UNITED STATES AIR FORCE
JOINT BASE ELMENDORF-RICHARDSON
ALASKA

NIKE SITE SUMMIT

REMEDIAL FIELD INVESTIGATION REPORT

Remedial Investigation Report – Volume 2 of 3

FINAL

MAY 2012

FINAL

REMEDIAL FIELD INVESTIGATION REPORT

NIKE SITE SUMMIT

JOINT BASE ELMENDORF-RICHARDSON, ALASKA

Prepared for:
673rd Civil Engineer Squadron, Asset Management Flight,
Natural Resources Element, Restoration Section

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Under Contract to Air Force Center for Engineering and the Environment
Contract No. FA8903-08-D-8777, Task Order 0083

MAY 2012

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LIST OF ACRONYMS AND ABBREVIATIONS

1,2-DCA	1,2-dichloroethane
%	percent
µg/Kg	micrograms per kilogram
µg/L	micrograms per liter
ADEC	Alaska Department of Environmental Conservation
ADR	Analytical Data Report
AFCEE	Air Force Center for Engineering and Environment
Army	U.S. Army
AST	aboveground storage tank
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
COPC	chemical of potential concern
DCE	dichloroethene
DL	detection limit
DRO	diesel range organics
EDB	1,2-dibromomethane
EPA	U.S. Environmental Protection Agency
FFA	Federal Facility Agreement
FS	Feasibility Study
GRO	gasoline range organics
HHERA	human health and ecological risk assessment
HIPAR	High Power Radar Acquisition
JBER	Joint Base Elmendorf-Richardson
LOD	limit of detection
LOQ	limit of quantitation
LSS	Lower Site Summit
mg/Kg	milligrams per kilogram
mg/L	milligrams per liter
MLE	maximum likelihood estimates
ND	non-detect
NPL	National Priorities List
NRHP	National Register of Historic Places
NSS	Nike Site Summit
PA/SI	preliminary assessment / site investigation
PCB	polychlorinated biphenyl
pCi/L	pico Curies per liter
PHC	petroleum hydrocarbon
PID	photoionization detector
ppm	part per million
QA	quality assurance
QAPP	Quality Assurance Project Plan

LIST OF ACRONYMS AND ABBREVIATIONS (CONT.)

QC	quality control
RCRA	Resource Conservation and Recovery Act
RFI	remedial field investigation
RI	remedial investigation
RRO	residual range organics
RRS	radio relay station
SARA	Superfund Amendments and Reauthorization Act
SGS	SGS Environmental Services, Inc.
SVOC	semi-volatile organic compound
TCE	trichloroethene
TPH	total petroleum hydrocarbon(s)
UPL	upper prediction limit
USAF	U.S. Air Force
USS	Upper Site Summit
UST	underground storage tank
VOC	volatile organic compound

EXECUTIVE SUMMARY

This Remedial Field Investigation (RFI) Report was prepared at the direction of the Air Force Center for Engineering and Environment under Contract FA8903-08-D-8777, Task Order 0083. The purpose of this RFI Report is to present the findings of the RFI at Nike Site Summit (NSS) located on Joint Base Elmendorf-Richardson (JBER), Alaska (**Figure 1-1**).

The objective of the RFI was to identify the presence or absence of suspected contaminants in areas that may have been impacted by past activities at NSS to support preparation of a Feasibility Study (FS) and, ultimately, select appropriate remedial alternatives for NSS. The objective of the Remedial Investigation (RI)/Feasibility Study (FS) process is to gather information sufficient to support an informed risk management decision regarding whether unacceptable risks to human health and the environment are present, as well as analysis of which remedy appears to be most appropriate for any sites where remedial actions are found to be required (USEPA, 1988).

Field investigations were conducted at seven NSS areas, either during a limited 1995 and 1996 Preliminary Assessment/Site Investigation (PA/SI) (Dowl/Ogden, 1996a; 1996b), the RFI, or both:

- Upper Site Summit
- Lower Site Summit
- Area A (Former Opportunity Strikes Radio Relay Station)
- Area B (High Explosive and Guided Missile Magazines)
- Area C (Pump House)
- Area D (Former Borrow Area), and
- Background Sampling Area

Analytical samples from the RFI exceeded RI/FS and Human Health and Ecological Risk Assessment Work Plan project action limits (Army, 2010 – Attachment 2, Quality Assurance Project Plan [QAPP] Worksheet #15) and site-specific background limits (Section 11 of this RFI report) in the following contaminant categories:

- Petroleum Hydrocarbon Compounds
- Volatile Organic Compounds (VOCs)
- Semi-Volatile Organic Compounds (SVOCs)
- Metals

Impacted environmental media include:

- Surface Soil
- Subsurface Soil
- Groundwater

Table ES-1 provides a summary of specific analytes that were detected above project action limits and the affected media by NSS area.

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Table ES-1 Nike Site Summit – Summary of Analytes Detected Above Project Action Limits and Media Impacted by Area

Area	Media	PHCs			RCRA Metals								Other Metals			VOCs	EDB	1,2-DCA	SVOCs	PCBs	Perchlorate
		GRO	DRO	RRO	As	Ba	Cd	Cr	Pb	Hg	Se	Ag	Ni	V	Cr VI						
USS	SS	◦	**X**	◦	**X**	**X**	**X**	**X**	**X**	◦	◦	**X**	◦	◦	◦	**X**	◦	◦	**X**	◦	ns
	SL	◦	**X**	◦	**X**	◦	◦	**X**	◦	◦	◦	◦	◦	◦	◦	**X**	◦	◦	**X**	◦	ns
	GW	◦	**X**	**X**	**X**	**X**	**X**	**X**	**X**	◦	◦	◦	**X**	**X**	◦	◦	◦	◦	**X**	◦	ns
LSS	SS	◦	**X**	**X**	**X**	◦	**X**	**X**	◦	◦	◦	◦	◦	◦	◦	**X**	◦	◦	**X**	◦	◦
	SL	◦	**X**	◦	B	◦	◦	**X**	◦	◦	◦	◦	**X**	◦	◦	**X**	◦	◦	**X**	◦	◦
	GW	◦	**X**	◦	**X**	◦	◦	◦	**X**	◦	◦	◦	◦	◦	ns	**X**	◦	◦	◦	◦	ns
Area A	SS	◦	**X**	**X**	B	◦	◦	**X**	◦	◦	◦	◦	◦	◦	◦	**X**	ns	ns	◦	◦	ns
	SL	◦	**X**	**X**	B	◦	◦	**X**	◦	◦	◦	◦	◦	◦	◦	**X**	ns	ns	◦	◦	ns
Area C	SS	◦	◦	◦	B	◦	◦	B	◦	◦	◦	◦	◦	◦	ns	◦	ns	ns	**X**	ns	ns
	SD	◦	◦	◦	B	◦	◦	B	◦	◦	◦	◦	◦	◦	ns	◦	ns	ns	◦	ns	ns
	SW	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	◦	ns	◦	ns	ns	◦	ns	ns

Key:

◦ – Analyte not detected above project action limit.
1,2-DCA – 1,2-dichloroethane (low-level)
95% UPL – 95 percent Upper Prediction Limit
Ag – silver
As – arsenic
B – Analyte detected above project action limit, but below the 95% UPL for metals.
Ba – barium
Cd – cadmium
Cr – chromium
Cr VI – hexavalent chromium
DRO – diesel range organics
EDB – 1,2-dibromomethane (low-level)
GRO – gasoline range organics
GW – groundwater
Hg – mercury
LSS – Lower Site Summit
Ni – nickel
ns – Analyte not sampled.
Pb – lead
PCBs – polychlorinated biphenyls
PHCs – petroleum hydrocarbons
RCRA – Resource Conservation and Recovery Act
RRO – residual range organics
SD – sediment
Se – selenium
SL – subsurface soil
SS – surface soil
SVOCs – semi-volatile organic compounds
SW – surface water
USS – Upper Site Summit
V – vanadium
VOCs – volatile organic compounds
X – Analyte detected above project action limit (and the 95% UPL for metals, if applicable).

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1.0 INTRODUCTION

This Remedial Field Investigation (RFI) Report was prepared at the direction of the Air Force Center for Engineering and the Environment (AFCEE) under Contract FA8903-08-D-8777, Task Order 0083. The purpose of this RFI Report is to present the findings of the RFI at Nike Site Summit (NSS). The objective of the Remedial Investigation (RI)/Feasibility Study (FS) process is to gather information sufficient to support an informed risk management decision regarding whether unacceptable risks to human health and the environment are present, as well as analysis of which remedy appears to be most appropriate for any sites where remedial actions are found to be required (USEPA, 1988).

NSS is located on a ridgeline adjacent to Mount Gordon Lyons near the eastern boundary of Joint Base Elmendorf-Richardson (JBER), Alaska. NSS was a manned Nike Hercules missile launch facility from 1959 to 1979. Access to NSS is along an approximately 1.5-mile gravel road beginning at Arctic Valley Road. The road leads to NSS investigation areas, ranging in elevation from 3,100 to 3,900 feet above sea level. The Opportunity Strikes Radio Relay Station (RRS) was located along the same access road, below the NSS facilities, and little is known about its operation. Opportunity Strikes RRS has typically been included in NSS investigations due to proximity and to enhance administrative efficiency. The entire area is referred to herein as NSS for simplicity. A location and vicinity map for NSS is provided as **Figure 1-1**. A project site map showing individual areas within NSS is provided as **Figure 1-2**.

Because known or suspected releases of hazardous chemicals were identified on the post, Fort Richardson (now JBER) was proposed for placement on the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) National Priorities List (NPL) of contaminated sites in need of cleanup on 18 June 1993 and listed on 1 June 1994. The Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) EPA identification number for the Fort Richardson NPL site is AK6214522157. As a result, environmental assessment and remediation activities at JBER are being performed to comply with CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986 and subsequent amendments.

Three parties direct the cleanup: JBER as the responsible party, the EPA to ensure that cleanup meets federal standards, and the Alaska Department of Environmental Conservation (ADEC) to ensure that it meets state standards. CERCLA governs non-petroleum contamination, like that from solvents, dry cleaning fluids, and polychlorinated biphenyls (PCBs). At JBER, the state's cleanup process and standards are applied to petroleum contamination.

The U.S. Army ([Army], now U.S. Air Force [USAF]), EPA (Region 10), and ADEC signed a Federal Facility Agreement (FFA) for Fort Richardson (now JBER) on 5 December 1994. The FFA ensures that environmental impacts associated with past practices at Fort Richardson (now JBER) are investigated and remedial actions are completed to protect human health and the environment. This agreement establishes a procedural framework and schedule for developing, implementing, and monitoring appropriate response actions in accordance with:

CERCLA, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), national Superfund guidance and policy, the Resource Conservation and Recovery Act (RCRA), national RCRA guidance and policy, and applicable state law. The FFA establishes and describes the CERCLA process as applied to Fort Richardson (now JBER). The FFA facilitates cooperation, exchange of information, and participation of JBER, EPA, and ADEC in these actions. It details the responsibilities and authority associated with each party pursuant to the CERCLA process and the environmental investigation and remediation requirements associated with JBER.

A limited Preliminary Assessment/Site Investigation (PA/SI) was conducted at NSS in 1995 and 1996 (Dowl/Ogden, 1996a; 1996b). Some remedial actions have also occurred, specifically underground storage tank (UST) removals. No monitoring wells had been installed at NSS prior to this RFI. A Work Plan to conduct a comprehensive RI, FS, and baseline human health and ecological risk assessment (HHERA) was approved by regulatory agencies in 2010 (Army, 2010). The RFI portion of the planned work was conducted from August 2010 through July 2011. More extensive background information and project document references are available in the RI/FS/HHERA Work Plan (Army, 2010).

Environmental field investigations conducted at NSS utilized a Triad process. Triad consists of using systematic project planning and dynamic work strategies for economically managing project decision uncertainties. The goal of the Triad process is to provide early and open communication amongst project stakeholders throughout the scoping and conduct of environmental investigations in order to streamline the RI/FS process. Client and regulatory agency representatives participated in three formal NSS Triad meetings (3 May, 26 August, and 28 September 2010), as well as real-time consultations during the course of field work. An additional Triad meeting was held 2 June 2011 to discuss groundwater use at NSS. Triad meetings were attended by project stakeholders, including representatives from the Army, USAF, EPA, and ADEC.

Data gaps identified during the initial 3 May 2010 Triad meeting were documented in Uncertainty Worksheets compiled by the Triad meeting coordinators, and became the basis of the RI/FS/HHERA Work Plan. The 26 August and 28 September 2010, Triad meetings, as well as other real-time communications specific to field observations and early laboratory results, allowed for quick alterations to the RI/FS/HHERA Work Plan, when appropriate. Ultimately, the Triad stakeholders decided to eliminate some planned sampling, and add some additional sampling locations and/or analytical parameters based on real-time field work results. Triad meeting attendance records and Uncertainty Worksheets are provided in **Appendix A** of this RFI Report.

A separate Analytical Data Report (ADR) presented the complete RFI analytical data set and data validation (USAF, 2012a). An HHERA report (USAF, 2012b) was also developed to address potential human and ecological impacts of the contaminants that were detected during the RFI. A FS will be prepared after client and agency comments are received on the ADR, RFI, and HHERA reports.

1.1 PURPOSE AND SCOPE OF THE RI/FS

The overall objective of the RI is to provide sufficient information for JBER, ADEC, and the EPA to determine whether the source areas at NSS are (1) eligible for No Further Action designations, or (2) pose potentially unacceptable risks to human health and/or the environment and require further remedial action. If it is determined that remedial action is required, an FS will be conducted. The FS would develop and evaluate a range of remedial alternatives to support the selection of a remedy that would eliminate, reduce, and/or control these risks. The results of the RI and FS reports will be used to develop a proposed plan and a record of decision (ROD) regarding the cleanup and/or resolution of NSS.

The objectives for the RI/FS include the following items, and are documented in the noted report:

- Evaluate the presence, nature, and extent of potential contaminants in soil and groundwater (ADR and RFI)
- Identify and evaluate potential receptors in the area(s) of contamination (HHERA)
- Identify whether potential human health and/or ecological risks posed by contamination in Nike Site Summit are high enough to require further response action (HHERA)
- Comply with federal and state applicable or relevant and appropriate requirements (FS)
- Carefully control and properly dispose of wastes generated during field investigation activities (Work Plan).

The RI Report volumes have been prepared in accordance with guidelines set forth under the CERCLA process as identified in *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA* (USEPA, 1988) and *Guidance for the Data Quality Objectives Process* (USEPA, 1994b).

This RFI Report describes the process for completing the RFI project components and summarizes the observations and information gathered relative to specific source areas. This analysis, and the HHERA, will support preparation of an FS and selection of an appropriate remedial alternative for each NSS Area.

Field investigations were conducted at the following seven NSS areas (Figure 1-2), either during the 1996 PA/SI, the RFI, or both:

- Upper Site Summit (USS)
- Lower Site Summit (LSS)
- Area A (Former Opportunity Strikes RRS)
- Area B (High Explosive and Guided Missile Magazines)
- Area C (Pump House)
- Area D (Former Borrow Area)
- Background Sampling Area

Figures and summary tables of detected results above project action limits defined in the RI/FS/HHERA Work Plan for each NSS area are provided at the end of each individual area section (Sections 5 through 11). Summaries of all analytical detections are included in an appendix. Complete RFI sample results, including laboratory reports with a case narrative, data sheets, and completed chain-of-custodies, along with data validation reports for the RFI and ADEC laboratory review checklists, are provided under separate cover in the ADR (USAF, 2012a).

Copies of stakeholder comments on the Final RFI Report, and the responses, will be provided in **Appendix B**.

1.2 ORGANIZATION OF THE RFI REPORT

This RFI Report is organized into the following 13 sections and seven appendices:

- Section 1 – Introduction
- Section 2 – Site Description and Background
- Section 3 – Remedial Field Investigation Activities
- Section 4 – Laboratory Analysis
- Section 5 – USS
- Section 6 – LSS
- Section 7 – Area A
- Section 8 – Area B
- Section 9 – Area C
- Section 10 – Area D
- Section 11 – Background Sampling Area
- Section 12 – Contaminant Fate and Transport
- Section 13 – References

- Appendix A Triad Documents
- Appendix B Stakeholder Comments and Responses
- Appendix C Summary Tables of Analytical Detections
- Appendix D Site Photos
- Appendix E Field Forms
- Appendix F Sample Location Coordinates
- Appendix G Waste Disposal Summary

JOB No. 1008300.83010401 TIME: 18-APR-2012 07:50 FILE: D:\CAD\Proj\AFCEE\Ft Richardson-Nike Site Summit _ 1008300\RI _Report\FINAL\FIG 1-1 - location map.dgn

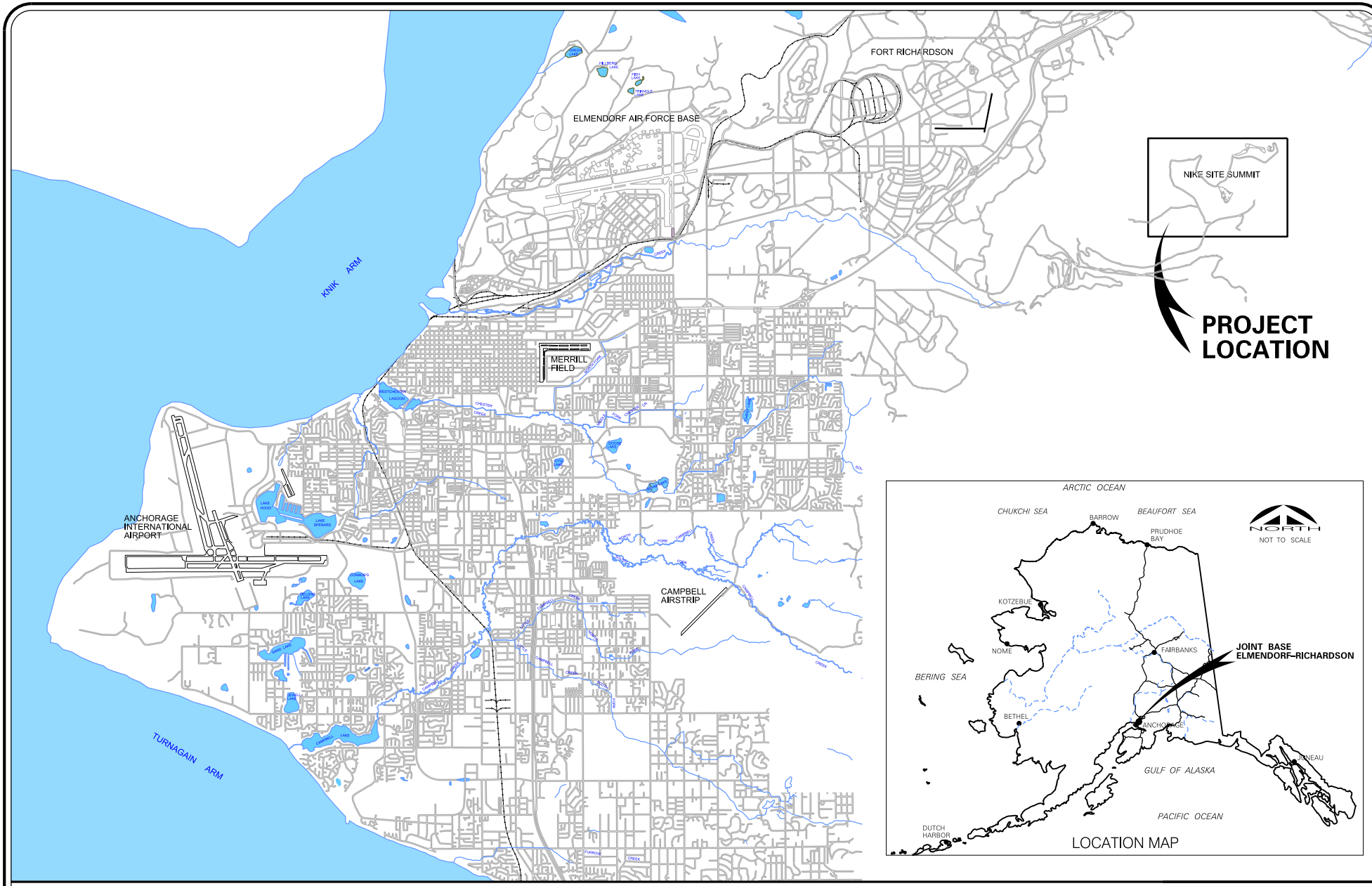

FIGURE 1-1 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

LOCATION AND VICINITY MAP

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JOB No. 1008300.83010401 TIME: 18-APR-2012 11:26 FILE: D:\CAD\Proj\AFCEE\Ft Richardson-Nike Site Summit _ 1008300\RI _Report\FINAL\FIG 1-2 - site map.dgn

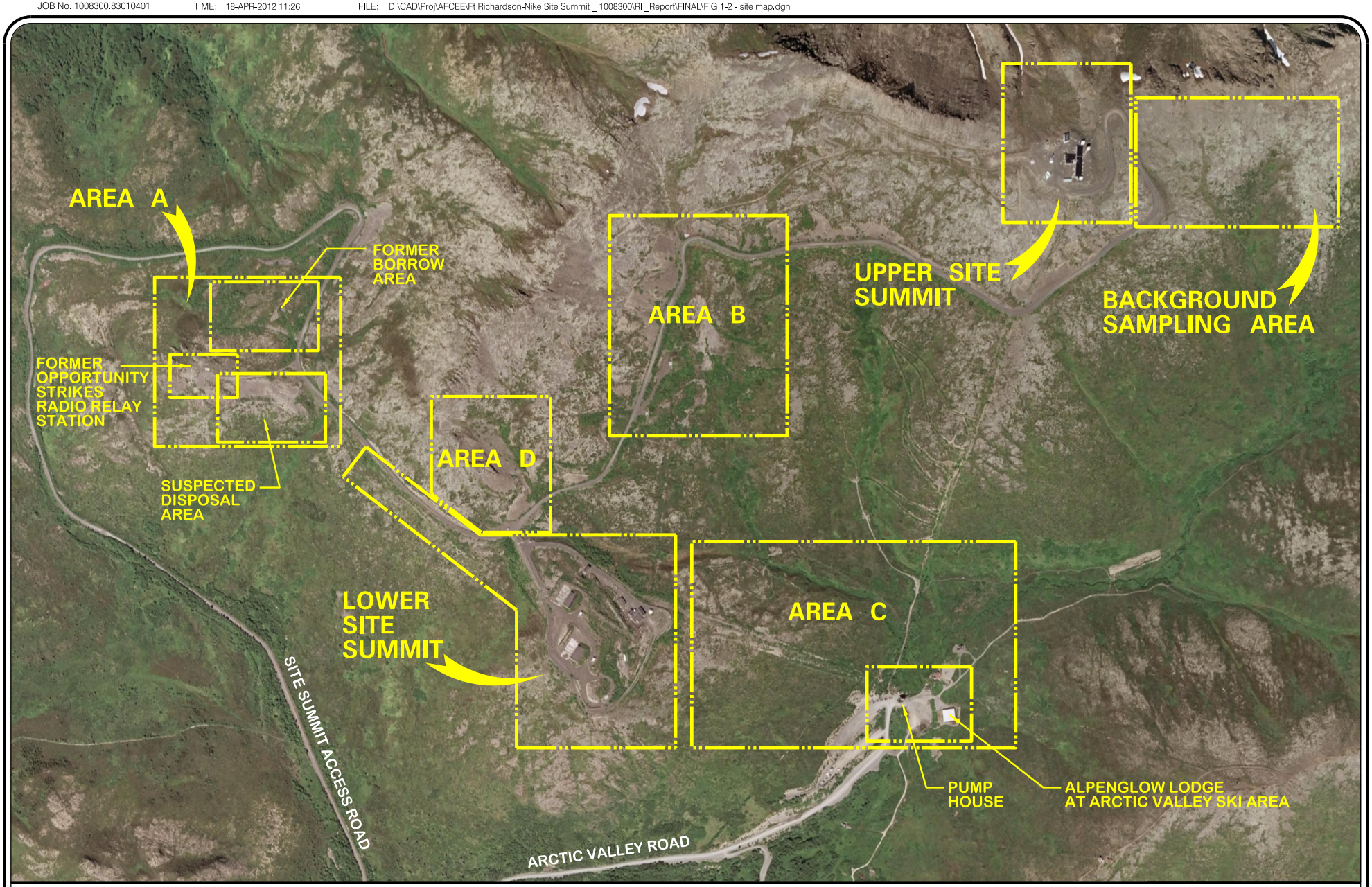

FIGURE 1-2 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

NSS AREA MAP

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2.0 SITE DESCRIPTION AND BACKGROUND

2.1 INSTALLATION DESCRIPTION

NSS is located on a ridgeline adjacent to Mount Gordon Lyons near the eastern boundary of JBER, Alaska. NSS was a manned Nike Hercules missile launch facility from 1959 to 1979. Access to NSS is along an approximately 1.5-mile gravel road beginning at Arctic Valley Road. The road leads to NSS investigation areas, ranging in elevation from 3,100 to 3,900 feet above sea level. The Opportunity Strikes RRS was located along the same access road, below the NSS facilities, and little is known about its operation. Opportunity Strikes RRS has typically been included in NSS investigations due to proximity and to enhance administrative efficiency.

