Hill Air Force Base, Utah

Final

Decision Document for
Operable Unit NR-1
Utah Test and Training Range – North
Hill AFB, Utah

November 2010

HILL AIR FORCE BASE, UTAH

DECISION DOCUMENT
FOR OPERABLE UNIT NR-1

November 2010

Project No.: 24585101.01000

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DECISION DOCUMENT
FOR OPERABLE UNIT NR-1
HILL AIR FORCE BASE, UTAH

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LIST OF ACRONYMS AND ABBREVIATIONS

1,1-DCE	1,1-dichloroethene
AFB	Air Force Base
amsl	above mean sea level
ARARs	Applicable or Relevant and Appropriate Requirements
bgs	below ground surface
CEM	conceptual exposure model
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
COC	contaminant of concern
COEC	chemicals of ecological concern
COPC	contaminant of potential concern
COPEC	contaminant of potential ecological concern
CSF	cancer slope factor
CSM	conceptual site model
DERR	Department of Environmental Response and Remediation
DoD	Department of Defense
DRO	diesel range organics
EPC	exposure point concentration
ERA	ecological risk assessment
ERP	Environmental Restoration Program
ES	Engineering Science, Inc.
FFA	federal facilities agreement
ft	feet
ft/ft	feet/foot
GMS	Groundwater Modeling System
HHRA	human health risk assessment
HI	hazard index
HQ	hazard quotient
IRP	Installation Restoration Program
kg	kilogram
LOAEL	lowest observed adverse effect level
LOEC	lowest observed effect concentration
MCL	maximum contaminant level
mg/kg	milligrams per kilogram

NAPL	non-aqueous phase liquid
NC	not calculated
NCP	National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300)
NFRAP	no further response action planned
PA	Preliminary Assessment
PCE	tetrachloroethylene
RAB	Restoration Advisory Board
RBC	risk-based concentration
RCRA	Resource Conservation and Recovery Act
RfD	reference dose
RI	Remedial Investigation
RME	reasonable maximum exposure
SAIC	Science Applications International Corporation
SI	Site Inspection
SVOC	semivolatile organic compound
TCE	trichloroethylene
TPH	total petroleum hydrocarbons
TRV	toxicity reference value
TTU	Thermal Treatment Unit
UCL	Upper Confidence Limit
UDEQ	Utah Department of Environmental Quality
USAF	United States Air Force
USEPA	United States Environmental Protection Agency
UTTR-North	Utah Test and Training Range – North
VOC	volatile organic compound
µg/L	microgram(s) per liter

DECISION DOCUMENT

1.0 DECLARATION

1.1 SITE NAME AND LOCATION

Operable Unit NR-1
Installation Restoration Program (IRP) WP-025
Chemical Pit #4
Hill Air Force Base (AFB), UT
USEPA Superfund Site ID No. UT0571724350

1.2 STATEMENT OF BASIS AND PURPOSE

This Decision Document presents the no action decision for Operable Unit NR-1 located at the Utah Test and Training Range – North (UTTR-North). The no action decision was chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the Administrative Record file for this site.

Environmental investigations at Operable Unit NR-1 have been conducted by the United States Air Force (USAF), which is the lead agency for CERCLA responses at USAF properties (Utah Department of Environmental Quality [UDEQ], 2008). Operable Unit NR-1 is regulated by the UDEQ. The U.S. Environmental Protection Agency (USEPA) advises through the UDEQ. The role of each agency was established in the *Integration Agreement for Air Force Cleanup of the Air Force's Utah Test and Training Range, the Wendover Range, and the Little Mountain Complex*, which is now included as an attachment to the *Hazardous Waste Operating Permit, United States Air Force Utah Test and Training Range (UT0570090001)* (UDEQ, 2008). The UDEQ concurs with the no action decision as the selected remedy for Operable Unit NR-1.

This document meets the requirements of USEPA guidance for documenting a no action decision (USEPA, 1999) and the USAF guidance for a no further response action planned (NFRAP) decision document for a Category III site (USAF, 1995).

1.3 DESCRIPTION OF THE SELECTED REMEDY

Operable Unit NR-1 (the "site") is located within a gravel pit on the UTTR-North, which is a military bombing, gunnery, and test range operated by Hill AFB for the Department of Defense (DoD). UTTR-North is located in northwestern Utah, west of the Great Salt Lake. According to anecdotal evidence, Operable Unit NR-1 was used for the disposal of liquid wastes containing waste engine oil, diesel fuel, and chemical solvents from 1973 to 1975 and possibly as late as 1980. The human health risk assessment (HHRA) for the site indicates that Operable Unit NR-1 poses no unacceptable risks to human health based on current and reasonably anticipated future land use scenarios. The ecological risk assessment (ERA) for the site indicates that Operable Unit NR-1 poses no unacceptable risks to ecological receptors.

This Decision Document concludes that no CERCLA action is necessary to protect human health and the environment at Operable Unit NR-1. This decision is based on both the results of the Remedial Investigation (RI) report (URS, 2008), and the assessment of the report by the UDEQ (Appendix A). Future monitoring of the site may occur on a voluntary basis by Hill AFB to verify that

no unacceptable exposures to potential hazards posed by Operable Unit NR-1 occur in the future (Appendix A). In the unlikely event that land use at Operable Unit NR-1 changes such that the exposure assumptions in the RI report are no longer valid, the potential risk to human health and the environment will be re-evaluated at that time.

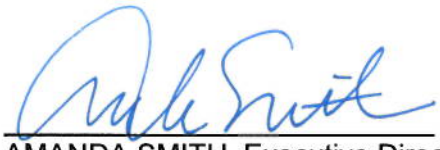
1.1 STATUTORY DETERMINATIONS

No remedial action is necessary to ensure protection of human health and the environment at Operable Unit NR-1.

1.2 AUTHORIZING SIGNATURES

The USAF selects the no action decision for Operable Unit NR-1 with the concurrence of the UDEQ.

STATE OF UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY



AMANDA SMITH, Executive Director
Utah Department of Environmental Quality

12·8·2010
Date

UNITED STATES AIR FORCE
HILL AIR FORCE BASE, UTAH

PATRICK C. HIGBY, Colonel, USAF
Commander, 75th Air Base Wing

2 DEC 2010
Date

2.0 DECISION SUMMARY

2.1 SITE NAME, LOCATION, AND DESCRIPTION

Since the site was first identified in 1989, it has been referenced by multiple names, including WP-025, Site 12, and Chemical Pit #4. Most recently, the site has been designated as Operable Unit NR-1, which is the site name that will be used in this Decision Document.

Operable Unit NR-1 is located on the UTTR-North, which is a military bombing, gunnery, and test range operated by Hill AFB for the DoD. UTTR-North is located in northwestern Utah, west of the Great Salt Lake (Figure 2-1). Operable Unit NR-1 is located within a gravel pit, 3 miles north of the Oasis Compound, west of the Lakeside Mountains and south of Homestead Knoll in the Sink Valley (Figure 2-1). The gravel pit is approximately 10 acres in size, 8 feet (ft) in depth, and is in active use. The pit is roughly oval-shaped, with a maximum length of approximately 1,000 ft long along its north-south axis and 700 ft wide along its east-west axis (Figure 2-2).

A dark stain approximately 20 ft in diameter covering what is assumed to be the general disposal area was observed in 1990 [Science Applications International Corporation (SAIC), 1990] in the southwestern portion of the gravel pit (Figure 2-2). The stain has weathered, and in the ordinary course of operating the gravel pit, the boundaries of the stain are no longer visible. The current area of active operations in the gravel pit is located to the north of the original disposal area.

No permanent buildings, temporary buildings, or other structures are located within the gravel pit or in the immediate vicinity of Operable Unit NR-1.

