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FINAL

**TECHNICAL ADDENDUM
HUMAN HEALTH RISK ASSESSMENT ON OU1 ALLEYWAYS AND
COMMERCIAL PROPERTIES**

**COLORADO SMELTER SUPERFUND SITE
PUEBLO, COLORADO**

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Prepared for:



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List of Acronyms

bgs	Below ground surface
BLL	Blood lead level
BTV	Background threshold value
COC	Contaminant of concern
COPC	Contaminant of potential concern
CS	Chemical-specific
CSF	Cancer slope factor
CSF _{ABS}	Absorbed cancer slope factor
CTE	Central tendency exposure
DQO	Data quality objective
DU	Decision unit
EPA	U.S. Environmental Protection Agency
FS	Feasibility study
GI _{ABS}	Gastrointestinal absorption
HI	Hazard index
HIF	Human intake factor
HHRA	Human health risk assessment
ICP-MS	Inductively-coupled plasma mass spectrometry
IRIS	Integrated Risk Information System
i-ROD	Interim Record of Decision
NPL	National Priorities List
OU	Operable unit
PbB	Blood lead
PWT	Pacific Western Technologies, Ltd.
QAPP	Quality Assurance Project Plan
RBA	Relative bioavailability of ingested substance
RfD	Reference dose
RfD _{ABS}	Absorbed reference dose
RI	Remedial investigation
RME	Reasonable maximum exposure
ROD	Record of Decision
RSL	Regional Screening Level
XRF	X-ray fluorescence

Units of Measurement

<	less than
>	greater than
≥	greater than or equal to
%	percent
cm	centimeter
cm ²	square-centimeter
dL	deciliter
g	gram
kg	kilogram
μm	micron or micrometer
mg	milligram
yr	year

1.0 Introduction

This addendum is a human health risk assessment (HHRA) for the Operable Unit 1 (OU1) at the Colorado Smelter Site (hereafter referred to as “the Site”) located in Pueblo, Colorado. OU1 is one of two operable units, that encompasses the residential properties located within a half-mile radius of the former smelter area. This addendum was prepared by Pacific Western Technologies, Ltd (PWT) and Tetra Tech Inc. (Tetra Tech) and is to supplement the previously completed HHRA for OU1 performed by the U.S. Environmental Protection Agency (EPA) with technical guidance from SRC, Inc. in 2019 (EPA, 2019). This HHRA addendum was prepared under contract line item (CLIN) 3 of the EPA Remedial Action Framework Design and Engineering Services (RAF DES) Contract Number 68HE0318D00010/ 68HE0821F0066, RAF DES Task Order for Colorado Smelter remedial investigation/feasibility study (RI/FS) Support. The original work performed in 2019 was an analysis of the potential receptors at residential properties, adjacent alleyways, and select non-adjacent alleyway trespasser scenarios. This addendum describes the risk analysis performed on potential non-resident receptors at alleyways and commercial properties.

This risk assessment addendum, combined with the risk assessment submitted in 2019, documents HHRA's performed using data generated from sampling for the Site collected in accordance with the Quality Assurance Project Plans (QAPP) for OU1 Remedial Investigation (RI) at Colorado Smelter (PWT, 2025). The early fieldwork supported the preparation of an early action interim Record of Decision (i-ROD), which supported the need for expedited soil removals at OU1 residential properties based on elevated levels of arsenic and lead (EPA, 2017b). This HHRA, and the 2019 OU1 HHRA, utilize the results from the samples collected during these field events.

One of the data quality objectives (DQOs) in the OU1 RI QAPP was to identify preliminary contaminants of potential concern (COPC) associated with OU1 soils (PWT, 2017b). In this effort, 17 preliminary COPCs were identified and discussed in the Technical Memorandum, Preliminary Identification of Contaminants of Potential Concern (preliminary COPC memorandum): antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, mercury, nickel, selenium, silver, thallium, vanadium, and zinc (PWT, 2017a). The RI later narrowed this list to nine COPCs for OU1 (PWT, 2020): antimony, arsenic, cadmium, copper, lead, manganese, nickel, thallium, and zinc. The 2019 OU1 HHRA (EPA, 2019) only included risk assessment for arsenic, copper, lead, manganese, and zinc. Based on the 2019 OU1 HHRA, the primary contaminants of concern (COC), in terms of human health risk, were arsenic and lead. This HHRA Addendum evaluates those COCs arsenic and lead as COPCs.

This Technical Addendum serves as an amendment to the initial OU1 HHRA conducted by SRC, Inc. in 2019 (EPA, 2019). It does not, however, supersede any risks calculated in the 2019 OU1 HHRA; rather it assesses properties that did not yet have data at the time of the 2019 OU1 HHRA. This Technical Addendum (1) presents the exposure point concentrations (EPCs) for arsenic and lead in the soils collected from alleyways and commercial properties within OU1, (2) describes the risk analysis methods, (3) discusses the results of the risk analysis, and (4) discusses qualitatively the risks associated with exposure pathways for which quantitative risk assessment was not conducted. The purpose of this HHRA is to report the current and potential future health risks posed to humans from exposure to contaminants at alleyways and

commercial properties within the Site and to help determine whether remediation is necessary. The methods used in this HHRA follow Risk Assessment Guidance for Superfund (RAGS) for human health and additional risk assessment guidelines specified by EPA for use at Superfund sites.

2.0 Site Characterization

The Site has been described in detail in previous Site documents (EPA, 2014; 2019; PWT, 2025). Sampling and field operations have been described in detail in previous technical memoranda pertaining to the characterization of this Site (EPA, 2019; PWT, 2020; PWT, 2025). A history pertaining to the potential health risks relevant to the Site were described in the 2019 OU1 HHRA (EPA, 2019). In brief, the Site is located in Pueblo, Colorado, bordered by Santa Fe Avenue to the east, Mesa Avenue to the south, Interstate 25 to the west, and the Arkansas River to the north. After the Site was placed on the National Priorities List (NPL) in December 2014, EPA divided the Site into two operable units (OUs). The first (OU1) encompasses community and residential properties within a half-mile radius of the former smelter area and the second (OU2) encompasses the former smelter area. Within OU1, there are approximately 2,060 residential properties and approximately 180 commercial properties, that include vacant properties, school properties, city-owned parks, county-owned parks (baseball fields), and city-owned alleyways.

A steel mill (Evraz/Rocky Mountain Steel/Colorado Fuel & Iron (CF&I)) is located to the south of the Site. This mill is currently operating and is under the jurisdiction of the Colorado Department of Public Health and Environment (CDPHE) Resource Conservation and Recovery Act (RCRA) program. This mill is not associated with the Site and was not evaluated in this HHRA.

In total, this addendum assessed 105 alleyways and 67 commercial properties within OU1. Details about these exact locations within OU1, and in relation to OU2, are presented in Figures 1 and 2.

Colorado Smelter began operation in 1883 and closed in 1908. It was built on a mesa by the owners of the Madonna Mine, to smelt the silver-lead ore extracted from the mine. Smelter operations processed an estimated 450 tons per day from 1883 to 1898 and 600 tons per day from 1899 to 1908. Operations produced waste slag, which was deposited in a ravine between Santa Fe Avenue and the Denver & Rio Grande railroad tracks. Most of the smelter structures were torn down in 1909. The American Smelting and Refining Company deeded the land in the 1920s to the Newton Lumber Company, which operated until the 1960s. The site was originally reported to EPA via a citizen complaint of an orange discharge to the Arkansas River (EPA, 2014). EPA listed the Site on the NPL due to concerns regarding high arsenic and lead measured in the slag and resident soils. Per the NPL Site Listing (EPA, 2014), the primary concerns of the Site include the residential soil and remaining slag onsite, containing lead and arsenic; an onsite seep contaminated with arsenic, cadmium, copper, lead, manganese, and zinc; and emissions from a 200-foot smelter stack containing lead and arsenic (EPA, 2014). A summary of previous investigations are described in detail in the 2019 OU1 HHRA (EPA, 2019), the draft OU1 RI Report (PWT, 2020) and revision 9 of the OU1 QAPP (PWT, 2025).

2.1 Alleyway Investigations

The 2019 OU1 HHRA investigated alleyways mostly as a connected landscape to residential properties (EPA, 2019). Three alleyways not in close proximity to residences were assessed alone for “alleyway trespasser” scenarios. The purpose of assessing alleyways in this HHRA addendum is to review exposure risks to harmful COPCs from visiting alleyways within OU1. In addition, more data collected from

alleyways within OU1 are available since the original HHRA was conducted. Five total scenarios were assessed in this Technical Addendum and are outlined below in Section 3.1.

2.2 Commercial Property Investigations

Commercial properties were not previously assessed in the 2019 OU1 HHRA, as the data had not yet been available. The purpose of assessing commercial properties in this HHRA addendum is to review exposure risks to harmful COPCs from visiting commercial properties within OU1. Three total scenarios were assessed and are outlined below in Section 3.1.

2.3 Human Health Risk Assessment Data

For this risk assessment, samples were collected from the Site by EPA and their contractors. Alleyway samples were collected from February to March 2017, January to February 2019, and February 2024. Commercial property samples were collected July 2023 through April 2024 and December 2024 through January 2025. Details regarding sample collection are discussed in previous project documents (PWT, 2017e; 2017f; 2017g; 2018; 2019b; 2020; 2022a; 2023a; 2025). In brief, soil data was collected from various depths from municipal owned alleyways and from commercial property assessor's parcel numbers (APN) in accordance with the approved Sampling and Analysis Plan (SAP) and (QAPP). Metals were quantified from these samples via XRF or ICP-MS. Exact quantification results from these samples are presented in Appendix A Table A-1 for alleyways and Appendix A Table A-2 for commercial properties.

All alleyways except for one (PC0321) had one decision unit (DU). A DU is the smallest volume of soil for which a decision is to be made (DUs are labeled as "Location" in Table A-1). The commercial properties considered in this HHRA had one or more DUs. Field duplicates and triplicates were collected from 10% of DUs.

3.0 Exposure Assessment

There are four understood routes of exposure for humans to external compounds: inhalation, ingestion, dermal contact, and injection. As discussed above and in the NPL Site Listing Narrative, the primary source of COPCs at the Site is the soil. Human exposure to soil occurs through ingestion, dermal contact, and inhalation. As discussed in the 2019 OU1 HHRA, the potential inhalation exposure from metals in contaminated soils is negligible. To maintain consistency with the 2019 OU1 HHRA, inhalation exposure from contaminated soils is not quantitatively assessed in this HHRA. A Conceptual Site Model (CSM) is shown in Figure 3.

The 2019 OU1 HHRA included the analysis of dust, as dust is the primary mechanism of soil exposure when indoors. As all exposure routes considered in this HHRA are outdoors, dust exposure was not considered beyond the standard dust exposure included in the Integrated Exposure Uptake Biokinetic (IEUBK) model. The IEUBK model is a unique blood lead quantitative analysis method, in which all possible exposure pathways are collectively considered to determine whether a particular environment presents a high risk for lead exposure for children under the age of 7. Some exposure pathways that were not quantitatively evaluated in this assessment on their own were included only in the IEUBK model calculations (as they are necessary for the calculations to take place) and are explained in further detail in Section 5.

3.1 Conceptual Site Model

A complete CSM is shown in Figure 3. This CSM summarizes the current understanding of potential contaminant sources and the ways in which these sources may lead to exposure to human receptors regarding the alleyways and commercial properties of the Site. All possible exposure pathways were proposed. Each exposure pathway was classified as either 1) complete and significant, 2) complete and minor, 3) complete but has insufficient data for evaluation, or 4) incomplete.

3.1.1 *Primary Sources of Contamination*

As discussed in the previous HHRA and the NPL Site Listing Narrative, the primary source of contamination at the Site are metals in soil. These metals accumulated in soil from historic smelter stack emissions and/or waste slag piles. Slag waste has not been found to any appreciable frequency in the residential properties and is not a concern for OU1 properties, therefore the scope of this HHRA includes quantifying the smelter-related contamination of soil at commercial properties and unpaved alleyways within the OU. As discussed above, the COPCs evaluated in this HHRA are arsenic and lead. Areas of uncertainty that may impact this assessment include pollutant contributors other than the Site, such as the Evraz Rocky Mountain Steel Mill, or general anthropogenic pollutants ubiquitous in nature, such as lead containing paints and gasoline, or arsenic containing pesticides.

3.1.2 *Transport in the Environment*

Historically, aerial dispersion and deposition from the former smoke stacks and slag piles had the potential to transport Site-related contaminants to surface soils of the neighboring communities.

3.1.3 Land Use and Populations of Chief Concern

As mentioned above, OU1 includes residential properties, alleyways, vacant lots, parks, and commercial properties. The human receptors considered in this HHRA are described below. Each scenario was assessed individually. Scenarios in which a single person falls within more than one receptor scenario (either discussed in this HHRA or the previous HHRA) were not evaluated (e.g., a resident of OU1 who also works as a construction worker within OU1). In summary, the scenarios listed in Exhibit 1 were evaluated:

Exhibit 1. List of Evaluated Human Receptor Scenarios and COPCs Considered

Property Type	Human Receptor Type	COPCs Considered
Alleyway	1. Child Alleyway Visitor	Arsenic Lead
	2. Adult Alleyway Visitor	Arsenic Lead
	3. Adult Construction Worker	
	4. Adult Utility Worker	
Commercial Properties	5. Adult Composite-Commercial Worker	
	6. Adult Construction Worker	
	7. Adult Utility Worker	

Note:

Child receptors were assessed for lead using the IEUBK model. Adults were assessed for lead using the adult lead methodology (ALM) model.

Alleyway Visitor

The alleyway visitor scenario refers to an individual who may walk through the alleyways of OU1 now or in the future. The nature of why this visitor is in the alleyway is unspecific. Potential examples include walking a dog or walking for leisure. The alleyway visitor scenario was evaluated through two potential receptors: a child and an adult. It was assumed the evaluation of a young child (0 to 7 years old) served as a protective evaluation for older children and adolescents as young children are the most vulnerable age group. Factors that make young children the most vulnerable include, but are not limited to, increased hand to mouth activity, smaller body size, and development stage. Increased hand to mouth activity leads to a higher incidental soil ingestion rate. Smaller body size more easily yields a larger dose, or body burden. The stages of development that young children are in are more vulnerable to lead and arsenic poisoning relative to older children or adolescents.

Commercial Worker (Composite)

The composite worker is a commercial worker, as defined by EPA, who is a full-time employee that works on-site, spending most of the workday conducting maintenance activities outdoors (such as moderate digging or landscaping) that typically involve on-site exposure to soils (EPA, 2024). For this evaluation, the composite-commercial worker represents adult individuals who may work at commercial properties within OU1 now or in the future, performing job tasks that align with EPA's definition of a Composite Worker. It was not assumed that a composite-commercial worker would likely work in alleyways, therefore composite workers were not assessed for alleyway properties. Any potential visits to the alleyways by composite workers would be classified as an adult alleyway visitor scenario. Specifically, for the Adult Lead Methodology (ALM) evaluation, a pregnant female is used and the protection of the fetus is evaluated.

Construction Worker

The construction worker refers to the adult individual who may work on construction sites involving digging activities in alleyways or on commercial properties located in OU1 where soil sampling was conducted now or in the future. Specifically, for the ALM evaluation, pregnant females were used.

Utility Worker

The utility worker refers to the adult individual who may engage in general non-construction related work activities involving digging in alleyways or on commercial properties located in OU1 where soil sampling was conducted now or in the future. Utility workers may work on buried phone lines, electrical lines, or municipal services. Specifically, for the ALM evaluation, pregnant females were used.

3.2 Exposure Pathways of Chief Concern

As described in Section 3.0, not all exposure pathways were quantitatively evaluated. Exposure pathways that were incomplete or that were complete but likely to cause negligible risk were not quantitatively evaluated. Complete pathways with considerable concern (indicated in the CSM by ●) were quantitatively evaluated. Complete pathways with minor risk (indicated in the CSM by ○) were qualitatively evaluated. Exposure pathways in which they may or may not be complete but have lacking data (indicated in the CSM by X), were qualitatively evaluated. Incomplete pathways (indicated in the CSM by an empty square) were not evaluated.

A discussion of each exposure pathway is discussed directly below.

3.2.1 Exposures to Soil and Indoor Dust

Incidental Ingestion of Surface Soil

Individuals that come into direct contact with contaminated soil may incidentally ingest small amounts of soil that adhere to their hands or face. Children, especially young children, may do so at higher amounts due to frequent hand-to-mouth or object-to-mouth behavior. Soil may enter buildings leading to contamination of indoor dust. As mentioned in the 2019 OU1 HHRA, incidental ingestion of soil is considered one of the most important routes of human exposure with contaminated soil and was evaluated for all potential receptors at all properties. Ingestion of soil, but not indoor dust, was quantitatively assessed in this HHRA. As mentioned in earlier sections, the IEUBK model requires the use of data from all potential exposure pathways; therefore, indoor dust was used for lead calculations. For more details see Section 5. Pica-related soil ingestion was not factored into this assessment.

Dermal Contact with Surface Soil

Individuals that come into direct contact with contaminated soil may have some of that soil contact their skin. Dermal exposure to surface soil is considered a complete exposure pathway for all receptors and was evaluated quantitatively for arsenic. As discussed in the 2019 OU1 HHRA, quantitative evaluation of lead uptake through dermal exposure to contaminated soils is not recommended. Dermal uptake of lead is considered negligible relative to lead uptake via incidental ingestion. Additionally, evaluation is logistically challenging as there is uncertainty in assigning dermal absorption fractions to lead that would apply to the

numerous inorganic forms of lead typically found in the environment.

Inhalation of Airborne Soil Particulates

The smelter stacks of the Site are no longer active and therefore do not contribute to potential ongoing airborne exposures. However, disturbance of previously contaminated soil may suspend contaminated soil or dust into the air which may be inhaled by humans within OU1. Air monitoring conducted on-site in OU1 demonstrated the levels of airborne particulate matter were generally small compared to the amount that is typically assumed for incidental ingestion. According to EPA, ingestion of dust and soil account for over 70% of exposures while inhalation accounts for under 2% of exposures (EPA, 2013). Following the approach used in the 2019 OU1 HHRA, inhalation of soil particulates was not evaluated in this HHRA. As mentioned in earlier sections, the IEUBK model requires the use of data from all potential exposure pathways, therefore, air monitoring data conducted at OU1 was used for lead calculations. For more details see Section 5.

Exposures to Subsurface Soil

In addition to the details outlined in the above sections, certain receptors are exposed to soils on the immediate surface and subsurface. Construction workers or utility workers typically have direct contact with soils deeper in the ground because of excavation activities. Because of the nature of construction or utility work, all exposure pathways may have increased soil contact: more soils come in contact with the skin, more incidental soil ingestion may occur, the skin may be coated in perspiration leading to increased soil adherence, and more particulates may get dispersed and inhaled. However, as articulated in the i-ROD, cleanup decisions on soils at depth based on the residential remedial action objective are to be protective of construction worker exposures. Following the approach of the 2019 OU1 HHRA, uptake through inhalation of contaminated soils for construction and utility workers were not quantified in this assessment.

3.2.2 Exposures to Groundwater

There is no record indicating the groundwater of OU1 is used as a drinking water source. As such, groundwater was not quantitatively evaluated in this HHRA.

3.2.3 Exposures to Food Items

It is not expected that any food grown on land located in OU1 will be a typical exposure pathway for the receptors evaluated in this HHRA. Exposures to food items grown on the land located in OU1 traditionally is evaluated for residents. Details regarding this exposure pathway are discussed in the 2019 OU1 HHRA.

3.2.4 Summary of Exposure Pathways Evaluated for Quantitative Assessment

The above sections discuss all potential exposure pathways for humans in the alleyways and commercial properties located in OU1. In summary, the following exposure pathways are quantitatively evaluated in this HHRA:

Exhibit 2. Summary of Exposure Pathways Quantitatively Evaluated

Property Type	Receptor	Exposure Pathways
Alleyways	Child Alleyway Visitor (Adult and child)	• Incidental ingestion of surface soil • Dermal contact with surface soil
	Construction Worker	• Incidental ingestion of surface and subsurface soils • Dermal contact with surface and subsurface soils
	Utility Worker	• Incidental ingestion of surface and subsurface soils • Dermal contact with surface and subsurface soils
Commercial Properties	Composite-Commercial Worker	• Incidental ingestion of surface soil • Dermal contact with surface soil
	Construction Worker	• Incidental ingestion of surface and subsurface soils • Dermal contact with surface and subsurface soils
	Utility Worker	• Incidental ingestion of surface and subsurface soils • Dermal contact with surface and subsurface soils

3.3 Selection of Contaminants of Potential Concern

Details regarding the selection of the initial COPCs that were evaluated at OU1 can be found in the 2019 OU1 HHRA. The conclusion of that discussion determined that arsenic, copper, lead, manganese, and zinc were to be quantified. Based on the 2019 OU1 HHRA, the primary COCs were arsenic and lead. Therefore, this HHRA evaluates the exposure risks from arsenic and lead exposure at OU1 for human receptors. Discussion of the uncertainty associated with the exclusion of other metals are discussed in Section 4.6.

4.0 Evaluating Exposure to and Risk from Non-Lead COPCs

As discussed earlier, the COPCs evaluated in this HHRA are arsenic and lead. Per EPA guidelines, lead exposure and risk are determined through unique assessment tools outlined in Section 5 of this report. As such, all non-lead COPCs, in this case only arsenic, are evaluated separately.

4.1 Exposure Point Concentrations (EPC)

All EPCs for arsenic and lead are presented in Table 4-1 (alleyways) and Table 4-2 (commercial properties). For DUs where field duplicates and triplicates were collected, all samples collected from those DUs were averaged. Results from samples collected from 0 to 1 inch were used for “surface soil” EPCs. Samples collected from 0 to 1 inch, 1 to 6 inches, 6 to 12 inches, and 12 to 18 inches were averaged to determine “subsurface soil” EPCs. To stay consistent with the 2019 OU1 HHRA, straight averages were used to determine subsurface soil EPCs. For alleyways or commercial properties that had more than one DU, an area-weighted-average (AWA) was calculated so each alleyway or commercial property had a single surface soil EPC and a single subsurface soil EPC.

Pulmonary exposure to metals was not considered in this report, as discussed in Section 3.2. However, when using the IEUBK model to determine child lead exposure risk, site-specific air lead data was used. Details regarding how site-specific air data was obtained are outlined in the 2019 OU1 HHRA.

4.2 Quantification of Exposure and Risk to Arsenic

The following sections discuss the methods used to quantitatively evaluate exposure to and risk from arsenic resulting from visiting alleyways or commercial properties located in OU1. As this is an addendum to the 2019 OU1 HHRA, methods outlined in the 2019 OU1 HHRA were used.

4.2.1 Basic Equations

Ingestion

The estimated exposure to non-lead COPCs via ingestion is presented as daily intake (DI). The DI by a human receptor present at the Site was calculated using the following equation:

$$DI = C \times \left(\frac{IR}{BW} \right) \times \left(\frac{EF \times ED}{AT} \right) \times CF \times RBA$$

where:

DI	=	Daily intake (mg/kg-day)
C	=	Concentration of contaminant in the environmental medium (soil) to which the person is exposed (mg/kg) – in this HHRA, this is also referred to as the EPC
IR	=	Intake rate of contaminated environmental medium (soil) by the exposed person (kg/day)
BW	=	Body weight of the exposed person (kg)
EF	=	Exposure frequency – how often a person is typically exposed to the contaminated medium over the course of a typical year (days/year)
ED	=	Exposure duration – how long a person is typically exposed to the contaminated medium throughout their lifetime (years)
AT	=	Averaging time – the length of time for which the average dose is calculated. For non-cancer effects, AT is equal to the ED. For cancer effects, the averaging

		time is the individual's lifetime.
CF	=	Conversion factor (10 ⁻⁶ kg/mg)
RBA	=	Relative bioavailability (unitless)

Note that while calculating a central tendency exposure (CTE) estimate and reasonable maximum exposure (RME) estimate, the BW remains the same. While BW may vary within the population, the purpose of BW in this exposure calculation is to derive the estimated dose in terms of “per kilogram of body weight.” Therefore, to properly capture the difference in ingestion rates between a CTE and RME estimate, the IR will vary and the BW will stay the same. As noted in the 2019 OU1 HHRA, the factors EF, ED, and AT combine to yield a factor between zero and one. Values near 1 can be interpreted as exposures that are nearly continuous over the specified averaging period and values near 0 can be interpreted as exposures that rarely occur. The relative bioavailability (RBA) for arsenic in this HHRA is unitless or presented as a percentage. Discussion on the RBA for arsenic is included in Section 4.3.3.

When simplified, daily intake can be calculated by:

$$DI = C \times HIF \times RBA$$

where:

HIF	=	Human intake factor – the average amount of an environmental medium that an exposed person takes in (kilogram of contaminated medium per kilogram of body weight, per day (kg/kg-day))
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and HIF is calculated for most receptors using the equation:

$$HIF = \left(\frac{IR}{BW} \right) \times \left(\frac{EF \times ED}{AT} \right) \times CF$$

For cancer risk, the child alleyway visitor and the adult alleyway visitor were assumed to be the same individual, where (similar to a resident) the alleyway visitor was assumed to begin their exposures in childhood and continue these exposures into adulthood. To account for this, HIFs for cancerous health outcomes for the alleyway visitor were calculated by:

$$HIF = \frac{\left[\frac{EF_{child} \times ED_{child} \times IR_{child}}{BW_{child}} + \frac{EF_a \times ED_a \times IR_{adult}}{BW_a} \right] \times CF}{AT}$$

Due to the variety of potential receptors in this assessment, the calculation for DI was simplified by deriving individual HIFs per receptor and using each HIF in the DI equation to determine each receptor's DI. HIFs are summarized in Table 4-8.

Dermal Contact

The estimated exposure to non-lead COPCs via dermal contact is presented as dermal absorbed dose (DAD). The DAD is calculated, as specified by EPA (EPA 2004), by using the following equation:

$$DAD = \frac{DA_{event} \times EF \times ED \times EV \times SA}{BW \times AT}$$

where:

DAD	=	Dermal absorbed dose (mg/kg-day)
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DA _{event}	=	Absorbed dose per event (mg of contaminant/cm ² of skin surface area, per event)
EF	=	Exposure frequency (days/year)
ED	=	Exposure duration (years)
EV	=	Event frequency – the number of times a person contacts the contaminant in the soil, per day (events/day)
SA	=	Surface area – the amount of skin exposed to the contaminated media (cm ²)
BW	=	Body weight of the exposed person (kg)
AT	=	Averaging time (days)

For soil, the DA_{event} is estimated using the following equation:

$$DA_{event} = C \times CF \times DAF \times ABS_d$$

where:

C	=	Contaminant concentration in soil (mg of contaminant per kg of soil) – in this HHRA, this is also referred to as the EPC
CF	=	Conversion factor (10 ⁻⁶ kg/mg)
DAF	=	Dermal adherence factor (mg of soil per cm ² of skin surface area, per event)
ABS _d	=	Dermal absorption fraction – the contribution of absorption of a contaminant across a person's skin from soil to the system dose, contaminant specific (unitless)

The 2019 OU1 HHRA used the following simplified equation to calculate the dermal exposure estimate for human receptors at the Site, which was used in this HHRA as well to maintain consistency:

$$DAD = C \times ABS_d \times HIF$$

where HIF is calculated for most receptors using the equation:

$$HIF = \frac{SA \times DAF \times EF \times ED \times EV \times CF}{BW \times AT}$$

For cancerous outcomes in the alleyway visitor, HIF was calculated by:

$$HIF = \frac{\left[\frac{EF_{child} \times ED_{child} \times SA_{child} \times AF_{child}}{BW_{child}} + \frac{EF_{adult} \times ED_{adult} \times SA_{adult} \times AF_{adult}}{BW_{adult}} \right] \times CF}{AT}$$

4.2.2 Selection of Human Exposure Parameters

Each exposure pathway accounts for the variability of how different groups of humans may encounter the soils within the alleyways and commercial properties of OU1. The ways in which a 4-year-old child may encounter the soils located in alleyways will differ from how a construction worker will encounter these soils. The numerical expression that describes degree of exposure is referred to as an exposure parameter. Examples for exposure parameters include exposure frequency, exposure duration, and exposed skin surface area. Due to the variability between receptors, exposure parameters were determined for each proposed receptor group.

While there is variability within each receptor group, EPA provides averages so that the average individual for each receptor group can be represented. These average individuals are defined as individuals whose exposure parameters lie within the central portion of the range of individuals within that receptor group.

Such exposure parameters are referred to as Central Tendency Exposure (CTE) estimates.

To account for individuals that may receive higher than average exposures to the compounds evaluated, EPA also provides upper estimates so that the more exposed individual for each receptor group can be represented. Exposure parameters that refer to these higher exposed individuals are referred to as Reasonable Maximum Exposure (RME) estimates. It is important to note that these values do not address the maximum exposure possible, rather, they address the exposure parameters for individuals that are exposed to an above average degree, staying within reason. Hypotheticals that pose extreme levels of exposure to contaminated soils (e.g., pica, high working hours) were not accounted for in this HHRA. RME individuals are defined as individuals whose exposure parameters lie within the 95th percentile of the range of individuals within that receptor group.

Tables 4-3 through 4-7 present the exposure parameters selected for arsenic exposure in this HHRA.

As this HHRA is an addendum to the 2019 OU1 HHRA, the applicable exposure parameters used in the 2019 OU1 HHRA were used in this HHRA where available. Details regarding the exposure parameters selected for construction workers, utility workers, and adult alleyway trespassers/visitors are discussed in the 2019 OU1 HHRA. Some receptor groups are included in this addendum that were not included in the 2019 OU1 HHRA. This includes the child alleyway visitor, the adult alleyway visitor, and the composite-commercial worker. The adult alleyway visitor in this HHRA used the same exposure parameters as the adult trespasser from the 2019 OU1 HHRA. For child alleyway visitors, borrowing logic from the authors of the 2019 OU1 HHRA, many exposure parameters used for the child resident were applied for the child alleyway visitor. This includes body weight, soil ingestion rate, exposed surface area, and adherence factor. The EF for the adult alleyway visitor was determined to also apply to the child alleyway visitor. Details regarding how the remainder of the exposure parameters were selected are outlined in the sources listed in Table 4-3. Exposure parameters selected for composite-commercial workers are outlined in the sources listed in Table 4-5.

For this HHRA, some exposure parameters were adjusted due to professional judgment. A summary of explanations for why certain exposure parameters were changed are outlined in Exhibit 3.

Exhibit 3. Summary of Non-Lead COPC Exposure Parameter Changes from 2019 OU1 HHRA and HHRA Addendum

Receptor	Exposure Parameter	Original Exposure Parameter Value	New Exposure Parameter Value
Adult Trespasser/ Alleyway Visitor	CTE Dermal adherence factor (ABS _d)	0.04 mg/cm ²	0.01 mg/cm ²
Construction Worker	CTE Exposure Frequency (EF)	130 days/year	250 days/year

4.3 Toxicity Assessment

A toxicity assessment within an HHRA identifies and discusses the adverse health effects a contaminant is likely to cause at various doses. An in-depth discussion regarding the toxicity of the COPCs evaluated in this HHRA is previously articulated in the 2019 OU1 HHRA. The toxicity assessment in this HHRA briefly reviews the expected adverse health effects from exposure to a contaminant based on the route of exposure

and exposure duration. In addition, these adverse health effects are discussed in terms of two potential outcomes: non-cancerous and cancerous. Toxicity values for any substance are derived from current understanding of each substance's dose-response relationship. The toxicity values selected for this HHRA are presented in Table 4-9. Discussion regarding the meaning of these toxicity values and which values were selected are presented below.

4.3.1 *Non-Cancer Effects*

A basic principle of toxicology is that all substances may be toxic when present in a high enough dose. It is the potency of the substance that dictates whether a substance may cause adverse health effects at low or high doses. Substances with high potency require lower doses to elicit adverse effects. However, dose-response is characterized through a variety of terms to fully describe what may happen to an individual if that individual were to be exposed to that substance.

When determining safety parameters for potential environmental substances, toxicologists aim to identify at which exposure humans may be exposed to that substance for which no adverse health effects are observed (often referred to as the NOAEL, or no-observed-adverse-effect-level). As mentioned in the 2019 OU1 HHRA, to maintain a health protective approach to setting these enforced thresholds, regulatory officials avoid using the NOAEL and instead use a more conservative value referred to as the Reference Dose (RfD). The RfD is an estimated daily exposure to a human that is likely to be without an appreciable risk of adverse effects during the human's lifetime.

To properly assess risks associated with incidental ingestion of contaminated soils, COPCs need to be assessed for how well they are absorbed through the gut to identify the true internalized dose of the COPC (EPA, 2025b). For an in-depth discussion regarding the RBA of metals in soils refer to Section 4.1.4 of the 2019 OU1 HHRA. In brief, metals in soils are generally not rapidly solubilized in human gastrointestinal fluids while the toxicity studies used to determine toxicity values use readily soluble forms of the substance. To account for this information gap, RBA is incorporated into risk calculations.

4.3.2 *Cancer Effects*

Arsenic is classified in the IRIS database as a Group A carcinogen (EPA 2025a). Carcinogenicity is grouped on a 6-tier scale, as outlined in the 2019 OU1 HHRA. To be a Group A carcinogen, this means EPA recognizes there is sufficient scientific evidence to conclude that the substance in question does cause cancer. However, the classification of being a Group A carcinogen does not describe a substance's potency for causing cancer. The toxicity values used to describe a substance's potency for causing cancer varies and is specific to the nature of the substance. If the mode-of-action for carcinogenicity is not established, there is no assumed dose at which exposure to that substance does not pose risk for cancer. In this case, a Slope Factor (SF), which represents risk of cancer per unit dose, is calculated and used for risk assessment.

4.3.3 *Human Toxicity Values*

EPA's Superfund program prioritizes the following sources when selecting for human health toxicity values

(EPA, 2003):

1. EPA's Integrated Risk Information System (IRIS)
2. The Provisional Peer Reviewed Toxicity Values (PPRTVs) derived by EPA's Superfund Health Risk Technical Support Center (STCS)
3. Other toxicity values, including additional EPA and non-EPA sources. Peer reviewed and publicly available information that is the most current is given priority.

IRIS includes an oral RfD and oral SF for inorganic arsenic (EPA, 2025a). The primary target for the non-cancerous effects of inorganic arsenic exposure includes cardiovascular and endocrine toxicity. Typically, cardiovascular toxicity from inorganic arsenic exposure presents as ischemic heart disease and the endocrine toxicity presents as type 2 diabetes. The RfD is based on the RfDs generated for these two adverse health outcomes. This oral RfD for inorganic arsenic is 6.00E-05 mg/kg-day.

The strength of evidence for inorganic arsenic carcinogenicity robustly supports that the primary target for the cancerous effects of inorganic arsenic exposure are the bladder and lungs. The SF in the IRIS database is a combined cancer SF that was obtained by combining the individual cancer SFs for bladder cancer and lung cancer. This combined oral SF for inorganic arsenic is 32 (mg/kg-day)⁻¹.

The nature of the soils present at a site may impact RBA, so RBA may be determined for each project. For this Site, a project-specific RBA of 0.48 (or 48%) was determined (PWT, 2017c; EPA, 2019).

4.4 Risk Characterization Approach

The purpose of this quantitative assessment is to determine the HI and Total Excess Cancer Risk.

The goal of this HHRA is to quantify the overall risk to each COPC for each exposure pathway outlined in the CSM. For non-cancerous outcomes regarding COPCs other than lead, this value is presented as the Hazard Index (HI). The HI is calculated by summing all hazard quotients (HQs). HQs are the risk for non-cancerous adverse effects for a given COPC per exposure route (e.g., ingestion, dermal). For cancerous outcomes, risk regarding each COPC for each exposure pathway is presented as the Excess Cancer Risk. The Total Excess Cancer Risk is the sum of all Excess Cancer Risks for each exposure route (e.g., ingestion, dermal). This section discusses the approach to quantification and calculation of HQs, HIs, and cancer risk. For a discussion of what these risk values mean and how they are interpreted, see Sections 4.4.1 and 4.4.2.

4.4.1 Non-Cancer Effects

Non-cancer risk is presented as HI. For this HHRA specifically, HI was calculated using the following equation:

$$HI = HQ(ingestion) + HQ(dermal)$$

Ingestion Exposures

To calculate ingestion HQ, the following equation was used:

$$HQ = \frac{DI}{RfD}$$

where:

DI = Daily intake of a contaminant, or the amount of which it is ingested per day (milligrams per kilogram of body weight, per day (mg/kg-day))
 RfD = Reference dose (mg/kg-day)

Dermal Exposures

To calculate dermal HQ, the following equation was used:

$$HQ = \frac{DAD}{RfD_{ABS}}$$

where:

DAD = Dermal absorbed dose (mg/kg-day)
 RfD_{ABS} = Absorbed reference dose (mg/kg-day)

and:

$$RfD_{ABS} = RfD \times GI_{ABS}$$

where:

GI_{ABS} = Fraction that is absorbed in the gastrointestinal tract

The HQ for ingestion or dermal exposures is found by dividing exposure by the reference dose.

A HI is calculated by adding together each HQ. A HQ refers to the ratio of the exposure to a substance (dose) to the reported exposure level at which no adverse effects are expected (RfD); put simply, $HQ = \text{dose}/RfD$. As the dose via ingestion varies from the dose via dermal contact, these ratios are determined individually and added together to identify the total possible risk an individual has when encountering the COPCs at a given site (HI); put simply, $HI = HQ(\text{oral}) + HQ(\text{dermal})$. When multiple COPCs are assessed, HQs per COPC are calculated and then added together to create a single HI (this was not done in this HHRA, as only arsenic was assessed; however, this was done for the 2019 OU1 HHRA).

It is the current opinion of EPA's Superfund program that if a HI is equal to or less than one, there is no appreciable risk that non-cancer adverse health effects will occur. Conversely, if a HI is greater than one, there is a possibility that a non-cancer adverse effect may occur due to exposure to the contaminants in question. Explaining numerically, when a HI is greater than one, the likelihood for a non-cancerous adverse health effect to develop within a human population due to exposure to the contaminants at the Site are greater than 0% but are below 100%. The larger the HI, the greater the likelihood for a non-cancerous adverse health effect to occur.

4.4.2 Cancer Effects

To calculate ingestion cancer risk, the following equation was used:

$$\text{Cancer Risk} = DI_L \times SF$$

where:

DI_L = Daily intake, averaged over a lifetime (mg/kg-day)
 SF = Slope factor (mg/kg-day)

To calculate dermal cancer risk, the following equation was used:

$$Cancer\ Risk = DAD \times SF$$

where:

DAD = Dermal absorbed dose (mg/kg-day)
 SF = Slope factor (mg/kg-day)

The Total Excess Cancer Risk is calculated through adding together the excess cancer risk for each exposure route for a single substance. Excess Cancer Risk refers to the increased chance an individual has of developing cancer due to the exposure received. As the dose via ingestion varies from the dose via dermal contact, the excess cancer risk is determined for each route of exposure and then added together to identify the total excess risk.

It is the current opinion of EPA's Superfund program that excess cancer risks less than 1E-06 (or 1 individual per 1 million individuals) are negligible and excess cancer risks greater than 1E-04 (or 1 individual per 10,000 individuals) warrant remediation. Excess cancer risks that range between 1E-06 and 1E-04 are evaluated on a case-by-case basis by EPA.

4.5 Results

HI and Excess Cancer Risks were identified for each property in this HHRA. A summary for all HI's is presented in Table 4-10. The calculation results for all individual HI's are presented in Tables B-1 through B-4, C-1, C-2, D-1, D-2, E-1, E-2, F-1, F-2, G-1, and G-2. A summary of all Excess Cancer Risks is presented in Table 4-11. The calculation results for all individual Excess Cancer Risks are presented in Tables B-5 through B-6, C-3, C-4, D-3, D-4, E-3, E-4, F-3, F-4, G-3, and G-4.

Results are presented in Table 4-10 as:

- the percent of all alleyways or commercial properties with a $HI \leq 1$ and
- the percent of all alleyways or commercial properties with a $HI > 1$.

Results are presented in Table 4-11 as:

- the percent of all alleyways or commercial properties with a cancer risk $\geq 1E-06$ (for each receptor),
- the percent of all alleyways or commercial properties with a cancer risk $> 1E-06$ to $1E-05$ (for each receptor),
- the percent of all alleyways or commercial properties with a cancer risk $> 1E-05$ to $1E-04$ (for each receptor), and
- the percent of all alleyways or commercial properties with a cancer risk $> 1E-04$ (for each receptor).

4.5.1 Risks to Alleyway Visitors

Table 4-10 presents the non-cancer hazards to the child and adult alleyway visitor. HQ and HI results for RME child alleyway visitors for each alleyway are shown in Table B-1. HQ and HI results for CTE child alleyway visitors for each alleyway are shown in Table B-3. The maximum HI for the RME child is 0.9. The maximum HI for the CTE child in alleyways is 0.2. HQ and HI results for RME adult alleyway visitors for each property are shown in Table B-2. HQ and HI results for CTE adult alleyway visitors for each property are shown in Table B-4. The maximum HI for the RME adult is 0.09. The maximum HI for the CTE adult in alleyways is 0.02.

Table 4-11 presents the cumulative cancer risks to the alley visitor. Cancer risk addresses the weighted average over an alleyway visitor's lifetime, assuming the individual is likely to visit the alleyways of OU1 from childhood into adulthood. For details regarding the excess cancer risk results for each alleyway, refer to Table B-5 for RME alleyway visitors and Table B-6 for CTE alleyway visitors. Excess cancer risk for the RME alleyway visitor range from 2E-05 to 2E-04. Excess cancer risk for the CTE alleyway visitor range from 2E-06 to 2E-05.

4.5.2 Risks to Construction Workers in Alleyways

Table 4-10 presents the non-cancer hazards to the adult construction worker in alleyways. HQ and HI results for RME construction workers for each alleyway are shown in Table C-1. HQ and HI results for CTE construction workers for each alleyway are shown in Table C-2. The maximum HI for the RME construction worker in alleyways is 0.9. The maximum HI for the CTE construction worker in alleyways is 0.3.

Table 4-11 presents cancer risks to the construction workers in alleyways. Cancer risk estimates for RME construction workers for each alleyway are shown in Table C-3. Cancer risk estimates for the RME construction worker at the alleyways sampled range from 4E-06 to 3E-05. Cancer risk estimates for CTE construction workers for alleyways are shown in Table C-4. Cancer risk estimates for the CTE construction worker in alleyways range from 6E-07 to 4E-06.

4.5.3 Risks to Utility Workers in Alleyways

Table 4-10 presents the non-cancer hazards to the adult utility worker in alleyways. HQ and HI results for RME utility workers for each alleyway are shown in Table D-1. HQ and HI results for CTE utility workers for each alleyway are shown in Table D-2. The maximum HI for the RME utility worker in alleyways is 0.5. The maximum HI for the CTE utility worker in alleyways is 0.09.

Table 4-11 presents cancer hazards to the utility worker in alleyways. Cancer risk estimates for RME utility workers for each alleyway are shown in Table D-3. Cancer risk estimates for the RME utility worker at the alleyways sampled range from 5E-05 to 3E-04. Cancer risk estimates for CTE utility workers for each alleyway are shown in Table D-4. Cancer risk estimates for the CTE utility worker at the alleyways sampled range from 3E-06 to 2E-05.

4.5.4 Risks to Composite-Commercial Workers in Commercial Properties

Table 4-10 presents the non-cancer hazards to the adult composite-commercial worker at commercial properties. HQ and HI results for RME composite-commercial workers for each commercial property are shown in Table E-1. HQ and HI results for CTE composite-commercial workers for each commercial property are shown in Table E-2. The maximum HI for the RME composite-commercial worker at commercial properties is 0.4. The maximum HI for the CTE composite-commercial worker at commercial properties is 0.2.

Table 4-11 presents cancer hazards to the composite-commercial worker at commercial properties. Cancer risk estimates for RME composite-commercial workers for each commercial property are shown in Table E-3. Cancer risk estimates for RME composite-commercial workers at the commercial properties sampled range from 7E-06 to 3E-04. Cancer risk estimates for CTE composite-commercial workers for each commercial property are shown in Table E-4. Cancer risk estimates for the CTE composite-commercial worker at the commercial properties sampled range from 1E-06 to 6E-05.

4.5.5 Risks to Construction Workers in Commercial Properties

Table 4-10 presents the non-cancer hazards to the adult construction workers at commercial properties. HQ and HI results for RME construction workers for each commercial property are shown in Table F-1. Non-cancer hazards for the RME construction workers at commercial properties range 0.07 to 2. HQ and HI results for CTE construction workers for each commercial property are shown in Table F-2. The maximum HI for the CTE construction worker at commercial properties is 0.7.

Table 4-11 presents the cancer hazards to the construction workers at commercial properties. Cancer risk estimates for RME construction workers for each commercial property are shown in Table F-3. Cancer risk estimates for RME construction workers at the commercial properties sampled range from 2E-06 to 6E-05. Cancer risk estimates for CTE construction workers for each commercial property are shown in Table F-4. The maximum Total Cancer Risk for the CTE construction workers at commercial properties is 9E-06.

4.5.6 Risks to Utility Workers in Commercial Properties

Table 4-10 presents the non-cancer hazards to the adult utility worker in commercial properties. HQ and HI results for RME utility workers for each commercial property are shown in Table G-1. The maximum HI for the RME utility worker at commercial properties is 1. HQ and HI results for CTE utility workers for each commercial property are shown in Table G-2. The maximum HI for the CTE utility worker at commercial properties is 0.2.

Table 4-11 presents the cancer hazards to the utility worker at commercial properties. Cancer risk estimates for RME utility workers for each commercial property are shown in Table G-3. Cancer risk estimates for RME utility workers at the commercial properties sampled range from 2E-05 to 8E-04. Cancer risk estimates for CTE utility workers for each commercial property are shown in Table G-4. Cancer risk estimates for the CTE utility worker at the commercial properties sampled range from 2E-06 to 5E-05.

4.6 Uncertainty Assessment

To assess the risks presented to humans from environmental contamination, assumptions are made to make these assessments quantitative. These assumptions include concentrations of COPCs in the environment, actual human contact/dose of the COPC, and actual dose-response curves for the non-cancer and cancer effects in humans. These assumptions are estimates that are accomplished through rigorous scientific study, however, these estimates are not guaranteed.

4.6.1 Uncertainties in Exposure Point Concentrations

Two assumptions were made when generating EPCs in this HHRA. 1) Which COPCs are present and 2) what concentration they are present within the Site. While the sampling process is a well calculated process to gather information regarding what COPCs are present and at what concentration, it is possible that the results of sampling were not actually representative of the Site. Sampling the incorrect areas of the Site could lead to a mischaracterization of the Site. Additionally, while soils were analyzed, it is possible certain analytes were present but not detected. Furthermore, while soils were analyzed, it is possible that certain detected analytes were detected in concentrations that are not representative of the Site. While the techniques used in this study have minimal likelihood for error, as with all sampling studies, these areas for uncertainty should be considered when making decisions regarding the Site.

4.6.2 Uncertainties in Human Exposure Parameters

The exposure parameters used to perform this HHRA were reported averages based on the information currently available by EPA (for individual citations for each exposure parameter, refer to Tables 4-3 through 4-8). While these exposure parameters are well researched and thoughtfully developed, they are estimates. Variations in body weight and ingestion rates cause significant variability in dose across the population. In addition, variations in exposure frequency, exposure durations, exposed skin, and level of perspiration cause significant variability in contact time with COPCs. Furthermore, the RME exposure parameters describe individuals that fall within the reasonable maximum or estimated 95 percentiles of exposures. These do not describe the worst-case scenario exposure possible. Ingestion rates were assumed to be incidental; cases of pica were not accounted for. Dermal exposure estimates assumed typical play behaviors; excessive skin showing and contact with soil were not accounted for. While many assumptions in this HHRA were made to be protective, risk managers and the public using the results of this HHRA should understand that these assumptions were still estimates and do not represent every individual.

4.6.3 Uncertainties in Dose of COPCs

Combining the two concepts outlined above together, this HHRA makes assumptions that the dose of arsenic a human will receive will be represented by the EPCs measured at the Site and the exposure parameters estimated by EPA. It is possible that the actual COPCs a future human comes into contact with at the Site will be different or will be at a different concentration than what was assumed.

4.6.4 Uncertainties in Toxicity Assessment

Toxicity values reported by IRIS are based on a multitude of high quality, peer-reviewed research studies that describe the dose-response of substances in humans. While these toxicity values are robustly supported

by scientific evidence, there are limitations in how they were obtained. Such limitations in the studies used to obtain these toxicity values include:

- Physiological differences between species leading to information gaps when only animal studies are available
- Extrapolation of data generated from high doses of a substance to determine toxicity values, which are much lower doses
- Extrapolation of data generated from acute doses to predicted outcomes regarding chronic exposure, or vice versa
- Extrapolation of data from homogenous populations to describe the heterogeneous human population as a whole
- Limitations in current technology or accurate interpretation of research studies

Studies are generally ranked in order of significance or impact, such that an epidemiological study of a large sample size of humans over the course of several decades will take precedence over a short-term mouse study; however, not all substances have the same variety of information available. Therefore, information regarding the cancer slope factor or the reference dose gets updated over time. As more information is available regarding a substance, these toxicity values may get updated until they best describe the dose-response relationship within a human.

Specifically for the current IRIS toxicity values for inorganic arsenic, two of the above limitations can be excluded. According to the IRIS summary and IRIS Toxicological Review of Inorganic arsenic, only chronic exposure, human epidemiological studies (no animal studies or acute exposure studies) were used as these are the highest quality studies to use for determining IRIS toxicity values. Therefore, these studies don't have the same limitations or information gaps as many other substances. However, scientists still encounter limitations when interpreting data from chronic human epidemiological studies to determine IRIS toxicity values.

Firstly, some health outcomes observed in epidemiological studies may be a consequence of factors outside of the exposure to arsenic. Unlike animal studies, confounding variables in human epidemiological studies are numerous and may contribute to the phenotypes measured in the study. Epidemiologists generally are trained to minimize this obstacle; however, the limitations are still present. Second, the human populations studied may not apply to all populations. The biological differences between genders, age, or ethnic groups may or may not be sufficiently significant to impact the toxicokinetics of arsenic. According to the IRIS report, these arsenic toxicity values are derived from studies that included both biological genders, included a wide range of age groups, and are from a variety of countries. While all nationalities or ethnicities may not be represented, it is likely the information gap from this limitation is minimal. Thirdly, as subtle physiological changes from low doses are challenging to derive a cause-effect relationship, the typical approach to toxicology is to study a substance at high doses and then work backward. As technology improves over time, it becomes easier to identify these subtle physiological changes and to connect them to the toxin in question. Therefore, it is assumed that there are likely lower doses than what is observed in a study that yield adverse reactions in humans. To overcome this limitation, among many other limitations discussed, toxicity values are derived to include multiple factors of safety and are much lower than the values reported in these studies.

It is impossible to know whether the current toxicity values accurately describe the actual dose-response relationship. Furthermore, as with factors such as the cancer slope factor, the natural genetic variation within human populations may indicate individual human beings respond differently to the same dose of a substance. While toxicity values such as the reference dose allows for the protection of individuals that can tolerate the smallest of doses, toxicity values such as the cancer slope factor assume all individuals will respond the same.

