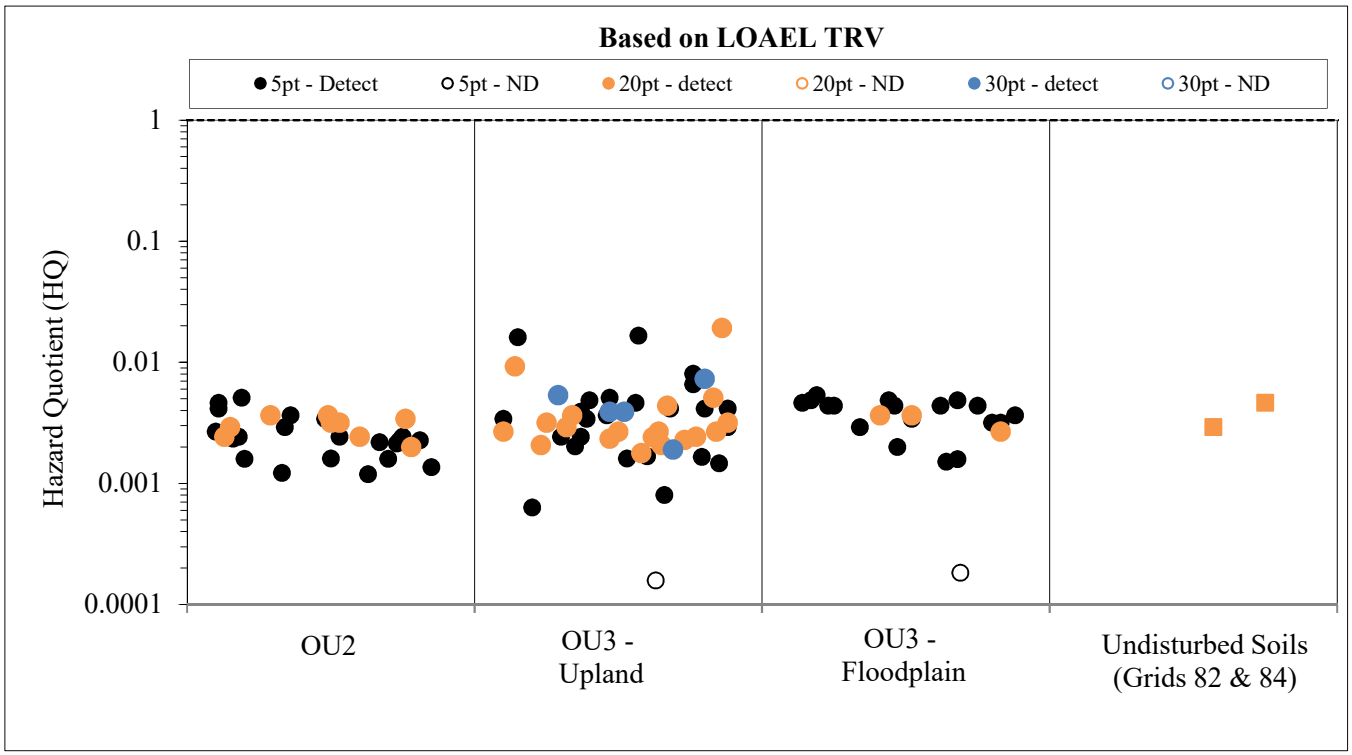
Thallium

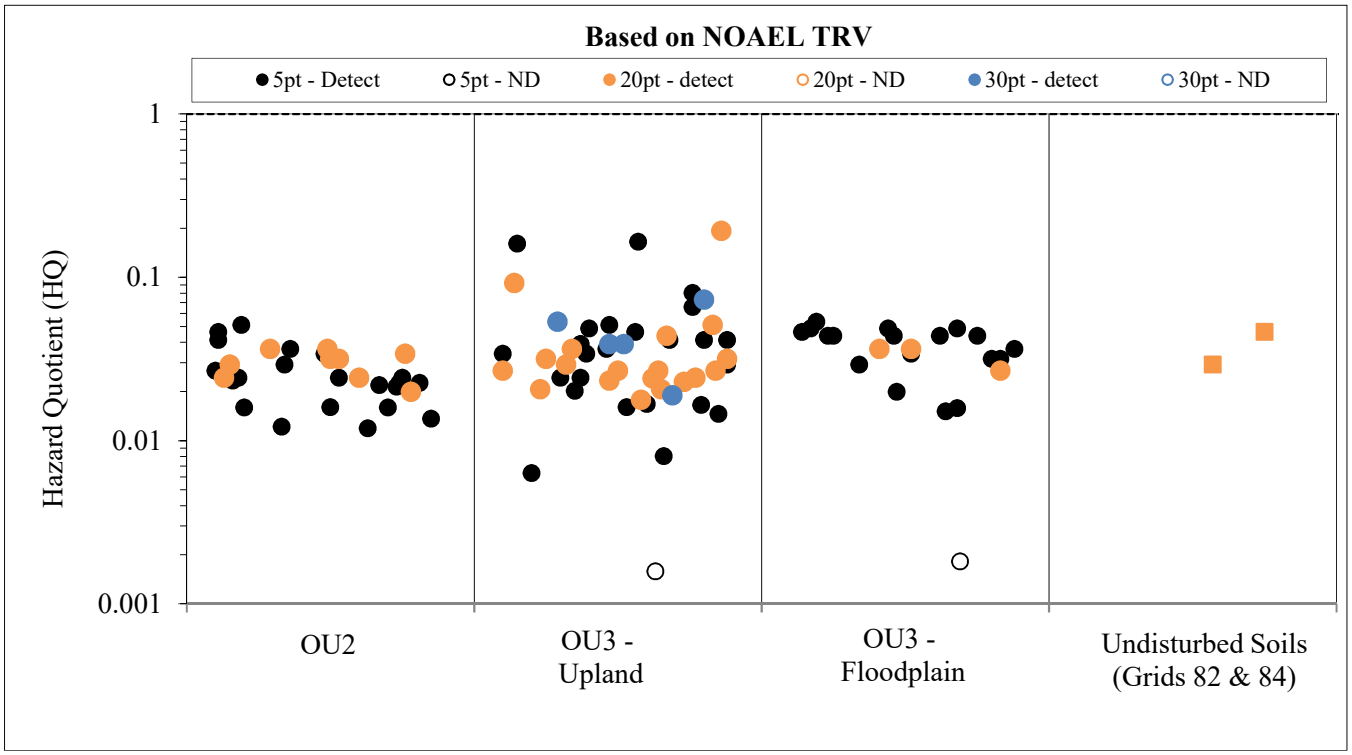
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.01705	detect	0	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.02325	detect	0	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.02325	detect	0	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.031	detect	0	0	<1.0	**1.1**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.001163	ND	0	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	0.0279	detect	0	0	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	0.02015	detect	0	0	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	0.031	detect	0	0	<1.0	**1.1**
	SE13-HP12	SE13-HP12-(0-2)c	0.0279	detect	0	0	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	0.0279	detect	0	0	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.02325	detect	0	0	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	0.031	detect	0	0	<1.0	**1.1**
	SE17-HP13a	SE17-HP13a-(0-2)c	0.0279	detect	0	0	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.0186	detect	0	0	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.02015	detect	0	0	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.00961	detect	0	0	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.01271	detect	0	0	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	0.0341	detect	0	0	<1.0	**1.2**
	SE6-HP7	SE6-HP7-(0-2)c	0.02945	detect	0	0	<1.0	**1.1**
	SE7-HP7	SE7-HP7-(0-2)c	0.0217	detect	0	0	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.010075	detect	0	0	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	0.0279	detect	0	0	<1.0	<1.0
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	0.02945	detect	0	0	<1.0	**1.1**
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.0186	detect	0	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Surface Soil by Exposure Unit/Soil Type

Thallium





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Surface Soil

Thallium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.082	detect	0	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.14	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.1	detect	0	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.1	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.13	detect	0	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.15	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.12	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.15	detect	0	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.13	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.21	detect	0	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.05	detect	0	0	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.1	detect	0	0	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.1	detect	0	0	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.1	detect	0	0	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.066	detect	0	0	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.096	detect	0	0	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.19	detect	0	0	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.14	detect	0	0	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.11	detect	0	0	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.088	detect	0	0	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.093	detect	0	0	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.12	detect	0	0	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.049	detect	0	0	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.13	detect	0	0	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.093	detect	0	0	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.15	detect	0	0	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.09	detect	0	0	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.13	detect	0	0	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.056	detect	0	0	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.17	detect	0	0	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.065667	detect	0	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.065667	detect	0	0	<1.0	<1.0
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.22	detect	0	0	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.66	detect	0	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.033	detect	0	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.085	detect	0	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.085	detect	0	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.11	detect	0	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.12	detect	0	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.13	detect	0	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.099	detect	0	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.094	detect	0	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.13	detect	0	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.096	detect	0	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.11	detect	0	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.21	detect	0	0	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.15	detect	0	0	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.11	detect	0	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.11	detect	0	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.1	detect	0	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.79	detect	0	0	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.18	detect	0	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.073	detect	0	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.14	detect	0	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.15	detect	0	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.21	detect	0	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.12	detect	0	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.069	detect	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.1	detect	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.2	detect	0	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.0065	ND	0	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.17	detect	0	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.33	detect	0	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.68	detect	0	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.38	detect	0	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.066	detect	0	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.026	detect	0	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.083	detect	0	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.14	detect	0	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.16	detect	0	0	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.16	detect	0	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.19	detect	0	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.27	detect	0	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.3	detect	0	0	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.11	detect	0	0	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.1	detect	0	0	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	0.16	detect	0	0	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	0.17	detect	0	0	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.06	detect	0	0	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.068	detect	0	0	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.17	detect	0	0	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.16	detect	0	0	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.078	detect	0	0	<1.0	<1.0
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.11	detect	0	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.15	detect	0	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.15	detect	0	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.2	detect	0	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.0075	ND	0	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	0.18	detect	0	0	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	0.13	detect	0	0	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	0.2	detect	0	0	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	0.18	detect	0	0	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	0.18	detect	0	0	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.15	detect	0	0	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	0.2	detect	0	0	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.18	detect	0	0	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.12	detect	0	0	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.13	detect	0	0	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.062	detect	0	0	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.082	detect	0	0	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	0.22	detect	0	0	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	0.19	detect	0	0	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	0.14	detect	0	0	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.065	detect	0	0	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	0.18	detect	0	0	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.19	detect	0	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.12	detect	0	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of River Surface Water

Thallium

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	3E-05	ND	0.0074	0.074	<1.0	<1.0
	CFR2	CFR2_20180523_NM	3E-05	ND	0.0074	0.074	<1.0	<1.0
	SW3-CFR	SW3-CFR	2E-05	ND	0.0074	0.074	<1.0	<1.0
	51-CFR	SW51-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	52-CFR	SW52-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	54-CFR	SW54-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	SW2-CFR	SW2-CFR	2E-05	ND	0.0074	0.074	<1.0	<1.0
	55-CFR	SW55-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	56-CFR	SW56-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	SW1-CFR	SW1-CFR	2E-05	ND	0.0074	0.074	<1.0	<1.0
	57-CFR	SW57-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	58-CFR	SW58-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	59-CFR	SW59-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	60-CFR	SW60-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	61-CFR	SW61-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	62-CFR	SW62-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	63-CFR	SW63-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of Creek Surface Water

Thallium

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	3E-05	ND	0.0074	0.074	<1.0	<1.0
	43-OK	SW43-OK	3E-05	detect	0.0074	0.074	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	2E-05	ND	0.0074	0.074	<1.0	<1.0
	37-LV	SW37-LV	3E-05	ND	0.0074	0.074	<1.0	<1.0
	39-LV	SW39-LV	3E-05	ND	0.0074	0.074	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of Pond Surface Water

Thallium

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	3E-05	ND	0.0074	0.074	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	3E-05	ND	0.0074	0.074	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0001	ND	0.0074	0.074	<1.0	<1.0
73-P5	SW73-P5	0.0001	ND	0.0074	0.074	<1.0	<1.0
71-HP7	SW71-HP7	0.0001	ND	0.0074	0.074	<1.0	<1.0
72-HP2	SW72-HP2	0.0001	ND	0.0074	0.074	<1.0	<1.0
75-HP10	SW75-HP10	0.0001	ND	0.0074	0.074	<1.0	<1.0
67-HP12	SW67-HP12	0.0001	ND	0.0074	0.074	<1.0	<1.0
68-IBJ	SW68-IBJ	3E-05	ND	0.0074	0.074	<1.0	<1.0
66-HP13	SW66-HP13	0.0001	ND	0.0074	0.074	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0001	ND	0.0074	0.074	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	3E-05	ND	0.0074	0.074	<1.0	<1.0
70-CWD	SW70-CWD	3E-05	ND	0.0074	0.074	<1.0	<1.0
64-HP18	SW64-HP18	0.0001	ND	0.0074	0.074	<1.0	<1.0

#N/A = not analyzed

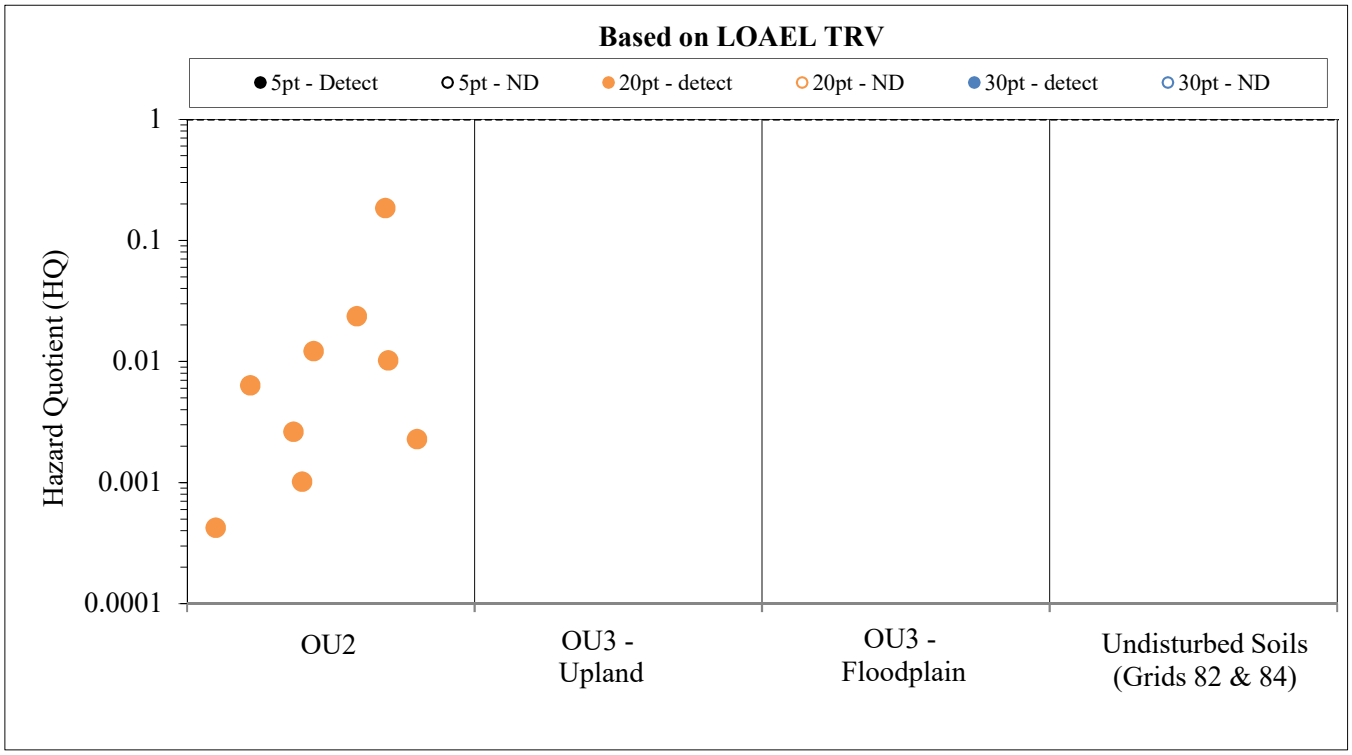
(a) Non-detects are evaluated at 1/2 the reported value.

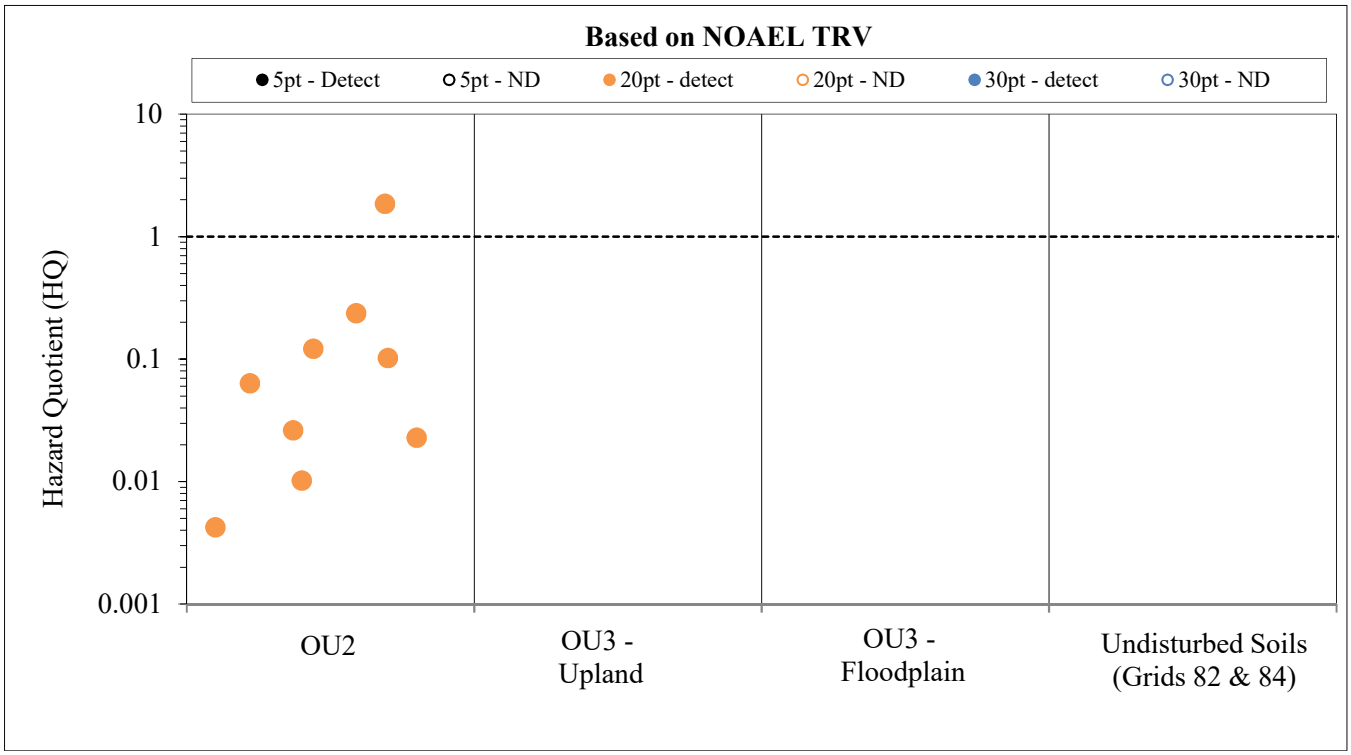
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Food by Exposure Unit/Soil Type

Total PCBs (ND=1/2RL)





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Total PCBs (ND=1/2RL)

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.082161	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.003529	detect	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.022059	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.00793	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.03547	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.001468	detect	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.042266	detect	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.642506	detect	1	0	<1.0	**1.9**
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.009116	detect	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	#N/A	#N/A	1	0	#N/A	#N/A
	TSB-SS	BACKFILL-TSB-SS	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Total PCBs (ND=1/2RL)

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	CRP-1	CRP-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-1	HP18-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-IB	HP18-SSC-IB_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP9-1	HP9-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	IBK-1	IBK-1-SS_4/16/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P17-BH1	P17-BH1-SS_4/3/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P4-BH1	P4-BH1-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P5-BH2	P5-BH2-SS_4/3/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

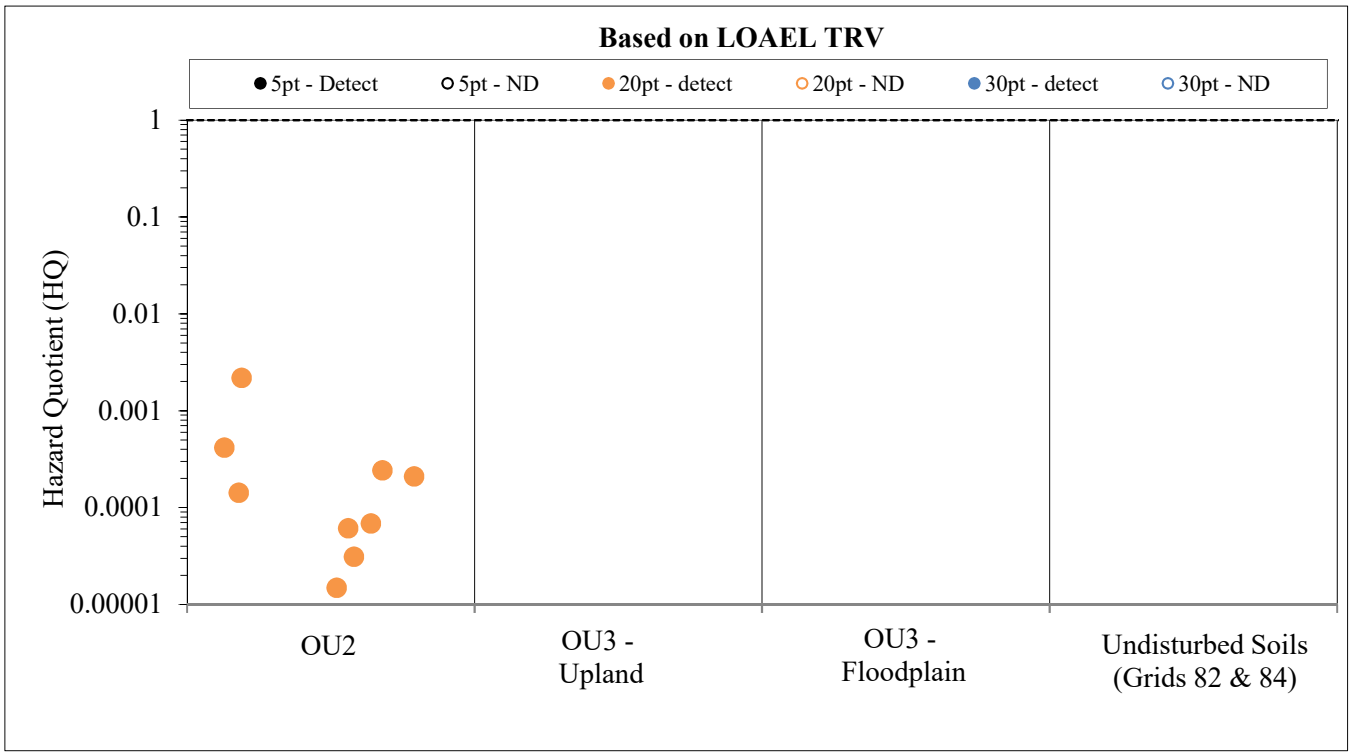
Total PCBs (ND=1/2RL)

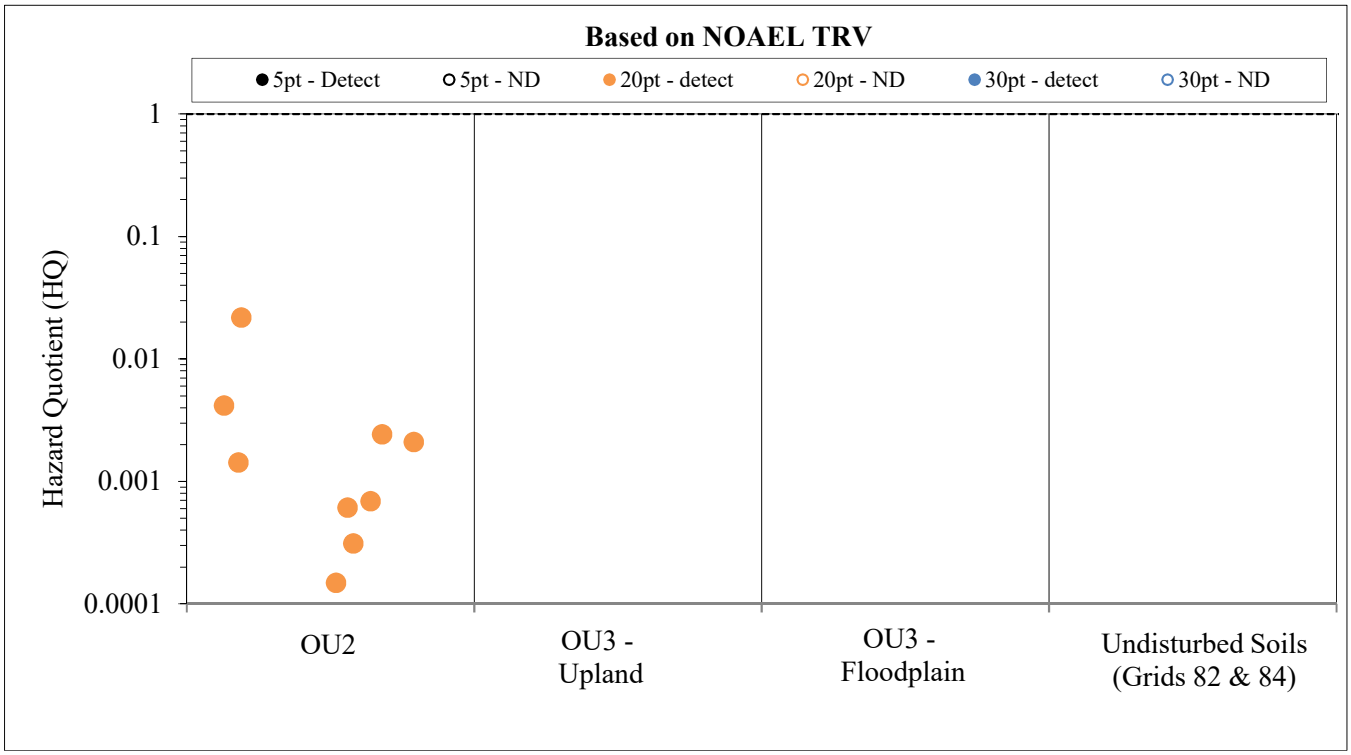
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Surface Soil by Exposure Unit/Soil Type

Total PCBs (ND=1/2RL)





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Surface Soil

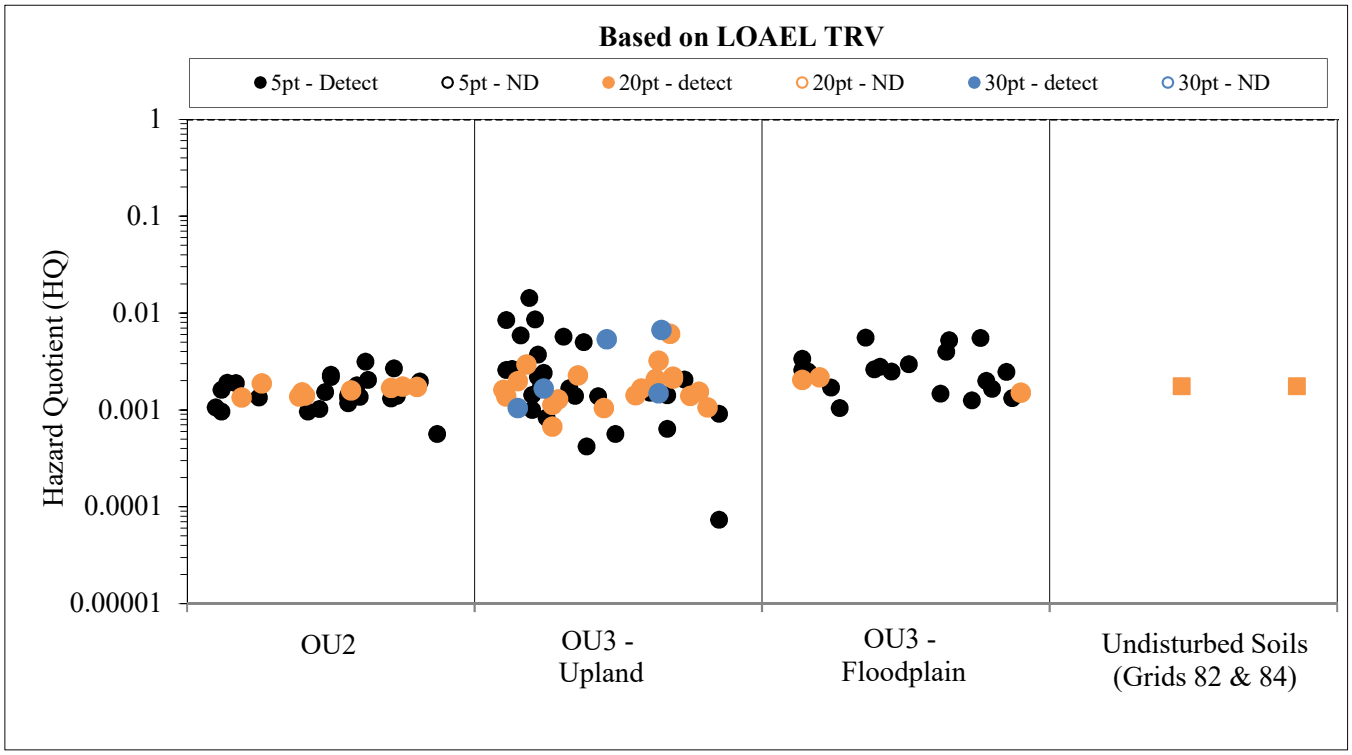
Total PCBs (ND=1/2RL)

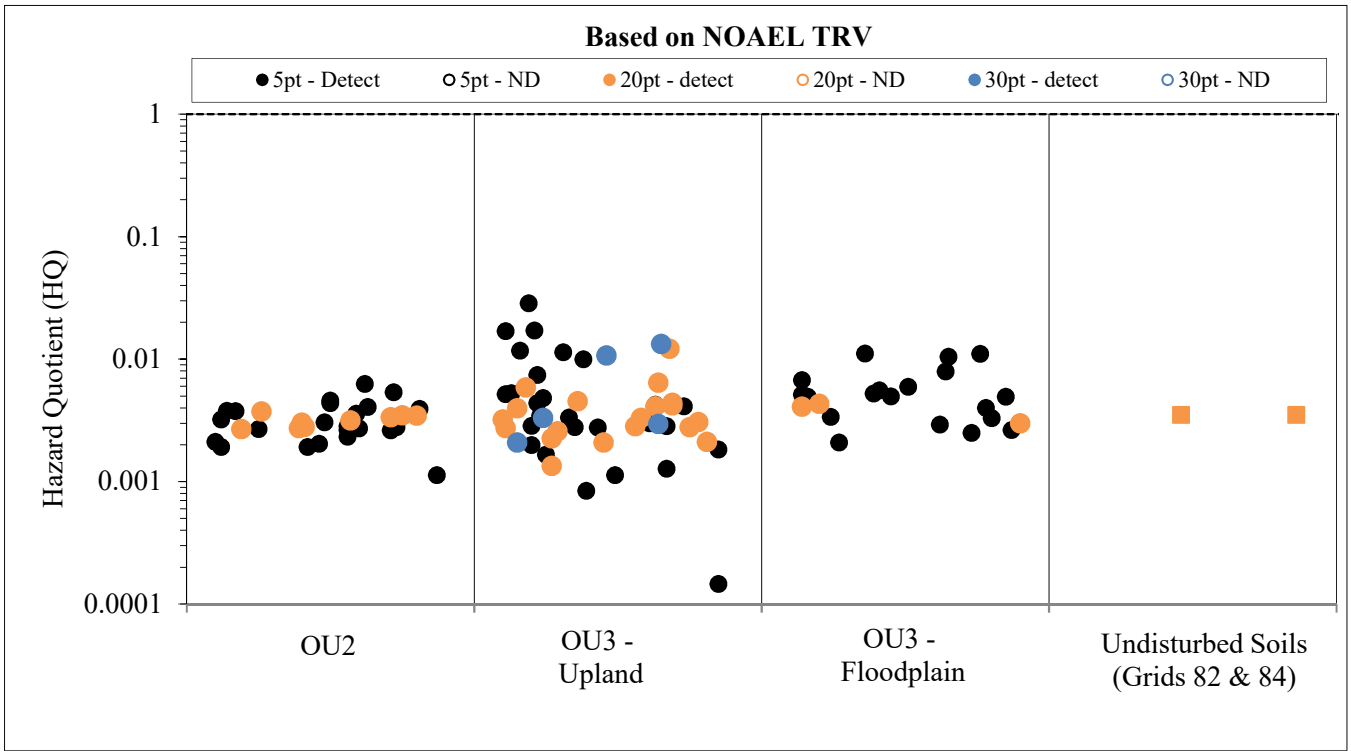
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.2153	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.016098	detect	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.073668	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.031651	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.108693	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.007675	detect	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.125414	detect	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	1.125173	detect	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.035534	detect	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	#N/A	#N/A	1	0	#N/A	#N/A
	TSB-SS	BACKFILL-TSB-SS	#N/A	#N/A	1	0	#N/A	#N/A
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	CRP-1	CRP-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-1	HP18-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-IB	HP18-SSC-IB_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP9-1	HP9-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	IBK-1	IBK-1-SS_4/16/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P17-BH1	P17-BH1-SS_4/3/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P4-BH1	P4-BH1-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P5-BH2	P5-BH2-SS_4/3/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Food by Exposure Unit/Soil Type

Vanadium





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Vanadium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.046919	detect	8	4	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.053994	detect	8	4	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.042451	detect	8	4	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.041706	detect	8	4	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.053622	detect	8	4	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.058091	detect	8	4	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.043568	detect	8	4	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.052133	detect	8	4	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.049154	detect	8	4	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.08304	detect	8	4	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.017502	detect	8	4	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.04394	detect	8	4	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.040589	detect	8	4	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.041706	detect	8	4	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.031652	detect	8	4	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.040961	detect	8	4	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.055484	detect	8	4	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.049898	detect	8	4	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.060697	detect	8	4	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.042078	detect	8	4	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	8	4	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.03612	detect	8	4	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	8	4	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	8	4	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.097562	detect	8	4	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.071124	detect	8	4	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.062931	detect	8	4	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.043196	detect	8	4	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.058835	detect	8	4	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.047292	detect	8	4	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.058463	detect	8	4	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.032769	detect	8	4	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.067772	detect	8	4	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.02979	detect	8	4	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.02979	detect	8	4	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Vanadium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.166452	detect	8	4	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.266248	detect	8	4	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.443126	detect	8	4	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.035003	detect	8	4	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.032397	detect	8	4	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.070379	detect	8	4	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.04394	detect	8	4	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.061442	detect	8	4	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.039844	detect	8	4	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.042451	detect	8	4	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.068145	detect	8	4	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.099797	detect	8	4	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.047664	detect	8	4	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.188422	detect	8	4	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.065166	detect	8	4	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.051388	detect	8	4	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.049898	detect	8	4	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.043196	detect	8	4	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.09086	detect	8	4	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.064049	detect	8	4	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.032769	detect	8	4	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.115436	detect	8	4	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.063676	detect	8	4	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.154908	detect	8	4	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.043196	detect	8	4	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.030907	detect	8	4	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	8	4	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.025694	detect	8	4	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.176506	detect	8	4	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.019736	detect	8	4	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.080061	detect	8	4	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.262897	detect	8	4	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.053622	detect	8	4	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.020853	detect	8	4	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.017502	detect	8	4	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.002271	detect	8	4	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.013033	detect	8	4	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.042823	detect	8	4	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.045802	detect	8	4	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.051388	detect	8	4	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.05176	detect	8	4	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.182091	detect	8	4	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.206296	detect	8	4	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.044313	detect	8	4	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.046547	detect	8	4	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	0.08155	detect	8	4	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	0.074847	detect	8	4	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.04394	detect	8	4	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.028301	detect	8	4	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.067772	detect	8	4	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.06591	detect	8	4	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.032397	detect	8	4	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

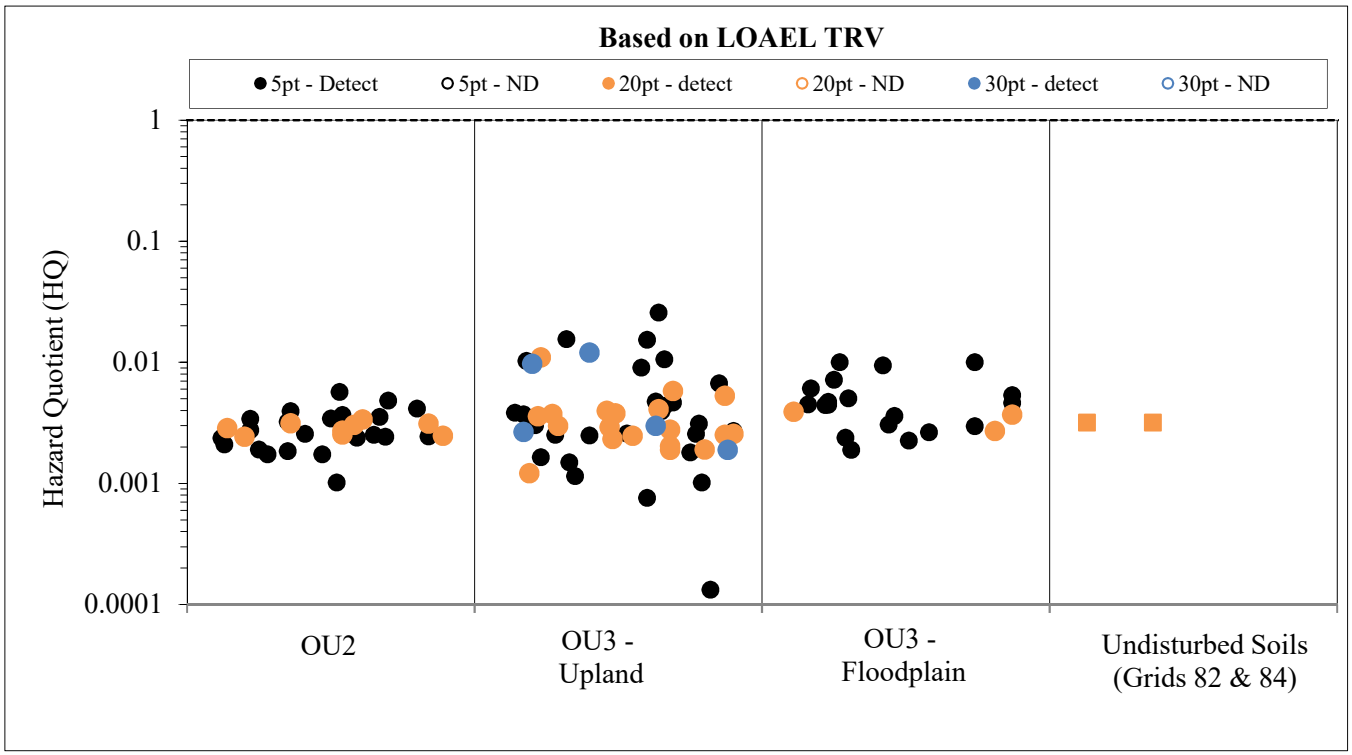
Vanadium

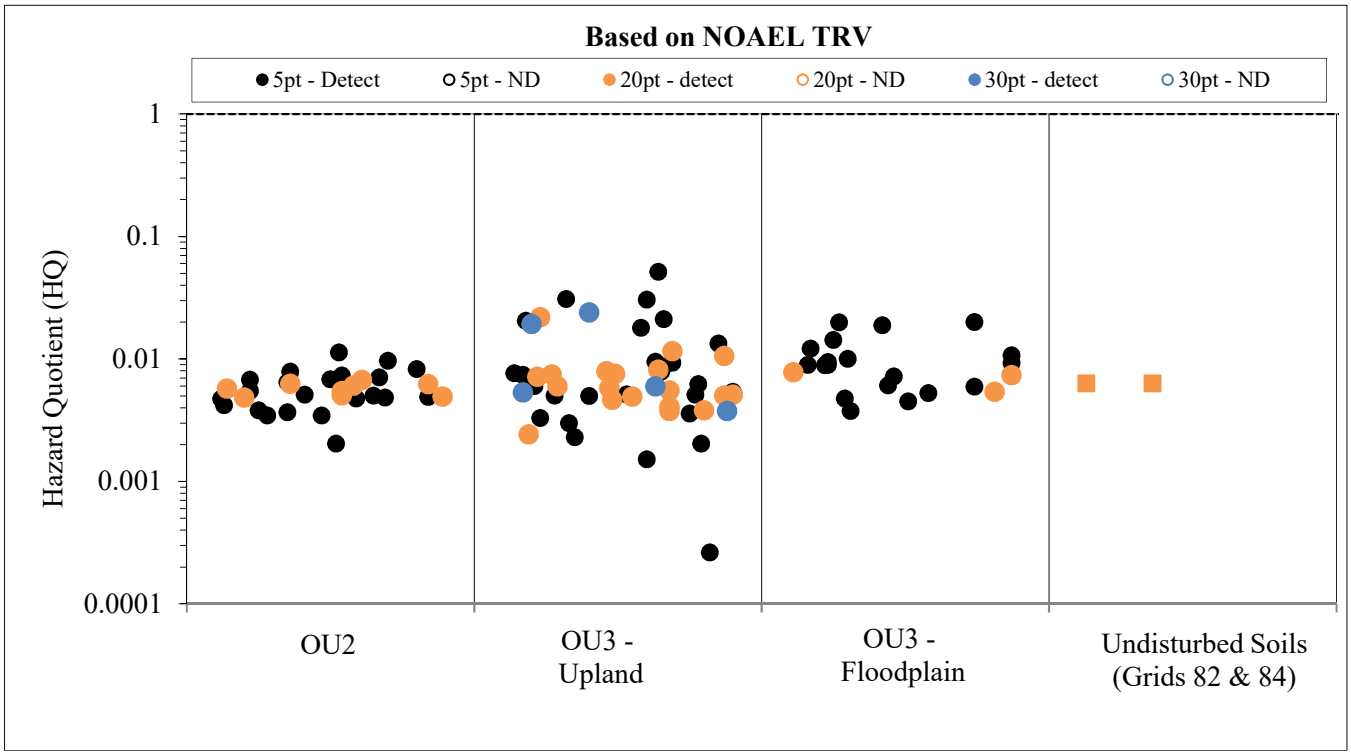
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.046547	detect	8	4	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.067028	detect	8	4	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.063304	detect	8	4	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.079688	detect	8	4	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.032397	detect	8	4	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	0.172037	detect	8	4	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	0.061814	detect	8	4	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	0.091977	detect	8	4	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	0.171665	detect	8	4	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	0.086391	detect	8	4	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.051015	detect	8	4	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	0.076709	detect	8	4	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.076337	detect	8	4	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.081178	detect	8	4	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.077082	detect	8	4	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.04543	detect	8	4	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.052505	detect	8	4	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	0.161983	detect	8	4	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	0.123256	detect	8	4	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	0.038727	detect	8	4	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.040961	detect	8	4	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	0.104637	detect	8	4	<1.0	<1.0
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	0.054367	detect	8	4	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.054367	detect	8	4	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Surface Soil by Exposure Unit/Soil Type

Vanadium





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Surface Soil

Vanadium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	12.6	detect	8	4	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	14.5	detect	8	4	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	11.4	detect	8	4	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	11.2	detect	8	4	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	14.4	detect	8	4	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	15.6	detect	8	4	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	11.7	detect	8	4	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	14	detect	8	4	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	13.2	detect	8	4	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	22.3	detect	8	4	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	4.7	detect	8	4	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	11.8	detect	8	4	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	10.9	detect	8	4	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	11.2	detect	8	4	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	8.5	detect	8	4	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	11	detect	8	4	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	14.9	detect	8	4	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	13.4	detect	8	4	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	16.3	detect	8	4	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	11.3	detect	8	4	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	8	4	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	9.7	detect	8	4	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	8	4	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	8	4	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	26.2	detect	8	4	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	19.1	detect	8	4	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	16.9	detect	8	4	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	11.6	detect	8	4	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	15.8	detect	8	4	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	12.7	detect	8	4	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	15.7	detect	8	4	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	8.8	detect	8	4	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	18.2	detect	8	4	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	8	detect	8	4	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	8	detect	8	4	<1.0	<1.0
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	44.7	detect	8	4	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	71.5	detect	8	4	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	119	detect	8	4	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	9.4	detect	8	4	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	8.7	detect	8	4	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	18.9	detect	8	4	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	11.8	detect	8	4	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	16.5	detect	8	4	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	10.7	detect	8	4	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	11.4	detect	8	4	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	18.3	detect	8	4	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	26.8	detect	8	4	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	12.8	detect	8	4	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	50.6	detect	8	4	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	17.5	detect	8	4	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	13.8	detect	8	4	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	13.4	detect	8	4	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	11.6	detect	8	4	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	24.4	detect	8	4	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	17.2	detect	8	4	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	8.8	detect	8	4	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	31	detect	8	4	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	17.1	detect	8	4	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	41.6	detect	8	4	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	11.6	detect	8	4	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	8.3	detect	8	4	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	8	4	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	6.9	detect	8	4	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	47.4	detect	8	4	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	5.3	detect	8	4	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	21.5	detect	8	4	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	70.6	detect	8	4	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	14.4	detect	8	4	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	5.6	detect	8	4	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	4.7	detect	8	4	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.61	detect	8	4	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	3.5	detect	8	4	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	11.5	detect	8	4	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	12.3	detect	8	4	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	13.8	detect	8	4	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	13.9	detect	8	4	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	48.9	detect	8	4	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	55.4	detect	8	4	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	11.9	detect	8	4	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	12.5	detect	8	4	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	21.9	detect	8	4	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	20.1	detect	8	4	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	11.8	detect	8	4	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	7.6	detect	8	4	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	18.2	detect	8	4	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	17.7	detect	8	4	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	8.7	detect	8	4	<1.0	<1.0
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	12.5	detect	8	4	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	18	detect	8	4	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	17	detect	8	4	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	21.4	detect	8	4	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	8.7	detect	8	4	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	46.2	detect	8	4	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	16.6	detect	8	4	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	24.7	detect	8	4	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	46.1	detect	8	4	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	23.2	detect	8	4	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	13.7	detect	8	4	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	20.6	detect	8	4	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	20.5	detect	8	4	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	21.8	detect	8	4	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	20.7	detect	8	4	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	12.2	detect	8	4	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	14.1	detect	8	4	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	43.5	detect	8	4	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	33.1	detect	8	4	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	10.4	detect	8	4	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	11	detect	8	4	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	28.1	detect	8	4	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	14.6	detect	8	4	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	14.6	detect	8	4	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of River Surface Water

Vanadium

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0006	detect	4.16	8.31	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0013	detect	4.16	8.31	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0019	detect	4.16	8.31	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0006	detect	4.16	8.31	<1.0	<1.0
	51-CFR	SW51-CFR	0.0007	detect	4.16	8.31	<1.0	<1.0
	52-CFR	SW52-CFR	0.0008	detect	4.16	8.31	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0003	detect	4.16	8.31	<1.0	<1.0
	54-CFR	SW54-CFR	0.0007	detect	4.16	8.31	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0006	detect	4.16	8.31	<1.0	<1.0
	55-CFR	SW55-CFR	0.0007	detect	4.16	8.31	<1.0	<1.0
	56-CFR	SW56-CFR	0.0007	detect	4.16	8.31	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0007	detect	4.16	8.31	<1.0	<1.0
	57-CFR	SW57-CFR	0.0003	ND	4.16	8.31	<1.0	<1.0
	58-CFR	SW58-CFR	0.0009	detect	4.16	8.31	<1.0	<1.0
	59-CFR	SW59-CFR	0.0006	detect	4.16	8.31	<1.0	<1.0
	60-CFR	SW60-CFR	0.0009	detect	4.16	8.31	<1.0	<1.0
	61-CFR	SW61-CFR	0.0008	detect	4.16	8.31	<1.0	<1.0
	62-CFR	SW62-CFR	0.0008	detect	4.16	8.31	<1.0	<1.0
	63-CFR	SW63-CFR	0.0007	detect	4.16	8.31	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of Creek Surface Water

Vanadium

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.0009	detect	4.16	8.31	<1.0	<1.0
	43-OK	SW43-OK	0.001	detect	4.16	8.31	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.0012	detect	4.16	8.31	<1.0	<1.0
	37-LV	SW37-LV	0.001	detect	4.16	8.31	<1.0	<1.0
	39-LV	SW39-LV	0.0011	detect	4.16	8.31	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of Pond Surface Water

Vanadium

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0009	detect	4.16	8.31	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0053	detect	4.16	8.31	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0069	detect	4.16	8.31	<1.0	<1.0
73-P5	SW73-P5	0.0036	detect	4.16	8.31	<1.0	<1.0
71-HP7	SW71-HP7	0.0045	detect	4.16	8.31	<1.0	<1.0
72-HP2	SW72-HP2	0.0041	detect	4.16	8.31	<1.0	<1.0
75-HP10	SW75-HP10	0.0032	detect	4.16	8.31	<1.0	<1.0
67-HP12	SW67-HP12	0.0045	detect	4.16	8.31	<1.0	<1.0
68-IBJ	SW68-IBJ	0.001	detect	4.16	8.31	<1.0	<1.0
66-HP13	SW66-HP13	0.0046	detect	4.16	8.31	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0058	detect	4.16	8.31	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0069	detect	4.16	8.31	<1.0	<1.0
70-CWD	SW70-CWD	0.0014	detect	4.16	8.31	<1.0	<1.0
64-HP18	SW64-HP18	0.0077	detect	4.16	8.31	<1.0	<1.0

#N/A = not analyzed

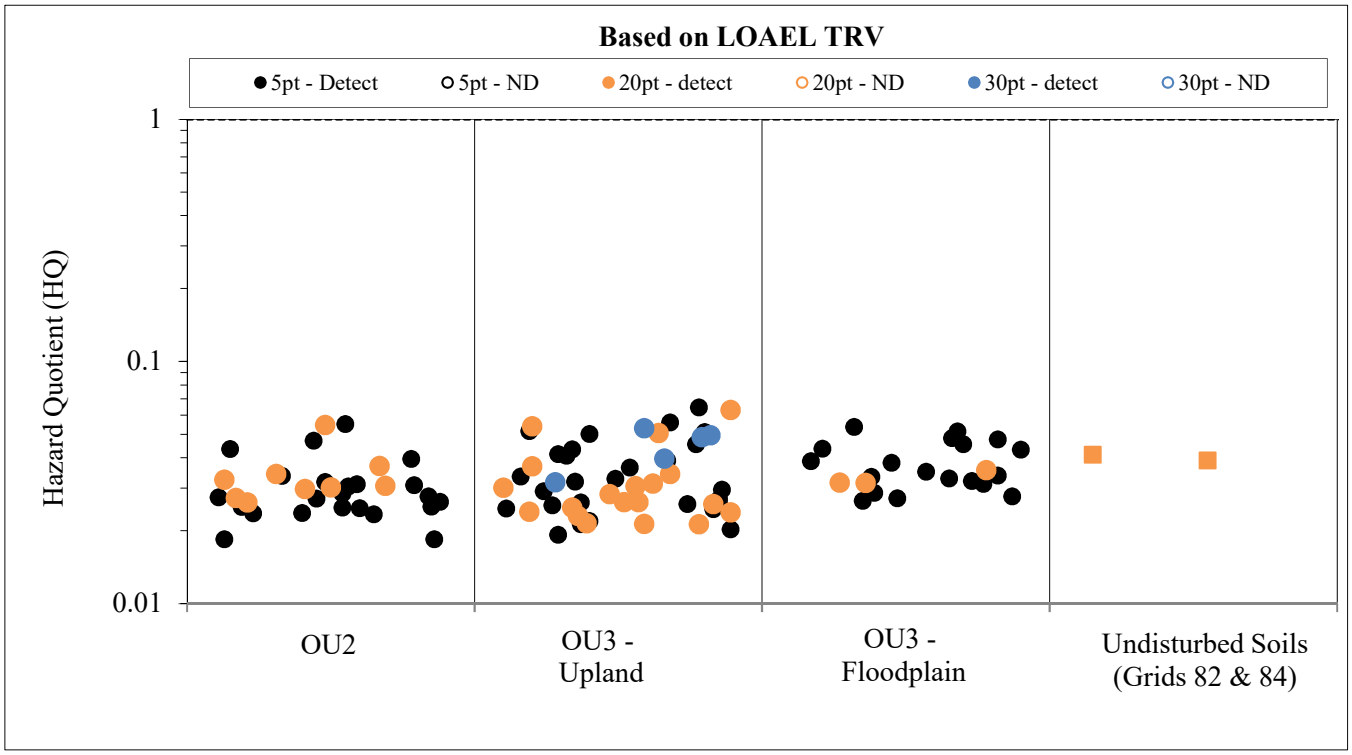
(a) Non-detects are evaluated at 1/2 the reported value.

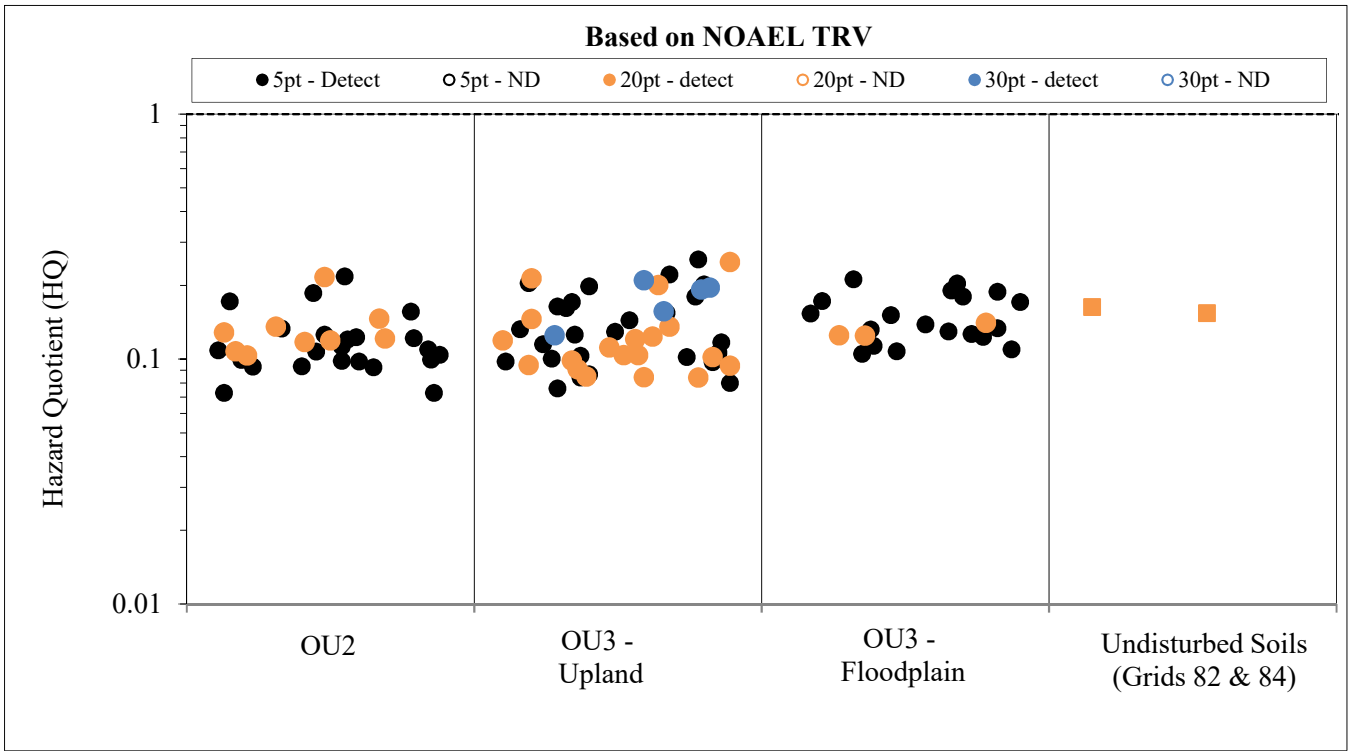
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Food by Exposure Unit/Soil Type

Zinc





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Zinc

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	41.11867	detect	298	75	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	34.11772	detect	298	75	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	36.14247	detect	298	75	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	33.53125	detect	298	75	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	38.15627	detect	298	75	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	30.31651	detect	298	75	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	29.12291	detect	298	75	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	60.79131	detect	298	75	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	33.01377	detect	298	75	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	33.86856	detect	298	75	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	26.01409	detect	298	75	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	27.49613	detect	298	75	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	37.46701	detect	298	75	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	30.83394	detect	298	75	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	30.51865	detect	298	75	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	34.55294	detect	298	75	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	35.38273	detect	298	75	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	52.26156	detect	298	75	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	26.21315	detect	298	75	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	26.2789	detect	298	75	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	298	75	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	27.89426	detect	298	75	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	298	75	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	298	75	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	61.24805	detect	298	75	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	48.40167	detect	298	75	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	27.69648	detect	298	75	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	27.97268	detect	298	75	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	29.26786	detect	298	75	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	31.65318	detect	298	75	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	34.22744	detect	298	75	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	44.01757	detect	298	75	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	30.1804	detect	298	75	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	20.47595	detect	298	75	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	20.47595	detect	298	75	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

Zinc

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	55.03333	detect	298	75	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	50.63861	detect	298	75	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	43.39193	detect	298	75	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	23.64179	detect	298	75	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	23.85175	detect	298	75	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	25.56166	detect	298	75	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	26.6247	detect	298	75	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	26.47441	detect	298	75	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	23.72092	detect	298	75	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	28.66144	detect	298	75	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	29.21365	detect	298	75	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	31.43205	detect	298	75	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	34.80686	detect	298	75	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	56.3349	detect	298	75	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	38.15627	detect	298	75	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	41.01915	detect	298	75	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	33.50287	detect	298	75	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	33.95197	detect	298	75	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	70.13032	detect	298	75	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	29.15927	detect	298	75	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	27.73623	detect	298	75	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	35.43427	detect	298	75	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	27.45575	detect	298	75	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	37.23228	detect	298	75	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	29.04995	detect	298	75	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	21.38877	detect	298	75	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	298	75	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	22.50858	detect	298	75	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	55.74962	detect	298	75	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	28.43515	detect	298	75	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	29.93956	detect	298	75	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	62.24318	detect	298	75	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	71.79019	detect	298	75	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	60.06922	detect	298	75	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	48.17567	detect	298	75	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	28.28249	detect	298	75	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	36.3896	detect	298	75	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	40.51519	detect	298	75	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	44.10571	detect	298	75	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	54.05311	detect	298	75	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	57.36336	detect	298	75	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	56.73858	detect	298	75	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	58.95806	detect	298	75	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	23.64179	detect	298	75	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	24.41258	detect	298	75	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	46.0546	detect	298	75	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	45.39297	detect	298	75	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	28.6427	detect	298	75	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	27.29315	detect	298	75	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	32.89682	detect	298	75	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	32.31587	detect	298	75	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	35.22731	detect	298	75	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Food

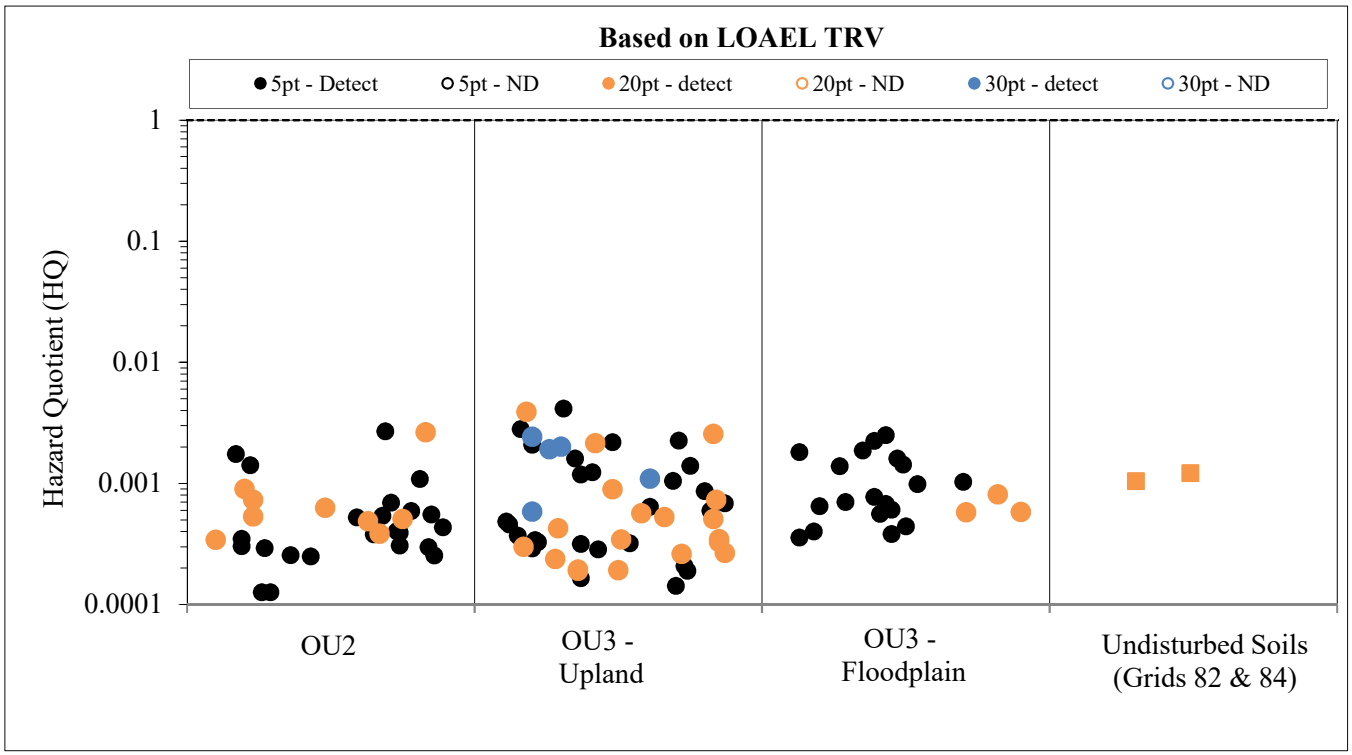
Zinc

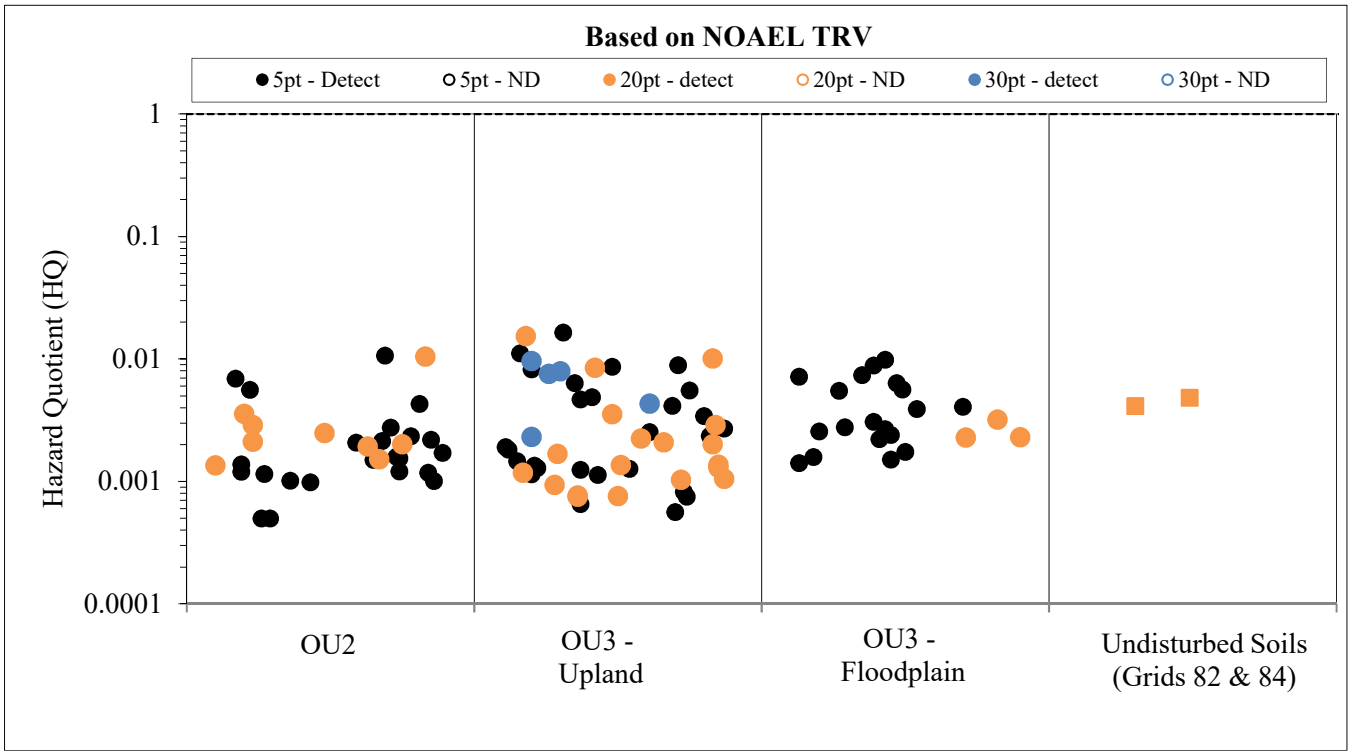
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	35.03133	detect	298	75	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	35.14915	detect	298	75	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	39.57963	detect	298	75	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	36.51207	detect	298	75	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	30.23157	detect	298	75	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	57.19411	detect	298	75	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	43.11897	detect	298	75	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	35.63914	detect	298	75	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	53.55155	detect	298	75	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	31.84058	detect	298	75	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	48.55133	detect	298	75	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	38.93393	detect	298	75	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	37.58342	detect	298	75	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	42.47022	detect	298	75	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	48.09994	detect	298	75	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	30.80102	detect	298	75	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	34.67363	detect	298	75	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	52.9132	detect	298	75	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	59.54442	detect	298	75	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	29.53626	detect	298	75	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	37.11393	detect	298	75	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	50.63861	detect	298	75	<1.0	<1.0
Undisturbed	Grid 82	Grid 82-SSComp-01_20171024_NM	45.8084	detect	298	75	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	43.30127	detect	298	75	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Mouse from Ingestion of Surface Soil by Exposure Unit/Soil Type

Zinc





APPENDIX G4

Sample-Specific HQ Values for Mouse from Ingestion of Surface Soil

Zinc

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	149	detect	298	75	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	88.5	detect	298	75	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	104	detect	298	75	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	84.3	detect	298	75	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	121	detect	298	75	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	63.5	detect	298	75	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	56.7	detect	298	75	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	437	detect	298	75	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	80.7	detect	298	75	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	86.7	detect	298	75	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	41.2	detect	298	75	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	48.2	detect	298	75	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	115	detect	298	75	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	66.6	detect	298	75	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	64.7	detect	298	75	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	91.7	detect	298	75	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	98	detect	298	75	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	289	detect	298	75	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	42.1	detect	298	75	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	42.4	detect	298	75	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	298	75	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	50.2	detect	298	75	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	298	75	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	298	75	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	446	detect	298	75	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	234	detect	298	75	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	49.2	detect	298	75	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	50.6	detect	298	75	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	57.5	detect	298	75	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	71.7	detect	298	75	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	89.3	detect	298	75	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	180	detect	298	75	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	62.7	detect	298	75	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	20.83333	detect	298	75	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	20.83333	detect	298	75	<1.0	<1.0
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	333	detect	298	75	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	265	detect	298	75	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	173	detect	298	75	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	31.4	detect	298	75	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	32.2	detect	298	75	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	39.2	detect	298	75	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	44	detect	298	75	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	43.3	detect	298	75	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	31.7	detect	298	75	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	54.2	detect	298	75	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	57.2	detect	298	75	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	70.3	detect	298	75	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	93.6	detect	298	75	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	355	detect	298	75	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	121	detect	298	75	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	148	detect	298	75	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	84.1	detect	298	75	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	87.3	detect	298	75	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	644	detect	298	75	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	56.9	detect	298	75	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	49.4	detect	298	75	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	98.4	detect	298	75	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	48	detect	298	75	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	113	detect	298	75	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	56.3	detect	298	75	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	23.6	detect	298	75	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	298	75	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	27.3	detect	298	75	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	345	detect	298	75	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	53	detect	298	75	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	61.3	detect	298	75	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	466	detect	298	75	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	686	detect	298	75	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	423	detect	298	75	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	231	detect	298	75	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	52.2	detect	298	75	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	106	detect	298	75	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	143	detect	298	75	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	181	detect	298	75	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	317	detect	298	75	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	373	detect	298	75	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	362	detect	298	75	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	402	detect	298	75	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	31.4	detect	298	75	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	34.4	detect	298	75	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	204	detect	298	75	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	196	detect	298	75	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	54.1	detect	298	75	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	47.2	detect	298	75	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	79.9	detect	298	75	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	76	detect	298	75	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	96.8	detect	298	75	<1.0	<1.0
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	95.3	detect	298	75	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	96.2	detect	298	75	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	134	detect	298	75	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	107	detect	298	75	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	63	detect	298	75	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	370	detect	298	75	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	170	detect	298	75	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	100	detect	298	75	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	309	detect	298	75	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	72.9	detect	298	75	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	236	detect	298	75	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	128	detect	298	75	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	116	detect	298	75	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	163	detect	298	75	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	230	detect	298	75	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	66.4	detect	298	75	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	92.6	detect	298	75	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	299	detect	298	75	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	413	detect	298	75	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	59	detect	298	75	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	112	detect	298	75	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	265	detect	298	75	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	201	detect	298	75	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	172	detect	298	75	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of River Surface Water

Zinc

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0045	detect	75.4	298	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0139	detect	75.4	298	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0153	detect	75.4	298	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0035	detect	75.4	298	<1.0	<1.0
	51-CFR	SW51-CFR	0.0044	detect	75.4	298	<1.0	<1.0
	52-CFR	SW52-CFR	0.0063	detect	75.4	298	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0268	detect	75.4	298	<1.0	<1.0
	54-CFR	SW54-CFR	0.0062	detect	75.4	298	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0026	detect	75.4	298	<1.0	<1.0
	55-CFR	SW55-CFR	0.0041	detect	75.4	298	<1.0	<1.0
	56-CFR	SW56-CFR	0.0039	detect	75.4	298	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0025	detect	75.4	298	<1.0	<1.0
	57-CFR	SW57-CFR	0.0057	detect	75.4	298	<1.0	<1.0
	58-CFR	SW58-CFR	0.0044	detect	75.4	298	<1.0	<1.0
	59-CFR	SW59-CFR	0.0042	detect	75.4	298	<1.0	<1.0
	60-CFR	SW60-CFR	0.0059	detect	75.4	298	<1.0	<1.0
	61-CFR	SW61-CFR	0.005	detect	75.4	298	<1.0	<1.0
	62-CFR	SW62-CFR	0.0092	detect	75.4	298	<1.0	<1.0
	63-CFR	SW63-CFR	0.0036	detect	75.4	298	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of Creek Surface Water

Zinc

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.0045	detect	75.4	298	<1.0	<1.0
	43-OK	SW43-OK	0.0045	detect	75.4	298	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.0024	ND	75.4	298	<1.0	<1.0
	37-LV	SW37-LV	0.0039	detect	75.4	298	<1.0	<1.0
	39-LV	SW39-LV	0.0053	detect	75.4	298	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Mouse from Ingestion of Pond Surface Water

Zinc

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0019	ND	75.4	298	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.022	detect	75.4	298	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0096	ND	75.4	298	<1.0	<1.0
73-P5	SW73-P5	0.0096	ND	75.4	298	<1.0	<1.0
71-HP7	SW71-HP7	0.0132	detect	75.4	298	<1.0	<1.0
72-HP2	SW72-HP2	0.0096	ND	75.4	298	<1.0	<1.0
75-HP10	SW75-HP10	0.0096	ND	75.4	298	<1.0	<1.0
67-HP12	SW67-HP12	0.0096	ND	75.4	298	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0031	detect	75.4	298	<1.0	<1.0
66-HP13	SW66-HP13	0.0096	ND	75.4	298	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0127	detect	75.4	298	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.043	detect	75.4	298	<1.0	<1.0
70-CWD	SW70-CWD	0.0027	detect	75.4	298	<1.0	<1.0
64-HP18	SW64-HP18	0.0096	ND	75.4	298	<1.0	<1.0

#N/A = not analyzed

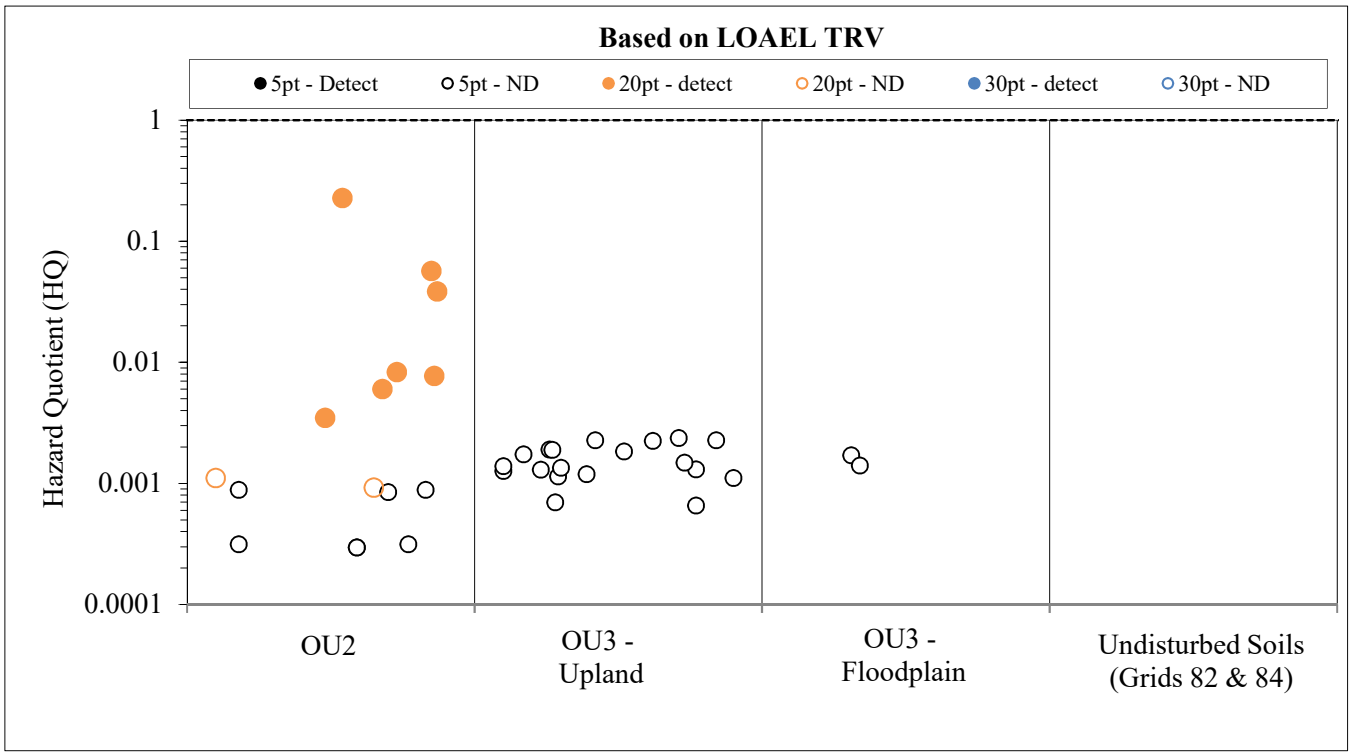
(a) Non-detects are evaluated at 1/2 the reported value.

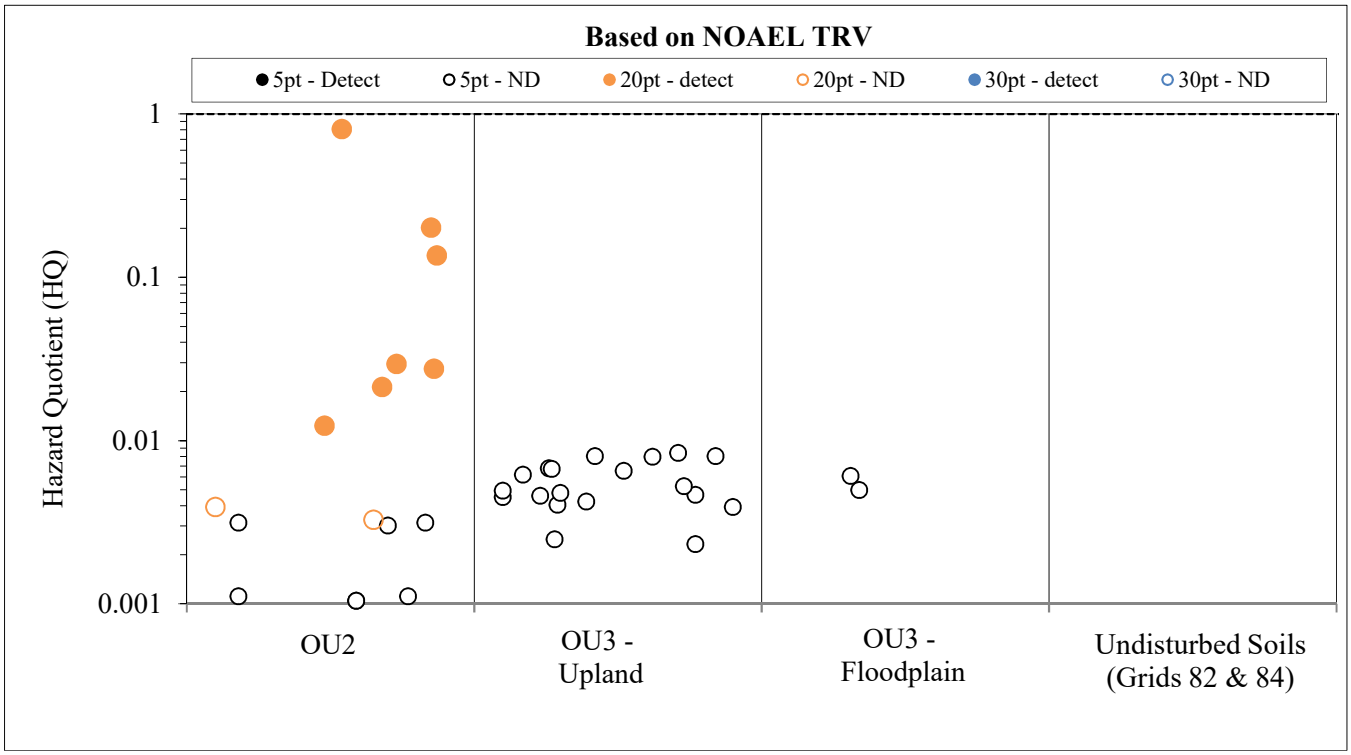
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Food by Exposure Unit/Soil Type

Aroclor-1254





APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Aroclor-1254

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.076448	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.001487	ND	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.051609	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.008068	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.010414	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.001239	ND	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.011179	detect	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.306103	detect	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.004681	detect	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.001143	ND	1	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	0.000397	ND	1	0	<1.0	<1.0
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	0.000422	ND	1	0	<1.0	<1.0
	SS31-IN	SS31-IN-(0-2)c	0.000422	ND	1	0	<1.0	<1.0
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.001191	ND	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.001191	ND	1	0	<1.0	<1.0

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Aroclor-1254

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.003052	ND	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.001709	ND	1	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	0.002566	ND	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.001867	ND	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.003052	ND	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.001744	ND	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.001487	ND	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.000881	ND	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.002472	ND	1	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.001606	ND	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.000941	ND	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.003191	ND	1	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.00234	ND	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.001538	ND	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.001762	ND	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.001814	ND	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.001992	ND	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.002547	ND	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.003013	ND	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

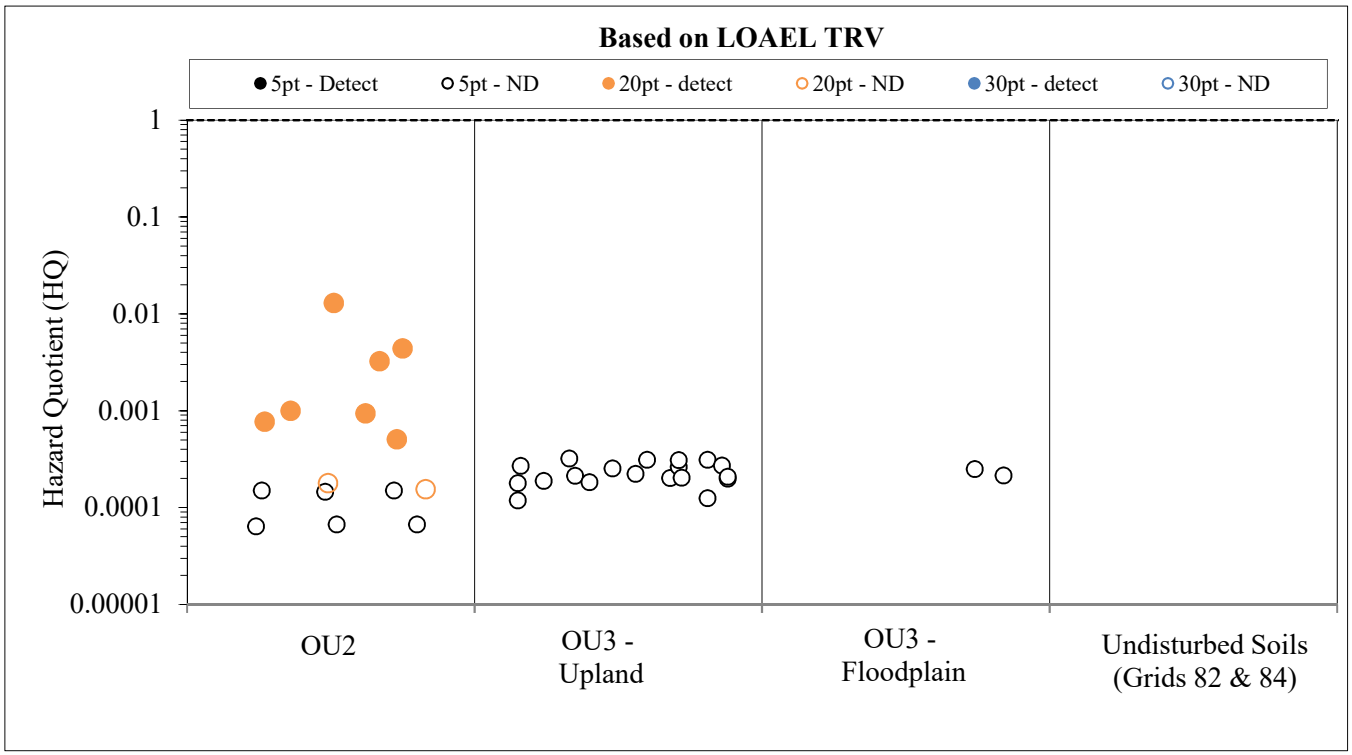
Aroclor-1254

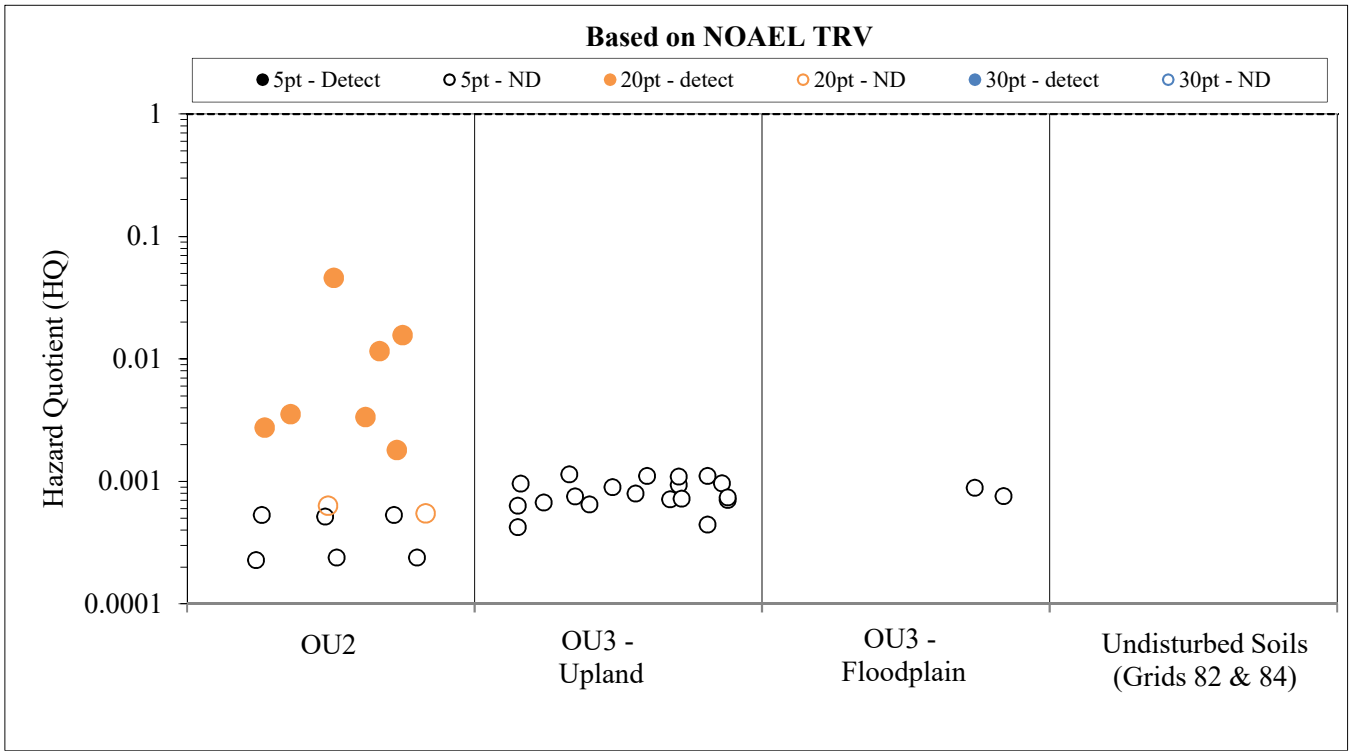
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.002303	ND	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.001885	ND	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Surface Soil by Exposure Unit/Soil Type

Aroclor-1254





APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Aroclor-1254

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.141	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.0057	ND	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.104	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.0247	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.0301	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.00495	ND	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.0318	detect	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.413	detect	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.0162	detect	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.00465	ND	1	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	0.00205	ND	1	0	<1.0	<1.0
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	0.00215	ND	1	0	<1.0	<1.0
	SS31-IN	SS31-IN-(0-2)c	0.00215	ND	1	0	<1.0	<1.0
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.0048	ND	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.0048	ND	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Aroclor-1254

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.00995	ND	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.00635	ND	1	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	0.0087	ND	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.0068	ND	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.00995	ND	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.00645	ND	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.0057	ND	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.0038	ND	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.00845	ND	1	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.00605	ND	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.004	ND	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.0103	ND	1	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	8E-03	ND	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.00585	ND	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.0065	ND	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.00665	ND	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.00715	ND	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.00865	ND	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.00985	ND	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

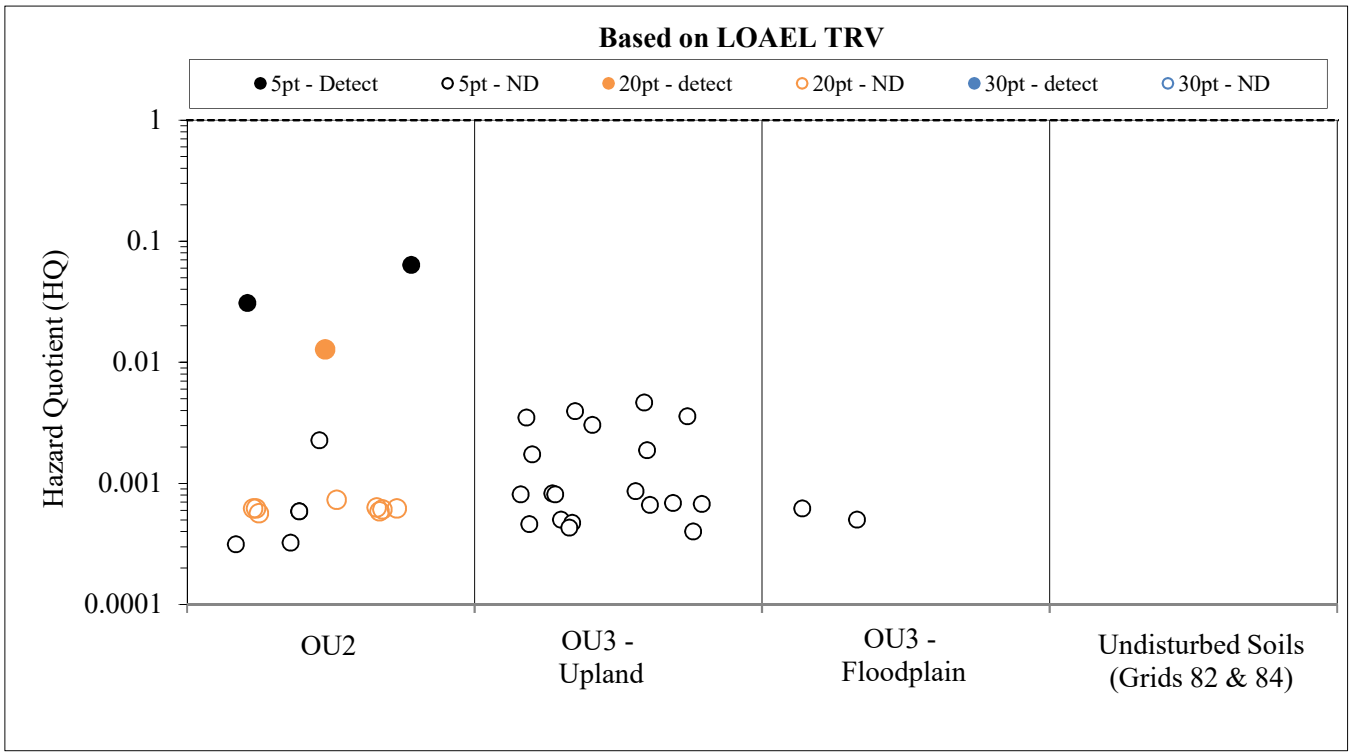
Aroclor-1254

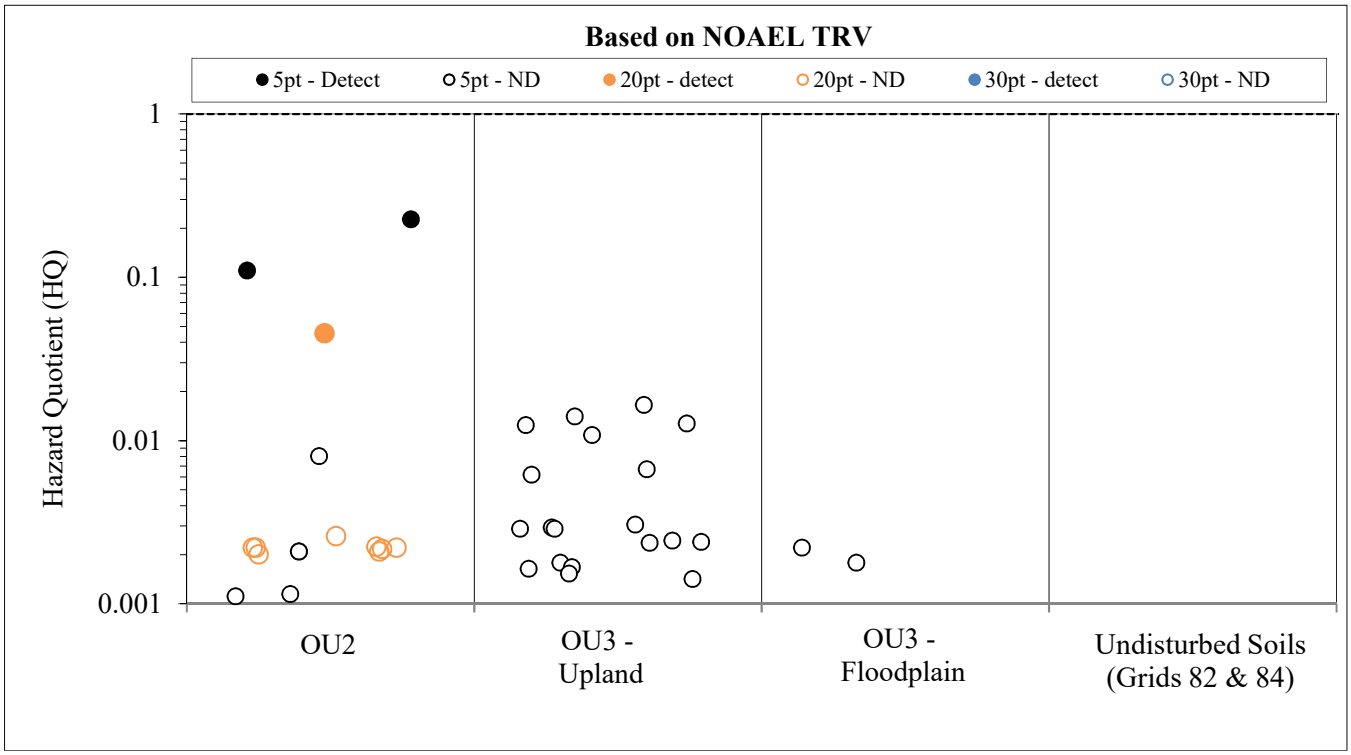
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.008	ND	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.00685	ND	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Food by Exposure Unit/Soil Type

Aroclor-1260





APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Aroclor-1260

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.000792	ND	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.000987	ND	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.000763	ND	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.000836	ND	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.017251	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.000822	ND	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.000836	ND	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.000836	ND	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.000851	ND	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.003052	ND	1	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	0.085666	detect	1	0	<1.0	<1.0
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	0.000435	ND	1	0	<1.0	<1.0
	SS31-IN	SS31-IN-(0-2)c	0.041659	detect	1	0	<1.0	<1.0
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.000792	ND	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.000792	ND	1	0	<1.0	<1.0

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Aroclor-1260

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.001112	ND	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.000621	ND	1	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	0.000926	ND	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.000677	ND	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.001096	ND	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.000635	ND	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.00054	ND	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.00234	ND	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.000896	ND	1	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.00058	ND	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.002528	ND	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.001159	ND	1	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.006256	ND	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.004097	ND	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.004721	ND	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.004831	ND	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.005319	ND	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.000911	ND	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.001096	ND	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

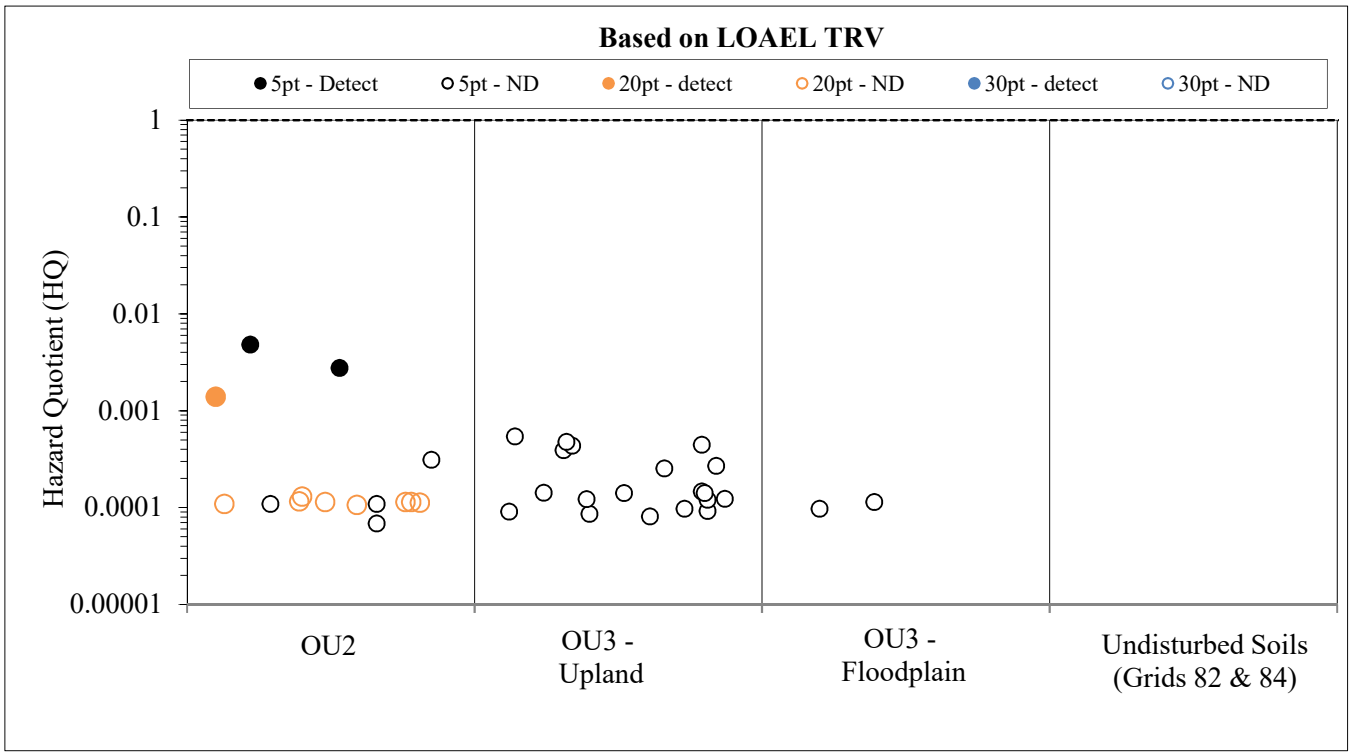
Aroclor-1260

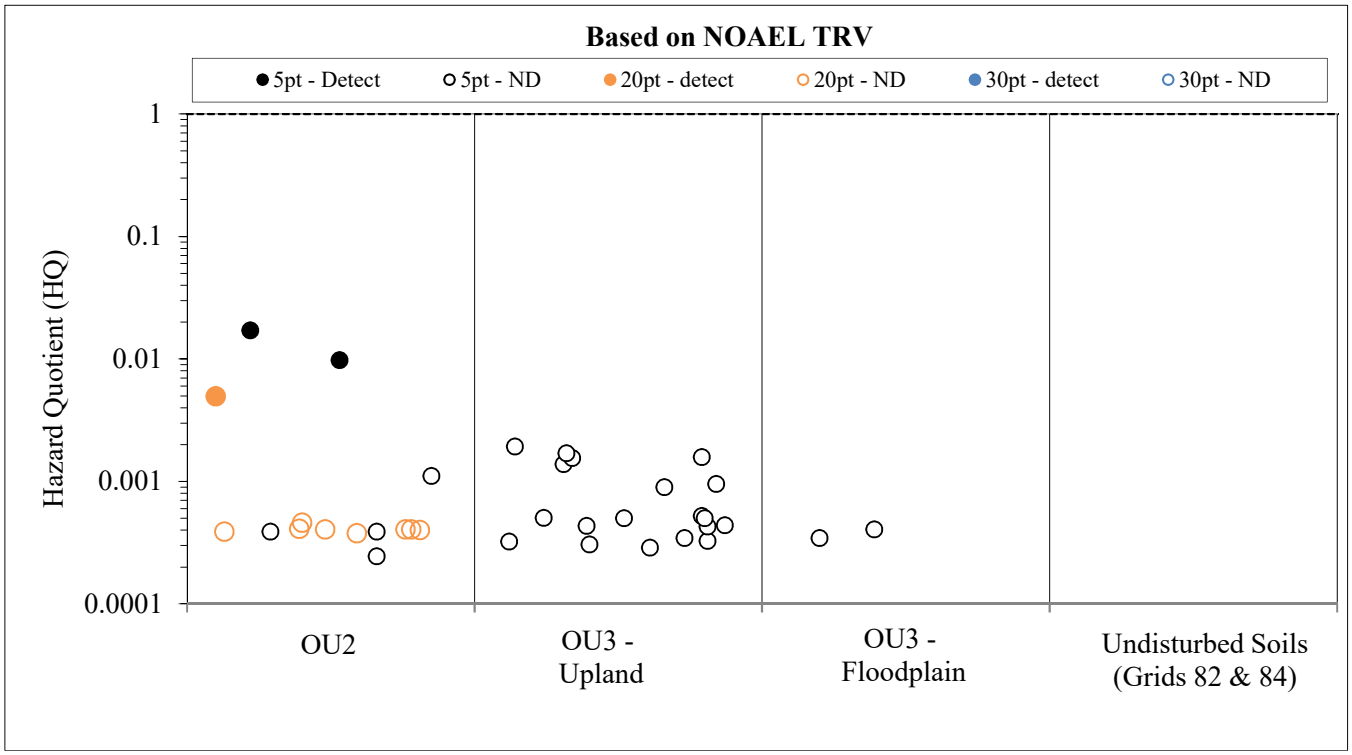
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.000836	ND	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.000677	ND	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Surface Soil by Exposure Unit/Soil Type

Aroclor-1260





APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Aroclor-1260

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.0035	ND	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.00415	ND	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.0034	ND	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.00365	ND	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.0445	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.0036	ND	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.00365	ND	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.00365	ND	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.0037	ND	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.00995	ND	1	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	0.154	detect	1	0	<1.0	<1.0
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	0.0022	ND	1	0	<1.0	<1.0
	SS31-IN	SS31-IN-(0-2)c	0.0881	detect	1	0	<1.0	<1.0
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.0035	ND	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.0035	ND	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Aroclor-1260

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.00455	ND	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.0029	ND	1	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	0.00395	ND	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.0031	ND	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.0045	ND	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.00295	ND	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.0026	ND	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.0081	ND	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.00385	ND	1	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.00275	ND	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.0086	ND	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.0047	ND	1	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	2E-02	ND	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.0125	ND	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.01395	ND	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.0142	ND	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.0153	ND	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.0039	ND	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.0045	ND	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

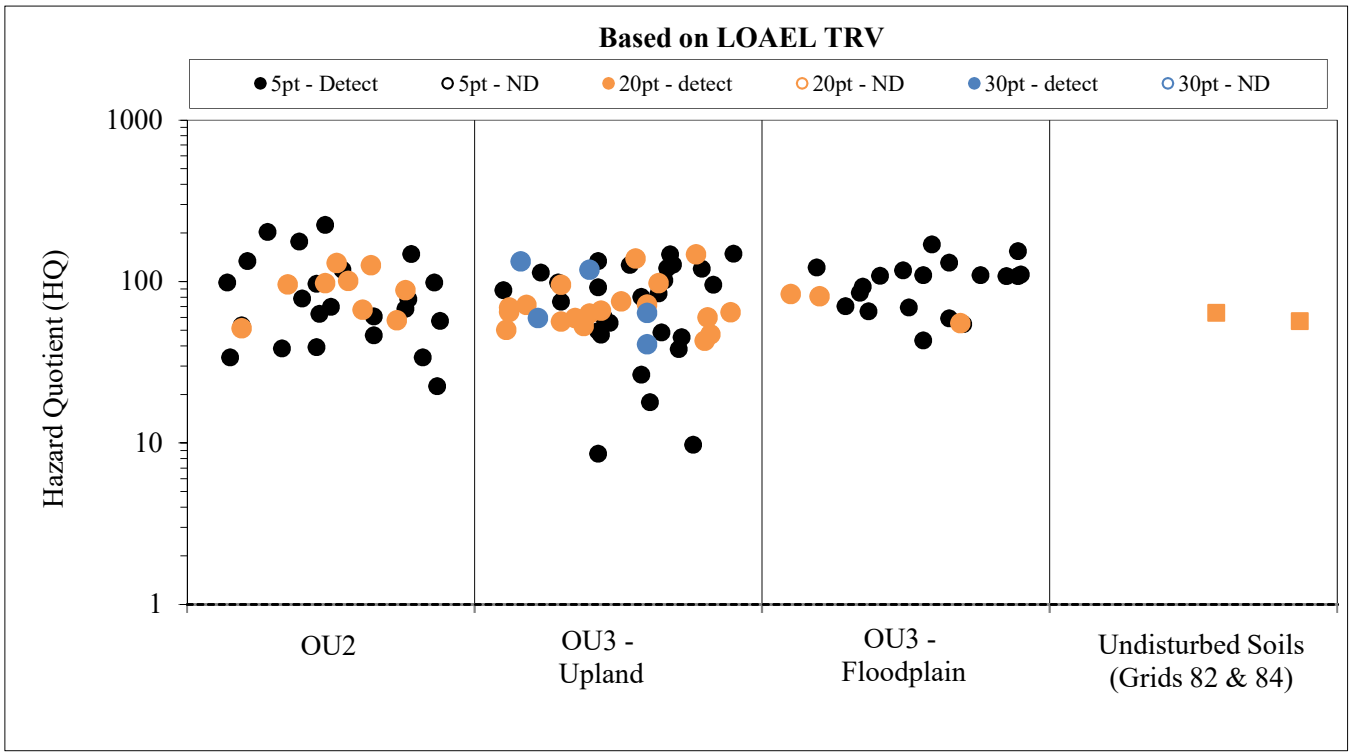
Aroclor-1260

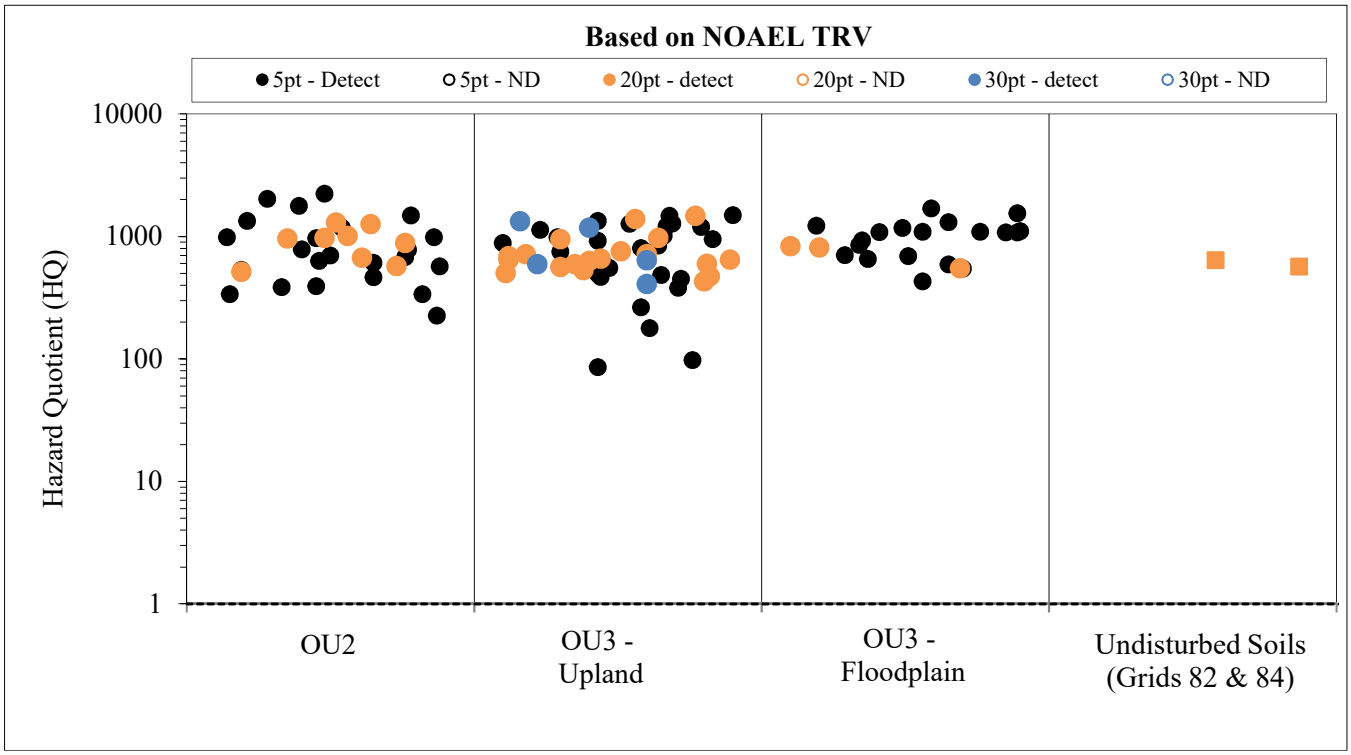
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.00365	ND	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.0031	ND	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Food by Exposure Unit/Soil Type

Aluminum





APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Aluminum

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	1166.4	detect	19	2	**57.4**	**574.1**
	Grid 13	Grid 13-SSComp-01_20171019_NM	2560	detect	19	2	**126.0**	**1260.1**
	Grid 14	Grid 14-SSComp-01_20171017_NM	1361.6	detect	19	2	**67.0**	**670.2**
	Grid 2	Grid 2-SSComp-01_20171016_NM	1043.2	detect	19	2	**51.3**	**513.5**
	Grid 22	Grid 22-SSComp-01_20171018_NM	1984	detect	19	2	**97.7**	**976.6**
	Grid 23	Grid 23-SSComp-01_20171018_NM	2640	detect	19	2	**129.9**	**1299.5**
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	1792	detect	19	2	**88.2**	**882.1**
	Grid 8	Grid 8-SSComp-01_20171018_NM	2048	detect	19	2	**100.8**	**1008.1**
	Grid 9	Grid 9-SSComp-01_20171018_NM	1952	detect	19	2	**96.1**	**960.8**
	LF-1	LF-1-SS_4/18/14_NM	4544	detect	19	2	**223.7**	**2236.7**
	SB2a,3a-IN	SB2a-IN-(0-2)	457.6	detect	19	2	**22.5**	**225.2**
	SS10-IN	SS10-IN-(0-2)c	795.2	detect	19	2	**39.1**	**391.4**
	SS11-IN	SS11-IN-(0-2)c	1361.6	detect	19	2	**67.0**	**670.2**
	SS12-IN	SS12-IN-(0-2)c	1281.6	detect	19	2	**63.1**	**630.8**
	SS13-IN	SS13-IN-(0-2)c	944	detect	19	2	**46.5**	**464.7**
	SS14-IN	SS14-IN-(0-2)c	1582.4	detect	19	2	**77.9**	**778.9**
	SS15-IN	SS15-IN-(0-2)c	3600	detect	19	2	**177.2**	**1772.0**
	SS16-IN	SS16-IN-(0-2)c	2400	detect	19	2	**118.1**	**1181.3**
	SS17-IN	SS17-IN-(0-2)c	1592	detect	19	2	**78.4**	**783.6**
	SS1-IN	SS1-IN-(0-2)c	1236.8	detect	19	2	**60.9**	**608.8**
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	19	2	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	1086.4	detect	19	2	**53.5**	**534.8**
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	19	2	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	19	2	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	4112	detect	19	2	**202.4**	**2024.0**
	SS33-IN	SS33-IN-(0-2)c	2000	detect	19	2	**98.4**	**984.5**
	SS3-IN	SS3-IN-(0-2)c	2000	detect	19	2	**98.4**	**984.5**
	SS4-IN	SS4-IN-(0-2)c	1376	detect	19	2	**67.7**	**677.3**
	SS5-IN	SS5-IN-(0-2)c	3008	detect	19	2	**148.1**	**1480.6**
	SS6-IN	SS6-IN-(0-2)c	1417.6	detect	19	2	**69.8**	**697.8**
	SS7-IN	SS7-IN-(0-2)c	1968	detect	19	2	**96.9**	**968.7**
	SS8-IN	SS8-IN-(0-2)c	782.4	detect	19	2	**38.5**	**385.1**
	SS9-IN	SS9-IN-(0-2)c	2720	detect	19	2	**133.9**	**1338.9**
	HDPT-SS	BACKFILL-HDPT-SS	688	detect	19	2	**33.9**	**338.7**
	TSB-SS	BACKFILL-TSB-SS	688	detect	19	2	**33.9**	**338.7**

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Aluminum

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	2400	detect	19	2	**118.1**	**1181.3**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	1632	detect	19	2	**80.3**	**803.3**
	CRP-1	CRP-1-SS_4/10/14_NM	1792	detect	19	2	**88.2**	**882.1**
	Grid 27	Grid 27-SSComp-01_20171019_NM	1076.8	detect	19	2	**53.0**	**530.0**
	Grid 28	Grid 28-SSComp-01_20171019_NM	1017.6	detect	19	2	**50.1**	**500.9**
	Grid 29	Grid 29-SSComp-01_20171019_NM	1209.6	detect	19	2	**59.5**	**595.4**
	Grid 30	Grid 30-SSComp-01_20171020_NM	1313.6	detect	19	2	**64.7**	**646.6**
	Grid 33	Grid 33-SSComp-01_20171020_NM	1401.6	detect	19	2	**69.0**	**689.9**
	Grid 34	Grid 34-SSComp-01_20171019_NM	1147.2	detect	19	2	**56.5**	**564.7**
	Grid 37	Grid 37-SSComp-01_20171020_NM	1339.2	detect	19	2	**65.9**	**659.2**
	Grid 39	Grid 39-SSComp-01_20171020_NM	1459.2	detect	19	2	**71.8**	**718.3**
	Grid 43	Grid 43-SSComp-01_20171023_NM	1457.6	detect	19	2	**71.7**	**717.5**
	Grid 44	Grid 44-SSComp-01_20171023_NM	1532.8	detect	19	2	**75.4**	**754.5**
	Grid 47	Grid 47-SSComp-01_20171023_NM	2816	detect	19	2	**138.6**	**1386.1**
	Grid 53	Grid 53-SSComp-01_20171020_NM	1936	detect	19	2	**95.3**	**953.0**
	Grid 60	Grid 60-SSComp-01_20171023_NM	1286.4	detect	19	2	**63.3**	**633.2**
	Grid 61	Grid 61-SSComp-01_20171023_NM	1310.4	detect	19	2	**64.5**	**645.0**
	Grid 64	Grid 64-SSComp-01_20171024_NM	1216	detect	19	2	**59.9**	**598.5**
	Grid 74	Grid 74-SSComp-01_20171023_NM	2992	detect	19	2	**147.3**	**1472.7**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	1984	detect	19	2	**97.7**	**976.6**
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	872	detect	19	2	**42.9**	**429.2**
	HP16-1	HP16-1-SS_4/10/14_NM	2000	detect	19	2	**98.4**	**984.5**
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	1936	detect	19	2	**95.3**	**953.0**
	HP18-1	HP18-1-SS_4/10/14_NM	3024	detect	19	2	**148.8**	**1488.5**
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	1523.2	detect	19	2	**75.0**	**749.8**
	HP18-IB	HP18-SSC-IB_4/10/14_NM	774.4	detect	19	2	**38.1**	**381.2**
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	19	2	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	1000	detect	19	2	**49.2**	**492.2**
	HP9-1	HP9-1-SS_4/10/14_NM	2576	detect	19	2	**126.8**	**1268.0**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	916.8	detect	19	2	**45.1**	**451.3**
	IBK-1	IBK-1-SS_4/16/14_NM	2720	detect	19	2	**133.9**	**1338.9**
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	2992	detect	19	2	**147.3**	**1472.7**
	P17-BH1	P17-BH1-SS_4/3/14_NM	2592	detect	19	2	**127.6**	**1275.9**
	P3	P3-SSComp-01_20171020_NM	958.4	detect	19	2	**47.2**	**471.8**
	P3-BH1	P3-BH1-SS_4/3/14_NM	363.2	detect	19	2	**17.9**	**178.8**
	P4-BH1	P4-BH1-SS_4/4/14_NM	198.4	detect	19	2	**9.8**	**97.7**
	P5-BH2	P5-BH2-SS_4/3/14_NM	174.4	detect	19	2	**8.6**	**85.8**
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	537.6	detect	19	2	**26.5**	**264.6**
	P8	P8-SSComp-01_20171025_NM	1299.2	detect	19	2	**64.0**	**639.5**
	P8dc	P8dc-SSComp-01_20171024_NM	1204.8	detect	19	2	**59.3**	**593.0**
	P8-TP3	P8-TP3-SS_4/4/14_NM	1712	detect	19	2	**84.3**	**842.7**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	2464	detect	19	2	**121.3**	**1212.8**
	SPP	SPP-SSComp-01_20171025_NM	2704	detect	19	2	**133.1**	**1331.0**
	SS1,2-HP18	SS1-HP18-(0-2)c	1124.8	detect	19	2	**55.4**	**553.7**
	SS11,12-IBK	SS11-IBK-(0-2)c	1219.2	detect	19	2	**60.0**	**600.1**
	SS13,14-HP9	SS13-HP9-(0-2)c	2304	detect	19	2	**113.4**	**1134.1**
	SS15,16-HP9	SS15-HP9-(0-2)c	2432	detect	19	2	**119.7**	**1197.1**
	SS3,4-HP16	SS3-HP16-(0-2)c	982.4	detect	19	2	**48.4**	**483.6**
	SS5,6-IBJ	SS5-IBJ-(0-2)c	952	detect	19	2	**46.9**	**468.6**
	SS7,8-HP13	SS7-HP13-(0-2)c	2064	detect	19	2	**101.6**	**1016.0**
	SS9,10-HP12	SS9-HP12-(0-2)c	1872	detect	19	2	**92.1**	**921.5**
	SWBA	SWBA-SSComp-01_20171024_NM	832	detect	19	2	**41.0**	**409.5**