2.2 SITE HISTORY, ENFORCEMENT ACTIVITIES, AND INVESTIGATIONS

2.2.1 Site History

Waste disposal within the gravel pit that surrounds Operable Unit NR-1 occurred from 1973 to 1975 (SAIC, 1990), and possibly as late as 1980 (Olsen, 2005). According to anecdotal evidence, Operable Unit NR-1 was used for the disposal of liquid wastes containing waste engine oil, diesel fuel, and chemical solvents. No documentation exists for the types and quantities of liquid wastes that were deposited at Operable Unit NR-1 (SAIC, 1990).

2.2.2 Previous Investigations

Environmental investigations have been conducted at Hill AFB and its satellite facilities since 1982 and continue under the USAF's Environmental Restoration Program (ERP). The ERP was developed by the DoD in 1981 to identify, investigate, and clean up former disposal sites on military bases. The area that includes Operable Unit NR-1 was identified as an environmental site through the ERP. Several investigations have been conducted at Operable Unit NR-1. The primary activities are listed below.

1982	Phase I IRP Records Search (Engineering-Science, Inc. [ES], 1982)
1989	Preliminary Assessment (SAIC, 1989)
1990	Site Inspection (SAIC, 1990)
2009	Remedial Investigation (URS, 2008)

Between 1997 and the initiation of the RI in 2006, Hill AFB voluntarily conducted several site investigations that were not mandated under the CERCLA program. These investigations included the installation of a passive soil vapor extraction system at the site to remove contaminant mass from the vadose zone. The results of these investigations are summarized in the RI (URS, 2008). The investigations required by CERCLA regulations are summarized below.

2.2.2.1 Phase I IRP Records Search

In 1982, ES conducted a records search for Hill AFB as part of the ERP, which was then known as the IRP (ES, 1982). At that time, Operable Unit NR-1 was identified as being an area of potential contamination.

2.2.2.2 Preliminary Assessment

In 1989, SAIC conducted a Preliminary Assessment (PA) for Operable Unit NR-1 to determine if the disposal pit was releasing or had released contaminants into the environment, and if so, if any releases required response actions. Based on record searches and interviews, it was determined that waste engine oil, diesel fuel, and chemical solvents may have been disposed of at the site in the early 1970s. The PA recommended further investigation of the site (SAIC, 1989).

2.2.2.3 Site Inspection

In 1989, SAIC conducted a Site Inspection (SI) at Operable Unit NR-1 to determine if the disposal activities identified in the PA had resulted in a release requiring response actions (SAIC, 1990). A soil gas survey encompassing 20 locations was conducted and results were used by SAIC to determine the placement of soil borings in the area of greatest soil gas contamination. Three soil borings were advanced to a maximum depth of 64 ft, and soil samples were collected; groundwater was not encountered in any of the borings. The samples were analyzed for volatile organics compounds (VOCs), semi-volatile organic compounds (SVOCs), total petroleum hydrocarbons (TPH), trace metals, and nitrates/nitrites. The SI determined that, based on the soil data available at that time, the distance between Operable Unit NR-1 and the nearest drinking water wells at the Oasis compound and the climate at the site, the contaminants at Operable Unit NR-1 did not pose an unacceptable risk to human health and the environment. However, the scope of the SI did not include determination of the lateral or vertical extent of contamination, and no groundwater samples were collected.

2.2.2.4 Remedial Investigation

From 2006 to 2008, a RI was conducted by URS at Operable Unit NR-1. The RI characterized potential contamination in the air, water, and soil at Operable Unit NR-1 and included a HHRA and ERA for the site.

The RI included a passive soil gas survey, surface and shallow subsurface soil sampling, a geophysical investigation, and a deep soil boring and groundwater sampling investigation (URS, 2008). The passive soil gas survey was performed on a grid which extended beyond all sides of the gravel pit, and included 80 monitoring points. Based on the results of the passive soil gas survey, approximately 50 soil samples were collected from surface soil and shallow subsurface soil to a depth of 10 ft below ground surface (bgs). These samples were analyzed for VOCs, with some samples also analyzed for SVOCs, TPH, and/or metals. The geophysical investigation was conducted to identify potential preferential flow pathways beneath the site (if any) and to guide monitoring well placement. Subcontractors utilized sonic drilling techniques to install a total of 13

groundwater monitoring wells during three drilling phases. Deep subsurface soil sampling was conducted in some of the well borings for delineation of the nature and extent of soil contaminants in the vadose zone. Groundwater from these wells was sampled for VOCs, SVOCs, TPH-diesel range organics (DRO), total metals, and general chemistry parameters during four sampling rounds in 2007 and 2008. Aquifer slug testing was conducted in February 2008 on seven groundwater monitoring wells to estimate the hydraulic conductivity at the site.

The analytical data for the samples collected during the RI allowed for the determination of the lateral and vertical extent of soil contamination and the lateral extent of groundwater contamination at Operable Unit NR-1. Groundwater contaminant concentrations were observed to decrease with depth. No detectable VOC concentrations have ever been detected when monitoring the breathing space at the site (URS, 2008).

The HHRA and ERA concluded that there is no unacceptable risk to human health or ecological receptors, under current or reasonably anticipated future land use scenarios. The HHRA and ERA are discussed further in Section 2.7.

2.2.3 Enforcement Activities

Since 1984, the USAF has committed significant resources to assess and remediate environmental contamination identified at Hill AFB and its satellite facilities. The CERCLA (commonly referred to as the "Superfund" statute) established a national program for responding to releases of hazardous substances into the environment. In anticipation of CERCLA, the DoD developed the IRP to respond to releases of toxic or hazardous substances at DoD facilities. Hill AFB was already engaged in the IRP when it was placed on the EPA's CERCLA National Priorities List in July of 1987.

In 1994, Hill AFB applied for a Resource Conservation and Recovery Act (RCRA) Part B, Subpart X permit for open burn/open detonation operations at the Thermal Treatment Unit (TTU) located at UTTR-North. As part of the permit application process, Hill AFB identified a number of solid waste management units at UTTR-North. In 2001, Hill AFB and the State of Utah arrived at an agreement to manage a number of sites, including Operable Unit NR-1, under CERCLA. Operable Unit NR-1 was listed as a CERCLA site under Module VI of the *Hazardous Waste Operating Permit, United States Air Force Utah Test and Training Range (UT0570090001)* issued on February 13, 2003, by UDEQ. This permit required the negotiation of a federal facilities agreement (FFA) to stipulate the terms of cleanup and close out for CERCLA sites. The FFA, also called an integration agreement, was finalized in November 2006 and was incorporated into the revised permit (UDEQ, 2008). It is the intent of Hill AFB to meet any and all of the relevant requirements [as Applicable or Relevant and Appropriate Requirements (ARARs)] under both RCRA and CERCLA, as appropriate.

2.3 COMMUNITY PARTICIPATION

The Air Force has followed a remedy selection process in accordance with the public participation requirements of CERCLA Sections 113(k)(2)(B)(i-iv) and 117. In addition, the requirements outlined in the *Final Community Relations Plan, Utah Test and Training Range, Environmental Restoration Program* (Radian, 1998) have been fulfilled. Hill AFB delivered the RI document to the USEPA, the UDEQ, and the Administrative Record repositories (Appendix B). The Administrative Record repositories are located at Hill AFB and at Weber State University, both in the Stewart Library on the main campus in Ogden, Utah and in the Davis Campus Library in Layton, Utah. An information repository was initially established for documents related to the UTTR in West Wendover, Nevada in 1998 (Radian, 1998), but the repository has since been shifted to the locations of the

Administrative Record. The Administrative Record file and the information repositories are open to the public. The Decision Document for Operable Unit NR-1 was made available in the Administrative Record on September 30, 2010. The notice of availability of the Decision Document was published in the Tooele Transcript-Bulletin on September 30, 2010. In addition, the document was made available online on the Hill website at www.hillrab.org/Chempit4 on the same date. The public comment period ran from October 1 to October 30, 2010. Public comment on the Decision Document for Operable Unit NR-1 is discussed in Section 3.0.