While it may be considered ideal to assume any dose of a harmful substance, such as arsenic, should be intolerable, there is no plausibility in enforcing a dose of zero. Due to natural occurrences of COPCs in the environment along with the financial and technical constraints regarding COPC removal, toxicity values are necessary to identify how low these substances must be to safely use any land that contain such substances. It is important for risk managers and the public to understand these toxicity values are as accurate as is possible by the current state of scientific knowledge and technology, yet they have their limitations and may not accurately represent the actual nature of the dose-response relationship of the COPCs in question.

4.6.5 Uncertainties from Contaminants Not Evaluated

As mentioned in previous documents, other potential substances may be of concern within OU1. Rigorous evidence and evaluation demonstrate the COPCs that warrant a quantitative analysis in this HHRA are arsenic and lead. However, there is a possibility that other substances at the Site may adversely have health outcomes but were not evaluated in this HHRA. As was described above, sampling is not a flawless science and potentially harmful contaminants that should have been evaluated may not have been detected. Additionally, certain COPCs were eliminated from evaluation as they are not considered to be as harmful as arsenic or lead (therefore, an analysis of arsenic or lead should be protective). This HHRA only evaluates the risk to adverse health outcomes to Site-related exposure to arsenic and lead. If a substance other than arsenic or lead are present at this Site in sufficient quantities, the conclusions made from this HHRA may underestimate or mischaracterize possible health risks from exposures to contaminants at this Site.

4.6.6 Uncertainties from Exposure Pathways Not Evaluated

As discussed above, quantitative risk estimates are derived only for arsenic based on the 2019 HHRA (EPA, 2019). Contaminants that were measured in Site samples but excluded from this HHRA may contribute a small amount of added risk but compared to the amount of risk that comes from arsenic, the contribution from other COPCs is expected to be so small that this is not a source of significant uncertainty.

4.6.7 Uncertainties in Contaminant Absorption (Relative Bioavailability)

The risk from an ingested contaminant depends on how much of the ingested contaminant is absorbed from the gastrointestinal tract into the body. This issue is especially important for metals in soil at mining/smeltering sites, because some of the metals may exist in poorly absorbable forms, and failure to account for this may result in a substantial overestimation of risk. In the absence of data, the default approach is to assume that the RBA is 100% for most metals. Use of this default assumption is likely to overestimate the true risk with the magnitude of the error depending on the actual amount that is absorbed from the GI tract.

For this HHRA Addendum, site-specific RBA was used, which reduces the uncertainty from this factor

considerably. A small amount of uncertainty remains, though the likelihood of overestimation is reduced significantly.

5.0 Evaluating Exposure to and Risk from Lead

Per EPA guidelines, the health risks from lead are evaluated differently than non-lead COPCs. For a detailed discussion regarding this, refer to Section 5.1 of the 2019 OU1 HHRA. There is no blood lead level (BLL) at which epidemiological studies have found no adverse effects in humans and therefore no NOAEL or RfD has been established. Lead risk is instead assessed by comparing estimated BLLs of humans exposed to the Site to the BLLs for which there is potential health concern. This assessment approach involves multidimensional modeling that assesses total lead exposure for individuals of both groups rather than restricting to Site-related sources. More discussion regarding the BLLs of potential health concern are discussed in Section 5.2 of this HHRA.

5.1 Lead Exposure Models

Two toxicokinetic models are used to assess BLLs in humans, as specified by EPA: the IEUBK model and the ALM model. For a detailed discussion regarding these models, refer to Section 5.2 of the 2019 OU1 HHRA. The IEUBK model was used in this HHRA to evaluate risks to child alleyway visitors from exposures to lead from the alleyways of OU1. The ALM was used in this HHRA to evaluate risks to adult alleyway visitors, adult composite-commercial workers, adult construction workers, and adult utility workers from exposure to lead from the alleyways and commercial properties of OU1. To keep risk estimates protective for the most vulnerable subpopulation, the IEUBK evaluated young children and the ALM evaluated risk to the fetus of pregnant exposed individuals. The IEUBK model software used for this HHRA was the most current version on the EPA website, as of January 2026 (Model Version: 2.0 Build1.72). Calculations using the ALM utilized the most current version of the ALM calculations Excel workbook available on the EPA website, as of January 2026 (version date 06/14/2017) (EPA, 2017).

5.2 Target Blood Lead Level

As mentioned in Section 5.0, there is no blood lead level (BLL) at which epidemiological studies have found no adverse effects in humans. Therefore, EPA follows the information provided in EPA OLEM Policy Directive “Residential Lead Directive for CERCLA Sites and RCRA Hazardous Waste Cleanup Program Facilities” (dated October 16, 2025), where a BLL of 5 µg/dL is the target BLL to develop preliminary remediation goals (EPA, 2025c). The EPA uses the 5 µg/dL BLL as a cleanup goal or action level—rather than a “safe” level—because it functions as a regulatory trigger for action based on population risk rather than a threshold for individual health safety. While the EPA acknowledges there is no known safe level of lead in blood, the 5 µg/dL goal is used to prioritize resources to protect children from the highest, most immediate hazards.

Per the i-ROD, a preliminary remediation goal of 350 ppm and 275 ppm for the lead in the soil and indoor dust gives a predicted BLL for exposed populations of 6.24 µg/dL. For details that explain how that BLL was determined, refer to Section 5.3 of the 2019 OU1 HHRA. To keep this HHRA consistent with current EPA guidance, a target BLL of 5 µg/dL was used in this assessment.

5.3 Exposure Point Concentrations

The soil EPCs were generated as described in Section 4.1. As this is an addendum to the 2019 OU1 HHRA,

the same site-specific concentration of lead in the air ($0.0166 \mu\text{g}/\text{m}^3$) used in the 2019 OU1 HHRA was used in this HHRA. All exposure assessments in this HHRA were outside exposures, therefore it was assumed indoor dust exposures were off-site. Consequently, indoor dust exposures were not property specific and did not utilize EPCs. More information regarding the dust concentration used in this HHRA is included below.

5.4 Exposure Parameters

Exposure parameters are presented for both the IEUBK Model and the ALM in the sections below.

5.4.1 IEUBK Model Inputs

Tables 5-1 and 5-2 present the IEUBK input parameters that were used in this HHRA. These parameters are consistent with the previous 2019 OU1 HHRA. Some of these values are based on IEUBK default parameters and some are site-specific. These inputs are discussed in the “Basis” column of Table 5-1. Risk values were calculated for each property using batch run computation and an input file. The input file used for this HHRA is attached in Appendix H. The information used in the input file is discussed below.

ID, FAM, BLOCK

To perform a batch run in IEUBK, the input file requires location identifiers for “ID,” “FAM,” and “BLOCK.” Each property was identified via ID. FAM and BLOCK refer to family or block groups that may be tracked within a lead monitoring study. As no FAM or BLOCK groups were tracked and to remain consistent with the 2019 OU1 HHRA, “0” was used as the input value.

Age

A receptor age of 50 months was used for consistency with the 2019 OU1 HHRA.

Soil Concentration (EPC)

Soil concentrations were property specific. Details regarding how individual EPCs were calculated are available in Section 4.1.

Dust Concentration

All Site-specific exposures evaluated in this HHRA are assumed to be outdoors. However, as previously discussed, the IEUBK model requires the use of data from all potential exposure pathways, therefore, indoor dust was used for lead calculations. While any indoor dust exposures in this HHRA are assumed to be off-site, the individuals assessed in this HHRA were assumed to have indoor exposures that were near the Site. Therefore, general site-specific dust variables were used. This Site’s background threshold value (BTv) for lead ($62.1 \text{ mg}/\text{kg}$) and the Site-specific MSD (0.36) were used to calculate a dust concentration of $22 \text{ mg}/\text{kg}$ (or $22 \mu\text{g}/\text{g}$) (PWT, 2017d; 2019; 2023b).

Drinking Water Concentration

The IEUBK default for drinking water was used.

Air Concentration

A Site-specific air concentration of 0.0166 µg/m³ was used. This was a maximum quarterly concentration measured within OU1, reported in November 2018, from the air monitoring study conducted (McVehil-Monnett Associates, Inc. 2019).

Other

The IEUBK “Other” exposure refers to alternate source intakes for lead. The IEUBK default of 0 µg/day was used.

PbB

Blood lead was not directly tracked in this study. PbB was left blank (as indicated by an asterisk).

ABSSoil

Absorbed soil was the site-specific derived value of 32%. This value was generated by multiplying the Site-wide mean lead RBA of 63% by 0.5, in accordance with the protocols outlined in EPA’s Lead RBA (EPA, 2019) and IVBA Fact Sheet (EPA, 2021) and soil bioavailability guidance (EPA, 2025b). This is consistent with the absorbed soil value used in the 2019 OU1 HHRA.

ABSDust

Absorbed dust was the site-specific value of 32%. This is consistent with the absorbed dust value used in the 2019 OU1 HHRA.

5.4.2 ALM Inputs

ALM inputs used in this HHRA are consistent with the inputs used in the 2019 OU1 HHRA. CTE values described in Section 4 were used. Detailed explanations regarding how individual exposure durations were derived are outlined in Section 5.5.2 of the 2019 OU1 HHRA. As noted in the 2019 OU1 HHRA, a site-specific absorption fraction (AF(soil)) of 12.6% was used. EPA default ALM inputs were used except for the following parameters: soil ingestion rate (IRs), exposure frequency (EFS,D), absorption fraction (AFS,D), and averaging time (ATS,D). The specific parameters used for each receptor group that differ from the default ALM inputs are summarized in Table 5-3.

The probability of the predicted PbB exceeding the target PbB of 5 µg/dL (P(PbB>C)) was identified for each property in this HHRA. Soil concentrations were property specific. Details regarding how individual EPCs were calculated are available in Section 4.1. The exact inputs used for each exposure pathway assessed using the ALM are shown in Appendix I.

For this HHRA, one exposure parameter was adjusted due to professional judgment. A summary of explanations for why this exposure parameter was changed is outlined in Exhibit 4.

Exhibit 4. Summary of Lead Exposure Parameter Changes from 2019 OU1 HHRA and HHRA Addendum

Receptor	Exposure Parameter	Original Exposure Parameter	New Exposure Parameter	Explanation
Adult Trespasser/ Alleyway Visitor	Soil Ingestion Rate (IR _s)	0.50 g/day	0.050 g/day	The 2019 OU1 HHRA notes they used the same exposure parameter as the CTE. However, the report indicates “0.50 g/day” was used. The CTE value was 50 mg/day which should convert to 0.050 g/day. This discrepancy was likely a conversion error.

5.5 Results

A summary of all lead risk probabilities are presented in Tables 5-4 through 5-10. These tables present the number of properties that have probabilities equal to or greater than 5%, 10%, and 20% exceeding the target BLL of 5 µg/dL.

The results from the IEUBK model assessment in children are summarized in Table 5-4. The results for each individual alleyway using the IEUBK model are presented in Appendix H. The results from the ALM assessment in adults are presented in Tables 5-5 through 5-10. The results for each individual alleyway or commercial property using the ALM are presented in Appendix I.

5.5.1 Risks to Alleyway Visitors

The risks to children from exposures to lead in surface soils at the alleyways evaluated in this assessment are summarized in Table 5-4. This assessment was conducted using the IEUBK model. The IEUBK output file encompassing the results for each individual property is in Appendix H.

The risks to adults from exposures to lead in surface soils at the alleyways evaluated in this assessment are summarized in Table 5-5. This assessment was conducted using the ALM. The results for each individual property are available in Appendix I, Table I-1.

5.5.2 Risks to Composite-Commercial Workers in Commercial Properties

The risks to composite-commercial workers from exposures to lead in surface soils at the commercial properties evaluated in this assessment are presented in Table 5-6. This assessment was conducted using the ALM. The results for each individual property are available in Appendix I, Table I-2.

5.5.3 Risks to Construction Workers in Alleyways

The risks to construction workers from exposures to lead in surface and subsurface soils at the alleyways evaluated in this assessment are summarized in Table 5-7. This assessment was conducted using the ALM. The results for each individual property are available in Appendix I, Table I-3.

5.5.4 Risks to Construction Workers in Commercial Properties

The risks to construction workers from exposures to lead in surface and subsurface soils at the commercial

properties evaluated in this assessment are summarized in Table 5-8. This assessment was conducted using the ALM. The results for each individual property are available in Appendix I, Table I-4.

5.5.5 *Risks to Utility Workers in Alleyways*

The risks to utility workers from exposures to lead in surface and subsurface soils at the alleyways evaluated in this assessment are summarized in Table 5-9. This assessment was conducted using the ALM. The results for each individual alleyway are available in Appendix I, Table I-5.

5.5.6 *Risks to Utility Workers in Commercial Properties*

The risks to utility workers from exposures to lead in surface and subsurface soils at the commercial properties evaluated in this assessment are summarized in Table 5-10. This assessment was conducted using the ALM. The results for each individual property are available in Appendix I, Table I-6.

5.6 *Uncertainty Assessment*

As described in Section 4.6 of this HHRA, all risk assessments must make assumptions on details regarding exposure and toxicity to make these risk assessments quantitative.

5.6.1 *Uncertainty in Human Contact/Dose of Lead*

As described in the 2019 OU1 HHRA, the main uncertainty with the IEUBK model and ALM are the uncertainties in the actual amount of lead that is ingested by the individual. The IEUBK model and ALM use exposure estimates for the CTE individual and do not portray any variability in ingestion rate. Exposure parameters for intermittently exposed individuals (such as the alleyway visitor) were consistent with the parameters used in the 2019 OU1 HHRA, where these values were created through professional judgment, using residential exposures as a frame of reference. Additionally, as discussed in Section 4.6, reported estimates for the CTE individual in the populations that were assessed are based on national averages tracked by EPA. As is the case with any estimates that describe a population, these are well-calculated estimates, but do not represent all individuals within the population. To account for these uncertainties, these exposure estimates were protective for the CTE individual.

5.6.2 *Uncertainty in Concentrations of COPCs in the Environment*

As discussed in Section 4.6, all EPCs used in this HHRA are estimates on COPC concentrations found in the soils of OU1. These estimates are generated through strategic soil sampling conducted on the site, however, as with any sampling, the true concentration of lead in the soils of OU1 may be different from what was quantified during sampling.

5.6.3 *Uncertainty in Model Inputs*

As mentioned in Section 5.7.3 of the 2019 OU1 HHRA, EPA Superfund authority does not address all sources of lead. EPA Office of Solid Waste and Emergency Response (OSWER) recommends coordination with other government agencies to facilitate communication and outreach regarding programs aimed to reduce lead exposure. Uncertainties in the exposure parameters used as the IEUBK and ALM model inputs create uncertainties similar to those noted in Section 4.6.2 for arsenic.

5.6.4 *Uncertainties in Model Predictions*

As discussed in Section 4.6 of this HHRA and in Section 5.7.4 of the 2019 OU1 HHRA, risk calculations assume that COPC uptake in the human body is fully understood. Current toxicokinetic models describe how lead is taken up by the body to the best of its ability; however, there are likely features to lead uptake that are not properly described or not yet understood. In addition, the process of lead uptake specifically has been found to be a highly complex process, hence the need for complex risk assessment tools. While these tools introduce complexity to risk estimates for lead exposure, they still may oversimplify the process. Risk managers should understand these BLLs are estimates with room for uncertainty, but that these BLL estimates are likely protective.

6.0 Summary

The purpose of this addendum is to provide additional health risk information for receptors and parcels not previously evaluated in the HHRA for OU1 of the Colorado Smelter Superfund Site to support future risk management decisions regarding the Site.

After the conclusions generated from previous HHRA and field work, the COPCs for OU1 of the Site are arsenic and lead. Most of the exposure pathways assessed within this HHRA had a HI that demonstrated no increased risk for non-cancerous adverse health effects due to Site-related arsenic exposure. Only one receptor at one commercial parcel had a HI greater than 1. Commercial property ID PC0710 had a HI of 2 for the RME construction worker.

For both RME and CTE receptors, the cancer risk is greater than $1\text{E-}06$ for at least one property for the following receptors and property types:

- alleyway visitors in alleyways;
- construction workers in alleyways;
- utility worker in alleyways;
- construction worker in commercial properties;
- composite-commercial worker in commercial properties; and
- utility worker in commercial properties.

To review which properties specifically have cancer risk greater than $1\text{E-}06$, see Appendices B through G.

Properties that had below a 5% chance for BLL to exceed $5\text{ }\mu\text{g/dL}$ were considered to have acceptable risk from lead exposure in this assessment. All receptors had properties that exceeded a 5% probability threshold, except for the adult alleyway visitor.

- Eight alleyway properties had a $\geq 5\%$ chance for BLL to exceed $5\text{ }\mu\text{g/dL}$ for the child alleyway visitor receptor.
- One commercial property had a $\geq 5\%$ chance for BLL to exceed $5\text{ }\mu\text{g/dL}$ for the composite-commercial worker receptor.
- Twelve alleyway properties and nine commercial properties that exceeded a 5% probability of unacceptable lead risk to construction and utility workers.

The specific properties that caused a greater than 5% chance for BLL to exceed $5\text{ }\mu\text{g/dL}$ may be viewed in Appendix H and Appendix I.

In summary, arsenic and lead are COCs for OU1 for these receptor scenarios, just as they were for the 2019 HHRA.

7.0 References

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Figures

Figure 1. Commercial Sampled Properties within OU1

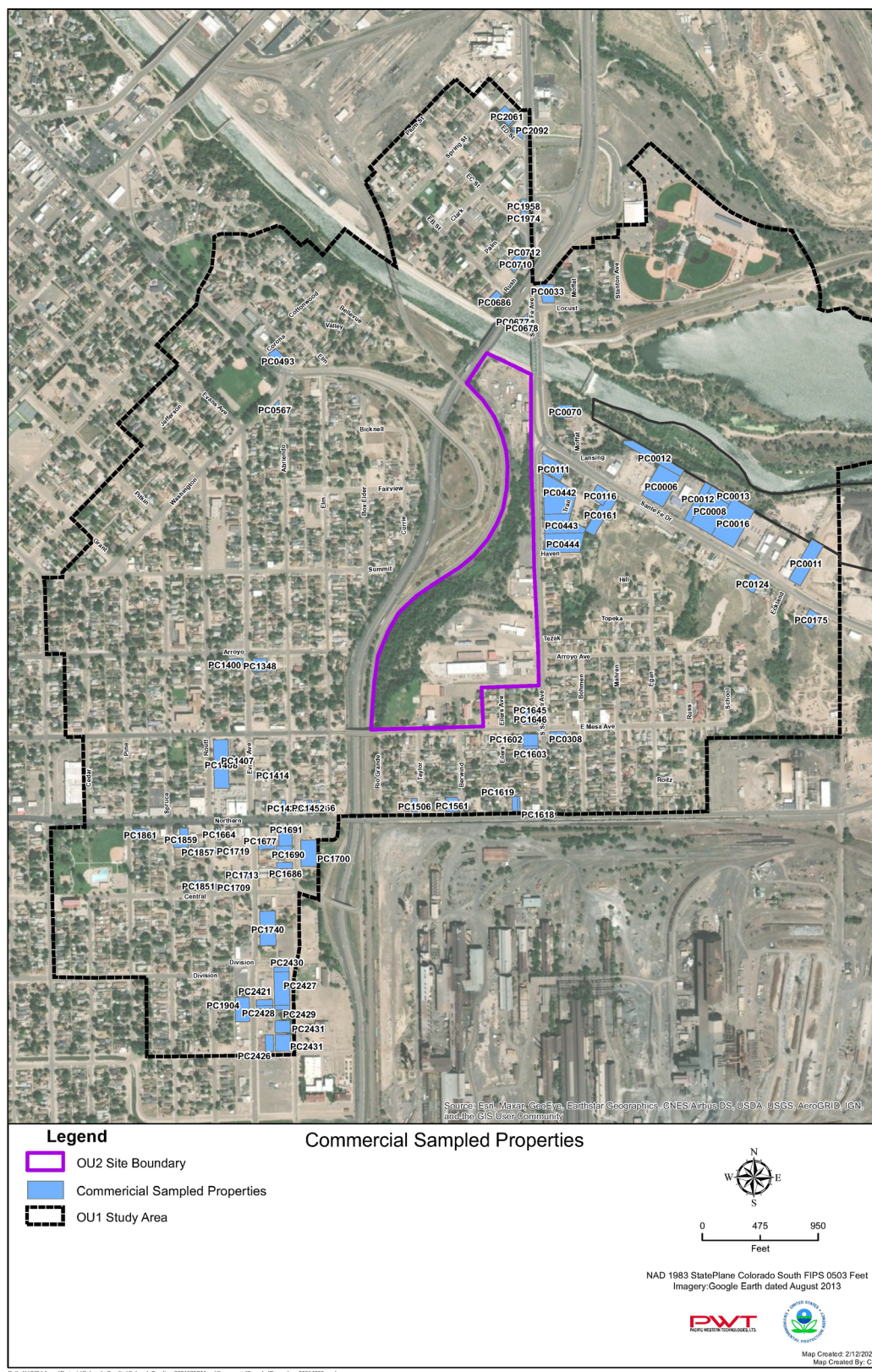
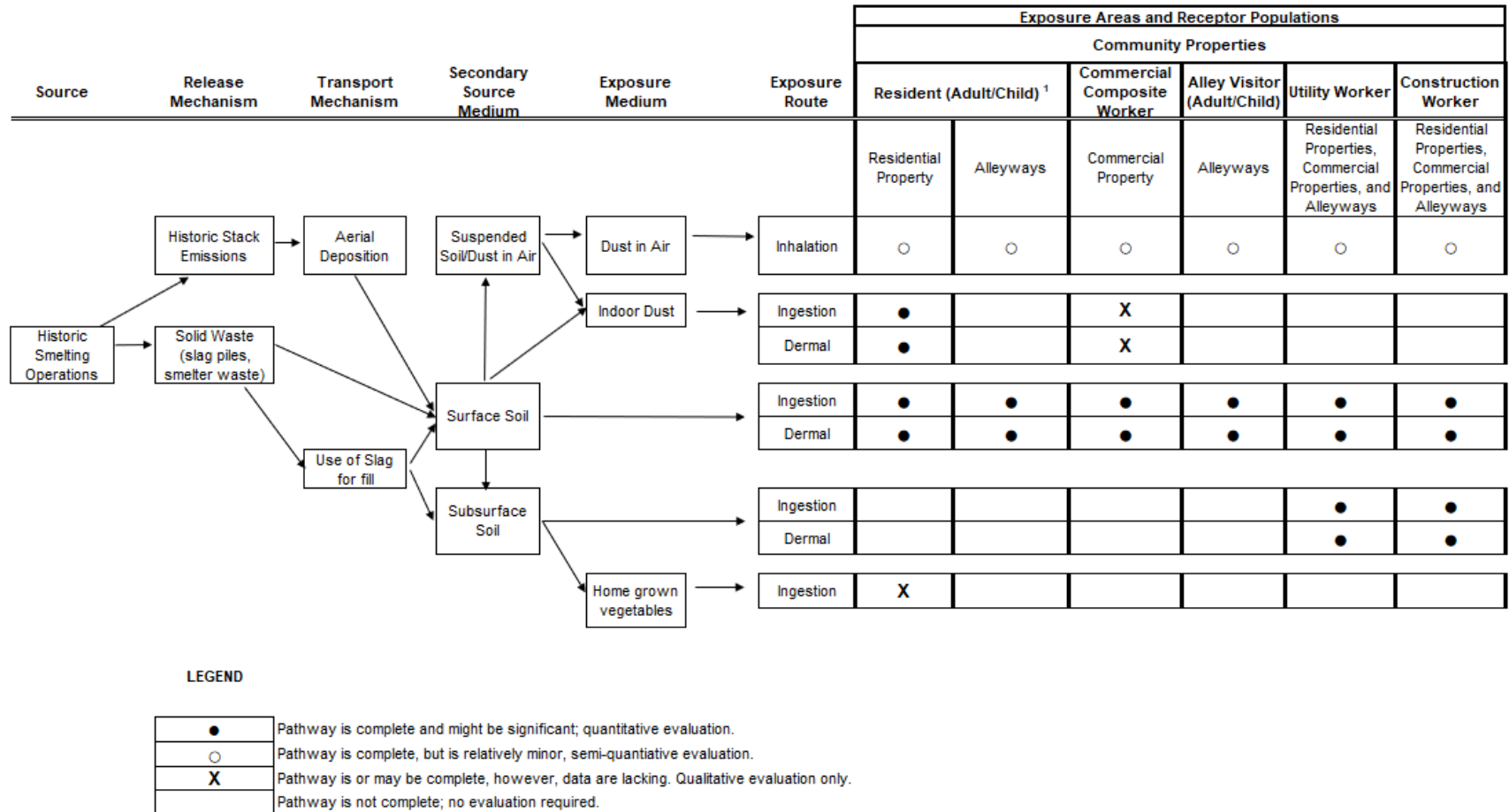


Figure 3. Conceptual Site Model for Human Exposure at the Colorado Smelter Site Operable Unit 1 (Community Properties)



¹ Residential properties and vacant lots evaluation for residential (EPA, 2019)

Tables

Table 4-1. Alleyway Exposure Point Concentrations

Property	Arsenic (mg/kg)		Lead (mg/kg)	
	Surface Soil	Subsurface Soil	Surface Soil	Subsurface Soil
AC001	10	10	300	270
AC002	16	15	250	220
AC003	38	33	290	260
AC004	19	14	500	310
AC005	19	16	460	400
AC006	20	19	500	390
AC007	16	16	230	250
AC008	6.5	10	160	260
AC009	9.6	10	210	210
AC010	7.6	9.8	210	400
AC011	29	20	550	420
AC012	8.1	11	100	90
AC013	11	9.8	240	160
AC014	7.6	8	150	110
AC015	11	9.5	220	140
AC016	12	11	290	220
AC017	6.7	9.2	160	120
AC018	12	11	290	230
AC019	11	14	260	230
AC020	5.6	9.4	94	180
AC021	13	12	230	220
AC022	6.6	9	99	160
AC023	9.3	14	130	220
AC024	11	11	120	140
AC025	12	17	250	290
AC026	7.5	12	160	280
AC028	6.7	8.6	90	110
AC029	7.6	13	130	200
AC030	7	10	170	160
AC031	9	10	180	140
AC032	9.5	11	150	160
AC033	7.6	12	130	140
AC034	9.4	16	230	330
AC035	7.8	12	120	150
AC037	7.7	12	130	210
AC038	9.3	12	120	200
AC039	11	12	170	240
AC040	11	13	200	220
AC041	7.8	21	160	380
AC042	6	10	150	220
AC043	11	13	190	240
AC044	13	17	230	280
AC045	9.8	10	260	220
AC046	9	13	150	250

Table 4-1. Alleyway Exposure Point Concentrations

Property	Arsenic (mg/kg)		Lead (mg/kg)	
	Surface Soil	Subsurface Soil	Surface Soil	Subsurface Soil
AC047	11	12	190	200
AC048	7.5	11	100	230
AC051	6.7	9.4	70	86
AC052	12	11	220	160
AC053	10	14	190	190
AC054	18	16	97	110
AC055	9.7	11	93	120
AC057	24	34	400	330
AC058	14	15	120	110
AC059	12	9.8	280	180
AC060	10	16	280	260
AC061	17	15	260	200
AC062	9.6	9.6	250	140
AC063	15	22	280	290
AC064	12	11	290	190
AC065	15	21	430	300
AC066	14	11	240	120
AC067	12	11	210	170
AC068	21	12	190	120
AC069	9.9	13	190	190
AC070	14	12	220	170
AC071	19	20	360	280
AC072	21	31	400	430
AC073	12	27	320	500
AC074	11	12	310	150
AC075	9.1	31	170	490
AC076	16	25	370	490
AC077	15	25	340	340
AC078	13	26	300	450
AC079	14	22	220	370
AC080	8	32	220	450
AC081	9.5	23	270	420
AC082	8.1	23	180	300
AC083	8.7	17	170	310
AC084	23	19	470	260
AC085	23	18	510	320
AC086	9.6	17	210	240
AC087	12	13	210	220
AC088	8.2	11	210	230
AC089	8.6	8.7	180	160
AC090	11	17	160	200
AC091	9.4	12	270	400
AC092	21	16	500	500
AC093	14	16	360	470

Table 4-1. Alleyway Exposure Point Concentrations

Property	Arsenic (mg/kg)		Lead (mg/kg)	
	Surface Soil	Subsurface Soil	Surface Soil	Subsurface Soil
AC094	14	19	340	550
AC095	11	23	220	450
AC096	11	20	280	570
AC097	13	14	270	390
AC098	7.5	11	280	280
AC099	3.6	5.1	99	160
AC100	3.9	5.5	270	290
AC101	3.5	5.2	130	190
AC102	5.8	7.5	160	210
AC103	4.1	5.9	110	180
AC104	6.3	6.8	160	240
AC105	5.2	5.4	230	160
AC106	4.5	5.1	88	53
AC107	6.1	5.7	78	69
AC108	11	25	100	150
AC109	4.8	9.6	50	210
PC0321	8.73	10.9	303	371

Notes:

mg/kg = milligrams per kilogram of soil

Surface soil EPCs were determined using samples collected from 0 to 1 foot. See Section 4.1 of the report for more details.

Subsurface soil EPCs were determined using samples collected from 0 - 1 foot, 1 - 6 feet, 6 - 12 feet, and 12 - 18 feet. See Section 4.1 of the report for more details.

Straight averages were calculated to combine soil depths. Area-weighted averages were calculated to combine DUs for properties with multiple DUs. This is consistent with the methods used in the 2019 OU1 HHRA.

All alleyways had one DU, except for PC0321.

Table 4-2. Commercial Property Exposure Point Concentrations

Property	Arsenic (mg/kg)		Lead (mg/kg)	
	Surface Soil	Subsurface Soil	Surface Soil	Subsurface Soil
PC0006	2.9	4.1	81	99
PC0008	3.6	4.9	150	100
PC0011	3.5	4.3	35	25
PC0012	6	5.5	30	33
PC0013	9	11	280	350
PC0016	3.1	3.7	90	58
PC0033	6.9	7	150	200
PC0070	5.4	5.8	130	110
PC0111	18	19	89	98
PC0116	7.9	11	120	160
PC0124	15	14	130	110
PC0161	9.9	12	94	140
PC0175	9.1	19	77	200
PC0308	3.8	12	71	170
PC0442	10	15	50	34
PC0443	5.1	12	66	120
PC0444	5.2	7.2	51	63
PC0493	2	2.4	100	110
PC0567	3.4	4.6	140	150
PC0677	1.9	3.6	88	120
PC0678	3.3	2.8	150	180
PC0686	2.3	4.4	160	420
PC0710	23	82	230	380
PC0712	9	11	860	660
PC1348	46	39	220	210
PC1400	8.5	16	400	330
PC1407	4.7	6.3	400	550
PC1408	1.1	5.8	15	65
PC1414	4.9	7	200	230
PC1426	6.7	5.5	210	190
PC1452	5.6	7.7	190	370
PC1453	5.3	8.2	170	260
PC1456	3.4	5.8	130	390
PC1506	8.5	10	230	290
PC1561	7.9	12	250	390
PC1602	6.1	6.3	100	62
PC1603	3.6	17	76	200
PC1618	5	8.7	82	200
PC1619	7	14	270	470
PC1645	26	25	430	340
PC1646	5.7	16	230	230
PC1664	4.4	4.6	90	320
PC1677	4.8	8	220	330
PC1686	11	9	250	190

Table 4-2. Commercial Property Exposure Point Concentrations

Property	Arsenic (mg/kg)		Lead (mg/kg)	
	Surface Soil	Subsurface Soil	Surface Soil	Subsurface Soil
PC1690	3.6	6.4	77	86
PC1691	3.5	4.4	130	310
PC1700	9.5	8.6	300	220
PC1709	4.7	5.4	140	130
PC1713	6	7.5	400	700
PC1719	19	14	540	310
PC1740	7.2	9.3	130	240
PC1851	3	4.3	55	140
PC1857	4.8	7.7	140	290
PC1859	4.5	5.8	310	210
PC1861	1.5	4.1	29	89
PC1904	12	11	200	270
PC1958	4.4	7.4	84	200
PC1974	8.1	12	360	410
PC2061	7.5	8.7	310	320
PC2092	4.5	6.9	85	230
PC2421	5.5	6.9	200	240
PC2426	8.3	8.8	160	270
PC2427	7.2	7.3	310	240
PC2428	6.3	5.9	220	160
PC2429	50	34	1100	1100
PC2430	10	8.8	200	120
PC2431	4	6.9	71	130

Notes:

mg/kg = milligrams per kilogram of soil

Surface soil EPCs were determined using samples collected from 0 to 1 foot. See Section 4.1 of the report for more details.

Subsurface soil EPCs were determined using samples collected from 0 - 1 foot, 1 - 6 feet, 6 - 12 feet, and 12 - 18 feet. See Section 4.1 of the report for more details.

Straight averages were calculated to combine soil depths. Area-weighted averages were calculated to combine DUs for properties with multiple DUs. This is consistent with the methods used in the 2019 OU1 HHRA.

Table 4-3. Exposure Parameters for an Alley Child Visitor/Walker

Exposure Pathway	Exposure Input Parameter	Units	CTE		RME	
			Child	Source	Child	Source
General	Body Weight	kg	15	[1]	15	[1]
	Exposure Frequency	days/yr	36	[3, a]	72	[3, a]
	Exposure Duration	yr	2	[3, b]	4	[3, e]
	Averaging Time, Noncancer	days	730	[2, 5]	1,460	[2, 5]
	Averaging Time, Cancer	days	25,550	[2]	25,550	[2]
	Conversion Factor	kg/mg	1.00E-06	--	1.00E-06	--
Ingestion of Soil	Ingestion rate	mg/day	100	[3, b]	200	[3, c]
Dermal Exposure to Soil	Exposed Surface Area (SA)	cm ² /event	2,373	[1, d]	2,373	[1, d]
	Adherence Factor (AF)	mg/cm ²	0.04	[4, f]	0.2	[1]
	Dermal Absorption Fraction (ABS _d)	unitless	CS	--	CS	--
	Event Frequency (EV)	events/day	1	[3, 4, g]	1	[3, 4, g]

Notes

CS = Chemical-specific, see Table 4-9

CTE = Central Tendency Exposure

RME = Reasonable Maximum Exposure

Sources:

[1] USEPA 2014. Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors. OSWER Directive 9200.1-120. February.

[2] USEPA 1989. Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A). Office of Emergency and Remedial Response, Washington, D.C. EPA/540/1-

[3] Professional judgment

[4] USEPA 2004. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part E). Office of Solid Waste and Emergency Response. July.

[5] USEPA 2024. Regional Screening Levels (RSLs) - Generic Tables. November.

[a] Assumes exposure occurs over the course of 36 weeks (March to October) at a frequency of 1 visit/week for a CTE visitor and 2 visit/week for an RME visitor.

[b] Assumes CTE value is half of the RME value.

[c] Assumes the same soil ingestion rate as the child resident.

[d] Assumes the same surface area for an child trespasser as an child resident.

[e] Assumes of the 6 possible years of a child's life (child is defined as < 6 years old), no visits to alleyways are made from ages 0 to 2 years.

[f] Value used is the geometric mean of the weighted soil adherence value for children playing.

[g] Assumes the same event frequency as a resident.

Table 4-4. Exposure Parameters for an Alley Adult Visitor/Walker

Exposure Pathway	Exposure Input Parameter	Units	CTE		RME	
			Adult	Source	Adult	Source
General	Body Weight	kg	80	[1]	80	[1]
	Exposure Frequency	days/yr	36	[4, a]	72	[4, a]
	Exposure Duration	yr	9	[3]	26	[3]
	Averaging Time, Noncancer	days	3,285	[2, 7]	9,490	[2, 7]
	Averaging Time, Cancer	days	25,550	[2]	25,550	[2]
	Conversion Factor	kg/mg	1.00E-06	--	1.00E-06	--
Ingestion of Soil	Ingestion rate	mg/day	50	[4, b]	100	[4, c]
Dermal Exposure to Soil	Exposed Surface Area (SA)	cm ² /event	6,032	[5, d]	6,032	[5, d]
	Adherence Factor (AF)	mg/cm ²	0.01	[6]	0.07	[1, e]
	Dermal Absorption Fraction (ABS _d)	unitless	CS	--	CS	--
	Event Frequency (EV)	events/day	1	[4, 6, f]	1	[4, 6, f]

Notes

CS = Chemical-specific, see Table 4-9

CTE = Central Tendency Exposure

RME = Reasonable Maximum Exposure

Sources:

[1] USEPA 2014. Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors. OSWER Directive 9200.1-120. February.

[2] USEPA 1989. Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A). Office of Emergency and Remedial Response, Washington, D.C. EPA/540/1-

[3] USEPA 1993. Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.

[4] Professional judgment

[5] USEPA 2011. Exposure Factors Handbook. EPA/600/R-090/052F.

[6] USEPA 2004. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part E). Office of Solid Waste and Emergency Response. July.

[7] USEPA 2024. Regional Screening Levels (RSLs) - Generic Tables. November.

[a] Assumes exposure occurs over the course of 36 weeks (March to October) at a frequency of 1 visit/week for a CTE visitor and 2 visit/week for an RME visitor.

[b] Assumes CTE value is half of the RME value.

[c] Assumes the same soil ingestion rate as the adult resident.

[d] Assumes the same surface area for an adult alley visitor as an adult resident.

[e] Assumes adherence factor equal to the soil adherence factor for an adult resident.

[f] Assumes the same event frequency as a resident.

Table 4-5. Exposure Parameters for a Composite-Commercial Worker

Exposure Pathway	Exposure Input Parameter	Units	CTE		RME	
			Value	Source	Value	Source
General	Body Weight	kg	80	[1]	80	[1]
	Exposure Frequency	days/yr	219	[4, a]	250	[5, 6; 4, a]
	Exposure Duration	yr	13	[3, c]	25	[1, 5]
	Averaging Time, Noncancer	days	4,745	[2, 5]	9,125	[2, 5]
	Averaging Time, Cancer	days	25,550	[2, 5]	25,550	[2, 5]
	Conversion Factor	kg/mg	1.00E-06	--	1.00E-06	--
Incidental Ingestion of Soil	Ingestion Rate - soil	mg/day	50	[3, b]	100	[5, 6]
Dermal Exposure to Soil	Exposed Surface Area (SA)	cm ² /event	3,527	[5, 7]	3,527	[5, 7]
	Adherence Factor (AF)	mg/cm ²	0.02	[4, a]	0.12	[5, 8]
	Dermal Absorption Fraction (ABS _d)	unitless	CS	--	CS	--
	Event Frequency (EV)	events/day	1	[4]	1	[4]

CS = chemical-specific, see Table 4-9

CTE = Central Tendency Exposure

RME = Reasonable Maximum Exposure

Sources:

[1] USEPA 2014. Humal Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors. OSWER Directive 9200.1-120. February.

[2] ESEPA 1989. Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A). Office of Emergency and Remedial Response, Washington, D.C. EPA/540/1-89/002. December.

[3] Professional judgment

[4] USEPA 2004. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part E). Office of Solid Waste and Emergency Response. July.

[5] USEPA 2024. Regional Screening Levels (RSLs) - Generic Tables. November.

[6] USEPA 1991. Human health evaluation manual, supplemental guidance: "Standard default exposure factors (PDF) (28 pp, 248 K)". OSWER Directive 9285.6-03. pg. 15.

[7] USEPA 2011a, Table 7-2; weighted average of mean values for head, hands, and forearms (male and female, 21+years).

[8] USEPA 2011, Table 7-20 and Section 7.2.2; arithmetic mean of weighted average of body part-specific (hands, forearms, and face) mean adherence factors for adult commercial/industrial activities.

[a] Using Exhibit 3-5.

[b] CTE ingestion rate assumed to be half that of the RME receptor.

[c] Using the exposure durations used in OU2 Report.

Table 4-6. Exposure Parameters for a Construction Worker

Exposure Pathway	Exposure Input Parameter	Units	CTE		RME	
			Value	Source	Value	Source
General	Body Weight	kg	80	[1]	80	[1]
	Exposure Frequency	days/yr	250	[3, a]	250	[6]
	Exposure Duration	yr	0.5	[3, b, c]	1	[6, c]
	Averaging Time, Noncancer	days	183	[2, 8]	365	[2, 8]
	Averaging Time, Cancer	days	25,550	[2]	25,550	[2]
	Conversion Factor	kg/mg	1.00E-06	--	1.00E-06	--
Incidental Ingestion of Soil	Ingestion Rate - Soil	mg/day	100	[7]	330	[6]
Dermal Exposure to Soil	Exposed Surface Area (SA)	cm ² /event	3,527	[1, 5]	3,527	[1, 5]
	Adherence Factor (AF)	mg/cm ²	0.1	[4, d]	0.3	[4, d, 8]
	Dermal Absorption Fraction (ABS _d)	unitless	CS	--	CS	--
	Event Frequency (EV)	events/day	1	[4]	1	[4]

CS = chemical-specific, see Table 4-9

CTE = Central Tendency Exposure

RME = Reasonable Maximum Exposure

Sources:

[1] USEPA 2014. Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors. OSWER Directive 9200.1-120. February.

[2] USEPA 1989. Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A). Office of Emergency and Remedial Response, Washington, D.C. EPA/540/1-89/002. December.

[3] Professional judgment

[4] USEPA 2004. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part E). Office of Solid Waste and Emergency Response. July.

[5] USEPA 2011. Exposure Factors Handbook.

[6] USEPA 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24. December 2002.

[7] USEPA 2009c. Frequent Questions from Risk Assessors on the Adult Lead Methodology.

[8] USEPA 2024. Regional Screening Levels (RSLs) - Generic Tables. November.

[a] Assumes exposure 5 days/week for 26 weeks (1/2 year). When computed with the ED, the CTE ED converts this exposure to 0.5 year vs. the 1.0 year for the RME exposure.

[b] CTE assumed to be half of the RME receptor.

[c] Using the exposure durations used in OU2 Report.

[d] Using Exhibit 3-3.

Table 4-7. Exposure Parameters for a Utility Worker

Exposure Pathway	Exposure Input Parameter	Units	CTE		RME	
			Value	Source	Value	Source
General	Body Weight	kg	80	[1]	80	[1]
	Exposure Frequency	days/yr	65	[3, a]	130	[3, a]
	Exposure Duration	yr	9	[4, c]	25	[1, c]
	Averaging Time, Noncancer	days	3,285	[2, 5]	9,125	[2, 5]
	Averaging Time, Cancer	days	25,550	[2]	25,550	[2]
	Conversion Factor	kg/mg	1.00E-06	--	1.00E-06	--
Incidental Ingestion of Soil	Ingestion Rate - soil	mg/day	100	[3, b]	200	[1, 3]
Dermal Exposure to Soil	Exposed Surface Area (SA)	cm ² /event	3,527	[1]	3,527	[1]
	Adherence Factor (AF)	mg/cm ²	0.2	[4, d]	0.9	[4, d]
	Dermal Absorption Fraction (ABS _d)	unitless	CS	--	CS	--
	Event Frequency (EV)	events/day	1	[4]	1	[4]

CS = Chemical-specific, see Table 4-9

CTE = Central Tendency Exposure

RME = Reasonable Maximum Exposure

Sources:

[1] USEPA 2014. Humal Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors. OSWER Directive 9200.1-120. February.

[2] ESEPA 1989. Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A). Office of Emergency and Remedial Response, Washington, D.C. EPA/540/1-89/002. December.

[3] Professional judgment

[4] USEPA 2004. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part E). Office of Solid Waste and Emergency Response. July.

[5] USEPA 2024. Regional Screening Levels (RSLs) - Generic Tables. November.

[a] A utility worker is assumed to be exposed only during working hours. Assumes exposure 5 days/week over 26 weeks for the RME receptor and over 13 weeks for the CTE receptor.

[b] CTE ingestion rate assumed to be half that of the RME receptor.

[c] Using the exposure durations used in OU2 Report.

[d] Used Exhibit 3-3, values for utility workers.

Table 4-8. Human Intake Factors (HIFs)

Exposed Population	Exposure Route	Exposure Medium	HIF (kg/kg-day)			
			Non-Cancer		Cancer	
			CTE	RME	CTE	RME
Child Alley Visitor	Ingestion	Surface Soil	6.6E-07	2.6E-06	2.7E-08	2.4E-07
	Dermal	Surface Soil	6.2E-07	6.2E-06	2.7E-08	7.4E-07
Adult Alley Visitor	Ingestion	Surface Soil	6.2E-08	2.5E-07	2.7E-08	2.4E-07
	Dermal	Surface Soil	7.4E-08	1.0E-06	2.7E-08	7.4E-07
Composite-Commercial Worker	Ingestion	Surface Soil	3.8E-07	8.6E-07	7.0E-08	3.1E-07
	Dermal	Surface Soil	5.3E-07	3.6E-06	9.8E-08	1.3E-06
Construction Worker	Ingestion	Subsurface Soil	8.6E-07	2.8E-06	6.1E-09	4.0E-08
	Dermal	Subsurface Soil	3.0E-06	9.1E-06	2.2E-08	1.3E-07
Utility Worker	Ingestion	Subsurface Soil	2.2E-07	8.9E-07	2.9E-08	3.2E-07
	Dermal	Subsurface Soil	1.6E-06	1.4E-05	2.0E-07	5.0E-06

Surface Soil: depths 0 to 1 inches below ground surface (bgs).