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

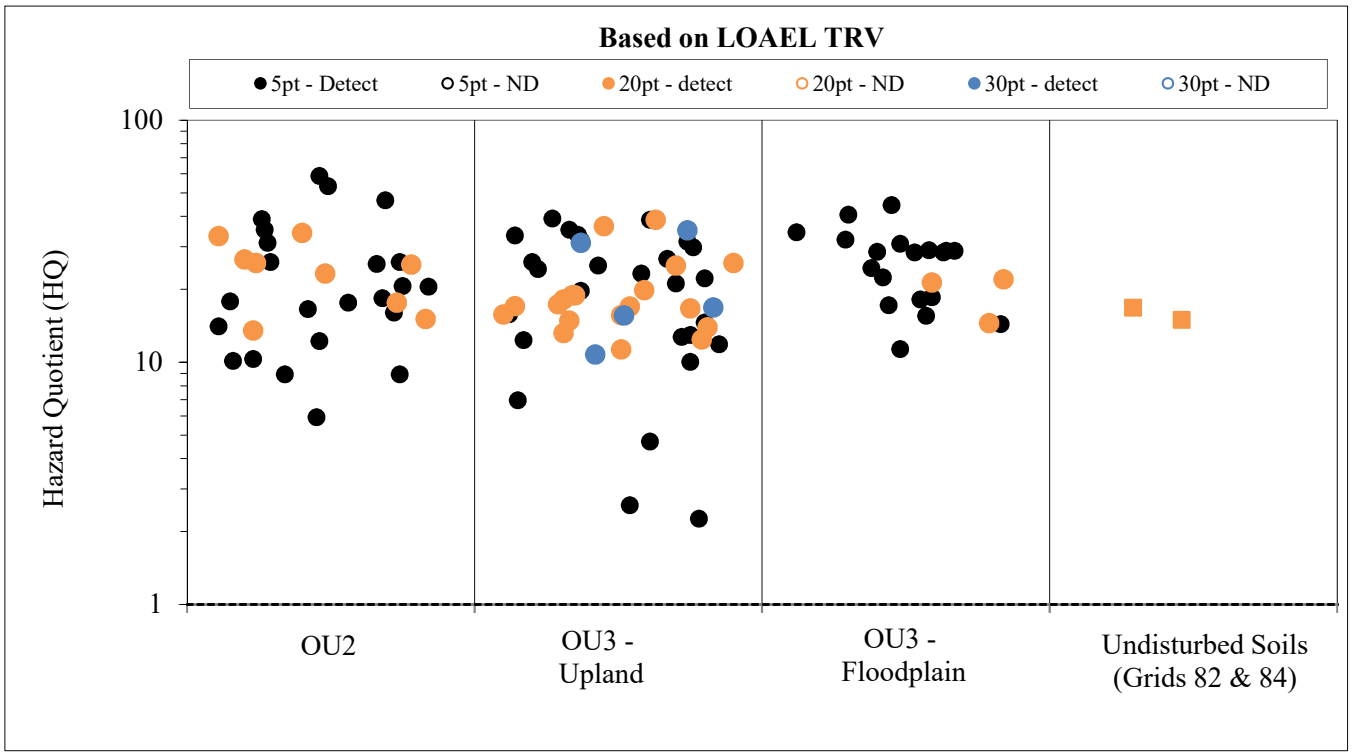
Aluminum

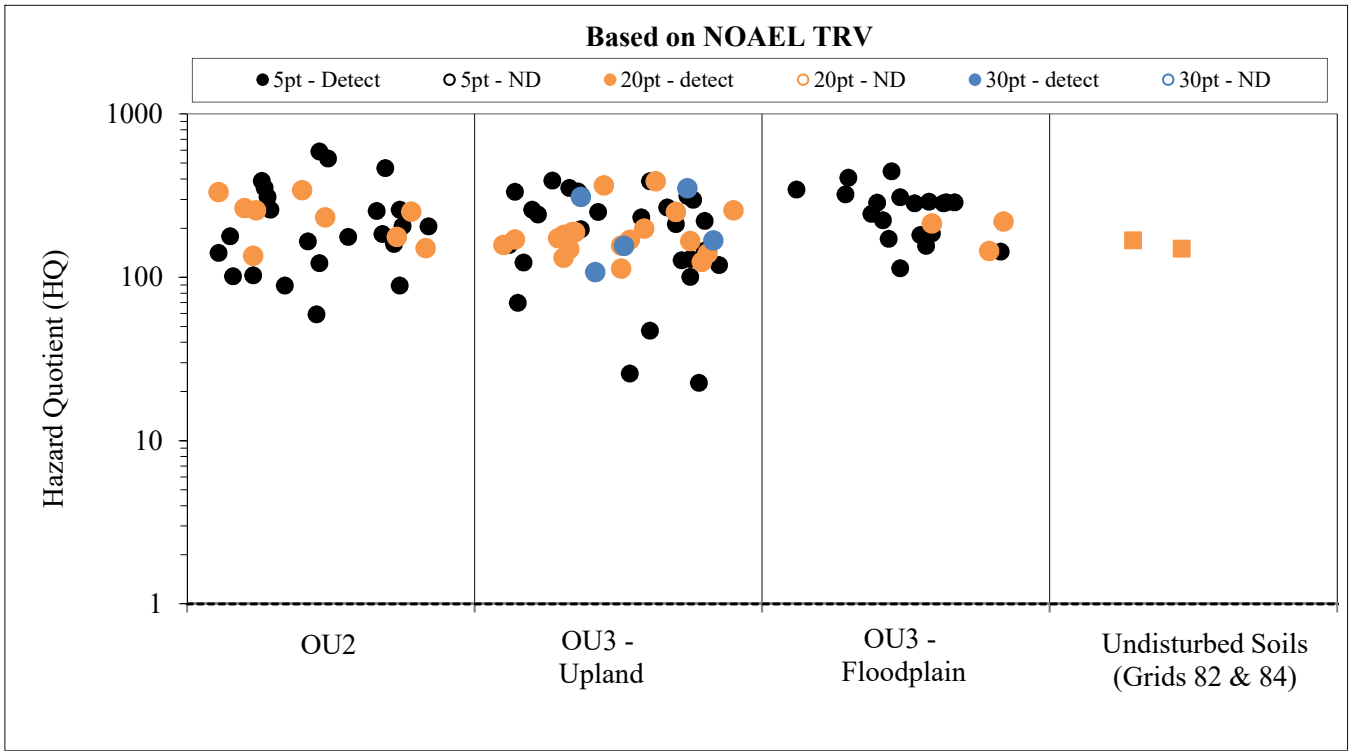
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	1120	detect	19	2	**55.1**	**551.3**
	Grid 89	Grid 89-SSComp-01_20171026_NM	1696	detect	19	2	**83.5**	**834.8**
	Grid 94	Grid 94-SSComp-01_20171026_NM	1648	detect	19	2	**81.1**	**811.2**
	HP13a-1	HP13A-1-SS_4/10/14_NM	3136	detect	19	2	**154.4**	**1543.6**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	1108.8	detect	19	2	**54.6**	**545.8**
	SE10-HP11	SE10-HP11-(0-2)c	3440	detect	19	2	**169.3**	**1693.3**
	SE11-HP11	SE11-HP11-(0-2)c	1326.4	detect	19	2	**65.3**	**652.9**
	SE12-HP12	SE12-HP12-(0-2)c	2480	detect	19	2	**122.1**	**1220.7**
	SE13-HP12	SE13-HP12-(0-2)c	2240	detect	19	2	**110.3**	**1102.6**
	SE14-HP13	SE14-HP13-(0-2)c	2224	detect	19	2	**109.5**	**1094.7**
	SE15-HP13	SE15-HP13-(0-2)c	1888	detect	19	2	**92.9**	**929.3**
	SE16-HP13	SE16-HP13-(0-2)c	1728	detect	19	2	**85.1**	**850.6**
	SE17-HP13a	SE17-HP13a-(0-2)c	2192	detect	19	2	**107.9**	**1079.0**
	SE1-HP1a	SE1-HP1a-(0-2)c	2192	detect	19	2	**107.9**	**1079.0**
	SE2-HP1a	SE2-HP1a-(0-2)c	2656	detect	19	2	**130.7**	**1307.4**
	SE3-HP1	SE3-HP1-(0-2)c	875.2	detect	19	2	**43.1**	**430.8**
	SE4-HP1	SE4-HP1-(0-2)c	1432	detect	19	2	**70.5**	**704.9**
	SE5-HP2	SE5-HP2-(0-2)c	2384	detect	19	2	**117.3**	**1173.5**
	SE6-HP7	SE6-HP7-(0-2)c	2208	detect	19	2	**108.7**	**1086.8**
	SE7-HP7	SE7-HP7-(0-2)c	1200	detect	19	2	**59.1**	**590.7**
	SE8-HP10	SE8-HP10-(0-2)c	1401.6	detect	19	2	**69.0**	**689.9**
	SE9-HP10	SE9-HP10-(0-2)c	2224	detect	19	2	**109.5**	**1094.7**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	1296	detect	19	2	**63.8**	**637.9**
	Grid 84	Grid 84-SSComp-01_20171026_NM	1153.6	detect	19	2	**56.8**	**567.8**

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Surface Soil by Exposure Unit/Soil Type

Aluminum





APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Aluminum

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	7290	detect	19	2	**15.1**	**151.1**
	Grid 13	Grid 13-SSComp-01_20171019_NM	16000	detect	19	2	**33.2**	**331.6**
	Grid 14	Grid 14-SSComp-01_20171017_NM	8510	detect	19	2	**17.6**	**176.4**
	Grid 2	Grid 2-SSComp-01_20171016_NM	6520	detect	19	2	**13.5**	**135.1**
	Grid 22	Grid 22-SSComp-01_20171018_NM	12400	detect	19	2	**25.7**	**257.0**
	Grid 23	Grid 23-SSComp-01_20171018_NM	16500	detect	19	2	**34.2**	**342.0**
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	11200	detect	19	2	**23.2**	**232.1**
	Grid 8	Grid 8-SSComp-01_20171018_NM	12800	detect	19	2	**26.5**	**265.3**
	Grid 9	Grid 9-SSComp-01_20171018_NM	12200	detect	19	2	**25.3**	**252.8**
	LF-1	LF-1-SS_4/18/14_NM	28400	detect	19	2	**58.9**	**588.6**
	SB2a,3a-IN	SB2a-IN-(0-2)	2860	detect	19	2	**5.9**	**59.3**
	SS10-IN	SS10-IN-(0-2)c	4970	detect	19	2	**10.3**	**103.0**
	SS11-IN	SS11-IN-(0-2)c	8510	detect	19	2	**17.6**	**176.4**
	SS12-IN	SS12-IN-(0-2)c	8010	detect	19	2	**16.6**	**166.0**
	SS13-IN	SS13-IN-(0-2)c	5900	detect	19	2	**12.2**	**122.3**
	SS14-IN	SS14-IN-(0-2)c	9890	detect	19	2	**20.5**	**205.0**
	SS15-IN	SS15-IN-(0-2)c	22500	detect	19	2	**46.6**	**466.3**
	SS16-IN	SS16-IN-(0-2)c	15000	detect	19	2	**31.1**	**310.9**
	SS17-IN	SS17-IN-(0-2)c	9950	detect	19	2	**20.6**	**206.2**
	SS1-IN	SS1-IN-(0-2)c	7730	detect	19	2	**16.0**	**160.2**
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	19	2	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	6790	detect	19	2	**14.1**	**140.7**
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	19	2	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	19	2	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	25700	detect	19	2	**53.3**	**532.6**
	SS33-IN	SS33-IN-(0-2)c	12500	detect	19	2	**25.9**	**259.1**
	SS3-IN	SS3-IN-(0-2)c	12500	detect	19	2	**25.9**	**259.1**
	SS4-IN	SS4-IN-(0-2)c	8600	detect	19	2	**17.8**	**178.2**
	SS5-IN	SS5-IN-(0-2)c	18800	detect	19	2	**39.0**	**389.6**
	SS6-IN	SS6-IN-(0-2)c	8860	detect	19	2	**18.4**	**183.6**
	SS7-IN	SS7-IN-(0-2)c	12300	detect	19	2	**25.5**	**254.9**
	SS8-IN	SS8-IN-(0-2)c	4890	detect	19	2	**10.1**	**101.3**
	SS9-IN	SS9-IN-(0-2)c	17000	detect	19	2	**35.2**	**352.3**
	HDPT-SS	BACKFILL-HDPT-SS	4300	detect	19	2	**8.9**	**89.1**
	TSB-SS	BACKFILL-TSB-SS	4300	detect	19	2	**8.9**	**89.1**

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Aluminum

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	15000	detect	19	2	**31.1**	**310.9**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	10200	detect	19	2	**21.1**	**211.4**
	CRP-1	CRP-1-SS_4/10/14_NM	11200	detect	19	2	**23.2**	**232.1**
	Grid 27	Grid 27-SSComp-01_20171019_NM	6730	detect	19	2	**13.9**	**139.5**
	Grid 28	Grid 28-SSComp-01_20171019_NM	6360	detect	19	2	**13.2**	**131.8**
	Grid 29	Grid 29-SSComp-01_20171019_NM	7560	detect	19	2	**15.7**	**156.7**
	Grid 30	Grid 30-SSComp-01_20171020_NM	8210	detect	19	2	**17.0**	**170.2**
	Grid 33	Grid 33-SSComp-01_20171020_NM	8760	detect	19	2	**18.2**	**181.6**
	Grid 34	Grid 34-SSComp-01_20171019_NM	7170	detect	19	2	**14.9**	**148.6**
	Grid 37	Grid 37-SSComp-01_20171020_NM	8370	detect	19	2	**17.3**	**173.5**
	Grid 39	Grid 39-SSComp-01_20171020_NM	9120	detect	19	2	**18.9**	**189.0**
	Grid 43	Grid 43-SSComp-01_20171023_NM	9110	detect	19	2	**18.9**	**188.8**
	Grid 44	Grid 44-SSComp-01_20171023_NM	9580	detect	19	2	**19.9**	**198.5**
	Grid 47	Grid 47-SSComp-01_20171023_NM	17600	detect	19	2	**36.5**	**364.8**
	Grid 53	Grid 53-SSComp-01_20171020_NM	12100	detect	19	2	**25.1**	**250.8**
	Grid 60	Grid 60-SSComp-01_20171023_NM	8040	detect	19	2	**16.7**	**166.6**
	Grid 61	Grid 61-SSComp-01_20171023_NM	8190	detect	19	2	**17.0**	**169.7**
	Grid 64	Grid 64-SSComp-01_20171024_NM	7600	detect	19	2	**15.8**	**157.5**
	Grid 74	Grid 74-SSComp-01_20171023_NM	18700	detect	19	2	**38.8**	**387.6**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	12400	detect	19	2	**25.7**	**257.0**
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	5450	detect	19	2	**11.3**	**113.0**
	HP16-1	HP16-1-SS_4/10/14_NM	12500	detect	19	2	**25.9**	**259.1**
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	12100	detect	19	2	**25.1**	**250.8**
	HP18-1	HP18-1-SS_4/10/14_NM	18900	detect	19	2	**39.2**	**391.7**
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	9520	detect	19	2	**19.7**	**197.3**
	HP18-IB	HP18-SSC-IB_4/10/14_NM	4840	detect	19	2	**10.0**	**100.3**
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	19	2	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	6250	detect	19	2	**13.0**	**129.5**
	HP9-1	HP9-1-SS_4/10/14_NM	16100	detect	19	2	**33.4**	**333.7**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	5730	detect	19	2	**11.9**	**118.8**
	IBK-1	IBK-1-SS_4/16/14_NM	17000	detect	19	2	**35.2**	**352.3**
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	18700	detect	19	2	**38.8**	**387.6**
	P17-BH1	P17-BH1-SS_4/3/14_NM	2E+04	detect	19	2	**33.6**	**335.8**
	P3	P3-SSComp-01_20171020_NM	5990	detect	19	2	**12.4**	**124.1**
	P3-BH1	P3-BH1-SS_4/3/14_NM	2270	detect	19	2	**4.7**	**47.0**
	P4-BH1	P4-BH1-SS_4/4/14_NM	1240	detect	19	2	**2.6**	**25.7**
	P5-BH2	P5-BH2-SS_4/3/14_NM	1090	detect	19	2	**2.3**	**22.6**
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	3360	detect	19	2	**7.0**	**69.6**
	P8	P8-SSComp-01_20171025_NM	8120	detect	19	2	**16.8**	**168.3**
	P8dc	P8dc-SSComp-01_20171024_NM	7530	detect	19	2	**15.6**	**156.1**
	P8-TP3	P8-TP3-SS_4/4/14_NM	10700	detect	19	2	**22.2**	**221.8**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	15400	detect	19	2	**31.9**	**319.2**
	SPP	SPP-SSComp-01_20171025_NM	16900	detect	19	2	**35.0**	**350.3**
	SS1,2-HP18	SS1-HP18-(0-2)c	7030	detect	19	2	**14.6**	**145.7**
	SS11,12-IBK	SS11-IBK-(0-2)c	7620	detect	19	2	**15.8**	**157.9**
	SS13,14-HP9	SS13-HP9-(0-2)c	14400	detect	19	2	**29.8**	**298.4**
	SS15,16-HP9	SS15-HP9-(0-2)c	15200	detect	19	2	**31.5**	**315.0**
	SS3,4-HP16	SS3-HP16-(0-2)c	6140	detect	19	2	**12.7**	**127.3**
	SS5,6-IBJ	SS5-IBJ-(0-2)c	5950	detect	19	2	**12.3**	**123.3**
	SS7,8-HP13	SS7-HP13-(0-2)c	12900	detect	19	2	**26.7**	**267.4**
	SS9,10-HP12	SS9-HP12-(0-2)c	11700	detect	19	2	**24.2**	**242.5**
	SWBA	SWBA-SSComp-01_20171024_NM	5200	detect	19	2	**10.8**	**107.8**

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Aluminum

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	7000	detect	19	2	**14.5**	**145.1**
	Grid 89	Grid 89-SSComp-01_20171026_NM	10600	detect	19	2	**22.0**	**219.7**
	Grid 94	Grid 94-SSComp-01_20171026_NM	10300	detect	19	2	**21.3**	**213.5**
	HP13a-1	HP13A-1-SS_4/10/14_NM	19600	detect	19	2	**40.6**	**406.2**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	6930	detect	19	2	**14.4**	**143.6**
	SE10-HP11	SE10-HP11-(0-2)c	21500	detect	19	2	**44.6**	**445.6**
	SE11-HP11	SE11-HP11-(0-2)c	8290	detect	19	2	**17.2**	**171.8**
	SE12-HP12	SE12-HP12-(0-2)c	15500	detect	19	2	**32.1**	**321.2**
	SE13-HP12	SE13-HP12-(0-2)c	14000	detect	19	2	**29.0**	**290.2**
	SE14-HP13	SE14-HP13-(0-2)c	13900	detect	19	2	**28.8**	**288.1**
	SE15-HP13	SE15-HP13-(0-2)c	11800	detect	19	2	**24.5**	**244.6**
	SE16-HP13	SE16-HP13-(0-2)c	10800	detect	19	2	**22.4**	**223.8**
	SE17-HP13a	SE17-HP13a-(0-2)c	13700	detect	19	2	**28.4**	**283.9**
	SE1-HP1a	SE1-HP1a-(0-2)c	13700	detect	19	2	**28.4**	**283.9**
	SE2-HP1a	SE2-HP1a-(0-2)c	16600	detect	19	2	**34.4**	**344.0**
	SE3-HP1	SE3-HP1-(0-2)c	5470	detect	19	2	**11.3**	**113.4**
	SE4-HP1	SE4-HP1-(0-2)c	8950	detect	19	2	**18.5**	**185.5**
	SE5-HP2	SE5-HP2-(0-2)c	14900	detect	19	2	**30.9**	**308.8**
	SE6-HP7	SE6-HP7-(0-2)c	13800	detect	19	2	**28.6**	**286.0**
	SE7-HP7	SE7-HP7-(0-2)c	7500	detect	19	2	**15.5**	**155.4**
	SE8-HP10	SE8-HP10-(0-2)c	8760	detect	19	2	**18.2**	**181.6**
	SE9-HP10	SE9-HP10-(0-2)c	13900	detect	19	2	**28.8**	**288.1**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	8100	detect	19	2	**16.8**	**167.9**
	Grid 84	Grid 84-SSComp-01_20171026_NM	7210	detect	19	2	**14.9**	**149.4**

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of River Surface Water

Aluminum

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0366	detect	1.93	19.3	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0873	detect	1.93	19.3	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.747	detect	1.93	19.3	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0303	detect	1.93	19.3	<1.0	<1.0
	51-CFR	SW51-CFR	0.0376	detect	1.93	19.3	<1.0	<1.0
	52-CFR	SW52-CFR	0.116	detect	1.93	19.3	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0073	detect	1.93	19.3	<1.0	<1.0
	54-CFR	SW54-CFR	0.044	detect	1.93	19.3	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0248	detect	1.93	19.3	<1.0	<1.0
	55-CFR	SW55-CFR	0.0499	detect	1.93	19.3	<1.0	<1.0
	56-CFR	SW56-CFR	0.0515	detect	1.93	19.3	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0284	detect	1.93	19.3	<1.0	<1.0
	57-CFR	SW57-CFR	0.0392	detect	1.93	19.3	<1.0	<1.0
	58-CFR	SW58-CFR	0.0561	detect	1.93	19.3	<1.0	<1.0
	59-CFR	SW59-CFR	0.03	detect	1.93	19.3	<1.0	<1.0
	60-CFR	SW60-CFR	0.0882	detect	1.93	19.3	<1.0	<1.0
	61-CFR	SW61-CFR	0.0583	detect	1.93	19.3	<1.0	<1.0
	62-CFR	SW62-CFR	0.0478	detect	1.93	19.3	<1.0	<1.0
	63-CFR	SW63-CFR	0.0279	detect	1.93	19.3	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of Creek Surface Water

Aluminum

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.254	detect	1.93	19.3	<1.0	<1.0
	43-OK	SW43-OK	0.215	detect	1.93	19.3	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.275	detect	1.93	19.3	<1.0	<1.0
	37-LV	SW37-LV	0.305	detect	1.93	19.3	<1.0	<1.0
	39-LV	SW39-LV	0.188	detect	1.93	19.3	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of Pond Surface Water

Aluminum

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0165	detect	1.93	19.3	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.218	detect	1.93	19.3	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0479	detect	1.93	19.3	<1.0	<1.0
73-P5	SW73-P5	0.171	detect	1.93	19.3	<1.0	<1.0
71-HP7	SW71-HP7	0.271	detect	1.93	19.3	<1.0	<1.0
72-HP2	SW72-HP2	0.0758	detect	1.93	19.3	<1.0	<1.0
75-HP10	SW75-HP10	0.137	detect	1.93	19.3	<1.0	<1.0
67-HP12	SW67-HP12	0.101	detect	1.93	19.3	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0174	detect	1.93	19.3	<1.0	<1.0
66-HP13	SW66-HP13	0.0998	detect	1.93	19.3	<1.0	<1.0
65-HP13a	SW65-HP13a	0.195	detect	1.93	19.3	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.138	detect	1.93	19.3	<1.0	<1.0
70-CWD	SW70-CWD	0.0552	detect	1.93	19.3	<1.0	<1.0
64-HP18	SW64-HP18	0.13	detect	1.93	19.3	<1.0	<1.0

#N/A = not analyzed

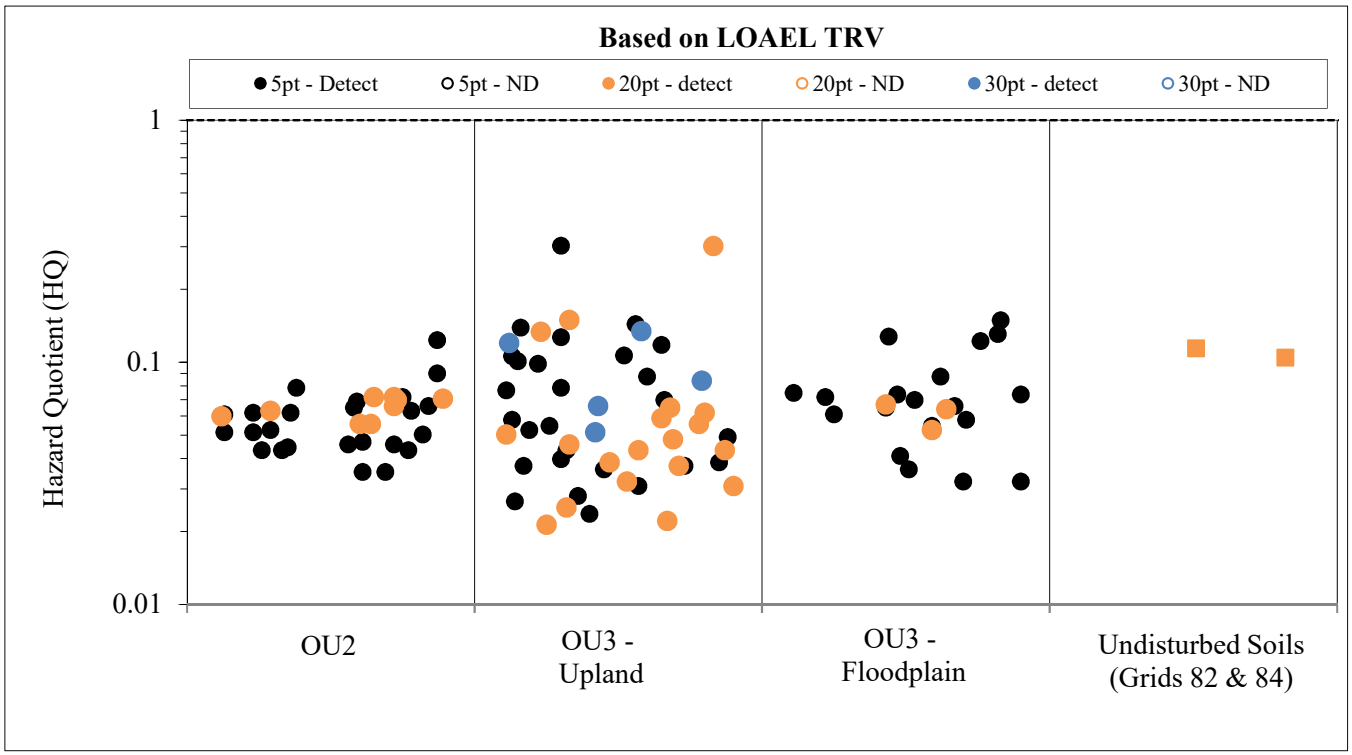
(a) Non-detects are evaluated at 1/2 the reported value.

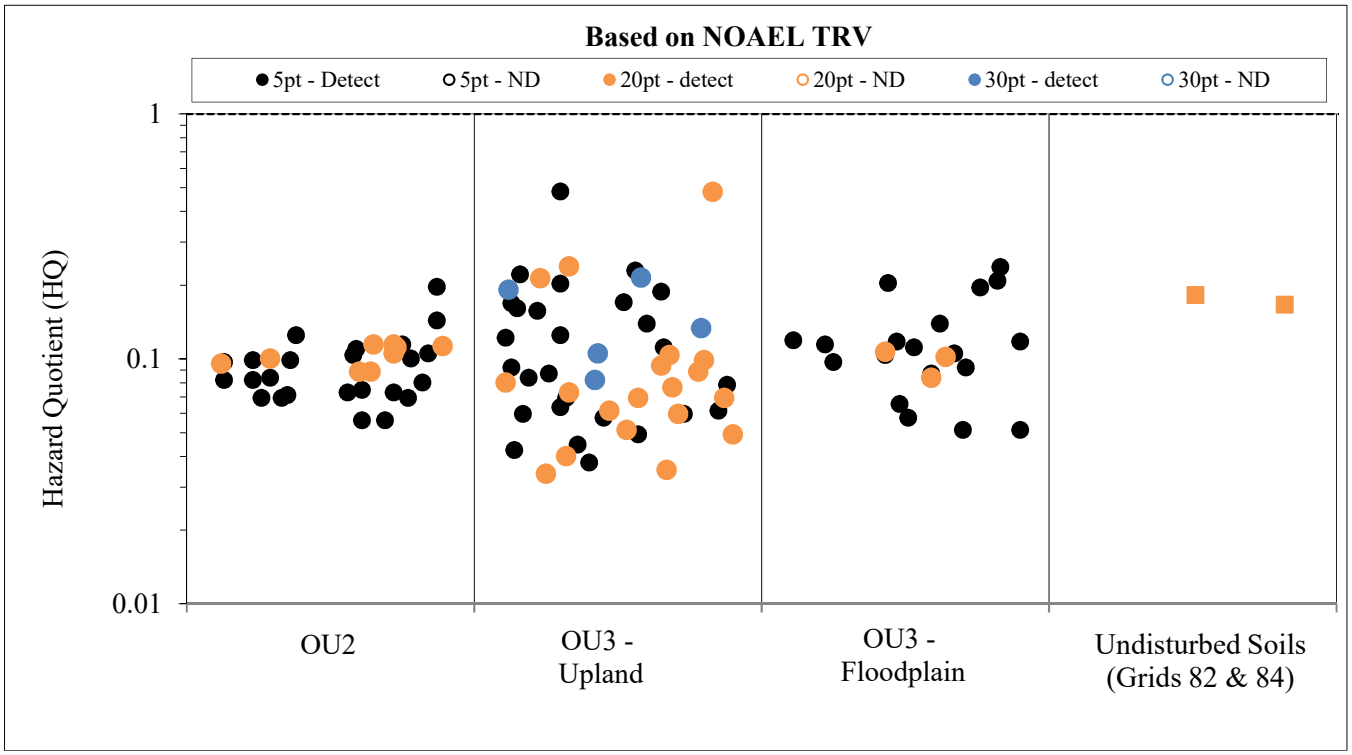
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Food by Exposure Unit/Soil Type

Arsenic





APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Arsenic

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.122048	detect	2	1	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.123733	detect	2	1	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.10462	detect	2	1	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.097306	detect	2	1	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.125408	detect	2	1	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.125408	detect	2	1	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.097306	detect	2	1	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.11521	detect	2	1	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.109968	detect	2	1	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.136887	detect	2	1	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.075851	detect	2	1	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.108197	detect	2	1	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.120354	detect	2	1	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.089755	detect	2	1	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.075851	detect	2	1	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.077899	detect	2	1	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.108197	detect	2	1	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.109968	detect	2	1	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.125408	detect	2	1	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.091667	detect	2	1	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	2	1	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.075851	detect	2	1	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	2	1	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	2	1	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.215359	detect	2	1	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.157215	detect	2	1	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.11521	detect	2	1	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.079925	detect	2	1	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.079925	detect	2	1	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.087826	detect	2	1	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.089755	detect	2	1	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.08193	detect	2	1	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.106415	detect	2	1	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.061535	detect	2	1	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.061535	detect	2	1	<1.0	<1.0

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Arsenic

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.209996	detect	2	1	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.176499	detect	2	1	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.185107	detect	2	1	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.038636	detect	2	1	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.037262	detect	2	1	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.056193	detect	2	1	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.043943	detect	2	1	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.102812	detect	2	1	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.053839	detect	2	1	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.075851	detect	2	1	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.067412	detect	2	1	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.079925	detect	2	1	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.087826	detect	2	1	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.23371	detect	2	1	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.075851	detect	2	1	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.113474	detect	2	1	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.097306	detect	2	1	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.083914	detect	2	1	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.527049	detect	2	1	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.108197	detect	2	1	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.065234	detect	2	1	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.122048	detect	2	1	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.063025	detect	2	1	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.186525	detect	2	1	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.065234	detect	2	1	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.041325	detect	2	1	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	2	1	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.053839	detect	2	1	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.221985	detect	2	1	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.046498	detect	2	1	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.17213	detect	2	1	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.25148	detect	2	1	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.528885	detect	2	1	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.261401	detect	2	1	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.152625	detect	2	1	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.075851	detect	2	1	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.13365	detect	2	1	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.136887	detect	2	1	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.11521	detect	2	1	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.146415	detect	2	1	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.205936	detect	2	1	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.242663	detect	2	1	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.234998	detect	2	1	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.065234	detect	2	1	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.091667	detect	2	1	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	0.095441	detect	2	1	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	0.10099	detect	2	1	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.067412	detect	2	1	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.048995	detect	2	1	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.085879	detect	2	1	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.069561	detect	2	1	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.089755	detect	2	1	<1.0	<1.0

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

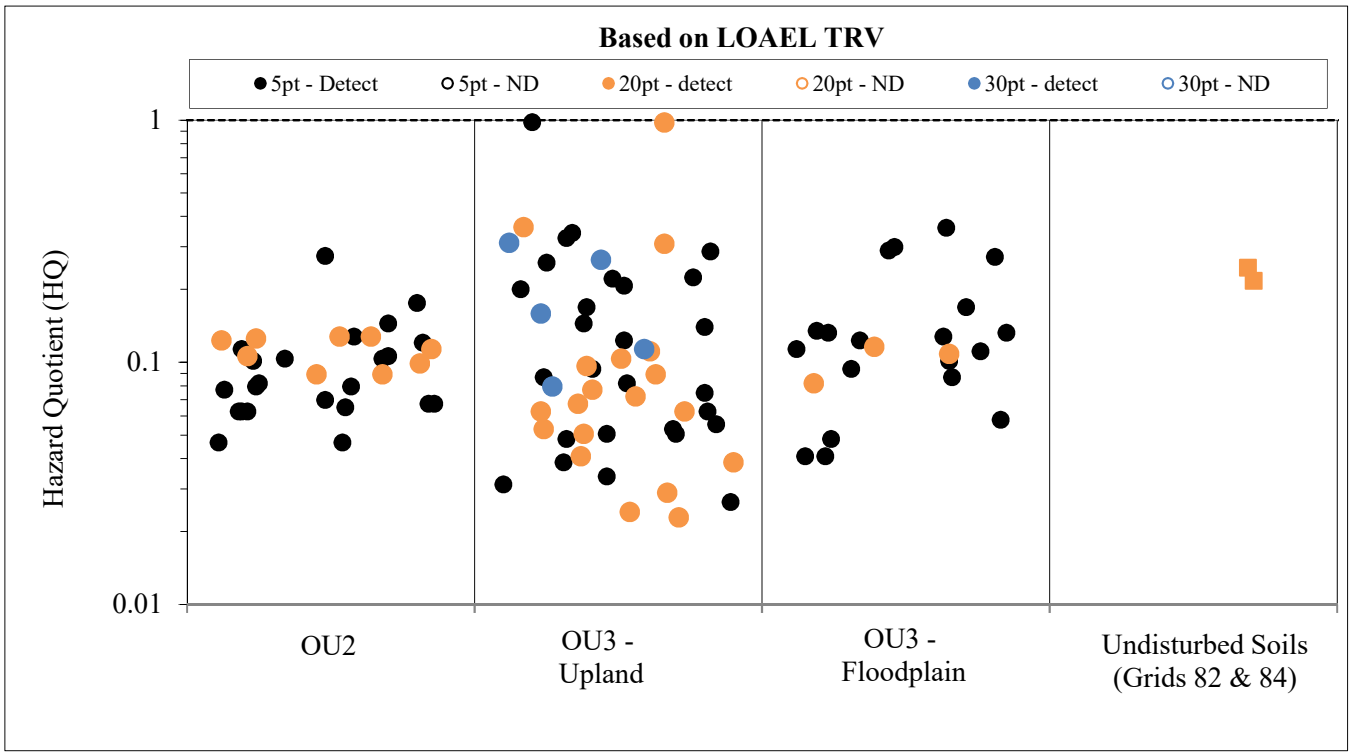
Arsenic

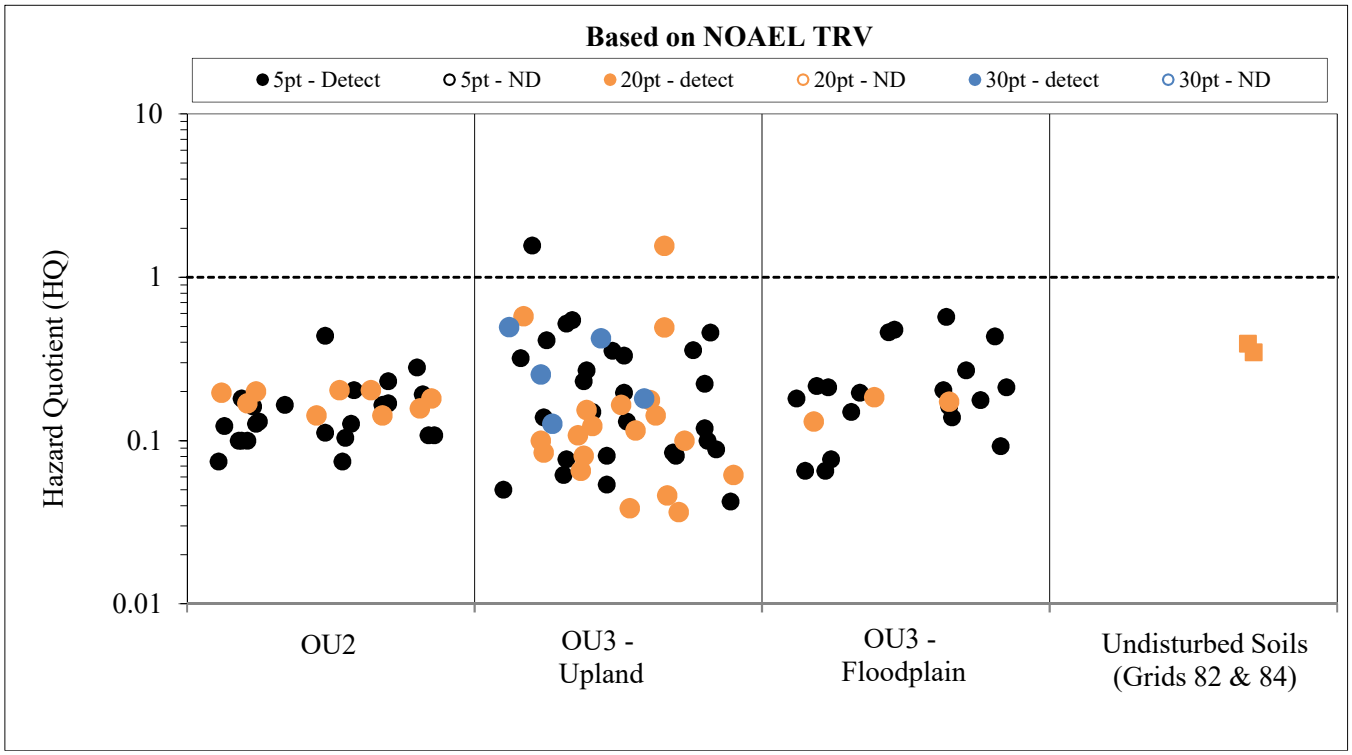
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.111726	detect	2	1	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.116935	detect	2	1	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.091667	detect	2	1	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.113474	detect	2	1	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.056193	detect	2	1	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	0.2233	detect	2	1	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	0.122048	detect	2	1	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	0.130379	detect	2	1	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	0.26017	detect	2	1	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	0.125408	detect	2	1	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.128731	detect	2	1	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	0.11521	detect	2	1	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.10099	detect	2	1	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.106415	detect	2	1	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.128731	detect	2	1	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.071683	detect	2	1	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.063025	detect	2	1	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	0.22853	detect	2	1	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	0.214023	detect	2	1	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	0.056193	detect	2	1	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.095441	detect	2	1	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	0.152625	detect	2	1	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.199094	detect	2	1	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.182256	detect	2	1	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Surface Soil by Exposure Unit/Soil Type

Arsenic





APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Arsenic

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	5.1	detect	2	1	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	5.2	detect	2	1	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	4.1	detect	2	1	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	3.7	detect	2	1	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	5.3	detect	2	1	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	5.3	detect	2	1	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	3.7	detect	2	1	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	4.7	detect	2	1	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	4.4	detect	2	1	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	6	detect	2	1	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	2.6	detect	2	1	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	4.3	detect	2	1	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	5	detect	2	1	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	3.3	detect	2	1	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	2.6	detect	2	1	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	2.7	detect	2	1	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	4.3	detect	2	1	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	4.4	detect	2	1	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	5.3	detect	2	1	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	3.4	detect	2	1	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	2	1	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	2.6	detect	2	1	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	2	1	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	2	1	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	11.4	detect	2	1	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	7.3	detect	2	1	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	4.7	detect	2	1	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	2.8	detect	2	1	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	2.8	detect	2	1	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	3.2	detect	2	1	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	3.3	detect	2	1	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	2.9	detect	2	1	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	4.2	detect	2	1	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	1.933333	detect	2	1	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	1.933333	detect	2	1	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Arsenic

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	11	detect	2	1	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	8.6	detect	2	1	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	9.2	detect	2	1	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	1	detect	2	1	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.95	detect	2	1	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	1.7	detect	2	1	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	1.2	detect	2	1	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	4	detect	2	1	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	1.6	detect	2	1	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	2.6	detect	2	1	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	2.2	detect	2	1	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	2.8	detect	2	1	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	3.2	detect	2	1	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	12.8	detect	2	1	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	2.6	detect	2	1	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	4.6	detect	2	1	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	3.7	detect	2	1	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	3	detect	2	1	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	40.5	detect	2	1	<1.0	**1.6**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	4.3	detect	2	1	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	2.1	detect	2	1	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	5.1	detect	2	1	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	2	detect	2	1	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	9.3	detect	2	1	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	2.1	detect	2	1	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	1.1	detect	2	1	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	2	1	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	1.6	detect	2	1	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	11.9	detect	2	1	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	1.3	detect	2	1	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	8.3	detect	2	1	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	14.2	detect	2	1	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	4E+01	detect	2	1	<1.0	**1.6**
	P3	P3-SSComp-01_20171020_NM	15	detect	2	1	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	7	detect	2	1	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	2.6	detect	2	1	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	5.8	detect	2	1	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	6	detect	2	1	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	4.7	detect	2	1	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	6.6	detect	2	1	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	10.7	detect	2	1	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	13.5	detect	2	1	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	12.9	detect	2	1	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	2.1	detect	2	1	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	3.4	detect	2	1	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	3.6	detect	2	1	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	3.9	detect	2	1	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	2.2	detect	2	1	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	1.4	detect	2	1	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	3.1	detect	2	1	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	2.3	detect	2	1	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	3.3	detect	2	1	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Arsenic

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	4.5	detect	2	1	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	4.8	detect	2	1	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	3.4	detect	2	1	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	4.6	detect	2	1	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	1.7	detect	2	1	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	12	detect	2	1	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	5.1	detect	2	1	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	5.6	detect	2	1	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	14.9	detect	2	1	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	5.3	detect	2	1	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	5.5	detect	2	1	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	4.7	detect	2	1	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	3.9	detect	2	1	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	4.2	detect	2	1	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	5.5	detect	2	1	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	2.4	detect	2	1	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	2	detect	2	1	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	12.4	detect	2	1	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	11.3	detect	2	1	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	1.7	detect	2	1	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	3.6	detect	2	1	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	7	detect	2	1	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	10.2	detect	2	1	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	9	detect	2	1	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of River Surface Water

Arsenic

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0029	detect	1.04	1.66	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0222	detect	1.04	1.66	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0073	detect	1.04	1.66	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0022	detect	1.04	1.66	<1.0	<1.0
	51-CFR	SW51-CFR	0.0029	detect	1.04	1.66	<1.0	<1.0
	52-CFR	SW52-CFR	0.0033	detect	1.04	1.66	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0031	detect	1.04	1.66	<1.0	<1.0
	54-CFR	SW54-CFR	0.0034	detect	1.04	1.66	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0022	detect	1.04	1.66	<1.0	<1.0
	55-CFR	SW55-CFR	0.0028	detect	1.04	1.66	<1.0	<1.0
	56-CFR	SW56-CFR	0.0027	detect	1.04	1.66	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0021	detect	1.04	1.66	<1.0	<1.0
	57-CFR	SW57-CFR	0.0045	detect	1.04	1.66	<1.0	<1.0
	58-CFR	SW58-CFR	0.0031	detect	1.04	1.66	<1.0	<1.0
	59-CFR	SW59-CFR	0.0033	detect	1.04	1.66	<1.0	<1.0
	60-CFR	SW60-CFR	0.0031	detect	1.04	1.66	<1.0	<1.0
	61-CFR	SW61-CFR	0.0031	detect	1.04	1.66	<1.0	<1.0
	62-CFR	SW62-CFR	0.0037	detect	1.04	1.66	<1.0	<1.0
	63-CFR	SW63-CFR	0.0031	detect	1.04	1.66	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of Creek Surface Water

Arsenic

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.003	detect	1.04	1.66	<1.0	<1.0
	43-OK	SW43-OK	0.003	detect	1.04	1.66	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.002	detect	1.04	1.66	<1.0	<1.0
	37-LV	SW37-LV	0.003	detect	1.04	1.66	<1.0	<1.0
	39-LV	SW39-LV	0.004	detect	1.04	1.66	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of Pond Surface Water

Arsenic

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0024	detect	1.04	1.66	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0054	detect	1.04	1.66	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0084	detect	1.04	1.66	<1.0	<1.0
73-P5	SW73-P5	0.0071	detect	1.04	1.66	<1.0	<1.0
71-HP7	SW71-HP7	0.0044	detect	1.04	1.66	<1.0	<1.0
72-HP2	SW72-HP2	0.0109	detect	1.04	1.66	<1.0	<1.0
75-HP10	SW75-HP10	0.005	detect	1.04	1.66	<1.0	<1.0
67-HP12	SW67-HP12	0.0073	detect	1.04	1.66	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0024	detect	1.04	1.66	<1.0	<1.0
66-HP13	SW66-HP13	0.033	detect	1.04	1.66	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0152	detect	1.04	1.66	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0162	detect	1.04	1.66	<1.0	<1.0
70-CWD	SW70-CWD	0.0034	detect	1.04	1.66	<1.0	<1.0
64-HP18	SW64-HP18	0.0076	detect	1.04	1.66	<1.0	<1.0

#N/A = not analyzed

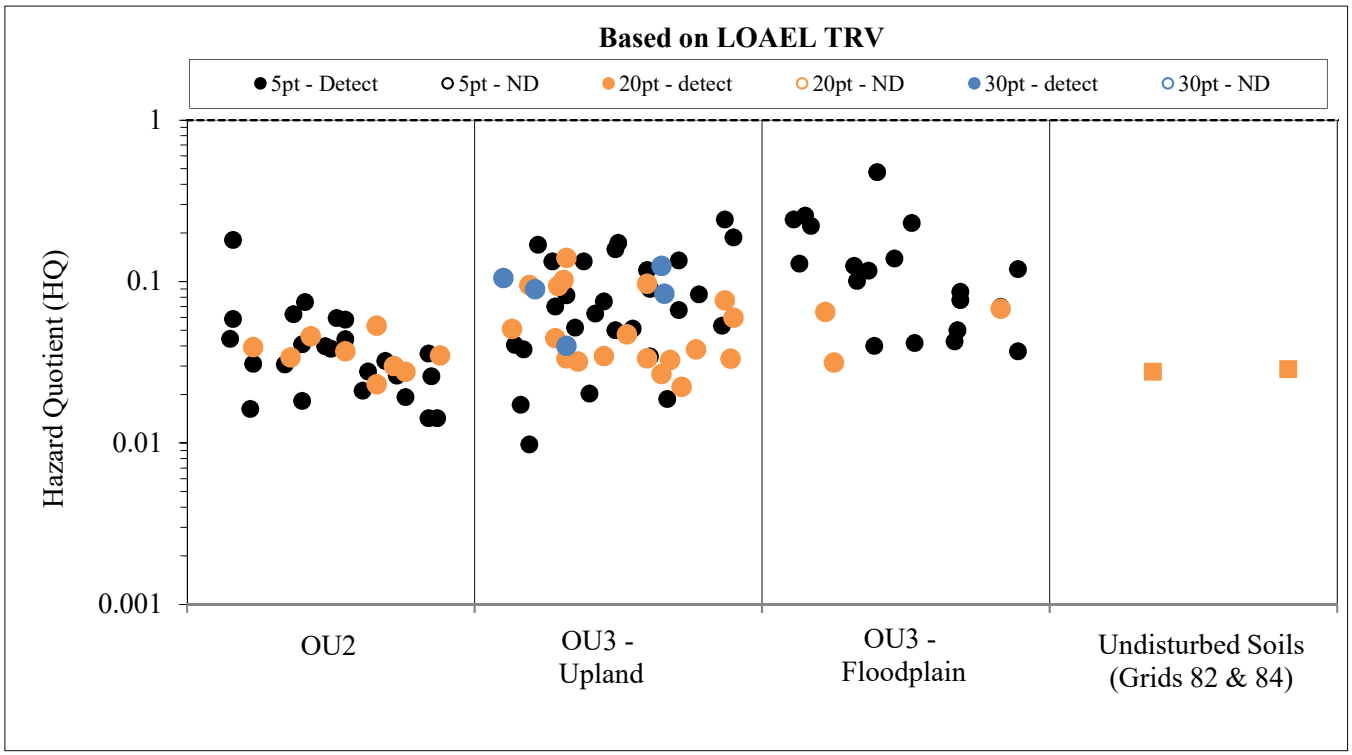
(a) Non-detects are evaluated at 1/2 the reported value.

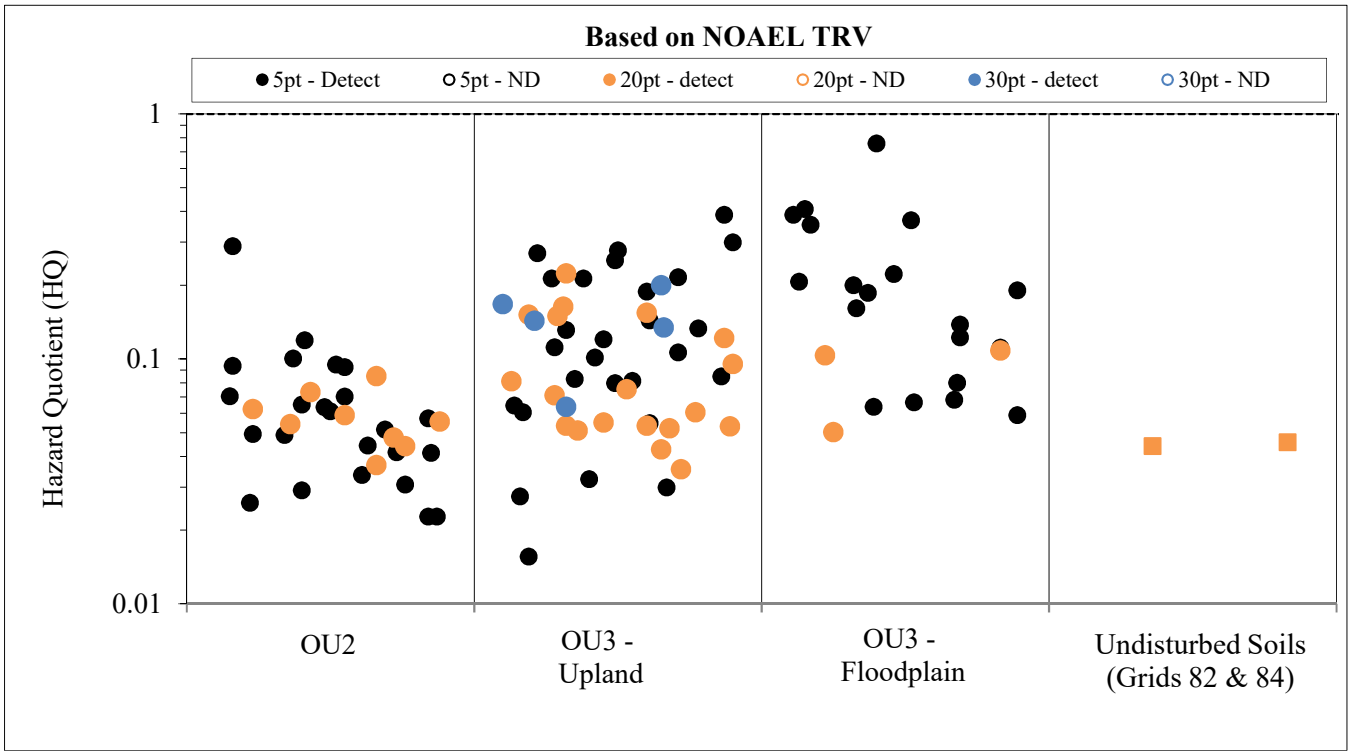
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Food by Exposure Unit/Soil Type

Barium





APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Barium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	2.95568	detect	83	52	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	3.40704	detect	83	52	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	2.4024	detect	83	52	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	2.00928	detect	83	52	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	4.64464	detect	83	52	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	3.98944	detect	83	52	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	3.21776	detect	83	52	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	3.02848	detect	83	52	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	2.60624	detect	83	52	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	5.1688	detect	83	52	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	2.2568	detect	83	52	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	3.84384	detect	83	52	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	3.33424	detect	83	52	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	2.41696	detect	83	52	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	5.47456	detect	83	52	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	2.66448	detect	83	52	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	5.05232	detect	83	52	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	3.82928	detect	83	52	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	2.6936	detect	83	52	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	1.58704	detect	83	52	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	83	52	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	1.83456	detect	83	52	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	83	52	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	83	52	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	15.7248	detect	83	52	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	6.50832	detect	83	52	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	3.46528	detect	83	52	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	1.6744	detect	83	52	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	5.11056	detect	83	52	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	2.27136	detect	83	52	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	3.11584	detect	83	52	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	1.41232	detect	83	52	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	3.55264	detect	83	52	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	1.240027	detect	83	52	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	1.240027	detect	83	52	<1.0	<1.0

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Barium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	7.80416	detect	83	52	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	13.77376	detect	83	52	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	3.52352	detect	83	52	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	2.912	detect	83	52	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	2.912	detect	83	52	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	2.78096	detect	83	52	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	5.19792	detect	83	52	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	3.30512	detect	83	52	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	2.89744	detect	83	52	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	2.3296	detect	83	52	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	6.63936	detect	83	52	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	8.41568	detect	83	52	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	4.42624	detect	83	52	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	8.16816	detect	83	52	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	8.27008	detect	83	52	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	4.10592	detect	83	52	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	2.8392	detect	83	52	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	3.87296	detect	83	52	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	12.18672	detect	83	52	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	2.99936	detect	83	52	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	1.93648	detect	83	52	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	7.16352	detect	83	52	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	4.4408	detect	83	52	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	15.1424	detect	83	52	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	3.30512	detect	83	52	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	1.76176	detect	83	52	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	83	52	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.85176	detect	83	52	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	11.61888	detect	83	52	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	4.63008	detect	83	52	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	4.5136	detect	83	52	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	11.61888	detect	83	52	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	11.76448	detect	83	52	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	8.91072	detect	83	52	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	7.83328	detect	83	52	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	5.79488	detect	83	52	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	7.26544	detect	83	52	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	6.552	detect	83	52	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	7.32368	detect	83	52	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	9.12912	detect	83	52	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	10.2648	detect	83	52	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	16.3072	detect	83	52	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	10.90544	detect	83	52	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	1.63072	detect	83	52	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	1.49968	detect	83	52	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	14.7056	detect	83	52	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	21.112	detect	83	52	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	5.51824	detect	83	52	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	2.9848	detect	83	52	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	4.33888	detect	83	52	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	6.08608	detect	83	52	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	3.47984	detect	83	52	<1.0	<1.0

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

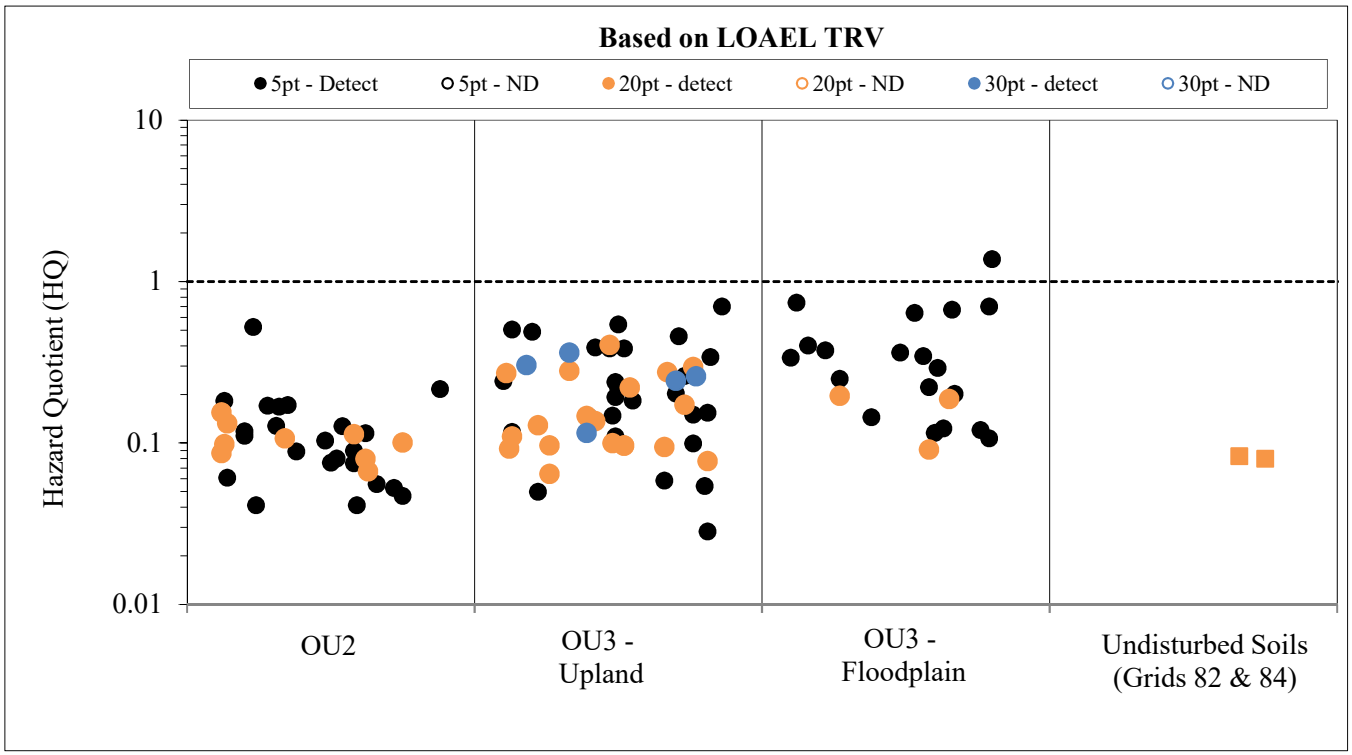
Barium

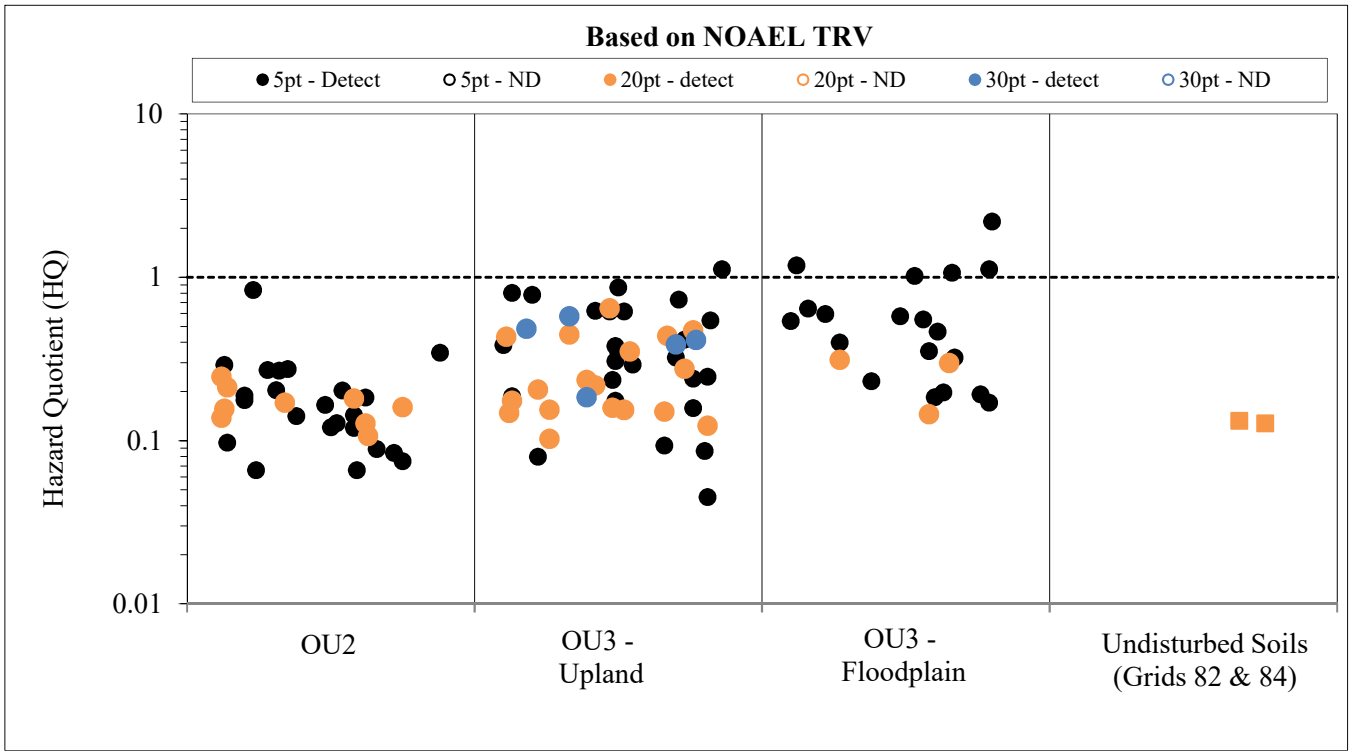
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	2.73728	detect	83	52	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	5.8968	detect	83	52	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	5.63472	detect	83	52	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	6.66848	detect	83	52	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	3.47984	detect	83	52	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	8.77968	detect	83	52	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	12.09936	detect	83	52	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	7.52752	detect	83	52	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	10.14832	detect	83	52	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	6.07152	detect	83	52	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	21.112	detect	83	52	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	11.25488	detect	83	52	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	20.0928	detect	83	52	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	22.2768	detect	83	52	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	41.3504	detect	83	52	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	3.21776	detect	83	52	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	3.62544	detect	83	52	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	10.38128	detect	83	52	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	10.90544	detect	83	52	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	4.35344	detect	83	52	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	3.7128	detect	83	52	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	19.2192	detect	83	52	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	2.48976	detect	83	52	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	2.4024	detect	83	52	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Surface Soil by Exposure Unit/Soil Type

Barium





APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Barium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	203	detect	83	52	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	234	detect	83	52	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	165	detect	83	52	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	138	detect	83	52	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	319	detect	83	52	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	274	detect	83	52	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	221	detect	83	52	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	208	detect	83	52	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	179	detect	83	52	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	355	detect	83	52	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	155	detect	83	52	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	264	detect	83	52	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	229	detect	83	52	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	166	detect	83	52	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	376	detect	83	52	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	183	detect	83	52	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	347	detect	83	52	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	263	detect	83	52	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	185	detect	83	52	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	109	detect	83	52	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	83	52	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	126	detect	83	52	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	83	52	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	83	52	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	1080	detect	83	52	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	447	detect	83	52	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	238	detect	83	52	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	115	detect	83	52	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	351	detect	83	52	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	156	detect	83	52	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	214	detect	83	52	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	97	detect	83	52	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	244	detect	83	52	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	85.16667	detect	83	52	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	85.16667	detect	83	52	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Barium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	536	detect	83	52	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	946	detect	83	52	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	242	detect	83	52	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	200	detect	83	52	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	200	detect	83	52	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	191	detect	83	52	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	357	detect	83	52	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	227	detect	83	52	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	199	detect	83	52	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	160	detect	83	52	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	456	detect	83	52	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	578	detect	83	52	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	304	detect	83	52	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	561	detect	83	52	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	568	detect	83	52	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	282	detect	83	52	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	195	detect	83	52	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	266	detect	83	52	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	837	detect	83	52	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	206	detect	83	52	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	133	detect	83	52	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	492	detect	83	52	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	305	detect	83	52	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	1040	detect	83	52	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	227	detect	83	52	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	121	detect	83	52	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	83	52	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	58.5	detect	83	52	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	798	detect	83	52	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	318	detect	83	52	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	310	detect	83	52	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	798	detect	83	52	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	8E+02	detect	83	52	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	612	detect	83	52	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	538	detect	83	52	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	398	detect	83	52	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	499	detect	83	52	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	450	detect	83	52	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	503	detect	83	52	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	627	detect	83	52	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	705	detect	83	52	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1120	detect	83	52	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	749	detect	83	52	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	112	detect	83	52	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	103	detect	83	52	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	1010	detect	83	52	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	1450	detect	83	52	<1.0	**1.1**
	SS3,4-HP16	SS3-HP16-(0-2)c	379	detect	83	52	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	205	detect	83	52	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	298	detect	83	52	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	418	detect	83	52	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	239	detect	83	52	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Barium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	188	detect	83	52	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	405	detect	83	52	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	387	detect	83	52	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	458	detect	83	52	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	239	detect	83	52	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	603	detect	83	52	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	831	detect	83	52	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	517	detect	83	52	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	697	detect	83	52	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	417	detect	83	52	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	1450	detect	83	52	<1.0	**1.1**
	SE16-HP13	SE16-HP13-(0-2)c	773	detect	83	52	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	1380	detect	83	52	<1.0	**1.1**
	SE1-HP1a	SE1-HP1a-(0-2)c	1530	detect	83	52	<1.0	**1.2**
	SE2-HP1a	SE2-HP1a-(0-2)c	2840	detect	83	52	**1.4**	**2.2**
	SE3-HP1	SE3-HP1-(0-2)c	221	detect	83	52	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	249	detect	83	52	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	713	detect	83	52	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	749	detect	83	52	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	299	detect	83	52	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	255	detect	83	52	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	1320	detect	83	52	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	171	detect	83	52	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	165	detect	83	52	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of River Surface Water

Barium

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.126	detect	51.8	82.7	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.127	detect	51.8	82.7	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0818	detect	51.8	82.7	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0932	detect	51.8	82.7	<1.0	<1.0
	51-CFR	SW51-CFR	0.129	detect	51.8	82.7	<1.0	<1.0
	52-CFR	SW52-CFR	0.124	detect	51.8	82.7	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.105	detect	51.8	82.7	<1.0	<1.0
	54-CFR	SW54-CFR	0.106	detect	51.8	82.7	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0982	detect	51.8	82.7	<1.0	<1.0
	55-CFR	SW55-CFR	0.123	detect	51.8	82.7	<1.0	<1.0
	56-CFR	SW56-CFR	0.12	detect	51.8	82.7	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0982	detect	51.8	82.7	<1.0	<1.0
	57-CFR	SW57-CFR	0.118	detect	51.8	82.7	<1.0	<1.0
	58-CFR	SW58-CFR	0.124	detect	51.8	82.7	<1.0	<1.0
	59-CFR	SW59-CFR	0.121	detect	51.8	82.7	<1.0	<1.0
	60-CFR	SW60-CFR	0.123	detect	51.8	82.7	<1.0	<1.0
	61-CFR	SW61-CFR	0.126	detect	51.8	82.7	<1.0	<1.0
	62-CFR	SW62-CFR	0.133	detect	51.8	82.7	<1.0	<1.0
	63-CFR	SW63-CFR	0.125	detect	51.8	82.7	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of Creek Surface Water

Barium

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.145	detect	51.8	82.7	<1.0	<1.0
	43-OK	SW43-OK	0.142	detect	51.8	82.7	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.25	detect	51.8	82.7	<1.0	<1.0
	37-LV	SW37-LV	0.158	detect	51.8	82.7	<1.0	<1.0
	39-LV	SW39-LV	0.163	detect	51.8	82.7	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of Pond Surface Water

Barium

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0725	detect	51.8	82.7	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.105	detect	51.8	82.7	<1.0	<1.0
69-HP1a	SW69-HP1a	0.204	detect	51.8	82.7	<1.0	<1.0
73-P5	SW73-P5	0.0417	detect	51.8	82.7	<1.0	<1.0
71-HP7	SW71-HP7	0.0563	detect	51.8	82.7	<1.0	<1.0
72-HP2	SW72-HP2	0.0414	detect	51.8	82.7	<1.0	<1.0
75-HP10	SW75-HP10	0.0226	detect	51.8	82.7	<1.0	<1.0
67-HP12	SW67-HP12	0.0272	detect	51.8	82.7	<1.0	<1.0
68-IBJ	SW68-IBJ	0.133	detect	51.8	82.7	<1.0	<1.0
66-HP13	SW66-HP13	0.0142	detect	51.8	82.7	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0606	detect	51.8	82.7	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0903	detect	51.8	82.7	<1.0	<1.0
70-CWD	SW70-CWD	0.161	detect	51.8	82.7	<1.0	<1.0
64-HP18	SW64-HP18	0.177	detect	51.8	82.7	<1.0	<1.0

#N/A = not analyzed

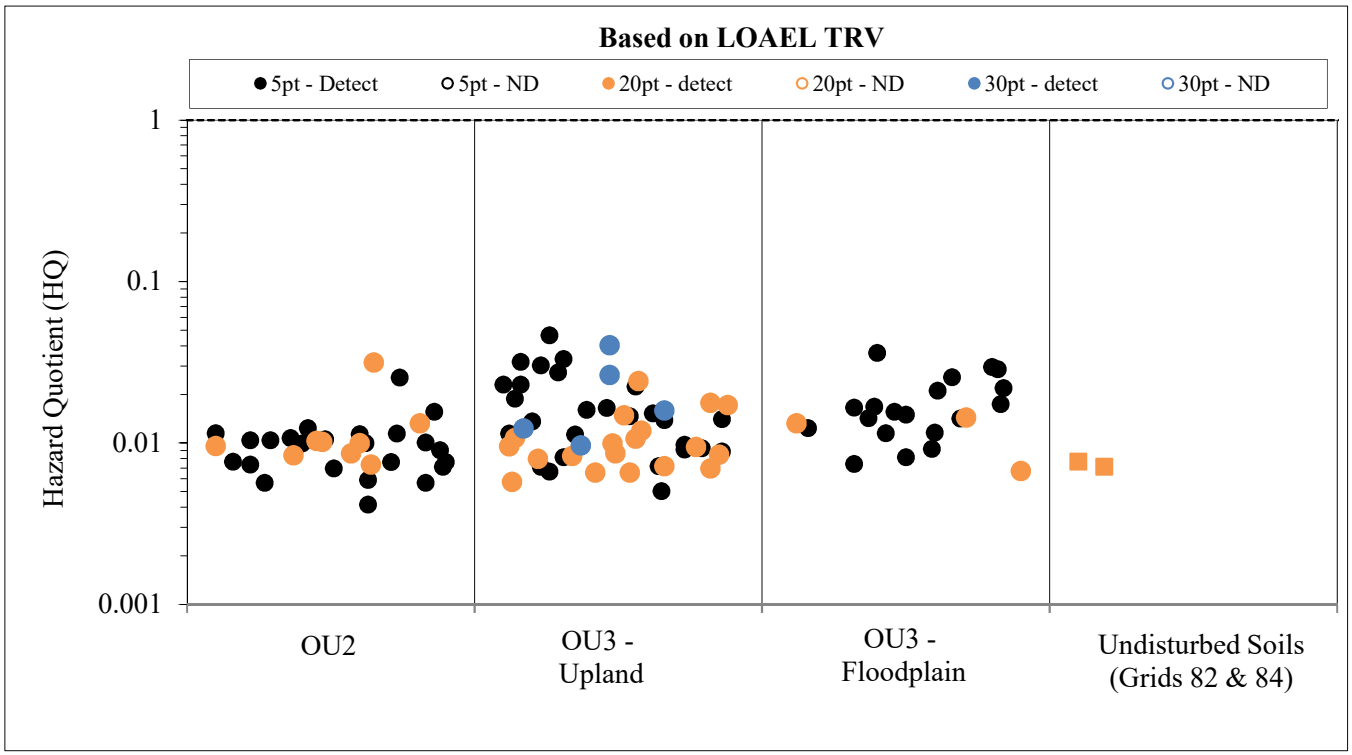
(a) Non-detects are evaluated at 1/2 the reported value.

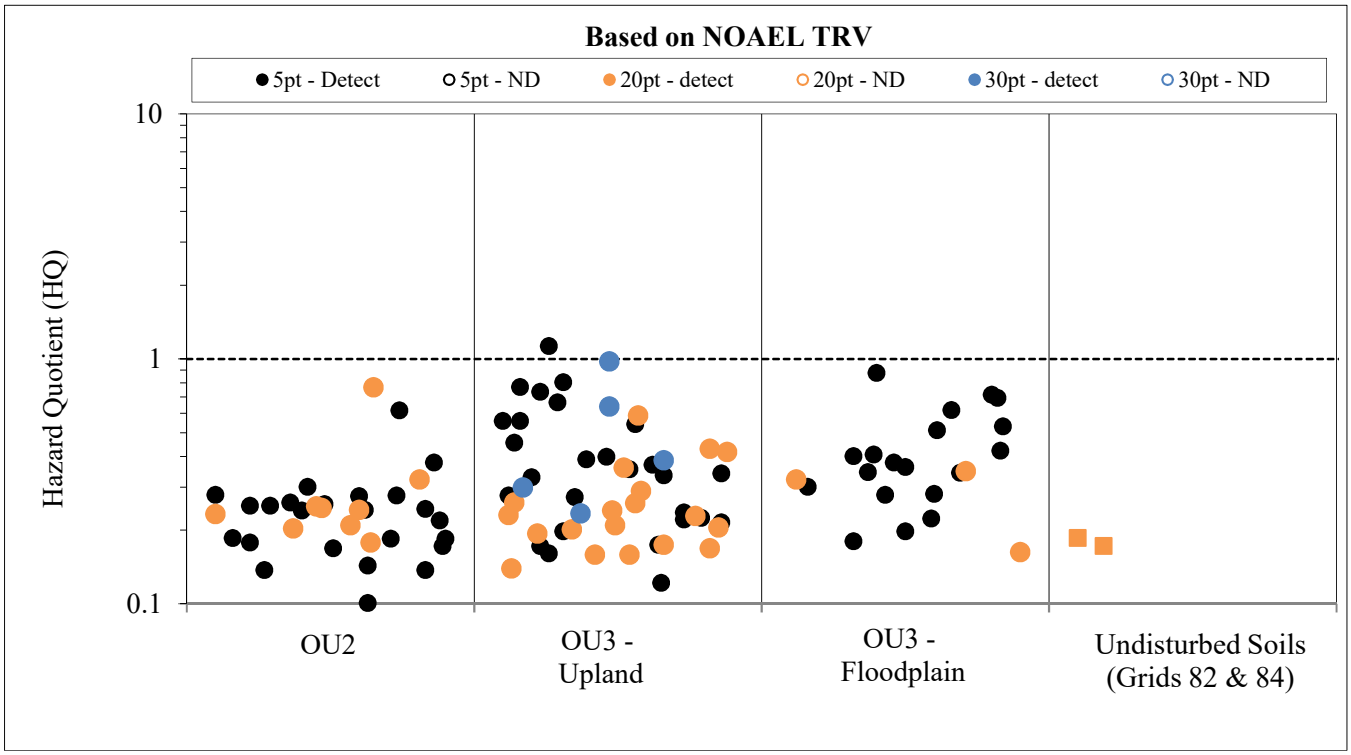
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Food by Exposure Unit/Soil Type

Chromium





APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Chromium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.612	detect	58	2	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.58752	detect	58	2	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.812736	detect	58	2	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.51408	detect	58	2	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.621792	detect	58	2	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.631584	detect	58	2	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.450432	detect	58	2	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	1.93392	detect	58	2	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.528768	detect	58	2	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.95472	detect	58	2	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.254592	detect	58	2	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.347616	detect	58	2	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.470016	detect	58	2	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.450432	detect	58	2	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.646272	detect	58	2	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.553248	detect	58	2	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.700128	detect	58	2	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.63648	detect	58	2	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.616896	detect	58	2	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.75888	detect	58	2	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	58	2	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.362304	detect	58	2	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	58	2	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	58	2	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	1.556928	detect	58	2	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.705024	detect	58	2	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.695232	detect	58	2	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.435744	detect	58	2	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.612	detect	58	2	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.607104	detect	58	2	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.656064	detect	58	2	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.425952	detect	58	2	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.63648	detect	58	2	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.466752	detect	58	2	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.466752	detect	58	2	<1.0	<1.0

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Chromium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	1.61568	detect	58	2	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	1.855584	detect	58	2	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.895968	detect	58	2	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.425952	detect	58	2	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.352512	detect	58	2	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.528768	detect	58	2	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.4896	detect	58	2	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.518976	detect	58	2	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.401472	detect	58	2	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.44064	detect	58	2	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.582624	detect	58	2	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.651168	detect	58	2	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.509184	detect	58	2	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	1.086912	detect	58	2	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	1.05264	detect	58	2	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.729504	detect	58	2	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.607104	detect	58	2	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.577728	detect	58	2	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	1.483488	detect	58	2	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.656064	detect	58	2	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.401472	detect	58	2	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.861696	detect	58	2	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.597312	detect	58	2	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.984096	detect	58	2	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.435744	detect	58	2	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.308448	detect	58	2	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	58	2	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.44064	detect	58	2	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1.943712	detect	58	2	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.406368	detect	58	2	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.83232	detect	58	2	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	2.849472	detect	58	2	<1.0	**1.1**
	P17-BH1	P17-BH1-SS_4/3/14_NM	1.37088	detect	58	2	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.910656	detect	58	2	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.935136	detect	58	2	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.558144	detect	58	2	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	1.679328	detect	58	2	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.690336	detect	58	2	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.753984	detect	58	2	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.974304	detect	58	2	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	1.15056	detect	58	2	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	2.03184	detect	58	2	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	2.47248	detect	58	2	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.567936	detect	58	2	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.499392	detect	58	2	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	1.410048	detect	58	2	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	1.410048	detect	58	2	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.700128	detect	58	2	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.543456	detect	58	2	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	1.008576	detect	58	2	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.847008	detect	58	2	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.592416	detect	58	2	<1.0	<1.0

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

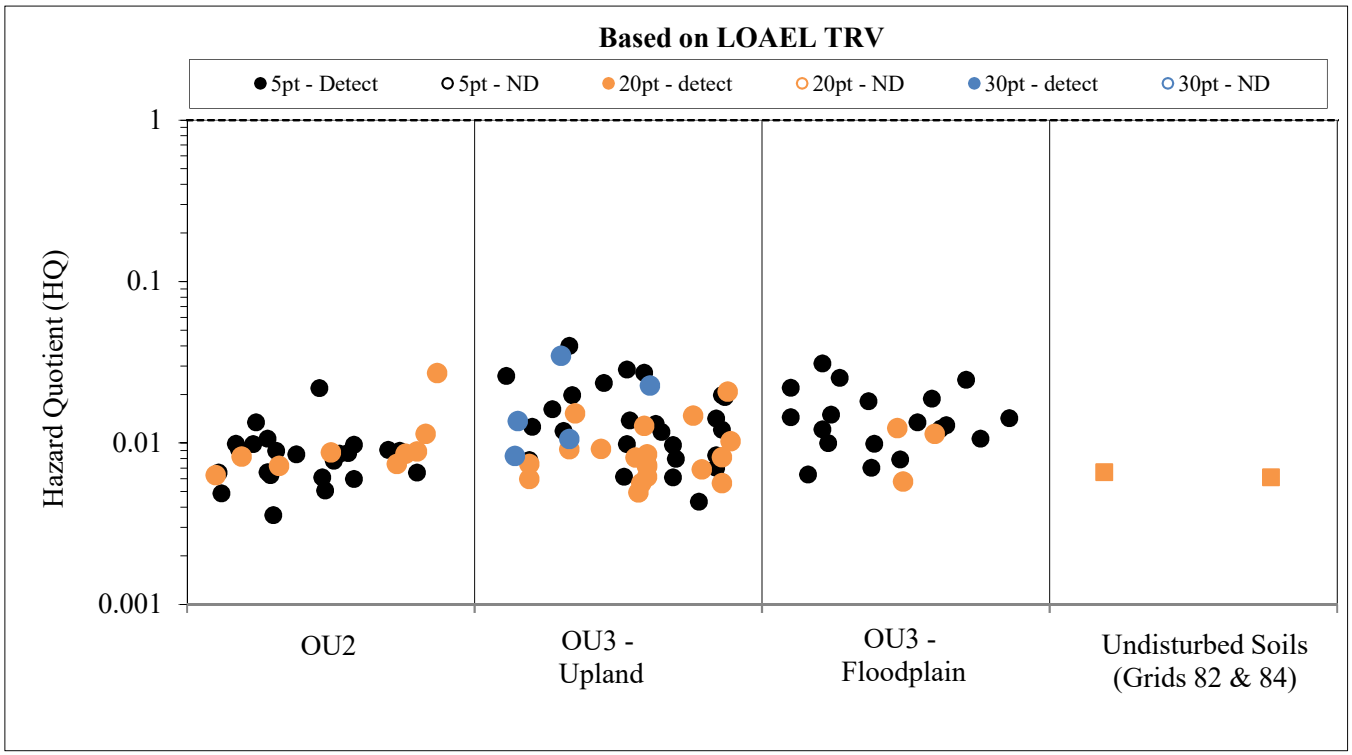
Chromium

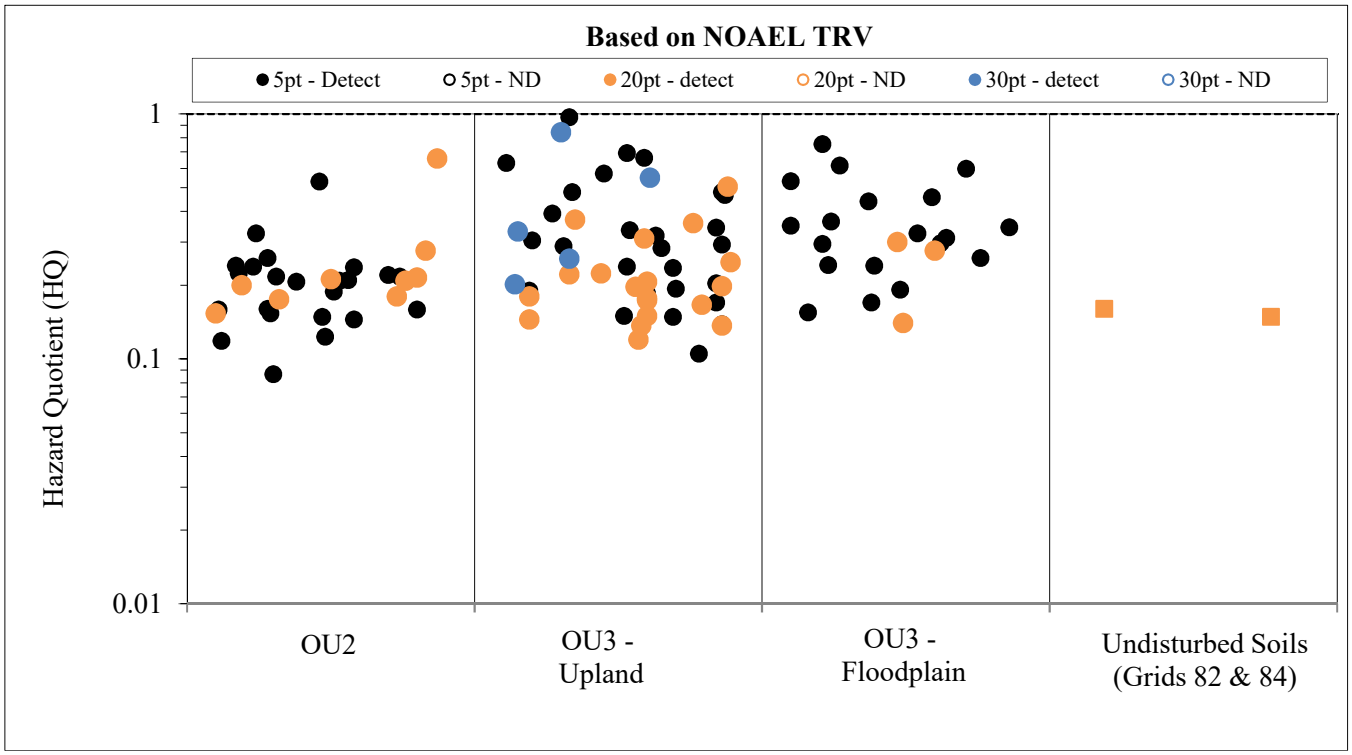
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.411264	detect	58	2	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.812736	detect	58	2	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.88128	detect	58	2	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.95472	detect	58	2	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.455328	detect	58	2	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	1.752768	detect	58	2	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	0.915552	detect	58	2	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	1.013472	detect	58	2	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	1.806624	detect	58	2	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	0.871488	detect	58	2	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	1.292544	detect	58	2	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	0.75888	detect	58	2	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	1.067328	detect	58	2	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.866592	detect	58	2	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	1.02816	detect	58	2	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.56304	detect	58	2	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.70992	detect	58	2	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	1.341504	detect	58	2	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	2.212992	detect	58	2	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	0.499392	detect	58	2	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.705024	detect	58	2	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	1.561824	detect	58	2	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.470016	detect	58	2	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.435744	detect	58	2	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Surface Soil by Exposure Unit/Soil Type

Chromium





APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Chromium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	12.5	detect	58	2	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	12	detect	58	2	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	16.6	detect	58	2	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	10.5	detect	58	2	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	12.7	detect	58	2	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	12.9	detect	58	2	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	9.2	detect	58	2	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	39.5	detect	58	2	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	10.8	detect	58	2	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	19.5	detect	58	2	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	5.2	detect	58	2	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	7.1	detect	58	2	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	9.6	detect	58	2	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	9.2	detect	58	2	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	13.2	detect	58	2	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	11.3	detect	58	2	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	14.3	detect	58	2	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	13	detect	58	2	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	12.6	detect	58	2	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	15.5	detect	58	2	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	58	2	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	7.4	detect	58	2	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	58	2	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	58	2	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	31.8	detect	58	2	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	14.4	detect	58	2	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	14.2	detect	58	2	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	8.9	detect	58	2	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	12.5	detect	58	2	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	12.4	detect	58	2	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	13.4	detect	58	2	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	8.7	detect	58	2	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	13	detect	58	2	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	9.533333	detect	58	2	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	9.533333	detect	58	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Chromium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	33	detect	58	2	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	37.9	detect	58	2	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	18.3	detect	58	2	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	8.7	detect	58	2	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	7.2	detect	58	2	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	10.8	detect	58	2	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	10	detect	58	2	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	10.6	detect	58	2	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	8.2	detect	58	2	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	9	detect	58	2	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	11.9	detect	58	2	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	13.3	detect	58	2	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	10.4	detect	58	2	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	22.2	detect	58	2	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	21.5	detect	58	2	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	14.9	detect	58	2	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	12.4	detect	58	2	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	11.8	detect	58	2	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	30.3	detect	58	2	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	13.4	detect	58	2	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	8.2	detect	58	2	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	17.6	detect	58	2	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	12.2	detect	58	2	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	20.1	detect	58	2	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	8.9	detect	58	2	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	6.3	detect	58	2	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	58	2	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	9	detect	58	2	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	39.7	detect	58	2	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	8.3	detect	58	2	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	17	detect	58	2	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	58.2	detect	58	2	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	3E+01	detect	58	2	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	18.6	detect	58	2	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	19.1	detect	58	2	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	11.4	detect	58	2	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	34.3	detect	58	2	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	14.1	detect	58	2	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	15.4	detect	58	2	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	19.9	detect	58	2	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	23.5	detect	58	2	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	41.5	detect	58	2	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	50.5	detect	58	2	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	11.6	detect	58	2	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	10.2	detect	58	2	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	28.8	detect	58	2	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	28.8	detect	58	2	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	14.3	detect	58	2	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	11.1	detect	58	2	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	20.6	detect	58	2	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	17.3	detect	58	2	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	12.1	detect	58	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Chromium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	8.4	detect	58	2	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	16.6	detect	58	2	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	18	detect	58	2	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	19.5	detect	58	2	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	9.3	detect	58	2	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	35.8	detect	58	2	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	18.7	detect	58	2	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	20.7	detect	58	2	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	36.9	detect	58	2	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	17.8	detect	58	2	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	26.4	detect	58	2	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	15.5	detect	58	2	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	21.8	detect	58	2	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	17.7	detect	58	2	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	21	detect	58	2	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	11.5	detect	58	2	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	14.5	detect	58	2	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	27.4	detect	58	2	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	45.2	detect	58	2	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	10.2	detect	58	2	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	14.4	detect	58	2	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	31.9	detect	58	2	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	9.6	detect	58	2	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	8.9	detect	58	2	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of River Surface Water

Chromium

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0002	detect	2.4	58.2	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0004	ND	2.4	58.2	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0008	detect	2.4	58.2	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0005	ND	2.4	58.2	<1.0	<1.0
	51-CFR	SW51-CFR	0.0002	detect	2.4	58.2	<1.0	<1.0
	52-CFR	SW52-CFR	0.0002	ND	2.4	58.2	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0002	ND	2.4	58.2	<1.0	<1.0
	54-CFR	SW54-CFR	0.0002	ND	2.4	58.2	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0005	ND	2.4	58.2	<1.0	<1.0
	55-CFR	SW55-CFR	0.0002	ND	2.4	58.2	<1.0	<1.0
	56-CFR	SW56-CFR	0.0002	ND	2.4	58.2	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0005	ND	2.4	58.2	<1.0	<1.0
	57-CFR	SW57-CFR	0.0002	ND	2.4	58.2	<1.0	<1.0
	58-CFR	SW58-CFR	0.0002	ND	2.4	58.2	<1.0	<1.0
	59-CFR	SW59-CFR	0.0002	ND	2.4	58.2	<1.0	<1.0
	60-CFR	SW60-CFR	0.0002	detect	2.4	58.2	<1.0	<1.0
	61-CFR	SW61-CFR	0.0002	detect	2.4	58.2	<1.0	<1.0
	62-CFR	SW62-CFR	0.0002	ND	2.4	58.2	<1.0	<1.0
	63-CFR	SW63-CFR	0.0003	detect	2.4	58.2	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of Creek Surface Water

Chromium

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	3E-04	detect	2.4	58.2	<1.0	<1.0
	43-OK	SW43-OK	3E-04	detect	2.4	58.2	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	5E-04	detect	2.4	58.2	<1.0	<1.0
	37-LV	SW37-LV	3E-04	detect	2.4	58.2	<1.0	<1.0
	39-LV	SW39-LV	2E-04	detect	2.4	58.2	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of Pond Surface Water

Chromium

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0002	ND	2.4	58.2	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0016	detect	2.4	58.2	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0013	detect	2.4	58.2	<1.0	<1.0
73-P5	SW73-P5	0.0016	ND	2.4	58.2	<1.0	<1.0
71-HP7	SW71-HP7	0.0011	detect	2.4	58.2	<1.0	<1.0
72-HP2	SW72-HP2	0.0011	detect	2.4	58.2	<1.0	<1.0
75-HP10	SW75-HP10	0.0008	ND	2.4	58.2	<1.0	<1.0
67-HP12	SW67-HP12	0.0011	detect	2.4	58.2	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0002	detect	2.4	58.2	<1.0	<1.0
66-HP13	SW66-HP13	0.001	detect	2.4	58.2	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0009	detect	2.4	58.2	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0015	detect	2.4	58.2	<1.0	<1.0
70-CWD	SW70-CWD	0.0002	ND	2.4	58.2	<1.0	<1.0
64-HP18	SW64-HP18	0.0008	ND	2.4	58.2	<1.0	<1.0

#N/A = not analyzed

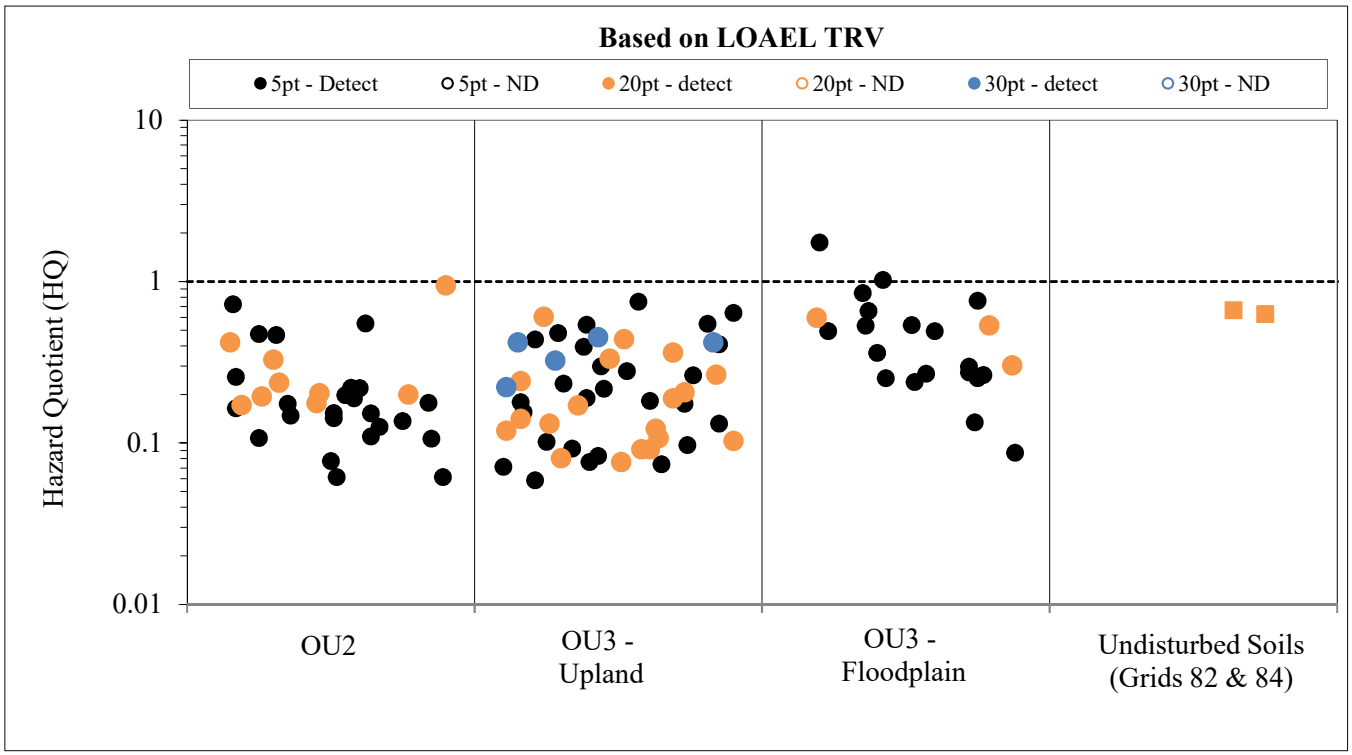
(a) Non-detects are evaluated at 1/2 the reported value.

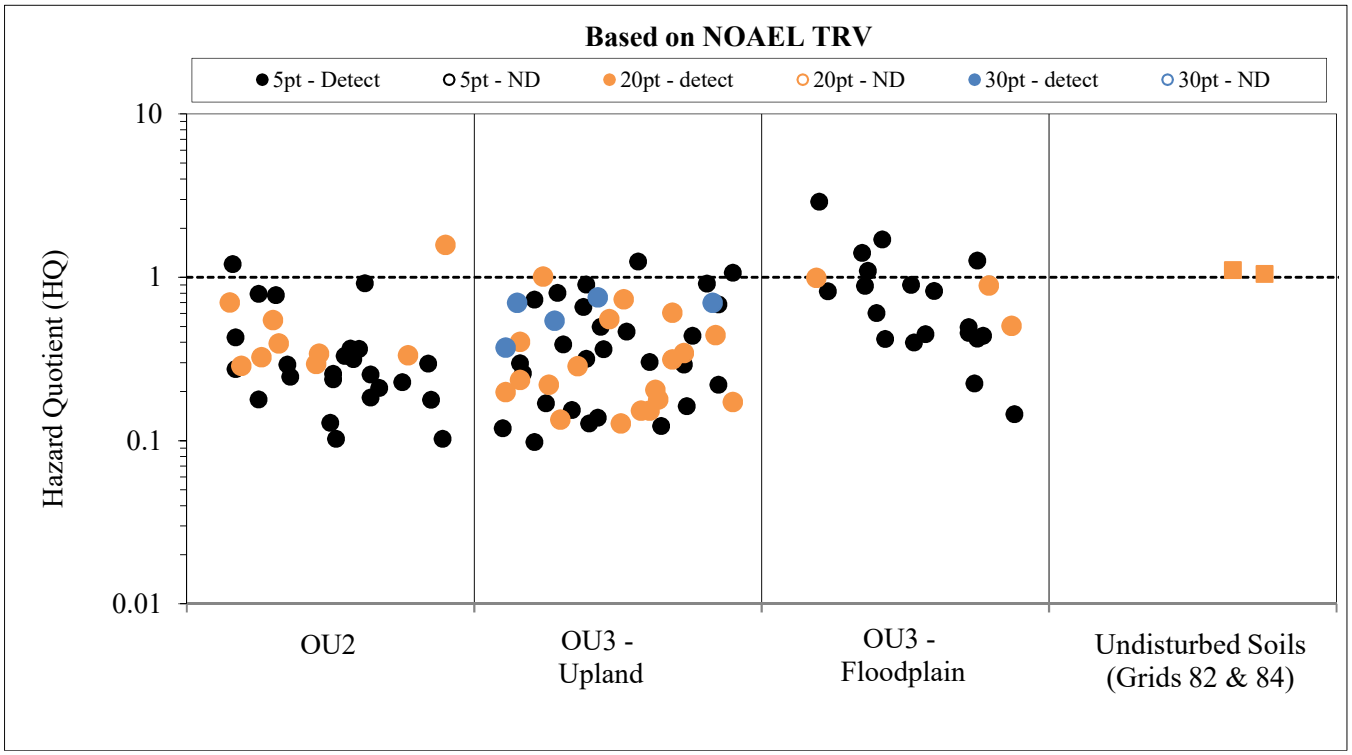
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Food by Exposure Unit/Soil Type

Copper





APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Copper

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	2.32368	detect	9	6	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	1.91168	detect	9	6	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	9.3112	detect	9	6	<1.0	**1.6**
	Grid 2	Grid 2-SSComp-01_20171016_NM	2.00232	detect	9	6	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	4.13648	detect	9	6	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	1.96112	detect	9	6	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	1.73864	detect	9	6	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	3.22184	detect	9	6	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	1.6892	detect	9	6	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	2.52144	detect	9	6	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.75808	detect	9	6	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	1.04648	detect	9	6	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	1.72216	detect	9	6	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	1.4008	detect	9	6	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	1.50792	detect	9	6	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	1.94464	detect	9	6	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	2.15888	detect	9	6	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	4.58968	detect	9	6	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	1.61504	detect	9	6	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	1.49968	detect	9	6	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	9	6	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	1.07944	detect	9	6	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	9	6	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	9	6	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	5.40544	detect	9	6	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	4.6556	detect	9	6	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	1.74688	detect	9	6	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	1.236	detect	9	6	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	7.11112	detect	9	6	<1.0	**1.2**
	SS6-IN	SS6-IN-(0-2)c	1.45024	detect	9	6	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	2.15064	detect	9	6	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	1.05472	detect	9	6	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	1.86224	detect	9	6	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.604267	detect	9	6	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.604267	detect	9	6	<1.0	<1.0

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Copper

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	4.12	detect	9	6	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	2.73568	detect	9	6	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	1.5244	detect	9	6	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.74984	detect	9	6	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.79104	detect	9	6	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.89816	detect	9	6	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	1.05472	detect	9	6	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	1.38432	detect	9	6	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.89816	detect	9	6	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	1.29368	detect	9	6	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	1.17008	detect	9	6	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	1.20304	detect	9	6	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	2.02704	detect	9	6	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	4.326	detect	9	6	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	3.27128	detect	9	6	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	2.37312	detect	9	6	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	1.68096	detect	9	6	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	2.60384	detect	9	6	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	5.94104	detect	9	6	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	1.854	detect	9	6	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	1.01352	detect	9	6	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	1.75512	detect	9	6	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	1.78808	detect	9	6	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	2.57912	detect	9	6	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	1.29368	detect	9	6	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.74984	detect	9	6	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	9	6	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.5768	detect	9	6	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	5.38072	detect	9	6	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.72512	detect	9	6	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	2.13416	detect	9	6	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	4.72152	detect	9	6	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	7.36656	detect	9	6	<1.0	**1.2**
	P3	P3-SSComp-01_20171020_NM	3.57616	detect	9	6	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	4.02112	detect	9	6	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.81576	detect	9	6	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	1.72216	detect	9	6	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	2.29072	detect	9	6	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	3.18888	detect	9	6	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	4.12	detect	9	6	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	5.30656	detect	9	6	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	4.30128	detect	9	6	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	4.44136	detect	9	6	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.9064	detect	9	6	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.99704	detect	9	6	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	6.27888	detect	9	6	<1.0	**1.1**
	SS15,16-HP9	SS15-HP9-(0-2)c	3.88104	detect	9	6	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.95584	detect	9	6	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.7004	detect	9	6	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	2.93344	detect	9	6	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	1.87048	detect	9	6	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	2.1836	detect	9	6	<1.0	<1.0

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

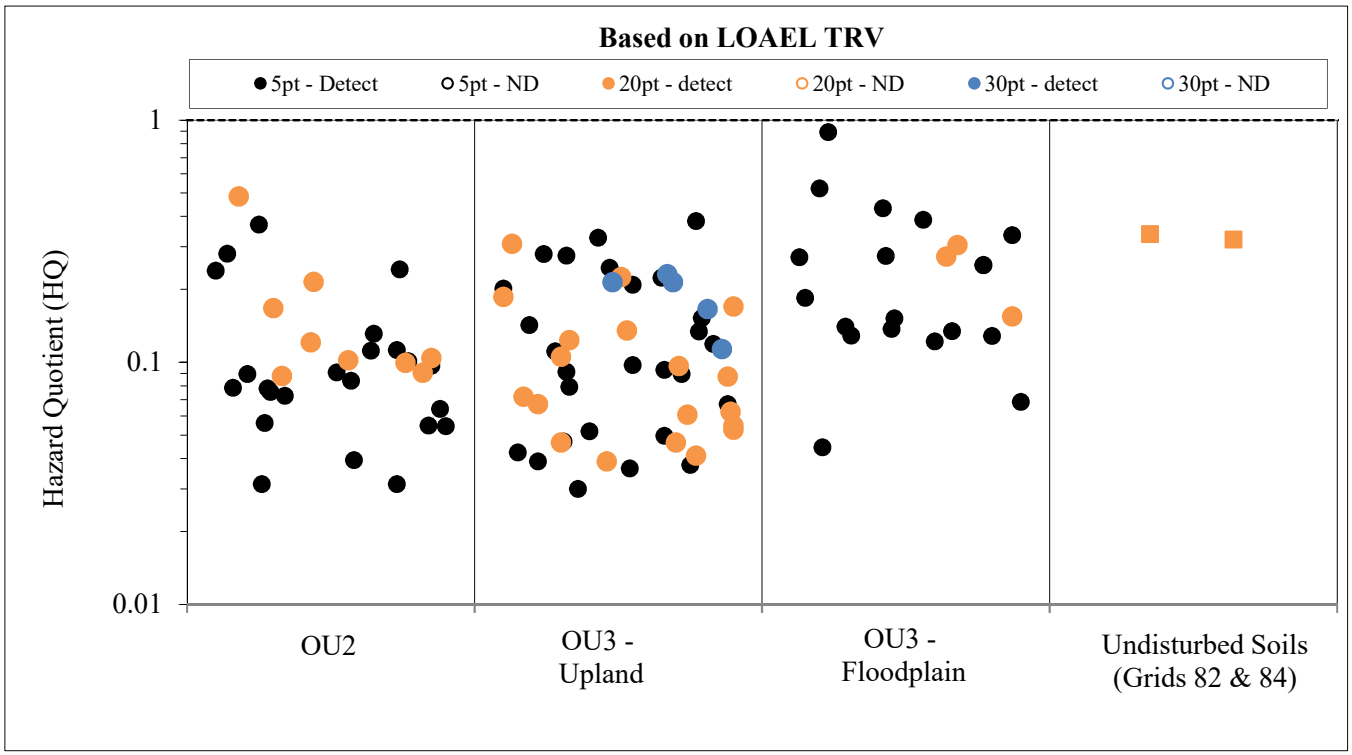
Copper

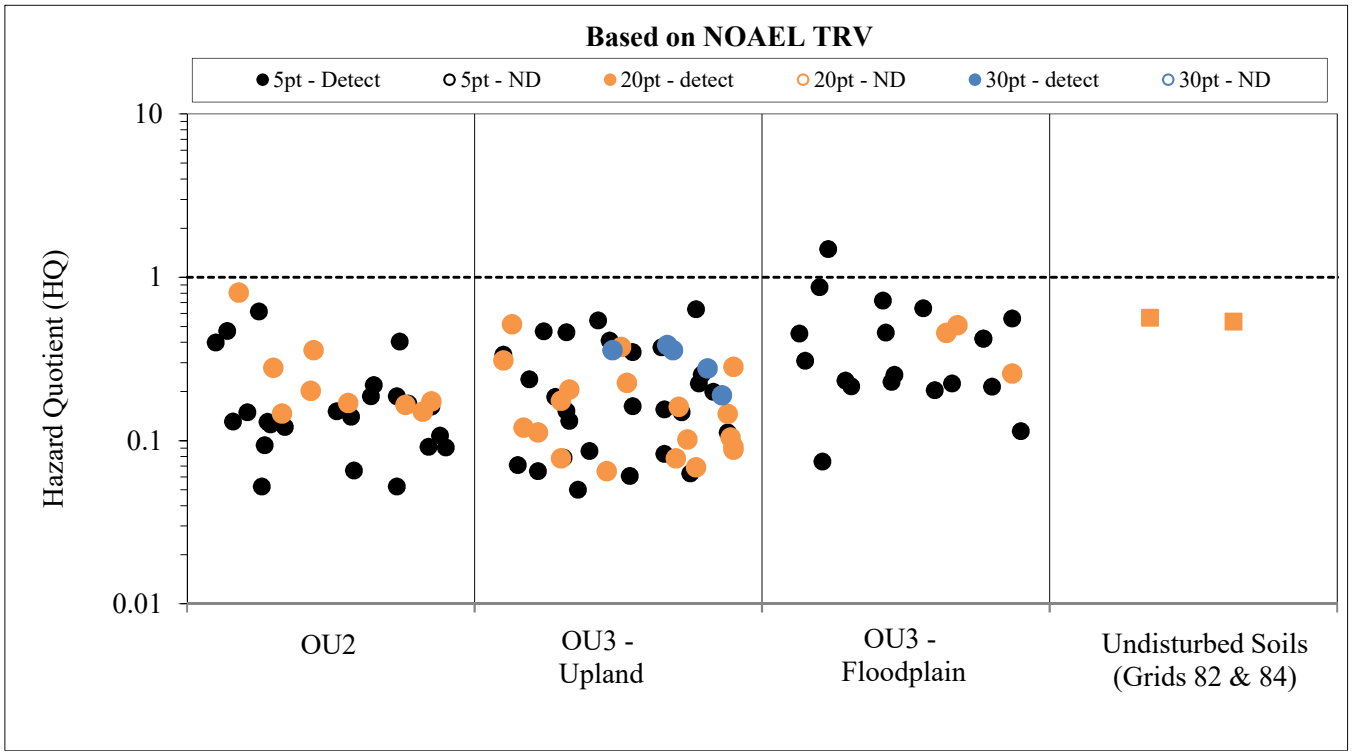
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	2.97464	detect	9	6	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	5.25712	detect	9	6	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	5.85864	detect	9	6	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	3.55144	detect	9	6	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.85696	detect	9	6	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	17.1392	detect	9	6	**1.7**	**2.9**
	SE11-HP11	SE11-HP11-(0-2)c	5.22416	detect	9	6	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	2.58736	detect	9	6	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	7.46544	detect	9	6	<1.0	**1.3**
	SE14-HP13	SE14-HP13-(0-2)c	2.64504	detect	9	6	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	6.44368	detect	9	6	<1.0	**1.1**
	SE16-HP13	SE16-HP13-(0-2)c	2.69448	detect	9	6	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	2.3484	detect	9	6	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	2.472	detect	9	6	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	2.91696	detect	9	6	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	1.3184	detect	9	6	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	2.48024	detect	9	6	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	8.3224	detect	9	6	<1.0	**1.4**
	SE6-HP7	SE6-HP7-(0-2)c	10.0528	detect	9	6	<1.0	**1.7**
	SE7-HP7	SE7-HP7-(0-2)c	4.84512	detect	9	6	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	4.85336	detect	9	6	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	5.28184	detect	9	6	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	6.5096	detect	9	6	<1.0	**1.1**
	Grid 84	Grid 84-SSComp-01_20171026_NM	6.17176	detect	9	6	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Surface Soil by Exposure Unit/Soil Type

Copper





APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Copper

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	28.2	detect	9	6	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	23.2	detect	9	6	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	113	detect	9	6	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	24.3	detect	9	6	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	50.2	detect	9	6	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	23.8	detect	9	6	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	21.1	detect	9	6	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	39.1	detect	9	6	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	20.5	detect	9	6	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	30.6	detect	9	6	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	9.2	detect	9	6	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	12.7	detect	9	6	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	20.9	detect	9	6	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	17	detect	9	6	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	18.3	detect	9	6	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	23.6	detect	9	6	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	26.2	detect	9	6	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	55.7	detect	9	6	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	19.6	detect	9	6	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	18.2	detect	9	6	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	9	6	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	13.1	detect	9	6	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	9	6	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	9	6	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	65.6	detect	9	6	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	56.5	detect	9	6	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	21.2	detect	9	6	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	15	detect	9	6	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	86.3	detect	9	6	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	17.6	detect	9	6	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	26.1	detect	9	6	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	12.8	detect	9	6	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	22.6	detect	9	6	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	7.333333	detect	9	6	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	7.333333	detect	9	6	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Copper

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	50	detect	9	6	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	33.2	detect	9	6	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	18.5	detect	9	6	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	9.1	detect	9	6	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	9.6	detect	9	6	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	10.9	detect	9	6	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	12.8	detect	9	6	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	16.8	detect	9	6	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	10.9	detect	9	6	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	15.7	detect	9	6	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	14.2	detect	9	6	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	14.6	detect	9	6	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	24.6	detect	9	6	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	52.5	detect	9	6	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	39.7	detect	9	6	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	28.8	detect	9	6	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	20.4	detect	9	6	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	31.6	detect	9	6	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	72.1	detect	9	6	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	22.5	detect	9	6	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	12.3	detect	9	6	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	21.3	detect	9	6	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	21.7	detect	9	6	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	31.3	detect	9	6	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	15.7	detect	9	6	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	9.1	detect	9	6	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	9	6	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	7	detect	9	6	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	65.3	detect	9	6	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	8.8	detect	9	6	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	25.9	detect	9	6	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	57.3	detect	9	6	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	9E+01	detect	9	6	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	43.4	detect	9	6	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	48.8	detect	9	6	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	9.9	detect	9	6	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	20.9	detect	9	6	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	27.8	detect	9	6	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	38.7	detect	9	6	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	50	detect	9	6	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	64.4	detect	9	6	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	52.2	detect	9	6	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	53.9	detect	9	6	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	11	detect	9	6	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	12.1	detect	9	6	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	76.2	detect	9	6	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	47.1	detect	9	6	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	11.6	detect	9	6	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	8.5	detect	9	6	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	35.6	detect	9	6	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	22.7	detect	9	6	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	26.5	detect	9	6	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Copper

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	36.1	detect	9	6	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	63.8	detect	9	6	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	71.1	detect	9	6	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	43.1	detect	9	6	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	10.4	detect	9	6	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	208	detect	9	6	<1.0	**1.5**
	SE11-HP11	SE11-HP11-(0-2)c	63.4	detect	9	6	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	31.4	detect	9	6	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	90.6	detect	9	6	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	32.1	detect	9	6	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	78.2	detect	9	6	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	32.7	detect	9	6	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	28.5	detect	9	6	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	30	detect	9	6	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	35.4	detect	9	6	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	16	detect	9	6	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	30.1	detect	9	6	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	101	detect	9	6	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	122	detect	9	6	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	58.8	detect	9	6	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	58.9	detect	9	6	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	64.1	detect	9	6	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	79	detect	9	6	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	74.9	detect	9	6	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of River Surface Water

Copper

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.002	detect	5.6	9.34	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0254	detect	5.6	9.34	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0131	detect	5.6	9.34	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.002	detect	5.6	9.34	<1.0	<1.0
	51-CFR	SW51-CFR	0.0021	detect	5.6	9.34	<1.0	<1.0
	52-CFR	SW52-CFR	0.0043	detect	5.6	9.34	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0299	detect	5.6	9.34	<1.0	<1.0
	54-CFR	SW54-CFR	0.0032	detect	5.6	9.34	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0015	detect	5.6	9.34	<1.0	<1.0
	55-CFR	SW55-CFR	0.0025	detect	5.6	9.34	<1.0	<1.0
	56-CFR	SW56-CFR	0.0023	detect	5.6	9.34	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0014	detect	5.6	9.34	<1.0	<1.0
	57-CFR	SW57-CFR	0.0027	detect	5.6	9.34	<1.0	<1.0
	58-CFR	SW58-CFR	0.0027	detect	5.6	9.34	<1.0	<1.0
	59-CFR	SW59-CFR	0.0026	detect	5.6	9.34	<1.0	<1.0
	60-CFR	SW60-CFR	0.0029	detect	5.6	9.34	<1.0	<1.0
	61-CFR	SW61-CFR	0.003	detect	5.6	9.34	<1.0	<1.0
	62-CFR	SW62-CFR	0.0026	detect	5.6	9.34	<1.0	<1.0
	63-CFR	SW63-CFR	0.0026	detect	5.6	9.34	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of Creek Surface Water

Copper

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.002	detect	5.6	9.34	<1.0	<1.0
	43-OK	SW43-OK	0.002	detect	5.6	9.34	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	9E-04	detect	5.6	9.34	<1.0	<1.0
	37-LV	SW37-LV	0.002	detect	5.6	9.34	<1.0	<1.0
	39-LV	SW39-LV	0.002	detect	5.6	9.34	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of Pond Surface Water

Copper

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0007	detect	5.6	9.34	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0138	detect	5.6	9.34	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0036	detect	5.6	9.34	<1.0	<1.0
73-P5	SW73-P5	0.0014	detect	5.6	9.34	<1.0	<1.0
71-HP7	SW71-HP7	0.0025	detect	5.6	9.34	<1.0	<1.0
72-HP2	SW72-HP2	0.0035	detect	5.6	9.34	<1.0	<1.0
75-HP10	SW75-HP10	0.0018	detect	5.6	9.34	<1.0	<1.0
67-HP12	SW67-HP12	0.0018	detect	5.6	9.34	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0006	detect	5.6	9.34	<1.0	<1.0
66-HP13	SW66-HP13	0.0033	detect	5.6	9.34	<1.0	<1.0
65-HP13a	SW65-HP13a	0.006	detect	5.6	9.34	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0196	detect	5.6	9.34	<1.0	<1.0
70-CWD	SW70-CWD	0.0016	detect	5.6	9.34	<1.0	<1.0
64-HP18	SW64-HP18	0.0024	detect	5.6	9.34	<1.0	<1.0

#N/A = not analyzed

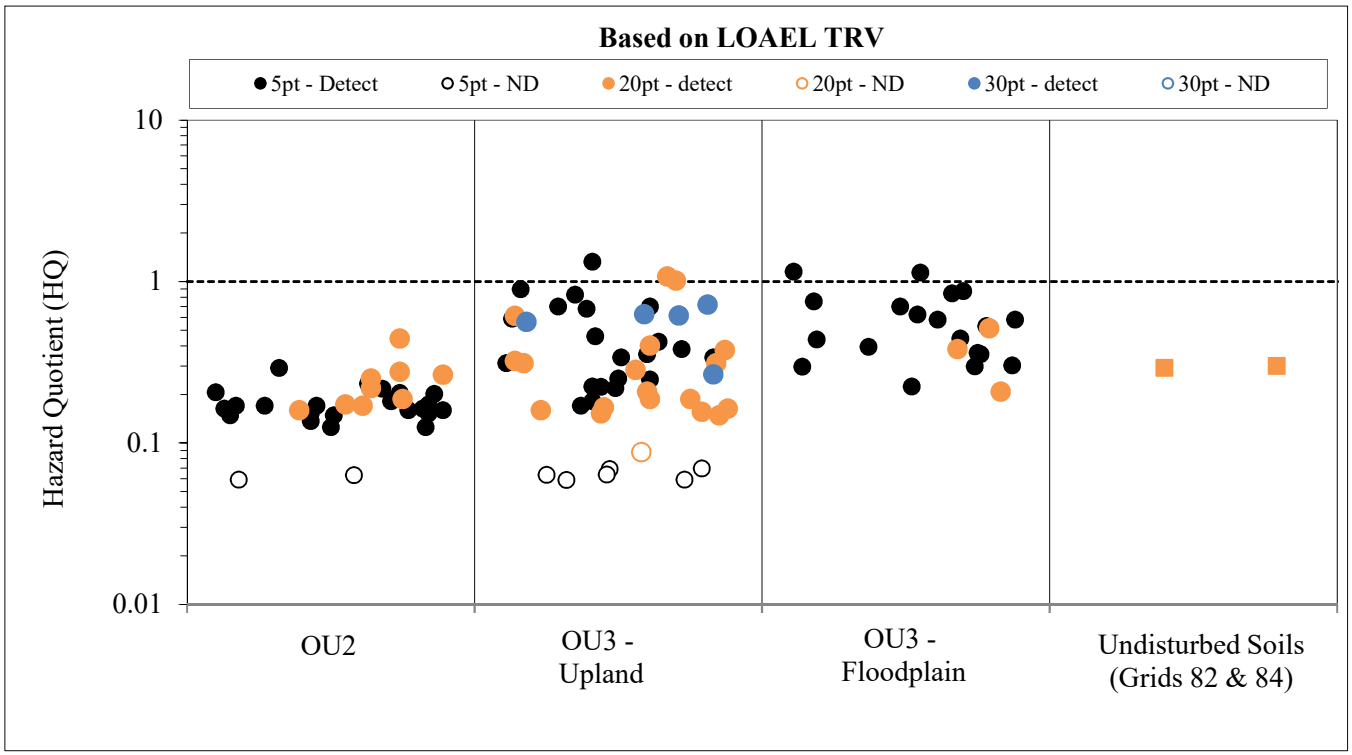
(a) Non-detects are evaluated at 1/2 the reported value.