2.4 SCOPE AND ROLE OF RESPONSE ACTION

Response actions at Hill AFB and at the UTTR are structured into 18 operable units (Loucks, 2009). Most of the operable units are geographically defined (though some are delineated on the basis of contaminated media) and where appropriate, address all known contaminated media within each operable unit. Remedial actions are addressed separately for each operable unit, and each operable unit is at different stages of investigation or remediation. This Decision Document is prepared for Operable Unit NR-1 and documents that no action will be undertaken at the site based on no unacceptable risks to human health under current and reasonably anticipated future land use scenarios and no unacceptable risks to the environment.

2.5 SITE CHARACTERISTICS

2.5.1 Physical Setting

UTTR-North terrain varies from barren mud and salt flats to vegetated valley floors and mountain ranges. Surface elevation at UTTR-North varies from approximately 4,000 ft above mean sea level (amsl) in the valleys, to approximately 7,000 ft amsl in the mountainous regions. The elevation at Operable Unit NR-1 is approximately 4,360 ft amsl.

The valleys at UTTR-North are generally filled with Tertiary and Quaternary age, unconsolidated-to-poorly-consolidated alluvial, lacustrine, and aeolian sediments, and evaporite deposits. Surface soils exposed at the natural ground surface surrounding Operable Unit NR-1 are lacustrine sediments consisting primarily of silts and fine sands. These sediments occur as a thin veneer, locally 1.5 ft to 5 ft thick, covering the underlying alluvial sediments that dominate the subsurface geology at the site. Soil conditions at the UTTR-North are typically alkaline with an average pH of approximately 8.2 (Price and Bolke, 1970).

The floor of Operable Unit NR-1 lies approximately 8 ft below the surrounding natural ground surface, and consists of a relatively flat lying gravel pavement resulting from the wind erosion of the exposed sedimentary units. Gravel is stockpiled approximately 60 ft northeast of the defined disposal area, and gravel removal is currently limited to the northern edge of the pit, located more than 500 ft north of the defined disposal area. Photos of the site are provided in Figure 2-3.

No surface water bodies are present within, or in the immediate vicinity of, Operable Unit NR-1. Surface water hydrology at Operable Unit NR-1 is dominated by the processes of overland flow, infiltration, and evapotranspiration.

The water table at Operable Unit NR-1 is encountered at depths ranging from 138 ft to 168 ft bgs with minimal seasonal fluctuations (URS, 2008). Drinking water for the surrounding area is obtained from wells located approximately 3 miles south of the site (URS, 2008). Based on the groundwater elevation data collected in February 2008, the dominant hydraulic gradient at Operable Unit NR-1 is to the north-northwest with a magnitude of 0.0008 feet/foot (ft/ft). The shallow

groundwater aquifer at UTTR-North is saline and is categorized by the State of Utah as a Class III aquifer, which cannot be used for potable water without treatment (URS, 2008).

2.5.2 Conceptual Site Model

A conceptual site model (CSM) [also referred to as a conceptual exposure model (CEM) in the RI report] has been developed for human and ecological receptors at Operable Unit NR-1 (URS, 2008) and is presented in Figure 2-4. A CSM is a schematic representation of source areas, release mechanisms, environmental transport media, and potential exposure routes that may lead to exposure of receptors to chemicals in the site area. The CSM provides a basis for the risk assessments summarized later in this Decision Document and, as a result, forms the basis for the evaluation of the need for response actions.

Potentially complete and significant exposure pathways for human and ecological receptors were evaluated in the CSM. A complete exposure pathway includes the following elements: a source and mechanism of contaminant release; a transport or contact medium (e.g., soil); an exposure point where humans can contact the contaminated medium; and an exposure (intake) route (e.g., ingestion or inhalation). The absence of one of these elements results in an incomplete exposure pathway. Where there is no potential exposure, there is no potential risk. Risk assessment and risk characterization guidance (USEPA, 1989; USEPA, 1992) do not require that all plausible exposure scenarios and exposure pathways be assessed. As a result, pathways which are incomplete, or potentially complete but negligible, were not evaluated in the risk evaluation. A pathway may be potentially complete but negligible, if the transport process is considered to be insignificant resulting in negligible concentrations of chemicals in the exposure medium or if the amount of exposure to the medium is considered to be negligible. Potentially complete but negligible pathways were not evaluated quantitatively in the risk assessment because these pathways would be unlikely to measurably impact risk estimates or remediation decisions. Further details regarding the exposure scenarios that were quantitatively evaluated in the risk evaluation are presented in Sections 2.7.1.2, 2.7.4.1, and 2.7.4.2.

2.5.3 Nature and Extent of Contamination

The nature and extent of contamination in groundwater and soil at Operable Unit NR-1 is summarized below.

2.5.3.1 Soil

The area of soil contamination at Operable Unit NR-1 measures approximately 135 ft by 115 ft. The maximum detected concentrations of contaminants in surface soil did not exceed background concentrations and risk-based concentrations protective of residents. Subsurface soil contaminants exceeding risk screening criteria for residential use include: 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, tetrachloroethylene (PCE), trichloroethylene (TCE), and TPH as DRO. The analytical data from borings in the area of contaminated soil indicate there are several zones of subsurface soil contamination associated with finer-grained soils like clay and silt. Non-aqueous phase liquids (NAPLs) were detected in samples collected at depths of approximately 22 to 25 ft bgs, 54 to 56 ft bgs, 89 to 90 ft bgs, and 100 ft bgs in two borings in this area. Soil contamination extends to approximately 105 ft bgs. Based on the analytical data, there is a 40-ft thick zone of uncontaminated soil that separates the contaminated soil and the groundwater table at approximately 145 ft bgs. Additional details regarding the extent and distribution of soil contamination at Operable Unit NR-1 are provided in the RI report (URS, 2008).

2.5.3.2 Groundwater

Groundwater contamination at Operable Unit NR-1 is restricted to the vicinity of the gravel pit. The concentrations of two groundwater contaminants [1,1-dichloroethene (1,1-DCE) and TCE] exceeded maximum contaminant levels (MCLs) established for drinking water (URS, 2008). The TCE plume, when contoured to the MCL of 5 micrograms per liter (µg/L), measures approximately 990 ft (east to west) by 1,125 ft (north to south). The highest TCE concentration detected during the RI was 96.7 µg/L (URS, 2008). The 1,1-DCE plume, when contoured to the MCL of 7 µg/L, measures approximately 750 ft (east to west) by 900 ft (north to south). The highest 1,1-DCE concentration detected during the RI was 37.4 µg/L (URS, 2008).

2.5.3.3 Contaminant Fate and Transport Modeling

Fate and transport modeling of the TCE within the groundwater and the soil at Operable Unit NR-1 was performed for the RI report (URS, 2008). TCE concentrations within the groundwater were modeled using MODFLOW and MT3D within the Groundwater Modeling System (GMS) (EMRL, 2007). The mass of TCE within the vadose zone over time was modeled using equilibrium partitioning equations. Major assumptions of the model include:

(1) the solute concentrations do not affect the density of groundwater,

(2) NAPL is not in contact with groundwater at Operable Unit NR-1,

(3) there is a finite mass of TCE in the vadose zone,

(4) the TCE concentration entering the groundwater decreases with time as the TCE mass in the vadose zone concurrently declines,

(5) TCE is removed from the vadose zone via passive soil vapor extraction and dissolution into the recharge water passing through the vadose source zone, and

(6) dissolved TCE in groundwater is attenuated by dispersion and biological degradation.

The RI estimated that approximately 528 kilograms (kg) of TCE are currently present in the vadose zone and 19.8 kg of TCE are present in the groundwater at Operable Unit NR-1 (URS, 2008). The model indicates that more than 99% of the TCE mass in the vadose zone will have been removed, primarily through infiltrating precipitation, within approximately 50 years and the areal extent of the TCE plume will stabilize in 141 years. Once the plume has stabilized, the 5 µg/L (drinking water MCL) contour of the TCE plume will extend a distance of only 0.6 miles north-northwest from Operable Unit NR-1. After 256 years, TCE concentrations throughout the entire plume are predicted to fall below 5 µg/L.