2.2 CLIMATE

NSS has a subarctic climate with strong maritime influences. Site temperatures vary from minus 13 degrees Fahrenheit (ºF) in the winter to 80ºF in the summer. The average annual total precipitation in the Anchorage Bowl is 16.08 of rainfall and 70.5 inches of snowfall. Average annual snowfall at the Arctic Valley ski area, adjacent to NSS, is approximately 250 inches.

2.3 GEOLOGY

NSS lies atop the western edge of the Front Range of the Chugach Mountains, Alaska. Surficial materials are dense, with outcroppings of bedrock, hornfels, talus, and rocky gravely soil. Surficial materials are dense in areas that have been undisturbed. Many of the investigative areas contain gravel building pads that were apparently constructed by leveling and spreading the local terrain, as well as utilizing materials obtained from borrow sources at Areas A and D.

2.4 HYDROLOGY

Data on the subsurface hydrology at NSS is limited. No borings were advanced during the PA/SI. Previous reports mention standing water on top of fill or bedrock in areas where former USTs were removed at both USS and LSS. There is a well located just upslope from Alpenglow Lodge at Arctic Valley Ski Area that is known to have water present at 20 feet below ground surface (bgs). Many borings drilled during the RFI were dry. Monitoring wells that were installed during the RFI encountered a variety of subsurface water conditions.

The hydrology of NSS is dominated by seasonal snow-pack melt, run-off and percolation. During the RFI it was noted that very little surficial runoff occurs and that the majority of the melt-water percolated into the subsurface. The subsurface water layer likely follows the predominantly non-fractured bedrock contours until daylighting to form rivulets and stream tributaries. It is likely that some fractures accommodate further downward percolation.

Surface drainage from NSS leads directly down slope towards an unnamed tributary of Ship Creek, which lies between NSS and the Alpenglow Lodge well. Source areas at NSS are more than 2,200 feet from the unnamed tributary, and approximately 2.2 miles from Ship Creek itself, as measured along drainage/stream courses. The magnitude of seasonal groundwater fluctuations, potential changes in gradient, and aquifer thickness are not known. It can be inferred from the RFI wells installed at USS and LSS that the localized aquifers are relatively shallow and their recovery is likely directly linked to rainfall and snowmelt events. Additionally, there was no evidence of groundwater at Area A, which is dominated by bedrock outcroppings, further strengthening the position that groundwater at NSS is limited by surficial bedrock flow dynamics.

2.5 SURFACE WATER

The only known surface water body at NSS consists of a ponded area at Area C. The pond forms behind a weir that was installed in an unnamed tributary of Ship Creek to provide water for NSS during its operative years. The tributary and pond collect seasonal surface snowmelt and precipitation runoff from the watershed between Mount Gordon Lyon and Rendezvous Peak.

2.6 ECOLOGY AND SENSITIVE ENVIRONMENTS

The predominant vegetation at USS is limited to lichens and mosses. The predominant vegetation at the other NSS areas includes lichens, mosses, low shrubs and berries (including blueberry, crowberry, bearberry, and lingon berry), and herbaceous plants. In the deeper swales and gullies, there are also low, dense-forming willows and small trees. No special status plants are known to exist at NSS.

A variety of herbivorous, carnivorous, or omnivorous birds and mammals occur in the vicinity of NSS. Ecological species present at NSS include, but are not limited to: ptarmigan (*Lagopus* sp.), water pipit (*Anthus spinoletta*), golden eagle (*Aquila chrysaetos*), peregrine falcon (*Falco peregrinus*), Dall sheep (*Ovis dalli*), brown bear (*Ursus arctos*), black bear (*Ursus americanus*), coyote (*Canis latrans*), wolf (*Canis lupus*), shrews (*Sorex* sp.), and voles (*Microtus* sp.).

A more detailed appraisal of NSS ecology is provided in the HHERA Report (USAF, 2012b).

2.7 LAND USE

There are currently no manned operations at NSS facilities. However, the general area is used by military personnel for various aspects of military training. Legal access to the site is controlled, but trespass onto the property is known to occur. There is also recreational use near NSS. Several modern commercial communication structures and antennas are located at USS. USS tenants include the U.S. Bureau of Land Management, Enstar Natural Gas Company, the Federal Aviation Administration, State of Alaska, and Arctic Valley Ski Area.

In 1994, the Alaska State Historic Preservation Office (SHPO) nominated NSS for listing on the National Register of Historic Places (NRHP), and NSS was placed on the NRHP in 1995. In 2007, the Army conducted an Environmental Assessment for the management of NSS relative to demolition and preservation with respect to its NRHP status (Army, 2007). Approximately 244 acres, of which approximately 180 acres is located within JBER, are part of the NRHP Historical Area (Figure 1-2 – Army, 2007).

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3.0 REMEDIAL FIELD INVESTIGATION ACTIVITIES

An RFI was conducted at NSS from August 2010 through July 2011. Activities conducted during the RFI investigation are described in this section. Work was conducted in accordance with an approved work plan (Army, 2010).

Two RFI Triad meetings were held during the field sampling effort (26 August 2010 and 28 September 2010) to address issues identified in the field pertaining to unanticipated evidence of contamination, source areas, and potential emerging data gaps. An additional Triad meeting was held 2 June 2011 to discuss groundwater use at NSS. At these meetings, military and regulatory agency participants agreed upon real-time changes to the approved Work Plan, including additional sampling locations and analytical parameters. Decisions were made based on field screening results, preliminary laboratory analytical data and other field observations.

3.1 SITE LOGISTICS

NSS is located on a ridgeline adjacent to Mount Gordon Lyons near the eastern boundary of JBER. Access to NSS is along an approximately 1.5-mile gated gravel road beginning at Arctic Valley Road. The road leads to NSS investigation areas, ranging in elevation from 3,100 to 3,900 feet above sea level. Access to and use of the site requires coordination with JBER range control, as the access road and portions of NSS itself are within an active firing range. The area is also used for military training that can take precedence over other activities.

JBER dig permits were obtained for the following areas prior to performing planned subsurface work.

- USS (boreholes / test pits)
- LSS (boreholes / test pits)
- Area A (test pits)

Utility locates were obtained as part of the dig permit approval process. All utilities were located and visually marked before performing any intrusive activities, such as digging test pits or conducting soil borings.

3.2 FIELD SAMPLING PROCEDURES

RFI sampling was conducted in accordance with the methods approved in the Work Plan (Army, 2010). Exceptions due to conditions encountered in the field were discussed with Triad participants. A brief overview of the sampling methods used in the field is presented in this section. Field logs and/or field data sheets were used to document sample-specific information in accordance with the Work Plan. Copies of the field data are provided in **Appendix E**.

3.2.1 Surface Soil Sampling

Surface soil samples were collected from depths of 0 to 2 feet bgs with clean, disposable, stainless steel spoons following screening with a photoionization detector (PID). Picks and/or shovels were used to remove overlying materials prior to sampling, when needed. Laboratory sample containers were filled with an appropriate sample volume and preservative, if appropriate for the target analyte.

3.2.2 Subsurface Soil Sampling

Subsurface soil samples were collected from test pits and soil borings at depths below 2 bgs following screening with a PID. Test pit samples were collected directly from the bottom of the test pit for depths between 2 and 4 bgs. Deeper test pit samples were collected from the center of the backhoe bucket for safety reasons, with care taken to ensure sampled soil was from the desired depth rather than slough. Soil boring samples were collected from a split-spoon attachment to the drill rig at the desired sampling depth. Laboratory sample containers were filled with an appropriate sample volume using clean, disposable, stainless steel spoons. Preservative was added, if appropriate for the target analyte.

3.2.3 Groundwater Sampling and Water Level Measurements

Groundwater sampling and water level measurement procedures are summarized below.

Static water levels and total well depth were measured using electronic, battery-powered Solinst® water level meters with flat polyethylene tape permanently marked and labeled at 1-foot intervals, with 0.1- and 0.01-foot subdivisions. Well casing volumes were calculated from the depth measurements and casing size.

At USS, wells were not purged and were sampled directly with Teflon® bailers. This was due to limited groundwater and inability of either a submersible pump or peristaltic pump to draw any water to the surface because of the limited volume and high total suspended solids.

At LSS, wells were developed using a combination of submersible pumps and Teflon® bailers. Purging prior to sampling was performed with Teflon® bailers. All samples from LSS were collected directly from the discharge of the peristaltic pump through one time use disposable Teflon® coated tubing. Dissolved metals samples were pumped through a 0.45-micron filter attached directly to the disposable Teflon®-coated tubing at the point of discharge and into the preserved sample container. All wells at LSS had at least three well casing volumes of groundwater purged from the well prior to sampling.

Water quality measurements (temperature, pH, and electrical conductivity) were collected and recorded during the purging process. Readings were taken approximately after each well casing volume was removed. Wells were considered sufficiently purged after three well casing volumes had been removed and the temperature, pH, and electrical conductivity measurements had stabilized between two readings. Stabilization is defined as follows: for

temperature, ± 1 degree Celsius; for pH, ± 0.1 standard units; and for electrical conductivity, ± 5 percent.

3.2.4 Surface Water Sampling

Surface water samples were collected prior to their associated sediment sample. The farthest downstream samples were collected first. Water quality parameters were measured at each surface water location after the sample was collected to minimize the potential for disruption of the underlying sediment.

Surface water samples were collected using disposable Teflon® dippers to collect water from below the surface, taking care not to capture any sediment, and gently transferring the sampled water to a laboratory-supplied bottle. For dissolved metals samples, a peristaltic pump with disposable tubing was used to transfer water through a filter into the sample bottle.

3.2.5 Sediment Sampling

Sediment sample locations were collocated with surface water sample locations. Sediment samples were collected immediately following collection of the associated surface water sample. Samples were collected using clean, disposable, stainless-steel spoons to transfer the material directly into a sample container. Excess water was allowed to drain from the spoon prior to filling the sample container.

3.2.6 Rinsate Sampling

Rinsate samples were collected from reusable, decontaminated field sampling equipment to demonstrate that decontamination of sampling equipment adequately prevented cross contamination between samples. Rinsate samples were collected from drill rig split-spoon samplers and the excavator bucket by pouring deionized water over or through the piece of decontaminated field sampling equipment and collecting it directly into the appropriate sampling container.

3.2.7 Field Equipment Calibration

The PID and pH meters were calibrated daily when in use.

3.2.8 Sample Designations

Samples collected during the RFI field sampling efforts used the following naming convention:

- Two-digit year designation: 10.
- Three-letter project site designation: NSS for Nike Site Summit.
- Three-digit sample number. Numbering started from 001 at each location:

- 001 through 099 for primary samples.
- 201 through 299 for duplicate samples.

For soil sample locations where several samples were collected from the same location, but at different depths, the three-digit sample number was used to distinguish between samples (i.e., Sample 001 was first sample taken from a given location, Sample 002 was second sample at a given location, etc.).

- Two-letter sample media designation:
  - TP = Subsurface Soil (collected from a Test Pit)
  - SS = Surface Soil
  - SL = Subsurface Soil (collected from a Borehole)
  - SW = Surface Water
  - SD = Sediment
  - GW = Groundwater (collected from a Monitoring Well)
- Alpha numeric location identifier: two-digit (##) location identifier, followed by a three-letter/digit (XXX) site designation:
  - USS = Upper Site Summit
  - LSS = Lower Site Summit
  - ARA = Area A
  - ARB = Area B
  - ARC = Area C
  - ARD = Area D
  - BCK = Background Sampling Area

The following examples illustrate the sample identifier scheme:

- Sample 10NSS001TP01USS would be the first soil sample collected from Test Pit 1 at USS.
- Sample 10NSS002TP01USS would be the second soil sample collected from Test Pit 1 at USS.
- Sample 10NSS201SW02ARA would be the first quality control (QC) sample collected from Surface Water location 02 at Area A.

3.2.9 Sample Locations

Most RFI sample locations were documented by a third-party surveyor. A few interior sample locations could not be directly surveyed, and a few other sample markers were not located during the survey. Sample locations for the un-surveyed locations were extrapolated from field notes and measurements. All coordinates and elevations are provided in **Appendix F**.

3.2.10 Decontamination

Disposable sampling equipment was used in most cases. Non-disposable sampling equipment, such as split spoons, was decontaminated at the sampling location. A stiff brush was used in a solution of hot water and laboratory-grade, critical cleaning detergent such as Alconox® or a similar product, followed by two potable water rinses, and a final rinse with deionized water.

The backhoe bucket was decontaminated over the test pit in the same manner, with the rinsate water allowed to go back into the test pit.

The drill rig auger flights were steam cleaned on a daily basis by the driller at their shop in Anchorage.

3.2.11 Investigative-Derived Waste Management

Investigative-derived waste consisted of purge and decontamination water, soil cuttings, personal protective equipment, and disposable sampling materials. Management of this waste is discussed below.

3.2.11.1 Purge Water and Decontamination Water

Decontamination water from cleaning split-spoons, as well as purge water having sheen or petroleum odor, was containerized, sampled and left on-site during analytical characterization. One drum containing water with constituents above ADEC Method Two cleanup levels was transported to the Fort Richardson Investigative-Derived Waste Facility for appropriate disposal and/or treatment (**Appendix G**).

Decontamination water and purge water without sheen or petroleum odor was processed through a granular, activated carbon filter unit prior to being discharged to the ground. Purge water was discharged to the ground surface adjacent to the monitoring well from which it was produced.

3.2.11.2 Soil Cuttings

Subsurface cuttings from boreholes not completed as monitoring wells were returned to the borehole and capped with a bentonite plug and silica sand to within 6 inches of the surface. Soil cuttings from monitoring wells were drummed and left on-site during analytical characterization. Drums containing soils above ADEC Method Two cleanup levels were transported to the Fort Richardson Investigative-Derived Waste Facility for appropriate disposal and/or treatment (Appendix G).

3.2.11.3 Personal Protective Equipment and Disposable Sampling Materials

Personal protective equipment and incidental materials (e.g., gloves) and disposable sampling equipment (e.g., sampling spoons and tubing) were bagged and transported off-site for disposal at the Anchorage regional landfill as non-hazardous waste.

3.2.12 Field Quality Assurance/Quality Control

Collection, handling, and analysis of soil, sediment, and water samples were performed in accordance with the Quality Assurance Project Plan (QAPP) provided as Attachment 2 to the Work Plan (Army, 2010).

Field quality assurance (QA)/QC samples included:

- Duplicate samples collected at a minimum frequency of 10 percent.
- Based on field considerations, the field team selected the locations for collection of duplicate, matrix spike (MS), and matrix spike duplicate (MSD) samples. These QA/QC samples were submitted for the same analyses as the primary sample.
- Water trip blanks, consisting of one 40-milliliter bottle with a septa lid filled at the laboratory with analyte-free water, accompanied the sample containers for volatile analytes from the laboratory to the field during sample collection, and during transport of the samples back to the analytical laboratory.
- Methanol trip blanks (soil/sediment samples), consisting of one 4-ounce jar with a septa lid filled at the laboratory with 25 grams of silica sand and 25 milliliters of methanol, accompanied the primary sample containers for volatile analytes from the laboratory to the field during sample collection, and during transport of the samples back to the analytical laboratory.

4.0 LABORATORY ANALYSIS

Per the approved Work Plan, a significant quantity of laboratory samples were collected, hand delivered daily to SGS Environmental Services, Inc. (SGS) in Anchorage, and analyzed for a comprehensive constituent suite. The majority of samples were analyzed at SGS' Anchorage laboratory. Any samples requiring analyses at other SGS laboratory locations and/or subcontracted laboratories were distributed by SGS to the appropriate laboratories. All results were then reported by SGS.

4.1 LABORATORY SAMPLING SUMMARY

A total of 24 sample sets were analyzed by SGS over the course of the RFI field work at NSS. The number of samples collected from discrete locations by media and area included:

- 80 primary and 7 duplicate surface (0 to 2 feet bgs) soil samples – USS, LSS, Area A, Area C, and Background Sampling Area
- 88 primary and 9 duplicate subsurface (over 2 feet bgs except where equipment met refusal) soil samples – USS, LSS, Area A
- 10 primary and one duplicate groundwater samples – USS and LSS
- One primary and one duplicate collocated surface water/sediment sample – Area C (2010)
- 7 primary and one duplicate surface water sample – Area C and Off-Site Drainages (2011)

The above sample counts do not include collections of additional volume from the same locations for additional parameters requested after initial sampling, or to replace samples that the laboratory was unable to analyze using the original sample volume.

Most samples were analyzed for: gasoline range organics (GRO), diesel range organics (DRO), residual range organics (RRO), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), RCRA 8 Metals, nickel, and vanadium. Samples associated with former gasoline USTs were also analyzed for low level 1,2-dibromomethane (EDB) and 1,2-dichloroethane (1,2-DCA). Samples associated with electrical substations and potential electrical equipment were also analyzed for PCBs. Sample locations associated with actual missile launching were also analyzed for perchlorate.

SGS (or their subcontracted laboratories) used the methods listed in **Table 4-1** to analyze project samples. A comprehensive separate ADR (USAF, 2012a) documents all sample results, laboratory quality control data, data verification and validation, and ADEC Laboratory Data Review Checklists. The data collected for the RFI sampling rounds were determined to be of sufficient quantity and quality to meet the project objectives as outlined in the Work Plan. This RFI Report focuses on detected constituents.

4.2 DATA QUALIFIERS

The data qualifiers used for the analytical data summarized in Sections 5 through 11 include:

- *Italic* Italicized result indicates analyte reported to the laboratory detection limit.
- **Bold** Bolded result indicates positively identified compound.
- B Analyte detected in an associated blank.
- D Sample dilution required for analysis; reported values reflect the dilution.
- F Analyte was positively identified, but the reported concentration is estimated; reported concentration is less than the limit of quantitation (LOQ), but greater than the limit of detection (LOD).
- J Data are estimated based on associated quality control data.
- J- Data are estimated, potentially biased low, based on associated quality control data.
- J+ Data are estimated, potentially biased high, based on associated quality control data.
- NA Not analyzed.
- NE Not established.
- U Analyte not detected at the reported LOQ or LOD.
- UB Analyte considered not detected, based on an associated blank concentration.
- UJ Potential low bias, possible false negative.
- UK Analyte considered not detected, based on professional judgment of Validation Chemist.

4.3 DETECTIONS AND PROJECT ACTION LIMITS

As mentioned above, this RFI Report focuses on detected constituents. The **Appendix C** tables include all detections for USS, LSS, Area A, and Area C. Sections 5 through 10 include tables and figures showing detections above the project action limits defined in the QAPP for those locations.

Background Metals – To address naturally-occurring background levels of metals at NSS that may be above project action limits, 12 background samples were collected and analyzed for RCRA 8 metals, plus nickel and vanadium. Upper prediction limits (UPLs) of 95 percent (%) were calculated for each metal per input from regulatory agency Triad participants. Section 11 provides information on the location and analytical results for the background samples and the calculation of the 95% UPLs. Arsenic and chromium were commonly detected above their project action limits, but below their respective 95% UPLs. Project action limits and 95% UPLs are compared with metal detections for specific areas in Sections 5 through 10.