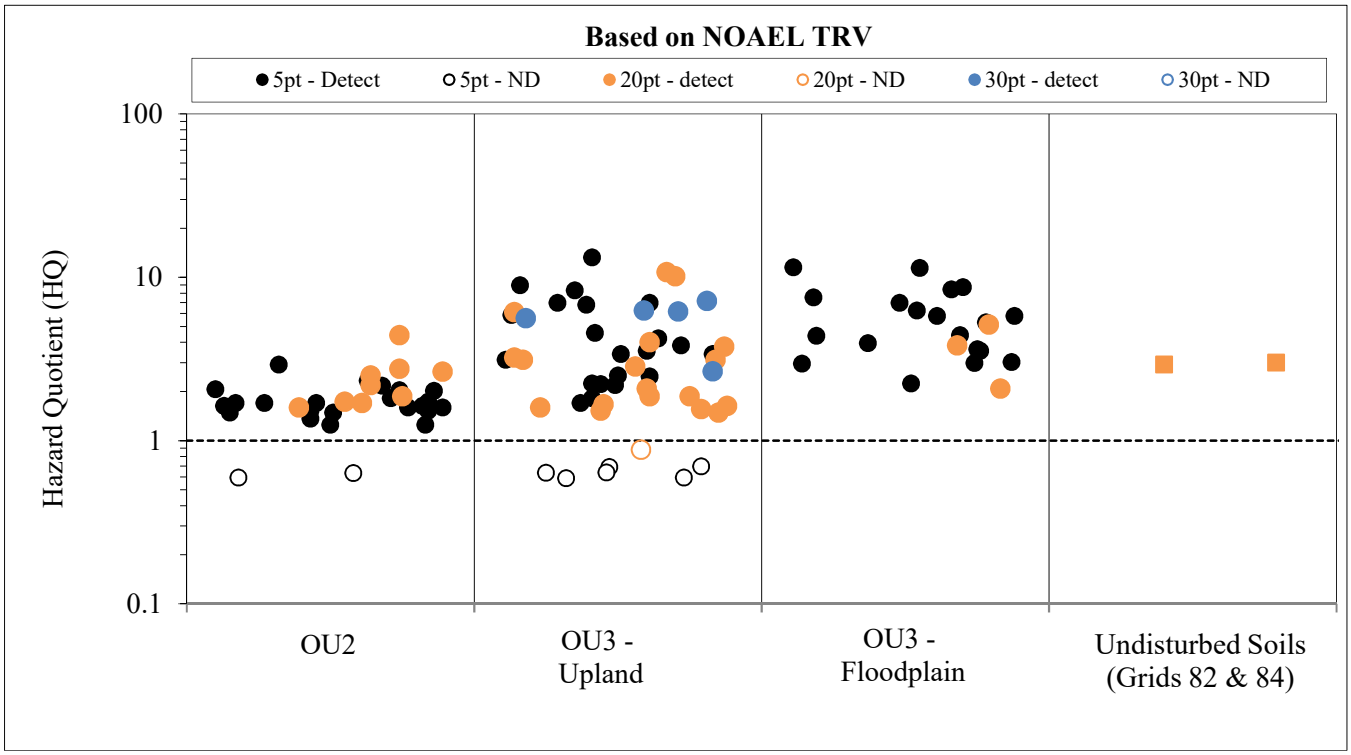
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Food by Exposure Unit/Soil Type

Mercury





APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Mercury

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.116595	detect	0	0	<1.0	**4.4**
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.049242	detect	0	0	<1.0	**1.9**
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.072608	detect	0	0	<1.0	**2.8**
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.065901	detect	0	0	<1.0	**2.5**
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.057487	detect	0	0	<1.0	**2.2**
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.045515	detect	0	0	<1.0	**1.7**
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.044693	detect	0	0	<1.0	**1.7**
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.069589	detect	0	0	<1.0	**2.6**
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.04203	detect	0	0	<1.0	**1.6**
	LF-1	LF-1-SS_4/18/14_NM	0.054253	detect	0	0	<1.0	**2.1**
	SB2a,3a-IN	SB2a-IN-(0-2)	0.044693	detect	0	0	<1.0	**1.7**
	SS10-IN	SS10-IN-(0-2)c	0.040052	detect	0	0	<1.0	**1.5**
	SS11-IN	SS11-IN-(0-2)c	0.076864	detect	0	0	<1.0	**2.9**
	SS12-IN	SS12-IN-(0-2)c	0.040052	detect	0	0	<1.0	**1.5**
	SS13-IN	SS13-IN-(0-2)c	0.038987	detect	0	0	<1.0	**1.5**
	SS14-IN	SS14-IN-(0-2)c	0.053676	detect	0	0	<1.0	**2.0**
	SS15-IN	SS15-IN-(0-2)c	0.045515	detect	0	0	<1.0	**1.7**
	SS16-IN	SS16-IN-(0-2)c	0.056973	detect	0	0	<1.0	**2.2**
	SS17-IN	SS17-IN-(0-2)c	0.047819	detect	0	0	<1.0	**1.8**
	SS1-IN	SS1-IN-(0-2)c	0.038987	detect	0	0	<1.0	**1.5**
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.053086	detect	0	0	<1.0	**2.0**
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.042954	detect	0	0	<1.0	**1.6**
	SS33-IN	SS33-IN-(0-2)c	0.015605	ND	0	0	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.044693	detect	0	0	<1.0	**1.7**
	SS4-IN	SS4-IN-(0-2)c	0.035907	detect	0	0	<1.0	**1.4**
	SS5-IN	SS5-IN-(0-2)c	0.044693	detect	0	0	<1.0	**1.7**
	SS6-IN	SS6-IN-(0-2)c	0.042954	detect	0	0	<1.0	**1.6**
	SS7-IN	SS7-IN-(0-2)c	0.061309	detect	0	0	<1.0	**2.3**
	SS8-IN	SS8-IN-(0-2)c	0.04203	detect	0	0	<1.0	**1.6**
	SS9-IN	SS9-IN-(0-2)c	0.04203	detect	0	0	<1.0	**1.6**
	HDPT-SS	BACKFILL-HDPT-SS	0.03295	detect	0	0	<1.0	**1.3**
	TSB-SS	BACKFILL-TSB-SS	0.03295	detect	0	0	<1.0	**1.3**

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Mercury

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.148059	detect	0	0	<1.0	**5.6**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.183956	detect	0	0	<1.0	**7.0**
	CRP-1	CRP-1-SS_4/10/14_NM	0.12028	detect	0	0	<1.0	**4.6**
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.038987	detect	0	0	<1.0	**1.5**
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.042954	detect	0	0	<1.0	**1.6**
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.054818	detect	0	0	<1.0	**2.1**
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.049242	detect	0	0	<1.0	**1.9**
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.043841	detect	0	0	<1.0	**1.7**
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.040052	detect	0	0	<1.0	**1.5**
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.04203	detect	0	0	<1.0	**1.6**
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.074796	detect	0	0	<1.0	**2.8**
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.084687	detect	0	0	<1.0	**3.2**
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.08224	detect	0	0	<1.0	**3.1**
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.161141	detect	0	0	<1.0	**6.1**
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.282783	detect	0	0	**1.1**	**10.7**
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.098867	detect	0	0	<1.0	**3.8**
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.08224	detect	0	0	<1.0	**3.1**
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.266352	detect	0	0	<1.0	**10.1**
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.10544	detect	0	0	<1.0	**4.0**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.041065	detect	0	0	<1.0	**1.6**
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.049242	detect	0	0	<1.0	**1.9**
	HP16-1	HP16-1-SS_4/10/14_NM	0.111292	detect	0	0	<1.0	**4.2**
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.057487	detect	0	0	<1.0	**2.2**
	HP18-1	HP18-1-SS_4/10/14_NM	0.089201	detect	0	0	<1.0	**3.4**
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.044693	detect	0	0	<1.0	**1.7**
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.015605	ND	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.01552	ND	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.183956	detect	0	0	<1.0	**7.0**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.065901	detect	0	0	<1.0	**2.5**
	IBK-1	IBK-1-SS_4/16/14_NM	0.047819	detect	0	0	<1.0	**1.8**
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.235562	detect	0	0	<1.0	**9.0**
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.10059	detect	0	0	<1.0	**3.8**
	P3	P3-SSComp-01_20171020_NM	0.023154	ND	0	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.018145	ND	0	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.065113	detect	0	0	<1.0	**2.5**
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.018332	ND	0	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.08224	detect	0	0	<1.0	**3.1**
	P8	P8-SSComp-01_20171025_NM	0.165068	detect	0	0	<1.0	**6.3**
	P8dc	P8dc-SSComp-01_20171024_NM	0.162471	detect	0	0	<1.0	**6.2**
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.154872	detect	0	0	<1.0	**5.9**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.178642	detect	0	0	<1.0	**6.8**
	SPP	SPP-SSComp-01_20171025_NM	0.188984	detect	0	0	<1.0	**7.2**
	SS1,2-HP18	SS1-HP18-(0-2)c	0.016713	ND	0	0	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.016787	ND	0	0	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	0.34857	detect	0	0	**1.3**	**13.2**
	SS15,16-HP9	SS15-HP9-(0-2)c	0.218502	detect	0	0	<1.0	**8.3**
	SS3,4-HP16	SS3-HP16-(0-2)c	0.089201	detect	0	0	<1.0	**3.4**
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.058489	detect	0	0	<1.0	**2.2**
	SS7,8-HP13	SS7-HP13-(0-2)c	0.093305	detect	0	0	<1.0	**3.5**
	SS9,10-HP12	SS9-HP12-(0-2)c	0.058977	detect	0	0	<1.0	**2.2**
	SWBA	SWBA-SSComp-01_20171024_NM	0.069938	detect	0	0	<1.0	**2.7**

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

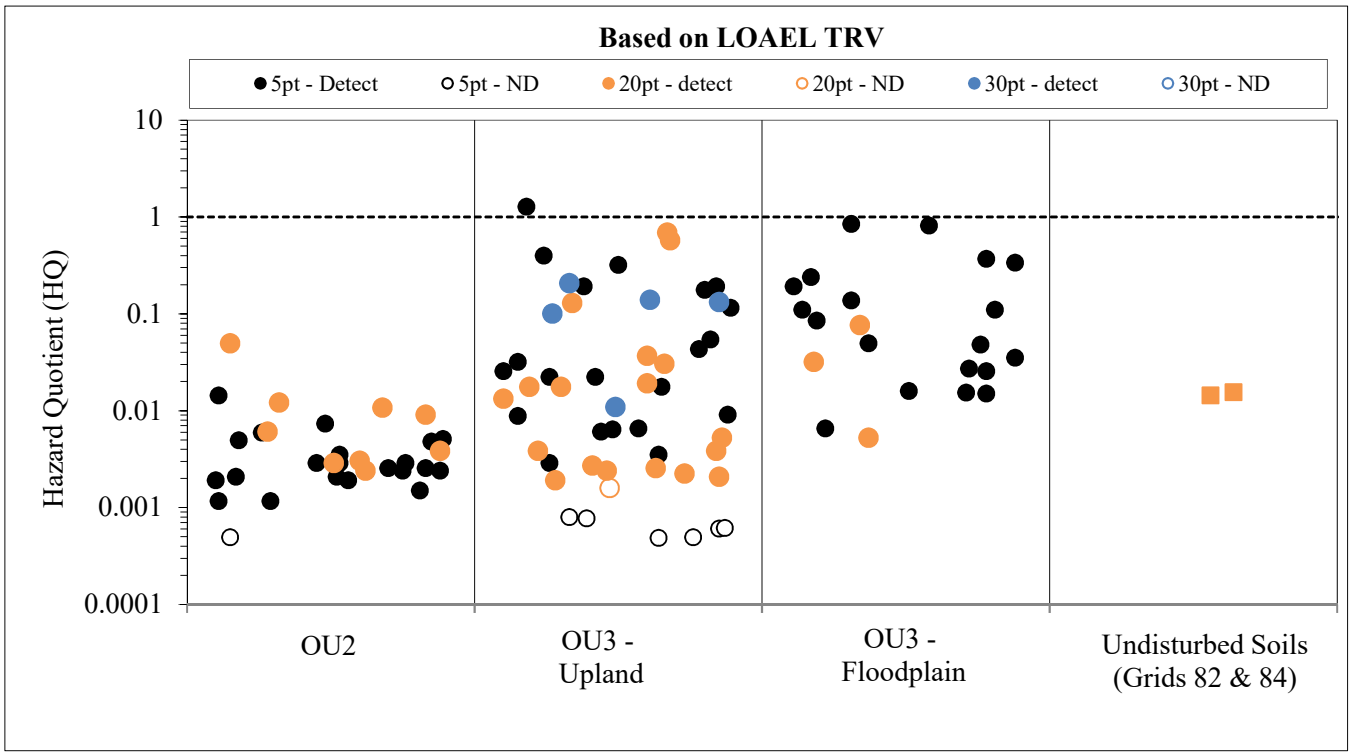
Mercury

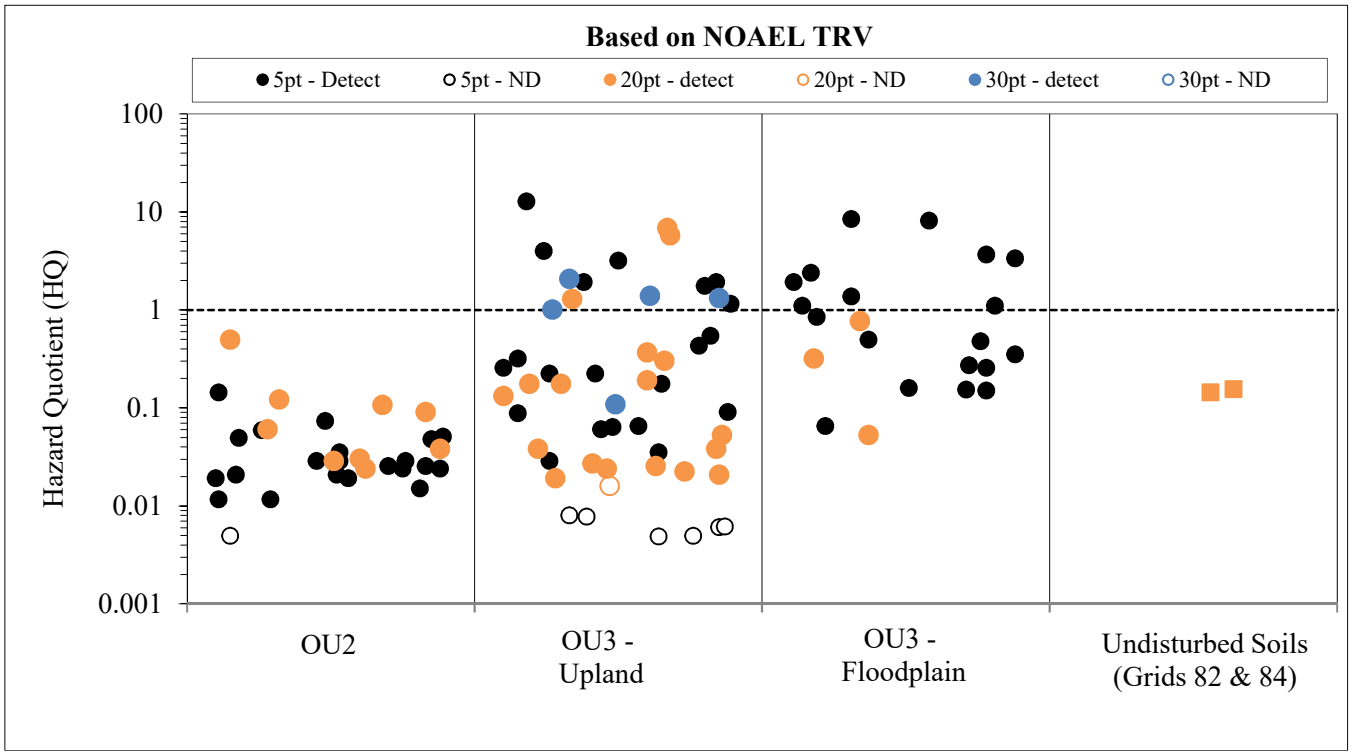
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.054818	detect	0	0	<1.0	**2.1**
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.10059	detect	0	0	<1.0	**3.8**
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.135098	detect	0	0	<1.0	**5.1**
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.139684	detect	0	0	<1.0	**5.3**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.058977	detect	0	0	<1.0	**2.2**
	SE10-HP11	SE10-HP11-(0-2)c	0.299515	detect	0	0	**1.1**	**11.4**
	SE11-HP11	SE11-HP11-(0-2)c	0.152668	detect	0	0	<1.0	**5.8**
	SE12-HP12	SE12-HP12-(0-2)c	0.093305	detect	0	0	<1.0	**3.5**
	SE13-HP12	SE13-HP12-(0-2)c	0.229036	detect	0	0	<1.0	**8.7**
	SE14-HP13	SE14-HP13-(0-2)c	0.078554	detect	0	0	<1.0	**3.0**
	SE15-HP13	SE15-HP13-(0-2)c	0.152668	detect	0	0	<1.0	**5.8**
	SE16-HP13	SE16-HP13-(0-2)c	0.079641	detect	0	0	<1.0	**3.0**
	SE17-HP13a	SE17-HP13a-(0-2)c	0.077998	detect	0	0	<1.0	**3.0**
	SE1-HP1a	SE1-HP1a-(0-2)c	0.116595	detect	0	0	<1.0	**4.4**
	SE2-HP1a	SE2-HP1a-(0-2)c	0.115314	detect	0	0	<1.0	**4.4**
	SE3-HP1	SE3-HP1-(0-2)c	0.095231	detect	0	0	<1.0	**3.6**
	SE4-HP1	SE4-HP1-(0-2)c	0.222123	detect	0	0	<1.0	**8.4**
	SE5-HP2	SE5-HP2-(0-2)c	0.164426	detect	0	0	<1.0	**6.2**
	SE6-HP7	SE6-HP7-(0-2)c	0.303422	detect	0	0	**1.2**	**11.5**
	SE7-HP7	SE7-HP7-(0-2)c	0.103872	detect	0	0	<1.0	**3.9**
	SE8-HP10	SE8-HP10-(0-2)c	0.183956	detect	0	0	<1.0	**7.0**
	SE9-HP10	SE9-HP10-(0-2)c	0.198319	detect	0	0	<1.0	**7.5**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.078828	detect	0	0	<1.0	**3.0**
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.076864	detect	0	0	<1.0	**2.9**

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Surface Soil by Exposure Unit/Soil Type

Mercury





APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Mercury

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.31	detect	0	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.024	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.076	detect	0	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.057	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.038	detect	0	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.019	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.018	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.067	detect	0	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.015	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.032	detect	0	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.018	detect	0	0	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.013	detect	0	0	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.09	detect	0	0	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.013	detect	0	0	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.012	detect	0	0	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.031	detect	0	0	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.019	detect	0	0	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.037	detect	0	0	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.022	detect	0	0	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.012	detect	0	0	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.03	detect	0	0	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.016	detect	0	0	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.0031	ND	0	0	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.018	detect	0	0	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.0094	detect	0	0	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.018	detect	0	0	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.016	detect	0	0	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.046	detect	0	0	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.015	detect	0	0	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.015	detect	0	0	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.007283	detect	0	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.007283	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Mercury

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.63	detect	0	0	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	1.2	detect	0	0	<1.0	**1.9**
	CRP-1	CRP-1-SS_4/10/14_NM	0.34	detect	0	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.012	detect	0	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.016	detect	0	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.033	detect	0	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.024	detect	0	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.017	detect	0	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.013	detect	0	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.015	detect	0	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.083	detect	0	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.12	detect	0	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.11	detect	0	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.81	detect	0	0	<1.0	**1.3**
	Grid 53	Grid 53-SSComp-01_20171020_NM	4.3	detect	0	0	<1.0	**6.9**
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.19	detect	0	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.11	detect	0	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	3.6	detect	0	0	<1.0	**5.8**
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.23	detect	0	0	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.014	detect	0	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.024	detect	0	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.27	detect	0	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.038	detect	0	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.14	detect	0	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.018	detect	0	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.0031	ND	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.00305	ND	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1.2	detect	0	0	<1.0	**1.9**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.057	detect	0	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.022	detect	0	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	2.5	detect	0	0	<1.0	**4.0**
	P17-BH1	P17-BH1-SS_4/3/14_NM	2E-01	detect	0	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.01	ND	0	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.00485	ND	0	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.055	detect	0	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.005	ND	0	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.11	detect	0	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.87	detect	0	0	<1.0	**1.4**
	P8dc	P8dc-SSComp-01_20171024_NM	0.83	detect	0	0	<1.0	**1.3**
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.72	detect	0	0	<1.0	**1.2**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1.1	detect	0	0	<1.0	**1.8**
	SPP	SPP-SSComp-01_20171025_NM	1.3	detect	0	0	<1.0	**2.1**
	SS1,2-HP18	SS1-HP18-(0-2)c	0.0038	ND	0	0	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.00385	ND	0	0	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	8	detect	0	0	**1.3**	**12.8**
	SS15,16-HP9	SS15-HP9-(0-2)c	2	detect	0	0	<1.0	**3.2**
	SS3,4-HP16	SS3-HP16-(0-2)c	0.14	detect	0	0	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.04	detect	0	0	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.16	detect	0	0	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.041	detect	0	0	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.068	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Mercury

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.033	detect	0	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.2	detect	0	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.48	detect	0	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.53	detect	0	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.041	detect	0	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	5.1	detect	0	0	<1.0	**8.2**
	SE11-HP11	SE11-HP11-(0-2)c	0.69	detect	0	0	<1.0	**1.1**
	SE12-HP12	SE12-HP12-(0-2)c	0.16	detect	0	0	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	2.3	detect	0	0	<1.0	**3.7**
	SE14-HP13	SE14-HP13-(0-2)c	0.096	detect	0	0	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.69	detect	0	0	<1.0	**1.1**
	SE16-HP13	SE16-HP13-(0-2)c	0.1	detect	0	0	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.094	detect	0	0	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.31	detect	0	0	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.3	detect	0	0	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.17	detect	0	0	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	2.1	detect	0	0	<1.0	**3.4**
	SE5-HP2	SE5-HP2-(0-2)c	0.86	detect	0	0	<1.0	**1.4**
	SE6-HP7	SE6-HP7-(0-2)c	5.3	detect	0	0	<1.0	**8.5**
	SE7-HP7	SE7-HP7-(0-2)c	0.22	detect	0	0	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	1.2	detect	0	0	<1.0	**1.9**
	SE9-HP10	SE9-HP10-(0-2)c	1.5	detect	0	0	<1.0	**2.4**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.097	detect	0	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.09	detect	0	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of River Surface Water

Mercury

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	8E-05	ND	0.032	0.16	<1.0	<1.0
	CFR2	CFR2_20180523_NM	8E-05	ND	0.032	0.16	<1.0	<1.0
	SW3-CFR	SW3-CFR	2E-05	ND	0.032	0.16	<1.0	<1.0
	51-CFR	SW51-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	52-CFR	SW52-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	54-CFR	SW54-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	SW2-CFR	SW2-CFR	2E-05	ND	0.032	0.16	<1.0	<1.0
	55-CFR	SW55-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	56-CFR	SW56-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	SW1-CFR	SW1-CFR	2E-05	ND	0.032	0.16	<1.0	<1.0
	57-CFR	SW57-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	58-CFR	SW58-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	59-CFR	SW59-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	60-CFR	SW60-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	61-CFR	SW61-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	62-CFR	SW62-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	63-CFR	SW63-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of Creek Surface Water

Mercury

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	8E-05	ND	0.032	0.16	<1.0	<1.0
	43-OK	SW43-OK	8E-05	ND	0.032	0.16	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	3E-05	detect	0.032	0.16	<1.0	<1.0
	37-LV	SW37-LV	8E-05	ND	0.032	0.16	<1.0	<1.0
	39-LV	SW39-LV	8E-05	ND	0.032	0.16	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of Pond Surface Water

Mercury

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	8E-05	ND	0.032	0.16	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	8E-05	ND	0.032	0.16	<1.0	<1.0
69-HP1a	SW69-HP1a	8E-05	ND	0.032	0.16	<1.0	<1.0
73-P5	SW73-P5	8E-05	ND	0.032	0.16	<1.0	<1.0
71-HP7	SW71-HP7	8E-05	ND	0.032	0.16	<1.0	<1.0
72-HP2	SW72-HP2	8E-05	ND	0.032	0.16	<1.0	<1.0
75-HP10	SW75-HP10	8E-05	ND	0.032	0.16	<1.0	<1.0
67-HP12	SW67-HP12	8E-05	ND	0.032	0.16	<1.0	<1.0
68-IBJ	SW68-IBJ	8E-05	ND	0.032	0.16	<1.0	<1.0
66-HP13	SW66-HP13	8E-05	ND	0.032	0.16	<1.0	<1.0
65-HP13a	SW65-HP13a	8E-05	ND	0.032	0.16	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	8E-05	ND	0.032	0.16	<1.0	<1.0
70-CWD	SW70-CWD	8E-05	ND	0.032	0.16	<1.0	<1.0
64-HP18	SW64-HP18	8E-05	ND	0.032	0.16	<1.0	<1.0

#N/A = not analyzed

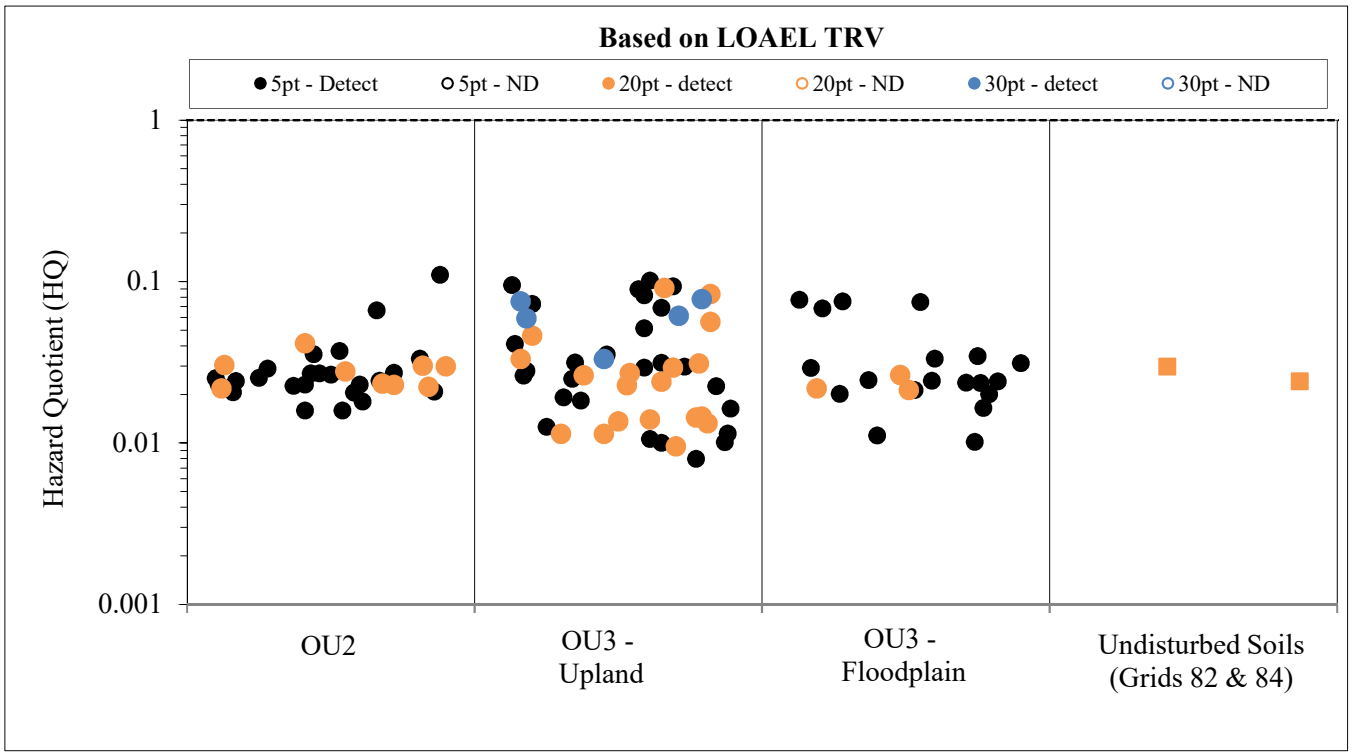
(a) Non-detects are evaluated at 1/2 the reported value.

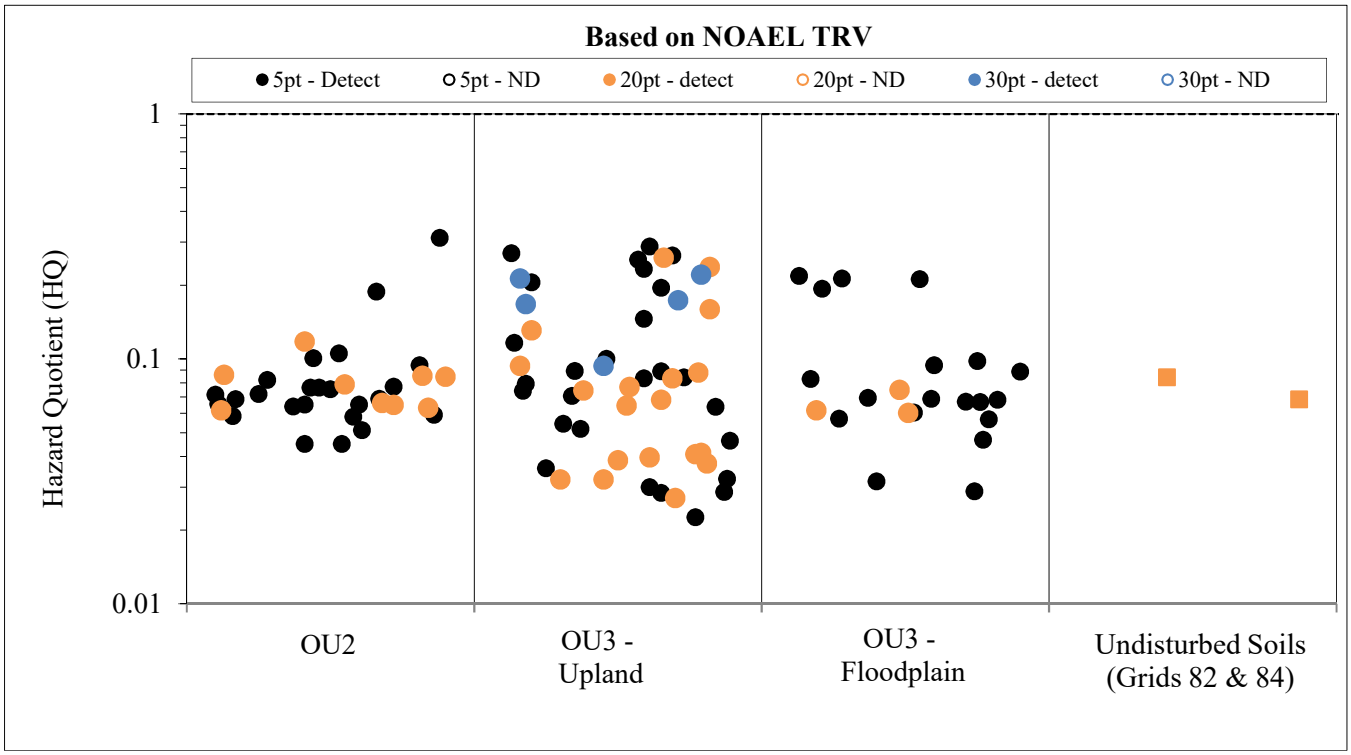
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Food by Exposure Unit/Soil Type

Manganese





APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Manganese

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	6.378952	detect	146	52	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	4.622616	detect	146	52	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	3.524262	detect	146	52	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	3.421109	detect	146	52	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	4.587835	detect	146	52	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	4.261807	detect	146	52	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	3.587046	detect	146	52	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	4.664194	detect	146	52	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	3.340763	detect	146	52	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	4.145669	detect	146	52	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	3.169017	detect	146	52	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	4.072307	detect	146	52	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	5.704662	detect	146	52	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	3.532139	detect	146	52	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	2.776507	detect	146	52	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	3.726477	detect	146	52	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	4.447456	detect	146	52	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	5.104161	detect	146	52	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	3.532139	detect	146	52	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	3.20206	detect	146	52	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	146	52	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	3.468896	detect	146	52	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	146	52	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	146	52	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	16.90813	detect	146	52	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	10.20537	detect	146	52	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	3.878602	detect	146	52	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	3.152435	detect	146	52	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	4.13836	detect	146	52	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	3.893661	detect	146	52	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	3.711106	detect	146	52	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	3.547867	detect	146	52	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	4.174844	detect	146	52	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	2.43785	detect	146	52	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	2.43785	detect	146	52	<1.0	<1.0

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Manganese

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	9.071376	detect	146	52	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	14.34971	detect	146	52	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	4.013172	detect	146	52	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	1.747031	detect	146	52	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	1.46619	detect	146	52	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	2.211388	detect	146	52	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	1.747031	detect	146	52	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	4.160269	detect	146	52	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	2.240677	detect	146	52	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	3.500584	detect	146	52	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	2.09236	detect	146	52	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	2.152258	detect	146	52	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	3.687994	detect	146	52	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	8.661335	detect	146	52	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	4.510878	detect	146	52	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	7.101262	detect	146	52	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	4.774234	detect	146	52	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	5.084252	detect	146	52	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	14.02036	detect	146	52	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	4.035395	detect	146	52	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	2.031652	detect	146	52	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	4.290611	detect	146	52	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	1.627031	detect	146	52	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	4.822005	detect	146	52	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	4.842411	detect	146	52	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	1.538899	detect	146	52	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	146	52	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	1.225377	detect	146	52	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	10.58608	detect	146	52	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	1.938965	detect	146	52	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	4.510878	detect	146	52	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	11.14551	detect	146	52	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	14.63503	detect	146	52	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	12.88082	detect	146	52	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	13.77096	detect	146	52	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	4.559921	detect	146	52	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	6.307052	detect	146	52	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	7.89389	detect	146	52	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	9.42319	detect	146	52	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	11.961	detect	146	52	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	12.62122	detect	146	52	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	15.5943	detect	146	52	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	11.55661	detect	146	52	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	2.515264	detect	146	52	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	2.811633	detect	146	52	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	5.430868	detect	146	52	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	3.833261	detect	146	52	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	1.757946	detect	146	52	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	1.552786	detect	146	52	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	3.453001	detect	146	52	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	2.95015	detect	146	52	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	5.084252	detect	146	52	<1.0	<1.0

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

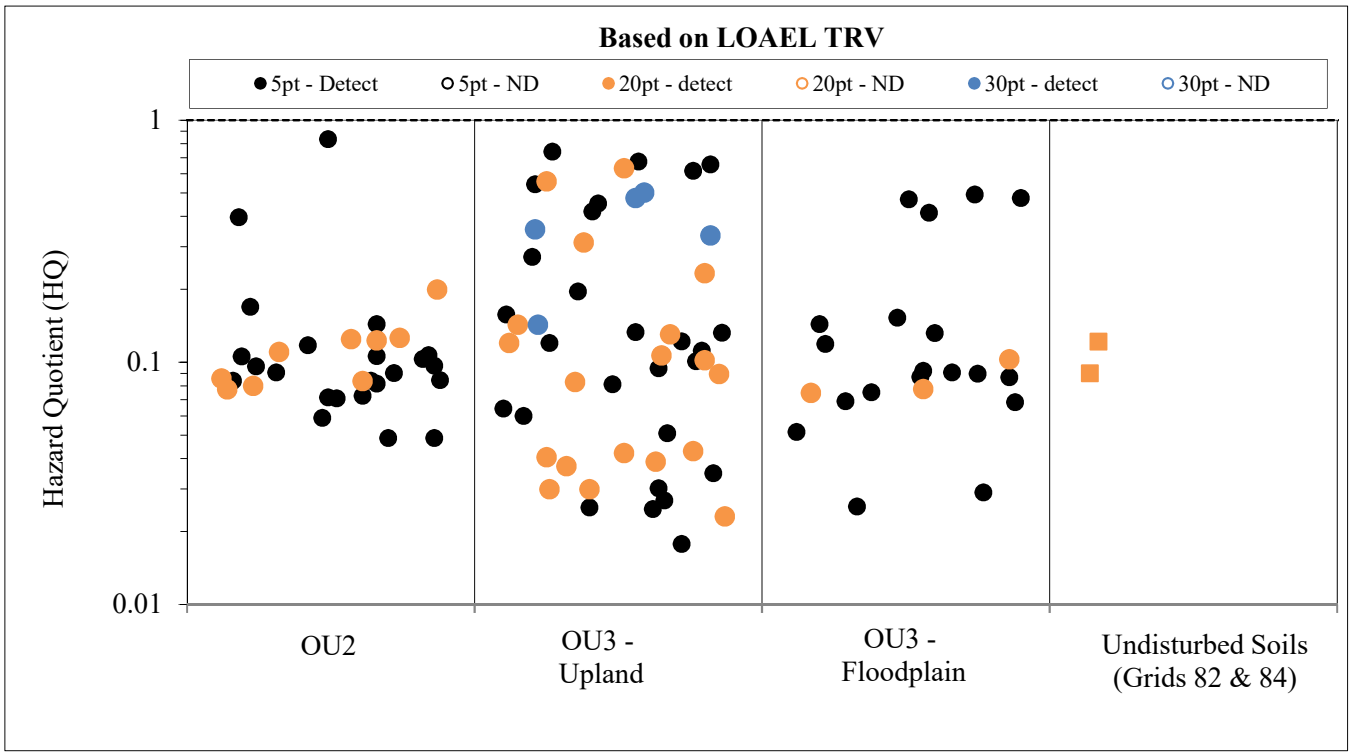
Manganese

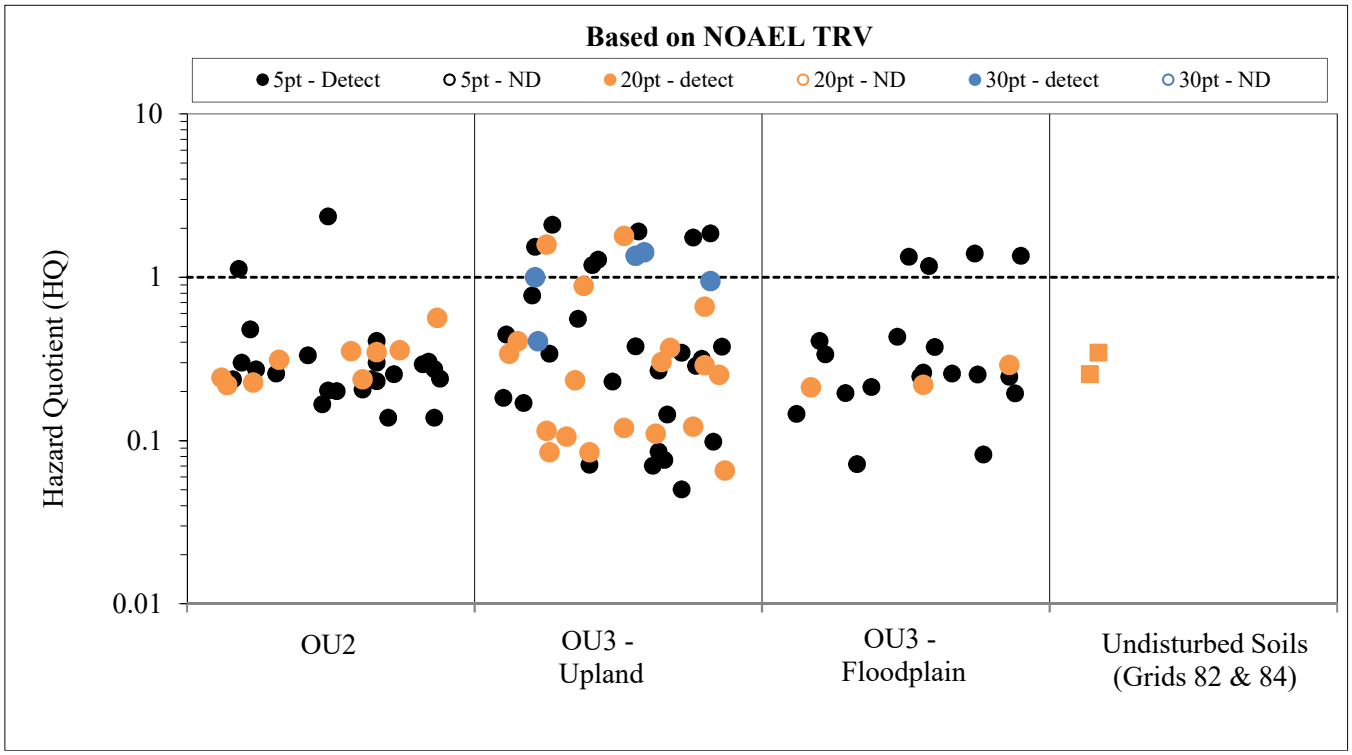
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	3.348838	detect	146	52	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	4.057561	detect	146	52	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	3.267674	detect	146	52	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	5.314336	detect	146	52	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	1.563164	detect	146	52	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	10.49151	detect	146	52	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	4.489784	detect	146	52	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	3.626027	detect	146	52	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	11.82692	detect	146	52	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	3.764776	detect	146	52	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	5.104161	detect	146	52	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	3.275832	detect	146	52	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	3.726477	detect	146	52	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	3.094076	detect	146	52	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	3.695705	detect	146	52	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	2.533678	detect	146	52	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	3.618247	detect	146	52	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	11.46585	detect	146	52	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	11.55661	detect	146	52	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	1.714093	detect	146	52	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	3.077307	detect	146	52	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	4.808379	detect	146	52	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	4.55293	detect	146	52	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	3.703409	detect	146	52	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Surface Soil by Exposure Unit/Soil Type

Manganese





APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Manganese

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	728	detect	146	52	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	454	detect	146	52	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	305	detect	146	52	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	292	detect	146	52	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	449	detect	146	52	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	403	detect	146	52	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	313	detect	146	52	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	460	detect	146	52	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	282	detect	146	52	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	387	detect	146	52	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	261	detect	146	52	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	377	detect	146	52	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	618	detect	146	52	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	306	detect	146	52	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	215	detect	146	52	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	331	detect	146	52	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	429	detect	146	52	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	525	detect	146	52	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	306	detect	146	52	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	265	detect	146	52	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	146	52	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	298	detect	146	52	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	146	52	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	146	52	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	3040	detect	146	52	<1.0	**2.4**
	SS33-IN	SS33-IN-(0-2)c	1450	detect	146	52	<1.0	**1.1**
	SS3-IN	SS3-IN-(0-2)c	351	detect	146	52	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	259	detect	146	52	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	386	detect	146	52	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	353	detect	146	52	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	329	detect	146	52	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	308	detect	146	52	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	391	detect	146	52	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	177.6667	detect	146	52	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	177.6667	detect	146	52	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Manganese

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	1220	detect	146	52	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	2390	detect	146	52	<1.0	**1.9**
	CRP-1	CRP-1-SS_4/10/14_NM	369	detect	146	52	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	109	detect	146	52	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	84.3	detect	146	52	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	154	detect	146	52	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	109	detect	146	52	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	389	detect	146	52	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	157	detect	146	52	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	302	detect	146	52	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	142	detect	146	52	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	148	detect	146	52	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	326	detect	146	52	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	1140	detect	146	52	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	438	detect	146	52	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	852	detect	146	52	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	476	detect	146	52	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	522	detect	146	52	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	2310	detect	146	52	<1.0	**1.8**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	372	detect	146	52	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	136	detect	146	52	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	407	detect	146	52	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	98.2	detect	146	52	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	483	detect	146	52	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	486	detect	146	52	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	90.5	detect	146	52	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	146	52	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	64.8	detect	146	52	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1530	detect	146	52	<1.0	**1.2**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	127	detect	146	52	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	438	detect	146	52	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	1650	detect	146	52	<1.0	**1.3**
	P17-BH1	P17-BH1-SS_4/3/14_NM	2E+03	detect	146	52	<1.0	**1.9**
	P3	P3-SSComp-01_20171020_NM	2040	detect	146	52	<1.0	**1.6**
	P3-BH1	P3-BH1-SS_4/3/14_NM	2250	detect	146	52	<1.0	**1.7**
	P4-BH1	P4-BH1-SS_4/4/14_NM	445	detect	146	52	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	716	detect	146	52	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	995	detect	146	52	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	1290	detect	146	52	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	1830	detect	146	52	<1.0	**1.4**
	P8-TP3	P8-TP3-SS_4/4/14_NM	1980	detect	146	52	<1.0	**1.5**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	2700	detect	146	52	<1.0	**2.1**
	SPP	SPP-SSComp-01_20171025_NM	1740	detect	146	52	<1.0	**1.4**
	SS1,2-HP18	SS1-HP18-(0-2)c	186	detect	146	52	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	219	detect	146	52	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	575	detect	146	52	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	345	detect	146	52	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	110	detect	146	52	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	91.7	detect	146	52	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	296	detect	146	52	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	235	detect	146	52	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	522	detect	146	52	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Manganese

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	283	detect	146	52	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	375	detect	146	52	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	273	detect	146	52	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	557	detect	146	52	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	92.6	detect	146	52	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	1510	detect	146	52	<1.0	**1.2**
	SE11-HP11	SE11-HP11-(0-2)c	435	detect	146	52	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	318	detect	146	52	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	1800	detect	146	52	<1.0	**1.4**
	SE14-HP13	SE14-HP13-(0-2)c	336	detect	146	52	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	525	detect	146	52	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	274	detect	146	52	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	331	detect	146	52	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	252	detect	146	52	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	327	detect	146	52	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	188	detect	146	52	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	317	detect	146	52	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	1720	detect	146	52	<1.0	**1.3**
	SE6-HP7	SE6-HP7-(0-2)c	1740	detect	146	52	<1.0	**1.4**
	SE7-HP7	SE7-HP7-(0-2)c	106	detect	146	52	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	250	detect	146	52	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	481	detect	146	52	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	444	detect	146	52	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	328	detect	146	52	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of River Surface Water

Manganese

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0169	detect	51.5	146	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.287	detect	51.5	146	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.163	detect	51.5	146	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0151	detect	51.5	146	<1.0	<1.0
	51-CFR	SW51-CFR	0.0192	detect	51.5	146	<1.0	<1.0
	52-CFR	SW52-CFR	0.0893	detect	51.5	146	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0752	detect	51.5	146	<1.0	<1.0
	54-CFR	SW54-CFR	0.084	detect	51.5	146	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0119	detect	51.5	146	<1.0	<1.0
	55-CFR	SW55-CFR	0.0181	detect	51.5	146	<1.0	<1.0
	56-CFR	SW56-CFR	0.0205	detect	51.5	146	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0117	detect	51.5	146	<1.0	<1.0
	57-CFR	SW57-CFR	0.33	detect	51.5	146	<1.0	<1.0
	58-CFR	SW58-CFR	0.0184	detect	51.5	146	<1.0	<1.0
	59-CFR	SW59-CFR	0.0388	detect	51.5	146	<1.0	<1.0
	60-CFR	SW60-CFR	0.0213	detect	51.5	146	<1.0	<1.0
	61-CFR	SW61-CFR	0.0228	detect	51.5	146	<1.0	<1.0
	62-CFR	SW62-CFR	0.0951	detect	51.5	146	<1.0	<1.0
	63-CFR	SW63-CFR	0.0136	detect	51.5	146	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of Creek Surface Water

Manganese

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.008	detect	51.5	146	<1.0	<1.0
	43-OK	SW43-OK	0.008	detect	51.5	146	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.007	detect	51.5	146	<1.0	<1.0
	37-LV	SW37-LV	0.008	detect	51.5	146	<1.0	<1.0
	39-LV	SW39-LV	0.128	detect	51.5	146	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of Pond Surface Water

Manganese

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0316	detect	51.5	146	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.428	detect	51.5	146	<1.0	<1.0
69-HP1a	SW69-HP1a	0.383	detect	51.5	146	<1.0	<1.0
73-P5	SW73-P5	0.0716	detect	51.5	146	<1.0	<1.0
71-HP7	SW71-HP7	1.94	detect	51.5	146	<1.0	<1.0
72-HP2	SW72-HP2	0.99	detect	51.5	146	<1.0	<1.0
75-HP10	SW75-HP10	3.69	detect	51.5	146	<1.0	<1.0
67-HP12	SW67-HP12	2.15	detect	51.5	146	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0714	detect	51.5	146	<1.0	<1.0
66-HP13	SW66-HP13	0.654	detect	51.5	146	<1.0	<1.0
65-HP13a	SW65-HP13a	0.768	detect	51.5	146	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.953	detect	51.5	146	<1.0	<1.0
70-CWD	SW70-CWD	0.0101	detect	51.5	146	<1.0	<1.0
64-HP18	SW64-HP18	0.281	detect	51.5	146	<1.0	<1.0

#N/A = not analyzed

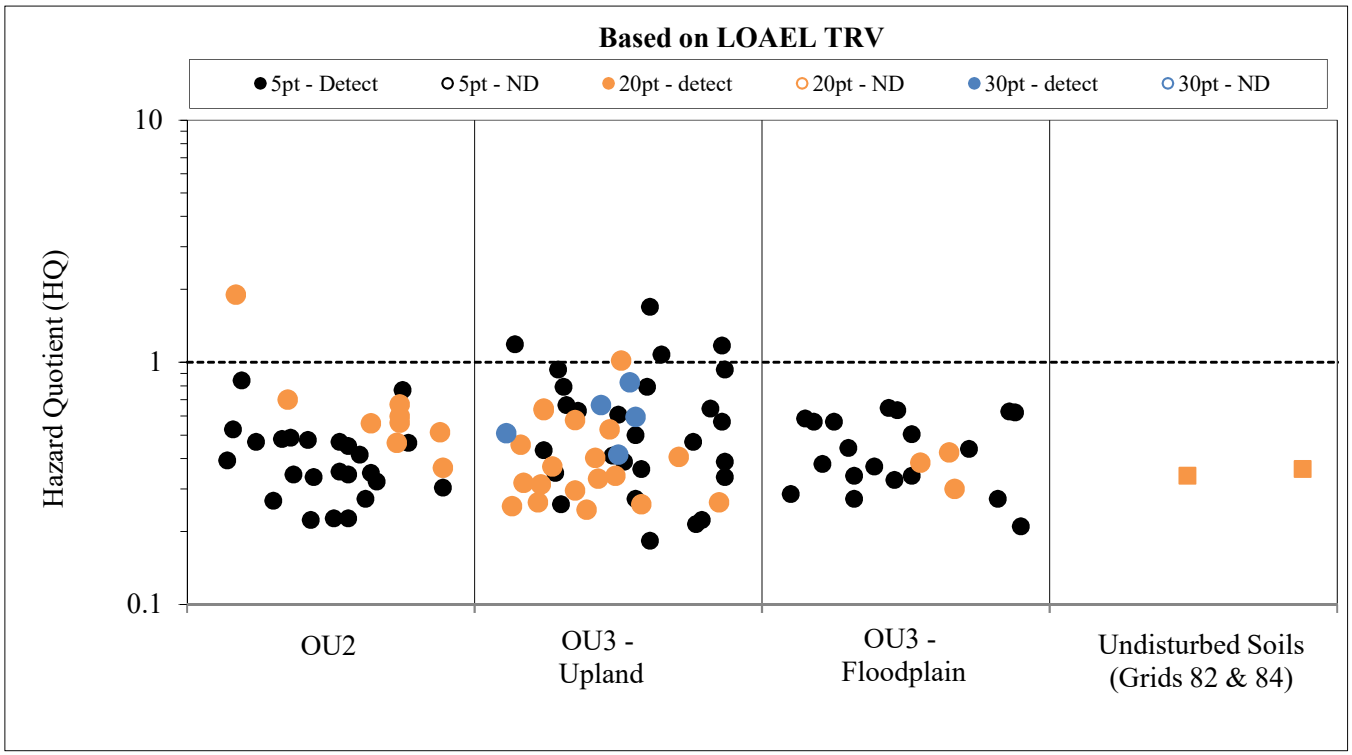
(a) Non-detects are evaluated at 1/2 the reported value.

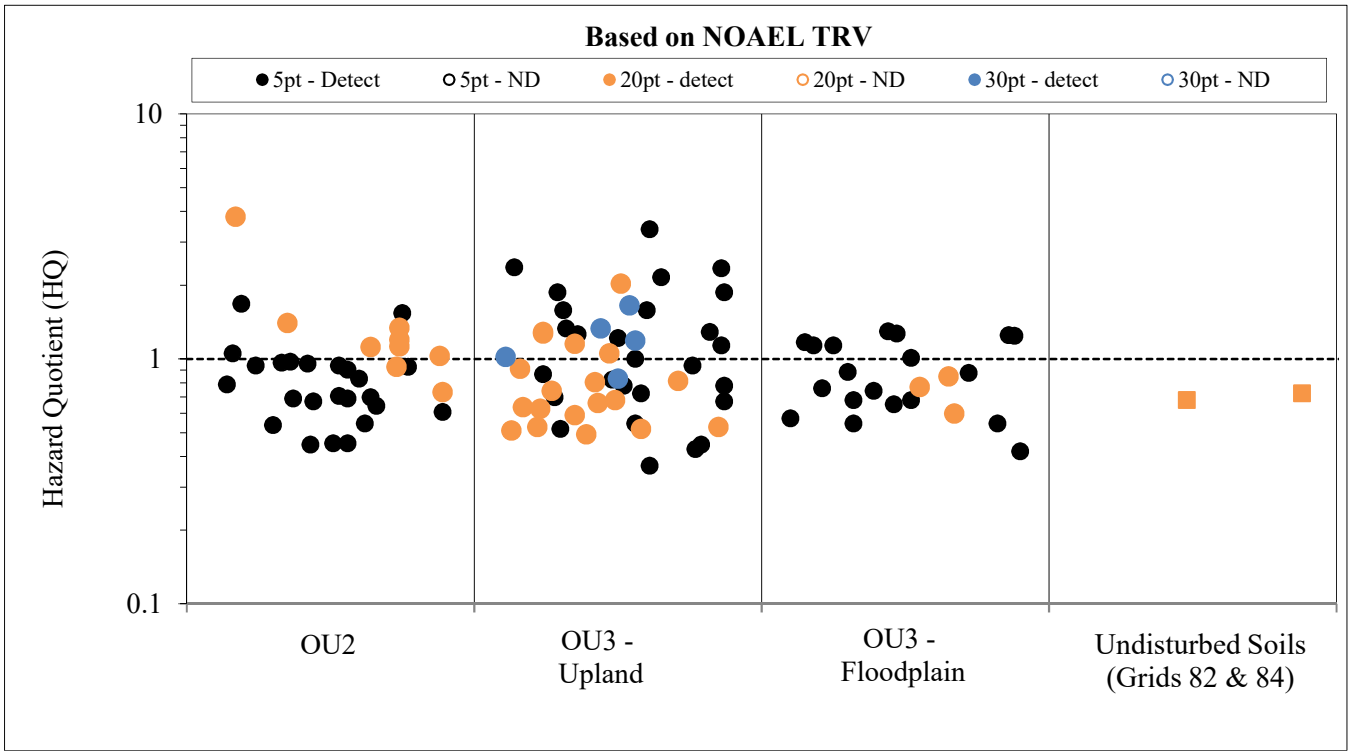
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Food by Exposure Unit/Soil Type

Nickel





APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Nickel

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	2.144	detect	3	2	<1.0	**1.2**
	Grid 13	Grid 13-SSComp-01_20171019_NM	1.84	detect	3	2	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	2.512	detect	3	2	<1.0	**1.4**
	Grid 2	Grid 2-SSComp-01_20171016_NM	2	detect	3	2	<1.0	**1.1**
	Grid 22	Grid 22-SSComp-01_20171018_NM	2.4	detect	3	2	<1.0	**1.3**
	Grid 23	Grid 23-SSComp-01_20171018_NM	2.016	detect	3	2	<1.0	**1.1**
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	1.312	detect	3	2	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	6.8	detect	3	2	**1.9**	**3.8**
	Grid 9	Grid 9-SSComp-01_20171018_NM	1.664	detect	3	2	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	2.752	detect	3	2	<1.0	**1.5**
	SB2a,3a-IN	SB2a-IN-(0-2)	0.8	detect	3	2	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	1.232	detect	3	2	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	1.264	detect	3	2	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	1.232	detect	3	2	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	1.408	detect	3	2	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	1.248	detect	3	2	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	1.888	detect	3	2	<1.0	**1.1**
	SS16-IN	SS16-IN-(0-2)c	1.616	detect	3	2	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	1.728	detect	3	2	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	1.68	detect	3	2	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	3	2	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.96	detect	3	2	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	3	2	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	3	2	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	3.008	detect	3	2	<1.0	**1.7**
	SS33-IN	SS33-IN-(0-2)c	1.488	detect	3	2	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	1.664	detect	3	2	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	1.2	detect	3	2	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	1.68	detect	3	2	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	1.152	detect	3	2	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	1.744	detect	3	2	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	1.088	detect	3	2	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	1.712	detect	3	2	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.810667	detect	3	2	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.810667	detect	3	2	<1.0	<1.0

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Nickel

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	2.384	detect	3	2	<1.0	**1.3**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	3.856	detect	3	2	**1.1**	**2.2**
	CRP-1	CRP-1-SS_4/10/14_NM	2.384	detect	3	2	<1.0	**1.3**
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.88	detect	3	2	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.912	detect	3	2	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	1.056	detect	3	2	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.944	detect	3	2	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	1.328	detect	3	2	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.928	detect	3	2	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	1.136	detect	3	2	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	1.12	detect	3	2	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	1.184	detect	3	2	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	1.216	detect	3	2	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	2.304	detect	3	2	<1.0	**1.3**
	Grid 53	Grid 53-SSComp-01_20171020_NM	1.632	detect	3	2	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	1.888	detect	3	2	<1.0	**1.1**
	Grid 61	Grid 61-SSComp-01_20171023_NM	1.44	detect	3	2	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	1.456	detect	3	2	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	3.632	detect	3	2	<1.0	**2.0**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	2.064	detect	3	2	<1.0	**1.2**
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.944	detect	3	2	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	1.792	detect	3	2	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	1.392	detect	3	2	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	2.256	detect	3	2	<1.0	**1.3**
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	1.2	detect	3	2	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.8	detect	3	2	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	3	2	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.768	detect	3	2	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	2.176	detect	3	2	<1.0	**1.2**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.656	detect	3	2	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	2.832	detect	3	2	<1.0	**1.6**
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	3.344	detect	3	2	<1.0	**1.9**
	P17-BH1	P17-BH1-SS_4/3/14_NM	4.192	detect	3	2	**1.2**	**2.3**
	P3	P3-SSComp-01_20171020_NM	2.272	detect	3	2	<1.0	**1.3**
	P3-BH1	P3-BH1-SS_4/3/14_NM	6.064	detect	3	2	**1.7**	**3.4**
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.928	detect	3	2	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	4.24	detect	3	2	**1.2**	**2.4**
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	3.344	detect	3	2	<1.0	**1.9**
	P8	P8-SSComp-01_20171025_NM	1.488	detect	3	2	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	2.128	detect	3	2	<1.0	**1.2**
	P8-TP3	P8-TP3-SS_4/4/14_NM	2.304	detect	3	2	<1.0	**1.3**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	2.832	detect	3	2	<1.0	**1.6**
	SPP	SPP-SSComp-01_20171025_NM	2.96	detect	3	2	<1.0	**1.7**
	SS1,2-HP18	SS1-HP18-(0-2)c	1.296	detect	3	2	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	1.248	detect	3	2	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	1.552	detect	3	2	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	1.472	detect	3	2	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	1.392	detect	3	2	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.976	detect	3	2	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	2.032	detect	3	2	<1.0	**1.1**
	SS9,10-HP12	SS9-HP12-(0-2)c	1.68	detect	3	2	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	1.824	detect	3	2	<1.0	<1.0

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

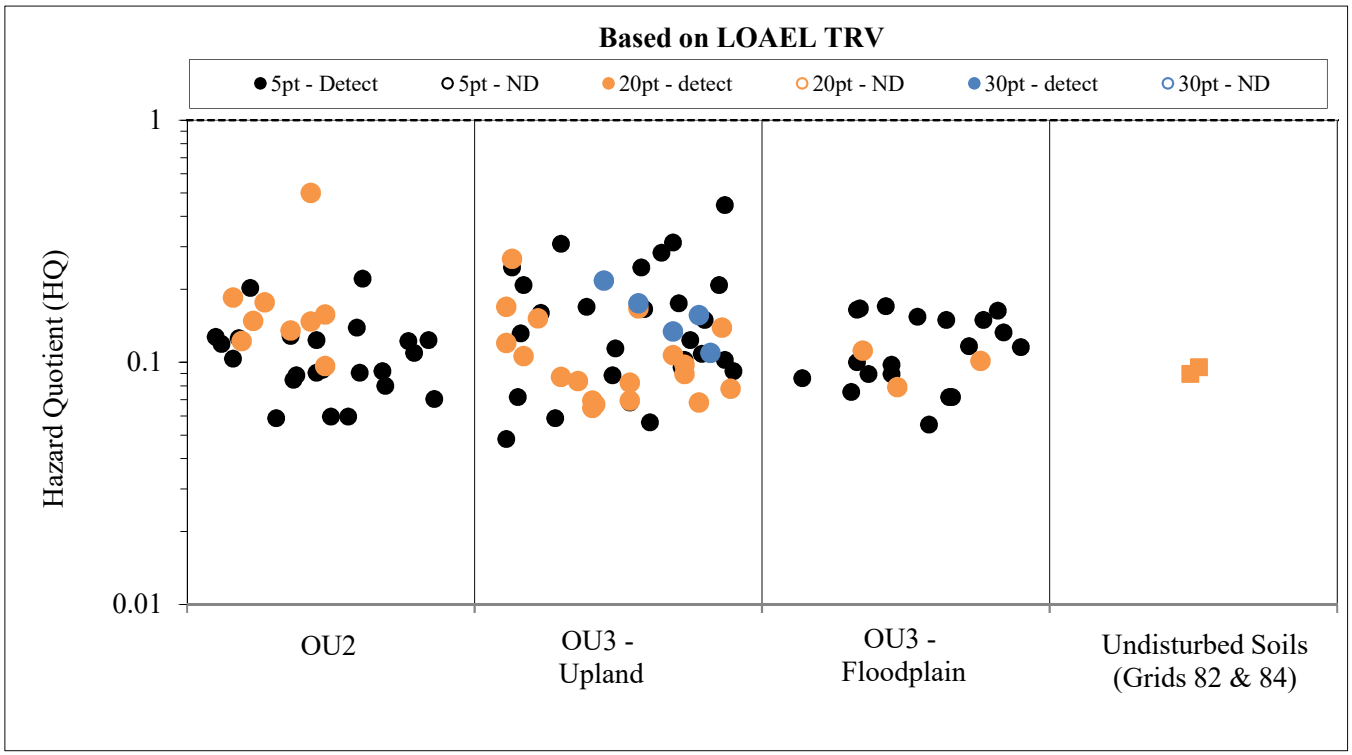
Nickel

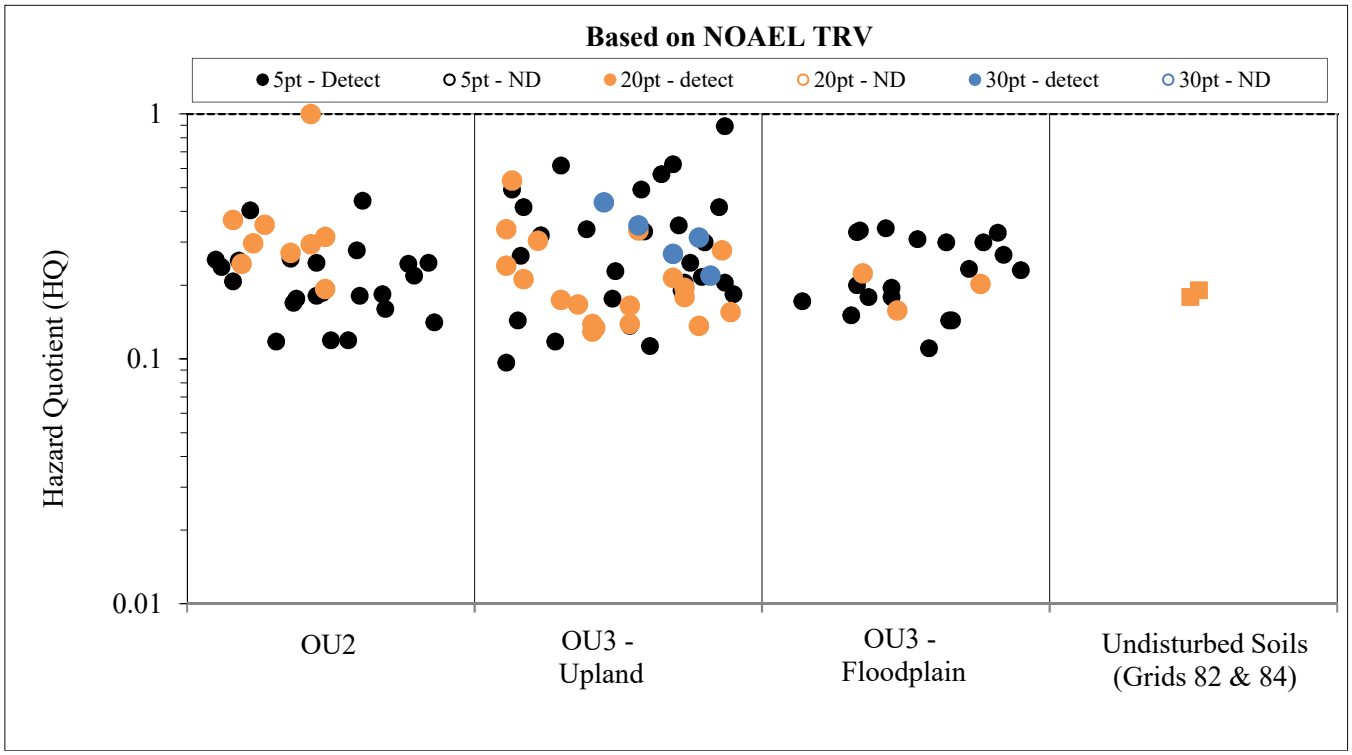
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	1.072	detect	3	2	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	1.52	detect	3	2	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	1.376	detect	3	2	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	2.224	detect	3	2	<1.0	**1.2**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.752	detect	3	2	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	2.096	detect	3	2	<1.0	**1.2**
	SE11-HP11	SE11-HP11-(0-2)c	1.216	detect	3	2	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	2.272	detect	3	2	<1.0	**1.3**
	SE13-HP12	SE13-HP12-(0-2)c	2.24	detect	3	2	<1.0	**1.3**
	SE14-HP13	SE14-HP13-(0-2)c	2.032	detect	3	2	<1.0	**1.1**
	SE15-HP13	SE15-HP13-(0-2)c	1.216	detect	3	2	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	1.36	detect	3	2	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	1.808	detect	3	2	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	1.328	detect	3	2	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	1.584	detect	3	2	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.976	detect	3	2	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	1.168	detect	3	2	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	2.32	detect	3	2	<1.0	**1.3**
	SE6-HP7	SE6-HP7-(0-2)c	2.032	detect	3	2	<1.0	**1.1**
	SE7-HP7	SE7-HP7-(0-2)c	1.024	detect	3	2	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.976	detect	3	2	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	1.568	detect	3	2	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	1.296	detect	3	2	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	1.216	detect	3	2	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Surface Soil by Exposure Unit/Soil Type

Nickel





APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Nickel

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	13.4	detect	3	2	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	11.5	detect	3	2	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	15.7	detect	3	2	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	12.5	detect	3	2	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	15	detect	3	2	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	12.6	detect	3	2	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	8.2	detect	3	2	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	42.5	detect	3	2	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	10.4	detect	3	2	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	17.2	detect	3	2	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	5	detect	3	2	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	7.7	detect	3	2	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	7.9	detect	3	2	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	7.7	detect	3	2	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	8.8	detect	3	2	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	7.8	detect	3	2	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	11.8	detect	3	2	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	10.1	detect	3	2	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	10.8	detect	3	2	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	10.5	detect	3	2	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	3	2	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	6	detect	3	2	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	3	2	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	3	2	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	18.8	detect	3	2	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	9.3	detect	3	2	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	10.4	detect	3	2	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	7.5	detect	3	2	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	10.5	detect	3	2	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	7.2	detect	3	2	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	10.9	detect	3	2	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	6.8	detect	3	2	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	10.7	detect	3	2	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	5.066667	detect	3	2	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	5.066667	detect	3	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Nickel

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	14.9	detect	3	2	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	24.1	detect	3	2	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	14.9	detect	3	2	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	5.5	detect	3	2	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	5.7	detect	3	2	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	6.6	detect	3	2	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	5.9	detect	3	2	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	8.3	detect	3	2	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	5.8	detect	3	2	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	7.1	detect	3	2	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	7	detect	3	2	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	7.4	detect	3	2	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	7.6	detect	3	2	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	14.4	detect	3	2	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	10.2	detect	3	2	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	11.8	detect	3	2	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	9	detect	3	2	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	9.1	detect	3	2	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	22.7	detect	3	2	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	12.9	detect	3	2	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	5.9	detect	3	2	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	11.2	detect	3	2	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	8.7	detect	3	2	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	14.1	detect	3	2	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	7.5	detect	3	2	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	5	detect	3	2	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	3	2	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	4.8	detect	3	2	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	13.6	detect	3	2	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	4.1	detect	3	2	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	17.7	detect	3	2	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	20.9	detect	3	2	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	3E+01	detect	3	2	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	14.2	detect	3	2	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	37.9	detect	3	2	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	5.8	detect	3	2	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	26.5	detect	3	2	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	20.9	detect	3	2	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	9.3	detect	3	2	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	13.3	detect	3	2	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	14.4	detect	3	2	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	17.7	detect	3	2	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	18.5	detect	3	2	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	8.1	detect	3	2	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	7.8	detect	3	2	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	9.7	detect	3	2	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	9.2	detect	3	2	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	8.7	detect	3	2	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	6.1	detect	3	2	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	12.7	detect	3	2	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	10.5	detect	3	2	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	11.4	detect	3	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Nickel

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	6.7	detect	3	2	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	9.5	detect	3	2	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	8.6	detect	3	2	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	13.9	detect	3	2	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	4.7	detect	3	2	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	13.1	detect	3	2	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	7.6	detect	3	2	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	14.2	detect	3	2	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	14	detect	3	2	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	12.7	detect	3	2	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	7.6	detect	3	2	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	8.5	detect	3	2	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	11.3	detect	3	2	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	8.3	detect	3	2	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	9.9	detect	3	2	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	6.1	detect	3	2	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	7.3	detect	3	2	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	14.5	detect	3	2	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	12.7	detect	3	2	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	6.4	detect	3	2	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	6.1	detect	3	2	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	9.8	detect	3	2	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	8.1	detect	3	2	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	7.6	detect	3	2	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of River Surface Water

Nickel

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0009	detect	1.7	3.4	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0009	detect	1.7	3.4	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0002	ND	1.7	3.4	<1.0	<1.0
	51-CFR	SW51-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
	52-CFR	SW52-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0003	detect	1.7	3.4	<1.0	<1.0
	54-CFR	SW54-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
	55-CFR	SW55-CFR	0.0001	detect	1.7	3.4	<1.0	<1.0
	56-CFR	SW56-CFR	0.0001	detect	1.7	3.4	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
	57-CFR	SW57-CFR	0.0003	detect	1.7	3.4	<1.0	<1.0
	58-CFR	SW58-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
	59-CFR	SW59-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
	60-CFR	SW60-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
	61-CFR	SW61-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
	62-CFR	SW62-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
	63-CFR	SW63-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of Creek Surface Water

Nickel

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	4E-04	detect	1.7	3.4	<1.0	<1.0
	43-OK	SW43-OK	3E-04	detect	1.7	3.4	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	3E-04	detect	1.7	3.4	<1.0	<1.0
	37-LV	SW37-LV	4E-04	detect	1.7	3.4	<1.0	<1.0
	39-LV	SW39-LV	4E-04	detect	1.7	3.4	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of Pond Surface Water

Nickel

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0002	detect	1.7	3.4	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0043	detect	1.7	3.4	<1.0	<1.0
69-HP1a	SW69-HP1a	0.003	detect	1.7	3.4	<1.0	<1.0
73-P5	SW73-P5	0.0171	detect	1.7	3.4	<1.0	<1.0
71-HP7	SW71-HP7	0.0044	detect	1.7	3.4	<1.0	<1.0
72-HP2	SW72-HP2	0.0029	detect	1.7	3.4	<1.0	<1.0
75-HP10	SW75-HP10	0.0029	detect	1.7	3.4	<1.0	<1.0
67-HP12	SW67-HP12	0.0027	detect	1.7	3.4	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0009	detect	1.7	3.4	<1.0	<1.0
66-HP13	SW66-HP13	0.0046	detect	1.7	3.4	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0037	detect	1.7	3.4	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0034	detect	1.7	3.4	<1.0	<1.0
70-CWD	SW70-CWD	0.0001	ND	1.7	3.4	<1.0	<1.0
64-HP18	SW64-HP18	0.0019	detect	1.7	3.4	<1.0	<1.0

#N/A = not analyzed

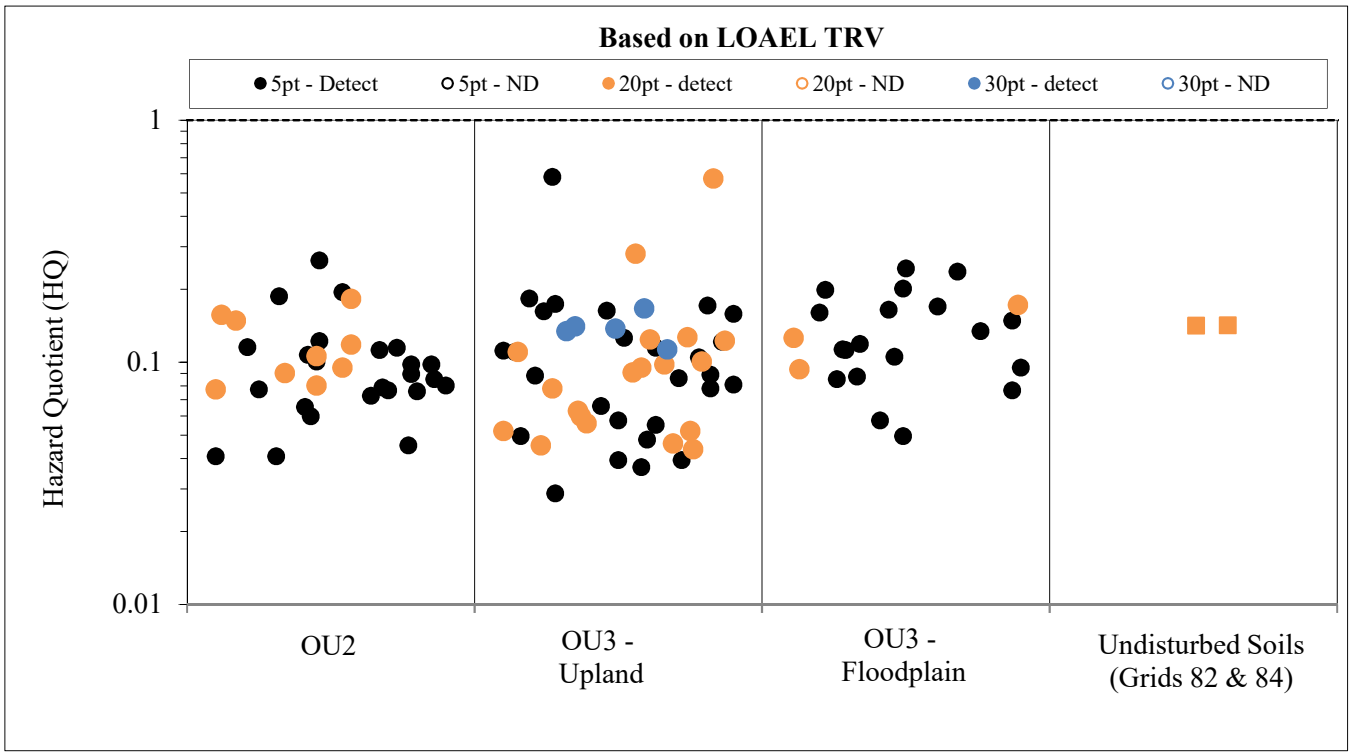
(a) Non-detects are evaluated at 1/2 the reported value.

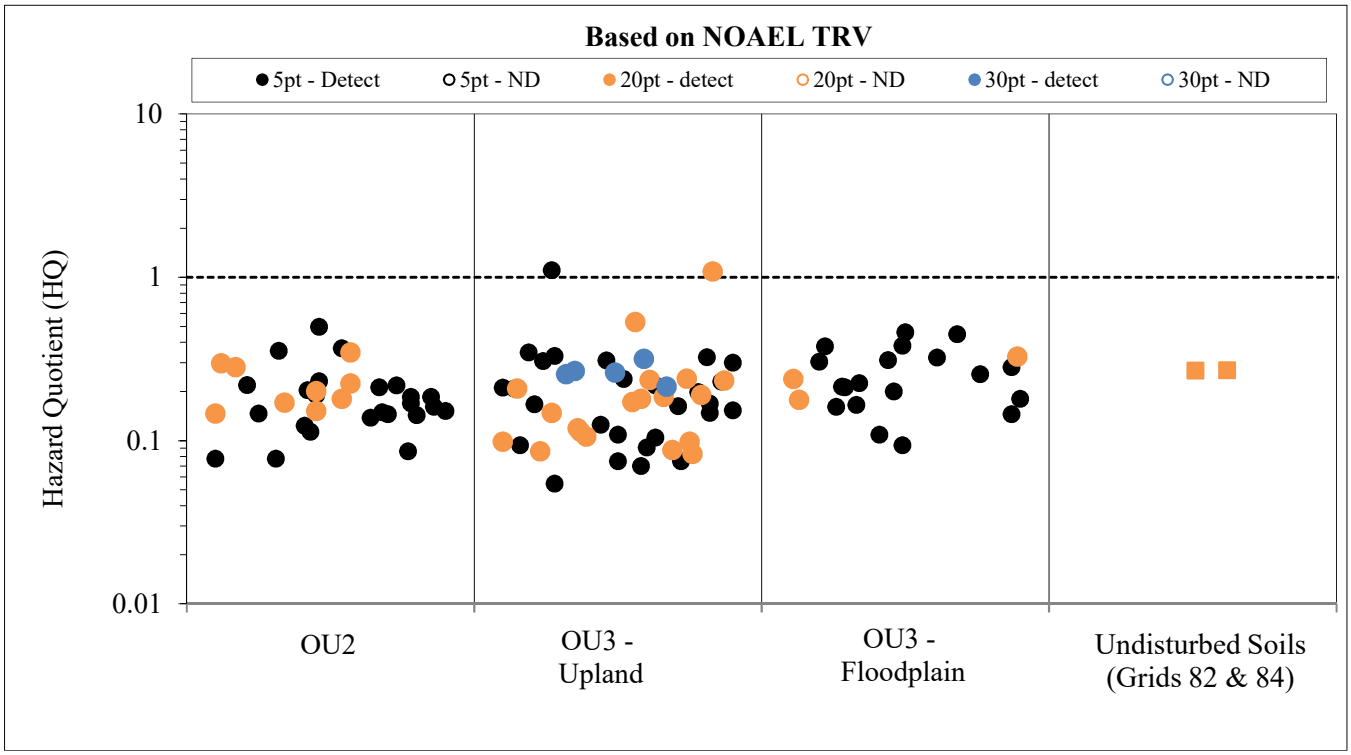
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Food by Exposure Unit/Soil Type

Lead





APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Lead

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.890938	detect	9	5	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	1.472411	detect	9	5	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	1.107241	detect	9	5	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.750934	detect	9	5	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	1.390714	detect	9	5	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.994129	detect	9	5	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.723577	detect	9	5	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	1.711395	detect	9	5	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.844896	detect	9	5	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	1.07611	detect	9	5	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.425314	detect	9	5	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	1.082353	detect	9	5	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	1.006844	detect	9	5	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.737286	detect	9	5	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.723577	detect	9	5	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.83827	detect	9	5	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	1.051049	detect	9	5	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	1.755989	detect	9	5	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.7167	detect	9	5	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.560924	detect	9	5	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	9	5	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.611498	detect	9	5	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	9	5	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	9	5	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	2.463945	detect	9	5	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	1.822378	detect	9	5	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.798246	detect	9	5	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.68207	detect	9	5	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.942872	detect	9	5	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	1.144325	detect	9	5	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.916993	detect	9	5	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.750934	detect	9	5	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.916993	detect	9	5	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.383199	detect	9	5	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.383199	detect	9	5	<1.0	<1.0

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Lead

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	1.259936	detect	9	5	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	1.03216	detect	9	5	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.824981	detect	9	5	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.409643	detect	9	5	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.425314	detect	9	5	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.486697	detect	9	5	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.524125	detect	9	5	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.730439	detect	9	5	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.486697	detect	9	5	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	1.162759	detect	9	5	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.589951	detect	9	5	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.560924	detect	9	5	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	1.150478	detect	9	5	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	1.18723	detect	9	5	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	1.03216	detect	9	5	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.890938	detect	9	5	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.942872	detect	9	5	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.85151	detect	9	5	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	5.37507	detect	9	5	<1.0	**1.1**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.916993	detect	9	5	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.433098	detect	9	5	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.804949	detect	9	5	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.757735	detect	9	5	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	1.07611	detect	9	5	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.730439	detect	9	5	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.34542	detect	9	5	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	9	5	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.448566	detect	9	5	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1.604343	detect	9	5	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.369813	detect	9	5	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.981375	detect	9	5	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	1.716984	detect	9	5	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	5.459963	detect	9	5	<1.0	**1.1**
	P3	P3-SSComp-01_20171020_NM	2.631719	detect	9	5	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	1.138165	detect	9	5	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.269514	detect	9	5	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.538916	detect	9	5	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	1.530106	detect	9	5	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	1.057328	detect	9	5	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	1.289933	detect	9	5	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	1.632676	detect	9	5	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1.483993	detect	9	5	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	1.564474	detect	9	5	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.516692	detect	9	5	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.61864	detect	9	5	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	1.51861	detect	9	5	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	1.181124	detect	9	5	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.463908	detect	9	5	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.369813	detect	9	5	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	1.044762	detect	9	5	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.831632	detect	9	5	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	1.319764	detect	9	5	<1.0	<1.0

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

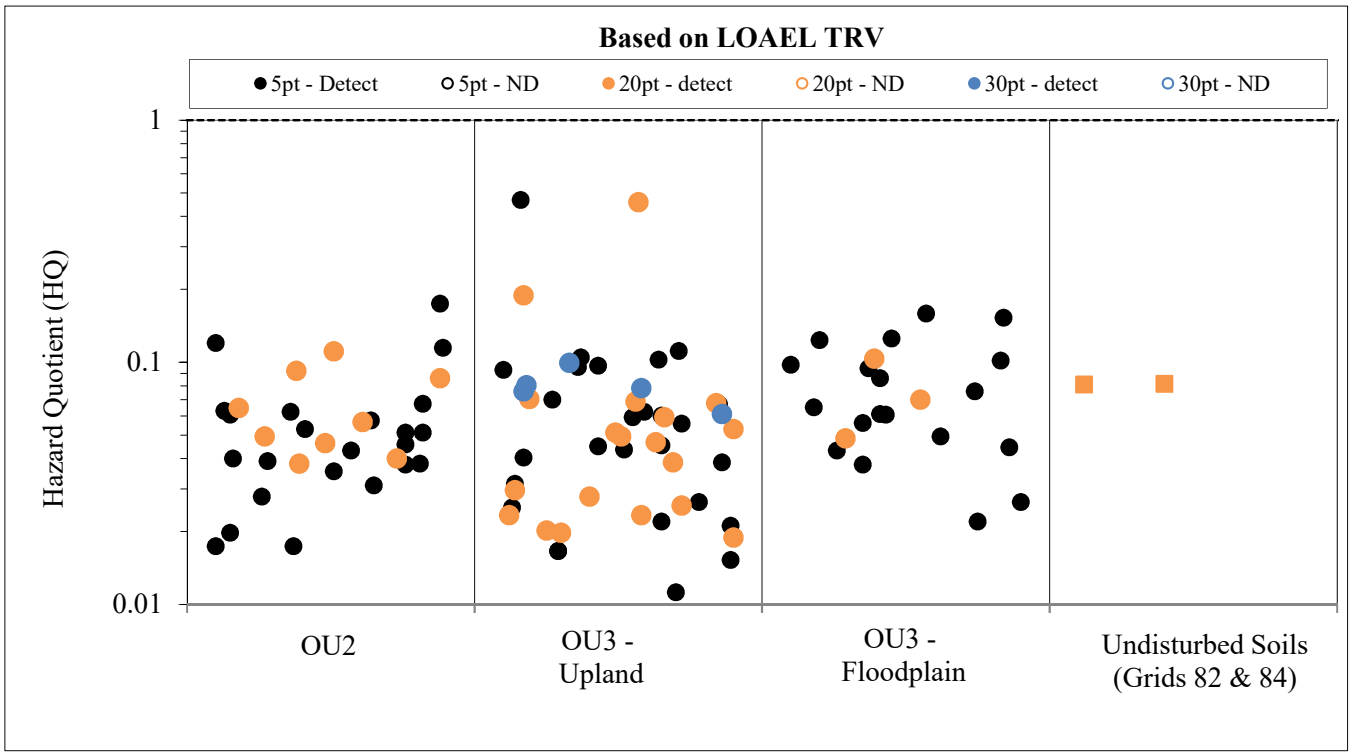
Lead

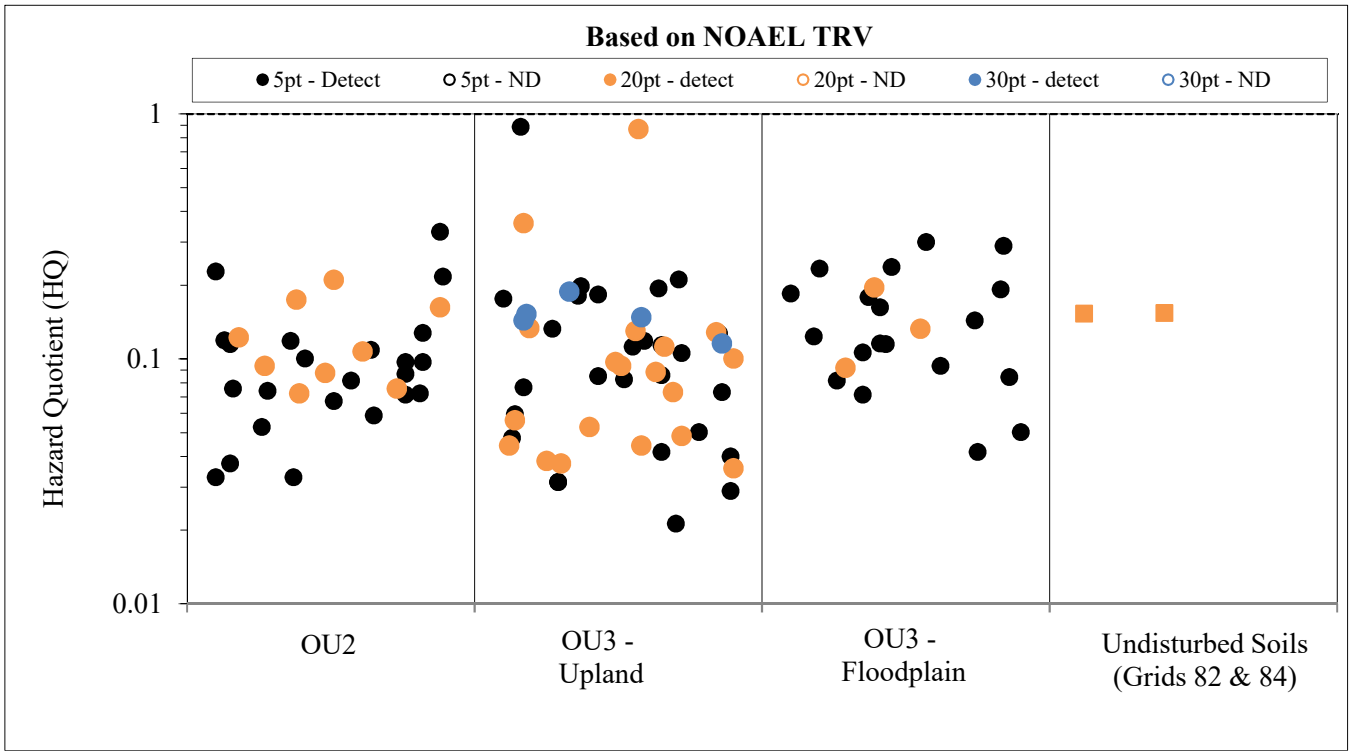
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.877843	detect	9	5	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	1.181124	detect	9	5	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	1.61569	detect	9	5	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	1.259936	detect	9	5	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.538916	detect	9	5	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	2.282958	detect	9	5	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	1.390714	detect	9	5	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	1.113442	detect	9	5	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	1.866316	detect	9	5	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	1.051049	detect	9	5	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	1.501325	detect	9	5	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	0.987757	detect	9	5	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.798246	detect	9	5	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.890938	detect	9	5	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	1.057328	detect	9	5	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.463908	detect	9	5	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.7167	detect	9	5	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	1.888193	detect	9	5	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	2.214865	detect	9	5	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	1.592976	detect	9	5	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.818317	detect	9	5	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	1.541583	detect	9	5	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	1.325711	detect	9	5	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	1.331651	detect	9	5	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Surface Soil by Exposure Unit/Soil Type

Lead





APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Lead

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	11	detect	9	5	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	20.5	detect	9	5	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	14.4	detect	9	5	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	8.9	detect	9	5	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	19.1	detect	9	5	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	12.6	detect	9	5	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	8.5	detect	9	5	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	24.7	detect	9	5	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	10.3	detect	9	5	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	13.9	detect	9	5	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	4.4	detect	9	5	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	14	detect	9	5	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	12.8	detect	9	5	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	8.7	detect	9	5	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	8.5	detect	9	5	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	10.2	detect	9	5	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	13.5	detect	9	5	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	25.5	detect	9	5	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	8.4	detect	9	5	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	6.2	detect	9	5	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	9	5	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	6.9	detect	9	5	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	9	5	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	9	5	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	38.8	detect	9	5	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	26.7	detect	9	5	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	9.6	detect	9	5	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	7.9	detect	9	5	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	11.8	detect	9	5	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	15	detect	9	5	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	11.4	detect	9	5	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	8.9	detect	9	5	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	11.4	detect	9	5	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	3.866667	detect	9	5	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	3.866667	detect	9	5	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Lead

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	16.9	detect	9	5	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	13.2	detect	9	5	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	10	detect	9	5	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	4.2	detect	9	5	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	4.4	detect	9	5	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	5.2	detect	9	5	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	5.7	detect	9	5	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	8.6	detect	9	5	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	5.2	detect	9	5	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	15.3	detect	9	5	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	6.6	detect	9	5	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	6.2	detect	9	5	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	15.1	detect	9	5	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	15.7	detect	9	5	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	13.2	detect	9	5	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	11	detect	9	5	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	11.8	detect	9	5	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	10.4	detect	9	5	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	102	detect	9	5	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	11.4	detect	9	5	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	4.5	detect	9	5	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	9.7	detect	9	5	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	9	detect	9	5	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	13.9	detect	9	5	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	8.6	detect	9	5	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	3.4	detect	9	5	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	9	5	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	4.7	detect	9	5	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	22.8	detect	9	5	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	3.7	detect	9	5	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	12.4	detect	9	5	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	24.8	detect	9	5	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	1E+02	detect	9	5	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	42.1	detect	9	5	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	14.9	detect	9	5	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	2.5	detect	9	5	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	5.9	detect	9	5	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	21.5	detect	9	5	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	13.6	detect	9	5	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	17.4	detect	9	5	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	23.3	detect	9	5	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	20.7	detect	9	5	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	22.1	detect	9	5	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	5.6	detect	9	5	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	7	detect	9	5	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	21.3	detect	9	5	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	15.6	detect	9	5	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	4.9	detect	9	5	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	3.7	detect	9	5	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	13.4	detect	9	5	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	10.1	detect	9	5	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	17.9	detect	9	5	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Lead

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	10.8	detect	9	5	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	15.6	detect	9	5	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	23	detect	9	5	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	16.9	detect	9	5	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	5.9	detect	9	5	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	35.3	detect	9	5	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	19.1	detect	9	5	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	14.5	detect	9	5	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	27.5	detect	9	5	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	13.5	detect	9	5	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	21	detect	9	5	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	12.5	detect	9	5	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	9.6	detect	9	5	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	11	detect	9	5	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	13.6	detect	9	5	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	4.9	detect	9	5	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	8.4	detect	9	5	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	27.9	detect	9	5	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	34	detect	9	5	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	22.6	detect	9	5	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	9.9	detect	9	5	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	21.7	detect	9	5	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	18	detect	9	5	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	18.1	detect	9	5	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of River Surface Water

Lead

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0001	detect	4.7	8.9	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0006	detect	4.7	8.9	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0016	detect	4.7	8.9	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0002	detect	4.7	8.9	<1.0	<1.0
	51-CFR	SW51-CFR	0.0002	detect	4.7	8.9	<1.0	<1.0
	52-CFR	SW52-CFR	0.0004	detect	4.7	8.9	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0015	detect	4.7	8.9	<1.0	<1.0
	54-CFR	SW54-CFR	0.0001	detect	4.7	8.9	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0001	detect	4.7	8.9	<1.0	<1.0
	55-CFR	SW55-CFR	0.0002	detect	4.7	8.9	<1.0	<1.0
	56-CFR	SW56-CFR	0.0002	detect	4.7	8.9	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0001	detect	4.7	8.9	<1.0	<1.0
	57-CFR	SW57-CFR	0.0002	detect	4.7	8.9	<1.0	<1.0
	58-CFR	SW58-CFR	0.0002	detect	4.7	8.9	<1.0	<1.0
	59-CFR	SW59-CFR	0.0002	detect	4.7	8.9	<1.0	<1.0
	60-CFR	SW60-CFR	0.0002	detect	4.7	8.9	<1.0	<1.0
	61-CFR	SW61-CFR	0.0002	detect	4.7	8.9	<1.0	<1.0
	62-CFR	SW62-CFR	0.0002	detect	4.7	8.9	<1.0	<1.0
	63-CFR	SW63-CFR	0.0001	detect	4.7	8.9	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of Creek Surface Water

Lead

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	3E-04	detect	4.7	8.9	<1.0	<1.0
	43-OK	SW43-OK	2E-04	detect	4.7	8.9	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	3E-04	detect	4.7	8.9	<1.0	<1.0
	37-LV	SW37-LV	3E-04	detect	4.7	8.9	<1.0	<1.0
	39-LV	SW39-LV	3E-04	detect	4.7	8.9	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of Pond Surface Water

Lead

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	6E-05	detect	4.7	8.9	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0006	detect	4.7	8.9	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0002	detect	4.7	8.9	<1.0	<1.0
73-P5	SW73-P5	0.0002	ND	4.7	8.9	<1.0	<1.0
71-HP7	SW71-HP7	0.0003	detect	4.7	8.9	<1.0	<1.0
72-HP2	SW72-HP2	0.0004	detect	4.7	8.9	<1.0	<1.0
75-HP10	SW75-HP10	0.0002	detect	4.7	8.9	<1.0	<1.0
67-HP12	SW67-HP12	0.0002	detect	4.7	8.9	<1.0	<1.0
68-IBJ	SW68-IBJ	7E-05	detect	4.7	8.9	<1.0	<1.0
66-HP13	SW66-HP13	0.0008	detect	4.7	8.9	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0014	detect	4.7	8.9	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.001	detect	4.7	8.9	<1.0	<1.0
70-CWD	SW70-CWD	0.0001	detect	4.7	8.9	<1.0	<1.0
64-HP18	SW64-HP18	0.0005	detect	4.7	8.9	<1.0	<1.0

#N/A = not analyzed

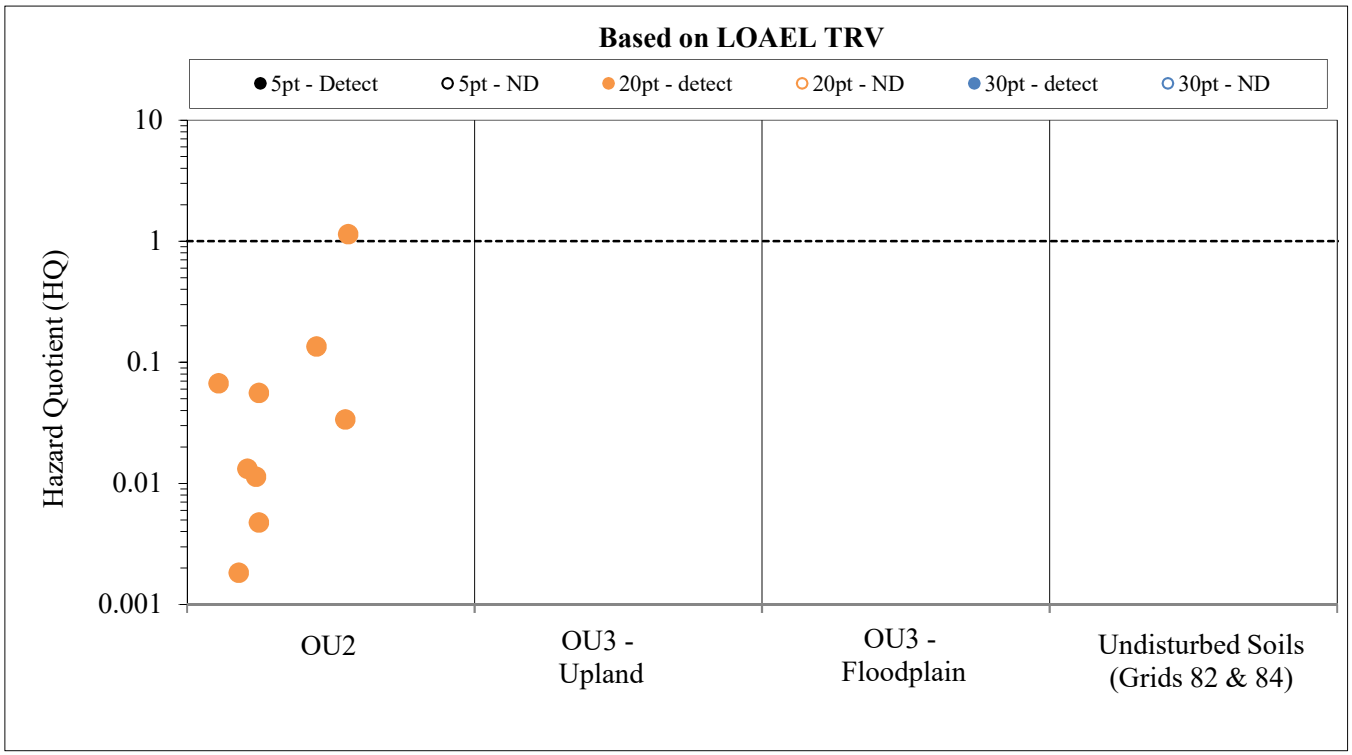
(a) Non-detects are evaluated at 1/2 the reported value.