Model sensitivity analysis indicates that parameters such as biological degradation rates, dispersivity, contaminant mass, recharge rate, and recharge water contaminant concentration, have significant effects on the model output (URS, 2008). The assumption regarding contaminant removal from the vadose zone through passive soil vapor extraction does not significantly affect the results of the model. The model predicts that, after approximately 50 years, the passive soil vapor extraction system will have transferred approximately 13 kg of the TCE from the vadose zone to the atmosphere, and infiltrating precipitation will have transferred approximately 512 kg of the TCE from the vadose zone to groundwater (URS, 2008).

2.6 CURRENT AND POTENTIAL FUTURE LAND AND RESOURCE USES

Operable Unit NR-1 is located within an active gravel pit within UTTR-North. Access to UTTR-North is restricted via a perimeter fence, signs, surveillance, and security personnel. Currently, there are no buildings at Operable Unit NR-1. The only regular human use of Operable Unit NR-1 is by gravel pit operators who occasionally remove gravel from an existing uncontaminated stockpile located more than 60 ft from the defined source area. The stockpile is periodically replenished using gravel from the northern edge of the gravel pit. The shallow groundwater aquifer at UTTR-North is categorized by the State of Utah as a Class III aquifer, which cannot be used for potable water without treatment (URS, 2008). The closest water production wells are located at Oasis, approximately three miles south of the site (URS, 2008). The water withdrawn from the wells at Oasis, like the groundwater at Operable Unit NR-1, is not potable and must be treated prior to use.

Reasonably anticipated future land use of Operable Unit NR-1 is expected to remain the same as current use. Additionally, gravel may at some time be removed from the vertical cut of the pit located more than 500 ft north of the defined source area. No excavation in the defined source area is expected. There are no plans to use groundwater at the site in the foreseeable future (URS, 2008). Land ownership of the area is unlikely to change in the future, as there are no plans to close the UTTR-North facility in the foreseeable future.

2.7 SUMMARY OF SITE RISKS

A HHRA and an ERA were prepared as part of, and included in, the RI for Operable Unit NR-1 (URS, 2008). The HHRA and ERA evaluated potential human health and environmental effects, respectively, caused by contamination at Operable Unit NR-1 under current and hypothetical future exposure scenarios.

2.7.1 Human Health Risk Assessment Process

The HHRA provides the basis for taking action and identifies the contaminants and exposure pathways that need to be addressed by the remedial action. It is also used in support of the determination that no remedial action is necessary to protect human health. The following sections outline the process for conducting the HHRA. The HHRA results for soil and groundwater at Operable Unit NR-1 are discussed in Sections 2.7.2 and 2.7.3, respectively.

2.7.1.1 Identification of Contaminants of Potential Concern

The selection of contaminants of potential concern (COPCs) is a conservative screening process that identifies chemicals that may be present at the site at concentrations that could result in unacceptable risks to exposed receptors. The COPC selection process was conservative to ensure that potential risks were not overlooked at this early stage in the HHRA. The maximum detected concentration of each constituent in each medium that was evaluated (surface soil and surface plus subsurface soil, as explained in Section 2.7.1.2) was compared to a screening value to select the COPCs. If the maximum detected concentration of a constituent exceeded the screening value, the constituent was selected as a COPC and retained for further evaluation. Although residential use of Operable Unit NR-1 is not anticipated based on current and reasonably anticipated future land use, the USEPA Region III risk-based concentrations (RBCs) for residents (USEPA, 2007) were primarily used as the screening levels to identify COPCs. Screening levels for non-cancer effects were divided by 10 prior to the comparison, to account for potential cumulative effects as reflected in a cumulative hazard index (HI).

The RBCs are conservatively set to represent an excess lifetime cancer risk of 1 x 10^{-6} (a 1 in 1,000,000 chance of developing cancer over a 70-year lifetime) or a non-cancer HI of 1.0 (an HI of less than 1 would not be expected to observe non-cancer health effects) as a result of site-related exposure. Chemicals eliminated from further evaluation at this step present minimal risks to exposed human receptors. The COPCs were then further evaluated by comparing their maximum detected concentrations to the 95% upper tolerance limit background concentrations for UTTR-North. COPCs that were determined to be inconsistent with background concentrations were considered in the evaluation of site-related risk.

2.7.1.2 Exposure Assessment

The exposure assessment defines and evaluates the type and magnitude of human exposure to the chemicals present at a site or migrating from a site. The exposure assessment analyzes the physical setting of the site, identifies potentially exposed populations, and estimates chemical intakes under the identified exposure scenarios. A complete exposure pathway consists of all five of the following elements: source (e.g., chemical); environmental transport medium (e.g., groundwater); mechanism for release and migration of chemical (e.g., leaching from subsurface soil to groundwater); point or site of potential human contact (exposure point, e.g., groundwater as potable water); and route of intake (e.g., ingestion of groundwater). The compilation of contaminant sources, potentially complete exposure pathways, and potential human receptors are depicted in the CSM in Figure 2-4.

Although there are no plans to close the UTTR and no plans to build facilities or residences in Operable Unit NR-1, the HHRA considered the following exposure scenarios:

- current/future gravel pit operator
- future hypothetical construction worker
- future hypothetical indoor worker
- future hypothetical on-site resident

Each of these potential receptors was assumed in the HHRA to be exposed to surface soil and/or surface plus subsurface soil. The HHRA assumed that the current and future gravel pit operators are exposed to surface soil; the future hypothetical construction worker is exposed to surface plus subsurface soil during excavation activities; and the future hypothetical indoor worker and future hypothetical on-site resident are exposed to surface soil. Further, it is assumed that there is no exposure to groundwater in any current or future exposure scenario, as groundwater is located 145 ft bgs, does not “daylight”, and no wells are known to draw upon any water affected by contamination. For purposes of evaluating potential unrestricted use of the site, the HHRA assumed that future residents and future indoor workers would obtain potable water from a municipal source.

The HHRA determined that the only human receptor with potentially complete and significant exposure pathways was the hypothetical construction worker, via inhalation of particulates and vapors in outdoor air and ingestion and direct contact with surface plus subsurface soil. One of the reasons for this determination is that the HHRA determined that no COPCs are present in surface soil (Section 2.7.2), resulting in several exposure pathways for potential receptors that were classified as negligible. The rationale for determining if an exposure pathway is incomplete or negligible is presented in the RI (URS, 2008). As discussed in Section 2.5.2, exposure pathways that are incomplete or potentially complete, but negligible, were not evaluated in the risk evaluation.

The reasonable maximum exposure (RME) scenario for quantifying the potentially complete and significant exposure pathways for the hypothetical construction worker was utilized in the HHRA. The RME scenario represents a conservative (i.e., upper limit) level of human exposure. Pathway-specific information for these receptors, such as exposure parameters used to quantify exposure, is presented in the RI (URS, 2008). Exposure factors used in the HHRA were compiled from USEPA and UDEQ sources, as listed in the RI report (URS, 2008).

2.7.1.3 Toxicity Assessment

This section describes the toxicity values used for the characterization of the potential human health risks associated with the potential exposure to media at Operable Unit NR-1. The toxicity assessment identifies the potential adverse health effects in exposed populations. The sources of toxicity values used in the HHRA were selected in accordance with USEPA risk assessment guidance (USEPA, 2003). The sources of toxicity values are discussed in the RI report (URS, 2008).

The toxicity value used to evaluate carcinogenic effects is the cancer slope factor (CSF). The CSF is an upper-bound estimate of the probability that a person will develop cancer over a lifetime based on a given dose. The toxicity value used to evaluate noncarcinogenic effects is the reference dose (RfD). The RfD is an estimate of the daily exposure level for the human population that is unlikely to result in adverse health effects.