Subsurface Soil: subsurface samples are the average of all four depth intervals sampled (0-1, 1-6, 6-12, and 12-18 inches bgs)

$$HIF_{\text{ingestion}} = (IR/BW) * (EF * ED / AT) * CF$$

where:

IR = Intake rate of contaminated environmental medium (mg/day)

BW = Body weight (kg)

EF = Exposure frequency (days/year)

ED = Exposure duration (years)

AT = Averaging time (days)

CF_s = Conversion factor for soil (10⁻⁶ kg/mg)

$$HIF_{\text{Dermal - Soil}} = (SA * DAF * EF * ED * EV * CF_s) / (BW * AT)$$

where:

SA = Surface Area

AF = Adherence factor

EF = Exposure frequency

ED = Exposure duration

EV = Event frequency

CF_s = Conversion factor for soil (10⁻⁶ kg/mg)

For alleyway visitor cancer HIFs:

$$HIF_{\text{ingestion}} = (((EF_{\text{child}} * ED_{\text{child}} * IR_{\text{child}}) / BW_{\text{child}}) + ((EF_{\text{adult}} * ED_{\text{adult}} * IR_{\text{adult}}) / BW_{\text{adult}})) * CF / AT$$

$$HIF_{\text{dermal}} = (((EF_{\text{child}} * ED_{\text{child}} * SA_{\text{child}} * AF_{\text{child}}) / BW_{\text{child}}) + ((EF_{\text{adult}} * ED_{\text{adult}} * SA_{\text{adult}} * AF_{\text{adult}}) / BW_{\text{adult}})) * CF / AT$$

Table 4-9. Human Health Toxicity Values for Arsenic

Analyte	Source	Oral			Dermal				Primary Target (noncancer effects)	USEPA IRIS Cancer Weight of Evidence for the Oral Route
		RfD (mg/kg-day)	CSF (mg/kg-day) ⁻¹	Project- Specific Arsenic RBA	ABS _D	GI _{ABS}	RfD _{ABS} (mg/kg-day)	CSF _{ABS} (mg/kg-day) ⁻¹		
Arsenic	EPA IRIS 1/2025	6.00E-05	3.20E+01	48%	0.03	1	6.00E-05	3.20E+01	Cardiovascular, Endocrine	A. Human Carcinogen

mg/kg-day = milligrams per kilogram, per day

(mg/kg-day)⁻¹ = milligrams per kilogram, per day, per that unit

ABS_D = Dermal absorption fraction

CSF = Cancer Slope Factor

CSF_{ABS} = Absorbed Cancer Slope Factor

GI_{ABS} = Gastrointestinal absorption, what gets absorbed through the gastrointestinal tract

RBA = Relative Bioavailability of ingested substance - for details regarding project specific RBA, refer to Section 4.4

RfD = Reference Dose

RfD_{ABS} = Absorbed Reference Dose

Table 4-10. Summary of Non-Cancer Hazards to Arsenic

Panel A: RME Receptors

Type of Exposure Unit (EU)	Number of Properties Evaluated	Receptor	Estimated Number and Percent of Properties Within the Specified Risk Range		
			Total Non-Cancer Hazard Index (HI)		
			≤1E+00	>1E+00	Max HI
Alleyways	105	Child Visitor	105 (100%)	0 (0%)	9E-01
		Adult Visitor	105 (100%)	0 (0%)	9E-02
		Construction Worker	105 (100%)	0 (0%)	9E-01
		Utility Worker	105 (100%)	0 (0%)	5E-01
Commercial Properties	67	Composite-Commercial Worker	67 (100%)	0 (0%)	4E-01
		Construction Worker	66 (99%)	1 (1%)	2E+00
		Utility Worker	67 (100%)	0 (0%)	1E+00

Panel B: CTE Receptors

Type of Exposure Unit (EU)	Number of Properties Evaluated	Receptor	Estimated Number and Percent of Properties Within the Specified Risk Range		
			Total Non-Cancer Hazard Index (HI)		
			≤1E+00	>1E+00	Max HI
Alleyways	105	Child Visitor	105 (100%)	0 (0%)	2E-01
		Adult Visitor	105 (100%)	0 (0%)	2E-02
		Construction Worker	105 (100%)	0 (0%)	3E-01
		Utility Worker	105 (100%)	0 (0%)	9E-02
Commercial Properties	67	Composite-Commercial Worker	67 (100%)	0 (0%)	2E-01
		Construction Worker	67 (100%)	0 (0%)	7E-01
		Utility Worker	67 (100%)	0 (0%)	2E-01

Table 4-11. Summary of Cancer Risks to Arsenic

Panel A: RME Receptors

Type of Exposure Unit (EU)	Number of Properties Evaluated	Receptor	Estimated Number and Percent of Properties Within the Specified Risk Range				
			Total Excess Cancer Hazard Risk				
			≤1E-06	>1E-06 to ≤1E-05	>1E-05 to ≤1E-04	>1E-04	Max Risk
Alleyways	105	Alley Visitor	0 (0%)	0 (0%)	104 (99%)	1 (1%)	2E-04
		Construction Worker	0 (0%)	88 (84%)	17 (16%)	0 (0%)	3E-05
		Utility Worker	0 (0%)	0 (0%)	69 (66%)	36 (34%)	3E-04
Commercial Properties	67	Composite-Commercial Worker	0 (0%)	5 (7%)	59 (88%)	3 (4%)	3E-04
		Construction Worker	0 (0%)	63 (94%)	4 (6%)	0 (0%)	6E-05
		Utility Worker	0 (0%)	0 (0%)	58 (87%)	9 (13%)	8E-04

Panel B: CTE Receptors

Type of Exposure Unit (EU)	Number of Properties Evaluated	Receptor	Estimated Number and Percent of Properties Within the Specified Risk Range				
			Total Excess Cancer Hazard Risk				
			≤1E-06	>1E-06 to ≤1E-05	>1E-05 to ≤1E-04	>1E-04	Max Risk
Alleyways	105	Alley Visitor	0 (0%)	104 (99%)	1 (1%)	0 (0%)	2E-05
		Construction Worker	61 (58%)	44 (42%)	0 (0%)	0 (0%)	4E-06
		Utility Worker	0 (0%)	95 (90%)	10 (10%)	0 (0%)	2E-05
Commercial Properties	67	Composite-Commercial Worker	1 (1%)	59 (88%)	7 (10%)	0 (0%)	6E-05
		Construction Worker	54 (81%)	13 (19%)	0 (0%)	0 (0%)	9E-06
		Utility Worker	0 (0%)	63 (94%)	4 (6%)	0 (0%)	5E-05

Table 5-1. Integrated Exposure Uptake Biokinetic (IEUBK) Model Input Parameters

Parameter	Value	Basis
Soil Concentration (mg/kg)	Decision Unit-specific average outdoor soil concentration	Average soil lead concentrations for each DU; EPA determined area-weighted average is within 10% of arithmetic average (correspondence with C. Partridge).
Dust concentration (mg/kg)	Off-site specific indoor dust concentration	Dust was calculated assuming the child alleyway visitor lives off-site. BTV for lead (62.1 mg/kg) was used and the site-specific MSD (0.36) was used. PWT (2017d; 2019; 2023b)
Air concentration ($\mu\text{g}/\text{m}^3$)	0.0166	Maximum quarterly concentration from McVehil-Monnett Associates, Inc. (2019)
Indoor air concentration ($\mu\text{g}/\text{m}^3$)	30% of outdoors	IEUBK Default (EPA 1994)
Drinking water concentration ($\mu\text{g}/\text{L}$)	0.9	Updated default (EPA 2016)
Absorption Fractions:		
Air	32%	IEUBK Default (EPA 1994)
Diet	50%	IEUBK Default (EPA 1994)
Water	50%	IEUBK Default (EPA 1994)
Soil	32%	PWT (2017c); EPA (2019)
Dust	32%	PWT (2017c); EPA (2019)
RBA	63%	PWT (2017c); EPA (2019)
Fraction soil	45%	IEUBK Default (EPA 1994)
GSD	1.6	IEUBK Default (EPA 1994)

Table 5-2. Age Dependent Model Inputs

Age	Air		Diet	Water	Soil
	Time Outdoors (hrs)	Ventilation Rate (m ³ /day)	Dietary Intake (µg/day)	Intake (L/day)	Intake (mg/day)
0-1	1.0	3.22	2.66	0.4	86
1-2	2.0	4.97	5.03	0.43	94
2-3	3.0	6.09	5.21	0.51	67
3-4	4.0	6.95	5.38	0.54	63
4-5	4.0	7.68	5.64	0.57	67
5-6	4.0	8.32	6.04	0.6	52
6-7	4.0	8.89	5.95	0.63	55

Table 5-3. Adult Lead Methodology (ALM) Model Input Parameters

Exposure Parameter	Adult Alley Visitor	Composite-Commercial Worker	Construction Worker	Utility Worker
Soil Ingestion Rate (IR _s) g/day	0.050	0.05	0.100	0.100
Exposure Frequency (EF _{s,D}) day/year	36	219	130	65
Absorption Fraction (AF _{s,D}) unitless	0.126	0.126	0.126	0.126
Averaging Time (AT _{s,D}) day/year	252	365	182	91

Table 5-4. Summary of Lead Risks to Child Alleyway Visitors

Probability of the predicted PbB exceeding the target PbB	Estimated Number and Percent of Alleyways Within the Specified Range of the Target BLL
	Target BLL 5 µg/dL
<5%	97 (92%)
≥5%	8 (8%)
≥10%	0 (0%)
≥20%	0 (0%)

Notes:

µg/dL = micrograms per deciliter

BLL = Blood Lead Level

PbB = Blood lead

Total number of alleyways evaluated = 105

Table 5-5. Summary of Lead Risks to Adult Visitor in Alleyways

Probability of the predicted PbB exceeding the target PbB	Estimated Number and Percent of Alleyways Within the Specified Range of the Target BLL
	Target BLL 5 µg/dL
<5%	105 (100%)
≥5%	0 (0%)
≥10%	0 (0%)
≥20%	0 (0%)

Notes:

µg/dL = micrograms per deciliter

BLL = Blood Lead Level

PbB = Blood lead

Total number of alleyways evaluated = 105

Table 5-6. Summary of Lead Risks to Composite-Commercial Worker in Commercial Properties

Probability of the predicted PbB exceeding the target PbB	Estimated Number and Percent of Commercial Properties Within the Specified Range of the Target BLL
	Target BLL 5 µg/dL
<5%	66 (99%)
≥5%	1 (1%)
≥10%	0 (0%)
≥20%	0 (0%)

Notes:

µg/dL = micrograms per deciliter

BLL = Blood Lead Level

PbB = Blood lead

Total number of commercial properties evaluated = 67

Table 5-7. Summary of Lead Risks to Construction Worker in Alleyways

Probability of the predicted PbB exceeding the target PbB	Estimated Number and Percent of Alleyways Within the Specified Range of the Target BLL
	Target BLL 5 µg/dL
<5%	94 (90%)
≥5%	11 (10%)
≥10%	1 (1%)
≥20%	0 (0%)

Notes:

µg/dL = micrograms per deciliter

BLL = Blood Lead Level

PbB = Blood lead

Total number of alleyways evaluated = 105

Table 5-8. Summary of Lead Risks to Construction Worker in Commercial Properties

Probability of the predicted PbB exceeding the target PbB	Estimated Number and Percent of Commercial Properties Within the Specified Range of the Target BLL
	Target BLL 5 µg/dL
<5%	62 (93%)
≥5%	5 (7%)
≥10%	3 (4%)
≥20%	1 (1%)

Notes:

µg/dL = micrograms per deciliter

BLL = Blood Lead Level

PbB = Blood lead

Total number of commercial properties evaluated = 67

Table 5-9. Summary of Lead Risks to Utility Worker in Alleyways

Probability of the predicted PbB exceeding the target PbB	Estimated Number and Percent of Alleyways Within the Specified Range of the Target BLL
	Target BLL 5 µg/dL
<5%	94 (90%)
≥5%	11 (10%)
≥10%	1 (1%)
≥20%	0 (0%)

Notes:

µg/dL = micrograms per deciliter

BLL = Blood Lead Level

PbB = Blood lead

Total number of alleyways evaluated = 105

Table 5-10. Summary of Lead Risks to Utility Worker in Commercial Properties

Probability of the predicted PbB exceeding the target PbB	Estimated Number and Percent of Commercial Properties Within the Specified Range of the Target BLL
	Target BLL 5 µg/dL
<5%	62 (93%)
≥5%	5 (7%)
≥10%	3 (4%)
≥20%	1 (1%)

Notes:

µg/dL = micrograms per deciliter

BLL = Blood Lead Level

PbB = Blood lead

Total number of commercial properties evaluated = 67

Appendix A
Data Summary – Alleyway and Commercial Property EPCs

Table A-1.	Field data used to calculate EPCs at alleyways
Table A-2.	Field data used to calculate EPCs at commercial properties

Table A-1. Alleyway Data for Arsenic and Lead

Analyte	Property ID	Location	Sample Type	Concentration by Depth in Inches (mg/kg)			
				0-1	1-6	6-12	12-18
Arsenic	AC001	AC001	Field Sample	10.1	10.3	10.5	9.1
Arsenic	AC002	AC002	Field Sample	15.9	17.9	11.9	13.3
Arsenic	AC003	AC003	Field Sample	38	42.9	31.3	19.3
Arsenic	AC004	AC004	Field Sample	18.9	17.6	9.22	10.8
Arsenic	AC005	AC005	Field Sample	20.7	17.8	14.3	15
Arsenic	AC005	AC005	Field Duplicate	20.9	14.9	13.3	21.2
Arsenic	AC005	AC005	Field Triplicate	14.9	12.8	11.8	17
Arsenic	AC006	AC006	Field Sample	19.7	18.5	18.8	17.2
Arsenic	AC007	AC007	Field Sample	15.7	13.3	12.1	23.7
Arsenic	AC008	AC008	Field Sample	6.45	7.83	11.2	14.9
Arsenic	AC009	AC009	Field Sample	9.58	11.7	12.4	7.35
Arsenic	AC010	AC010	Field Sample	7.57	12.2	10.2	9.4
Arsenic	AC011	AC011	Field Sample	28.6	19.8	14.2	16.6
Arsenic	AC012	AC012	Field Sample	6.97	12.2	12.8	9.72
Arsenic	AC012	AC012	Field Duplicate	9.47	15.8	13.3	11.4
Arsenic	AC012	AC012	Field Triplicate	7.87	10.9	12	6.46
Arsenic	AC013	AC013	Field Sample	11.2	11	9.7	7.39
Arsenic	AC014	AC014	Field Sample	7.56	8.79	7.97	7.77
Arsenic	AC015	AC015	Field Sample	10.5	9.86	8.3	9.31
Arsenic	AC016	AC016	Field Sample	11.9	13.7	10.3	9.85
Arsenic	AC017	AC017	Field Sample	6.67	14.3	7.8	7.87
Arsenic	AC018	AC018	Field Sample	11.9	15.4	7.92	9.42
Arsenic	AC019	AC019	Field Sample	11.1	19.4	15.4	10.7
Arsenic	AC020	AC020	Field Sample	5.59	11.3	9.87	10.8
Arsenic	AC021	AC021	Field Sample	13.3	12.4	13.1	9.9
Arsenic	AC022	AC022	Field Sample	6.62	7.83	8.63	12.9
Arsenic	AC023	AC023	Field Sample	9.34	10.9	19.6	17.3
Arsenic	AC024	AC024	Field Sample	10.5	9.79	10.2	11.9
Arsenic	AC025	AC025	Field Sample	12.4	12.7	19.1	22.2
Arsenic	AC026	AC026	Field Sample	7.52	11.8	15.6	12.7
Arsenic	AC028	AC028	Field Sample	6.72	9.93	8.23	9.6
Arsenic	AC029	AC029	Field Sample	7.64	10.4	15.4	17.3
Arsenic	AC030	AC030	Field Sample	7	10.4	12.6	10.5
Arsenic	AC031	AC031	Field Sample	9.02	12.3	9.94	8.59
Arsenic	AC032	AC032	Field Sample	9.5	16	10.6	7.42
Arsenic	AC033	AC033	Field Sample	7.62	14	14.5	10.2
Arsenic	AC034	AC034	Field Sample	9.37	20.7	18	14.7
Arsenic	AC035	AC035	Field Sample	7.82	16.4	12.5	10.4
Arsenic	AC037	AC037	Field Sample	7.69	11.9	14.5	12.8
Arsenic	AC038	AC038	Field Sample	9.25	13.1	15.2	10.2
Arsenic	AC039	AC039	Field Sample	10.6	13.6	13.1	12.4
Arsenic	AC040	AC040	Field Sample	11.1	14.2	12.8	12.8
Arsenic	AC041	AC041	Field Sample	6.84	29.1	31.1	22.1

Table A-1. Alleyway Data for Arsenic and Lead

Analyte	Property ID	Location	Sample Type	Concentration by Depth in Inches (mg/kg)			
				0-1	1-6	6-12	12-18
Arsenic	AC041	AC041	Field Duplicate	9.28	16	36.1	24.6
Arsenic	AC041	AC041	Field Triplicate	7.36	24.6	25.3	15.8
Arsenic	AC042	AC042	Field Sample	5.96	8.91	14.2	11.3
Arsenic	AC043	AC043	Field Sample	11.2	18.5	12.5	11.7
Arsenic	AC044	AC044	Field Sample	13.3	11.9	21.5	19.6
Arsenic	AC045	AC045	Field Sample	9.76	7.62	9.56	14
Arsenic	AC046	AC046	Field Sample	9.02	13.3	18.4	11.2
Arsenic	AC047	AC047	Field Sample	10.7	12.7	13.3	10.4
Arsenic	AC048	AC048	Field Sample	7.48	11.6	11.9	12.5
Arsenic	AC051	AC051	Field Sample	6.69	9.45	10.7	10.6
Arsenic	AC052	AC052	Field Sample	11.9	12.1	11.5	10.2
Arsenic	AC053	AC053	Field Sample	10.5	11.8	16.9	23.5
Arsenic	AC053	AC053	Field Duplicate	10.5	13.2	16.5	9.24
Arsenic	AC053	AC053	Field Triplicate	9.53	10.8	24.8	13.6
Arsenic	AC054	AC054	Field Sample	17.8	16.3	15.7	15.3
Arsenic	AC055	AC055	Field Sample	9.73	9.42	11.7	12.2
Arsenic	AC057	AC057	Field Sample	24	69.5	22.3	20.2
Arsenic	AC058	AC058	Field Sample	13.6	13.7	21.1	13.5
Arsenic	AC059	AC059	Field Sample	12.3	10.4	9.63	6.69
Arsenic	AC060	AC060	Field Sample	10	25.7	19.6	8.68
Arsenic	AC061	AC061	Field Sample	17	16.2	14.8	10.9
Arsenic	AC062	AC062	Field Sample	9.56	11.7	10.7	6.37
Arsenic	AC063	AC063	Field Sample	15.4	25.5	23.3	25.1
Arsenic	AC064	AC064	Field Sample	11.8	9.04	10.7	12.5
Arsenic	AC065	AC065	Field Sample	14.9	24.3	37	9.23
Arsenic	AC066	AC066	Field Sample	13.6	13.7	9.34	6.05
Arsenic	AC067	AC067	Field Sample	11.9	11.4	12.1	6.99
Arsenic	AC068	AC068	Field Sample	20.7	12	10.8	5.55
Arsenic	AC069	AC069	Field Sample	9.92	11.6	17.5	13.5
Arsenic	AC070	AC070	Field Sample	13.9	13.4	11	9.63
Arsenic	AC071	AC071	Field Sample	19.9	18.4	25.2	11.3
Arsenic	AC071	AC071	Field Duplicate	18.9	23.6	22.2	21.2
Arsenic	AC071	AC071	Field Triplicate	18.9	22.7	21.1	19.6
Arsenic	AC072	AC072	Field Sample	21.1	30.6	36.6	36.3
Arsenic	AC073	AC073	Field Sample	12	28.7	40.1	29
Arsenic	AC074	AC074	Field Sample	11.3	11.3	14	10.8
Arsenic	AC075	AC075	Field Sample	9.09	34.5	44	36.7
Arsenic	AC076	AC076	Field Sample	15.7	27	35	21.6
Arsenic	AC077	AC077	Field Sample	14.6	17.3	33.1	34
Arsenic	AC078	AC078	Field Sample	12.6	17.4	29.3	44.1
Arsenic	AC079	AC079	Field Sample	13.9	17.7	35.6	20.1
Arsenic	AC080	AC080	Field Sample	8.01	14.1	52.2	52
Arsenic	AC081	AC081	Field Sample	9.49	20.7	29.3	31.9

Table A-1. Alleyway Data for Arsenic and Lead

Analyte	Property ID	Location	Sample Type	Concentration by Depth in Inches (mg/kg)			
				0-1	1-6	6-12	12-18
Arsenic	AC082	AC082	Field Sample	8.1	22.4	25.4	37.5
Arsenic	AC083	AC083	Field Sample	8.69	11.6	21.2	26.2
Arsenic	AC084	AC084	Field Sample	23	14.5	19.2	19.6
Arsenic	AC085	AC085	Field Sample	23	25.8	17.6	7.51
Arsenic	AC086	AC086	Field Sample	9.6	17	19.5	19.9
Arsenic	AC087	AC087	Field Sample	12.4	15.9	13	9.79
Arsenic	AC088	AC088	Field Sample	8.2	10.6	12.4	13
Arsenic	AC089	AC089	Field Sample	8.63	7.04	9.36	9.6
Arsenic	AC090	AC090	Field Sample	11	15.1	26.1	16.8
Arsenic	AC091	AC091	Field Sample	9.42	12.9	12.9	12.5
Arsenic	AC092	AC092	Field Sample	20.5	16.1	15.3	11
Arsenic	AC093	AC093	Field Sample	13.6	16.5	19.7	15
Arsenic	AC094	AC094	Field Sample	13.8	19.7	17.2	26.4
Arsenic	AC095	AC095	Field Sample	11.2	25.8	24.6	30.5
Arsenic	AC096	AC096	Field Sample	13.1	14.4	27	25.3
Arsenic	AC096	AC096	Field Duplicate	10.1	12.3	29.6	39.4
Arsenic	AC096	AC096	Field Triplicate	9.96	11	27.7	25.6
Arsenic	AC097	AC097	Field Sample	13	13.4	19.6	10.1
Arsenic	AC098	AC098	Field Sample	7.54	18.2	12	7.4
Arsenic	AC099	AC099	Field Sample	3.6	5.3	6.4	5.1
Arsenic	AC100	AC100	Field Sample	3.9	5.3	5.8	7
Arsenic	AC101	AC101	Field Sample	3.5	5.3	6.6	5.2
Arsenic	AC102	AC102	Field Sample	5.8	6.5	8.7	8.8
Arsenic	AC103	AC103	Field Sample	4.4	5.5	6.8	6.3
Arsenic	AC103	AC103	Field Duplicate	4.1	5.7	7.3	5.9
Arsenic	AC103	AC103	Field Triplicate	3.9	6.4	7.7	6.5
Arsenic	AC104	AC104	Field Sample	7.2	8.7	8.2	5.7
Arsenic	AC104	AC104	Field Duplicate	5.7	7.8	7.1	5.7
Arsenic	AC104	AC104	Field Triplicate	6	7.1	6.9	5.5
Arsenic	AC105	AC105	Field Sample	5.2	5.8	5.3	5.3
Arsenic	AC106	AC106	Field Sample	4.5	7.2	5.4	3.2
Arsenic	AC107	AC107	Field Sample	6.1	5.1	5.8	--
Arsenic	AC108	AC108	Field Sample	11	12	24	53
Arsenic	AC109	AC109	Field Sample	4.8	6.5	11	16
Arsenic	PC0321	APS-0321	Field Sample	3.9	7.6	12	10
Arsenic	PC0321	VL-0321	Field Sample	8.9	12	13	12
Lead	AC001	AC001	Field Sample	302	301	311	177
Lead	AC002	AC002	Field Sample	254	314	198	132
Lead	AC003	AC003	Field Sample	293	414	248	99.2
Lead	AC004	AC004	Field Sample	497	336	143	268
Lead	AC005	AC005	Field Sample	442	290	237	270
Lead	AC005	AC005	Field Duplicate	495	379	264	698
Lead	AC005	AC005	Field Triplicate	442	295	229	709

Table A-1. Alleyway Data for Arsenic and Lead

Analyte	Property ID	Location	Sample Type	Concentration by Depth in Inches (mg/kg)			
				0-1	1-6	6-12	12-18
Lead	AC006	AC006	Field Sample	502	466	434	157
Lead	AC007	AC007	Field Sample	230	242	301	208
Lead	AC008	AC008	Field Sample	157	258	262	348
Lead	AC009	AC009	Field Sample	212	272	269	100
Lead	AC010	AC010	Field Sample	206	364	386	656
Lead	AC011	AC011	Field Sample	545	432	381	309
Lead	AC012	AC012	Field Sample	94.6	121	89.2	32.7
Lead	AC012	AC012	Field Duplicate	114	137	97.2	37.4
Lead	AC012	AC012	Field Triplicate	103	125	79.9	44.9
Lead	AC013	AC013	Field Sample	238	233	109	77.7
Lead	AC014	AC014	Field Sample	149	129	94.7	60.3
Lead	AC015	AC015	Field Sample	223	164	84.3	88.8
Lead	AC016	AC016	Field Sample	289	327	134	120
Lead	AC017	AC017	Field Sample	157	214	56.3	56.5
Lead	AC018	AC018	Field Sample	288	293	205	153
Lead	AC019	AC019	Field Sample	257	291	226	137
Lead	AC020	AC020	Field Sample	93.8	182	208	231
Lead	AC021	AC021	Field Sample	229	253	206	193
Lead	AC022	AC022	Field Sample	99.4	158	154	212
Lead	AC023	AC023	Field Sample	127	190	305	246
Lead	AC024	AC024	Field Sample	121	153	155	140
Lead	AC025	AC025	Field Sample	245	317	343	265
Lead	AC026	AC026	Field Sample	158	299	502	153
Lead	AC028	AC028	Field Sample	89.5	191	73	94.6
Lead	AC029	AC029	Field Sample	129	167	207	284
Lead	AC030	AC030	Field Sample	170	231	193	58.3
Lead	AC031	AC031	Field Sample	176	206	125	34.2
Lead	AC032	AC032	Field Sample	153	338	95.7	54.6
Lead	AC033	AC033	Field Sample	132	195	156	92.9
Lead	AC034	AC034	Field Sample	230	459	402	226
Lead	AC035	AC035	Field Sample	121	296	125	54.4
Lead	AC037	AC037	Field Sample	133	267	230	227
Lead	AC038	AC038	Field Sample	117	299	275	124
Lead	AC039	AC039	Field Sample	168	271	287	245
Lead	AC040	AC040	Field Sample	195	317	197	155
Lead	AC041	AC041	Field Sample	154	652	578	313
Lead	AC041	AC041	Field Duplicate	187	545	607	262
Lead	AC041	AC041	Field Triplicate	137	609	403	155
Lead	AC042	AC042	Field Sample	150	204	271	267
Lead	AC043	AC043	Field Sample	193	279	223	267
Lead	AC044	AC044	Field Sample	233	235	341	318
Lead	AC045	AC045	Field Sample	257	230	179	227
Lead	AC046	AC046	Field Sample	147	257	433	179

Table A-1. Alleyway Data for Arsenic and Lead

Analyte	Property ID	Location	Sample Type	Concentration by Depth in Inches (mg/kg)			
				0-1	1-6	6-12	12-18
Lead	AC047	AC047	Field Sample	188	285	222	90.7
Lead	AC048	AC048	Field Sample	100	146	209	469
Lead	AC051	AC051	Field Sample	69.5	62.1	83.2	131
Lead	AC052	AC052	Field Sample	216	185	146	82.9
Lead	AC053	AC053	Field Sample	195	233	223	191
Lead	AC053	AC053	Field Duplicate	174	236	180	48
Lead	AC053	AC053	Field Triplicate	189	261	236	98.6
Lead	AC054	AC054	Field Sample	97.3	109	104	146
Lead	AC055	AC055	Field Sample	92.5	175	120	112
Lead	AC057	AC057	Field Sample	400	827	70.1	41.9
Lead	AC058	AC058	Field Sample	121	152	98.7	61.9
Lead	AC059	AC059	Field Sample	283	238	120	69.9
Lead	AC060	AC060	Field Sample	275	467	164	144
Lead	AC061	AC061	Field Sample	262	171	233	135
Lead	AC062	AC062	Field Sample	252	159	70.6	66
Lead	AC063	AC063	Field Sample	282	398	240	255
Lead	AC064	AC064	Field Sample	291	123	185	174
Lead	AC065	AC065	Field Sample	432	239	471	58.6
Lead	AC066	AC066	Field Sample	244	152	45.7	41.2
Lead	AC067	AC067	Field Sample	212	219	162	85.7
Lead	AC068	AC068	Field Sample	187	175	78.8	27.3
Lead	AC069	AC069	Field Sample	186	187	221	150
Lead	AC070	AC070	Field Sample	224	235	131	88.2
Lead	AC071	AC071	Field Sample	362	357	307	81.6
Lead	AC071	AC071	Field Duplicate	375	456	273	142
Lead	AC071	AC071	Field Triplicate	335	395	238	87.8
Lead	AC072	AC072	Field Sample	402	468	416	422
Lead	AC073	AC073	Field Sample	320	694	625	361
Lead	AC074	AC074	Field Sample	311	121	105	69.5
Lead	AC075	AC075	Field Sample	172	842	537	427
Lead	AC076	AC076	Field Sample	371	772	559	263
Lead	AC077	AC077	Field Sample	340	388	355	265
Lead	AC078	AC078	Field Sample	295	323	551	623
Lead	AC079	AC079	Field Sample	215	398	532	323
Lead	AC080	AC080	Field Sample	215	321	657	599
Lead	AC081	AC081	Field Sample	266	444	592	380
Lead	AC082	AC082	Field Sample	181	295	285	425
Lead	AC083	AC083	Field Sample	174	254	416	413
Lead	AC084	AC084	Field Sample	474	159	287	120
Lead	AC085	AC085	Field Sample	513	545	154	49.2
Lead	AC086	AC086	Field Sample	213	213	292	257
Lead	AC087	AC087	Field Sample	213	296	218	165
Lead	AC088	AC088	Field Sample	206	230	211	261

Table A-1. Alleyway Data for Arsenic and Lead

Analyte	Property ID	Location	Sample Type	Concentration by Depth in Inches (mg/kg)			
				0-1	1-6	6-12	12-18
Lead	AC089	AC089	Field Sample	179	171	169	132
Lead	AC090	AC090	Field Sample	158	197	232	201
Lead	AC091	AC091	Field Sample	270	360	517	469
Lead	AC092	AC092	Field Sample	497	871	463	167
Lead	AC093	AC093	Field Sample	360	546	523	434
Lead	AC094	AC094	Field Sample	340	537	385	928
Lead	AC095	AC095	Field Sample	217	530	392	643
Lead	AC096	AC096	Field Sample	288	386	656	678
Lead	AC096	AC096	Field Duplicate	268	644	911	929
Lead	AC096	AC096	Field Triplicate	288	411	774	637
Lead	AC097	AC097	Field Sample	270	535	472	273
Lead	AC098	AC098	Field Sample	276	462	257	106
Lead	AC099	AC099	Field Sample	99	250	230	58
Lead	AC100	AC100	Field Sample	270	370	290	210
Lead	AC101	AC101	Field Sample	130	220	220	170
Lead	AC102	AC102	Field Sample	160	240	250	170
Lead	AC103	AC103	Field Sample	130	290	190	39
Lead	AC103	AC103	Field Duplicate	100	380	98	170
Lead	AC103	AC103	Field Triplicate	110	360	180	110
Lead	AC104	AC104	Field Sample	170	410	240	180
Lead	AC104	AC104	Field Duplicate	150	410	250	150
Lead	AC104	AC104	Field Triplicate	150	290	280	210
Lead	AC105	AC105	Field Sample	230	230	82	86
Lead	AC106	AC106	Field Sample	88	82	25	15
Lead	AC107	AC107	Field Sample	78	77	53	--
Lead	AC108	AC108	Field Sample	100	110	150	230
Lead	AC109	AC109	Field Sample	50	140	210	420
Lead	PC0321	APS-0321	Field Sample	94	92	140	150
Lead	PC0321	VL-0321	Field Sample	310	420	480	310

Notes

mg/kg Milligrams per kilogram

Table A-2. Commercial Property Data for Arsenic and Lead

Analyte	Property ID	Location	Sample Type	Area (ft ²)	Concentration by Depth in Inches (mg/kg)			
					0-1	1-6	6-12	12-18
Arsenic	PC0006	ED-0006	Field Sample	58,001	2.9	3.6	5.7	--
Arsenic	PC0008	VL-0008	Field Sample	57,948	3.7	5	4.8	6.5
Arsenic	PC0008	VL-0008	Field Duplicate	57,948	3.7	4.9	5.9	4.9
Arsenic	PC0008	VL-0008	Field Triplicate	57,948	3.4	5	5.5	5.1
Arsenic	PC0011	ED-0011	Field Sample	11,209	3.6	3.4	3.5	4.8
Arsenic	PC0011	LRN-0011	Field Sample	2,010	2.6	5.3	9	7.1
Arsenic	PC0011	LRS-0011	Field Sample	123	2.6	5.2	7.1	8.4
Arsenic	PC0011	SY-0011	Field Sample	469	6	7.9	8.2	8.9
Arsenic	PC0012	ED-0012	Field Sample	3,966	6	4.9	--	--
Arsenic	PC0013	VL-0013	Field Sample	12,001	9	12	9.6	12
Arsenic	PC0016	APS-0016	Field Sample	9,181	3.1	3	5.3	4.8
Arsenic	PC0016	VL-0016	Field Sample	27,304	3.1	2.6	4.5	4.1
Arsenic	PC0033	APE-0033	Field Sample	1,169	8	9.4	7.4	5.9
Arsenic	PC0033	APN-0033	Field Sample	984	5.5	5.9	7.3	6
Arsenic	PC0070	VL-0070	Field Sample	12,000	5.4	5.6	5.8	6.5
Arsenic	PC0111	VL-0111	Field Sample	25,064	18	18	21	19
Arsenic	PC0116	AP-0116	Field Sample	596	7.9	12	14	11
Arsenic	PC0124	BY-0124	Field Sample	6,557	18	21	13	9.8
Arsenic	PC0124	BY-0124	Field Duplicate	6,557	19	20	13	11
Arsenic	PC0124	BY-0124	Field Triplicate	6,557	18	17	11	9.3
Arsenic	PC0124	ED-0124	Field Sample	1,689	2.8	8.6	14	--
Arsenic	PC0124	SYE-0124	Field Sample	524	4.7	13	16	--
Arsenic	PC0161	AP-0161	Field Sample	290	7.9	5.8	10	18
Arsenic	PC0161	ED-0161	Field Sample	17,266	10	11	14	--
Arsenic	PC0161	LR-0161	Field Sample	491	6.3	8.5	12	13
Arsenic	PC0175	VL-0175	Field Sample	13,437	9.7	15	17	31
Arsenic	PC0175	VL-0175	Field Duplicate	13,437	8.9	15	19	30
Arsenic	PC0175	VL-0175	Field Triplicate	13,437	8.6	16	20	34
Arsenic	PC0308	APE-0308	Field Sample	116	2.6	3.7	4.4	--
Arsenic	PC0308	APN-0308	Field Sample	102	2.6	4.3	5.7	9
Arsenic	PC0308	APS-0308	Field Sample	297	4.6	19	35	8.2
Arsenic	PC0442	AP-0442	Field Sample	4,912	7	15	17	19
Arsenic	PC0442	BY-0442	Field Sample	10,291	12	18	19	17
Arsenic	PC0442	LR-0442	Field Sample	768	3.8	11	5.5	--
Arsenic	PC0443	AP-0443	Field Sample	1,048	5.3	15	17	15
Arsenic	PC0443	LR-0443	Field Sample	784	4.9	14	14	14
Arsenic	PC0444	AP-0444	Field Sample	2,181	3.8	5.8	11	--
Arsenic	PC0444	LR-0444	Field Sample	3,281	6.1	6.5	5.9	11
Arsenic	PC0493	APN-0493	Field Sample	756	2.8	3.4	3.9	2.7
Arsenic	PC0493	ED-0493	Field Sample	921	1.2	1.4	2.6	--
Arsenic	PC0493	GA-0493	Field Sample	54	3.9	2.6	1.4	--
Arsenic	PC0493	SYE-0493	Field Sample	51	3.5	3.4	3.1	--
Arsenic	PC0567	APE-0567	Field Sample	1,700	3.4	5.6	3.7	6.7
Arsenic	PC0567	APW-0567	Field Sample	891	3.4	4.3	4.4	--
Arsenic	PC0677	ED-0677	Field Sample	3,927	1.9	2.4	6.4	--
Arsenic	PC0678	VL-0678	Field Sample	12,992	3.3	2.2	2.9	--

Table A-2. Commercial Property Data for Arsenic and Lead

Analyte	Property ID	Location	Sample Type	Area (ft ²)	Concentration by Depth in Inches (mg/kg)			
					0-1	1-6	6-12	12-18
Arsenic	PC0686	ED-0686	Field Sample	940	2.3	5.1	4.3	5.9
Arsenic	PC0710	FY-0710	Field Sample	423	39	150	290	370
Arsenic	PC0710	SYS-0710	Field Sample	934	16	24	30	21
Arsenic	PC0712	ED-0712	Field Sample	2,811	9	11	11	13
Arsenic	PC1348	AP-1348	Field Sample	810	56	64	39	39
Arsenic	PC1348	SYS-1348	Field Sample	550	9.9	11	11	13
Arsenic	PC1348	SYW-1348	Field Sample	2,424	49	45	21	28
Arsenic	PC1348	SYW-1348	Field Duplicate	2,424	46	53	28	39
Arsenic	PC1348	SYW-1348	Field Triplicate	2,424	56	60	50	19
Arsenic	PC1400	ED-1400	Field Sample	1,099	7.9	14	16	25
Arsenic	PC1400	SYS-1400	Field Sample	901	9.3	11	22	20
Arsenic	PC1407	BY-1407	Field Sample	964	4.7	6.9	7.4	--
Arsenic	PC1408	APE-1408	Field Sample	1,902	1.3	6.4	8.7	8.1
Arsenic	PC1408	APN-1408	Field Sample	538	0.99	4.3	6.6	5.7
Arsenic	PC1408	APS-1408	Field Sample	423	0.96	3	4.3	--
Arsenic	PC1408	APW-1408	Field Sample	2,554	0.99	6.7	9.8	7.9
Arsenic	PC1414	BY-1414	Field Sample	939	4.7	7.2	5.5	11
Arsenic	PC1414	SYS-1414	Field Sample	203	5.6	5.9	6.7	7.5
Arsenic	PC1426	ED-1426	Field Sample	970	6.7	7.5	4.7	3.1
Arsenic	PC1452	BY-1452	Field Sample	121	5.6	7.2	8.2	9.8
Arsenic	PC1453	BY-1453	Field Sample	437	5.3	8.2	11	--
Arsenic	PC1456	ED-1456	Field Sample	1,420	3.4	6.3	7.6	--
Arsenic	PC1506	APE-1506	Field Sample	956	8.8	10	8.4	12
Arsenic	PC1506	APN-1506	Field Sample	15	7.5	9.2	9.5	11
Arsenic	PC1506	APS-1506	Field Sample	290	7.6	13	14	16
Arsenic	PC1561	SYN-1561	Field Sample	103	7.9	10	14	16
Arsenic	PC1602	APE-1602	Field Sample	184	4.3	--	--	--
Arsenic	PC1602	APN-1602	Field Sample	104	2.9	--	--	--
Arsenic	PC1602	APS-1602	Field Sample	535	7.2	13	6	--
Arsenic	PC1602	APS-1602	Field Duplicate	535	7.2	10	5.1	--
Arsenic	PC1602	APS-1602	Field Triplicate	535	7.3	11	6.3	--
Arsenic	PC1602	APW-1602	Field Sample	1,092	6.1	7.6	6.1	4.4
Arsenic	PC1603	AP-1603	Field Sample	256	3.6	14	23	26
Arsenic	PC1618	ED-1618	Field Sample	2,444	5	4.2	7.6	18
Arsenic	PC1619	APN-1619	Field Sample	153	8.8	24	14	15
Arsenic	PC1619	LR-1619	Field Sample	365	6.7	9.6	12	18
Arsenic	PC1619	LR-1619	Field Duplicate	365	6	8.5	22	19
Arsenic	PC1619	LR-1619	Field Triplicate	365	6.1	9.5	19	24
Arsenic	PC1645	VL-1645	Field Sample	5,782	26	56	12	6
Arsenic	PC1646	APE-1646	Field Sample	414	4.1	7.7	12	5.9
Arsenic	PC1646	APS-1646	Field Sample	190	4.8	7.5	9.5	3.9
Arsenic	PC1646	APW-1646	Field Sample	1,273	3.8	6.4	3.2	2.4
Arsenic	PC1646	ED-1646	Field Sample	5,039	6.4	23	42	8.2
Arsenic	PC1664	ED-1664	Field Sample	571	4.4	3.8	5.8	4.2
Arsenic	PC1677	BY-1677	Field Sample	1,034	6.7	8.9	13	16
Arsenic	PC1677	ED-1677	Field Sample	2,117	3.9	5.3	8.9	7.7

Table A-2. Commercial Property Data for Arsenic and Lead

Analyte	Property ID	Location	Sample Type	Area (ft ²)	Concentration by Depth in Inches (mg/kg)			
					0-1	1-6	6-12	12-18
Arsenic	PC1686	APE-1686	Field Sample	174	5.3	10	7.9	4.8
Arsenic	PC1686	APW-1686	Field Sample	121	5.8	9.9	15	9.8
Arsenic	PC1686	ED-1686	Field Sample	2,947	12	11	4.9	8.4
Arsenic	PC1690	AP-1690	Field Sample	170	3.6	9.7	6	6.1
Arsenic	PC1691	AP-1691	Field Sample	1,047	3.5	4.8	6.3	6.9
Arsenic	PC1691	AP-1691	Field Duplicate	1,047	3.6	4.8	3.7	3.1
Arsenic	PC1691	AP-1691	Field Triplicate	1,047	3.4	3.9	4.7	4.5
Arsenic	PC1700	VL-1700	Field Sample	14,833	9.5	10	6.8	7.9
Arsenic	PC1709	VL-1709	Field Sample	7,829	4.7	6	6.5	4.2
Arsenic	PC1713	ED-1713	Field Sample	1,780	6	9	9.7	5.2
Arsenic	PC1719	SYE-1719	Field Sample	518	19	20	9.7	7.5
Arsenic	PC1740	LR-1740	Field Sample	1,951	7.2	12	8.5	9.4
Arsenic	PC1851	ED-1851	Field Sample	2,937	3	4.1	5.2	4.7
Arsenic	PC1857	AP-1857	Field Sample	25	4.6	8.7	10	8.9
Arsenic	PC1857	ED-1857	Field Sample	4,911	4.8	6.5	9.6	10
Arsenic	PC1859	AP-1859	Field Sample	144	4.6	6.5	6.9	4.5
Arsenic	PC1859	BY-1859	Field Sample	1,289	4.7	6.2	7.5	6.4
Arsenic	PC1859	FY-1859	Field Sample	282	4.3	5.7	6.3	4.7
Arsenic	PC1859	SYS-1859	Field Sample	321	3.7	4.6	5.5	5.3
Arsenic	PC1861	APN-1861	Field Sample	105	0.89	3.4	4.7	3.9
Arsenic	PC1861	APS-1861	Field Sample	357	1.6	3.9	7.2	6.6
Arsenic	PC1861	APS-1861	Field Duplicate	357	1.5	2.8	6.7	6.8
Arsenic	PC1861	APS-1861	Field Triplicate	357	2	4.4	6.5	6.2
Arsenic	PC1861	APW-1861	Field Sample	115	1.2	2.2	4	4.5
Arsenic	PC1904	BY-1904	Field Sample	436	18	19	--	--
Arsenic	PC1904	ED-1904	Field Sample	374	7.1	5.8	6.3	6.9
Arsenic	PC1904	SYS-1904	Field Sample	405	8.6	8.6	6.7	7.6
Arsenic	PC1958	APE-1958	Field Sample	84	3.8	5	8.7	12
Arsenic	PC1958	APN-1958	Field Sample	88	5	5.5	10	9.4
Arsenic	PC1974	APE-1974	Field Sample	602	6.2	11	12	7.8
Arsenic	PC1974	APW-1974	Field Sample	1,519	7.3	8.1	17	--
Arsenic	PC1974	VL-1974	Field Sample	4,240	8.6	9.6	13	23
Arsenic	PC2061	APE-2061	Field Sample	405	6.6	13	8.7	10
Arsenic	PC2061	APS-2061	Field Sample	3,865	7.8	8.9	7.8	6
Arsenic	PC2061	APW-2061	Field Sample	841	6.4	7.7	9.9	28
Arsenic	PC2092	BY-2092	Field Sample	800	5.4	8.2	9.5	7
Arsenic	PC2092	FY-2092	Field Sample	212	3	2.6	3.1	3.1
Arsenic	PC2092	SY-2092	Field Sample	838	4.1	7.2	8.1	10
Arsenic	PC2421	VL-2421	Field Sample	6,666	5.5	8.5	6	7.5
Arsenic	PC2426	APN-2426	Field Sample	87	3.6	--	--	--
Arsenic	PC2426	ED-2426	Field Sample	1,389	8.6	8.3	11	8.4
Arsenic	PC2427	APE-2427	Field Sample	202	4.6	11	9.7	4.3
Arsenic	PC2427	ED-2427	Field Sample	7,364	3.2	5.9	7.4	6.9
Arsenic	PC2427	ED-2427	Field Duplicate	7,364	3.2	7.7	8.7	4
Arsenic	PC2427	ED-2427	Field Triplicate	7,364	3.1	6.1	7.7	6.2
Arsenic	PC2427	VL-2427	Field Sample	23,741	8.5	11	6.5	5.1

Table A-2. Commercial Property Data for Arsenic and Lead

Analyte	Property ID	Location	Sample Type	Area (ft ²)	Concentration by Depth in Inches (mg/kg)			
					0-1	1-6	6-12	12-18
Arsenic	PC2428	ED-2428	Field Sample	4,723	6.3	6	6	5.3
Arsenic	PC2429	APE-2429	Field Sample	202	8.5	13	17	17
Arsenic	PC2429	FY-2429	Field Sample	377	72	63	19	25
Arsenic	PC2430	VL-2430	Field Sample	4,799	10	6.5	14	4.6
Arsenic	PC2431	APC-2431	Field Sample	329	3.2	9.8	12	11
Arsenic	PC2431	APE-2431	Field Sample	956	4.8	6.7	6	5.3
Arsenic	PC2431	APN-2431	Field Sample	332	3.5	4.9	10	10
Arsenic	PC2431	APS-2431	Field Sample	301	2.6	11	12	7.7
Lead	PC0006	ED-0006	Field Sample	58,001	81	86	130	--
Lead	PC0008	VL-0008	Field Sample	57,948	170	61	99	130
Lead	PC0008	VL-0008	Field Duplicate	57,948	110	94	71	40
Lead	PC0008	VL-0008	Field Triplicate	57,948	170	130	98	45
Lead	PC0011	ED-0011	Field Sample	11,209	37	15	11	16
Lead	PC0011	LRN-0011	Field Sample	2,010	21	34	70	52
Lead	PC0011	LRS-0011	Field Sample	123	18	31	57	81
Lead	PC0011	SY-0011	Field Sample	469	55	67	62	67
Lead	PC0012	ED-0012	Field Sample	3,966	30	35	--	--
Lead	PC0013	VL-0013	Field Sample	12,001	280	230	310	560
Lead	PC0016	APS-0016	Field Sample	9,181	150	94	61	61
Lead	PC0016	VL-0016	Field Sample	27,304	70	52	36	29
Lead	PC0033	APE-0033	Field Sample	1,169	160	230	190	97
Lead	PC0033	APN-0033	Field Sample	984	130	160	180	450
Lead	PC0070	VL-0070	Field Sample	12,000	130	87	78	130
Lead	PC0111	VL-0111	Field Sample	25,064	89	130	100	73
Lead	PC0116	AP-0116	Field Sample	596	120	170	190	140
Lead	PC0124	BY-0124	Field Sample	6,557	150	87	14	7.5
Lead	PC0124	BY-0124	Field Duplicate	6,557	130	100	17	9.6
Lead	PC0124	BY-0124	Field Triplicate	6,557	160	91	9.7	8.1
Lead	PC0124	ED-0124	Field Sample	1,689	66	420	280	--
Lead	PC0124	SYE-0124	Field Sample	524	130	330	140	--
Lead	PC0161	AP-0161	Field Sample	290	64	65	220	270
Lead	PC0161	ED-0161	Field Sample	17,266	95	100	210	--
Lead	PC0161	LR-0161	Field Sample	491	71	90	120	230
Lead	PC0175	VL-0175	Field Sample	13,437	87	110	66	440
Lead	PC0175	VL-0175	Field Duplicate	13,437	72	250	190	530
Lead	PC0175	VL-0175	Field Triplicate	13,437	73	100	140	330
Lead	PC0308	APE-0308	Field Sample	116	38	44	42	--
Lead	PC0308	APN-0308	Field Sample	102	28	44	84	170
Lead	PC0308	APS-0308	Field Sample	297	98	420	410	40
Lead	PC0442	AP-0442	Field Sample	4,912	65	38	53	48
Lead	PC0442	BY-0442	Field Sample	10,291	45	23	19	16
Lead	PC0442	LR-0442	Field Sample	768	28	41	37	--
Lead	PC0443	AP-0443	Field Sample	1,048	70	170	260	160
Lead	PC0443	LR-0443	Field Sample	784	61	54	51	63
Lead	PC0444	AP-0444	Field Sample	2,181	76	110	160	--
Lead	PC0444	LR-0444	Field Sample	3,281	34	35	22	20

Table A-2. Commercial Property Data for Arsenic and Lead

Analyte	Property ID	Location	Sample Type	Area (ft ²)	Concentration by Depth in Inches (mg/kg)			
					0-1	1-6	6-12	12-18
Lead	PC0493	APN-0493	Field Sample	756	130	160	180	43
Lead	PC0493	ED-0493	Field Sample	921	71	130	92	--
Lead	PC0493	GA-0493	Field Sample	54	50	44	27	--
Lead	PC0493	SYE-0493	Field Sample	51	340	240	180	--
Lead	PC0567	APE-0567	Field Sample	1,700	160	290	150	160
Lead	PC0567	APW-0567	Field Sample	891	91	85	74	--
Lead	PC0677	ED-0677	Field Sample	3,927	88	160	100	--
Lead	PC0678	VL-0678	Field Sample	12,992	150	170	220	--
Lead	PC0686	ED-0686	Field Sample	940	160	340	160	1000
Lead	PC0710	FY-0710	Field Sample	423	370	470	580	600
Lead	PC0710	SYS-0710	Field Sample	934	170	350	450	300
Lead	PC0712	ED-0712	Field Sample	2,811	860	1000	500	290
Lead	PC1348	AP-1348	Field Sample	810	230	220	260	260
Lead	PC1348	SYS-1348	Field Sample	550	190	190	280	320
Lead	PC1348	SYW-1348	Field Sample	2,424	220	220	140	140
Lead	PC1348	SYW-1348	Field Duplicate	2,424	210	240	180	180
Lead	PC1348	SYW-1348	Field Triplicate	2,424	230	240	220	110
Lead	PC1400	ED-1400	Field Sample	1,099	370	380	280	280
Lead	PC1400	SYS-1400	Field Sample	901	440	350	350	200
Lead	PC1407	BY-1407	Field Sample	964	400	810	450	--
Lead	PC1408	APE-1408	Field Sample	1,902	18	55	92	80
Lead	PC1408	APN-1408	Field Sample	538	12	62	64	22
Lead	PC1408	APS-1408	Field Sample	423	12	55	84	--
Lead	PC1408	APW-1408	Field Sample	2,554	13	62	77	150
Lead	PC1414	BY-1414	Field Sample	939	160	170	160	330
Lead	PC1414	SYS-1414	Field Sample	203	360	380	400	150
Lead	PC1426	ED-1426	Field Sample	970	210	240	240	63
Lead	PC1452	BY-1452	Field Sample	121	190	420	400	480
Lead	PC1453	BY-1453	Field Sample	437	170	250	370	--
Lead	PC1456	ED-1456	Field Sample	1,420	130	460	580	--
Lead	PC1506	APE-1506	Field Sample	956	230	230	340	220
Lead	PC1506	APN-1506	Field Sample	15	260	170	110	130
Lead	PC1506	APS-1506	Field Sample	290	220	1200	130	110
Lead	PC1561	SYN-1561	Field Sample	103	250	320	490	500
Lead	PC1602	APE-1602	Field Sample	184	120	--	--	--
Lead	PC1602	APN-1602	Field Sample	104	33	--	--	--
Lead	PC1602	APS-1602	Field Sample	535	17	57	56	--
Lead	PC1602	APS-1602	Field Duplicate	535	83	65	21	--
Lead	PC1602	APS-1602	Field Triplicate	535	70	48	27	--
Lead	PC1602	APW-1602	Field Sample	1,092	130	61	37	15
Lead	PC1603	AP-1603	Field Sample	256	76	270	300	140
Lead	PC1618	ED-1618	Field Sample	2,444	82	80	230	390
Lead	PC1619	APN-1619	Field Sample	153	100	470	700	630
Lead	PC1619	LR-1619	Field Sample	365	320	580	330	440
Lead	PC1619	LR-1619	Field Duplicate	365	390	520	520	350
Lead	PC1619	LR-1619	Field Triplicate	365	310	430	1100	390

Table A-2. Commercial Property Data for Arsenic and Lead

Analyte	Property ID	Location	Sample Type	Area (ft ²)	Concentration by Depth in Inches (mg/kg)			
					0-1	1-6	6-12	12-18
Lead	PC1645	VL-1645	Field Sample	5,782	430	810	62	43
Lead	PC1646	APE-1646	Field Sample	414	45	79	150	49
Lead	PC1646	APS-1646	Field Sample	190	45	80	82	24
Lead	PC1646	APW-1646	Field Sample	1,273	74	45	11	8
Lead	PC1646	ED-1646	Field Sample	5,039	290	340	500	60
Lead	PC1664	ED-1664	Field Sample	571	90	430	560	180
Lead	PC1677	BY-1677	Field Sample	1,034	350	480	500	700
Lead	PC1677	ED-1677	Field Sample	2,117	150	250	380	220
Lead	PC1686	APE-1686	Field Sample	174	120	240	25	22
Lead	PC1686	APW-1686	Field Sample	121	130	320	740	310
Lead	PC1686	ED-1686	Field Sample	2,947	260	250	110	140
Lead	PC1690	AP-1690	Field Sample	170	77	210	24	33
Lead	PC1691	AP-1691	Field Sample	1,047	130	190	190	260
Lead	PC1691	AP-1691	Field Duplicate	1,047	140	120	140	26
Lead	PC1691	AP-1691	Field Triplicate	1,047	120	210	1800	450
Lead	PC1700	VL-1700	Field Sample	14,833	300	310	150	120
Lead	PC1709	VL-1709	Field Sample	7,829	140	170	140	50
Lead	PC1713	ED-1713	Field Sample	1,780	400	1300	770	310
Lead	PC1719	SYE-1719	Field Sample	518	540	420	190	94
Lead	PC1740	LR-1740	Field Sample	1,951	130	330	250	230
Lead	PC1851	ED-1851	Field Sample	2,937	55	200	250	44
Lead	PC1857	AP-1857	Field Sample	25	210	490	200	75
Lead	PC1857	ED-1857	Field Sample	4,911	140	370	280	380
Lead	PC1859	AP-1859	Field Sample	144	140	170	130	36
Lead	PC1859	BY-1859	Field Sample	1,289	370	420	210	42
Lead	PC1859	FY-1859	Field Sample	282	230	180	52	36
Lead	PC1859	SYS-1859	Field Sample	321	240	220	100	22
Lead	PC1861	APN-1861	Field Sample	105	17	57	39	21
Lead	PC1861	APS-1861	Field Sample	357	37	75	240	180
Lead	PC1861	APS-1861	Field Duplicate	357	28	56	260	180
Lead	PC1861	APS-1861	Field Triplicate	357	39	110	190	69
Lead	PC1861	APW-1861	Field Sample	115	20	27	41	62
Lead	PC1904	BY-1904	Field Sample	436	430	790	--	--
Lead	PC1904	ED-1904	Field Sample	374	95	28	81	140
Lead	PC1904	SYS-1904	Field Sample	405	64	60	51	86
Lead	PC1958	APE-1958	Field Sample	84	79	120	230	370
Lead	PC1958	APN-1958	Field Sample	88	88	160	310	240
Lead	PC1974	APE-1974	Field Sample	602	300	560	440	160
Lead	PC1974	APW-1974	Field Sample	1,519	230	600	430	--
Lead	PC1974	VL-1974	Field Sample	4,240	410	380	420	460
Lead	PC2061	APE-2061	Field Sample	405	160	240	95	170
Lead	PC2061	APS-2061	Field Sample	3,865	320	200	140	140
Lead	PC2061	APW-2061	Field Sample	841	320	380	740	2300
Lead	PC2092	BY-2092	Field Sample	800	140	270	320	290
Lead	PC2092	FY-2092	Field Sample	212	43	29	16	16
Lead	PC2092	SY-2092	Field Sample	838	44	270	350	350