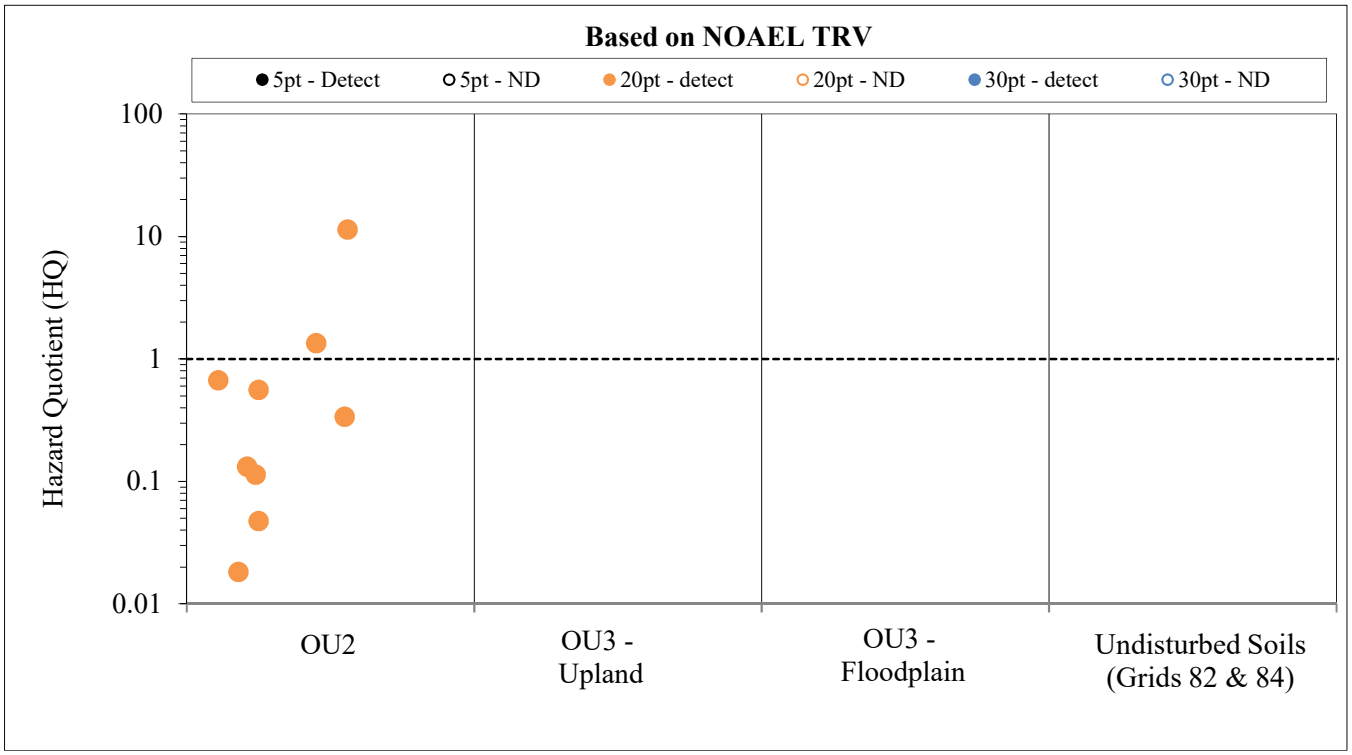
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Food by Exposure Unit/Soil Type

Total PCBs (ND=1/2RL)





APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Total PCBs (ND=1/2RL)

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.132028	detect	1	0	<1.0	**1.3**
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.004643	detect	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.033068	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.011112	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.054635	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.001784	detect	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.065719	detect	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	1.116237	detect	1	0	**1.1**	**11.4**
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.012902	detect	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	#N/A	#N/A	1	0	#N/A	#N/A
	TSB-SS	BACKFILL-TSB-SS	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Total PCBs (ND=1/2RL)

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	CRP-1	CRP-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-1	HP18-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-IB	HP18-SSC-IB_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP9-1	HP9-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	IBK-1	IBK-1-SS_4/16/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P17-BH1	P17-BH1-SS_4/3/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P4-BH1	P4-BH1-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P5-BH2	P5-BH2-SS_4/3/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

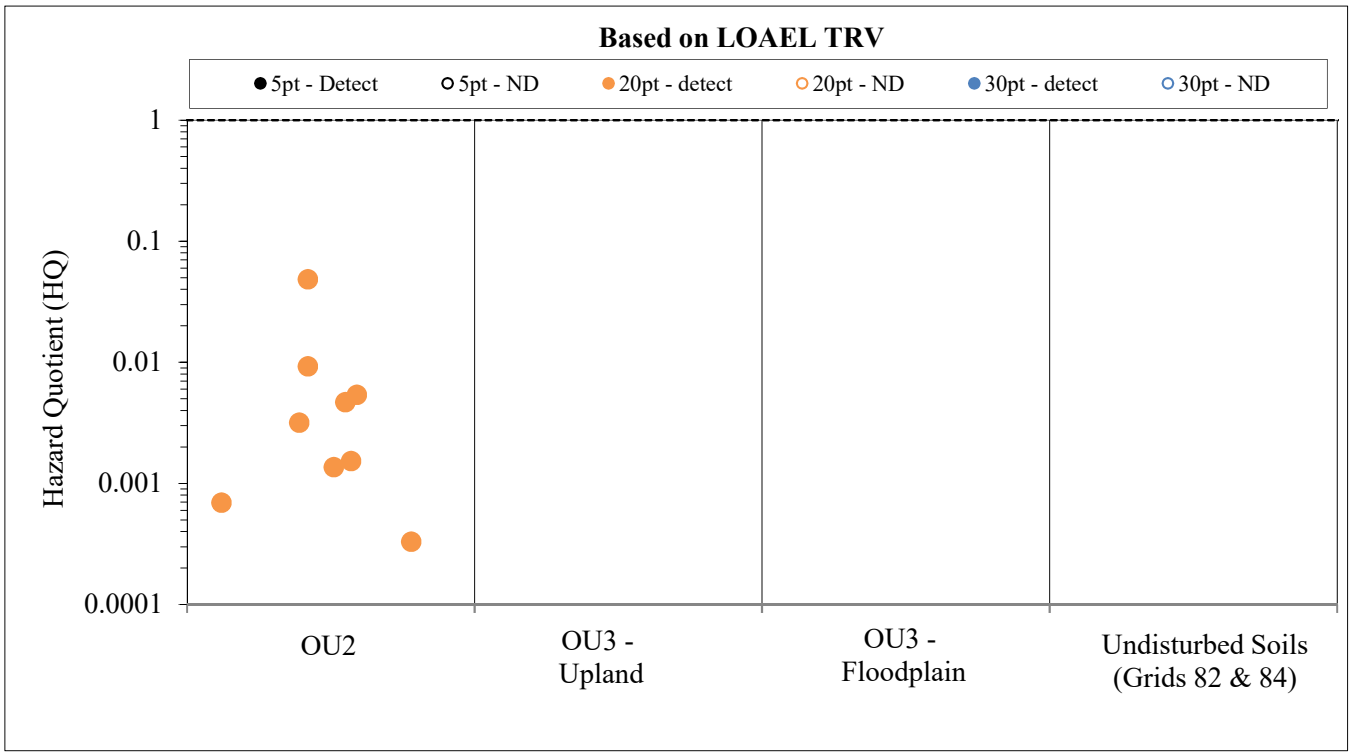
Total PCBs (ND=1/2RL)

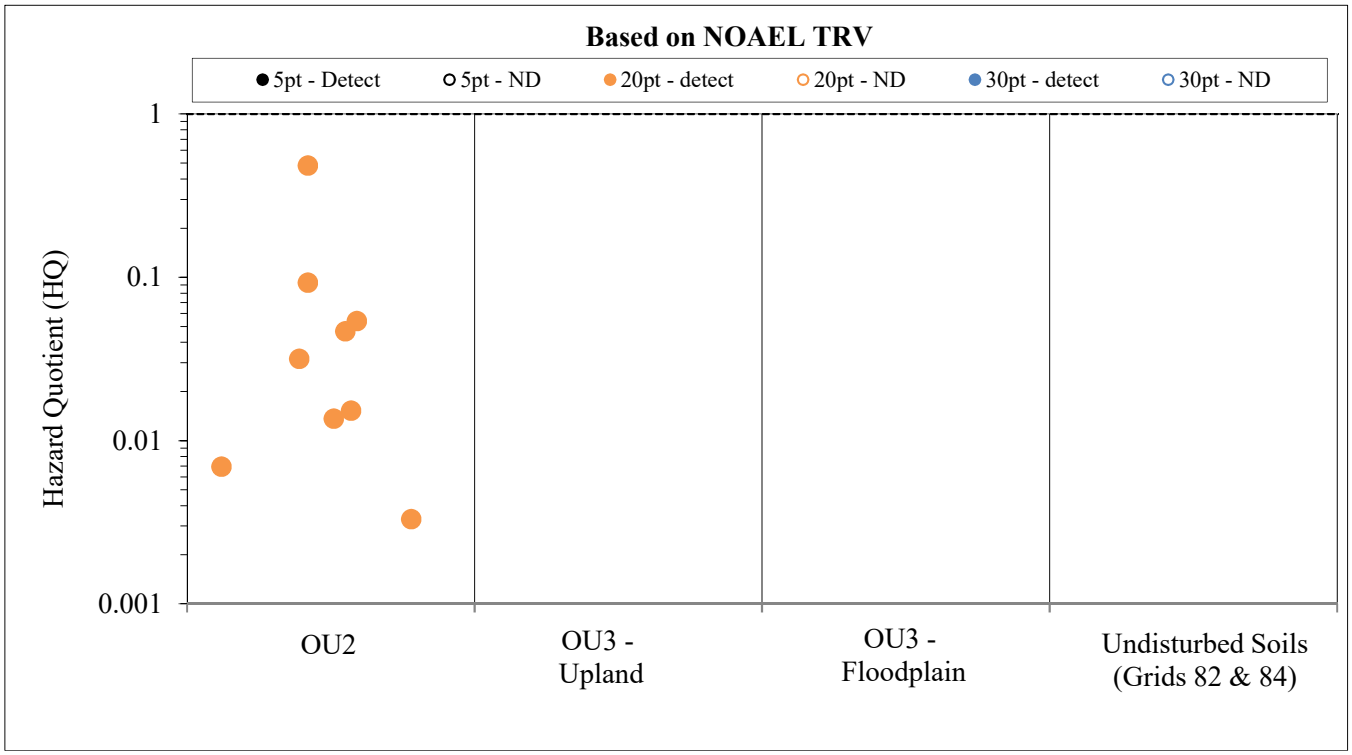
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Surface Soil by Exposure Unit/Soil Type

Total PCBs (ND=1/2RL)





APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Total PCBs (ND=1/2RL)

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.2153	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.016098	detect	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.073668	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.031651	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.108693	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.007675	detect	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.125414	detect	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	1.125173	detect	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.035534	detect	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	#N/A	#N/A	1	0	#N/A	#N/A
	TSB-SS	BACKFILL-TSB-SS	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Total PCBs (ND=1/2RL)

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	CRP-1	CRP-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-1	HP18-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-IB	HP18-SSC-IB_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP9-1	HP9-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	IBK-1	IBK-1-SS_4/16/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P17-BH1	P17-BH1-SS_4/3/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P4-BH1	P4-BH1-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P5-BH2	P5-BH2-SS_4/3/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

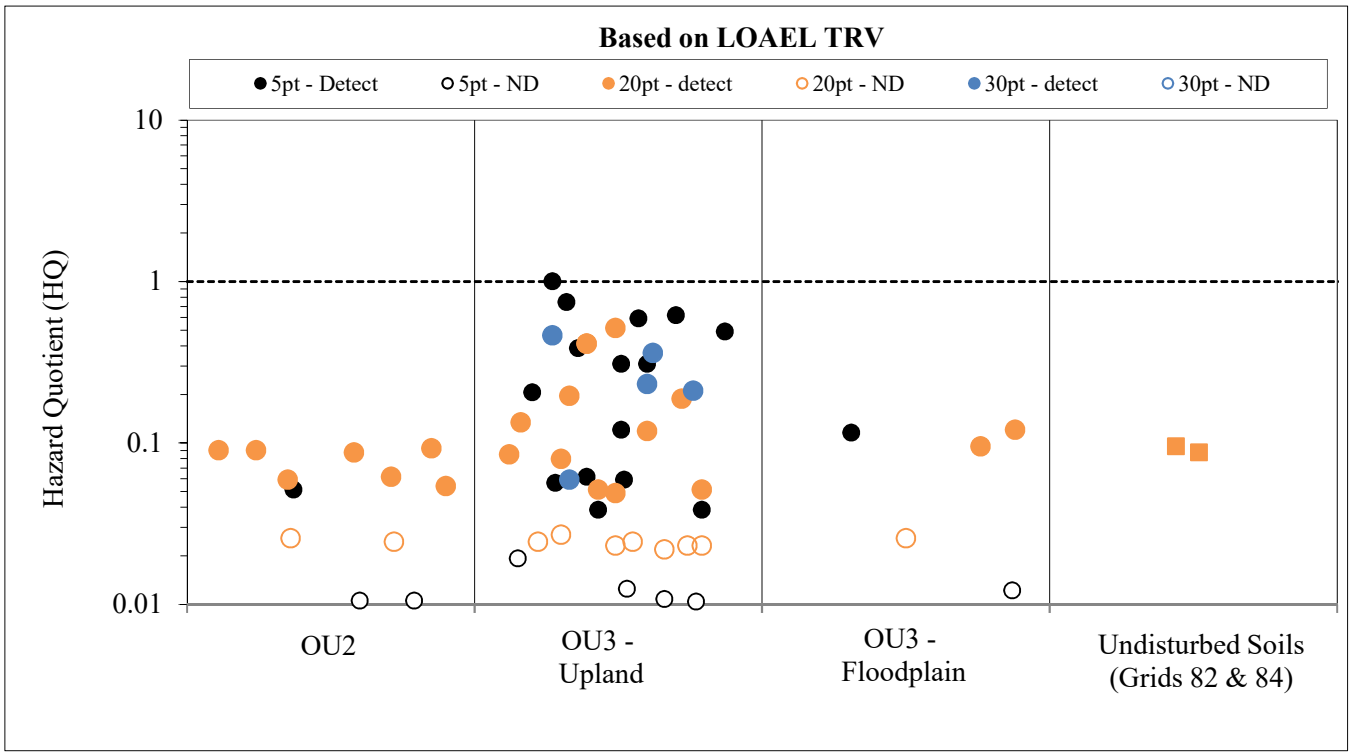
Total PCBs (ND=1/2RL)

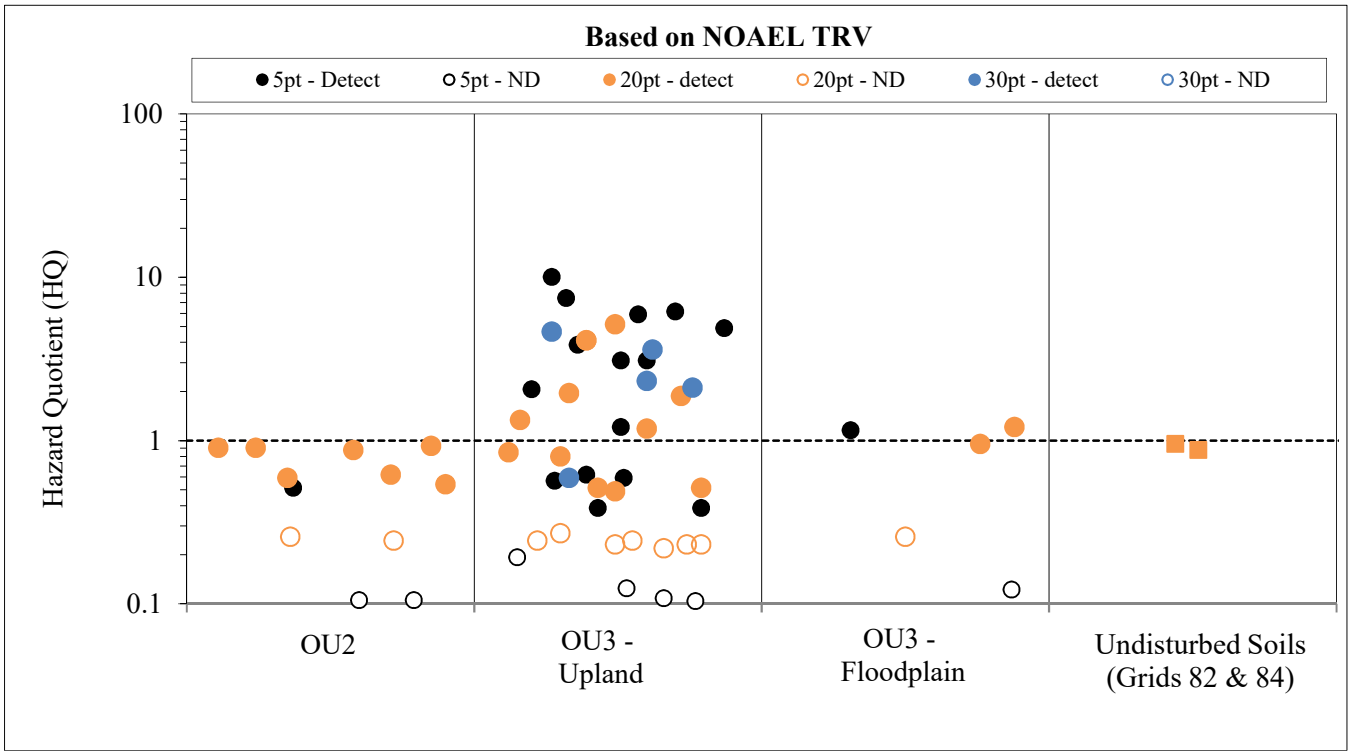
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Food by Exposure Unit/Soil Type

Antimony





APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Antimony

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.056	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.0368	detect	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.0544	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.0384	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.056	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.0336	detect	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.0152	ND	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.0576	detect	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.016	ND	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.032	detect	1	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.00656	ND	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.00656	ND	1	0	<1.0	<1.0

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Antimony

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.224	detect	1	0	<1.0	**3.6**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.192	detect	1	0	<1.0	**3.1**
	CRP-1	CRP-1-SS_4/10/14_NM	0.464	detect	1	0	<1.0	**7.5**
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.0144	ND	1	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.0144	ND	1	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.0304	detect	1	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.032	detect	1	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.0144	ND	1	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.0136	ND	1	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.0528	detect	1	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.0832	detect	1	0	<1.0	**1.3**
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.1216	detect	1	0	<1.0	**2.0**
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.1168	detect	1	0	<1.0	**1.9**
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.256	detect	1	0	<1.0	**4.1**
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.0736	detect	1	0	<1.0	**1.2**
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.0496	detect	1	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.032	detect	1	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.0168	ND	1	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.32	detect	1	0	<1.0	**5.2**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.0152	ND	1	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.0152	ND	1	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.128	detect	1	0	<1.0	**2.1**
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.00776	ND	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.24	detect	1	0	<1.0	**3.9**
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.0368	detect	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.024	detect	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.00648	ND	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.368	detect	1	0	<1.0	**5.9**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.00672	ND	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.0352	detect	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.384	detect	1	0	<1.0	**6.2**
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.624	detect	1	0	<1.0	**10.0**
	P3	P3-SSComp-01_20171020_NM	0.256	detect	1	0	<1.0	**4.1**
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.0384	detect	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.024	detect	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.012	ND	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.0752	detect	1	0	<1.0	**1.2**
	P8	P8-SSComp-01_20171025_NM	0.144	detect	1	0	<1.0	**2.3**
	P8dc	P8dc-SSComp-01_20171024_NM	0.1312	detect	1	0	<1.0	**2.1**
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.304	detect	1	0	<1.0	**4.9**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.192	detect	1	0	<1.0	**3.1**
	SPP	SPP-SSComp-01_20171025_NM	0.288	detect	1	0	<1.0	**4.6**
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	0.0368	detect	1	0	<1.0	<1.0

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

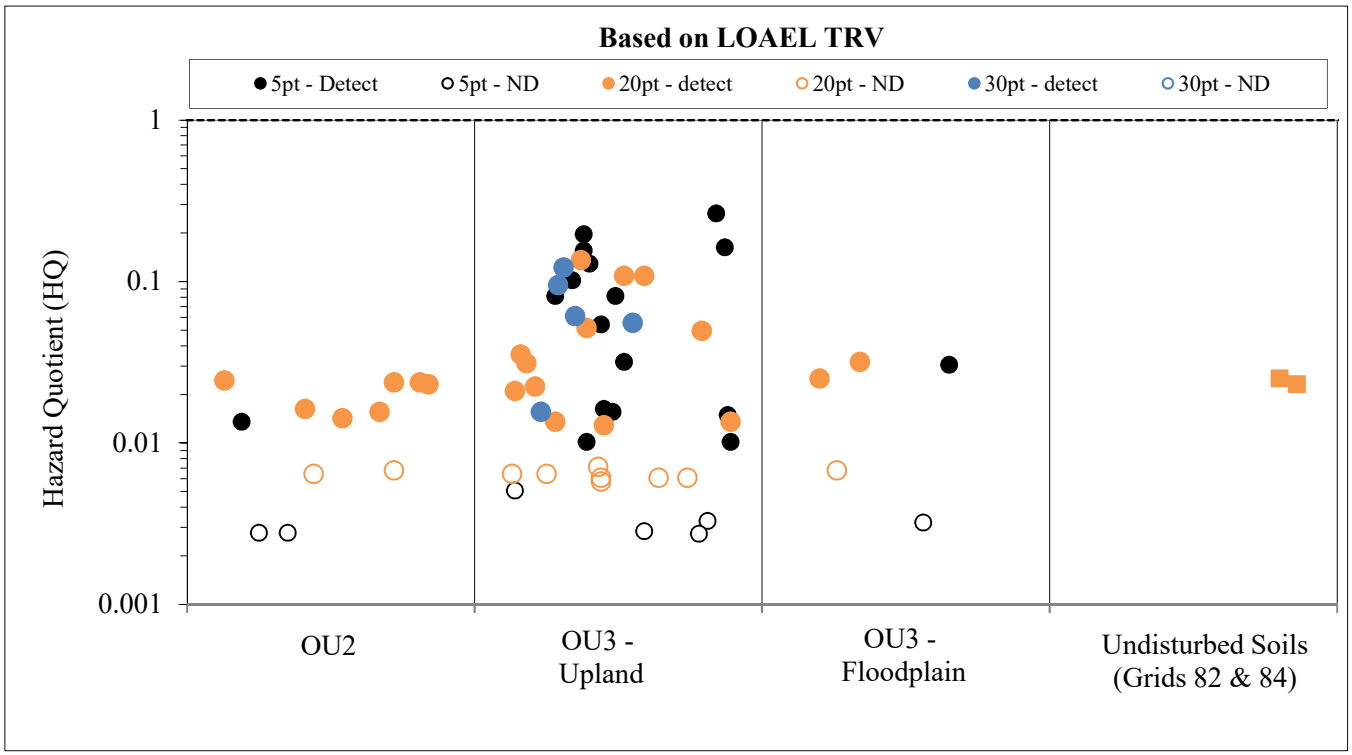
Antimony

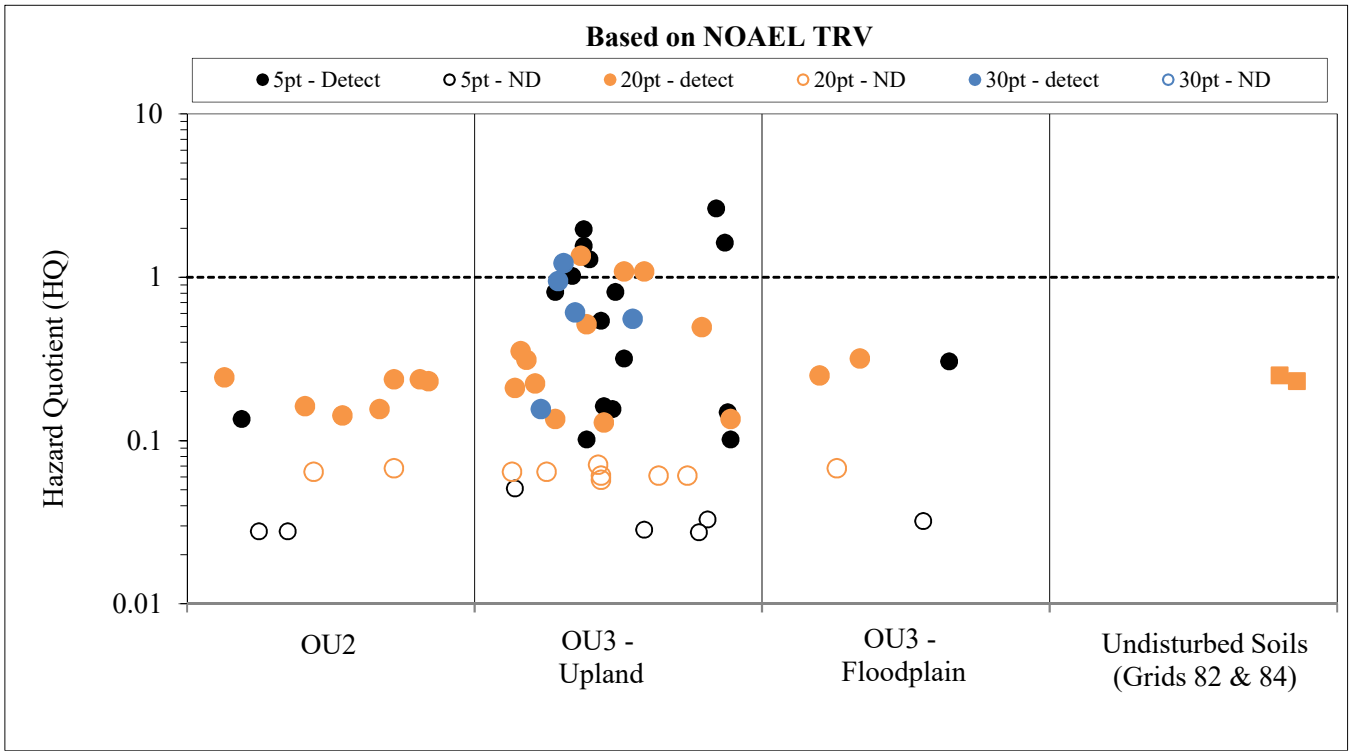
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.016	ND	1	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.0592	detect	1	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.0752	detect	1	0	<1.0	**1.2**
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.072	detect	1	0	<1.0	**1.2**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.0076	ND	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.0592	detect	1	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.0544	detect	1	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Surface Soil by Exposure Unit/Soil Type

Antimony





APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Antimony

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.35	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.23	detect	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.34	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.24	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.35	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.21	detect	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.095	ND	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.36	detect	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.1	ND	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.2	detect	1	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.041	ND	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.041	ND	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Antimony

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	1.4	detect	1	0	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	1.2	detect	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	2.9	detect	1	0	<1.0	**2.0**
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.09	ND	1	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.09	ND	1	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.19	detect	1	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.2	detect	1	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.09	ND	1	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.085	ND	1	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.33	detect	1	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.52	detect	1	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.76	detect	1	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.73	detect	1	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	1.6	detect	1	0	<1.0	**1.1**
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.46	detect	1	0	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.31	detect	1	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.2	detect	1	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.105	ND	1	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	2	detect	1	0	<1.0	**1.4**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.095	ND	1	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.095	ND	1	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.8	detect	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.0485	ND	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	1.5	detect	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.23	detect	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.15	detect	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.0405	ND	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	2.3	detect	1	0	<1.0	**1.6**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.042	ND	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.22	detect	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	2.4	detect	1	0	<1.0	**1.6**
	P17-BH1	P17-BH1-SS_4/3/14_NM	4E+00	detect	1	0	<1.0	**2.6**
	P3	P3-SSComp-01_20171020_NM	1.6	detect	1	0	<1.0	**1.1**
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.24	detect	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.15	detect	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.075	ND	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.47	detect	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.9	detect	1	0	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.82	detect	1	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	1.9	detect	1	0	<1.0	**1.3**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1.2	detect	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	1.8	detect	1	0	<1.0	**1.2**
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	0.23	detect	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Antimony

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.1	ND	1	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.37	detect	1	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.47	detect	1	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.45	detect	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.0475	ND	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.37	detect	1	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.34	detect	1	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of River Surface Water

Antimony

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0006	detect	0.059	0.59	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0003	detect	0.059	0.59	<1.0	<1.0
	SW3-CFR	SW3-CFR	#N/A	#N/A	0.059	0.59	#N/A	#N/A
	51-CFR	SW51-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
	52-CFR	SW52-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0001	detect	0.059	0.59	<1.0	<1.0
	54-CFR	SW54-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
	SW2-CFR	SW2-CFR	#N/A	#N/A	0.059	0.59	#N/A	#N/A
	55-CFR	SW55-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
	56-CFR	SW56-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
	SW1-CFR	SW1-CFR	#N/A	#N/A	0.059	0.59	#N/A	#N/A
	57-CFR	SW57-CFR	8E-05	detect	0.059	0.59	<1.0	<1.0
	58-CFR	SW58-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
	59-CFR	SW59-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
	60-CFR	SW60-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
	61-CFR	SW61-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
	62-CFR	SW62-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
	63-CFR	SW63-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of Creek Surface Water

Antimony

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	2E-04	detect	0.059	0.59	<1.0	<1.0
	43-OK	SW43-OK	2E-04	detect	0.059	0.59	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	#N/A	#N/A	0.059	0.59	#N/A	#N/A
	37-LV	SW37-LV	2E-04	detect	0.059	0.59	<1.0	<1.0
	39-LV	SW39-LV	2E-04	detect	0.059	0.59	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of Pond Surface Water

Antimony

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0001	detect	0.059	0.59	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0013	detect	0.059	0.59	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0033	detect	0.059	0.59	<1.0	<1.0
73-P5	SW73-P5	0.0029	detect	0.059	0.59	<1.0	<1.0
71-HP7	SW71-HP7	0.0015	detect	0.059	0.59	<1.0	<1.0
72-HP2	SW72-HP2	0.0017	detect	0.059	0.59	<1.0	<1.0
75-HP10	SW75-HP10	0.001	detect	0.059	0.59	<1.0	<1.0
67-HP12	SW67-HP12	0.001	detect	0.059	0.59	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0003	detect	0.059	0.59	<1.0	<1.0
66-HP13	SW66-HP13	0.0014	detect	0.059	0.59	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0012	detect	0.059	0.59	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0014	detect	0.059	0.59	<1.0	<1.0
70-CWD	SW70-CWD	0.0002	detect	0.059	0.59	<1.0	<1.0
64-HP18	SW64-HP18	0.001	detect	0.059	0.59	<1.0	<1.0

#N/A = not analyzed

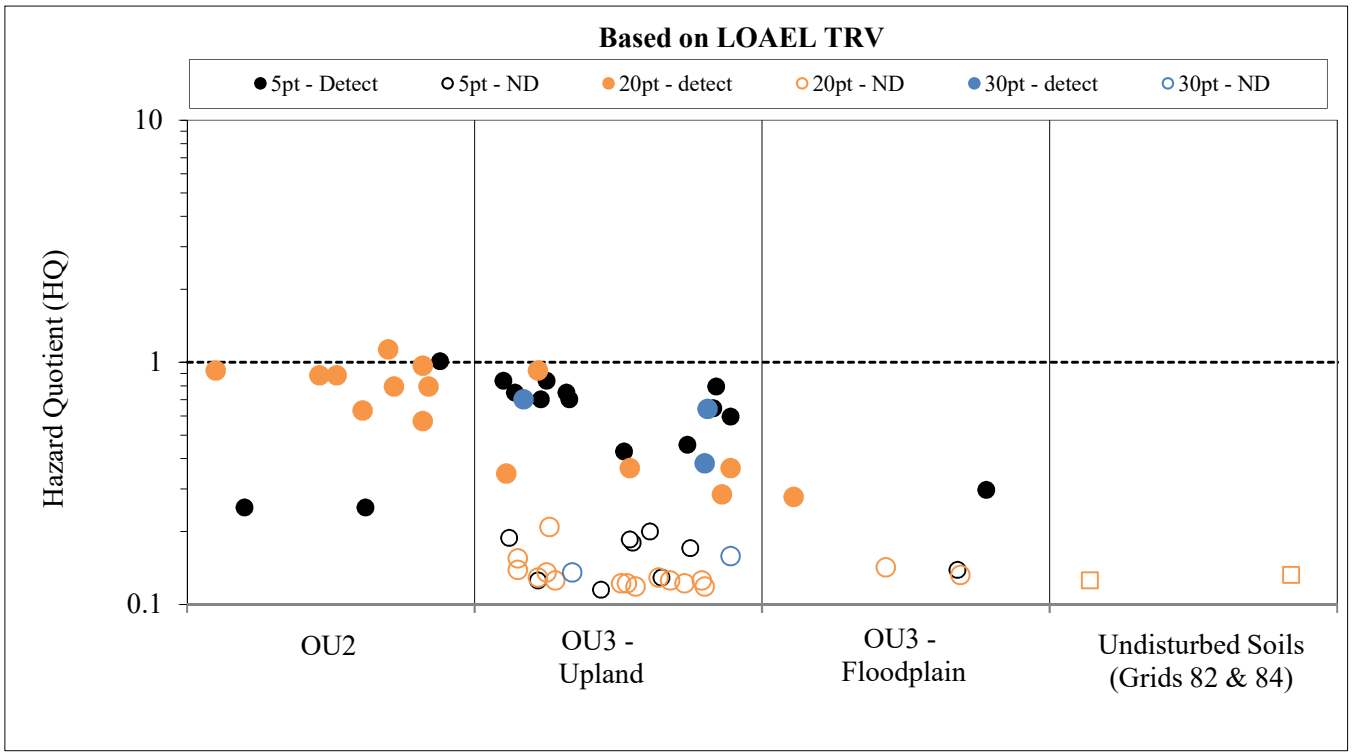
(a) Non-detects are evaluated at 1/2 the reported value.

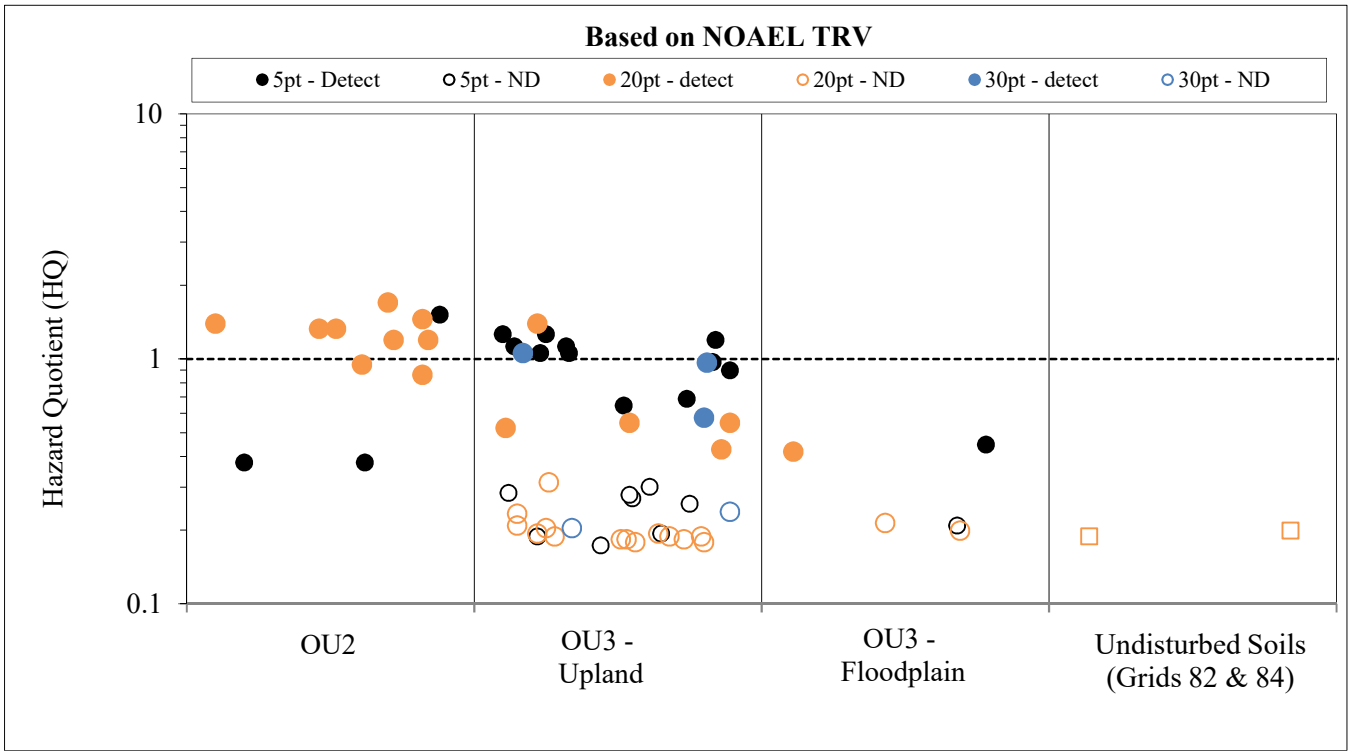
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Food by Exposure Unit/Soil Type

Selenium





APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Selenium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.142962	detect	0	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.199813	detect	0	0	<1.0	**1.3**
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.179915	detect	0	0	<1.0	**1.2**
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.129489	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.219012	detect	0	0	<1.0	**1.5**
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.255702	detect	0	0	**1.1**	**1.7**
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.179915	detect	0	0	<1.0	**1.2**
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.199813	detect	0	0	<1.0	**1.3**
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.209492	detect	0	0	<1.0	**1.4**
	LF-1	LF-1-SS_4/18/14_NM	0.228382	detect	0	0	<1.0	**1.5**
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	0	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.056851	detect	0	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.056851	detect	0	0	<1.0	<1.0

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Selenium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.15918	detect	0	0	<1.0	**1.1**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.04066	ND	0	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.169663	detect	0	0	<1.0	**1.1**
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.02765	ND	0	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.02765	ND	0	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.028425	ND	0	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.02765	ND	0	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.028425	ND	0	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.026866	ND	0	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.026866	ND	0	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.035098	ND	0	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.082671	detect	0	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.064391	detect	0	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.209492	detect	0	0	<1.0	**1.4**
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.082671	detect	0	0	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.031455	ND	0	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.029193	ND	0	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.030708	ND	0	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.078594	detect	0	0	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.029193	ND	0	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.028425	ND	0	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.097044	detect	0	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.189959	detect	0	0	<1.0	**1.3**
	HP18-1	HP18-1-SS_4/10/14_NM	0.135162	detect	0	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.029193	ND	0	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.026074	ND	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.103322	detect	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.15918	detect	0	0	<1.0	**1.1**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.028425	ND	0	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.169663	detect	0	0	<1.0	**1.1**
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.189959	detect	0	0	<1.0	**1.3**
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.179915	detect	0	0	<1.0	**1.2**
	P3	P3-SSComp-01_20171020_NM	0.047246	ND	0	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.038609	ND	0	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.042007	ND	0	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.042674	ND	0	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.045307	ND	0	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.03581	ND	0	0	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.086676	detect	0	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.146257	detect	0	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.15918	detect	0	0	<1.0	**1.1**
	SPP	SPP-SSComp-01_20171025_NM	0.145162	detect	0	0	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	0.030708	ND	0	0	<1.0	<1.0

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

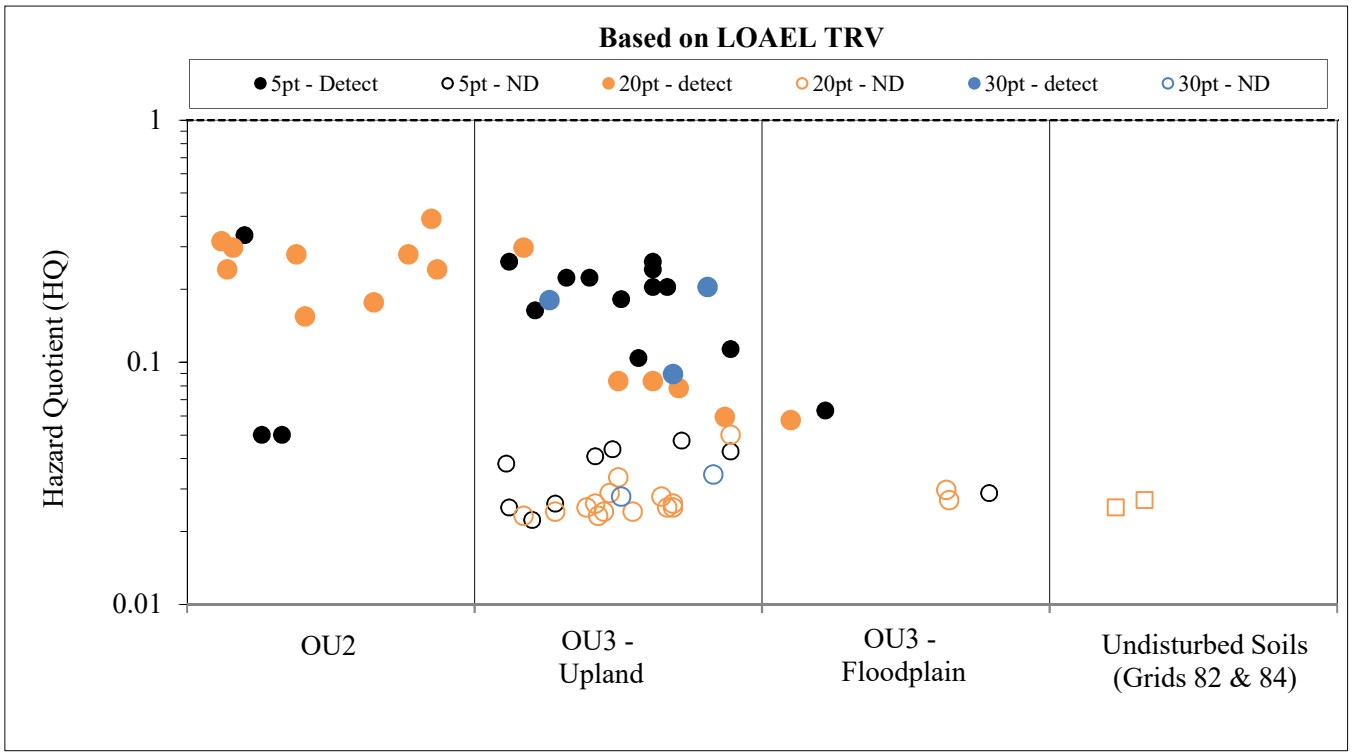
Selenium

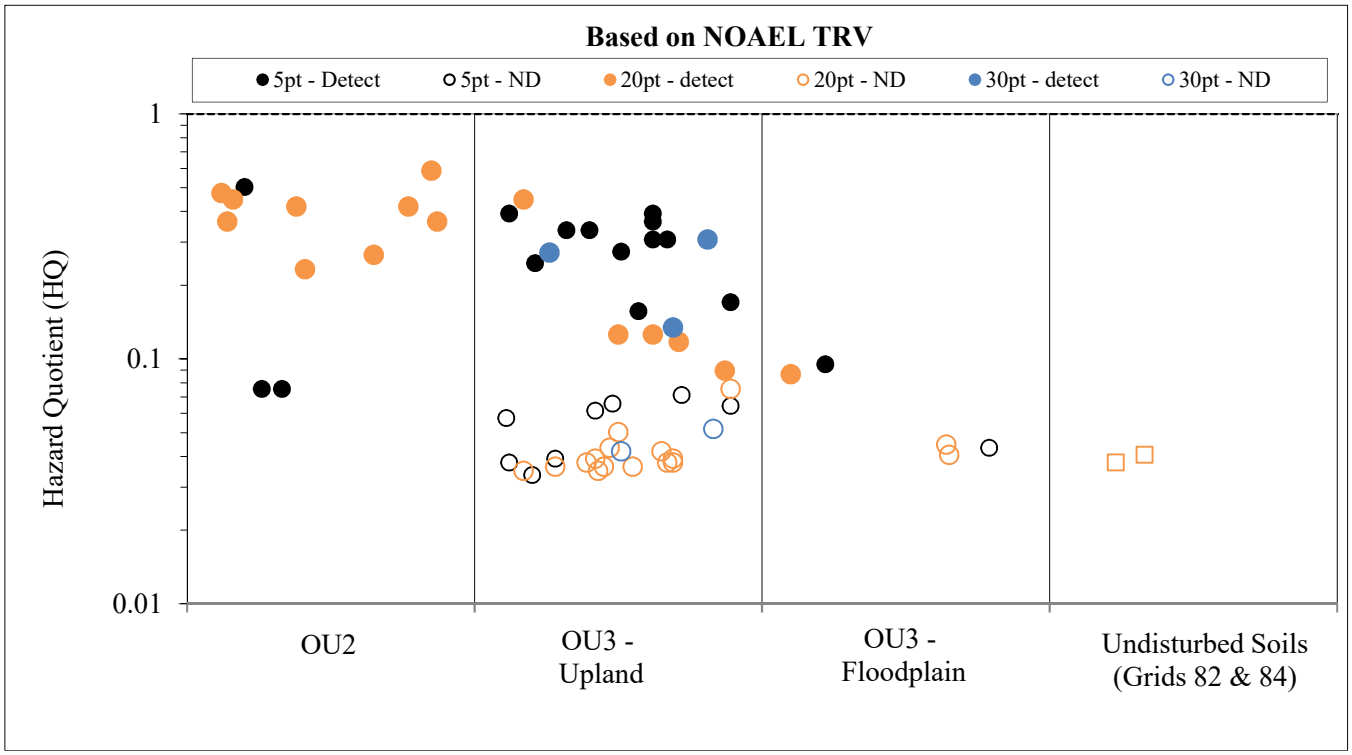
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.029954	ND	0	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.062909	detect	0	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.032195	ND	0	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.067317	detect	0	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.031455	ND	0	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.029954	ND	0	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.028425	ND	0	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Surface Soil by Exposure Unit/Soil Type

Selenium





APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Selenium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.95	detect	0	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	1.5	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	1.3	detect	0	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.83	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	1.7	detect	0	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	2.1	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	1.3	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	1.5	detect	0	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	1.6	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	1.8	detect	0	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	0	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.27	detect	0	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.27	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Selenium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	1.1	detect	0	0	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.22	ND	0	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	1.2	detect	0	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.13	ND	0	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.13	ND	0	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.135	ND	0	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.13	ND	0	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.135	ND	0	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.125	ND	0	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.125	ND	0	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.18	ND	0	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.45	detect	0	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.32	detect	0	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	1.6	detect	0	0	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.45	detect	0	0	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.155	ND	0	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.14	ND	0	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.15	ND	0	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.42	detect	0	0	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.14	ND	0	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.135	ND	0	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.56	detect	0	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	1.4	detect	0	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.88	detect	0	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.14	ND	0	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.12	ND	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.61	detect	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1.1	detect	0	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.135	ND	0	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	1.2	detect	0	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	1.4	detect	0	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	1E+00	detect	0	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.27	ND	0	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.205	ND	0	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.23	ND	0	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.235	ND	0	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.255	ND	0	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.185	ND	0	0	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.48	detect	0	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.98	detect	0	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1.1	detect	0	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.97	detect	0	0	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	0.15	ND	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Selenium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.145	ND	0	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.31	detect	0	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.16	ND	0	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.34	detect	0	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.155	ND	0	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.145	ND	0	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.135	ND	0	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of River Surface Water

Selenium

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0002	ND	0.143	0.215	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0002	ND	0.143	0.215	<1.0	<1.0
	SW3-CFR	SW3-CFR	#N/A	#N/A	0.143	0.215	#N/A	#N/A
	51-CFR	SW51-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	52-CFR	SW52-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	54-CFR	SW54-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	SW2-CFR	SW2-CFR	#N/A	#N/A	0.143	0.215	#N/A	#N/A
	55-CFR	SW55-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	56-CFR	SW56-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	SW1-CFR	SW1-CFR	#N/A	#N/A	0.143	0.215	#N/A	#N/A
	57-CFR	SW57-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	58-CFR	SW58-CFR	0.0001	detect	0.143	0.215	<1.0	<1.0
	59-CFR	SW59-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	60-CFR	SW60-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	61-CFR	SW61-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	62-CFR	SW62-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	63-CFR	SW63-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of Creek Surface Water

Selenium

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	1E-04	ND	0.143	0.215	<1.0	<1.0
	43-OK	SW43-OK	1E-04	ND	0.143	0.215	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	#N/A	#N/A	0.143	0.215	#N/A	#N/A
	37-LV	SW37-LV	1E-04	ND	0.143	0.215	<1.0	<1.0
	39-LV	SW39-LV	1E-04	ND	0.143	0.215	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of Pond Surface Water

Selenium

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0001	ND	0.143	0.215	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0002	detect	0.143	0.215	<1.0	<1.0
69-HP1a	SW69-HP1a	0.002	detect	0.143	0.215	<1.0	<1.0
73-P5	SW73-P5	0.0018	detect	0.143	0.215	<1.0	<1.0
71-HP7	SW71-HP7	0.0013	detect	0.143	0.215	<1.0	<1.0
72-HP2	SW72-HP2	0.0007	ND	0.143	0.215	<1.0	<1.0
75-HP10	SW75-HP10	0.0014	detect	0.143	0.215	<1.0	<1.0
67-HP12	SW67-HP12	0.0009	detect	0.143	0.215	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0001	ND	0.143	0.215	<1.0	<1.0
66-HP13	SW66-HP13	0.0007	ND	0.143	0.215	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0007	detect	0.143	0.215	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0004	detect	0.143	0.215	<1.0	<1.0
70-CWD	SW70-CWD	0.0001	ND	0.143	0.215	<1.0	<1.0
64-HP18	SW64-HP18	0.0007	ND	0.143	0.215	<1.0	<1.0

#N/A = not analyzed

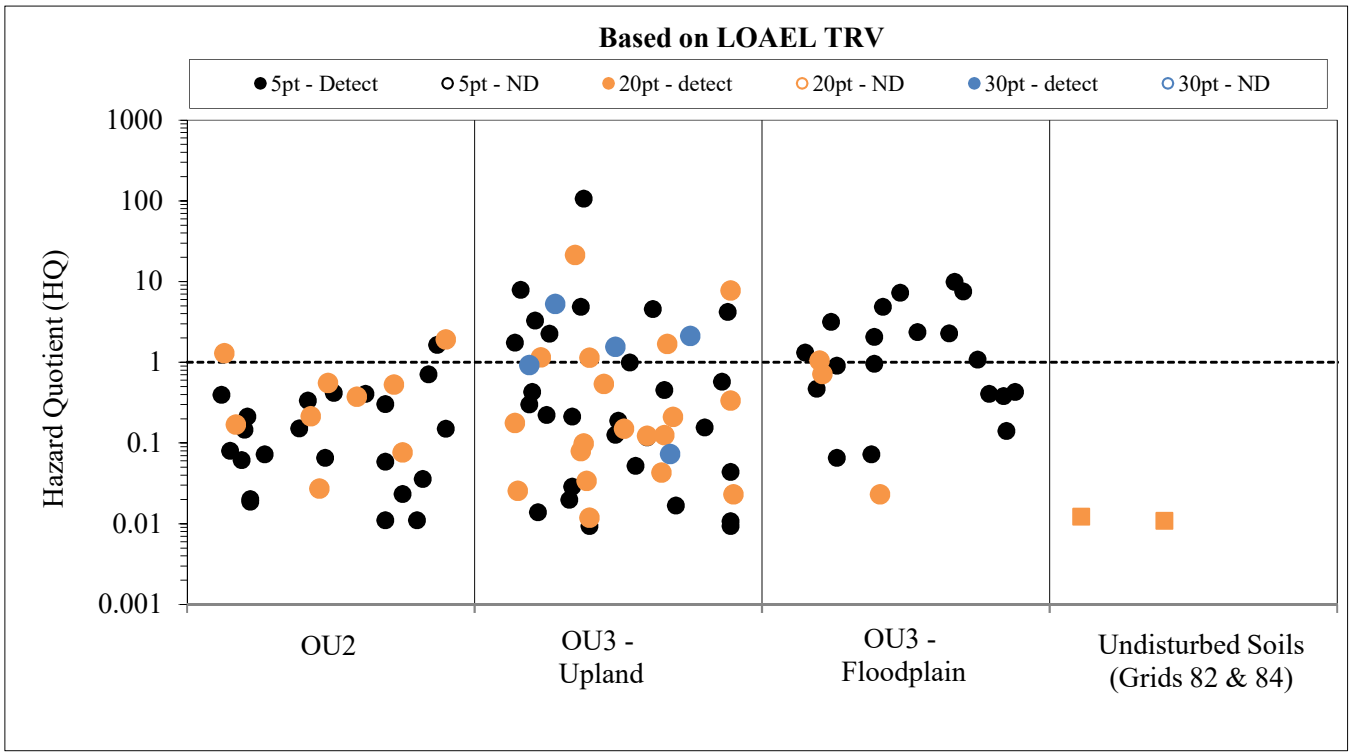
(a) Non-detects are evaluated at 1/2 the reported value.

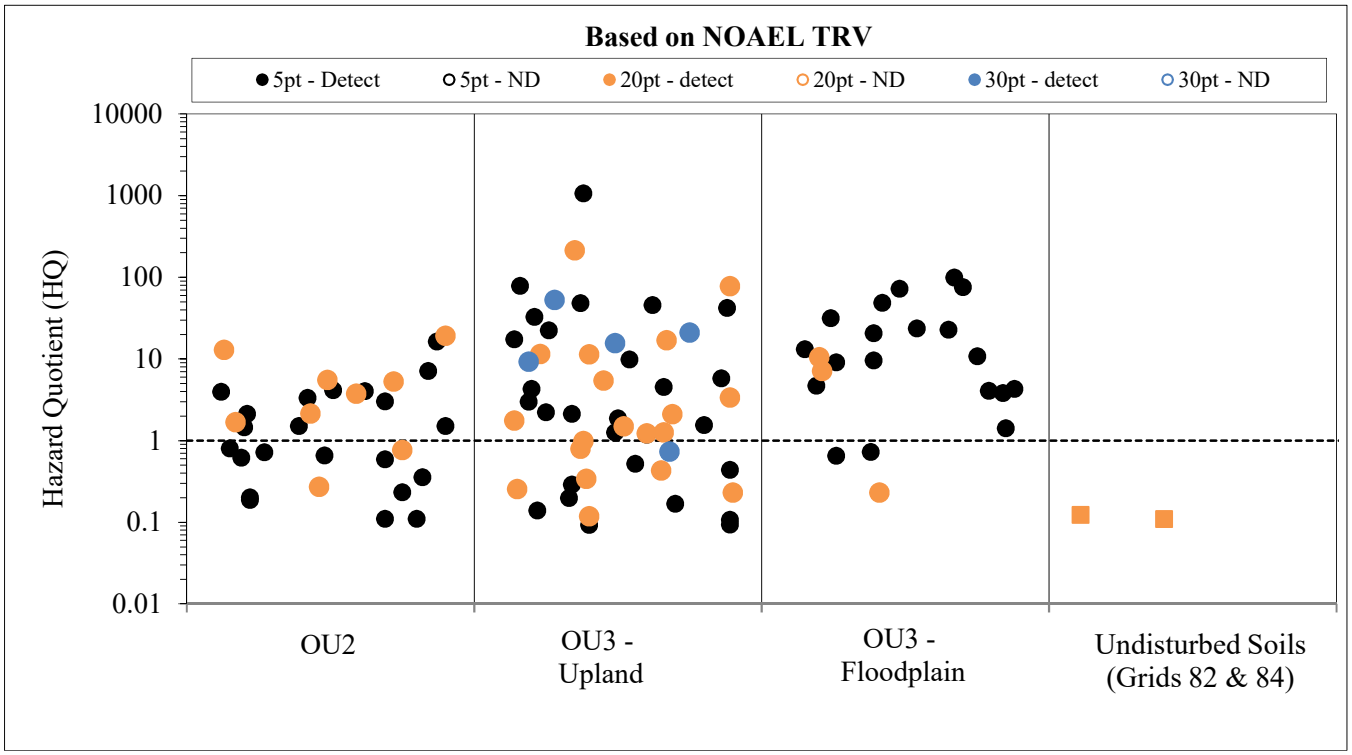
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Food by Exposure Unit/Soil Type

D/F Mam TEQ - ND=1/2RL





APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

D/F Mam TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	3.95E-06	detect	0	0	<1.0	**3.8**
	Grid 13	Grid 13-SSComp-01_20171019_NM	1.78E-06	detect	0	0	<1.0	**1.7**
	Grid 14	Grid 14-SSComp-01_20171017_NM	2.02E-05	detect	0	0	**1.9**	**19.2**
	Grid 2	Grid 2-SSComp-01_20171016_NM	2.26E-06	detect	0	0	<1.0	**2.1**
	Grid 22	Grid 22-SSComp-01_20171018_NM	1.36E-05	detect	0	0	**1.3**	**12.9**
	Grid 23	Grid 23-SSComp-01_20171018_NM	2.87E-07	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	8.07E-07	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	5.81E-06	detect	0	0	<1.0	**5.5**
	Grid 9	Grid 9-SSComp-01_20171018_NM	5.58E-06	detect	0	0	<1.0	**5.3**
	LF-1	LF-1-SS_4/18/14_NM	3.75E-07	detect	0	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	0	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	1.59E-06	detect	0	0	<1.0	**1.5**
	SS11-IN	SS11-IN-(0-2)c	4.37E-06	detect	0	0	<1.0	**4.2**
	SS12-IN	SS12-IN-(0-2)c	3.19E-06	detect	0	0	<1.0	**3.0**
	SS13-IN	SS13-IN-(0-2)c	1.54E-06	detect	0	0	<1.0	**1.5**
	SS14-IN	SS14-IN-(0-2)c	2.24E-06	detect	0	0	<1.0	**2.1**
	SS15-IN	SS15-IN-(0-2)c	1.58E-06	detect	0	0	<1.0	**1.5**
	SS16-IN	SS16-IN-(0-2)c	4.26E-06	detect	0	0	<1.0	**4.0**
	SS17-IN	SS17-IN-(0-2)c	1.97E-07	detect	0	0	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	6.18E-07	detect	0	0	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	8.45E-07	detect	0	0	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	4.17E-06	detect	0	0	<1.0	**4.0**
	SS33-IN	SS33-IN-(0-2)c	2.12E-07	detect	0	0	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	6.48E-07	detect	0	0	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	6.91E-07	detect	0	0	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	2.45E-07	detect	0	0	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	1.73E-05	detect	0	0	**1.6**	**16.4**
	SS7-IN	SS7-IN-(0-2)c	3.53E-06	detect	0	0	<1.0	**3.4**
	SS8-IN	SS8-IN-(0-2)c	7.49E-06	detect	0	0	<1.0	**7.1**
	SS9-IN	SS9-IN-(0-2)c	7.61E-07	detect	0	0	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	1.16E-07	detect	0	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	1.16E-07	detect	0	0	<1.0	<1.0

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

D/F Mam TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	2.22E-05	detect	0	0	**2.1**	**21.1**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	4.81E-05	detect	0	0	**4.6**	**45.7**
	CRP-1	CRP-1-SS_4/10/14_NM	1.33E-06	detect	0	0	<1.0	**1.3**
	Grid 27	Grid 27-SSComp-01_20171019_NM	1.32E-06	detect	0	0	<1.0	**1.3**
	Grid 28	Grid 28-SSComp-01_20171019_NM	2.69E-07	detect	0	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	1.58E-06	detect	0	0	<1.0	**1.5**
	Grid 30	Grid 30-SSComp-01_20171020_NM	8.35E-07	detect	0	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	4.53E-07	detect	0	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	3.57E-07	detect	0	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	2.42E-07	detect	0	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	1.86E-06	detect	0	0	<1.0	**1.8**
	Grid 43	Grid 43-SSComp-01_20171023_NM	2.22E-06	detect	0	0	<1.0	**2.1**
	Grid 44	Grid 44-SSComp-01_20171023_NM	1.04E-06	detect	0	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	1.19E-05	detect	0	0	**1.1**	**11.3**
	Grid 53	Grid 53-SSComp-01_20171020_NM	1.78E-05	detect	0	0	**1.7**	**16.9**
	Grid 60	Grid 60-SSComp-01_20171023_NM	5.69E-06	detect	0	0	<1.0	**5.4**
	Grid 61	Grid 61-SSComp-01_20171023_NM	3.54E-06	detect	0	0	<1.0	**3.4**
	Grid 64	Grid 64-SSComp-01_20171024_NM	1.21E-05	detect	0	0	**1.2**	**11.5**
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.000225	detect	0	0	**21.4**	**213.8**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	1.25E-07	detect	0	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	1.29E-06	detect	0	0	<1.0	**1.2**
	HP16-1	HP16-1-SS_4/10/14_NM	6.07E-06	detect	0	0	<1.0	**5.8**
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	1.77E-07	detect	0	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	4.51E-06	detect	0	0	<1.0	**4.3**
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	3.04E-07	detect	0	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	2.09E-07	detect	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	9.82E-08	detect	0	0	<1.0	<1.0
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	4.62E-07	detect	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	8.28E-05	detect	0	0	**7.9**	**78.6**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	2.24E-06	detect	0	0	<1.0	**2.1**
	IBK-1	IBK-1-SS_4/16/14_NM	9.82E-08	detect	0	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	4.43E-05	detect	0	0	**4.2**	**42.1**
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.00112	detect	0	0	**106.4**	**1064.0**
	P3	P3-SSComp-01_20171020_NM	8.17E-05	detect	0	0	**7.8**	**77.6**
	P3-BH1	P3-BH1-SS_4/3/14_NM	1.84E-05	detect	0	0	**1.7**	**17.5**
	P4-BH1	P4-BH1-SS_4/4/14_NM	5.46E-07	detect	0	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	1.24E-06	detect	0	0	<1.0	**1.2**
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	2.33E-06	detect	0	0	<1.0	**2.2**
	P8	P8-SSComp-01_20171025_NM	1.64E-05	detect	0	0	**1.6**	**15.6**
	P8dc	P8dc-SSComp-01_20171024_NM	9.73E-06	detect	0	0	<1.0	**9.2**
	P8-TP3	P8-TP3-SS_4/4/14_NM	1.04E-05	detect	0	0	<1.0	**9.9**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	5.1E-05	detect	0	0	**4.8**	**48.4**
	SPP	SPP-SSComp-01_20171025_NM	5.56E-05	detect	0	0	**5.3**	**52.8**
	SS1,2-HP18	SS1-HP18-(0-2)c	1.46E-07	detect	0	0	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	1.13E-07	detect	0	0	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	3.45E-05	detect	0	0	**3.3**	**32.7**
	SS15,16-HP9	SS15-HP9-(0-2)c	2.37E-05	detect	0	0	**2.2**	**22.5**
	SS3,4-HP16	SS3-HP16-(0-2)c	3.15E-06	detect	0	0	<1.0	**3.0**
	SS5,6-IBJ	SS5-IBJ-(0-2)c	1.98E-06	detect	0	0	<1.0	**1.9**
	SS7,8-HP13	SS7-HP13-(0-2)c	4.78E-06	detect	0	0	<1.0	**4.5**
	SS9,10-HP12	SS9-HP12-(0-2)c	1.63E-06	detect	0	0	<1.0	**1.6**
	SWBA	SWBA-SSComp-01_20171024_NM	7.71E-07	detect	0	0	<1.0	<1.0

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

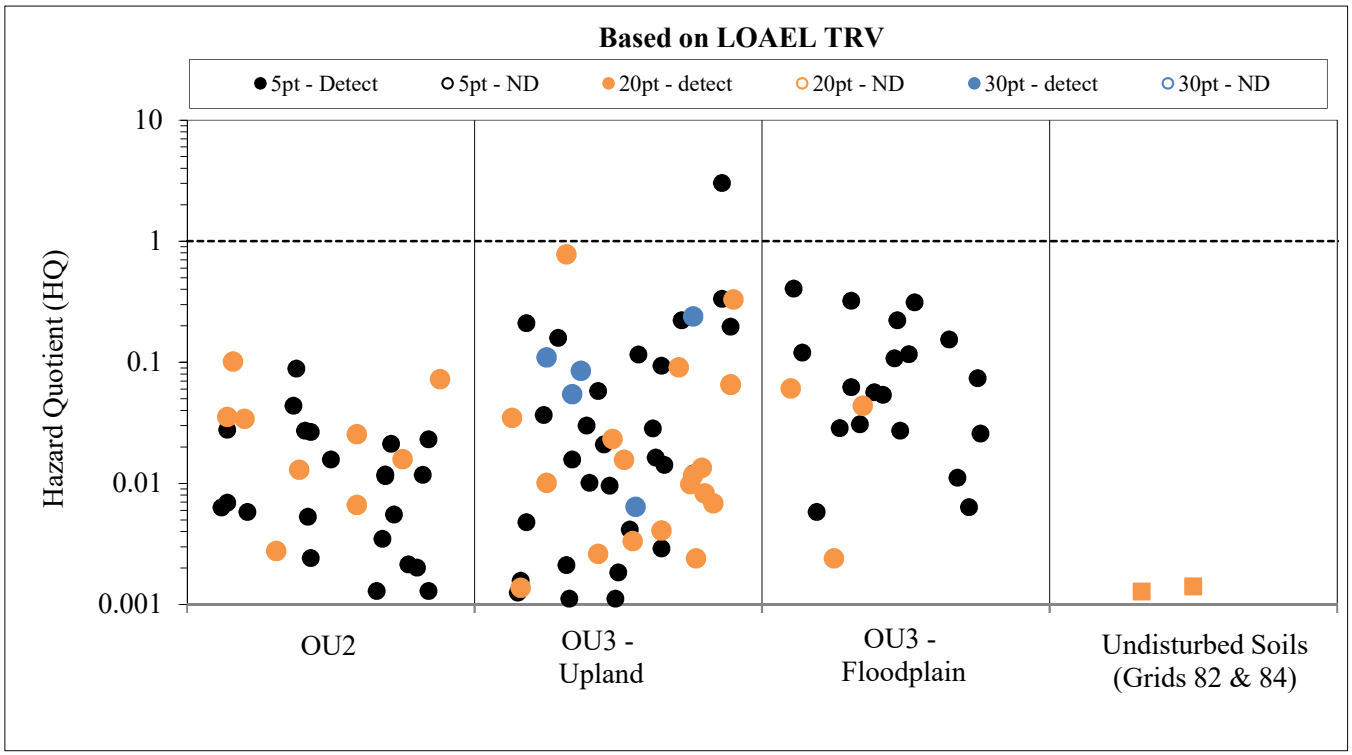
D/F Mam TEQ - ND=1/2RL

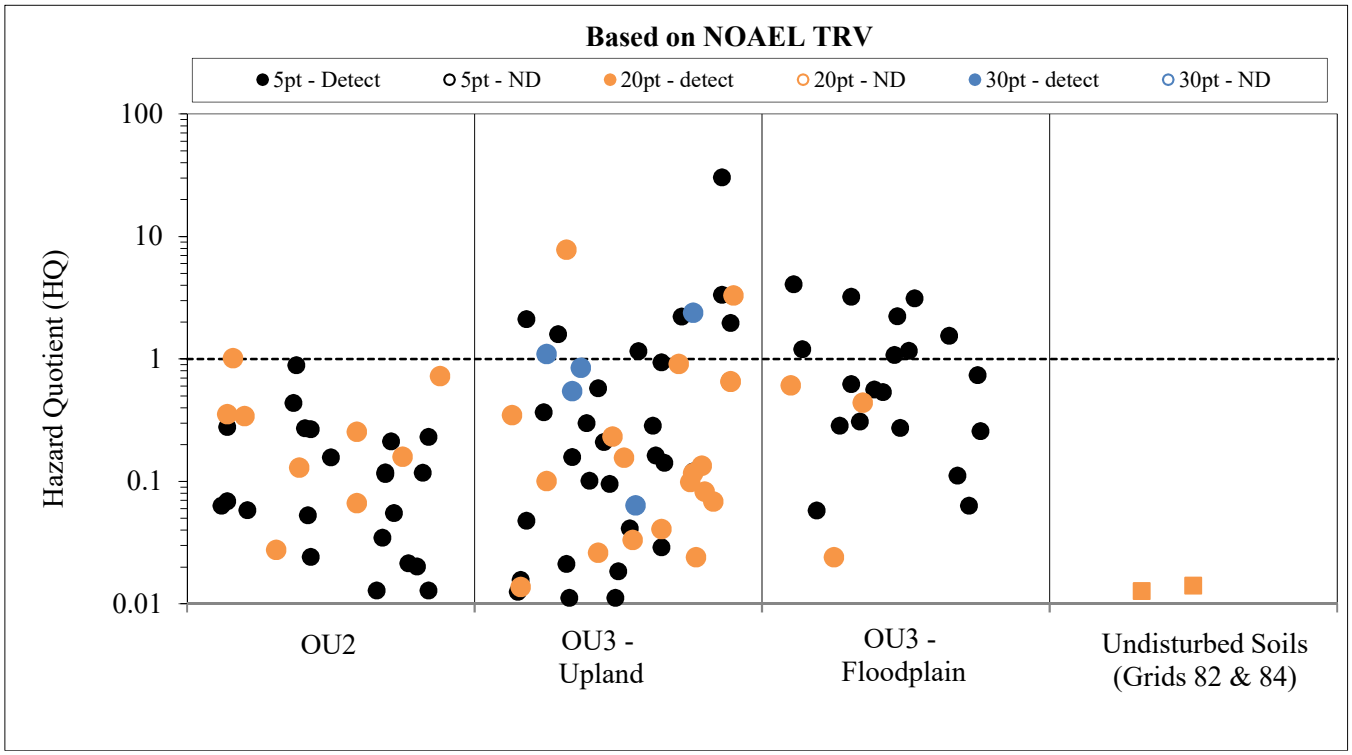
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	2.43E-07	detect	0	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	7.51E-06	detect	0	0	<1.0	**7.1**
	Grid 94	Grid 94-SSComp-01_20171026_NM	1.1E-05	detect	0	0	<1.0	**10.5**
	HP13a-1	HP13A-1-SS_4/10/14_NM	1.39E-05	detect	0	0	**1.3**	**13.2**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	1.49E-06	detect	0	0	<1.0	**1.4**
	SE10-HP11	SE10-HP11-(0-2)c	7.64E-05	detect	0	0	**7.3**	**72.6**
	SE11-HP11	SE11-HP11-(0-2)c	2.48E-05	detect	0	0	**2.4**	**23.5**
	SE12-HP12	SE12-HP12-(0-2)c	4.01E-06	detect	0	0	<1.0	**3.8**
	SE13-HP12	SE13-HP12-(0-2)c	7.94E-05	detect	0	0	**7.5**	**75.5**
	SE14-HP13	SE14-HP13-(0-2)c	7.64E-07	detect	0	0	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	5.13E-05	detect	0	0	**4.9**	**48.7**
	SE16-HP13	SE16-HP13-(0-2)c	4.28E-06	detect	0	0	<1.0	**4.1**
	SE17-HP13a	SE17-HP13a-(0-2)c	4.95E-06	detect	0	0	<1.0	**4.7**
	SE1-HP1a	SE1-HP1a-(0-2)c	9.54E-06	detect	0	0	<1.0	**9.1**
	SE2-HP1a	SE2-HP1a-(0-2)c	1.14E-05	detect	0	0	**1.1**	**10.8**
	SE3-HP1	SE3-HP1-(0-2)c	4.51E-06	detect	0	0	<1.0	**4.3**
	SE4-HP1	SE4-HP1-(0-2)c	2.18E-05	detect	0	0	**2.1**	**20.7**
	SE5-HP2	SE5-HP2-(0-2)c	2.39E-05	detect	0	0	**2.3**	**22.7**
	SE6-HP7	SE6-HP7-(0-2)c	0.000104	detect	0	0	**9.9**	**99.2**
	SE7-HP7	SE7-HP7-(0-2)c	6.86E-07	detect	0	0	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	1.01E-05	detect	0	0	<1.0	**9.6**
	SE9-HP10	SE9-HP10-(0-2)c	3.33E-05	detect	0	0	**3.2**	**31.6**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	1.29E-07	detect	0	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	1.14E-07	detect	0	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Surface Soil by Exposure Unit/Soil Type

D/F Mam TEQ - ND=1/2RL





APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

D/F Mam TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	6.37E-06	detect	0	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	3.24E-06	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	2.53E-05	detect	0	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	3.97E-06	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	1.81E-05	detect	0	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	6.92E-07	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	1.66E-06	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	8.82E-06	detect	0	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	8.53E-06	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	8.69E-07	detect	0	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	0	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	2.95E-06	detect	0	0	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	6.94E-06	detect	0	0	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	5.31E-06	detect	0	0	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	2.87E-06	detect	0	0	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	3.93E-06	detect	0	0	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	2.94E-06	detect	0	0	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	6.79E-06	detect	0	0	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	5.04E-07	detect	0	0	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	1.33E-06	detect	0	0	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	1.73E-06	detect	0	0	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	6.66E-06	detect	0	0	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	5.36E-07	detect	0	0	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	1.38E-06	detect	0	0	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	1.46E-06	detect	0	0	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	6.05E-07	detect	0	0	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	2.22E-05	detect	0	0	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	5.78E-06	detect	0	0	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	1.09E-05	detect	0	0	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	1.58E-06	detect	0	0	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	3.22E-07	detect	0	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	3.22E-07	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

D/F Mam TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	2.74E-05	detect	0	0	<1.0	**1.1**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	5.27E-05	detect	0	0	<1.0	**2.1**
	CRP-1	CRP-1-SS_4/10/14_NM	2.53E-06	detect	0	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	2.52E-06	detect	0	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	6.55E-07	detect	0	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	2.92E-06	detect	0	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	1.71E-06	detect	0	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	1.02E-06	detect	0	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	8.33E-07	detect	0	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	6E-07	detect	0	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	3.36E-06	detect	0	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	3.9E-06	detect	0	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	2.06E-06	detect	0	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	1.62E-05	detect	0	0	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	2.27E-05	detect	0	0	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	8.67E-06	detect	0	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	5.8E-06	detect	0	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	1.64E-05	detect	0	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.000195	detect	0	0	<1.0	**7.8**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	3.43E-07	detect	0	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	2.47E-06	detect	0	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	9.15E-06	detect	0	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	4.61E-07	detect	0	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	7.12E-06	detect	0	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	7.27E-07	detect	0	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	5.3E-07	detect	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	2.79E-07	detect	0	0	<1.0	<1.0
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	1.04E-06	detect	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	8.35E-05	detect	0	0	<1.0	**3.3**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	3.94E-06	detect	0	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	2.79E-07	detect	0	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	4.92E-05	detect	0	0	<1.0	**2.0**
	P17-BH1	P17-BH1-SS_4/3/14_NM	8E-04	detect	0	0	**3.0**	**30.3**
	P3	P3-SSComp-01_20171020_NM	8.26E-05	detect	0	0	<1.0	**3.3**
	P3-BH1	P3-BH1-SS_4/3/14_NM	2.34E-05	detect	0	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	1.19E-06	detect	0	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	2.39E-06	detect	0	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	4.08E-06	detect	0	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	2.12E-05	detect	0	0	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	1.36E-05	detect	0	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	1.44E-05	detect	0	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	5.54E-05	detect	0	0	<1.0	**2.2**
	SPP	SPP-SSComp-01_20171025_NM	5.96E-05	detect	0	0	<1.0	**2.4**
	SS1,2-HP18	SS1-HP18-(0-2)c	3.92E-07	detect	0	0	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	3.14E-07	detect	0	0	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	3.98E-05	detect	0	0	<1.0	**1.6**
	SS15,16-HP9	SS15-HP9-(0-2)c	2.9E-05	detect	0	0	<1.0	**1.2**
	SS3,4-HP16	SS3-HP16-(0-2)c	5.25E-06	detect	0	0	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	3.55E-06	detect	0	0	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	7.48E-06	detect	0	0	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	3.01E-06	detect	0	0	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	1.6E-06	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

D/F Mam TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	6.01E-07	detect	0	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	1.1E-05	detect	0	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	1.52E-05	detect	0	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	1.84E-05	detect	0	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	2.78E-06	detect	0	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	7.81E-05	detect	0	0	<1.0	**3.1**
	SE11-HP11	SE11-HP11-(0-2)c	3.01E-05	detect	0	0	<1.0	**1.2**
	SE12-HP12	SE12-HP12-(0-2)c	6.45E-06	detect	0	0	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	8.06E-05	detect	0	0	<1.0	**3.2**
	SE14-HP13	SE14-HP13-(0-2)c	1.59E-06	detect	0	0	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	5.57E-05	detect	0	0	<1.0	**2.2**
	SE16-HP13	SE16-HP13-(0-2)c	6.82E-06	detect	0	0	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	7.71E-06	detect	0	0	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	1.34E-05	detect	0	0	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	1.56E-05	detect	0	0	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	7.13E-06	detect	0	0	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	2.7E-05	detect	0	0	<1.0	**1.1**
	SE5-HP2	SE5-HP2-(0-2)c	2.92E-05	detect	0	0	<1.0	**1.2**
	SE6-HP7	SE6-HP7-(0-2)c	0.000102	detect	0	0	<1.0	**4.1**
	SE7-HP7	SE7-HP7-(0-2)c	1.45E-06	detect	0	0	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	1.41E-05	detect	0	0	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	3.87E-05	detect	0	0	<1.0	**1.5**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	3.52E-07	detect	0	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	3.18E-07	detect	0	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of River Surface Water

Mam TEQ - ND=1/2RL

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	1E-09	ND	0.000001	0.00001	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	1E-09	ND	0.000001	0.00001	<1.0	<1.0
	CFR2	CFR2_20180523_NM	1E-09	detect	0.000001	0.00001	<1.0	<1.0
	SW3-CFR	SW3-CFR	1E-09	detect	0.000001	0.00001	<1.0	<1.0
	51-CFR	SW51-CFR	2E-09	ND	0.000001	0.00001	<1.0	<1.0
	52-CFR	SW52-CFR	1E-09	ND	0.000001	0.00001	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	1E-09	ND	0.000001	0.00001	<1.0	<1.0
	54-CFR	SW54-CFR	1E-09	ND	0.000001	0.00001	<1.0	<1.0
	SW2-CFR	SW2-CFR	2E-09	detect	0.000001	0.00001	<1.0	<1.0
	55-CFR	SW55-CFR	1E-09	ND	0.000001	0.00001	<1.0	<1.0
	56-CFR	SW56-CFR	1E-09	ND	0.000001	0.00001	<1.0	<1.0
	SW1-CFR	SW1-CFR	2E-09	detect	0.000001	0.00001	<1.0	<1.0
	57-CFR	SW57-CFR	2E-09	ND	0.000001	0.00001	<1.0	<1.0
	58-CFR	SW58-CFR	2E-09	ND	0.000001	0.00001	<1.0	<1.0
	59-CFR	SW59-CFR	1E-09	ND	0.000001	0.00001	<1.0	<1.0
	60-CFR	SW60-CFR	2E-09	ND	0.000001	0.00001	<1.0	<1.0
	61-CFR	SW61-CFR	2E-09	ND	0.000001	0.00001	<1.0	<1.0
	62-CFR	SW62-CFR	2E-09	ND	0.000001	0.00001	<1.0	<1.0
	63-CFR	SW63-CFR	2E-09	ND	0.000001	0.00001	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of Creek Surface Water

Mam TEQ - ND=1/2RL

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	2E-09	detect	0.000001	0.00001	<1.0	<1.0
	43-OK	SW43-OK	2E-09	detect	0.000001	0.00001	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	2E-09	detect	0.000001	0.00001	<1.0	<1.0
	37-LV	SW37-LV	2E-09	detect	0.000001	0.00001	<1.0	<1.0
	39-LV	SW39-LV	2E-09	detect	0.000001	0.00001	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of Pond Surface Water

Mam TEQ - ND=1/2RL

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	2E-09	detect	0.000001	0.00001	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	1E-09	detect	0.000001	0.00001	<1.0	<1.0
69-HP1a	SW69-HP1a	1E-09	detect	0.000001	0.00001	<1.0	<1.0
73-P5	SW73-P5	2E-09	detect	0.000001	0.00001	<1.0	<1.0
71-HP7	SW71-HP7	1E-09	detect	0.000001	0.00001	<1.0	<1.0
72-HP2	SW72-HP2	1E-09	detect	0.000001	0.00001	<1.0	<1.0
75-HP10	SW75-HP10	8E-10	detect	0.000001	0.00001	<1.0	<1.0
67-HP12	SW67-HP12	1E-09	detect	0.000001	0.00001	<1.0	<1.0
68-IBJ	SW68-IBJ	2E-09	detect	0.000001	0.00001	<1.0	<1.0
66-HP13	SW66-HP13	1E-09	detect	0.000001	0.00001	<1.0	<1.0
65-HP13a	SW65-HP13a	1E-09	detect	0.000001	0.00001	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	2E-09	detect	0.000001	0.00001	<1.0	<1.0
70-CWD	SW70-CWD	2E-09	detect	0.000001	0.00001	<1.0	<1.0
64-HP18	SW64-HP18	1E-09	detect	0.000001	0.00001	<1.0	<1.0

#N/A = not analyzed

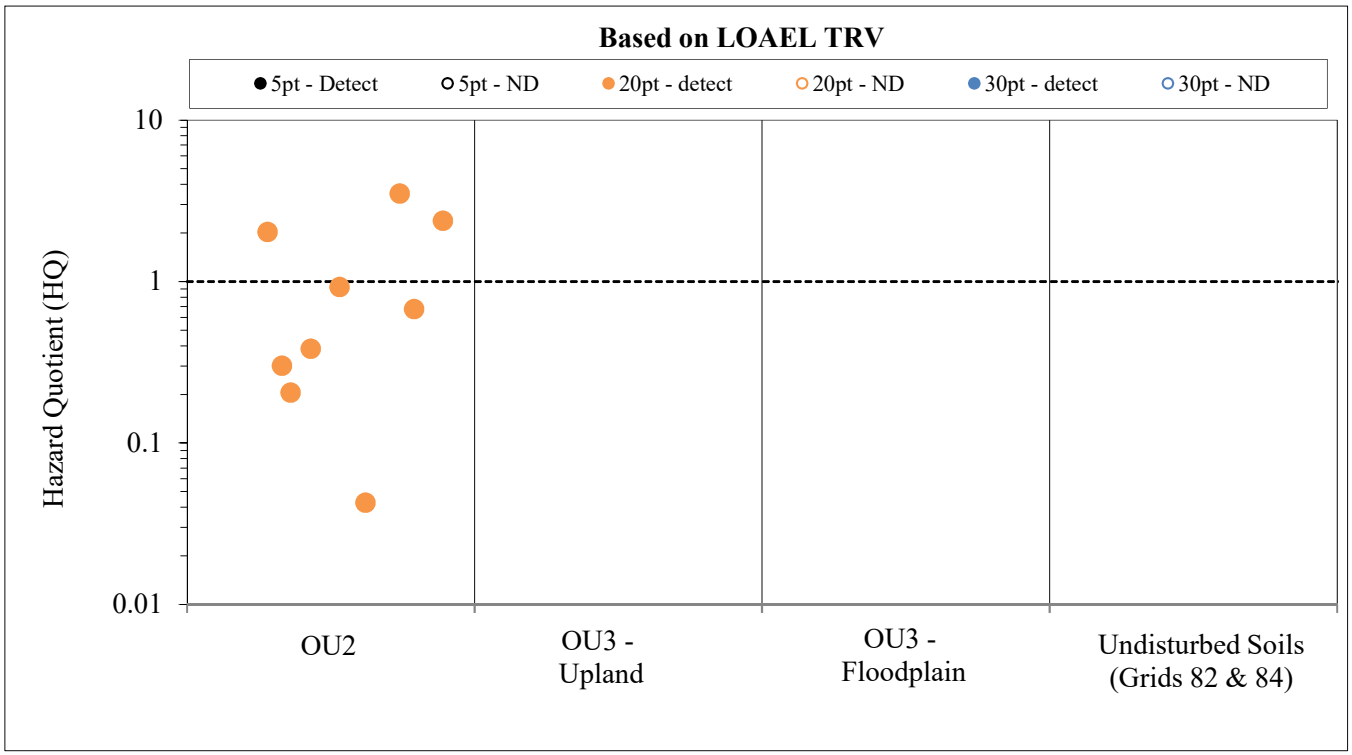
(a) Non-detects are evaluated at 1/2 the reported value.

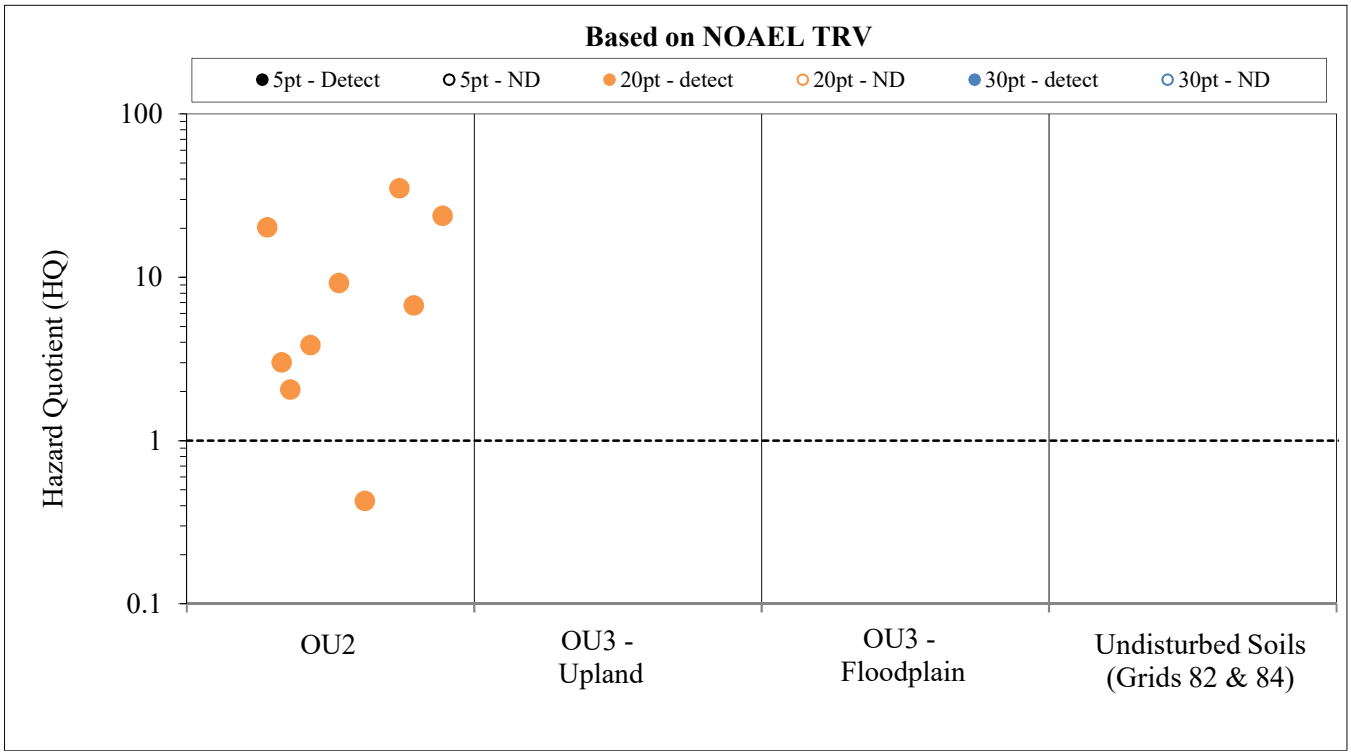
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Food by Exposure Unit/Soil Type

D/F+DL-PCB Mam TEQ - ND=1/2RL





APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

D/F+DL-PCB Mam TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	9.73E-06	detect	0	0	<1.0	**9.2**
	Grid 13	Grid 13-SSComp-01_20171019_NM	2.16E-06	detect	0	0	<1.0	**2.1**
	Grid 14	Grid 14-SSComp-01_20171017_NM	2.51E-05	detect	0	0	**2.4**	**23.8**
	Grid 2	Grid 2-SSComp-01_20171016_NM	3.17E-06	detect	0	0	<1.0	**3.0**
	Grid 22	Grid 22-SSComp-01_20171018_NM	2.13E-05	detect	0	0	**2.0**	**20.2**
	Grid 23	Grid 23-SSComp-01_20171018_NM	4.5E-07	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	4.04E-06	detect	0	0	<1.0	**3.8**
	Grid 8	Grid 8-SSComp-01_20171018_NM	3.69E-05	detect	0	0	**3.5**	**35.0**
	Grid 9	Grid 9-SSComp-01_20171018_NM	7.1E-06	detect	0	0	<1.0	**6.7**
	LF-1	LF-1-SS_4/18/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	0	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	#N/A	#N/A	0	0	#N/A	#N/A
	TSB-SS	BACKFILL-TSB-SS	#N/A	#N/A	0	0	#N/A	#N/A

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

D/F+DL-PCB Mam TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	0	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	CRP-1	CRP-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-1	HP18-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-IB	HP18-SSC-IB_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP9-1	HP9-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	IBK-1	IBK-1-SS_4/16/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P17-BH1	P17-BH1-SS_4/3/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P4-BH1	P4-BH1-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P5-BH2	P5-BH2-SS_4/3/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

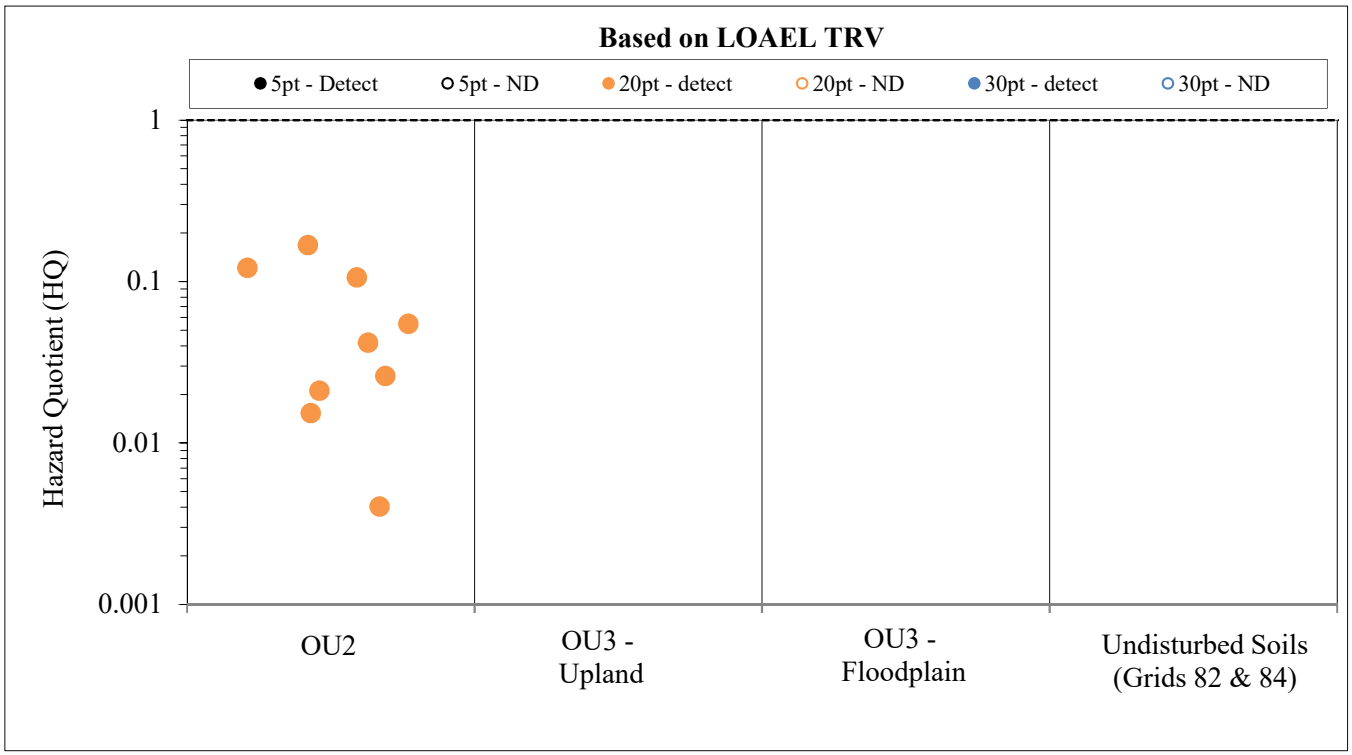
D/F+DL-PCB Mam TEQ - ND=1/2RL

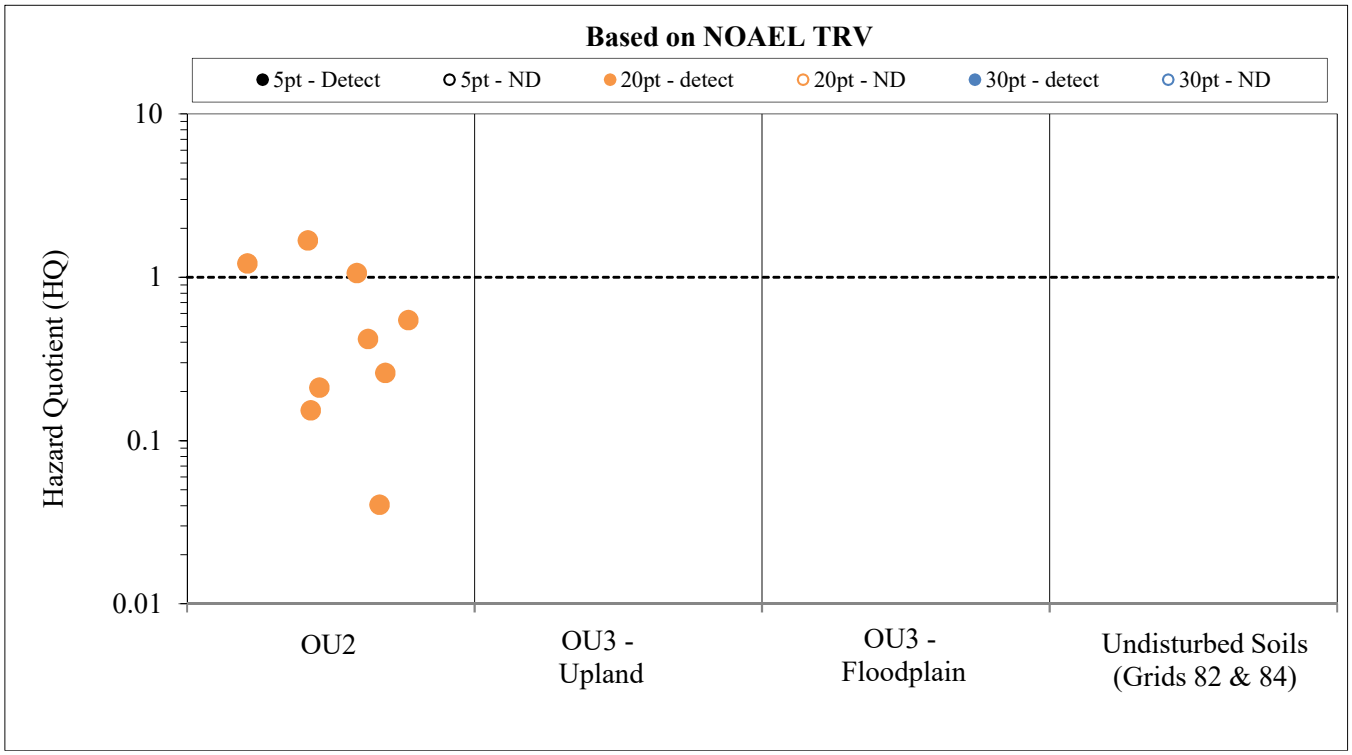
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	0	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Surface Soil by Exposure Unit/Soil Type

D/F+DL-PCB Mam TEQ - ND=1/2RL





APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

D/F+DL-PCB Mam TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	1.37E-05	detect	0	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	3.83E-06	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	3.04E-05	detect	0	0	<1.0	**1.2**
	Grid 2	Grid 2-SSComp-01_20171016_NM	5.28E-06	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	2.65E-05	detect	0	0	<1.0	**1.1**
	Grid 23	Grid 23-SSComp-01_20171018_NM	1.01E-06	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	6.49E-06	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	4.21E-05	detect	0	0	<1.0	**1.7**
	Grid 9	Grid 9-SSComp-01_20171018_NM	1.05E-05	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	0	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	#N/A	#N/A	0	0	#N/A	#N/A
	TSB-SS	BACKFILL-TSB-SS	#N/A	#N/A	0	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

D/F+DL-PCB Mam TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	0	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	CRP-1	CRP-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-1	HP18-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-IB	HP18-SSC-IB_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP9-1	HP9-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	IBK-1	IBK-1-SS_4/16/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P17-BH1	P17-BH1-SS_4/3/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P4-BH1	P4-BH1-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P5-BH2	P5-BH2-SS_4/3/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

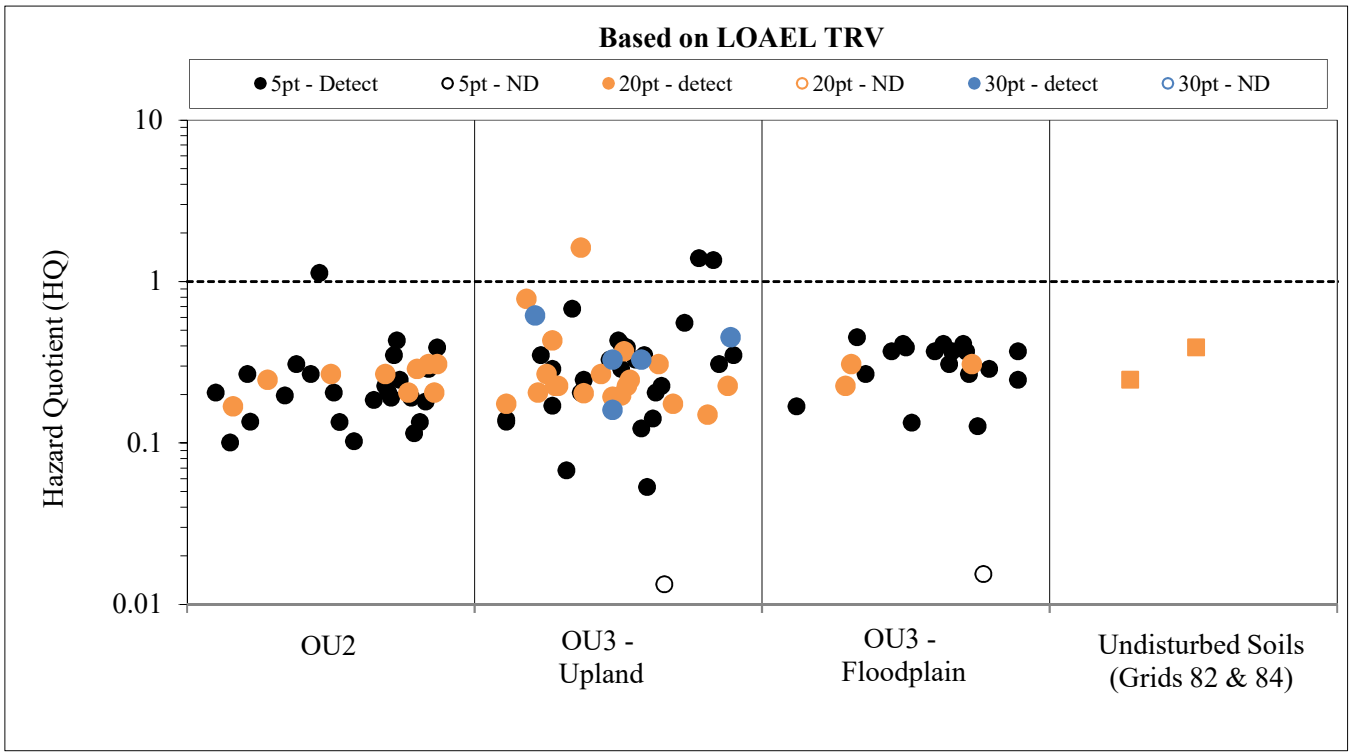
D/F+DL-PCB Mam TEQ - ND=1/2RL

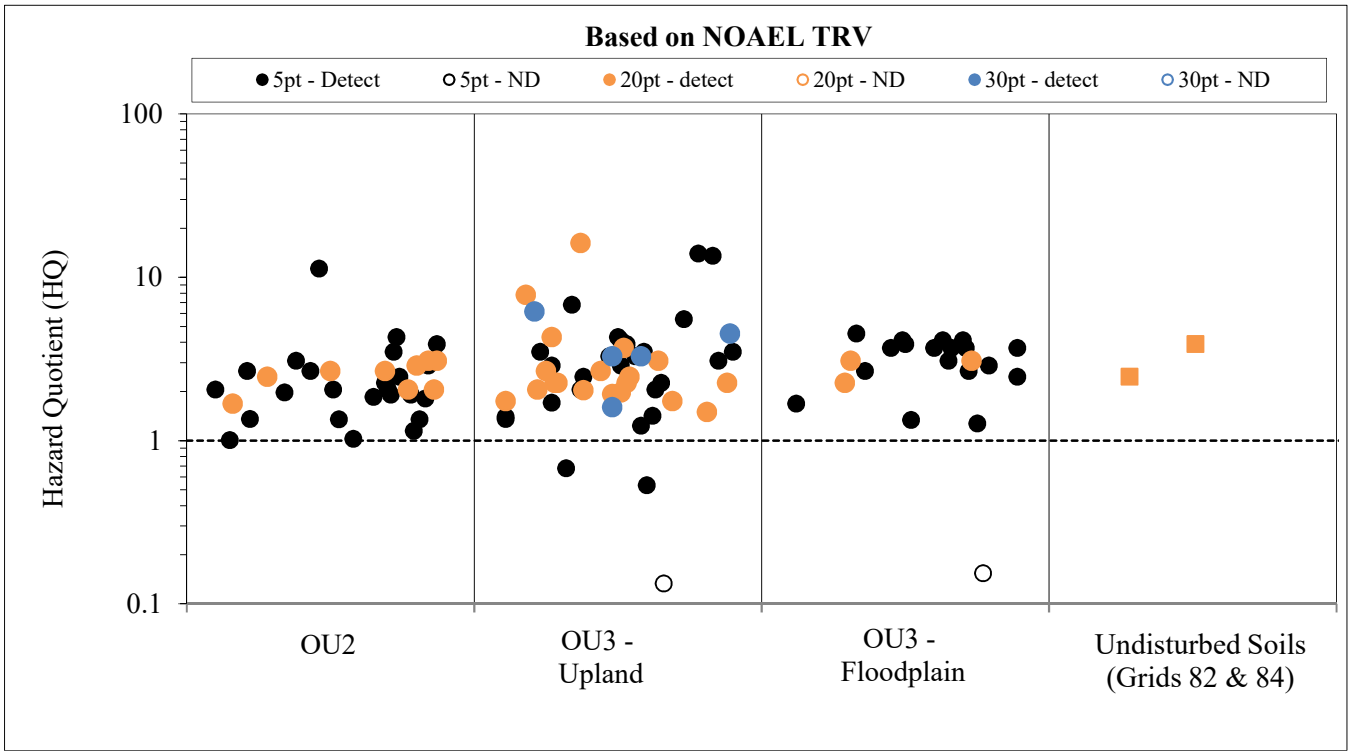
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	0	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Food by Exposure Unit/Soil Type

Thallium





APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Thallium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.01312	detect	0	0	<1.0	**1.7**
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.0224	detect	0	0	<1.0	**2.9**
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.016	detect	0	0	<1.0	**2.1**
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.016	detect	0	0	<1.0	**2.1**
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.0208	detect	0	0	<1.0	**2.7**
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.024	detect	0	0	<1.0	**3.1**
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.0192	detect	0	0	<1.0	**2.5**
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.024	detect	0	0	<1.0	**3.1**
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.0208	detect	0	0	<1.0	**2.7**
	LF-1	LF-1-SS_4/18/14_NM	0.0336	detect	0	0	<1.0	**4.3**
	SB2a,3a-IN	SB2a-IN-(0-2)	0.008	detect	0	0	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.016	detect	0	0	<1.0	**2.1**
	SS11-IN	SS11-IN-(0-2)c	0.016	detect	0	0	<1.0	**2.1**
	SS12-IN	SS12-IN-(0-2)c	0.016	detect	0	0	<1.0	**2.1**
	SS13-IN	SS13-IN-(0-2)c	0.01056	detect	0	0	<1.0	**1.4**
	SS14-IN	SS14-IN-(0-2)c	0.01536	detect	0	0	<1.0	**2.0**
	SS15-IN	SS15-IN-(0-2)c	0.0304	detect	0	0	<1.0	**3.9**
	SS16-IN	SS16-IN-(0-2)c	0.0224	detect	0	0	<1.0	**2.9**
	SS17-IN	SS17-IN-(0-2)c	0.0176	detect	0	0	<1.0	**2.3**
	SS1-IN	SS1-IN-(0-2)c	0.01408	detect	0	0	<1.0	**1.8**
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.01488	detect	0	0	<1.0	**1.9**
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.0192	detect	0	0	<1.0	**2.5**
	SS33-IN	SS33-IN-(0-2)c	0.00784	detect	0	0	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.0208	detect	0	0	<1.0	**2.7**
	SS4-IN	SS4-IN-(0-2)c	0.01488	detect	0	0	<1.0	**1.9**
	SS5-IN	SS5-IN-(0-2)c	0.024	detect	0	0	<1.0	**3.1**
	SS6-IN	SS6-IN-(0-2)c	0.0144	detect	0	0	<1.0	**1.8**
	SS7-IN	SS7-IN-(0-2)c	0.0208	detect	0	0	<1.0	**2.7**
	SS8-IN	SS8-IN-(0-2)c	0.00896	detect	0	0	<1.0	**1.2**
	SS9-IN	SS9-IN-(0-2)c	0.0272	detect	0	0	<1.0	**3.5**
	HDPT-SS	BACKFILL-HDPT-SS	0.010507	detect	0	0	<1.0	**1.3**
	TSB-SS	BACKFILL-TSB-SS	0.010507	detect	0	0	<1.0	**1.3**

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Thallium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.0352	detect	0	0	<1.0	**4.5**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.1056	detect	0	0	**1.4**	**13.6**
	CRP-1	CRP-1-SS_4/10/14_NM	0.00528	detect	0	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.0136	detect	0	0	<1.0	**1.7**
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.0136	detect	0	0	<1.0	**1.7**
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.0176	detect	0	0	<1.0	**2.3**
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.0192	detect	0	0	<1.0	**2.5**
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.0208	detect	0	0	<1.0	**2.7**
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.01584	detect	0	0	<1.0	**2.0**
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.01504	detect	0	0	<1.0	**1.9**
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.0208	detect	0	0	<1.0	**2.7**
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.01536	detect	0	0	<1.0	**2.0**
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.0176	detect	0	0	<1.0	**2.3**
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.0336	detect	0	0	<1.0	**4.3**
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.024	detect	0	0	<1.0	**3.1**
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.0176	detect	0	0	<1.0	**2.3**
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.0176	detect	0	0	<1.0	**2.3**
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.016	detect	0	0	<1.0	**2.1**
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.1264	detect	0	0	**1.6**	**16.2**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.0288	detect	0	0	<1.0	**3.7**
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.01168	detect	0	0	<1.0	**1.5**
	HP16-1	HP16-1-SS_4/10/14_NM	0.0224	detect	0	0	<1.0	**2.9**
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.024	detect	0	0	<1.0	**3.1**
	HP18-1	HP18-1-SS_4/10/14_NM	0.0336	detect	0	0	<1.0	**4.3**
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.0192	detect	0	0	<1.0	**2.5**
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.01104	detect	0	0	<1.0	**1.4**
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.016	detect	0	0	<1.0	**2.1**
	HP9-1	HP9-1-SS_4/10/14_NM	0.032	detect	0	0	<1.0	**4.1**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.00104	ND	0	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.0272	detect	0	0	<1.0	**3.5**
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.0528	detect	0	0	<1.0	**6.8**
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.1088	detect	0	0	**1.4**	**14.0**
	P3	P3-SSComp-01_20171020_NM	0.0608	detect	0	0	<1.0	**7.8**
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.01056	detect	0	0	<1.0	**1.4**
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.00416	detect	0	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.01328	detect	0	0	<1.0	**1.7**
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.0224	detect	0	0	<1.0	**2.9**
	P8	P8-SSComp-01_20171025_NM	0.0256	detect	0	0	<1.0	**3.3**
	P8dc	P8dc-SSComp-01_20171024_NM	0.0256	detect	0	0	<1.0	**3.3**
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.0304	detect	0	0	<1.0	**3.9**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.0432	detect	0	0	<1.0	**5.5**
	SPP	SPP-SSComp-01_20171025_NM	0.048	detect	0	0	<1.0	**6.2**
	SS1,2-HP18	SS1-HP18-(0-2)c	0.0176	detect	0	0	<1.0	**2.3**
	SS11,12-IBK	SS11-IBK-(0-2)c	0.016	detect	0	0	<1.0	**2.1**
	SS13,14-HP9	SS13-HP9-(0-2)c	0.0256	detect	0	0	<1.0	**3.3**
	SS15,16-HP9	SS15-HP9-(0-2)c	0.0272	detect	0	0	<1.0	**3.5**
	SS3,4-HP16	SS3-HP16-(0-2)c	0.0096	detect	0	0	<1.0	**1.2**
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.01088	detect	0	0	<1.0	**1.4**
	SS7,8-HP13	SS7-HP13-(0-2)c	0.0272	detect	0	0	<1.0	**3.5**
	SS9,10-HP12	SS9-HP12-(0-2)c	0.0256	detect	0	0	<1.0	**3.3**
	SWBA	SWBA-SSComp-01_20171024_NM	0.01248	detect	0	0	<1.0	**1.6**

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

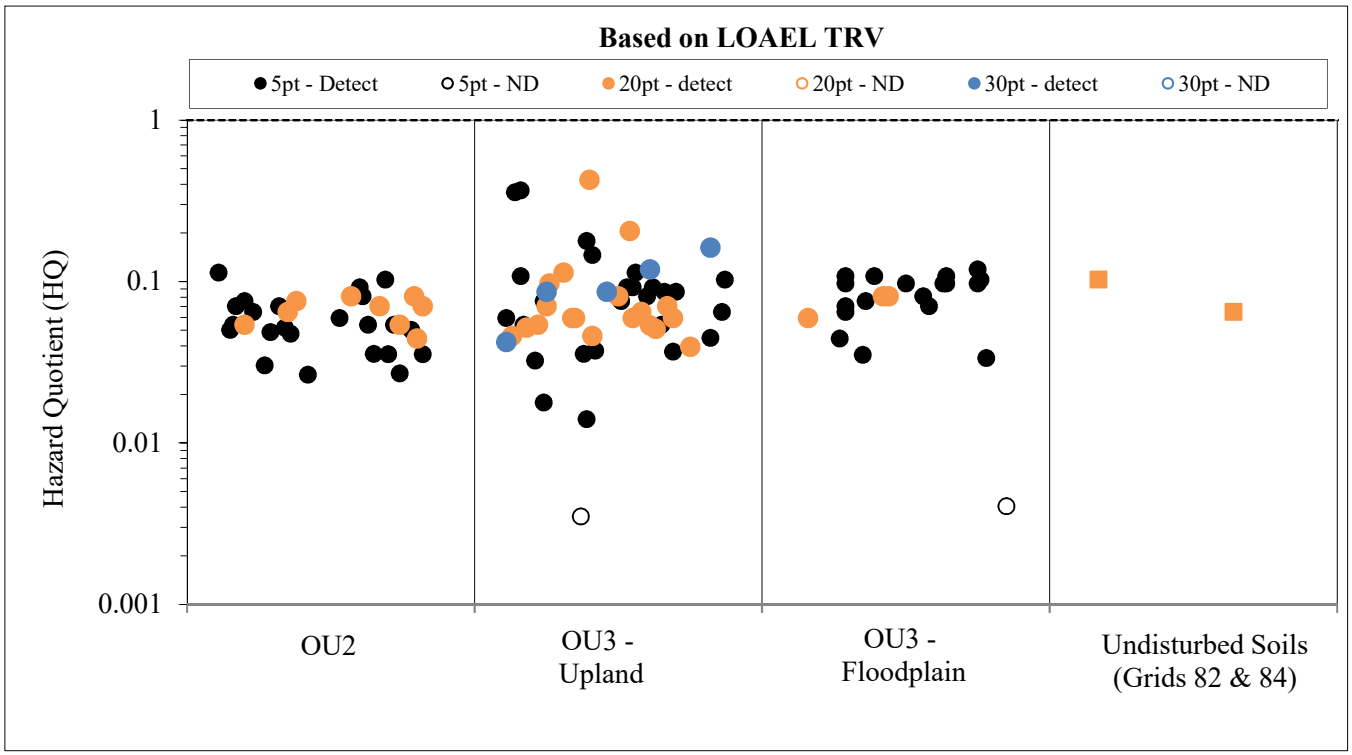
Thallium

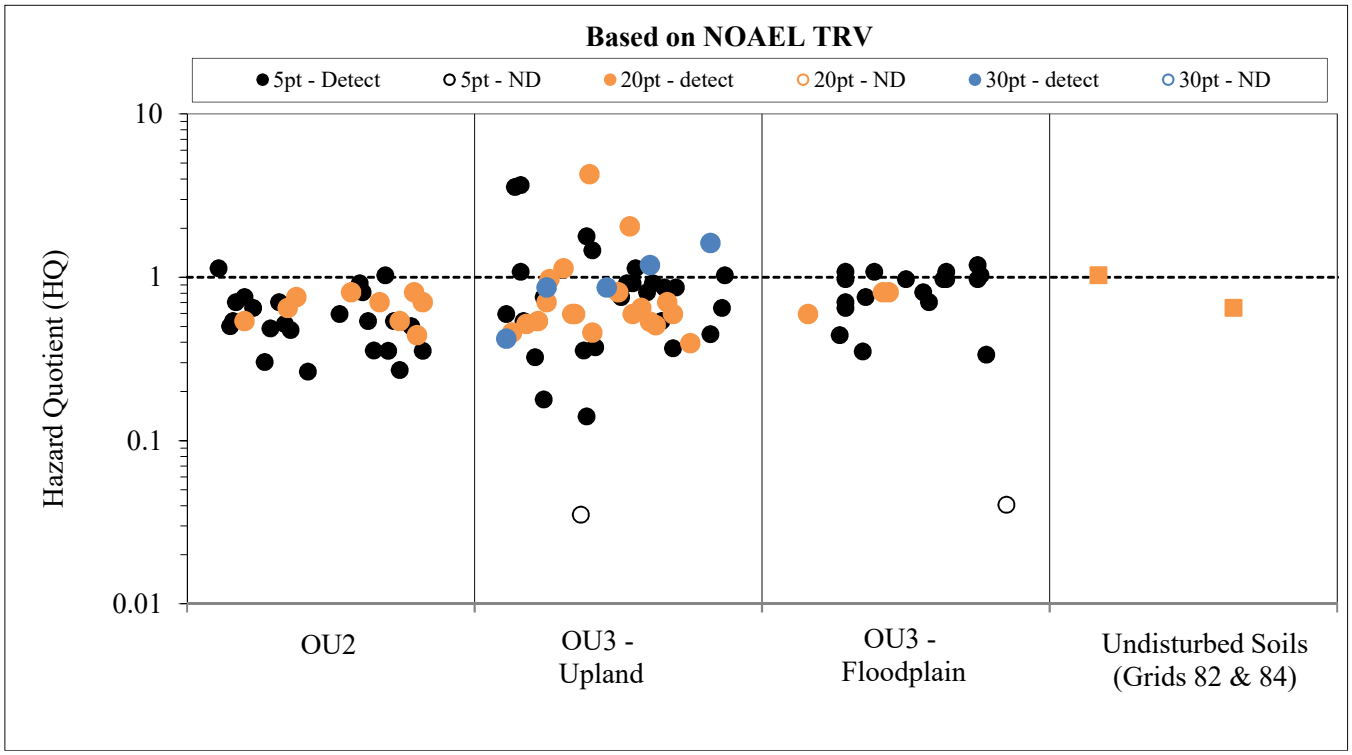
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.0176	detect	0	0	<1.0	**2.3**
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.024	detect	0	0	<1.0	**3.1**
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.024	detect	0	0	<1.0	**3.1**
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.032	detect	0	0	<1.0	**4.1**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.0012	ND	0	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	0.0288	detect	0	0	<1.0	**3.7**
	SE11-HP11	SE11-HP11-(0-2)c	0.0208	detect	0	0	<1.0	**2.7**
	SE12-HP12	SE12-HP12-(0-2)c	0.032	detect	0	0	<1.0	**4.1**
	SE13-HP12	SE13-HP12-(0-2)c	0.0288	detect	0	0	<1.0	**3.7**
	SE14-HP13	SE14-HP13-(0-2)c	0.0288	detect	0	0	<1.0	**3.7**
	SE15-HP13	SE15-HP13-(0-2)c	0.024	detect	0	0	<1.0	**3.1**
	SE16-HP13	SE16-HP13-(0-2)c	0.032	detect	0	0	<1.0	**4.1**
	SE17-HP13a	SE17-HP13a-(0-2)c	0.0288	detect	0	0	<1.0	**3.7**
	SE1-HP1a	SE1-HP1a-(0-2)c	0.0192	detect	0	0	<1.0	**2.5**
	SE2-HP1a	SE2-HP1a-(0-2)c	0.0208	detect	0	0	<1.0	**2.7**
	SE3-HP1	SE3-HP1-(0-2)c	0.00992	detect	0	0	<1.0	**1.3**
	SE4-HP1	SE4-HP1-(0-2)c	0.01312	detect	0	0	<1.0	**1.7**
	SE5-HP2	SE5-HP2-(0-2)c	0.0352	detect	0	0	<1.0	**4.5**
	SE6-HP7	SE6-HP7-(0-2)c	0.0304	detect	0	0	<1.0	**3.9**
	SE7-HP7	SE7-HP7-(0-2)c	0.0224	detect	0	0	<1.0	**2.9**
	SE8-HP10	SE8-HP10-(0-2)c	0.0104	detect	0	0	<1.0	**1.3**
	SE9-HP10	SE9-HP10-(0-2)c	0.0288	detect	0	0	<1.0	**3.7**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.0304	detect	0	0	<1.0	**3.9**
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.0192	detect	0	0	<1.0	**2.5**

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Surface Soil by Exposure Unit/Soil Type

Thallium





APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Thallium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.082	detect	0	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.14	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.1	detect	0	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.1	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.13	detect	0	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.15	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.12	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.15	detect	0	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.13	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.21	detect	0	0	<1.0	**1.1**
	SB2a,3a-IN	SB2a-IN-(0-2)	0.05	detect	0	0	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.1	detect	0	0	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.1	detect	0	0	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.1	detect	0	0	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.066	detect	0	0	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.096	detect	0	0	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.19	detect	0	0	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.14	detect	0	0	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.11	detect	0	0	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.088	detect	0	0	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.093	detect	0	0	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.12	detect	0	0	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.049	detect	0	0	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.13	detect	0	0	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.093	detect	0	0	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.15	detect	0	0	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.09	detect	0	0	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.13	detect	0	0	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.056	detect	0	0	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.17	detect	0	0	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.065667	detect	0	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.065667	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Thallium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.22	detect	0	0	<1.0	**1.2**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.66	detect	0	0	<1.0	**3.6**
	CRP-1	CRP-1-SS_4/10/14_NM	0.033	detect	0	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.085	detect	0	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.085	detect	0	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.11	detect	0	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.12	detect	0	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.13	detect	0	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.099	detect	0	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.094	detect	0	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.13	detect	0	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.096	detect	0	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.11	detect	0	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.21	detect	0	0	<1.0	**1.1**
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.15	detect	0	0	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.11	detect	0	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.11	detect	0	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.1	detect	0	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.79	detect	0	0	<1.0	**4.3**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.18	detect	0	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.073	detect	0	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.14	detect	0	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.15	detect	0	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.21	detect	0	0	<1.0	**1.1**
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.12	detect	0	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.069	detect	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.1	detect	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.2	detect	0	0	<1.0	**1.1**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.0065	ND	0	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.17	detect	0	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.33	detect	0	0	<1.0	**1.8**
	P17-BH1	P17-BH1-SS_4/3/14_NM	7E-01	detect	0	0	<1.0	**3.7**
	P3	P3-SSComp-01_20171020_NM	0.38	detect	0	0	<1.0	**2.1**
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.066	detect	0	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.026	detect	0	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.083	detect	0	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.14	detect	0	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.16	detect	0	0	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.16	detect	0	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.19	detect	0	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.27	detect	0	0	<1.0	**1.5**
	SPP	SPP-SSComp-01_20171025_NM	0.3	detect	0	0	<1.0	**1.6**
	SS1,2-HP18	SS1-HP18-(0-2)c	0.11	detect	0	0	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.1	detect	0	0	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	0.16	detect	0	0	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	0.17	detect	0	0	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.06	detect	0	0	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.068	detect	0	0	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.17	detect	0	0	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.16	detect	0	0	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.078	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Thallium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.11	detect	0	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.15	detect	0	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.15	detect	0	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.2	detect	0	0	<1.0	**1.1**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.0075	ND	0	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	0.18	detect	0	0	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	0.13	detect	0	0	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	0.2	detect	0	0	<1.0	**1.1**
	SE13-HP12	SE13-HP12-(0-2)c	0.18	detect	0	0	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	0.18	detect	0	0	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.15	detect	0	0	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	0.2	detect	0	0	<1.0	**1.1**
	SE17-HP13a	SE17-HP13a-(0-2)c	0.18	detect	0	0	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.12	detect	0	0	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.13	detect	0	0	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.062	detect	0	0	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.082	detect	0	0	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	0.22	detect	0	0	<1.0	**1.2**
	SE6-HP7	SE6-HP7-(0-2)c	0.19	detect	0	0	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	0.14	detect	0	0	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.065	detect	0	0	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	0.18	detect	0	0	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.19	detect	0	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.12	detect	0	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of River Surface Water

Thallium

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	3E-05	ND	0.0074	0.074	<1.0	<1.0
	CFR2	CFR2_20180523_NM	3E-05	ND	0.0074	0.074	<1.0	<1.0
	SW3-CFR	SW3-CFR	2E-05	ND	0.0074	0.074	<1.0	<1.0
	51-CFR	SW51-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	52-CFR	SW52-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	54-CFR	SW54-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	SW2-CFR	SW2-CFR	2E-05	ND	0.0074	0.074	<1.0	<1.0
	55-CFR	SW55-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	56-CFR	SW56-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	SW1-CFR	SW1-CFR	2E-05	ND	0.0074	0.074	<1.0	<1.0
	57-CFR	SW57-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	58-CFR	SW58-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	59-CFR	SW59-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	60-CFR	SW60-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	61-CFR	SW61-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	62-CFR	SW62-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	63-CFR	SW63-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of Creek Surface Water

Thallium

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	3E-05	ND	0.0074	0.074	<1.0	<1.0
	43-OK	SW43-OK	3E-05	detect	0.0074	0.074	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	2E-05	ND	0.0074	0.074	<1.0	<1.0
	37-LV	SW37-LV	3E-05	ND	0.0074	0.074	<1.0	<1.0
	39-LV	SW39-LV	3E-05	ND	0.0074	0.074	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of Pond Surface Water

Thallium

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	3E-05	ND	0.0074	0.074	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	3E-05	ND	0.0074	0.074	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0001	ND	0.0074	0.074	<1.0	<1.0
73-P5	SW73-P5	0.0001	ND	0.0074	0.074	<1.0	<1.0
71-HP7	SW71-HP7	0.0001	ND	0.0074	0.074	<1.0	<1.0
72-HP2	SW72-HP2	0.0001	ND	0.0074	0.074	<1.0	<1.0
75-HP10	SW75-HP10	0.0001	ND	0.0074	0.074	<1.0	<1.0
67-HP12	SW67-HP12	0.0001	ND	0.0074	0.074	<1.0	<1.0
68-IBJ	SW68-IBJ	3E-05	ND	0.0074	0.074	<1.0	<1.0
66-HP13	SW66-HP13	0.0001	ND	0.0074	0.074	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0001	ND	0.0074	0.074	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	3E-05	ND	0.0074	0.074	<1.0	<1.0
70-CWD	SW70-CWD	3E-05	ND	0.0074	0.074	<1.0	<1.0
64-HP18	SW64-HP18	0.0001	ND	0.0074	0.074	<1.0	<1.0

#N/A = not analyzed

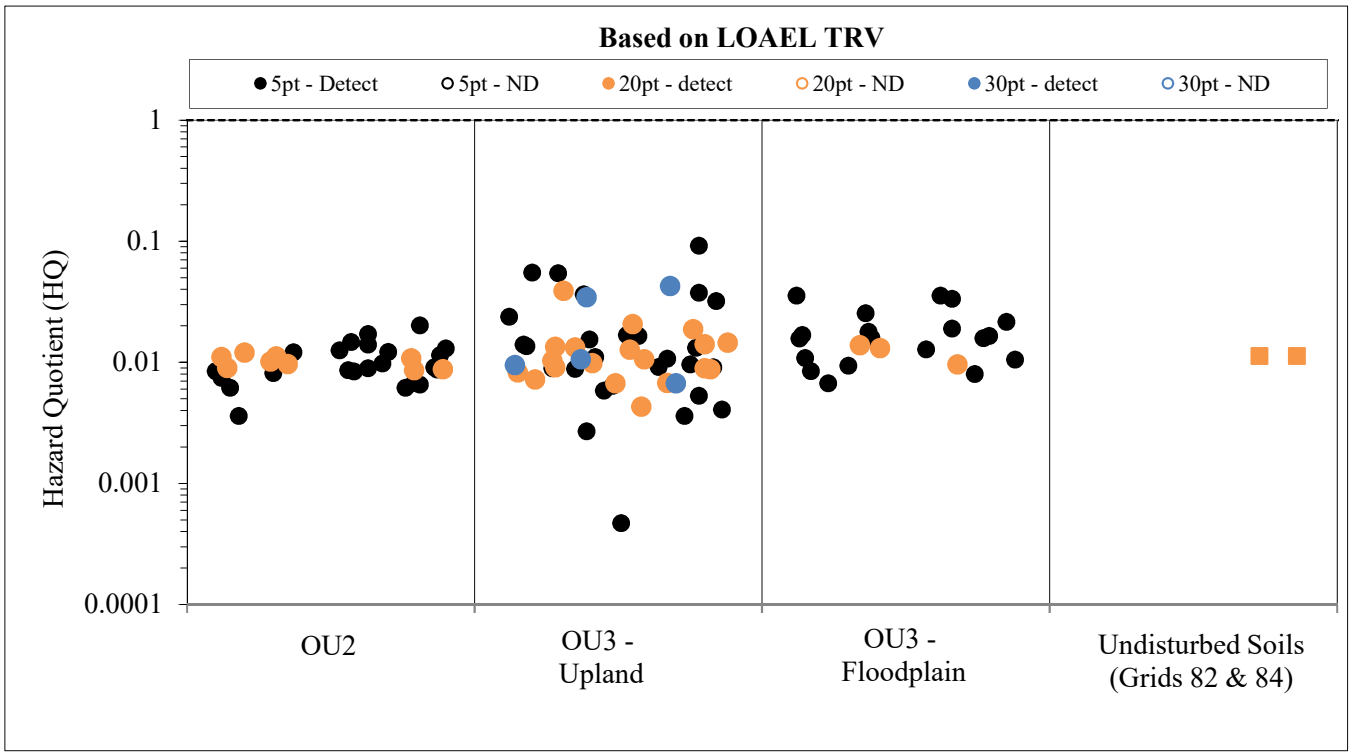
(a) Non-detects are evaluated at 1/2 the reported value.