Table 4-1 Summary of Sample Preparation, Analysis Method, and Analysis Type

Analyte(s)	Sample Preparation Method	Sample Analysis Method	Analysis Type
GRO	SW-846 5035 (Solid) SW-846 5030B (Water)	AK101	GC
DRO	SW-846 3550C (Solid) SW-846 3520C (Water)	AK102	GC
RRO	SW-846 3550C (Solid) SW-846 3520C (Water)	AK103	GC
VOCs	SW-846 5035 (Solid) SW-846 5030B (Water)	SW-846 8260B	GC/MS
PCBs	SW-846 3550C (Solid) SW-846 3520C (Water)	SW-846 8082A	GC
Hexavalent Chromium (Cr VI)	SW-846 7196A (Solid, Water)	SW-846 7196A	Colorimetric
EDB	EPA 504.1 (Water)	EPA 504.1	GC/MS
SVOCs	SW-846 3550C (Solid) SW-846 3520C (Water)	SW-846 8270D	GC/MS
Perchlorate	SW-846 6860 (Solid) EPA 314.00 (Water)	SW-846 6860	IC
RCRA 8 Metals, Nickel, Vanadium	SW-846 3050B (Solid) SW-846 3010A (Water)	SW-846 6020A	ICP/MS
Mercury	SW-846 7471A (Solid) SW-846 7470A (Water)	SW-846 7471A (Solid) SW-846 7470A (Water)	CVAA

Key:
AK – Alaska Test Method
CVAA – cold vapor atomic absorption
DRO – diesel range organic compound
EDB – 1,2-dibromomethane
EPA – U.S. Environmental Protection Agency
GC – gas chromatography
GRO – gasoline range organics
IC – ion chromatography
ICP – inductively coupled plasma
MS – mass spectroscopy
PCB – polychlorinated biphenyl
RCRA – Resource Conservation and Recovery Act
RRO – residual range organics
SVOC – semi-volatile organic compound
SW – EPA Solid Waste Method
VOC – volatile organic compound

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5.0 UPPER SITE SUMMIT

USS area consists of the following subareas (**Figure 5-1**):

- Former USTs at the Battery Control and Barracks Building
- Outfall from the Battery Control and Barracks Building
- High Power Radar Acquisition (HIPAR) Building and Foundation
- Electrical Substation C
- Former Motor Pool Maintenance Building Foundation
- Radar Domes
- Septic System and Outfall

5.1 USS PHYSICAL CHARACTERISTICS

The following sections describe the physical characteristics associated with USS.

5.1.1 Geology

The primary surficial material in this area is composed of exposed weathered bedrock with gravelly-fill material used to level the mountaintop site. Both well-rounded and angular gravels were encountered during soil borings. This indicates that fill material was likely from both on-site and off-site sources, because well rounded gravels would not be anticipated from weathered bedrock formation on the top of the mountain.

Subsurface geology at USS typically consists of gravel fill overlaying weathered bedrock. There were also two tan sand layers noted in Boreholes 05 and 08 that are presumably from depositional topographical features prior to the site being leveled and graded

5.1.2 Hydrogeology

Boreholes drilled to characterize groundwater at USS encountered a shallow zone of saturation limited to the vicinity of the excavated area where the former USTs were previously located. The zone appears to be created by water collecting within fill material that was placed on top of bedrock. This perched groundwater is discontinuous and does not represent a groundwater aquifer in this area.

Of the 13 boreholes advanced at USS, only three (BH/MW 03, 04, and 12) had zones of saturation. Water in these three wells was very limited and allowed for limited sampling.

5.1.3 Hydrology

There are no surface water bodies located at USS. The primary drainages from the site are toward the south-southwest, and toward the access road. There are drain outfalls from the Barracks Building and the Motor Pool, as well as the septic outfall drainage. However, the

septic tank has been backfilled with soil so there is virtually no opportunity for drainage from USS through the septic system at this time.

Surface runoff at USS is thought to be minimal, except in times of extreme precipitation. A site visit conducted in May 2010 during snowpack melt showed no signs of runoff. Several heavy rainfall events occurred during the RFI from August through October 2010, and no surficial runoff resulted. All the melt water and rainwater appeared to be absorbed through percolation.

5.2 USS PREVIOUS INVESTIGATIONS

During the 1996 PA/SI, a total of six surface soil samples were collected at USS and analyzed for GRO, DRO, total petroleum hydrocarbons (TPH), and metals. The locations and analytical results are described below.

5.2.1 Former USTs at the Battery Control and Barracks Building

Previous investigations of the Battery Control and Barracks Building centered on two USTs: UST-112 (a 30,000-gallon diesel UST) and UST-57 (a 2,000-gallon gasoline UST). Both USTs were located just to the west of the Battery Control and Barracks Building. Several project documents indicate that the USTs were removed, and the holes backfilled with the temporarily removed soil. The original removal reports have not been located.

Three samples were collected from surface soils near the former UST locations. The samples detected DRO (16 milligrams per kilogram [mg/Kg]) and TPH (75 to 820 mg/Kg). No GRO was detected in the samples near the former USTs.

5.2.2 Former Motor Pool Maintenance Building Foundation

One surface soil sample was collected near the Former Motor Pool Building Maintenance foundation. The sample detected DRO (15 mg/Kg) and TPH (80 mg/Kg). GRO was not detected.

5.2.3 HIPAR Building and Foundation

One surface soil sample was collected in what is assumed to be the vicinity of the entrance to the HIPAR Building. The rationale for collecting this sample is not known, but was presumably due to observation of surface staining. The sample detected GRO (320 mg/Kg), DRO (5,790 mg/Kg), and TPH (6,400 mg/Kg).

5.2.4 Western Edge of Pad

One surface soil sample was collected at the western edge of the USS pad and had detections of: DRO (66 mg/Kg), TPH (390 mg/Kg), arsenic (7.7 mg/Kg), chromium (28.0 mg/Kg), and lead (7.7 mg/Kg). GRO was analyzed for but not detected. It was unclear from the 1996

PA/SI report why this sample was collected, but the area was presumed to have exhibited some staining.

5.3 USS REMEDIAL FIELD INVESTIGATIONS

Previous investigation reports were reviewed as the initial step in planning RFI field data collection at USS. UST removal reports were not found and limited analytical results were found in the 1996 PA/SI report. As-builts for USS were also reviewed to determine locations of drains and potential source areas that may have impacted the site.

Areas at USS that were investigated during the RFI include the following:

- Former USTs at and Outfall from the Battery Control and Barracks Building
- HIPAR Building and Foundation
- Former Motor Pool Maintenance Building Foundation
- Electrical Substation C
- Radar Domes
- Septic System and Outfall

Analytical detections from RFI samples collected at USS are summarized in Appendix C Tables C-5.1, C-5.2, and C-5.3 for surface soil, subsurface soil, and groundwater, respectively. Complete analytical results are provided in a separate ADR (USAF, 2012a). Photographs of USS taken during the RFI are provided in **Appendix D1**.

Figure 5-1 provides a key map for sampling subareas at USS. Locations of the RFI samples collected at USS, along with the analytical results above project action limits, are provided in **Figures 5-2** through **5-8**. **Tables 5-1**, **5-2**, and **5-3** summarize detected results above project action limits for surface soil, subsurface soil, and groundwater, respectively. Details of the RFI sampling results at USS are provided by subarea in the following subsections.

5.3.1 Former USTs at and Outfall from the Battery Control and Barracks Building

A total of 11 borings were advanced in the vicinity of the two former UST locations at the Battery Control and Barracks Building. Of the 11 boreholes, three were converted to monitoring wells. There were also four surface soil samples collected in the vicinity of the former UST locations and one surface soil sample collected at the outfall of the floor drain from the Battery Control Building. Figures 5-2 and 5-3 present the sample locations and results for both surface and subsurface soils in the vicinity of the former diesel UST and gasoline UST, respectively. Figure 5-4 presents the sample locations and results for the three monitoring well locations located in the vicinity of both former UST locations. The following subsections detail the individual results based on media and analyte type.

5.3.1.1 Surface Soil

Five surface soil samples were collected from the vicinity of the former Diesel UST location (SS13USS and SS14USS), the former gasoline UST (SS15USS and SS16USS), and the drain outfall for the Barracks Building (SS07USS). Due to proximity, SS07USS is shown on Figure 5-6. All five surface soil samples at the Battery Control and Barracks Building were analyzed for GRO, DRO, RRO, VOCs, and SVOCs. Samples associated with the former gasoline UST (SS15USS, and SS16USS) were also analyzed for low level EDB, 1,2-DCA, RCRA 8 metals, nickel, and vanadium. Sample SS07USS at the outfall was also sampled for RCRA 8 metals, nickel, and vanadium. Detected results are presented in Table 5-1.

Arsenic was detected in the two samples associated with the gasoline UST (SS15USS) and SS16USS) at 7.48 and 9.15 mg/Kg, above the project action limit of 3.9 mg/Kg, but below the 95% UPL of 12.5 mg/Kg for background arsenic concentrations at NSS. No other metals were detected above project action limits.

SVOCs were detected in surface soil samples above project action limits for benzo(a)anthracene (8.61 mg/Kg), benzo(a)pyrene (2.0 to 5.75 mg/Kg), and benzo(b)fluoranthene (6.93 mg/Kg). All other SVOCs were not detected above the project action limits.

No other analytes were detected above project action limits in surface soil samples collected from the Battery Control and Barracks Building.

5.3.1.2 Subsurface Soil

The detected analytical results above project action limits from samples collected within the vicinity of the former UST locations (BH01 to BH07, and BH10 to BH13) are presented in Table 5-2.

Petroleum Hydrocarbons (PHCs) GRO and RRO were not detected in any of the borehole sample locations above project action limits. DRO concentrations in subsurface soil ranged from non-detect (ND) to 3,690 mg/Kg.

Arsenic was detected in six subsurface soil samples associated with the gasoline UST, ranging from 4.64 to 5.77 mg/Kg. These values are above the project action limit of 3.9 mg/Kg, but below the 95% UPL of 12.5 mg/Kg for background arsenic concentrations at NSS. **Total chromium** was detected above the project action limit of 25 mg/Kg in nine subsurface soil samples, ranging from 28.2 to 46.8 mg/Kg. Eight of the nine chromium detections are below the 95% UPL of 38.3 mg/Kg for background chromium concentrations at NSS. No other metals were detected above project action limits.

VOC compounds detected included trichloroethene (TCE) and methylene chloride. TCE was detected in subsurface soils above project action limits at BH01, BH/MW04, BH06, BH07, BH10, and BH/MW12 – ranging from 21.1 to 79.0 micrograms per kilogram (µg/Kg).

Methylene chloride was detected above project action limits in three boreholes, ranging from 26.7 to 41.4 µg/Kg, but these detections are likely attributable to laboratory contamination.

SVOC compounds were also detected in the sample from the 12- to 14-foot interval of BH12USS, as well as the duplicate. Benzo(a)pyrene was detected at 2.47 and 3.71 mg/Kg. Dibenz(a,h)anthracene was detected at 0.653 and 0.846 mg/Kg.

No other analytes were detected above project action limits in subsurface soil samples collected from the Battery Control and Barracks Building.

5.3.1.3 Groundwater

Groundwater at USS is limited to perched water collecting within fill material placed on top of bedrock in the vicinity of the former USTs. It is presumed from the gravel fill material encountered in this vicinity that the voids for the two USTs were excavated partially into the bedrock. Subsequently, groundwater volume at USS was not sufficient to develop or purge any of the three wells, but rather was collected directly utilizing disposable Teflon bailers, as the use of peristaltic pumps was unsuccessful due to high viscosity.

A complete sample suite was able to be collected from Monitoring Well MW04USS only (GRO, DRO/RRO, VOCs, SVOCs, filtered and total RCRA 8 metals, nickel, vanadium, EDB, and 1,2-DCA). MW03USS required three separate sampling events to produce sufficient volume for GRO, DRO/RRO, VOCs, RCRA 8 metals, nickel, and vanadium. Volume for SVOCs at MW03USS was not achieved, because the well went dry and did not recover. Monitoring Well MW12USS produced only two 40-milliliter vials, which were analyzed for GRO and VOCs. Subsequent attempts to sample MW12USS showed the well to be dry. Figure 5-4 shows the location and samples results for Monitoring Wells MW03USS, MW04USS, and MW12USS.

PHCs were detected in groundwater samples above project action limits for the following compounds and ranges, singular results indicate one detection only above project action limits:

- GRO (0.941 milligrams per liter [mg/L])
- DRO (9.43 and 32.3 mg/L)
- RRO (4.41 and 31 mg/L)

Total metals were detected in two groundwater samples above project action limits for the following compounds and ranges, singular results indicate one detection only above project action limits:

- Arsenic, Total (73 and 156 micrograms per liter [µg/L])
- Barium, Total (11,600 and 16,200) µg/L
- Cadmium, Total (6.88 µg/L)
- Chromium, Total (694 and 1,790 µg/L)
- Lead, Total (189 to 653 µg/L)

- Nickel, Total (531 and 916 µg/L)
- Vanadium, Total (1,610 and 2,450 µg/L).

Dissolved metals were detected, but below project action limits, except for lead at MW04USS (43.5 µg/L).

SVOCs were detected in one groundwater sample (MW04USS) above project action limits for the following compounds and ranges:

- Benzo(a)anthracene (0.0168 mg/L)
- Benzo(b)pyrene (0.0131 mg/L)
- Benzo(b)fluoranthene (0.0142 mg/L)
- bis(2-ethylhexyl)Phthalate (0.0115 mg/L)
- Indeno(1,2,3-c,d)Pyrene (0.0051 mg/L).

No other analytes, including VOCs and PCBs, were detected above project action limits in groundwater samples collected from the Battery Control and Barracks Building.

5.3.2 HIPAR Building and Foundation

One soil boring and one test pit were advanced in the vicinity of the former HIPAR foundation and to the east of the HIPAR control building, respectively. Groundwater was not encountered in either the boring or test pit. A total of six surface soil samples were collected in the HIPAR area. Figure 5-6 shows the sample locations and results for both surface and subsurface soil samples collected from this site. The following subsections detail the individual results based on media and analyte type.

5.3.2.1 Surface Soil

One surface soil sample (SS04USS) was collected down gradient from the HIPAR foundation, and two surface soil samples were collected from the presumed vicinity of a former aboveground storage tank (AST) at the HIPAR foundation (SS05USS and SS06USS).

Eight field screening samples (PetroFLAG and EnSys PCB) were collected from the vicinity of a previous sample documented in the 1996 PA/SI that had detections of GRO (320 mg/Kg), DRO (5,790 mg/Kg), and TPH (6,400 mg/Kg). The rationale for collection of the 1996 sample is unknown. Based on the results of the field screening, three confirmation surface soil samples were collected (SS17USS, SS18USS, and SS22USS). Figure 5-6 shows the location and results of both the field screening and laboratory analysis. All of the laboratory surface soil samples were analyzed for GRO, DRO, RRO, VOCs, and SVOCs. There were no detections above project action limits.

Methylene chloride was detected in three samples above project action limits at levels ranging from 28.7 to 50.6 µg/Kg, but these detections were found during data validation to be attributable to laboratory contamination.

No other analytes were detected above project action limits in surface soil samples collected from the HIPAR area.

5.3.2.2 Subsurface Soil

Two subsurface soil samples were collected from the test pit near the HIPAR building. Subsurface soil samples were collected at two depths from a borehole near the HIPAR foundation. All four samples were analyzed for GRO, DRO, RRO, VOCs, SVOCs, RCRA 8 metals, nickel, and vanadium. The two test pit samples were also analyzed for PCBs.

Arsenic was detected in the test pit samples at 5.46 and 6.2 mg/Kg. These detections are above the project action limit of 3.9 mg/Kg, but below the 95% UPL of 12.5 mg/Kg for background arsenic concentrations at NSS.

Total chromium was detected above the project action limit of 25 mg/Kg in sample TP01USS at 25.7 mg/Kg. This chromium detection is below the 95% UPL of 38.3 mg/Kg for background chromium concentrations at NSS.

No other analytes were detected above project action limits in subsurface soil samples collected from the HIPAR area.

5.3.3 Electrical Substation C

One test pit was advanced in the vicinity of Electrical Substation C. Groundwater was not encountered in the test pit. A total 16 field screening and three confirmation surface soil samples were collected around the perimeter of Electrical Substation C. Figure 5-7 shows the sample locations and results for both surface and subsurface soil samples collected from this site. The following subsections detail the individual results based on media and analyte type.

5.3.3.1 Surface Soil

A total of 16 surface soil screening samples (SS25USS through SS40USS) were collected for EnSys PCB analysis. None of the surface soil screening samples exhibited PCBs greater than the 1 part per million (ppm) detection limit. Three confirmation surface soil samples were collected from the surface soil screening locations (SS27USS, SS31USS, and SS34USS) in areas most likely to have collected contamination from spills, if there had been any in the past. All three samples were analyzed for GRO, DRO, RRO, VOCs, SVOCs, RCRA 8 metals, nickel, vanadium, and PCBs.

Arsenic was detected in all three samples between 4.59 and 5.54 mg/Kg. These detections are above the project action limit of 3.9 mg/Kg, but below the 95% UPL of 12.5 mg/Kg for background arsenic concentrations at NSS.

Total chromium was detected above the project action limit of 25 mg/Kg in Samples SS27USS and SS31USS at 29.9 and 25.1 mg/Kg, respectively. However, all chromium

detections were below the 95% UPL of 38.3 mg/Kg for background chromium concentrations at NSS.

No other analytes were detected above project action limits in surface soil samples collected from Electrical Substation C.

5.3.3.2 Subsurface Soil

One exploratory test pit was excavated at the most downgradient area in the vicinity of Electrical Substation C. Two primary samples were collected at approximately 3 feet bgs, where the excavator met with refusal due to the presence of bedrock. Both samples were analyzed for GRO, DRO, RRO, VOCs, SVOCs, RCRA 8 metals, nickel, vanadium, and PCBs.

Total Chromium was detected above the project action limit of 25 mg/Kg in both samples (31.1 and 31.8 mg/Kg), but was below the 95% UPL of 38.3 mg/Kg for background chromium concentrations at NSS.

No other analytes were detected above project action limits in subsurface soil samples collected from Electrical Substation C.

5.3.4 Former Motor Pool Maintenance Building Foundation

One soil boring and one test pit were advanced at the Former Motor Pool Maintenance Building Foundation area. Groundwater was not encountered in either the boring or the test pit. Three surface soil samples were also collected from this area. Figure 5-5 shows the sample locations and results for both surface and subsurface soil samples collected from this area of USS. The following subsections detail the individual results based on media and analyte type.

5.3.4.1 Surface Soil

Three surface soil samples were collected from the Former Motor Pool Maintenance Building Foundation area. Two off the southwest edge of the former garage door bays (SS08USS and SS09USS), and one at the outfall of the floor drain (SS10USS). Samples were analyzed for GRO, DRO, RRO, RCRA 8 metals, nickel, vanadium, VOCs, and SVOCs.

DRO was detected above the project action limit of 250 mg/Kg for DRO in SS10USS at 554 mg/Kg.

Arsenic was detected in all three sample locations (6.45 to 15.2 mg/Kg) above the project action limit of 3.9 mg/Kg. Only SS10USS (15.2 mg/Kg) was above the 95% UPL of 12.5 mg/Kg for background arsenic concentrations at NSS.

Total Chromium was also detected in all three sample locations (30 to 63.2 mg/Kg) above the project action limit of 25 mg/Kg. Only SS09USS (63.2 mg/Kg) was above the 95% UPL of 38.3 mg/Kg for background arsenic concentrations at NSS.

Methylene chloride was detected in all three samples above project action limits at levels ranging from 28 to 54.1 µg/Kg, but these detections were found during data validation to be attributable to laboratory contamination.

No other analytes were detected above project action limits in surface soil samples collected from the Former Motor Pool Maintenance Building Foundation area.

5.3.4.2 Subsurface Soil

One borehole (BH09USS) and one test pit (TP04USS) were advanced to assess subsurface soil conditions at the Former Motor Pool Maintenance Building Foundation area. BH09USS is located off the southeast corner of the concrete pad and was advanced until refusal at bedrock (19 feet bgs). TP04USS is located off the northwestern corner of the pad adjacent to a former sump and was advanced to refusal with hand excavation methods at 2.5 feet bgs (Figure 5-5). Two primary samples were collected from the borehole and test pit, as well as a duplicate sample from the borehole. Samples were analyzed for GRO, DRO, RRO, RCRA 8 metals, nickel, vanadium, VOCs, and SVOCs.

Arsenic was detected in both samples from TP04USS (4.67 and 5.55 mg/Kg) at levels above the project action limit of 3.9 mg/Kg, but below the 95% UPL of 12.5 mg/Kg for background arsenic concentrations at NSS.

Total chromium was detected in all five subsurface soil samples collected from BH09USS and TP04USS (25.9 to 37.3 mg/kg) at levels above the project action limit of 25 mg/Kg. However, all chromium detections were below the 95% UPL of 38.3 mg/Kg for background chromium concentrations at NSS.

No other analytes were detected above project action limits in subsurface soils collected from the Former Motor Pool Maintenance Building Foundation area.

5.3.5 Radar Domes

A total of three surface soil samples (SS01USS, SS02USS, and SS03USS) were collected, one each from directly under the radar domes: Missile Ranging Radar, Target Ranging Radar, and Target Tracking Radar. Sample locations were selected based on the lowest area or depression where potential contaminants may have accumulated from the radar domes. All three samples were analyzed for GRO, DRO, RRO, VOCs, SVOCs, RCRA 8 metals, nickel, vanadium, and PCBs. Figure 5-7 shows the sample locations and results for the three surface soil samples collected from this site.

Arsenic was detected in Samples SS02USS and SS03USS at 5.35 and 19.1 mg/Kg, respectively. SS02USS is above the project action limit of 3.9 mg/Kg, but below the 95%

UPL of 12.5 mg/Kg for background arsenic concentrations at NSS. SS03USS is above both the project action limit and the 95% UPL for background.

Total chromium was detected in Samples SS01USS and SS03USS at 29.7 and 25 mg/Kg, respectively – both are above the project action limit of 25 mg/Kg. However, both of these chromium detections were below the 95% UPL of 38.3 mg/Kg for background chromium concentrations at NSS.