2.7.1.4 Risk Characterization

The results of the exposure assessment and the toxicity assessment were used to develop numerical estimates and characterize the potential health risks associated with site-related contamination.

For carcinogens, risks are generally expressed as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to the carcinogen. These risks are probabilities that usually are expressed in scientific notation (e.g. 1×10^{-6}). A lifetime excess cancer risk of 1×10^{-6} indicates that an individual receiving the RME dose of a contaminant has a 1 in 1,000,000 chance of developing cancer as a result of site-related exposure. This risk is referred to as “excess lifetime cancer risk” because it would be in addition to the risks of developing cancer that individuals face from other causes, such as smoking or exposure to too much sun. The NCP at 40 CFR Section 300.430(e)(2)(i)(A)(2) indicates that a generally acceptable risk range for site-related exposures is 10^{-4} to 10^{-6}.

The potential for noncarcinogenic effects is evaluated by comparing the dose of a noncarcinogenic chemical to an established RfD for that chemical. A RfD represents a dose that an individual may be exposed to, that is not expected to cause any deleterious effect. The ratio of the chemical dose to the RfD is called a hazard quotient (HQ). A HQ value of less than one indicates that a receptor’s dose of a single contaminant is less than the RfD and that noncarcinogenic effects from that chemical are unlikely. The HI is generated by adding the HQs for all contaminants of concern (COCs) at a site. A target organ HI is generated by adding HQ values for all chemicals that affect the same target organ or that act through the same mechanism within a medium or across all media to which a given individual may reasonably be exposed. A target organ HI of less than or equal to one indicates that, based on the sum of all HQs from different contaminants and exposure routes, noncarcinogenic effects from all contaminants are unlikely. An HI of greater than 1 indicates that site-related exposures may result in adverse health effects.

2.7.2 Baseline Human Health Risk Assessment Results – Soil

The HHRA used analytical data generated from analysis of surface and subsurface soil samples collected during the RI to perform the soil risk assessment. Based on a comparison of maximum detected concentrations at the site to background concentrations and to risk-based concentrations protective of residents, no COPCs were selected for surface soil (defined as 0 to 2 ft bgs for the purposes of the HHRA). Therefore, surface soil at Operable Unit NR-1 does not pose an unacceptable threat to human health under current and reasonably anticipated future exposure scenarios.

1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, PCE, TCE, and TPH as DRO (C_{10} to C_{28}) were identified as COPCs in surface plus subsurface soil (0 to 10 ft bgs) at Operable Unit NR-1. Based on conservative assumptions intended to protect specific potential receptors, potential risks were evaluated for hypothetical construction workers at Operable Unit NR-1. No other human receptors were assumed to be exposed to surface plus subsurface soil. The complete exposure routes evaluated for hypothetical construction workers included incidental ingestion of soil, dermal contact with soil, and inhalation of particulates and vapors in outdoor air. The calculated cancer risk is 2×10^{-8} and the HI for non-cancer risk is 0.2 for hypothetical construction workers assumed to be exposed to surface plus subsurface soil (0 to 10 ft bgs) at Operable Unit NR-1 (Table 2-1). The cancer risk is below 1×10^{-6} and the HI is less than 1, indicating that COPCs in surface plus subsurface soil at Operable Unit NR-1 do not pose an unacceptable threat to human health under current and reasonably anticipated future exposure scenarios.

Because the results of the HHRA indicate that the surface soil and surface plus subsurface soil at Operable Unit NR-1 do not present an unacceptable risk for any potential receptors under current and reasonably anticipated future exposure scenarios, no remedial action is necessary for surface or subsurface soil.

2.7.3 Baseline Human Health Risk Assessment Results – Groundwater

No groundwater COPCs were identified at Operable Unit NR-1 because groundwater pathways at the site are incomplete or negligible for human receptors (URS, 2008). There are currently no complete exposure pathways to contaminated groundwater at Operable Unit NR-1. The groundwater is located at a depth of approximately 145 ft bgs, does not “daylight” at the site, and no wells are known to draw upon any water affected by contamination at the site. The closest drinking water well is approximately three miles south (upgradient) of the site at the Oasis compound. No future use of groundwater is anticipated at Operable Unit NR-1 because groundwater at the site is not potable. Additionally, there are no plans to use groundwater for such purposes in the future. Because the results of the HHRA indicate that the groundwater at Operable Unit NR-1 does not present an unacceptable risk for any receptors under current and reasonably anticipated future exposure scenarios, no remedial action is necessary for groundwater.

2.7.4 Ecological Risk Assessment Process

The ERA provides an additional basis for taking action and identifies the contaminants and exposure pathways that need to be addressed by the remedial action, based on potential threats to ecological receptors. The ERA is also relied upon to support the determination that no remedial action is necessary to protect ecological receptors. The following sections outline the process for conducting the ERA. The ecological risk characterization results for soil at Operable Unit NR-1 are discussed in Section 2.7.5.

2.7.4.1 Conceptual Site Model

The ecological CSM was developed for Operable Unit NR-1 and is depicted in Figure 2-4. The exposure of ecological receptors to chemicals at the site is schematically represented with source areas, release mechanisms, environmental transport media, and potential exposure routes.

Potentially complete and significant exposure pathways for ecological receptors are evaluated in an ERA. A complete and significant exposure pathway includes the following elements: a source and mechanism of contaminant release; a transport or contact medium (e.g., soil); an exposure point where the ecological receptor comes in contact the contaminated medium; and a significant exposure (intake) route (e.g., ingestion or inhalation). Potentially complete, but negligible, pathways, such as inhalation, were not evaluated quantitatively (URS, 2008) because these pathways would be unlikely to measurably impact risk estimates or remediation decisions. The ERA assumed that ecological receptors are exposed to soils extending from the surface to three ft bgs and that no exposure to groundwater occurs due to the depth of groundwater at the site.

2.7.4.2 Identification of Ecological Receptors

Ecological exposure pathways that are potentially complete and significant were evaluated in the ERA. Receptors with complete exposure pathways were as follows:

- plants and soil invertebrates via direct contact with soil;
- herbivores, invertivores, and carnivores via ingestion of soil;
- invertivores and carnivores via ingestion of food and prey; and
- herbivores via ingestion of vegetation.

Parameters used to evaluate these exposure pathways are described in the RI (URS, 2008). Specific ecological receptors used to represent herbivores, invertivores, and carnivores were:

- Herbivores – sage sparrow, Townsend's ground squirrel, and pronghorn
- Invertivores – western meadowlark, loggerhead shrike, and northern grasshopper mouse
- Carnivores – burrowing owl and coyote

Most of these potential ecological receptors were specified by Attachment 10a (Thermal Treatment Unit Ecological Risk Screen) to the *Hazardous Waste Operating Permit United States Air Force Utah Test and Training Range (UT0570090001)* (UDEQ, 2008).

2.7.4.3 Identification of COPECs

The identification of chemicals of potential ecological concern (COPECs) is a conservative screening process that identifies those chemicals that may be present at the site at concentrations that could result in risks to exposed ecological receptors. The identification of COPECs serves to focus the detailed analysis steps on site-related chemicals that have the potential to pose risk to one or more ecological receptors. To select the COPECs, the maximum detected concentration of each constituent in surface soil was compared to a conservative screening value and the 95% upper tolerance limit background concentrations for UTTR-North. Chemicals eliminated from further evaluation at this step present minimal risks to exposed ecological receptors. The ecological screening levels were derived from USEPA and other sources and are discussed in the RI report (URS, 2008).

Five analytes (TPH as DRO [C_{10} to C_{28}], cadmium, lead, mercury, and selenium) were identified as COPECs for Operable Unit NR-1 and were further evaluated for risk analysis and characterization. Chemicals eliminated from further evaluation at this step present minimal risks to exposed human receptors. The 95% upper confidence limit (UCL) or the maximum measured concentration, whichever is lower, was used to assess quantitatively the potential risk to ecological receptors exposed to surface soil (defined as 0 to 3 ft bgs for the purposes of the ERA).