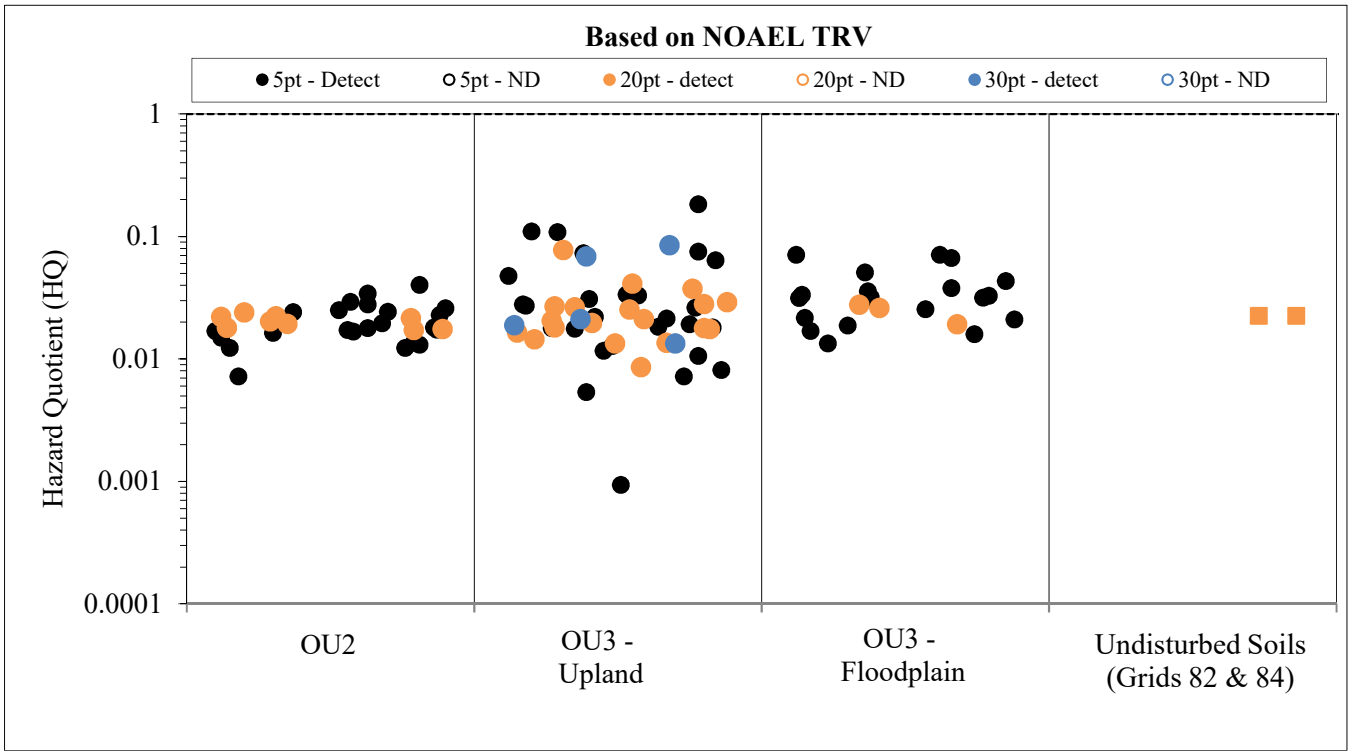
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Food by Exposure Unit/Soil Type

Vanadium





APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Vanadium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.084672	detect	8	4	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.09744	detect	8	4	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.076608	detect	8	4	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.075264	detect	8	4	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.096768	detect	8	4	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.104832	detect	8	4	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.078624	detect	8	4	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.09408	detect	8	4	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.088704	detect	8	4	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.149856	detect	8	4	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.031584	detect	8	4	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.079296	detect	8	4	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.073248	detect	8	4	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.075264	detect	8	4	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.05712	detect	8	4	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.07392	detect	8	4	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.100128	detect	8	4	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.090048	detect	8	4	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.109536	detect	8	4	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.075936	detect	8	4	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	8	4	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.065184	detect	8	4	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	8	4	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	8	4	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.176064	detect	8	4	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.128352	detect	8	4	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.113568	detect	8	4	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.077952	detect	8	4	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.106176	detect	8	4	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.085344	detect	8	4	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.105504	detect	8	4	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.059136	detect	8	4	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.122304	detect	8	4	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.05376	detect	8	4	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.05376	detect	8	4	<1.0	<1.0

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Vanadium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.300384	detect	8	4	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.48048	detect	8	4	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.79968	detect	8	4	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.063168	detect	8	4	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.058464	detect	8	4	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.127008	detect	8	4	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.079296	detect	8	4	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.11088	detect	8	4	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.071904	detect	8	4	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.076608	detect	8	4	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.122976	detect	8	4	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.180096	detect	8	4	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.086016	detect	8	4	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.340032	detect	8	4	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.1176	detect	8	4	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.092736	detect	8	4	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.090048	detect	8	4	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.077952	detect	8	4	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.163968	detect	8	4	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.115584	detect	8	4	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.059136	detect	8	4	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.20832	detect	8	4	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.114912	detect	8	4	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.279552	detect	8	4	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.077952	detect	8	4	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.055776	detect	8	4	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	8	4	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.046368	detect	8	4	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.318528	detect	8	4	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.035616	detect	8	4	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.14448	detect	8	4	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.474432	detect	8	4	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.096768	detect	8	4	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.037632	detect	8	4	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.031584	detect	8	4	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.004099	detect	8	4	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.02352	detect	8	4	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.07728	detect	8	4	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.082656	detect	8	4	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.092736	detect	8	4	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.093408	detect	8	4	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.328608	detect	8	4	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.372288	detect	8	4	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.079968	detect	8	4	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.084	detect	8	4	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	0.147168	detect	8	4	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	0.135072	detect	8	4	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.079296	detect	8	4	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.051072	detect	8	4	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.122304	detect	8	4	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.118944	detect	8	4	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.058464	detect	8	4	<1.0	<1.0

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

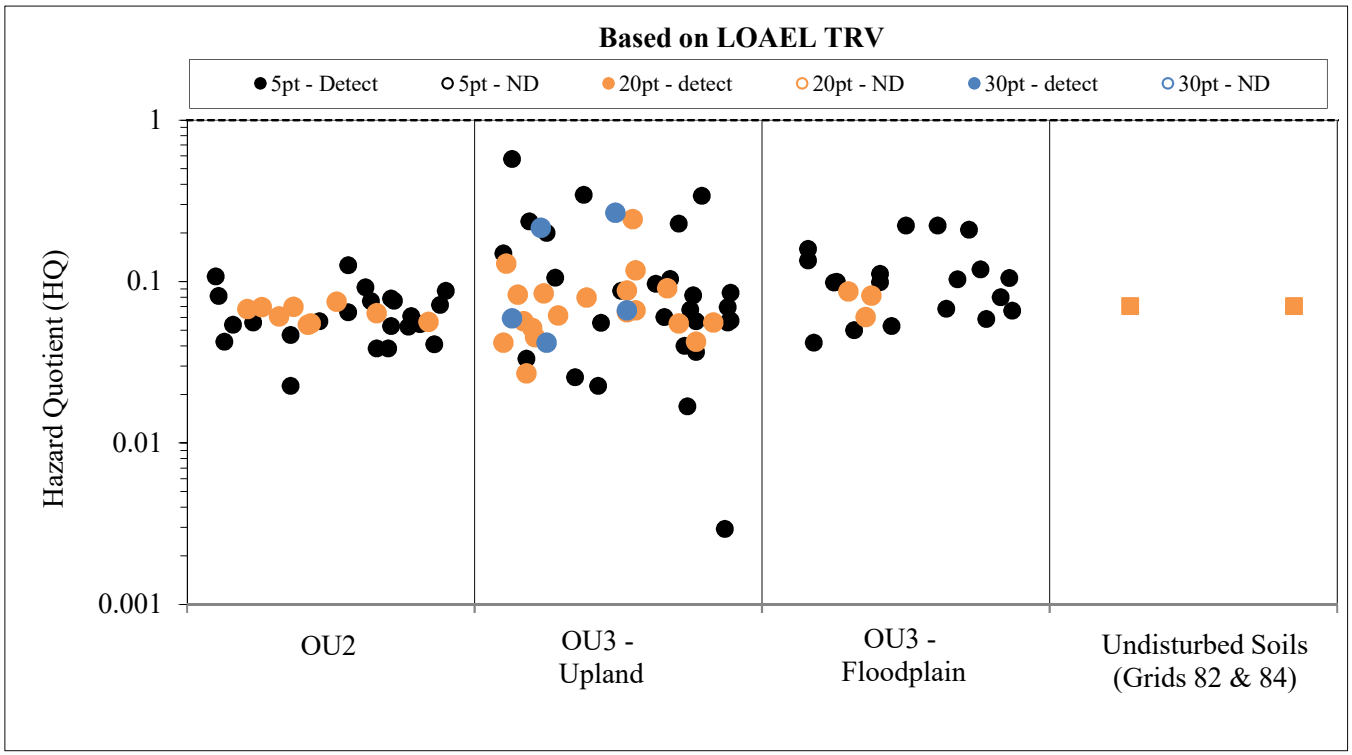
Vanadium

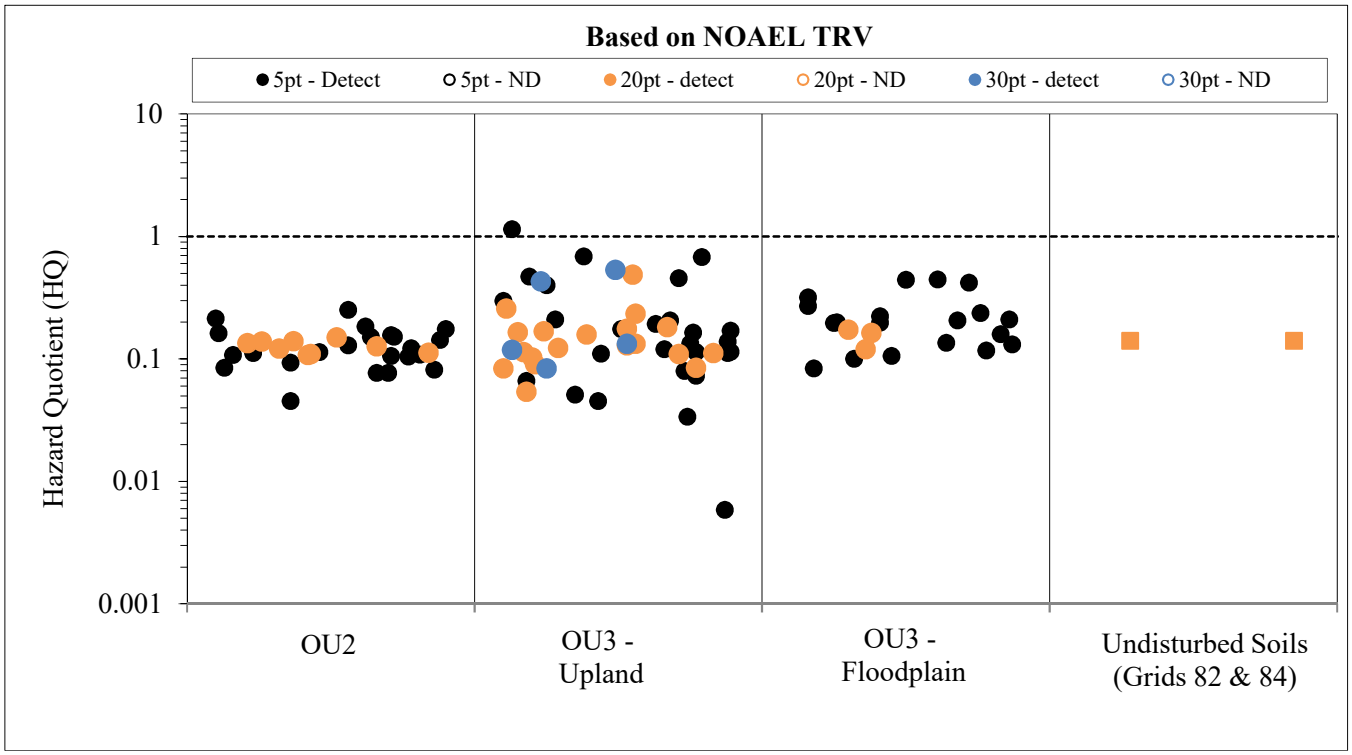
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.084	detect	8	4	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.12096	detect	8	4	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.11424	detect	8	4	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.143808	detect	8	4	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.058464	detect	8	4	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	0.310464	detect	8	4	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	0.111552	detect	8	4	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	0.165984	detect	8	4	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	0.309792	detect	8	4	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	0.155904	detect	8	4	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.092064	detect	8	4	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	0.138432	detect	8	4	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.13776	detect	8	4	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.146496	detect	8	4	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.139104	detect	8	4	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.081984	detect	8	4	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.094752	detect	8	4	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	0.29232	detect	8	4	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	0.222432	detect	8	4	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	0.069888	detect	8	4	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.07392	detect	8	4	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	0.188832	detect	8	4	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.098112	detect	8	4	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.098112	detect	8	4	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Surface Soil by Exposure Unit/Soil Type

Vanadium





APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Vanadium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	12.6	detect	8	4	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	14.5	detect	8	4	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	11.4	detect	8	4	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	11.2	detect	8	4	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	14.4	detect	8	4	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	15.6	detect	8	4	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	11.7	detect	8	4	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	14	detect	8	4	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	13.2	detect	8	4	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	22.3	detect	8	4	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	4.7	detect	8	4	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	11.8	detect	8	4	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	10.9	detect	8	4	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	11.2	detect	8	4	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	8.5	detect	8	4	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	11	detect	8	4	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	14.9	detect	8	4	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	13.4	detect	8	4	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	16.3	detect	8	4	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	11.3	detect	8	4	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	8	4	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	9.7	detect	8	4	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	8	4	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	8	4	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	26.2	detect	8	4	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	19.1	detect	8	4	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	16.9	detect	8	4	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	11.6	detect	8	4	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	15.8	detect	8	4	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	12.7	detect	8	4	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	15.7	detect	8	4	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	8.8	detect	8	4	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	18.2	detect	8	4	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	8	detect	8	4	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	8	detect	8	4	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Vanadium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	44.7	detect	8	4	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	71.5	detect	8	4	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	119	detect	8	4	<1.0	**1.1**
	Grid 27	Grid 27-SSComp-01_20171019_NM	9.4	detect	8	4	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	8.7	detect	8	4	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	18.9	detect	8	4	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	11.8	detect	8	4	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	16.5	detect	8	4	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	10.7	detect	8	4	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	11.4	detect	8	4	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	18.3	detect	8	4	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	26.8	detect	8	4	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	12.8	detect	8	4	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	50.6	detect	8	4	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	17.5	detect	8	4	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	13.8	detect	8	4	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	13.4	detect	8	4	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	11.6	detect	8	4	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	24.4	detect	8	4	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	17.2	detect	8	4	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	8.8	detect	8	4	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	31	detect	8	4	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	17.1	detect	8	4	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	41.6	detect	8	4	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	11.6	detect	8	4	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	8.3	detect	8	4	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	8	4	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	6.9	detect	8	4	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	47.4	detect	8	4	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	5.3	detect	8	4	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	21.5	detect	8	4	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	70.6	detect	8	4	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	1E+01	detect	8	4	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	5.6	detect	8	4	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	4.7	detect	8	4	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.61	detect	8	4	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	3.5	detect	8	4	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	11.5	detect	8	4	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	12.3	detect	8	4	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	13.8	detect	8	4	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	13.9	detect	8	4	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	48.9	detect	8	4	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	55.4	detect	8	4	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	11.9	detect	8	4	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	12.5	detect	8	4	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	21.9	detect	8	4	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	20.1	detect	8	4	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	11.8	detect	8	4	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	7.6	detect	8	4	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	18.2	detect	8	4	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	17.7	detect	8	4	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	8.7	detect	8	4	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Vanadium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	12.5	detect	8	4	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	18	detect	8	4	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	17	detect	8	4	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	21.4	detect	8	4	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	8.7	detect	8	4	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	46.2	detect	8	4	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	16.6	detect	8	4	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	24.7	detect	8	4	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	46.1	detect	8	4	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	23.2	detect	8	4	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	13.7	detect	8	4	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	20.6	detect	8	4	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	20.5	detect	8	4	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	21.8	detect	8	4	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	20.7	detect	8	4	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	12.2	detect	8	4	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	14.1	detect	8	4	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	43.5	detect	8	4	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	33.1	detect	8	4	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	10.4	detect	8	4	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	11	detect	8	4	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	28.1	detect	8	4	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	14.6	detect	8	4	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	14.6	detect	8	4	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of River Surface Water

Vanadium

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0006	detect	4.16	8.31	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0013	detect	4.16	8.31	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0019	detect	4.16	8.31	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0006	detect	4.16	8.31	<1.0	<1.0
	51-CFR	SW51-CFR	0.0007	detect	4.16	8.31	<1.0	<1.0
	52-CFR	SW52-CFR	0.0008	detect	4.16	8.31	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0003	detect	4.16	8.31	<1.0	<1.0
	54-CFR	SW54-CFR	0.0007	detect	4.16	8.31	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0006	detect	4.16	8.31	<1.0	<1.0
	55-CFR	SW55-CFR	0.0007	detect	4.16	8.31	<1.0	<1.0
	56-CFR	SW56-CFR	0.0007	detect	4.16	8.31	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0007	detect	4.16	8.31	<1.0	<1.0
	57-CFR	SW57-CFR	0.0003	ND	4.16	8.31	<1.0	<1.0
	58-CFR	SW58-CFR	0.0009	detect	4.16	8.31	<1.0	<1.0
	59-CFR	SW59-CFR	0.0006	detect	4.16	8.31	<1.0	<1.0
	60-CFR	SW60-CFR	0.0009	detect	4.16	8.31	<1.0	<1.0
	61-CFR	SW61-CFR	0.0008	detect	4.16	8.31	<1.0	<1.0
	62-CFR	SW62-CFR	0.0008	detect	4.16	8.31	<1.0	<1.0
	63-CFR	SW63-CFR	0.0007	detect	4.16	8.31	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of Creek Surface Water

Vanadium

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	9E-04	detect	4.16	8.31	<1.0	<1.0
	43-OK	SW43-OK	1E-03	detect	4.16	8.31	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.001	detect	4.16	8.31	<1.0	<1.0
	37-LV	SW37-LV	0.001	detect	4.16	8.31	<1.0	<1.0
	39-LV	SW39-LV	0.001	detect	4.16	8.31	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of Pond Surface Water

Vanadium

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0009	detect	4.16	8.31	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0053	detect	4.16	8.31	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0069	detect	4.16	8.31	<1.0	<1.0
73-P5	SW73-P5	0.0036	detect	4.16	8.31	<1.0	<1.0
71-HP7	SW71-HP7	0.0045	detect	4.16	8.31	<1.0	<1.0
72-HP2	SW72-HP2	0.0041	detect	4.16	8.31	<1.0	<1.0
75-HP10	SW75-HP10	0.0032	detect	4.16	8.31	<1.0	<1.0
67-HP12	SW67-HP12	0.0045	detect	4.16	8.31	<1.0	<1.0
68-IBJ	SW68-IBJ	0.001	detect	4.16	8.31	<1.0	<1.0
66-HP13	SW66-HP13	0.0046	detect	4.16	8.31	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0058	detect	4.16	8.31	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0069	detect	4.16	8.31	<1.0	<1.0
70-CWD	SW70-CWD	0.0014	detect	4.16	8.31	<1.0	<1.0
64-HP18	SW64-HP18	0.0077	detect	4.16	8.31	<1.0	<1.0

#N/A = not analyzed

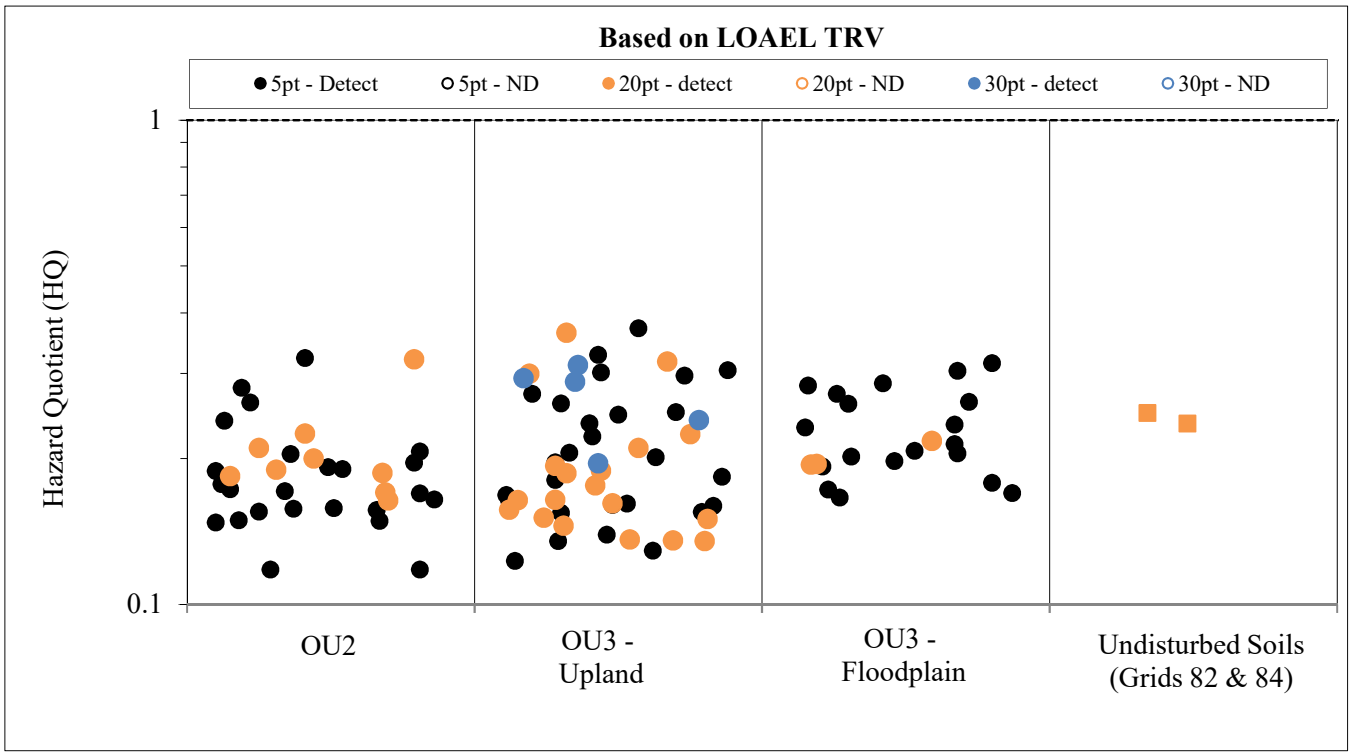
(a) Non-detects are evaluated at 1/2 the reported value.

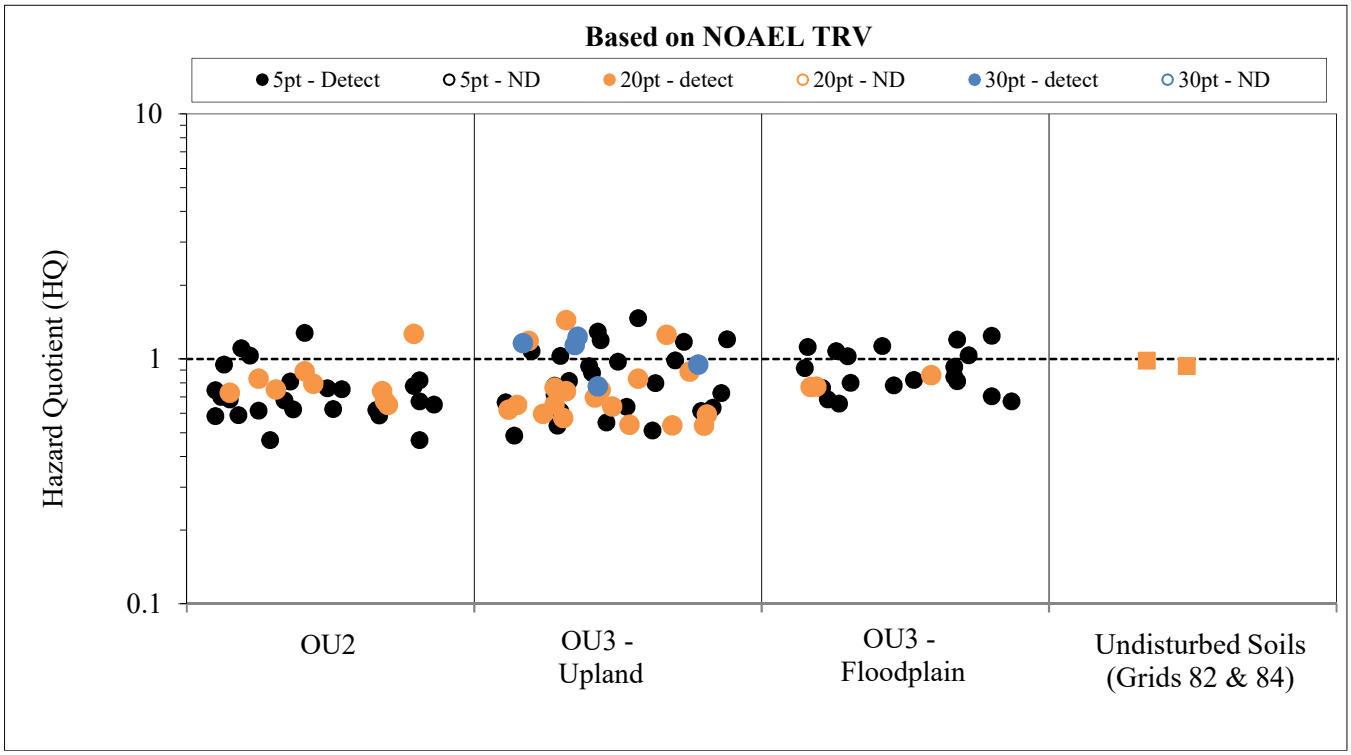
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Food by Exposure Unit/Soil Type

Zinc





APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Zinc

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	70.64822	detect	298	75	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	59.55161	detect	298	75	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	62.78893	detect	298	75	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	58.60944	detect	298	75	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	65.98569	detect	298	75	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	53.40795	detect	298	75	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	51.46019	detect	298	75	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	100.5481	detect	298	75	<1.0	**1.3**
	Grid 9	Grid 9-SSComp-01_20171018_NM	57.77642	detect	298	75	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	59.15159	detect	298	75	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	46.34282	detect	298	75	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	48.79053	detect	298	75	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	64.89407	detect	298	75	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	54.24949	detect	298	75	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	53.73692	detect	298	75	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	60.24948	detect	298	75	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	61.57697	detect	298	75	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	87.79517	detect	298	75	<1.0	**1.1**
	SS17-IN	SS17-IN-(0-2)c	46.67246	detect	298	75	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	46.78128	detect	298	75	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	298	75	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	49.44552	detect	298	75	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	298	75	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	298	75	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	101.2227	detect	298	75	<1.0	**1.3**
	SS33-IN	SS33-IN-(0-2)c	81.9217	detect	298	75	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	49.12026	detect	298	75	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	49.5744	detect	298	75	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	51.69722	detect	298	75	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	55.57845	detect	298	75	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	59.72765	detect	298	75	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	75.16671	detect	298	75	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	53.18631	detect	298	75	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	37.05519	detect	298	75	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	37.05519	detect	298	75	<1.0	<1.0

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

Zinc

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	91.97247	detect	298	75	<1.0	**1.2**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	85.33374	detect	298	75	<1.0	**1.1**
	CRP-1	CRP-1-SS_4/10/14_NM	74.19511	detect	298	75	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	42.3925	detect	298	75	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	42.74377	detect	298	75	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	45.59256	detect	298	75	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	47.35312	detect	298	75	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	47.10469	detect	298	75	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	42.52493	detect	298	75	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	50.70466	detect	298	75	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	51.60859	detect	298	75	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	55.22014	detect	298	75	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	60.65612	detect	298	75	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	93.9228	detect	298	75	<1.0	**1.2**
	Grid 53	Grid 53-SSComp-01_20171020_NM	65.98569	detect	298	75	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	70.49235	detect	298	75	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	58.5638	detect	298	75	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	59.28554	detect	298	75	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	114.1854	detect	298	75	<1.0	**1.4**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	51.51966	detect	298	75	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	49.18567	detect	298	75	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	61.65929	detect	298	75	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	48.72404	detect	298	75	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	64.52171	detect	298	75	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	51.34083	detect	298	75	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	38.60213	detect	298	75	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	298	75	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	40.4909	detect	298	75	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	93.04666	detect	298	75	<1.0	**1.2**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	50.33367	detect	298	75	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	52.79383	detect	298	75	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	102.6897	detect	298	75	<1.0	**1.3**
	P17-BH1	P17-BH1-SS_4/3/14_NM	116.5763	detect	298	75	<1.0	**1.5**
	P3	P3-SSComp-01_20171020_NM	99.48	detect	298	75	<1.0	**1.3**
	P3-BH1	P3-BH1-SS_4/3/14_NM	81.57571	detect	298	75	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	50.0832	detect	298	75	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	63.18245	detect	298	75	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	69.70218	detect	298	75	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	75.30342	detect	298	75	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	90.49896	detect	298	75	<1.0	**1.1**
	P8-TP3	P8-TP3-SS_4/4/14_NM	95.45894	detect	298	75	<1.0	**1.2**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	94.52627	detect	298	75	<1.0	**1.2**
	SPP	SPP-SSComp-01_20171025_NM	97.8323	detect	298	75	<1.0	**1.2**
	SS1,2-HP18	SS1-HP18-(0-2)c	42.3925	detect	298	75	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	43.68047	detect	298	75	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	78.31678	detect	298	75	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	77.29584	detect	298	75	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	50.67396	detect	298	75	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	48.45617	detect	298	75	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	57.58793	detect	298	75	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	56.6504	detect	298	75	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	61.32863	detect	298	75	<1.0	<1.0

APPENDIX H4

Sample-Specific HQ Values for Shrew from Ingestion of Food

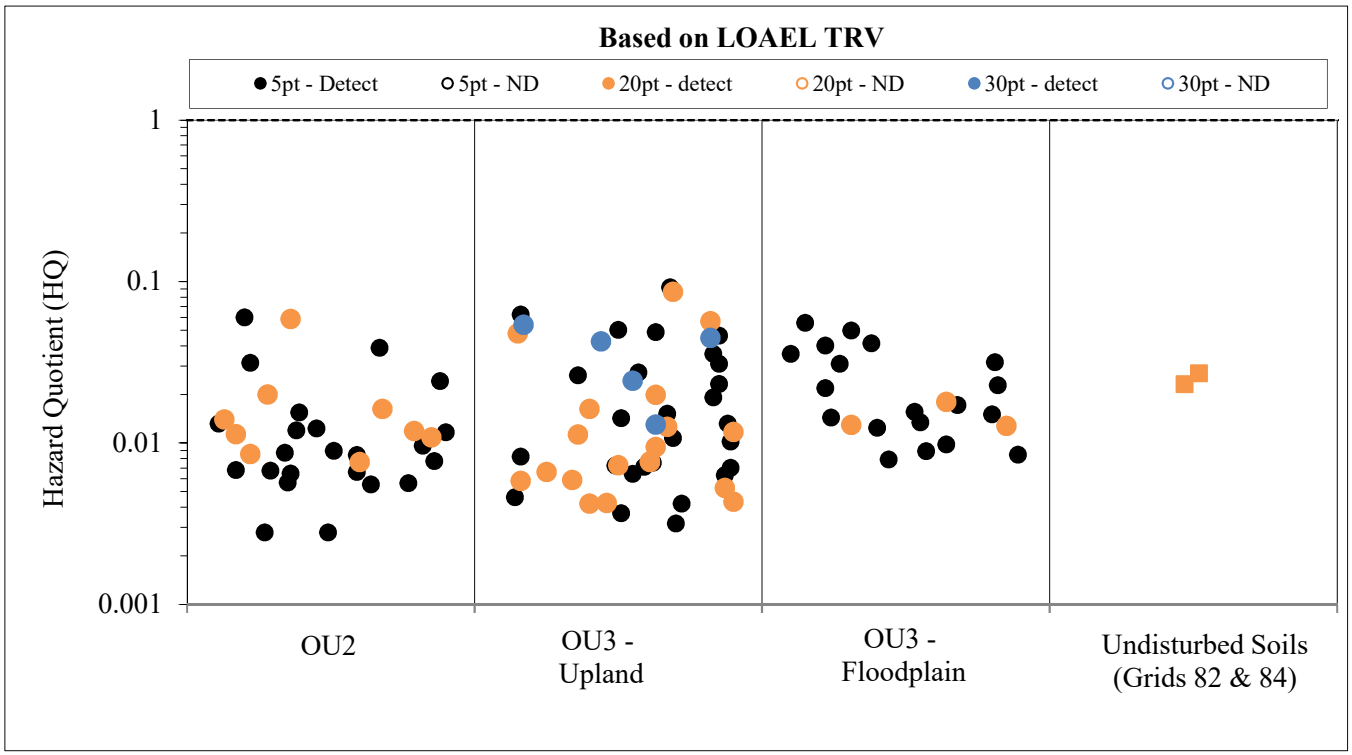
Zinc

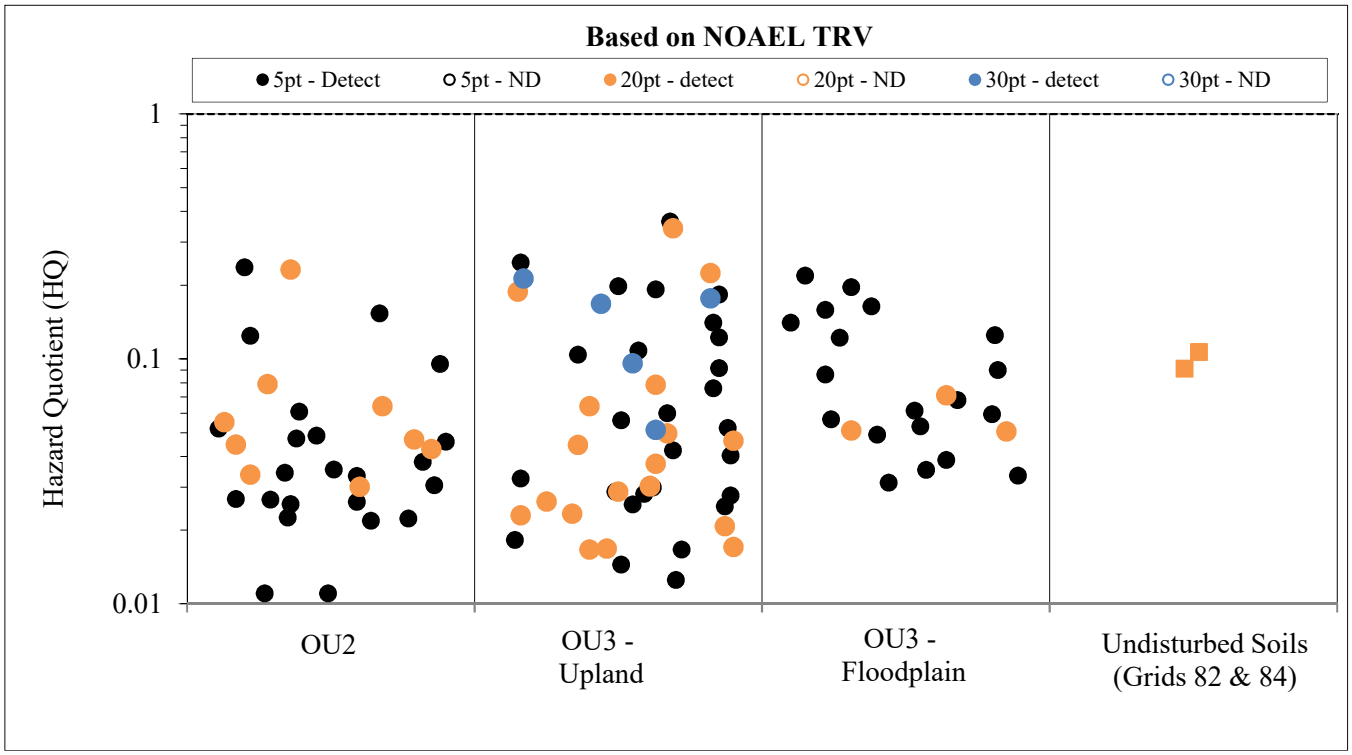
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	61.01528	detect	298	75	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	61.20368	detect	298	75	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	68.23175	detect	298	75	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	63.37734	detect	298	75	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	53.26965	detect	298	75	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	95.20643	detect	298	75	<1.0	**1.2**
	SE11-HP11	SE11-HP11-(0-2)c	73.77061	detect	298	75	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	61.98636	detect	298	75	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	89.7434	detect	298	75	<1.0	**1.1**
	SE14-HP13	SE14-HP13-(0-2)c	55.88185	detect	298	75	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	82.1507	detect	298	75	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	67.2142	detect	298	75	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	65.07862	detect	298	75	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	72.76016	detect	298	75	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	81.45971	detect	298	75	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	54.196	detect	298	75	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	60.44279	detect	298	75	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	88.78023	detect	298	75	<1.0	**1.1**
	SE6-HP7	SE6-HP7-(0-2)c	98.70241	detect	298	75	<1.0	**1.2**
	SE7-HP7	SE7-HP7-(0-2)c	52.13575	detect	298	75	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	64.33387	detect	298	75	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	85.33374	detect	298	75	<1.0	**1.1**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	77.93714	detect	298	75	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	74.05416	detect	298	75	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Shrew from Ingestion of Surface Soil by Exposure Unit/Soil Type

Zinc





APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Zinc

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	149	detect	298	75	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	88.5	detect	298	75	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	104	detect	298	75	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	84.3	detect	298	75	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	121	detect	298	75	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	63.5	detect	298	75	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	56.7	detect	298	75	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	437	detect	298	75	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	80.7	detect	298	75	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	86.7	detect	298	75	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	41.2	detect	298	75	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	48.2	detect	298	75	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	115	detect	298	75	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	66.6	detect	298	75	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	64.7	detect	298	75	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	91.7	detect	298	75	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	98	detect	298	75	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	289	detect	298	75	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	42.1	detect	298	75	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	42.4	detect	298	75	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	298	75	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	50.2	detect	298	75	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	298	75	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	298	75	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	446	detect	298	75	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	234	detect	298	75	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	49.2	detect	298	75	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	50.6	detect	298	75	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	57.5	detect	298	75	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	71.7	detect	298	75	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	89.3	detect	298	75	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	180	detect	298	75	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	62.7	detect	298	75	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	20.83333	detect	298	75	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	20.83333	detect	298	75	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Zinc

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	333	detect	298	75	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	265	detect	298	75	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	173	detect	298	75	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	31.4	detect	298	75	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	32.2	detect	298	75	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	39.2	detect	298	75	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	44	detect	298	75	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	43.3	detect	298	75	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	31.7	detect	298	75	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	54.2	detect	298	75	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	57.2	detect	298	75	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	70.3	detect	298	75	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	93.6	detect	298	75	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	355	detect	298	75	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	121	detect	298	75	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	148	detect	298	75	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	84.1	detect	298	75	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	87.3	detect	298	75	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	644	detect	298	75	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	56.9	detect	298	75	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	49.4	detect	298	75	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	98.4	detect	298	75	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	48	detect	298	75	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	113	detect	298	75	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	56.3	detect	298	75	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	23.6	detect	298	75	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	298	75	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	27.3	detect	298	75	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	345	detect	298	75	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	53	detect	298	75	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	61.3	detect	298	75	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	466	detect	298	75	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	7E+02	detect	298	75	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	423	detect	298	75	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	231	detect	298	75	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	52.2	detect	298	75	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	106	detect	298	75	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	143	detect	298	75	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	181	detect	298	75	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	317	detect	298	75	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	373	detect	298	75	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	362	detect	298	75	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	402	detect	298	75	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	31.4	detect	298	75	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	34.4	detect	298	75	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	204	detect	298	75	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	196	detect	298	75	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	54.1	detect	298	75	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	47.2	detect	298	75	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	79.9	detect	298	75	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	76	detect	298	75	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	96.8	detect	298	75	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Shrew from Ingestion of Surface Soil

Zinc

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	95.3	detect	298	75	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	96.2	detect	298	75	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	134	detect	298	75	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	107	detect	298	75	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	63	detect	298	75	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	370	detect	298	75	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	170	detect	298	75	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	100	detect	298	75	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	309	detect	298	75	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	72.9	detect	298	75	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	236	detect	298	75	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	128	detect	298	75	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	116	detect	298	75	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	163	detect	298	75	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	230	detect	298	75	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	66.4	detect	298	75	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	92.6	detect	298	75	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	299	detect	298	75	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	413	detect	298	75	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	59	detect	298	75	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	112	detect	298	75	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	265	detect	298	75	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	201	detect	298	75	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	172	detect	298	75	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of River Surface Water

Zinc

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0045	detect	75.4	298	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0139	detect	75.4	298	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0153	detect	75.4	298	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0035	detect	75.4	298	<1.0	<1.0
	51-CFR	SW51-CFR	0.0044	detect	75.4	298	<1.0	<1.0
	52-CFR	SW52-CFR	0.0063	detect	75.4	298	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0268	detect	75.4	298	<1.0	<1.0
	54-CFR	SW54-CFR	0.0062	detect	75.4	298	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0026	detect	75.4	298	<1.0	<1.0
	55-CFR	SW55-CFR	0.0041	detect	75.4	298	<1.0	<1.0
	56-CFR	SW56-CFR	0.0039	detect	75.4	298	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0025	detect	75.4	298	<1.0	<1.0
	57-CFR	SW57-CFR	0.0057	detect	75.4	298	<1.0	<1.0
	58-CFR	SW58-CFR	0.0044	detect	75.4	298	<1.0	<1.0
	59-CFR	SW59-CFR	0.0042	detect	75.4	298	<1.0	<1.0
	60-CFR	SW60-CFR	0.0059	detect	75.4	298	<1.0	<1.0
	61-CFR	SW61-CFR	0.005	detect	75.4	298	<1.0	<1.0
	62-CFR	SW62-CFR	0.0092	detect	75.4	298	<1.0	<1.0
	63-CFR	SW63-CFR	0.0036	detect	75.4	298	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of Creek Surface Water

Zinc

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.005	detect	75.4	298	<1.0	<1.0
	43-OK	SW43-OK	0.005	detect	75.4	298	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.002	ND	75.4	298	<1.0	<1.0
	37-LV	SW37-LV	0.004	detect	75.4	298	<1.0	<1.0
	39-LV	SW39-LV	0.005	detect	75.4	298	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Shrew from Ingestion of Pond Surface Water

Zinc

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0019	ND	75.4	298	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.022	detect	75.4	298	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0096	ND	75.4	298	<1.0	<1.0
73-P5	SW73-P5	0.0096	ND	75.4	298	<1.0	<1.0
71-HP7	SW71-HP7	0.0132	detect	75.4	298	<1.0	<1.0
72-HP2	SW72-HP2	0.0096	ND	75.4	298	<1.0	<1.0
75-HP10	SW75-HP10	0.0096	ND	75.4	298	<1.0	<1.0
67-HP12	SW67-HP12	0.0096	ND	75.4	298	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0031	detect	75.4	298	<1.0	<1.0
66-HP13	SW66-HP13	0.0096	ND	75.4	298	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0127	detect	75.4	298	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.043	detect	75.4	298	<1.0	<1.0
70-CWD	SW70-CWD	0.0027	detect	75.4	298	<1.0	<1.0
64-HP18	SW64-HP18	0.0096	ND	75.4	298	<1.0	<1.0

#N/A = not analyzed

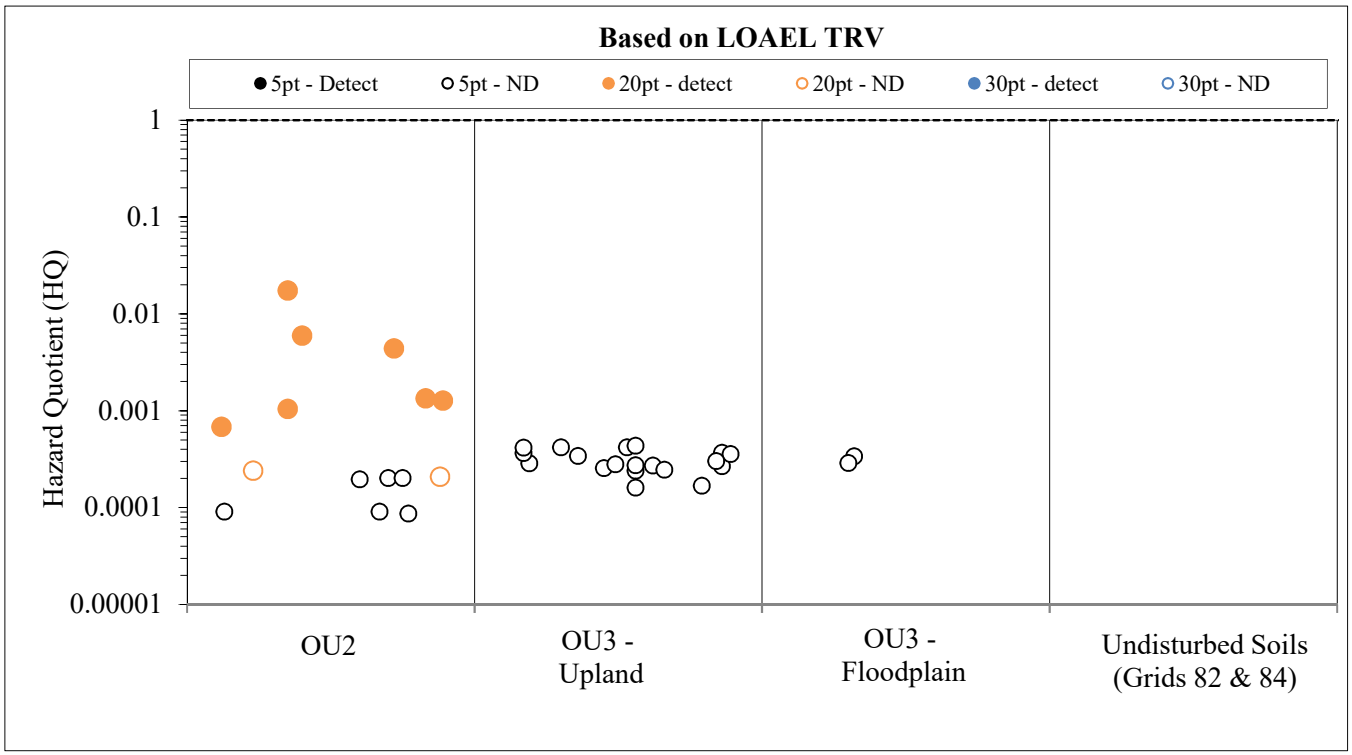
(a) Non-detects are evaluated at 1/2 the reported value.

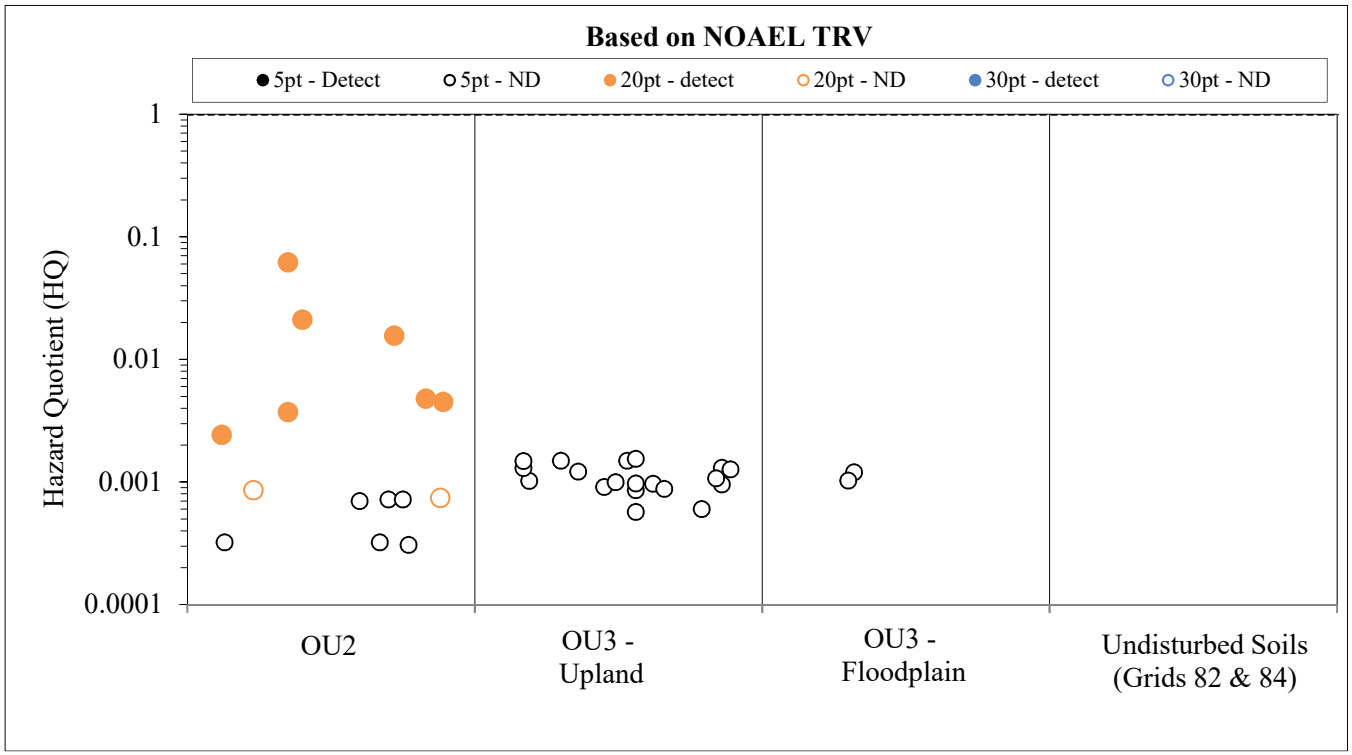
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Food by Exposure Unit/Soil Type

Aroclor-1254





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Aroclor-1254

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.02115	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.000855	ND	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.0156	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.003705	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.004515	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.000743	ND	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.00477	detect	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.06195	detect	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.00243	detect	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.000698	ND	1	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	0.000308	ND	1	0	<1.0	<1.0
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	0.000323	ND	1	0	<1.0	<1.0
	SS31-IN	SS31-IN-(0-2)c	0.000323	ND	1	0	<1.0	<1.0
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.00072	ND	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.00072	ND	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Aroclor-1254

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.001493	ND	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.000953	ND	1	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	0.001305	ND	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.00102	ND	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.001493	ND	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.000968	ND	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.000855	ND	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.00057	ND	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.001268	ND	1	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.000908	ND	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.0006	ND	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.001545	ND	1	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.001215	ND	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.000878	ND	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.000975	ND	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.000998	ND	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.001073	ND	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.001298	ND	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.001478	ND	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

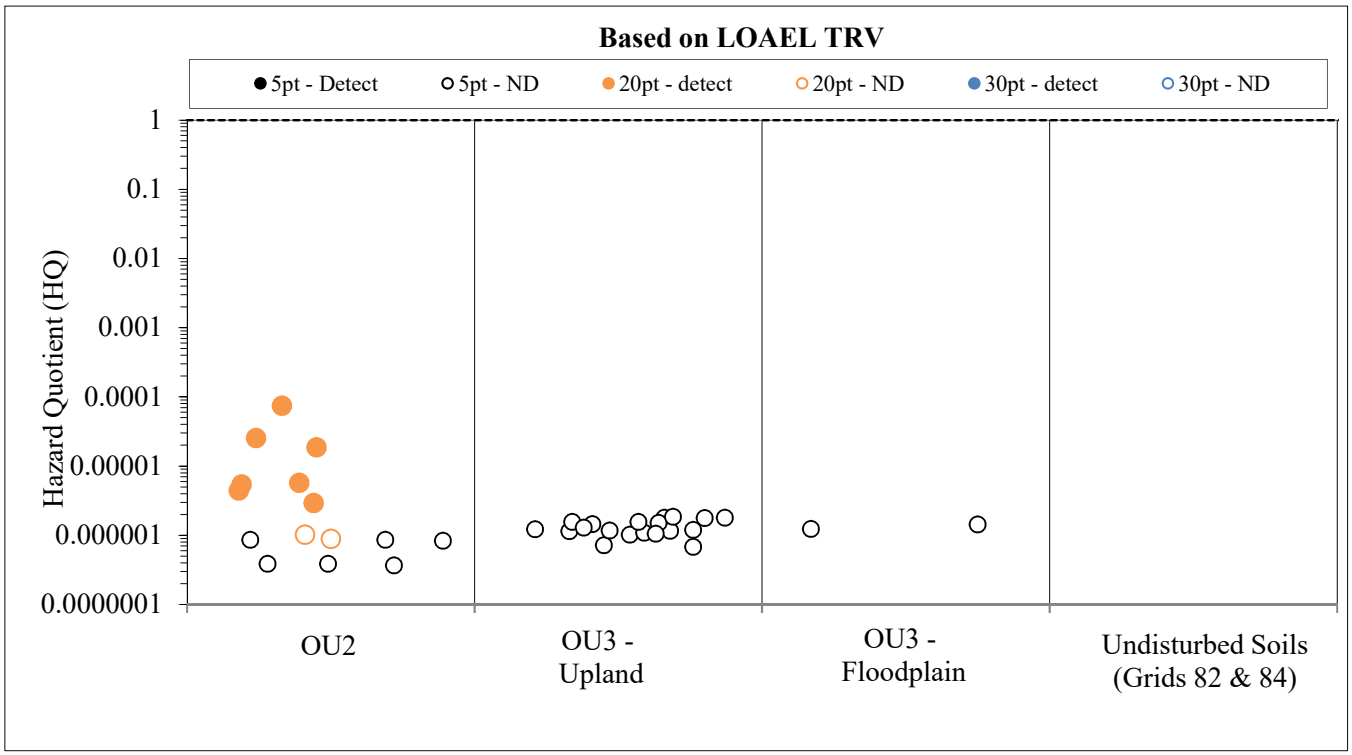
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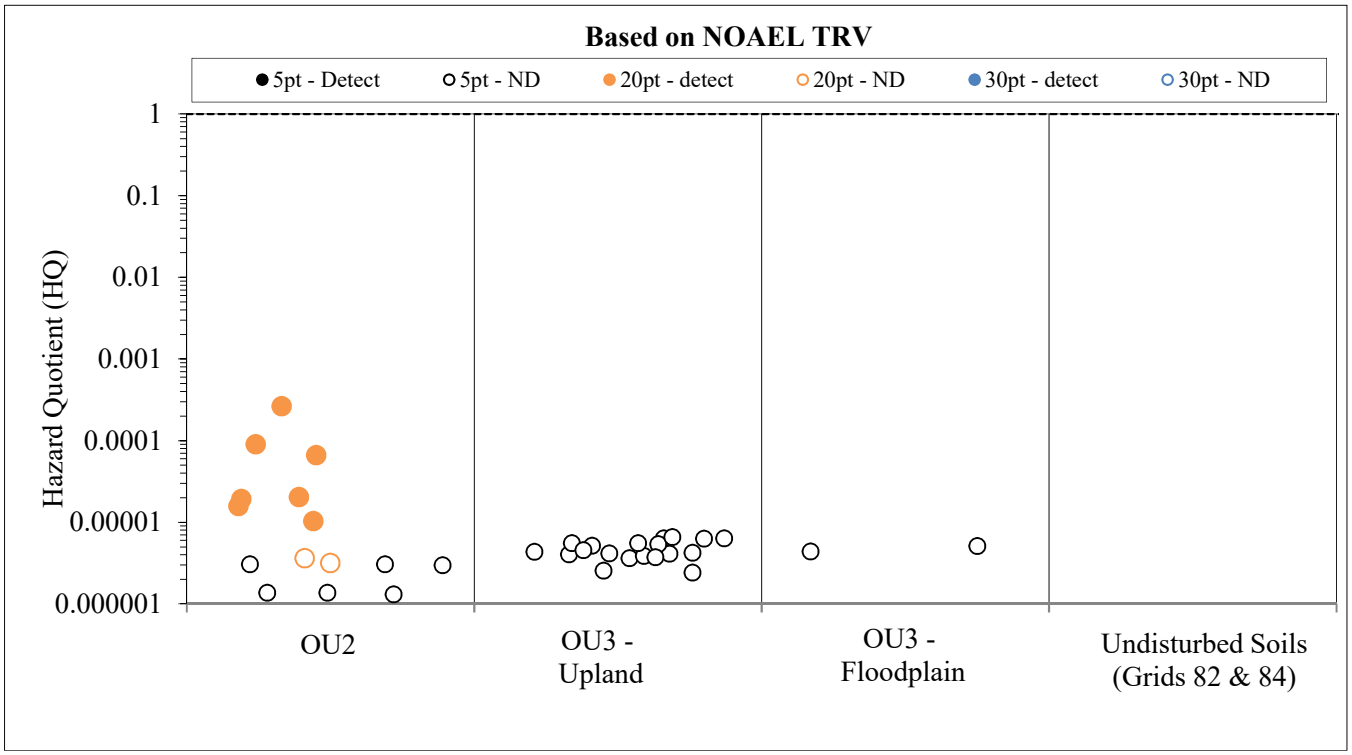
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.0012	ND	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.001028	ND	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Surface Soil by Exposure Unit/Soil Type

Aroclor-1254





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Aroclor-1254

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.141	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.0057	ND	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.104	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.0247	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.0301	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.00495	ND	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.0318	detect	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.413	detect	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.0162	detect	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.00465	ND	1	0	<1.0	<1.0
	SB1-IN	SB1A-IN-(1-2)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	0.00205	ND	1	0	<1.0	<1.0
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	0.00215	ND	1	0	<1.0	<1.0
	SS31-IN	SS31-IN-(0-2)c	0.00215	ND	1	0	<1.0	<1.0
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.0048	ND	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.0048	ND	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Aroclor-1254

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.00995	ND	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.00635	ND	1	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	0.0087	ND	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.0068	ND	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.00995	ND	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.00645	ND	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.0057	ND	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.0038	ND	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.00845	ND	1	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.00605	ND	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.004	ND	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.0103	ND	1	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.0081	ND	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.00585	ND	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.0065	ND	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.00665	ND	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.00715	ND	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.00865	ND	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.00985	ND	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

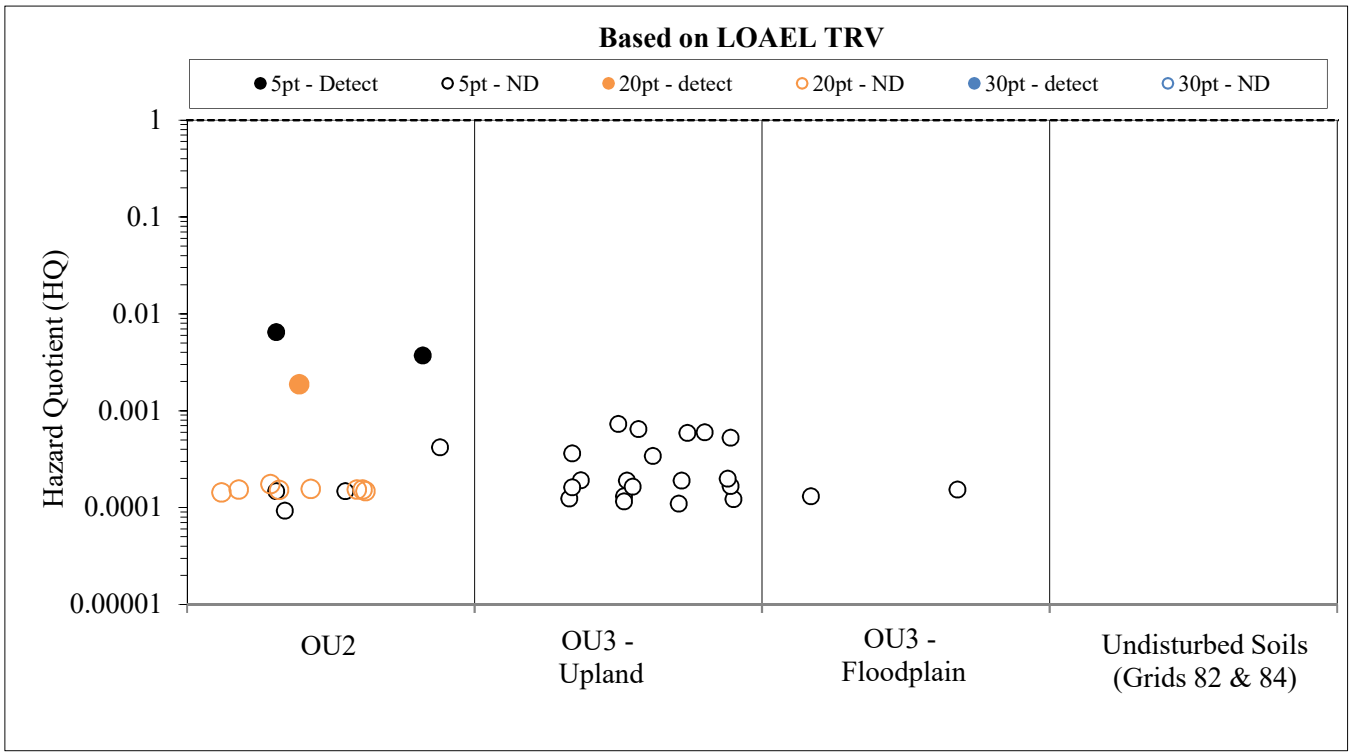
Aroclor-1254

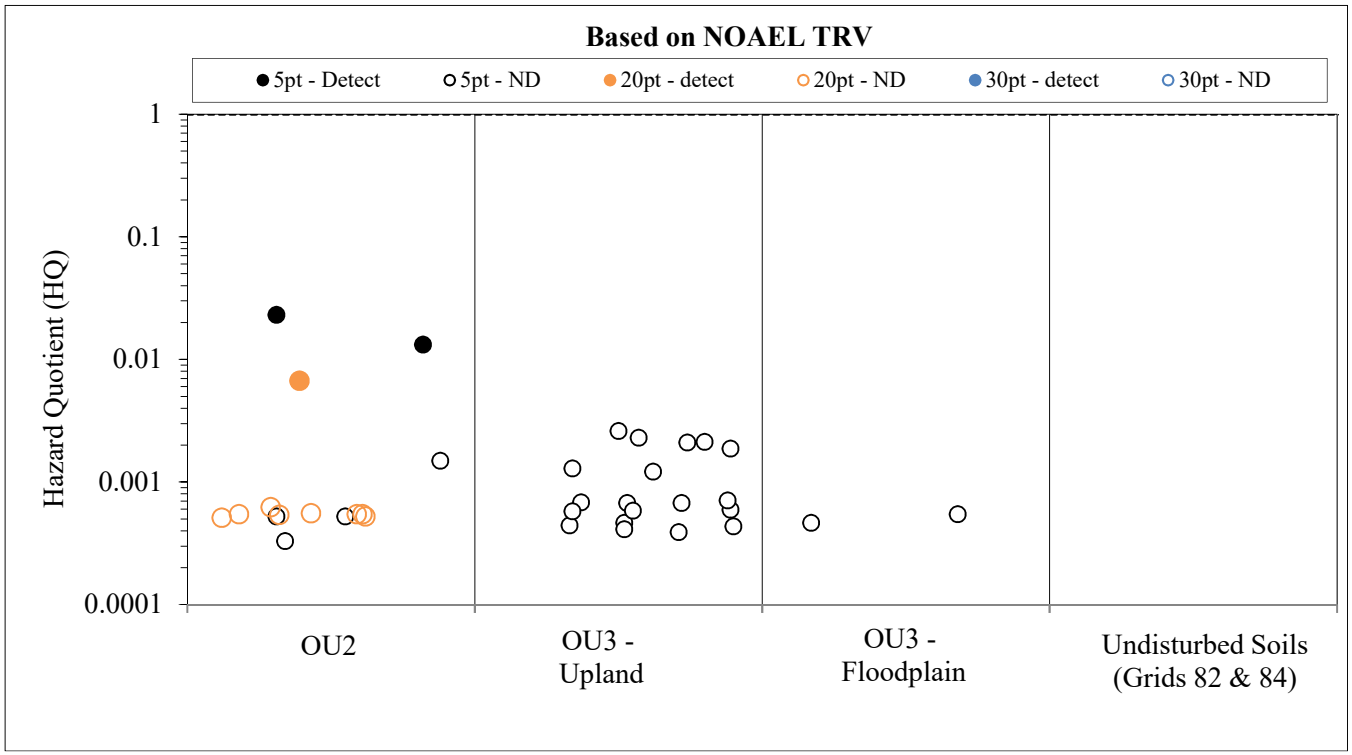
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.008	ND	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.00685	ND	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Food by Exposure Unit/Soil Type

Aroclor-1260





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Aroclor-1260

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.000525	ND	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.000623	ND	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.00051	ND	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.000548	ND	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.006675	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.00054	ND	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.000548	ND	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.000548	ND	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.000555	ND	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.001493	ND	1	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	0.0231	detect	1	0	<1.0	<1.0
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	0.00033	ND	1	0	<1.0	<1.0
	SS31-IN	SS31-IN-(0-2)c	0.013215	detect	1	0	<1.0	<1.0
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.000525	ND	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.000525	ND	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Aroclor-1260

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.000683	ND	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.000435	ND	1	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	0.000593	ND	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.000465	ND	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.000675	ND	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.000443	ND	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.00039	ND	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.001215	ND	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.000578	ND	1	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.000413	ND	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.00129	ND	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.000705	ND	1	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.002603	ND	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.001875	ND	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.002093	ND	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.00213	ND	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.002295	ND	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.000585	ND	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.000675	ND	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

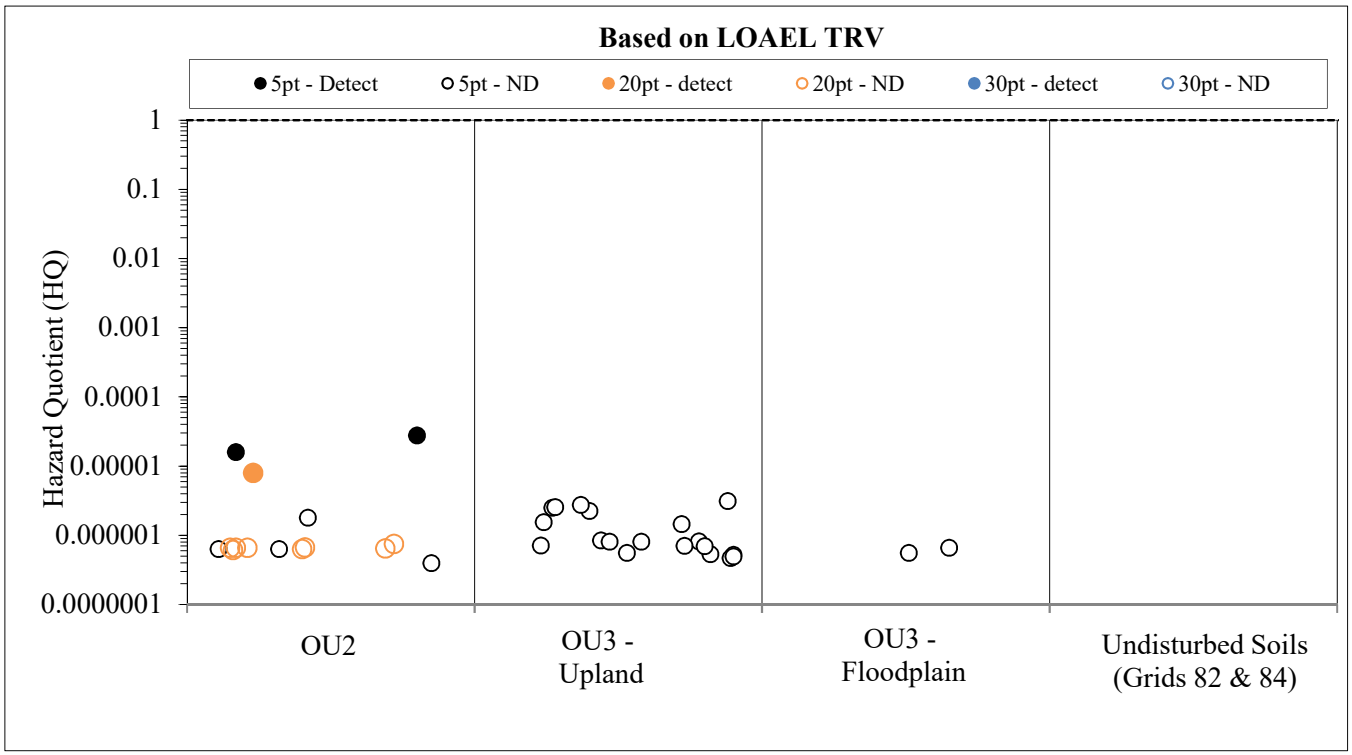
Aroclor-1260

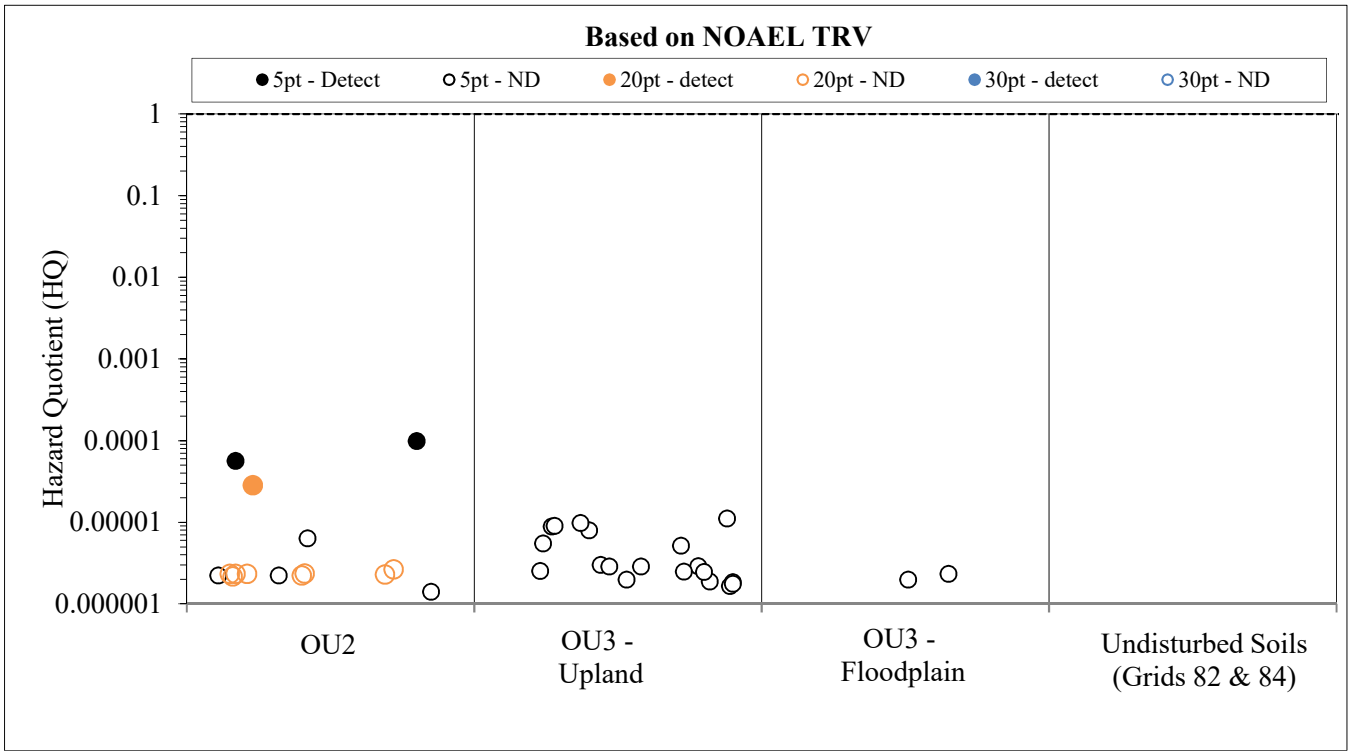
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.000548	ND	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.000465	ND	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Surface Soil by Exposure Unit/Soil Type

Aroclor-1260





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Aroclor-1260

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.0035	ND	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.00415	ND	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.0034	ND	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.00365	ND	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.0445	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.0036	ND	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.00365	ND	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.00365	ND	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.0037	ND	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.00995	ND	1	0	<1.0	<1.0
	SB1-IN	SB1A-IN-(1-2)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	0.154	detect	1	0	<1.0	<1.0
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	0.0022	ND	1	0	<1.0	<1.0
	SS31-IN	SS31-IN-(0-2)c	0.0881	detect	1	0	<1.0	<1.0
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.0035	ND	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.0035	ND	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Aroclor-1260

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.00455	ND	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.0029	ND	1	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	0.00395	ND	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.0031	ND	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.0045	ND	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.00295	ND	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.0026	ND	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.0081	ND	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.00385	ND	1	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.00275	ND	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.0086	ND	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.0047	ND	1	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.01735	ND	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.0125	ND	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.01395	ND	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.0142	ND	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.0153	ND	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.0039	ND	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.0045	ND	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

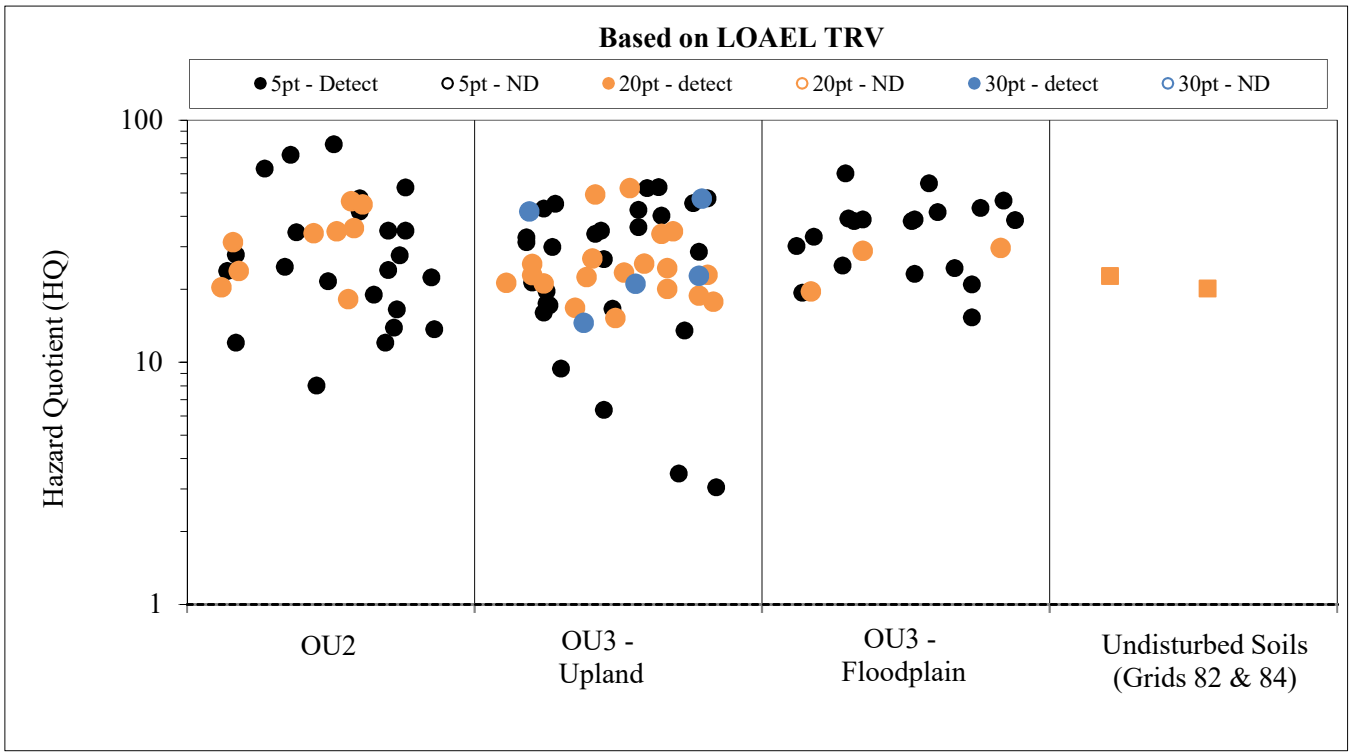
Aroclor-1260

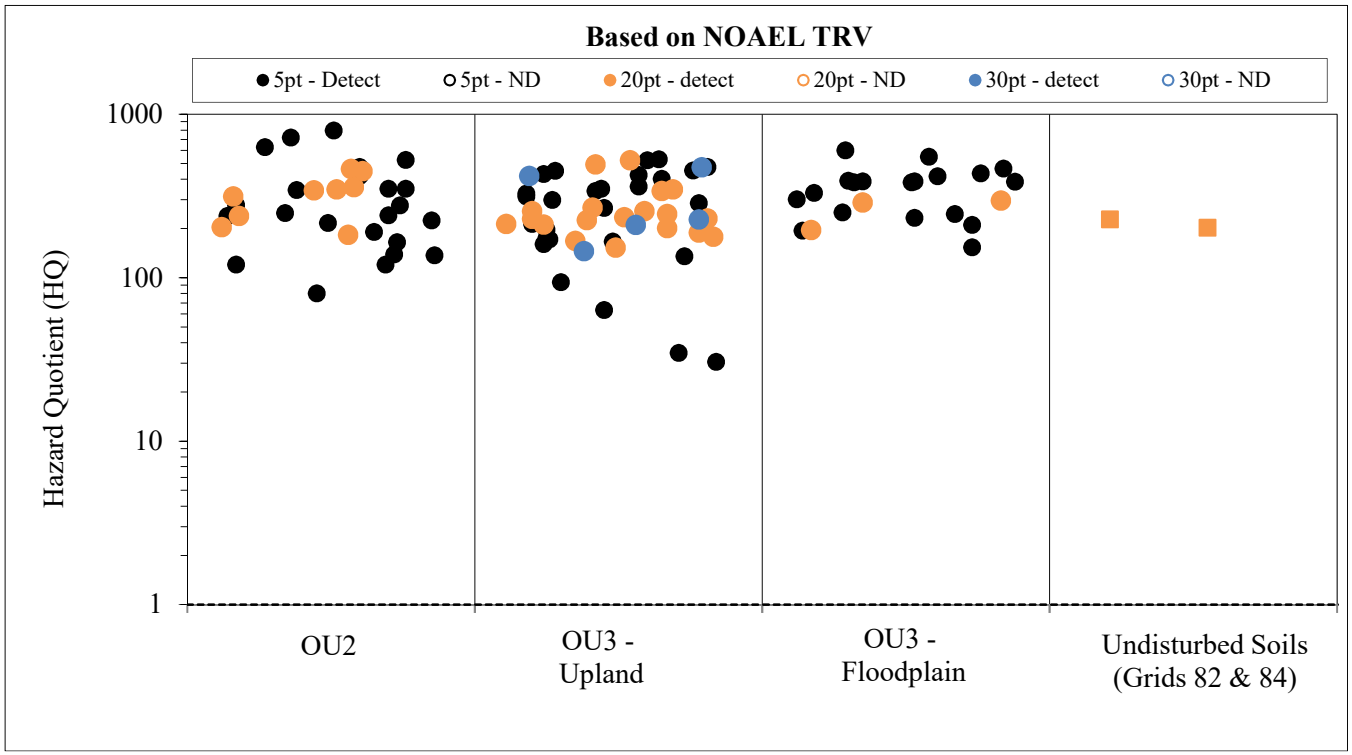
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.00365	ND	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.0031	ND	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Food by Exposure Unit/Soil Type

Aluminum





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Aluminum

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	1093.5	detect	19	2	**20.4**	**204.0**
	Grid 13	Grid 13-SSComp-01_20171019_NM	2400	detect	19	2	**44.8**	**447.7**
	Grid 14	Grid 14-SSComp-01_20171017_NM	1276.5	detect	19	2	**23.8**	**238.1**
	Grid 2	Grid 2-SSComp-01_20171016_NM	978	detect	19	2	**18.2**	**182.4**
	Grid 22	Grid 22-SSComp-01_20171018_NM	1860	detect	19	2	**34.7**	**346.9**
	Grid 23	Grid 23-SSComp-01_20171018_NM	2475	detect	19	2	**46.2**	**461.7**
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	1680	detect	19	2	**31.3**	**313.4**
	Grid 8	Grid 8-SSComp-01_20171018_NM	1920	detect	19	2	**35.8**	**358.1**
	Grid 9	Grid 9-SSComp-01_20171018_NM	1830	detect	19	2	**34.1**	**341.3**
	LF-1	LF-1-SS_4/18/14_NM	4260	detect	19	2	**79.5**	**794.6**
	SB2a,3a-IN	SB2a-IN-(0-2)	429	detect	19	2	**8.0**	**80.0**
	SS10-IN	SS10-IN-(0-2)c	745.5	detect	19	2	**13.9**	**139.1**
	SS11-IN	SS11-IN-(0-2)c	1276.5	detect	19	2	**23.8**	**238.1**
	SS12-IN	SS12-IN-(0-2)c	1201.5	detect	19	2	**22.4**	**224.1**
	SS13-IN	SS13-IN-(0-2)c	885	detect	19	2	**16.5**	**165.1**
	SS14-IN	SS14-IN-(0-2)c	1483.5	detect	19	2	**27.7**	**276.7**
	SS15-IN	SS15-IN-(0-2)c	3375	detect	19	2	**63.0**	**629.5**
	SS16-IN	SS16-IN-(0-2)c	2250	detect	19	2	**42.0**	**419.7**
	SS17-IN	SS17-IN-(0-2)c	1492.5	detect	19	2	**27.8**	**278.4**
	SS1-IN	SS1-IN-(0-2)c	1159.5	detect	19	2	**21.6**	**216.3**
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	19	2	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	1018.5	detect	19	2	**19.0**	**190.0**
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	19	2	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	19	2	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	3855	detect	19	2	**71.9**	**719.1**
	SS33-IN	SS33-IN-(0-2)c	1875	detect	19	2	**35.0**	**349.7**
	SS3-IN	SS3-IN-(0-2)c	1875	detect	19	2	**35.0**	**349.7**
	SS4-IN	SS4-IN-(0-2)c	1290	detect	19	2	**24.1**	**240.6**
	SS5-IN	SS5-IN-(0-2)c	2820	detect	19	2	**52.6**	**526.0**
	SS6-IN	SS6-IN-(0-2)c	1329	detect	19	2	**24.8**	**247.9**
	SS7-IN	SS7-IN-(0-2)c	1845	detect	19	2	**34.4**	**344.1**
	SS8-IN	SS8-IN-(0-2)c	733.5	detect	19	2	**13.7**	**136.8**
	SS9-IN	SS9-IN-(0-2)c	2550	detect	19	2	**47.6**	**475.6**
	HDPT-SS	BACKFILL-HDPT-SS	645	detect	19	2	**12.0**	**120.3**
	TSB-SS	BACKFILL-TSB-SS	645	detect	19	2	**12.0**	**120.3**

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Aluminum

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	2250	detect	19	2	**42.0**	**419.7**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	1530	detect	19	2	**28.5**	**285.4**
	CRP-1	CRP-1-SS_4/10/14_NM	1680	detect	19	2	**31.3**	**313.4**
	Grid 27	Grid 27-SSComp-01_20171019_NM	1009.5	detect	19	2	**18.8**	**188.3**
	Grid 28	Grid 28-SSComp-01_20171019_NM	954	detect	19	2	**17.8**	**177.9**
	Grid 29	Grid 29-SSComp-01_20171019_NM	1134	detect	19	2	**21.2**	**211.5**
	Grid 30	Grid 30-SSComp-01_20171020_NM	1231.5	detect	19	2	**23.0**	**229.7**
	Grid 33	Grid 33-SSComp-01_20171020_NM	1314	detect	19	2	**24.5**	**245.1**
	Grid 34	Grid 34-SSComp-01_20171019_NM	1075.5	detect	19	2	**20.1**	**200.6**
	Grid 37	Grid 37-SSComp-01_20171020_NM	1255.5	detect	19	2	**23.4**	**234.2**
	Grid 39	Grid 39-SSComp-01_20171020_NM	1368	detect	19	2	**25.5**	**255.2**
	Grid 43	Grid 43-SSComp-01_20171023_NM	1366.5	detect	19	2	**25.5**	**254.9**
	Grid 44	Grid 44-SSComp-01_20171023_NM	1437	detect	19	2	**26.8**	**268.0**
	Grid 47	Grid 47-SSComp-01_20171023_NM	2640	detect	19	2	**49.2**	**492.4**
	Grid 53	Grid 53-SSComp-01_20171020_NM	1815	detect	19	2	**33.9**	**338.5**
	Grid 60	Grid 60-SSComp-01_20171023_NM	1206	detect	19	2	**22.5**	**225.0**
	Grid 61	Grid 61-SSComp-01_20171023_NM	1228.5	detect	19	2	**22.9**	**229.2**
	Grid 64	Grid 64-SSComp-01_20171024_NM	1140	detect	19	2	**21.3**	**212.6**
	Grid 74	Grid 74-SSComp-01_20171023_NM	2805	detect	19	2	**52.3**	**523.2**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	1860	detect	19	2	**34.7**	**346.9**
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	817.5	detect	19	2	**15.2**	**152.5**
	HP16-1	HP16-1-SS_4/10/14_NM	1875	detect	19	2	**35.0**	**349.7**
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	1815	detect	19	2	**33.9**	**338.5**
	HP18-1	HP18-1-SS_4/10/14_NM	2835	detect	19	2	**52.9**	**528.8**
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	1428	detect	19	2	**26.6**	**266.4**
	HP18-IB	HP18-SSC-IB_4/10/14_NM	726	detect	19	2	**13.5**	**135.4**
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	19	2	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	937.5	detect	19	2	**17.5**	**174.9**
	HP9-1	HP9-1-SS_4/10/14_NM	2415	detect	19	2	**45.0**	**450.5**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	859.5	detect	19	2	**16.0**	**160.3**
	IBK-1	IBK-1-SS_4/16/14_NM	2550	detect	19	2	**47.6**	**475.6**
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	2805	detect	19	2	**52.3**	**523.2**
	P17-BH1	P17-BH1-SS_4/3/14_NM	2430	detect	19	2	**45.3**	**453.3**
	P3	P3-SSComp-01_20171020_NM	898.5	detect	19	2	**16.8**	**167.6**
	P3-BH1	P3-BH1-SS_4/3/14_NM	340.5	detect	19	2	**6.4**	**63.5**
	P4-BH1	P4-BH1-SS_4/4/14_NM	186	detect	19	2	**3.5**	**34.7**
	P5-BH2	P5-BH2-SS_4/3/14_NM	163.5	detect	19	2	**3.0**	**30.5**
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	504	detect	19	2	**9.4**	**94.0**
	P8	P8-SSComp-01_20171025_NM	1218	detect	19	2	**22.7**	**227.2**
	P8dc	P8dc-SSComp-01_20171024_NM	1129.5	detect	19	2	**21.1**	**210.7**
	P8-TP3	P8-TP3-SS_4/4/14_NM	1605	detect	19	2	**29.9**	**299.4**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	2310	detect	19	2	**43.1**	**430.9**
	SPP	SPP-SSComp-01_20171025_NM	2535	detect	19	2	**47.3**	**472.8**
	SS1,2-HP18	SS1-HP18-(0-2)c	1054.5	detect	19	2	**19.7**	**196.7**
	SS11,12-IBK	SS11-IBK-(0-2)c	1143	detect	19	2	**21.3**	**213.2**
	SS13,14-HP9	SS13-HP9-(0-2)c	2160	detect	19	2	**40.3**	**402.9**
	SS15,16-HP9	SS15-HP9-(0-2)c	2280	detect	19	2	**42.5**	**425.3**
	SS3,4-HP16	SS3-HP16-(0-2)c	921	detect	19	2	**17.2**	**171.8**
	SS5,6-IBJ	SS5-IBJ-(0-2)c	892.5	detect	19	2	**16.6**	**166.5**
	SS7,8-HP13	SS7-HP13-(0-2)c	1935	detect	19	2	**36.1**	**360.9**
	SS9,10-HP12	SS9-HP12-(0-2)c	1755	detect	19	2	**32.7**	**327.4**
	SWBA	SWBA-SSComp-01_20171024_NM	780	detect	19	2	**14.5**	**145.5**

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

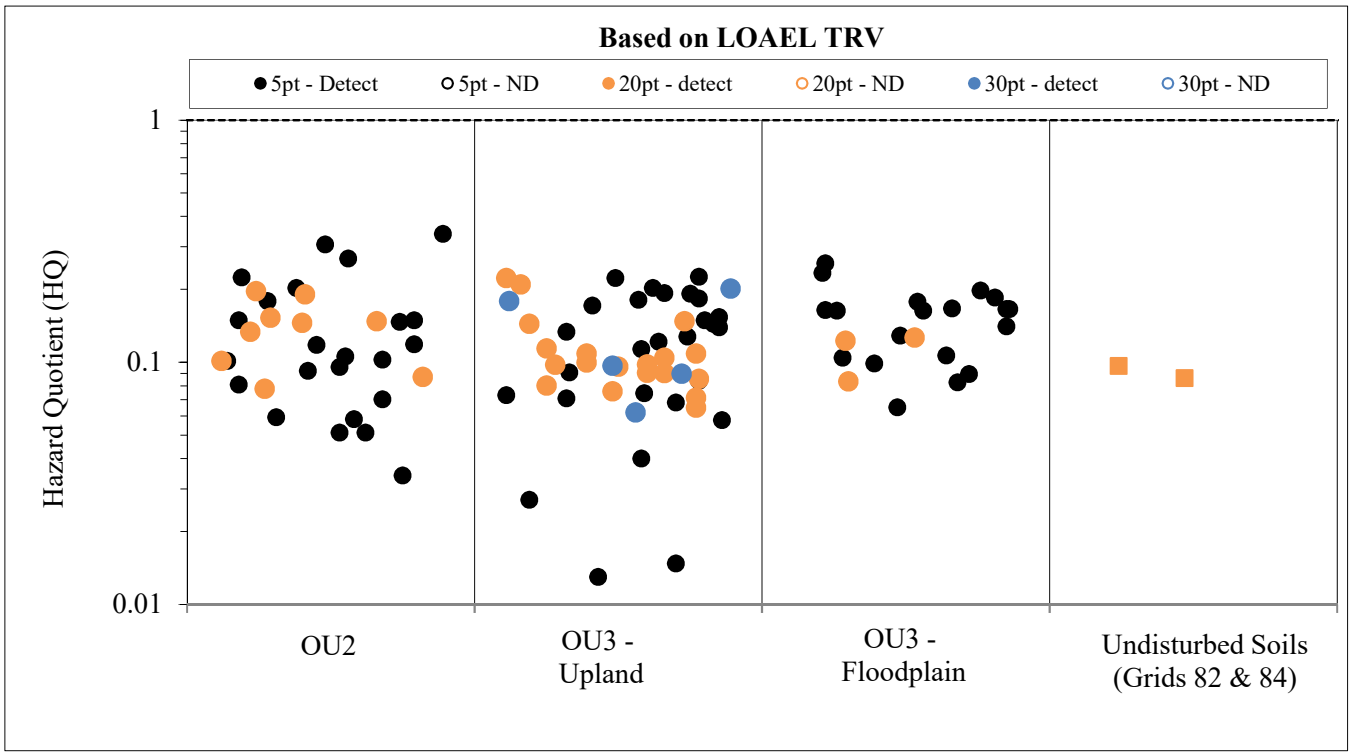
Aluminum

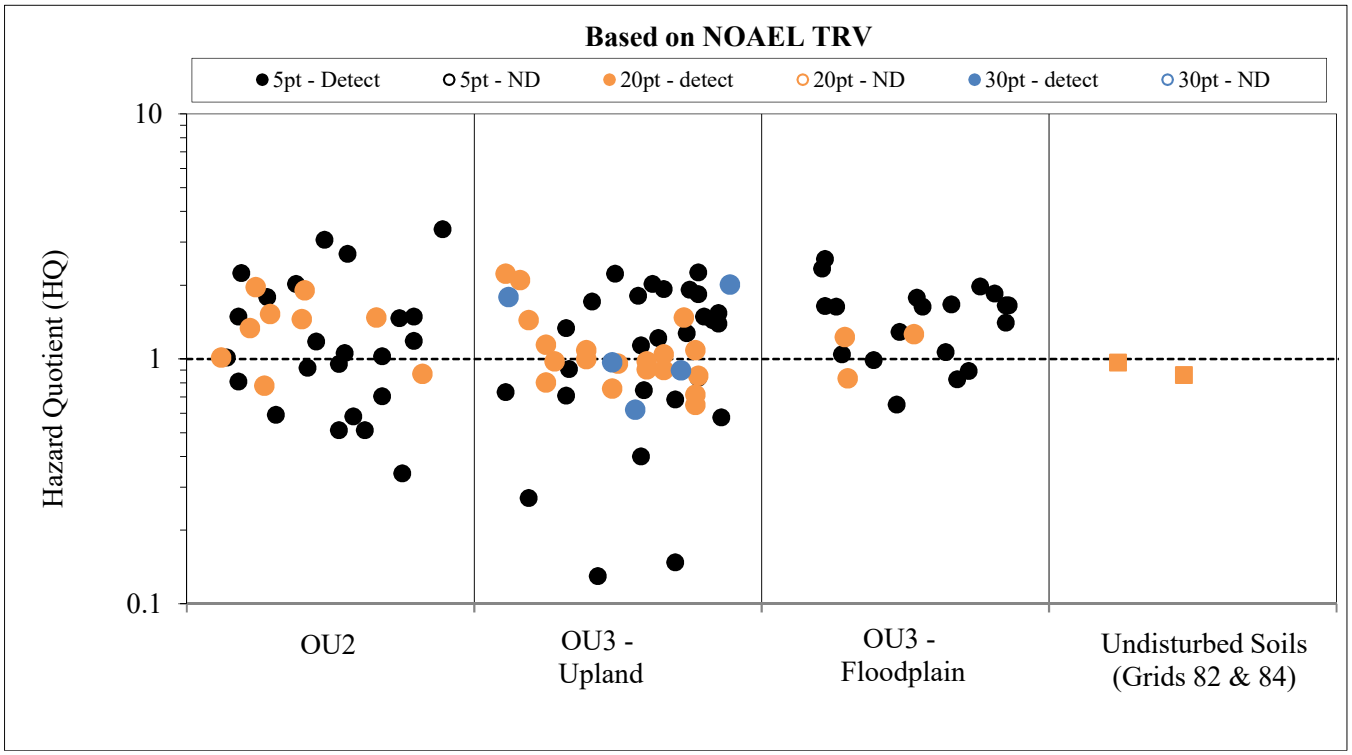
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	1050	detect	19	2	**19.6**	**195.9**
	Grid 89	Grid 89-SSComp-01_20171026_NM	1590	detect	19	2	**29.7**	**296.6**
	Grid 94	Grid 94-SSComp-01_20171026_NM	1545	detect	19	2	**28.8**	**288.2**
	HP13a-1	HP13A-1-SS_4/10/14_NM	2940	detect	19	2	**54.8**	**548.4**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	1039.5	detect	19	2	**19.4**	**193.9**
	SE10-HP11	SE10-HP11-(0-2)c	3225	detect	19	2	**60.2**	**601.6**
	SE11-HP11	SE11-HP11-(0-2)c	1243.5	detect	19	2	**23.2**	**231.9**
	SE12-HP12	SE12-HP12-(0-2)c	2325	detect	19	2	**43.4**	**433.7**
	SE13-HP12	SE13-HP12-(0-2)c	2100	detect	19	2	**39.2**	**391.7**
	SE14-HP13	SE14-HP13-(0-2)c	2085	detect	19	2	**38.9**	**388.9**
	SE15-HP13	SE15-HP13-(0-2)c	1770	detect	19	2	**33.0**	**330.2**
	SE16-HP13	SE16-HP13-(0-2)c	1620	detect	19	2	**30.2**	**302.2**
	SE17-HP13a	SE17-HP13a-(0-2)c	2055	detect	19	2	**38.3**	**383.3**
	SE1-HP1a	SE1-HP1a-(0-2)c	2055	detect	19	2	**38.3**	**383.3**
	SE2-HP1a	SE2-HP1a-(0-2)c	2490	detect	19	2	**46.4**	**464.5**
	SE3-HP1	SE3-HP1-(0-2)c	820.5	detect	19	2	**15.3**	**153.0**
	SE4-HP1	SE4-HP1-(0-2)c	1342.5	detect	19	2	**25.0**	**250.4**
	SE5-HP2	SE5-HP2-(0-2)c	2235	detect	19	2	**41.7**	**416.9**
	SE6-HP7	SE6-HP7-(0-2)c	2070	detect	19	2	**38.6**	**386.1**
	SE7-HP7	SE7-HP7-(0-2)c	1125	detect	19	2	**21.0**	**209.8**
	SE8-HP10	SE8-HP10-(0-2)c	1314	detect	19	2	**24.5**	**245.1**
	SE9-HP10	SE9-HP10-(0-2)c	2085	detect	19	2	**38.9**	**388.9**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	1215	detect	19	2	**22.7**	**226.6**
	Grid 84	Grid 84-SSComp-01_20171026_NM	1081.5	detect	19	2	**20.2**	**201.7**

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Surface Soil by Exposure Unit/Soil Type

Aluminum





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Aluminum

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	7290	detect	19	2	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	16000	detect	19	2	<1.0	**1.9**
	Grid 14	Grid 14-SSComp-01_20171017_NM	8510	detect	19	2	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	6520	detect	19	2	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	12400	detect	19	2	<1.0	**1.5**
	Grid 23	Grid 23-SSComp-01_20171018_NM	16500	detect	19	2	<1.0	**2.0**
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	11200	detect	19	2	<1.0	**1.3**
	Grid 8	Grid 8-SSComp-01_20171018_NM	12800	detect	19	2	<1.0	**1.5**
	Grid 9	Grid 9-SSComp-01_20171018_NM	12200	detect	19	2	<1.0	**1.5**
	LF-1	LF-1-SS_4/18/14_NM	28400	detect	19	2	<1.0	**3.4**
	SB1-IN	SB1A-IN-(1-2)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	SB2a,3a-IN	SB2a-IN-(0-2)	2860	detect	19	2	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	4970	detect	19	2	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	8510	detect	19	2	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	8010	detect	19	2	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	5900	detect	19	2	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	9890	detect	19	2	<1.0	**1.2**
	SS15-IN	SS15-IN-(0-2)c	22500	detect	19	2	<1.0	**2.7**
	SS16-IN	SS16-IN-(0-2)c	15000	detect	19	2	<1.0	**1.8**
	SS17-IN	SS17-IN-(0-2)c	9950	detect	19	2	<1.0	**1.2**
	SS1-IN	SS1-IN-(0-2)c	7730	detect	19	2	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	19	2	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	6790	detect	19	2	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	19	2	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	19	2	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	25700	detect	19	2	<1.0	**3.1**
	SS33-IN	SS33-IN-(0-2)c	12500	detect	19	2	<1.0	**1.5**
	SS3-IN	SS3-IN-(0-2)c	12500	detect	19	2	<1.0	**1.5**
	SS4-IN	SS4-IN-(0-2)c	8600	detect	19	2	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	18800	detect	19	2	<1.0	**2.2**
	SS6-IN	SS6-IN-(0-2)c	8860	detect	19	2	<1.0	**1.1**
	SS7-IN	SS7-IN-(0-2)c	12300	detect	19	2	<1.0	**1.5**
	SS8-IN	SS8-IN-(0-2)c	4890	detect	19	2	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	17000	detect	19	2	<1.0	**2.0**
	HDPT-SS	BACKFILL-HDPT-SS	4300	detect	19	2	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	4300	detect	19	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Aluminum

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	15000	detect	19	2	<1.0	**1.8**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	10200	detect	19	2	<1.0	**1.2**
	CRP-1	CRP-1-SS_4/10/14_NM	11200	detect	19	2	<1.0	**1.3**
	Grid 27	Grid 27-SSComp-01_20171019_NM	6730	detect	19	2	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	6360	detect	19	2	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	7560	detect	19	2	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	8210	detect	19	2	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	8760	detect	19	2	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	7170	detect	19	2	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	8370	detect	19	2	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	9120	detect	19	2	<1.0	**1.1**
	Grid 43	Grid 43-SSComp-01_20171023_NM	9110	detect	19	2	<1.0	**1.1**
	Grid 44	Grid 44-SSComp-01_20171023_NM	9580	detect	19	2	<1.0	**1.1**
	Grid 47	Grid 47-SSComp-01_20171023_NM	17600	detect	19	2	<1.0	**2.1**
	Grid 53	Grid 53-SSComp-01_20171020_NM	12100	detect	19	2	<1.0	**1.4**
	Grid 60	Grid 60-SSComp-01_20171023_NM	8040	detect	19	2	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	8190	detect	19	2	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	7600	detect	19	2	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	18700	detect	19	2	<1.0	**2.2**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	12400	detect	19	2	<1.0	**1.5**
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	5450	detect	19	2	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	12500	detect	19	2	<1.0	**1.5**
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	12100	detect	19	2	<1.0	**1.4**
	HP18-1	HP18-1-SS_4/10/14_NM	18900	detect	19	2	<1.0	**2.3**
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	9520	detect	19	2	<1.0	**1.1**
	HP18-IB	HP18-SSC-IB_4/10/14_NM	4840	detect	19	2	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	19	2	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	6250	detect	19	2	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	16100	detect	19	2	<1.0	**1.9**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	5730	detect	19	2	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	17000	detect	19	2	<1.0	**2.0**
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	18700	detect	19	2	<1.0	**2.2**
	P17-BH1	P17-BH1-SS_4/3/14_NM	16200	detect	19	2	<1.0	**1.9**
	P3	P3-SSComp-01_20171020_NM	5990	detect	19	2	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	2270	detect	19	2	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	1240	detect	19	2	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	1090	detect	19	2	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	3360	detect	19	2	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	8120	detect	19	2	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	7530	detect	19	2	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	10700	detect	19	2	<1.0	**1.3**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	15400	detect	19	2	<1.0	**1.8**
	SPP	SPP-SSComp-01_20171025_NM	16900	detect	19	2	<1.0	**2.0**
	SS1,2-HP18	SS1-HP18-(0-2)c	7030	detect	19	2	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	7620	detect	19	2	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	14400	detect	19	2	<1.0	**1.7**
	SS15,16-HP9	SS15-HP9-(0-2)c	15200	detect	19	2	<1.0	**1.8**
	SS3,4-HP16	SS3-HP16-(0-2)c	6140	detect	19	2	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	5950	detect	19	2	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	12900	detect	19	2	<1.0	**1.5**
	SS9,10-HP12	SS9-HP12-(0-2)c	11700	detect	19	2	<1.0	**1.4**
	SWBA	SWBA-SSComp-01_20171024_NM	5200	detect	19	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Aluminum

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	7000	detect	19	2	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	10600	detect	19	2	<1.0	**1.3**
	Grid 94	Grid 94-SSComp-01_20171026_NM	10300	detect	19	2	<1.0	**1.2**
	HP13a-1	HP13A-1-SS_4/10/14_NM	19600	detect	19	2	<1.0	**2.3**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	6930	detect	19	2	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	21500	detect	19	2	<1.0	**2.6**
	SE11-HP11	SE11-HP11-(0-2)c	8290	detect	19	2	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	15500	detect	19	2	<1.0	**1.8**
	SE13-HP12	SE13-HP12-(0-2)c	14000	detect	19	2	<1.0	**1.7**
	SE14-HP13	SE14-HP13-(0-2)c	13900	detect	19	2	<1.0	**1.7**
	SE15-HP13	SE15-HP13-(0-2)c	11800	detect	19	2	<1.0	**1.4**
	SE16-HP13	SE16-HP13-(0-2)c	10800	detect	19	2	<1.0	**1.3**
	SE17-HP13a	SE17-HP13a-(0-2)c	13700	detect	19	2	<1.0	**1.6**
	SE1-HP1a	SE1-HP1a-(0-2)c	13700	detect	19	2	<1.0	**1.6**
	SE2-HP1a	SE2-HP1a-(0-2)c	16600	detect	19	2	<1.0	**2.0**
	SE3-HP1	SE3-HP1-(0-2)c	5470	detect	19	2	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	8950	detect	19	2	<1.0	**1.1**
	SE5-HP2	SE5-HP2-(0-2)c	14900	detect	19	2	<1.0	**1.8**
	SE6-HP7	SE6-HP7-(0-2)c	13800	detect	19	2	<1.0	**1.6**
	SE7-HP7	SE7-HP7-(0-2)c	7500	detect	19	2	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	8760	detect	19	2	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	13900	detect	19	2	<1.0	**1.7**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	8100	detect	19	2	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	7210	detect	19	2	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of River Surface Water

Aluminum

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0366	detect	1.93	19.3	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0873	detect	1.93	19.3	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.747	detect	1.93	19.3	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0303	detect	1.93	19.3	<1.0	<1.0
	51-CFR	SW51-CFR	0.0376	detect	1.93	19.3	<1.0	<1.0
	52-CFR	SW52-CFR	0.116	detect	1.93	19.3	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0073	detect	1.93	19.3	<1.0	<1.0
	54-CFR	SW54-CFR	0.044	detect	1.93	19.3	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0248	detect	1.93	19.3	<1.0	<1.0
	55-CFR	SW55-CFR	0.0499	detect	1.93	19.3	<1.0	<1.0
	56-CFR	SW56-CFR	0.0515	detect	1.93	19.3	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0284	detect	1.93	19.3	<1.0	<1.0
	57-CFR	SW57-CFR	0.0392	detect	1.93	19.3	<1.0	<1.0
	58-CFR	SW58-CFR	0.0561	detect	1.93	19.3	<1.0	<1.0
	59-CFR	SW59-CFR	0.03	detect	1.93	19.3	<1.0	<1.0
	60-CFR	SW60-CFR	0.0882	detect	1.93	19.3	<1.0	<1.0
	61-CFR	SW61-CFR	0.0583	detect	1.93	19.3	<1.0	<1.0
	62-CFR	SW62-CFR	0.0478	detect	1.93	19.3	<1.0	<1.0
	63-CFR	SW63-CFR	0.0279	detect	1.93	19.3	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of Creek Surface Water

Aluminum

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.254	detect	1.93	19.3	<1.0	<1.0
	43-OK	SW43-OK	0.215	detect	1.93	19.3	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.275	detect	1.93	19.3	<1.0	<1.0
	37-LV	SW37-LV	0.305	detect	1.93	19.3	<1.0	<1.0
	39-LV	SW39-LV	0.188	detect	1.93	19.3	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of Pond Surface Water

Aluminum

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0165	detect	1.93	19.3	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.218	detect	1.93	19.3	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0479	detect	1.93	19.3	<1.0	<1.0
73-P5	SW73-P5	0.171	detect	1.93	19.3	<1.0	<1.0
71-HP7	SW71-HP7	0.271	detect	1.93	19.3	<1.0	<1.0
72-HP2	SW72-HP2	0.0758	detect	1.93	19.3	<1.0	<1.0
75-HP10	SW75-HP10	0.137	detect	1.93	19.3	<1.0	<1.0
67-HP12	SW67-HP12	0.101	detect	1.93	19.3	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0174	detect	1.93	19.3	<1.0	<1.0
66-HP13	SW66-HP13	0.0998	detect	1.93	19.3	<1.0	<1.0
65-HP13a	SW65-HP13a	0.195	detect	1.93	19.3	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.138	detect	1.93	19.3	<1.0	<1.0
70-CWD	SW70-CWD	0.0552	detect	1.93	19.3	<1.0	<1.0
64-HP18	SW64-HP18	0.13	detect	1.93	19.3	<1.0	<1.0

#N/A = not analyzed

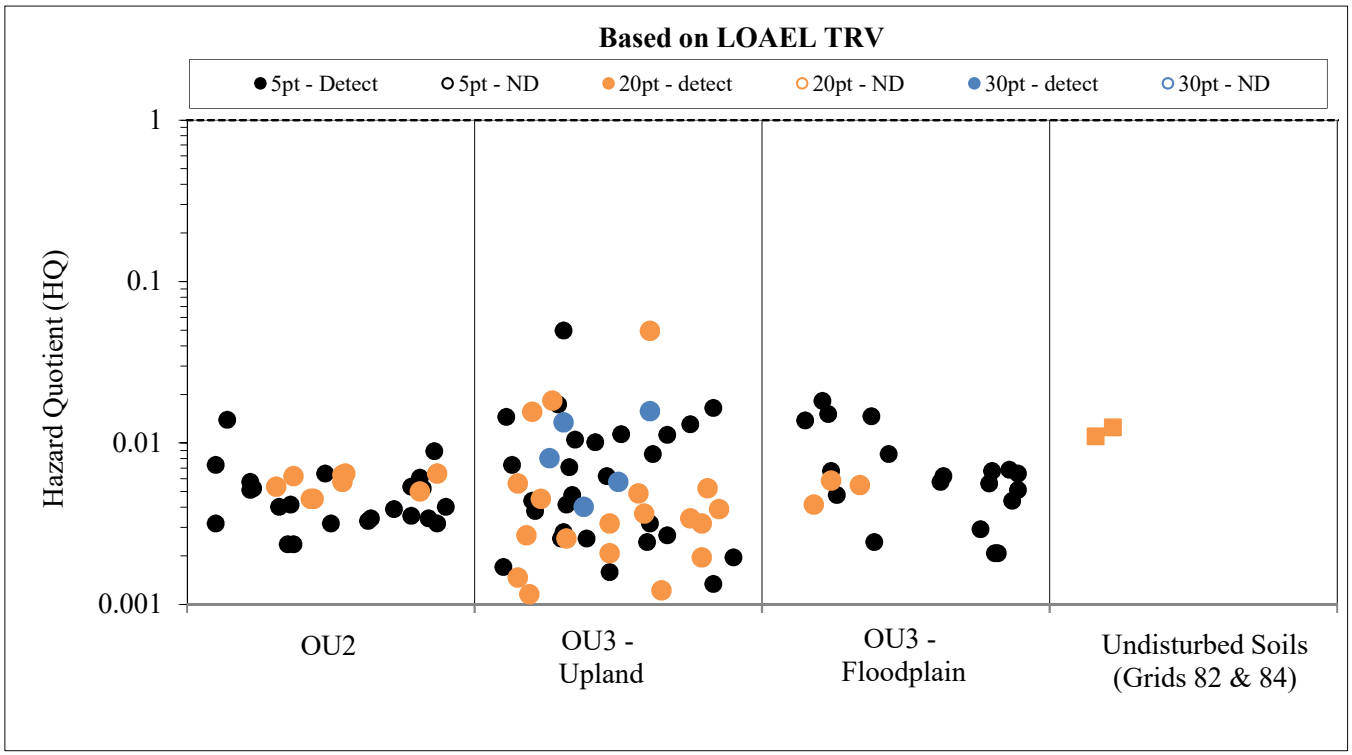
(a) Non-detects are evaluated at 1/2 the reported value.