PHCs were detected in all three surface soil samples; however, only SS02USS was above the project action limit of 250 mg/Kg for DRO at 2,270 mg/Kg.

Methylene chloride was the only VOC detected (SS02USS and SS03USS), and was determined during data validation to be attributable to laboratory contamination.

SVOCs were detected in all three surface soil samples at or above their respective project action limits. Benzo (a)pyrene was detected in all three samples and ranged from 1.0 to 3.85 mg/Kg. Dibenz(a,h) anthracene was detected in two samples (SS01USS and SS02USS) at 0.64 and 2.42 mg/Kg, respectively. Benzo(a)anthracene was detected above the project action limit in SS01USS only at 4.16 mg/Kg.

No other analytes were detected above the project action limits in surface soil samples collected from the Radar Domes.

5.3.6 Septic System and Outfall

One test pit with two subsurface soil samples and two surface soil samples were collected from the vicinity of the former Septic System. One planned sample within the septic tank was not able to be collected, because the tank had been backfilled with soil to abandon the system. Figure 5-8 shows the sample locations and results for the surface and subsurface soil samples collected from this site. The following subsections detail the individual results based on media and analyte type.

5.3.6.1 Surface Soil

Two surface soil samples were collected from the outfall of the septic system, one immediately at the discharge (SS11USS), and the other approximately 70 feet downgradient of the septic system outfall (SS12USS). Samples were analyzed for GRO, DRO, RRO, RCRA 8 metals, nickel, vanadium, VOCs, and SVOCs.

DRO was detected above the project action limit of 250 mg/Kg in SS11USS and SS12USS at 562 and 613 mg/Kg, respectively.

Arsenic was detected above the project action limit of 3.9 mg/Kg only in Sample SS11USS at 11.2 mg/Kg. This was below the 95% UPL of 12.5 mg/Kg for background arsenic concentrations at NSS.

Total chromium was detected in both SS11USS and SS12USS at 54.5 and 27 mg/Kg, respectively. Both results are above the project action limit of 25 mg/Kg; however, only Sample SS11USS is above the 95% UPL of 38.3 mg/Kg for background chromium concentrations at NSS. Subsequently, an additional sample was collected from SS11USS and analyzed for hexavalent chromium, the results of which were non-detect.

Barium, cadmium, and **lead** were detected above their respective project action limits in SS11USS. **Silver** was detected at 38.2 mg/Kg in SS12USS, above the project action limit of 11.2 mg/Kg. These four metal concentrations also exceed the 95% UPLs for background concentrations at NSS, since the 95% UPLs are well below the project action limits.

Methylene chloride was the only VOC detected above project action limits in SS11USS at 148 µg/Kg; however, it was determined during data validation to be associated with laboratory contamination.

SVOCs were detected in SS11USS and SS12USS above their respective project action limits. 4-Chloraniline was detected in both samples (5.52 and 7.8 mg/Kg), while benzo(a)pyrene (2.23 mg/Kg), and benzo(b)fluoranthene (10.6 mg/Kg) were detected in only SS11USS.

No other analytes were detected above project action limits in surface soil samples collected from the Septic System and Outfall area.

5.3.6.2 Subsurface Soil

One exploratory test pit was excavated adjacent to the septic tank, alongside the access road to USS. A primary and duplicate sample were collected from the bottom of the test pit (001TP03USS and 002TP03USS) and analyzed for GRO, DRO, RRO, RCRA 8 metals, nickel, vanadium, VOCs, SVOCs, and PCBs.

Arsenic was detected in both samples at 5.0 and 5.51 mg/Kg, which are above the project action limit of 3.9 mg/Kg but below the 95% UPL of 12.5 mg/Kg for background arsenic concentrations at NSS.

Total chromium was detected in both samples at 29 and 31.6 mg/Kg, which are above the project action limit of 25 mg/Kg, but below the 95% UPL of 38.3 mg/Kg for background chromium.

No other analytes were detected above project action limits in subsurface soil samples collected from the Septic System and Outfall area.

5.4 USS DISCUSSION AND CONCLUSIONS

Two of the six USS subareas are not likely to require further action (Electrical Substation C and HIPAR Building and Foundation). Chemicals of potential concern (COPCs) detected above project action limits at the other four USS subareas are discussed below – excluding methylene chloride detections that were determined to be attributable to laboratory

contamination, and metals that are above project action limits, but below their respective 95% UPL for background at NSS. Specific recommendations on future potential actions will be made in the FS.

Battery Control and Barracks Building – The source of contamination at the Battery Control and Barracks Buildings appears to be from releases either from leaks or overfilling of the former diesel and gasoline USTs. Both of the USTs were removed prior to the 1996 PA/SI. Additionally, the pipeline that supplied diesel fuel from the UST to the building appears to be partially intact and some leakage is anticipated to have occurred. The pipeline was encountered on the outer edge of BH07USS (Figure 5-3). Subsurface soil, surface soil, and groundwater in the vicinity of the former diesel UST, former gasoline UST, and buried fuel line T-junction have detections of DRO, VOCs, SVOCs, and metals, above their respective project action limits (Figures 5-2, 5-3, and 5-4).

Former Motor Pool Maintenance Building and Foundation – As presented in Section 5.3.4, DRO was detected in surface soil above the project action limit of 250 mg/Kg at 554 mg/Kg in one sample at the outfall (Figure 5-5). The source of the contamination is presumed to be from the floor drain and lube-pit. The floor drain and lube-pit have been backfilled with soil; therefore, mobilization of contamination from either within the lines or the lube pit is minimized. During the RFI, water was noted to be seeping out of the composite (presumably asbestos) pipe. However, the volume of water seeping was insufficient to sample.

Radar Domes – As presented in Section 5.3.5, DRO and SVOCs were detected above their respective project action limits (Figure 5-7). The source of contamination is uncertain; however, given the composition of the analytes detected, lubricants used to operate the clam-shell enclosures of the three radar antennas are the likely source.

Septic System and Outfall – As presented in Section 5.3.6, DRO, metals, and SVOCs were detected above their respective project action limits (Figure 5-8). The source of contamination is from discharge of fluids and sediment from the septic system. Based on the analytes detected, it is likely that the original source of contamination included waste oil, paints, and pesticides. The septic system tank has been backfilled with soil; therefore, mobilization of contamination from either within the lines or tanks to the outfall is minimized. During the RFI, water was noted to be seeping out of the wooden stave pipe outfall. However, the volume of water seeping was insufficient to sample.

Table 5-1 USS - Surface Soil Samples, Analytical Detections Above Project Action Limits

Location Identification		SS01USS		SS02USS		SS03USS		SS04USS		SS05USS		SS06USS	
Field Sample Identification		10NSS001SS01USS		10NSS001SS02USS		10NSS001SS03USS		10NSS001SS04USS		10NSS001SS05USS		10NSS001SS06USS	
Date Collected		8/4/2010		8/4/2010		8/4/2010		8/4/2010		8/4/2010		8/4/2010	
Depth (ft)		0.5		0.5		0.5		0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**												
Total Petroleum Hydrocarbons (mg/kg)													
Diesel Range Organics (DRO)/AK102	250	**93.5**	D	**2270**	D	**32.8**		**14.1**	F	**51.6**		**127**	
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	**3.1**		**5.35**		**19.1**		NA		NA		NA	
Barium	1100	**326**		**162**		**188**		NA		NA		NA	
Cadmium	5	**0.144**	F	**0.115**	F	**0.162**	F	NA		NA		NA	
Chromium	25	**29.7**		**21.2**		**25**		NA		NA		NA	
Lead	400	**12.1**		**8.85**		**20.3**		NA		NA		NA	
Silver	11.2	**0.0434**	F	**0.0603**	F	**0.0714**	F	NA		NA		NA	
Volatile Organic Compounds (SW8260B) (µg/kg)													
Methylene chloride	16	*22.7*	U	**33.9**	F,UB	**35**	F,UB	**28.7**	F,UB	**50.6**	F,UB	**34.5**	F,UB
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)													
4-Chloroaniline	0.057	*0.0822*	U	*0.0824*	U	*0.0819*	*U*	*0.0832*	U	*0.0916*	U	*0.0816*	U
Benzo(a)anthracene	3.6	**4.16**		**1.22**		**1.11**		**0.207**	F	0.293	U	0.262	U
Benzo(a)pyrene	0.49	**3.85**		**1.12**		**1**		**0.198**	F	*0.0916*	U	*0.0816*	U
Benzo(b)fluoranthene	4.9	**3.79**		**3.18**		**1.05**		**0.242**	F	0.293	U	0.262	U
Dibenz(a,h)anthracene	0.49	**0.64**		**2.42**		**0.16**	F	*0.0832*	U	*0.0916*	U	*0.0816*	U

Table 5-1 USS - Surface Soil Samples, Analytical Detections Above Project Action Limits

Location Identification		SS07USS		SS08USS		SS08USS Dup		SS09USS		SS10USS		SS11USS	
Field Sample Identification		10NSS001SS07USS		10NSS001SS08USS		10NSS201SS08USS		10NSS001SS09USS		10NSS001SS10USS		10NSS001SS11USS	
Date Collected		8/4/2010		8/4/2010		8/4/2010		8/4/2010		8/4/2010		8/5/2010	
Depth (ft)		0.5		0.5		0.5		All		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**												
Total Petroleum Hydrocarbons (mg/kg)													
Diesel Range Organics (DRO)/AK102	250	21.4	U	**6.8**	F	21.3	U	**23**		**554**	D	**562**	D
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	**3.36**		**6.45**		**8.21**		**6.37**		**15.2**		**11.2**	
Barium	1100	**222**		**72.2**		**69.2**		**93.9**		**129**		**1240**	
Cadmium	5	**0.191**	F	**0.221**		**0.218**		**0.278**		**2.92**		**23.9**	
Chromium	25	**28.8**		**30**		**33.7**		**63.2**		**35.2**		**54.5**	
Lead	400	**9.29**		**23.2**		**26.8**		**94.7**		**113**		**950**	
Silver	11.2	**0.051**	F	**0.12**		**0.0675**	F	**0.0751**	F	**0.0814**	F	**2.62**	
Volatile Organic Compounds (SW8260B) (µg/kg)													
Methylene chloride	16	**45.8**	F,UB	**54.1**	F,UB	**28**	F,UB	**44.8**	F,UB	**39.9**	F,UB	**148**	F,UB
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)													
4-Chloroaniline	0.057	*0.0835*	U	*0.0835*	U	*0.0837*	U	*0.0832*	U	*0.0913*	U	**5.52**	
Benzo(a)anthracene	3.6	0.268	U	0.268	U	0.268	U	0.267	U	**0.108**	F	**3.47**	
Benzo(a)pyrene	0.49	*0.0835*	U	*0.0835*	U	*0.0837*	U	*0.0832*	U	*0.0913*	U	**2.23**	F
Benzo(b)fluoranthene	4.9	0.268	U	0.268	U	0.268	U	0.267	U	0.293	U	**10.6**	
Dibenz(a,h)anthracene	0.49	*0.0835*	U	*0.0835*	U	*0.0837*	U	*0.0832*	U	*0.0913*	U	*0.706*	U

Table 5-1 USS - Surface Soil Samples, Analytical Detections Above Project Action Limits

Location Identification		SS11USS	SS12USS		SS13USS		SS13USS		SS14USS		SS14USS	
Field Sample Identification		10NSS001SS11USS	10NSS001SS12USS		10NSS001SS13USS		10NSS001SS13USS		10NSS001SS14USS		10NSS001SS14USS	
Date Collected		10/14/2010	8/5/2010		8/6/2010		9/7/2010		8/6/2010		9/7/2010	
Depth (ft)		0.5	0.5		0.5		0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**											
Total Petroleum Hydrocarbons (mg/kg)												
Diesel Range Organics (DRO)/AK102	250	NA	**613**	D	**170**		NA		21.1	U	NA	
Metals (SW6020A) (mg/kg)												
Arsenic	3.9	NA	**2.16**		NA		NA		NA		NA	
Barium	1100	NA	**381**		NA		NA		NA		NA	
Cadmium	5	NA	**2.98**		NA		NA		NA		NA	
Chromium	25	NA	**27**		NA		NA		NA		NA	
Lead	400	NA	**54.7**		NA		NA		NA		NA	
Silver	11.2	NA	**38.2**		NA		NA		NA		NA	
Volatile Organic Compounds (SW8260B) (µg/kg)												
Methylene chloride	16	NA	*140*	U	NA		*20.4*	U	NA		*25.3*	U
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)												
4-Chloroaniline	0.057	NA	**7.8**		*0.0841*	U	NA		*0.081*	U	NA	
Benzo(a)anthracene	3.6	NA	1.32	U	0.27	U	NA		0.26	U	NA	
Benzo(a)pyrene	0.49	NA	*0.411*	U	*0.0841*	U	NA		*0.081*	U	NA	
Benzo(b)fluoranthene	4.9	NA	1.32	U	0.27	U	NA		0.26	U	NA	
Dibenz(a,h)anthracene	0.49	NA	*0.411*	U	*0.0841*	U	NA		*0.081*	U	NA	

Table 5-1 USS - Surface Soil Samples, Analytical Detections Above Project Action Limits

Location Identification		SS15USS		SS16USS		SS17USS		SS18USS		SS22USS		SS27USS	
Field Sample Identification		10NSS001SS15USS		10NSS001SS16USS		10NSS001SS17USS		10NSS001SS18USS		10NSS001SS22USS		10NSS001SS27USS	
Date Collected		8/6/2010		8/6/2010		8/16/2010		8/16/2010		8/16/2010		8/16/2010	
Depth (ft)		0.5		0.5		0.5		0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**												
Total Petroleum Hydrocarbons (mg/kg)													
Diesel Range Organics (DRO)/AK102	250	**13.2**	F	**48.2**		**9.35**	F	21.4	U	**8.87**	F	**12.9**	F
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	**7.48**		**9.15**		NA		NA		NA		**5.19**	
Barium	1100	**105**		**113**		NA		NA		NA		**95.2**	
Cadmium	5	**0.133**	F	**0.157**	F	NA		NA		NA		**0.289**	
Chromium	25	**16**		**20.4**		NA		NA		NA		**29.9**	
Lead	400	**11.7**		**18.7**		NA		NA		NA		**20.4**	
Silver	11.2	**0.0737**	F	**0.0797**	F	NA		NA		NA		**0.064**	F
Volatile Organic Compounds (SW8260B) (µg/kg)													
Methylene chloride	16	*6.3*	U	*5.6*	U	*32.3*	U	*38*	U	*88.6*	U	*34.2*	U
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)													
4-Chloroaniline	0.057	*0.416*	U	*0.0831*	U	*0.0824*	U	*0.0828*	U	*0.0833*	U	*0.0829*	U
Benzo(a)anthracene	3.6	**8.61**	D	**2.56**		0.264	U	0.265	U	0.267	U	**0.0944**	F
Benzo(a)pyrene	0.49	**5.75**	D	**2**		*0.0824*	U	*0.0828*	U	*0.0833*	U	*0.0829*	U
Benzo(b)fluoranthene	4.9	**6.93**	D	**2.57**		0.264	U	0.265	U	0.267	U	0.266	U
Dibenz(a,h)anthracene	0.49	**0.488**	F	**0.383**		*0.0824*	U	*0.0828*	U	*0.0833*	U	*0.0829*	U

Table 5-1 USS - Surface Soil Samples, Analytical Detections Above Project Action Limits

Location Identification		SS31USS		SS34USS	
Field Sample Identification		10NSS001SS31USS		10NSS001SS34USS	
Date Collected		8/16/2010		8/16/2010	
Depth (ft)		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**				
Total Petroleum Hydrocarbons (mg/kg)					
Diesel Range Organics (DRO)/AK102	250	**11.2**	F	**56.2**	
Metals (SW6020A) (mg/kg)					
Arsenic	3.9	**5.54**		**4.59**	
Barium	1100	**110**		**129**	
Cadmium	5	**0.239**		**0.176**	F
Chromium	25	**25.1**		**19**	
Lead	400	**18.5**		**9.29**	
Silver	11.2	**0.0725**	F	**0.0513**	F
Volatile Organic Compounds (SW8260B) (µg/kg)					
Methylene chloride	16	*36.3*	U	*39.6*	U
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)					
4-Chloroaniline	0.057	*0.0828*	U	*0.0847*	U
Benzo(a)anthracene	3.6	**0.212**	F	0.271	U
Benzo(a)pyrene	0.49	**0.197**	F	*0.0847*	U
Benzo(b)fluoranthene	4.9	**0.213**	F	0.271	U
Dibenz(a,h)anthracene	0.49	*0.0828*	U	*0.0847*	U

Key:

µg/kg	micrograms per kilogram.
mg/kg	milligrams per kilogram.
Italic	Italicized result indicates analyte reported to the laboratory detection limit.
	Indicates concentration, LOQ, or LOD is above the established project action limit
Bold	Bolded result indicates positively identified compound.
AK	Alaska Test Method
NA	Not analyzed.
B	Analyte detected in an associated blank.
D	Sample dilution required for analysis; reported values reflect the dilution.
F	Analyte was positively identified but the reported concentration is estimated; reported concen than the LOQ but greater than the LOD.
UB	Analyte considered not detected, based on an associated blank concentration.
U	Analyte is not detected at the reported LOQ or LOD
LOD	Limit of detection
LOQ	Limit of quantitation
SW	U.S. Environmental Protection Agency Solid Waste Method

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Table 5-2 USS - Subsurface Soil Samples, Analytical Detections Above Project Action Limits

Location Identification		BH01USS		BH01USS		BH01USS Dup		BH02USS		BH02USS		BH03USS	
Field Sample Identification		10NSS002SL01USS		10NSS004SL01USS		10NSS202SL01USS		10NSS003SL02USS		10NSS006SL02USS		10NSS006SL03USS	
Date Collected		8/9/2010		8/9/2010		8/9/2010		8/9/2010		8/9/2010		8/9/2010	
Depth (ft)		4 - 6		8 - 10		4 - 6		6 - 8		12 - 14		12 - 14	
Analyte/Methods (Units)	**Project Action Limit**												
Total Petroleum Hydrocarbons (mg/kg)													
Diesel Range Organics (DRO)/AK102	250	**2240**	D,J+	**1100**	D	**2270**	D	**591**		**487**	D	**9.03**	F
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	NA		NA		NA		NA		NA		NA	
Chromium	25	NA		NA		NA		NA		NA		NA	
Volatile Organic Compounds (SW8260B) (µg/kg)													
1,2,3-Trichloropropane	0.53	*8.57*	U	*7.32*	U	*8.4*	U	*5.99*	U	**24.7**		*5.53*	U
Benzene	25	*4.29*	U	11.7	U	*4.2*	U	9.59	U	8.4	U	8.87	U
Methylene chloride	16	*34.1*	U	*29.1*	U	*33.4*	U	*23.8*	U	*20.8*	U	*22*	U
Trichloroethene (TCE)	20	**31.1**		**42.9**		**23.4**	F	**8.06**	F	**5.71**	F	*5.53*	U
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)													
Benzo(a)pyrene	0.49	*0.0817*	U	*0.082*	U	*0.0826*	U	*0.0808*	U	*0.079*	U	*0.0788*	U
Dibenz(a,h)anthracene	0.49	*0.0817*	U	*0.082*	U	*0.0826*	U	*0.0808*	U	*0.079*	U	*0.0788*	U

Table 5-2 USS - Subsurface Soil Samples, Analytical Detections Above Project Action Limits

Location Identification		BH03USS		BH04USS		BH04USS		BH05USS		BH05USS		BH06USS	
Field Sample Identification		10NSS007SL03USS		10NSS005SL04USS		10NSS006SL04USS		10NSS006SL05USS		10NSS009SL05USS		10NSS001SL06USS	
Date Collected		8/9/2010		8/10/2010		8/10/2010		8/10/2010		8/10/2010		8/10/2010	
Depth (ft)		14 - 16		10 - 12		12 - 14		12 - 14		18 - 20		2 - 4	
Analyte/Methods (Units)	**Project Action Limit**												
Total Petroleum Hydrocarbons (mg/kg)													
Diesel Range Organics (DRO)/AK102	250	**70.9**		**92.3**		**1870**	D	20.7	U	20.5	U	**8.71**	F
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	NA		**5.77**		**5.57**		**2.24**		**1.75**		**4.72**	
Chromium	25	NA		**13.2**		**30**		**13.7**		**17.3**		**33.2**	
Volatile Organic Compounds (SW8260B) (µg/kg)													
1,2,3-Trichloropropane	0.53	*5.26*	U	*6.31*	U	*6.46*	U	*6.25*	U	*5.17*	U	*6.07*	U
Benzene	25	8.43	U	**29.1**		**8.49**	F	10	U	8.29	U	9.73	U
Methylene chloride	16	*20.9*	U	*25.1*	U	*25.7*	U	*24.9*	U	*20.6*	U	*24.1*	U
Trichloroethene (TCE)	20	*5.26*	U	**60.3**		**21.1**		*6.25*	U	*5.17*	U	**29.2**	
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)													
Benzo(a)pyrene	0.49	*0.0794*	U	**1.62**		*0.0828*	U	*0.0802*	U	*0.0791*	U	*0.0801*	U
Dibenz(a,h)anthracene	0.49	*0.0794*	U	**0.273**		*0.0828*	U	*0.0802*	U	*0.0791*	U	*0.0801*	U

Table 5-2 USS - Subsurface Soil Samples, Analytical Detections Above Project Action Limits