Table A-2. Commercial Property Data for Arsenic and Lead

Analyte	Property ID	Location	Sample Type	Area (ft ²)	Concentration by Depth in Inches (mg/kg)			
					0-1	1-6	6-12	12-18
Lead	PC2421	VL-2421	Field Sample	6,666	200	350	250	150
Lead	PC2426	APN-2426	Field Sample	87	89	--	--	--
Lead	PC2426	ED-2426	Field Sample	1,389	160	440	290	220
Lead	PC2427	APE-2427	Field Sample	202	240	410	260	63
Lead	PC2427	ED-2427	Field Sample	7,364	180	320	280	280
Lead	PC2427	ED-2427	Field Duplicate	7,364	200	370	390	95
Lead	PC2427	ED-2427	Field Triplicate	7,364	180	310	370	260
Lead	PC2427	VL-2427	Field Sample	23,741	350	370	160	52
Lead	PC2428	ED-2428	Field Sample	4,723	220	210	170	34
Lead	PC2429	APE-2429	Field Sample	202	220	360	450	300
Lead	PC2429	FY-2429	Field Sample	377	1600	3100	660	640
Lead	PC2430	VL-2430	Field Sample	4,799	200	62	180	42
Lead	PC2431	APC-2431	Field Sample	329	58	280	320	240
Lead	PC2431	APE-2431	Field Sample	956	89	110	75	41
Lead	PC2431	APN-2431	Field Sample	332	60	120	270	400
Lead	PC2431	APS-2431	Field Sample	301	42	230	170	47

Notes

ft² Square feet
mg/kg Milligrams per kilogram

Appendix B
Individual Risk Estimates for Arsenic at Alleyways for Alleyway Visitors

Table B-1.	Child RME non-cancer risk estimates
Table B-2.	Adult RME non-cancer risk estimates
Table B-3.	Child CTE non-cancer risk estimates
Table B-4.	Adult CTE non-cancer risk estimates
Table B-5.	RME cancer risk estimates
Table B-6.	CTE cancer risk estimates

Table B-1. NON-CANCER HAZARDS TO CHILD VISITORS IN ALLEYWAYS

Reasonable Maximum Exposure Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.6E-06	6.2E-06	

Alleyway Property Number:	EPC - Surface (mg/kg)	Non-Cancer HQs for Child Visitors		
		Arsenic		
		Ingestion	Dermal	Total
AC001	10	2.1E-01	3.1E-02	2E-01
AC002	16	3.4E-01	5.0E-02	4E-01
AC003	38	8.0E-01	1.2E-01	9E-01
AC004	19	4.0E-01	5.9E-02	5E-01
AC005	19	4.0E-01	5.9E-02	5E-01
AC006	20	4.2E-01	6.2E-02	5E-01
AC007	16	3.4E-01	5.0E-02	4E-01
AC008	6.5	1.4E-01	2.0E-02	2E-01
AC009	9.6	2.0E-01	3.0E-02	2E-01
AC010	7.6	1.6E-01	2.4E-02	2E-01
AC011	29	6.1E-01	9.0E-02	7E-01
AC012	8.1	1.7E-01	2.5E-02	2E-01
AC013	11	2.3E-01	3.4E-02	3E-01
AC014	7.6	1.6E-01	2.4E-02	2E-01
AC015	11	2.3E-01	3.4E-02	3E-01
AC016	12	2.5E-01	3.7E-02	3E-01
AC017	6.7	1.4E-01	2.1E-02	2E-01
AC018	12	2.5E-01	3.7E-02	3E-01
AC019	11	2.3E-01	3.4E-02	3E-01
AC020	5.6	1.2E-01	1.7E-02	1E-01
AC021	13	2.7E-01	4.1E-02	3E-01
AC022	6.6	1.4E-01	2.1E-02	2E-01
AC023	9.3	2.0E-01	2.9E-02	2E-01
AC024	11	2.3E-01	3.4E-02	3E-01
AC025	12	2.5E-01	3.7E-02	3E-01
AC026	7.5	1.6E-01	2.3E-02	2E-01
AC028	6.7	1.4E-01	2.1E-02	2E-01
AC029	7.6	1.6E-01	2.4E-02	2E-01
AC030	7.0	1.5E-01	2.2E-02	2E-01
AC031	9.0	1.9E-01	2.8E-02	2E-01
AC032	9.5	2.0E-01	3.0E-02	2E-01
AC033	7.6	1.6E-01	2.4E-02	2E-01
AC034	9.4	2.0E-01	2.9E-02	2E-01

Table B-1. NON-CANCER HAZARDS TO CHILD VISITORS IN ALLEYWAYS

Reasonable Maximum Exposure Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.6E-06	6.2E-06	

Alleyway Property Number:	EPC - Surface (mg/kg)	Non-Cancer HQs for Child Visitors		
		Arsenic		
		Ingestion	Dermal	Total
AC035	7.8	1.6E-01	2.4E-02	2E-01
AC037	7.7	1.6E-01	2.4E-02	2E-01
AC038	9.3	2.0E-01	2.9E-02	2E-01
AC039	11	2.3E-01	3.4E-02	3E-01
AC040	11	2.3E-01	3.4E-02	3E-01
AC041	7.8	1.6E-01	2.4E-02	2E-01
AC042	6.0	1.3E-01	1.9E-02	1E-01
AC043	11	2.3E-01	3.4E-02	3E-01
AC044	13	2.7E-01	4.1E-02	3E-01
AC045	9.8	2.1E-01	3.1E-02	2E-01
AC046	9.0	1.9E-01	2.8E-02	2E-01
AC047	11	2.3E-01	3.4E-02	3E-01
AC048	7.5	1.6E-01	2.3E-02	2E-01
AC051	6.7	1.4E-01	2.1E-02	2E-01
AC052	12	2.5E-01	3.7E-02	3E-01
AC053	10	2.1E-01	3.1E-02	2E-01
AC054	18	3.8E-01	5.6E-02	4E-01
AC055	9.7	2.0E-01	3.0E-02	2E-01
AC057	24	5.0E-01	7.5E-02	6E-01
AC058	14	2.9E-01	4.4E-02	3E-01
AC059	12	2.5E-01	3.7E-02	3E-01
AC060	10	2.1E-01	3.1E-02	2E-01
AC061	17	3.6E-01	5.3E-02	4E-01
AC062	9.6	2.0E-01	3.0E-02	2E-01
AC063	15	3.2E-01	4.7E-02	4E-01
AC064	12	2.5E-01	3.7E-02	3E-01
AC065	15	3.2E-01	4.7E-02	4E-01
AC066	14	2.9E-01	4.4E-02	3E-01
AC067	12	2.5E-01	3.7E-02	3E-01
AC068	21	4.4E-01	6.6E-02	5E-01
AC069	9.9	2.1E-01	3.1E-02	2E-01
AC070	14	2.9E-01	4.4E-02	3E-01
AC071	19	4.0E-01	5.9E-02	5E-01

Table B-1. NON-CANCER HAZARDS TO CHILD VISITORS IN ALLEYWAYS

Reasonable Maximum Exposure Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.6E-06	6.2E-06	

Alleyway Property Number:	EPC - Surface (mg/kg)	Non-Cancer HQs for Child Visitors		
		Arsenic		
		Ingestion	Dermal	Total
AC072	21	4.4E-01	6.6E-02	5E-01
AC073	12	2.5E-01	3.7E-02	3E-01
AC074	11	2.3E-01	3.4E-02	3E-01
AC075	9.1	1.9E-01	2.8E-02	2E-01
AC076	16	3.4E-01	5.0E-02	4E-01
AC077	15	3.2E-01	4.7E-02	4E-01
AC078	13	2.7E-01	4.1E-02	3E-01
AC079	14	2.9E-01	4.4E-02	3E-01
AC080	8.0	1.7E-01	2.5E-02	2E-01
AC081	9.5	2.0E-01	3.0E-02	2E-01
AC082	8.1	1.7E-01	2.5E-02	2E-01
AC083	8.7	1.8E-01	2.7E-02	2E-01
AC084	23	4.8E-01	7.2E-02	6E-01
AC085	23	4.8E-01	7.2E-02	6E-01
AC086	9.6	2.0E-01	3.0E-02	2E-01
AC087	12	2.5E-01	3.7E-02	3E-01
AC088	8.2	1.7E-01	2.6E-02	2E-01
AC089	8.6	1.8E-01	2.7E-02	2E-01
AC090	11	2.3E-01	3.4E-02	3E-01
AC091	9.4	2.0E-01	2.9E-02	2E-01
AC092	21	4.4E-01	6.6E-02	5E-01
AC093	14	2.9E-01	4.4E-02	3E-01
AC094	14	2.9E-01	4.4E-02	3E-01
AC095	11	2.3E-01	3.4E-02	3E-01
AC096	11	2.3E-01	3.4E-02	3E-01
AC097	13	2.7E-01	4.1E-02	3E-01
AC098	7.5	1.6E-01	2.3E-02	2E-01
AC099	3.6	7.6E-02	1.1E-02	9E-02
AC100	3.9	8.2E-02	1.2E-02	9E-02
AC101	3.5	7.4E-02	1.1E-02	8E-02
AC102	5.8	1.2E-01	1.8E-02	1E-01
AC103	4.1	8.6E-02	1.3E-02	1E-01
AC104	6.3	1.3E-01	2.0E-02	2E-01

Table B-1. NON-CANCER HAZARDS TO CHILD VISITORS IN ALLEYWAYS

Reasonable Maximum Exposure Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.6E-06	6.2E-06	

Alleyway Property Number:	EPC - Surface (mg/kg)	Non-Cancer HQs for Child Visitors		
		Arsenic		
		Ingestion	Dermal	Total
AC105	5.2	1.1E-01	1.6E-02	1E-01
AC106	4.5	9.5E-02	1.4E-02	1E-01
AC107	6.1	1.3E-01	1.9E-02	1E-01
AC108	11	2.3E-01	3.4E-02	3E-01
AC109	4.8	1.0E-01	1.5E-02	1E-01
PC0321	8.7	1.8E-01	2.7E-02	2E-01

Summary of Properties by Hazard Range	
Number with HI $\leq$ 1E+00	105
Number with HI > 1E+00	0
Percent with HI $\leq$ 1E+00	100%
Percent with HI > 1E+00	0%
Maximum HI	9E-01

Notes:

Ingestion

$$DI = C \times HIF \times RBA$$

$$HQ = DI/RfD$$

Dermal

$$DAD = C_{soil} \times ABS_d \times HIF_{soil}$$

$$RfD_{ABS} = RfD \times ABS_{GI}$$

$$ABS_{GI} = 1, \text{ so } RfD_{ABS} = RfD$$

$$HQ = DAD/RfD_{ABS}$$

EPC =

Exposure Point Concentration

HI =

Hazard Index

HQ =

Hazard Quotient

mg/kg =

milligrams per kilogram

N/A =

Not Applicable

RBA =

Relative Bioavailability

Table B-2. NON-CANCER HAZARDS TO ADULT VISITORS IN ALLEYWAYS

Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.5E-07	1.0E-06	

Alleyway Property Number:	EPC - Surface (mg/kg)	Non-Cancer HQs for Adult Visitors		
		Arsenic		
		Ingestion	Dermal	Total
AC001	10	2.0E-02	5.2E-03	2E-02
AC002	16	3.2E-02	8.3E-03	4E-02
AC003	38	7.5E-02	2.0E-02	9E-02
AC004	19	3.7E-02	9.9E-03	5E-02
AC005	19	3.7E-02	9.9E-03	5E-02
AC006	20	3.9E-02	1.0E-02	5E-02
AC007	16	3.2E-02	8.3E-03	4E-02
AC008	6.5	1.3E-02	3.4E-03	2E-02
AC009	9.6	1.9E-02	5.0E-03	2E-02
AC010	7.6	1.5E-02	4.0E-03	2E-02
AC011	29	5.7E-02	1.5E-02	7E-02
AC012	8.1	1.6E-02	4.2E-03	2E-02
AC013	11	2.2E-02	5.7E-03	3E-02
AC014	7.6	1.5E-02	4.0E-03	2E-02
AC015	11	2.2E-02	5.7E-03	3E-02
AC016	12	2.4E-02	6.2E-03	3E-02
AC017	6.7	1.3E-02	3.5E-03	2E-02
AC018	12	2.4E-02	6.2E-03	3E-02
AC019	11	2.2E-02	5.7E-03	3E-02
AC020	5.6	1.1E-02	2.9E-03	1E-02
AC021	13	2.6E-02	6.8E-03	3E-02
AC022	6.6	1.3E-02	3.4E-03	2E-02
AC023	9.3	1.8E-02	4.8E-03	2E-02
AC024	11	2.2E-02	5.7E-03	3E-02
AC025	12	2.4E-02	6.2E-03	3E-02
AC026	7.5	1.5E-02	3.9E-03	2E-02
AC028	6.7	1.3E-02	3.5E-03	2E-02
AC029	7.6	1.5E-02	4.0E-03	2E-02
AC030	7.0	1.4E-02	3.6E-03	2E-02
AC031	9.0	1.8E-02	4.7E-03	2E-02
AC032	9.5	1.9E-02	4.9E-03	2E-02
AC033	7.6	1.5E-02	4.0E-03	2E-02
AC034	9.4	1.9E-02	4.9E-03	2E-02

Table B-2. NON-CANCER HAZARDS TO ADULT VISITORS IN ALLEYWAYS

Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.5E-07	1.0E-06	

Alleyway Property Number:	EPC - Surface (mg/kg)	Non-Cancer HQs for Adult Visitors		
		Arsenic		
		Ingestion	Dermal	Total
AC035	7.8	1.5E-02	4.1E-03	2E-02
AC037	7.7	1.5E-02	4.0E-03	2E-02
AC038	9.3	1.8E-02	4.8E-03	2E-02
AC039	11	2.2E-02	5.7E-03	3E-02
AC040	11	2.2E-02	5.7E-03	3E-02
AC041	7.8	1.5E-02	4.1E-03	2E-02
AC042	6.0	1.2E-02	3.1E-03	1E-02
AC043	11	2.2E-02	5.7E-03	3E-02
AC044	13	2.6E-02	6.8E-03	3E-02
AC045	9.8	1.9E-02	5.1E-03	2E-02
AC046	9.0	1.8E-02	4.7E-03	2E-02
AC047	11	2.2E-02	5.7E-03	3E-02
AC048	7.5	1.5E-02	3.9E-03	2E-02
AC051	6.7	1.3E-02	3.5E-03	2E-02
AC052	12	2.4E-02	6.2E-03	3E-02
AC053	10	2.0E-02	5.2E-03	2E-02
AC054	18	3.6E-02	9.4E-03	4E-02
AC055	9.7	1.9E-02	5.0E-03	2E-02
AC057	24	4.7E-02	1.2E-02	6E-02
AC058	14	2.8E-02	7.3E-03	3E-02
AC059	12	2.4E-02	6.2E-03	3E-02
AC060	10	2.0E-02	5.2E-03	2E-02
AC061	17	3.4E-02	8.8E-03	4E-02
AC062	9.6	1.9E-02	5.0E-03	2E-02
AC063	15	3.0E-02	7.8E-03	4E-02
AC064	12	2.4E-02	6.2E-03	3E-02
AC065	15	3.0E-02	7.8E-03	4E-02
AC066	14	2.8E-02	7.3E-03	3E-02
AC067	12	2.4E-02	6.2E-03	3E-02
AC068	21	4.1E-02	1.1E-02	5E-02
AC069	9.9	2.0E-02	5.2E-03	2E-02
AC070	14	2.8E-02	7.3E-03	3E-02
AC071	19	3.7E-02	9.9E-03	5E-02

Table B-2. NON-CANCER HAZARDS TO ADULT VISITORS IN ALLEYWAYS

Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.5E-07	1.0E-06	

Alleyway Property Number:	EPC - Surface (mg/kg)	Non-Cancer HQs for Adult Visitors		
		Arsenic		
		Ingestion	Dermal	Total
AC072	21	4.1E-02	1.1E-02	5E-02
AC073	12	2.4E-02	6.2E-03	3E-02
AC074	11	2.2E-02	5.7E-03	3E-02
AC075	9.1	1.8E-02	4.7E-03	2E-02
AC076	16	3.2E-02	8.3E-03	4E-02
AC077	15	3.0E-02	7.8E-03	4E-02
AC078	13	2.6E-02	6.8E-03	3E-02
AC079	14	2.8E-02	7.3E-03	3E-02
AC080	8.0	1.6E-02	4.2E-03	2E-02
AC081	9.5	1.9E-02	4.9E-03	2E-02
AC082	8.1	1.6E-02	4.2E-03	2E-02
AC083	8.7	1.7E-02	4.5E-03	2E-02
AC084	23	4.5E-02	1.2E-02	6E-02
AC085	23	4.5E-02	1.2E-02	6E-02
AC086	9.6	1.9E-02	5.0E-03	2E-02
AC087	12	2.4E-02	6.2E-03	3E-02
AC088	8.2	1.6E-02	4.3E-03	2E-02
AC089	8.6	1.7E-02	4.5E-03	2E-02
AC090	11	2.2E-02	5.7E-03	3E-02
AC091	9.4	1.9E-02	4.9E-03	2E-02
AC092	21	4.1E-02	1.1E-02	5E-02
AC093	14	2.8E-02	7.3E-03	3E-02
AC094	14	2.8E-02	7.3E-03	3E-02
AC095	11	2.2E-02	5.7E-03	3E-02
AC096	11	2.2E-02	5.7E-03	3E-02
AC097	13	2.6E-02	6.8E-03	3E-02
AC098	7.5	1.5E-02	3.9E-03	2E-02
AC099	3.6	7.1E-03	1.9E-03	9E-03
AC100	3.9	7.7E-03	2.0E-03	1E-02
AC101	3.5	6.9E-03	1.8E-03	9E-03
AC102	5.8	1.1E-02	3.0E-03	1E-02
AC103	4.1	8.1E-03	2.1E-03	1E-02
AC104	6.3	1.2E-02	3.3E-03	2E-02

Table B-2. NON-CANCER HAZARDS TO ADULT VISITORS IN ALLEYWAYS

Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.5E-07	1.0E-06	

Alleyway Property Number:	EPC - Surface (mg/kg)	Non-Cancer HQs for Adult Visitors		
		Arsenic		
		Ingestion	Dermal	Total
AC105	5.2	1.0E-02	2.7E-03	1E-02
AC106	4.5	8.9E-03	2.3E-03	1E-02
AC107	6.1	1.2E-02	3.2E-03	2E-02
AC108	11	2.2E-02	5.7E-03	3E-02
AC109	4.8	9.5E-03	2.5E-03	1E-02
PC0321	8.7	1.7E-02	4.5E-03	2E-02

Summary of Properties by Hazard Range	
Number with HI $\leq$ 1E+00	105
Number with HI > 1E+00	0
Percent with HI $\leq$ 1E+00	100%
Percent with HI > 1E+00	0%
Maximum HI	9E-02

Notes:

Ingestion

$$DI = C \times HIF \times RBA$$

$$HQ = DI/RfD$$

Dermal

$$DAD = C_{soil} \times ABS_d \times HIF_{soil}$$

$$RfD_{ABS} = RfD \times ABS_{GI}$$

$$ABS_{GI} = 1, \text{ so } RfD_{ABS} = RfD$$

$$HQ = DAD/RfD_{ABS}$$

EPC =

Exposure Point Concentration

HI =

Hazard Index

HQ =

Hazard Quotient

mg/kg =

milligrams per kilogram

N/A =

Not Applicable

RBA =

Relative Bioavailability

Table B-3. NON-CANCER HAZARDS TO CHILD VISITORS IN ALLEYWAYS

Central Tendency Exposure Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	6.6E-07	6.2E-07	

Alleyway Property Number:	EPC - Surface (mg/kg)	Non-Cancer HQs for Child Visitors		
		Arsenic		
		Ingestion	Dermal	Total
AC001	10	5.3E-02	3.1E-03	6E-02
AC002	16	8.4E-02	5.0E-03	9E-02
AC003	38	2.0E-01	1.2E-02	2E-01
AC004	19	1.0E-01	5.9E-03	1E-01
AC005	19	1.0E-01	5.9E-03	1E-01
AC006	20	1.1E-01	6.2E-03	1E-01
AC007	16	8.4E-02	5.0E-03	9E-02
AC008	6.5	3.4E-02	2.0E-03	4E-02
AC009	9.6	5.0E-02	3.0E-03	5E-02
AC010	7.6	4.0E-02	2.4E-03	4E-02
AC011	29	1.5E-01	9.0E-03	2E-01
AC012	8.1	4.3E-02	2.5E-03	5E-02
AC013	11	5.8E-02	3.4E-03	6E-02
AC014	7.6	4.0E-02	2.4E-03	4E-02
AC015	11	5.8E-02	3.4E-03	6E-02
AC016	12	6.3E-02	3.7E-03	7E-02
AC017	6.7	3.5E-02	2.1E-03	4E-02
AC018	12	6.3E-02	3.7E-03	7E-02
AC019	11	5.8E-02	3.4E-03	6E-02
AC020	5.6	2.9E-02	1.7E-03	3E-02
AC021	13	6.8E-02	4.1E-03	7E-02
AC022	6.6	3.5E-02	2.1E-03	4E-02
AC023	9.3	4.9E-02	2.9E-03	5E-02
AC024	11	5.8E-02	3.4E-03	6E-02
AC025	12	6.3E-02	3.7E-03	7E-02
AC026	7.5	3.9E-02	2.3E-03	4E-02
AC028	6.7	3.5E-02	2.1E-03	4E-02
AC029	7.6	4.0E-02	2.4E-03	4E-02
AC030	7.0	3.7E-02	2.2E-03	4E-02
AC031	9.0	4.7E-02	2.8E-03	5E-02
AC032	9.5	5.0E-02	3.0E-03	5E-02
AC033	7.6	4.0E-02	2.4E-03	4E-02
AC034	9.4	4.9E-02	2.9E-03	5E-02

Table B-3. NON-CANCER HAZARDS TO CHILD VISITORS IN ALLEYWAYS
Central Tendency Exposure Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	6.6E-07	6.2E-07	

Alleyway Property Number:	EPC - Surface (mg/kg)	Non-Cancer HQs for Child Visitors		
		Arsenic		
		Ingestion	Dermal	Total
AC035	7.8	4.1E-02	2.4E-03	4E-02
AC037	7.7	4.1E-02	2.4E-03	4E-02
AC038	9.3	4.9E-02	2.9E-03	5E-02
AC039	11	5.8E-02	3.4E-03	6E-02
AC040	11	5.8E-02	3.4E-03	6E-02
AC041	7.8	4.1E-02	2.4E-03	4E-02
AC042	6.0	3.2E-02	1.9E-03	3E-02
AC043	11	5.8E-02	3.4E-03	6E-02
AC044	13	6.8E-02	4.1E-03	7E-02
AC045	9.8	5.2E-02	3.1E-03	5E-02
AC046	9.0	4.7E-02	2.8E-03	5E-02
AC047	11	5.8E-02	3.4E-03	6E-02
AC048	7.5	3.9E-02	2.3E-03	4E-02
AC051	6.7	3.5E-02	2.1E-03	4E-02
AC052	12	6.3E-02	3.7E-03	7E-02
AC053	10	5.3E-02	3.1E-03	6E-02
AC054	18	9.5E-02	5.6E-03	1E-01
AC055	9.7	5.1E-02	3.0E-03	5E-02
AC057	24	1.3E-01	7.5E-03	1E-01
AC058	14	7.4E-02	4.4E-03	8E-02
AC059	12	6.3E-02	3.7E-03	7E-02
AC060	10	5.3E-02	3.1E-03	6E-02
AC061	17	8.9E-02	5.3E-03	9E-02
AC062	9.6	5.0E-02	3.0E-03	5E-02
AC063	15	7.9E-02	4.7E-03	8E-02
AC064	12	6.3E-02	3.7E-03	7E-02
AC065	15	7.9E-02	4.7E-03	8E-02
AC066	14	7.4E-02	4.4E-03	8E-02
AC067	12	6.3E-02	3.7E-03	7E-02
AC068	21	1.1E-01	6.6E-03	1E-01
AC069	9.9	5.2E-02	3.1E-03	6E-02
AC070	14	7.4E-02	4.4E-03	8E-02
AC071	19	1.0E-01	5.9E-03	1E-01

Table B-3. NON-CANCER HAZARDS TO CHILD VISITORS IN ALLEYWAYS

Central Tendency Exposure Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	6.6E-07	6.2E-07	

Alleyway Property Number:	EPC - Surface (mg/kg)	Non-Cancer HQs for Child Visitors		
		Arsenic		
		Ingestion	Dermal	Total
AC072	21	1.1E-01	6.6E-03	1E-01
AC073	12	6.3E-02	3.7E-03	7E-02
AC074	11	5.8E-02	3.4E-03	6E-02
AC075	9.1	4.8E-02	2.8E-03	5E-02
AC076	16	8.4E-02	5.0E-03	9E-02
AC077	15	7.9E-02	4.7E-03	8E-02
AC078	13	6.8E-02	4.1E-03	7E-02
AC079	14	7.4E-02	4.4E-03	8E-02
AC080	8.0	4.2E-02	2.5E-03	4E-02
AC081	9.5	5.0E-02	3.0E-03	5E-02
AC082	8.1	4.3E-02	2.5E-03	5E-02
AC083	8.7	4.6E-02	2.7E-03	5E-02
AC084	23	1.2E-01	7.2E-03	1E-01
AC085	23	1.2E-01	7.2E-03	1E-01
AC086	9.6	5.0E-02	3.0E-03	5E-02
AC087	12	6.3E-02	3.7E-03	7E-02
AC088	8.2	4.3E-02	2.6E-03	5E-02
AC089	8.6	4.5E-02	2.7E-03	5E-02
AC090	11	5.8E-02	3.4E-03	6E-02
AC091	9.4	4.9E-02	2.9E-03	5E-02
AC092	21	1.1E-01	6.6E-03	1E-01
AC093	14	7.4E-02	4.4E-03	8E-02
AC094	14	7.4E-02	4.4E-03	8E-02
AC095	11	5.8E-02	3.4E-03	6E-02
AC096	11	5.8E-02	3.4E-03	6E-02
AC097	13	6.8E-02	4.1E-03	7E-02
AC098	7.5	3.9E-02	2.3E-03	4E-02
AC099	3.6	1.9E-02	1.1E-03	2E-02
AC100	3.9	2.1E-02	1.2E-03	2E-02
AC101	3.5	1.8E-02	1.1E-03	2E-02
AC102	5.8	3.1E-02	1.8E-03	3E-02
AC103	4.1	2.2E-02	1.3E-03	2E-02
AC104	6.3	3.3E-02	2.0E-03	4E-02

Table B-3. NON-CANCER HAZARDS TO CHILD VISITORS IN ALLEYWAYS

Central Tendency Exposure Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	6.6E-07	6.2E-07	

Alleyway Property Number:	EPC - Surface (mg/kg)	Non-Cancer HQs for Child Visitors		
		Arsenic		
		Ingestion	Dermal	Total
AC105	5.2	2.7E-02	1.6E-03	3E-02
AC106	4.5	2.4E-02	1.4E-03	3E-02
AC107	6.1	3.2E-02	1.9E-03	3E-02
AC108	11	5.8E-02	3.4E-03	6E-02
AC109	4.8	2.5E-02	1.5E-03	3E-02
PC0321	8.7	4.6E-02	2.7E-03	5E-02

Summary of Properties by Hazard Range	
Number with HI $\leq$ 1E+00	105
Number with HI > 1E+00	0
Percent with HI $\leq$ 1E+00	100%
Percent with HI > 1E+00	0%
Maximum HI	2E-01

Notes:

Ingestion

$$DI = C \times HIF \times RBA$$

$$HQ = DI/RfD$$

Dermal

$$DAD = C_{soil} \times ABS_d \times HIF_{soil}$$

$$RfD_{ABS} = RfD \times ABS_{GI}$$

$$ABS_{GI} = 1, \text{ so } RfD_{ABS} = RfD$$

$$HQ = DAD/RfD_{ABS}$$

EPC =

Exposure Point Concentration

HI =

Hazard Index

HQ =

Hazard Quotient

mg/kg =

milligrams per kilogram

N/A =

Not Applicable

RBA =

Relative Bioavailability

Table B-4. NON-CANCER HAZARDS TO ADULT VISITORS IN ALLEYWAYS

Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	6.2E-08	7.4E-08	

Alleyway Property Number:	EPC - Surface (mg/kg)	Non-Cancer HQs for Adult Visitors		
		Arsenic		
		Ingestion	Dermal	Total
AC001	10	4.9E-03	3.7E-04	5E-03
AC002	16	7.9E-03	5.9E-04	8E-03
AC003	38	1.9E-02	1.4E-03	2E-02
AC004	19	9.4E-03	7.1E-04	1E-02
AC005	19	9.4E-03	7.1E-04	1E-02
AC006	20	9.9E-03	7.4E-04	1E-02
AC007	16	7.9E-03	5.9E-04	8E-03
AC008	6.5	3.2E-03	2.4E-04	3E-03
AC009	9.6	4.7E-03	3.6E-04	5E-03
AC010	7.6	3.7E-03	2.8E-04	4E-03
AC011	29	1.4E-02	1.1E-03	2E-02
AC012	8.1	4.0E-03	3.0E-04	4E-03
AC013	11	5.4E-03	4.1E-04	6E-03
AC014	7.6	3.7E-03	2.8E-04	4E-03
AC015	11	5.4E-03	4.1E-04	6E-03
AC016	12	5.9E-03	4.5E-04	6E-03
AC017	6.7	3.3E-03	2.5E-04	4E-03
AC018	12	5.9E-03	4.5E-04	6E-03
AC019	11	5.4E-03	4.1E-04	6E-03
AC020	5.6	2.8E-03	2.1E-04	3E-03
AC021	13	6.4E-03	4.8E-04	7E-03
AC022	6.6	3.3E-03	2.5E-04	4E-03
AC023	9.3	4.6E-03	3.5E-04	5E-03
AC024	11	5.4E-03	4.1E-04	6E-03
AC025	12	5.9E-03	4.5E-04	6E-03
AC026	7.5	3.7E-03	2.8E-04	4E-03
AC028	6.7	3.3E-03	2.5E-04	4E-03
AC029	7.6	3.7E-03	2.8E-04	4E-03
AC030	7.0	3.5E-03	2.6E-04	4E-03
AC031	9.0	4.4E-03	3.3E-04	5E-03
AC032	9.5	4.7E-03	3.5E-04	5E-03
AC033	7.6	3.7E-03	2.8E-04	4E-03
AC034	9.4	4.6E-03	3.5E-04	5E-03

Table B-4. NON-CANCER HAZARDS TO ADULT VISITORS IN ALLEYWAYS

Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	6.2E-08	7.4E-08	

Alleyway Property Number:	EPC - Surface (mg/kg)	Non-Cancer HQs for Adult Visitors		
		Arsenic		
		Ingestion	Dermal	Total
AC035	7.8	3.8E-03	2.9E-04	4E-03
AC037	7.7	3.8E-03	2.9E-04	4E-03
AC038	9.3	4.6E-03	3.5E-04	5E-03
AC039	11	5.4E-03	4.1E-04	6E-03
AC040	11	5.4E-03	4.1E-04	6E-03
AC041	7.8	3.8E-03	2.9E-04	4E-03
AC042	6.0	3.0E-03	2.2E-04	3E-03
AC043	11	5.4E-03	4.1E-04	6E-03
AC044	13	6.4E-03	4.8E-04	7E-03
AC045	9.8	4.8E-03	3.6E-04	5E-03
AC046	9.0	4.4E-03	3.3E-04	5E-03
AC047	11	5.4E-03	4.1E-04	6E-03
AC048	7.5	3.7E-03	2.8E-04	4E-03
AC051	6.7	3.3E-03	2.5E-04	4E-03
AC052	12	5.9E-03	4.5E-04	6E-03
AC053	10	4.9E-03	3.7E-04	5E-03
AC054	18	8.9E-03	6.7E-04	1E-02
AC055	9.7	4.8E-03	3.6E-04	5E-03
AC057	24	1.2E-02	8.9E-04	1E-02
AC058	14	6.9E-03	5.2E-04	7E-03
AC059	12	5.9E-03	4.5E-04	6E-03
AC060	10	4.9E-03	3.7E-04	5E-03
AC061	17	8.4E-03	6.3E-04	9E-03
AC062	9.6	4.7E-03	3.6E-04	5E-03
AC063	15	7.4E-03	5.6E-04	8E-03
AC064	12	5.9E-03	4.5E-04	6E-03
AC065	15	7.4E-03	5.6E-04	8E-03
AC066	14	6.9E-03	5.2E-04	7E-03
AC067	12	5.9E-03	4.5E-04	6E-03
AC068	21	1.0E-02	7.8E-04	1E-02
AC069	9.9	4.9E-03	3.7E-04	5E-03
AC070	14	6.9E-03	5.2E-04	7E-03
AC071	19	9.4E-03	7.1E-04	1E-02

Table B-4. NON-CANCER HAZARDS TO ADULT VISITORS IN ALLEYWAYS

Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	6.2E-08	7.4E-08	

Alleyway Property Number:	EPC - Surface (mg/kg)	Non-Cancer HQs for Adult Visitors		
		Arsenic		
		Ingestion	Dermal	Total
AC072	21	1.0E-02	7.8E-04	1E-02
AC073	12	5.9E-03	4.5E-04	6E-03
AC074	11	5.4E-03	4.1E-04	6E-03
AC075	9.1	4.5E-03	3.4E-04	5E-03
AC076	16	7.9E-03	5.9E-04	8E-03
AC077	15	7.4E-03	5.6E-04	8E-03
AC078	13	6.4E-03	4.8E-04	7E-03
AC079	14	6.9E-03	5.2E-04	7E-03
AC080	8.0	3.9E-03	3.0E-04	4E-03
AC081	9.5	4.7E-03	3.5E-04	5E-03
AC082	8.1	4.0E-03	3.0E-04	4E-03
AC083	8.7	4.3E-03	3.2E-04	5E-03
AC084	23	1.1E-02	8.6E-04	1E-02
AC085	23	1.1E-02	8.6E-04	1E-02
AC086	9.6	4.7E-03	3.6E-04	5E-03
AC087	12	5.9E-03	4.5E-04	6E-03
AC088	8.2	4.0E-03	3.0E-04	4E-03
AC089	8.6	4.2E-03	3.2E-04	5E-03
AC090	11	5.4E-03	4.1E-04	6E-03
AC091	9.4	4.6E-03	3.5E-04	5E-03
AC092	21	1.0E-02	7.8E-04	1E-02
AC093	14	6.9E-03	5.2E-04	7E-03
AC094	14	6.9E-03	5.2E-04	7E-03
AC095	11	5.4E-03	4.1E-04	6E-03
AC096	11	5.4E-03	4.1E-04	6E-03
AC097	13	6.4E-03	4.8E-04	7E-03
AC098	7.5	3.7E-03	2.8E-04	4E-03
AC099	3.6	1.8E-03	1.3E-04	2E-03
AC100	3.9	1.9E-03	1.5E-04	2E-03
AC101	3.5	1.7E-03	1.3E-04	2E-03
AC102	5.8	2.9E-03	2.2E-04	3E-03
AC103	4.1	2.0E-03	1.5E-04	2E-03
AC104	6.3	3.1E-03	2.3E-04	3E-03

Table B-4. NON-CANCER HAZARDS TO ADULT VISITORS IN ALLEYWAYS

Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	6.2E-08	7.4E-08	

Alleyway Property Number:	EPC - Surface (mg/kg)	Non-Cancer HQs for Adult Visitors		
		Arsenic		
		Ingestion	Dermal	Total
AC105	5.2	2.6E-03	1.9E-04	3E-03
AC106	4.5	2.2E-03	1.7E-04	2E-03
AC107	6.1	3.0E-03	2.3E-04	3E-03
AC108	11	5.4E-03	4.1E-04	6E-03
AC109	4.8	2.4E-03	1.8E-04	3E-03
PC0321	8.7	4.3E-03	3.2E-04	5E-03

Summary of Properties by Hazard Range	
Number with HI $\leq$ 1E+00	105
Number with HI > 1E+00	0
Percent with HI $\leq$ 1E+00	100%
Percent with HI > 1E+00	0%
Maximum HI	2E-02

Notes:

Ingestion

$$DI = C \times HIF \times RBA$$

$$HQ = DI/RfD$$

Dermal

$$DAD = C_{soil} \times ABS_d \times HIF_{soil}$$

$$RfD_{ABS} = RfD \times ABS_{GI}$$

$$ABS_{GI} = 1, \text{ so } RfD_{ABS} = RfD$$

$$HQ = DAD/RfD_{ABS}$$

EPC =

Exposure Point Concentration

HI =

Hazard Index

HQ =

Hazard Quotient

mg/kg =

milligrams per kilogram

N/A =

Not Applicable

RBA =

Relative Bioavailability

Table B-5. CANCER HAZARDS TO ALLEY VISITORS

Reasonable Maximum Exposure Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.4E-07	7.4E-07	

Alleyway Property Number:	EPC - Surface (mg/kg)	Cancer Risks for Alley Visitors (Weighted Average Over Lifetime)		
		Arsenic		
		Ingestion	Dermal	Total
AC001	10	3.7E-05	7.1E-06	4E-05
AC002	16	5.9E-05	1.1E-05	7E-05
AC003	38	1.4E-04	2.7E-05	2E-04
AC004	19	7.1E-05	1.4E-05	8E-05
AC005	19	7.1E-05	1.4E-05	8E-05
AC006	20	7.4E-05	1.4E-05	9E-05
AC007	16	5.9E-05	1.1E-05	7E-05
AC008	6.5	2.4E-05	4.6E-06	3E-05
AC009	9.6	3.6E-05	6.9E-06	4E-05
AC010	7.6	2.8E-05	5.4E-06	3E-05
AC011	29	1.1E-04	2.1E-05	1E-04
AC012	8.1	3.0E-05	5.8E-06	4E-05
AC013	11	4.1E-05	7.8E-06	5E-05
AC014	7.6	2.8E-05	5.4E-06	3E-05
AC015	11	4.1E-05	7.8E-06	5E-05
AC016	12	4.5E-05	8.6E-06	5E-05
AC017	6.7	2.5E-05	4.8E-06	3E-05
AC018	12	4.5E-05	8.6E-06	5E-05
AC019	11	4.1E-05	7.8E-06	5E-05
AC020	5.6	2.1E-05	4.0E-06	2E-05
AC021	13	4.8E-05	9.3E-06	6E-05
AC022	6.6	2.5E-05	4.7E-06	3E-05
AC023	9.3	3.5E-05	6.6E-06	4E-05
AC024	11	4.1E-05	7.8E-06	5E-05
AC025	12	4.5E-05	8.6E-06	5E-05
AC026	7.5	2.8E-05	5.4E-06	3E-05
AC028	6.7	2.5E-05	4.8E-06	3E-05
AC029	7.6	2.8E-05	5.4E-06	3E-05
AC030	7.0	2.6E-05	5.0E-06	3E-05
AC031	9.0	3.3E-05	6.4E-06	4E-05
AC032	9.5	3.5E-05	6.8E-06	4E-05
AC033	7.6	2.8E-05	5.4E-06	3E-05

Table B-5. CANCER HAZARDS TO ALLEY VISITORS

Reasonable Maximum Exposure Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.4E-07	7.4E-07	

Alleyway Property Number:	EPC - Surface (mg/kg)	Cancer Risks for Alley Visitors (Weighted Average Over Lifetime)		
		Arsenic		
		Ingestion	Dermal	Total
AC034	9.4	3.5E-05	6.7E-06	4E-05
AC035	7.8	2.9E-05	5.6E-06	3E-05
AC037	7.7	2.9E-05	5.5E-06	3E-05
AC038	9.3	3.5E-05	6.6E-06	4E-05
AC039	11	4.1E-05	7.8E-06	5E-05
AC040	11	4.1E-05	7.8E-06	5E-05
AC041	7.8	2.9E-05	5.6E-06	3E-05
AC042	6.0	2.2E-05	4.3E-06	3E-05
AC043	11	4.1E-05	7.8E-06	5E-05
AC044	13	4.8E-05	9.3E-06	6E-05
AC045	9.8	3.6E-05	7.0E-06	4E-05
AC046	9.0	3.3E-05	6.4E-06	4E-05
AC047	11	4.1E-05	7.8E-06	5E-05
AC048	7.5	2.8E-05	5.4E-06	3E-05
AC051	6.7	2.5E-05	4.8E-06	3E-05
AC052	12	4.5E-05	8.6E-06	5E-05
AC053	10	3.7E-05	7.1E-06	4E-05
AC054	18	6.7E-05	1.3E-05	8E-05
AC055	9.7	3.6E-05	6.9E-06	4E-05
AC057	24	8.9E-05	1.7E-05	1E-04
AC058	14	5.2E-05	1.0E-05	6E-05
AC059	12	4.5E-05	8.6E-06	5E-05
AC060	10	3.7E-05	7.1E-06	4E-05
AC061	17	6.3E-05	1.2E-05	8E-05
AC062	9.6	3.6E-05	6.9E-06	4E-05
AC063	15	5.6E-05	1.1E-05	7E-05
AC064	12	4.5E-05	8.6E-06	5E-05
AC065	15	5.6E-05	1.1E-05	7E-05
AC066	14	5.2E-05	1.0E-05	6E-05
AC067	12	4.5E-05	8.6E-06	5E-05
AC068	21	7.8E-05	1.5E-05	9E-05
AC069	9.9	3.7E-05	7.1E-06	4E-05

Table B-5. CANCER HAZARDS TO ALLEY VISITORS

Reasonable Maximum Exposure Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.4E-07	7.4E-07	

Alleyway Property Number:	EPC - Surface (mg/kg)	Cancer Risks for Alley Visitors (Weighted Average Over Lifetime)		
		Arsenic		
		Ingestion	Dermal	Total
AC070	14	5.2E-05	1.0E-05	6E-05
AC071	19	7.1E-05	1.4E-05	8E-05
AC072	21	7.8E-05	1.5E-05	9E-05
AC073	12	4.5E-05	8.6E-06	5E-05
AC074	11	4.1E-05	7.8E-06	5E-05
AC075	9.1	3.4E-05	6.5E-06	4E-05
AC076	16	5.9E-05	1.1E-05	7E-05
AC077	15	5.6E-05	1.1E-05	7E-05
AC078	13	4.8E-05	9.3E-06	6E-05
AC079	14	5.2E-05	1.0E-05	6E-05
AC080	8.0	3.0E-05	5.7E-06	4E-05
AC081	9.5	3.5E-05	6.8E-06	4E-05
AC082	8.1	3.0E-05	5.8E-06	4E-05
AC083	8.7	3.2E-05	6.2E-06	4E-05
AC084	23	8.5E-05	1.6E-05	1E-04
AC085	23	8.5E-05	1.6E-05	1E-04
AC086	9.6	3.6E-05	6.9E-06	4E-05
AC087	12	4.5E-05	8.6E-06	5E-05
AC088	8.2	3.0E-05	5.9E-06	4E-05
AC089	8.6	3.2E-05	6.1E-06	4E-05
AC090	11	4.1E-05	7.8E-06	5E-05
AC091	9.4	3.5E-05	6.7E-06	4E-05
AC092	21	7.8E-05	1.5E-05	9E-05
AC093	14	5.2E-05	1.0E-05	6E-05
AC094	14	5.2E-05	1.0E-05	6E-05
AC095	11	4.1E-05	7.8E-06	5E-05
AC096	11	4.1E-05	7.8E-06	5E-05
AC097	13	4.8E-05	9.3E-06	6E-05
AC098	7.5	2.8E-05	5.4E-06	3E-05
AC099	3.6	1.3E-05	2.6E-06	2E-05
AC100	3.9	1.4E-05	2.8E-06	2E-05
AC101	3.5	1.3E-05	2.5E-06	2E-05

Table B-5. CANCER HAZARDS TO ALLEY VISITORS

Reasonable Maximum Exposure Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.4E-07	7.4E-07	

Alleyway Property Number:	EPC - Surface (mg/kg)	Cancer Risks for Alley Visitors (Weighted Average Over Lifetime)		
		Arsenic		
		Ingestion	Dermal	Total
AC102	5.8	2.2E-05	4.1E-06	3E-05
AC103	4.1	1.5E-05	2.9E-06	2E-05
AC104	6.3	2.3E-05	4.5E-06	3E-05
AC105	5.2	1.9E-05	3.7E-06	2E-05
AC106	4.5	1.7E-05	3.2E-06	2E-05
AC107	6.1	2.3E-05	4.4E-06	3E-05
AC108	11	4.1E-05	7.8E-06	5E-05
AC109	4.8	1.8E-05	3.4E-06	2E-05
PC0321	8.7	3.2E-05	6.2E-06	4E-05

Summary of Properties by Risk Range	
Number with Risk $\leq$ 1E-06	0
Number with Risk > 1E-06 to 1E-05	0
Number with Risk > 1E-05 to 1E-04	104
Number with Risk > 1E-4	1
Percent with Risk $\leq$ 1E-06	0%
Percent with Risk > 1E-06 to 1E-05	0%
Percent with Risk > 1E-05 to 1E-04	99%
Percent with Risk > 1E-4	1%
Maximum Risk	2E-04

Notes:

Ingestion

Excess Cancer Risk = $DI_L \times SF$ $DI = C \times HIF \times RBA$

Dermal

Excess Cancer Risk = $DAD \times SF$ $DAD = C_{soil} \times ABS_d \times HIF_{soil}$ $RfD_{ABS} = RfD \times ABS_{GI}$ $ABS_{GI} = 1$, so $RfD_{ABS} = RfD$

EPC =

mg/kg =

N/A =

RBA =

Exposure Point Concentration

milligrams per kilogram

Not Applicable

Relative Bioavailability

Table B-6. CANCER HAZARDS TO ALLEY VISITORS

Central Tendency Exposure Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.7E-08	2.7E-08	

Alleyway Property Number:	EPC - Surface (mg/kg)	Cancer Risks for Alley Visitors (Weighted Average Over Lifetime)		
		Arsenic		
		Ingestion	Dermal	Total
AC001	10	4.1E-06	2.6E-07	4E-06
AC002	16	6.6E-06	4.2E-07	7E-06
AC003	38	1.6E-05	1.0E-06	2E-05
AC004	19	7.8E-06	5.0E-07	8E-06
AC005	19	7.8E-06	5.0E-07	8E-06
AC006	20	8.2E-06	5.3E-07	9E-06
AC007	16	6.6E-06	4.2E-07	7E-06
AC008	6.5	2.7E-06	1.7E-07	3E-06
AC009	9.6	3.9E-06	2.5E-07	4E-06
AC010	7.6	3.1E-06	2.0E-07	3E-06
AC011	29	1.2E-05	7.6E-07	1E-05
AC012	8.1	3.3E-06	2.1E-07	4E-06
AC013	11	4.5E-06	2.9E-07	5E-06
AC014	7.6	3.1E-06	2.0E-07	3E-06
AC015	11	4.5E-06	2.9E-07	5E-06
AC016	12	4.9E-06	3.2E-07	5E-06
AC017	6.7	2.7E-06	1.8E-07	3E-06
AC018	12	4.9E-06	3.2E-07	5E-06
AC019	11	4.5E-06	2.9E-07	5E-06
AC020	5.6	2.3E-06	1.5E-07	2E-06
AC021	13	5.3E-06	3.4E-07	6E-06
AC022	6.6	2.7E-06	1.7E-07	3E-06
AC023	9.3	3.8E-06	2.4E-07	4E-06
AC024	11	4.5E-06	2.9E-07	5E-06
AC025	12	4.9E-06	3.2E-07	5E-06
AC026	7.5	3.1E-06	2.0E-07	3E-06
AC028	6.7	2.7E-06	1.8E-07	3E-06
AC029	7.6	3.1E-06	2.0E-07	3E-06
AC030	7.0	2.9E-06	1.8E-07	3E-06
AC031	9.0	3.7E-06	2.4E-07	4E-06
AC032	9.5	3.9E-06	2.5E-07	4E-06
AC033	7.6	3.1E-06	2.0E-07	3E-06

Table B-6. CANCER HAZARDS TO ALLEY VISITORS

Central Tendency Exposure Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.7E-08	2.7E-08	

Alleyway Property Number:	EPC - Surface (mg/kg)	Cancer Risks for Alley Visitors (Weighted Average Over Lifetime)		
		Arsenic		
		Ingestion	Dermal	Total
AC034	9.4	3.9E-06	2.5E-07	4E-06
AC035	7.8	3.2E-06	2.1E-07	3E-06
AC037	7.7	3.2E-06	2.0E-07	3E-06
AC038	9.3	3.8E-06	2.4E-07	4E-06
AC039	11	4.5E-06	2.9E-07	5E-06
AC040	11	4.5E-06	2.9E-07	5E-06
AC041	7.8	3.2E-06	2.1E-07	3E-06
AC042	6.0	2.5E-06	1.6E-07	3E-06
AC043	11	4.5E-06	2.9E-07	5E-06
AC044	13	5.3E-06	3.4E-07	6E-06
AC045	9.8	4.0E-06	2.6E-07	4E-06
AC046	9.0	3.7E-06	2.4E-07	4E-06
AC047	11	4.5E-06	2.9E-07	5E-06
AC048	7.5	3.1E-06	2.0E-07	3E-06
AC051	6.7	2.7E-06	1.8E-07	3E-06
AC052	12	4.9E-06	3.2E-07	5E-06
AC053	10	4.1E-06	2.6E-07	4E-06
AC054	18	7.4E-06	4.7E-07	8E-06
AC055	9.7	4.0E-06	2.6E-07	4E-06
AC057	24	9.8E-06	6.3E-07	1E-05
AC058	14	5.7E-06	3.7E-07	6E-06
AC059	12	4.9E-06	3.2E-07	5E-06
AC060	10	4.1E-06	2.6E-07	4E-06
AC061	17	7.0E-06	4.5E-07	7E-06
AC062	9.6	3.9E-06	2.5E-07	4E-06
AC063	15	6.2E-06	3.9E-07	7E-06
AC064	12	4.9E-06	3.2E-07	5E-06
AC065	15	6.2E-06	3.9E-07	7E-06
AC066	14	5.7E-06	3.7E-07	6E-06
AC067	12	4.9E-06	3.2E-07	5E-06
AC068	21	8.6E-06	5.5E-07	9E-06
AC069	9.9	4.1E-06	2.6E-07	4E-06

Table B-6. CANCER HAZARDS TO ALLEY VISITORS

Central Tendency Exposure Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.7E-08	2.7E-08	