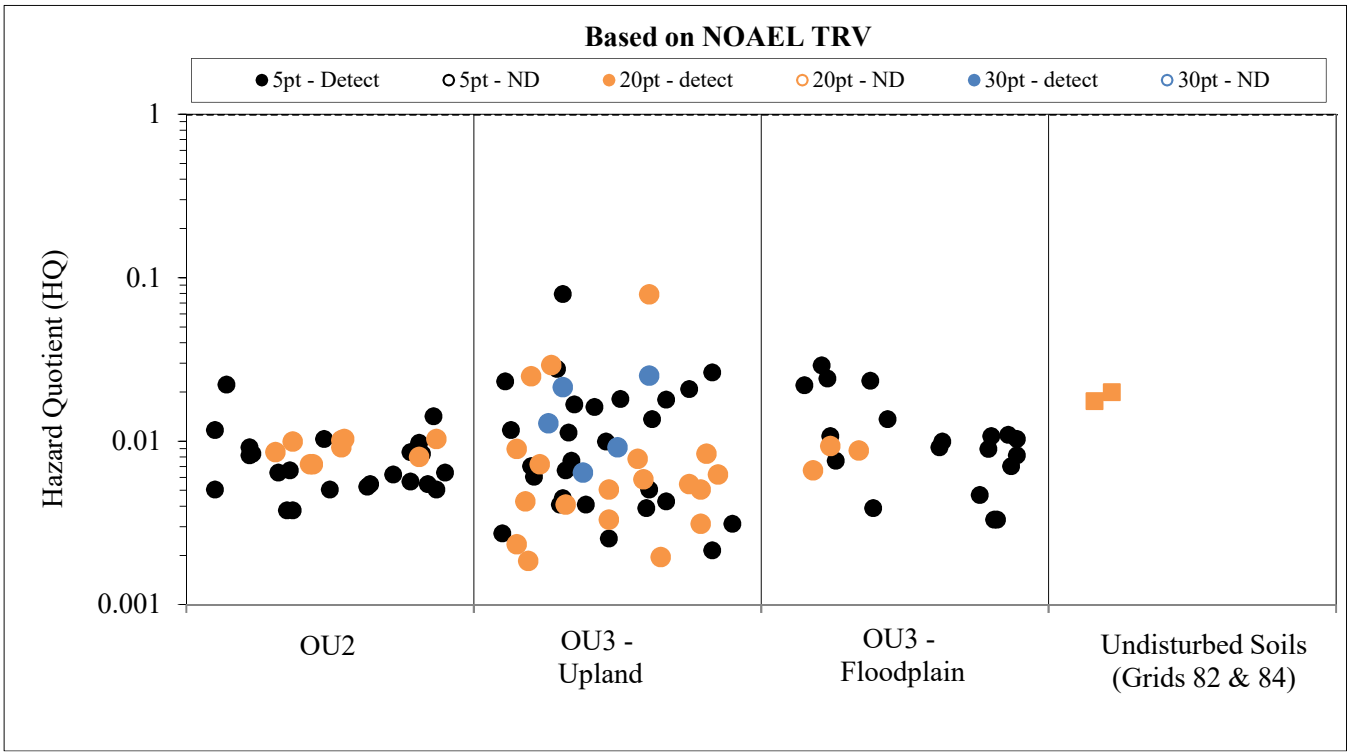
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Food by Exposure Unit/Soil Type

Arsenic





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Arsenic

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.028703	detect	2	1	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.029266	detect	2	1	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.023075	detect	2	1	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.020824	detect	2	1	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.029828	detect	2	1	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.029828	detect	2	1	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.020824	detect	2	1	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.026452	detect	2	1	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.024763	detect	2	1	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.033768	detect	2	1	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.014633	detect	2	1	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.0242	detect	2	1	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.02814	detect	2	1	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.018572	detect	2	1	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.014633	detect	2	1	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.015196	detect	2	1	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.0242	detect	2	1	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.024763	detect	2	1	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.029828	detect	2	1	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.019135	detect	2	1	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	2	1	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.014633	detect	2	1	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	2	1	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	2	1	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.064159	detect	2	1	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.041084	detect	2	1	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.026452	detect	2	1	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.015758	detect	2	1	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.015758	detect	2	1	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.01801	detect	2	1	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.018572	detect	2	1	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.016321	detect	2	1	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.023638	detect	2	1	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.010881	detect	2	1	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.010881	detect	2	1	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Arsenic

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.061908	detect	2	1	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.048401	detect	2	1	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.051778	detect	2	1	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.005628	detect	2	1	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.005347	detect	2	1	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.009568	detect	2	1	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.006754	detect	2	1	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.022512	detect	2	1	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.009005	detect	2	1	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.014633	detect	2	1	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.012382	detect	2	1	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.015758	detect	2	1	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.01801	detect	2	1	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.072038	detect	2	1	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.014633	detect	2	1	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.025889	detect	2	1	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.020824	detect	2	1	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.016884	detect	2	1	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.227934	detect	2	1	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.0242	detect	2	1	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.011819	detect	2	1	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.028703	detect	2	1	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.011256	detect	2	1	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.05234	detect	2	1	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.011819	detect	2	1	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.006191	detect	2	1	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	2	1	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.009005	detect	2	1	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.066973	detect	2	1	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.007316	detect	2	1	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.046712	detect	2	1	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.079918	detect	2	1	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.22906	detect	2	1	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.08442	detect	2	1	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.039396	detect	2	1	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.014633	detect	2	1	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.032642	detect	2	1	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.033768	detect	2	1	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.026452	detect	2	1	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.037145	detect	2	1	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.06022	detect	2	1	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.075978	detect	2	1	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.072601	detect	2	1	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.011819	detect	2	1	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.019135	detect	2	1	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	0.020261	detect	2	1	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	0.021949	detect	2	1	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.012382	detect	2	1	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.007879	detect	2	1	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.017447	detect	2	1	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.012944	detect	2	1	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.018572	detect	2	1	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

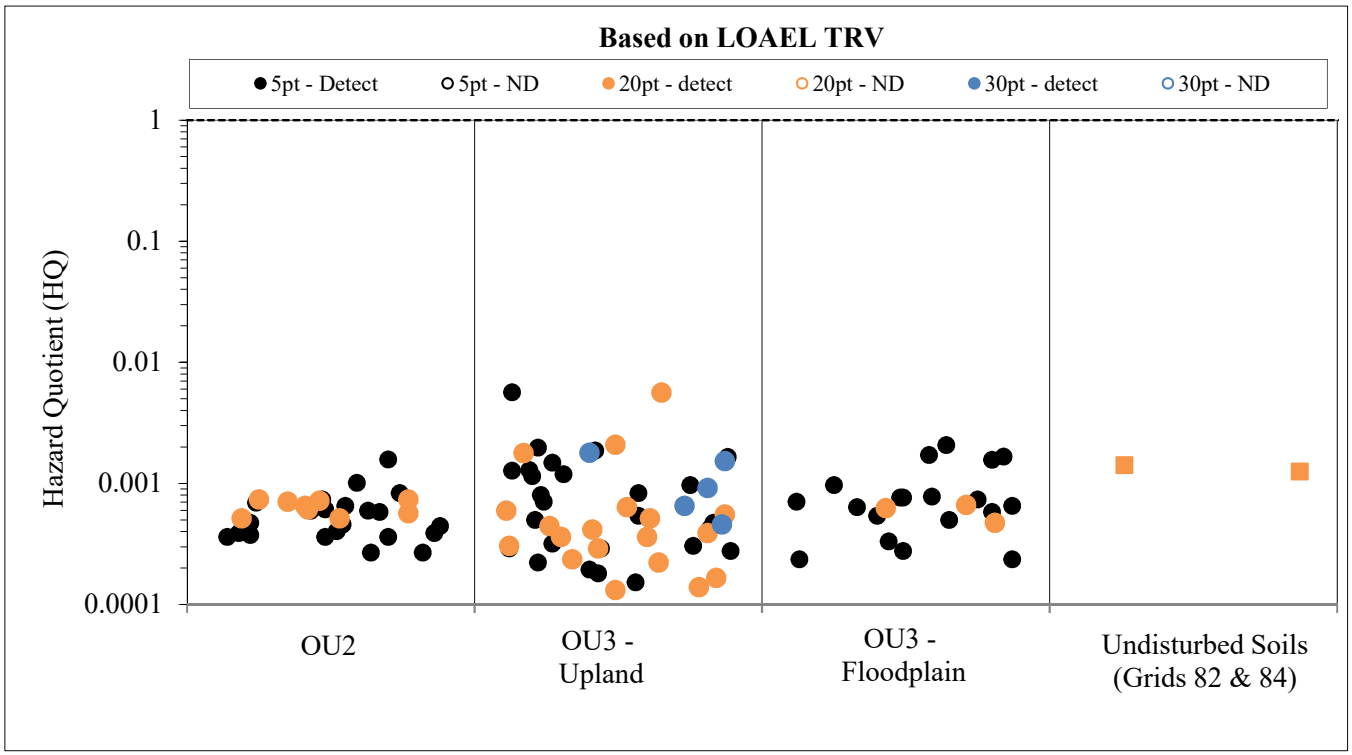
Arsenic

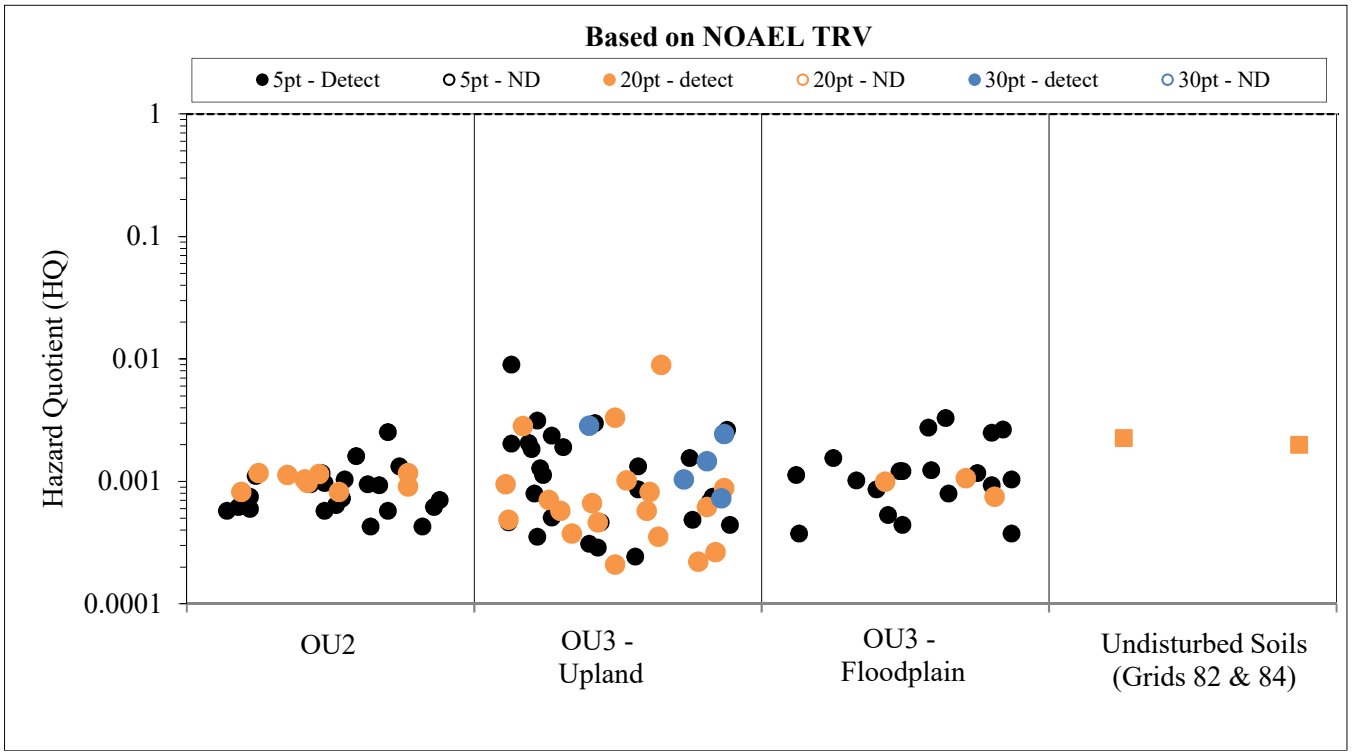
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.025326	detect	2	1	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.027014	detect	2	1	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.019135	detect	2	1	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.025889	detect	2	1	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.009568	detect	2	1	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	0.067536	detect	2	1	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	0.028703	detect	2	1	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	0.031517	detect	2	1	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	0.083857	detect	2	1	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	0.029828	detect	2	1	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.030954	detect	2	1	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	0.026452	detect	2	1	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.021949	detect	2	1	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.023638	detect	2	1	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.030954	detect	2	1	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.013507	detect	2	1	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.011256	detect	2	1	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	0.069787	detect	2	1	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	0.063596	detect	2	1	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	0.009568	detect	2	1	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.020261	detect	2	1	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	0.039396	detect	2	1	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.057406	detect	2	1	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.050652	detect	2	1	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Surface Soil by Exposure Unit/Soil Type

Arsenic





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Arsenic

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	5.1	detect	2	1	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	5.2	detect	2	1	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	4.1	detect	2	1	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	3.7	detect	2	1	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	5.3	detect	2	1	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	5.3	detect	2	1	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	3.7	detect	2	1	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	4.7	detect	2	1	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	4.4	detect	2	1	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	6	detect	2	1	<1.0	<1.0
	SB1-IN	SB1A-IN-(1-2)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	SB2a,3a-IN	SB2a-IN-(0-2)	2.6	detect	2	1	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	4.3	detect	2	1	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	5	detect	2	1	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	3.3	detect	2	1	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	2.6	detect	2	1	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	2.7	detect	2	1	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	4.3	detect	2	1	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	4.4	detect	2	1	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	5.3	detect	2	1	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	3.4	detect	2	1	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	2	1	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	2.6	detect	2	1	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	2	1	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	2	1	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	11.4	detect	2	1	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	7.3	detect	2	1	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	4.7	detect	2	1	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	2.8	detect	2	1	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	2.8	detect	2	1	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	3.2	detect	2	1	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	3.3	detect	2	1	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	2.9	detect	2	1	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	4.2	detect	2	1	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	1.933333	detect	2	1	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	1.933333	detect	2	1	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Arsenic

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	11	detect	2	1	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	8.6	detect	2	1	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	9.2	detect	2	1	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	1	detect	2	1	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.95	detect	2	1	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	1.7	detect	2	1	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	1.2	detect	2	1	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	4	detect	2	1	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	1.6	detect	2	1	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	2.6	detect	2	1	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	2.2	detect	2	1	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	2.8	detect	2	1	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	3.2	detect	2	1	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	12.8	detect	2	1	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	2.6	detect	2	1	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	4.6	detect	2	1	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	3.7	detect	2	1	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	3	detect	2	1	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	40.5	detect	2	1	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	4.3	detect	2	1	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	2.1	detect	2	1	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	5.1	detect	2	1	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	2	detect	2	1	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	9.3	detect	2	1	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	2.1	detect	2	1	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	1.1	detect	2	1	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	2	1	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	1.6	detect	2	1	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	11.9	detect	2	1	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	1.3	detect	2	1	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	8.3	detect	2	1	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	14.2	detect	2	1	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	40.7	detect	2	1	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	15	detect	2	1	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	7	detect	2	1	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	2.6	detect	2	1	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	5.8	detect	2	1	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	6	detect	2	1	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	4.7	detect	2	1	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	6.6	detect	2	1	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	10.7	detect	2	1	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	13.5	detect	2	1	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	12.9	detect	2	1	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	2.1	detect	2	1	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	3.4	detect	2	1	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	3.6	detect	2	1	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	3.9	detect	2	1	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	2.2	detect	2	1	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	1.4	detect	2	1	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	3.1	detect	2	1	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	2.3	detect	2	1	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	3.3	detect	2	1	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Arsenic

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	4.5	detect	2	1	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	4.8	detect	2	1	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	3.4	detect	2	1	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	4.6	detect	2	1	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	1.7	detect	2	1	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	12	detect	2	1	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	5.1	detect	2	1	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	5.6	detect	2	1	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	14.9	detect	2	1	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	5.3	detect	2	1	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	5.5	detect	2	1	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	4.7	detect	2	1	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	3.9	detect	2	1	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	4.2	detect	2	1	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	5.5	detect	2	1	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	2.4	detect	2	1	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	2	detect	2	1	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	12.4	detect	2	1	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	11.3	detect	2	1	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	1.7	detect	2	1	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	3.6	detect	2	1	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	7	detect	2	1	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	10.2	detect	2	1	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	9	detect	2	1	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of River Surface Water

Arsenic

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0029	detect	1.04	1.66	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0222	detect	1.04	1.66	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0073	detect	1.04	1.66	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0022	detect	1.04	1.66	<1.0	<1.0
	51-CFR	SW51-CFR	0.0029	detect	1.04	1.66	<1.0	<1.0
	52-CFR	SW52-CFR	0.0033	detect	1.04	1.66	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0031	detect	1.04	1.66	<1.0	<1.0
	54-CFR	SW54-CFR	0.0034	detect	1.04	1.66	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0022	detect	1.04	1.66	<1.0	<1.0
	55-CFR	SW55-CFR	0.0028	detect	1.04	1.66	<1.0	<1.0
	56-CFR	SW56-CFR	0.0027	detect	1.04	1.66	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0021	detect	1.04	1.66	<1.0	<1.0
	57-CFR	SW57-CFR	0.0045	detect	1.04	1.66	<1.0	<1.0
	58-CFR	SW58-CFR	0.0031	detect	1.04	1.66	<1.0	<1.0
	59-CFR	SW59-CFR	0.0033	detect	1.04	1.66	<1.0	<1.0
	60-CFR	SW60-CFR	0.0031	detect	1.04	1.66	<1.0	<1.0
	61-CFR	SW61-CFR	0.0031	detect	1.04	1.66	<1.0	<1.0
	62-CFR	SW62-CFR	0.0037	detect	1.04	1.66	<1.0	<1.0
	63-CFR	SW63-CFR	0.0031	detect	1.04	1.66	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of Creek Surface Water

Arsenic

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.0031	detect	1.04	1.66	<1.0	<1.0
	43-OK	SW43-OK	0.0031	detect	1.04	1.66	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.0016	detect	1.04	1.66	<1.0	<1.0
	37-LV	SW37-LV	0.0027	detect	1.04	1.66	<1.0	<1.0
	39-LV	SW39-LV	0.0035	detect	1.04	1.66	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of Pond Surface Water

Arsenic

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0024	detect	1.04	1.66	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0054	detect	1.04	1.66	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0084	detect	1.04	1.66	<1.0	<1.0
73-P5	SW73-P5	0.0071	detect	1.04	1.66	<1.0	<1.0
71-HP7	SW71-HP7	0.0044	detect	1.04	1.66	<1.0	<1.0
72-HP2	SW72-HP2	0.0109	detect	1.04	1.66	<1.0	<1.0
75-HP10	SW75-HP10	0.005	detect	1.04	1.66	<1.0	<1.0
67-HP12	SW67-HP12	0.0073	detect	1.04	1.66	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0024	detect	1.04	1.66	<1.0	<1.0
66-HP13	SW66-HP13	0.033	detect	1.04	1.66	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0152	detect	1.04	1.66	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0162	detect	1.04	1.66	<1.0	<1.0
70-CWD	SW70-CWD	0.0034	detect	1.04	1.66	<1.0	<1.0
64-HP18	SW64-HP18	0.0076	detect	1.04	1.66	<1.0	<1.0

#N/A = not analyzed

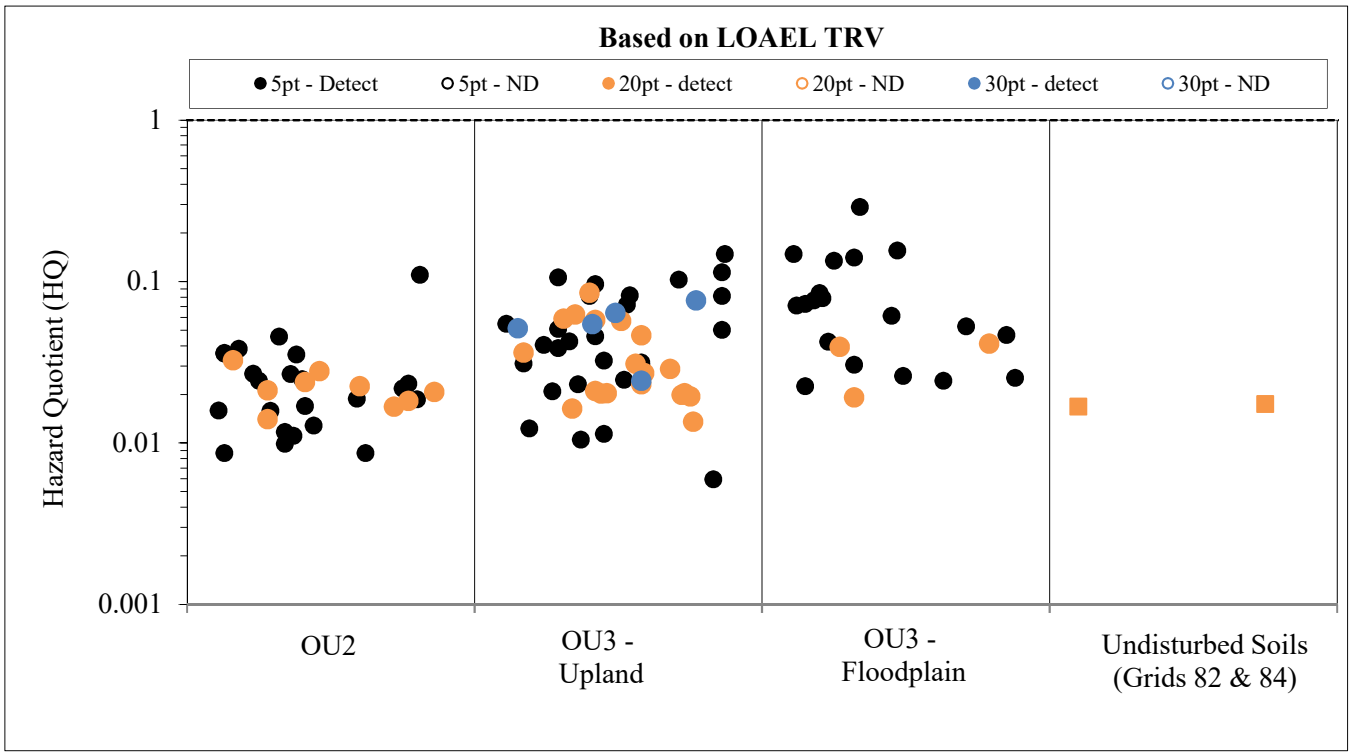
(a) Non-detects are evaluated at 1/2 the reported value.

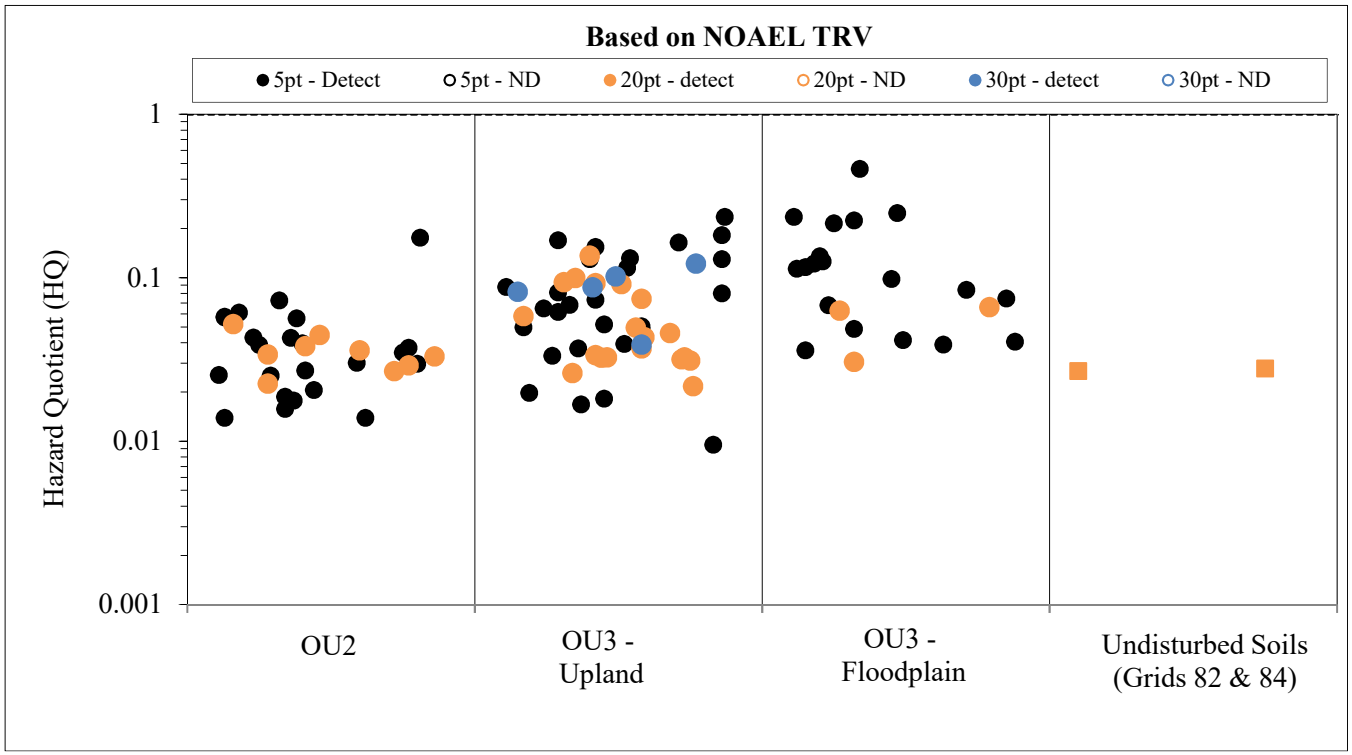
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Food by Exposure Unit/Soil Type

Barium





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Barium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	4.7502	detect	83	52	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	5.4756	detect	83	52	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	3.861	detect	83	52	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	3.2292	detect	83	52	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	7.4646	detect	83	52	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	6.4116	detect	83	52	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	5.1714	detect	83	52	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	4.8672	detect	83	52	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	4.1886	detect	83	52	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	8.307	detect	83	52	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	3.627	detect	83	52	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	6.1776	detect	83	52	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	5.3586	detect	83	52	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	3.8844	detect	83	52	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	8.7984	detect	83	52	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	4.2822	detect	83	52	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	8.1198	detect	83	52	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	6.1542	detect	83	52	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	4.329	detect	83	52	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	2.5506	detect	83	52	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	83	52	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	2.9484	detect	83	52	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	83	52	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	83	52	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	25.272	detect	83	52	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	10.4598	detect	83	52	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	5.5692	detect	83	52	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	2.691	detect	83	52	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	8.2134	detect	83	52	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	3.6504	detect	83	52	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	5.0076	detect	83	52	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	2.2698	detect	83	52	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	5.7096	detect	83	52	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	1.9929	detect	83	52	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	1.9929	detect	83	52	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Barium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	12.5424	detect	83	52	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	22.1364	detect	83	52	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	5.6628	detect	83	52	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	4.68	detect	83	52	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	4.68	detect	83	52	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	4.4694	detect	83	52	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	8.3538	detect	83	52	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	5.3118	detect	83	52	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	4.6566	detect	83	52	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	3.744	detect	83	52	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	10.6704	detect	83	52	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	13.5252	detect	83	52	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	7.1136	detect	83	52	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	13.1274	detect	83	52	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	13.2912	detect	83	52	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	6.5988	detect	83	52	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	4.563	detect	83	52	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	6.2244	detect	83	52	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	19.5858	detect	83	52	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	4.8204	detect	83	52	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	3.1122	detect	83	52	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	11.5128	detect	83	52	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	7.137	detect	83	52	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	24.336	detect	83	52	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	5.3118	detect	83	52	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	2.8314	detect	83	52	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	83	52	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	1.3689	detect	83	52	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	18.6732	detect	83	52	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	7.4412	detect	83	52	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	7.254	detect	83	52	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	18.6732	detect	83	52	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	18.9072	detect	83	52	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	14.3208	detect	83	52	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	12.5892	detect	83	52	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	9.3132	detect	83	52	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	11.6766	detect	83	52	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	10.53	detect	83	52	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	11.7702	detect	83	52	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	14.6718	detect	83	52	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	16.497	detect	83	52	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	26.208	detect	83	52	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	17.5266	detect	83	52	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	2.6208	detect	83	52	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	2.4102	detect	83	52	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	23.634	detect	83	52	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	33.93	detect	83	52	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	8.8686	detect	83	52	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	4.797	detect	83	52	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	6.9732	detect	83	52	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	9.7812	detect	83	52	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	5.5926	detect	83	52	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

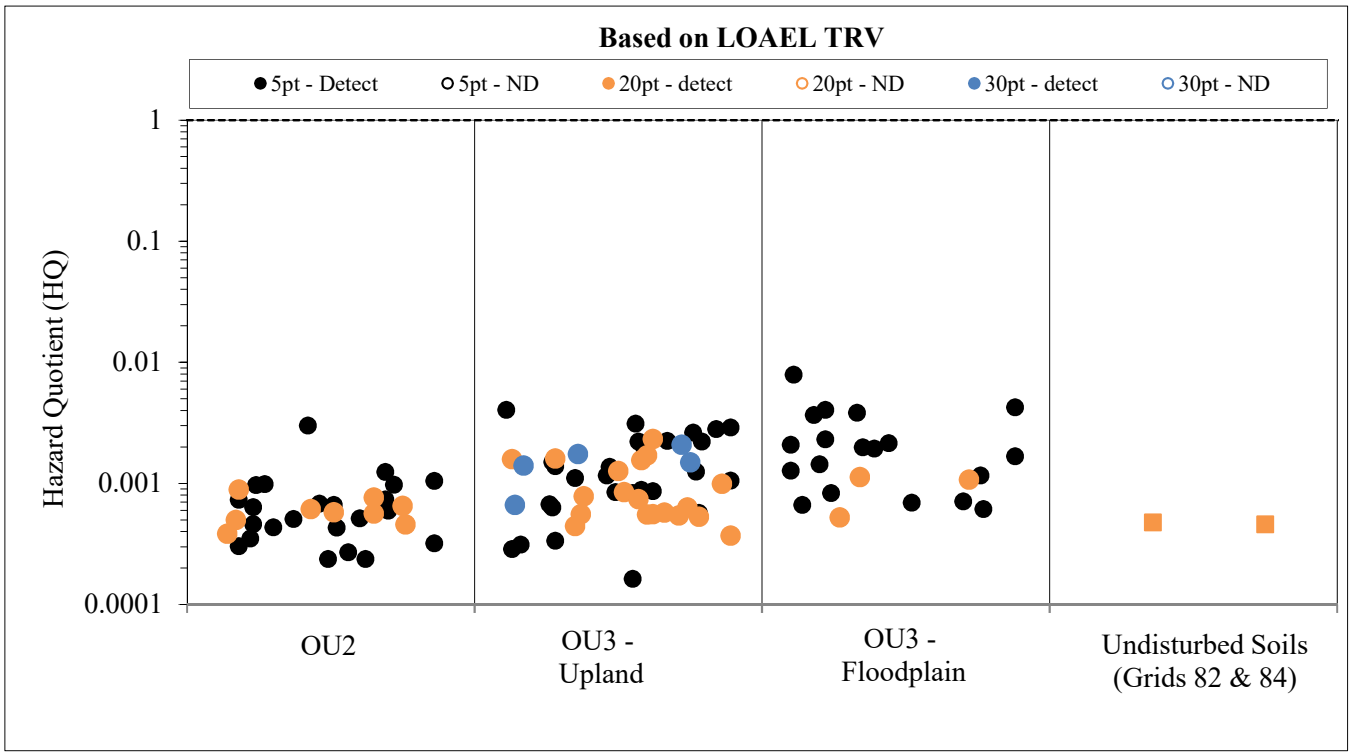
Barium

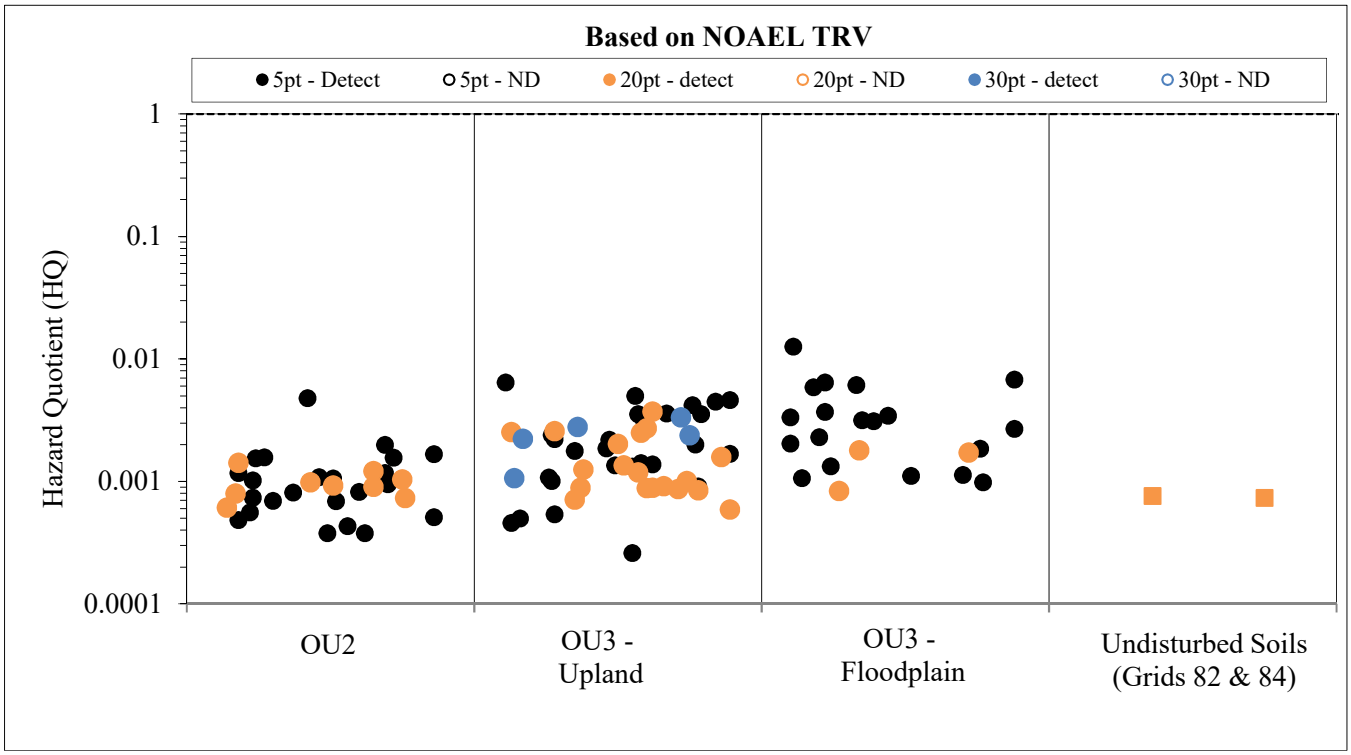
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	4.3992	detect	83	52	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	9.477	detect	83	52	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	9.0558	detect	83	52	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	10.7172	detect	83	52	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	5.5926	detect	83	52	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	14.1102	detect	83	52	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	19.4454	detect	83	52	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	12.0978	detect	83	52	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	16.3098	detect	83	52	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	9.7578	detect	83	52	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	33.93	detect	83	52	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	18.0882	detect	83	52	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	32.292	detect	83	52	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	35.802	detect	83	52	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	66.456	detect	83	52	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	5.1714	detect	83	52	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	5.8266	detect	83	52	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	16.6842	detect	83	52	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	17.5266	detect	83	52	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	6.9966	detect	83	52	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	5.967	detect	83	52	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	30.888	detect	83	52	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	4.0014	detect	83	52	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	3.861	detect	83	52	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Surface Soil by Exposure Unit/Soil Type

Barium





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Barium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	203	detect	83	52	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	234	detect	83	52	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	165	detect	83	52	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	138	detect	83	52	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	319	detect	83	52	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	274	detect	83	52	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	221	detect	83	52	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	208	detect	83	52	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	179	detect	83	52	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	355	detect	83	52	<1.0	<1.0
	SB1-IN	SB1A-IN-(1-2)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	SB2a,3a-IN	SB2a-IN-(0-2)	155	detect	83	52	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	264	detect	83	52	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	229	detect	83	52	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	166	detect	83	52	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	376	detect	83	52	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	183	detect	83	52	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	347	detect	83	52	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	263	detect	83	52	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	185	detect	83	52	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	109	detect	83	52	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	83	52	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	126	detect	83	52	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	83	52	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	83	52	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	1080	detect	83	52	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	447	detect	83	52	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	238	detect	83	52	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	115	detect	83	52	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	351	detect	83	52	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	156	detect	83	52	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	214	detect	83	52	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	97	detect	83	52	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	244	detect	83	52	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	85.16667	detect	83	52	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	85.16667	detect	83	52	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Barium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	536	detect	83	52	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	946	detect	83	52	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	242	detect	83	52	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	200	detect	83	52	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	200	detect	83	52	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	191	detect	83	52	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	357	detect	83	52	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	227	detect	83	52	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	199	detect	83	52	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	160	detect	83	52	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	456	detect	83	52	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	578	detect	83	52	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	304	detect	83	52	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	561	detect	83	52	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	568	detect	83	52	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	282	detect	83	52	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	195	detect	83	52	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	266	detect	83	52	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	837	detect	83	52	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	206	detect	83	52	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	133	detect	83	52	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	492	detect	83	52	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	305	detect	83	52	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	1040	detect	83	52	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	227	detect	83	52	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	121	detect	83	52	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	83	52	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	58.5	detect	83	52	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	798	detect	83	52	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	318	detect	83	52	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	310	detect	83	52	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	798	detect	83	52	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	808	detect	83	52	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	612	detect	83	52	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	538	detect	83	52	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	398	detect	83	52	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	499	detect	83	52	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	450	detect	83	52	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	503	detect	83	52	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	627	detect	83	52	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	705	detect	83	52	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1120	detect	83	52	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	749	detect	83	52	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	112	detect	83	52	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	103	detect	83	52	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	1010	detect	83	52	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	1450	detect	83	52	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	379	detect	83	52	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	205	detect	83	52	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	298	detect	83	52	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	418	detect	83	52	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	239	detect	83	52	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Barium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	188	detect	83	52	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	405	detect	83	52	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	387	detect	83	52	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	458	detect	83	52	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	239	detect	83	52	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	603	detect	83	52	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	831	detect	83	52	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	517	detect	83	52	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	697	detect	83	52	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	417	detect	83	52	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	1450	detect	83	52	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	773	detect	83	52	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	1380	detect	83	52	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	1530	detect	83	52	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	2840	detect	83	52	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	221	detect	83	52	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	249	detect	83	52	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	713	detect	83	52	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	749	detect	83	52	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	299	detect	83	52	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	255	detect	83	52	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	1320	detect	83	52	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	171	detect	83	52	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	165	detect	83	52	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of River Surface Water

Barium

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.126	detect	51.8	82.7	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.127	detect	51.8	82.7	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0818	detect	51.8	82.7	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0932	detect	51.8	82.7	<1.0	<1.0
	51-CFR	SW51-CFR	0.129	detect	51.8	82.7	<1.0	<1.0
	52-CFR	SW52-CFR	0.124	detect	51.8	82.7	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.105	detect	51.8	82.7	<1.0	<1.0
	54-CFR	SW54-CFR	0.106	detect	51.8	82.7	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0982	detect	51.8	82.7	<1.0	<1.0
	55-CFR	SW55-CFR	0.123	detect	51.8	82.7	<1.0	<1.0
	56-CFR	SW56-CFR	0.12	detect	51.8	82.7	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0982	detect	51.8	82.7	<1.0	<1.0
	57-CFR	SW57-CFR	0.118	detect	51.8	82.7	<1.0	<1.0
	58-CFR	SW58-CFR	0.124	detect	51.8	82.7	<1.0	<1.0
	59-CFR	SW59-CFR	0.121	detect	51.8	82.7	<1.0	<1.0
	60-CFR	SW60-CFR	0.123	detect	51.8	82.7	<1.0	<1.0
	61-CFR	SW61-CFR	0.126	detect	51.8	82.7	<1.0	<1.0
	62-CFR	SW62-CFR	0.133	detect	51.8	82.7	<1.0	<1.0
	63-CFR	SW63-CFR	0.125	detect	51.8	82.7	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of Creek Surface Water

Barium

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.145	detect	51.8	82.7	<1.0	<1.0
	43-OK	SW43-OK	0.142	detect	51.8	82.7	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.25	detect	51.8	82.7	<1.0	<1.0
	37-LV	SW37-LV	0.158	detect	51.8	82.7	<1.0	<1.0
	39-LV	SW39-LV	0.163	detect	51.8	82.7	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of Pond Surface Water

Barium

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0725	detect	51.8	82.7	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.105	detect	51.8	82.7	<1.0	<1.0
69-HP1a	SW69-HP1a	0.204	detect	51.8	82.7	<1.0	<1.0
73-P5	SW73-P5	0.0417	detect	51.8	82.7	<1.0	<1.0
71-HP7	SW71-HP7	0.0563	detect	51.8	82.7	<1.0	<1.0
72-HP2	SW72-HP2	0.0414	detect	51.8	82.7	<1.0	<1.0
75-HP10	SW75-HP10	0.0226	detect	51.8	82.7	<1.0	<1.0
67-HP12	SW67-HP12	0.0272	detect	51.8	82.7	<1.0	<1.0
68-IBJ	SW68-IBJ	0.133	detect	51.8	82.7	<1.0	<1.0
66-HP13	SW66-HP13	0.0142	detect	51.8	82.7	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0606	detect	51.8	82.7	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0903	detect	51.8	82.7	<1.0	<1.0
70-CWD	SW70-CWD	0.161	detect	51.8	82.7	<1.0	<1.0
64-HP18	SW64-HP18	0.177	detect	51.8	82.7	<1.0	<1.0

#N/A = not analyzed

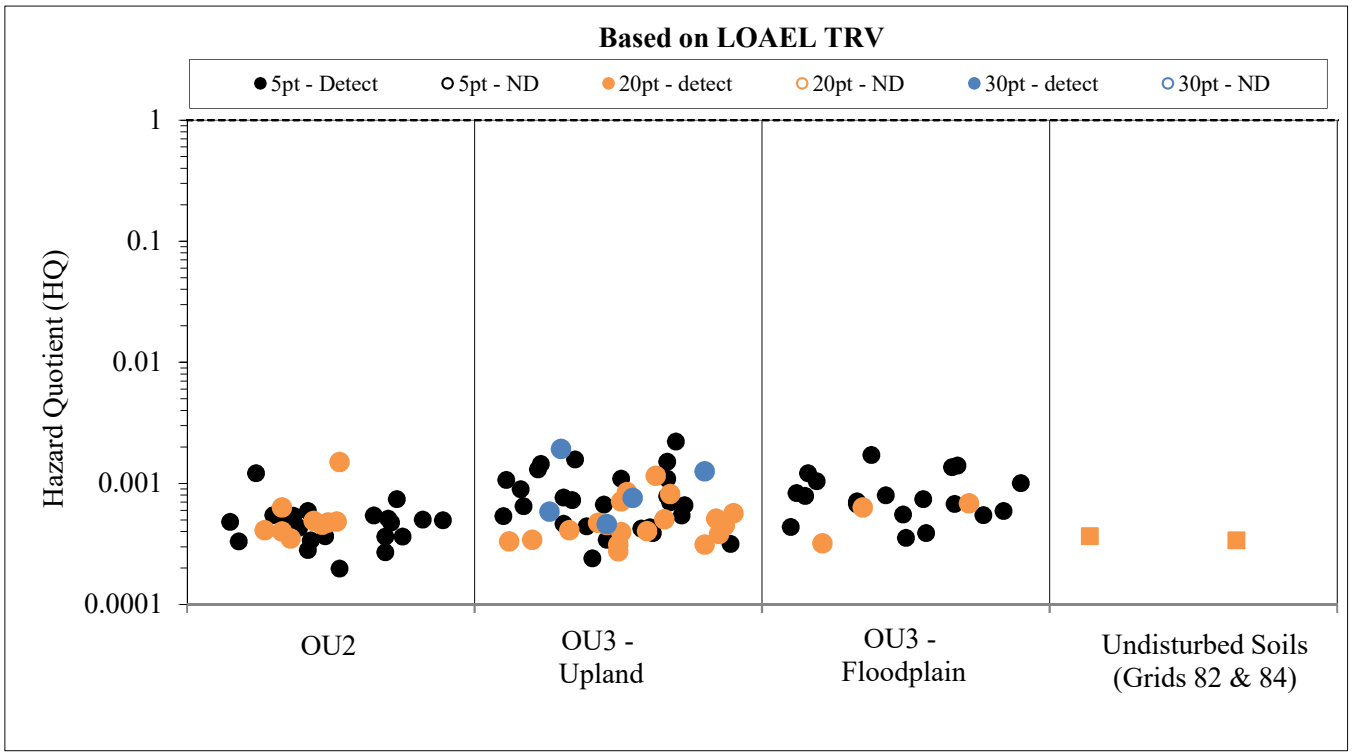
(a) Non-detects are evaluated at 1/2 the reported value.

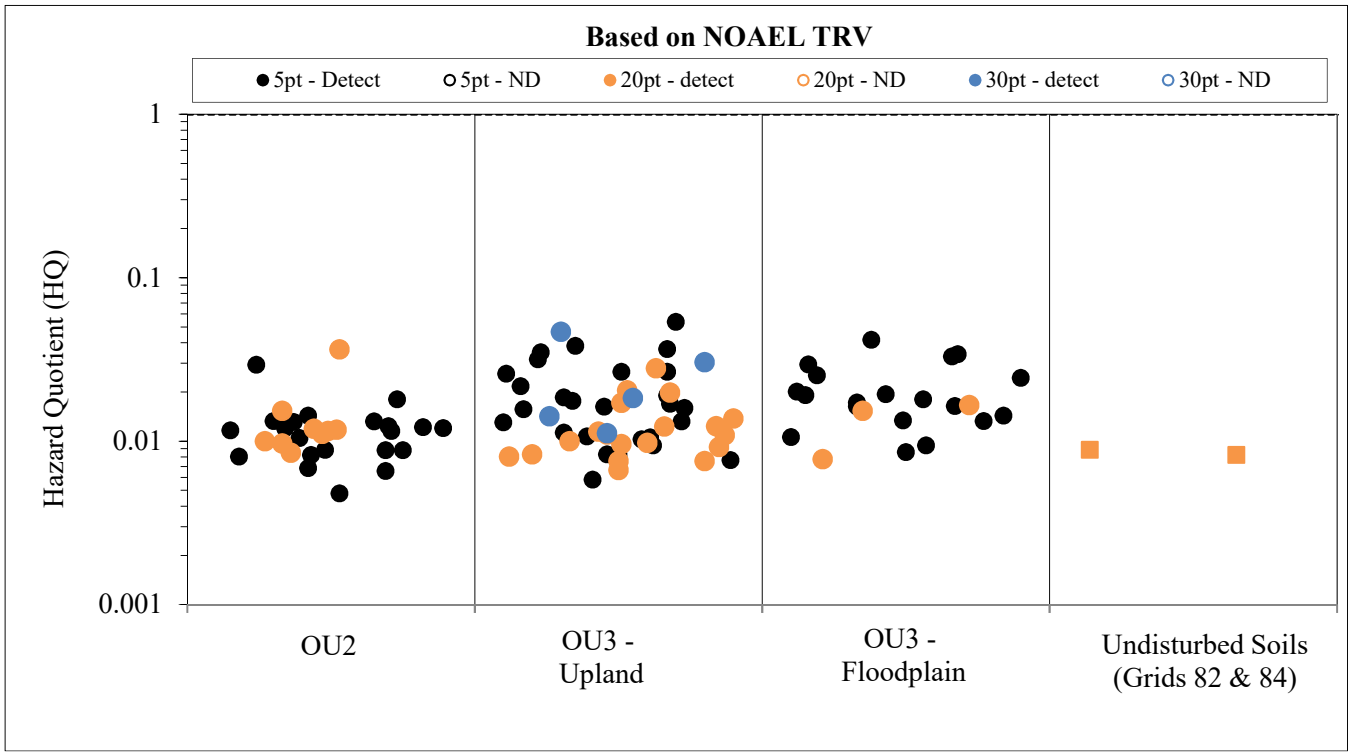
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Food by Exposure Unit/Soil Type

Chromium





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Chromium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.076875	detect	58	2	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.0738	detect	58	2	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.10209	detect	58	2	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.064575	detect	58	2	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.078105	detect	58	2	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.079335	detect	58	2	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.05658	detect	58	2	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.242925	detect	58	2	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.06642	detect	58	2	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.119925	detect	58	2	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.03198	detect	58	2	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.043665	detect	58	2	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.05904	detect	58	2	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.05658	detect	58	2	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.08118	detect	58	2	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.069495	detect	58	2	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.087945	detect	58	2	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.07995	detect	58	2	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.07749	detect	58	2	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.095325	detect	58	2	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	58	2	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.04551	detect	58	2	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	58	2	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	58	2	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.19557	detect	58	2	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.08856	detect	58	2	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.08733	detect	58	2	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.054735	detect	58	2	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.076875	detect	58	2	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.07626	detect	58	2	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.08241	detect	58	2	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.053505	detect	58	2	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.07995	detect	58	2	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.05863	detect	58	2	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.05863	detect	58	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Chromium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.20295	detect	58	2	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.233085	detect	58	2	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.112545	detect	58	2	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.053505	detect	58	2	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.04428	detect	58	2	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.06642	detect	58	2	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.0615	detect	58	2	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.06519	detect	58	2	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.05043	detect	58	2	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.05535	detect	58	2	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.073185	detect	58	2	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.081795	detect	58	2	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.06396	detect	58	2	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.13653	detect	58	2	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.132225	detect	58	2	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.091635	detect	58	2	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.07626	detect	58	2	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.07257	detect	58	2	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.186345	detect	58	2	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.08241	detect	58	2	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.05043	detect	58	2	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.10824	detect	58	2	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.07503	detect	58	2	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.123615	detect	58	2	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.054735	detect	58	2	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.038745	detect	58	2	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	58	2	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.05535	detect	58	2	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.244155	detect	58	2	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.051045	detect	58	2	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.10455	detect	58	2	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.35793	detect	58	2	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.1722	detect	58	2	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.11439	detect	58	2	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.117465	detect	58	2	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.07011	detect	58	2	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.210945	detect	58	2	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.086715	detect	58	2	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.09471	detect	58	2	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.122385	detect	58	2	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.144525	detect	58	2	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.255225	detect	58	2	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.310575	detect	58	2	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.07134	detect	58	2	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.06273	detect	58	2	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	0.17712	detect	58	2	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	0.17712	detect	58	2	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.087945	detect	58	2	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.068265	detect	58	2	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.12669	detect	58	2	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.106395	detect	58	2	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.074415	detect	58	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

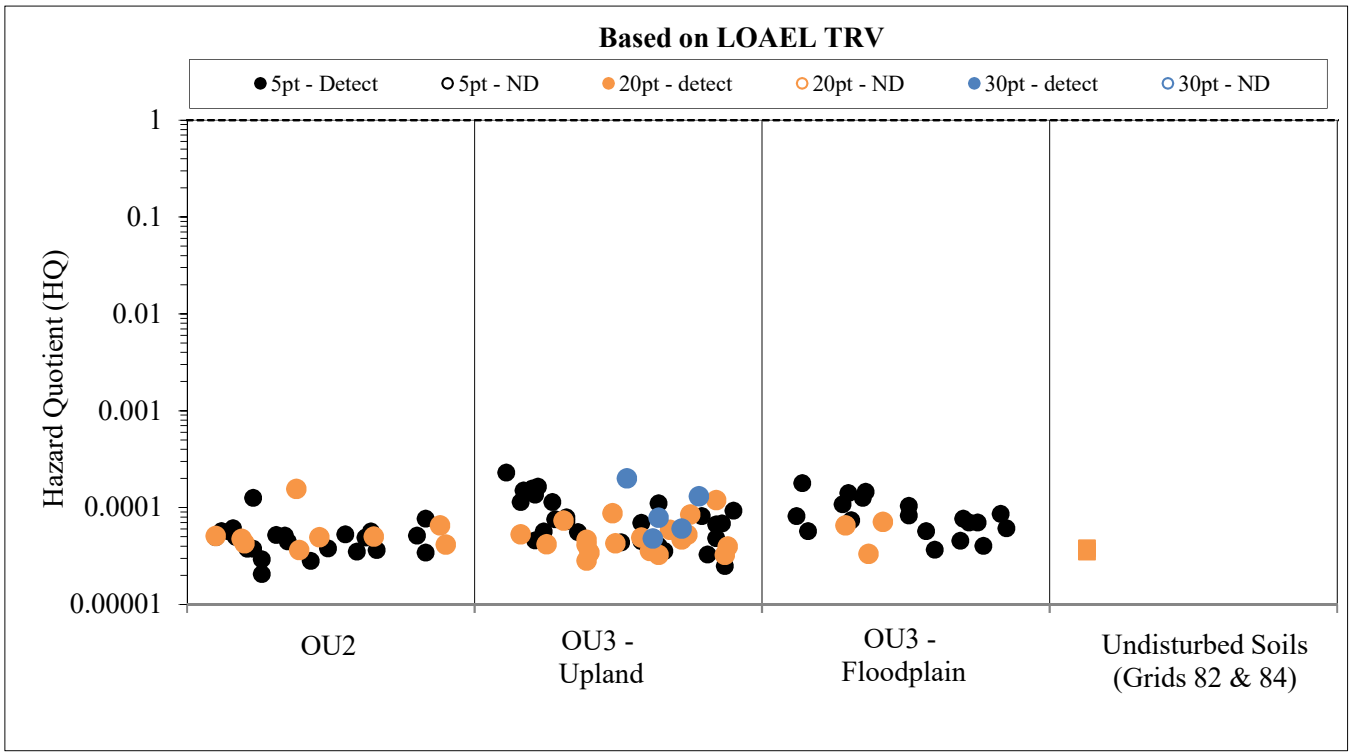
Chromium

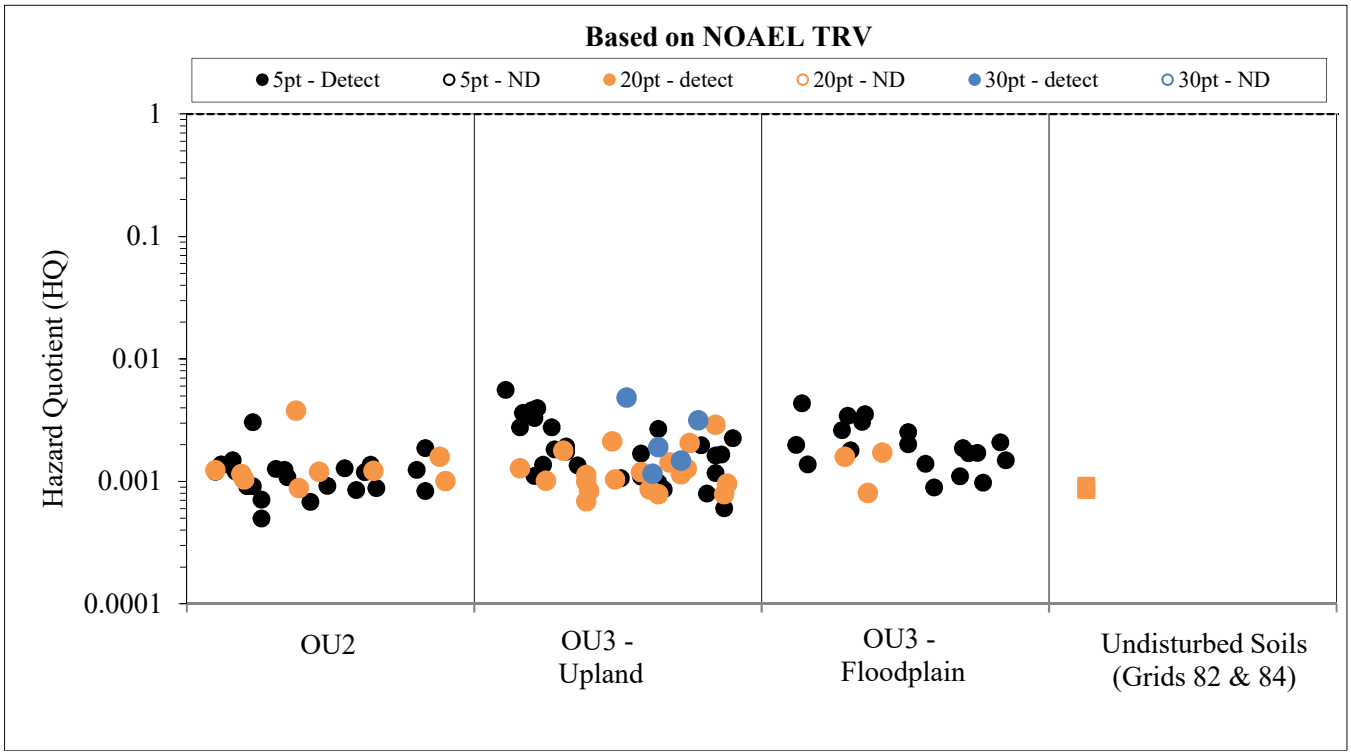
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.05166	detect	58	2	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.10209	detect	58	2	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.1107	detect	58	2	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.119925	detect	58	2	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.057195	detect	58	2	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	0.22017	detect	58	2	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	0.115005	detect	58	2	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	0.127305	detect	58	2	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	0.226935	detect	58	2	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	0.10947	detect	58	2	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.16236	detect	58	2	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	0.095325	detect	58	2	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.13407	detect	58	2	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.108855	detect	58	2	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.12915	detect	58	2	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.070725	detect	58	2	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.089175	detect	58	2	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	0.16851	detect	58	2	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	0.27798	detect	58	2	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	0.06273	detect	58	2	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.08856	detect	58	2	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	0.196185	detect	58	2	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.05904	detect	58	2	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.054735	detect	58	2	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Surface Soil by Exposure Unit/Soil Type

Chromium





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Chromium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	12.5	detect	58	2	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	12	detect	58	2	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	16.6	detect	58	2	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	10.5	detect	58	2	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	12.7	detect	58	2	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	12.9	detect	58	2	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	9.2	detect	58	2	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	39.5	detect	58	2	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	10.8	detect	58	2	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	19.5	detect	58	2	<1.0	<1.0
	SB1-IN	SB1A-IN-(1-2)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	SB2a,3a-IN	SB2a-IN-(0-2)	5.2	detect	58	2	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	7.1	detect	58	2	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	9.6	detect	58	2	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	9.2	detect	58	2	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	13.2	detect	58	2	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	11.3	detect	58	2	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	14.3	detect	58	2	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	13	detect	58	2	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	12.6	detect	58	2	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	15.5	detect	58	2	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	58	2	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	7.4	detect	58	2	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	58	2	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	58	2	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	31.8	detect	58	2	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	14.4	detect	58	2	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	14.2	detect	58	2	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	8.9	detect	58	2	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	12.5	detect	58	2	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	12.4	detect	58	2	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	13.4	detect	58	2	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	8.7	detect	58	2	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	13	detect	58	2	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	9.533333	detect	58	2	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	9.533333	detect	58	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Chromium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	33	detect	58	2	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	37.9	detect	58	2	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	18.3	detect	58	2	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	8.7	detect	58	2	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	7.2	detect	58	2	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	10.8	detect	58	2	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	10	detect	58	2	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	10.6	detect	58	2	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	8.2	detect	58	2	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	9	detect	58	2	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	11.9	detect	58	2	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	13.3	detect	58	2	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	10.4	detect	58	2	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	22.2	detect	58	2	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	21.5	detect	58	2	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	14.9	detect	58	2	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	12.4	detect	58	2	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	11.8	detect	58	2	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	30.3	detect	58	2	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	13.4	detect	58	2	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	8.2	detect	58	2	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	17.6	detect	58	2	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	12.2	detect	58	2	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	20.1	detect	58	2	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	8.9	detect	58	2	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	6.3	detect	58	2	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	58	2	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	9	detect	58	2	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	39.7	detect	58	2	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	8.3	detect	58	2	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	17	detect	58	2	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	58.2	detect	58	2	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	28	detect	58	2	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	18.6	detect	58	2	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	19.1	detect	58	2	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	11.4	detect	58	2	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	34.3	detect	58	2	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	14.1	detect	58	2	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	15.4	detect	58	2	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	19.9	detect	58	2	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	23.5	detect	58	2	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	41.5	detect	58	2	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	50.5	detect	58	2	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	11.6	detect	58	2	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	10.2	detect	58	2	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	28.8	detect	58	2	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	28.8	detect	58	2	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	14.3	detect	58	2	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	11.1	detect	58	2	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	20.6	detect	58	2	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	17.3	detect	58	2	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	12.1	detect	58	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Chromium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	8.4	detect	58	2	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	16.6	detect	58	2	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	18	detect	58	2	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	19.5	detect	58	2	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	9.3	detect	58	2	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	35.8	detect	58	2	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	18.7	detect	58	2	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	20.7	detect	58	2	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	36.9	detect	58	2	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	17.8	detect	58	2	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	26.4	detect	58	2	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	15.5	detect	58	2	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	21.8	detect	58	2	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	17.7	detect	58	2	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	21	detect	58	2	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	11.5	detect	58	2	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	14.5	detect	58	2	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	27.4	detect	58	2	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	45.2	detect	58	2	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	10.2	detect	58	2	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	14.4	detect	58	2	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	31.9	detect	58	2	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	9.6	detect	58	2	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	8.9	detect	58	2	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of River Surface Water

Chromium

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0002	detect	2.4	58.2	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0004	ND	2.4	58.2	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0008	detect	2.4	58.2	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0005	ND	2.4	58.2	<1.0	<1.0
	51-CFR	SW51-CFR	0.0002	detect	2.4	58.2	<1.0	<1.0
	52-CFR	SW52-CFR	0.0002	ND	2.4	58.2	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0002	ND	2.4	58.2	<1.0	<1.0
	54-CFR	SW54-CFR	0.0002	ND	2.4	58.2	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0005	ND	2.4	58.2	<1.0	<1.0
	55-CFR	SW55-CFR	0.0002	ND	2.4	58.2	<1.0	<1.0
	56-CFR	SW56-CFR	0.0002	ND	2.4	58.2	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0005	ND	2.4	58.2	<1.0	<1.0
	57-CFR	SW57-CFR	0.0002	ND	2.4	58.2	<1.0	<1.0
	58-CFR	SW58-CFR	0.0002	ND	2.4	58.2	<1.0	<1.0
	59-CFR	SW59-CFR	0.0002	ND	2.4	58.2	<1.0	<1.0
	60-CFR	SW60-CFR	0.0002	detect	2.4	58.2	<1.0	<1.0
	61-CFR	SW61-CFR	0.0002	detect	2.4	58.2	<1.0	<1.0
	62-CFR	SW62-CFR	0.0002	ND	2.4	58.2	<1.0	<1.0
	63-CFR	SW63-CFR	0.0003	detect	2.4	58.2	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of Creek Surface Water

Chromium

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.0003	detect	2.4	58.2	<1.0	<1.0
	43-OK	SW43-OK	0.0003	detect	2.4	58.2	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.0005	detect	2.4	58.2	<1.0	<1.0
	37-LV	SW37-LV	0.0003	detect	2.4	58.2	<1.0	<1.0
	39-LV	SW39-LV	0.0002	detect	2.4	58.2	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of Pond Surface Water

Chromium

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0002	ND	2.4	58.2	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0016	detect	2.4	58.2	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0013	detect	2.4	58.2	<1.0	<1.0
73-P5	SW73-P5	0.0016	ND	2.4	58.2	<1.0	<1.0
71-HP7	SW71-HP7	0.0011	detect	2.4	58.2	<1.0	<1.0
72-HP2	SW72-HP2	0.0011	detect	2.4	58.2	<1.0	<1.0
75-HP10	SW75-HP10	0.0008	ND	2.4	58.2	<1.0	<1.0
67-HP12	SW67-HP12	0.0011	detect	2.4	58.2	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0002	detect	2.4	58.2	<1.0	<1.0
66-HP13	SW66-HP13	0.001	detect	2.4	58.2	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0009	detect	2.4	58.2	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0015	detect	2.4	58.2	<1.0	<1.0
70-CWD	SW70-CWD	0.0002	ND	2.4	58.2	<1.0	<1.0
64-HP18	SW64-HP18	0.0008	ND	2.4	58.2	<1.0	<1.0

#N/A = not analyzed

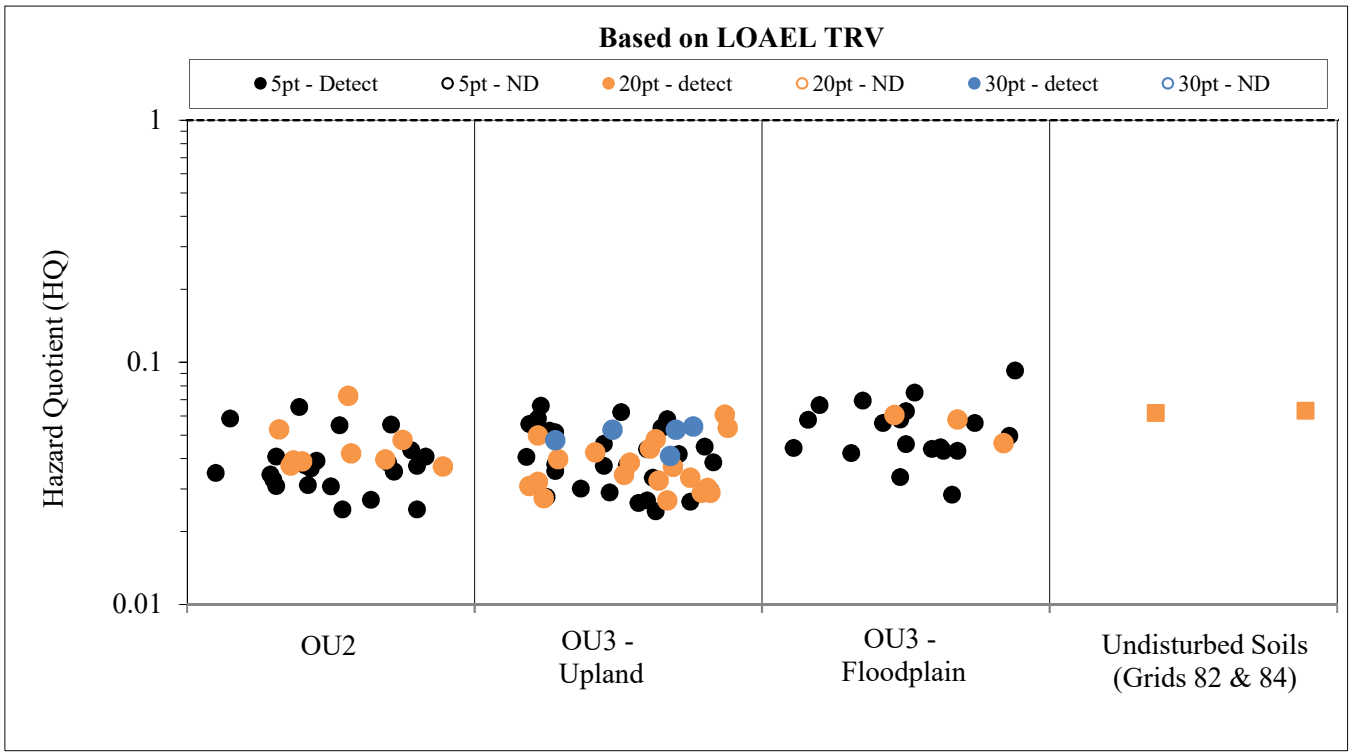
(a) Non-detects are evaluated at 1/2 the reported value.

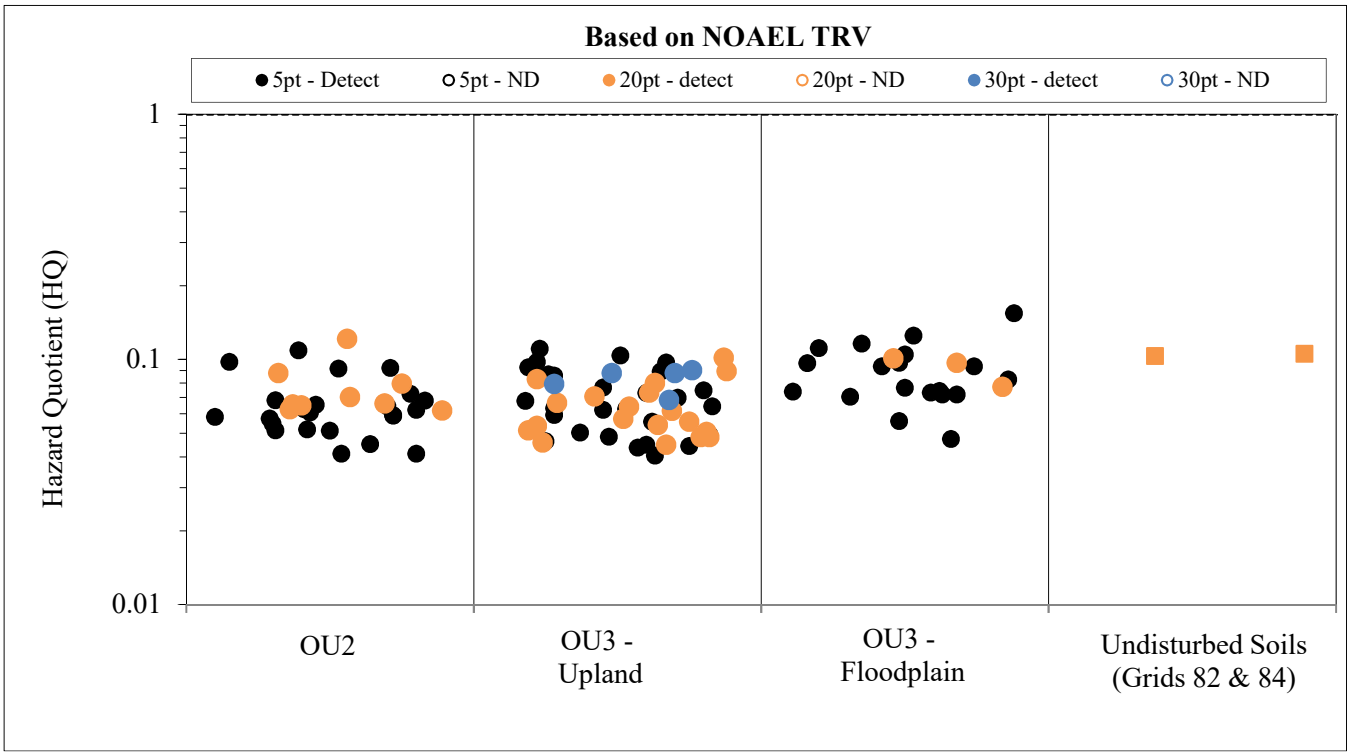
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Food by Exposure Unit/Soil Type

Copper





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Copper

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	1.090431	detect	9	6	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	1.009723	detect	9	6	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	1.884139	detect	9	6	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	1.028321	detect	9	6	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	1.368602	detect	9	6	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	1.019932	detect	9	6	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.972674	detect	9	6	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	1.240274	detect	9	6	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.961681	detect	9	6	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	1.126093	detect	9	6	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.701346	detect	9	6	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.79634	detect	9	6	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.969031	detect	9	6	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.893299	detect	9	6	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.919614	detect	9	6	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	1.016547	detect	9	6	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	1.05928	detect	9	6	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	1.425827	detect	9	6	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.94482	detect	9	6	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.917631	detect	9	6	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	9	6	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.80613	detect	9	6	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	9	6	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	9	6	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	1.520758	detect	9	6	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	1.433861	detect	9	6	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.974488	detect	9	6	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.850315	detect	9	6	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	1.694292	detect	9	6	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.905591	detect	9	6	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	1.057685	detect	9	6	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.798805	detect	9	6	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.999352	detect	9	6	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.6414	detect	9	6	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.6414	detect	9	6	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Copper

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	1.366451	detect	9	6	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	1.162863	detect	9	6	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.923561	detect	9	6	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.698333	detect	9	6	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.713206	detect	9	6	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.749801	detect	9	6	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.798805	detect	9	6	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.889143	detect	9	6	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.749801	detect	9	6	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.865734	detect	9	6	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.83215	detect	9	6	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.841308	detect	9	6	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	1.033305	detect	9	6	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	1.392973	detect	9	6	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	1.247738	detect	9	6	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	1.099514	detect	9	6	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.95983	detect	9	6	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	1.140451	detect	9	6	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	1.578434	detect	9	6	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.997608	detect	9	6	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.786362	detect	9	6	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.976296	detect	9	6	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.983479	detect	9	6	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	1.136173	detect	9	6	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.865734	detect	9	6	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.698333	detect	9	6	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	9	6	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.629751	detect	9	6	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1.518014	detect	9	6	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.68917	detect	9	6	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	1.054484	detect	9	6	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	1.441826	detect	9	6	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	1.718015	detect	9	6	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	1.292323	detect	9	6	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	1.353435	detect	9	6	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.721905	detect	9	6	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.969031	detect	9	6	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	1.08431	detect	9	6	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	1.235259	detect	9	6	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	1.366451	detect	9	6	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	1.509736	detect	9	6	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1.389832	detect	9	6	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	1.407492	detect	9	6	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.752504	detect	9	6	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.781299	detect	9	6	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	1.613207	detect	9	6	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	1.334659	detect	9	6	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.768416	detect	9	6	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.679815	detect	9	6	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	1.195284	detect	9	6	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	1.001092	detect	9	6	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	1.064042	detect	9	6	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

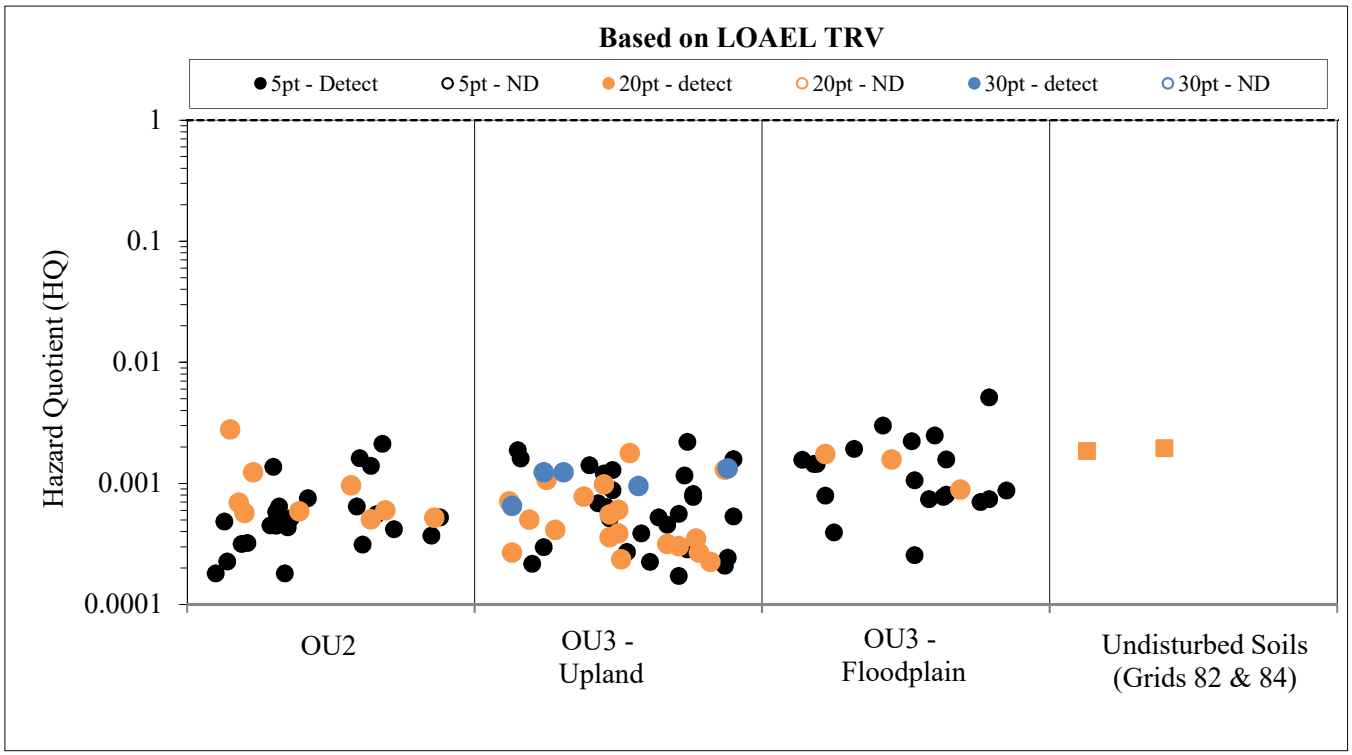
Copper

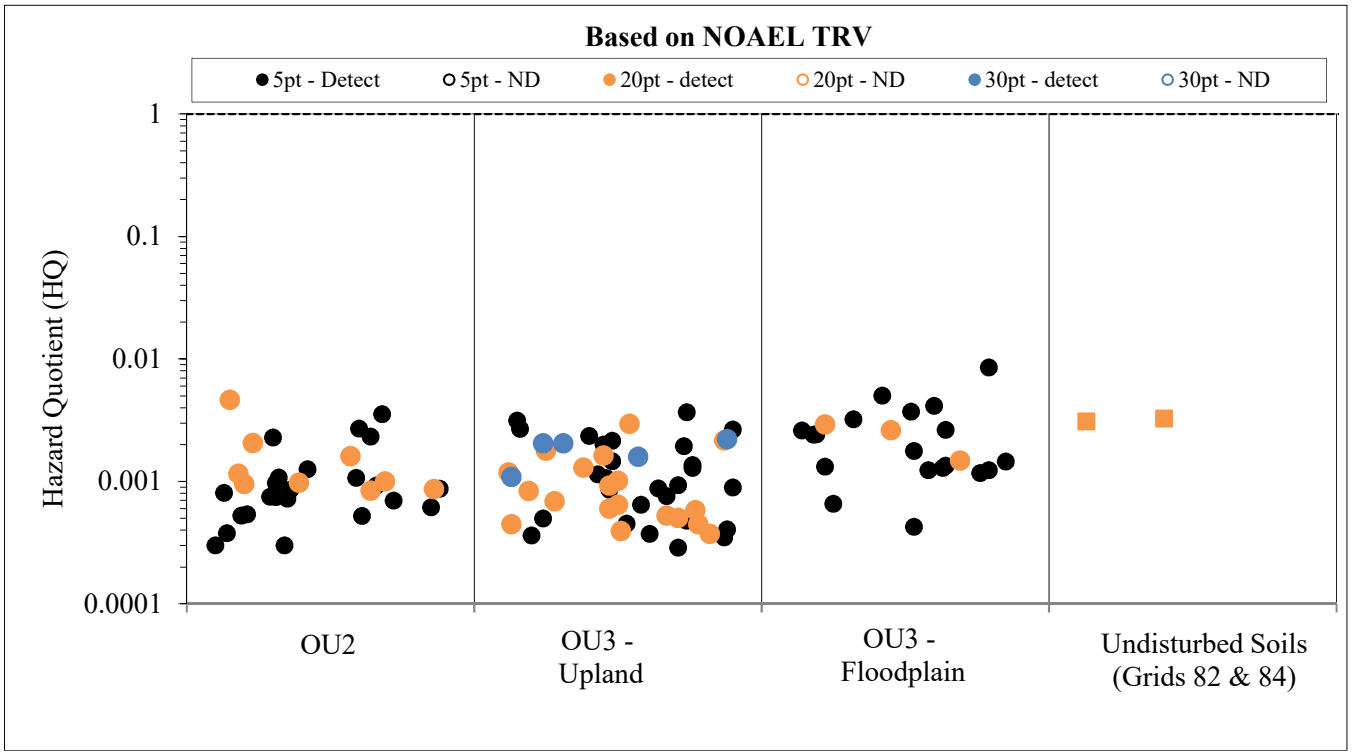
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	1.201871	detect	9	6	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	1.504178	detect	9	6	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	1.569772	detect	9	6	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	1.288796	detect	9	6	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.736056	detect	9	6	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	2.396166	detect	9	6	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	1.500456	detect	9	6	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	1.137602	detect	9	6	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	1.727064	detect	9	6	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	1.147527	detect	9	6	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	1.629759	detect	9	6	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	1.155931	detect	9	6	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	1.094987	detect	9	6	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	1.117341	detect	9	6	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	1.192634	detect	9	6	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.872214	detect	9	6	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	1.118807	detect	9	6	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	1.802613	detect	9	6	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	1.941895	detect	9	6	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	1.456581	detect	9	6	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	1.457557	detect	9	6	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	1.506961	detect	9	6	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	1.636308	detect	9	6	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	1.602307	detect	9	6	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Surface Soil by Exposure Unit/Soil Type

Copper





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Copper

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	28.2	detect	9	6	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	23.2	detect	9	6	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	113	detect	9	6	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	24.3	detect	9	6	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	50.2	detect	9	6	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	23.8	detect	9	6	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	21.1	detect	9	6	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	39.1	detect	9	6	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	20.5	detect	9	6	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	30.6	detect	9	6	<1.0	<1.0
	SB1-IN	SB1A-IN-(1-2)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	SB2a,3a-IN	SB2a-IN-(0-2)	9.2	detect	9	6	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	12.7	detect	9	6	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	20.9	detect	9	6	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	17	detect	9	6	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	18.3	detect	9	6	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	23.6	detect	9	6	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	26.2	detect	9	6	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	55.7	detect	9	6	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	19.6	detect	9	6	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	18.2	detect	9	6	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	9	6	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	13.1	detect	9	6	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	9	6	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	9	6	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	65.6	detect	9	6	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	56.5	detect	9	6	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	21.2	detect	9	6	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	15	detect	9	6	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	86.3	detect	9	6	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	17.6	detect	9	6	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	26.1	detect	9	6	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	12.8	detect	9	6	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	22.6	detect	9	6	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	7.333333	detect	9	6	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	7.333333	detect	9	6	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Copper

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	50	detect	9	6	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	33.2	detect	9	6	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	18.5	detect	9	6	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	9.1	detect	9	6	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	9.6	detect	9	6	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	10.9	detect	9	6	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	12.8	detect	9	6	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	16.8	detect	9	6	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	10.9	detect	9	6	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	15.7	detect	9	6	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	14.2	detect	9	6	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	14.6	detect	9	6	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	24.6	detect	9	6	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	52.5	detect	9	6	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	39.7	detect	9	6	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	28.8	detect	9	6	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	20.4	detect	9	6	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	31.6	detect	9	6	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	72.1	detect	9	6	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	22.5	detect	9	6	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	12.3	detect	9	6	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	21.3	detect	9	6	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	21.7	detect	9	6	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	31.3	detect	9	6	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	15.7	detect	9	6	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	9.1	detect	9	6	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	9	6	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	7	detect	9	6	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	65.3	detect	9	6	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	8.8	detect	9	6	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	25.9	detect	9	6	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	57.3	detect	9	6	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	89.4	detect	9	6	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	43.4	detect	9	6	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	48.8	detect	9	6	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	9.9	detect	9	6	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	20.9	detect	9	6	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	27.8	detect	9	6	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	38.7	detect	9	6	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	50	detect	9	6	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	64.4	detect	9	6	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	52.2	detect	9	6	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	53.9	detect	9	6	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	11	detect	9	6	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	12.1	detect	9	6	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	76.2	detect	9	6	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	47.1	detect	9	6	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	11.6	detect	9	6	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	8.5	detect	9	6	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	35.6	detect	9	6	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	22.7	detect	9	6	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	26.5	detect	9	6	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Copper

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	36.1	detect	9	6	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	63.8	detect	9	6	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	71.1	detect	9	6	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	43.1	detect	9	6	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	10.4	detect	9	6	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	208	detect	9	6	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	63.4	detect	9	6	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	31.4	detect	9	6	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	90.6	detect	9	6	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	32.1	detect	9	6	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	78.2	detect	9	6	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	32.7	detect	9	6	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	28.5	detect	9	6	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	30	detect	9	6	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	35.4	detect	9	6	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	16	detect	9	6	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	30.1	detect	9	6	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	101	detect	9	6	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	122	detect	9	6	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	58.8	detect	9	6	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	58.9	detect	9	6	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	64.1	detect	9	6	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	79	detect	9	6	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	74.9	detect	9	6	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of River Surface Water

Copper

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.002	detect	5.6	9.34	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0254	detect	5.6	9.34	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0131	detect	5.6	9.34	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.002	detect	5.6	9.34	<1.0	<1.0
	51-CFR	SW51-CFR	0.0021	detect	5.6	9.34	<1.0	<1.0
	52-CFR	SW52-CFR	0.0043	detect	5.6	9.34	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0299	detect	5.6	9.34	<1.0	<1.0
	54-CFR	SW54-CFR	0.0032	detect	5.6	9.34	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0015	detect	5.6	9.34	<1.0	<1.0
	55-CFR	SW55-CFR	0.0025	detect	5.6	9.34	<1.0	<1.0
	56-CFR	SW56-CFR	0.0023	detect	5.6	9.34	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0014	detect	5.6	9.34	<1.0	<1.0
	57-CFR	SW57-CFR	0.0027	detect	5.6	9.34	<1.0	<1.0
	58-CFR	SW58-CFR	0.0027	detect	5.6	9.34	<1.0	<1.0
	59-CFR	SW59-CFR	0.0026	detect	5.6	9.34	<1.0	<1.0
	60-CFR	SW60-CFR	0.0029	detect	5.6	9.34	<1.0	<1.0
	61-CFR	SW61-CFR	0.003	detect	5.6	9.34	<1.0	<1.0
	62-CFR	SW62-CFR	0.0026	detect	5.6	9.34	<1.0	<1.0
	63-CFR	SW63-CFR	0.0026	detect	5.6	9.34	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of Creek Surface Water

Copper

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.0023	detect	5.6	9.34	<1.0	<1.0
	43-OK	SW43-OK	0.002	detect	5.6	9.34	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.0009	detect	5.6	9.34	<1.0	<1.0
	37-LV	SW37-LV	0.0017	detect	5.6	9.34	<1.0	<1.0
	39-LV	SW39-LV	0.0024	detect	5.6	9.34	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of Pond Surface Water

Copper

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0007	detect	5.6	9.34	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0138	detect	5.6	9.34	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0036	detect	5.6	9.34	<1.0	<1.0
73-P5	SW73-P5	0.0014	detect	5.6	9.34	<1.0	<1.0
71-HP7	SW71-HP7	0.0025	detect	5.6	9.34	<1.0	<1.0
72-HP2	SW72-HP2	0.0035	detect	5.6	9.34	<1.0	<1.0
75-HP10	SW75-HP10	0.0018	detect	5.6	9.34	<1.0	<1.0
67-HP12	SW67-HP12	0.0018	detect	5.6	9.34	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0006	detect	5.6	9.34	<1.0	<1.0
66-HP13	SW66-HP13	0.0033	detect	5.6	9.34	<1.0	<1.0
65-HP13a	SW65-HP13a	0.006	detect	5.6	9.34	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0196	detect	5.6	9.34	<1.0	<1.0
70-CWD	SW70-CWD	0.0016	detect	5.6	9.34	<1.0	<1.0
64-HP18	SW64-HP18	0.0024	detect	5.6	9.34	<1.0	<1.0

#N/A = not analyzed

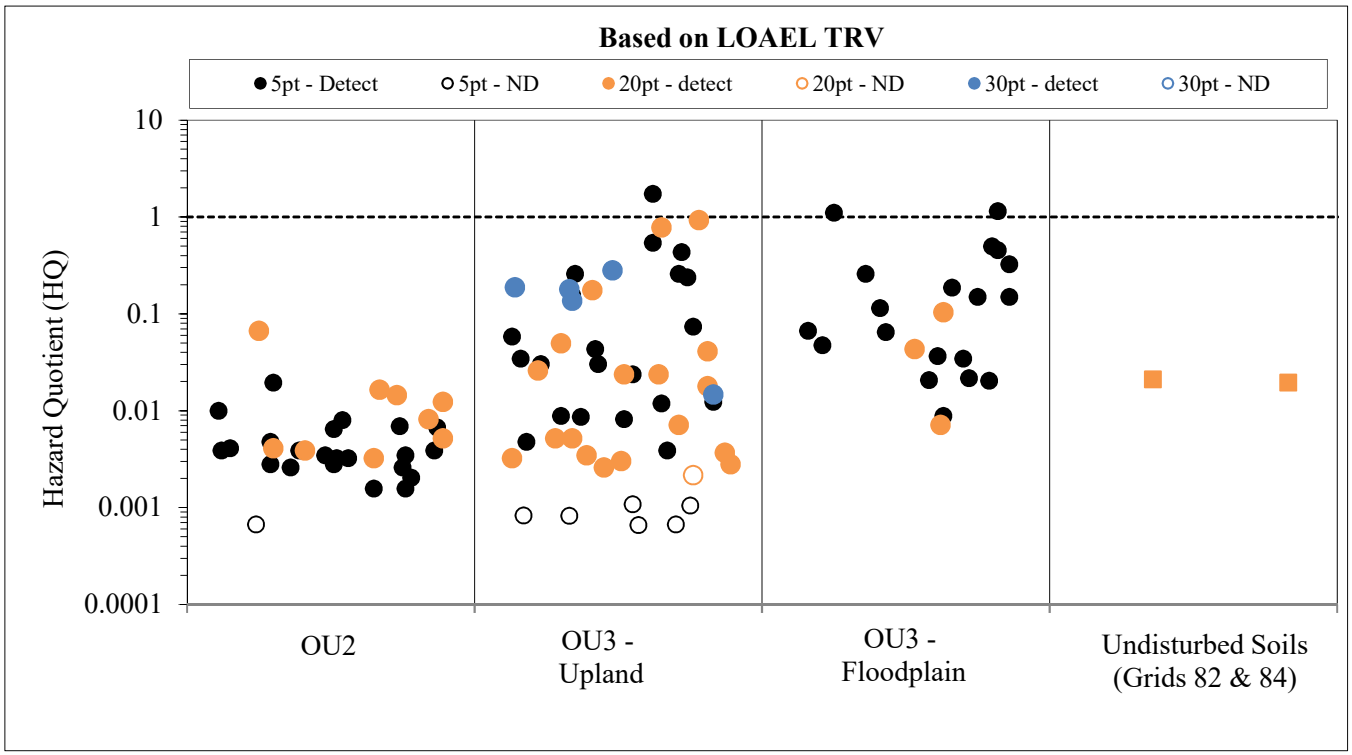
(a) Non-detects are evaluated at 1/2 the reported value.

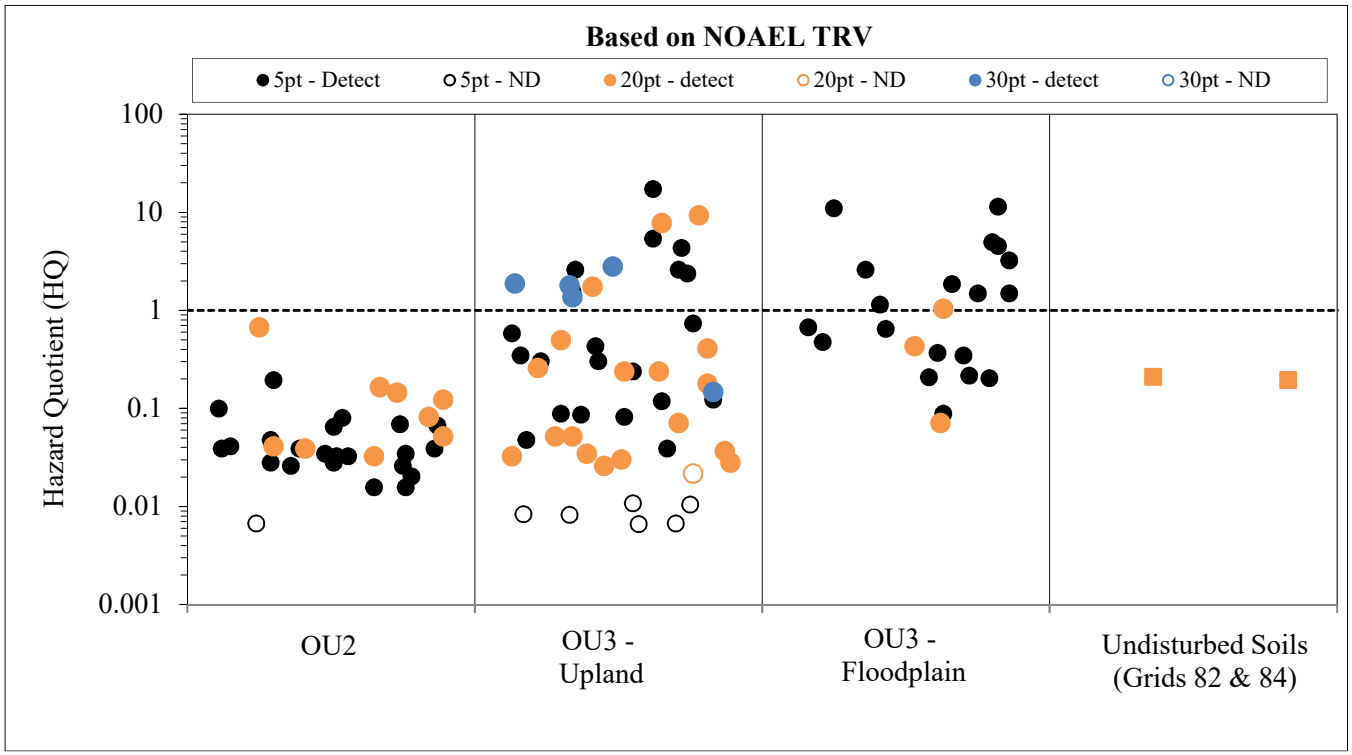
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Food by Exposure Unit/Soil Type

Mercury





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Mercury

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.0465	detect	0	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.0036	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.0114	detect	0	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.00855	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.0057	detect	0	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.00285	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.0027	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.01005	detect	0	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.00225	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.0048	detect	0	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.0027	detect	0	0	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.00195	detect	0	0	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.0135	detect	0	0	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.00195	detect	0	0	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.0018	detect	0	0	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.00465	detect	0	0	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.00285	detect	0	0	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.00555	detect	0	0	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.0033	detect	0	0	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.0018	detect	0	0	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.0045	detect	0	0	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.0024	detect	0	0	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.000465	ND	0	0	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.0027	detect	0	0	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.00141	detect	0	0	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.0027	detect	0	0	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.0024	detect	0	0	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.0069	detect	0	0	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.00225	detect	0	0	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.00225	detect	0	0	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.001093	detect	0	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.001093	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Mercury

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.0945	detect	0	0	<1.0	**1.4**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.18	detect	0	0	<1.0	**2.6**
	CRP-1	CRP-1-SS_4/10/14_NM	0.051	detect	0	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.0018	detect	0	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.0024	detect	0	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.00495	detect	0	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.0036	detect	0	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.00255	detect	0	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.00195	detect	0	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.00225	detect	0	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.01245	detect	0	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.018	detect	0	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.0165	detect	0	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.1215	detect	0	0	<1.0	**1.7**
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.645	detect	0	0	<1.0	**9.3**
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.0285	detect	0	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.0165	detect	0	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.54	detect	0	0	<1.0	**7.8**
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.0345	detect	0	0	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.0021	detect	0	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.0036	detect	0	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.0405	detect	0	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.0057	detect	0	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.021	detect	0	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.0027	detect	0	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.000465	ND	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.000458	ND	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.18	detect	0	0	<1.0	**2.6**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.00855	detect	0	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.0033	detect	0	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.375	detect	0	0	<1.0	**5.4**
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.03	detect	0	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.0015	ND	0	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.000728	ND	0	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.00825	detect	0	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.00075	ND	0	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.0165	detect	0	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.1305	detect	0	0	<1.0	**1.9**
	P8dc	P8dc-SSComp-01_20171024_NM	0.1245	detect	0	0	<1.0	**1.8**
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.108	detect	0	0	<1.0	**1.6**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.165	detect	0	0	<1.0	**2.4**
	SPP	SPP-SSComp-01_20171025_NM	0.195	detect	0	0	<1.0	**2.8**
	SS1,2-HP18	SS1-HP18-(0-2)c	0.00057	ND	0	0	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.000578	ND	0	0	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	1.2	detect	0	0	**1.7**	**17.3**
	SS15,16-HP9	SS15-HP9-(0-2)c	0.3	detect	0	0	<1.0	**4.3**
	SS3,4-HP16	SS3-HP16-(0-2)c	0.021	detect	0	0	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.006	detect	0	0	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.024	detect	0	0	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.00615	detect	0	0	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.0102	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

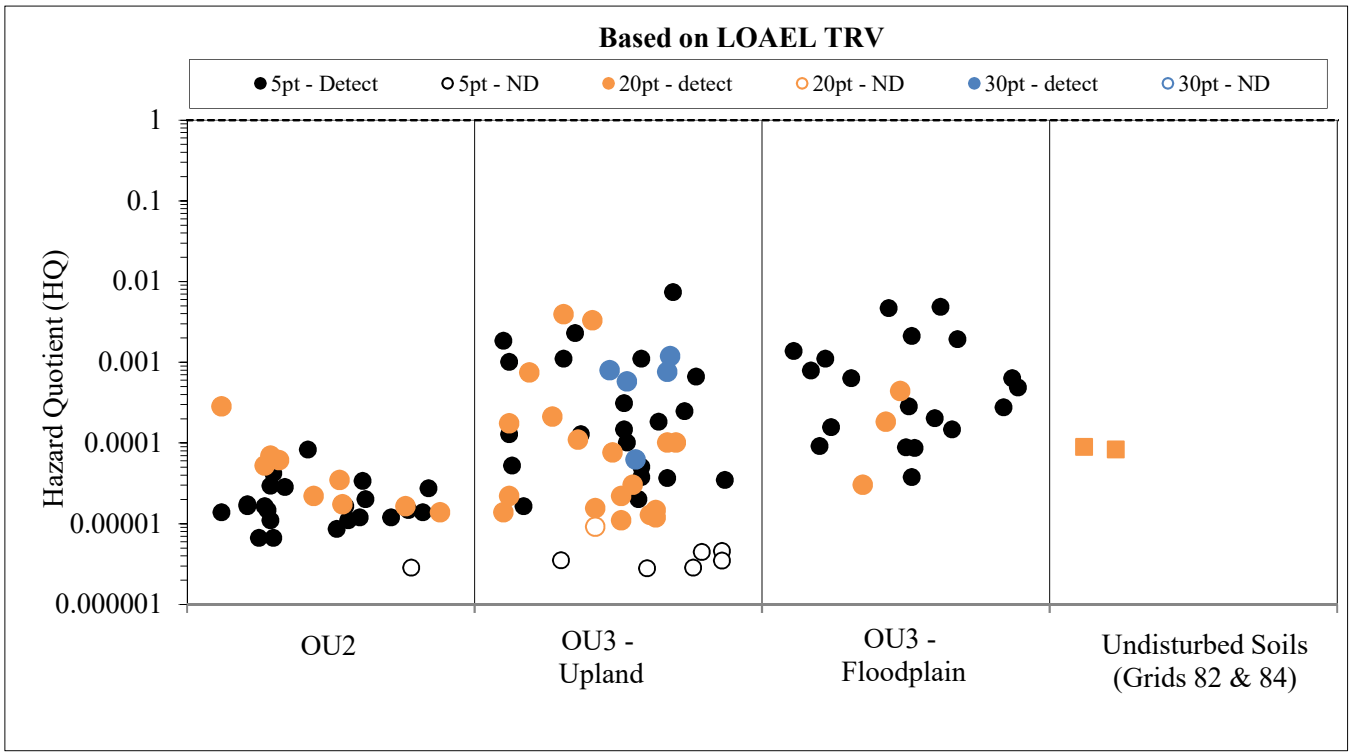
Mercury

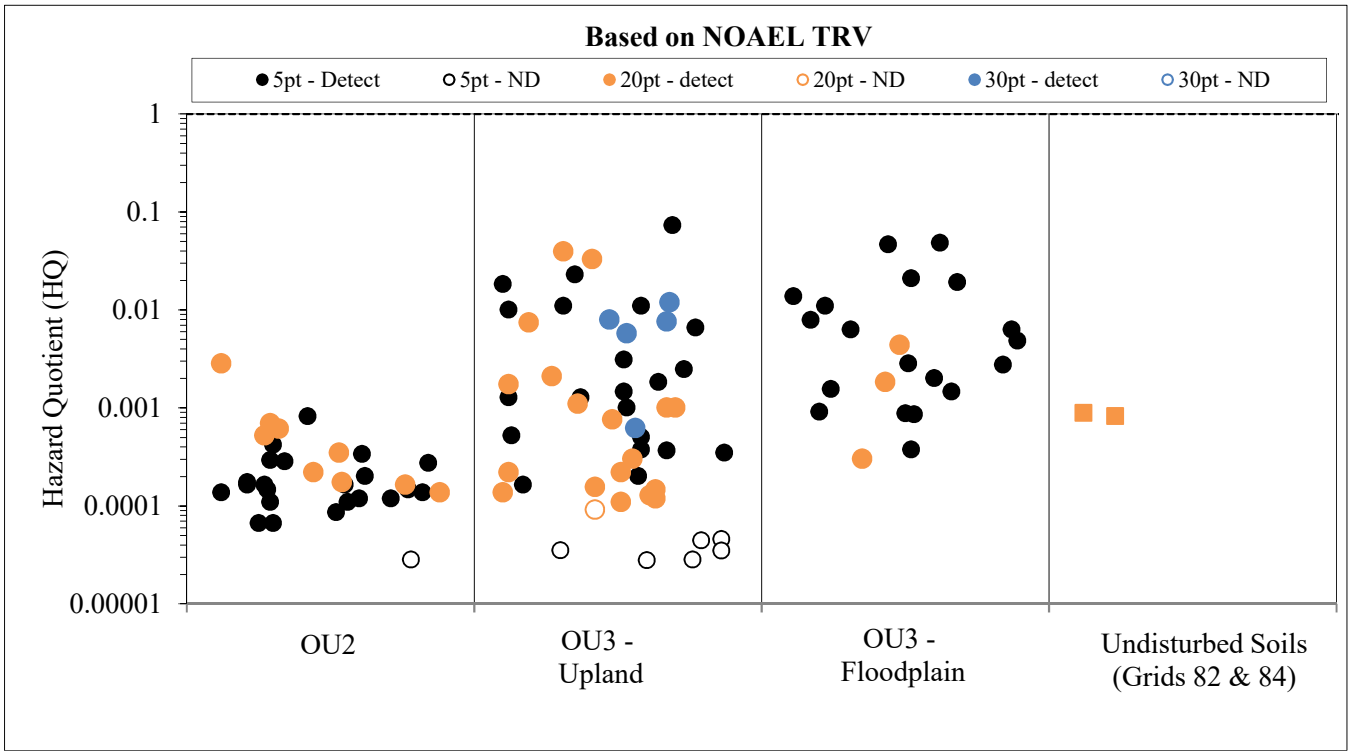
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.00495	detect	0	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.03	detect	0	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.072	detect	0	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.0795	detect	0	0	<1.0	**1.1**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.00615	detect	0	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	0.765	detect	0	0	**1.1**	**11.0**
	SE11-HP11	SE11-HP11-(0-2)c	0.1035	detect	0	0	<1.0	**1.5**
	SE12-HP12	SE12-HP12-(0-2)c	0.024	detect	0	0	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	0.345	detect	0	0	<1.0	**5.0**
	SE14-HP13	SE14-HP13-(0-2)c	0.0144	detect	0	0	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.1035	detect	0	0	<1.0	**1.5**
	SE16-HP13	SE16-HP13-(0-2)c	0.015	detect	0	0	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.0141	detect	0	0	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.0465	detect	0	0	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.045	detect	0	0	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.0255	detect	0	0	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.315	detect	0	0	<1.0	**4.5**
	SE5-HP2	SE5-HP2-(0-2)c	0.129	detect	0	0	<1.0	**1.9**
	SE6-HP7	SE6-HP7-(0-2)c	0.795	detect	0	0	**1.1**	**11.4**
	SE7-HP7	SE7-HP7-(0-2)c	0.033	detect	0	0	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.18	detect	0	0	<1.0	**2.6**
	SE9-HP10	SE9-HP10-(0-2)c	0.225	detect	0	0	<1.0	**3.2**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.01455	detect	0	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.0135	detect	0	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Surface Soil by Exposure Unit/Soil Type

Mercury





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Mercury

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.31	detect	0	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.024	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.076	detect	0	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.057	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.038	detect	0	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.019	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.018	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.067	detect	0	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.015	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.032	detect	0	0	<1.0	<1.0
	SB1-IN	SB1A-IN-(1-2)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	SB2a,3a-IN	SB2a-IN-(0-2)	0.018	detect	0	0	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.013	detect	0	0	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.09	detect	0	0	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.013	detect	0	0	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.012	detect	0	0	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.031	detect	0	0	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.019	detect	0	0	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.037	detect	0	0	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.022	detect	0	0	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.012	detect	0	0	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.03	detect	0	0	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.016	detect	0	0	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.0031	ND	0	0	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.018	detect	0	0	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.0094	detect	0	0	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.018	detect	0	0	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.016	detect	0	0	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.046	detect	0	0	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.015	detect	0	0	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.015	detect	0	0	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.007283	detect	0	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.007283	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Mercury

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.63	detect	0	0	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	1.2	detect	0	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.34	detect	0	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.012	detect	0	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.016	detect	0	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.033	detect	0	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.024	detect	0	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.017	detect	0	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.013	detect	0	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.015	detect	0	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.083	detect	0	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.12	detect	0	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.11	detect	0	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.81	detect	0	0	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	4.3	detect	0	0	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.19	detect	0	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.11	detect	0	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	3.6	detect	0	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.23	detect	0	0	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.014	detect	0	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.024	detect	0	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.27	detect	0	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.038	detect	0	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.14	detect	0	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.018	detect	0	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.0031	ND	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.00305	ND	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1.2	detect	0	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.057	detect	0	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.022	detect	0	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	2.5	detect	0	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.2	detect	0	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.01	ND	0	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.00485	ND	0	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.055	detect	0	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.005	ND	0	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.11	detect	0	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.87	detect	0	0	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.83	detect	0	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.72	detect	0	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1.1	detect	0	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	1.3	detect	0	0	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.0038	ND	0	0	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.00385	ND	0	0	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	8	detect	0	0	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	2	detect	0	0	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.14	detect	0	0	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.04	detect	0	0	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.16	detect	0	0	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.041	detect	0	0	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.068	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Mercury

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.033	detect	0	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.2	detect	0	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.48	detect	0	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.53	detect	0	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.041	detect	0	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	5.1	detect	0	0	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	0.69	detect	0	0	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	0.16	detect	0	0	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	2.3	detect	0	0	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	0.096	detect	0	0	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.69	detect	0	0	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	0.1	detect	0	0	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.094	detect	0	0	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.31	detect	0	0	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.3	detect	0	0	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.17	detect	0	0	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	2.1	detect	0	0	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	0.86	detect	0	0	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	5.3	detect	0	0	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	0.22	detect	0	0	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	1.2	detect	0	0	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	1.5	detect	0	0	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.097	detect	0	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.09	detect	0	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of River Surface Water

Mercury

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	8E-05	ND	0.032	0.16	<1.0	<1.0
	CFR2	CFR2_20180523_NM	8E-05	ND	0.032	0.16	<1.0	<1.0
	SW3-CFR	SW3-CFR	2E-05	ND	0.032	0.16	<1.0	<1.0
	51-CFR	SW51-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	52-CFR	SW52-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	54-CFR	SW54-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	SW2-CFR	SW2-CFR	2E-05	ND	0.032	0.16	<1.0	<1.0
	55-CFR	SW55-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	56-CFR	SW56-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	SW1-CFR	SW1-CFR	2E-05	ND	0.032	0.16	<1.0	<1.0
	57-CFR	SW57-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	58-CFR	SW58-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	59-CFR	SW59-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	60-CFR	SW60-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	61-CFR	SW61-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	62-CFR	SW62-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0
	63-CFR	SW63-CFR	8E-05	ND	0.032	0.16	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of Creek Surface Water

Mercury

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	8E-05	ND	0.032	0.16	<1.0	<1.0
	43-OK	SW43-OK	8E-05	ND	0.032	0.16	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	3E-05	detect	0.032	0.16	<1.0	<1.0
	37-LV	SW37-LV	8E-05	ND	0.032	0.16	<1.0	<1.0
	39-LV	SW39-LV	8E-05	ND	0.032	0.16	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of Pond Surface Water

Mercury

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	8E-05	ND	0.032	0.16	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	8E-05	ND	0.032	0.16	<1.0	<1.0
69-HP1a	SW69-HP1a	8E-05	ND	0.032	0.16	<1.0	<1.0
73-P5	SW73-P5	8E-05	ND	0.032	0.16	<1.0	<1.0
71-HP7	SW71-HP7	8E-05	ND	0.032	0.16	<1.0	<1.0
72-HP2	SW72-HP2	8E-05	ND	0.032	0.16	<1.0	<1.0
75-HP10	SW75-HP10	8E-05	ND	0.032	0.16	<1.0	<1.0
67-HP12	SW67-HP12	8E-05	ND	0.032	0.16	<1.0	<1.0
68-IBJ	SW68-IBJ	8E-05	ND	0.032	0.16	<1.0	<1.0
66-HP13	SW66-HP13	8E-05	ND	0.032	0.16	<1.0	<1.0
65-HP13a	SW65-HP13a	8E-05	ND	0.032	0.16	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	8E-05	ND	0.032	0.16	<1.0	<1.0
70-CWD	SW70-CWD	8E-05	ND	0.032	0.16	<1.0	<1.0
64-HP18	SW64-HP18	8E-05	ND	0.032	0.16	<1.0	<1.0

#N/A = not analyzed

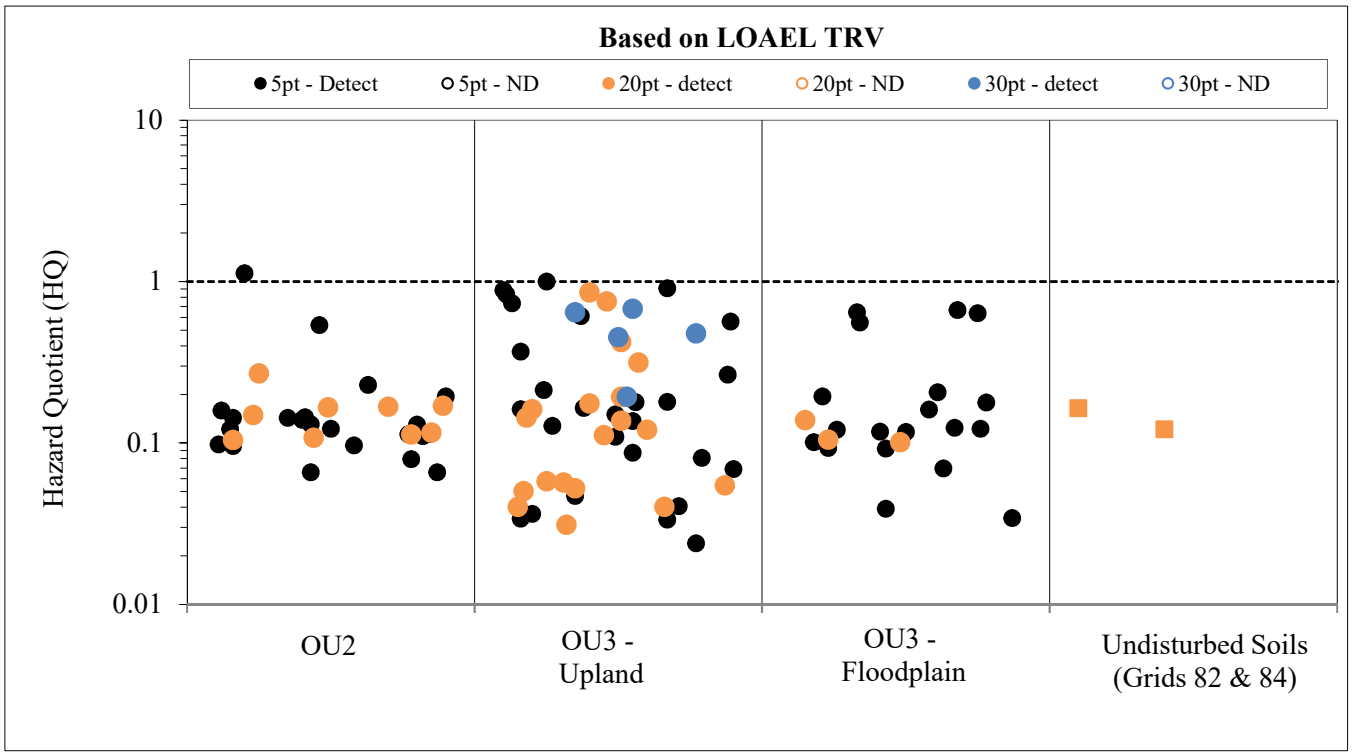
(a) Non-detects are evaluated at 1/2 the reported value.