Location Identification		BH06USS		BH06USS Dup		BH07USS		BH07USS		BH08USS		BH08USS	
Field Sample Identification		10NSS005SL06USS		10NSS201SL06USS		10NSS006SL07USS		10NSS007SL07USS		10NSS004SL08USS		10NSS005SL08USS	
Date Collected		8/10/2010		8/10/2010		8/10/2010		8/10/2010		8/11/2010		8/11/2010	
Depth (ft)		12 - 14		2 - 4		12 - 14		14 - 16		8 - 10		10 - 12	
Analyte/Methods (Units)	**Project Action Limit**												
Total Petroleum Hydrocarbons (mg/kg)													
Diesel Range Organics (DRO)/AK102	250	20.1	U	20.2	U	**150**		**367**		20.6	U	20.8	U
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	**2.14**		**4.95**		**2.26**		**3.79**		NA		NA	
Chromium	25	**31**		**46.8**		**32.7**		**28.2**		NA		NA	
Volatile Organic Compounds (SW8260B) (µg/kg)													
1,2,3-Trichloropropane	0.53	*5.3*	U	*5.82*	U	*5.21*	U	*6.07*	U	*5.65*	U	*5.54*	U
Benzene	25	8.49	U	9.33	U	8.35	U	9.72	U	9.06	U	8.88	U
Methylene chloride	16	*21*	U	*23.1*	U	*20.7*	U	*24.1*	U	*22.5*	U	*22*	U
Trichloroethene (TCE)	20	**15.4**	F	**27**		**79**		**78.7**		*5.65*	U	*5.54*	U
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)													
Benzo(a)pyrene	0.49	*0.0791*	U	*0.079*	U	*0.0794*	U	*0.0795*	U	*0.0808*	U	*0.0808*	U
Dibenz(a,h)anthracene	0.49	*0.0791*	U	*0.079*	U	*0.0794*	U	*0.0795*	U	*0.0808*	U	*0.0808*	U

Table 5-2 USS - Subsurface Soil Samples, Analytical Detections Above Project Action Limits

Location Identification		BH09USS		BH09USS		BH09USS Dup		BH10USS		BH10USS		BH11USS	
Field Sample Identification		10NSS003SL09USS		10NSS006SL09USS		10NSS203SL09USS		10NSS001SL10USS		10NSS005SL10USS		10NSS003SL11USS	
Date Collected		8/11/2010		8/11/2010		8/11/2010		8/11/2010		8/11/2010		8/19/2010	
Depth (ft)		6 - 8		12 - 14		6 - 8		2 - 4		10 - 12		6 - 8	
Analyte/Methods (Units)	**Project Action Limit**												
Total Petroleum Hydrocarbons (mg/kg)													
Diesel Range Organics (DRO)/AK102	250	21.5	U	**8.64**	F	21.6	U	**6.45**	F	20.3	U	51.3	U
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	**3.66**		**3.74**		**3.71**		**4.64**		**4.89**		**1.32**	
Chromium	25	**30.5**		**37.3**		**31.6**		**23.2**		**31.4**		**33.3**	
Volatile Organic Compounds (SW8260B) (µg/kg)													
1,2,3-Trichloropropane	0.53	*7.66*	U	*9.1*	U	*7.71*	U	*7.94*	U	*5.5*	U	*9.04*	U
Benzene	25	12.3	U	*4.55*	U	12.4	U	**4.07**	F	**2.82**	F	*4.52*	U
Methylene chloride	16	**32.9**	F,UB	*36.2*	U	*30.6*	U	**32.8**	F,UB	**31.9**	F,UB	**41.4**	F
Trichloroethene (TCE)	20	*7.66*	U	*9.1*	U	*7.71*	U	**78.4**		**38.2**		*9.04*	U
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)													
Benzo(a)pyrene	0.49	*0.0839*	U	*0.0848*	U	*0.0831*	U	**0.231**	F	*0.0796*	U	*0.079*	U
Dibenz(a,h)anthracene	0.49	*0.0839*	U	*0.0848*	U	*0.0831*	U	*0.0798*	U	*0.0796*	U	*0.079*	U

Table 5-2 USS - Subsurface Soil Samples, Analytical Detections Above Project Action Limits

Location Identification		BH11USS		BH12USS		BH12USS		BH12USS Dup		BH13USS		TP01USS	
Field Sample Identification		10NSS004SL11USS		10NSS005SL12USS		10NSS006SL12USS		10NSS206SL12USS		10NSS001SL13USS		10NSS001TP01USS	
Date Collected		8/19/2010		8/19/2010		8/19/2010		8/19/2010		8/19/2010		8/23/2010	
Depth (ft)		8 - 10		10 - 12		12 - 14		12 - 14		2		5	
Analyte/Methods (Units)	**Project Action Limit**												
Total Petroleum Hydrocarbons (mg/kg)													
Diesel Range Organics (DRO)/AK102	250	**11.8**	F	**51.8**		**3690**	D	**3560**	D	20.3	U	20.9	U
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	**1.79**		NA		NA		NA		NA		**6.2**	
Chromium	25	**31.9**		NA		NA		NA		NA		**25.7**	
Volatile Organic Compounds (SW8260B) (µg/kg)													
1,2,3-Trichloropropane	0.53	*5.56*	U	*6.46*	U	*9.69*	U	*7.44*	U	*4.58*	U	*5.25*	U
Benzene	25	8.9	U	10.4	U	*4.85*	U	**4.05**	F	7.35	U	8.41	U
Methylene chloride	16	**29.6**	F	*25.7*	U	*38.5*	U	*29.6*	U	**26.7**	F	*20.9*	U
Trichloroethene (TCE)	20	**5.7**	F	**8.08**	F	**49.4**		**44.8**		**17.3**		*5.25*	U
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)													
Benzo(a)pyrene	0.49	*0.0796*	U	*0.0868*	U	**2.47**		**3.71**		*0.0787*	U	*0.082*	U
Dibenz(a,h)anthracene	0.49	*0.0796*	U	*0.0868*	U	**0.653**		**0.846**		*0.0787*	U	*0.082*	U

Table 5-2 USS - Subsurface Soil Samples, Analytical Detections Above Project Action Limits

Location Identification		TP01USS		TP02USS		TP02USS		TP03USS		TP03USS		TP04USS		TP04USS	
Field Sample Identification		10NSS002TP01USS		10NSS001TP02USS		10NSS002TP02USS		10NSS001TP03USS		10NSS002TP03USS		10NSS001TP04USS		10NSS002TP04USS	
Date Collected		8/23/2010		8/23/2010		8/23/2010		8/23/2010		8/23/2010		8/27/2010		8/27/2010	
Depth (ft)		5		3		3		6		6		2.3		2.5	
Analyte/Methods (Units)	**Project Action Limit**														
Total Petroleum Hydrocarbons (mg/kg)															
Diesel Range Organics (DRO)/AK102	250	21.1	U	**7.65**	F	21.1	U	22.2	U	22	U	**119**	F	**139**	D
Metals (SW6020A) (mg/kg)															
Arsenic	3.9	**5.46**		**3.8**		**3.74**		**5**		**5.51**		**5.55**		**4.67**	
Chromium	25	**23.3**		**31.1**		**31.8**		**29**		**31.6**		**25.9**		**27.9**	
Volatile Organic Compounds (SW8260B) (µg/kg)															
1,2,3-Trichloropropane	0.53	*6.11*	U	*5.53*	U	*5.5*	U	*6.97*	U	*6.76*	U	*6.27*	U	*5.51*	U
Benzene	25	9.79	U	8.87	U	8.81	U	11.2	U	10.8	U	10.1	U	8.82	U
Methylene chloride	16	*24.3*	U	*22*	U	*21.9*	U	*27.7*	U	*26.9*	U	*24.9*	U	**27.3**	F,UB
Trichloroethene (TCE)	20	*6.11*	U	*5.53*	U	*5.5*	U	*6.97*	U	*6.76*	U	*6.27*	U	*5.51*	U
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)															
Benzo(a)pyrene	0.49	*0.0822*	U	*0.0832*	U	*0.083*	U	*0.0868*	U	*0.0847*	U	*0.0849*	U	*0.0936*	U
Dibenz(a,h)anthracene	0.49	*0.0822*	U	*0.0832*	U	*0.083*	U	*0.0868*	U	*0.0847*	U	*0.0849*	U	*0.0936*	U

µg/kg micrograms per kilogram.
mg/kg milligrams per kilogram.
Italic Italicized result indicates analyte reported to the laboratory detection limit.
Indicates concentration, LOQ, or LOD is above the established project action limit
Bold Bolded result indicates positively identified compound.
NA Not analyzed.
AK Alaska Test Method
B Analyte detected in an associated blank.
D Sample dilution required for analysis; reported values reflect the dilution.
F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the LOQ but greater than the LOD.
UB Analyte considered not detected, based on an associated blank concentration.
U Analyte is not detected at the reported LOQ or LOD
J+ Data are estimated, potentially biased high, based on associated quality control data.
J- Data are estimated, potentially biased low, based on associated quality control data.
LOD Limit of detection
LOQ Limit of quantitation
SW U.S. Environmental Protection Agency Solid Waste Method

Table 5-3 USS - Groundwater Samples, Analytical Detections Above Project Action Limits

Location Identification		MW03USS				MW04USS		MW12USS
Field Sample Identification		10NSS001GW03USS				10NSS001GW04USS		10NSS001GW12USS
Date Collected		9/1/2010	9/2/2010	10/4/2010	10/14/2010	9/1/2010		9/1/2010
Analyte/Methods (Units)	**Project Action Limit**							
Total Petroluem Hydrocarbons (mg/l)								
Diesel Range Organics (DRO)/AK102	1.5	**9.43**				**32.3** D		NA
Residual Range Organics (RRO)/AK103	1.1	**4.14**				**31** D		NA
Metals (SW6020) (µg/l)			**Total**		**Dissolved**	**Total**	**Dissolved**	
Arsenic	10		**156**	NA	*1.5* U	**73**	**4.8** F	NA
Barium	2000		**16200**	NA	**65.9**	**11600**	**136**	NA
Cadmium	5		**4.95** F	NA	2 U	**6.88**	2 U	NA
Chromium	100		**1790**	NA	4 U	**694**	**5.27**	NA
Lead	15		**189**	NA	1 U	**653**	**43.5**	NA
Nickel	100		**916**	NA	**1.65** F	**531**	**4.89**	NA
Vanadium	260		**2450**	NA	20 U	**1610**	**18.2** F	NA
Semi-Volatile Organic Compounds (SW8270C) (mg/l)								
Benzo(a)anthracene	0.0012			NA		**0.0168**		NA
Benzo(a)pyrene	0.0002			NA		**0.0131**		NA
Benzo(b)fluoranthene	0.0012			NA		**0.0142**		NA
bis(2-ethylhexyl) Phthalate	0.006			NA		**0.0115**		NA
Indeno(1,2,3-c,d)Pyrene	0.0012			NA		**0.0051** F		NA

µg/l micrograms per liter.
mg/l milligrams per liter.
Indicates concentration, LOQ or LOD is above the established project action limit
Italic Italicized result indicates analyte reported to the limit of detection
Bold Bolded result indicates positively identified compound.
AK Alaska Test Method
NA Not analyzed.
D Sample dilution required for analysis; reported values reflect the dilution.
F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the LOQ, but greater than the LOD.
J Data are estimated based on associated quality control data.
U Analyte is not detected at the reported LOQ or LOD
LOD Limit of detection
LOQ Limit of quantitation
SW U.S. Environmental Protection Agency Solid Waste Method

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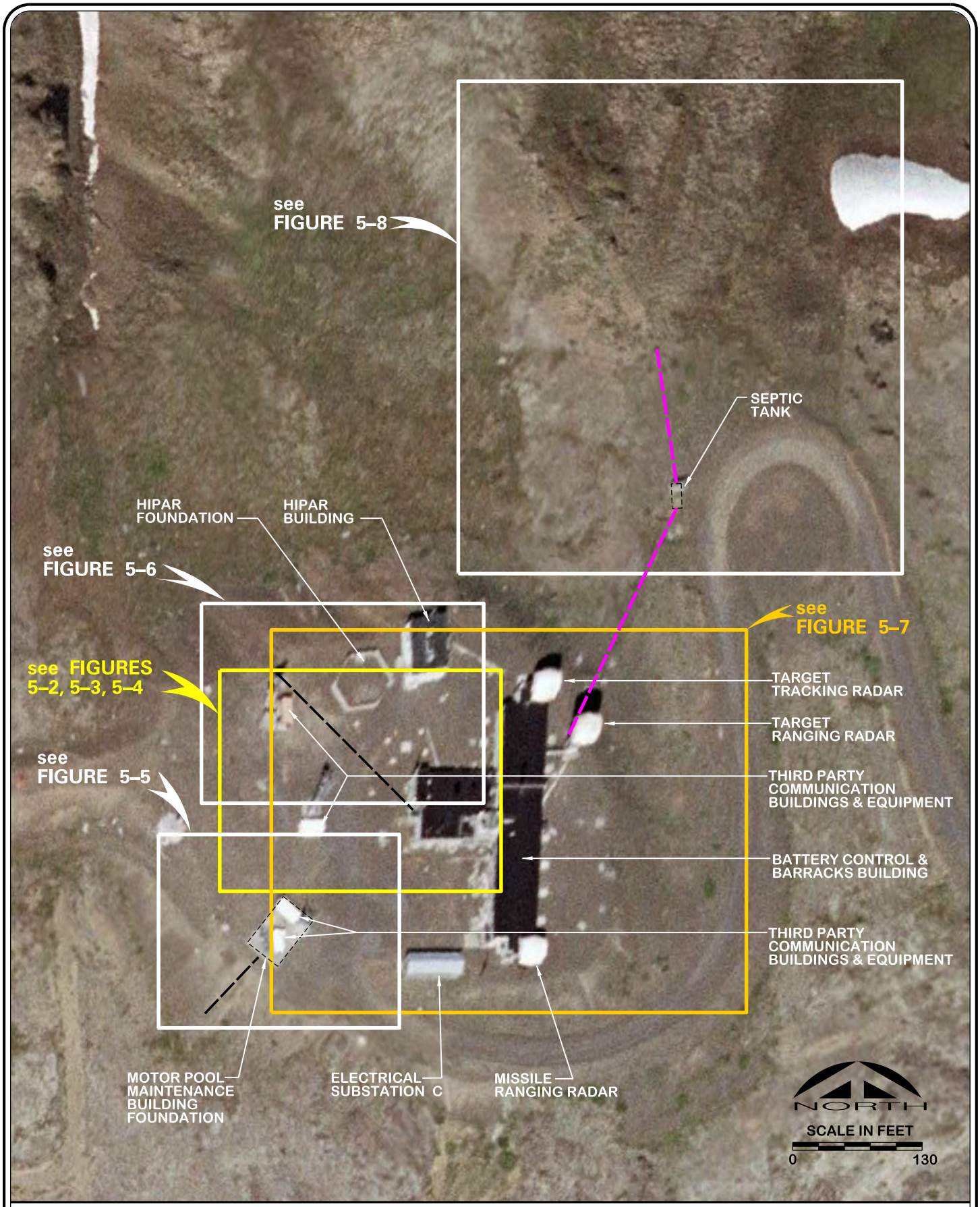

LEGEND:

- APPROXIMATE LOCATION OF BURIED DRAIN LINE
- APPROXIMATE LOCATION OF SEPTIC LINE AND OUTFALL

FIGURE 5-1 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

USS – KEY MAP

JOB No. 1008300.83010401 TIME: 18-APR-2012 11:27 FILE: D:\CAD\Proj\AFCEE\Ft Richardson-Nike Site Summit_1008300\RI_Report\FINAL\FIG 5-1 - upper site.dgn

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BH02USS	6-8' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	**591 mg/Kg**
RRO [2]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

BH02USS	12-14' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	**487 mg/Kg**
RRO [2]	Not detected above action limit
VOCs	
1,2,3-Trichloropropane [3]	**24.7 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

BH01USS	4-6' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	**2,240 mg/Kg**
RRO [2]	Not detected above action limit
VOCs	
TCE [3]	**31.1 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

BH01USS (DUPLICATE)	4-6' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	**2,270 mg/Kg**
RRO [2]	Not detected above action limit
VOCs	
TCE [3]	**23.4 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

BH01USS	8-10' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	**1,100 mg/Kg**
RRO [2]	Not detected above action limit
VOCs	
TCE [3]	**42.9 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

BH13USS	2' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
VOCs	
Methylene chloride [3]	**26.7 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS14USS	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS13USS	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

BH03USS (MW03USS - see Figure 5-4)	12-14' bgs, 14-16' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

BH12USS (MW12USS - see Figure 5-4)	10-12' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

BH12USS	12-14' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	**3,690 mg/Kg**
RRO [2]	Not detected above action limit
VOCs	
TCE [3]	**49.4 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs	
Benzo(a)pyrene [3, 4]	**2.47 mg/Kg**
Dibenz(a,h)anthracene [3, 4]	**0.653 mg/Kg**
All other SVOCs [3, 4, 6]	Not detected above action limit

BH12USS (DUPLICATE)	12-14' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	**3,560 mg/Kg**
RRO [2]	Not detected above action limit
VOCs	
TCE [3]	**44.8 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs	
Benzo(a)pyrene [3, 4]	**3.71 mg/Kg**
Dibenz(a,h)anthracene [3, 4]	**0.846 mg/Kg**
All other SVOCs [3, 4, 6]	Not detected above action limit

LEGEND:

	MONITORING WELL LOCATION
	SURFACE SOIL SAMPLE LOCATION
	BOREHOLE/ SUBSURFACE SOIL
	APPROXIMATE LOCATION OF BURIED DRAIN LINE
' bgs	FEET BELOW GROUND SURFACE
mg/Kg	MILLIGRAMS PER KILOGRAM
ug/Kg	MICROGRAMS PER KILOGRAM
Bold/Red	DETECTED ABOVE THE ACTION LIMIT

DRO	DIESEL RANGE ORGANICS
GRO	GASOLINE RANGE ORGANICS
PHCs	PETROLEUM HYDROCARBONS
RRO	RESIDUAL RANGE ORGANICS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
TCE	TRICHLOROETHENE
VOCs	VOLATILE ORGANIC COMPOUNDS

KEY:

[1] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Migration-to-Groundwater)

[2] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Ingestion)

[3] Reference: 18 AAC 75, Table B1 (Migration-to-Groundwater)

[4] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Direct Contact)

[5] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Outdoor Inhalation)

[6] Reference: U.S. EPA Risk Based Soil Screening Regional Screening Levels (Region 9)

[7] Reference: 18 AAC 75.345, Table C (Groundwater Cleanup Levels)

[8] Reference: U.S. EPA Total Carciogenic Risk Regional Screening Levels (Region 9)

[9] Reference: U.S. EPA Total Non-Carciogenic Risk Regional Screening Levels (Region 9)

[10] Reference: No appropriate criteria could be located.

NORTH

SCALE IN FEET

0 30

FIGURE 5-2 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

USS – BATTERY CONTROL AND BARRACKS BUILDING, FORMER DIESEL UST SOIL SAMPLE LOCATIONS AND ANALYTICAL RESULTS

JOB No. 10083003.83010401 TIME: 18-APR-2012 11:32 FILE: D:\CAD\Proj\AFCEE\JBER Richardson-Nike Site Summit _ 10083003\RI_Report\FINAL\FIG 5-2 - upper site.dgn

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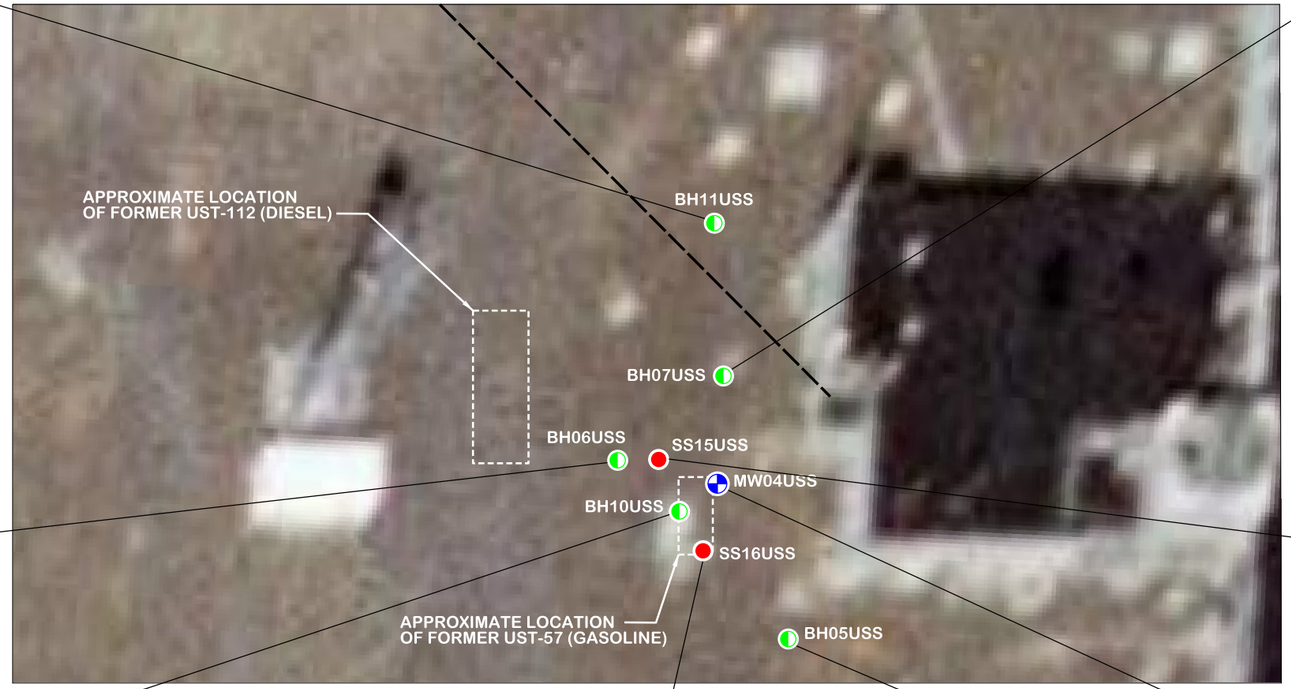

BH11USS 6-8' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	Not detected above action limit
RRO[2]	Not detected above action limit
Metals	
Chromium, Total[3]	**33.3 mg/Kg**
All other RCRA metals, plus Ni and V[3,4]	Not detected above action limit
VOCs	
Methylene chloride[3]	**41.4 ug/Kg**
All other VOCs[3,4,5,6]	Not detected above action limit
SVOCs[3,4,6]	Not detected above action limit

BH11USS 8-10' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	Not detected above action limit
RRO[2]	Not detected above action limit
Metals	
Chromium, Total[3]	**31.9 mg/Kg**
All other RCRA metals, plus Ni and V[3,4]	Not detected above action limit
VOCs	
Methylene chloride[3]	**29.6 ug/Kg**
All other VOCs[3,4,5,6]	Not detected above action limit
SVOCs[3,4,6]	Not detected above action limit