Alleyway Property Number:	EPC - Surface (mg/kg)	Cancer Risks for Alley Visitors (Weighted Average Over Lifetime)		
		Arsenic		
		Ingestion	Dermal	Total
AC070	14	5.7E-06	3.7E-07	6E-06
AC071	19	7.8E-06	5.0E-07	8E-06
AC072	21	8.6E-06	5.5E-07	9E-06
AC073	12	4.9E-06	3.2E-07	5E-06
AC074	11	4.5E-06	2.9E-07	5E-06
AC075	9.1	3.7E-06	2.4E-07	4E-06
AC076	16	6.6E-06	4.2E-07	7E-06
AC077	15	6.2E-06	3.9E-07	7E-06
AC078	13	5.3E-06	3.4E-07	6E-06
AC079	14	5.7E-06	3.7E-07	6E-06
AC080	8.0	3.3E-06	2.1E-07	3E-06
AC081	9.5	3.9E-06	2.5E-07	4E-06
AC082	8.1	3.3E-06	2.1E-07	4E-06
AC083	8.7	3.6E-06	2.3E-07	4E-06
AC084	23	9.4E-06	6.0E-07	1E-05
AC085	23	9.4E-06	6.0E-07	1E-05
AC086	9.6	3.9E-06	2.5E-07	4E-06
AC087	12	4.9E-06	3.2E-07	5E-06
AC088	8.2	3.4E-06	2.2E-07	4E-06
AC089	8.6	3.5E-06	2.3E-07	4E-06
AC090	11	4.5E-06	2.9E-07	5E-06
AC091	9.4	3.9E-06	2.5E-07	4E-06
AC092	21	8.6E-06	5.5E-07	9E-06
AC093	14	5.7E-06	3.7E-07	6E-06
AC094	14	5.7E-06	3.7E-07	6E-06
AC095	11	4.5E-06	2.9E-07	5E-06
AC096	11	4.5E-06	2.9E-07	5E-06
AC097	13	5.3E-06	3.4E-07	6E-06
AC098	7.5	3.1E-06	2.0E-07	3E-06
AC099	3.6	1.5E-06	9.5E-08	2E-06
AC100	3.9	1.6E-06	1.0E-07	2E-06
AC101	3.5	1.4E-06	9.2E-08	2E-06

Table B-6. CANCER HAZARDS TO ALLEY VISITORS

Central Tendency Exposure Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.7E-08	2.7E-08	

Alleyway Property Number:	EPC - Surface (mg/kg)	Cancer Risks for Alley Visitors (Weighted Average Over Lifetime)		
		Arsenic		
		Ingestion	Dermal	Total
AC102	5.8	2.4E-06	1.5E-07	3E-06
AC103	4.1	1.7E-06	1.1E-07	2E-06
AC104	6.3	2.6E-06	1.7E-07	3E-06
AC105	5.2	2.1E-06	1.4E-07	2E-06
AC106	4.5	1.8E-06	1.2E-07	2E-06
AC107	6.1	2.5E-06	1.6E-07	3E-06
AC108	11	4.5E-06	2.9E-07	5E-06
AC109	4.8	2.0E-06	1.3E-07	2E-06
PC0321	8.7	3.6E-06	2.3E-07	4E-06

Summary of Properties by Risk Range	
Number with Risk $\leq$ 1E-06	0
Number with Risk > 1E-06 to 1E-05	104
Number with Risk > 1E-05 to 1E-04	1
Number with Risk > 1E-4	0
Percent with Risk $\leq$ 1E-06	0%
Percent with Risk > 1E-06 to 1E-05	99%
Percent with Risk > 1E-05 to 1E-04	1%
Percent with Risk > 1E-4	0%
Maximum Risk	2E-05

Notes:

Ingestion

Excess Cancer Risk = $DI_L \times SF$

$DI = C \times HIF \times RBA$

Dermal

Excess Cancer Risk = $DAD \times SF$

$DAD = C_{soil} \times ABS_d \times HIF_{soil}$

$RfD_{ABS} = RfD \times ABS_{GI}$

$ABS_{GI} = 1$, so $RfD_{ABS} = RfD$

EPC =

mg/kg =

N/A =

RBA =

Exposure Point Concentration

milligrams per kilogram

Not Applicable

Relative Bioavailability

Appendix C
Individual Risk Estimates for Arsenic at Alleyways for Construction Workers

Table C-1.	Construction worker RME non-cancer risk estimates
Table C-2.	Construction worker CTE non-cancer risk estimates
Table C-3.	Construction worker RME cancer risk estimates
Table C-4.	Construction worker CTE cancer risk estimates

Table C-1. NON-CANCER HAZARDS TO CONSTRUCTION WORKERS IN ALLEYWAYS
Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.8E-06	9.1E-06	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Non-Cancer HQs for Adult Construction Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC001	10	2.3E-01	4.5E-02	3E-01
AC002	15	3.4E-01	6.8E-02	4E-01
AC003	33	7.5E-01	1.5E-01	9E-01
AC004	14	3.2E-01	6.3E-02	4E-01
AC005	16	3.6E-01	7.2E-02	4E-01
AC006	19	4.3E-01	8.6E-02	5E-01
AC007	16	3.6E-01	7.2E-02	4E-01
AC008	10	2.3E-01	4.5E-02	3E-01
AC009	10	2.3E-01	4.5E-02	3E-01
AC010	9.8	2.2E-01	4.4E-02	3E-01
AC011	20	4.5E-01	9.1E-02	5E-01
AC012	11	2.5E-01	5.0E-02	3E-01
AC013	9.8	2.2E-01	4.4E-02	3E-01
AC014	8.0	1.8E-01	3.6E-02	2E-01
AC015	9.5	2.1E-01	4.3E-02	3E-01
AC016	11	2.5E-01	5.0E-02	3E-01
AC017	9.2	2.1E-01	4.2E-02	2E-01
AC018	11	2.5E-01	5.0E-02	3E-01
AC019	14	3.2E-01	6.3E-02	4E-01
AC020	9.4	2.1E-01	4.3E-02	3E-01
AC021	12	2.7E-01	5.4E-02	3E-01
AC022	9.0	2.0E-01	4.1E-02	2E-01
AC023	14	3.2E-01	6.3E-02	4E-01
AC024	11	2.5E-01	5.0E-02	3E-01
AC025	17	3.8E-01	7.7E-02	5E-01
AC026	12	2.7E-01	5.4E-02	3E-01
AC028	8.6	1.9E-01	3.9E-02	2E-01
AC029	13	2.9E-01	5.9E-02	4E-01
AC030	10	2.3E-01	4.5E-02	3E-01
AC031	10	2.3E-01	4.5E-02	3E-01
AC032	11	2.5E-01	5.0E-02	3E-01
AC033	12	2.7E-01	5.4E-02	3E-01

Table C-1. NON-CANCER HAZARDS TO CONSTRUCTION WORKERS IN ALLEYWAYS
Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.8E-06	9.1E-06	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Non-Cancer HQs for Adult Construction Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC034	16	3.6E-01	7.2E-02	4E-01
AC035	12	2.7E-01	5.4E-02	3E-01
AC037	12	2.7E-01	5.4E-02	3E-01
AC038	12	2.7E-01	5.4E-02	3E-01
AC039	12	2.7E-01	5.4E-02	3E-01
AC040	13	2.9E-01	5.9E-02	4E-01
AC041	21	4.7E-01	9.5E-02	6E-01
AC042	10	2.3E-01	4.5E-02	3E-01
AC043	13	2.9E-01	5.9E-02	4E-01
AC044	17	3.8E-01	7.7E-02	5E-01
AC045	10	2.3E-01	4.5E-02	3E-01
AC046	13	2.9E-01	5.9E-02	4E-01
AC047	12	2.7E-01	5.4E-02	3E-01
AC048	11	2.5E-01	5.0E-02	3E-01
AC051	9.4	2.1E-01	4.3E-02	3E-01
AC052	11	2.5E-01	5.0E-02	3E-01
AC053	14	3.2E-01	6.3E-02	4E-01
AC054	16	3.6E-01	7.2E-02	4E-01
AC055	11	2.5E-01	5.0E-02	3E-01
AC057	34	7.7E-01	1.5E-01	9E-01
AC058	15	3.4E-01	6.8E-02	4E-01
AC059	9.8	2.2E-01	4.4E-02	3E-01
AC060	16	3.6E-01	7.2E-02	4E-01
AC061	15	3.4E-01	6.8E-02	4E-01
AC062	9.6	2.2E-01	4.3E-02	3E-01
AC063	22	5.0E-01	1.0E-01	6E-01
AC064	11	2.5E-01	5.0E-02	3E-01
AC065	21	4.7E-01	9.5E-02	6E-01
AC066	11	2.5E-01	5.0E-02	3E-01
AC067	11	2.5E-01	5.0E-02	3E-01
AC068	12	2.7E-01	5.4E-02	3E-01
AC069	13	2.9E-01	5.9E-02	4E-01

Table C-1. NON-CANCER HAZARDS TO CONSTRUCTION WORKERS IN ALLEYWAYS
Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.8E-06	9.1E-06	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Non-Cancer HQs for Adult Construction Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC070	12	2.7E-01	5.4E-02	3E-01
AC071	20	4.5E-01	9.1E-02	5E-01
AC072	31	7.0E-01	1.4E-01	8E-01
AC073	27	6.1E-01	1.2E-01	7E-01
AC074	12	2.7E-01	5.4E-02	3E-01
AC075	31	7.0E-01	1.4E-01	8E-01
AC076	25	5.7E-01	1.1E-01	7E-01
AC077	25	5.7E-01	1.1E-01	7E-01
AC078	26	5.9E-01	1.2E-01	7E-01
AC079	22	5.0E-01	1.0E-01	6E-01
AC080	32	7.2E-01	1.4E-01	9E-01
AC081	23	5.2E-01	1.0E-01	6E-01
AC082	23	5.2E-01	1.0E-01	6E-01
AC083	17	3.8E-01	7.7E-02	5E-01
AC084	19	4.3E-01	8.6E-02	5E-01
AC085	18	4.1E-01	8.2E-02	5E-01
AC086	17	3.8E-01	7.7E-02	5E-01
AC087	13	2.9E-01	5.9E-02	4E-01
AC088	11	2.5E-01	5.0E-02	3E-01
AC089	8.7	2.0E-01	3.9E-02	2E-01
AC090	17	3.8E-01	7.7E-02	5E-01
AC091	12	2.7E-01	5.4E-02	3E-01
AC092	16	3.6E-01	7.2E-02	4E-01
AC093	16	3.6E-01	7.2E-02	4E-01
AC094	19	4.3E-01	8.6E-02	5E-01
AC095	23	5.2E-01	1.0E-01	6E-01
AC096	20	4.5E-01	9.1E-02	5E-01
AC097	14	3.2E-01	6.3E-02	4E-01
AC098	11	2.5E-01	5.0E-02	3E-01
AC099	5.1	1.2E-01	2.3E-02	1E-01
AC100	5.5	1.2E-01	2.5E-02	1E-01
AC101	5.2	1.2E-01	2.4E-02	1E-01

Table C-1. NON-CANCER HAZARDS TO CONSTRUCTION WORKERS IN ALLEYWAYS

Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.8E-06	9.1E-06	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Non-Cancer HQs for Adult Construction Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC102	7.5	1.7E-01	3.4E-02	2E-01
AC103	5.9	1.3E-01	2.7E-02	2E-01
AC104	6.8	1.5E-01	3.1E-02	2E-01
AC105	5.4	1.2E-01	2.4E-02	1E-01
AC106	5.1	1.2E-01	2.3E-02	1E-01
AC107	5.7	1.3E-01	2.6E-02	2E-01
AC108	25	5.7E-01	1.1E-01	7E-01
AC109	9.6	2.2E-01	4.3E-02	3E-01
PC0321	11	2.5E-01	4.9E-02	3E-01

Summary of Properties by Hazard Range	
Number with HI $\leq$ 1E+00	105
Number with HI > 1E+00	0
Percent with HI $\leq$ 1E+00	100%
Percent with HI > 1E+00	0%
Maximum HI	9E-01

Notes:

Ingestion

DI = C x HIF x RBA

HQ = DI/RfD

Dermal

DAD = $C_{\text{soil}} \times \text{ABS}_d \times \text{HIF}_{\text{soil}}$

RfD_{ABS} = RfD x ABS_{GI}

ABS_{GI} = 1, so RfD_{ABS} = RfD

HQ = DAD/RfD_{ABS}

EPC =

Exposure Point Concentration

HI =

Hazard Index

HQ =

Hazard Quotient

mg/kg =

milligrams per kilogram

N/A =

Not Applicable

RBA =

Relative Bioavailability

Table C-2. NON-CANCER HAZARDS TO CONSTRUCTION WORKERS IN ALLEYWAYS
Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	8.6E-07	3.0E-06	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Non-Cancer HQs for Adult Construction Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC001	10	6.8E-02	1.5E-02	8E-02
AC002	15	1.0E-01	2.3E-02	1E-01
AC003	33	2.3E-01	5.0E-02	3E-01
AC004	14	9.6E-02	2.1E-02	1E-01
AC005	16	1.1E-01	2.4E-02	1E-01
AC006	19	1.3E-01	2.9E-02	2E-01
AC007	16	1.1E-01	2.4E-02	1E-01
AC008	10	6.8E-02	1.5E-02	8E-02
AC009	10	6.8E-02	1.5E-02	8E-02
AC010	9.8	6.7E-02	1.5E-02	8E-02
AC011	20	1.4E-01	3.0E-02	2E-01
AC012	11	7.5E-02	1.7E-02	9E-02
AC013	9.8	6.7E-02	1.5E-02	8E-02
AC014	8.0	5.5E-02	1.2E-02	7E-02
AC015	9.5	6.5E-02	1.4E-02	8E-02
AC016	11	7.5E-02	1.7E-02	9E-02
AC017	9.2	6.3E-02	1.4E-02	8E-02
AC018	11	7.5E-02	1.7E-02	9E-02
AC019	14	9.6E-02	2.1E-02	1E-01
AC020	9.4	6.4E-02	1.4E-02	8E-02
AC021	12	8.2E-02	1.8E-02	1E-01
AC022	9.0	6.2E-02	1.4E-02	8E-02
AC023	14	9.6E-02	2.1E-02	1E-01
AC024	11	7.5E-02	1.7E-02	9E-02
AC025	17	1.2E-01	2.6E-02	1E-01
AC026	12	8.2E-02	1.8E-02	1E-01
AC028	8.6	5.9E-02	1.3E-02	7E-02
AC029	13	8.9E-02	2.0E-02	1E-01
AC030	10	6.8E-02	1.5E-02	8E-02
AC031	10	6.8E-02	1.5E-02	8E-02
AC032	11	7.5E-02	1.7E-02	9E-02
AC033	12	8.2E-02	1.8E-02	1E-01

Table C-2. NON-CANCER HAZARDS TO CONSTRUCTION WORKERS IN ALLEYWAYS
Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	8.6E-07	3.0E-06	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Non-Cancer HQs for Adult Construction Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC034	16	1.1E-01	2.4E-02	1E-01
AC035	12	8.2E-02	1.8E-02	1E-01
AC037	12	8.2E-02	1.8E-02	1E-01
AC038	12	8.2E-02	1.8E-02	1E-01
AC039	12	8.2E-02	1.8E-02	1E-01
AC040	13	8.9E-02	2.0E-02	1E-01
AC041	21	1.4E-01	3.2E-02	2E-01
AC042	10	6.8E-02	1.5E-02	8E-02
AC043	13	8.9E-02	2.0E-02	1E-01
AC044	17	1.2E-01	2.6E-02	1E-01
AC045	10	6.8E-02	1.5E-02	8E-02
AC046	13	8.9E-02	2.0E-02	1E-01
AC047	12	8.2E-02	1.8E-02	1E-01
AC048	11	7.5E-02	1.7E-02	9E-02
AC051	9.4	6.4E-02	1.4E-02	8E-02
AC052	11	7.5E-02	1.7E-02	9E-02
AC053	14	9.6E-02	2.1E-02	1E-01
AC054	16	1.1E-01	2.4E-02	1E-01
AC055	11	7.5E-02	1.7E-02	9E-02
AC057	34	2.3E-01	5.1E-02	3E-01
AC058	15	1.0E-01	2.3E-02	1E-01
AC059	9.8	6.7E-02	1.5E-02	8E-02
AC060	16	1.1E-01	2.4E-02	1E-01
AC061	15	1.0E-01	2.3E-02	1E-01
AC062	9.6	6.6E-02	1.4E-02	8E-02
AC063	22	1.5E-01	3.3E-02	2E-01
AC064	11	7.5E-02	1.7E-02	9E-02
AC065	21	1.4E-01	3.2E-02	2E-01
AC066	11	7.5E-02	1.7E-02	9E-02
AC067	11	7.5E-02	1.7E-02	9E-02
AC068	12	8.2E-02	1.8E-02	1E-01
AC069	13	8.9E-02	2.0E-02	1E-01

Table C-2. NON-CANCER HAZARDS TO CONSTRUCTION WORKERS IN ALLEYWAYS
Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	8.6E-07	3.0E-06	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Non-Cancer HQs for Adult Construction Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC070	12	8.2E-02	1.8E-02	1E-01
AC071	20	1.4E-01	3.0E-02	2E-01
AC072	31	2.1E-01	4.7E-02	3E-01
AC073	27	1.8E-01	4.1E-02	2E-01
AC074	12	8.2E-02	1.8E-02	1E-01
AC075	31	2.1E-01	4.7E-02	3E-01
AC076	25	1.7E-01	3.8E-02	2E-01
AC077	25	1.7E-01	3.8E-02	2E-01
AC078	26	1.8E-01	3.9E-02	2E-01
AC079	22	1.5E-01	3.3E-02	2E-01
AC080	32	2.2E-01	4.8E-02	3E-01
AC081	23	1.6E-01	3.5E-02	2E-01
AC082	23	1.6E-01	3.5E-02	2E-01
AC083	17	1.2E-01	2.6E-02	1E-01
AC084	19	1.3E-01	2.9E-02	2E-01
AC085	18	1.2E-01	2.7E-02	2E-01
AC086	17	1.2E-01	2.6E-02	1E-01
AC087	13	8.9E-02	2.0E-02	1E-01
AC088	11	7.5E-02	1.7E-02	9E-02
AC089	8.7	6.0E-02	1.3E-02	7E-02
AC090	17	1.2E-01	2.6E-02	1E-01
AC091	12	8.2E-02	1.8E-02	1E-01
AC092	16	1.1E-01	2.4E-02	1E-01
AC093	16	1.1E-01	2.4E-02	1E-01
AC094	19	1.3E-01	2.9E-02	2E-01
AC095	23	1.6E-01	3.5E-02	2E-01
AC096	20	1.4E-01	3.0E-02	2E-01
AC097	14	9.6E-02	2.1E-02	1E-01
AC098	11	7.5E-02	1.7E-02	9E-02
AC099	5.1	3.5E-02	7.7E-03	4E-02
AC100	5.5	3.8E-02	8.3E-03	5E-02
AC101	5.2	3.6E-02	7.9E-03	4E-02

Table C-2. NON-CANCER HAZARDS TO CONSTRUCTION WORKERS IN ALLEYWAYS

Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	8.6E-07	3.0E-06	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Non-Cancer HQs for Adult Construction Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC102	7.5	5.1E-02	1.1E-02	6E-02
AC103	5.9	4.0E-02	8.9E-03	5E-02
AC104	6.8	4.7E-02	1.0E-02	6E-02
AC105	5.4	3.7E-02	8.2E-03	5E-02
AC106	5.1	3.5E-02	7.7E-03	4E-02
AC107	5.7	3.9E-02	8.6E-03	5E-02
AC108	25	1.7E-01	3.8E-02	2E-01
AC109	9.6	6.6E-02	1.4E-02	8E-02
PC0321	11	7.5E-02	1.6E-02	9E-02

Summary of Properties by Hazard Range	
Number with HI ≤ 1E+00	105
Number with HI > 1E+00	0
Percent with HI ≤ 1E+00	100%
Percent with HI > 1E+00	0%
Maximum HI	3E-01

Notes:

Ingestion

$$DI = C \times HIF \times RBA$$

$$HQ = DI/RfD$$

Dermal

$$DAD = C_{soil} \times ABS_d \times HIF_{soil}$$

$$RfD_{ABS} = RfD \times ABS_{GI}$$

$$ABS_{GI} = 1, \text{ so } RfD_{ABS} = RfD$$

$$HQ = DAD/RfD_{ABS}$$

EPC =

Exposure Point Concentration

HI =

Hazard Index

HQ =

Hazard Quotient

mg/kg =

milligrams per kilogram

N/A =

Not Applicable

RBA =

Relative Bioavailability

Table C-3. CANCER HAZARDS TO CONSTRUCTION WORKERS IN ALLEYWAYS

Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	4.0E-08	1.3E-07	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Cancer Risks for Adult Construction Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC001	10	6.2E-06	1.2E-06	7E-06
AC002	15	9.3E-06	1.9E-06	1E-05
AC003	33	2.0E-05	4.1E-06	2E-05
AC004	14	8.7E-06	1.7E-06	1E-05
AC005	16	9.9E-06	2.0E-06	1E-05
AC006	19	1.2E-05	2.4E-06	1E-05
AC007	16	9.9E-06	2.0E-06	1E-05
AC008	10	6.2E-06	1.2E-06	7E-06
AC009	10	6.2E-06	1.2E-06	7E-06
AC010	9.8	6.1E-06	1.2E-06	7E-06
AC011	20	1.2E-05	2.5E-06	1E-05
AC012	11	6.8E-06	1.4E-06	8E-06
AC013	9.8	6.1E-06	1.2E-06	7E-06
AC014	8.0	5.0E-06	9.9E-07	6E-06
AC015	9.5	5.9E-06	1.2E-06	7E-06
AC016	11	6.8E-06	1.4E-06	8E-06
AC017	9.2	5.7E-06	1.1E-06	7E-06
AC018	11	6.8E-06	1.4E-06	8E-06
AC019	14	8.7E-06	1.7E-06	1E-05
AC020	9.4	5.8E-06	1.2E-06	7E-06
AC021	12	7.4E-06	1.5E-06	9E-06
AC022	9.0	5.6E-06	1.1E-06	7E-06
AC023	14	8.7E-06	1.7E-06	1E-05
AC024	11	6.8E-06	1.4E-06	8E-06
AC025	17	1.1E-05	2.1E-06	1E-05
AC026	12	7.4E-06	1.5E-06	9E-06
AC028	8.6	5.3E-06	1.1E-06	6E-06
AC029	13	8.1E-06	1.6E-06	1E-05
AC030	10	6.2E-06	1.2E-06	7E-06
AC031	10	6.2E-06	1.2E-06	7E-06
AC032	11	6.8E-06	1.4E-06	8E-06
AC033	12	7.4E-06	1.5E-06	9E-06

Table C-3. CANCER HAZARDS TO CONSTRUCTION WORKERS IN ALLEYWAYS

Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	4.0E-08	1.3E-07	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Cancer Risks for Adult Construction Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC034	16	9.9E-06	2.0E-06	1E-05
AC035	12	7.4E-06	1.5E-06	9E-06
AC037	12	7.4E-06	1.5E-06	9E-06
AC038	12	7.4E-06	1.5E-06	9E-06
AC039	12	7.4E-06	1.5E-06	9E-06
AC040	13	8.1E-06	1.6E-06	1E-05
AC041	21	1.3E-05	2.6E-06	2E-05
AC042	10	6.2E-06	1.2E-06	7E-06
AC043	13	8.1E-06	1.6E-06	1E-05
AC044	17	1.1E-05	2.1E-06	1E-05
AC045	10	6.2E-06	1.2E-06	7E-06
AC046	13	8.1E-06	1.6E-06	1E-05
AC047	12	7.4E-06	1.5E-06	9E-06
AC048	11	6.8E-06	1.4E-06	8E-06
AC051	9.4	5.8E-06	1.2E-06	7E-06
AC052	11	6.8E-06	1.4E-06	8E-06
AC053	14	8.7E-06	1.7E-06	1E-05
AC054	16	9.9E-06	2.0E-06	1E-05
AC055	11	6.8E-06	1.4E-06	8E-06
AC057	34	2.1E-05	4.2E-06	3E-05
AC058	15	9.3E-06	1.9E-06	1E-05
AC059	9.8	6.1E-06	1.2E-06	7E-06
AC060	16	9.9E-06	2.0E-06	1E-05
AC061	15	9.3E-06	1.9E-06	1E-05
AC062	9.6	6.0E-06	1.2E-06	7E-06
AC063	22	1.4E-05	2.7E-06	2E-05
AC064	11	6.8E-06	1.4E-06	8E-06
AC065	21	1.3E-05	2.6E-06	2E-05
AC066	11	6.8E-06	1.4E-06	8E-06
AC067	11	6.8E-06	1.4E-06	8E-06
AC068	12	7.4E-06	1.5E-06	9E-06
AC069	13	8.1E-06	1.6E-06	1E-05

Table C-3. CANCER HAZARDS TO CONSTRUCTION WORKERS IN ALLEYWAYS

Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	4.0E-08	1.3E-07	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Cancer Risks for Adult Construction Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC070	12	7.4E-06	1.5E-06	9E-06
AC071	20	1.2E-05	2.5E-06	1E-05
AC072	31	1.9E-05	3.9E-06	2E-05
AC073	27	1.7E-05	3.4E-06	2E-05
AC074	12	7.4E-06	1.5E-06	9E-06
AC075	31	1.9E-05	3.9E-06	2E-05
AC076	25	1.5E-05	3.1E-06	2E-05
AC077	25	1.5E-05	3.1E-06	2E-05
AC078	26	1.6E-05	3.2E-06	2E-05
AC079	22	1.4E-05	2.7E-06	2E-05
AC080	32	2.0E-05	4.0E-06	2E-05
AC081	23	1.4E-05	2.9E-06	2E-05
AC082	23	1.4E-05	2.9E-06	2E-05
AC083	17	1.1E-05	2.1E-06	1E-05
AC084	19	1.2E-05	2.4E-06	1E-05
AC085	18	1.1E-05	2.2E-06	1E-05
AC086	17	1.1E-05	2.1E-06	1E-05
AC087	13	8.1E-06	1.6E-06	1E-05
AC088	11	6.8E-06	1.4E-06	8E-06
AC089	8.7	5.4E-06	1.1E-06	6E-06
AC090	17	1.1E-05	2.1E-06	1E-05
AC091	12	7.4E-06	1.5E-06	9E-06
AC092	16	9.9E-06	2.0E-06	1E-05
AC093	16	9.9E-06	2.0E-06	1E-05
AC094	19	1.2E-05	2.4E-06	1E-05
AC095	23	1.4E-05	2.9E-06	2E-05
AC096	20	1.2E-05	2.5E-06	1E-05
AC097	14	8.7E-06	1.7E-06	1E-05
AC098	11	6.8E-06	1.4E-06	8E-06
AC099	5.1	3.2E-06	6.3E-07	4E-06
AC100	5.5	3.4E-06	6.8E-07	4E-06
AC101	5.2	3.2E-06	6.5E-07	4E-06

Table C-3. CANCER HAZARDS TO CONSTRUCTION WORKERS IN ALLEYWAYS

Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	4.0E-08	1.3E-07	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Cancer Risks for Adult Construction Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC102	7.5	4.6E-06	9.3E-07	6E-06
AC103	5.9	3.7E-06	7.3E-07	4E-06
AC104	6.8	4.2E-06	8.4E-07	5E-06
AC105	5.4	3.3E-06	6.7E-07	4E-06
AC106	5.1	3.2E-06	6.3E-07	4E-06
AC107	5.7	3.5E-06	7.1E-07	4E-06
AC108	25	1.5E-05	3.1E-06	2E-05
AC109	9.6	6.0E-06	1.2E-06	7E-06
PC0321	11	6.8E-06	1.4E-06	8E-06

Summary of Properties by Risk Range	
Number with Risk $\leq 1\text{E-}06$	0
Number with Risk $> 1\text{E-}06$ to $1\text{E-}05$	88
Number with Risk $> 1\text{E-}05$ to $1\text{E-}04$	17
Number with Risk $> 1\text{E-}4$	0
Percent with Risk $\leq 1\text{E-}06$	0%
Percent with Risk $> 1\text{E-}06$ to $1\text{E-}05$	84%
Percent with Risk $> 1\text{E-}05$ to $1\text{E-}04$	16%
Percent with Risk $> 1\text{E-}4$	0%
Maximum Risk	$3\text{E-}05$

Notes:

Ingestion

Excess Cancer Risk = $DI_L \times SF$

$DI = C \times HIF \times RBA$

Dermal

Excess Cancer Risk = $DAD \times SF$

$DAD = C_{soil} \times ABS_d \times HIF_{soil}$

$RfD_{ABS} = RfD \times ABS_{GI}$

$ABS_{GI} = 1$, so $RfD_{ABS} = RfD$

EPC =

mg/kg =

N/A =

RBA =

Exposure Point Concentration

milligrams per kilogram

Not Applicable

Relative Bioavailability

Table C-4. CANCER HAZARDS TO CONSTRUCTION WORKERS IN ALLEYWAYS

Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	6.1E-09	2.2E-08	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Cancer Risks for Adult Construction Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC001	10	9.4E-07	2.1E-07	1E-06
AC002	15	1.4E-06	3.1E-07	2E-06
AC003	33	3.1E-06	6.8E-07	4E-06
AC004	14	1.3E-06	2.9E-07	2E-06
AC005	16	1.5E-06	3.3E-07	2E-06
AC006	19	1.8E-06	3.9E-07	2E-06
AC007	16	1.5E-06	3.3E-07	2E-06
AC008	10	9.4E-07	2.1E-07	1E-06
AC009	10	9.4E-07	2.1E-07	1E-06
AC010	9.8	9.2E-07	2.0E-07	1E-06
AC011	20	1.9E-06	4.1E-07	2E-06
AC012	11	1.0E-06	2.3E-07	1E-06
AC013	9.8	9.2E-07	2.0E-07	1E-06
AC014	8.0	7.5E-07	1.7E-07	9E-07
AC015	9.5	8.9E-07	2.0E-07	1E-06
AC016	11	1.0E-06	2.3E-07	1E-06
AC017	9.2	8.6E-07	1.9E-07	1E-06
AC018	11	1.0E-06	2.3E-07	1E-06
AC019	14	1.3E-06	2.9E-07	2E-06
AC020	9.4	8.8E-07	1.9E-07	1E-06
AC021	12	1.1E-06	2.5E-07	1E-06
AC022	9.0	8.5E-07	1.9E-07	1E-06
AC023	14	1.3E-06	2.9E-07	2E-06
AC024	11	1.0E-06	2.3E-07	1E-06
AC025	17	1.6E-06	3.5E-07	2E-06
AC026	12	1.1E-06	2.5E-07	1E-06
AC028	8.6	8.1E-07	1.8E-07	1E-06
AC029	13	1.2E-06	2.7E-07	1E-06
AC030	10	9.4E-07	2.1E-07	1E-06
AC031	10	9.4E-07	2.1E-07	1E-06
AC032	11	1.0E-06	2.3E-07	1E-06
AC033	12	1.1E-06	2.5E-07	1E-06

Table C-4. CANCER HAZARDS TO CONSTRUCTION WORKERS IN ALLEYWAYS

Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	6.1E-09	2.2E-08	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Cancer Risks for Adult Construction Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC034	16	1.5E-06	3.3E-07	2E-06
AC035	12	1.1E-06	2.5E-07	1E-06
AC037	12	1.1E-06	2.5E-07	1E-06
AC038	12	1.1E-06	2.5E-07	1E-06
AC039	12	1.1E-06	2.5E-07	1E-06
AC040	13	1.2E-06	2.7E-07	1E-06
AC041	21	2.0E-06	4.3E-07	2E-06
AC042	10	9.4E-07	2.1E-07	1E-06
AC043	13	1.2E-06	2.7E-07	1E-06
AC044	17	1.6E-06	3.5E-07	2E-06
AC045	10	9.4E-07	2.1E-07	1E-06
AC046	13	1.2E-06	2.7E-07	1E-06
AC047	12	1.1E-06	2.5E-07	1E-06
AC048	11	1.0E-06	2.3E-07	1E-06
AC051	9.4	8.8E-07	1.9E-07	1E-06
AC052	11	1.0E-06	2.3E-07	1E-06
AC053	14	1.3E-06	2.9E-07	2E-06
AC054	16	1.5E-06	3.3E-07	2E-06
AC055	11	1.0E-06	2.3E-07	1E-06
AC057	34	3.2E-06	7.0E-07	4E-06
AC058	15	1.4E-06	3.1E-07	2E-06
AC059	9.8	9.2E-07	2.0E-07	1E-06
AC060	16	1.5E-06	3.3E-07	2E-06
AC061	15	1.4E-06	3.1E-07	2E-06
AC062	9.6	9.0E-07	2.0E-07	1E-06
AC063	22	2.1E-06	4.6E-07	3E-06
AC064	11	1.0E-06	2.3E-07	1E-06
AC065	21	2.0E-06	4.3E-07	2E-06
AC066	11	1.0E-06	2.3E-07	1E-06
AC067	11	1.0E-06	2.3E-07	1E-06
AC068	12	1.1E-06	2.5E-07	1E-06
AC069	13	1.2E-06	2.7E-07	1E-06

Table C-4. CANCER HAZARDS TO CONSTRUCTION WORKERS IN ALLEYWAYS

Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	6.1E-09	2.2E-08	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Cancer Risks for Adult Construction Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC070	12	1.1E-06	2.5E-07	1E-06
AC071	20	1.9E-06	4.1E-07	2E-06
AC072	31	2.9E-06	6.4E-07	4E-06
AC073	27	2.5E-06	5.6E-07	3E-06
AC074	12	1.1E-06	2.5E-07	1E-06
AC075	31	2.9E-06	6.4E-07	4E-06
AC076	25	2.3E-06	5.2E-07	3E-06
AC077	25	2.3E-06	5.2E-07	3E-06
AC078	26	2.4E-06	5.4E-07	3E-06
AC079	22	2.1E-06	4.6E-07	3E-06
AC080	32	3.0E-06	6.6E-07	4E-06
AC081	23	2.2E-06	4.8E-07	3E-06
AC082	23	2.2E-06	4.8E-07	3E-06
AC083	17	1.6E-06	3.5E-07	2E-06
AC084	19	1.8E-06	3.9E-07	2E-06
AC085	18	1.7E-06	3.7E-07	2E-06
AC086	17	1.6E-06	3.5E-07	2E-06
AC087	13	1.2E-06	2.7E-07	1E-06
AC088	11	1.0E-06	2.3E-07	1E-06
AC089	8.7	8.2E-07	1.8E-07	1E-06
AC090	17	1.6E-06	3.5E-07	2E-06
AC091	12	1.1E-06	2.5E-07	1E-06
AC092	16	1.5E-06	3.3E-07	2E-06
AC093	16	1.5E-06	3.3E-07	2E-06
AC094	19	1.8E-06	3.9E-07	2E-06
AC095	23	2.2E-06	4.8E-07	3E-06
AC096	20	1.9E-06	4.1E-07	2E-06
AC097	14	1.3E-06	2.9E-07	2E-06
AC098	11	1.0E-06	2.3E-07	1E-06
AC099	5.1	4.8E-07	1.1E-07	6E-07
AC100	5.5	5.2E-07	1.1E-07	6E-07
AC101	5.2	4.9E-07	1.1E-07	6E-07

Table C-4. CANCER HAZARDS TO CONSTRUCTION WORKERS IN ALLEYWAYS

Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	6.1E-09	2.2E-08	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Cancer Risks for Adult Construction Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC102	7.5	7.0E-07	1.6E-07	9E-07
AC103	5.9	5.5E-07	1.2E-07	7E-07
AC104	6.8	6.4E-07	1.4E-07	8E-07
AC105	5.4	5.1E-07	1.1E-07	6E-07
AC106	5.1	4.8E-07	1.1E-07	6E-07
AC107	5.7	5.4E-07	1.2E-07	7E-07
AC108	25	2.3E-06	5.2E-07	3E-06
AC109	9.6	9.0E-07	2.0E-07	1E-06
PC0321	11	1.0E-06	2.3E-07	1E-06

Summary of Properties by Risk Range	
Number with Risk $\leq 1E-06$	61
Number with Risk $> 1E-06$ to $1E-05$	44
Number with Risk $> 1E-05$ to $1E-04$	0
Number with Risk $> 1E-4$	0
Percent with Risk $\leq 1E-06$	58%
Percent with Risk $> 1E-06$ to $1E-05$	42%
Percent with Risk $> 1E-05$ to $1E-04$	0%
Percent with Risk $> 1E-4$	0%
Maximum Risk	4E-06

Notes:

Ingestion

Excess Cancer Risk = $DI_L \times SF$

$DI = C \times HIF \times RBA$

Dermal

Excess Cancer Risk = $DAD \times SF$

$DAD = C_{soil} \times ABS_d \times HIF_{soil}$

$RfD_{ABS} = RfD \times ABS_{GI}$

$ABS_{GI} = 1$, so $RfD_{ABS} = RfD$

EPC =

mg/kg =

N/A =

RBA =

Exposure Point Concentration

milligrams per kilogram

Not Applicable

Relative Bioavailability

Appendix D
Individual Risk Estimates for Arsenic at Alleyways for Utility Workers

Table D-1.	Utility worker RME non-cancer risk estimates
Table D-2.	Utility worker CTE non-cancer risk estimates
Table D-3.	Utility worker RME cancer risk estimates
Table D-4.	Utility worker CTE cancer risk estimates

Table D-1. NON-CANCER HAZARDS TO UTILITY WORKERS IN ALLEYWAYS

Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	8.9E-07	1.4E-05	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Non-Cancer HQs for Adult Utility Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC001	10	7.1E-02	7.1E-02	1E-01
AC002	15	1.1E-01	1.1E-01	2E-01
AC003	33	2.4E-01	2.3E-01	5E-01
AC004	14	1.0E-01	9.9E-02	2E-01
AC005	16	1.1E-01	1.1E-01	2E-01
AC006	19	1.4E-01	1.3E-01	3E-01
AC007	16	1.1E-01	1.1E-01	2E-01
AC008	10	7.1E-02	7.1E-02	1E-01
AC009	10	7.1E-02	7.1E-02	1E-01
AC010	9.8	7.0E-02	6.9E-02	1E-01
AC011	20	1.4E-01	1.4E-01	3E-01
AC012	11	7.8E-02	7.8E-02	2E-01
AC013	9.8	7.0E-02	6.9E-02	1E-01
AC014	8.0	5.7E-02	5.7E-02	1E-01
AC015	9.5	6.8E-02	6.7E-02	1E-01
AC016	11	7.8E-02	7.8E-02	2E-01
AC017	9.2	6.6E-02	6.5E-02	1E-01
AC018	11	7.8E-02	7.8E-02	2E-01
AC019	14	1.0E-01	9.9E-02	2E-01
AC020	9.4	6.7E-02	6.6E-02	1E-01
AC021	12	8.5E-02	8.5E-02	2E-01
AC022	9.0	6.4E-02	6.4E-02	1E-01
AC023	14	1.0E-01	9.9E-02	2E-01
AC024	11	7.8E-02	7.8E-02	2E-01
AC025	17	1.2E-01	1.2E-01	2E-01
AC026	12	8.5E-02	8.5E-02	2E-01
AC028	8.6	6.1E-02	6.1E-02	1E-01
AC029	13	9.3E-02	9.2E-02	2E-01
AC030	10	7.1E-02	7.1E-02	1E-01
AC031	10	7.1E-02	7.1E-02	1E-01
AC032	11	7.8E-02	7.8E-02	2E-01
AC033	12	8.5E-02	8.5E-02	2E-01

Table D-1. NON-CANCER HAZARDS TO UTILITY WORKERS IN ALLEYWAYS

Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	8.9E-07	1.4E-05	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Non-Cancer HQs for Adult Utility Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC034	16	1.1E-01	1.1E-01	2E-01
AC035	12	8.5E-02	8.5E-02	2E-01
AC037	12	8.5E-02	8.5E-02	2E-01
AC038	12	8.5E-02	8.5E-02	2E-01
AC039	12	8.5E-02	8.5E-02	2E-01
AC040	13	9.3E-02	9.2E-02	2E-01
AC041	21	1.5E-01	1.5E-01	3E-01
AC042	10	7.1E-02	7.1E-02	1E-01
AC043	13	9.3E-02	9.2E-02	2E-01
AC044	17	1.2E-01	1.2E-01	2E-01
AC045	10	7.1E-02	7.1E-02	1E-01
AC046	13	9.3E-02	9.2E-02	2E-01
AC047	12	8.5E-02	8.5E-02	2E-01
AC048	11	7.8E-02	7.8E-02	2E-01
AC051	9.4	6.7E-02	6.6E-02	1E-01
AC052	11	7.8E-02	7.8E-02	2E-01
AC053	14	1.0E-01	9.9E-02	2E-01
AC054	16	1.1E-01	1.1E-01	2E-01
AC055	11	7.8E-02	7.8E-02	2E-01
AC057	34	2.4E-01	2.4E-01	5E-01
AC058	15	1.1E-01	1.1E-01	2E-01
AC059	9.8	7.0E-02	6.9E-02	1E-01
AC060	16	1.1E-01	1.1E-01	2E-01
AC061	15	1.1E-01	1.1E-01	2E-01
AC062	9.6	6.8E-02	6.8E-02	1E-01
AC063	22	1.6E-01	1.6E-01	3E-01
AC064	11	7.8E-02	7.8E-02	2E-01
AC065	21	1.5E-01	1.5E-01	3E-01
AC066	11	7.8E-02	7.8E-02	2E-01
AC067	11	7.8E-02	7.8E-02	2E-01
AC068	12	8.5E-02	8.5E-02	2E-01
AC069	13	9.3E-02	9.2E-02	2E-01

Table D-1. NON-CANCER HAZARDS TO UTILITY WORKERS IN ALLEYWAYS

Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	8.9E-07	1.4E-05	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Non-Cancer HQs for Adult Utility Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC070	12	8.5E-02	8.5E-02	2E-01
AC071	20	1.4E-01	1.4E-01	3E-01
AC072	31	2.2E-01	2.2E-01	4E-01
AC073	27	1.9E-01	1.9E-01	4E-01
AC074	12	8.5E-02	8.5E-02	2E-01
AC075	31	2.2E-01	2.2E-01	4E-01
AC076	25	1.8E-01	1.8E-01	4E-01
AC077	25	1.8E-01	1.8E-01	4E-01
AC078	26	1.9E-01	1.8E-01	4E-01
AC079	22	1.6E-01	1.6E-01	3E-01
AC080	32	2.3E-01	2.3E-01	5E-01
AC081	23	1.6E-01	1.6E-01	3E-01
AC082	23	1.6E-01	1.6E-01	3E-01
AC083	17	1.2E-01	1.2E-01	2E-01
AC084	19	1.4E-01	1.3E-01	3E-01
AC085	18	1.3E-01	1.3E-01	3E-01
AC086	17	1.2E-01	1.2E-01	2E-01
AC087	13	9.3E-02	9.2E-02	2E-01
AC088	11	7.8E-02	7.8E-02	2E-01
AC089	8.7	6.2E-02	6.1E-02	1E-01
AC090	17	1.2E-01	1.2E-01	2E-01
AC091	12	8.5E-02	8.5E-02	2E-01
AC092	16	1.1E-01	1.1E-01	2E-01
AC093	16	1.1E-01	1.1E-01	2E-01
AC094	19	1.4E-01	1.3E-01	3E-01
AC095	23	1.6E-01	1.6E-01	3E-01
AC096	20	1.4E-01	1.4E-01	3E-01
AC097	14	1.0E-01	9.9E-02	2E-01
AC098	11	7.8E-02	7.8E-02	2E-01
AC099	5.1	3.6E-02	3.6E-02	7E-02
AC100	5.5	3.9E-02	3.9E-02	8E-02
AC101	5.2	3.7E-02	3.7E-02	7E-02

Table D-1. NON-CANCER HAZARDS TO UTILITY WORKERS IN ALLEYWAYS

Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	8.9E-07	1.4E-05	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Non-Cancer HQs for Adult Utility Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC102	7.5	5.3E-02	5.3E-02	1E-01
AC103	5.9	4.2E-02	4.2E-02	8E-02
AC104	6.8	4.8E-02	4.8E-02	1E-01
AC105	5.4	3.8E-02	3.8E-02	8E-02
AC106	5.1	3.6E-02	3.6E-02	7E-02
AC107	5.7	4.1E-02	4.0E-02	8E-02
AC108	25	1.8E-01	1.8E-01	4E-01
AC109	9.6	6.8E-02	6.8E-02	1E-01
PC0321	11	7.8E-02	7.7E-02	2E-01

Summary of Properties by Hazard Range	
Number with HI ≤ 1E+00	105
Number with HI > 1E+00	0
Percent with HI ≤ 1E+00	100%
Percent with HI > 1E+00	0%
Maximum HI	5E-01

Notes:

Ingestion

$$DI = C \times HIF \times RBA$$

$$HQ = DI/RfD$$

Dermal

$$DAD = C_{soil} \times ABS_d \times HIF_{soil}$$

$$RfD_{ABS} = RfD \times ABS_{GI}$$

$$ABS_{GI} = 1, \text{ so } RfD_{ABS} = RfD$$

$$HQ = DAD/RfD_{ABS}$$

EPC =

Exposure Point Concentration

HI =

Hazard Index

HQ =

Hazard Quotient

mg/kg =

milligrams per kilogram

N/A =

Not Applicable

RBA =

Relative Bioavailability

Table D-2. NON-CANCER HAZARDS TO UTILITY WORKERS IN ALLEYWAYS

Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.2E-07	1.6E-06	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Non-Cancer HQs for Adult Utility Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC001	10	1.8E-02	7.9E-03	3E-02
AC002	15	2.7E-02	1.2E-02	4E-02
AC003	33	5.9E-02	2.6E-02	8E-02
AC004	14	2.5E-02	1.1E-02	4E-02
AC005	16	2.8E-02	1.3E-02	4E-02
AC006	19	3.4E-02	1.5E-02	5E-02
AC007	16	2.8E-02	1.3E-02	4E-02
AC008	10	1.8E-02	7.9E-03	3E-02
AC009	10	1.8E-02	7.9E-03	3E-02
AC010	9.8	1.7E-02	7.7E-03	3E-02
AC011	20	3.6E-02	1.6E-02	5E-02
AC012	11	2.0E-02	8.6E-03	3E-02
AC013	9.8	1.7E-02	7.7E-03	3E-02
AC014	8.0	1.4E-02	6.3E-03	2E-02
AC015	9.5	1.7E-02	7.5E-03	2E-02
AC016	11	2.0E-02	8.6E-03	3E-02
AC017	9.2	1.6E-02	7.2E-03	2E-02
AC018	11	2.0E-02	8.6E-03	3E-02
AC019	14	2.5E-02	1.1E-02	4E-02
AC020	9.4	1.7E-02	7.4E-03	2E-02
AC021	12	2.1E-02	9.4E-03	3E-02
AC022	9.0	1.6E-02	7.1E-03	2E-02
AC023	14	2.5E-02	1.1E-02	4E-02
AC024	11	2.0E-02	8.6E-03	3E-02
AC025	17	3.0E-02	1.3E-02	4E-02
AC026	12	2.1E-02	9.4E-03	3E-02
AC028	8.6	1.5E-02	6.8E-03	2E-02
AC029	13	2.3E-02	1.0E-02	3E-02
AC030	10	1.8E-02	7.9E-03	3E-02
AC031	10	1.8E-02	7.9E-03	3E-02
AC032	11	2.0E-02	8.6E-03	3E-02
AC033	12	2.1E-02	9.4E-03	3E-02

Table D-2. NON-CANCER HAZARDS TO UTILITY WORKERS IN ALLEYWAYS

Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.2E-07	1.6E-06	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Non-Cancer HQs for Adult Utility Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC034	16	2.8E-02	1.3E-02	4E-02
AC035	12	2.1E-02	9.4E-03	3E-02
AC037	12	2.1E-02	9.4E-03	3E-02
AC038	12	2.1E-02	9.4E-03	3E-02
AC039	12	2.1E-02	9.4E-03	3E-02
AC040	13	2.3E-02	1.0E-02	3E-02
AC041	21	3.7E-02	1.6E-02	5E-02
AC042	10	1.8E-02	7.9E-03	3E-02
AC043	13	2.3E-02	1.0E-02	3E-02
AC044	17	3.0E-02	1.3E-02	4E-02
AC045	10	1.8E-02	7.9E-03	3E-02
AC046	13	2.3E-02	1.0E-02	3E-02
AC047	12	2.1E-02	9.4E-03	3E-02
AC048	11	2.0E-02	8.6E-03	3E-02
AC051	9.4	1.7E-02	7.4E-03	2E-02
AC052	11	2.0E-02	8.6E-03	3E-02
AC053	14	2.5E-02	1.1E-02	4E-02
AC054	16	2.8E-02	1.3E-02	4E-02
AC055	11	2.0E-02	8.6E-03	3E-02
AC057	34	6.1E-02	2.7E-02	9E-02
AC058	15	2.7E-02	1.2E-02	4E-02
AC059	9.8	1.7E-02	7.7E-03	3E-02
AC060	16	2.8E-02	1.3E-02	4E-02
AC061	15	2.7E-02	1.2E-02	4E-02
AC062	9.6	1.7E-02	7.5E-03	2E-02
AC063	22	3.9E-02	1.7E-02	6E-02
AC064	11	2.0E-02	8.6E-03	3E-02
AC065	21	3.7E-02	1.6E-02	5E-02
AC066	11	2.0E-02	8.6E-03	3E-02
AC067	11	2.0E-02	8.6E-03	3E-02
AC068	12	2.1E-02	9.4E-03	3E-02
AC069	13	2.3E-02	1.0E-02	3E-02

Table D-2. NON-CANCER HAZARDS TO UTILITY WORKERS IN ALLEYWAYS

Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.2E-07	1.6E-06	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Non-Cancer HQs for Adult Utility Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC070	12	2.1E-02	9.4E-03	3E-02
AC071	20	3.6E-02	1.6E-02	5E-02
AC072	31	5.5E-02	2.4E-02	8E-02
AC073	27	4.8E-02	2.1E-02	7E-02
AC074	12	2.1E-02	9.4E-03	3E-02
AC075	31	5.5E-02	2.4E-02	8E-02
AC076	25	4.5E-02	2.0E-02	6E-02
AC077	25	4.5E-02	2.0E-02	6E-02
AC078	26	4.6E-02	2.0E-02	7E-02
AC079	22	3.9E-02	1.7E-02	6E-02
AC080	32	5.7E-02	2.5E-02	8E-02
AC081	23	4.1E-02	1.8E-02	6E-02
AC082	23	4.1E-02	1.8E-02	6E-02
AC083	17	3.0E-02	1.3E-02	4E-02
AC084	19	3.4E-02	1.5E-02	5E-02
AC085	18	3.2E-02	1.4E-02	5E-02
AC086	17	3.0E-02	1.3E-02	4E-02
AC087	13	2.3E-02	1.0E-02	3E-02
AC088	11	2.0E-02	8.6E-03	3E-02
AC089	8.7	1.5E-02	6.8E-03	2E-02
AC090	17	3.0E-02	1.3E-02	4E-02
AC091	12	2.1E-02	9.4E-03	3E-02
AC092	16	2.8E-02	1.3E-02	4E-02
AC093	16	2.8E-02	1.3E-02	4E-02
AC094	19	3.4E-02	1.5E-02	5E-02
AC095	23	4.1E-02	1.8E-02	6E-02
AC096	20	3.6E-02	1.6E-02	5E-02
AC097	14	2.5E-02	1.1E-02	4E-02
AC098	11	2.0E-02	8.6E-03	3E-02
AC099	5.1	9.1E-03	4.0E-03	1E-02
AC100	5.5	9.8E-03	4.3E-03	1E-02
AC101	5.2	9.3E-03	4.1E-03	1E-02