2.7.4.4 Risk Estimation

In this component of the ERA, exposure of ecological receptors was developed and quantified. In addition, ecological effects (i.e., toxicity) of the identified COPECs to the various receptors were quantified with toxicity reference values (TRVs) from literature. The derivation and quantification of exposure and the derivation of TRVs are detailed in the RI report (URS, 2008). HQs were calculated for each receptor. HQ values can be used to estimate the potential level at which the measured or predicted exposure relates to known levels where adverse effects are first observed in laboratory toxicological studies [i.e., the lowest observed effect concentration (LOEC) or lowest observed adverse effect level (LOAEL)]. When the HQ is less than or equal to one ($\leq$1.0), the estimated potential exposure is less than or equal to the TRV, indicating that significant adverse effects likely do not exist given the conservative assumptions inherent in the ERA process. HQ values greater than 1.0 suggest the receptor is potentially at risk of adverse effects. HQ values greater than 1.0 warrant the need for additional risk refinement and evaluation (i.e., additional lines of evidence, including the uncertainties associated with the assessment, would need to be considered).

2.7.5 Ecological Risk Assessment Results

The HQs for plants and soil invertebrates are all significantly lower than 1.0 for the COPECs (Table 2-2) identified at Operable Unit NR-1. Further, given the conservative exposure assumptions and uncertainties applied in the ERA, the effective risk estimates are most likely even lower than calculated. Therefore, risk to plants and soil invertebrates at Operable Unit NR-1 exposed to the COPECs is unlikely.

The HQs for wildlife (birds and mammals) exposed to the COPECs with TRVs at Operable Unit NR-1 are also all significantly lower than 1.0 (Table 2-3). In view of the physically disturbed nature of the habitat in Operable Unit NR-1, especially the marginal quality of soils and lack of vegetation, the ERA results are conservative because they overstate utilization of Operable Unit NR-1 by ecological receptors. Therefore, at Operable Unit NR-1, wildlife receptors exposed to the COPECs are not likely at risk. Although a TRV for birds exposed to TPH as DRO (C_{10} to C_{28}) is not available, exposure of avian receptors is less than that for the ground squirrel, and the HQ calculated for the ground squirrel due to TPH as DRO (C_{10} to C_{28}) was negligible. Therefore, by logical deduction, risk to avian receptors exposed to TPH as DRO (C_{10} to C_{28}) is also unlikely. As a result of this analysis, none of the COPECs are considered chemicals of ecological concern (COECs).

Because the results of the ERA indicate that the surface soil (0 to 3 ft bgs) at Operable Unit NR-1 does not present an unacceptable risk for any potential ecological receptors, no remedial action is necessary for surface or subsurface soil.

2.7.6 Conclusions of Risk Assessments and Basis for Action

The outcomes of the HHRA and the ERA indicate that no remedial action is necessary for soil or groundwater at Operable Unit NR-1. These findings have been approved by UDEQ (Appendix A).

Land use, and the potential for exposure of human receptors to contaminants at Operable Unit NR-1, is currently limited and is expected to remain unchanged in the future due to the site's location within UTTR-North. The HHRA concluded that no COPCs were identified in surface soil (0 to 2 ft bgs), based on a risk-based screening of maximum detected concentrations at the site versus background concentrations and USEPA Region III residential RBCs. Therefore, surface soil at Operable Unit NR-1 does not pose an unacceptable threat to human health. Further, surface plus subsurface soil at Operable Unit NR-1 does not pose an unacceptable threat to human health based on current and reasonably anticipated future exposure scenarios; the estimated cancer risk for exposure to surface plus subsurface soil by hypothetical construction workers is less than $1x10^{-6}$ and the HI is significantly below 1. There is no associated risk from the groundwater, as there are currently no complete exposure pathways to contaminated groundwater at Operable Unit NR-1 based on current land use. Future use of groundwater at Operable Unit NR-1 is not anticipated because groundwater at the site is not potable. Lastly, no ecological receptors (plants, soil invertebrates, birds and mammals) are at risk from exposure to soil at Operable Unit NR-1. Therefore, the ERA concluded that no action is necessary to protect ecological receptors.

2.8 DOCUMENTATION OF SIGNIFICANT CHANGES

As detailed in Section 3 of this document, no verbal or written comments from the public regarding the decision for Operable Unit NR-1 were received during the public comment period. Following the end of the public comment period, it was determined that no changes to the no action decision, as identified in the Draft Final Decision Document that was made available for public review and comment, were necessary or appropriate.

Table 2-1
Construction Worker Risk Summary
Reasonable Maximum Exposure
Surface Plus Subsurface Soil (0 to 10 ft bgs)

	Carcinogenic Risk				Noncarcinogenic Hazard			
	Ingestion	**Dermal**	**Inhalation**	**Total Cancer Risk**	**Ingestion**	**Dermal**	**Inhalation**	**Total HI**
1,2,4-Trimethylbenzene	NC[1]	NC[1,2]	NC[1]	NC[1]	0.0002	NC[2]	0.0003	0.0005
1,3,5-Trimethylbenzene	NC[1]	NC[1,2]	NC[1]	NC[1]	0.00009	NC[2]	0.0002	0.0003
Tetrachloroethene	1.80E-08	NC[2]	4.18E-11	1.81E-08	0.00005	NC[2]	0.000002	0.00005
Trichloroethene	1.47E-10	NC[2]	4.80E-12	1.52E-10	0.005	NC[2]	0.000008	0.005
Petroleum hydrocarbons (C10-C28)	NC[1]	NC[1]	NC[1]	NC[1]	0.2	0.1	0.006	0.2
Total for Surface Plus Subsurface Soil	**1.82E-08**	**NC**	**4.66E-11**	**2.E-08**	**0.2**	**0.1**	**0.006**	**0.2**

Notes:
1. Carcinogenic risk not calculated because compound is not classified as a carcinogen (USEPA, 2007; URS, 2008).
2. Dermal risk not calculated for VOCs (1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, tetrachloroethene, and trichloroethene) per USEPA guidance (USEPA, 2004).

HI = Hazard Index
NC = Not Calculated
Petroleum hydrocarbons (C10-C28) = TPH as DRO (C10-C28)