BH06USS 2-4' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	Not detected above action limit
RRO[2]	Not detected above action limit
Metals	
Arsenic[3]	**4.72 mg/Kg**
Chromium, Total[3]	**33.2 mg/Kg**
CrVI[3]	Not detected above action limit
All other RCRA metals, plus Ni and V[3,4]	Not detected above action limit
VOCs	
EDB & DCA[3]	Not detected above action limit
TCE[3]	**29.2 ug/Kg**
All other VOCs[3,4,5,6]	Not detected above action limit
SVOCs[3,4,6]	Not detected above action limit

BH06USS (DUPLICATE) 2-4' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	Not detected above action limit
RRO[2]	Not detected above action limit
Metals	
Arsenic[3]	**4.95 mg/Kg**
Chromium, Total[3]	**46.8 mg/Kg**
CrVI[3]	Not detected above action limit
All other RCRA metals, plus Ni and V[3,4]	Not detected above action limit
VOCs	
EDB & DCA[3]	Not detected above action limit
TCE[3]	**27 ug/Kg**
All other VOCs[3,4,5,6]	Not detected above action limit
SVOCs[3,4,6]	Not detected above action limit

BH06USS 12-14' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	Not detected above action limit
RRO[2]	Not detected above action limit
Metals	
Chromium, Total[3]	**31 mg/Kg**
CrVI[3]	Not detected above action limit
All other RCRA metals, plus Ni and V[3,4]	Not detected above action limit
VOCs[3,4,5,6]	Not detected above action limit
EDB & DCA[3]	Not detected above action limit
SVOCs[3,4,6]	Not detected above action limit

BH10USS 2-4' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	Not detected above action limit
RRO[2]	Not detected above action limit
Metals	
Arsenic[3]	**4.64 mg/Kg**
CrVI[3]	Not detected above action limit
All other RCRA metals, plus Ni and V[3,4]	Not detected above action limit
VOCs	
EDB & DCA[3]	Not detected above action limit
Methylene chloride[3]	**32.8 ug/Kg**
TCE[3]	**78.4 ug/Kg**
All other VOCs[3,4,5,6]	Not detected above action limit
SVOCs[3,4,6]	Not detected above action limit

BH10USS 10-12' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	Not detected above action limit
RRO[2]	Not detected above action limit
Metals	
Arsenic[3]	**4.89 mg/Kg**
Chromium, Total[3]	**31.4 mg/Kg**
CrVI[3]	Not detected above action limit
All other RCRA metals, plus Ni and V[3,4]	Not detected above action limit
VOCs	
EDB & DCA[3]	Not detected above action limit
Methylene chloride[3]	**31.9 ug/Kg**
TCE[3]	**38.2 ug/Kg**
All other VOCs[3,4,5,6]	Not detected above action limit
SVOCs[3,4,6]	Not detected above action limit

SS16USS 0.5' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	Not detected above action limit
RRO[2]	Not detected above action limit
Metals	
Arsenic[3]	**9.15 mg/Kg**
All other RCRA metals, plus Ni and V[3,4]	Not detected above action limit
VOCs[3,4,5,6]	Not detected above action limit
EDB & DCA[3]	Not detected above action limit
SVOCs	
Benzo(a)pyrene[3,4]	**2 mg/Kg**
All other SVOCs[3,4,6]	Not detected above action limit

BH05USS 12-14' bgs, 18-20' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	Not detected above action limit
RRO[2]	Not detected above action limit
Metals	
CrVI[3]	Not detected above action limit
All other RCRA metals, plus Ni and V[3,4]	Not detected above action limit
VOCs[3,4,5,6]	Not detected above action limit
EDB & DCA[3]	Not detected above action limit
SVOCs[3,4,6]	Not detected above action limit

BH07USS 12-14' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	Not detected above action limit
RRO[2]	Not detected above action limit
Metals	
Chromium, Total[3]	**32.7 mg/Kg**
CrVI[3]	Not detected above action limit
All other RCRA metals, plus Ni and V[3,4]	Not detected above action limit
VOCs	
EDB & DCA[3]	Not detected above action limit
TCE[3]	**79 ug/Kg**
All other VOCs[3,4,5,6]	Not detected above action limit
SVOCs[3,4,6]	Not detected above action limit

BH07USS 14-16' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	**367 mg/Kg**
RRO[2]	Not detected above action limit
Metals	
Chromium, Total[3]	**28.2 mg/Kg**
CrVI[3]	Not detected above action limit
All other RCRA metals, plus Ni and V[3,4]	Not detected above action limit
VOCs	
EDB & DCA[3]	Not detected above action limit
TCE[3]	**78.7 ug/Kg**
All other VOCs[3,4,5,6]	Not detected above action limit
SVOCs[3,4,6]	Not detected above action limit

SS15USS 0.5' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	Not detected above action limit
RRO[2]	Not detected above action limit
Metals	
Arsenic[3]	**7.48 mg/Kg**
All other RCRA metals, plus Ni and V[3,4]	Not detected above action limit
VOCs[3,4,5,6]	Not detected above action limit
EDB & DCA[3]	Not detected above action limit
SVOCs	
Benzo(a)anthracene[3]	**8.61 mg/Kg**
Benzo(a)pyrene[3,4]	**5.75 mg/Kg**
Benzo(b)fluoranthene[3,4]	**6.93 mg/Kg**
All other SVOCs[3,4,6]	Not detected above action limit

BH04USS (MW04USS - see Figure 5-4) 10-12' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	Not detected above action limit
RRO[2]	Not detected above action limit
Metals	
Arsenic[3]	**5.77 mg/Kg**
CrVI[3]	Not detected above action limit
All other RCRA metals, plus Ni and V[3,4]	Not detected above action limit
VOCs	
Benzene[3]	**29.1 ug/Kg**
EDB & DCA[3]	Not detected above action limit
TCE[3]	**60.3 ug/Kg**
All other VOCs[3,4,5,6]	Not detected above action limit
SVOCs	
Benzo(a)pyrene[3,4]	**1.62 mg/Kg**
All other SVOCs[3,4,6]	Not detected above action limit

BH04USS 12-14' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	**1,870 mg/Kg**
RRO[2]	Not detected above action limit
Metals	
Arsenic[3]	**5.57 mg/Kg**
Chromium, Total[3]	**30 mg/Kg**
CrVI[3]	Not detected above action limit
All other RCRA metals, plus Ni and V[3,4]	Not detected above action limit
VOCs	
EDB & DCA[3]	Not detected above action limit
TCE[3]	**21.1 ug/Kg**
All other VOCs[3,4,5,6]	Not detected above action limit
SVOCs[3,4,6]	Not detected above action limit

LEGEND:

- MONITORING WELL LOCATION
- SURFACE SOIL SAMPLE LOCATION
- BOREHOLE/ SUBSURFACE SOIL
- APPROXIMATE LOCATION OF BURIED DRAIN LINE
- ' bgs — FEET BELOW GROUND SURFACE
- mg/Kg — MILLIGRAMS PER KILOGRAM
- ug/Kg — MICROGRAMS PER KILOGRAM
- **Bold/Red** — DETECTED ABOVE THE ACTION LIMIT

CrVI	HEXAVALENT CHROMIUM
EDB	1, 2 - DIBROMOETHANE
DCA	1, 2 - DICHLOROETHANE
DRO	DIESEL RANGE ORGANICS
GRO	GASOLINE RANGE ORGANICS
Ni	NICKEL
PHCs	PETROLEUM HYDROCARBONS
RCRA	RESOURCE CONSERVATION AND RECOVERY ACT
RRO	RESIDUAL RANGE ORGANICS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
TCE	TRICHLOROETHENE
V	VANADIUM
VOCs	VOLATILE ORGANIC COMPOUNDS

KEY:

[1] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Migration-to-Groundwater)

[2] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Ingestion)

[3] Reference: 18 AAC 75, Table B1 (Migration-to-Groundwater)

[4] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Direct Contact)

[5] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Outdoor Inhalation)

[6] Reference: U.S. EPA Risk Based Soil Screening Regional Screening Levels (Region 9)

[7] Reference: 18 AAC 75.345, Table C (Groundwater Cleanup Levels)

[8] Reference: U.S. EPA Total Carcigogenic Risk Regional Screening Levels (Region 9)

[9] Reference: U.S. EPA Total Non-Carcigogenic Risk Regional Screening Levels (Region 9)

[10] Reference: No appropriate criteria could be located.

NORTH

SCALE IN FEET

0 30

FIGURE 5-3 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

USS – BATTERY CONTROL AND BARRACKS BUILDING, FORMER GASOLINE UST SOIL SAMPLE LOCATIONS AND ANALYTICAL RESULTS

JOB No. 1008300.83010401 TIME: 18-APR-2012 11:34 FILE: D:\CAD\Proj\AFCEE\Ft Richardson-Nike Site Summit_ 1008300\RI_Report\FINAL\FIG 5-3 - upper site.dgn

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MW03USS

PHCs	
GRO [7]	Not detected above action limit
DRO [7]	**9.43 mg/L**
RRO [7]	**4.14 mg/L**
Metals	
Arsenic, Total [7]	**156 ug/L**
Barium, Total [7]	**16,200 ug/L**
Chromium, Total [7]	**1,790 ug/L**
CrVI [7]	Not detected above action limit
Lead, Total [7]	**189 ug/L**
Nickel, Total [7]	**916 ug/L**
V, Total [7]	**2,450 ug/L**
All other RCRA metals [7]	Not detected above action limit
VOCs [7, 8, 9]	Not detected above action limit
SVOCs [7, 8, 9]	Insufficient Volume

MW12USS

PHCs	
GRO [7]	Not detected above action limit
DRO [7]	Insufficient Volume
RRO [7]	Insufficient Volume
Metals	
All RCRA metals, plus Ni and V [7]	Insufficient Volume
VOCs [7, 8, 9]	Not detected above action limit
SVOCs [7, 8, 9]	Insufficient Volume

MW04USS

PHCs	
GRO [7]	Not detected above action limit
DRO [7]	**32.3 mg/L**
RRO [7]	**31 mg/L**
Metals	
Arsenic, Total [7]	**73 ug/L**
Barium, Total [7]	**11,600 ug/L**
Cadmium, Total [7]	**6.88 ug/L**
Chromium, Total [7]	**694 ug/L**
Lead, Total [7]	**653 ug/L**
Lead, Disolved [7]	**43.5 ug/L**
Ni, Total [7]	**531 ug/L**
V, Total [7]	**1,610 ug/L**
All other RCRA metals [7]	Not detected above action limit
VOCs	
EDB & DCA [7]	Not detected above action limit
All other VOCs [7, 8, 9]	Not detected above action limit
SVOCs	
Benzo(a)anthracene [7]	**0.0168 mg/L**
Benzo(a)pyrene [7]	**0.0131 mg/L**
Benzo(b)fluoranthene [7]	**0.0142 mg/L**
bis(2-ethylhexyl) Phthalate [7]	**0.0115 mg/L**
Indeno (1,2,3-c,d) Pyrene [7]	**0.0051 mg/L**
All other SVOCs [7, 8, 9]	Not detected above action limit

LEGEND:

- MONITORING WELL LOCATION
- APPROXIMATE LOCATION OF BURIED DRAIN LINE
- mg/L — MILLIGRAMS PER LITER
- ug/ L — MICROGRAMS PER LITER
- **Bold/Red** — DETECTED ABOVE THE ACTION LIMIT

CrVI	HEXAVALENT CHROMIUM
EDB	1, 2 - DIBROMOETHANE
DCA	1, 2 - DICHLOROETHANE
DRO	DIESEL RANGE ORGANICS
GRO	GASOLINE RANGE ORGANICS
Ni	NICKEL
PHCs	PETROLEUM HYDROCARBONS
RCRA	RESOURCE CONSERVATION AND RECOVERY ACT
RRO	RESIDUAL RANGE ORGANICS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
V	VANADIUM
VOCs	VOLATILE ORGANIC COMPOUNDS

NORTH

SCALE IN FEET

0 30

KEY:

[1] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Migration-to-Groundwater)

[2] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Ingestion)

[3] Reference: 18 AAC 75, Table B1 (Migration-to-Groundwater)

[4] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Direct Contact)

[5] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Outdoor Inhalation)

[6] Reference: U.S. EPA Risk Based Soil Screening Regional Screening Levels (Region 9)

[7] Reference: 18 AAC 75.345, Table C (Groundwater Cleanup Levels)

[8] Reference: U.S. EPA Total Carciogenic Risk Regional Screening Levels (Region 9)

[9] Reference: U.S. EPA Total Non-Carciogenic Risk Regional Screening Levels (Region 9)

[10] Reference: No appropriate criteria could be located.

FIGURE 5-4 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

USS – BATTERY CONTROL AND BARRACKS BUILDING, FORMER USTs WATER SAMPLE LOCATIONS AND ANALYTICAL RESULTS

JOB No. 1008300.83010401 TIME: 18-APR-2012 11:35 FILE: D:\CAD\Proj\AFCEE\Ft Richardson-Nike Site Summit_1008300\RI_Report\FINAL\FIG 5-4 - upper site.dgn

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TP04USS 2.3' bgs

PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**5.55 mg/Kg**
Chromium, Total [3]	**25.9 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

TP04USS 2.5' bgs

PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**4.67 mg/Kg**
Chromium, Total [3]	**27.9 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
Methylene chloride [3]	**27.3 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS08USS 0.5' bgs

PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**6.45 mg/Kg**
Chromium, Total [3]	**30 mg/Kg**
CrVI [3]	Not detected above action limit
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
Methylene chloride [3]	**54.1 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS08USS (DUPLICATE) 0.5' bgs

PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**8.21 mg/Kg**
Chromium, Total [3]	**33.7 mg/Kg**
CrVI [3]	Not detected above action limit
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
Methylene chloride [3]	**28 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS09USS 0.5' bgs

PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**6.37 mg/Kg**
Chromium, Total [3]	**63.2 mg/Kg**
CrVI [3]	Not detected above action limit
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
Methylene chloride [3]	**44.8 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

BH09USS 6-8' bgs

PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Chromium, Total [3]	**30.5 mg/Kg**
CrVI [3]	Not detected above action limit
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
EDB & DCA [3]	Not detected above action limit
Methylene chloride [3]	**32.9 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

BH09USS (DUPLICATE) 6-8' bgs

PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Chromium, Total [3]	**31.6 mg/Kg**
CrVI [3]	Not detected above action limit
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
EDB & DCA [3]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

BH09USS 12-14' bgs

PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Chromium, Total [3]	**37.3 mg/Kg**
CrVI [3]	Not detected above action limit
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
EDB & DCA [3]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS10USS 0.5' bgs

PHCs	
GRO [1]	Not detected above action limit
DRO [1]	**554 mg/Kg**
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**15.2 mg/Kg**
Chromium, Total [3]	**35.2 mg/Kg**
CrVI [3]	Not detected above action limit
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
Methylene chloride [3]	**39.9 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

LEGEND:

TEST PIT LOCATION	
SURFACE SOIL SAMPLE LOCATION	
BOREHOLE/ SUBSURFACE SOIL	
APPROXIMATE LOCATION OF BURIED DRAIN LINE	
' bgs	FEET BELOW GROUND SURFACE
mg/Kg	MILLIGRAMS PER KILOGRAM
ug/Kg	MICROGRAMS PER KILOGRAM
Bold/Red	DETECTED ABOVE THE ACTION LIMIT

CrVI	HEXAVALENT CHROMIUM
EDB	1, 2 - DIBROMOETHANE
DCA	1, 2 - DICHLOROETHANE
DRO	DIESEL RANGE ORGANICS
GRO	GASOLINE RANGE ORGANICS
Ni	NICKEL
PCBs	POLYCHLORINATED BIPHENYLS
PHCs	PETROLEUM HYDROCARBONS
RCRA	RESOURCE CONSERVATION AND RECOVERY ACT
RRO	RESIDUAL RANGE ORGANICS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
V	VANADIUM
VOCs	VOLATILE ORGANIC COMPOUNDS

KEY:

[1] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Migration-to-Groundwater)

[2] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Ingestion)

[3] Reference: 18 AAC 75, Table B1 (Migration-to-Groundwater)

[4] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Direct Contact)

[5] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Outdoor Inhalation)

[6] Reference: U.S. EPA Risk Based Soil Screening Regional Screening Levels (Region 9)

[7] Reference: 18 AAC 75.345, Table C (Groundwater Cleanup Levels)

[8] Reference: U.S. EPA Total Carciogenic Risk Regional Screening Levels (Region 9)

[9] Reference: U.S. EPA Total Non-Carciogenic Risk Regional Screening Levels (Region 9)

[10] Reference: No appropriate criteria could be located.

NORTH

SCALE IN FEET

0 30

FIGURE 5-5 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

USS – MOTOR POOL MAINTENANCE BUILDING FOUNDATION SOIL SAMPLE LOCATIONS AND ANALYTICAL RESULTS

FILE: D:\CAD\Proj\AFCEE\Ft Richardson-Nike Site Summit_1008300\RI_Report\FINAL\FIG 5-5 - upper site.dgn
TIME: 18-APR-2012 11:36
JOB No. 1008300,83010401

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SS04USS 0.5' bgs

PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
Methylene chloride [3]	**28.7 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS07USS 0.5' bgs

PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Chromium, Total [3]	**28.8 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
Methylene chloride [3]	**45.8 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS05USS 0.5' bgs

PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
VOCs	
Methylene chloride [3]	**50.6 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

BH08USS 8-10' bgs, 10-12' bgs

PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS06USS 0.5' bgs

PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
VOCs	
Methylene chloride [3]	**34.5 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

FIELD SCREENING RESULTS

Location	Petro FLAG (ppm)	EnSys PCB reading	(1 ppm)
SS17USS	27	0.42	= < 1 ppm
SS18USS	54	0.31	= < 1 ppm
SS19USS	6	0.47	= < 1 ppm
SS20USS	0	0.45	= < 1 ppm
SS21USS	0	0.46	= < 1 ppm
SS22USS	24	0.20	= < 1 ppm
SS23USS	3	0.37	= < 1 ppm
SS24USS	3	0.12	= < 1 ppm

LEGEND:

- SURFACE SOIL SAMPLE LOCATION
- SURFACE SOIL FIELD SCREENING ONLY
- BOREHOLE/ SUBSURFACE SOIL
- TEST PIT LOCATION
- APPROXIMATE LOCATION OF BURIED DRAIN LINE

' bgs	FEET BELOW GROUND SURFACE
mg/Kg	MILLIGRAMS PER KILOGRAM
ug/Kg	MICROGRAMS PER KILOGRAM
Bold/Red	DETECTED ABOVE THE ACTION LIMIT
<	LESS THAN

DRO	DIESEL RANGE ORGANICS
GRO	GASOLINE RANGE ORGANICS
Ni	NICKEL
PCBs	POLYCHLORINATED BIPHENYLS
PHCs	PETROLEUM HYDROCARBONS
ppm	PART PER MILLION
RCRA	RESOURCE CONSERVATION AND RECOVERY ACT
RRO	RESIDUAL RANGE ORGANICS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
V	VANADIUM
VOCs	VOLATILE ORGANIC COMPOUNDS

SS22USS 0.5' bgs

PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

TP01USS 5' bgs

PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**6.2 mg/Kg**
Chromium, Total [3]	**25.7 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

TP01USS (DUPLICATE) 5' bgs

PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**5.46 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS18USS 0.5' bgs

PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS17USS 0.5' bgs

PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

NORTH

SCALE IN FEET

0 30

KEY:

[1] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Migration-to-Groundwater)

[2] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Ingestion)

[3] Reference: 18 AAC 75, Table B1 (Migration-to-Groundwater)

[4] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Direct Contact)

[5] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Outdoor Inhalation)

[6] Reference: U.S. EPA Risk Based Soil Screening Regional Screening Levels (Region 9)

[7] Reference: 18 AAC 75.345, Table C (Groundwater Cleanup Levels)

[8] Reference: U.S. EPA Total Carciogenic Risk Regional Screening Levels (Region 9)

[9] Reference: U.S. EPA Total Non-Carciogenic Risk Regional Screening Levels (Region 9)

[10] Reference: No appropriate criteria could be located.

FIGURE 5-6 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

USS – HIPAR BUILDING AND FOUNDATION SOIL SAMPLE LOCATIONS AND ANALYTICAL RESULTS

JOB No. 1008300,83010401 TIME: 18-APR-2012 11:38 FILE: D:\CAD\Proj\AFCEE\JFRichardson-Nike Site Summit _1008300\PIl_Report\FINAL\FIG 5-6 - upper site.dgn

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SS03USS	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**19.1 mg/Kg**
Chromium, Total [3]	**25 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
Methylene chloride [3]	**35 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs	
Benzo(a)pyrene [3, 4]	**1 mg/Kg**
All other SVOCs [3, 4, 6]	Not detected above action limit

SS31USS	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**5.54 mg/Kg**
Chromium, Total [3]	**25.1 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

TP02USS	3' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Chromium, Total [3]	**31.1 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

TP02USS (DUPLICATE)	3' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Chromium, Total [3]	**31.8 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS34USS	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**4.59 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS02USS	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	**2,270 mg/Kg**
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**5.35 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
Methylene chloride [3]	**33.9 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs	
Benzo(a)pyrene [3, 4]	**1.12 mg/Kg**
Dibenz(a,h)anthracene [3, 4]	**2.42 mg/Kg**
All other SVOCs [3, 4, 6]	Not detected above action limit

SS27USS	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**5.19 mg/Kg**
Chromium, Total [3]	**29.9 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS01USS	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Chromium, Total [3]	**29.7 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs	
Benzo(a)anthracene [3]	**4.16 mg/Kg**
Benzo(a)pyrene [3, 4]	**3.85 mg/Kg**
Dibenz(a,h)anthracene [3, 4]	**0.64 mg/Kg**
All other SVOCs [3, 4, 6]	Not detected above action limit

FIELD SCREENING RESULTS

Location	EnSys PCB reading	(1 ppm)
SS25USS	0.12	= < 1 ppm
SS26USS	0.11	= < 1 ppm
SS27USS	0.12	= < 1 ppm
SS28USS	0.08	= < 1 ppm
SS29USS	0.03	= < 1 ppm
SS30USS	0.03	= < 1 ppm
SS31USS	0.01	= < 1 ppm
SS32USS	0.12	= < 1 ppm
SS33USS	0.16	= < 1 ppm
SS34USS	0.15	= < 1 ppm
SS35USS	0.19	= < 1 ppm
SS36USS	0.20	= < 1 ppm
SS37USS	0.24	= < 1 ppm
SS38USS	0.02	= < 1 ppm
SS39USS	0.08	= < 1 ppm
SS40USS	0.10	= < 1 ppm

LEGEND:

- SURFACE SOIL SAMPLE LOCATION
- SURFACE SOIL FIELD SCREENING ONLY
- TEST PIT LOCATION
- APPROXIMATE LOCATION OF BURIED DRAIN LINE
- APPROXIMATE LOCATION OF SEPTIC LINE AND OUTFALL
- ' bgs — FEET BELOW GROUND SURFACE
- mg/Kg — MILLIGRAMS PER KILOGRAM
- ug/Kg — MICROGRAMS PER KILOGRAM
- **Bold/Red** — DETECTED ABOVE THE ACTION LIMIT
- < — LESS THAN

DRO	DIESEL RANGE ORGANICS
GRO	GASOLINE RANGE ORGANICS
Ni	NICKEL
PCBs	POLYCHLORINATED BIPHENYLS
PHCs	PETROLEUM HYDROCARBONS
ppm	PART PER MILLION
RCRA	RESOURCE CONSERVATION AND RECOVERY ACT
RRO	RESIDUAL RANGE ORGANICS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
V	VANADIUM
VOCs	VOLATILE ORGANIC COMPOUNDS

NORTH

SCALE IN FEET

0 60

KEY:

[1] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Migration-to-Groundwater)

[2] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Ingestion)

[3] Reference: 18 AAC 75, Table B1 (Migration-to-Groundwater)

[4] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Direct Contact)

[5] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Outdoor Inhalation)

[6] Reference: U.S. EPA Risk Based Soil Screening Regional Screening Levels (Region 9)

[7] Reference: 18 AAC 75.345, Table C (Groundwater Cleanup Levels)

[8] Reference: U.S. EPA Total Carcigenic Risk Regional Screening Levels (Region 9)

[9] Reference: U.S. EPA Total Non-Carcigenic Risk Regional Screening Levels (Region 9)

[10] Reference: No appropriate criteria could be located.