Table D-2. NON-CANCER HAZARDS TO UTILITY WORKERS IN ALLEYWAYS

Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.2E-07	1.6E-06	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Non-Cancer HQs for Adult Utility Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC102	7.5	1.3E-02	5.9E-03	2E-02
AC103	5.9	1.1E-02	4.6E-03	2E-02
AC104	6.8	1.2E-02	5.3E-03	2E-02
AC105	5.4	9.6E-03	4.2E-03	1E-02
AC106	5.1	9.1E-03	4.0E-03	1E-02
AC107	5.7	1.0E-02	4.5E-03	1E-02
AC108	25	4.5E-02	2.0E-02	6E-02
AC109	9.6	1.7E-02	7.5E-03	2E-02
PC0321	11	1.9E-02	8.6E-03	3E-02

Summary of Properties by Hazard Range	
Number with HI ≤ 1E+00	105
Number with HI > 1E+00	0
Percent with HI ≤ 1E+00	100%
Percent with HI > 1E+00	0%
Maximum HI	9E-02

Notes:

Ingestion

$$DI = C \times HIF \times RBA$$

$$HQ = DI/RfD$$

Dermal

$$DAD = C_{soil} \times ABS_d \times HIF_{soil}$$

$$RfD_{ABS} = RfD \times ABS_{GI}$$

$$ABS_{GI} = 1, \text{ so } RfD_{ABS} = RfD$$

$$HQ = DAD/RfD_{ABS}$$

EPC =

Exposure Point Concentration

HI =

Hazard Index

HQ =

Hazard Quotient

mg/kg =

milligrams per kilogram

N/A =

Not Applicable

RBA =

Relative Bioavailability

Table D-3. CANCER HAZARDS TO UTILITY WORKERS IN ALLEYWAYS

Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	3.2E-07	5.0E-06	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Cancer Risks for Adult Utility Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC001	10	4.9E-05	4.8E-05	1E-04
AC002	15	7.3E-05	7.3E-05	1E-04
AC003	33	1.6E-04	1.6E-04	3E-04
AC004	14	6.8E-05	6.8E-05	1E-04
AC005	16	7.8E-05	7.8E-05	2E-04
AC006	19	9.3E-05	9.2E-05	2E-04
AC007	16	7.8E-05	7.8E-05	2E-04
AC008	10	4.9E-05	4.8E-05	1E-04
AC009	10	4.9E-05	4.8E-05	1E-04
AC010	9.8	4.8E-05	4.7E-05	1E-04
AC011	20	9.8E-05	9.7E-05	2E-04
AC012	11	5.4E-05	5.3E-05	1E-04
AC013	9.8	4.8E-05	4.7E-05	1E-04
AC014	8.0	3.9E-05	3.9E-05	8E-05
AC015	9.5	4.6E-05	4.6E-05	9E-05
AC016	11	5.4E-05	5.3E-05	1E-04
AC017	9.2	4.5E-05	4.5E-05	9E-05
AC018	11	5.4E-05	5.3E-05	1E-04
AC019	14	6.8E-05	6.8E-05	1E-04
AC020	9.4	4.6E-05	4.6E-05	9E-05
AC021	12	5.9E-05	5.8E-05	1E-04
AC022	9.0	4.4E-05	4.4E-05	9E-05
AC023	14	6.8E-05	6.8E-05	1E-04
AC024	11	5.4E-05	5.3E-05	1E-04
AC025	17	8.3E-05	8.2E-05	2E-04
AC026	12	5.9E-05	5.8E-05	1E-04
AC028	8.6	4.2E-05	4.2E-05	8E-05
AC029	13	6.3E-05	6.3E-05	1E-04
AC030	10	4.9E-05	4.8E-05	1E-04
AC031	10	4.9E-05	4.8E-05	1E-04
AC032	11	5.4E-05	5.3E-05	1E-04
AC033	12	5.9E-05	5.8E-05	1E-04

Table D-3. CANCER HAZARDS TO UTILITY WORKERS IN ALLEYWAYS

Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	3.2E-07	5.0E-06	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Cancer Risks for Adult Utility Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC034	16	7.8E-05	7.8E-05	2E-04
AC035	12	5.9E-05	5.8E-05	1E-04
AC037	12	5.9E-05	5.8E-05	1E-04
AC038	12	5.9E-05	5.8E-05	1E-04
AC039	12	5.9E-05	5.8E-05	1E-04
AC040	13	6.3E-05	6.3E-05	1E-04
AC041	21	1.0E-04	1.0E-04	2E-04
AC042	10	4.9E-05	4.8E-05	1E-04
AC043	13	6.3E-05	6.3E-05	1E-04
AC044	17	8.3E-05	8.2E-05	2E-04
AC045	10	4.9E-05	4.8E-05	1E-04
AC046	13	6.3E-05	6.3E-05	1E-04
AC047	12	5.9E-05	5.8E-05	1E-04
AC048	11	5.4E-05	5.3E-05	1E-04
AC051	9.4	4.6E-05	4.6E-05	9E-05
AC052	11	5.4E-05	5.3E-05	1E-04
AC053	14	6.8E-05	6.8E-05	1E-04
AC054	16	7.8E-05	7.8E-05	2E-04
AC055	11	5.4E-05	5.3E-05	1E-04
AC057	34	1.7E-04	1.6E-04	3E-04
AC058	15	7.3E-05	7.3E-05	1E-04
AC059	9.8	4.8E-05	4.7E-05	1E-04
AC060	16	7.8E-05	7.8E-05	2E-04
AC061	15	7.3E-05	7.3E-05	1E-04
AC062	9.6	4.7E-05	4.7E-05	9E-05
AC063	22	1.1E-04	1.1E-04	2E-04
AC064	11	5.4E-05	5.3E-05	1E-04
AC065	21	1.0E-04	1.0E-04	2E-04
AC066	11	5.4E-05	5.3E-05	1E-04
AC067	11	5.4E-05	5.3E-05	1E-04
AC068	12	5.9E-05	5.8E-05	1E-04
AC069	13	6.3E-05	6.3E-05	1E-04

Table D-3. CANCER HAZARDS TO UTILITY WORKERS IN ALLEYWAYS

Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	3.2E-07	5.0E-06	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Cancer Risks for Adult Utility Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC070	12	5.9E-05	5.8E-05	1E-04
AC071	20	9.8E-05	9.7E-05	2E-04
AC072	31	1.5E-04	1.5E-04	3E-04
AC073	27	1.3E-04	1.3E-04	3E-04
AC074	12	5.9E-05	5.8E-05	1E-04
AC075	31	1.5E-04	1.5E-04	3E-04
AC076	25	1.2E-04	1.2E-04	2E-04
AC077	25	1.2E-04	1.2E-04	2E-04
AC078	26	1.3E-04	1.3E-04	3E-04
AC079	22	1.1E-04	1.1E-04	2E-04
AC080	32	1.6E-04	1.6E-04	3E-04
AC081	23	1.1E-04	1.1E-04	2E-04
AC082	23	1.1E-04	1.1E-04	2E-04
AC083	17	8.3E-05	8.2E-05	2E-04
AC084	19	9.3E-05	9.2E-05	2E-04
AC085	18	8.8E-05	8.7E-05	2E-04
AC086	17	8.3E-05	8.2E-05	2E-04
AC087	13	6.3E-05	6.3E-05	1E-04
AC088	11	5.4E-05	5.3E-05	1E-04
AC089	8.7	4.2E-05	4.2E-05	8E-05
AC090	17	8.3E-05	8.2E-05	2E-04
AC091	12	5.9E-05	5.8E-05	1E-04
AC092	16	7.8E-05	7.8E-05	2E-04
AC093	16	7.8E-05	7.8E-05	2E-04
AC094	19	9.3E-05	9.2E-05	2E-04
AC095	23	1.1E-04	1.1E-04	2E-04
AC096	20	9.8E-05	9.7E-05	2E-04
AC097	14	6.8E-05	6.8E-05	1E-04
AC098	11	5.4E-05	5.3E-05	1E-04
AC099	5.1	2.5E-05	2.5E-05	5E-05
AC100	5.5	2.7E-05	2.7E-05	5E-05
AC101	5.2	2.5E-05	2.5E-05	5E-05

Table D-3. CANCER HAZARDS TO UTILITY WORKERS IN ALLEYWAYS

Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	3.2E-07	5.0E-06	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Cancer Risks for Adult Utility Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC102	7.5	3.7E-05	3.6E-05	7E-05
AC103	5.9	2.9E-05	2.9E-05	6E-05
AC104	6.8	3.3E-05	3.3E-05	7E-05
AC105	5.4	2.6E-05	2.6E-05	5E-05
AC106	5.1	2.5E-05	2.5E-05	5E-05
AC107	5.7	2.8E-05	2.8E-05	6E-05
AC108	25	1.2E-04	1.2E-04	2E-04
AC109	9.6	4.7E-05	4.7E-05	9E-05
PC0321	11	5.3E-05	5.3E-05	1E-04

Summary of Properties by Risk Range	
Number with Risk $\leq 1\text{E-}06$	0
Number with Risk $> 1\text{E-}06$ to $1\text{E-}05$	0
Number with Risk $> 1\text{E-}05$ to $1\text{E-}04$	69
Number with Risk $> 1\text{E-}4$	36
Percent with Risk $\leq 1\text{E-}06$	0%
Percent with Risk $> 1\text{E-}06$ to $1\text{E-}05$	0%
Percent with Risk $> 1\text{E-}05$ to $1\text{E-}04$	66%
Percent with Risk $> 1\text{E-}4$	34%
Maximum Risk	$3\text{E-}04$

Notes:

Ingestion

Excess Cancer Risk = $DI_L \times SF$ $DI = C \times HIF \times RBA$

Dermal

Excess Cancer Risk = $DAD \times SF$ $DAD = C_{soil} \times ABS_d \times HIF_{soil}$ $RfD_{ABS} = RfD \times ABS_{GI}$ $ABS_{GI} = 1$, so $RfD_{ABS} = RfD$

EPC =

mg/kg =

N/A =

RBA =

Exposure Point Concentration

milligrams per kilogram

Not Applicable

Relative Bioavailability

Table D-4. CANCER HAZARDS TO UTILITY WORKERS IN ALLEYWAYS

Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.9E-08	2.0E-07	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Cancer Risks for Adult Utility Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC001	10	4.4E-06	1.9E-06	6E-06
AC002	15	6.6E-06	2.9E-06	1E-05
AC003	33	1.5E-05	6.4E-06	2E-05
AC004	14	6.2E-06	2.7E-06	9E-06
AC005	16	7.0E-06	3.1E-06	1E-05
AC006	19	8.4E-06	3.7E-06	1E-05
AC007	16	7.0E-06	3.1E-06	1E-05
AC008	10	4.4E-06	1.9E-06	6E-06
AC009	10	4.4E-06	1.9E-06	6E-06
AC010	9.8	4.3E-06	1.9E-06	6E-06
AC011	20	8.8E-06	3.9E-06	1E-05
AC012	11	4.8E-06	2.1E-06	7E-06
AC013	9.8	4.3E-06	1.9E-06	6E-06
AC014	8.0	3.5E-06	1.6E-06	5E-06
AC015	9.5	4.2E-06	1.8E-06	6E-06
AC016	11	4.8E-06	2.1E-06	7E-06
AC017	9.2	4.0E-06	1.8E-06	6E-06
AC018	11	4.8E-06	2.1E-06	7E-06
AC019	14	6.2E-06	2.7E-06	9E-06
AC020	9.4	4.1E-06	1.8E-06	6E-06
AC021	12	5.3E-06	2.3E-06	8E-06
AC022	9.0	4.0E-06	1.7E-06	6E-06
AC023	14	6.2E-06	2.7E-06	9E-06
AC024	11	4.8E-06	2.1E-06	7E-06
AC025	17	7.5E-06	3.3E-06	1E-05
AC026	12	5.3E-06	2.3E-06	8E-06
AC028	8.6	3.8E-06	1.7E-06	5E-06
AC029	13	5.7E-06	2.5E-06	8E-06
AC030	10	4.4E-06	1.9E-06	6E-06
AC031	10	4.4E-06	1.9E-06	6E-06
AC032	11	4.8E-06	2.1E-06	7E-06
AC033	12	5.3E-06	2.3E-06	8E-06

Table D-4. CANCER HAZARDS TO UTILITY WORKERS IN ALLEYWAYS

Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.9E-08	2.0E-07	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Cancer Risks for Adult Utility Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC034	16	7.0E-06	3.1E-06	1E-05
AC035	12	5.3E-06	2.3E-06	8E-06
AC037	12	5.3E-06	2.3E-06	8E-06
AC038	12	5.3E-06	2.3E-06	8E-06
AC039	12	5.3E-06	2.3E-06	8E-06
AC040	13	5.7E-06	2.5E-06	8E-06
AC041	21	9.2E-06	4.1E-06	1E-05
AC042	10	4.4E-06	1.9E-06	6E-06
AC043	13	5.7E-06	2.5E-06	8E-06
AC044	17	7.5E-06	3.3E-06	1E-05
AC045	10	4.4E-06	1.9E-06	6E-06
AC046	13	5.7E-06	2.5E-06	8E-06
AC047	12	5.3E-06	2.3E-06	8E-06
AC048	11	4.8E-06	2.1E-06	7E-06
AC051	9.4	4.1E-06	1.8E-06	6E-06
AC052	11	4.8E-06	2.1E-06	7E-06
AC053	14	6.2E-06	2.7E-06	9E-06
AC054	16	7.0E-06	3.1E-06	1E-05
AC055	11	4.8E-06	2.1E-06	7E-06
AC057	34	1.5E-05	6.6E-06	2E-05
AC058	15	6.6E-06	2.9E-06	1E-05
AC059	9.8	4.3E-06	1.9E-06	6E-06
AC060	16	7.0E-06	3.1E-06	1E-05
AC061	15	6.6E-06	2.9E-06	1E-05
AC062	9.6	4.2E-06	1.9E-06	6E-06
AC063	22	9.7E-06	4.3E-06	1E-05
AC064	11	4.8E-06	2.1E-06	7E-06
AC065	21	9.2E-06	4.1E-06	1E-05
AC066	11	4.8E-06	2.1E-06	7E-06
AC067	11	4.8E-06	2.1E-06	7E-06
AC068	12	5.3E-06	2.3E-06	8E-06
AC069	13	5.7E-06	2.5E-06	8E-06

Table D-4. CANCER HAZARDS TO UTILITY WORKERS IN ALLEYWAYS

Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.9E-08	2.0E-07	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Cancer Risks for Adult Utility Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC070	12	5.3E-06	2.3E-06	8E-06
AC071	20	8.8E-06	3.9E-06	1E-05
AC072	31	1.4E-05	6.0E-06	2E-05
AC073	27	1.2E-05	5.2E-06	2E-05
AC074	12	5.3E-06	2.3E-06	8E-06
AC075	31	1.4E-05	6.0E-06	2E-05
AC076	25	1.1E-05	4.8E-06	2E-05
AC077	25	1.1E-05	4.8E-06	2E-05
AC078	26	1.1E-05	5.0E-06	2E-05
AC079	22	9.7E-06	4.3E-06	1E-05
AC080	32	1.4E-05	6.2E-06	2E-05
AC081	23	1.0E-05	4.5E-06	1E-05
AC082	23	1.0E-05	4.5E-06	1E-05
AC083	17	7.5E-06	3.3E-06	1E-05
AC084	19	8.4E-06	3.7E-06	1E-05
AC085	18	7.9E-06	3.5E-06	1E-05
AC086	17	7.5E-06	3.3E-06	1E-05
AC087	13	5.7E-06	2.5E-06	8E-06
AC088	11	4.8E-06	2.1E-06	7E-06
AC089	8.7	3.8E-06	1.7E-06	6E-06
AC090	17	7.5E-06	3.3E-06	1E-05
AC091	12	5.3E-06	2.3E-06	8E-06
AC092	16	7.0E-06	3.1E-06	1E-05
AC093	16	7.0E-06	3.1E-06	1E-05
AC094	19	8.4E-06	3.7E-06	1E-05
AC095	23	1.0E-05	4.5E-06	1E-05
AC096	20	8.8E-06	3.9E-06	1E-05
AC097	14	6.2E-06	2.7E-06	9E-06
AC098	11	4.8E-06	2.1E-06	7E-06
AC099	5.1	2.2E-06	9.9E-07	3E-06
AC100	5.5	2.4E-06	1.1E-06	3E-06
AC101	5.2	2.3E-06	1.0E-06	3E-06

Table D-4. CANCER HAZARDS TO UTILITY WORKERS IN ALLEYWAYS

Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.9E-08	2.0E-07	

Alleyway Property Number:	EPC - Subsurface (mg/kg)	Cancer Risks for Adult Utility Workers		
		Arsenic		
		Ingestion	Dermal	Total
AC102	7.5	3.3E-06	1.5E-06	5E-06
AC103	5.9	2.6E-06	1.1E-06	4E-06
AC104	6.8	3.0E-06	1.3E-06	4E-06
AC105	5.4	2.4E-06	1.0E-06	3E-06
AC106	5.1	2.2E-06	9.9E-07	3E-06
AC107	5.7	2.5E-06	1.1E-06	4E-06
AC108	25	1.1E-05	4.8E-06	2E-05
AC109	9.6	4.2E-06	1.9E-06	6E-06
PC0321	11	4.8E-06	2.1E-06	7E-06

Summary of Properties by Risk Range	
Number with Risk $\leq 1E-06$	0
Number with Risk $> 1E-06$ to $1E-05$	95
Number with Risk $> 1E-05$ to $1E-04$	10
Number with Risk $> 1E-4$	0
Percent with Risk $\leq 1E-06$	0%
Percent with Risk $> 1E-06$ to $1E-05$	90%
Percent with Risk $> 1E-05$ to $1E-04$	10%
Percent with Risk $> 1E-4$	0%
Maximum Risk	2E-05

Notes:

Ingestion

Excess Cancer Risk = $DI_L \times SF$

$DI = C \times HIF \times RBA$

Dermal

Excess Cancer Risk = $DAD \times SF$

$DAD = C_{soil} \times ABS_d \times HIF_{soil}$

$RfD_{ABS} = RfD \times ABS_{GI}$

$ABS_{GI} = 1$, so $RfD_{ABS} = RfD$

EPC =

Exposure Point Concentration

mg/kg =

milligrams per kilogram

N/A =

Not Applicable

RBA =

Relative Bioavailability

Appendix E
Individual Risk Estimates for Arsenic at Commercial Properties for Composite-Commercial Workers

Table E-1.	Composite-Commercial worker RME non-cancer risk estimates
Table E-2.	Composite-Commercial worker CTE non-cancer risk estimates
Table E-3.	Composite-Commercial worker RME cancer risk estimates
Table E-4.	Composite-Commercial worker CTE cancer risk estimates

Table E-1. NON-CANCER HAZARDS TO COMPOSITE-COMMERCIAL WORKERS AT COMMERCIAL PROPERTIES
Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	8.6E-07	3.6E-06	

Commercial Property ID:	EPC - Surface (mg/kg)	Non-Cancer HQs for Adult Composite- Commercial Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC0006	2.9	2.0E-02	5.3E-03	3E-02
PC0008	3.6	2.5E-02	6.5E-03	3E-02
PC0011	3.5	2.4E-02	6.3E-03	3E-02
PC0012	6.0	4.1E-02	1.1E-02	5E-02
PC0013	9.0	6.2E-02	1.6E-02	8E-02
PC0016	3.1	2.1E-02	5.6E-03	3E-02
PC0033	6.9	4.7E-02	1.3E-02	6E-02
PC0070	5.4	3.7E-02	9.8E-03	5E-02
PC0111	18	1.2E-01	3.3E-02	2E-01
PC0116	7.9	5.4E-02	1.4E-02	7E-02
PC0124	15	1.0E-01	2.7E-02	1E-01
PC0161	9.9	6.8E-02	1.8E-02	9E-02
PC0175	9.1	6.2E-02	1.6E-02	8E-02
PC0308	3.8	2.6E-02	6.9E-03	3E-02
PC0442	10	6.8E-02	1.8E-02	9E-02
PC0443	5.1	3.5E-02	9.2E-03	4E-02
PC0444	5.2	3.6E-02	9.4E-03	5E-02
PC0493	2.0	1.4E-02	3.6E-03	2E-02
PC0567	3.4	2.3E-02	6.2E-03	3E-02
PC0677	1.9	1.3E-02	3.4E-03	2E-02
PC0678	3.3	2.3E-02	6.0E-03	3E-02
PC0686	2.3	1.6E-02	4.2E-03	2E-02
PC0710	23	1.6E-01	4.2E-02	2E-01
PC0712	9.0	6.2E-02	1.6E-02	8E-02
PC1348	46	3.2E-01	8.3E-02	4E-01
PC1400	8.5	5.8E-02	1.5E-02	7E-02
PC1407	4.7	3.2E-02	8.5E-03	4E-02
PC1408	1.1	7.5E-03	2.0E-03	1E-02
PC1414	4.9	3.4E-02	8.9E-03	4E-02
PC1426	6.7	4.6E-02	1.2E-02	6E-02
PC1452	5.6	3.8E-02	1.0E-02	5E-02
PC1453	5.3	3.6E-02	9.6E-03	5E-02

Table E-1. NON-CANCER HAZARDS TO COMPOSITE-COMMERCIAL WORKERS AT COMMERCIAL PROPERTIES
Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	8.6E-07	3.6E-06	

Commercial Property ID:	EPC - Surface (mg/kg)	Non-Cancer HQs for Adult Composite- Commercial Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC1456	3.4	2.3E-02	6.2E-03	3E-02
PC1506	8.5	5.8E-02	1.5E-02	7E-02
PC1561	7.9	5.4E-02	1.4E-02	7E-02
PC1602	6.1	4.2E-02	1.1E-02	5E-02
PC1603	3.6	2.5E-02	6.5E-03	3E-02
PC1618	5.0	3.4E-02	9.1E-03	4E-02
PC1619	7.0	4.8E-02	1.3E-02	6E-02
PC1645	26	1.8E-01	4.7E-02	2E-01
PC1646	5.7	3.9E-02	1.0E-02	5E-02
PC1664	4.4	3.0E-02	8.0E-03	4E-02
PC1677	4.8	3.3E-02	8.7E-03	4E-02
PC1686	11	7.5E-02	2.0E-02	1E-01
PC1690	3.6	2.5E-02	6.5E-03	3E-02
PC1691	3.5	2.4E-02	6.3E-03	3E-02
PC1700	9.5	6.5E-02	1.7E-02	8E-02
PC1709	4.7	3.2E-02	8.5E-03	4E-02
PC1713	6.0	4.1E-02	1.1E-02	5E-02
PC1719	19	1.3E-01	3.4E-02	2E-01
PC1740	7.2	4.9E-02	1.3E-02	6E-02
PC1851	3.0	2.1E-02	5.4E-03	3E-02
PC1857	4.8	3.3E-02	8.7E-03	4E-02
PC1859	4.5	3.1E-02	8.2E-03	4E-02
PC1861	1.5	1.0E-02	2.7E-03	1E-02
PC1904	12	8.2E-02	2.2E-02	1E-01
PC1958	4.4	3.0E-02	8.0E-03	4E-02
PC1974	8.1	5.5E-02	1.5E-02	7E-02
PC2061	7.5	5.1E-02	1.4E-02	6E-02
PC2092	4.5	3.1E-02	8.2E-03	4E-02
PC2421	5.5	3.8E-02	1.0E-02	5E-02
PC2426	8.3	5.7E-02	1.5E-02	7E-02
PC2427	7.2	4.9E-02	1.3E-02	6E-02
PC2428	6.3	4.3E-02	1.1E-02	5E-02

Table E-1. NON-CANCER HAZARDS TO COMPOSITE-COMMERCIAL WORKERS AT COMMERCIAL PROPERTIES
Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	8.6E-07	3.6E-06	

Commercial Property ID:	EPC - Surface (mg/kg)	Non-Cancer HQs for Adult Composite- Commercial Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC2429	50	3.4E-01	9.1E-02	4E-01
PC2430	10	6.8E-02	1.8E-02	9E-02
PC2431	4.0	2.7E-02	7.2E-03	3E-02

Summary of Properties by Hazard Range	
Number with HI $\leq$ 1E+00	67
Number with HI $>$ 1E+00	0
Percent with HI $\leq$ 1E+00	100%
Percent with HI $>$ 1E+00	0%
Maximum HI	4E-01

Notes:

Ingestion

$$DI = C \times HIF \times RBA$$

$$HQ = DI/RfD$$

Dermal

$$DAD = C_{soil} \times ABS_d \times HIF_{soil}$$

$$RfD_{ABS} = RfD \times ABS_{GI}$$

$$ABS_{GI} = 1, \text{ so } RfD_{ABS} = RfD$$

$$HQ = DAD/RfD_{ABS}$$

EPC =

Exposure Point Concentration

HI =

Hazard Index

HQ =

Hazard Quotient

mg/kg =

milligrams per kilogram

N/A =

Not Applicable

RBA =

Relative Bioavailability

Table E-2. NON-CANCER HAZARDS TO COMPOSITE-COMMERCIAL WORKERS AT COMMERCIAL PROPERTIES
Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	3.8E-07	5.3E-07	

Commercial Property ID:	EPC - Surface (mg/kg)	Non-Cancer HQs for Adult Composite- Commercial Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC0006	2.9	8.7E-03	7.7E-04	9E-03
PC0008	3.6	1.1E-02	9.5E-04	1E-02
PC0011	3.5	1.1E-02	9.3E-04	1E-02
PC0012	6.0	1.8E-02	1.6E-03	2E-02
PC0013	9.0	2.7E-02	2.4E-03	3E-02
PC0016	3.1	9.3E-03	8.2E-04	1E-02
PC0033	6.9	2.1E-02	1.8E-03	2E-02
PC0070	5.4	1.6E-02	1.4E-03	2E-02
PC0111	18	5.4E-02	4.8E-03	6E-02
PC0116	7.9	2.4E-02	2.1E-03	3E-02
PC0124	15	4.5E-02	4.0E-03	5E-02
PC0161	9.9	3.0E-02	2.6E-03	3E-02
PC0175	9.1	2.7E-02	2.4E-03	3E-02
PC0308	3.8	1.1E-02	1.0E-03	1E-02
PC0442	10	3.0E-02	2.6E-03	3E-02
PC0443	5.1	1.5E-02	1.3E-03	2E-02
PC0444	5.2	1.6E-02	1.4E-03	2E-02
PC0493	2.0	6.0E-03	5.3E-04	7E-03
PC0567	3.4	1.0E-02	9.0E-04	1E-02
PC0677	1.9	5.7E-03	5.0E-04	6E-03
PC0678	3.3	9.9E-03	8.7E-04	1E-02
PC0686	2.3	6.9E-03	6.1E-04	8E-03
PC0710	23	6.9E-02	6.1E-03	8E-02
PC0712	9.0	2.7E-02	2.4E-03	3E-02
PC1348	46	1.4E-01	1.2E-02	2E-01
PC1400	8.5	2.6E-02	2.2E-03	3E-02
PC1407	4.7	1.4E-02	1.2E-03	2E-02
PC1408	1.1	3.3E-03	2.9E-04	4E-03
PC1414	4.9	1.5E-02	1.3E-03	2E-02
PC1426	6.7	2.0E-02	1.8E-03	2E-02
PC1452	5.6	1.7E-02	1.5E-03	2E-02
PC1453	5.3	1.6E-02	1.4E-03	2E-02

Table E-2. NON-CANCER HAZARDS TO COMPOSITE-COMMERCIAL WORKERS AT COMMERCIAL PROPERTIES
Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	3.8E-07	5.3E-07	

Commercial Property ID:	EPC - Surface (mg/kg)	Non-Cancer HQs for Adult Composite- Commercial Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC1456	3.4	1.0E-02	9.0E-04	1E-02
PC1506	8.5	2.6E-02	2.2E-03	3E-02
PC1561	7.9	2.4E-02	2.1E-03	3E-02
PC1602	6.1	1.8E-02	1.6E-03	2E-02
PC1603	3.6	1.1E-02	9.5E-04	1E-02
PC1618	5.0	1.5E-02	1.3E-03	2E-02
PC1619	7.0	2.1E-02	1.9E-03	2E-02
PC1645	26	7.8E-02	6.9E-03	8E-02
PC1646	5.7	1.7E-02	1.5E-03	2E-02
PC1664	4.4	1.3E-02	1.2E-03	1E-02
PC1677	4.8	1.4E-02	1.3E-03	2E-02
PC1686	11	3.3E-02	2.9E-03	4E-02
PC1690	3.6	1.1E-02	9.5E-04	1E-02
PC1691	3.5	1.1E-02	9.3E-04	1E-02
PC1700	9.5	2.9E-02	2.5E-03	3E-02
PC1709	4.7	1.4E-02	1.2E-03	2E-02
PC1713	6.0	1.8E-02	1.6E-03	2E-02
PC1719	19	5.7E-02	5.0E-03	6E-02
PC1740	7.2	2.2E-02	1.9E-03	2E-02
PC1851	3.0	9.0E-03	7.9E-04	1E-02
PC1857	4.8	1.4E-02	1.3E-03	2E-02
PC1859	4.5	1.4E-02	1.2E-03	1E-02
PC1861	1.5	4.5E-03	4.0E-04	5E-03
PC1904	12	3.6E-02	3.2E-03	4E-02
PC1958	4.4	1.3E-02	1.2E-03	1E-02
PC1974	8.1	2.4E-02	2.1E-03	3E-02
PC2061	7.5	2.3E-02	2.0E-03	2E-02
PC2092	4.5	1.4E-02	1.2E-03	1E-02
PC2421	5.5	1.7E-02	1.5E-03	2E-02
PC2426	8.3	2.5E-02	2.2E-03	3E-02
PC2427	7.2	2.2E-02	1.9E-03	2E-02
PC2428	6.3	1.9E-02	1.7E-03	2E-02

Table E-2. NON-CANCER HAZARDS TO COMPOSITE-COMMERCIAL WORKERS AT COMMERCIAL PROPERTIES
Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	3.8E-07	5.3E-07	

Commercial Property ID:	EPC - Surface (mg/kg)	Non-Cancer HQs for Adult Composite- Commercial Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC2429	50	1.5E-01	1.3E-02	2E-01
PC2430	10	3.0E-02	2.6E-03	3E-02
PC2431	4.0	1.2E-02	1.1E-03	1E-02

Summary of Properties by Hazard Range	
Number with HI $\leq$ 1E+00	67
Number with HI $>$ 1E+00	0
Percent with HI $\leq$ 1E+00	100%
Percent with HI $>$ 1E+00	0%
Maximum HI	2E-01

Notes:

Ingestion

$DI = C \times HIF \times RBA$

$HQ = DI/RfD$

Dermal

$DAD = C_{soil} \times ABS_d \times HIF_{soil}$

$RfD_{ABS} = RfD \times ABS_{GI}$

$ABS_{GI} = 1$, so $RfD_{ABS} = RfD$

$HQ = DAD/RfD_{ABS}$

EPC =

Exposure Point Concentration

HI =

Hazard Index

HQ =

Hazard Quotient

mg/kg =

milligrams per kilogram

N/A =

Not Applicable

RBA =

Relative Bioavailability

Table E-3. CANCER HAZARDS TO COMPOSITE-COMMERCIAL WORKERS AT COMMERCIAL PROPERTIES
Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	3.1E-07	1.3E-06	

Commercial Property ID:	EPC - Surface (mg/kg)	Cancer Risks for Adult Composite- Commercial Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC0006	2.9	1.4E-05	3.6E-06	2E-05
PC0008	3.6	1.7E-05	4.5E-06	2E-05
PC0011	3.5	1.6E-05	4.3E-06	2E-05
PC0012	6.0	2.8E-05	7.5E-06	4E-05
PC0013	9.0	4.2E-05	1.1E-05	5E-05
PC0016	3.1	1.5E-05	3.9E-06	2E-05
PC0033	6.9	3.2E-05	8.6E-06	4E-05
PC0070	5.4	2.5E-05	6.7E-06	3E-05
PC0111	18	8.5E-05	2.2E-05	1E-04
PC0116	7.9	3.7E-05	9.8E-06	5E-05
PC0124	15	7.0E-05	1.9E-05	9E-05
PC0161	9.9	4.6E-05	1.2E-05	6E-05
PC0175	9.1	4.3E-05	1.1E-05	5E-05
PC0308	3.8	1.8E-05	4.7E-06	2E-05
PC0442	10	4.7E-05	1.2E-05	6E-05
PC0443	5.1	2.4E-05	6.3E-06	3E-05
PC0444	5.2	2.4E-05	6.5E-06	3E-05
PC0493	2.0	9.4E-06	2.5E-06	1E-05
PC0567	3.4	1.6E-05	4.2E-06	2E-05
PC0677	1.9	8.9E-06	2.4E-06	1E-05
PC0678	3.3	1.5E-05	4.1E-06	2E-05
PC0686	2.3	1.1E-05	2.9E-06	1E-05
PC0710	23	1.1E-04	2.9E-05	1E-04
PC0712	9.0	4.2E-05	1.1E-05	5E-05
PC1348	46	2.2E-04	5.7E-05	3E-04
PC1400	8.5	4.0E-05	1.1E-05	5E-05
PC1407	4.7	2.2E-05	5.8E-06	3E-05
PC1408	1.1	5.2E-06	1.4E-06	7E-06
PC1414	4.9	2.3E-05	6.1E-06	3E-05
PC1426	6.7	3.1E-05	8.3E-06	4E-05
PC1452	5.6	2.6E-05	7.0E-06	3E-05
PC1453	5.3	2.5E-05	6.6E-06	3E-05

Table E-3. CANCER HAZARDS TO COMPOSITE-COMMERCIAL WORKERS AT COMMERCIAL PROPERTIES
Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	3.1E-07	1.3E-06	

Commercial Property ID:	EPC - Surface (mg/kg)	Cancer Risks for Adult Composite- Commercial Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC1456	3.4	1.6E-05	4.2E-06	2E-05
PC1506	8.5	4.0E-05	1.1E-05	5E-05
PC1561	7.9	3.7E-05	9.8E-06	5E-05
PC1602	6.1	2.9E-05	7.6E-06	4E-05
PC1603	3.6	1.7E-05	4.5E-06	2E-05
PC1618	5.0	2.3E-05	6.2E-06	3E-05
PC1619	7.0	3.3E-05	8.7E-06	4E-05
PC1645	26	1.2E-04	3.2E-05	2E-04
PC1646	5.7	2.7E-05	7.1E-06	3E-05
PC1664	4.4	2.1E-05	5.5E-06	3E-05
PC1677	4.8	2.3E-05	6.0E-06	3E-05
PC1686	11	5.2E-05	1.4E-05	7E-05
PC1690	3.6	1.7E-05	4.5E-06	2E-05
PC1691	3.5	1.6E-05	4.3E-06	2E-05
PC1700	9.5	4.5E-05	1.2E-05	6E-05
PC1709	4.7	2.2E-05	5.8E-06	3E-05
PC1713	6.0	2.8E-05	7.5E-06	4E-05
PC1719	19	8.9E-05	2.4E-05	1E-04
PC1740	7.2	3.4E-05	8.9E-06	4E-05
PC1851	3.0	1.4E-05	3.7E-06	2E-05
PC1857	4.8	2.3E-05	6.0E-06	3E-05
PC1859	4.5	2.1E-05	5.6E-06	3E-05
PC1861	1.5	7.0E-06	1.9E-06	9E-06
PC1904	12	5.6E-05	1.5E-05	7E-05
PC1958	4.4	2.1E-05	5.5E-06	3E-05
PC1974	8.1	3.8E-05	1.0E-05	5E-05
PC2061	7.5	3.5E-05	9.3E-06	4E-05
PC2092	4.5	2.1E-05	5.6E-06	3E-05
PC2421	5.5	2.6E-05	6.8E-06	3E-05
PC2426	8.3	3.9E-05	1.0E-05	5E-05
PC2427	7.2	3.4E-05	8.9E-06	4E-05
PC2428	6.3	3.0E-05	7.8E-06	4E-05

Table E-3. CANCER HAZARDS TO COMPOSITE-COMMERCIAL WORKERS AT COMMERCIAL PROPERTIES
Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	3.1E-07	1.3E-06	

Commercial Property ID:	EPC - Surface (mg/kg)	Cancer Risks for Adult Composite- Commercial Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC2429	50	2.3E-04	6.2E-05	3E-04
PC2430	10	4.7E-05	1.2E-05	6E-05
PC2431	4.0	1.9E-05	5.0E-06	2E-05

Summary of Properties by Risk Range	
Number with Risk $\leq$ 1E-06	0
Number with Risk > 1E-06 to 1E-05	5
Number with Risk > 1E-05 to 1E-04	59
Number with Risk > 1E-4	3
Percent with Risk $\leq$ 1E-06	0%
Percent with Risk > 1E-06 to 1E-05	7%
Percent with Risk > 1E-05 to 1E-04	88%
Percent with Risk > 1E-4	4%
Maximum Risk	3E-04

Notes:

Ingestion

Excess Cancer Risk = $DI_L \times SF$

$DI = C \times HIF \times RBA$

Dermal

Excess Cancer Risk = $DAD \times SF$

$DAD = C_{soil} \times ABS_d \times HIF_{soil}$

$RfD_{ABS} = RfD \times ABS_{GI}$

$ABS_{GI} = 1$, so $RfD_{ABS} = RfD$

EPC =

mg/kg =

N/A =

RBA =

Exposure Point Concentration

milligrams per kilogram

Not Applicable

Relative Bioavailability

Table E-4. CANCER HAZARDS TO COMPOSITE-COMMERCIAL WORKERS AT COMMERCIAL PROPERTIES
Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	7.0E-08	9.8E-08	

Commercial Property ID:	EPC - Surface (mg/kg)	Cancer Risks for Adult Composite- Commercial Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC0006	2.9	3.1E-06	2.7E-07	3E-06
PC0008	3.6	3.9E-06	3.4E-07	4E-06
PC0011	3.5	3.7E-06	3.3E-07	4E-06
PC0012	6.0	6.4E-06	5.7E-07	7E-06
PC0013	9.0	9.6E-06	8.5E-07	1E-05
PC0016	3.1	3.3E-06	2.9E-07	4E-06
PC0033	6.9	7.4E-06	6.5E-07	8E-06
PC0070	5.4	5.8E-06	5.1E-07	6E-06
PC0111	18	1.9E-05	1.7E-06	2E-05
PC0116	7.9	8.5E-06	7.5E-07	9E-06
PC0124	15	1.6E-05	1.4E-06	2E-05
PC0161	9.9	1.1E-05	9.3E-07	1E-05
PC0175	9.1	9.7E-06	8.6E-07	1E-05
PC0308	3.8	4.1E-06	3.6E-07	4E-06
PC0442	10	1.1E-05	9.4E-07	1E-05
PC0443	5.1	5.5E-06	4.8E-07	6E-06
PC0444	5.2	5.6E-06	4.9E-07	6E-06
PC0493	2.0	2.1E-06	1.9E-07	2E-06
PC0567	3.4	3.6E-06	3.2E-07	4E-06
PC0677	1.9	2.0E-06	1.8E-07	2E-06
PC0678	3.3	3.5E-06	3.1E-07	4E-06
PC0686	2.3	2.5E-06	2.2E-07	3E-06
PC0710	23	2.5E-05	2.2E-06	3E-05
PC0712	9.0	9.6E-06	8.5E-07	1E-05
PC1348	46	4.9E-05	4.3E-06	5E-05
PC1400	8.5	9.1E-06	8.0E-07	1E-05
PC1407	4.7	5.0E-06	4.4E-07	5E-06
PC1408	1.1	1.2E-06	1.0E-07	1E-06
PC1414	4.9	5.2E-06	4.6E-07	6E-06
PC1426	6.7	7.2E-06	6.3E-07	8E-06
PC1452	5.6	6.0E-06	5.3E-07	7E-06
PC1453	5.3	5.7E-06	5.0E-07	6E-06

Table E-4. CANCER HAZARDS TO COMPOSITE-COMMERCIAL WORKERS AT COMMERCIAL PROPERTIES
Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	7.0E-08	9.8E-08	

Commercial Property ID:	EPC - Surface (mg/kg)	Cancer Risks for Adult Composite- Commercial Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC1456	3.4	3.6E-06	3.2E-07	4E-06
PC1506	8.5	9.1E-06	8.0E-07	1E-05
PC1561	7.9	8.5E-06	7.5E-07	9E-06
PC1602	6.1	6.5E-06	5.8E-07	7E-06
PC1603	3.6	3.9E-06	3.4E-07	4E-06
PC1618	5.0	5.3E-06	4.7E-07	6E-06
PC1619	7.0	7.5E-06	6.6E-07	8E-06
PC1645	26	2.8E-05	2.5E-06	3E-05
PC1646	5.7	6.1E-06	5.4E-07	7E-06
PC1664	4.4	4.7E-06	4.2E-07	5E-06
PC1677	4.8	5.1E-06	4.5E-07	6E-06
PC1686	11	1.2E-05	1.0E-06	1E-05
PC1690	3.6	3.9E-06	3.4E-07	4E-06
PC1691	3.5	3.7E-06	3.3E-07	4E-06
PC1700	9.5	1.0E-05	9.0E-07	1E-05
PC1709	4.7	5.0E-06	4.4E-07	5E-06
PC1713	6.0	6.4E-06	5.7E-07	7E-06
PC1719	19	2.0E-05	1.8E-06	2E-05
PC1740	7.2	7.7E-06	6.8E-07	8E-06
PC1851	3.0	3.2E-06	2.8E-07	3E-06
PC1857	4.8	5.1E-06	4.5E-07	6E-06
PC1859	4.5	4.8E-06	4.2E-07	5E-06
PC1861	1.5	1.6E-06	1.4E-07	2E-06
PC1904	12	1.3E-05	1.1E-06	1E-05
PC1958	4.4	4.7E-06	4.2E-07	5E-06
PC1974	8.1	8.7E-06	7.6E-07	9E-06
PC2061	7.5	8.0E-06	7.1E-07	9E-06
PC2092	4.5	4.8E-06	4.2E-07	5E-06
PC2421	5.5	5.9E-06	5.2E-07	6E-06
PC2426	8.3	8.9E-06	7.8E-07	1E-05
PC2427	7.2	7.7E-06	6.8E-07	8E-06
PC2428	6.3	6.7E-06	5.9E-07	7E-06

Table E-4. CANCER HAZARDS TO COMPOSITE-COMMERCIAL WORKERS AT COMMERCIAL PROPERTIES
Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	7.0E-08	9.8E-08	

Commercial Property ID:	EPC - Surface (mg/kg)	Cancer Risks for Adult Composite- Commercial Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC2429	50	5.3E-05	4.7E-06	6E-05
PC2430	10	1.1E-05	9.4E-07	1E-05
PC2431	4.0	4.3E-06	3.8E-07	5E-06

Summary of Properties by Risk Range	
Number with Risk $\leq$ 1E-06	1
Number with Risk > 1E-06 to 1E-05	59
Number with Risk > 1E-05 to 1E-04	7
Number with Risk > 1E-4	0
Percent with Risk $\leq$ 1E-06	1%
Percent with Risk > 1E-06 to 1E-05	88%
Percent with Risk > 1E-05 to 1E-04	10%
Percent with Risk > 1E-4	0%
Maximum Risk	6E-05

Notes:

Ingestion

Excess Cancer Risk = $DI_L \times SF$

$DI = C \times HIF \times RBA$

Dermal

Excess Cancer Risk = $DAD \times SF$

$DAD = C_{soil} \times ABS_d \times HIF_{soil}$

$RfD_{ABS} = RfD \times ABS_{GI}$

$ABS_{GI} = 1$, so $RfD_{ABS} = RfD$

EPC =

mg/kg =

N/A =

RBA =

Exposure Point Concentration

milligrams per kilogram

Not Applicable

Relative Bioavailability

Appendix F
Individual Risk Estimates for Arsenic at Commercial Properties for Construction Workers

Table F-1.	Construction worker RME non-cancer risk estimates
Table F-2.	Construction worker CTE non-cancer risk estimates
Table F-3.	Construction worker RME cancer risk estimates
Table F-4.	Construction worker CTE cancer risk estimates

Table F-1. NON-CANCER HAZARDS TO CONSTRUCTION WORKERS AT COMMERCIAL PROPERTIES
Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.8E-06	9.1E-06	

Commercial Property ID:	EPC - Subsurface (mg/kg)	Non-Cancer HQs for Adult Construction Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC0006	4.1	9.3E-02	1.9E-02	1E-01
PC0008	4.9	1.1E-01	2.2E-02	1E-01
PC0011	4.3	9.7E-02	1.9E-02	1E-01
PC0012	5.5	1.2E-01	2.5E-02	1E-01
PC0013	11	2.5E-01	5.0E-02	3E-01
PC0016	3.7	8.4E-02	1.7E-02	1E-01
PC0033	7.0	1.6E-01	3.2E-02	2E-01
PC0070	5.8	1.3E-01	2.6E-02	2E-01
PC0111	19	4.3E-01	8.6E-02	5E-01
PC0116	11	2.5E-01	5.0E-02	3E-01
PC0124	14	3.2E-01	6.3E-02	4E-01
PC0161	12	2.7E-01	5.4E-02	3E-01
PC0175	19	4.3E-01	8.6E-02	5E-01
PC0308	12	2.7E-01	5.4E-02	3E-01
PC0442	15	3.4E-01	6.8E-02	4E-01
PC0443	12	2.7E-01	5.4E-02	3E-01
PC0444	7.2	1.6E-01	3.3E-02	2E-01
PC0493	2.4	5.4E-02	1.1E-02	7E-02
PC0567	4.6	1.0E-01	2.1E-02	1E-01
PC0677	3.6	8.1E-02	1.6E-02	1E-01
PC0678	2.8	6.3E-02	1.3E-02	8E-02
PC0686	4.4	9.9E-02	2.0E-02	1E-01
PC0710	82	1.9E+00	3.7E-01	2E+00
PC0712	11	2.5E-01	5.0E-02	3E-01
PC1348	39	8.8E-01	1.8E-01	1E+00
PC1400	16	3.6E-01	7.2E-02	4E-01
PC1407	6.3	1.4E-01	2.9E-02	2E-01
PC1408	5.8	1.3E-01	2.6E-02	2E-01
PC1414	7.0	1.6E-01	3.2E-02	2E-01
PC1426	5.5	1.2E-01	2.5E-02	1E-01
PC1452	7.7	1.7E-01	3.5E-02	2E-01
PC1453	8.2	1.9E-01	3.7E-02	2E-01

Table F-1. NON-CANCER HAZARDS TO CONSTRUCTION WORKERS AT COMMERCIAL PROPERTIES
Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.8E-06	9.1E-06	

Commercial Property ID:	EPC - Subsurface (mg/kg)	Non-Cancer HQs for Adult Construction Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC1456	5.8	1.3E-01	2.6E-02	2E-01
PC1506	10	2.3E-01	4.5E-02	3E-01
PC1561	12	2.7E-01	5.4E-02	3E-01
PC1602	6.3	1.4E-01	2.9E-02	2E-01
PC1603	17	3.8E-01	7.7E-02	5E-01
PC1618	8.7	2.0E-01	3.9E-02	2E-01
PC1619	14	3.2E-01	6.3E-02	4E-01
PC1645	25	5.7E-01	1.1E-01	7E-01
PC1646	16	3.6E-01	7.2E-02	4E-01
PC1664	4.6	1.0E-01	2.1E-02	1E-01
PC1677	8.0	1.8E-01	3.6E-02	2E-01
PC1686	9.0	2.0E-01	4.1E-02	2E-01
PC1690	6.4	1.4E-01	2.9E-02	2E-01
PC1691	4.4	9.9E-02	2.0E-02	1E-01
PC1700	8.6	1.9E-01	3.9E-02	2E-01
PC1709	5.4	1.2E-01	2.4E-02	1E-01
PC1713	7.5	1.7E-01	3.4E-02	2E-01
PC1719	14	3.2E-01	6.3E-02	4E-01
PC1740	9.3	2.1E-01	4.2E-02	3E-01
PC1851	4.3	9.7E-02	1.9E-02	1E-01
PC1857	7.7	1.7E-01	3.5E-02	2E-01
PC1859	5.8	1.3E-01	2.6E-02	2E-01
PC1861	4.1	9.3E-02	1.9E-02	1E-01
PC1904	11	2.5E-01	5.0E-02	3E-01
PC1958	7.4	1.7E-01	3.4E-02	2E-01
PC1974	12	2.7E-01	5.4E-02	3E-01
PC2061	8.7	2.0E-01	3.9E-02	2E-01
PC2092	6.9	1.6E-01	3.1E-02	2E-01
PC2421	6.9	1.6E-01	3.1E-02	2E-01
PC2426	8.8	2.0E-01	4.0E-02	2E-01
PC2427	7.3	1.7E-01	3.3E-02	2E-01
PC2428	5.9	1.3E-01	2.7E-02	2E-01

Table F-1. NON-CANCER HAZARDS TO CONSTRUCTION WORKERS AT COMMERCIAL PROPERTIES
Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.8E-06	9.1E-06	

Commercial Property ID:	EPC - Subsurface (mg/kg)	Non-Cancer HQs for Adult Construction Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC2429	34	7.7E-01	1.5E-01	9E-01
PC2430	8.8	2.0E-01	4.0E-02	2E-01
PC2431	6.9	1.6E-01	3.1E-02	2E-01

Summary of Properties by Hazard Range	
Number with HI $\leq$ 1E+00	66
Number with HI $>$ 1E+00	1
Percent with HI $\leq$ 1E+00	99%
Percent with HI $>$ 1E+00	1%
Maximum HI	2E+00

Notes:

Ingestion

$DI = C \times HIF \times RBA$

$HQ = DI/RfD$

Dermal

$DAD = C_{soil} \times ABS_d \times HIF_{soil}$

$RfD_{ABS} = RfD \times ABS_{GI}$

$ABS_{GI} = 1$, so $RfD_{ABS} = RfD$

$HQ = DAD/RfD_{ABS}$

EPC =

Exposure Point Concentration

HI =

Hazard Index

HQ =

Hazard Quotient

mg/kg =

milligrams per kilogram

N/A =

Not Applicable

RBA =

Relative Bioavailability

Table F-2. NON-CANCER HAZARDS TO CONSTRUCTION WORKERS AT COMMERCIAL PROPERTIES
Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	8.6E-07	3.0E-06	

Commercial Property ID:	EPC - Subsurface (mg/kg)	Non-Cancer HQs for Adult Construction Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC0006	4.1	2.8E-02	6.2E-03	3E-02
PC0008	4.9	3.4E-02	7.4E-03	4E-02
PC0011	4.3	2.9E-02	6.5E-03	4E-02
PC0012	5.5	3.8E-02	8.3E-03	5E-02
PC0013	11	7.5E-02	1.7E-02	9E-02
PC0016	3.7	2.5E-02	5.6E-03	3E-02
PC0033	7.0	4.8E-02	1.1E-02	6E-02
PC0070	5.8	4.0E-02	8.8E-03	5E-02
PC0111	19	1.3E-01	2.9E-02	2E-01
PC0116	11	7.5E-02	1.7E-02	9E-02
PC0124	14	9.6E-02	2.1E-02	1E-01
PC0161	12	8.2E-02	1.8E-02	1E-01
PC0175	19	1.3E-01	2.9E-02	2E-01
PC0308	12	8.2E-02	1.8E-02	1E-01
PC0442	15	1.0E-01	2.3E-02	1E-01
PC0443	12	8.2E-02	1.8E-02	1E-01
PC0444	7.2	4.9E-02	1.1E-02	6E-02
PC0493	2.4	1.6E-02	3.6E-03	2E-02
PC0567	4.6	3.2E-02	6.9E-03	4E-02
PC0677	3.6	2.5E-02	5.4E-03	3E-02
PC0678	2.8	1.9E-02	4.2E-03	2E-02
PC0686	4.4	3.0E-02	6.6E-03	4E-02
PC0710	82	5.6E-01	1.2E-01	7E-01
PC0712	11	7.5E-02	1.7E-02	9E-02
PC1348	39	2.7E-01	5.9E-02	3E-01
PC1400	16	1.1E-01	2.4E-02	1E-01
PC1407	6.3	4.3E-02	9.5E-03	5E-02
PC1408	5.8	4.0E-02	8.8E-03	5E-02
PC1414	7.0	4.8E-02	1.1E-02	6E-02
PC1426	5.5	3.8E-02	8.3E-03	5E-02
PC1452	7.7	5.3E-02	1.2E-02	6E-02
PC1453	8.2	5.6E-02	1.2E-02	7E-02