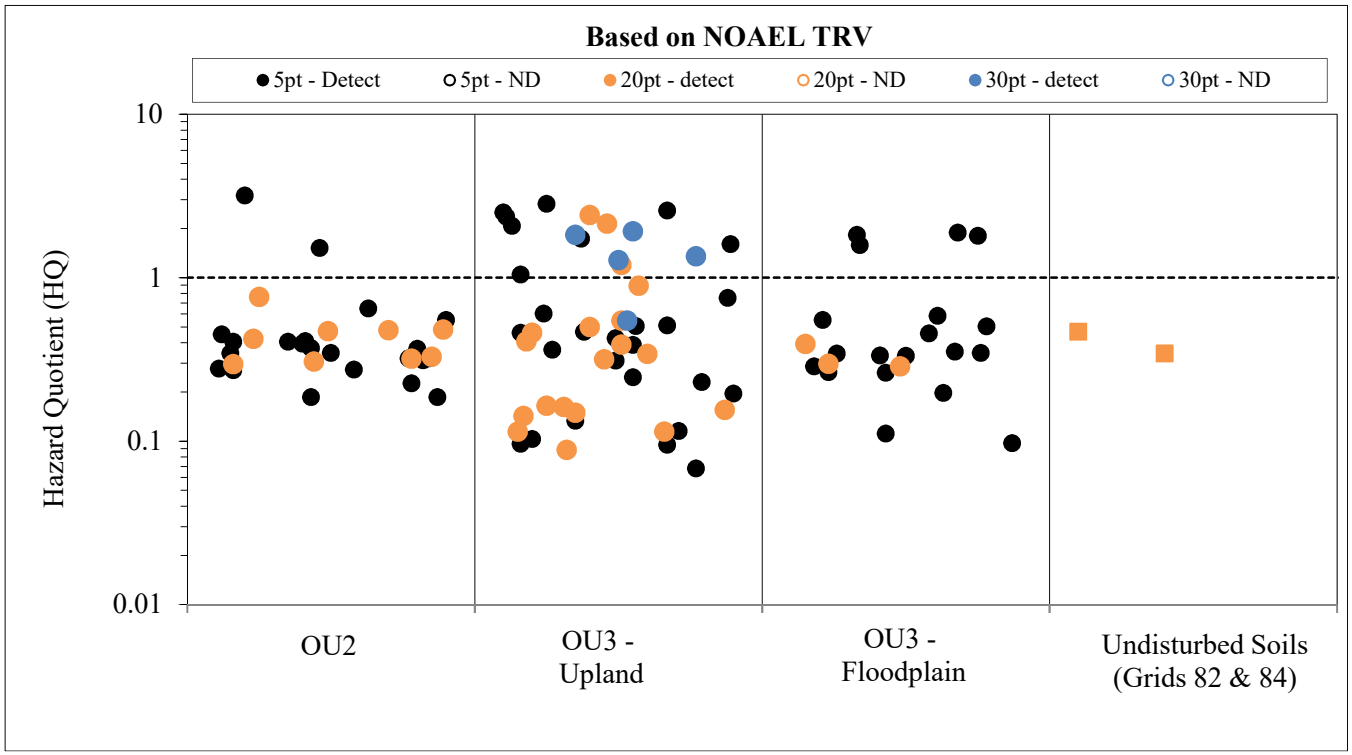
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Food by Exposure Unit/Soil Type

Manganese





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Manganese

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	109.2	detect	146	52	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	68.1	detect	146	52	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	45.75	detect	146	52	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	43.8	detect	146	52	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	67.35	detect	146	52	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	60.45	detect	146	52	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	46.95	detect	146	52	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	69	detect	146	52	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	42.3	detect	146	52	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	58.05	detect	146	52	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	39.15	detect	146	52	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	56.55	detect	146	52	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	92.7	detect	146	52	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	45.9	detect	146	52	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	32.25	detect	146	52	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	49.65	detect	146	52	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	64.35	detect	146	52	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	78.75	detect	146	52	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	45.9	detect	146	52	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	39.75	detect	146	52	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	146	52	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	44.7	detect	146	52	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	146	52	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	146	52	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	456	detect	146	52	**1.1**	**3.2**
	SS33-IN	SS33-IN-(0-2)c	217.5	detect	146	52	<1.0	**1.5**
	SS3-IN	SS3-IN-(0-2)c	52.65	detect	146	52	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	38.85	detect	146	52	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	57.9	detect	146	52	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	52.95	detect	146	52	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	49.35	detect	146	52	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	46.2	detect	146	52	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	58.65	detect	146	52	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	26.65	detect	146	52	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	26.65	detect	146	52	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Manganese

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	183	detect	146	52	<1.0	**1.3**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	358.5	detect	146	52	<1.0	**2.5**
	CRP-1	CRP-1-SS_4/10/14_NM	55.35	detect	146	52	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	16.35	detect	146	52	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	12.645	detect	146	52	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	23.1	detect	146	52	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	16.35	detect	146	52	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	58.35	detect	146	52	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	23.55	detect	146	52	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	45.3	detect	146	52	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	21.3	detect	146	52	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	22.2	detect	146	52	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	48.9	detect	146	52	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	171	detect	146	52	<1.0	**1.2**
	Grid 53	Grid 53-SSComp-01_20171020_NM	65.7	detect	146	52	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	127.8	detect	146	52	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	71.4	detect	146	52	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	78.3	detect	146	52	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	346.5	detect	146	52	<1.0	**2.4**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	55.8	detect	146	52	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	20.4	detect	146	52	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	61.05	detect	146	52	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	14.73	detect	146	52	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	72.45	detect	146	52	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	72.9	detect	146	52	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	13.575	detect	146	52	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	146	52	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	9.72	detect	146	52	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	229.5	detect	146	52	<1.0	**1.6**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	19.05	detect	146	52	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	65.7	detect	146	52	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	247.5	detect	146	52	<1.0	**1.7**
	P17-BH1	P17-BH1-SS_4/3/14_NM	369	detect	146	52	<1.0	**2.6**
	P3	P3-SSComp-01_20171020_NM	306	detect	146	52	<1.0	**2.1**
	P3-BH1	P3-BH1-SS_4/3/14_NM	337.5	detect	146	52	<1.0	**2.4**
	P4-BH1	P4-BH1-SS_4/4/14_NM	66.75	detect	146	52	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	107.4	detect	146	52	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	149.25	detect	146	52	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	193.5	detect	146	52	<1.0	**1.4**
	P8dc	P8dc-SSComp-01_20171024_NM	274.5	detect	146	52	<1.0	**1.9**
	P8-TP3	P8-TP3-SS_4/4/14_NM	297	detect	146	52	<1.0	**2.1**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	405	detect	146	52	<1.0	**2.8**
	SPP	SPP-SSComp-01_20171025_NM	261	detect	146	52	<1.0	**1.8**
	SS1,2-HP18	SS1-HP18-(0-2)c	27.9	detect	146	52	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	32.85	detect	146	52	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	86.25	detect	146	52	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	51.75	detect	146	52	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	16.5	detect	146	52	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	13.755	detect	146	52	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	44.4	detect	146	52	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	35.25	detect	146	52	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	78.3	detect	146	52	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

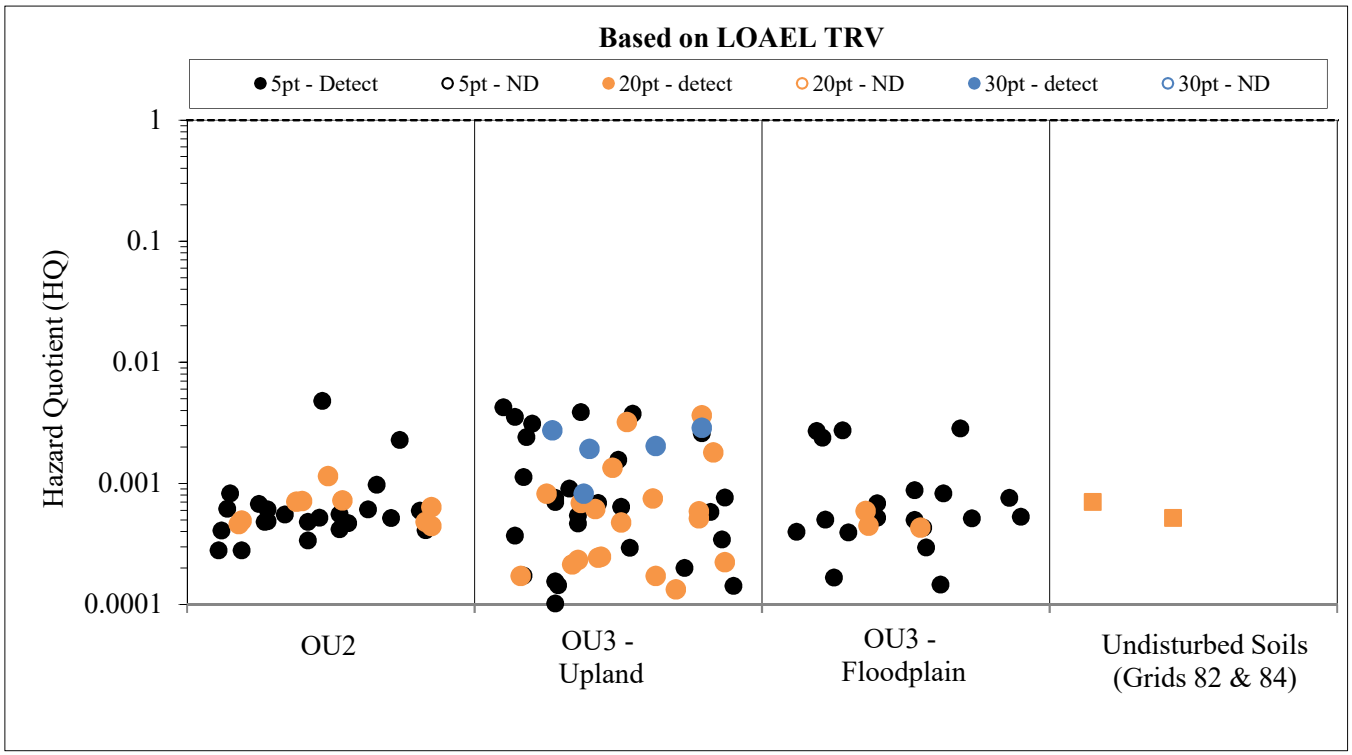
Manganese

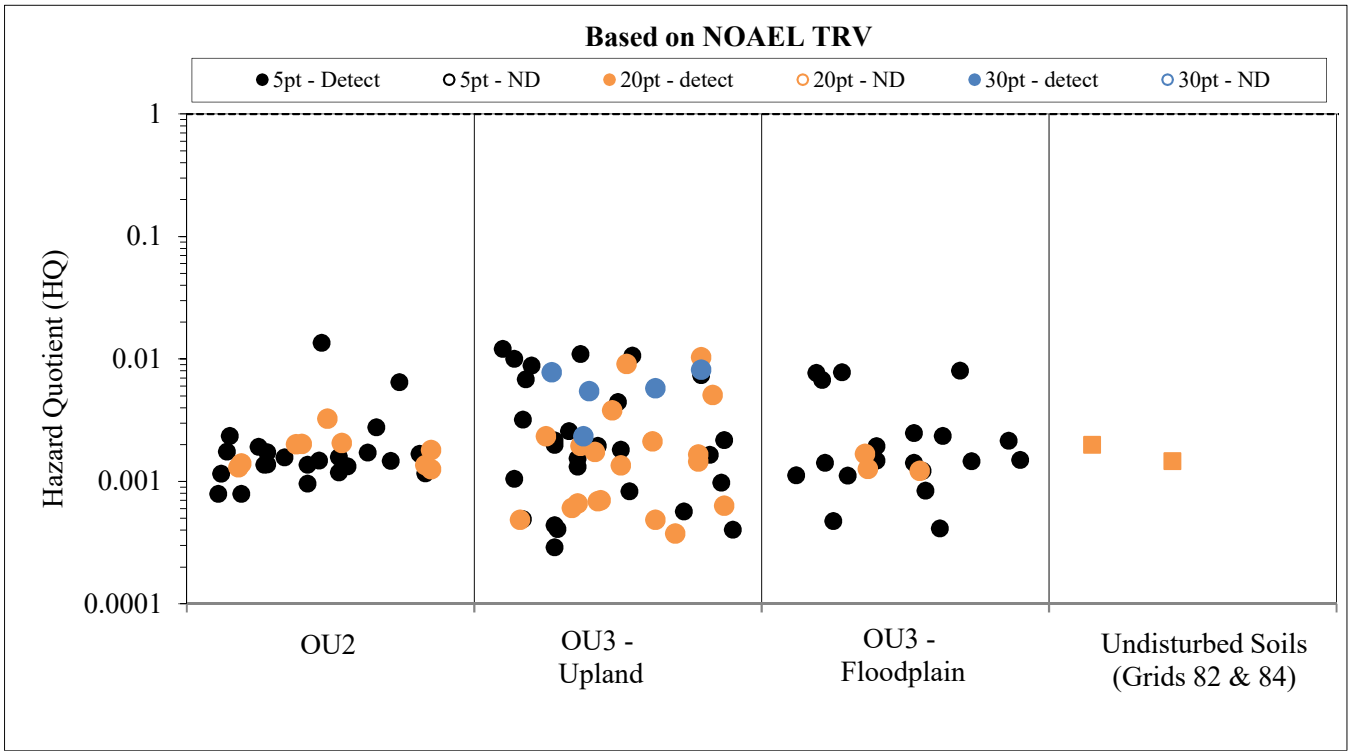
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	42.45	detect	146	52	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	56.25	detect	146	52	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	40.95	detect	146	52	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	83.55	detect	146	52	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	13.89	detect	146	52	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	226.5	detect	146	52	<1.0	**1.6**
	SE11-HP11	SE11-HP11-(0-2)c	65.25	detect	146	52	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	47.7	detect	146	52	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	270	detect	146	52	<1.0	**1.9**
	SE14-HP13	SE14-HP13-(0-2)c	50.4	detect	146	52	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	78.75	detect	146	52	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	41.1	detect	146	52	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	49.65	detect	146	52	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	37.8	detect	146	52	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	49.05	detect	146	52	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	28.2	detect	146	52	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	47.55	detect	146	52	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	258	detect	146	52	<1.0	**1.8**
	SE6-HP7	SE6-HP7-(0-2)c	261	detect	146	52	<1.0	**1.8**
	SE7-HP7	SE7-HP7-(0-2)c	15.9	detect	146	52	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	37.5	detect	146	52	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	72.15	detect	146	52	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	66.6	detect	146	52	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	49.2	detect	146	52	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Surface Soil by Exposure Unit/Soil Type

Manganese





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Manganese

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	728	detect	146	52	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	454	detect	146	52	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	305	detect	146	52	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	292	detect	146	52	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	449	detect	146	52	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	403	detect	146	52	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	313	detect	146	52	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	460	detect	146	52	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	282	detect	146	52	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	387	detect	146	52	<1.0	<1.0
	SB1-IN	SB1A-IN-(1-2)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	SB2a,3a-IN	SB2a-IN-(0-2)	261	detect	146	52	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	377	detect	146	52	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	618	detect	146	52	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	306	detect	146	52	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	215	detect	146	52	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	331	detect	146	52	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	429	detect	146	52	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	525	detect	146	52	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	306	detect	146	52	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	265	detect	146	52	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	146	52	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	298	detect	146	52	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	146	52	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	146	52	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	3040	detect	146	52	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	1450	detect	146	52	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	351	detect	146	52	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	259	detect	146	52	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	386	detect	146	52	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	353	detect	146	52	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	329	detect	146	52	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	308	detect	146	52	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	391	detect	146	52	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	177.6667	detect	146	52	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	177.6667	detect	146	52	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Manganese

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	1220	detect	146	52	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	2390	detect	146	52	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	369	detect	146	52	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	109	detect	146	52	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	84.3	detect	146	52	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	154	detect	146	52	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	109	detect	146	52	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	389	detect	146	52	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	157	detect	146	52	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	302	detect	146	52	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	142	detect	146	52	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	148	detect	146	52	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	326	detect	146	52	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	1140	detect	146	52	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	438	detect	146	52	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	852	detect	146	52	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	476	detect	146	52	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	522	detect	146	52	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	2310	detect	146	52	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	372	detect	146	52	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	136	detect	146	52	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	407	detect	146	52	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	98.2	detect	146	52	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	483	detect	146	52	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	486	detect	146	52	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	90.5	detect	146	52	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	146	52	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	64.8	detect	146	52	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1530	detect	146	52	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	127	detect	146	52	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	438	detect	146	52	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	1650	detect	146	52	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	2460	detect	146	52	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	2040	detect	146	52	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	2250	detect	146	52	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	445	detect	146	52	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	716	detect	146	52	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	995	detect	146	52	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	1290	detect	146	52	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	1830	detect	146	52	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	1980	detect	146	52	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	2700	detect	146	52	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	1740	detect	146	52	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	186	detect	146	52	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	219	detect	146	52	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	575	detect	146	52	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	345	detect	146	52	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	110	detect	146	52	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	91.7	detect	146	52	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	296	detect	146	52	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	235	detect	146	52	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	522	detect	146	52	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Manganese

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	283	detect	146	52	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	375	detect	146	52	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	273	detect	146	52	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	557	detect	146	52	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	92.6	detect	146	52	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	1510	detect	146	52	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	435	detect	146	52	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	318	detect	146	52	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	1800	detect	146	52	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	336	detect	146	52	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	525	detect	146	52	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	274	detect	146	52	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	331	detect	146	52	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	252	detect	146	52	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	327	detect	146	52	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	188	detect	146	52	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	317	detect	146	52	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	1720	detect	146	52	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	1740	detect	146	52	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	106	detect	146	52	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	250	detect	146	52	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	481	detect	146	52	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	444	detect	146	52	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	328	detect	146	52	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of River Surface Water

Manganese

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0169	detect	51.5	146	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.287	detect	51.5	146	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.163	detect	51.5	146	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0151	detect	51.5	146	<1.0	<1.0
	51-CFR	SW51-CFR	0.0192	detect	51.5	146	<1.0	<1.0
	52-CFR	SW52-CFR	0.0893	detect	51.5	146	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0752	detect	51.5	146	<1.0	<1.0
	54-CFR	SW54-CFR	0.084	detect	51.5	146	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0119	detect	51.5	146	<1.0	<1.0
	55-CFR	SW55-CFR	0.0181	detect	51.5	146	<1.0	<1.0
	56-CFR	SW56-CFR	0.0205	detect	51.5	146	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0117	detect	51.5	146	<1.0	<1.0
	57-CFR	SW57-CFR	0.33	detect	51.5	146	<1.0	<1.0
	58-CFR	SW58-CFR	0.0184	detect	51.5	146	<1.0	<1.0
	59-CFR	SW59-CFR	0.0388	detect	51.5	146	<1.0	<1.0
	60-CFR	SW60-CFR	0.0213	detect	51.5	146	<1.0	<1.0
	61-CFR	SW61-CFR	0.0228	detect	51.5	146	<1.0	<1.0
	62-CFR	SW62-CFR	0.0951	detect	51.5	146	<1.0	<1.0
	63-CFR	SW63-CFR	0.0136	detect	51.5	146	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of Creek Surface Water

Manganese

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.0079	detect	51.5	146	<1.0	<1.0
	43-OK	SW43-OK	0.0081	detect	51.5	146	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.0073	detect	51.5	146	<1.0	<1.0
	37-LV	SW37-LV	0.0084	detect	51.5	146	<1.0	<1.0
	39-LV	SW39-LV	0.128	detect	51.5	146	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of Pond Surface Water

Manganese

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0316	detect	51.5	146	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.428	detect	51.5	146	<1.0	<1.0
69-HP1a	SW69-HP1a	0.383	detect	51.5	146	<1.0	<1.0
73-P5	SW73-P5	0.0716	detect	51.5	146	<1.0	<1.0
71-HP7	SW71-HP7	1.94	detect	51.5	146	<1.0	<1.0
72-HP2	SW72-HP2	0.99	detect	51.5	146	<1.0	<1.0
75-HP10	SW75-HP10	3.69	detect	51.5	146	<1.0	<1.0
67-HP12	SW67-HP12	2.15	detect	51.5	146	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0714	detect	51.5	146	<1.0	<1.0
66-HP13	SW66-HP13	0.654	detect	51.5	146	<1.0	<1.0
65-HP13a	SW65-HP13a	0.768	detect	51.5	146	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.953	detect	51.5	146	<1.0	<1.0
70-CWD	SW70-CWD	0.0101	detect	51.5	146	<1.0	<1.0
64-HP18	SW64-HP18	0.281	detect	51.5	146	<1.0	<1.0

#N/A = not analyzed

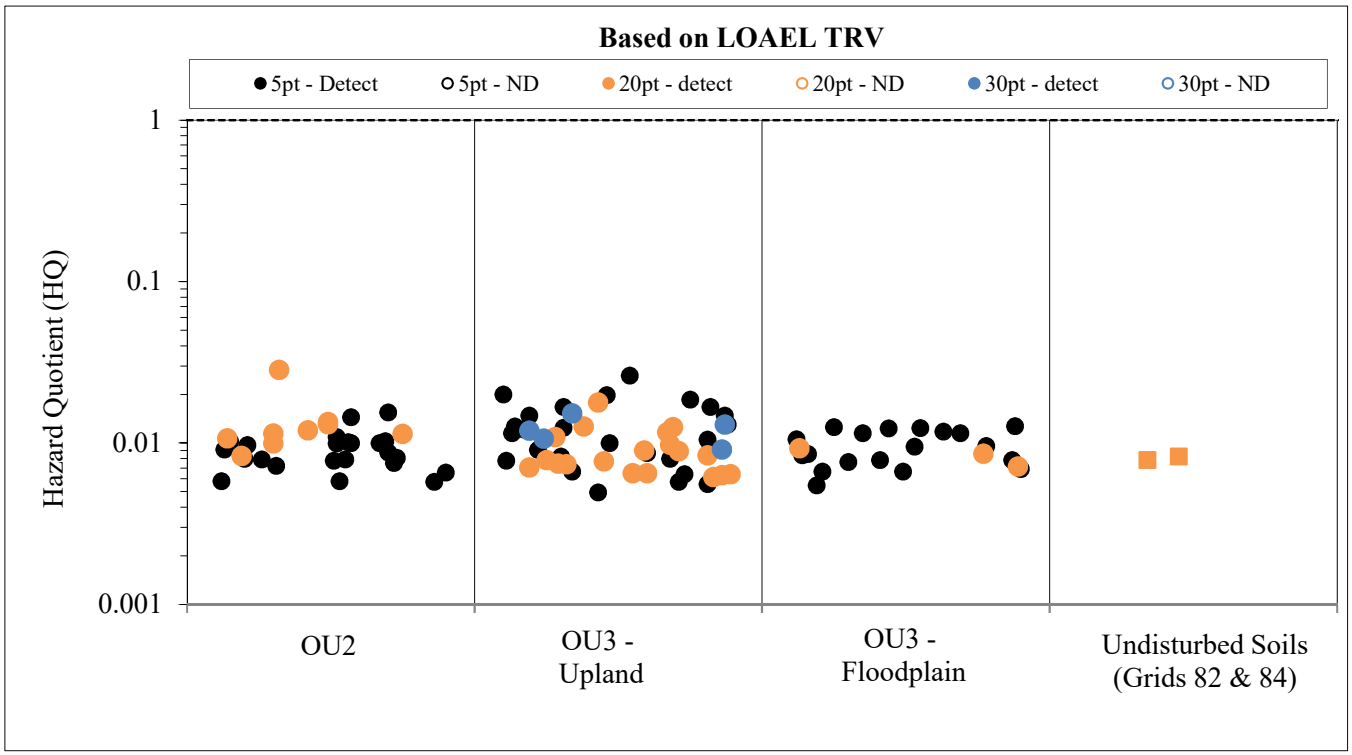
(a) Non-detects are evaluated at 1/2 the reported value.

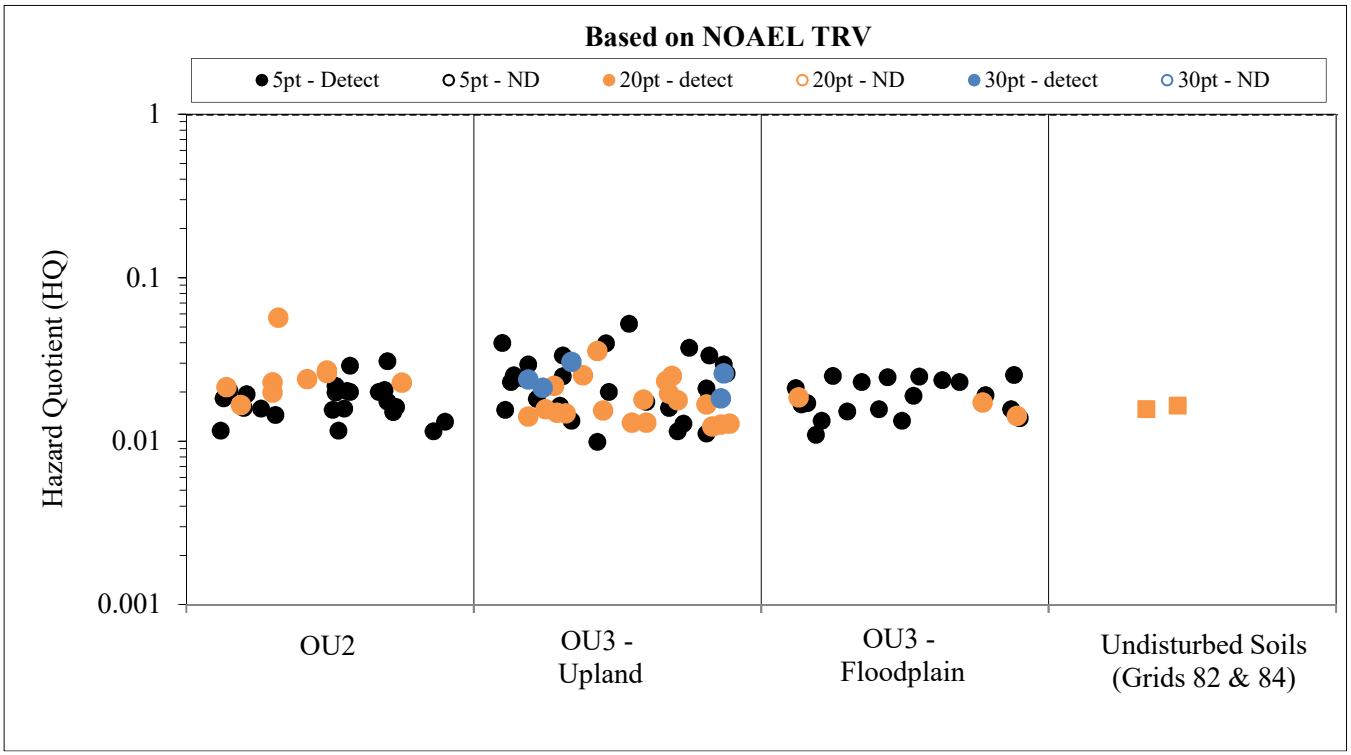
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Food by Exposure Unit/Soil Type

Nickel





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Nickel

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.113169	detect	3	2	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.100938	detect	3	2	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.127405	detect	3	2	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.107434	detect	3	2	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.123132	detect	3	2	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.108077	detect	3	2	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.078377	detect	3	2	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.268343	detect	3	2	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.093626	detect	3	2	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.136405	detect	3	2	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.054136	detect	3	2	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.074774	detect	3	2	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.076222	detect	3	2	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.074774	detect	3	2	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.082628	detect	3	2	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.075499	detect	3	2	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.102902	detect	3	2	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.091598	detect	3	2	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.096306	detect	3	2	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.094298	detect	3	2	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	3	2	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.062046	detect	3	2	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	3	2	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	3	2	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.145789	detect	3	2	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.086115	detect	3	2	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.093626	detect	3	2	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.073316	detect	3	2	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.094298	detect	3	2	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.071111	detect	3	2	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.096973	detect	3	2	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.068135	detect	3	2	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.095639	detect	3	2	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.054675	detect	3	2	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.054675	detect	3	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Nickel

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.122517	detect	3	2	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.175551	detect	3	2	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.122517	detect	3	2	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.058136	detect	3	2	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.05971	detect	3	2	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.066631	detect	3	2	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.061271	detect	3	2	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.079091	detect	3	2	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.060492	detect	3	2	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.070371	detect	3	2	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.069629	detect	3	2	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.072584	detect	3	2	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.074046	detect	3	2	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.119429	detect	3	2	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.092276	detect	3	2	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.102902	detect	3	2	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.084029	detect	3	2	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.084726	detect	3	2	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.167866	detect	3	2	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.109996	detect	3	2	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.061271	detect	3	2	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.098962	detect	3	2	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.081925	detect	3	2	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.117563	detect	3	2	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.073316	detect	3	2	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.054136	detect	3	2	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	3	2	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.052508	detect	3	2	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.11443	detect	3	2	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.046668	detect	3	2	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.13936	detect	3	2	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.157806	detect	3	2	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.186872	detect	3	2	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.118186	detect	3	2	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.246307	detect	3	2	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.060492	detect	3	2	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.18847	detect	3	2	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.157806	detect	3	2	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.086115	detect	3	2	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.112537	detect	3	2	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.119429	detect	3	2	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.13936	detect	3	2	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.144045	detect	3	2	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.077661	detect	3	2	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.075499	detect	3	2	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	0.088871	detect	3	2	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	0.085422	detect	3	2	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.081925	detect	3	2	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.062818	detect	3	2	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.108718	detect	3	2	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.094298	detect	3	2	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.100281	detect	3	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

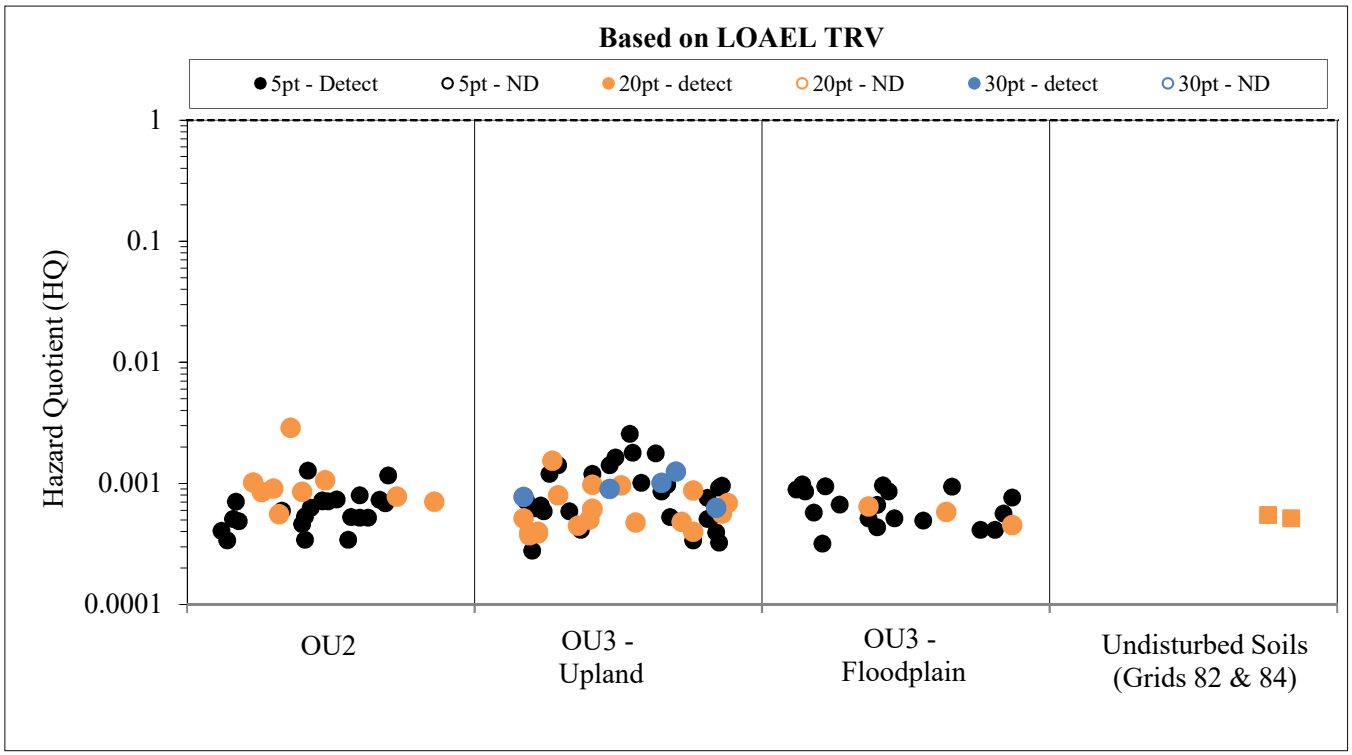
Nickel

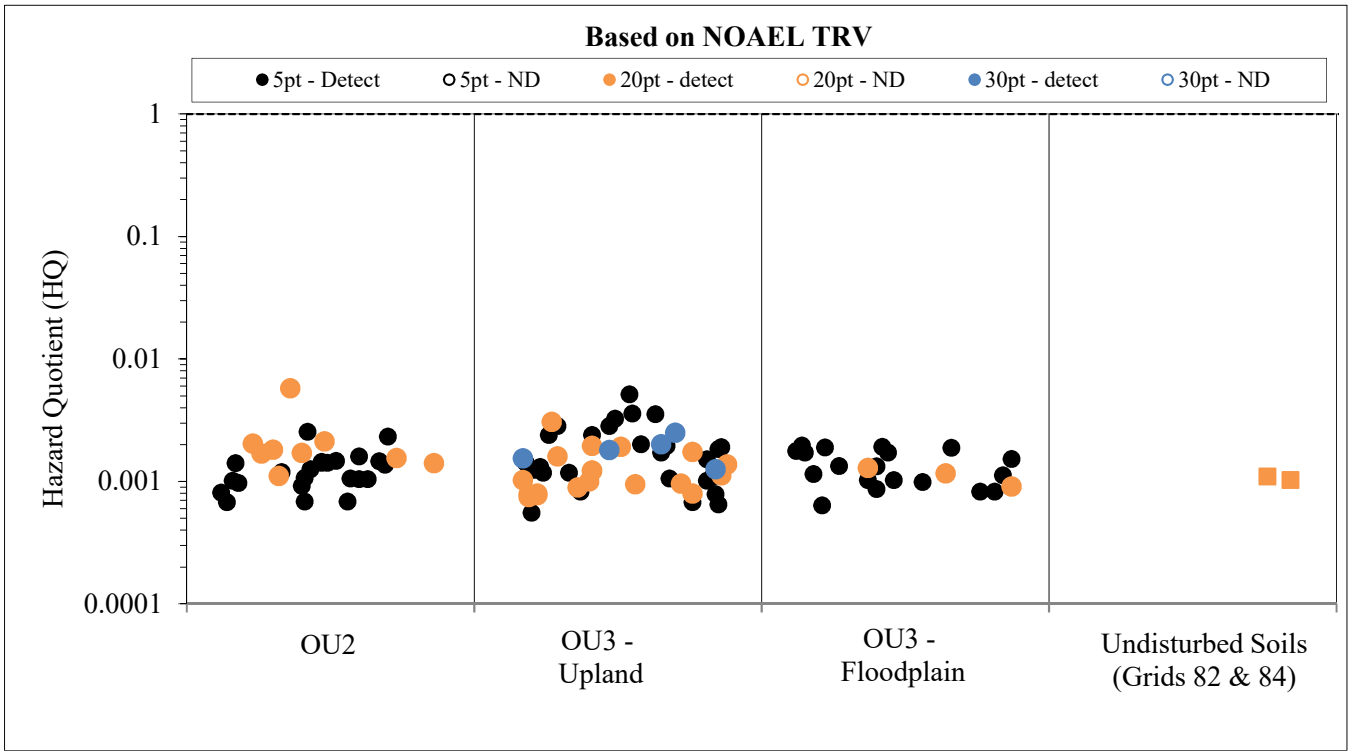
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.067384	detect	3	2	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.087497	detect	3	2	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.081219	detect	3	2	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.116313	detect	3	2	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.051687	detect	3	2	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	0.111269	detect	3	2	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	0.074046	detect	3	2	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	0.118186	detect	3	2	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	0.116939	detect	3	2	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	0.108718	detect	3	2	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.074046	detect	3	2	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	0.080512	detect	3	2	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.099622	detect	3	2	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.079091	detect	3	2	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.090238	detect	3	2	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.062818	detect	3	2	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.071849	detect	3	2	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	0.120049	detect	3	2	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	0.108718	detect	3	2	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	0.065114	detect	3	2	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.062818	detect	3	2	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	0.089555	detect	3	2	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.077661	detect	3	2	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.074046	detect	3	2	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Surface Soil by Exposure Unit/Soil Type

Nickel





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Nickel

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	13.4	detect	3	2	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	11.5	detect	3	2	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	15.7	detect	3	2	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	12.5	detect	3	2	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	15	detect	3	2	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	12.6	detect	3	2	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	8.2	detect	3	2	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	42.5	detect	3	2	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	10.4	detect	3	2	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	17.2	detect	3	2	<1.0	<1.0
	SB1-IN	SB1A-IN-(1-2)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	SB2a,3a-IN	SB2a-IN-(0-2)	5	detect	3	2	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	7.7	detect	3	2	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	7.9	detect	3	2	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	7.7	detect	3	2	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	8.8	detect	3	2	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	7.8	detect	3	2	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	11.8	detect	3	2	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	10.1	detect	3	2	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	10.8	detect	3	2	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	10.5	detect	3	2	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	3	2	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	6	detect	3	2	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	3	2	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	3	2	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	18.8	detect	3	2	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	9.3	detect	3	2	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	10.4	detect	3	2	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	7.5	detect	3	2	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	10.5	detect	3	2	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	7.2	detect	3	2	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	10.9	detect	3	2	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	6.8	detect	3	2	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	10.7	detect	3	2	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	5.066667	detect	3	2	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	5.066667	detect	3	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Nickel

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	14.9	detect	3	2	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	24.1	detect	3	2	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	14.9	detect	3	2	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	5.5	detect	3	2	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	5.7	detect	3	2	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	6.6	detect	3	2	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	5.9	detect	3	2	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	8.3	detect	3	2	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	5.8	detect	3	2	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	7.1	detect	3	2	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	7	detect	3	2	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	7.4	detect	3	2	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	7.6	detect	3	2	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	14.4	detect	3	2	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	10.2	detect	3	2	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	11.8	detect	3	2	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	9	detect	3	2	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	9.1	detect	3	2	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	22.7	detect	3	2	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	12.9	detect	3	2	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	5.9	detect	3	2	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	11.2	detect	3	2	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	8.7	detect	3	2	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	14.1	detect	3	2	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	7.5	detect	3	2	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	5	detect	3	2	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	3	2	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	4.8	detect	3	2	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	13.6	detect	3	2	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	4.1	detect	3	2	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	17.7	detect	3	2	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	20.9	detect	3	2	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	26.2	detect	3	2	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	14.2	detect	3	2	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	37.9	detect	3	2	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	5.8	detect	3	2	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	26.5	detect	3	2	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	20.9	detect	3	2	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	9.3	detect	3	2	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	13.3	detect	3	2	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	14.4	detect	3	2	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	17.7	detect	3	2	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	18.5	detect	3	2	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	8.1	detect	3	2	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	7.8	detect	3	2	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	9.7	detect	3	2	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	9.2	detect	3	2	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	8.7	detect	3	2	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	6.1	detect	3	2	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	12.7	detect	3	2	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	10.5	detect	3	2	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	11.4	detect	3	2	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Nickel

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	6.7	detect	3	2	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	9.5	detect	3	2	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	8.6	detect	3	2	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	13.9	detect	3	2	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	4.7	detect	3	2	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	13.1	detect	3	2	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	7.6	detect	3	2	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	14.2	detect	3	2	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	14	detect	3	2	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	12.7	detect	3	2	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	7.6	detect	3	2	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	8.5	detect	3	2	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	11.3	detect	3	2	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	8.3	detect	3	2	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	9.9	detect	3	2	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	6.1	detect	3	2	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	7.3	detect	3	2	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	14.5	detect	3	2	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	12.7	detect	3	2	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	6.4	detect	3	2	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	6.1	detect	3	2	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	9.8	detect	3	2	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	8.1	detect	3	2	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	7.6	detect	3	2	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of River Surface Water

Nickel

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0009	detect	1.7	3.4	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0009	detect	1.7	3.4	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0002	ND	1.7	3.4	<1.0	<1.0
	51-CFR	SW51-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
	52-CFR	SW52-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0003	detect	1.7	3.4	<1.0	<1.0
	54-CFR	SW54-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
	55-CFR	SW55-CFR	0.0001	detect	1.7	3.4	<1.0	<1.0
	56-CFR	SW56-CFR	0.0001	detect	1.7	3.4	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
	57-CFR	SW57-CFR	0.0003	detect	1.7	3.4	<1.0	<1.0
	58-CFR	SW58-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
	59-CFR	SW59-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
	60-CFR	SW60-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
	61-CFR	SW61-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
	62-CFR	SW62-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0
	63-CFR	SW63-CFR	0.0002	detect	1.7	3.4	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of Creek Surface Water

Nickel

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.0004	detect	1.7	3.4	<1.0	<1.0
	43-OK	SW43-OK	0.0003	detect	1.7	3.4	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.0003	detect	1.7	3.4	<1.0	<1.0
	37-LV	SW37-LV	0.0004	detect	1.7	3.4	<1.0	<1.0
	39-LV	SW39-LV	0.0004	detect	1.7	3.4	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of Pond Surface Water

Nickel

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0002	detect	1.7	3.4	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0043	detect	1.7	3.4	<1.0	<1.0
69-HP1a	SW69-HP1a	0.003	detect	1.7	3.4	<1.0	<1.0
73-P5	SW73-P5	0.0171	detect	1.7	3.4	<1.0	<1.0
71-HP7	SW71-HP7	0.0044	detect	1.7	3.4	<1.0	<1.0
72-HP2	SW72-HP2	0.0029	detect	1.7	3.4	<1.0	<1.0
75-HP10	SW75-HP10	0.0029	detect	1.7	3.4	<1.0	<1.0
67-HP12	SW67-HP12	0.0027	detect	1.7	3.4	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0009	detect	1.7	3.4	<1.0	<1.0
66-HP13	SW66-HP13	0.0046	detect	1.7	3.4	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0037	detect	1.7	3.4	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0034	detect	1.7	3.4	<1.0	<1.0
70-CWD	SW70-CWD	0.0001	ND	1.7	3.4	<1.0	<1.0
64-HP18	SW64-HP18	0.0019	detect	1.7	3.4	<1.0	<1.0

#N/A = not analyzed

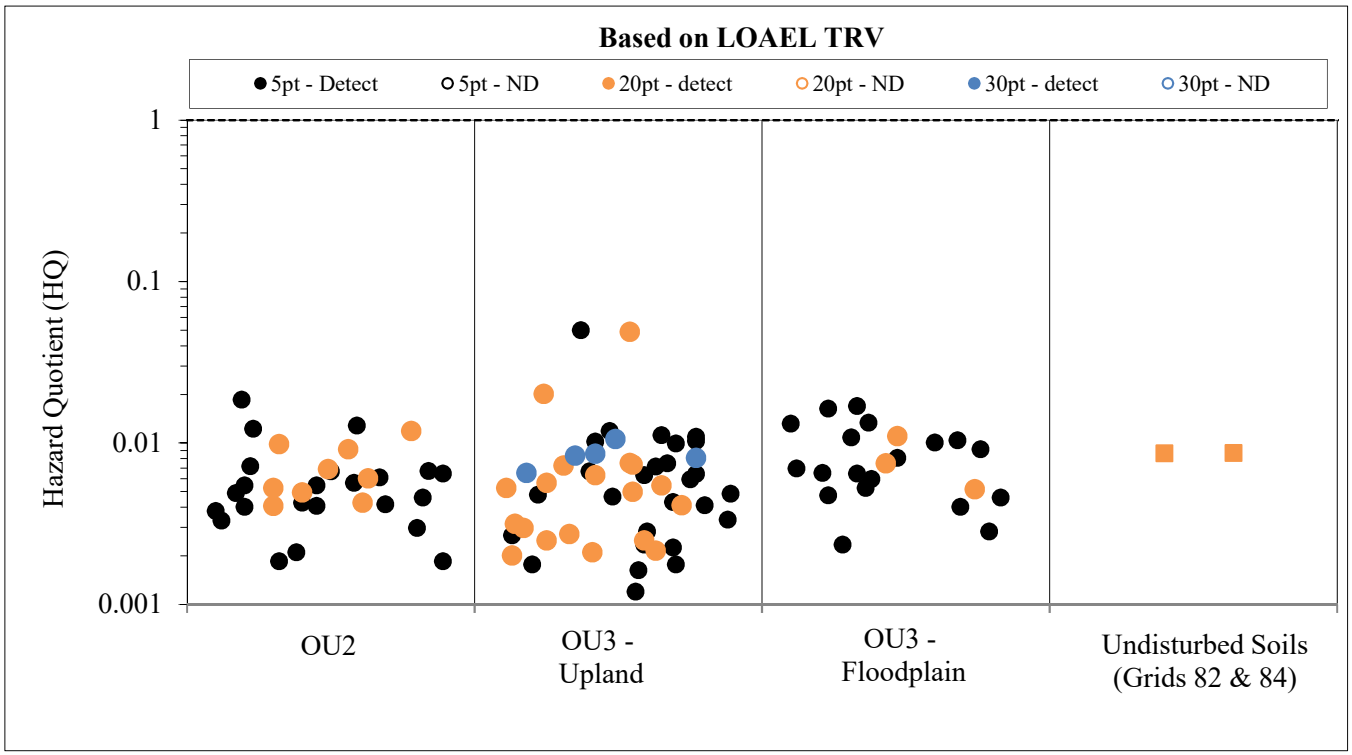
(a) Non-detects are evaluated at 1/2 the reported value.

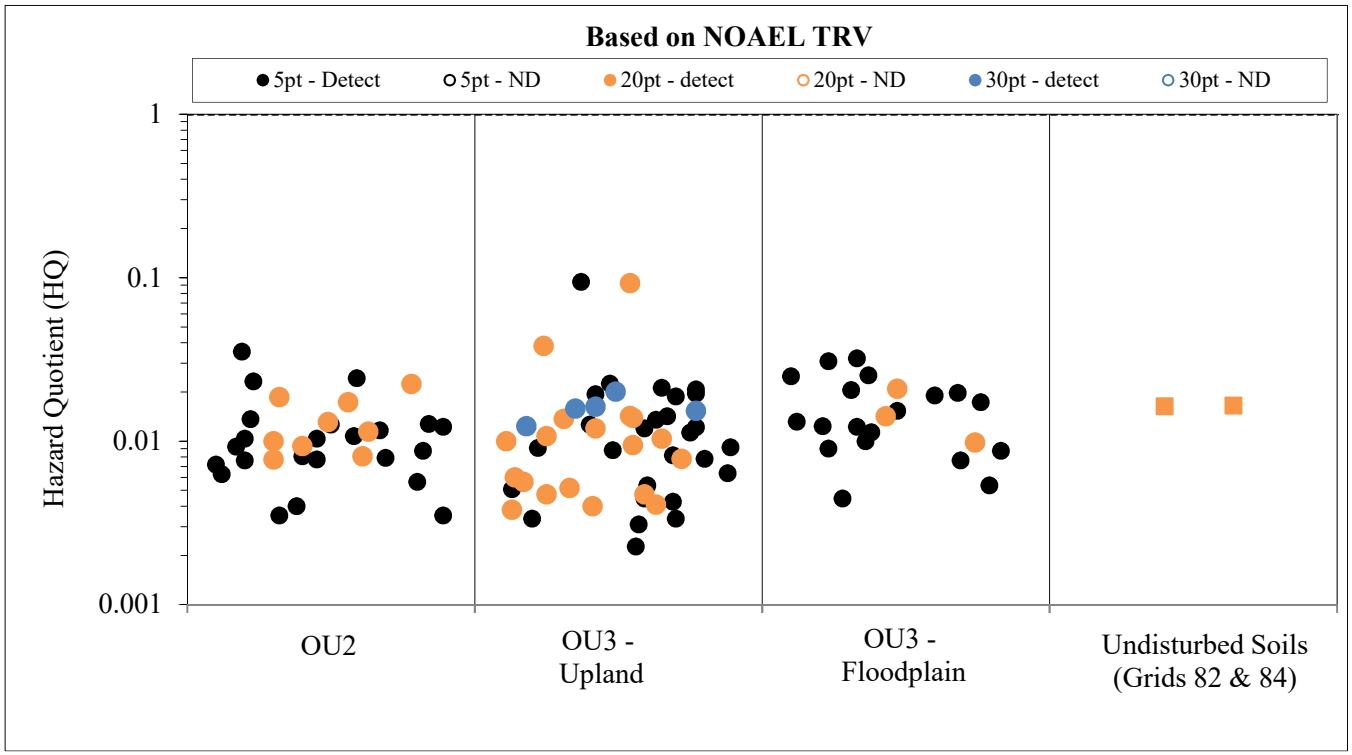
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Food by Exposure Unit/Soil Type

Lead





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Lead

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.13035	detect	9	5	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.242925	detect	9	5	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.17064	detect	9	5	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.105465	detect	9	5	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.226335	detect	9	5	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.14931	detect	9	5	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.100725	detect	9	5	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.292695	detect	9	5	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.122055	detect	9	5	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.164715	detect	9	5	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.05214	detect	9	5	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.1659	detect	9	5	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.15168	detect	9	5	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.103095	detect	9	5	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.100725	detect	9	5	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.12087	detect	9	5	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.159975	detect	9	5	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.302175	detect	9	5	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.09954	detect	9	5	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.07347	detect	9	5	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	9	5	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.081765	detect	9	5	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	9	5	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	9	5	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.45978	detect	9	5	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.316395	detect	9	5	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.11376	detect	9	5	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.093615	detect	9	5	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.13983	detect	9	5	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.17775	detect	9	5	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.13509	detect	9	5	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.105465	detect	9	5	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.13509	detect	9	5	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.04582	detect	9	5	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.04582	detect	9	5	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Lead

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.200265	detect	9	5	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.15642	detect	9	5	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.1185	detect	9	5	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.04977	detect	9	5	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.05214	detect	9	5	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.06162	detect	9	5	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.067545	detect	9	5	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.10191	detect	9	5	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.06162	detect	9	5	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.181305	detect	9	5	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.07821	detect	9	5	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.07347	detect	9	5	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.178935	detect	9	5	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.186045	detect	9	5	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.15642	detect	9	5	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.13035	detect	9	5	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.13983	detect	9	5	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.12324	detect	9	5	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	1.2087	detect	9	5	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.13509	detect	9	5	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.053325	detect	9	5	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.114945	detect	9	5	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.10665	detect	9	5	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.164715	detect	9	5	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.10191	detect	9	5	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.04029	detect	9	5	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	9	5	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.055695	detect	9	5	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.27018	detect	9	5	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.043845	detect	9	5	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.14694	detect	9	5	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.29388	detect	9	5	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	1.2324	detect	9	5	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.498885	detect	9	5	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.176565	detect	9	5	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.029625	detect	9	5	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.069915	detect	9	5	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.254775	detect	9	5	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.16116	detect	9	5	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.20619	detect	9	5	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.276105	detect	9	5	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.245295	detect	9	5	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.261885	detect	9	5	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.06636	detect	9	5	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.08295	detect	9	5	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	0.252405	detect	9	5	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	0.18486	detect	9	5	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.058065	detect	9	5	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.043845	detect	9	5	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.15879	detect	9	5	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.119685	detect	9	5	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.212115	detect	9	5	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

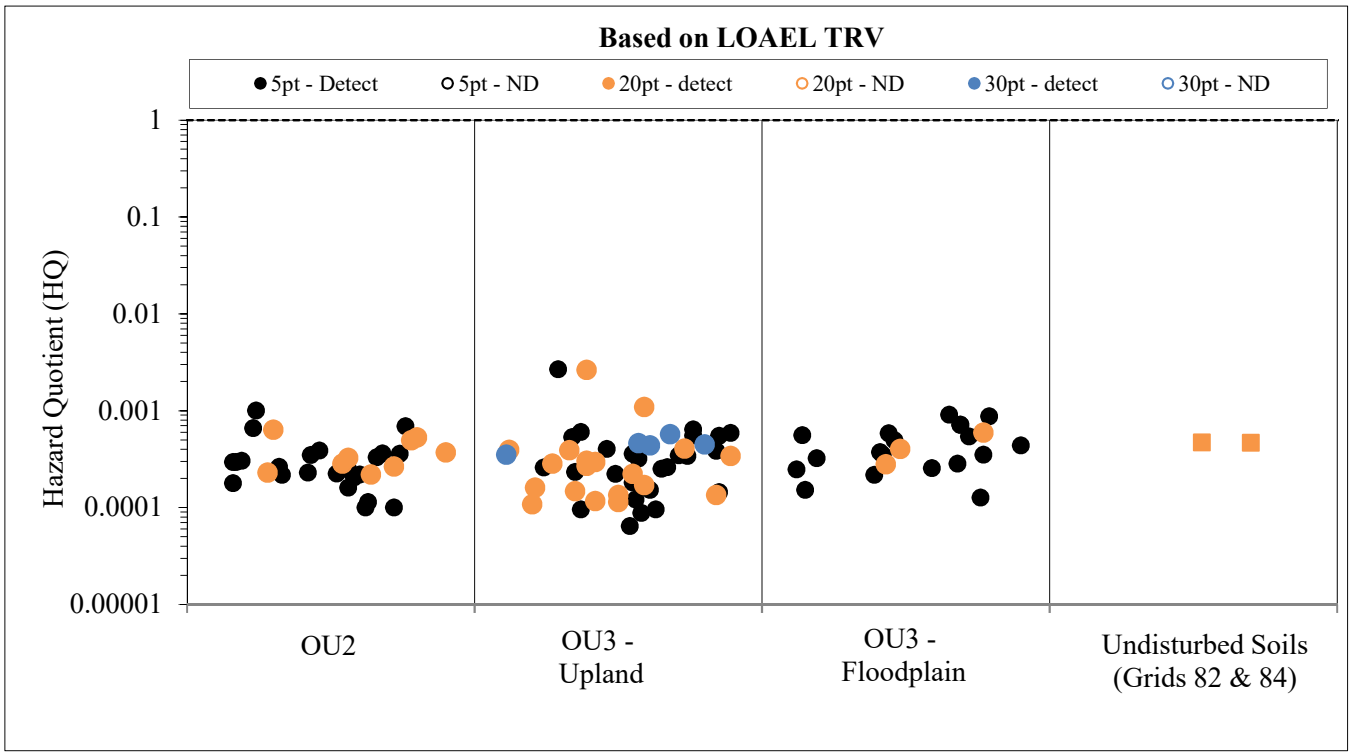
Lead

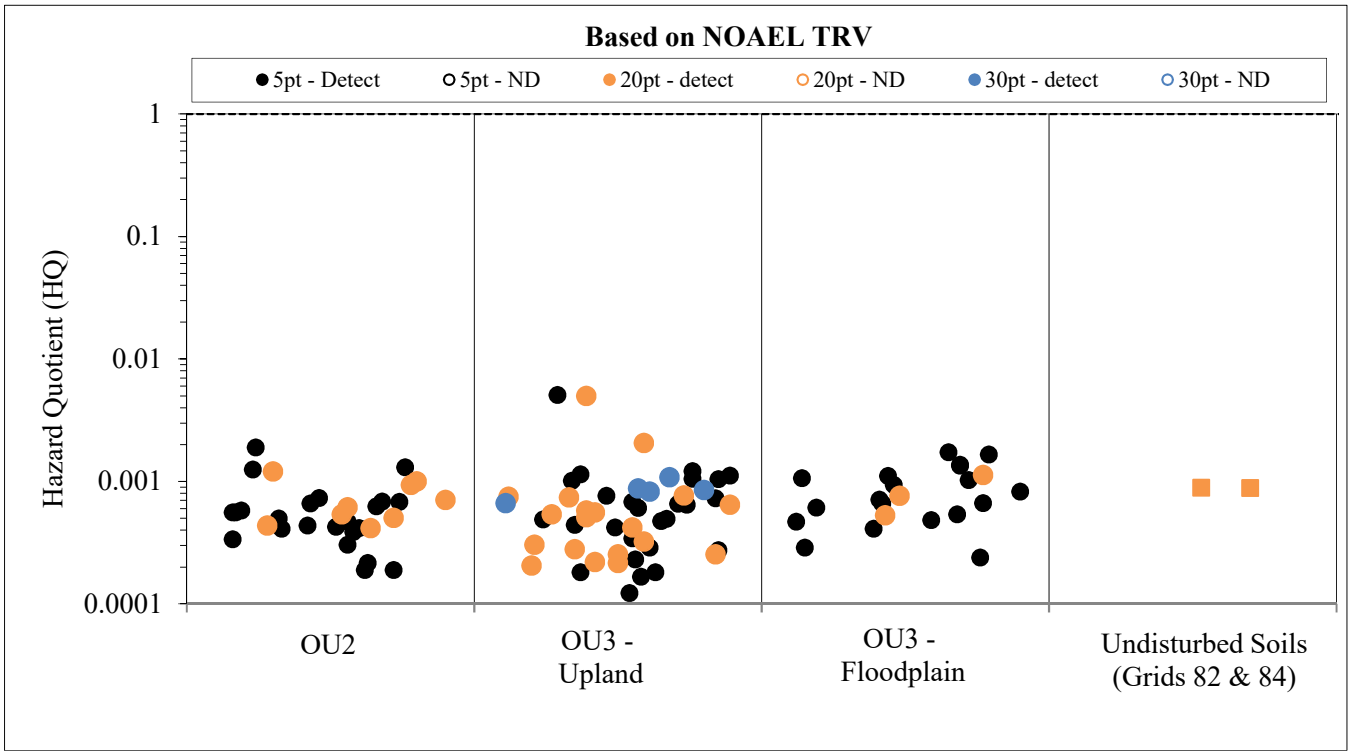
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.12798	detect	9	5	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.18486	detect	9	5	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.27255	detect	9	5	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.200265	detect	9	5	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.069915	detect	9	5	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	0.418305	detect	9	5	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	0.226335	detect	9	5	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	0.171825	detect	9	5	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	0.325875	detect	9	5	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	0.159975	detect	9	5	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.24885	detect	9	5	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	0.148125	detect	9	5	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.11376	detect	9	5	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.13035	detect	9	5	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.16116	detect	9	5	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.058065	detect	9	5	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.09954	detect	9	5	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	0.330615	detect	9	5	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	0.4029	detect	9	5	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	0.26781	detect	9	5	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.117315	detect	9	5	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	0.257145	detect	9	5	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.2133	detect	9	5	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.214485	detect	9	5	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Surface Soil by Exposure Unit/Soil Type

Lead





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Lead

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	11	detect	9	5	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	20.5	detect	9	5	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	14.4	detect	9	5	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	8.9	detect	9	5	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	19.1	detect	9	5	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	12.6	detect	9	5	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	8.5	detect	9	5	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	24.7	detect	9	5	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	10.3	detect	9	5	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	13.9	detect	9	5	<1.0	<1.0
	SB1-IN	SB1A-IN-(1-2)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	SB2a,3a-IN	SB2a-IN-(0-2)	4.4	detect	9	5	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	14	detect	9	5	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	12.8	detect	9	5	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	8.7	detect	9	5	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	8.5	detect	9	5	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	10.2	detect	9	5	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	13.5	detect	9	5	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	25.5	detect	9	5	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	8.4	detect	9	5	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	6.2	detect	9	5	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	9	5	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	6.9	detect	9	5	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	9	5	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	9	5	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	38.8	detect	9	5	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	26.7	detect	9	5	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	9.6	detect	9	5	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	7.9	detect	9	5	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	11.8	detect	9	5	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	15	detect	9	5	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	11.4	detect	9	5	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	8.9	detect	9	5	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	11.4	detect	9	5	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	3.866667	detect	9	5	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	3.866667	detect	9	5	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Lead

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	16.9	detect	9	5	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	13.2	detect	9	5	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	10	detect	9	5	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	4.2	detect	9	5	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	4.4	detect	9	5	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	5.2	detect	9	5	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	5.7	detect	9	5	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	8.6	detect	9	5	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	5.2	detect	9	5	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	15.3	detect	9	5	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	6.6	detect	9	5	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	6.2	detect	9	5	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	15.1	detect	9	5	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	15.7	detect	9	5	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	13.2	detect	9	5	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	11	detect	9	5	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	11.8	detect	9	5	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	10.4	detect	9	5	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	102	detect	9	5	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	11.4	detect	9	5	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	4.5	detect	9	5	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	9.7	detect	9	5	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	9	detect	9	5	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	13.9	detect	9	5	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	8.6	detect	9	5	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	3.4	detect	9	5	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	9	5	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	4.7	detect	9	5	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	22.8	detect	9	5	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	3.7	detect	9	5	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	12.4	detect	9	5	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	24.8	detect	9	5	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	104	detect	9	5	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	42.1	detect	9	5	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	14.9	detect	9	5	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	2.5	detect	9	5	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	5.9	detect	9	5	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	21.5	detect	9	5	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	13.6	detect	9	5	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	17.4	detect	9	5	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	23.3	detect	9	5	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	20.7	detect	9	5	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	22.1	detect	9	5	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	5.6	detect	9	5	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	7	detect	9	5	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	21.3	detect	9	5	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	15.6	detect	9	5	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	4.9	detect	9	5	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	3.7	detect	9	5	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	13.4	detect	9	5	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	10.1	detect	9	5	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	17.9	detect	9	5	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Lead

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	10.8	detect	9	5	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	15.6	detect	9	5	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	23	detect	9	5	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	16.9	detect	9	5	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	5.9	detect	9	5	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	35.3	detect	9	5	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	19.1	detect	9	5	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	14.5	detect	9	5	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	27.5	detect	9	5	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	13.5	detect	9	5	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	21	detect	9	5	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	12.5	detect	9	5	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	9.6	detect	9	5	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	11	detect	9	5	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	13.6	detect	9	5	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	4.9	detect	9	5	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	8.4	detect	9	5	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	27.9	detect	9	5	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	34	detect	9	5	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	22.6	detect	9	5	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	9.9	detect	9	5	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	21.7	detect	9	5	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	18	detect	9	5	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	18.1	detect	9	5	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of River Surface Water

Lead

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0001	detect	4.7	8.9	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0006	detect	4.7	8.9	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0016	detect	4.7	8.9	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0002	detect	4.7	8.9	<1.0	<1.0
	51-CFR	SW51-CFR	0.0002	detect	4.7	8.9	<1.0	<1.0
	52-CFR	SW52-CFR	0.0004	detect	4.7	8.9	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0015	detect	4.7	8.9	<1.0	<1.0
	54-CFR	SW54-CFR	0.0001	detect	4.7	8.9	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0001	detect	4.7	8.9	<1.0	<1.0
	55-CFR	SW55-CFR	0.0002	detect	4.7	8.9	<1.0	<1.0
	56-CFR	SW56-CFR	0.0002	detect	4.7	8.9	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0001	detect	4.7	8.9	<1.0	<1.0
	57-CFR	SW57-CFR	0.0002	detect	4.7	8.9	<1.0	<1.0
	58-CFR	SW58-CFR	0.0002	detect	4.7	8.9	<1.0	<1.0
	59-CFR	SW59-CFR	0.0002	detect	4.7	8.9	<1.0	<1.0
	60-CFR	SW60-CFR	0.0002	detect	4.7	8.9	<1.0	<1.0
	61-CFR	SW61-CFR	0.0002	detect	4.7	8.9	<1.0	<1.0
	62-CFR	SW62-CFR	0.0002	detect	4.7	8.9	<1.0	<1.0
	63-CFR	SW63-CFR	0.0001	detect	4.7	8.9	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of Creek Surface Water

Lead

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.0003	detect	4.7	8.9	<1.0	<1.0
	43-OK	SW43-OK	0.0002	detect	4.7	8.9	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.0003	detect	4.7	8.9	<1.0	<1.0
	37-LV	SW37-LV	0.0003	detect	4.7	8.9	<1.0	<1.0
	39-LV	SW39-LV	0.0003	detect	4.7	8.9	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of Pond Surface Water

Lead

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	6E-05	detect	4.7	8.9	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0006	detect	4.7	8.9	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0002	detect	4.7	8.9	<1.0	<1.0
73-P5	SW73-P5	0.0002	ND	4.7	8.9	<1.0	<1.0
71-HP7	SW71-HP7	0.0003	detect	4.7	8.9	<1.0	<1.0
72-HP2	SW72-HP2	0.0004	detect	4.7	8.9	<1.0	<1.0
75-HP10	SW75-HP10	0.0002	detect	4.7	8.9	<1.0	<1.0
67-HP12	SW67-HP12	0.0002	detect	4.7	8.9	<1.0	<1.0
68-IBJ	SW68-IBJ	7E-05	detect	4.7	8.9	<1.0	<1.0
66-HP13	SW66-HP13	0.0008	detect	4.7	8.9	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0014	detect	4.7	8.9	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.001	detect	4.7	8.9	<1.0	<1.0
70-CWD	SW70-CWD	0.0001	detect	4.7	8.9	<1.0	<1.0
64-HP18	SW64-HP18	0.0005	detect	4.7	8.9	<1.0	<1.0

#N/A = not analyzed

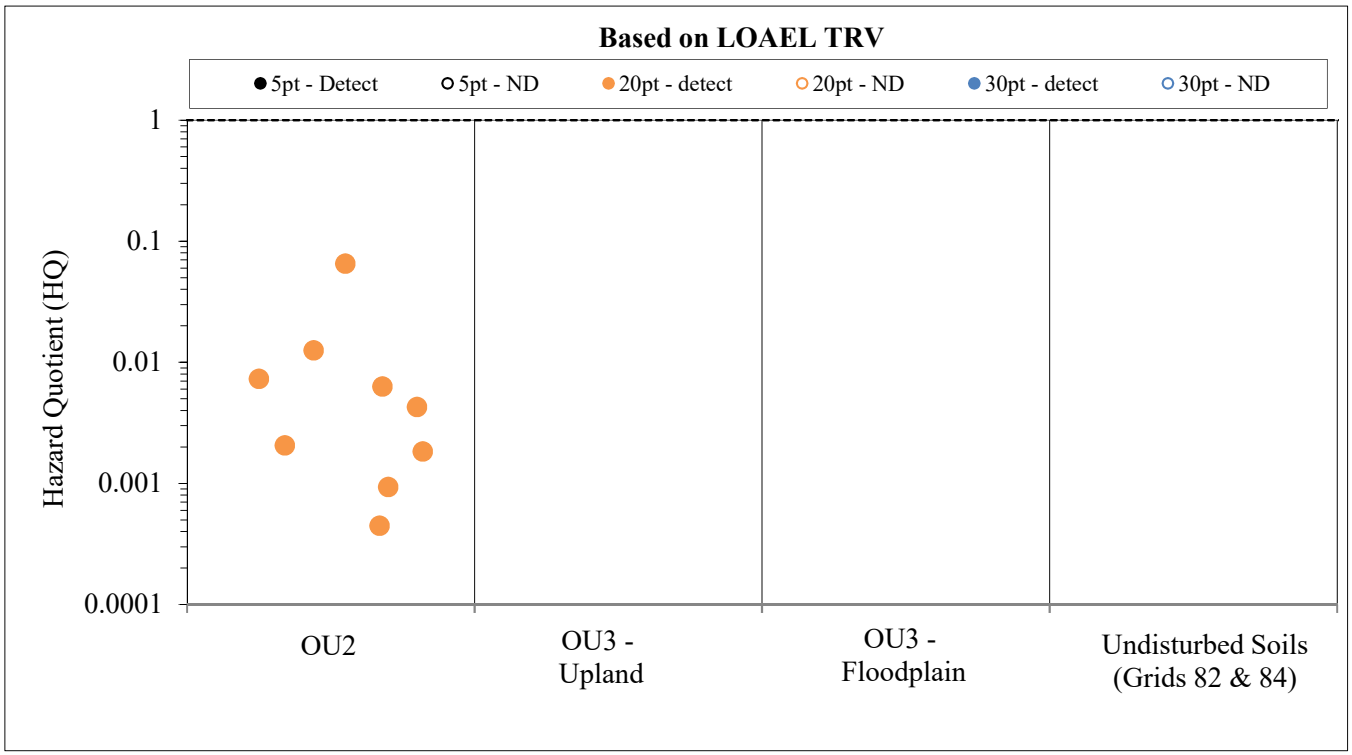
(a) Non-detects are evaluated at 1/2 the reported value.

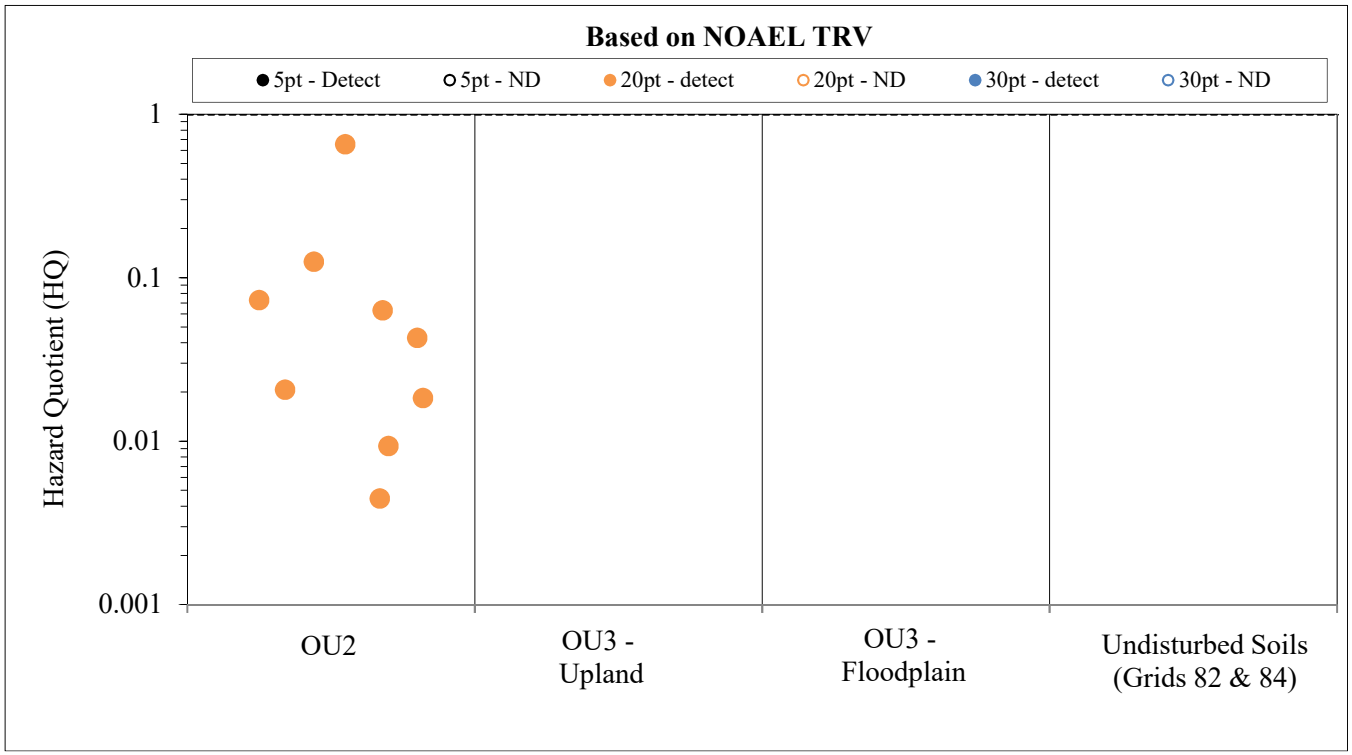
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Food by Exposure Unit/Soil Type

Total PCBs (ND=1/2RL)





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Total PCBs (ND=1/2RL)

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.032295	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.002415	detect	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.01105	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.004748	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.016304	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.001151	detect	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.018812	detect	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.168776	detect	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.00533	detect	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	#N/A	#N/A	1	0	#N/A	#N/A
	TSB-SS	BACKFILL-TSB-SS	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Total PCBs (ND=1/2RL)

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	CRP-1	CRP-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-1	HP18-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-IB	HP18-SSC-IB_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP9-1	HP9-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	IBK-1	IBK-1-SS_4/16/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P17-BH1	P17-BH1-SS_4/3/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P4-BH1	P4-BH1-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P5-BH2	P5-BH2-SS_4/3/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

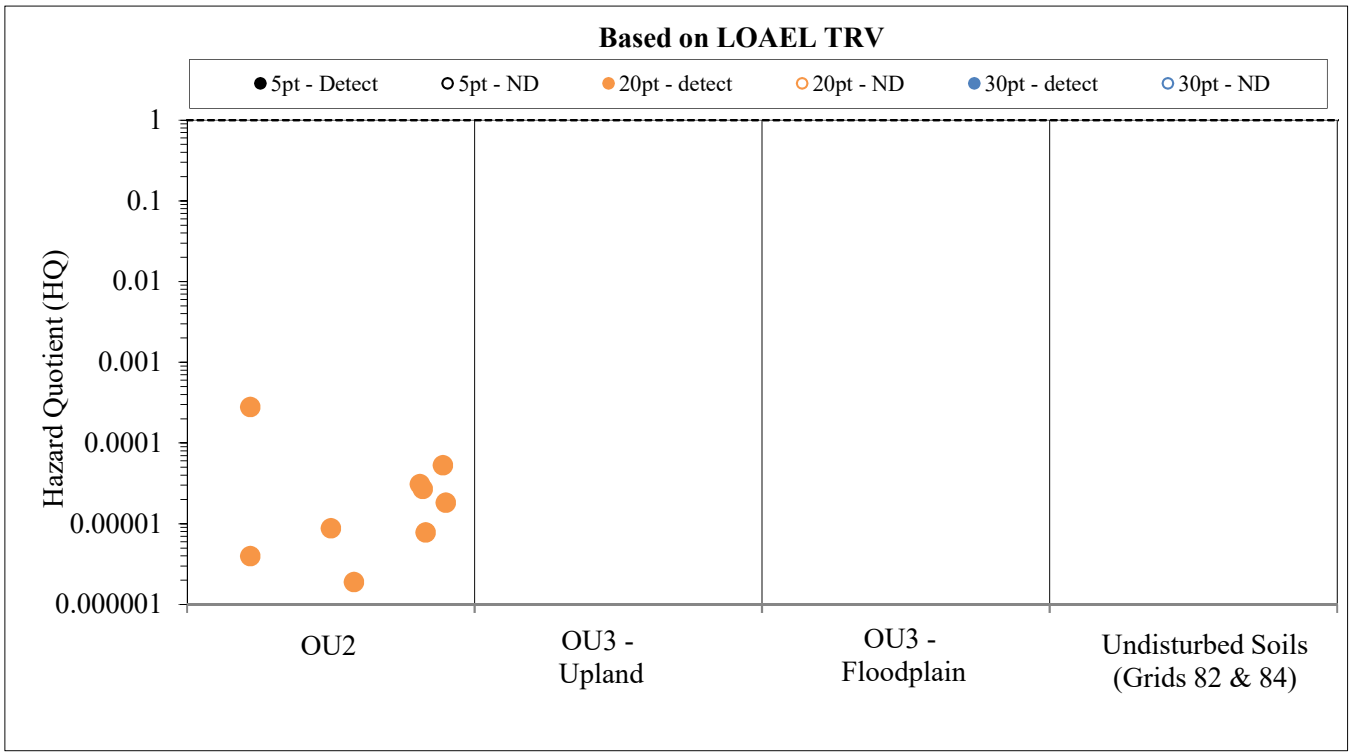
Total PCBs (ND=1/2RL)

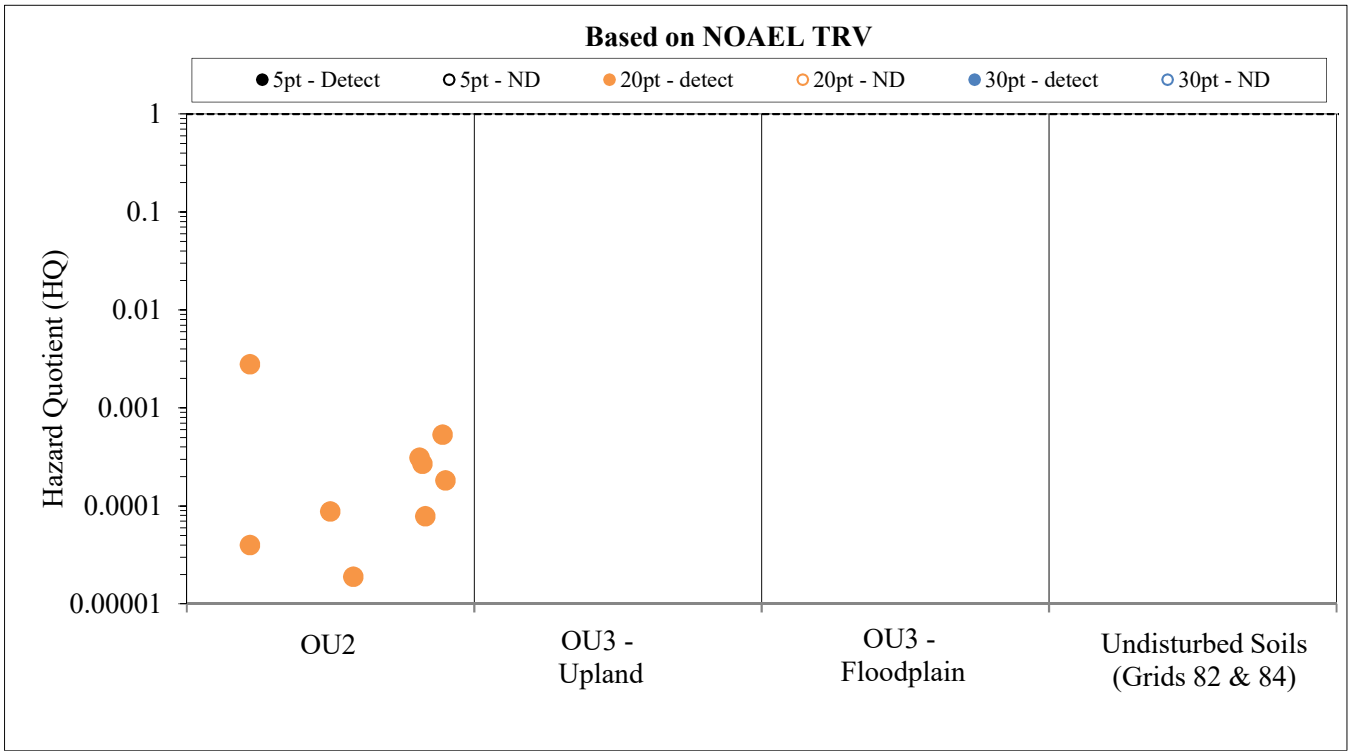
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Surface Soil by Exposure Unit/Soil Type

Total PCBs (ND=1/2RL)





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Total PCBs (ND=1/2RL)

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.2153	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.016098	detect	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.073668	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.031651	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.108693	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.007675	detect	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.125414	detect	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	1.125173	detect	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.035534	detect	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SB1-IN	SB1A-IN-(1-2)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	#N/A	#N/A	1	0	#N/A	#N/A
	TSB-SS	BACKFILL-TSB-SS	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Total PCBs (ND=1/2RL)

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	CRP-1	CRP-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-1	HP18-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-IB	HP18-SSC-IB_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP9-1	HP9-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	IBK-1	IBK-1-SS_4/16/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P17-BH1	P17-BH1-SS_4/3/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P4-BH1	P4-BH1-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P5-BH2	P5-BH2-SS_4/3/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

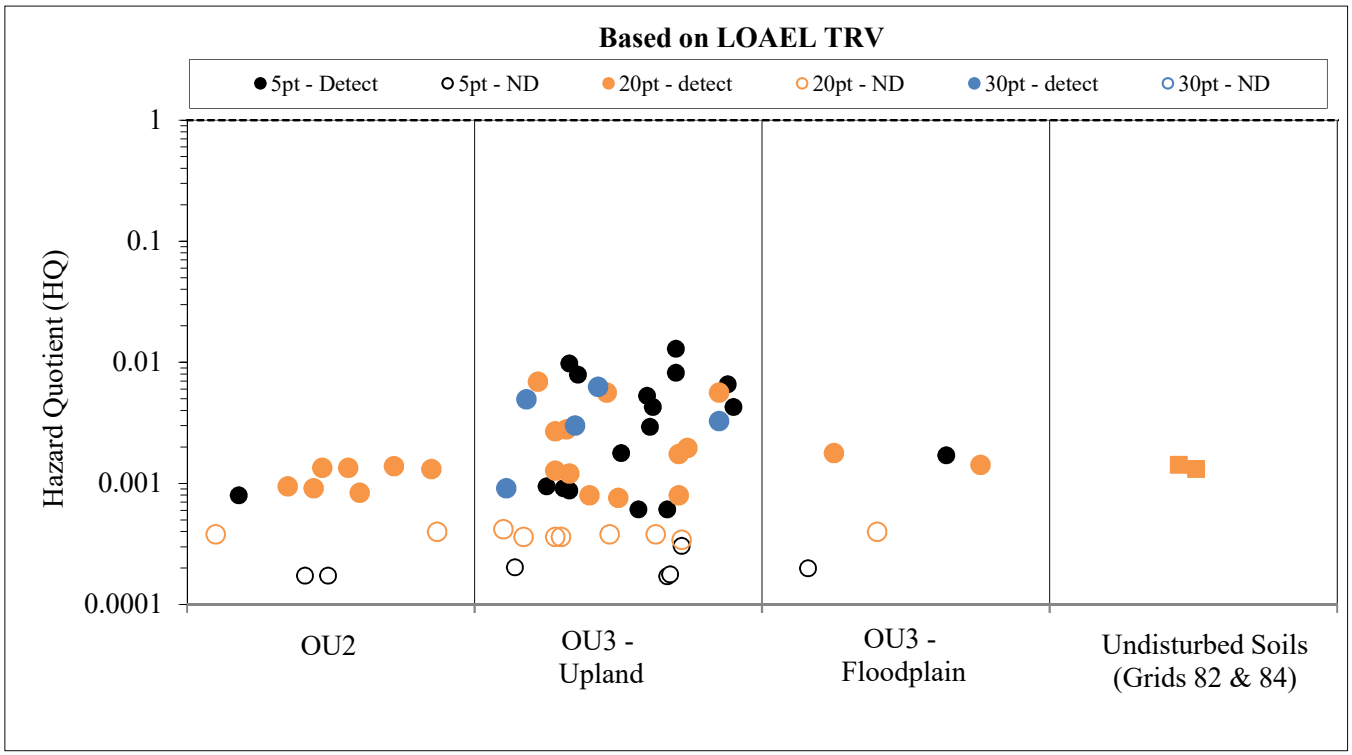
Total PCBs (ND=1/2RL)

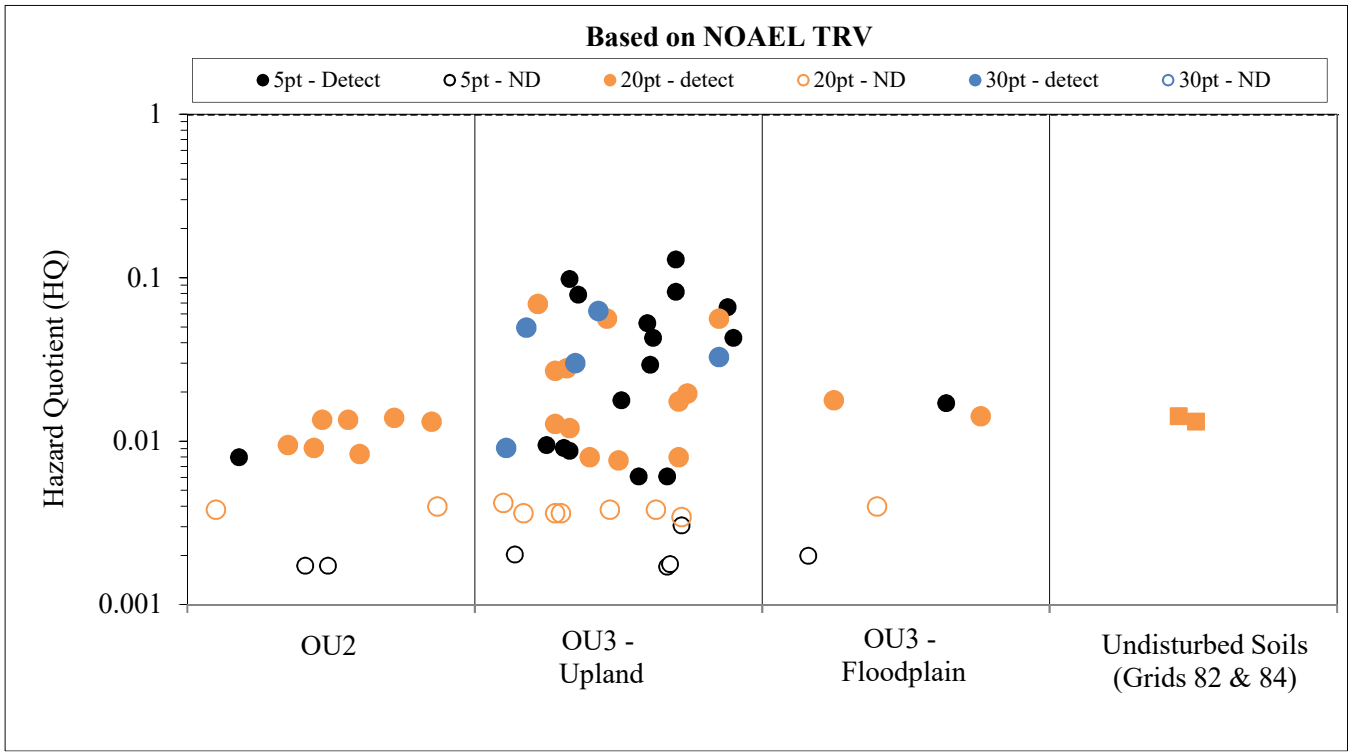
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	1	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	1	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Food by Exposure Unit/Soil Type

Antimony





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Antimony

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.00221	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.00149	detect	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.002151	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.001551	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.00221	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.001369	detect	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.000623	ND	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.002269	detect	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.000654	ND	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.001307	detect	1	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.000283	ND	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.000283	ND	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Antimony

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.008111	detect	1	0	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.007019	detect	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.01606	detect	1	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.000592	ND	1	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.000592	ND	1	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.001246	detect	1	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.001307	detect	1	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.000592	ND	1	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.000561	ND	1	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.002091	detect	1	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.003204	detect	1	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.004573	detect	1	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.004404	detect	1	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.009194	detect	1	0	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.002856	detect	1	0	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.001972	detect	1	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.001307	detect	1	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.000684	ND	1	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.011334	detect	1	0	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.000623	ND	1	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.000623	ND	1	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.004799	detect	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.000332	ND	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.008653	detect	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.00149	detect	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.000998	detect	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.00028	ND	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.012922	detect	1	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.00029	ND	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.00143	detect	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.013448	detect	1	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.021205	detect	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.009194	detect	1	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.001551	detect	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.000998	detect	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.000499	ND	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.002914	detect	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.005359	detect	1	0	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.004911	detect	1	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.010802	detect	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.007019	detect	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.010267	detect	1	0	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	0.00149	detect	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

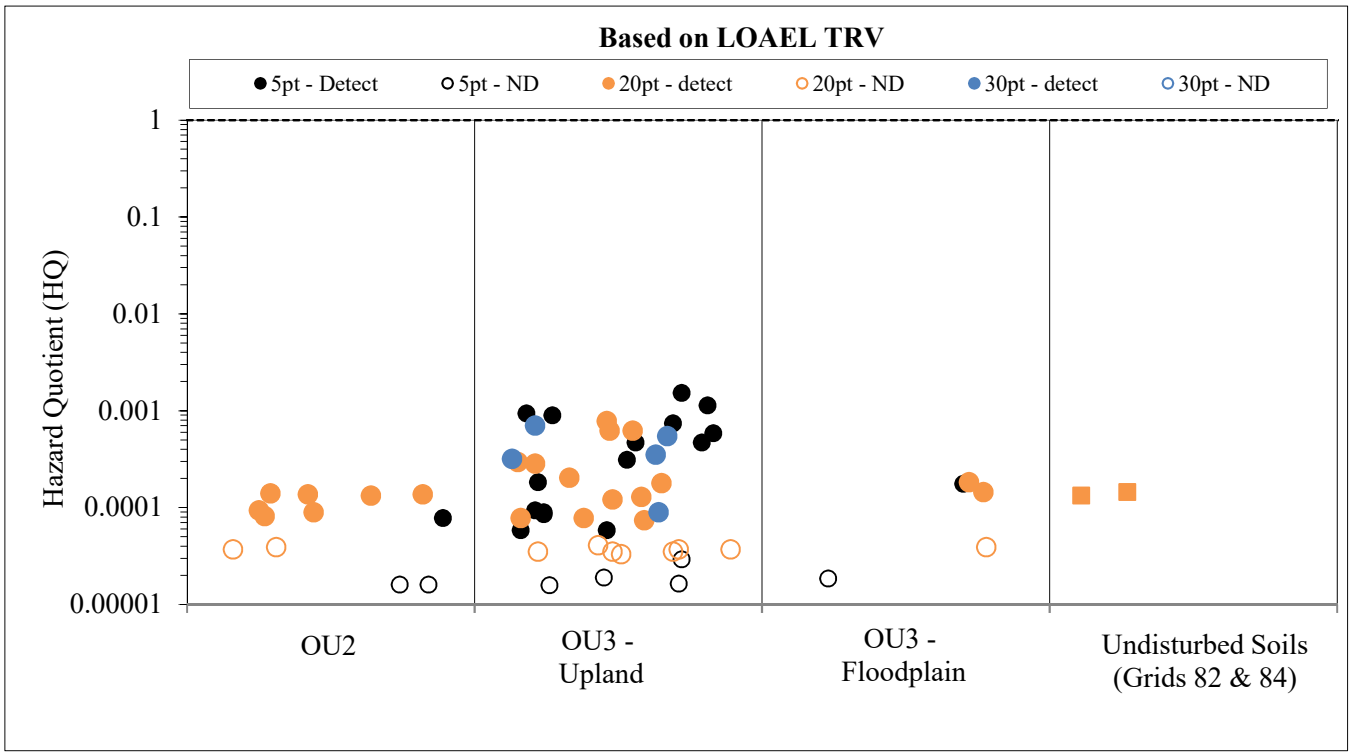
Antimony

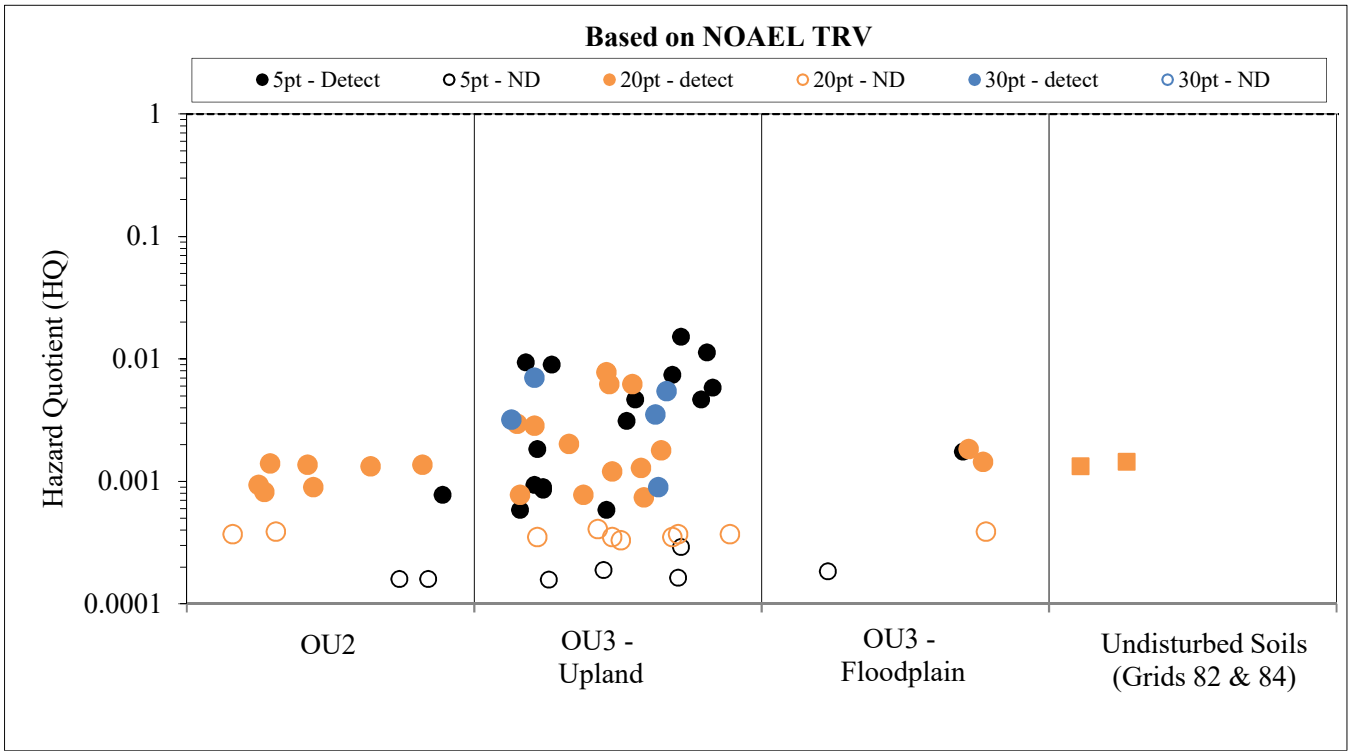
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.000654	ND	1	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.002328	detect	1	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.002914	detect	1	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.002797	detect	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.000325	ND	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.002328	detect	1	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.002151	detect	1	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Surface Soil by Exposure Unit/Soil Type

Antimony





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Antimony

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.35	detect	1	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.23	detect	1	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.34	detect	1	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.24	detect	1	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.35	detect	1	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.21	detect	1	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.095	ND	1	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.36	detect	1	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.1	ND	1	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.2	detect	1	0	<1.0	<1.0
	SB1-IN	SB1A-IN-(1-2)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	1	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.041	ND	1	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.041	ND	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Antimony

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	1.4	detect	1	0	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	1.2	detect	1	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	2.9	detect	1	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.09	ND	1	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.09	ND	1	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.19	detect	1	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.2	detect	1	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.09	ND	1	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.085	ND	1	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.33	detect	1	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.52	detect	1	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.76	detect	1	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.73	detect	1	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	1.6	detect	1	0	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.46	detect	1	0	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.31	detect	1	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.2	detect	1	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.105	ND	1	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	2	detect	1	0	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.095	ND	1	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.095	ND	1	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.8	detect	1	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.0485	ND	1	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	1.5	detect	1	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.23	detect	1	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.15	detect	1	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	1	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.0405	ND	1	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	2.3	detect	1	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.042	ND	1	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.22	detect	1	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	2.4	detect	1	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	3.9	detect	1	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	1.6	detect	1	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.24	detect	1	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.15	detect	1	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.075	ND	1	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.47	detect	1	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.9	detect	1	0	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.82	detect	1	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	1.9	detect	1	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1.2	detect	1	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	1.8	detect	1	0	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	0.23	detect	1	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Antimony

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.1	ND	1	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.37	detect	1	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.47	detect	1	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.45	detect	1	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.0475	ND	1	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	1	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.37	detect	1	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.34	detect	1	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of River Surface Water

Antimony

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0006	detect	0.059	0.59	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0003	detect	0.059	0.59	<1.0	<1.0
	SW3-CFR	SW3-CFR	#N/A	#N/A	0.059	0.59	#N/A	#N/A
	51-CFR	SW51-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
	52-CFR	SW52-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0001	detect	0.059	0.59	<1.0	<1.0
	54-CFR	SW54-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
	SW2-CFR	SW2-CFR	#N/A	#N/A	0.059	0.59	#N/A	#N/A
	55-CFR	SW55-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
	56-CFR	SW56-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
	SW1-CFR	SW1-CFR	#N/A	#N/A	0.059	0.59	#N/A	#N/A
	57-CFR	SW57-CFR	8E-05	detect	0.059	0.59	<1.0	<1.0
	58-CFR	SW58-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
	59-CFR	SW59-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
	60-CFR	SW60-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
	61-CFR	SW61-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
	62-CFR	SW62-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0
	63-CFR	SW63-CFR	0.0002	detect	0.059	0.59	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of Creek Surface Water

Antimony

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.0002	detect	0.059	0.59	<1.0	<1.0
	43-OK	SW43-OK	0.0002	detect	0.059	0.59	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	#N/A	#N/A	0.059	0.59	#N/A	#N/A
	37-LV	SW37-LV	0.0002	detect	0.059	0.59	<1.0	<1.0
	39-LV	SW39-LV	0.0002	detect	0.059	0.59	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of Pond Surface Water

Antimony

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0001	detect	0.059	0.59	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0013	detect	0.059	0.59	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0033	detect	0.059	0.59	<1.0	<1.0
73-P5	SW73-P5	0.0029	detect	0.059	0.59	<1.0	<1.0
71-HP7	SW71-HP7	0.0015	detect	0.059	0.59	<1.0	<1.0
72-HP2	SW72-HP2	0.0017	detect	0.059	0.59	<1.0	<1.0
75-HP10	SW75-HP10	0.001	detect	0.059	0.59	<1.0	<1.0
67-HP12	SW67-HP12	0.001	detect	0.059	0.59	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0003	detect	0.059	0.59	<1.0	<1.0
66-HP13	SW66-HP13	0.0014	detect	0.059	0.59	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0012	detect	0.059	0.59	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0014	detect	0.059	0.59	<1.0	<1.0
70-CWD	SW70-CWD	0.0002	detect	0.059	0.59	<1.0	<1.0
64-HP18	SW64-HP18	0.001	detect	0.059	0.59	<1.0	<1.0

#N/A = not analyzed

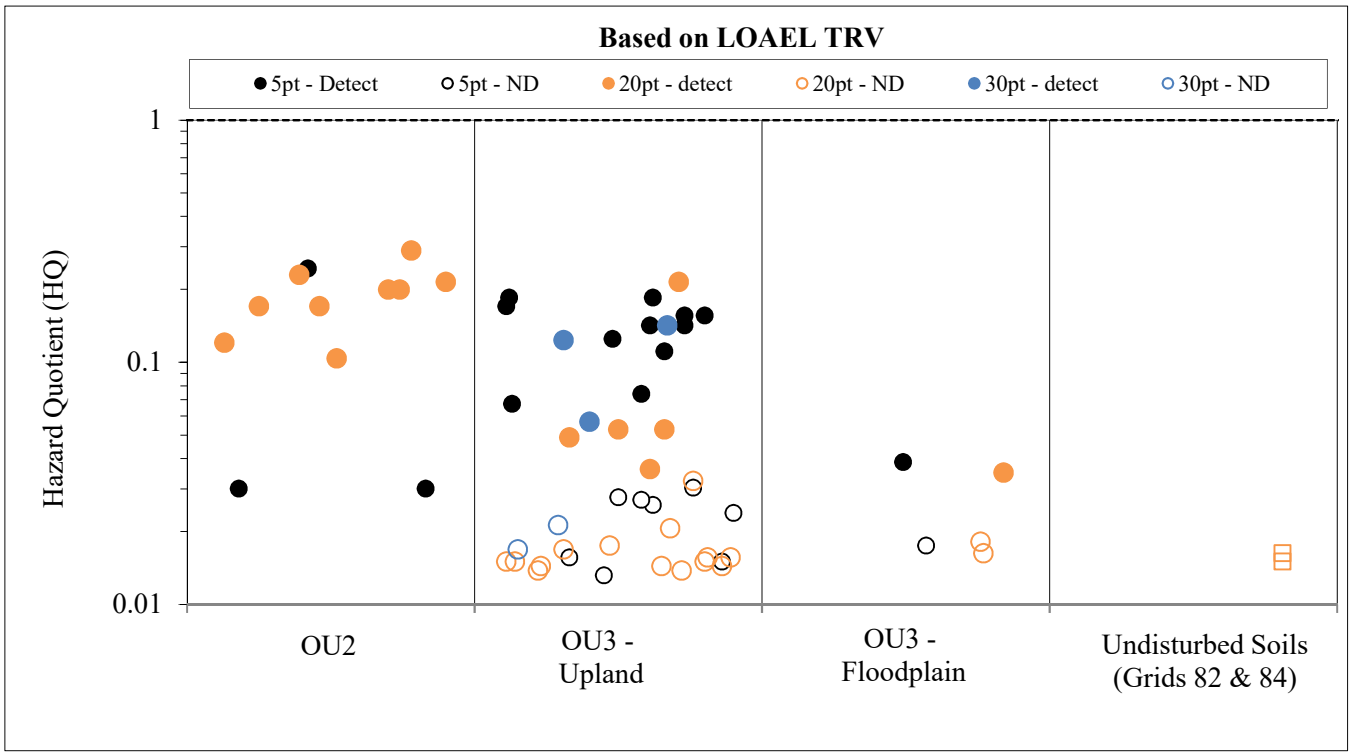
(a) Non-detects are evaluated at 1/2 the reported value.

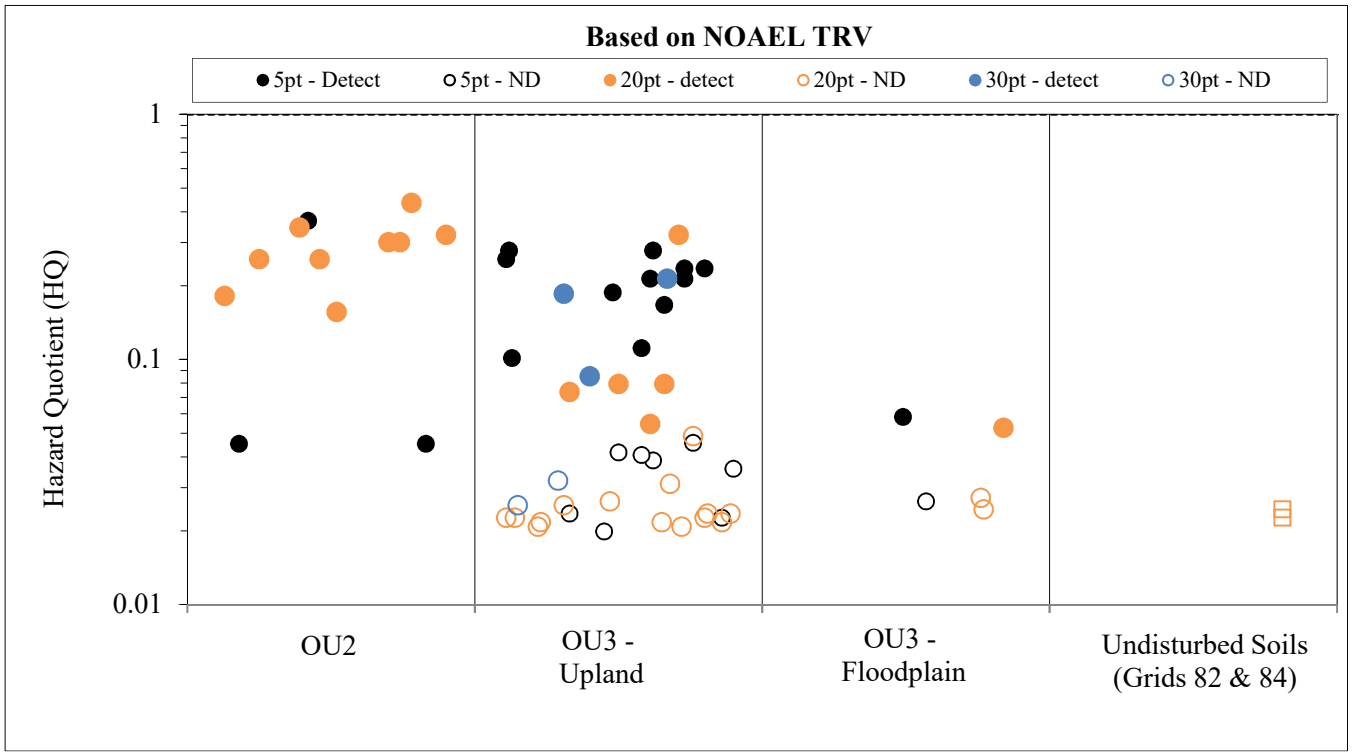
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Food by Exposure Unit/Soil Type

Selenium





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Selenium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.072025	detect	0	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.119256	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.101828	detect	0	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.062049	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.136927	detect	0	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.172904	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.101828	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.119256	detect	0	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.128063	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.145846	detect	0	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	0	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.01796	detect	0	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.01796	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Selenium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.084678	detect	0	0	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.015396	ND	0	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.093216	detect	0	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.008613	ND	0	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.008613	ND	0	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.00898	ND	0	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.008613	ND	0	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.00898	ND	0	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.008248	ND	0	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.008248	ND	0	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.012337	ND	0	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.031566	detect	0	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.021665	detect	0	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.128063	detect	0	0	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.031566	detect	0	0	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.010459	ND	0	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.009348	ND	0	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.010088	ND	0	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.029251	detect	0	0	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.009348	ND	0	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.00898	ND	0	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.040186	detect	0	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.110509	detect	0	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.066189	detect	0	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.009348	ND	0	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.007885	ND	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.044165	detect	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.084678	detect	0	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.00898	ND	0	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.093216	detect	0	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.110509	detect	0	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.101828	detect	0	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.019302	ND	0	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.014242	ND	0	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.016171	ND	0	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.016559	ND	0	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.018122	ND	0	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.012716	ND	0	0	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.033897	detect	0	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.07454	detect	0	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.084678	detect	0	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.0737	detect	0	0	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	0.010088	ND	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

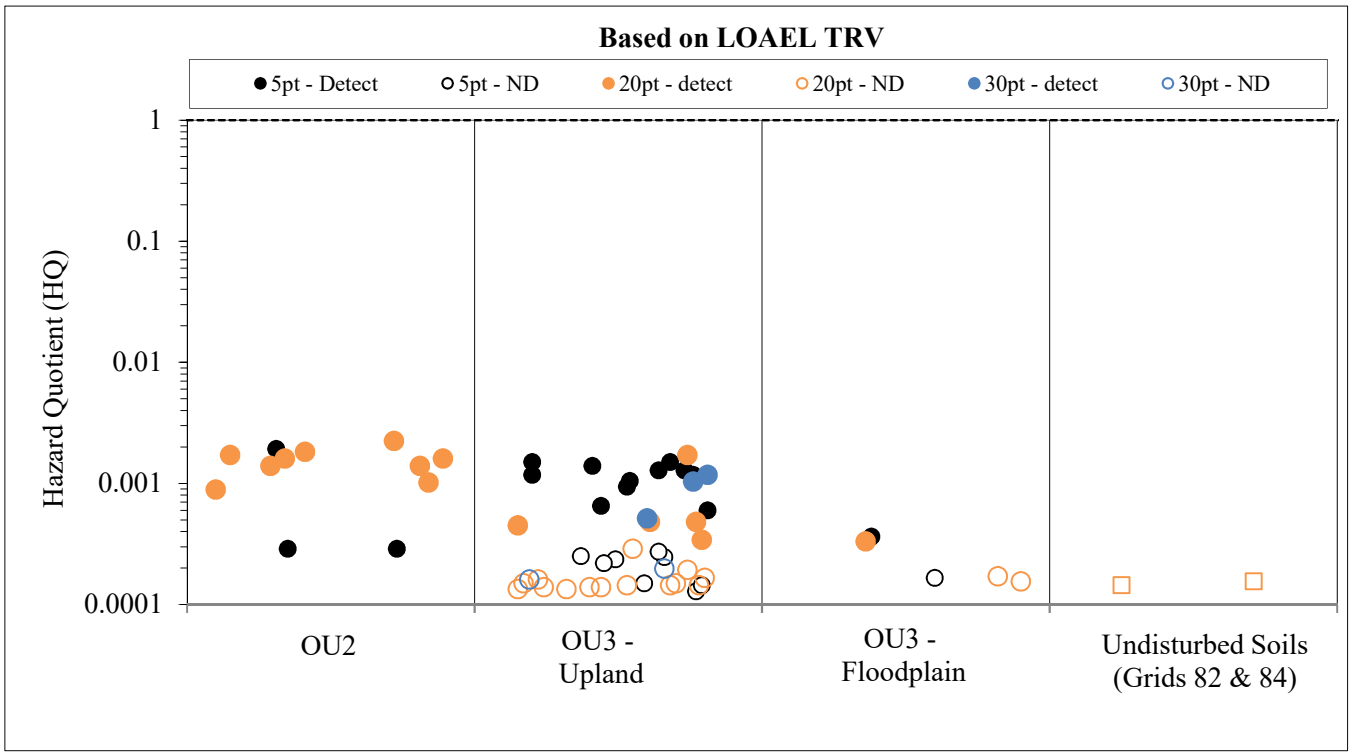
Selenium

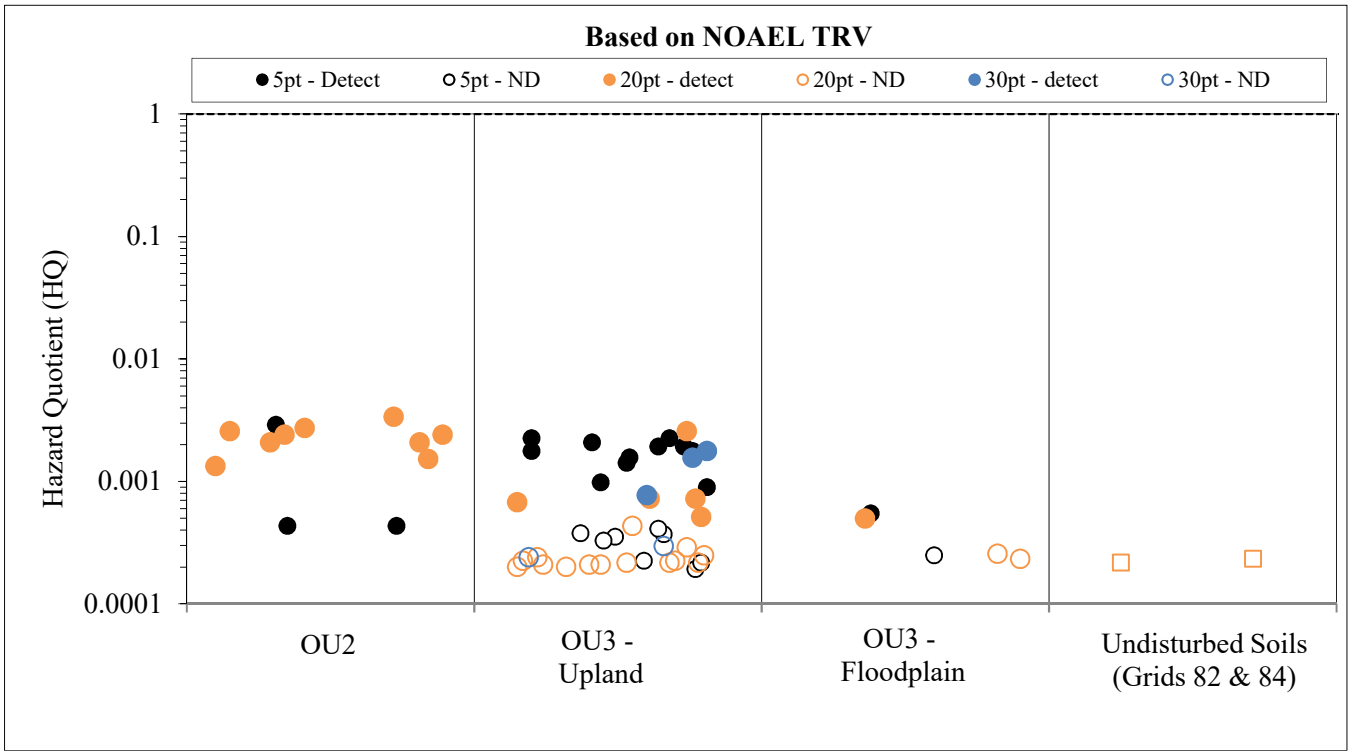
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.009717	ND	0	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.020919	detect	0	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.010833	ND	0	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.023165	detect	0	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.010459	ND	0	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.009717	ND	0	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.00898	ND	0	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Surface Soil by Exposure Unit/Soil Type

Selenium





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Selenium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.95	detect	0	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	1.5	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	1.3	detect	0	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.83	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	1.7	detect	0	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	2.1	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	1.3	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	1.5	detect	0	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	1.6	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	1.8	detect	0	0	<1.0	<1.0
	SB1-IN	SB1A-IN-(1-2)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	0	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	0.27	detect	0	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.27	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Selenium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	1.1	detect	0	0	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.22	ND	0	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	1.2	detect	0	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.13	ND	0	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.13	ND	0	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.135	ND	0	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.13	ND	0	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.135	ND	0	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.125	ND	0	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.125	ND	0	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.18	ND	0	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.45	detect	0	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.32	detect	0	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	1.6	detect	0	0	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.45	detect	0	0	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.155	ND	0	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.14	ND	0	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.15	ND	0	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.42	detect	0	0	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.14	ND	0	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.135	ND	0	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.56	detect	0	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	1.4	detect	0	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.88	detect	0	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.14	ND	0	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.12	ND	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.61	detect	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1.1	detect	0	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.135	ND	0	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	1.2	detect	0	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	1.4	detect	0	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	1.3	detect	0	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.27	ND	0	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.205	ND	0	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.23	ND	0	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.235	ND	0	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.255	ND	0	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.185	ND	0	0	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.48	detect	0	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.98	detect	0	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	1.1	detect	0	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.97	detect	0	0	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	0.15	ND	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Selenium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.145	ND	0	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.31	detect	0	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.16	ND	0	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.34	detect	0	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.155	ND	0	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.145	ND	0	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.135	ND	0	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of River Surface Water

Selenium

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0002	ND	0.143	0.215	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0002	ND	0.143	0.215	<1.0	<1.0
	SW3-CFR	SW3-CFR	#N/A	#N/A	0.143	0.215	#N/A	#N/A
	51-CFR	SW51-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	52-CFR	SW52-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	54-CFR	SW54-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	SW2-CFR	SW2-CFR	#N/A	#N/A	0.143	0.215	#N/A	#N/A
	55-CFR	SW55-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	56-CFR	SW56-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	SW1-CFR	SW1-CFR	#N/A	#N/A	0.143	0.215	#N/A	#N/A
	57-CFR	SW57-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	58-CFR	SW58-CFR	0.0001	detect	0.143	0.215	<1.0	<1.0
	59-CFR	SW59-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	60-CFR	SW60-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	61-CFR	SW61-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	62-CFR	SW62-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0
	63-CFR	SW63-CFR	0.0001	ND	0.143	0.215	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of Creek Surface Water

Selenium

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.0001	ND	0.143	0.215	<1.0	<1.0
	43-OK	SW43-OK	0.0001	ND	0.143	0.215	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	#N/A	#N/A	0.143	0.215	#N/A	#N/A
	37-LV	SW37-LV	0.0001	ND	0.143	0.215	<1.0	<1.0
	39-LV	SW39-LV	0.0001	ND	0.143	0.215	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of Pond Surface Water

Selenium

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0001	ND	0.143	0.215	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0002	detect	0.143	0.215	<1.0	<1.0
69-HP1a	SW69-HP1a	0.002	detect	0.143	0.215	<1.0	<1.0
73-P5	SW73-P5	0.0018	detect	0.143	0.215	<1.0	<1.0
71-HP7	SW71-HP7	0.0013	detect	0.143	0.215	<1.0	<1.0
72-HP2	SW72-HP2	0.0007	ND	0.143	0.215	<1.0	<1.0
75-HP10	SW75-HP10	0.0014	detect	0.143	0.215	<1.0	<1.0
67-HP12	SW67-HP12	0.0009	detect	0.143	0.215	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0001	ND	0.143	0.215	<1.0	<1.0
66-HP13	SW66-HP13	0.0007	ND	0.143	0.215	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0007	detect	0.143	0.215	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0004	detect	0.143	0.215	<1.0	<1.0
70-CWD	SW70-CWD	0.0001	ND	0.143	0.215	<1.0	<1.0
64-HP18	SW64-HP18	0.0007	ND	0.143	0.215	<1.0	<1.0

#N/A = not analyzed

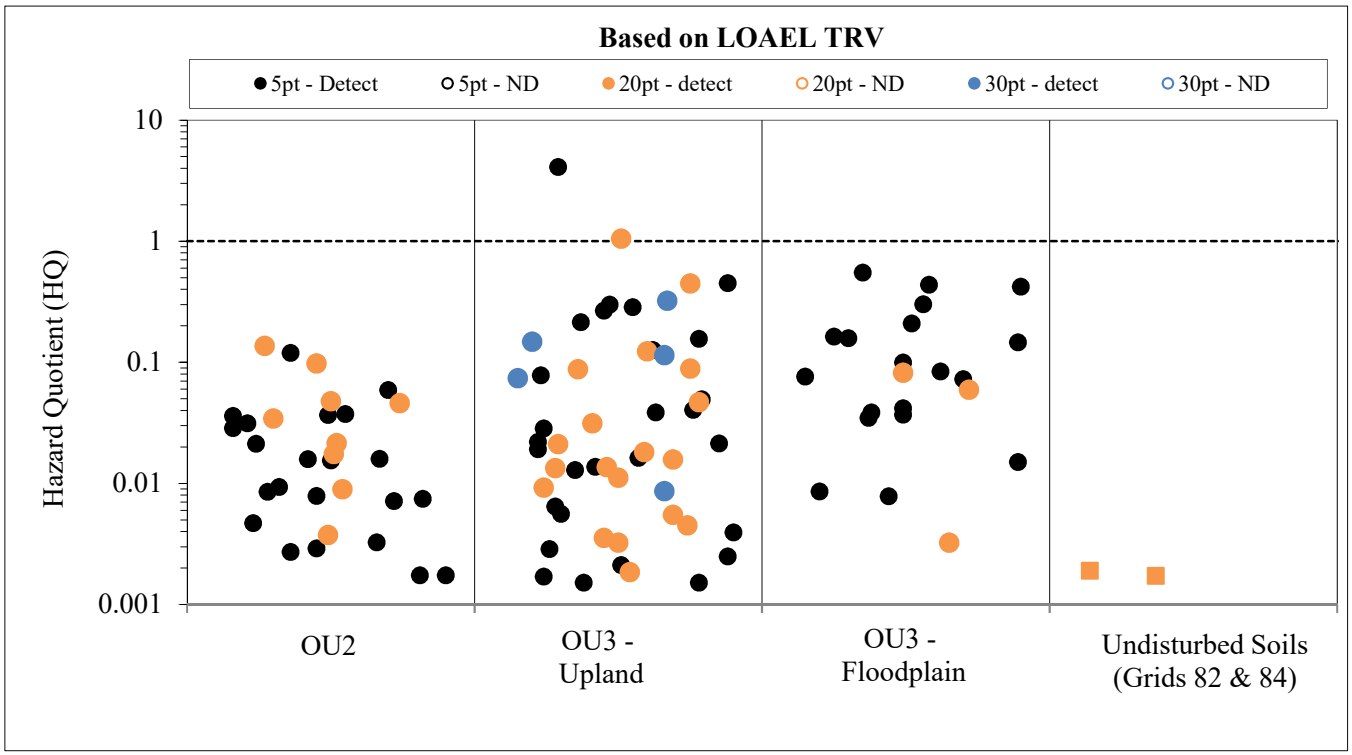
(a) Non-detects are evaluated at 1/2 the reported value.