FIGURE 5-7 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

USS – ELECTRICAL SUBSTATION C AND RADAR DOMES SOIL SAMPLE LOCATIONS AND ANALYTICAL RESULTS

JOB No. 1008300.83010401 TIME: 18-APR-2012 11:39 FILE: D:\CAD\Proj\AFCEE\Ft Richardson-Nike Site Summit _ 1008300\RI_Report\FINAL\FIG 5-7 - upper site.dgn

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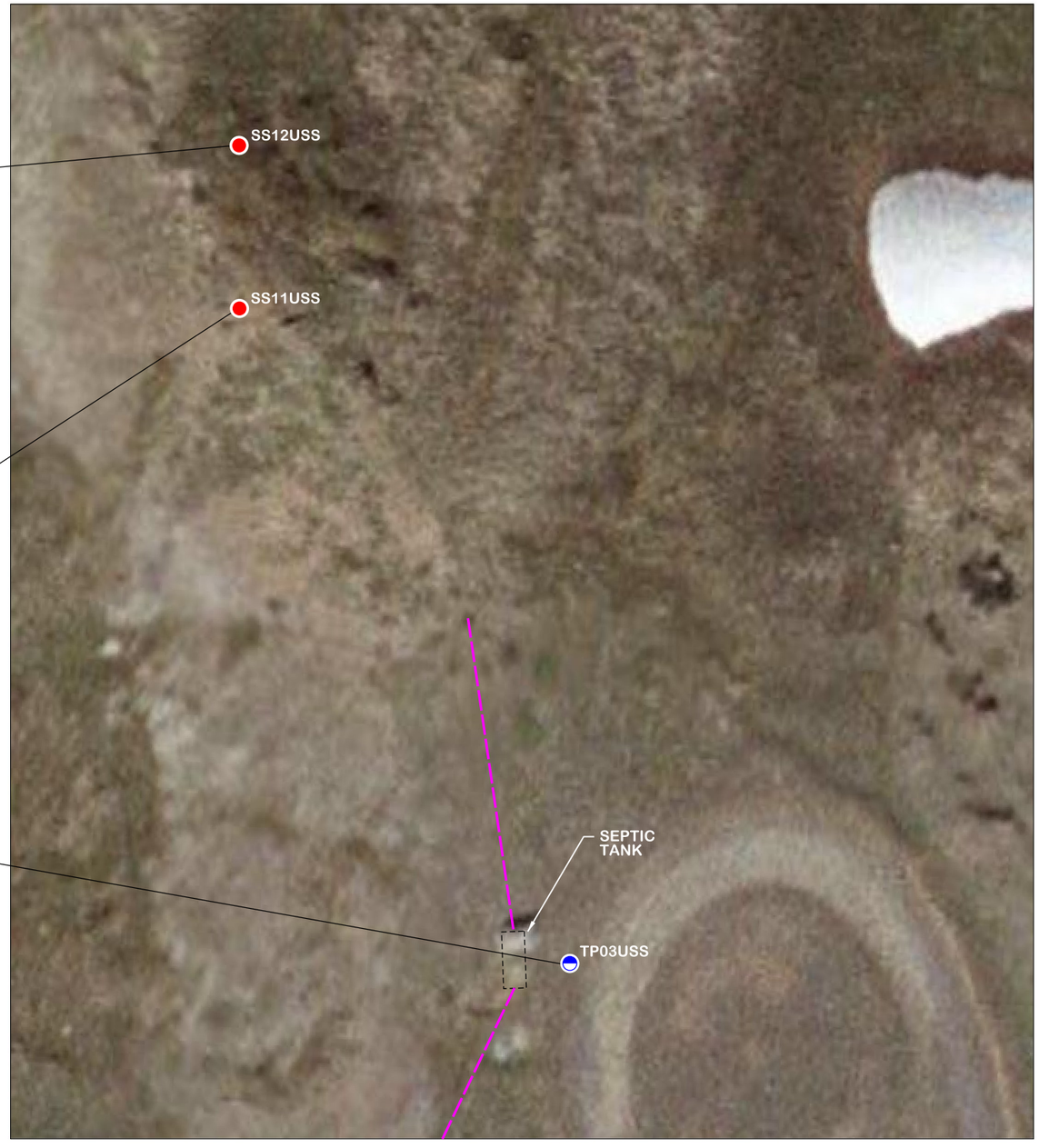
SS11USS	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	**562 mg/Kg**
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**11.2 mg/Kg**
Barium [3]	**1,240 mg/Kg**
Cadmium [3]	**23.9 mg/Kg**
Chromium, Total [3]	**54.5 mg/Kg**
Lead [4]	**950 mg/Kg**
All other RCRA metals, plus Ni and V [3]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
Methylene chloride [3]	**148 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs	
4-Chloroaniline [3]	**5.52 mg/Kg**
Benzo(a)pyrene [3, 4]	**2.23 mg/Kg**
Benzo(b)fluoranthene [3, 4]	**10.6 mg/Kg**
All other SVOCs [3, 4, 6]	Not detected above action limit

SS12USS	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	**613 mg/Kg**
RRO [2]	Not detected above action limit
Metals	
Chromium, Total [3]	**27 mg/Kg**
Silver [3]	**38.2 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs	
4-Chloroaniline [3]	**7.8 mg/Kg**
All other SVOCs [3, 4, 6]	Not detected above action limit

TP03USS	6' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**5 mg/Kg**
Chromium, Total [3]	**29 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

TP03USS (DUPLICATE)	6' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**5.51 mg/Kg**
Chromium, Total [3]	**31.6 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit



LEGEND:

●	SURFACE SOIL SAMPLE LOCATION
◓	TEST PIT LOCATION
– – –	APPROXIMATE LOCATION OF SEPTIC LINE AND OUTFALL
' bgs	FEET BELOW GROUND SURFACE
mg/Kg	MILLIGRAMS PER KILOGRAM
ug/Kg	MICROGRAMS PER KILOGRAM
DRO	DIESEL RANGE ORGANICS
GRO	GASOLINE RANGE ORGANICS
Ni	NICKEL
PCBs	POLYCHLORINATED BIPHENYLS
PHCs	PETROLEUM HYDROCARBONS
RCRA	RESOURCE CONSERVATION AND RECOVERY ACT
RRO	RESIDUAL RANGE ORGANICS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
V	VANADIUM
VOCs	VOLATILE ORGANIC COMPOUNDS
Bold/Red	DETECTED ABOVE THE ACTION LIMIT

NORTH

SCALE IN FEET

0 60

KEY:

[1] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Migration-to-Groundwater)

[2] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Ingestion)

[3] Reference: 18 AAC 75, Table B1 (Migration-to-Groundwater)

[4] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Direct Contact)

[5] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Outdoor Inhalation)

[6] Reference: U.S. EPA Risk Based Soil Screening Regional Screening Levels (Region 9)

[7] Reference: 18 AAC 75.345, Table C (Groundwater Cleanup Levels)

[8] Reference: U.S. EPA Total Carciogenic Risk Regional Screening Levels (Region 9)

[9] Reference: U.S. EPA Total Non-Carciogenic Risk Regional Screening Levels (Region 9)

[10] Reference: No appropriate criteria could be located.

FIGURE 5-8 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

USS – SEPTIC SYSTEM AND OUTFALL SOIL SAMPLE LOCATIONS AND ANALYTICAL RESULTS

JOB No. 1008300.83010401 TIME: 18-APR-2012 11:41 FILE: D:\CAD\Pro\AFCEE\FI Richardson-Nike Site Summit_ 1008300\RI_Report\FINAL\FG 5-8 - upper site.dgn

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6.0 LOWER SITE SUMMIT

LSS includes former Nike Hercules Missile storage, maintenance, and launch facilities. LSS is located roughly half-way up the access road between Arctic Valley Road and USS and consists of the following subareas (**Figure 6-1**):

- Launch Control Building
- Missile Launch Pad and Control Buildings 1 and 2
- Vehicle Maintenance Shop
- Electrical Substations B, D, and D2
- Guided Missile Maintenance Facility
- Missile Warhead Magazine
- Septic Tank and Outfall
- Guard Dog Kennel
- Three Sentry Stations

6.1 LSS PHYSICAL CHARACTERISTICS

The following sections describe the physical characteristics associated with LSS.

6.1.1 Geology

The primary surficial material in this area is composed of exposed weathered bedrock with gravelly fill material used to level the LSS area. Both well-rounded and angular gravels were encountered during soil borings. This indicates that fill material was likely from both on-site and off-site sources, because well-rounded gravels would not be anticipated from weathered bedrock formation on the top of the mountain. Well-rounded gravels were limited to the former UST locations near the Launch Control Building. Sandy soils are present toward the edges of the LSS construction pad at varying depth intervals, which likely coincide with original, pre-site development contours. This thin, sandy soil layer quickly gives way to bedrock in most locations across LSS.

6.1.2 Hydrogeology

Boreholes drilled to characterize groundwater at LSS have encountered a shallow zone of saturation within fill material that was placed on top of the existing topography. Groundwater was found only in the Launch Control Building/Vehicle Maintenance Shop area. Groundwater here appears to be following the contours of the bedrock, because it is extremely shallow nearest the excavated bedrock behind the Launch Control Building, and steadily drops as it heads downhill toward the northeast edge of the LSS construction pad. This perched groundwater aquifer appears to be discontinuous, as evidenced by BH09LSS that did not encounter groundwater and met with refusal at 25 feet bgs.

6.1.3 Hydrology

No surface water bodies exist at LSS. There are a number of small drainages and manmade ditches and culverts that carry surface water away from the site during storm events, as shown on various figures in this section. There are no signs of significant erosion from runoff, and no significant runoff was noted during heavy precipitation that was encountered while performing the RFI field work.

6.2 LSS PREVIOUS INVESTIGATIONS

During the 1996 PA/SI, eight surface soil samples, four water samples from within structures, and four wipe samples were collected and analyzed at LSS. The sample locations and analytical results are described below.

6.2.1 Vehicle Maintenance Shop and Launch Control Building

Four surface soil samples were collected in front of the Vehicle Maintenance Shop and Launch Control Building. Samples had detections of: DRO (9.6 to 225 mg/Kg), arsenic (3.3 to 6.9 mg/Kg), chromium (27 to 37 mg/Kg), and lead (29 to 42 mg/Kg).

6.2.2 Missile Launch Pad and Control Buildings 1 and 2

During the 1996 PA/SI, four water samples were collected from within the Missile Launch Pad and Control Buildings, two from each structure. Analytical results were:

- Low levels of the following VOCs were detected in the two samples from Missile Launch Pad and Control Building 2: benzene (13 and 30 micrograms per liter [µg/L]), xylenes (11 and 23 µg/L), and methylene chloride (qualified as a laboratory contaminant). VOCs were not detected in the two samples from Missile Launch Pad and Control Building 1.
- The following SVOCs were detected at low levels in one of the two samples from Missile Launch Pad and Control Building 2: naphthalene, 2-methylnaphthalene, acenaphthene, dibenzofuran, fluorine, phenanthrene, anthracene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(a,h)anthracene, and benzo(g,h,i)perylene. SVOCs were not detected in the two samples from Missile Launch Pad and Control Building 1.
- Metal analytical results were as follows: arsenic (ND), barium (ND to 0.23 mg/L), cadmium (ND to 0.039 mg/L), chromium (ND to 0.095 mg/L), lead (ND to 0.0054 mg/L), mercury (ND), selenium (ND), and silver (ND).
- Gross Alpha and Gross Beta radiation analysis was performed on the four water samples and results ranged from ND to 2.89 pico Curies per liter (pCi/L) for Gross Alpha, and 2.57 $\pm$ 0.78 to 4.8 $\pm$ 1.2 pCi/L for Gross Beta.

Additionally, four wipe samples were collected and tested for explosive residues, two from the concrete surface of each Missile Launch Pad. Explosive residues were not detected on any of the wipe samples.

6.2.3 Electrical Substation B

One surface soil sample was collected on the north side of the Electrical Substation B building and had detections of: DRO (225 mg/Kg), arsenic (5.4 mg/Kg), chromium (24 mg/Kg), and lead (38 mg/Kg).

6.2.4 Electrical Substation D

One surface soil sample was collected on the northwest corner of the Electrical Substation D building and had detections of: DRO (445 mg/Kg), arsenic (7.4 mg/Kg), chromium (21 mg/Kg), and lead (8.8 mg/Kg).

6.2.5 Septic Tank

Two surface soil samples collected near the septic tank had detections of: DRO (1,580 and 12,700 mg/Kg), TPH (4,200 and 22,900 mg/Kg), arsenic (3.3 and 6.9 mg/Kg), chromium (27 and 37 mg/Kg), and lead (29 and 42 mg/Kg). GRO and VOCs were not detected. TCE and dichlorodifluoromethane (Freon) were detected in one sample at 0.030 and 0.011 mg/Kg, respectively.

6.3 LSS REMEDIAL FIELD INVESTIGATIONS

Previous investigation reports were reviewed as the initial step in planning field data collection at LSS. Data was limited to the 1996 PA/SI, because the UST removal reports were not found. As-builts for LSS were also reviewed to determine locations of drains and potential source areas that may have impacted the site.

Areas at LSS that were investigated during the RFI include the following:

- Launch Control Building
- Missile Launch Pad and Control Buildings 1 and 2
- Vehicle Maintenance Shop
- Electrical Substations B, D, and D2
- Guided Missile Maintenance Facility
- Missile Warhead Magazine
- Septic Tank and Outfall

The bulk of the sampling and investigation, including all of the groundwater sampling, was focused on the Launch Control Building and Vehicle Maintenance Shop, which are adjacent to one another. The Launch Control Building is the site of a former diesel UST (UST-129), and a former diesel aboveground storage tank (AST) of unknown quantity or designation.

Analytical detections from RFI samples collected at LSS are summarized in Appendix C Tables C-6.1, C-6.2, and C-6.3 for surface soil, subsurface soil, and groundwater,

respectively. Complete analytical results are provided in a separate ADR (USAF, 2012a). Photographs of LSS taken during the RFI are provided in **Appendix D2**.

Locations of the RFI samples collected at LSS, along with the analytical results above project action limits, are provided in **Figures 6-1** through **6-13**. **Tables 6-1, 6-2,** and **6-3** summarize detected results above project action limits for surface soil, subsurface soil, and groundwater, respectively. Details of the RFI sampling results at LSS are provided by subarea in the following subsections.

6.3.1 Launch Control Building

Eight boreholes (BH02LSS to BH07LSS, BH10LSS, and BH11LSS) were advanced in the vicinity of the Launch Control Building (Figures 6-3, 6-5 and 6-6). All but one (BH11LSS) were converted to monitoring wells (MW02LSS to MW07LSS, and MW10LSS). BH02LSS through BH06LSS were located to determine the nature and extent of subsurface contamination associated with the former diesel UST. BH07LSS was located between a former AST tank crib and its pipeline transmission point to the Launch Control Building. BH10LSS and BH11LSS were placed to determine if contamination from either the UST or AST source areas was migrating off the LSS pad area. Two samples from each borehole were collected for off-site laboratory analysis, based on the highest PID readings and at the interval just above the groundwater interface. All borehole samples were analyzed for GRO, DRO, RRO, RCRA 8 metals, nickel, vanadium, VOCs, and SVOCs. BH10LSS and BH11LSS were also analyzed for PCBs.

A total of seven test pits (TP04LSS to TP10LSS) were excavated in the vicinity of the Launch Control Building. Three were dug using an excavator (TP04LSS to TP06LSS), the remaining four were hand dug using shovels, picks, and stainless steel spoons (TP07LSS to TP10LSS). TP04LSS and TP05LSS were located to the east of the Launch Control Building to delineate potential off-site migration of contamination originating from the building or the former AST (Figure 6-6). TP06LSS to TP08LSS were located between the Launch Control Building and MW07LSS to delineate the nature and extent of contamination encountered in MW07LSS (Figure 6-5 and 6-6). TP09LSS and TP10LSS (Figure 6-3) were located to the east of MW06LSS to delineate the nature and extent of contamination encountered in MW06LSS. All test pit samples were analyzed for GRO, DRO, RRO, RCRA 8 metals, nickel, vanadium, VOCs, and SVOCs. TP09LSS and TP10LSS were also analyzed for PCBs.

A total of three surface soil samples were collected, two (SS04LSS and SS05LSS) in the vicinity of the former diesel UST on the northern side of the Launch Control Building (Figure 6-3). The remaining surface soil sample (SS06LSS) was collected at the terminus of the culvert that exits at the northeast edge of the LSS gravel pad (Figure 6-5). All three surface soil samples were analyzed for GRO, DRO, RRO, VOCs, and SVOCs.

All seven monitoring wells were successfully developed and sampled for GRO, DRO, RRO, RCRA 8 metals, nickel, vanadium, VOCs, and SVOCs.

The following subsections detail the individual results based on media and analyte type.

6.3.1.1 Surface Soil

PHCs were detected above the project action limit for DRO in Sample SS06LSS at 1,100 mg/Kg (Table 6-1).

VOCs were limited to a single detection above project action limits for methylene chloride at 37.2 µg/Kg in Sample SS05LSS. However, this detection was determined to be attributable to laboratory contamination during data validation.

No other analytes were detected above project action limits in surface soil samples collected from the Launch Control Building.

6.3.1.2 Subsurface Soil

PHCs were detected above project action limits in the vicinity of the Launch Control Building in BH02LSS, BH03LSS, BH07LSS, TP05LSS, and TP06LSS (Table 6-2). DRO was detected above the project action limit of 250 mg/Kg and ranged from 376 to 4,170 mg/Kg. GRO and RRO were not detected above their project action limits of 300 and 10,000 mg/Kg, respectively.

Arsenic was detected above the project action limit of 3.9 mg/Kg in one borehole (BH10LSS) and all seven test pits (TP04LSS through TP10LSS), and ranged from 4.38 to 9.56 mg/Kg. However, all results were below the 95% UPL of 12.5 mg/Kg for background arsenic concentrations at NSS.

Total chromium was detected above the project action limit of 25 mg/Kg in three test pits (TP08LSS, TP09LSS, and TP10LSS) and ranged from 25.5 to 31.3 mg/Kg. However, all were below the 95% UPL of 38.3 mg/Kg for background chromium concentrations at NSS.

VOCs were detected above project action limits in ten of the fifteen subsurface soil sample locations near the Launch Control Building. TCE was detected above project action limits in Boreholes BH03LSS, BH04LSS, BH06LSS, BH07LSS, BH10LSS and Test Pits TP04LSS, TP07LSS, TP08LSS, TP09LSS, TP10LSS – ranging from 32.5 to 613 µg/Kg. BH07LSS, at a depth of 2 to 4 feet, also had detections above project action limits of: 1,1,2,2-tetrachloroethane (1,210 µg/Kg), 1,1,2-trichloroethane (1,650 µg/Kg), 1,2,3-trichlorobenzene (131 µg/Kg), 1,2,3-trichloropropane (491 µg/Kg), 1,2-dibromo-3-chloropropane (3,040 µg/Kg), 2-hexanone (942 µg/Kg), and benzene (43.1 µg/Kg). Samples collected from 4 to 6 feet bgs at BH07LSS also had detections above project action limits of benzene at 49.7 and 47.9 µg/Kg for the primary and duplicate samples, respectively.

SVOCs were detected in the vicinity of the presumed spill from the former AST on the east side of the Launch Control Building. Both samples from the bottom of TP06LSS, and the sample from TP07LSS, had detections of benzo(a)pyrene at 35.7, 30.4, and 2.52 mg/Kg, respectively. Both samples from TP06LSS also had detections above project action limits for benzo(a)anthracene (37 and 32 mg/Kg), benzo(b)fluoranthene (40.1 and 31.8 mg/Kg),

dibenz(a,h)anthracene (6.12 and 4.14 mg/Kg), and indeno(1,2,3-c,d)pyrene (16.1 and 14.7 mg/Kg).

No other analytes, including PCBs, were detected above project action limits in subsurface soil samples collected from the Launch Control Building.

6.3.1.3 Groundwater

PHCs were detected above project action limits in groundwater from Monitoring Wells MW02LSS, MW03LSS, and MW07LSS. DRO was detected above the project action limit of 1.5 mg/L, ranging from 1.72 to 29.4 mg/L. GRO and RRO were not detected above their project action limits.