Table F-2. NON-CANCER HAZARDS TO CONSTRUCTION WORKERS AT COMMERCIAL PROPERTIES
Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	8.6E-07	3.0E-06	

Commercial Property ID:	EPC - Subsurface (mg/kg)	Non-Cancer HQs for Adult Construction Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC1456	5.8	4.0E-02	8.8E-03	5E-02
PC1506	10	6.8E-02	1.5E-02	8E-02
PC1561	12	8.2E-02	1.8E-02	1E-01
PC1602	6.3	4.3E-02	9.5E-03	5E-02
PC1603	17	1.2E-01	2.6E-02	1E-01
PC1618	8.7	6.0E-02	1.3E-02	7E-02
PC1619	14	9.6E-02	2.1E-02	1E-01
PC1645	25	1.7E-01	3.8E-02	2E-01
PC1646	16	1.1E-01	2.4E-02	1E-01
PC1664	4.6	3.2E-02	6.9E-03	4E-02
PC1677	8.0	5.5E-02	1.2E-02	7E-02
PC1686	9.0	6.2E-02	1.4E-02	8E-02
PC1690	6.4	4.4E-02	9.7E-03	5E-02
PC1691	4.4	3.0E-02	6.6E-03	4E-02
PC1700	8.6	5.9E-02	1.3E-02	7E-02
PC1709	5.4	3.7E-02	8.2E-03	5E-02
PC1713	7.5	5.1E-02	1.1E-02	6E-02
PC1719	14	9.6E-02	2.1E-02	1E-01
PC1740	9.3	6.4E-02	1.4E-02	8E-02
PC1851	4.3	2.9E-02	6.5E-03	4E-02
PC1857	7.7	5.3E-02	1.2E-02	6E-02
PC1859	5.8	4.0E-02	8.8E-03	5E-02
PC1861	4.1	2.8E-02	6.2E-03	3E-02
PC1904	11	7.5E-02	1.7E-02	9E-02
PC1958	7.4	5.1E-02	1.1E-02	6E-02
PC1974	12	8.2E-02	1.8E-02	1E-01
PC2061	8.7	6.0E-02	1.3E-02	7E-02
PC2092	6.9	4.7E-02	1.0E-02	6E-02
PC2421	6.9	4.7E-02	1.0E-02	6E-02
PC2426	8.8	6.0E-02	1.3E-02	7E-02
PC2427	7.3	5.0E-02	1.1E-02	6E-02
PC2428	5.9	4.0E-02	8.9E-03	5E-02

Table F-2. NON-CANCER HAZARDS TO CONSTRUCTION WORKERS AT COMMERCIAL PROPERTIES
Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	8.6E-07	3.0E-06	

Commercial Property ID:	EPC - Subsurface (mg/kg)	Non-Cancer HQs for Adult Construction Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC2429	34	2.3E-01	5.1E-02	3E-01
PC2430	8.8	6.0E-02	1.3E-02	7E-02
PC2431	6.9	4.7E-02	1.0E-02	6E-02

Summary of Properties by Hazard Range	
Number with HI $\leq$ 1E+00	67
Number with HI $>$ 1E+00	0
Percent with HI $\leq$ 1E+00	100%
Percent with HI $>$ 1E+00	0%
Maximum HI	7E-01

Notes:

Ingestion

$DI = C \times HIF \times RBA$

$HQ = DI/RfD$

Dermal

$DAD = C_{soil} \times ABS_d \times HIF_{soil}$

$RfD_{ABS} = RfD \times ABS_{GI}$

$ABS_{GI} = 1$, so $RfD_{ABS} = RfD$

$HQ = DAD/RfD_{ABS}$

EPC =

Exposure Point Concentration

HI =

Hazard Index

HQ =

Hazard Quotient

mg/kg =

milligrams per kilogram

N/A =

Not Applicable

RBA =

Relative Bioavailability

Table F-3. CANCER HAZARDS TO CONSTRUCTION WORKERS AT COMMERCIAL PROPERTIES
Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	4.0E-08	1.3E-07	

Commercial Property ID:	EPC - Subsurface (mg/kg)	Cancer Risks for Adult Construction Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC0006	4.1	2.5E-06	5.1E-07	3E-06
PC0008	4.9	3.0E-06	6.1E-07	4E-06
PC0011	4.3	2.7E-06	5.3E-07	3E-06
PC0012	5.5	3.4E-06	6.8E-07	4E-06
PC0013	11	6.8E-06	1.4E-06	8E-06
PC0016	3.7	2.3E-06	4.6E-07	3E-06
PC0033	7.0	4.3E-06	8.7E-07	5E-06
PC0070	5.8	3.6E-06	7.2E-07	4E-06
PC0111	19	1.2E-05	2.4E-06	1E-05
PC0116	11	6.8E-06	1.4E-06	8E-06
PC0124	14	8.7E-06	1.7E-06	1E-05
PC0161	12	7.4E-06	1.5E-06	9E-06
PC0175	19	1.2E-05	2.4E-06	1E-05
PC0308	12	7.4E-06	1.5E-06	9E-06
PC0442	15	9.3E-06	1.9E-06	1E-05
PC0443	12	7.4E-06	1.5E-06	9E-06
PC0444	7.2	4.5E-06	8.9E-07	5E-06
PC0493	2.4	1.5E-06	3.0E-07	2E-06
PC0567	4.6	2.9E-06	5.7E-07	3E-06
PC0677	3.6	2.2E-06	4.5E-07	3E-06
PC0678	2.8	1.7E-06	3.5E-07	2E-06
PC0686	4.4	2.7E-06	5.5E-07	3E-06
PC0710	82	5.1E-05	1.0E-05	6E-05
PC0712	11	6.8E-06	1.4E-06	8E-06
PC1348	39	2.4E-05	4.8E-06	3E-05
PC1400	16	9.9E-06	2.0E-06	1E-05
PC1407	6.3	3.9E-06	7.8E-07	5E-06
PC1408	5.8	3.6E-06	7.2E-07	4E-06
PC1414	7.0	4.3E-06	8.7E-07	5E-06
PC1426	5.5	3.4E-06	6.8E-07	4E-06
PC1452	7.7	4.8E-06	9.6E-07	6E-06
PC1453	8.2	5.1E-06	1.0E-06	6E-06

Table F-3. CANCER HAZARDS TO CONSTRUCTION WORKERS AT COMMERCIAL PROPERTIES
Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	4.0E-08	1.3E-07	

Commercial Property ID:	EPC - Subsurface (mg/kg)	Cancer Risks for Adult Construction Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC1456	5.8	3.6E-06	7.2E-07	4E-06
PC1506	10	6.2E-06	1.2E-06	7E-06
PC1561	12	7.4E-06	1.5E-06	9E-06
PC1602	6.3	3.9E-06	7.8E-07	5E-06
PC1603	17	1.1E-05	2.1E-06	1E-05
PC1618	8.7	5.4E-06	1.1E-06	6E-06
PC1619	14	8.7E-06	1.7E-06	1E-05
PC1645	25	1.5E-05	3.1E-06	2E-05
PC1646	16	9.9E-06	2.0E-06	1E-05
PC1664	4.6	2.9E-06	5.7E-07	3E-06
PC1677	8.0	5.0E-06	9.9E-07	6E-06
PC1686	9.0	5.6E-06	1.1E-06	7E-06
PC1690	6.4	4.0E-06	8.0E-07	5E-06
PC1691	4.4	2.7E-06	5.5E-07	3E-06
PC1700	8.6	5.3E-06	1.1E-06	6E-06
PC1709	5.4	3.3E-06	6.7E-07	4E-06
PC1713	7.5	4.6E-06	9.3E-07	6E-06
PC1719	14	8.7E-06	1.7E-06	1E-05
PC1740	9.3	5.8E-06	1.2E-06	7E-06
PC1851	4.3	2.7E-06	5.3E-07	3E-06
PC1857	7.7	4.8E-06	9.6E-07	6E-06
PC1859	5.8	3.6E-06	7.2E-07	4E-06
PC1861	4.1	2.5E-06	5.1E-07	3E-06
PC1904	11	6.8E-06	1.4E-06	8E-06
PC1958	7.4	4.6E-06	9.2E-07	6E-06
PC1974	12	7.4E-06	1.5E-06	9E-06
PC2061	8.7	5.4E-06	1.1E-06	6E-06
PC2092	6.9	4.3E-06	8.6E-07	5E-06
PC2421	6.9	4.3E-06	8.6E-07	5E-06
PC2426	8.8	5.5E-06	1.1E-06	7E-06
PC2427	7.3	4.5E-06	9.1E-07	5E-06
PC2428	5.9	3.7E-06	7.3E-07	4E-06

Table F-3. CANCER HAZARDS TO CONSTRUCTION WORKERS AT COMMERCIAL PROPERTIES

Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	4.0E-08	1.3E-07	

Commercial Property ID:	EPC - Subsurface (mg/kg)	Cancer Risks for Adult Construction Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC2429	34	2.1E-05	4.2E-06	3E-05
PC2430	8.8	5.5E-06	1.1E-06	7E-06
PC2431	6.9	4.3E-06	8.6E-07	5E-06

Summary of Properties by Risk Range	
Number with Risk $\leq$ 1E-06	0
Number with Risk > 1E-06 to 1E-05	63
Number with Risk > 1E-05 to 1E-04	4
Number with Risk > 1E-4	0
Percent with Risk $\leq$ 1E-06	0%
Percent with Risk > 1E-06 to 1E-05	94%
Percent with Risk > 1E-05 to 1E-04	6%
Percent with Risk > 1E-4	0%
Maximum Risk	6E-05

Notes:

Ingestion

Excess Cancer Risk = $DI_L \times SF$

$DI = C \times HIF \times RBA$

Dermal

Excess Cancer Risk = $DAD \times SF$

$DAD = C_{soil} \times ABS_d \times HIF_{soil}$

$RfD_{ABS} = RfD \times ABS_{GI}$

$ABS_{GI} = 1$, so $RfD_{ABS} = RfD$

EPC =

mg/kg =

N/A =

RBA =

Exposure Point Concentration

milligrams per kilogram

Not Applicable

Relative Bioavailability

Table F-4. CANCER HAZARDS TO CONSTRUCTION WORKERS AT COMMERCIAL PROPERTIES
Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	6.1E-09	2.2E-08	

Commercial Property ID:	EPC - Subsurface (mg/kg)	Cancer Risks for Adult Construction Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC0006	4.1	3.9E-07	8.5E-08	5E-07
PC0008	4.9	4.6E-07	1.0E-07	6E-07
PC0011	4.3	4.0E-07	8.9E-08	5E-07
PC0012	5.5	5.2E-07	1.1E-07	6E-07
PC0013	11	1.0E-06	2.3E-07	1E-06
PC0016	3.7	3.5E-07	7.7E-08	4E-07
PC0033	7.0	6.6E-07	1.4E-07	8E-07
PC0070	5.8	5.4E-07	1.2E-07	7E-07
PC0111	19	1.8E-06	3.9E-07	2E-06
PC0116	11	1.0E-06	2.3E-07	1E-06
PC0124	14	1.3E-06	2.9E-07	2E-06
PC0161	12	1.1E-06	2.5E-07	1E-06
PC0175	19	1.8E-06	3.9E-07	2E-06
PC0308	12	1.1E-06	2.5E-07	1E-06
PC0442	15	1.4E-06	3.1E-07	2E-06
PC0443	12	1.1E-06	2.5E-07	1E-06
PC0444	7.2	6.8E-07	1.5E-07	8E-07
PC0493	2.4	2.3E-07	5.0E-08	3E-07
PC0567	4.6	4.3E-07	9.5E-08	5E-07
PC0677	3.6	3.4E-07	7.5E-08	4E-07
PC0678	2.8	2.6E-07	5.8E-08	3E-07
PC0686	4.4	4.1E-07	9.1E-08	5E-07
PC0710	82	7.7E-06	1.7E-06	9E-06
PC0712	11	1.0E-06	2.3E-07	1E-06
PC1348	39	3.7E-06	8.1E-07	4E-06
PC1400	16	1.5E-06	3.3E-07	2E-06
PC1407	6.3	5.9E-07	1.3E-07	7E-07
PC1408	5.8	5.4E-07	1.2E-07	7E-07
PC1414	7.0	6.6E-07	1.4E-07	8E-07
PC1426	5.5	5.2E-07	1.1E-07	6E-07
PC1452	7.7	7.2E-07	1.6E-07	9E-07
PC1453	8.2	7.7E-07	1.7E-07	9E-07

Table F-4. CANCER HAZARDS TO CONSTRUCTION WORKERS AT COMMERCIAL PROPERTIES
Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	6.1E-09	2.2E-08	

Commercial Property ID:	EPC - Subsurface (mg/kg)	Cancer Risks for Adult Construction Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC1456	5.8	5.4E-07	1.2E-07	7E-07
PC1506	10	9.4E-07	2.1E-07	1E-06
PC1561	12	1.1E-06	2.5E-07	1E-06
PC1602	6.3	5.9E-07	1.3E-07	7E-07
PC1603	17	1.6E-06	3.5E-07	2E-06
PC1618	8.7	8.2E-07	1.8E-07	1E-06
PC1619	14	1.3E-06	2.9E-07	2E-06
PC1645	25	2.3E-06	5.2E-07	3E-06
PC1646	16	1.5E-06	3.3E-07	2E-06
PC1664	4.6	4.3E-07	9.5E-08	5E-07
PC1677	8.0	7.5E-07	1.7E-07	9E-07
PC1686	9.0	8.5E-07	1.9E-07	1E-06
PC1690	6.4	6.0E-07	1.3E-07	7E-07
PC1691	4.4	4.1E-07	9.1E-08	5E-07
PC1700	8.6	8.1E-07	1.8E-07	1E-06
PC1709	5.4	5.1E-07	1.1E-07	6E-07
PC1713	7.5	7.0E-07	1.6E-07	9E-07
PC1719	14	1.3E-06	2.9E-07	2E-06
PC1740	9.3	8.7E-07	1.9E-07	1E-06
PC1851	4.3	4.0E-07	8.9E-08	5E-07
PC1857	7.7	7.2E-07	1.6E-07	9E-07
PC1859	5.8	5.4E-07	1.2E-07	7E-07
PC1861	4.1	3.9E-07	8.5E-08	5E-07
PC1904	11	1.0E-06	2.3E-07	1E-06
PC1958	7.4	7.0E-07	1.5E-07	8E-07
PC1974	12	1.1E-06	2.5E-07	1E-06
PC2061	8.7	8.2E-07	1.8E-07	1E-06
PC2092	6.9	6.5E-07	1.4E-07	8E-07
PC2421	6.9	6.5E-07	1.4E-07	8E-07
PC2426	8.8	8.3E-07	1.8E-07	1E-06
PC2427	7.3	6.9E-07	1.5E-07	8E-07
PC2428	5.9	5.5E-07	1.2E-07	7E-07

Table F-4. CANCER HAZARDS TO CONSTRUCTION WORKERS AT COMMERCIAL PROPERTIES
Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	6.1E-09	2.2E-08	

Commercial Property ID:	EPC - Subsurface (mg/kg)	Cancer Risks for Adult Construction Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC2429	34	3.2E-06	7.0E-07	4E-06
PC2430	8.8	8.3E-07	1.8E-07	1E-06
PC2431	6.9	6.5E-07	1.4E-07	8E-07

Summary of Properties by Risk Range	
Number with Risk $\leq$ 1E-06	54
Number with Risk > 1E-06 to 1E-05	13
Number with Risk > 1E-05 to 1E-04	0
Number with Risk > 1E-4	0
Percent with Risk $\leq$ 1E-06	81%
Percent with Risk > 1E-06 to 1E-05	19%
Percent with Risk > 1E-05 to 1E-04	0%
Percent with Risk > 1E-4	0%
Maximum Risk	9E-06

Notes:

Ingestion

Excess Cancer Risk = $DI_L \times SF$

$DI = C \times HIF \times RBA$

Dermal

Excess Cancer Risk = $DAD \times SF$

$DAD = C_{soil} \times ABS_d \times HIF_{soil}$

$RfD_{ABS} = RfD \times ABS_{GI}$

$ABS_{GI} = 1$, so $RfD_{ABS} = RfD$

EPC =

mg/kg =

N/A =

RBA =

Exposure Point Concentration

milligrams per kilogram

Not Applicable

Relative Bioavailability

Appendix G

Individual Risk Estimates for Arsenic at Commercial Properties for Utility Workers

Table G-1.	Utility worker RME non-cancer risk estimates
Table G-2.	Utility worker CTE non-cancer risk estimates
Table G-3.	Utility worker RME cancer risk estimates
Table G-4.	Utility worker CTE cancer risk estimates

Table G-1. NON-CANCER HAZARDS TO UTILITY WORKERS AT COMMERCIAL PROPERTIES
Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	8.9E-07	1.4E-05	

Commercial Property ID:	EPC - Subsurface (mg/kg)	Non-Cancer HQs for Adult Utility Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC0006	4.1	2.9E-02	2.9E-02	6E-02
PC0008	4.9	3.5E-02	3.5E-02	7E-02
PC0011	4.3	3.1E-02	3.0E-02	6E-02
PC0012	5.5	3.9E-02	3.9E-02	8E-02
PC0013	11	7.8E-02	7.8E-02	2E-01
PC0016	3.7	2.6E-02	2.6E-02	5E-02
PC0033	7.0	5.0E-02	4.9E-02	1E-01
PC0070	5.8	4.1E-02	4.1E-02	8E-02
PC0111	19	1.4E-01	1.3E-01	3E-01
PC0116	11	7.8E-02	7.8E-02	2E-01
PC0124	14	1.0E-01	9.9E-02	2E-01
PC0161	12	8.5E-02	8.5E-02	2E-01
PC0175	19	1.4E-01	1.3E-01	3E-01
PC0308	12	8.5E-02	8.5E-02	2E-01
PC0442	15	1.1E-01	1.1E-01	2E-01
PC0443	12	8.5E-02	8.5E-02	2E-01
PC0444	7.2	5.1E-02	5.1E-02	1E-01
PC0493	2.4	1.7E-02	1.7E-02	3E-02
PC0567	4.6	3.3E-02	3.3E-02	7E-02
PC0677	3.6	2.6E-02	2.5E-02	5E-02
PC0678	2.8	2.0E-02	2.0E-02	4E-02
PC0686	4.4	3.1E-02	3.1E-02	6E-02
PC0710	82	5.8E-01	5.8E-01	1E+00
PC0712	11	7.8E-02	7.8E-02	2E-01
PC1348	39	2.8E-01	2.8E-01	6E-01
PC1400	16	1.1E-01	1.1E-01	2E-01
PC1407	6.3	4.5E-02	4.5E-02	9E-02
PC1408	5.8	4.1E-02	4.1E-02	8E-02
PC1414	7.0	5.0E-02	4.9E-02	1E-01
PC1426	5.5	3.9E-02	3.9E-02	8E-02
PC1452	7.7	5.5E-02	5.4E-02	1E-01
PC1453	8.2	5.8E-02	5.8E-02	1E-01

Table G-1. NON-CANCER HAZARDS TO UTILITY WORKERS AT COMMERCIAL PROPERTIES
Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	8.9E-07	1.4E-05	

Commercial Property ID:	EPC - Subsurface (mg/kg)	Non-Cancer HQs for Adult Utility Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC1456	5.8	4.1E-02	4.1E-02	8E-02
PC1506	10	7.1E-02	7.1E-02	1E-01
PC1561	12	8.5E-02	8.5E-02	2E-01
PC1602	6.3	4.5E-02	4.5E-02	9E-02
PC1603	17	1.2E-01	1.2E-01	2E-01
PC1618	8.7	6.2E-02	6.1E-02	1E-01
PC1619	14	1.0E-01	9.9E-02	2E-01
PC1645	25	1.8E-01	1.8E-01	4E-01
PC1646	16	1.1E-01	1.1E-01	2E-01
PC1664	4.6	3.3E-02	3.3E-02	7E-02
PC1677	8.0	5.7E-02	5.7E-02	1E-01
PC1686	9.0	6.4E-02	6.4E-02	1E-01
PC1690	6.4	4.6E-02	4.5E-02	9E-02
PC1691	4.4	3.1E-02	3.1E-02	6E-02
PC1700	8.6	6.1E-02	6.1E-02	1E-01
PC1709	5.4	3.8E-02	3.8E-02	8E-02
PC1713	7.5	5.3E-02	5.3E-02	1E-01
PC1719	14	1.0E-01	9.9E-02	2E-01
PC1740	9.3	6.6E-02	6.6E-02	1E-01
PC1851	4.3	3.1E-02	3.0E-02	6E-02
PC1857	7.7	5.5E-02	5.4E-02	1E-01
PC1859	5.8	4.1E-02	4.1E-02	8E-02
PC1861	4.1	2.9E-02	2.9E-02	6E-02
PC1904	11	7.8E-02	7.8E-02	2E-01
PC1958	7.4	5.3E-02	5.2E-02	1E-01
PC1974	12	8.5E-02	8.5E-02	2E-01
PC2061	8.7	6.2E-02	6.1E-02	1E-01
PC2092	6.9	4.9E-02	4.9E-02	1E-01
PC2421	6.9	4.9E-02	4.9E-02	1E-01
PC2426	8.8	6.3E-02	6.2E-02	1E-01
PC2427	7.3	5.2E-02	5.2E-02	1E-01
PC2428	5.9	4.2E-02	4.2E-02	8E-02

Table G-1. NON-CANCER HAZARDS TO UTILITY WORKERS AT COMMERCIAL PROPERTIES
Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	8.9E-07	1.4E-05	

Commercial Property ID:	EPC - Subsurface (mg/kg)	Non-Cancer HQs for Adult Utility Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC2429	34	2.4E-01	2.4E-01	5E-01
PC2430	8.8	6.3E-02	6.2E-02	1E-01
PC2431	6.9	4.9E-02	4.9E-02	1E-01

Summary of Properties by Hazard Range	
Number with HI $\leq$ 1E+00	67
Number with HI $>$ 1E+00	0
Percent with HI $\leq$ 1E+00	100%
Percent with HI $>$ 1E+00	0%
Maximum HI	1E+00

Notes:

Ingestion

$$DI = C \times HIF \times RBA$$

$$HQ = DI/RfD$$

Dermal

$$DAD = C_{soil} \times ABS_d \times HIF_{soil}$$

$$RfD_{ABS} = RfD \times ABS_{GI}$$

$$ABS_{GI} = 1, \text{ so } RfD_{ABS} = RfD$$

$$HQ = DAD/RfD_{ABS}$$

EPC =

Exposure Point Concentration

HI =

Hazard Index

HQ =

Hazard Quotient

mg/kg =

milligrams per kilogram

N/A =

Not Applicable

RBA =

Relative Bioavailability

Table G-2. NON-CANCER HAZARDS TO UTILITY WORKERS AT COMMERCIAL PROPERTIES
Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.2E-07	1.6E-06	

Commercial Property ID:	EPC - Subsurface (mg/kg)	Non-Cancer HQs for Adult Utility Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC0006	4.1	7.3E-03	3.2E-03	1E-02
PC0008	4.9	8.7E-03	3.8E-03	1E-02
PC0011	4.3	7.7E-03	3.4E-03	1E-02
PC0012	5.5	9.8E-03	4.3E-03	1E-02
PC0013	11	2.0E-02	8.6E-03	3E-02
PC0016	3.7	6.6E-03	2.9E-03	9E-03
PC0033	7.0	1.2E-02	5.5E-03	2E-02
PC0070	5.8	1.0E-02	4.6E-03	1E-02
PC0111	19	3.4E-02	1.5E-02	5E-02
PC0116	11	2.0E-02	8.6E-03	3E-02
PC0124	14	2.5E-02	1.1E-02	4E-02
PC0161	12	2.1E-02	9.4E-03	3E-02
PC0175	19	3.4E-02	1.5E-02	5E-02
PC0308	12	2.1E-02	9.4E-03	3E-02
PC0442	15	2.7E-02	1.2E-02	4E-02
PC0443	12	2.1E-02	9.4E-03	3E-02
PC0444	7.2	1.3E-02	5.7E-03	2E-02
PC0493	2.4	4.3E-03	1.9E-03	6E-03
PC0567	4.6	8.2E-03	3.6E-03	1E-02
PC0677	3.6	6.4E-03	2.8E-03	9E-03
PC0678	2.8	5.0E-03	2.2E-03	7E-03
PC0686	4.4	7.8E-03	3.5E-03	1E-02
PC0710	82	1.5E-01	6.4E-02	2E-01
PC0712	11	2.0E-02	8.6E-03	3E-02
PC1348	39	6.9E-02	3.1E-02	1E-01
PC1400	16	2.8E-02	1.3E-02	4E-02
PC1407	6.3	1.1E-02	4.9E-03	2E-02
PC1408	5.8	1.0E-02	4.6E-03	1E-02
PC1414	7.0	1.2E-02	5.5E-03	2E-02
PC1426	5.5	9.8E-03	4.3E-03	1E-02
PC1452	7.7	1.4E-02	6.0E-03	2E-02
PC1453	8.2	1.5E-02	6.4E-03	2E-02

Table G-2. NON-CANCER HAZARDS TO UTILITY WORKERS AT COMMERCIAL PROPERTIES
Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.2E-07	1.6E-06	

Commercial Property ID:	EPC - Subsurface (mg/kg)	Non-Cancer HQs for Adult Utility Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC1456	5.8	1.0E-02	4.6E-03	1E-02
PC1506	10	1.8E-02	7.9E-03	3E-02
PC1561	12	2.1E-02	9.4E-03	3E-02
PC1602	6.3	1.1E-02	4.9E-03	2E-02
PC1603	17	3.0E-02	1.3E-02	4E-02
PC1618	8.7	1.5E-02	6.8E-03	2E-02
PC1619	14	2.5E-02	1.1E-02	4E-02
PC1645	25	4.5E-02	2.0E-02	6E-02
PC1646	16	2.8E-02	1.3E-02	4E-02
PC1664	4.6	8.2E-03	3.6E-03	1E-02
PC1677	8.0	1.4E-02	6.3E-03	2E-02
PC1686	9.0	1.6E-02	7.1E-03	2E-02
PC1690	6.4	1.1E-02	5.0E-03	2E-02
PC1691	4.4	7.8E-03	3.5E-03	1E-02
PC1700	8.6	1.5E-02	6.8E-03	2E-02
PC1709	5.4	9.6E-03	4.2E-03	1E-02
PC1713	7.5	1.3E-02	5.9E-03	2E-02
PC1719	14	2.5E-02	1.1E-02	4E-02
PC1740	9.3	1.7E-02	7.3E-03	2E-02
PC1851	4.3	7.7E-03	3.4E-03	1E-02
PC1857	7.7	1.4E-02	6.0E-03	2E-02
PC1859	5.8	1.0E-02	4.6E-03	1E-02
PC1861	4.1	7.3E-03	3.2E-03	1E-02
PC1904	11	2.0E-02	8.6E-03	3E-02
PC1958	7.4	1.3E-02	5.8E-03	2E-02
PC1974	12	2.1E-02	9.4E-03	3E-02
PC2061	8.7	1.5E-02	6.8E-03	2E-02
PC2092	6.9	1.2E-02	5.4E-03	2E-02
PC2421	6.9	1.2E-02	5.4E-03	2E-02
PC2426	8.8	1.6E-02	6.9E-03	2E-02
PC2427	7.3	1.3E-02	5.7E-03	2E-02
PC2428	5.9	1.1E-02	4.6E-03	2E-02

Table G-2. NON-CANCER HAZARDS TO UTILITY WORKERS AT COMMERCIAL PROPERTIES
Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Reference Dose	6.00E-05	6.00E-05	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.2E-07	1.6E-06	

Commercial Property ID:	EPC - Subsurface (mg/kg)	Non-Cancer HQs for Adult Utility Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC2429	34	6.1E-02	2.7E-02	9E-02
PC2430	8.8	1.6E-02	6.9E-03	2E-02
PC2431	6.9	1.2E-02	5.4E-03	2E-02

Summary of Properties by Hazard Range	
Number with HI $\leq$ 1E+00	67
Number with HI $>$ 1E+00	0
Percent with HI $\leq$ 1E+00	100%
Percent with HI $>$ 1E+00	0%
Maximum HI	2E-01

Notes:

Ingestion

$DI = C \times HIF \times RBA$

$HQ = DI/RfD$

Dermal

$DAD = C_{soil} \times ABS_d \times HIF_{soil}$

$RfD_{ABS} = RfD \times ABS_{GI}$

$ABS_{GI} = 1$, so $RfD_{ABS} = RfD$

$HQ = DAD/RfD_{ABS}$

EPC =

Exposure Point Concentration

HI =

Hazard Index

HQ =

Hazard Quotient

mg/kg =

milligrams per kilogram

N/A =

Not Applicable

RBA =

Relative Bioavailability

Table G-3. CANCER HAZARDS TO UTILITY WORKERS AT COMMERCIAL PROPERTIES
Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	3.2E-07	5.0E-06	

Commercial Property ID:	EPC - Subsurface (mg/kg)	Cancer Risks for Adult Utility Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC0006	4.1	2.0E-05	2.0E-05	4E-05
PC0008	4.9	2.4E-05	2.4E-05	5E-05
PC0011	4.3	2.1E-05	2.1E-05	4E-05
PC0012	5.5	2.7E-05	2.7E-05	5E-05
PC0013	11	5.4E-05	5.3E-05	1E-04
PC0016	3.7	1.8E-05	1.8E-05	4E-05
PC0033	7.0	3.4E-05	3.4E-05	7E-05
PC0070	5.8	2.8E-05	2.8E-05	6E-05
PC0111	19	9.3E-05	9.2E-05	2E-04
PC0116	11	5.4E-05	5.3E-05	1E-04
PC0124	14	6.8E-05	6.8E-05	1E-04
PC0161	12	5.9E-05	5.8E-05	1E-04
PC0175	19	9.3E-05	9.2E-05	2E-04
PC0308	12	5.9E-05	5.8E-05	1E-04
PC0442	15	7.3E-05	7.3E-05	1E-04
PC0443	12	5.9E-05	5.8E-05	1E-04
PC0444	7.2	3.5E-05	3.5E-05	7E-05
PC0493	2.4	1.2E-05	1.2E-05	2E-05
PC0567	4.6	2.2E-05	2.2E-05	4E-05
PC0677	3.6	1.8E-05	1.7E-05	4E-05
PC0678	2.8	1.4E-05	1.4E-05	3E-05
PC0686	4.4	2.1E-05	2.1E-05	4E-05
PC0710	82	4.0E-04	4.0E-04	8E-04
PC0712	11	5.4E-05	5.3E-05	1E-04
PC1348	39	1.9E-04	1.9E-04	4E-04
PC1400	16	7.8E-05	7.8E-05	2E-04
PC1407	6.3	3.1E-05	3.1E-05	6E-05
PC1408	5.8	2.8E-05	2.8E-05	6E-05
PC1414	7.0	3.4E-05	3.4E-05	7E-05
PC1426	5.5	2.7E-05	2.7E-05	5E-05
PC1452	7.7	3.8E-05	3.7E-05	7E-05
PC1453	8.2	4.0E-05	4.0E-05	8E-05

Table G-3. CANCER HAZARDS TO UTILITY WORKERS AT COMMERCIAL PROPERTIES
Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	3.2E-07	5.0E-06	

Commercial Property ID:	EPC - Subsurface (mg/kg)	Cancer Risks for Adult Utility Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC1456	5.8	2.8E-05	2.8E-05	6E-05
PC1506	10	4.9E-05	4.8E-05	1E-04
PC1561	12	5.9E-05	5.8E-05	1E-04
PC1602	6.3	3.1E-05	3.1E-05	6E-05
PC1603	17	8.3E-05	8.2E-05	2E-04
PC1618	8.7	4.2E-05	4.2E-05	8E-05
PC1619	14	6.8E-05	6.8E-05	1E-04
PC1645	25	1.2E-04	1.2E-04	2E-04
PC1646	16	7.8E-05	7.8E-05	2E-04
PC1664	4.6	2.2E-05	2.2E-05	4E-05
PC1677	8.0	3.9E-05	3.9E-05	8E-05
PC1686	9.0	4.4E-05	4.4E-05	9E-05
PC1690	6.4	3.1E-05	3.1E-05	6E-05
PC1691	4.4	2.1E-05	2.1E-05	4E-05
PC1700	8.6	4.2E-05	4.2E-05	8E-05
PC1709	5.4	2.6E-05	2.6E-05	5E-05
PC1713	7.5	3.7E-05	3.6E-05	7E-05
PC1719	14	6.8E-05	6.8E-05	1E-04
PC1740	9.3	4.5E-05	4.5E-05	9E-05
PC1851	4.3	2.1E-05	2.1E-05	4E-05
PC1857	7.7	3.8E-05	3.7E-05	7E-05
PC1859	5.8	2.8E-05	2.8E-05	6E-05
PC1861	4.1	2.0E-05	2.0E-05	4E-05
PC1904	11	5.4E-05	5.3E-05	1E-04
PC1958	7.4	3.6E-05	3.6E-05	7E-05
PC1974	12	5.9E-05	5.8E-05	1E-04
PC2061	8.7	4.2E-05	4.2E-05	8E-05
PC2092	6.9	3.4E-05	3.3E-05	7E-05
PC2421	6.9	3.4E-05	3.3E-05	7E-05
PC2426	8.8	4.3E-05	4.3E-05	9E-05
PC2427	7.3	3.6E-05	3.5E-05	7E-05
PC2428	5.9	2.9E-05	2.9E-05	6E-05

Table G-3. CANCER HAZARDS TO UTILITY WORKERS AT COMMERCIAL PROPERTIES
Reasonable Maximum Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	3.2E-07	5.0E-06	

Commercial Property ID:	EPC - Subsurface (mg/kg)	Cancer Risks for Adult Utility Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC2429	34	1.7E-04	1.6E-04	3E-04
PC2430	8.8	4.3E-05	4.3E-05	9E-05
PC2431	6.9	3.4E-05	3.3E-05	7E-05

Summary of Properties by Risk Range	
Number with Risk $\leq$ 1E-06	0
Number with Risk > 1E-06 to 1E-05	0
Number with Risk > 1E-05 to 1E-04	58
Number with Risk > 1E-4	9
Percent with Risk $\leq$ 1E-06	0%
Percent with Risk > 1E-06 to 1E-05	0%
Percent with Risk > 1E-05 to 1E-04	87%
Percent with Risk > 1E-4	13%
Maximum Risk	8E-04

Notes:

Ingestion

Excess Cancer Risk = $DI_L \times SF$

$DI = C \times HIF \times RBA$

Dermal

Excess Cancer Risk = $DAD \times SF$

$DAD = C_{soil} \times ABS_d \times HIF_{soil}$

$RfD_{ABS} = RfD \times ABS_{GI}$

$ABS_{GI} = 1$, so $RfD_{ABS} = RfD$

EPC =

mg/kg =

N/A =

RBA =

Exposure Point Concentration

milligrams per kilogram

Not Applicable

Relative Bioavailability

Table G-4. CANCER HAZARDS TO UTILITY WORKERS AT COMMERCIAL PROPERTIES
Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.9E-08	2.0E-07	

Commercial Property ID:	EPC - Subsurface (mg/kg)	Cancer Risks for Adult Utility Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC0006	4.1	1.8E-06	7.9E-07	3E-06
PC0008	4.9	2.2E-06	9.5E-07	3E-06
PC0011	4.3	1.9E-06	8.3E-07	3E-06
PC0012	5.5	2.4E-06	1.1E-06	3E-06
PC0013	11	4.8E-06	2.1E-06	7E-06
PC0016	3.7	1.6E-06	7.2E-07	2E-06
PC0033	7.0	3.1E-06	1.4E-06	4E-06
PC0070	5.8	2.5E-06	1.1E-06	4E-06
PC0111	19	8.4E-06	3.7E-06	1E-05
PC0116	11	4.8E-06	2.1E-06	7E-06
PC0124	14	6.2E-06	2.7E-06	9E-06
PC0161	12	5.3E-06	2.3E-06	8E-06
PC0175	19	8.4E-06	3.7E-06	1E-05
PC0308	12	5.3E-06	2.3E-06	8E-06
PC0442	15	6.6E-06	2.9E-06	1E-05
PC0443	12	5.3E-06	2.3E-06	8E-06
PC0444	7.2	3.2E-06	1.4E-06	5E-06
PC0493	2.4	1.1E-06	4.7E-07	2E-06
PC0567	4.6	2.0E-06	8.9E-07	3E-06
PC0677	3.6	1.6E-06	7.0E-07	2E-06
PC0678	2.8	1.2E-06	5.4E-07	2E-06
PC0686	4.4	1.9E-06	8.5E-07	3E-06
PC0710	82	3.6E-05	1.6E-05	5E-05
PC0712	11	4.8E-06	2.1E-06	7E-06
PC1348	39	1.7E-05	7.6E-06	2E-05
PC1400	16	7.0E-06	3.1E-06	1E-05
PC1407	6.3	2.8E-06	1.2E-06	4E-06
PC1408	5.8	2.5E-06	1.1E-06	4E-06
PC1414	7.0	3.1E-06	1.4E-06	4E-06
PC1426	5.5	2.4E-06	1.1E-06	3E-06
PC1452	7.7	3.4E-06	1.5E-06	5E-06
PC1453	8.2	3.6E-06	1.6E-06	5E-06

Table G-4. CANCER HAZARDS TO UTILITY WORKERS AT COMMERCIAL PROPERTIES
Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.9E-08	2.0E-07	

Commercial Property ID:	EPC - Subsurface (mg/kg)	Cancer Risks for Adult Utility Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC1456	5.8	2.5E-06	1.1E-06	4E-06
PC1506	10	4.4E-06	1.9E-06	6E-06
PC1561	12	5.3E-06	2.3E-06	8E-06
PC1602	6.3	2.8E-06	1.2E-06	4E-06
PC1603	17	7.5E-06	3.3E-06	1E-05
PC1618	8.7	3.8E-06	1.7E-06	6E-06
PC1619	14	6.2E-06	2.7E-06	9E-06
PC1645	25	1.1E-05	4.8E-06	2E-05
PC1646	16	7.0E-06	3.1E-06	1E-05
PC1664	4.6	2.0E-06	8.9E-07	3E-06
PC1677	8.0	3.5E-06	1.6E-06	5E-06
PC1686	9.0	4.0E-06	1.7E-06	6E-06
PC1690	6.4	2.8E-06	1.2E-06	4E-06
PC1691	4.4	1.9E-06	8.5E-07	3E-06
PC1700	8.6	3.8E-06	1.7E-06	5E-06
PC1709	5.4	2.4E-06	1.0E-06	3E-06
PC1713	7.5	3.3E-06	1.5E-06	5E-06
PC1719	14	6.2E-06	2.7E-06	9E-06
PC1740	9.3	4.1E-06	1.8E-06	6E-06
PC1851	4.3	1.9E-06	8.3E-07	3E-06
PC1857	7.7	3.4E-06	1.5E-06	5E-06
PC1859	5.8	2.5E-06	1.1E-06	4E-06
PC1861	4.1	1.8E-06	7.9E-07	3E-06
PC1904	11	4.8E-06	2.1E-06	7E-06
PC1958	7.4	3.3E-06	1.4E-06	5E-06
PC1974	12	5.3E-06	2.3E-06	8E-06
PC2061	8.7	3.8E-06	1.7E-06	6E-06
PC2092	6.9	3.0E-06	1.3E-06	4E-06
PC2421	6.9	3.0E-06	1.3E-06	4E-06
PC2426	8.8	3.9E-06	1.7E-06	6E-06
PC2427	7.3	3.2E-06	1.4E-06	5E-06
PC2428	5.9	2.6E-06	1.1E-06	4E-06

Table G-4. CANCER HAZARDS TO UTILITY WORKERS AT COMMERCIAL PROPERTIES
Central Tendency Estimate

Toxicity and Exposure Values	Arsenic		
	Ingestion	Dermal	
Slope Factor	3.20E+01	3.20E+01	
Dermal Absorption Fraction	0.03	0.03	
Project Specific RBA - Arsenic	0.48	N/A	
Human Intake Factor (HIF) for receptor:	2.9E-08	2.0E-07	

Commercial Property ID:	EPC - Subsurface (mg/kg)	Cancer Risks for Adult Utility Workers		
		Arsenic		
		Ingestion	Dermal	Total
PC2429	34	1.5E-05	6.6E-06	2E-05
PC2430	8.8	3.9E-06	1.7E-06	6E-06
PC2431	6.9	3.0E-06	1.3E-06	4E-06

Summary of Properties by Risk Range	
Number with Risk $\leq 1\text{E-}06$	0
Number with Risk $> 1\text{E-}06$ to $1\text{E-}05$	63
Number with Risk $> 1\text{E-}05$ to $1\text{E-}04$	4
Number with Risk $> 1\text{E-}4$	0
Percent with Risk $\leq 1\text{E-}06$	0%
Percent with Risk $> 1\text{E-}06$ to $1\text{E-}05$	94%
Percent with Risk $> 1\text{E-}05$ to $1\text{E-}04$	6%
Percent with Risk $> 1\text{E-}4$	0%
Maximum Risk	5E-05

Notes:

Ingestion

Excess Cancer Risk = $DI_L \times SF$

$DI = C \times HIF \times RBA$

Dermal

Excess Cancer Risk = $DAD \times SF$

$DAD = C_{soil} \times ABS_d \times HIF_{soil}$

$RfD_{ABS} = RfD \times ABS_{GI}$

$ABS_{GI} = 1$, so $RfD_{ABS} = RfD$

EPC =

mg/kg =

N/A =

RBA =

Exposure Point Concentration

milligrams per kilogram

Not Applicable

Relative Bioavailability

Appendix H
Individual Risk Estimates for Lead at Alleyways in Child Alleyway Visitors

Table H-1.	IEUBK Output File
Table H-2.	IEUBK Input File

Table H-1. IEUBK OUTPUT FILE

LEAD BATCH MODE OUTPUT FILE

These IEUBK Model results are valid as long as they were produced with an official, unmodified version of the IEUBK Model with a software certificate.

While IEUBK Model output is generally written with three digits to the right of the decimal point, the true precision of the output is strongly influenced by least precise input values.

=====

Model Version: 2.0 Build1

User Name:

Date:

Site Name:

Operable Unit:

Run Mode: Research

* : signify default values used in place of missing input data.

---: signify missing input data.

PBB & PRED are the observed and predicted blood Pb levels in µg/dL.

Percent exceedance was calculated using values of GSD and PbB Cutoff as follows:

GSD = 1.600

PbB Cutoff (C) = 5.000 µg/dL

Input File: IEUBK input_FINAL_2026.03.02.dat

ID	FAM	BLK	AGE	SOIL	DUST	WATER	AIR	OTHER	ABSSoil	ABSDust	PBB	PRED	P(PbB>C)
	(mon)		(µg/g)	(µg/g)	(µg/L)	(µg/m ³)	(µg/day)	(%)	(%)	(µg/dL)	(µg/dL)	(%)	

AC001	000	000	50	300.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.97	2.394

AC002	000 000	50	250.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.83	1.607
AC003	000 000	50	290.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.94	2.221
AC004	000 000	50	500.0	22.0	0.90	0.02	0.000	32.000	32.000	---	2.55	7.609
AC005	000 000	50	460.0	22.0	0.90	0.02	0.000	32.000	32.000	---	2.44	6.306
AC006	000 000	50	500.0	22.0	0.90	0.02	0.000	32.000	32.000	---	2.55	7.609
AC007	000 000	50	230.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.77	1.347
AC008	000 000	50	160.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.56	0.661
AC009	000 000	50	210.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.71	1.117
AC010	000 000	50	210.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.71	1.117
AC011	000 000	50	550.0	22.0	0.90	0.02	0.000	32.000	32.000	---	2.69	9.403
AC012	000 000	50	100.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.38	0.310
AC013	000 000	50	240.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.80	1.473
AC014	000 000	50	150.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.53	0.589
AC015	000 000	50	220.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.74	1.228
AC016	000 000	50	290.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.94	2.221
AC017	000 000	50	160.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.56	0.661
AC018	000 000	50	290.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.94	2.221
AC019	000 000	50	260.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.86	1.749
AC020	000 000	50	94.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.36	0.285
AC021	000 000	50	230.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.77	1.347
AC022	000 000	50	99.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.38	0.306
AC023	000 000	50	130.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.47	0.462
AC024	000 000	50	120.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.44	0.406
AC025	000 000	50	250.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.83	1.607
AC026	000 000	50	160.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.56	0.661
AC028	000 000	50	90.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.35	0.269
AC029	000 000	50	130.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.47	0.462
AC030	000 000	50	170.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.59	0.739
AC031	000 000	50	180.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.62	0.824
AC032	000 000	50	150.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.53	0.589
AC033	000 000	50	130.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.47	0.462
AC034	000 000	50	230.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.77	1.347
AC035	000 000	50	120.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.44	0.406

AC037	000 000	50	130.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.47	0.462
AC038	000 000	50	120.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.44	0.406
AC039	000 000	50	170.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.59	0.739
AC040	000 000	50	200.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.68	1.012
AC041	000 000	50	160.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.56	0.661
AC042	000 000	50	150.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.53	0.589
AC043	000 000	50	190.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.65	0.915
AC044	000 000	50	230.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.77	1.347
AC045	000 000	50	260.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.86	1.749
AC046	000 000	50	150.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.53	0.589
AC047	000 000	50	190.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.65	0.915
AC048	000 000	50	100.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.38	0.310
AC051	000 000	50	70.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.29	0.199
AC052	000 000	50	220.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.74	1.228
AC053	000 000	50	190.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.65	0.915
AC054	000 000	50	97.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.37	0.297
AC055	000 000	50	93.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.36	0.281
AC057	000 000	50	400.0	22.0	0.90	0.02	0.000	32.000	32.000	---	2.26	4.589
AC058	000 000	50	120.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.44	0.406
AC059	000 000	50	280.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.91	2.055
AC060	000 000	50	280.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.91	2.055
AC061	000 000	50	260.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.86	1.749
AC062	000 000	50	250.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.83	1.607
AC063	000 000	50	280.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.91	2.055
AC064	000 000	50	290.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.94	2.221
AC065	000 000	50	430.0	22.0	0.90	0.02	0.000	32.000	32.000	---	2.35	5.411
AC066	000 000	50	240.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.80	1.473
AC067	000 000	50	210.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.71	1.117
AC068	000 000	50	190.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.65	0.915
AC069	000 000	50	190.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.65	0.915
AC070	000 000	50	220.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.74	1.228
AC071	000 000	50	360.0	22.0	0.90	0.02	0.000	32.000	32.000	---	2.15	3.611
AC072	000 000	50	400.0	22.0	0.90	0.02	0.000	32.000	32.000	---	2.26	4.589

AC073	000 000 50	320.0	22.0	0.90	0.02	0.000	32.000	32.000	---	2.03	2.766
AC074	000 000 50	310.0	22.0	0.90	0.02	0.000	32.000	32.000	---	2.00	2.576
AC075	000 000 50	170.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.59	0.739
AC076	000 000 50	370.0	22.0	0.90	0.02	0.000	32.000	32.000	---	2.18	3.843
AC077	000 000 50	340.0	22.0	0.90	0.02	0.000	32.000	32.000	---	2.09	3.172
AC078	000 000 50	300.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.97	2.394
AC079	000 000 50	220.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.74	1.228
AC080	000 000 50	220.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.74	1.228
AC081	000 000 50	270.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.89	1.898
AC082	000 000 50	180.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.62	0.824
AC083	000 000 50	170.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.59	0.739
AC084	000 000 50	470.0	22.0	0.90	0.02	0.000	32.000	32.000	---	2.47	6.620
AC085	000 000 50	510.0	22.0	0.90	0.02	0.000	32.000	32.000	---	2.58	7.954
AC086	000 000 50	210.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.71	1.117
AC087	000 000 50	210.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.71	1.117
AC088	000 000 50	210.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.71	1.117
AC089	000 000 50	180.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.62	0.824
AC090	000 000 50	160.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.56	0.661
AC091	000 000 50	270.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.89	1.898
AC092	000 000 50	500.0	22.0	0.90	0.02	0.000	32.000	32.000	---	2.55	7.609
AC093	000 000 50	360.0	22.0	0.90	0.02	0.000	32.000	32.000	---	2.15	3.611
AC094	000 000 50	340.0	22.0	0.90	0.02	0.000	32.000	32.000	---	2.09	3.172
AC095	000 000 50	220.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.74	1.228
AC096	000 000 50	280.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.91	2.055
AC097	000 000 50	270.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.89	1.898
AC098	000 000 50	280.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.91	2.055
AC099	000 000 50	99.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.38	0.306
AC100	000 000 50	270.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.89	1.898
AC101	000 000 50	130.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.47	0.462
AC102	000 000 50	160.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.56	0.661
AC103	000 000 50	110.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.41	0.356
AC104	000 000 50	160.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.56	0.661
AC105	000 000 50	230.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.77	1.347

AC106 000 000 50	88.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.35	0.261
AC107 000 000 50	78.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.32	0.225
AC108 000 000 50	100.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.38	0.310
AC109 000 000 50	50.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.23	0.143
PC0321 000 000 50	303.0	22.0	0.90	0.02	0.000	32.000	32.000	---	1.98	2.448

Table H-2. IEUBK INPUT FILE

IEUBK input data file.

NOTE: actual data begins on line 4!!