Table 2-2
Plant and Soil Invertebrate Hazard Quotients

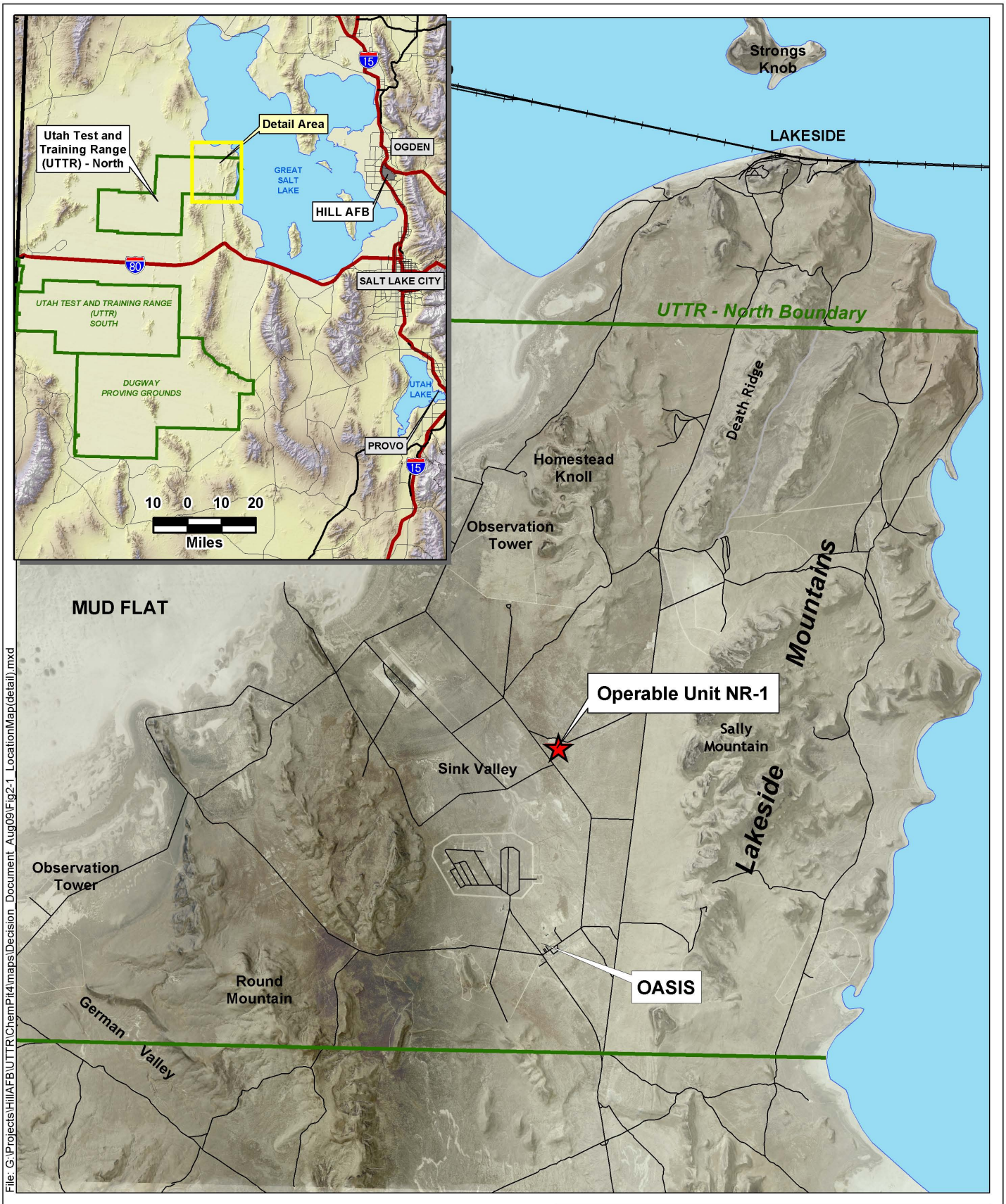
COPEC	EPC (mg/kg)	Plant LOEC (mg/kg)	Plant LOEC HQ	Invertebrate LOEC (mg/kg)	Invertebrate LOEC HQ
Cadmium	1.44	160	0.0	700	0.0
Lead	27.5	600	0.05	8,500	0.0
Mercury	0.0171	1.5	0.01	0.25	0.07
Petroleum hydrocarbons C10-C28	108	1,000	0.1	1,000	0.1
Selenium	1.37	2.6	0.5	21	0.07

Notes:
0.0 indicates an HQ of <0.01
COPEC = Chemical of Potential Ecological Concern
EPC = Exposure Point Concentration
HQ = Hazard Quotient = EPC / LOEC
LOEC = Lowest Observed Effects Concentration
mg/kg = milligrams per kilogram
Petroleum hydrocarbons C10-C28 = TPH as DRO (C10-C28)

Table 2-3
Summary of Wildlife Hazard Quotients

COPEC	Burrowing Owl	Loggerhead Strike	Sage Sparrow	Western Meadowlark	Coyote	Northern Grasshopper Mouse	Townsend's Ground Squirrel	Pronghorn
Cadmium	0.0	0.0	0.0	0.06	0.0	0.04	0.0	0.0
Lead	0.1	0.02	0.0	0.2	0.0	0.05	0.01	0.0
Mercury	0.0	0.01	0.0	0.07	0.0	0.0	0.0	0.0
Petroleum hydrocarbons C10-C28	-	-	-	-	0.0	0.0	0.0	0.0
Selenium	0.04	0.0	0.0	0.03	0.0	0.1	0.1	0.0

Notes:
0.0 indicates an HQ of <0.01
- = HQ not available
COPEC = Chemical of Potential Ecological Concern
HQ = Hazard Quotient
Petroleum hydrocarbons C10-C28 = TPH as DRO (C10-C28)



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Operable Unit NR-1 Location Map

Operable Unit NR-1
Decision Document
UTTR-North

FIGURE 2-1

Approximate Extent and Location of Stained Soil

N
W E
S

90 0 90 180
Feet

Operable Unit NR-1 Site Map

Operable Unit NR-1
Decision Document
UTTR-North

FIGURE 2-2

Photo 1: West side of Operable Unit NR-1, looking northwest at road to gravel pit.

Photo 2: Vicinity of Operable Unit NR-1, looking northwest.

Photo 3: Looking southeast across Operable Unit NR-1.

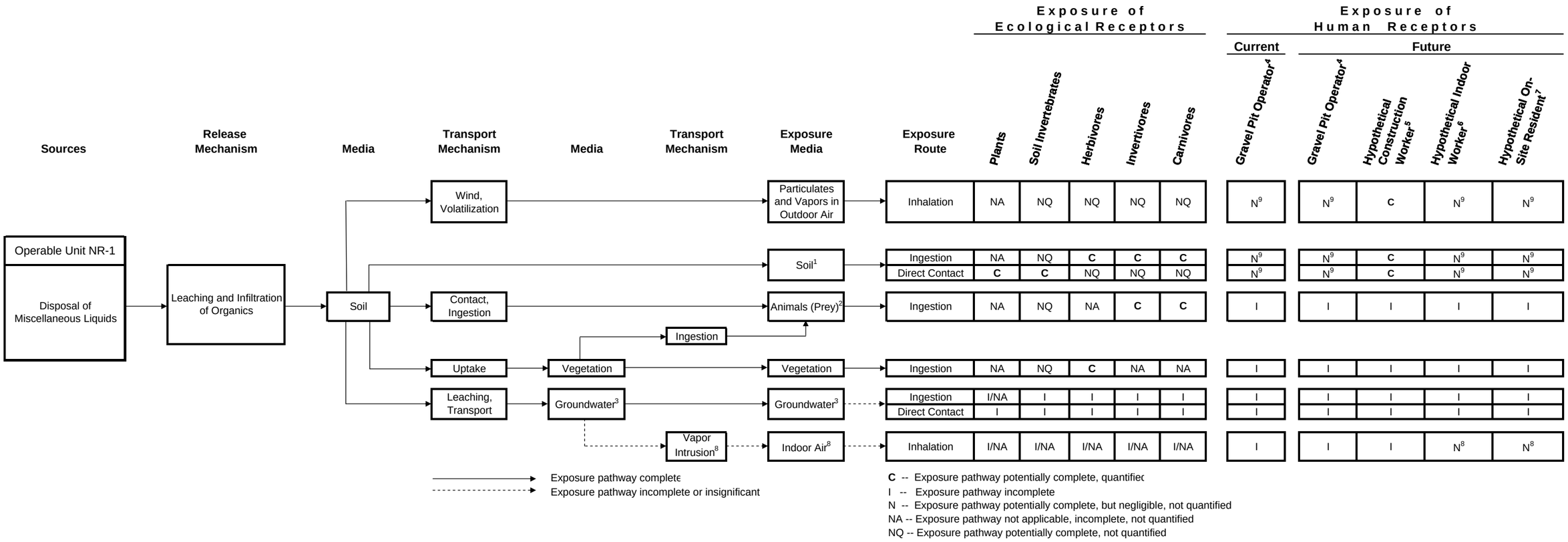
Photo 4: Looking northeast across Operable Unit NR-1.

Photos of Operable Unit NR-1

Operable Unit NR-1
Decision Document
UTTR - North

FIGURE 2-3

Figure 2-4
Operable Unit NR-1
Conceptual Site Model



Notes:

There are no plans to close Utah Test and Training Range and no plans to build facilities or residences in Operable Unit NR-1.