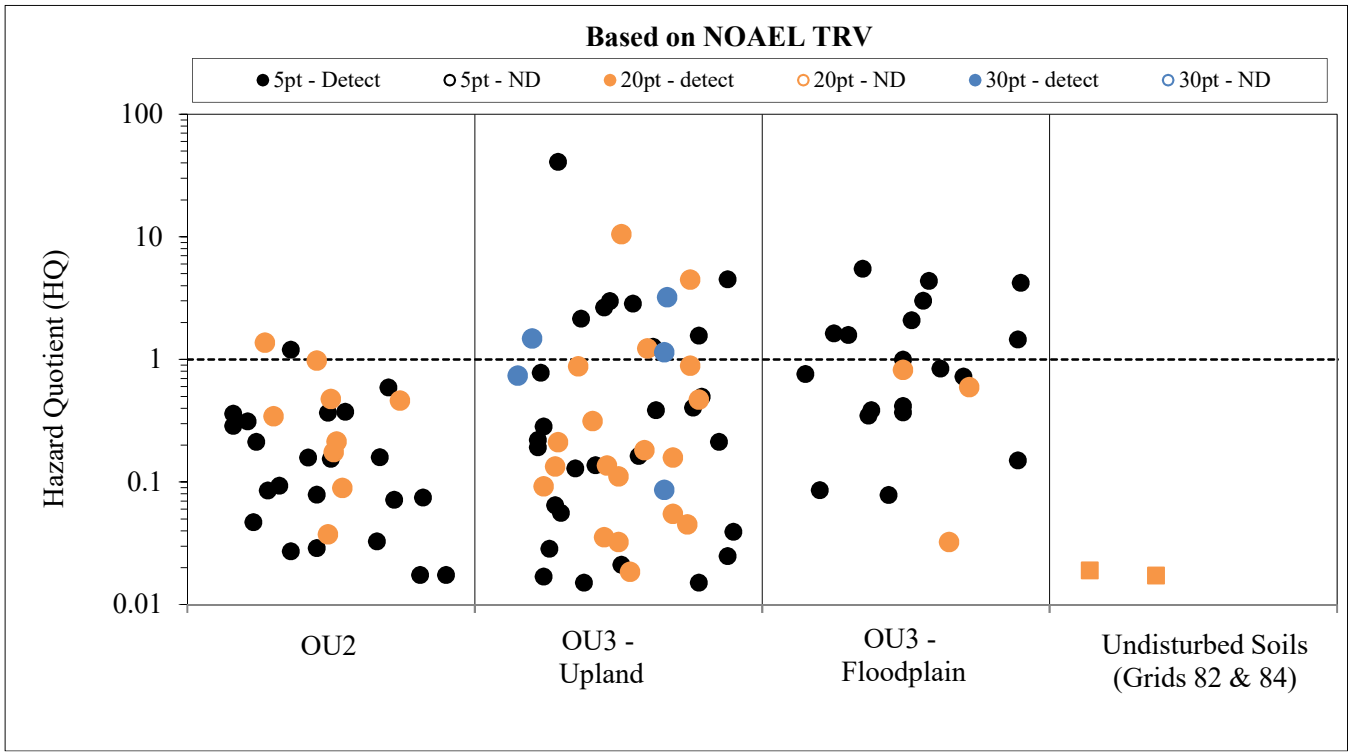
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Food by Exposure Unit/Soil Type

D/F Mam TEQ - ND=1/2RL





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

D/F Mam TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	9.55E-07	detect	0	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	4.85E-07	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	3.79E-06	detect	0	0	<1.0	**1.4**
	Grid 2	Grid 2-SSComp-01_20171016_NM	5.95E-07	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	2.72E-06	detect	0	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	1.04E-07	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	2.49E-07	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	1.32E-06	detect	0	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	1.28E-06	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	1.3E-07	detect	0	0	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	0	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	4.43E-07	detect	0	0	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	1.04E-06	detect	0	0	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	7.96E-07	detect	0	0	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	4.3E-07	detect	0	0	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	5.9E-07	detect	0	0	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	4.41E-07	detect	0	0	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	1.02E-06	detect	0	0	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	7.56E-08	detect	0	0	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	1.99E-07	detect	0	0	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	2.59E-07	detect	0	0	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	9.99E-07	detect	0	0	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	8.04E-08	detect	0	0	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	2.07E-07	detect	0	0	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	2.18E-07	detect	0	0	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	9.07E-08	detect	0	0	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	3.33E-06	detect	0	0	<1.0	**1.2**
	SS7-IN	SS7-IN-(0-2)c	8.68E-07	detect	0	0	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	1.64E-06	detect	0	0	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	2.37E-07	detect	0	0	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	4.84E-08	detect	0	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	4.84E-08	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

D/F Mam TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	4.11E-06	detect	0	0	<1.0	**1.5**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	7.91E-06	detect	0	0	<1.0	**2.8**
	CRP-1	CRP-1-SS_4/10/14_NM	3.8E-07	detect	0	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	3.78E-07	detect	0	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	9.83E-08	detect	0	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	4.39E-07	detect	0	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	2.56E-07	detect	0	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	1.53E-07	detect	0	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	1.25E-07	detect	0	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	9E-08	detect	0	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	5.04E-07	detect	0	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	5.86E-07	detect	0	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	3.09E-07	detect	0	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	2.43E-06	detect	0	0	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	3.41E-06	detect	0	0	<1.0	**1.2**
	Grid 60	Grid 60-SSComp-01_20171023_NM	1.3E-06	detect	0	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	8.71E-07	detect	0	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	2.47E-06	detect	0	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	2.92E-05	detect	0	0	**1.1**	**10.5**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	5.14E-08	detect	0	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	3.7E-07	detect	0	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	1.37E-06	detect	0	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	6.91E-08	detect	0	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	1.07E-06	detect	0	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	1.09E-07	detect	0	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	7.95E-08	detect	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	4.19E-08	detect	0	0	<1.0	<1.0
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	1.55E-07	detect	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	1.25E-05	detect	0	0	<1.0	**4.5**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	5.91E-07	detect	0	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	4.19E-08	detect	0	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	7.38E-06	detect	0	0	<1.0	**2.7**
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.000113	detect	0	0	**4.1**	**40.8**
	P3	P3-SSComp-01_20171020_NM	1.24E-05	detect	0	0	<1.0	**4.5**
	P3-BH1	P3-BH1-SS_4/3/14_NM	3.51E-06	detect	0	0	<1.0	**1.3**
	P4-BH1	P4-BH1-SS_4/4/14_NM	1.79E-07	detect	0	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	3.58E-07	detect	0	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	6.12E-07	detect	0	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	3.18E-06	detect	0	0	<1.0	**1.1**
	P8dc	P8dc-SSComp-01_20171024_NM	2.05E-06	detect	0	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	2.17E-06	detect	0	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	8.31E-06	detect	0	0	<1.0	**3.0**
	SPP	SPP-SSComp-01_20171025_NM	8.95E-06	detect	0	0	<1.0	**3.2**
	SS1,2-HP18	SS1-HP18-(0-2)c	5.88E-08	detect	0	0	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	4.71E-08	detect	0	0	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	5.97E-06	detect	0	0	<1.0	**2.1**
	SS15,16-HP9	SS15-HP9-(0-2)c	4.34E-06	detect	0	0	<1.0	**1.6**
	SS3,4-HP16	SS3-HP16-(0-2)c	7.88E-07	detect	0	0	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	5.32E-07	detect	0	0	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	1.12E-06	detect	0	0	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	4.52E-07	detect	0	0	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	2.4E-07	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

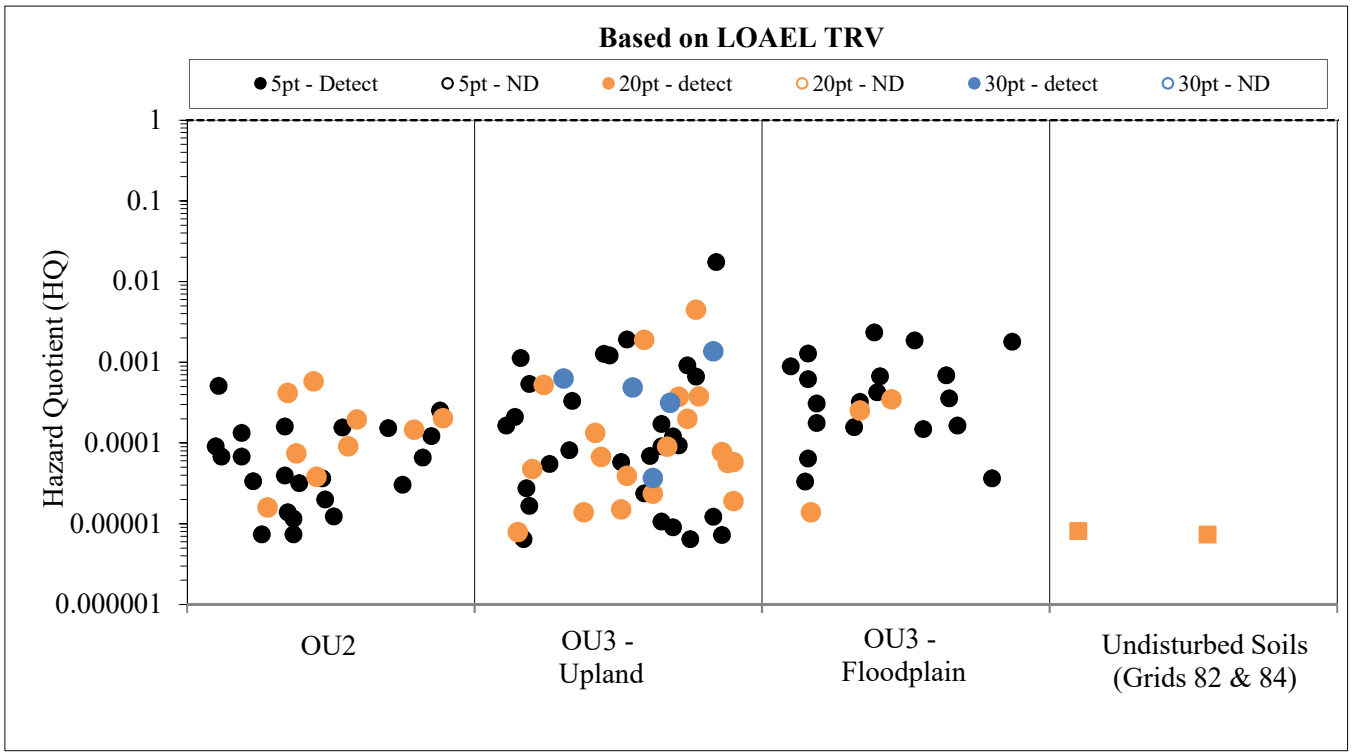
D/F Mam TEQ - ND=1/2RL

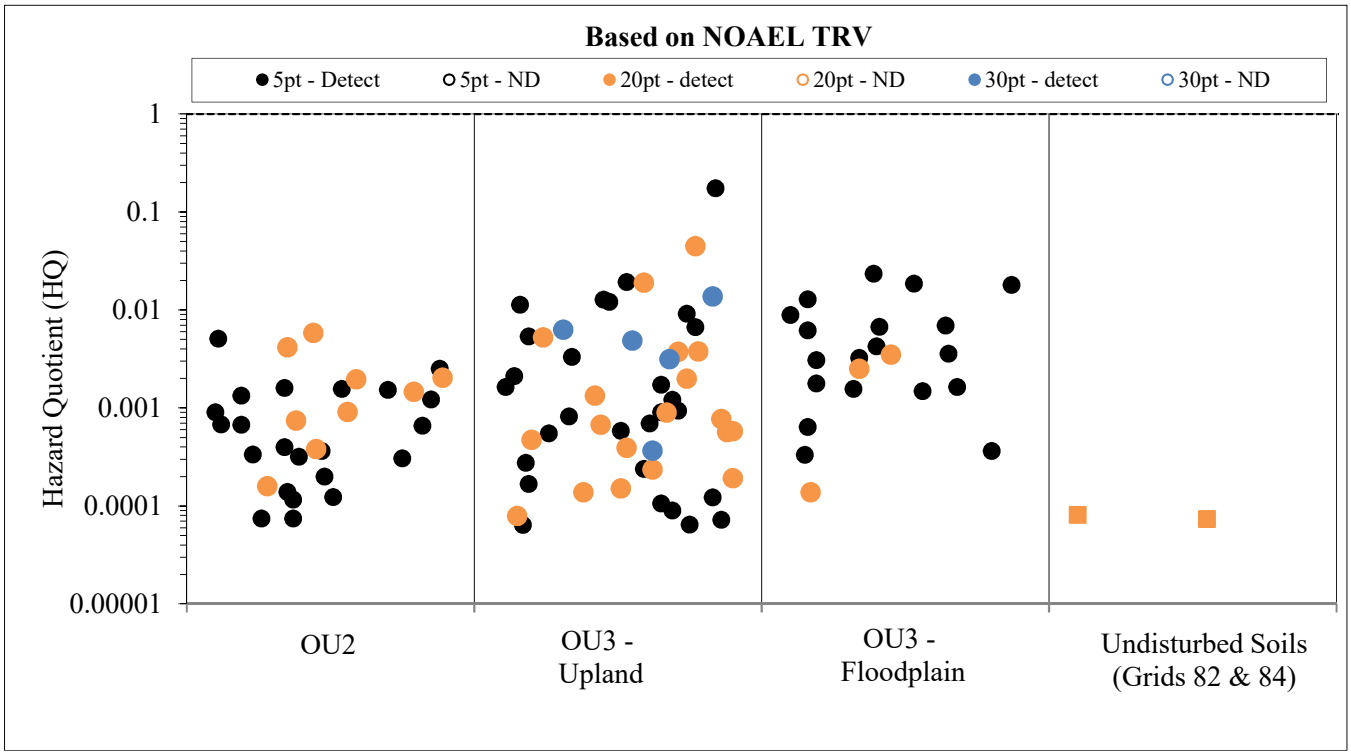
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	9.01E-08	detect	0	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	1.64E-06	detect	0	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	2.27E-06	detect	0	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	2.77E-06	detect	0	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	4.17E-07	detect	0	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	1.17E-05	detect	0	0	<1.0	**4.2**
	SE11-HP11	SE11-HP11-(0-2)c	4.51E-06	detect	0	0	<1.0	**1.6**
	SE12-HP12	SE12-HP12-(0-2)c	9.68E-07	detect	0	0	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	1.21E-05	detect	0	0	<1.0	**4.4**
	SE14-HP13	SE14-HP13-(0-2)c	2.38E-07	detect	0	0	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	8.35E-06	detect	0	0	<1.0	**3.0**
	SE16-HP13	SE16-HP13-(0-2)c	1.02E-06	detect	0	0	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	1.16E-06	detect	0	0	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	2.01E-06	detect	0	0	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	2.33E-06	detect	0	0	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	1.07E-06	detect	0	0	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	4.04E-06	detect	0	0	<1.0	**1.5**
	SE5-HP2	SE5-HP2-(0-2)c	4.38E-06	detect	0	0	<1.0	**1.6**
	SE6-HP7	SE6-HP7-(0-2)c	1.53E-05	detect	0	0	<1.0	**5.5**
	SE7-HP7	SE7-HP7-(0-2)c	2.17E-07	detect	0	0	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	2.11E-06	detect	0	0	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	5.8E-06	detect	0	0	<1.0	**2.1**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	5.28E-08	detect	0	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	4.77E-08	detect	0	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Surface Soil by Exposure Unit/Soil Type

D/F Mam TEQ - ND=1/2RL





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

D/F Mam TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	6.37E-06	detect	0	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	3.24E-06	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	2.53E-05	detect	0	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	3.97E-06	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	1.81E-05	detect	0	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	6.92E-07	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	1.66E-06	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	8.82E-06	detect	0	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	8.53E-06	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	8.69E-07	detect	0	0	<1.0	<1.0
	SB1-IN	SB1A-IN-(1-2)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	0	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	2.95E-06	detect	0	0	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	6.94E-06	detect	0	0	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	5.31E-06	detect	0	0	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	2.87E-06	detect	0	0	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	3.93E-06	detect	0	0	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	2.94E-06	detect	0	0	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	6.79E-06	detect	0	0	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	5.04E-07	detect	0	0	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	1.33E-06	detect	0	0	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	1.73E-06	detect	0	0	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	6.66E-06	detect	0	0	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	5.36E-07	detect	0	0	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	1.38E-06	detect	0	0	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	1.46E-06	detect	0	0	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	6.05E-07	detect	0	0	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	2.22E-05	detect	0	0	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	5.78E-06	detect	0	0	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	1.09E-05	detect	0	0	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	1.58E-06	detect	0	0	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	3.22E-07	detect	0	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	3.22E-07	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

D/F Mam TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	2.74E-05	detect	0	0	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	5.27E-05	detect	0	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	2.53E-06	detect	0	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	2.52E-06	detect	0	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	6.55E-07	detect	0	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	2.92E-06	detect	0	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	1.71E-06	detect	0	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	1.02E-06	detect	0	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	8.33E-07	detect	0	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	6E-07	detect	0	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	3.36E-06	detect	0	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	3.9E-06	detect	0	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	2.06E-06	detect	0	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	1.62E-05	detect	0	0	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	2.27E-05	detect	0	0	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	8.67E-06	detect	0	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	5.8E-06	detect	0	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	1.64E-05	detect	0	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.000195	detect	0	0	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	3.43E-07	detect	0	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	2.47E-06	detect	0	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	9.15E-06	detect	0	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	4.61E-07	detect	0	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	7.12E-06	detect	0	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	7.27E-07	detect	0	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	5.3E-07	detect	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	2.79E-07	detect	0	0	<1.0	<1.0
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	1.04E-06	detect	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	8.35E-05	detect	0	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	3.94E-06	detect	0	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	2.79E-07	detect	0	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	4.92E-05	detect	0	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.000756	detect	0	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	8.26E-05	detect	0	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	2.34E-05	detect	0	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	1.19E-06	detect	0	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	2.39E-06	detect	0	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	4.08E-06	detect	0	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	2.12E-05	detect	0	0	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	1.36E-05	detect	0	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	1.44E-05	detect	0	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	5.54E-05	detect	0	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	5.96E-05	detect	0	0	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	3.92E-07	detect	0	0	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	3.14E-07	detect	0	0	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	3.98E-05	detect	0	0	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	2.9E-05	detect	0	0	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	5.25E-06	detect	0	0	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	3.55E-06	detect	0	0	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	7.48E-06	detect	0	0	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	3.01E-06	detect	0	0	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	1.6E-06	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

D/F Mam TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	6.01E-07	detect	0	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	1.1E-05	detect	0	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	1.52E-05	detect	0	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	1.84E-05	detect	0	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	2.78E-06	detect	0	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	7.81E-05	detect	0	0	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	3.01E-05	detect	0	0	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	6.45E-06	detect	0	0	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	8.06E-05	detect	0	0	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	1.59E-06	detect	0	0	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	5.57E-05	detect	0	0	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	6.82E-06	detect	0	0	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	7.71E-06	detect	0	0	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	1.34E-05	detect	0	0	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	1.56E-05	detect	0	0	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	7.13E-06	detect	0	0	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	2.7E-05	detect	0	0	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	2.92E-05	detect	0	0	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	0.000102	detect	0	0	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	1.45E-06	detect	0	0	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	1.41E-05	detect	0	0	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	3.87E-05	detect	0	0	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	3.52E-07	detect	0	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	3.18E-07	detect	0	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of River Surface Water

Mam TEQ - ND=1/2RL

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	1E-09	ND	0.000001	0.00001	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	1E-09	ND	0.000001	0.00001	<1.0	<1.0
	CFR2	CFR2_20180523_NM	1E-09	detect	0.000001	0.00001	<1.0	<1.0
	SW3-CFR	SW3-CFR	1E-09	detect	0.000001	0.00001	<1.0	<1.0
	51-CFR	SW51-CFR	2E-09	ND	0.000001	0.00001	<1.0	<1.0
	52-CFR	SW52-CFR	1E-09	ND	0.000001	0.00001	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	1E-09	ND	0.000001	0.00001	<1.0	<1.0
	54-CFR	SW54-CFR	1E-09	ND	0.000001	0.00001	<1.0	<1.0
	SW2-CFR	SW2-CFR	2E-09	detect	0.000001	0.00001	<1.0	<1.0
	55-CFR	SW55-CFR	1E-09	ND	0.000001	0.00001	<1.0	<1.0
	56-CFR	SW56-CFR	1E-09	ND	0.000001	0.00001	<1.0	<1.0
	SW1-CFR	SW1-CFR	2E-09	detect	0.000001	0.00001	<1.0	<1.0
	57-CFR	SW57-CFR	2E-09	ND	0.000001	0.00001	<1.0	<1.0
	58-CFR	SW58-CFR	2E-09	ND	0.000001	0.00001	<1.0	<1.0
	59-CFR	SW59-CFR	1E-09	ND	0.000001	0.00001	<1.0	<1.0
	60-CFR	SW60-CFR	2E-09	ND	0.000001	0.00001	<1.0	<1.0
	61-CFR	SW61-CFR	2E-09	ND	0.000001	0.00001	<1.0	<1.0
	62-CFR	SW62-CFR	2E-09	ND	0.000001	0.00001	<1.0	<1.0
	63-CFR	SW63-CFR	2E-09	ND	0.000001	0.00001	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of Creek Surface Water

Mam TEQ - ND=1/2RL

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	2E-09	detect	0.000001	0.00001	<1.0	<1.0
	43-OK	SW43-OK	2E-09	detect	0.000001	0.00001	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	2E-09	detect	0.000001	0.00001	<1.0	<1.0
	37-LV	SW37-LV	2E-09	detect	0.000001	0.00001	<1.0	<1.0
	39-LV	SW39-LV	2E-09	detect	0.000001	0.00001	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of Pond Surface Water

Mam TEQ - ND=1/2RL

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	2E-09	detect	0.000001	0.00001	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	1E-09	detect	0.000001	0.00001	<1.0	<1.0
69-HP1a	SW69-HP1a	1E-09	detect	0.000001	0.00001	<1.0	<1.0
73-P5	SW73-P5	2E-09	detect	0.000001	0.00001	<1.0	<1.0
71-HP7	SW71-HP7	1E-09	detect	0.000001	0.00001	<1.0	<1.0
72-HP2	SW72-HP2	1E-09	detect	0.000001	0.00001	<1.0	<1.0
75-HP10	SW75-HP10	8E-10	detect	0.000001	0.00001	<1.0	<1.0
67-HP12	SW67-HP12	1E-09	detect	0.000001	0.00001	<1.0	<1.0
68-IBJ	SW68-IBJ	2E-09	detect	0.000001	0.00001	<1.0	<1.0
66-HP13	SW66-HP13	1E-09	detect	0.000001	0.00001	<1.0	<1.0
65-HP13a	SW65-HP13a	1E-09	detect	0.000001	0.00001	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	2E-09	detect	0.000001	0.00001	<1.0	<1.0
70-CWD	SW70-CWD	2E-09	detect	0.000001	0.00001	<1.0	<1.0
64-HP18	SW64-HP18	1E-09	detect	0.000001	0.00001	<1.0	<1.0

#N/A = not analyzed

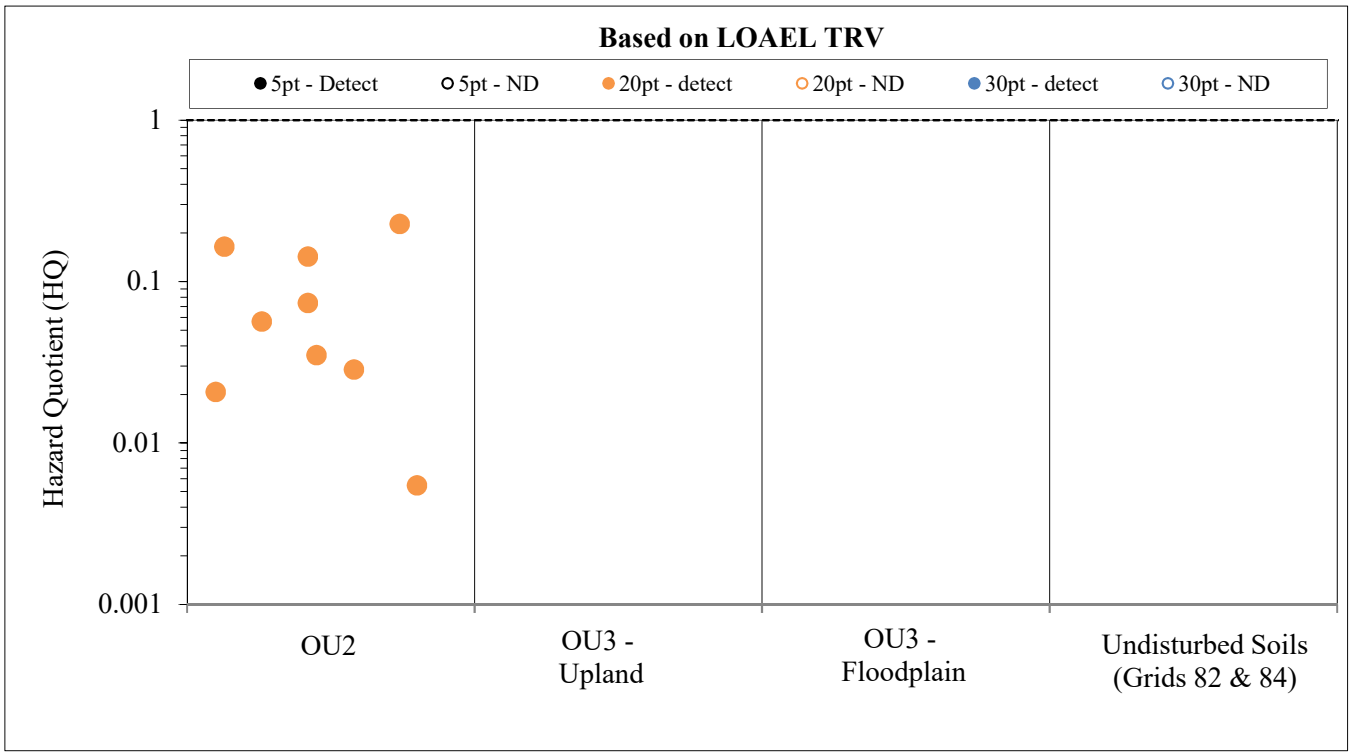
(a) Non-detects are evaluated at 1/2 the reported value.

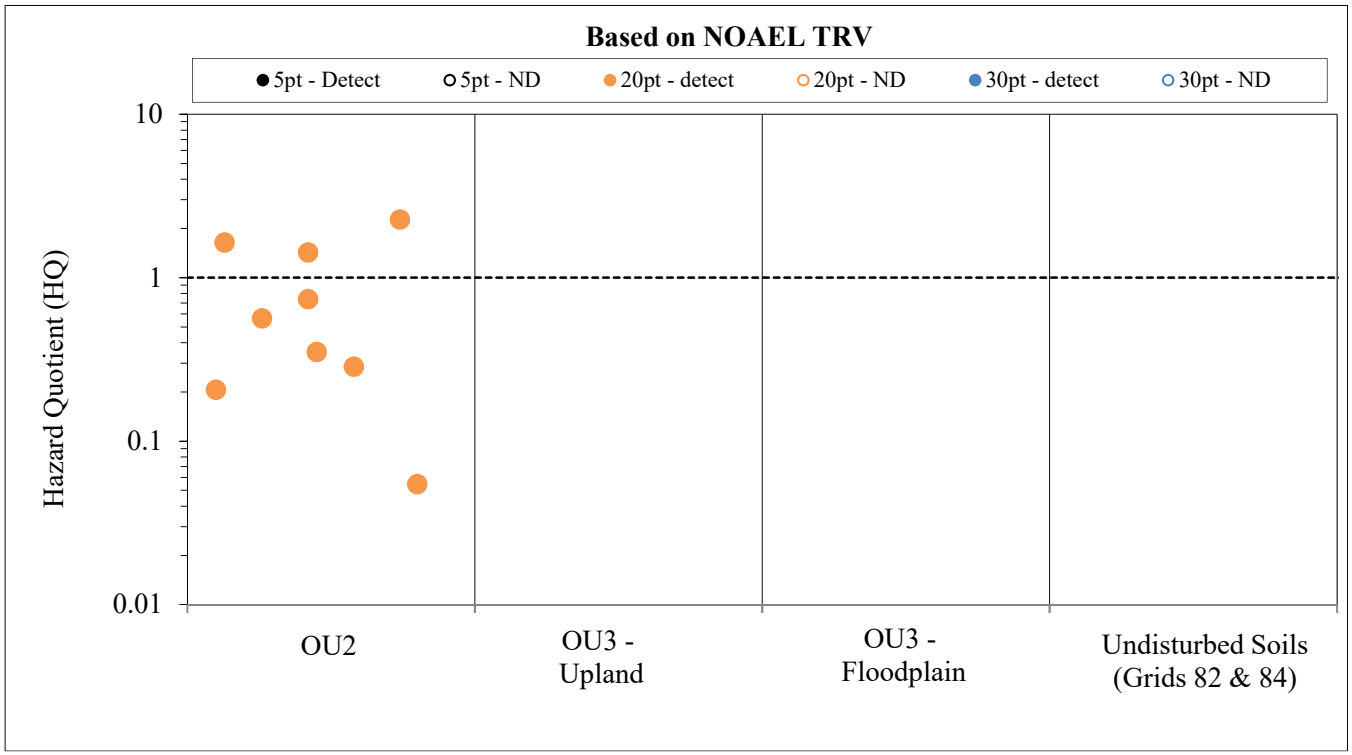
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Food by Exposure Unit/Soil Type

D/F+DL-PCB Mam TEQ - ND=1/2RL





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

D/F+DL-PCB Mam TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	2.05E-06	detect	0	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	5.74E-07	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	4.56E-06	detect	0	0	<1.0	**1.6**
	Grid 2	Grid 2-SSComp-01_20171016_NM	7.92E-07	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	3.97E-06	detect	0	0	<1.0	**1.4**
	Grid 23	Grid 23-SSComp-01_20171018_NM	1.52E-07	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	9.73E-07	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	6.32E-06	detect	0	0	<1.0	**2.3**
	Grid 9	Grid 9-SSComp-01_20171018_NM	1.57E-06	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	0	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	#N/A	#N/A	0	0	#N/A	#N/A
	TSB-SS	BACKFILL-TSB-SS	#N/A	#N/A	0	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

D/F+DL-PCB Mam TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	0	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	CRP-1	CRP-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-1	HP18-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-IB	HP18-SSC-IB_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP9-1	HP9-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	IBK-1	IBK-1-SS_4/16/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P17-BH1	P17-BH1-SS_4/3/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P4-BH1	P4-BH1-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P5-BH2	P5-BH2-SS_4/3/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

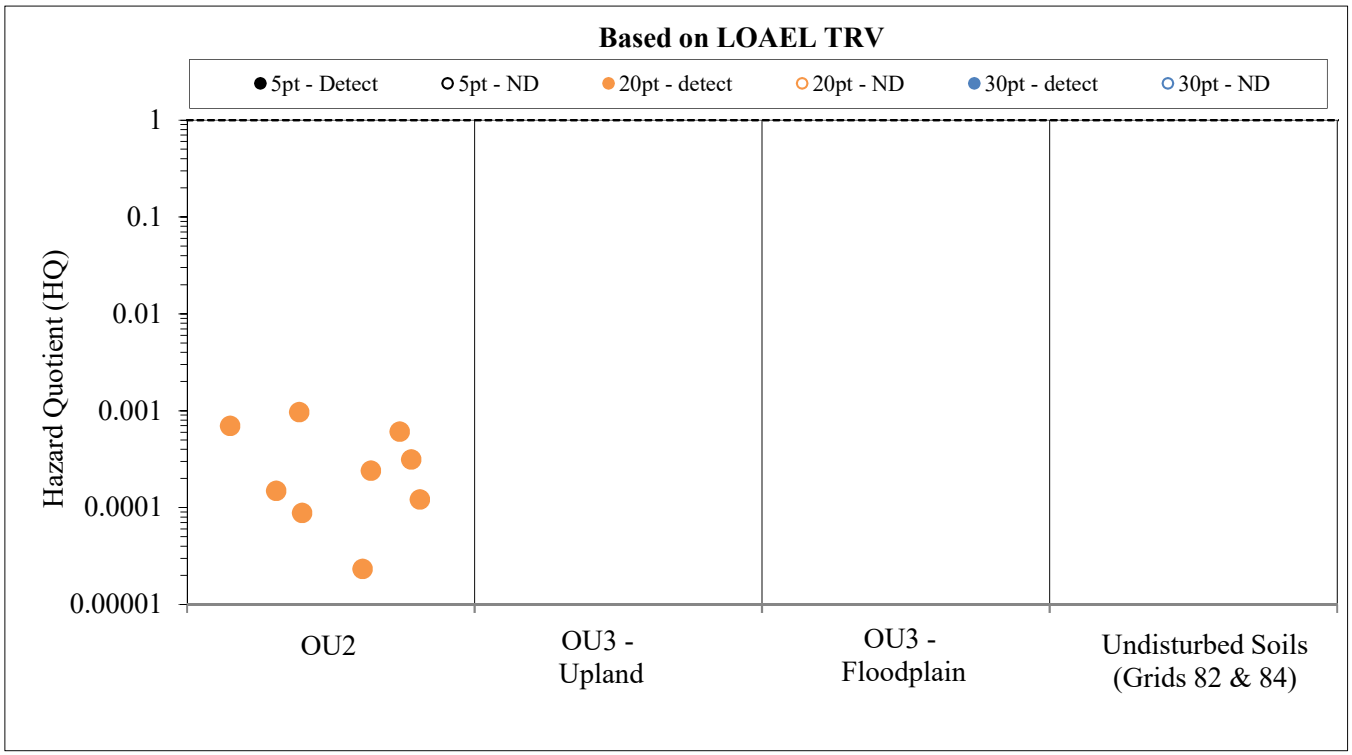
D/F+DL-PCB Mam TEQ - ND=1/2RL

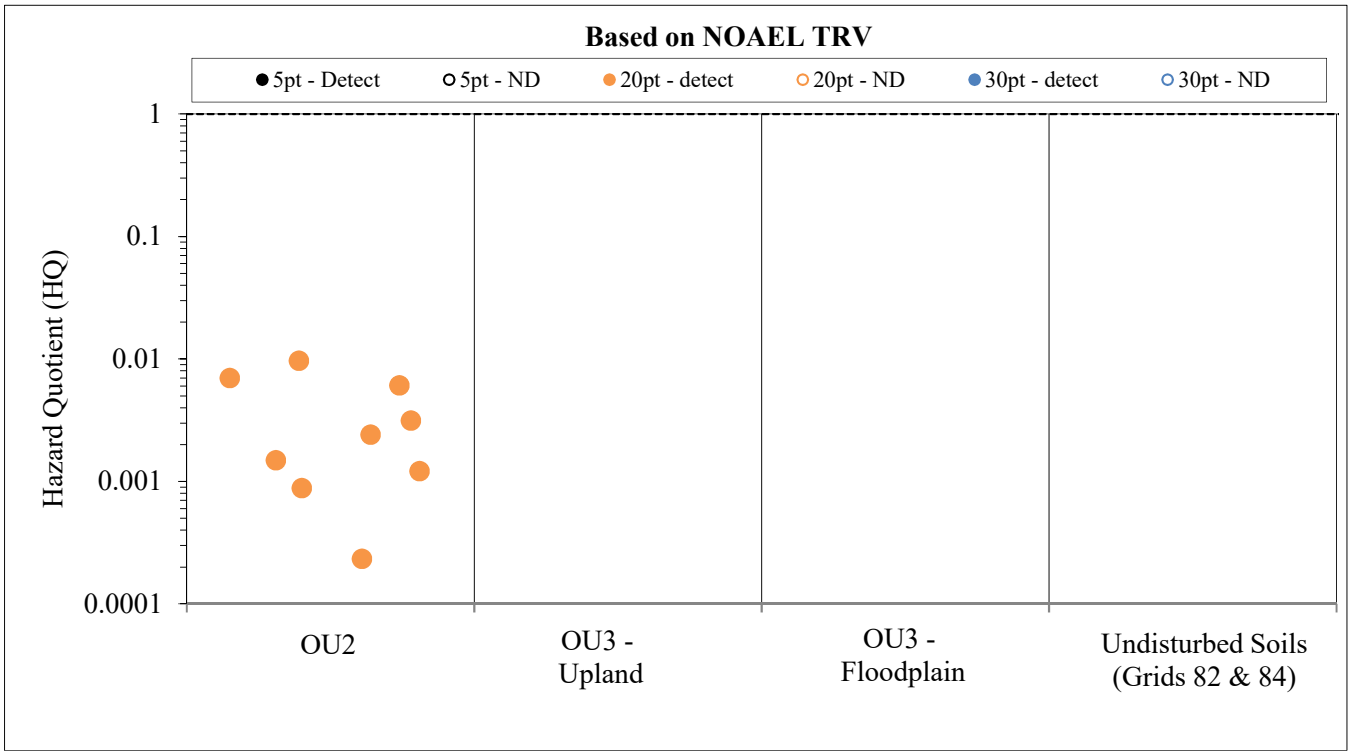
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	0	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Surface Soil by Exposure Unit/Soil Type

D/F+DL-PCB Mam TEQ - ND=1/2RL





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

D/F+DL-PCB Mam TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	1.37E-05	detect	0	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	3.83E-06	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	3.04E-05	detect	0	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	5.28E-06	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	2.65E-05	detect	0	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	1.01E-06	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	6.49E-06	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	4.21E-05	detect	0	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	1.05E-05	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SB1-IN	SB1A-IN-(1-2)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	SB2a,3a-IN	SB2a-IN-(0-2)	#N/A	#N/A	0	0	#N/A	#N/A
	SS10-IN	SS10-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS11-IN	SS11-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS12-IN	SS12-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS13-IN	SS13-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS14-IN	SS14-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS15-IN	SS15-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS16-IN	SS16-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS17-IN	SS17-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS1-IN	SS1-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS33-IN	SS33-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS3-IN	SS3-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS4-IN	SS4-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS5-IN	SS5-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS6-IN	SS6-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS7-IN	SS7-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS8-IN	SS8-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS9-IN	SS9-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	HDPT-SS	BACKFILL-HDPT-SS	#N/A	#N/A	0	0	#N/A	#N/A
	TSB-SS	BACKFILL-TSB-SS	#N/A	#N/A	0	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

D/F+DL-PCB Mam TEQ - ND=1/2RL

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	#N/A	#N/A	0	0	#N/A	#N/A
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	CRP-1	CRP-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 27	Grid 27-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 28	Grid 28-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 29	Grid 29-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 30	Grid 30-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 33	Grid 33-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 34	Grid 34-SSComp-01_20171019_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 37	Grid 37-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 39	Grid 39-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 43	Grid 43-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 44	Grid 44-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 47	Grid 47-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 53	Grid 53-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 60	Grid 60-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 61	Grid 61-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 64	Grid 64-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 74	Grid 74-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP16-1	HP16-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-1	HP18-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-IB	HP18-SSC-IB_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP9-1	HP9-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	IBK-1	IBK-1-SS_4/16/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P17-BH1	P17-BH1-SS_4/3/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P3	P3-SSComp-01_20171020_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P3-BH1	P3-BH1-SS_4/3/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P4-BH1	P4-BH1-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P5-BH2	P5-BH2-SS_4/3/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P8	P8-SSComp-01_20171025_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P8dc	P8dc-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	P8-TP3	P8-TP3-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SPP	SPP-SSComp-01_20171025_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SS1,2-HP18	SS1-HP18-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS11,12-IBK	SS11-IBK-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS13,14-HP9	SS13-HP9-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS15,16-HP9	SS15-HP9-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS3,4-HP16	SS3-HP16-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS5,6-IBJ	SS5-IBJ-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS7,8-HP13	SS7-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS9,10-HP12	SS9-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SWBA	SWBA-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

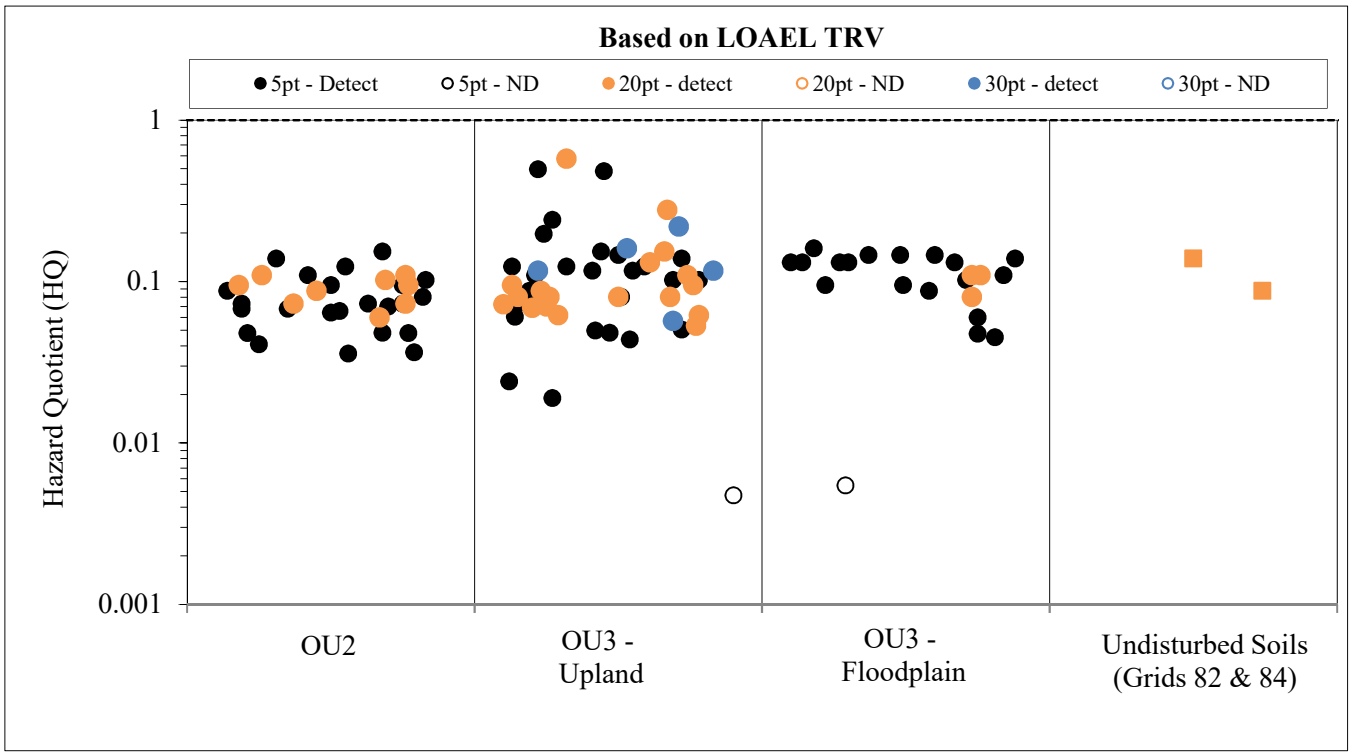
D/F+DL-PCB Mam TEQ - ND=1/2RL

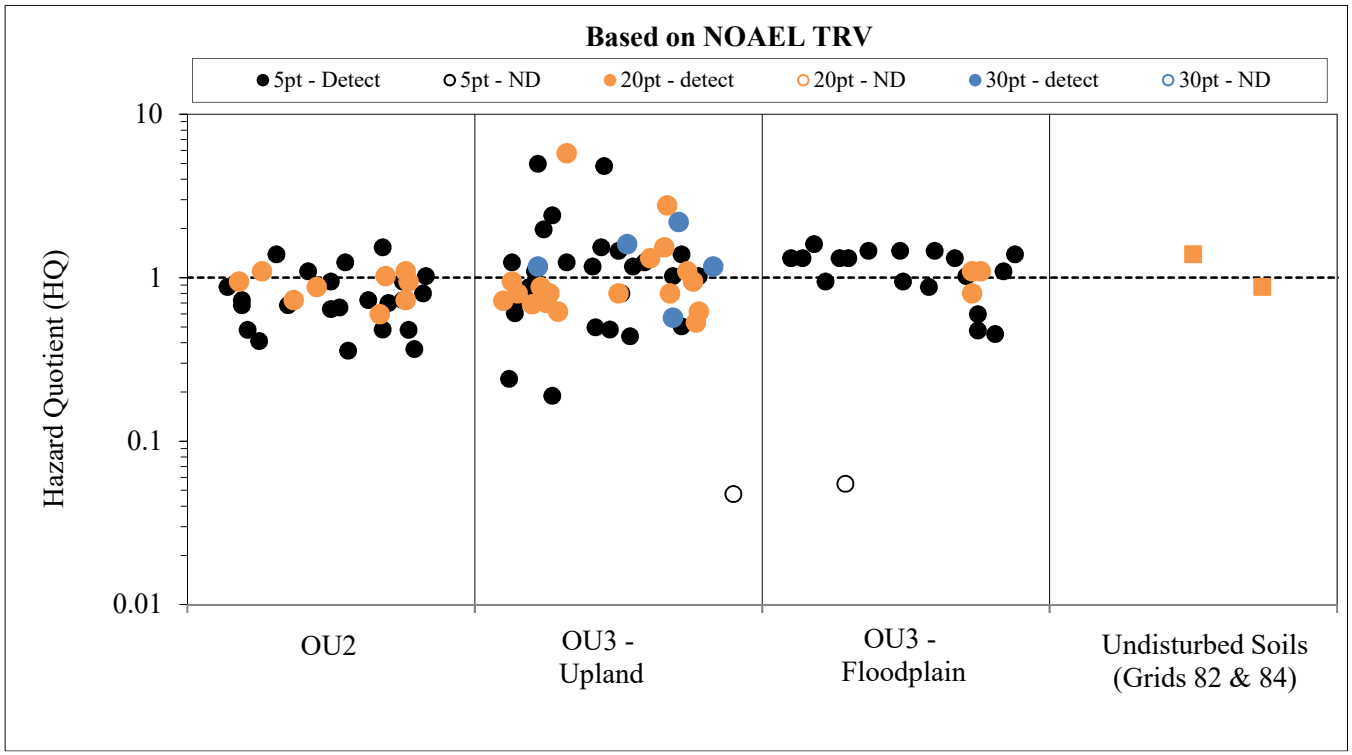
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 89	Grid 89-SSComp-01_20171026_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 94	Grid 94-SSComp-01_20171026_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP13a-1	HP13A-1-SS_4/10/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	SE10-HP11	SE10-HP11-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE11-HP11	SE11-HP11-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE12-HP12	SE12-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE13-HP12	SE13-HP12-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE14-HP13	SE14-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE15-HP13	SE15-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE16-HP13	SE16-HP13-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE17-HP13a	SE17-HP13a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE1-HP1a	SE1-HP1a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE2-HP1a	SE2-HP1a-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE3-HP1	SE3-HP1-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE4-HP1	SE4-HP1-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE5-HP2	SE5-HP2-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE6-HP7	SE6-HP7-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE7-HP7	SE7-HP7-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE8-HP10	SE8-HP10-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SE9-HP10	SE9-HP10-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	#N/A	#N/A	0	0	#N/A	#N/A
	Grid 84	Grid 84-SSComp-01_20171026_NM	#N/A	#N/A	0	0	#N/A	#N/A

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Food by Exposure Unit/Soil Type

Thallium





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Thallium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.0123	detect	0	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.021	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.015	detect	0	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.015	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.0195	detect	0	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.0225	detect	0	0	<1.0	**1.1**
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.018	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.0225	detect	0	0	<1.0	**1.1**
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.0195	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.0315	detect	0	0	<1.0	**1.5**
	SB2a,3a-IN	SB2a-IN-(0-2)	0.0075	detect	0	0	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.015	detect	0	0	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.015	detect	0	0	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.015	detect	0	0	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.0099	detect	0	0	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.0144	detect	0	0	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.0285	detect	0	0	<1.0	**1.4**
	SS16-IN	SS16-IN-(0-2)c	0.021	detect	0	0	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.0165	detect	0	0	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.0132	detect	0	0	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.01395	detect	0	0	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.018	detect	0	0	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.00735	detect	0	0	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.0195	detect	0	0	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.01395	detect	0	0	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.0225	detect	0	0	<1.0	**1.1**
	SS6-IN	SS6-IN-(0-2)c	0.0135	detect	0	0	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.0195	detect	0	0	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.0084	detect	0	0	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.0255	detect	0	0	<1.0	**1.2**
	HDPT-SS	BACKFILL-HDPT-SS	0.00985	detect	0	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.00985	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Thallium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.033	detect	0	0	<1.0	**1.6**
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.099	detect	0	0	<1.0	**4.8**
	CRP-1	CRP-1-SS_4/10/14_NM	0.00495	detect	0	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.01275	detect	0	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.01275	detect	0	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.0165	detect	0	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.018	detect	0	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.0195	detect	0	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.01485	detect	0	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.0141	detect	0	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.0195	detect	0	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.0144	detect	0	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.0165	detect	0	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.0315	detect	0	0	<1.0	**1.5**
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.0225	detect	0	0	<1.0	**1.1**
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.0165	detect	0	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.0165	detect	0	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.015	detect	0	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.1185	detect	0	0	<1.0	**5.8**
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.027	detect	0	0	<1.0	**1.3**
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.01095	detect	0	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.021	detect	0	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.0225	detect	0	0	<1.0	**1.1**
	HP18-1	HP18-1-SS_4/10/14_NM	0.0315	detect	0	0	<1.0	**1.5**
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.018	detect	0	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.01035	detect	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.015	detect	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.03	detect	0	0	<1.0	**1.5**
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.000975	ND	0	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.0255	detect	0	0	<1.0	**1.2**
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.0495	detect	0	0	<1.0	**2.4**
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.102	detect	0	0	<1.0	**5.0**
	P3	P3-SSComp-01_20171020_NM	0.057	detect	0	0	<1.0	**2.8**
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.0099	detect	0	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.0039	detect	0	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.01245	detect	0	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.021	detect	0	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.024	detect	0	0	<1.0	**1.2**
	P8dc	P8dc-SSComp-01_20171024_NM	0.024	detect	0	0	<1.0	**1.2**
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.0285	detect	0	0	<1.0	**1.4**
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.0405	detect	0	0	<1.0	**2.0**
	SPP	SPP-SSComp-01_20171025_NM	0.045	detect	0	0	<1.0	**2.2**
	SS1,2-HP18	SS1-HP18-(0-2)c	0.0165	detect	0	0	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.015	detect	0	0	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	0.024	detect	0	0	<1.0	**1.2**
	SS15,16-HP9	SS15-HP9-(0-2)c	0.0255	detect	0	0	<1.0	**1.2**
	SS3,4-HP16	SS3-HP16-(0-2)c	0.009	detect	0	0	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.0102	detect	0	0	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.0255	detect	0	0	<1.0	**1.2**
	SS9,10-HP12	SS9-HP12-(0-2)c	0.024	detect	0	0	<1.0	**1.2**
	SWBA	SWBA-SSComp-01_20171024_NM	0.0117	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

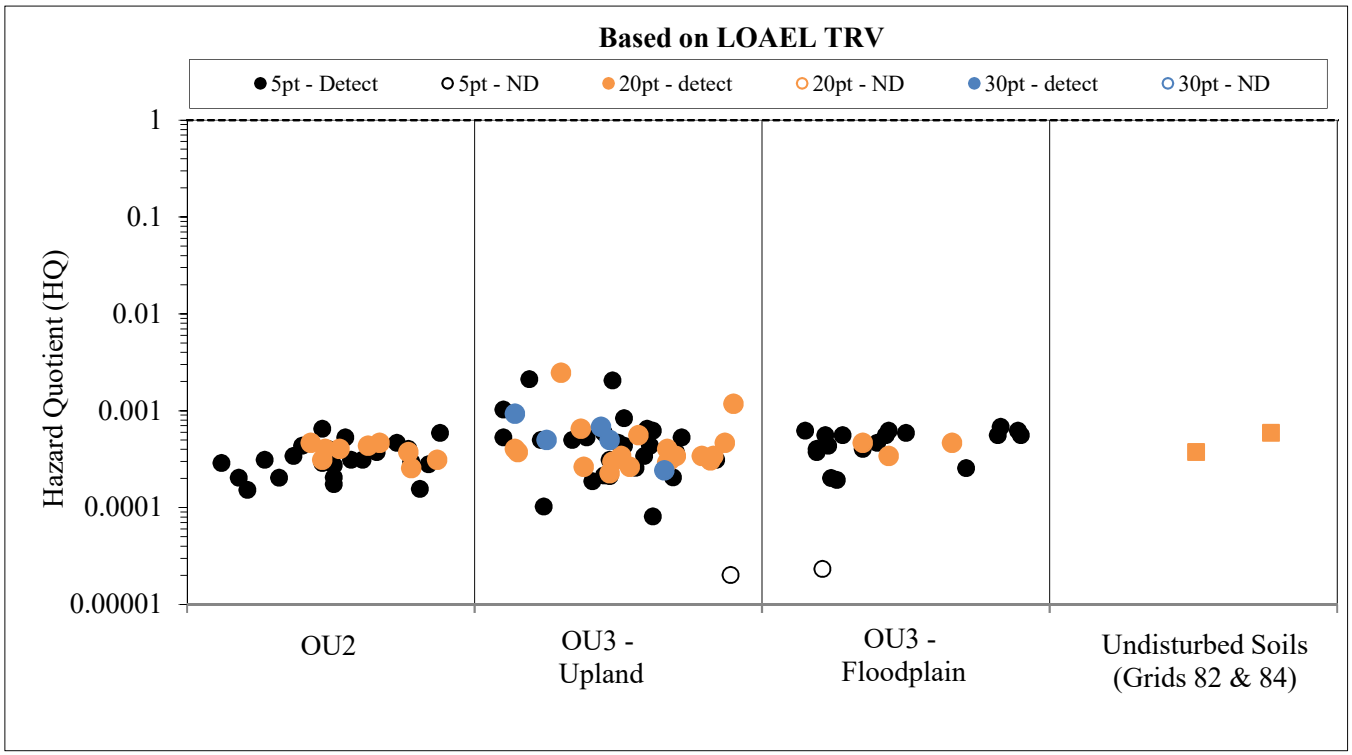
Thallium

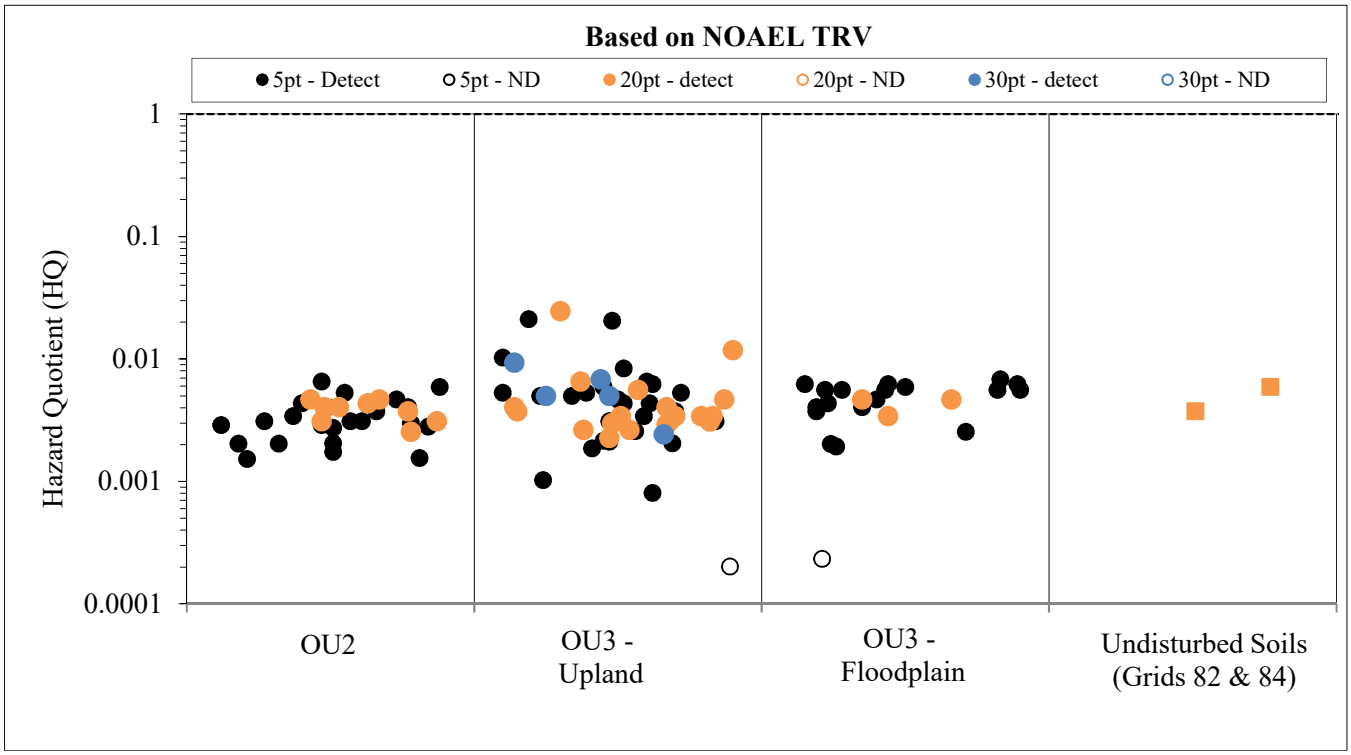
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.0165	detect	0	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.0225	detect	0	0	<1.0	**1.1**
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.0225	detect	0	0	<1.0	**1.1**
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.03	detect	0	0	<1.0	**1.5**
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.001125	ND	0	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	0.027	detect	0	0	<1.0	**1.3**
	SE11-HP11	SE11-HP11-(0-2)c	0.0195	detect	0	0	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	0.03	detect	0	0	<1.0	**1.5**
	SE13-HP12	SE13-HP12-(0-2)c	0.027	detect	0	0	<1.0	**1.3**
	SE14-HP13	SE14-HP13-(0-2)c	0.027	detect	0	0	<1.0	**1.3**
	SE15-HP13	SE15-HP13-(0-2)c	0.0225	detect	0	0	<1.0	**1.1**
	SE16-HP13	SE16-HP13-(0-2)c	0.03	detect	0	0	<1.0	**1.5**
	SE17-HP13a	SE17-HP13a-(0-2)c	0.027	detect	0	0	<1.0	**1.3**
	SE1-HP1a	SE1-HP1a-(0-2)c	0.018	detect	0	0	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.0195	detect	0	0	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.0093	detect	0	0	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.0123	detect	0	0	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	0.033	detect	0	0	<1.0	**1.6**
	SE6-HP7	SE6-HP7-(0-2)c	0.0285	detect	0	0	<1.0	**1.4**
	SE7-HP7	SE7-HP7-(0-2)c	0.021	detect	0	0	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.00975	detect	0	0	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	0.027	detect	0	0	<1.0	**1.3**
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.0285	detect	0	0	<1.0	**1.4**
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.018	detect	0	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Surface Soil by Exposure Unit/Soil Type

Thallium





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Thallium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.082	detect	0	0	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.14	detect	0	0	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.1	detect	0	0	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.1	detect	0	0	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.13	detect	0	0	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.15	detect	0	0	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.12	detect	0	0	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.15	detect	0	0	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.13	detect	0	0	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.21	detect	0	0	<1.0	<1.0
	SB1-IN	SB1A-IN-(1-2)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	SB2a,3a-IN	SB2a-IN-(0-2)	0.05	detect	0	0	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.1	detect	0	0	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.1	detect	0	0	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.1	detect	0	0	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.066	detect	0	0	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.096	detect	0	0	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.19	detect	0	0	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.14	detect	0	0	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.11	detect	0	0	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.088	detect	0	0	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.093	detect	0	0	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	0	0	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.12	detect	0	0	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.049	detect	0	0	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.13	detect	0	0	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.093	detect	0	0	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.15	detect	0	0	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.09	detect	0	0	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.13	detect	0	0	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.056	detect	0	0	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.17	detect	0	0	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.065667	detect	0	0	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.065667	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Thallium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.22	detect	0	0	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.66	detect	0	0	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.033	detect	0	0	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.085	detect	0	0	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.085	detect	0	0	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.11	detect	0	0	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.12	detect	0	0	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.13	detect	0	0	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.099	detect	0	0	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.094	detect	0	0	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.13	detect	0	0	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.096	detect	0	0	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.11	detect	0	0	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.21	detect	0	0	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.15	detect	0	0	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.11	detect	0	0	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.11	detect	0	0	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.1	detect	0	0	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.79	detect	0	0	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.18	detect	0	0	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.073	detect	0	0	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.14	detect	0	0	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.15	detect	0	0	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.21	detect	0	0	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.12	detect	0	0	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.069	detect	0	0	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	0	0	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.1	detect	0	0	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.2	detect	0	0	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.0065	ND	0	0	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.17	detect	0	0	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.33	detect	0	0	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.68	detect	0	0	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.38	detect	0	0	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.066	detect	0	0	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.026	detect	0	0	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.083	detect	0	0	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.14	detect	0	0	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.16	detect	0	0	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.16	detect	0	0	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.19	detect	0	0	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.27	detect	0	0	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.3	detect	0	0	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.11	detect	0	0	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.1	detect	0	0	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	0.16	detect	0	0	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	0.17	detect	0	0	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.06	detect	0	0	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.068	detect	0	0	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.17	detect	0	0	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.16	detect	0	0	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.078	detect	0	0	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Thallium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.11	detect	0	0	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.15	detect	0	0	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.15	detect	0	0	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.2	detect	0	0	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.0075	ND	0	0	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	0.18	detect	0	0	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	0.13	detect	0	0	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	0.2	detect	0	0	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	0.18	detect	0	0	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	0.18	detect	0	0	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.15	detect	0	0	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	0.2	detect	0	0	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.18	detect	0	0	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.12	detect	0	0	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.13	detect	0	0	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.062	detect	0	0	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.082	detect	0	0	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	0.22	detect	0	0	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	0.19	detect	0	0	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	0.14	detect	0	0	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.065	detect	0	0	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	0.18	detect	0	0	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.19	detect	0	0	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.12	detect	0	0	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of River Surface Water

Thallium

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	3E-05	ND	0.0074	0.074	<1.0	<1.0
	CFR2	CFR2_20180523_NM	3E-05	ND	0.0074	0.074	<1.0	<1.0
	SW3-CFR	SW3-CFR	2E-05	ND	0.0074	0.074	<1.0	<1.0
	51-CFR	SW51-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	52-CFR	SW52-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	54-CFR	SW54-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	SW2-CFR	SW2-CFR	2E-05	ND	0.0074	0.074	<1.0	<1.0
	55-CFR	SW55-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	56-CFR	SW56-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	SW1-CFR	SW1-CFR	2E-05	ND	0.0074	0.074	<1.0	<1.0
	57-CFR	SW57-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	58-CFR	SW58-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	59-CFR	SW59-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	60-CFR	SW60-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	61-CFR	SW61-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	62-CFR	SW62-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0
	63-CFR	SW63-CFR	3E-05	ND	0.0074	0.074	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of Creek Surface Water

Thallium

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	3E-05	ND	0.0074	0.074	<1.0	<1.0
	43-OK	SW43-OK	3E-05	detect	0.0074	0.074	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	2E-05	ND	0.0074	0.074	<1.0	<1.0
	37-LV	SW37-LV	3E-05	ND	0.0074	0.074	<1.0	<1.0
	39-LV	SW39-LV	3E-05	ND	0.0074	0.074	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of Pond Surface Water

Thallium

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	3E-05	ND	0.0074	0.074	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	3E-05	ND	0.0074	0.074	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0001	ND	0.0074	0.074	<1.0	<1.0
73-P5	SW73-P5	0.0001	ND	0.0074	0.074	<1.0	<1.0
71-HP7	SW71-HP7	0.0001	ND	0.0074	0.074	<1.0	<1.0
72-HP2	SW72-HP2	0.0001	ND	0.0074	0.074	<1.0	<1.0
75-HP10	SW75-HP10	0.0001	ND	0.0074	0.074	<1.0	<1.0
67-HP12	SW67-HP12	0.0001	ND	0.0074	0.074	<1.0	<1.0
68-IBJ	SW68-IBJ	3E-05	ND	0.0074	0.074	<1.0	<1.0
66-HP13	SW66-HP13	0.0001	ND	0.0074	0.074	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0001	ND	0.0074	0.074	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	3E-05	ND	0.0074	0.074	<1.0	<1.0
70-CWD	SW70-CWD	3E-05	ND	0.0074	0.074	<1.0	<1.0
64-HP18	SW64-HP18	0.0001	ND	0.0074	0.074	<1.0	<1.0

#N/A = not analyzed

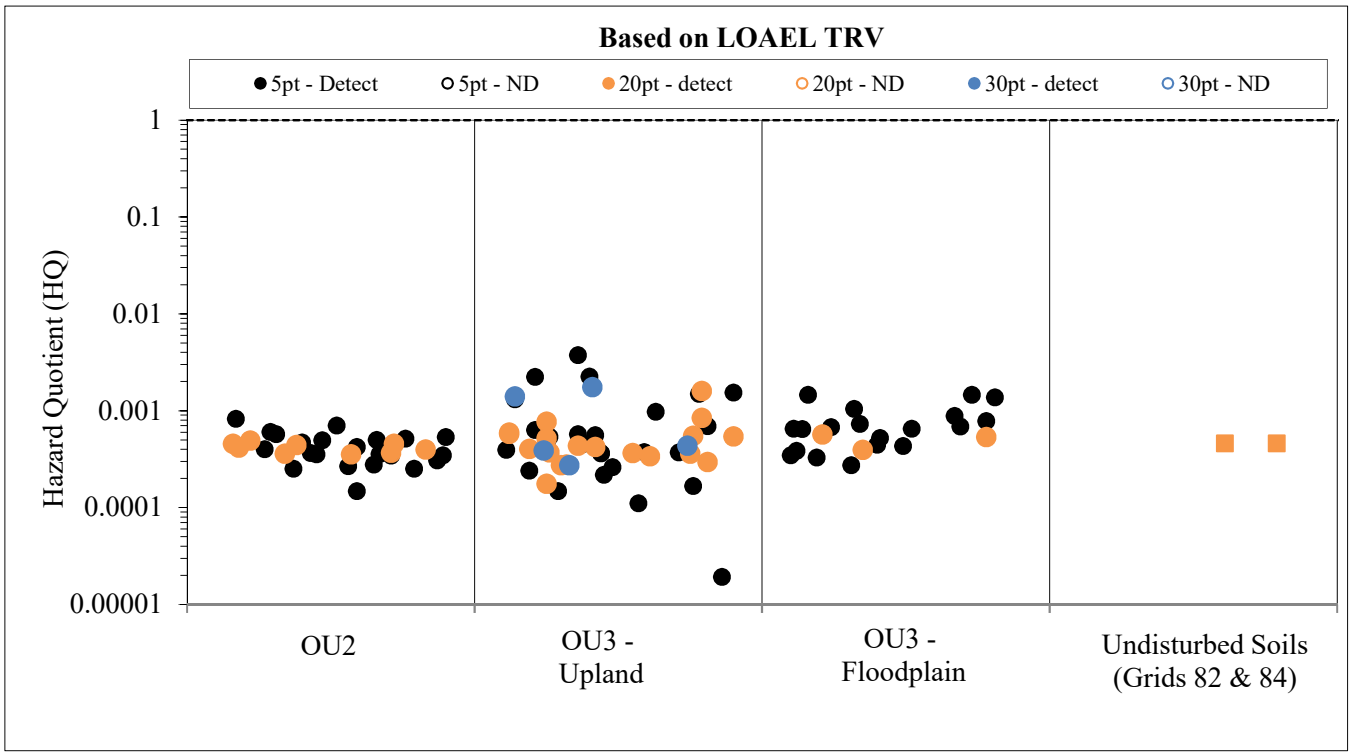
(a) Non-detects are evaluated at 1/2 the reported value.

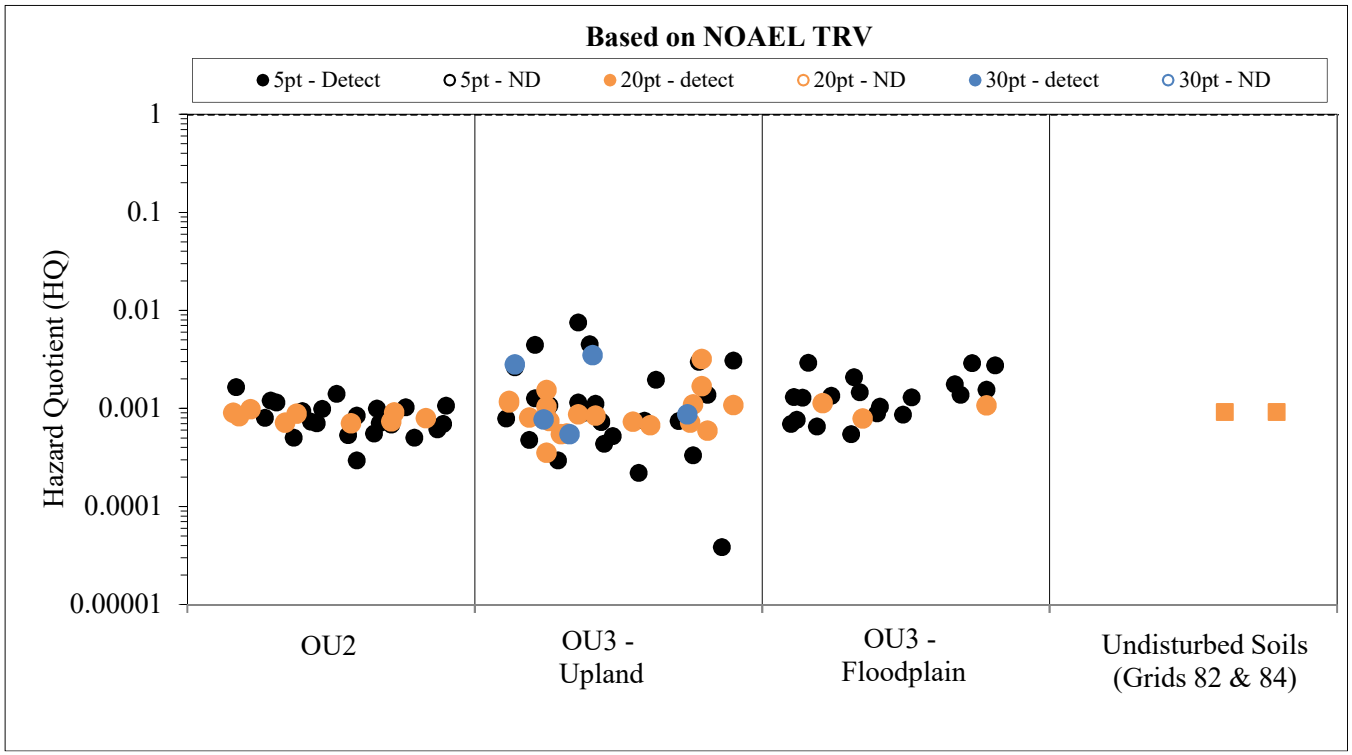
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Food by Exposure Unit/Soil Type

Vanadium





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Vanadium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	0.009167	detect	8	4	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	0.010549	detect	8	4	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	0.008294	detect	8	4	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	0.008148	detect	8	4	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	0.010476	detect	8	4	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	0.011349	detect	8	4	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	0.008512	detect	8	4	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	0.010185	detect	8	4	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	0.009603	detect	8	4	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	0.016223	detect	8	4	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	0.003419	detect	8	4	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	0.008585	detect	8	4	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	0.00793	detect	8	4	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	0.008148	detect	8	4	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	0.006184	detect	8	4	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	0.008003	detect	8	4	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	0.01084	detect	8	4	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	0.009749	detect	8	4	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	0.011858	detect	8	4	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	0.008221	detect	8	4	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	8	4	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	0.007057	detect	8	4	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	8	4	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	8	4	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	0.019061	detect	8	4	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	0.013895	detect	8	4	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	0.012295	detect	8	4	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	0.008439	detect	8	4	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	0.011495	detect	8	4	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	0.009239	detect	8	4	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	0.011422	detect	8	4	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	0.006402	detect	8	4	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	0.013241	detect	8	4	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	0.00582	detect	8	4	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	0.00582	detect	8	4	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Vanadium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	0.032519	detect	8	4	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	0.052016	detect	8	4	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	0.086573	detect	8	4	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	0.006839	detect	8	4	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	0.006329	detect	8	4	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	0.01375	detect	8	4	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	0.008585	detect	8	4	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	0.012004	detect	8	4	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	0.007784	detect	8	4	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	0.008294	detect	8	4	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	0.013313	detect	8	4	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	0.019497	detect	8	4	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	0.009312	detect	8	4	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	0.036812	detect	8	4	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	0.012731	detect	8	4	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	0.01004	detect	8	4	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	0.009749	detect	8	4	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	0.008439	detect	8	4	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	0.017751	detect	8	4	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	0.012513	detect	8	4	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	0.006402	detect	8	4	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	0.022553	detect	8	4	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	0.01244	detect	8	4	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	0.030264	detect	8	4	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	0.008439	detect	8	4	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	0.006038	detect	8	4	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	8	4	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	0.00502	detect	8	4	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	0.034484	detect	8	4	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	0.003856	detect	8	4	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	0.015641	detect	8	4	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	0.051362	detect	8	4	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	0.010476	detect	8	4	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	0.004074	detect	8	4	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	0.003419	detect	8	4	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.000444	detect	8	4	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	0.002546	detect	8	4	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	0.008366	detect	8	4	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	0.008948	detect	8	4	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	0.01004	detect	8	4	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	0.010112	detect	8	4	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	0.035575	detect	8	4	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	0.040304	detect	8	4	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	0.008657	detect	8	4	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	0.009094	detect	8	4	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	0.015932	detect	8	4	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	0.014623	detect	8	4	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	0.008585	detect	8	4	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	0.005529	detect	8	4	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	0.013241	detect	8	4	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	0.012877	detect	8	4	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	0.006329	detect	8	4	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

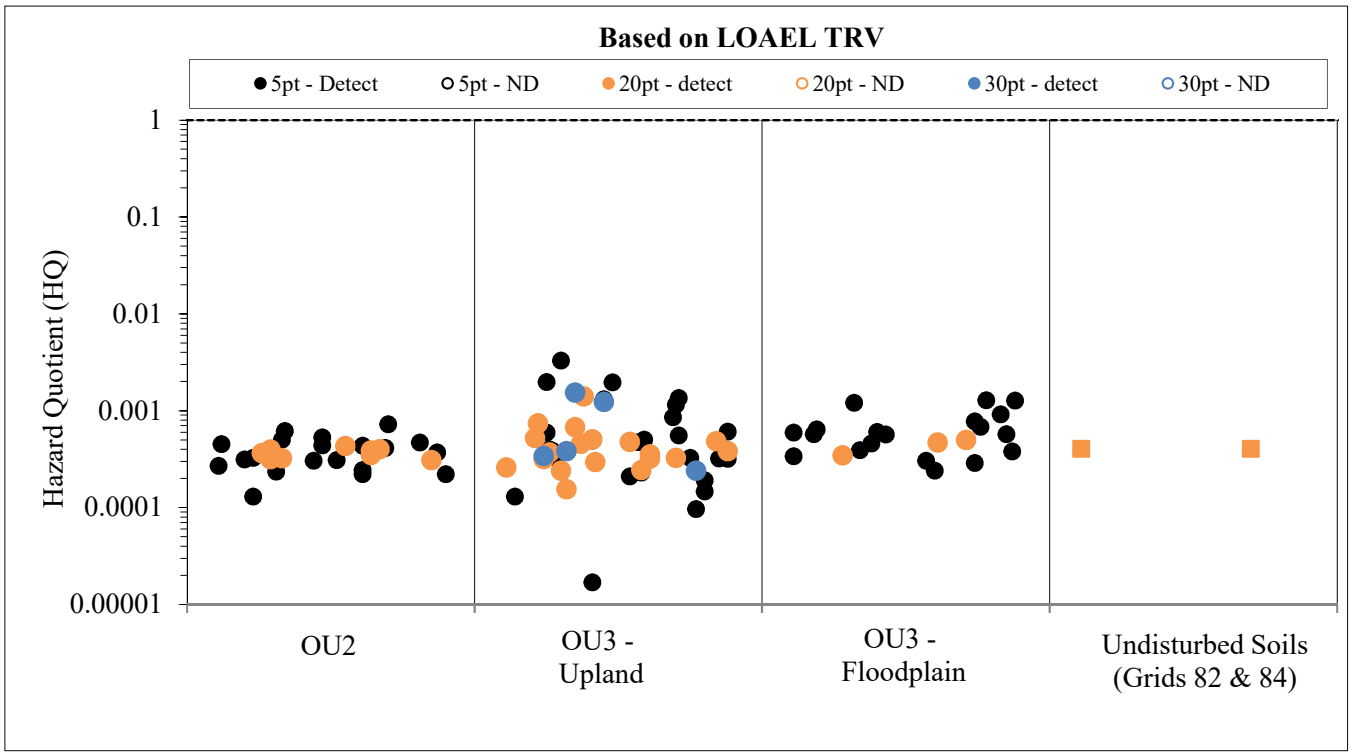
Vanadium

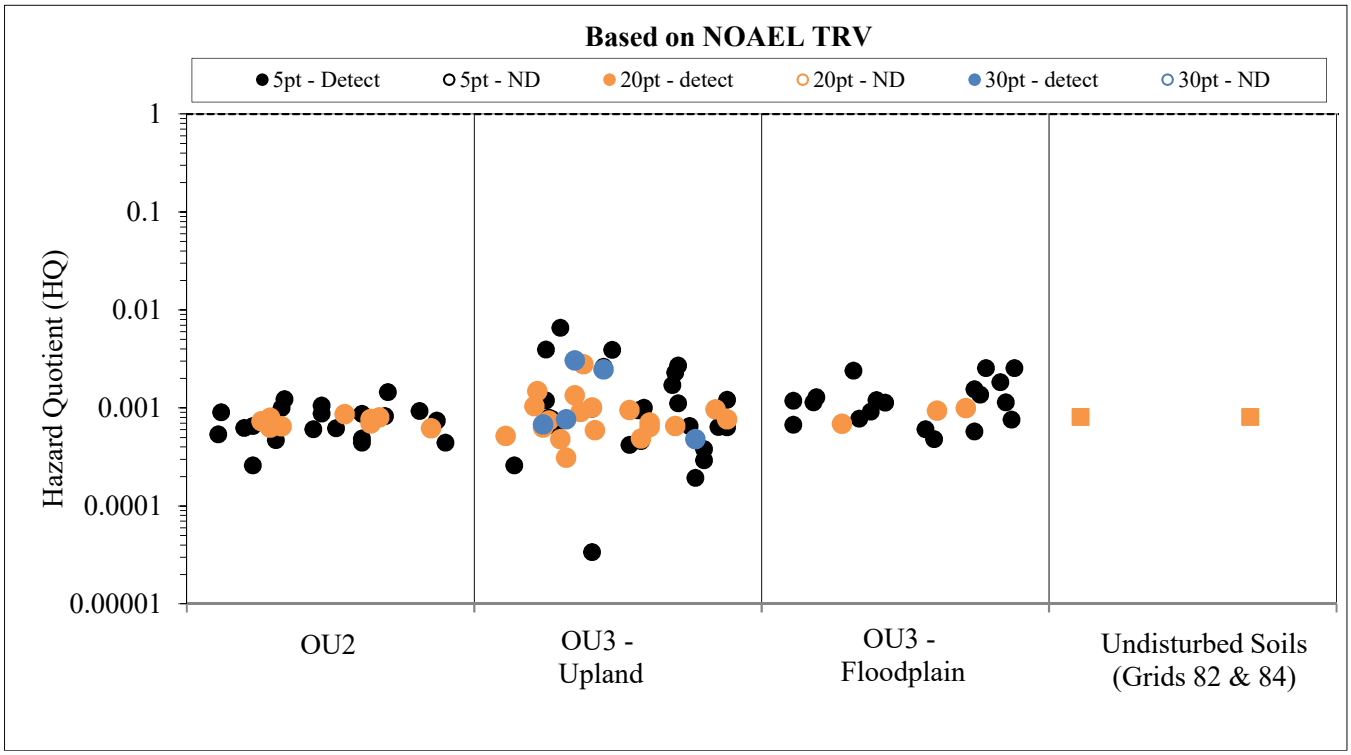
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	0.009094	detect	8	4	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	0.013095	detect	8	4	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	0.012368	detect	8	4	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	0.015569	detect	8	4	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	0.006329	detect	8	4	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	0.033611	detect	8	4	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	0.012077	detect	8	4	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	0.017969	detect	8	4	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	0.033538	detect	8	4	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	0.016878	detect	8	4	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	0.009967	detect	8	4	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	0.014987	detect	8	4	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	0.014914	detect	8	4	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	0.01586	detect	8	4	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	0.015059	detect	8	4	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	0.008876	detect	8	4	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	0.010258	detect	8	4	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	0.031646	detect	8	4	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	0.02408	detect	8	4	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	0.007566	detect	8	4	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	0.008003	detect	8	4	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	0.020443	detect	8	4	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	0.010622	detect	8	4	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	0.010622	detect	8	4	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Surface Soil by Exposure Unit/Soil Type

Vanadium





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Vanadium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	12.6	detect	8	4	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	14.5	detect	8	4	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	11.4	detect	8	4	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	11.2	detect	8	4	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	14.4	detect	8	4	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	15.6	detect	8	4	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	11.7	detect	8	4	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	14	detect	8	4	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	13.2	detect	8	4	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	22.3	detect	8	4	<1.0	<1.0
	SB1-IN	SB1A-IN-(1-2)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	SB2a,3a-IN	SB2a-IN-(0-2)	4.7	detect	8	4	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	11.8	detect	8	4	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	10.9	detect	8	4	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	11.2	detect	8	4	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	8.5	detect	8	4	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	11	detect	8	4	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	14.9	detect	8	4	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	13.4	detect	8	4	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	16.3	detect	8	4	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	11.3	detect	8	4	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	8	4	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	9.7	detect	8	4	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	8	4	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	8	4	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	26.2	detect	8	4	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	19.1	detect	8	4	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	16.9	detect	8	4	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	11.6	detect	8	4	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	15.8	detect	8	4	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	12.7	detect	8	4	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	15.7	detect	8	4	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	8.8	detect	8	4	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	18.2	detect	8	4	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	8	detect	8	4	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	8	detect	8	4	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Vanadium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	44.7	detect	8	4	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	71.5	detect	8	4	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	119	detect	8	4	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	9.4	detect	8	4	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	8.7	detect	8	4	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	18.9	detect	8	4	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	11.8	detect	8	4	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	16.5	detect	8	4	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	10.7	detect	8	4	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	11.4	detect	8	4	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	18.3	detect	8	4	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	26.8	detect	8	4	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	12.8	detect	8	4	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	50.6	detect	8	4	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	17.5	detect	8	4	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	13.8	detect	8	4	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	13.4	detect	8	4	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	11.6	detect	8	4	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	24.4	detect	8	4	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	17.2	detect	8	4	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	8.8	detect	8	4	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	31	detect	8	4	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	17.1	detect	8	4	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	41.6	detect	8	4	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	11.6	detect	8	4	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	8.3	detect	8	4	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	8	4	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	6.9	detect	8	4	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	47.4	detect	8	4	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	5.3	detect	8	4	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	21.5	detect	8	4	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	70.6	detect	8	4	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	14.4	detect	8	4	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	5.6	detect	8	4	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	4.7	detect	8	4	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	0.61	detect	8	4	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	3.5	detect	8	4	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	11.5	detect	8	4	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	12.3	detect	8	4	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	13.8	detect	8	4	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	13.9	detect	8	4	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	48.9	detect	8	4	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	55.4	detect	8	4	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	11.9	detect	8	4	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	12.5	detect	8	4	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	21.9	detect	8	4	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	20.1	detect	8	4	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	11.8	detect	8	4	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	7.6	detect	8	4	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	18.2	detect	8	4	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	17.7	detect	8	4	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	8.7	detect	8	4	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Vanadium

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	12.5	detect	8	4	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	18	detect	8	4	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	17	detect	8	4	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	21.4	detect	8	4	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	8.7	detect	8	4	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	46.2	detect	8	4	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	16.6	detect	8	4	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	24.7	detect	8	4	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	46.1	detect	8	4	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	23.2	detect	8	4	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	13.7	detect	8	4	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	20.6	detect	8	4	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	20.5	detect	8	4	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	21.8	detect	8	4	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	20.7	detect	8	4	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	12.2	detect	8	4	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	14.1	detect	8	4	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	43.5	detect	8	4	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	33.1	detect	8	4	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	10.4	detect	8	4	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	11	detect	8	4	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	28.1	detect	8	4	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	14.6	detect	8	4	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	14.6	detect	8	4	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of River Surface Water

Vanadium

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0006	detect	4.16	8.31	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0013	detect	4.16	8.31	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0019	detect	4.16	8.31	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0006	detect	4.16	8.31	<1.0	<1.0
	51-CFR	SW51-CFR	0.0007	detect	4.16	8.31	<1.0	<1.0
	52-CFR	SW52-CFR	0.0008	detect	4.16	8.31	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0003	detect	4.16	8.31	<1.0	<1.0
	54-CFR	SW54-CFR	0.0007	detect	4.16	8.31	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0006	detect	4.16	8.31	<1.0	<1.0
	55-CFR	SW55-CFR	0.0007	detect	4.16	8.31	<1.0	<1.0
	56-CFR	SW56-CFR	0.0007	detect	4.16	8.31	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0007	detect	4.16	8.31	<1.0	<1.0
	57-CFR	SW57-CFR	0.0003	ND	4.16	8.31	<1.0	<1.0
	58-CFR	SW58-CFR	0.0009	detect	4.16	8.31	<1.0	<1.0
	59-CFR	SW59-CFR	0.0006	detect	4.16	8.31	<1.0	<1.0
	60-CFR	SW60-CFR	0.0009	detect	4.16	8.31	<1.0	<1.0
	61-CFR	SW61-CFR	0.0008	detect	4.16	8.31	<1.0	<1.0
	62-CFR	SW62-CFR	0.0008	detect	4.16	8.31	<1.0	<1.0
	63-CFR	SW63-CFR	0.0007	detect	4.16	8.31	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of Creek Surface Water

Vanadium

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.0009	detect	4.16	8.31	<1.0	<1.0
	43-OK	SW43-OK	0.001	detect	4.16	8.31	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.0012	detect	4.16	8.31	<1.0	<1.0
	37-LV	SW37-LV	0.001	detect	4.16	8.31	<1.0	<1.0
	39-LV	SW39-LV	0.0011	detect	4.16	8.31	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of Pond Surface Water

Vanadium

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0009	detect	4.16	8.31	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.0053	detect	4.16	8.31	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0069	detect	4.16	8.31	<1.0	<1.0
73-P5	SW73-P5	0.0036	detect	4.16	8.31	<1.0	<1.0
71-HP7	SW71-HP7	0.0045	detect	4.16	8.31	<1.0	<1.0
72-HP2	SW72-HP2	0.0041	detect	4.16	8.31	<1.0	<1.0
75-HP10	SW75-HP10	0.0032	detect	4.16	8.31	<1.0	<1.0
67-HP12	SW67-HP12	0.0045	detect	4.16	8.31	<1.0	<1.0
68-IBJ	SW68-IBJ	0.001	detect	4.16	8.31	<1.0	<1.0
66-HP13	SW66-HP13	0.0046	detect	4.16	8.31	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0058	detect	4.16	8.31	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.0069	detect	4.16	8.31	<1.0	<1.0
70-CWD	SW70-CWD	0.0014	detect	4.16	8.31	<1.0	<1.0
64-HP18	SW64-HP18	0.0077	detect	4.16	8.31	<1.0	<1.0

#N/A = not analyzed

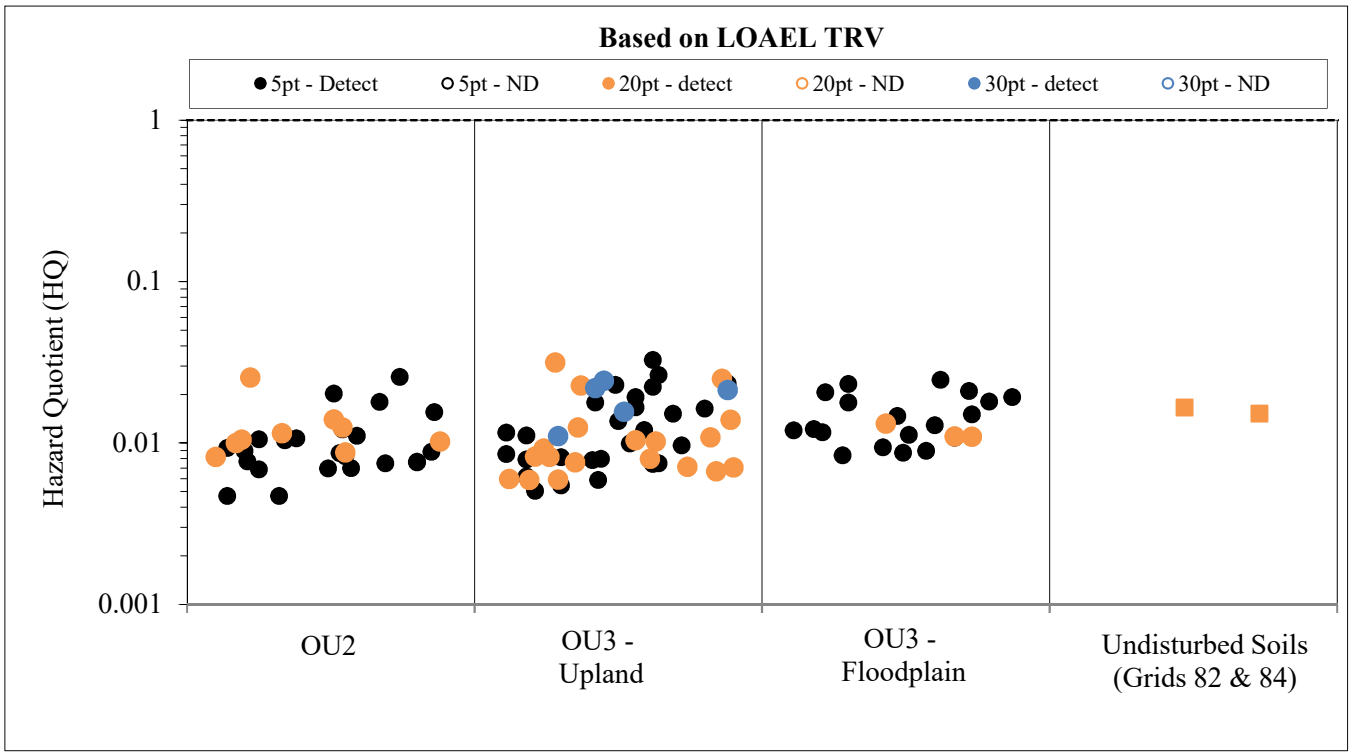
(a) Non-detects are evaluated at 1/2 the reported value.

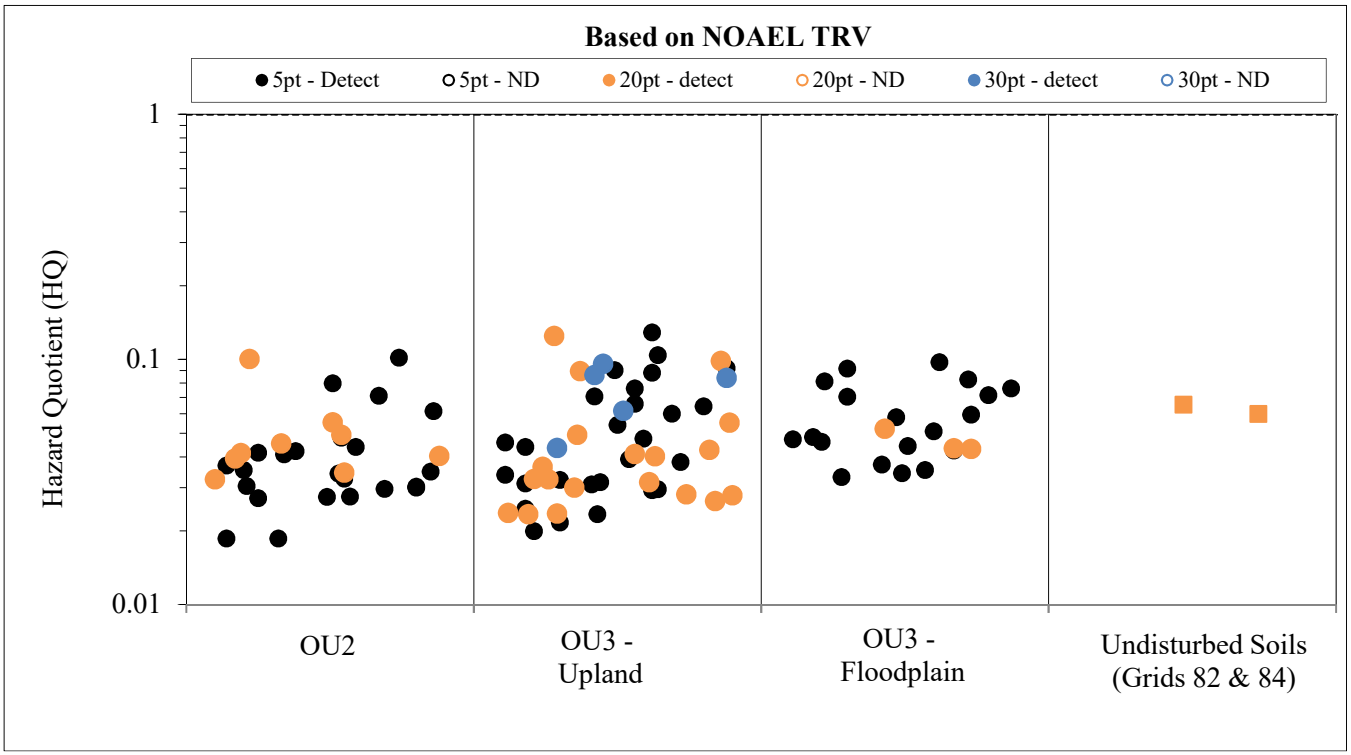
(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Food by Exposure Unit/Soil Type

Zinc





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Zinc

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	11.58911	detect	298	75	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	8.683837	detect	298	75	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	9.496018	detect	298	75	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	8.453052	detect	298	75	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	10.32686	detect	298	75	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	7.225064	detect	298	75	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	6.785629	detect	298	75	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	21.03448	detect	298	75	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	8.251122	detect	298	75	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	8.585541	detect	298	75	<1.0	<1.0
	SB2a,3a-IN	SB2a-IN-(0-2)	5.685362	detect	298	75	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	6.201734	detect	298	75	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	10.03995	detect	298	75	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	7.418392	detect	298	75	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	7.30039	detect	298	75	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	8.856409	detect	298	75	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	9.188494	detect	298	75	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	16.72794	detect	298	75	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	5.753834	detect	298	75	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	5.776513	detect	298	75	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	298	75	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	6.343003	detect	298	75	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	298	75	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	298	75	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	21.27338	detect	298	75	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	14.88164	detect	298	75	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	6.272689	detect	298	75	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	6.370954	detect	298	75	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	6.838503	detect	298	75	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	7.727921	detect	298	75	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	8.727237	detect	298	75	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	12.86844	detect	298	75	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	7.174494	detect	298	75	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	3.896704	detect	298	75	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	3.896704	detect	298	75	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

Zinc

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	18.09419	detect	298	75	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	15.94349	detect	298	75	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	12.58875	detect	298	75	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	4.891072	detect	298	75	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	4.959721	detect	298	75	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	5.530769	detect	298	75	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	5.896277	detect	298	75	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	5.844123	detect	298	75	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	4.916906	detect	298	75	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	6.618212	detect	298	75	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	6.818714	detect	298	75	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	7.643958	detect	298	75	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	8.957605	detect	298	75	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	18.74699	detect	298	75	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	10.32686	detect	298	75	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	11.54596	detect	298	75	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	8.441936	detect	298	75	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	8.618406	detect	298	75	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	26.07521	detect	298	75	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	6.798878	detect	298	75	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	6.286802	detect	298	75	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	9.209252	detect	298	75	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	6.187464	detect	298	75	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	9.942842	detect	298	75	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	6.759066	detect	298	75	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	4.175402	detect	298	75	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	298	75	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	4.526257	detect	298	75	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	18.45257	detect	298	75	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	6.53663	detect	298	75	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	7.085299	detect	298	75	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	21.79671	detect	298	75	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	27.00403	detect	298	75	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	20.65845	detect	298	75	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	14.77563	detect	298	75	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	6.481784	detect	298	75	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	9.596757	detect	298	75	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	11.32821	detect	298	75	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	12.908	detect	298	75	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	17.60726	detect	298	75	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	19.26778	detect	298	75	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	18.95089	detect	298	75	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	20.08382	detect	298	75	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	4.891072	detect	298	75	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	5.144681	detect	298	75	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	13.79241	detect	298	75	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	13.49009	detect	298	75	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	6.611444	detect	298	75	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	6.130119	detect	298	75	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	8.205707	detect	298	75	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	7.98134	detect	298	75	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	9.125991	detect	298	75	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Food

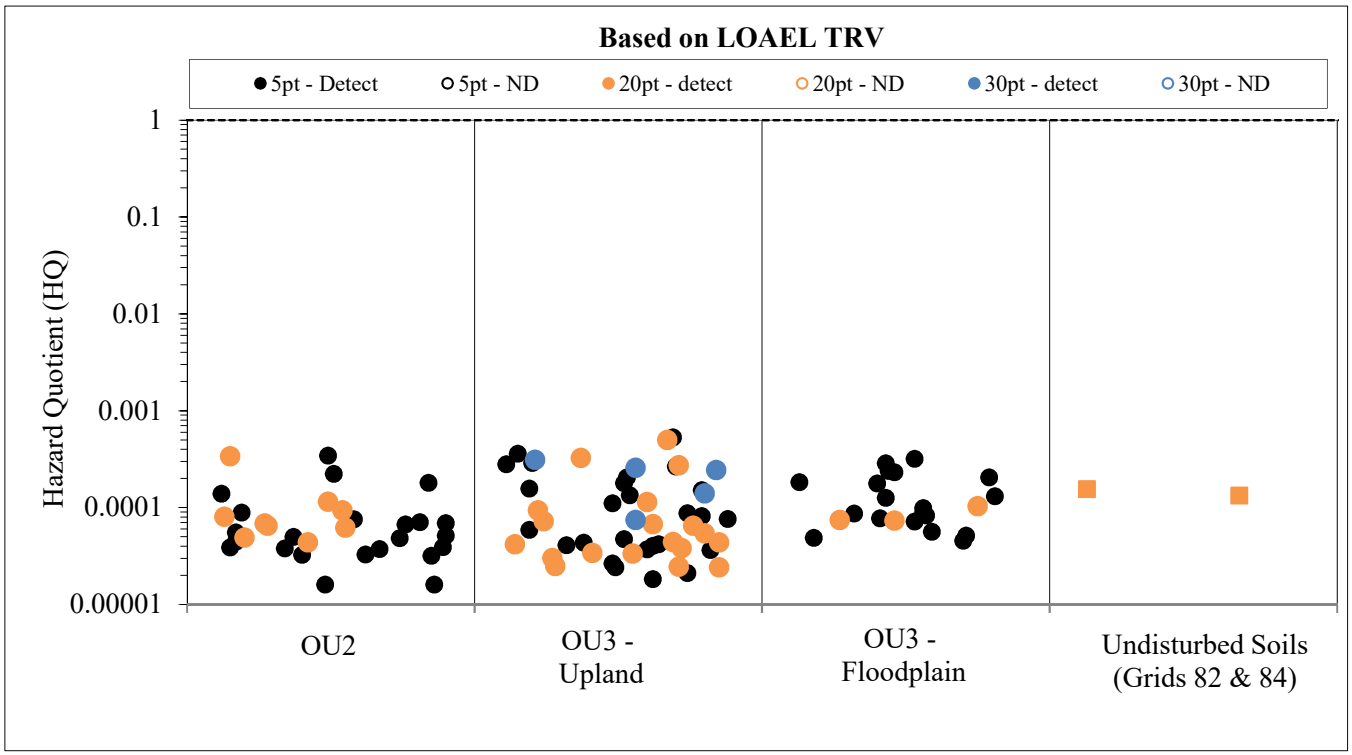
Zinc

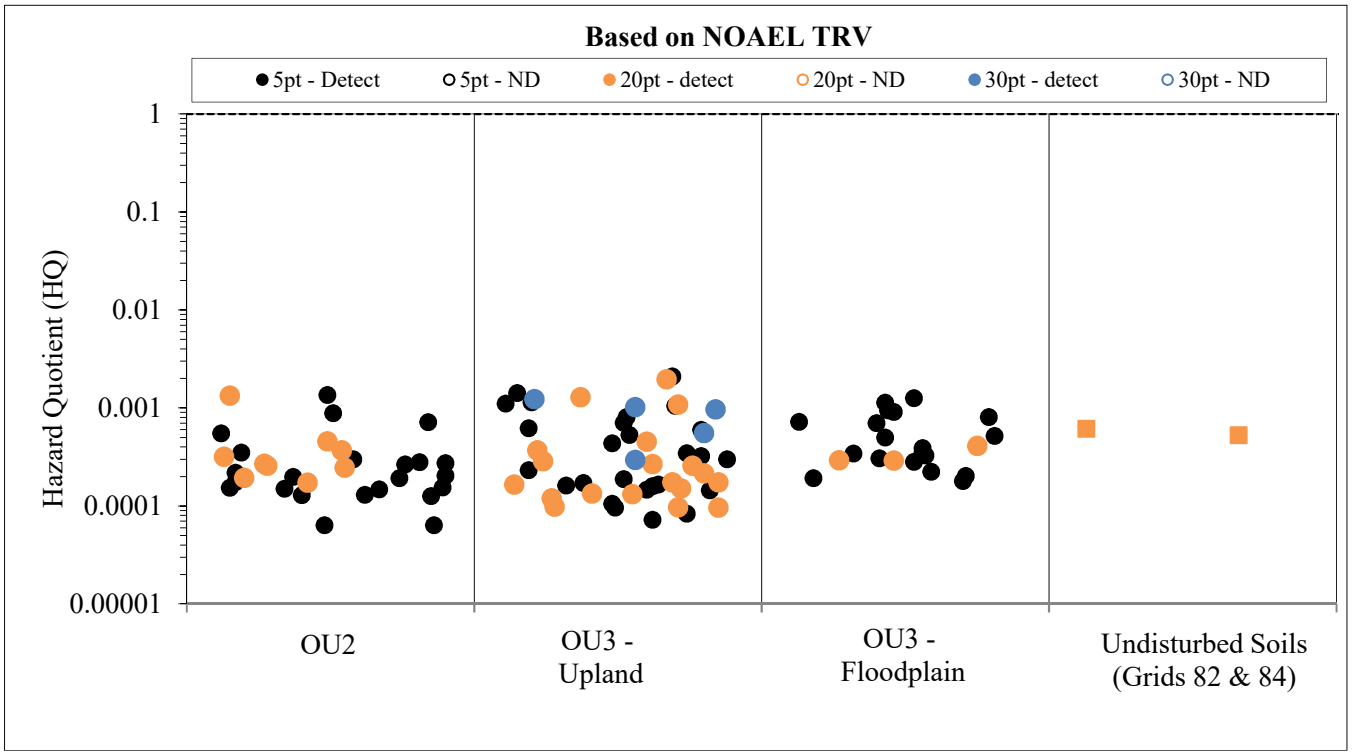
EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	9.047374	detect	298	75	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	9.09461	detect	298	75	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	10.92751	detect	298	75	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	9.646809	detect	298	75	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	7.193491	detect	298	75	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	19.18178	detect	298	75	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	12.46734	detect	298	75	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	9.291912	detect	298	75	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	17.35969	detect	298	75	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	7.799309	detect	298	75	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	14.95197	detect	298	75	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	10.65367	detect	298	75	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	10.08823	detect	298	75	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	12.18027	detect	298	75	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	14.74016	detect	298	75	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	7.406042	detect	298	75	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	8.904459	detect	298	75	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	17.04617	detect	298	75	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	20.38644	detect	298	75	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	6.936767	detect	298	75	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	9.893999	detect	298	75	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	15.94349	detect	298	75	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	13.67967	detect	298	75	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	12.54838	detect	298	75	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

APPENDIX G4
Hazard Quotients for Vole from Ingestion of Surface Soil by Exposure Unit/Soil Type

Zinc





APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Zinc

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU2	Grid 1	Grid 1-SSComp-01_20171016_NM	149	detect	298	75	<1.0	<1.0
	Grid 13	Grid 13-SSComp-01_20171019_NM	88.5	detect	298	75	<1.0	<1.0
	Grid 14	Grid 14-SSComp-01_20171017_NM	104	detect	298	75	<1.0	<1.0
	Grid 2	Grid 2-SSComp-01_20171016_NM	84.3	detect	298	75	<1.0	<1.0
	Grid 22	Grid 22-SSComp-01_20171018_NM	121	detect	298	75	<1.0	<1.0
	Grid 23	Grid 23-SSComp-01_20171018_NM	63.5	detect	298	75	<1.0	<1.0
	Grid 4&7	Grid 4&7-SSComp-01_20171017_NM	56.7	detect	298	75	<1.0	<1.0
	Grid 8	Grid 8-SSComp-01_20171018_NM	437	detect	298	75	<1.0	<1.0
	Grid 9	Grid 9-SSComp-01_20171018_NM	80.7	detect	298	75	<1.0	<1.0
	LF-1	LF-1-SS_4/18/14_NM	86.7	detect	298	75	<1.0	<1.0
	SB1-IN	SB1A-IN-(1-2)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
	SB2a,3a-IN	SB2a-IN-(0-2)	41.2	detect	298	75	<1.0	<1.0
	SS10-IN	SS10-IN-(0-2)c	48.2	detect	298	75	<1.0	<1.0
	SS11-IN	SS11-IN-(0-2)c	115	detect	298	75	<1.0	<1.0
	SS12-IN	SS12-IN-(0-2)c	66.6	detect	298	75	<1.0	<1.0
	SS13-IN	SS13-IN-(0-2)c	64.7	detect	298	75	<1.0	<1.0
	SS14-IN	SS14-IN-(0-2)c	91.7	detect	298	75	<1.0	<1.0
	SS15-IN	SS15-IN-(0-2)c	98	detect	298	75	<1.0	<1.0
	SS16-IN	SS16-IN-(0-2)c	289	detect	298	75	<1.0	<1.0
	SS17-IN	SS17-IN-(0-2)c	42.1	detect	298	75	<1.0	<1.0
	SS1-IN	SS1-IN-(0-2)c	42.4	detect	298	75	<1.0	<1.0
	SS29-IN	SS29-IN-(0-2)c	#N/A	#N/A	298	75	#N/A	#N/A
	SS2-IN	SS2-IN-(0-2)c	50.2	detect	298	75	<1.0	<1.0
	SS30-IN	SS30-IN-(0-2)c	#N/A	#N/A	298	75	#N/A	#N/A
	SS31-IN	SS31-IN-(0-2)c	#N/A	#N/A	298	75	#N/A	#N/A
	SS32-IN	SS32-IN-(0-2)c	446	detect	298	75	<1.0	<1.0
	SS33-IN	SS33-IN-(0-2)c	234	detect	298	75	<1.0	<1.0
	SS3-IN	SS3-IN-(0-2)c	49.2	detect	298	75	<1.0	<1.0
	SS4-IN	SS4-IN-(0-2)c	50.6	detect	298	75	<1.0	<1.0
	SS5-IN	SS5-IN-(0-2)c	57.5	detect	298	75	<1.0	<1.0
	SS6-IN	SS6-IN-(0-2)c	71.7	detect	298	75	<1.0	<1.0
	SS7-IN	SS7-IN-(0-2)c	89.3	detect	298	75	<1.0	<1.0
	SS8-IN	SS8-IN-(0-2)c	180	detect	298	75	<1.0	<1.0
	SS9-IN	SS9-IN-(0-2)c	62.7	detect	298	75	<1.0	<1.0
	HDPT-SS	BACKFILL-HDPT-SS	20.83333	detect	298	75	<1.0	<1.0
	TSB-SS	BACKFILL-TSB-SS	20.83333	detect	298	75	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Zinc

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Upland	AB II	AB II-SSComp-01_20171025_NM	333	detect	298	75	<1.0	<1.0
	AB1-TP3	AB1-TP3-SS_4/4/14_NM	265	detect	298	75	<1.0	<1.0
	CRP-1	CRP-1-SS_4/10/14_NM	173	detect	298	75	<1.0	<1.0
	Grid 27	Grid 27-SSComp-01_20171019_NM	31.4	detect	298	75	<1.0	<1.0
	Grid 28	Grid 28-SSComp-01_20171019_NM	32.2	detect	298	75	<1.0	<1.0
	Grid 29	Grid 29-SSComp-01_20171019_NM	39.2	detect	298	75	<1.0	<1.0
	Grid 30	Grid 30-SSComp-01_20171020_NM	44	detect	298	75	<1.0	<1.0
	Grid 33	Grid 33-SSComp-01_20171020_NM	43.3	detect	298	75	<1.0	<1.0
	Grid 34	Grid 34-SSComp-01_20171019_NM	31.7	detect	298	75	<1.0	<1.0
	Grid 37	Grid 37-SSComp-01_20171020_NM	54.2	detect	298	75	<1.0	<1.0
	Grid 39	Grid 39-SSComp-01_20171020_NM	57.2	detect	298	75	<1.0	<1.0
	Grid 43	Grid 43-SSComp-01_20171023_NM	70.3	detect	298	75	<1.0	<1.0
	Grid 44	Grid 44-SSComp-01_20171023_NM	93.6	detect	298	75	<1.0	<1.0
	Grid 47	Grid 47-SSComp-01_20171023_NM	355	detect	298	75	<1.0	<1.0
	Grid 53	Grid 53-SSComp-01_20171020_NM	121	detect	298	75	<1.0	<1.0
	Grid 60	Grid 60-SSComp-01_20171023_NM	148	detect	298	75	<1.0	<1.0
	Grid 61	Grid 61-SSComp-01_20171023_NM	84.1	detect	298	75	<1.0	<1.0
	Grid 64	Grid 64-SSComp-01_20171024_NM	87.3	detect	298	75	<1.0	<1.0
	Grid 74	Grid 74-SSComp-01_20171023_NM	644	detect	298	75	<1.0	<1.0
	Grid 75,78	Grid 75,78-SSComp-01_20171023_NM	56.9	detect	298	75	<1.0	<1.0
	Grid 76,77,79,80	Grid 76,77,79,80-SSComp-01_20171023_NM	49.4	detect	298	75	<1.0	<1.0
	HP16-1	HP16-1-SS_4/10/14_NM	98.4	detect	298	75	<1.0	<1.0
	HP16-TP2	HP16-TP2-SS_4/1/14_NM	48	detect	298	75	<1.0	<1.0
	HP18-1	HP18-1-SS_4/10/14_NM	113	detect	298	75	<1.0	<1.0
	HP18-DITCH	HP18-SSC-ditch_4/10/14_NM	56.3	detect	298	75	<1.0	<1.0
	HP18-IB	HP18-SSC-IB_4/10/14_NM	23.6	detect	298	75	<1.0	<1.0
	HP18-TP1	HP18-TP1-SS_4/1/14_NM	#N/A	#N/A	298	75	#N/A	#N/A
	HP18-TP3	HP18-TP3-SS_4/1/14_NM	27.3	detect	298	75	<1.0	<1.0
	HP9-1	HP9-1-SS_4/10/14_NM	345	detect	298	75	<1.0	<1.0
	IBJ-TP1	IBJ-TP1-SS_4/1/14_NM	53	detect	298	75	<1.0	<1.0
	IBK-1	IBK-1-SS_4/16/14_NM	61.3	detect	298	75	<1.0	<1.0
	NPP-TP1	NPP-TP1-SS_4/1/14_NM	466	detect	298	75	<1.0	<1.0
	P17-BH1	P17-BH1-SS_4/3/14_NM	686	detect	298	75	<1.0	<1.0
	P3	P3-SSComp-01_20171020_NM	423	detect	298	75	<1.0	<1.0
	P3-BH1	P3-BH1-SS_4/3/14_NM	231	detect	298	75	<1.0	<1.0
	P4-BH1	P4-BH1-SS_4/4/14_NM	52.2	detect	298	75	<1.0	<1.0
	P5-BH2	P5-BH2-SS_4/3/14_NM	106	detect	298	75	<1.0	<1.0
	P5S-BH1	P5S-BH1-SS_4/4/14_NM	143	detect	298	75	<1.0	<1.0
	P8	P8-SSComp-01_20171025_NM	181	detect	298	75	<1.0	<1.0
	P8dc	P8dc-SSComp-01_20171024_NM	317	detect	298	75	<1.0	<1.0
	P8-TP3	P8-TP3-SS_4/4/14_NM	373	detect	298	75	<1.0	<1.0
	SB19-TP3	SB19-TP3-SS_4/4/14_NM	362	detect	298	75	<1.0	<1.0
	SPP	SPP-SSComp-01_20171025_NM	402	detect	298	75	<1.0	<1.0
	SS1,2-HP18	SS1-HP18-(0-2)c	31.4	detect	298	75	<1.0	<1.0
	SS11,12-IBK	SS11-IBK-(0-2)c	34.4	detect	298	75	<1.0	<1.0
	SS13,14-HP9	SS13-HP9-(0-2)c	204	detect	298	75	<1.0	<1.0
	SS15,16-HP9	SS15-HP9-(0-2)c	196	detect	298	75	<1.0	<1.0
	SS3,4-HP16	SS3-HP16-(0-2)c	54.1	detect	298	75	<1.0	<1.0
	SS5,6-IBJ	SS5-IBJ-(0-2)c	47.2	detect	298	75	<1.0	<1.0
	SS7,8-HP13	SS7-HP13-(0-2)c	79.9	detect	298	75	<1.0	<1.0
	SS9,10-HP12	SS9-HP12-(0-2)c	76	detect	298	75	<1.0	<1.0
	SWBA	SWBA-SSComp-01_20171024_NM	96.8	detect	298	75	<1.0	<1.0

APPENDIX G4

Sample-Specific HQ Values for Vole from Ingestion of Surface Soil

Zinc

EU	Location	Sample_No	Surface Soil Conc. (a) (mg/kg)		Soil TRV (mg/kg-day)		Hazard Quotient (b) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
OU3-Floodplain	Grid 81	Grid 81-SSComp-01_20171024_NM	95.3	detect	298	75	<1.0	<1.0
	Grid 89	Grid 89-SSComp-01_20171026_NM	96.2	detect	298	75	<1.0	<1.0
	Grid 94	Grid 94-SSComp-01_20171026_NM	134	detect	298	75	<1.0	<1.0
	HP13a-1	HP13A-1-SS_4/10/14_NM	107	detect	298	75	<1.0	<1.0
	HP2-TP3	HP2-TP3-SS_4/2/14_NM	63	detect	298	75	<1.0	<1.0
	SE10-HP11	SE10-HP11-(0-2)c	370	detect	298	75	<1.0	<1.0
	SE11-HP11	SE11-HP11-(0-2)c	170	detect	298	75	<1.0	<1.0
	SE12-HP12	SE12-HP12-(0-2)c	100	detect	298	75	<1.0	<1.0
	SE13-HP12	SE13-HP12-(0-2)c	309	detect	298	75	<1.0	<1.0
	SE14-HP13	SE14-HP13-(0-2)c	72.9	detect	298	75	<1.0	<1.0
	SE15-HP13	SE15-HP13-(0-2)c	236	detect	298	75	<1.0	<1.0
	SE16-HP13	SE16-HP13-(0-2)c	128	detect	298	75	<1.0	<1.0
	SE17-HP13a	SE17-HP13a-(0-2)c	116	detect	298	75	<1.0	<1.0
	SE1-HP1a	SE1-HP1a-(0-2)c	163	detect	298	75	<1.0	<1.0
	SE2-HP1a	SE2-HP1a-(0-2)c	230	detect	298	75	<1.0	<1.0
	SE3-HP1	SE3-HP1-(0-2)c	66.4	detect	298	75	<1.0	<1.0
	SE4-HP1	SE4-HP1-(0-2)c	92.6	detect	298	75	<1.0	<1.0
	SE5-HP2	SE5-HP2-(0-2)c	299	detect	298	75	<1.0	<1.0
	SE6-HP7	SE6-HP7-(0-2)c	413	detect	298	75	<1.0	<1.0
	SE7-HP7	SE7-HP7-(0-2)c	59	detect	298	75	<1.0	<1.0
	SE8-HP10	SE8-HP10-(0-2)c	112	detect	298	75	<1.0	<1.0
	SE9-HP10	SE9-HP10-(0-2)c	265	detect	298	75	<1.0	<1.0
Undisturbed Floodplain	Grid 82	Grid 82-SSComp-01_20171024_NM	201	detect	298	75	<1.0	<1.0
	Grid 84	Grid 84-SSComp-01_20171026_NM	172	detect	298	75	<1.0	<1.0

#N/A = not analyzed
(a) Non-detects are evaluated at 1/2 the reported value.
(b) HQ values shown to two significant figures. HQs > 1.0 are shown in **bold**.
(c) Excluded as statistical outlier.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of River Surface Water

Zinc

Reach	Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW -day)		Hazard Quotient (c) (HQ)	
					LOAEL	NOAEL	LOAEL	NOAEL
CFR - Within Site Boundary	50-CFR	SW50-CFR	0.0045	detect	75.4	298	<1.0	<1.0
	CFRHP13A	CFRHP13A_20180523_NM	0.0139	detect	75.4	298	<1.0	<1.0
	CFR2	CFR2_20180523_NM	0.0153	detect	75.4	298	<1.0	<1.0
	SW3-CFR	SW3-CFR	0.0035	detect	75.4	298	<1.0	<1.0
	51-CFR	SW51-CFR	0.0044	detect	75.4	298	<1.0	<1.0
	52-CFR	SW52-CFR	0.0063	detect	75.4	298	<1.0	<1.0
CFR - Downstream of Site	53-CFR	SW53-CFR	0.0268	detect	75.4	298	<1.0	<1.0
	54-CFR	SW54-CFR	0.0062	detect	75.4	298	<1.0	<1.0
	SW2-CFR	SW2-CFR	0.0026	detect	75.4	298	<1.0	<1.0
	55-CFR	SW55-CFR	0.0041	detect	75.4	298	<1.0	<1.0
	56-CFR	SW56-CFR	0.0039	detect	75.4	298	<1.0	<1.0
	SW1-CFR	SW1-CFR	0.0025	detect	75.4	298	<1.0	<1.0
	57-CFR	SW57-CFR	0.0057	detect	75.4	298	<1.0	<1.0
	58-CFR	SW58-CFR	0.0044	detect	75.4	298	<1.0	<1.0
	59-CFR	SW59-CFR	0.0042	detect	75.4	298	<1.0	<1.0
	60-CFR	SW60-CFR	0.0059	detect	75.4	298	<1.0	<1.0
	61-CFR	SW61-CFR	0.005	detect	75.4	298	<1.0	<1.0
	62-CFR	SW62-CFR	0.0092	detect	75.4	298	<1.0	<1.0
	63-CFR	SW63-CFR	0.0036	detect	75.4	298	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of Creek Surface Water

Zinc

Reach	Location	Sample ID	Surface Water Conc. (a) (ug/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
					Acute	Chronic	Acute	Chronic
O'Keefe Creek	41-OK	SW41-OK	0.0045	detect	75.4	298	<1.0	<1.0
	43-OK	SW43-OK	0.0045	detect	75.4	298	<1.0	<1.0
LaValle Creek	SW9-LV	SW9-LV	0.0024	ND	75.4	298	<1.0	<1.0
	37-LV	SW37-LV	0.0039	detect	75.4	298	<1.0	<1.0
	39-LV	SW39-LV	0.0053	detect	75.4	298	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.

Appendix G4

Sample-Specific Hazard Quotients for Vole from Ingestion of Pond Surface Water

Zinc

Location	Sample ID	Surface Water Conc. (a) (mg/L)		Toxicity Benchmark (b) (mg/kg BW-day)		Hazard Quotient (c) (HQ)	
				LOAEL	NOAEL	LOAEL	NOAEL
74-CL Pond	SW74-CL Pond	0.0019	ND	75.4	298	<1.0	<1.0
HP2POND	HP2POND_20180523_NM	0.022	detect	75.4	298	<1.0	<1.0
69-HP1a	SW69-HP1a	0.0096	ND	75.4	298	<1.0	<1.0
73-P5	SW73-P5	0.0096	ND	75.4	298	<1.0	<1.0
71-HP7	SW71-HP7	0.0132	detect	75.4	298	<1.0	<1.0
72-HP2	SW72-HP2	0.0096	ND	75.4	298	<1.0	<1.0
75-HP10	SW75-HP10	0.0096	ND	75.4	298	<1.0	<1.0
67-HP12	SW67-HP12	0.0096	ND	75.4	298	<1.0	<1.0
68-IBJ	SW68-IBJ	0.0031	detect	75.4	298	<1.0	<1.0
66-HP13	SW66-HP13	0.0096	ND	75.4	298	<1.0	<1.0
65-HP13a	SW65-HP13a	0.0127	detect	75.4	298	<1.0	<1.0
HP13APOND	HP13APOND_20180523_NM	0.043	detect	75.4	298	<1.0	<1.0
70-CWD	SW70-CWD	0.0027	detect	75.4	298	<1.0	<1.0
64-HP18	SW64-HP18	0.0096	ND	75.4	298	<1.0	<1.0

#N/A = not analyzed

(a) Non-detects are evaluated at 1/2 the reported value.

(b) Hardness-dependant metals calculated from sample-specific hardness, based on dissolved fraction.

(c) HQ values shown to two significant figures. HQs > 1.0 are shown in bold.