ID	FAM	BLOCK	AGE	SOIL	DUST	WATER	AIR	OTHER	PBB	ABSSoil	ABSDust
AC001	0	0	50	300	22	0.9	0.0166	0	*	32	32
AC002	0	0	50	250	22	0.9	0.0166	0	*	32	32
AC003	0	0	50	290	22	0.9	0.0166	0	*	32	32
AC004	0	0	50	500	22	0.9	0.0166	0	*	32	32
AC005	0	0	50	460	22	0.9	0.0166	0	*	32	32
AC006	0	0	50	500	22	0.9	0.0166	0	*	32	32
AC007	0	0	50	230	22	0.9	0.0166	0	*	32	32
AC008	0	0	50	160	22	0.9	0.0166	0	*	32	32
AC009	0	0	50	210	22	0.9	0.0166	0	*	32	32
AC010	0	0	50	210	22	0.9	0.0166	0	*	32	32
AC011	0	0	50	550	22	0.9	0.0166	0	*	32	32
AC012	0	0	50	100	22	0.9	0.0166	0	*	32	32
AC013	0	0	50	240	22	0.9	0.0166	0	*	32	32
AC014	0	0	50	150	22	0.9	0.0166	0	*	32	32
AC015	0	0	50	220	22	0.9	0.0166	0	*	32	32
AC016	0	0	50	290	22	0.9	0.0166	0	*	32	32
AC017	0	0	50	160	22	0.9	0.0166	0	*	32	32
AC018	0	0	50	290	22	0.9	0.0166	0	*	32	32
AC019	0	0	50	260	22	0.9	0.0166	0	*	32	32
AC020	0	0	50	94	22	0.9	0.0166	0	*	32	32
AC021	0	0	50	230	22	0.9	0.0166	0	*	32	32
AC022	0	0	50	99	22	0.9	0.0166	0	*	32	32
AC023	0	0	50	130	22	0.9	0.0166	0	*	32	32
AC024	0	0	50	120	22	0.9	0.0166	0	*	32	32
AC025	0	0	50	250	22	0.9	0.0166	0	*	32	32
AC026	0	0	50	160	22	0.9	0.0166	0	*	32	32
AC028	0	0	50	90	22	0.9	0.0166	0	*	32	32
AC029	0	0	50	130	22	0.9	0.0166	0	*	32	32
AC030	0	0	50	170	22	0.9	0.0166	0	*	32	32
AC031	0	0	50	180	22	0.9	0.0166	0	*	32	32

AC032	0	0	50	150	22	0.9	0.0166	0	*	32	32
AC033	0	0	50	130	22	0.9	0.0166	0	*	32	32
AC034	0	0	50	230	22	0.9	0.0166	0	*	32	32
AC035	0	0	50	120	22	0.9	0.0166	0	*	32	32
AC037	0	0	50	130	22	0.9	0.0166	0	*	32	32
AC038	0	0	50	120	22	0.9	0.0166	0	*	32	32
AC039	0	0	50	170	22	0.9	0.0166	0	*	32	32
AC040	0	0	50	200	22	0.9	0.0166	0	*	32	32
AC041	0	0	50	160	22	0.9	0.0166	0	*	32	32
AC042	0	0	50	150	22	0.9	0.0166	0	*	32	32
AC043	0	0	50	190	22	0.9	0.0166	0	*	32	32
AC044	0	0	50	230	22	0.9	0.0166	0	*	32	32
AC045	0	0	50	260	22	0.9	0.0166	0	*	32	32
AC046	0	0	50	150	22	0.9	0.0166	0	*	32	32
AC047	0	0	50	190	22	0.9	0.0166	0	*	32	32
AC048	0	0	50	100	22	0.9	0.0166	0	*	32	32
AC051	0	0	50	70	22	0.9	0.0166	0	*	32	32
AC052	0	0	50	220	22	0.9	0.0166	0	*	32	32
AC053	0	0	50	190	22	0.9	0.0166	0	*	32	32
AC054	0	0	50	97	22	0.9	0.0166	0	*	32	32
AC055	0	0	50	93	22	0.9	0.0166	0	*	32	32
AC057	0	0	50	400	22	0.9	0.0166	0	*	32	32
AC058	0	0	50	120	22	0.9	0.0166	0	*	32	32
AC059	0	0	50	280	22	0.9	0.0166	0	*	32	32
AC060	0	0	50	280	22	0.9	0.0166	0	*	32	32
AC061	0	0	50	260	22	0.9	0.0166	0	*	32	32
AC062	0	0	50	250	22	0.9	0.0166	0	*	32	32
AC063	0	0	50	280	22	0.9	0.0166	0	*	32	32
AC064	0	0	50	290	22	0.9	0.0166	0	*	32	32
AC065	0	0	50	430	22	0.9	0.0166	0	*	32	32
AC066	0	0	50	240	22	0.9	0.0166	0	*	32	32
AC067	0	0	50	210	22	0.9	0.0166	0	*	32	32
AC068	0	0	50	190	22	0.9	0.0166	0	*	32	32

AC069	0	0	50	190	22	0.9	0.0166	0	*	32	32
AC070	0	0	50	220	22	0.9	0.0166	0	*	32	32
AC071	0	0	50	360	22	0.9	0.0166	0	*	32	32
AC072	0	0	50	400	22	0.9	0.0166	0	*	32	32
AC073	0	0	50	320	22	0.9	0.0166	0	*	32	32
AC074	0	0	50	310	22	0.9	0.0166	0	*	32	32
AC075	0	0	50	170	22	0.9	0.0166	0	*	32	32
AC076	0	0	50	370	22	0.9	0.0166	0	*	32	32
AC077	0	0	50	340	22	0.9	0.0166	0	*	32	32
AC078	0	0	50	300	22	0.9	0.0166	0	*	32	32
AC079	0	0	50	220	22	0.9	0.0166	0	*	32	32
AC080	0	0	50	220	22	0.9	0.0166	0	*	32	32
AC081	0	0	50	270	22	0.9	0.0166	0	*	32	32
AC082	0	0	50	180	22	0.9	0.0166	0	*	32	32
AC083	0	0	50	170	22	0.9	0.0166	0	*	32	32
AC084	0	0	50	470	22	0.9	0.0166	0	*	32	32
AC085	0	0	50	510	22	0.9	0.0166	0	*	32	32
AC086	0	0	50	210	22	0.9	0.0166	0	*	32	32
AC087	0	0	50	210	22	0.9	0.0166	0	*	32	32
AC088	0	0	50	210	22	0.9	0.0166	0	*	32	32
AC089	0	0	50	180	22	0.9	0.0166	0	*	32	32
AC090	0	0	50	160	22	0.9	0.0166	0	*	32	32
AC091	0	0	50	270	22	0.9	0.0166	0	*	32	32
AC092	0	0	50	500	22	0.9	0.0166	0	*	32	32
AC093	0	0	50	360	22	0.9	0.0166	0	*	32	32
AC094	0	0	50	340	22	0.9	0.0166	0	*	32	32
AC095	0	0	50	220	22	0.9	0.0166	0	*	32	32
AC096	0	0	50	280	22	0.9	0.0166	0	*	32	32
AC097	0	0	50	270	22	0.9	0.0166	0	*	32	32
AC098	0	0	50	280	22	0.9	0.0166	0	*	32	32
AC099	0	0	50	99	22	0.9	0.0166	0	*	32	32
AC100	0	0	50	270	22	0.9	0.0166	0	*	32	32
AC101	0	0	50	130	22	0.9	0.0166	0	*	32	32

AC102	0	0	50	160	22	0.9	0.0166	0	*	32	32
AC103	0	0	50	110	22	0.9	0.0166	0	*	32	32
AC104	0	0	50	160	22	0.9	0.0166	0	*	32	32
AC105	0	0	50	230	22	0.9	0.0166	0	*	32	32
AC106	0	0	50	88	22	0.9	0.0166	0	*	32	32
AC107	0	0	50	78	22	0.9	0.0166	0	*	32	32
AC108	0	0	50	100	22	0.9	0.0166	0	*	32	32
AC109	0	0	50	50	22	0.9	0.0166	0	*	32	32
PC0321	0	0	50	303	22	0.9	0.0166	0	*	32	32

Appendix I

Individual Risk Estimates for Lead in Adults at Alleyways and Commercial Properties

Table I-1.	ALM calculation set up and risk estimates for adult alleyway visitors in alleyways
Table I-2.	ALM calculation set up and risk estimates for composite-commercial workers in alleyways
Table I-3.	ALM calculation set up and risk estimates for construction workers in alleyways
Table I-4.	ALM calculation set up and risk estimates for construction workers in commercial properties
Table I-5.	ALM calculation set up and risk estimates for utility workers in alleyways
Table I-6.	ALM calculation set up and risk estimates for utility workers in commercial properties

Table I-1. ALM RISK ESTIMATES FOR ADULT VISITORS IN ALLEYWAYS

Calculations of Blood Lead Concentrations (PbBs) and Risk in Nonresidential Areas
U.S. EPA Technical Review Workgroup for Lead
Version date 06/14/2017

Edit Red Cells

Variable	Description of Variable	Units	GSDi and PbBo from Analysis of NHANES 2009-2014	GSDi and PbBo from Analysis of NHANES 2007-2010	GSDi and PbBo from Analysis of NHANES 2004-2007	GSDi and PbBo from Analysis of NHANES III (Phases 1&2)
PbS	Soil lead concentration	µg/g or ppm	300	1129	776	100
R _{fetal/maternal}	Fetal/maternal PbB ratio	--	0.9	0.9	0.9	0.9
BKSF	Biokinetic Slope Factor	µg/dL per µg/day	0.4	0.4	0.4	0.4
GSD _i	Geometric standard deviation PbB	--	1.8	1.7	1.8	2.1
PbB ₀	Baseline PbB	µg/dL	0.6	0.7	1.0	1.5
IR _S	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050	0.050	0.050
IR _{S+D}	Total ingestion rate of outdoor soil and indoor dust	g/day	--	--	--	--
W _S	Weighting factor; fraction of IR _{S+D} ingested as outdoor soil	--	--	--	--	--
K _{SD}	Mass fraction of soil in dust	--	--	--	--	--
AF _{S, D}	Absorption fraction (same for soil and dust)	--	0.126	0.12	0.12	0.12
EF _{S, D}	Exposure frequency (same for soil and dust)	days/yr	36	219	219	219
AT _{S, D}	Averaging time (same for soil and dust)	days/yr	252	365	365	365
PbB _{adult}	PbB of adult worker, geometric mean	µg/dL	0.7	2.3	2.1	1.6
PbB _{fetal, 0.95}	95th percentile PbB among fetuses of adult workers	µg/dL	1.7	5.0	5.0	5.0
PbB _t	Target PbB level of concern (e.g., 2-8 ug/dL)	µg/dL	5.0	5.0	5.0	5.0
P(PbB _{fetal} > PbB _t)	Probability that fetal PbB exceeds target PbB, assuming lognormal distribution	%	0.0%	5.0%	5.0%	5.0%

Calculations assuming GSDi and PbBo from Analysis of NHANES 2009-2014				
Property ID	Soil Concentration (mg/kg)	Geomean Adult PbB (µg/dL)	95th Percentile PbB among Fetuses of Adults	Probability Fetal PbB Exceeds 5 µg/dL (%)
AC001	300	0.7	1.7	0.0%
AC002	250	0.7	1.6	0.0%
AC003	290	0.7	1.7	0.0%
AC004	500	0.8	1.8	0.0%
AC005	460	0.8	1.8	0.0%
AC006	500	0.8	1.8	0.0%
AC007	230	0.7	1.6	0.0%
AC008	160	0.7	1.6	0.0%
AC009	210	0.7	1.6	0.0%
AC010	210	0.7	1.6	0.0%
AC011	550	0.8	1.9	0.0%
AC012	100	0.6	1.5	0.0%
AC013	240	0.7	1.6	0.0%
AC014	150	0.7	1.5	0.0%
AC015	220	0.7	1.6	0.0%
AC016	290	0.7	1.7	0.0%
AC017	160	0.7	1.6	0.0%
AC018	290	0.7	1.7	0.0%
AC019	260	0.7	1.6	0.0%
AC020	94	0.6	1.5	0.0%
AC021	230	0.7	1.6	0.0%
AC022	99	0.6	1.5	0.0%
AC023	130	0.6	1.5	0.0%
AC024	120	0.6	1.5	0.0%
AC025	250	0.7	1.6	0.0%
AC026	160	0.7	1.6	0.0%
AC028	90	0.6	1.5	0.0%
AC029	130	0.6	1.5	0.0%
AC030	170	0.7	1.6	0.0%
AC031	180	0.7	1.6	0.0%
AC032	150	0.7	1.5	0.0%
AC033	130	0.6	1.5	0.0%
AC034	230	0.7	1.6	0.0%
AC035	120	0.6	1.5	0.0%
AC037	130	0.6	1.5	0.0%
AC038	120	0.6	1.5	0.0%
AC039	170	0.7	1.6	0.0%
AC040	200	0.7	1.6	0.0%
AC041	160	0.7	1.6	0.0%
AC042	150	0.7	1.5	0.0%
AC043	190	0.7	1.6	0.0%
AC044	230	0.7	1.6	0.0%
AC045	260	0.7	1.6	0.0%
AC046	150	0.7	1.5	0.0%
AC047	190	0.7	1.6	0.0%
AC048	100	0.6	1.5	0.0%
AC051	70	0.6	1.5	0.0%
AC052	220	0.7	1.6	0.0%
AC053	190	0.7	1.6	0.0%
AC054	97	0.6	1.5	0.0%
AC055	93	0.6	1.5	0.0%
AC057	400	0.7	1.8	0.0%
AC058	120	0.6	1.5	0.0%
AC059	280	0.7	1.7	0.0%
AC060	280	0.7	1.7	0.0%
AC061	260	0.7	1.6	0.0%
AC062	250	0.7	1.6	0.0%
AC063	280	0.7	1.7	0.0%
AC064	290	0.7	1.7	0.0%
AC065	430	0.8	1.8	0.0%
AC066	240	0.7	1.6	0.0%
AC067	210	0.7	1.6	0.0%
AC068	190	0.7	1.6	0.0%
AC069	190	0.7	1.6	0.0%
AC070	220	0.7	1.6	0.0%
AC071	360	0.7	1.7	0.0%
AC072	400	0.7	1.8	0.0%
AC073	320	0.7	1.7	0.0%
AC074	310	0.7	1.7	0.0%

AC075	170	0.7	1.6	0.0%
AC076	370	0.7	1.7	0.0%
AC077	340	0.7	1.7	0.0%
AC078	300	0.7	1.7	0.0%
AC079	220	0.7	1.6	0.0%
AC080	220	0.7	1.6	0.0%
AC081	270	0.7	1.7	0.0%
AC082	180	0.7	1.6	0.0%
AC083	170	0.7	1.6	0.0%
AC084	470	0.8	1.8	0.0%
AC085	510	0.8	1.9	0.0%
AC086	210	0.7	1.6	0.0%
AC087	210	0.7	1.6	0.0%
AC088	210	0.7	1.6	0.0%
AC089	180	0.7	1.6	0.0%
AC090	160	0.7	1.6	0.0%
AC091	270	0.7	1.7	0.0%
AC092	500	0.8	1.8	0.0%
AC093	360	0.7	1.7	0.0%
AC094	340	0.7	1.7	0.0%
AC095	220	0.7	1.6	0.0%
AC096	280	0.7	1.7	0.0%
AC097	270	0.7	1.7	0.0%
AC098	280	0.7	1.7	0.0%
AC099	99	0.6	1.5	0.0%
AC100	270	0.7	1.7	0.0%
AC101	130	0.6	1.5	0.0%
AC102	160	0.7	1.6	0.0%
AC103	110	0.6	1.5	0.0%
AC104	160	0.7	1.6	0.0%
AC105	230	0.7	1.6	0.0%
AC106	88	0.6	1.5	0.0%
AC107	78	0.6	1.5	0.0%
AC108	100	0.6	1.5	0.0%
AC109	50	0.6	1.5	0.0%
PC0321	303	0.7	1.7	0.0%

Summary of Properties by P(PbB _{fetal} > PbB _t)	
Number with P(PbB _{fetal} > PbB _t) <5%	105
Number with P(PbB _{fetal} > PbB _t) ≥5%	0
Number with P(PbB _{fetal} > PbB _t) ≥10%	0
Number with P(PbB _{fetal} > PbB _t) ≥20%	0
Percent with P(PbB _{fetal} > PbB _t) <5%	100%
Percent with P(PbB _{fetal} > PbB _t) ≥5%	0%
Percent with P(PbB _{fetal} > PbB _t) ≥10%	0%
Percent with P(PbB _{fetal} > PbB _t) ≥20%	0%

Table I-2. ALM RISK ESTIMATES FOR COMPOSITE-COMMERCIAL WORKERS AT COMMERCIAL PROPERTIES

Calculations of Blood Lead Concentrations (PbBs) and Risk in Nonresidential Areas

U.S. EPA Technical Review Workgroup for Lead

Version date 06/14/2017

Edit Red Cells

Variable	Description of Variable	Units	GSDi and PbBo from Analysis of NHANES 2009-2014	GSDi and PbBo from Analysis of NHANES 2007-2010	GSDi and PbBo from Analysis of NHANES 2004-2007	GSDi and PbBo from Analysis of NHANES III (Phases 1&2)
PbS	Soil lead concentration	µg/g or ppm	99	1129	776	100
R _{fetal/maternal}	Fetal/maternal PbB ratio	--	0.9	0.9	0.9	0.9
BKSF	Biokinetic Slope Factor	µg/dL per µg/day	0.4	0.4	0.4	0.4
GSD _i	Geometric standard deviation PbB	--	1.8	1.7	1.8	2.1
PbB ₀	Baseline PbB	µg/dL	0.6	0.7	1.0	1.5
IR _S	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050	0.050	0.050
IR _{S+D}	Total ingestion rate of outdoor soil and indoor dust	g/day	--	--	--	--
W _S	Weighting factor; fraction of IR _{S+D} ingested as outdoor soil	--	--	--	--	--
K _{SD}	Mass fraction of soil in dust	--	--	--	--	--
AF _{S, D}	Absorption fraction (same for soil and dust)	--	0.126	0.12	0.12	0.12
EF _{S, D}	Exposure frequency (same for soil and dust)	days/yr	219	219	219	219
AT _{S, D}	Averaging time (same for soil and dust)	days/yr	365	365	365	365
PbB _{adult}	PbB of adult worker, geometric mean	µg/dL	0.7	2.3	2.1	1.6
PbB _{fetal, 0.95}	95th percentile PbB among fetuses of adult workers	µg/dL	1.8	5.0	5.0	5.0
PbB _t	Target PbB level of concern (e.g., 2-8 ug/dL)	µg/dL	5.0	5.0	5.0	5.0
P(PbB _{fetal} > PbB _t)	Probability that fetal PbB exceeds target PbB, assuming lognormal distribution	%	0.0%	5.0%	5.0%	5.0%

Calculations assuming GSDi and PbBo from Analysis of NHANES 2009-2014				
Property ID	Soil Concentration (mg/kg)	Geomean Adult PbB (µg/dL)	95th Percentile PbB among Fetuses of Adults	Probability Fetal PbB Exceeds 5 µg/dL (%)
PC0006	99	0.7	1.8	0.0%
PC0008	100	0.8	1.8	0.0%
PC0011	25	0.6	1.5	0.0%
PC0012	33	0.6	1.5	0.0%
PC0013	350	1.1	2.7	0.3%
PC0016	58	0.7	1.6	0.0%
PC0033	200	0.9	2.1	0.1%
PC0070	110	0.8	1.8	0.0%
PC0111	98	0.7	1.8	0.0%
PC0116	160	0.8	2.0	0.1%
PC0124	110	0.8	1.8	0.0%
PC0161	140	0.8	1.9	0.1%
PC0175	200	0.9	2.1	0.1%
PC0308	170	0.9	2.0	0.1%
PC0442	34	0.7	1.5	0.0%
PC0443	120	0.8	1.8	0.0%
PC0444	63	0.7	1.6	0.0%
PC0493	110	0.8	1.8	0.0%
PC0567	150	0.8	2.0	0.1%
PC0677	120	0.8	1.8	0.0%
PC0678	180	0.9	2.1	0.1%
PC0686	420	1.2	2.9	0.5%
PC0710	380	1.2	2.8	0.4%
PC0712	660	1.6	3.8	1.7%
PC1348	210	0.9	2.2	0.1%
PC1400	330	1.1	2.6	0.3%
PC1407	550	1.4	3.4	1.1%
PC1408	65	0.7	1.7	0.0%
PC1414	230	0.9	2.2	0.1%
PC1426	190	0.9	2.1	0.1%
PC1452	370	1.2	2.7	0.4%
PC1453	260	1.0	2.4	0.2%
PC1456	390	1.2	2.8	0.4%
PC1506	290	1.0	2.5	0.2%
PC1561	390	1.2	2.8	0.4%
PC1602	62	0.7	1.6	0.0%
PC1603	200	0.9	2.1	0.1%
PC1618	200	0.9	2.1	0.1%
PC1619	470	1.3	3.1	0.7%
PC1645	340	1.1	2.6	0.3%
PC1646	230	0.9	2.2	0.1%
PC1664	320	1.1	2.6	0.3%
PC1677	330	1.1	2.6	0.3%
PC1686	190	0.9	2.1	0.1%
PC1690	86	0.7	1.7	0.0%
PC1691	310	1.1	2.5	0.3%
PC1700	220	0.9	2.2	0.1%
PC1709	130	0.8	1.9	0.0%
PC1713	700	1.7	3.9	2.0%
PC1719	310	1.1	2.5	0.3%
PC1740	240	1.0	2.3	0.1%
PC1851	140	0.8	1.9	0.1%
PC1857	290	1.0	2.5	0.2%
PC1859	210	0.9	2.2	0.1%
PC1861	89	0.7	1.7	0.0%
PC1904	270	1.0	2.4	0.2%
PC1958	200	0.9	2.1	0.1%
PC1974	410	1.2	2.9	0.5%
PC2061	320	1.1	2.6	0.3%
PC2092	230	0.9	2.2	0.1%
PC2421	240	1.0	2.3	0.1%
PC2426	270	1.0	2.4	0.2%
PC2427	240	1.0	2.3	0.1%
PC2428	160	0.8	2.0	0.1%
PC2429	1100	2.3	5.4	6.3%
PC2430	120	0.8	1.8	0.0%
PC2431	130	0.8	1.9	0.0%

Summary of Properties by $P(\text{PbB}_{\text{fetal}} > \text{PbB}_t)$	
Number with $P(\text{PbB}_{\text{fetal}} > \text{PbB}_t) < 5\%$	66
Number with $P(\text{PbB}_{\text{fetal}} > \text{PbB}_t) \geq 5\%$	1
Number with $P(\text{PbB}_{\text{fetal}} > \text{PbB}_t) \geq 10\%$	0
Number with $P(\text{PbB}_{\text{fetal}} > \text{PbB}_t) \geq 20\%$	0
Percent with $P(\text{PbB}_{\text{fetal}} > \text{PbB}_t) < 5\%$	99%
Percent with $P(\text{PbB}_{\text{fetal}} > \text{PbB}_t) \geq 5\%$	1%
Percent with $P(\text{PbB}_{\text{fetal}} > \text{PbB}_t) \geq 10\%$	0%
Percent with $P(\text{PbB}_{\text{fetal}} > \text{PbB}_t) \geq 20\%$	0%

Table I-3. ALM RISK ESTIMATES FOR CONSTRUCTION WORKERS IN ALLEYWAYS

Calculations of Blood Lead Concentrations (PbBs) and Risk in Nonresidential Areas
U.S. EPA Technical Review Workgroup for Lead
Version date 06/14/2017

Edit Red Cells

Variable	Description of Variable	Units	GSDi and PbBo from Analysis of NHANES 2009-2014	GSDi and PbBo from Analysis of NHANES 2007-2010	GSDi and PbBo from Analysis of NHANES 2004-2007	GSDi and PbBo from Analysis of NHANES III (Phases 1&2)
PbS	Soil lead concentration	µg/g or ppm	270	1129	776	100
R _{fetal/maternal}	Fetal/maternal PbB ratio	--	0.9	0.9	0.9	0.9
BKSF	Biokinetic Slope Factor	µg/dL per µg/day	0.4	0.4	0.4	0.4
GSD _i	Geometric standard deviation PbB	--	1.8	1.7	1.8	2.1
PbB ₀	Baseline PbB	µg/dL	0.6	0.7	1.0	1.5
IR _S	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.100	0.050	0.050	0.050
IR _{S+D}	Total ingestion rate of outdoor soil and indoor dust	g/day	--	--	--	--
W _S	Weighting factor; fraction of IR _{S+D} ingested as outdoor soil	--	--	--	--	--
K _{SD}	Mass fraction of soil in dust	--	--	--	--	--
AF _{S, D}	Absorption fraction (same for soil and dust)	--	0.126	0.12	0.12	0.12
EF _{S, D}	Exposure frequency (same for soil and dust)	days/yr	130	219	219	219
AT _{S, D}	Averaging time (same for soil and dust)	days/yr	182	365	365	365
PbB _{adult}	PbB of adult worker, geometric mean	µg/dL	1.6	2.3	2.1	1.6
PbB _{fetal, 0.95}	95th percentile PbB among fetuses of adult workers	µg/dL	3.7	5.0	5.0	5.0
PbB _t	Target PbB level of concern (e.g., 2-8 ug/dL)	µg/dL	5.0	5.0	5.0	5.0
P(PbB _{fetal} > PbB _t)	Probability that fetal PbB exceeds target PbB, assuming lognormal distribution	%	1.6%	5.0%	5.0%	5.0%

Calculations assuming GSDi and PbBo from Analysis of NHANES 2009-2014				
Property ID	Soil Concentration (mg/kg)	Geomean Adult PbB (µg/dL)	95th Percentile PbB among Fetuses of Adults	Probability Fetal PbB Exceeds 5 µg/dL (%)
AC001	270	1.6	3.7	1.6%
AC002	220	1.4	3.3	0.9%
AC003	260	1.5	3.6	1.4%
AC004	310	1.7	4.1	2.3%
AC005	400	2.0	4.8	4.4%
AC006	390	2.0	4.7	4.1%
AC007	250	1.5	3.6	1.3%
AC008	260	1.5	3.6	1.4%
AC009	210	1.4	3.2	0.8%
AC010	400	2.0	4.8	4.4%
AC011	420	2.1	5.0	5.0%
AC012	90	0.9	2.2	0.1%
AC013	160	1.2	2.8	0.4%
AC014	110	1.0	2.4	0.2%
AC015	140	1.1	2.6	0.3%
AC016	220	1.4	3.3	0.9%
AC017	120	1.0	2.4	0.2%
AC018	230	1.4	3.4	1.0%
AC019	230	1.4	3.4	1.0%
AC020	180	1.2	3.0	0.6%
AC021	220	1.4	3.3	0.9%
AC022	160	1.2	2.8	0.4%
AC023	220	1.4	3.3	0.9%
AC024	140	1.1	2.6	0.3%
AC025	290	1.6	3.9	1.9%
AC026	280	1.6	3.8	1.7%
AC028	110	1.0	2.4	0.2%
AC029	200	1.3	3.1	0.7%
AC030	160	1.2	2.8	0.4%
AC031	140	1.1	2.6	0.3%
AC032	160	1.2	2.8	0.4%
AC033	140	1.1	2.6	0.3%
AC034	330	1.8	4.2	2.7%
AC035	150	1.1	2.7	0.4%
AC037	210	1.4	3.2	0.8%
AC038	200	1.3	3.1	0.7%
AC039	240	1.5	3.5	1.2%
AC040	220	1.4	3.3	0.9%
AC041	380	2.0	4.7	3.9%
AC042	220	1.4	3.3	0.9%
AC043	240	1.5	3.5	1.2%
AC044	280	1.6	3.8	1.7%
AC045	220	1.4	3.3	0.9%
AC046	250	1.5	3.6	1.3%
AC047	200	1.3	3.1	0.7%
AC048	230	1.4	3.4	1.0%
AC051	86	0.9	2.2	0.1%
AC052	160	1.2	2.8	0.4%
AC053	190	1.3	3.0	0.6%
AC054	110	1.0	2.4	0.2%
AC055	120	1.0	2.4	0.2%
AC057	330	1.8	4.2	2.7%
AC058	110	1.0	2.4	0.2%
AC059	180	1.2	3.0	0.6%
AC060	260	1.5	3.6	1.4%
AC061	200	1.3	3.1	0.7%
AC062	140	1.1	2.6	0.3%
AC063	290	1.6	3.9	1.9%
AC064	190	1.3	3.0	0.6%
AC065	300	1.7	4.0	2.1%
AC066	120	1.0	2.4	0.2%
AC067	170	1.2	2.9	0.5%
AC068	120	1.0	2.4	0.2%
AC069	190	1.3	3.0	0.6%
AC070	170	1.2	2.9	0.5%
AC071	280	1.6	3.8	1.7%
AC072	430	2.1	5.1	5.3%
AC073	500	2.4	5.7	7.7%
AC074	150	1.1	2.7	0.4%

AC075	490	2.4	5.6	7.3%
AC076	490	2.4	5.6	7.3%
AC077	340	1.8	4.3	2.9%
AC078	450	2.2	5.3	5.9%
AC079	370	1.9	4.6	3.6%
AC080	450	2.2	5.3	5.9%
AC081	420	2.1	5.0	5.0%
AC082	300	1.7	4.0	2.1%
AC083	310	1.7	4.1	2.3%
AC084	260	1.5	3.6	1.4%
AC085	320	1.8	4.1	2.5%
AC086	240	1.5	3.5	1.2%
AC087	220	1.4	3.3	0.9%
AC088	230	1.4	3.4	1.0%
AC089	160	1.2	2.8	0.4%
AC090	200	1.3	3.1	0.7%
AC091	400	2.0	4.8	4.4%
AC092	500	2.4	5.7	7.7%
AC093	470	2.3	5.4	6.6%
AC094	550	2.6	6.1	9.6%
AC095	450	2.2	5.3	5.9%
AC096	570	2.7	6.3	10.4%
AC097	390	2.0	4.7	4.1%
AC098	280	1.6	3.8	1.7%
AC099	160	1.2	2.8	0.4%
AC100	290	1.6	3.9	1.9%
AC101	190	1.3	3.0	0.6%
AC102	210	1.4	3.2	0.8%
AC103	180	1.2	3.0	0.6%
AC104	240	1.5	3.5	1.2%
AC105	160	1.2	2.8	0.4%
AC106	53	0.8	1.9	0.0%
AC107	69	0.8	2.0	0.1%
AC108	150	1.1	2.7	0.4%
AC109	210	1.4	3.2	0.8%
PC0321	371	1.9	4.6	3.6%

Summary of Properties by P(PbB _{fetal} > PbB _t)	
Number with P(PbB _{fetal} > PbB _t) <5%	94
Number with P(PbB _{fetal} > PbB _t) ≥5%	11
Number with P(PbB _{fetal} > PbB _t) ≥10%	1
Number with P(PbB _{fetal} > PbB _t) ≥20%	0
Percent with P(PbB _{fetal} > PbB _t) <5%	90%
Percent with P(PbB _{fetal} > PbB _t) ≥5%	10%
Percent with P(PbB _{fetal} > PbB _t) ≥10%	1%
Percent with P(PbB _{fetal} > PbB _t) ≥20%	0%

Table I-4. ALM RISK ESTIMATES FOR CONSTRUCTION WORKERS AT COMMERCIAL PROPERTIES

Calculations of Blood Lead Concentrations (PbBs) and Risk in Nonresidential Areas
U.S. EPA Technical Review Workgroup for Lead
Version date 06/14/2017

Edit Red Cells

Variable	Description of Variable	Units	GSDi and PbBo from Analysis of NHANES 2009-2014	GSDi and PbBo from Analysis of NHANES 2007-2010	GSDi and PbBo from Analysis of NHANES 2004-2007	GSDi and PbBo from Analysis of NHANES III (Phases 1&2)
PbS	Soil lead concentration	µg/g or ppm	99	1129	776	100
R _{fetal/maternal}	Fetal/maternal PbB ratio	--	0.9	0.9	0.9	0.9
BKSF	Biokinetic Slope Factor	µg/dL per µg/day	0.4	0.4	0.4	0.4
GSD _i	Geometric standard deviation PbB	--	1.8	1.7	1.8	2.1
PbB ₀	Baseline PbB	µg/dL	0.6	0.7	1.0	1.5
IR _S	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.100	0.050	0.050	0.050
IR _{S+D}	Total ingestion rate of outdoor soil and indoor dust	g/day	--	--	--	--
W _S	Weighting factor; fraction of IR _{S+D} ingested as outdoor soil	--	--	--	--	--
K _{SD}	Mass fraction of soil in dust	--	--	--	--	--
AF _{S, D}	Absorption fraction (same for soil and dust)	--	0.126	0.12	0.12	0.12
EF _{S, D}	Exposure frequency (same for soil and dust)	days/yr	130	219	219	219
AT _{S, D}	Averaging time (same for soil and dust)	days/yr	182	365	365	365
PbB _{adult}	PbB of adult worker, geometric mean	µg/dL	1.0	2.3	2.1	1.6
PbB _{fetal, 0.95}	95th percentile PbB among fetuses of adult workers	µg/dL	2.3	5.0	5.0	5.0
PbB _t	Target PbB level of concern (e.g., 2-8 ug/dL)	µg/dL	5.0	5.0	5.0	5.0
P(PbB _{fetal} > PbB _t)	Probability that fetal PbB exceeds target PbB, assuming lognormal distribution	%	0.1%	5.0%	5.0%	5.0%

Calculations assuming GSDi and PbBo from Analysis of NHANES 2009-2014				
Property ID	Soil Concentration (mg/kg)	Geomean Adult PbB (µg/dL)	95th Percentile PbB among Fetuses of Adults	Probability Fetal PbB Exceeds 5 µg/dL (%)
PC0006	99	1.0	2.3	0.1%
PC0008	100	1.0	2.3	0.1%
PC0011	25	0.7	1.6	0.0%
PC0012	33	0.7	1.7	0.0%
PC0013	350	1.9	4.4	3.1%
PC0016	58	0.8	1.9	0.1%
PC0033	200	1.3	3.1	0.7%
PC0070	110	1.0	2.4	0.2%
PC0111	98	1.0	2.3	0.1%
PC0116	160	1.2	2.8	0.4%
PC0124	110	1.0	2.4	0.2%
PC0161	140	1.1	2.6	0.3%
PC0175	200	1.3	3.1	0.7%
PC0308	170	1.2	2.9	0.5%
PC0442	34	0.7	1.7	0.0%
PC0443	120	1.0	2.4	0.2%
PC0444	63	0.8	2.0	0.1%
PC0493	110	1.0	2.4	0.2%
PC0567	150	1.1	2.7	0.4%
PC0677	120	1.0	2.4	0.2%
PC0678	180	1.2	3.0	0.6%
PC0686	420	2.1	5.0	5.0%
PC0710	380	2.0	4.7	3.9%
PC0712	660	3.0	7.0	14.4%
PC1348	210	1.4	3.2	0.8%
PC1400	330	1.8	4.2	2.7%
PC1407	550	2.6	6.1	9.6%
PC1408	65	0.8	2.0	0.1%
PC1414	230	1.4	3.4	1.0%
PC1426	190	1.3	3.0	0.6%
PC1452	370	1.9	4.6	3.6%
PC1453	260	1.5	3.6	1.4%
PC1456	390	2.0	4.7	4.1%
PC1506	290	1.6	3.9	1.9%
PC1561	390	2.0	4.7	4.1%
PC1602	62	0.8	1.9	0.1%
PC1603	200	1.3	3.1	0.7%
PC1618	200	1.3	3.1	0.7%
PC1619	470	2.3	5.4	6.6%
PC1645	340	1.8	4.3	2.9%
PC1646	230	1.4	3.4	1.0%
PC1664	320	1.8	4.1	2.5%
PC1677	330	1.8	4.2	2.7%
PC1686	190	1.3	3.0	0.6%
PC1690	86	0.9	2.2	0.1%
PC1691	310	1.7	4.1	2.3%
PC1700	220	1.4	3.3	0.9%
PC1709	130	1.1	2.5	0.3%
PC1713	700	3.1	7.4	16.3%
PC1719	310	1.7	4.1	2.3%
PC1740	240	1.5	3.5	1.2%
PC1851	140	1.1	2.6	0.3%
PC1857	290	1.6	3.9	1.9%
PC1859	210	1.4	3.2	0.8%
PC1861	89	0.9	2.2	0.1%
PC1904	270	1.6	3.7	1.6%
PC1958	200	1.3	3.1	0.7%
PC1974	410	2.1	4.9	4.7%
PC2061	320	1.8	4.1	2.5%
PC2092	230	1.4	3.4	1.0%
PC2421	240	1.5	3.5	1.2%
PC2426	270	1.6	3.7	1.6%
PC2427	240	1.5	3.5	1.2%
PC2428	160	1.2	2.8	0.4%
PC2429	1100	4.6	10.8	36.8%
PC2430	120	1.0	2.4	0.2%
PC2431	130	1.1	2.5	0.3%

Summary of Properties by $P(\text{PbB}_{\text{fetal}} > \text{PbB}_t)$	
Number with $P(\text{PbB}_{\text{fetal}} > \text{PbB}_t) < 5\%$	62
Number with $P(\text{PbB}_{\text{fetal}} > \text{PbB}_t) \geq 5\%$	5
Number with $P(\text{PbB}_{\text{fetal}} > \text{PbB}_t) \geq 10\%$	3
Number with $P(\text{PbB}_{\text{fetal}} > \text{PbB}_t) \geq 20\%$	1
Percent with $P(\text{PbB}_{\text{fetal}} > \text{PbB}_t) < 5\%$	93%
Percent with $P(\text{PbB}_{\text{fetal}} > \text{PbB}_t) \geq 5\%$	7%
Percent with $P(\text{PbB}_{\text{fetal}} > \text{PbB}_t) \geq 10\%$	4%
Percent with $P(\text{PbB}_{\text{fetal}} > \text{PbB}_t) \geq 20\%$	1%

Table I-5. ALM RISK ESTIMATES FOR UTILITY WORKERS IN ALLEYWAYS

Calculations of Blood Lead Concentrations (PbBs) and Risk in Nonresidential Areas
U.S. EPA Technical Review Workgroup for Lead
Version date 06/14/2017

Edit Red Cells

Variable	Description of Variable	Units	GSDi and PbBo from Analysis of NHANES 2009-2014	GSDi and PbBo from Analysis of NHANES 2007-2010	GSDi and PbBo from Analysis of NHANES 2004-2007	GSDi and PbBo from Analysis of NHANES III (Phases 1&2)
PbS	Soil lead concentration	µg/g or ppm	300	1129	776	100
R _{fetal/maternal}	Fetal/maternal PbB ratio	--	0.9	0.9	0.9	0.9
BKSF	Biokinetic Slope Factor	µg/dL per µg/day	0.4	0.4	0.4	0.4
GSD _i	Geometric standard deviation PbB	--	1.8	1.7	1.8	2.1
PbB ₀	Baseline PbB	µg/dL	0.6	0.7	1.0	1.5
IR _S	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.100	0.050	0.050	0.050
IR _{S+D}	Total ingestion rate of outdoor soil and indoor dust	g/day	--	--	--	--
W _S	Weighting factor; fraction of IR _{S+D} ingested as outdoor soil	--	--	--	--	--
K _{SD}	Mass fraction of soil in dust	--	--	--	--	--
AF _{S, D}	Absorption fraction (same for soil and dust)	--	0.126	0.12	0.12	0.12
EF _{S, D}	Exposure frequency (same for soil and dust)	days/yr	65	219	219	219
AT _{S, D}	Averaging time (same for soil and dust)	days/yr	91	365	365	365
PbB _{adult}	PbB of adult worker, geometric mean	µg/dL	1.7	2.3	2.1	1.6
PbB _{fetal, 0.95}	95th percentile PbB among fetuses of adult workers	µg/dL	4.0	5.0	5.0	5.0
PbB _t	Target PbB level of concern (e.g., 2-8 ug/dL)	µg/dL	5.0	5.0	5.0	5.0
P(PbB _{fetal} > PbB _t)	Probability that fetal PbB exceeds target PbB, assuming lognormal distribution	%	2.1%	5.0%	5.0%	5.0%

Calculations assuming GSDi and PbBo from Analysis of NHANES 2009-2014				
Property ID	Soil Concentration (mg/kg)	Geomean Adult PbB (µg/dL)	95th Percentile PbB among Fetuses of Adults	Probability Fetal PbB Exceeds 5 µg/dL (%)
AC001	270	1.6	3.7	1.6%
AC002	220	1.4	3.3	0.9%
AC003	260	1.5	3.6	1.4%
AC004	310	1.7	4.1	2.3%
AC005	400	2.0	4.8	4.4%
AC006	390	2.0	4.7	4.1%
AC007	250	1.5	3.6	1.3%
AC008	260	1.5	3.6	1.4%
AC009	210	1.4	3.2	0.8%
AC010	400	2.0	4.8	4.4%
AC011	420	2.1	5.0	5.0%
AC012	90	0.9	2.2	0.1%
AC013	160	1.2	2.8	0.4%
AC014	110	1.0	2.4	0.2%
AC015	140	1.1	2.6	0.3%
AC016	220	1.4	3.3	0.9%
AC017	120	1.0	2.4	0.2%
AC018	230	1.4	3.4	1.0%
AC019	230	1.4	3.4	1.0%
AC020	180	1.2	3.0	0.6%
AC021	220	1.4	3.3	0.9%
AC022	160	1.2	2.8	0.4%
AC023	220	1.4	3.3	0.9%
AC024	140	1.1	2.6	0.3%
AC025	290	1.6	3.9	1.9%
AC026	280	1.6	3.8	1.7%
AC028	110	1.0	2.4	0.2%
AC029	200	1.3	3.1	0.7%
AC030	160	1.2	2.8	0.4%
AC031	140	1.1	2.6	0.3%
AC032	160	1.2	2.8	0.4%
AC033	140	1.1	2.6	0.3%
AC034	330	1.8	4.2	2.7%
AC035	150	1.1	2.7	0.4%
AC037	210	1.4	3.2	0.8%
AC038	200	1.3	3.1	0.7%
AC039	240	1.5	3.5	1.2%
AC040	220	1.4	3.3	0.9%
AC041	380	2.0	4.7	3.9%
AC042	220	1.4	3.3	0.9%
AC043	240	1.5	3.5	1.2%
AC044	280	1.6	3.8	1.7%
AC045	220	1.4	3.3	0.9%
AC046	250	1.5	3.6	1.3%
AC047	200	1.3	3.1	0.7%
AC048	230	1.4	3.4	1.0%
AC051	86	0.9	2.2	0.1%
AC052	160	1.2	2.8	0.4%
AC053	190	1.3	3.0	0.6%
AC054	110	1.0	2.4	0.2%
AC055	120	1.0	2.4	0.2%
AC057	330	1.8	4.2	2.7%
AC058	110	1.0	2.4	0.2%
AC059	180	1.2	3.0	0.6%
AC060	260	1.5	3.6	1.4%
AC061	200	1.3	3.1	0.7%
AC062	140	1.1	2.6	0.3%
AC063	290	1.6	3.9	1.9%
AC064	190	1.3	3.0	0.6%
AC065	300	1.7	4.0	2.1%
AC066	120	1.0	2.4	0.2%
AC067	170	1.2	2.9	0.5%
AC068	120	1.0	2.4	0.2%
AC069	190	1.3	3.0	0.6%
AC070	170	1.2	2.9	0.5%
AC071	280	1.6	3.8	1.7%
AC072	430	2.1	5.1	5.3%
AC073	500	2.4	5.7	7.7%
AC074	150	1.1	2.7	0.4%

AC075	490	2.4	5.6	7.3%
AC076	490	2.4	5.6	7.3%
AC077	340	1.8	4.3	2.9%
AC078	450	2.2	5.3	5.9%
AC079	370	1.9	4.6	3.6%
AC080	450	2.2	5.3	5.9%
AC081	420	2.1	5.0	5.0%
AC082	300	1.7	4.0	2.1%
AC083	310	1.7	4.1	2.3%
AC084	260	1.5	3.6	1.4%
AC085	320	1.8	4.1	2.5%
AC086	240	1.5	3.5	1.2%
AC087	220	1.4	3.3	0.9%
AC088	230	1.4	3.4	1.0%
AC089	160	1.2	2.8	0.4%
AC090	200	1.3	3.1	0.7%
AC091	400	2.0	4.8	4.4%
AC092	500	2.4	5.7	7.7%
AC093	470	2.3	5.4	6.6%
AC094	550	2.6	6.1	9.6%
AC095	450	2.2	5.3	5.9%
AC096	570	2.7	6.3	10.4%
AC097	390	2.0	4.7	4.1%
AC098	280	1.6	3.8	1.7%
AC099	160	1.2	2.8	0.4%
AC100	290	1.6	3.9	1.9%
AC101	190	1.3	3.0	0.6%
AC102	210	1.4	3.2	0.8%
AC103	180	1.2	3.0	0.6%
AC104	240	1.5	3.5	1.2%
AC105	160	1.2	2.8	0.4%
AC106	53	0.8	1.9	0.0%
AC107	69	0.8	2.0	0.1%
AC108	150	1.1	2.7	0.4%
AC109	210	1.4	3.2	0.8%
PC0321	371	1.9	4.6	3.6%

Summary of Properties by P(PbB _{fetal} > PbB _t)	
Number with P(PbB _{fetal} > PbB _t) <5%	94
Number with P(PbB _{fetal} > PbB _t) ≥5%	11
Number with P(PbB _{fetal} > PbB _t) ≥10%	1
Number with P(PbB _{fetal} > PbB _t) ≥20%	0
Percent with P(PbB _{fetal} > PbB _t) <5%	90%
Percent with P(PbB _{fetal} > PbB _t) ≥5%	10%
Percent with P(PbB _{fetal} > PbB _t) ≥10%	1%
Percent with P(PbB _{fetal} > PbB _t) ≥20%	0%

Table I-6. ALM RISK ESTIMATES FOR UTILITY WORKERS AT COMMERCIAL PROPERTIES

Calculations of Blood Lead Concentrations (PbBs) and Risk in Nonresidential Areas
U.S. EPA Technical Review Workgroup for Lead
Version date 06/14/2017

Edit Red Cells

Variable	Description of Variable	Units	GSDi and PbBo from Analysis of NHANES 2009-2014	GSDi and PbBo from Analysis of NHANES 2007-2010	GSDi and PbBo from Analysis of NHANES 2004-2007	GSDi and PbBo from Analysis of NHANES III (Phases 1&2)
PbS	Soil lead concentration	µg/g or ppm	99	1129	776	100
R _{fetal/maternal}	Fetal/maternal PbB ratio	--	0.9	0.9	0.9	0.9
BKSF	Biokinetic Slope Factor	µg/dL per µg/day	0.4	0.4	0.4	0.4
GSD _i	Geometric standard deviation PbB	--	1.8	1.7	1.8	2.1
PbB ₀	Baseline PbB	µg/dL	0.6	0.7	1.0	1.5
IR _S	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.100	0.050	0.050	0.050
IR _{S+D}	Total ingestion rate of outdoor soil and indoor dust	g/day	--	--	--	--
W _S	Weighting factor; fraction of IR _{S+D} ingested as outdoor soil	--	--	--	--	--
K _{SD}	Mass fraction of soil in dust	--	--	--	--	--
AF _{S, D}	Absorption fraction (same for soil and dust)	--	0.126	0.12	0.12	0.12
EF _{S, D}	Exposure frequency (same for soil and dust)	days/yr	65	219	219	219
AT _{S, D}	Averaging time (same for soil and dust)	days/yr	91	365	365	365
PbB _{adult}	PbB of adult worker, geometric mean	µg/dL	1.0	2.3	2.1	1.6
PbB _{fetal, 0.95}	95th percentile PbB among fetuses of adult workers	µg/dL	2.3	5.0	5.0	5.0
PbB _t	Target PbB level of concern (e.g., 2-8 ug/dL)	µg/dL	5.0	5.0	5.0	5.0
P(PbB _{fetal} > PbB _t)	Probability that fetal PbB exceeds target PbB, assuming lognormal distribution	%	0.1%	5.0%	5.0%	5.0%

Calculations assuming GSDi and PbBo from Analysis of NHANES 2009-2014				
Property ID	Soil Concentration (mg/kg)	Geomean Adult PbB (µg/dL)	95th Percentile PbB among Fetuses of Adults	Probability Fetal PbB Exceeds 5 µg/dL (%)
PC0006	99	1.0	2.3	0.1%
PC0008	100	1.0	2.3	0.1%
PC0011	25	0.7	1.6	0.0%
PC0012	33	0.7	1.7	0.0%
PC0013	350	1.9	4.4	3.1%
PC0016	58	0.8	1.9	0.1%
PC0033	200	1.3	3.1	0.7%
PC0070	110	1.0	2.4	0.2%
PC0111	98	1.0	2.3	0.1%
PC0116	160	1.2	2.8	0.4%
PC0124	110	1.0	2.4	0.2%
PC0161	140	1.1	2.6	0.3%
PC0175	200	1.3	3.1	0.7%
PC0308	170	1.2	2.9	0.5%
PC0442	34	0.7	1.7	0.0%
PC0443	120	1.0	2.4	0.2%
PC0444	63	0.8	2.0	0.1%
PC0493	110	1.0	2.4	0.2%
PC0567	150	1.1	2.7	0.4%
PC0677	120	1.0	2.4	0.2%
PC0678	180	1.2	3.0	0.6%
PC0686	420	2.1	5.0	5.0%
PC0710	380	2.0	4.7	3.9%
PC0712	660	3.0	7.0	14.4%
PC1348	210	1.4	3.2	0.8%
PC1400	330	1.8	4.2	2.7%
PC1407	550	2.6	6.1	9.6%
PC1408	65	0.8	2.0	0.1%
PC1414	230	1.4	3.4	1.0%
PC1426	190	1.3	3.0	0.6%
PC1452	370	1.9	4.6	3.6%
PC1453	260	1.5	3.6	1.4%
PC1456	390	2.0	4.7	4.1%
PC1506	290	1.6	3.9	1.9%
PC1561	390	2.0	4.7	4.1%
PC1602	62	0.8	1.9	0.1%
PC1603	200	1.3	3.1	0.7%
PC1618	200	1.3	3.1	0.7%
PC1619	470	2.3	5.4	6.6%
PC1645	340	1.8	4.3	2.9%
PC1646	230	1.4	3.4	1.0%
PC1664	320	1.8	4.1	2.5%
PC1677	330	1.8	4.2	2.7%
PC1686	190	1.3	3.0	0.6%
PC1690	86	0.9	2.2	0.1%
PC1691	310	1.7	4.1	2.3%
PC1700	220	1.4	3.3	0.9%
PC1709	130	1.1	2.5	0.3%
PC1713	700	3.1	7.4	16.3%
PC1719	310	1.7	4.1	2.3%
PC1740	240	1.5	3.5	1.2%
PC1851	140	1.1	2.6	0.3%
PC1857	290	1.6	3.9	1.9%
PC1859	210	1.4	3.2	0.8%
PC1861	89	0.9	2.2	0.1%
PC1904	270	1.6	3.7	1.6%
PC1958	200	1.3	3.1	0.7%
PC1974	410	2.1	4.9	4.7%
PC2061	320	1.8	4.1	2.5%
PC2092	230	1.4	3.4	1.0%
PC2421	240	1.5	3.5	1.2%
PC2426	270	1.6	3.7	1.6%
PC2427	240	1.5	3.5	1.2%
PC2428	160	1.2	2.8	0.4%
PC2429	1100	4.6	10.8	36.8%
PC2430	120	1.0	2.4	0.2%
PC2431	130	1.1	2.5	0.3%

Summary of Properties by $P(\text{PbB}_{\text{fetal}} > \text{PbB}_t)$	
Number with $P(\text{PbB}_{\text{fetal}} > \text{PbB}_t) < 5\%$	62
Number with $P(\text{PbB}_{\text{fetal}} > \text{PbB}_t) \geq 5\%$	5
Number with $P(\text{PbB}_{\text{fetal}} > \text{PbB}_t) \geq 10\%$	3
Number with $P(\text{PbB}_{\text{fetal}} > \text{PbB}_t) \geq 20\%$	1
Percent with $P(\text{PbB}_{\text{fetal}} > \text{PbB}_t) < 5\%$	93%
Percent with $P(\text{PbB}_{\text{fetal}} > \text{PbB}_t) \geq 5\%$	7%
Percent with $P(\text{PbB}_{\text{fetal}} > \text{PbB}_t) \geq 10\%$	4%
Percent with $P(\text{PbB}_{\text{fetal}} > \text{PbB}_t) \geq 20\%$	1%