[1]Soil as an exposure medium extends from the surface to 10 feet deep. Ecological receptors are assumed to be exposed to soil 0 to 3 feet deep. Human receptors are assumed to be exposed to the following soil depths: Gravel Pit Operator - 0 to 2 feet; Construction Worker - 0 to 10 feet; Indoor Worker - 0 to 2 feet; and Resident - 0 to 2 feet.

[2]Animal prey can include soil invertebrates or wildlife (small birds and mammals).

[3]Groundwater is first found at a depth of 145 feet below ground surface, does not "daylight", and no wells are known to draw upon any water affected by contamination at Operable Unit NR-1. Therefore, exposure to groundwater is not considered to be complete for any ecological or human receptors.

[4]Current/future Gravel Pit Operator is assumed to be exposed to surface soil.

[5]No future construction activities are anticipated at Operable Unit NR-1. However, a hypothetical Construction Worker exposed to surface and subsurface soil while excavatin soil to install utility lines or dig a foundation is evaluated for risk management purposes to identify if institutional controls are needed, or if there is a change in land use, whethe a remedy may need to be reevaluated.

[6]No future office buildings are anticipated at Operable Unit NR-1. However, a hypothetical Indoor Worker in an office building exposed to surface soil is evaluated for risk management purposes. For the office worker scenario, it is assumed that water is obtained from municipal sources (groundwater from Operable Unit NR-1 is not used).

[7]No future residents are anticipated at Operable Unit NR-1. However, a hypothetical Resident exposed to surface soil is evaluated for risk management purposes. For the residential scenario, it is assumed that water is obtained from municipal sources (groundwater from Operable Unit NR-1 is not used).

[8]Significant vapor intrusion to indoor air will not occur because groundwater is found at a depth of 145 feet below ground surface.

[9]Pathways are considered negligible because no Chemicals of Potential Concern (COPCs) were identified in surface soil.

3.0 RESPONSIVENESS SUMMARY

This section provides a summary of the public's comments, concerns, and questions about the no action recommendation presented in the Decision Document for Operable Unit NR-1 and the USAF's responses to these concerns, comments, and questions. These responses are known as the Responsiveness Summary and are a requirement of the CERCLA process. The USEPA and UDEQ are required to review and consider the responses to public comments before the Decision Document can be finalized. The Responsiveness Summary consists of an introduction, an overview of Hill AFB community involvement, and a summary of the main issues identified by the public.

3.1 OVERVIEW

This Responsiveness Summary provides information about the views of the community with regard to the no action recommendation for Operable Unit NR-1, documents how public comments were considered during the decision-making process, and provides responses to concerns raised by the community.

The public was informed of the recommendation for no remedial action at Operable Unit NR-1 in the following ways:

- All items relevant to the no action decision contained within the Administrative Record (listed in Appendix B) have been on file in the Weber State University Library since September 30, 2010. The documents include the Site Investigation Report (SAIC, 1990) and the Final Remedial Investigation Report (URS, 2008).
- A notice of availability for the documents in the Administrative Record was published in the Tooele Transcript-Bulletin on September 30, 2010. The Draft Final Decision Document was made available on the Hill website at www.hillrab.org/Chempit4 on the same date.
- A public comment period for the Decision Document was held from October 1, 2010 through October 30, 2010.
- Written comments by the public were encouraged.

The public participation requirements of CERCLA Sections 113(k)(2)(B)(i-v) and 117 were met through the public comment process.

3.2 BACKGROUND ON COMMUNITY INVOLVEMENT

Hill AFB proactively informs the public regarding environmental cleanup efforts. A Restoration Advisory Board (RAB) was formed for Hill AFB in 1995 and actively participates in decisions regarding cleanup efforts at the base. Hill AFB has periodically sought public involvement for the environmental restoration projects at UTTR; no significant public interest in a RAB for UTTR has been manifested (Radian 1998; Harris, 2009). The residents in communities around UTTR have expressed a greater interest in noise impacts from low-flying aircraft near their communities than environmental cleanup activities on the UTTR, so community involvement activities for the UTTR have focused on flight activities (Radian, 1998). Hill AFB remains committed to informing the public regarding cleanup activities at UTTR to the extent practicable.

3.3 SUMMARY OF COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND AIR FORCE RESPONSES

A public comment period was held from October 1 through October 30, 2010. No verbal or written comments from the public regarding the decision for Operable Unit NR-1 were received during the public comment period. The USAF, with the concurrence of the UDEQ, has decided that the no action decision adequately and appropriately addresses site conditions at Operable Unit NR-1 in accordance with CERCLA requirements and the NCP.

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Appendix A
DERR Recommendation for No Further Action

State of Utah

GARY R. HERBERT
Governor

GREG BELL
Lieutenant Governor

Department of
Environmental Quality

Amanda Smith
Executive Director

William J. Sinclair
Deputy Director

ERRC-211-09

September 30, 2009

Ms. Fran Firouzi
Environmental Management Restoration
75th CEG/CEVR
7274 Wardleigh Road
Hill AFB, UT 84056-5137

Subject: Draft Operable Unit NR-1 Feasibility Study Project Plans, Utah Test and Training Range – North, Hill AFB, Utah March 2009

Dear Ms Firouzi:

The Utah Department of Environmental Quality, Division of Environmental Response and Remediation (DERR) has reviewed the above noted document and has the following comment:

As discussed in our conference call on May 13th 2009, the DERR recommends that the Feasibility Study for Operable Unit NR-1 not be finalized and that Hill AFB move directly to documenting a no-action decision for the site. This is based on the conclusions in the recently finalized Remedial Investigation Report that the site poses no unacceptable current or reasonably anticipated future risks to human health or the environment. EPA's "A guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents" (OSWER 9200.1-23P, July 1999) can be used as guidance for documenting the no-action decision. (In particular, see Section 8.1 and Highlights 8-2 and 8-4.)

As noted in the guidance, a no-action decision can still include monitoring to verify that no unacceptable exposures to potential hazards posed by the site occur in the future and DERR recommends that Hill AFB implement an appropriate monitoring program. If property use changes to a condition that was not anticipated in the human health and ecological risk assessments, then the site would need to be reevaluated.

If you have any questions please contact me at (801) 536-4164.

Sincerely,

Rik Ombach, Project Manager
Division of Environmental Response and Remediation

RO/jh

cc: Bronson Hawley, Division of Solid and Hazardous Waste
Evan Gabrielsen, URS Corporation
Jeff Coombs, Tooele County Health Department
Annette Barnard, U.S. EPA Region VIII

Appendix B
Administrative Record Index

Table B-1
Administrative Record Index for Operable Unit NR-1

Date	1990	2008
Title	Site Inspection Report for the Explosive Ordnance Thermal Treatment Unit and Chemical Disposal Pit No. 4, Oasis Site Utah Test and Training Range North Range, Utah	Final Remedial Investigation Operable Unit NR-1, Chemical Pit #4 Utah Test and Training Range – North Hill Air Force Base, Utah
Number of Pages	54	173
Author	Science Applications International Corporation	URS Corporation
Recipient	U.S. Air Force Logistics Command, Wright-Patterson AFB, Ohio	UTTR Project Manager, Hill AFB, Utah
Summary	This report presents the results of the investigation to determine whether contamination exists at Chemical Pit No. 4 and the need for further investigation. This report recommended that contamination at Chemical Disposal Pit No. 4 does not pose a risk to human health and the environment and that a no further action be performed under the Comprehensive Environmental Response, Compensation, and Liability Act/Superfund Amendments and Reauthorization Act.	The purpose of the Remedial Investigation was to gather sufficient information to characterize the nature and extent of risks posed by contamination at this site so that an informed risk management decision could be made and to evaluate potential remedial options for the site. The results of remedial investigation and baseline risk assessment, coupled with the current and probably future military use of Chemical Pit #4, do not indicate a need for remediation.