Total arsenic was detected above the project action limit of 10 µg/L in five of the seven monitoring wells at the Launch Control Building, ranging from 15.8 to 32.2 µg/L.

Total lead was detected above the project action limit of 15 µg/L in MW02LSS (23.3 µg/L), MW03LSS (31.7 µg/L), MW04LSS and its duplicate (25.4 µg/L and 33.3 µg/L), MW05LSS (25 µg/L), and MW10LSS (27.6 µg/L).

Dissolved metals were detected, but below project action limits, in groundwater at the Launch Control Building.

VOCs were detected above project action limits in two monitoring wells. TCE was detected above the project action limit of 5 µg/L in MW06LSS at 17.5 µg/L. Benzene was detected above the project action limit of 5 µg/L in MW07LSS at 5.39 µg/L

No other analytes were detected above project action limits in groundwater samples collected from the Launch Control Building.

6.3.2 Missile Launch Pad and Control Building 1

Four surface soil samples (SS11LSS through SS14LSS) and one borehole (BH09LSS) were sampled in the vicinity of the Missile Launch Pad and Control Building 1 (Figure 6-10).

Surface soil Sample SS11LSS was collected immediately downgradient of the culvert from the predominant drainage located between Missile Launch Pad and Control Buildings 1 and 2. Surface soil Sample SS14LSS was located further downgradient off the LSS pad in the same drainage.

Surface soil Samples SS12LSS and SS13LSS were collected at the terminus of the Launch Pad in line with the two central guide channels. These samples were originally designated to be collected at the outfall of drains shown on as-built drawings. However, no evidence of these drains was noted in the field.

Borehole BH09LSS is located adjacent to a culvert between Missile Launch Pad and Control Buildings 1 and 2. BH09LSS was advanced into bedrock to a total depth of 2 feet bgs. Two samples were collected from BH09LSS; 001BH09LSS at 1-foot bgs and 002BH09LSS at 2 feet bgs.

All samples from the vicinity of Missile Launch Pad and Control Building 1 were analyzed for DRO, RRO, VOCs, SVOCs, RCRA 8 metals, nickel, and vanadium, VOCs, SVOCs, PCBs, and perchlorate.

Figure 6-10 shows the location of the surface and subsurface soil samples and analytical results. The following subsections detail the results from the vicinity of Missile Launch Pad and Control Building 1 by media and analyte type.

6.3.2.1 Surface Soil

PHC DRO was detected above the project action limit of 250 mg/Kg in one sample (SS12LSS) at 4,210 mg/Kg.

Arsenic was detected above the project action limit of 3.9 mg/Kg in all four surface soil samples and ranged from 5.91 to 8.19 mg/Kg, all below the 95% UPL of 12.5 mg/Kg for background arsenic concentrations at NSS.

Total chromium was detected above the project action limit of 25 mg/Kg in surface soil Samples SS12LSS, SS13LSS, and SS14LSS at 34.8, 44.7 and 26.8 mg/Kg, respectively. Only SS13LSS at 44.7 mg/Kg was above the 95% UPL of 38.3 mg/Kg for background chromium concentrations at NSS.

SVOC benzo(a)pyrene was detected in surface soil Samples SS12LSS and SS13LSS at 0.631 and 1.44 mg/Kg, respectively, above the project action limit of 0.49 mg/Kg.

No other analytes were detected above project action limits in surface soil samples collected from the Missile Launch Pad and Control Building 1.

6.3.2.2 Subsurface Soil

Arsenic was detected above the project action limit of 3.9 mg/Kg in the 1-foot and 2-foot samples from BH09LSS at 4.88 and 4.14 mg/Kg, respectively. These are both below the 95% UPL of 12.5 mg/Kg for background arsenic concentrations at NSS.

Total chromium was detected above the project action limit of 25 mg/Kg in the 2-foot bgs sample (002BH09LSS) at 29.3 mg/Kg, but below the 95% UPL of 38.3 mg/Kg for background chromium concentrations at NSS.

No other analytes were detected above project action limits in subsurface soil samples collected from the vicinity of the Missile Launch Pad and Control Building 1.

6.3.3 Missile Launch Pad and Control Building 2

Two surface soil samples (SS09LSS and SS10LSS) were collected at the terminus of the Missile Launch Pad in line with the two central guide channels (Figure 6-10). These samples were originally designated to be collected at the outfall of drains shown on as-built drawings. However, no evidence of these drains was noted in the field. Both samples were analyzed for DRO, RRO, VOCs, SVOCs, RCRA 8 metals, nickel, vanadium, VOCs, SVOCs, PCBs, and perchlorate.

Figure 6-10 shows the location of the two surface soil samples. The following subsections detail the surface soil results from the vicinity of Missile Launch Pad and Control Building 2 by analyte type detected above project action limits.

PHC DRO was detected above the project action limit of 250 mg/Kg at SS09LSS (7,360 mg/Kg) and SS10LSS (4,350 mg/Kg).

Arsenic was detected above the project action limit of 3.9 mg/Kg in both surface soil samples, SS09LSS at 7.57 and SS10LSS at 8.98 mg/Kg. Both were below the 95% UPL of 12.5 mg/Kg for background arsenic concentrations at NSS.

Total chromium was detected above the project action limit of 25 mg/Kg in both surface soil samples, SS09LSS at 29.6 mg/Kg and SS10LSS at 27 mg/Kg. Both were below the 95% UPL of 38.3 mg/Kg for background chromium concentrations at NSS.

SVOC benzo(a)pyrene was detected above the project action limit of 0.49 mg/Kg in both surface soil samples, SS09LSS at 0.924 mg/Kg and SS10LSS at 2.55 mg/Kg.

No other analytes were detected above project action limits in surface soil samples collected from the Missile Launch Pad and Control Building 2.

6.3.4 Vehicle Maintenance Shop

One soil boring (BH01LSS) was advanced in the vicinity of the second garage bay from the north end of the building, in front of the former lube pit (Figure 6-2). The borehole was met with refusal at 12.25 feet bgs. Groundwater was not encountered in the boring.

Five surface soil samples were collected, four from the low lying areas of predominant drainage in the vicinity of the garage bays (SS15LSS to SS18LSS), and one at the culvert outfall (SS19LSS). Figure 6-2 shows the borehole and surface soil sample locations. All samples were analyzed for GRO, DRO, RRO, RCRA 8 metals, nickel, vanadium, Cr VI, VOCs (including low level EDB and DCA), SVOCs, and PCBs. The following subsections detail the individual results based on media.

6.3.4.1 Surface Soil

PHCs were detected above project action limits at two locations. DRO was detected at 973 mg/Kg in the sample from in front of the lube pit garage bay (SS15LSS). DRO was also detected at 756 mg/Kg in the sample collected at the terminus of the culvert (SS19LSS).

Arsenic was detected above the project action limit of 3.9 mg/Kg in all five surface soil sample locations, ranging from 6.68 to 10.5 mg/Kg. All detections were below the 95% UPL of 12.5 mg/Kg for background arsenic concentrations at NSS.

Total chromium was detected in Samples SS18LSS and SS19LSS at 29.5 and 46.1 mg/Kg, respectively. Both results are above the project action limit of 25 mg/Kg; however, only sample SS19LSS is above the 95% UPL of 38.3 mg/Kg for background chromium concentrations at NSS.

VOCs were detected in two surface soil samples (SS15LSS and SS17LSS). TCE was detected at 22 µg/Kg in SS17LSS and trans-1,3-dichloropropene was detected in SS15LSS at 0.27 µg/Kg.

No other analytes, including SVOCs and PCBs, were detected above project action limits in any of the surface soil samples collected from the Vehicle Maintenance Shop.

6.3.4.2 Subsurface Soil

PHCs GRO, DRO, and RRO were not detected in BH01LSS at either depth sampled.

Arsenic was detected above the project action limit of 3.9 mg/Kg in both samples from BH01LSS at 6.91 and 7.51 mg/Kg. Both are below the 95% UPL of 12.5 mg/Kg for background arsenic concentrations at NSS.

Total chromium was detected above project action limits in the 8-10-foot bgs sample at 171 mg/Kg. This is above both the project action limit of 25 mg/Kg and the 95% UPL of 38.3 mg/Kg for background chromium concentrations at NSS. Nickel was also detected above its project action limit of 100 mg/Kg in the 8-10-foot bgs sample at 143 mg/Kg.

VOCs were detected at both depths within BH01LSS. Methylene chloride was detected in samples from 2-4 feet and 8-10 feet bgs at 30.7 and 35.4 µg/Kg, respectively, but these were determined to be attributable to laboratory contamination during data validation. TCE was detected in both these samples at 111 and 151 µg/Kg, respectively, above the project action limit of 20 µg/Kg.

No other analytes, including SVOCs and PCBs, were detected above project action limits in subsurface soil samples collected from BH01LSS at the Vehicle Maintenance Shop.

6.3.5 Electrical Substation B

A total of 16 surface soil screening samples (SS20LSS through SS35LSS) were collected from this area for EnSys PCB analysis. Samples were collected from the perimeter of the concrete transformer pad inside of the Electrical Substation B, as well as one sample located in a depression immediately outside the access door (SS35LSS). None of the surface soil screening samples exhibited PCBs greater than the 1 ppm detection limit (Figure 6-7).

Three confirmation surface soils were collected from the surface soil screening locations (SS24LSS, SS24LSS duplicate, and SS28LSS) in areas with readings closest to registering a positive analysis. These areas also were noted to be stained. All three samples were analyzed for GRO, DRO, RRO, VOCs, SVOCs, RCRA 8 metals, nickel, vanadium, VOCs, SVOCs, and PCBs. Figure 6-7 shows the location of the samples and both the field screening and analytical results from the three confirmation samples. Details of the individual surface soil results from Electrical Substation B are provided below.

PHCs were detected above the project action limit of 250 mg/Kg for DRO in one sample (SS28LSS) at 450 mg/Kg.

Arsenic was detected above the project action limit of 3.9 mg/Kg in all three surface soil samples, ranging from 5.96 to 19 mg/Kg. However, only the primary sample from SS24LSS was above the 95% UPL of 12.5 mg/Kg for background arsenic concentrations at NSS.

VOCs detected above project action limits at Electrical Substation B included TCE in all three samples and methylene chloride in one sample. TCE ranged from 87.9 to 290 µg/Kg. Methylene chloride was detected in the duplicate sample from SS24LSS only, at 32.9 µg/Kg. However, this detection was determined to be attributable to laboratory contamination during data validation.

No other analytes were detected above project action limits in surface soil samples collected from Electrical Substation B.

6.3.6 Electrical Substation D

One test (TP02LSS) was excavated adjacent to the underground utility corridor between Electrical Substation D and the Missile Launch Pad and Control Building 1 (Figure 6-8). Two samples were collected from the bottom of the excavation (001TP02LSS and 002TP02LSS), which proceeded to refusal at 6 feet bgs.

Eight surface soil screening samples (SS36LSS through SS43LSS) were collected for EnSys PCB analysis at Electrical Substation D. Samples were collected from the perimeter of the concrete transformer pad inside of the Electrical Substation, as well as two samples located outside the structure – one immediately outside the entrance (SS42LSS) and the other in a drainage depression northeast of the building. None of the surface soil screening samples exhibited PCBs greater than 1 ppm detection limit (Figure 6-3). Two confirmation surface soil samples were collected from the surface soil screening locations (SS40LSS and

SS41LSS) in areas with readings closest to registering a positive analysis. These areas also were noted to be stained.

All four samples were analyzed for GRO, DRO, RRO, VOCs, SVOCs, RCRA 8 metals, nickel, vanadium, VOCs, SVOCs, and PCBs. Additionally, SS40LSS and SS41LSS were analyzed for hexavalent chromium.

Figure 6-8 shows the location of the surface and subsurface soil samples and both the field screening and analytical results. The following subsections detail the individual results from Electrical Substation D by media and analyte type.

6.3.6.1 Surface Soil

Arsenic was detected above the project action limit of 3.9 mg/Kg in both surface soil samples at 5.5 and 5.95 mg/Kg. Both are below the 95% UPL of 12.5 mg/Kg for background arsenic concentrations at NSS.

Total chromium was detected above the project action limit of 25 mg/Kg in SS41LSS only at 39.3 mg/Kg. This is above the 95% UPL of 38.3 mg/Kg for background chromium concentrations at NSS.

VOCs detected above project action limits were limited to one detection of methylene chloride in Sample SS40LSS at 49.5 µg/Kg. However, this detection was determined to be attributable to laboratory contamination during data validation.

No other analytes, including PHCs, SVOCs, and PCBs, were detected above project action limits in surface soil samples collected from Electrical Substation D.

6.3.6.2 Subsurface Soil

Arsenic was detected above the project action limit of 3.9 mg/Kg in both subsurface soil samples at 7.21 and 7.26 mg/Kg, both below the 95% UPL of 12.5 mg/Kg for background arsenic concentrations at NSS.

Total chromium was detected above the project action limit of 25 mg/Kg in both subsurface soil samples at 27.2 and 31 mg/Kg, both below the 95% UPL of 38.3 mg/Kg for background chromium concentrations at NSS.

VOC TCE was detected above the project action limit of 20 µg/Kg in samples 001TP02LSS and 002TP02LSS at 210µg/Kg and 257 µg/Kg, respectively.

No other analytes were detected above project action limits in subsurface soil samples collected from Electrical Substation D.

6.3.7 Electrical Substation D2

Eight surface soil screening samples (SS44LSS through SS51LSS) were collected for EnSys PCB analysis at Electrical Substation D2. Samples were collected from the perimeter of the concrete transformer pad inside of the Electrical Substation, as well as two samples located outside the structure – one immediately outside the entrance (SS50LSS) and the other downgradient in the predominant drainage away from the entrance (SS51LSS). None of the surface soil screening samples exhibited PCBs greater than 1 ppm detection limit (Figure 6-9). Two confirmation surface soils were collected from the surface soil screening locations (SS45LSS and SS50LSS) in areas with readings closest to registering a positive analysis.

One test pit (TP03LSS) was excavated adjacent to the underground utility corridor between Electrical Substation D2 and the Missile Launch Pad and Control Building 2. Two primary and a duplicate sample were collected from the excavation, which proceeded to refusal at 6 feet bgs.

All samples from Electrical Substation D2 were analyzed for GRO, DRO, RRO, VOCs, SVOCs, RCRA 8 metals, nickel, vanadium, VOCs, SVOCs, and PCBs. Figure 6-9 shows the location of the surface and subsurface soil samples and both the field screening and analytical results. The following subsections detail the individual results from Electrical Substation D2 by media and analyte type.

6.3.7.1 Surface Soil

Arsenic was detected above the project action limit of 3.9 mg/Kg in both surface soil samples SS45LSS and SS50LSS at 6.88 and 6.98 mg/Kg, respectively. Both are below the 95% UPL of 12.5 mg/Kg for background arsenic concentrations at NSS.

Total chromium was detected above the project action limit of 25 mg/Kg surface soil samples SS45LSS and SS50LSS at 32.5 and 36.8 mg/Kg, respectively. Both are below the 95% UPL of 38.3 mg/Kg for background chromium concentrations at NSS.

VOCs were detected above project action limits only in surface soil Sample SS50LSS. TCE was detected at 139 µg/Kg above the project action limit of 20 µg/Kg. Methylene chloride was detected at 40.4 µg/Kg, but was determined to be attributable to laboratory contamination during data validation.

No other analytes were detected above project action limits in surface soil samples collected from Electrical Substation D2.

6.3.7.2 Subsurface Soil

Arsenic was detected above the project action limit of 3.9 mg/Kg in all three subsurface soil samples, ranging from 6.68 to 7.47 mg/Kg. All detections were below the 95% UPL of 12.5 mg/Kg for background arsenic concentrations at NSS.

Total chromium was detected above the project action limit of 25 mg/Kg in one subsurface soil sample (002TP03LSS) at 30.4 mg/Kg, below the 95% UPL of 38.3 mg/Kg for background chromium concentrations at NSS.

VOC TCE was detected above the project action limit of 20 µg/Kg in all three samples, ranging from 42.5 to 171 µg/Kg.

No other analytes were detected above project action limits in subsurface soil samples collected from Electrical Substation D2.

6.3.8 Guided Missile Maintenance Facility

Three surface soil samples (SS01LSS, SS02LSS, and SS03LSS) and one borehole (BH08LSS) were sampled in the vicinity of the Guided Missile Maintenance Facility.

One surface soil sample each was located at the two opposing garage bay entrances (SS01LSS and SS02LSS). The remaining sample (SS03LSS) was located downgradient from the Guided Missile Maintenance Facility, just off the LSS pad and adjacent to the access manhole for the Septic System.

The borehole (BH08LSS) was located adjacent to SS02LSS in the predominant drainage from the garage bay. The borehole was advanced to a total depth of 10 feet bgs, where it met with refusal at bedrock. One sample each was collected at the 2-4-foot and 4-6-foot bgs depths.

Figure 6-11 shows the location of the surface and subsurface soil samples. All samples were analyzed for GRO, DRO, RRO, RCRA 8 metals, nickel, vanadium, VOCs, and SVOCs. The following subsections detail the individual results by media and analyte type.

6.3.8.1 Surface Soil

Arsenic was detected above the project action limit of 3.9 mg/Kg in all three surface soil samples and ranged from 5.13 to 7.55 mg/Kg, all below the 95% UPL of 12.5 mg/Kg for background arsenic concentrations at NSS.

Total chromium was detected above the project action limit of 25 mg/Kg only in Sample SS02LSS at 28.6 mg/Kg, below the 95% UPL of 38.3 mg/Kg for background chromium concentrations at NSS.

VOC detections above project action limits were limited to one detection of methylene chloride from SS02LSS at 28.8 µg/Kg. This detection was determined to be attributed to laboratory contamination during data validation.

SVOC detections above project action limits were limited to one detection of benzo(a)pyrene from SS03LSS at 0.518 mg/Kg.

No other analytes were detected above project action limits in surface soil samples collected from the Guided Missile Maintenance Facility.

6.3.8.2 Subsurface Soil

Arsenic was detected above the project action limit of 3.9 mg/Kg in the upper sample interval from 2-4 feet bgs (001BH08LSS), at 5.61 mg/Kg, below the 95% UPL of 12.5 mg/Kg for background arsenic concentrations at NSS.

Total chromium was detected above the project action limit of 25 mg/Kg in the lower sample interval from 4-6 feet begs (002BH08LSS) at 25.6 mg/Kg, below the 95% UPL of 38.3mg/Kg for background chromium concentrations at NSS.

No other analytes were detected above project action limits in subsurface soil samples collected from the Guided Missile Maintenance Facility.

6.3.9 Missile Warhead Magazine

Three surface soil samples (S07LSS, SS07LSS duplicate, and SS08LSS) were collected from in front of the garage bay door to the Missile Warhead Magazine. All three samples were analyzed for GRO, DRO, RRO, VOCs, SVOCs, RCRA 8 metals, nickel, vanadium, VOCs, SVOCs, and PCBs.

Figure 6-10 shows the location of the surface soil samples at the Missile Warhead Magazine. Details of the individual surface soil results by analyte type are provided below.

Arsenic was detected above the project action limit of 3.9 mg/Kg in all three surface soil samples, ranging from 5.86 to 7.66 mg/Kg. All detections were below the 95% UPL of 12.5 mg/Kg for background arsenic concentrations at NSS.

Total chromium was detected above the project action limit of 25 mg/Kg in all three surface soil samples, ranging from 25.3 to 31.6 mg/Kg. All detections were below the 95% UPL of 38.3 mg/Kg for background chromium concentrations at NSS.

VOC detections above project action limits were limited to the duplicate sample from SS07LSS (201SS07LSS), where methylene chloride was detected at 38.4 µg/Kg. This detection was determined to be attributed to laboratory contamination during data validation.

No other analytes were detected above project action limits in surface soil samples collected from the Missile Warhead Magazine.

6.3.10 Septic Tank and Outfall

One test (TP01SS) was excavated adjacent to the Septic Tank and pump house alongside the perimeter access road at LSS. Two samples were collected from the bottom of the excavation (001TP01LSS and 002TP01LSS), which proceeded to refusal at 8 feet bgs.

Eight surface soil screening samples (SS52LSS through SS59LSS) were collected for PetroFLAG analysis for PHCs. Samples were collected around the Septic System pump house and mounded tank area. Two confirmation surface soil screening samples with the highest PetroFLAG results (SS53LSS and SS59LSS) were collected for laboratory analysis (Figure 6-12). Sample SS53LSS was located in an area of notable surface staining northwest of the pump house.

Two additional surface soil samples were collected from the outfall of the Septic System. The first surface soil sample location (SS60LSS) is located directly under the outfall itself. The second surface soil sample (SS61LSS) is located approximately 120 feet downgradient in the predominant drainage. According to the as-built, there was a man-made, v-notch channel leading away from the outfall discharge; however, due to dense vegetation, this could not be confirmed.

Figure 6-12 shows the location of the surface and subsurface soil samples in the vicinity of the septic tank and pump house. Figure 6-13 shows the location of the surface soil samples at the outfall. All of the soil samples, both surface and subsurface, were analyzed for GRO, DRO, RRO, VOCs, SVOCs, RCRA 8 metals, nickel, vanadium, VOCs, SVOCs, and PCBs. Additionally, SS53LSS and SS60LSS were analyzed for hexavalent chromium based on their preliminary sample results for total chromium in excess of established background levels for NSS. The following subsections detail the results by media and analyte type detected above project action limits.

6.3.10.1 Surface Soil

PHCs were detected above the project action limits in two surface soil samples. Sample SS53LSS exceeded project action limits for both DRO at 4,960 mg/Kg and RRO at 24,400 mg/Kg. Sample SS60LSS exceed the project action limit for DRO at 1,230 mg/Kg.

Arsenic was detected above the project action limit of 3.9 mg/Kg in all four surface soil samples, ranging from 5.33 to 9.49 mg/Kg. All detections were below the 95% UPL of 12.5 mg/Kg for background arsenic concentrations at NSS.

Total chromium was detected above the project action limit of 25 mg/Kg in all four surface soil samples, ranging from 31.2 to 65 mg/Kg. However, only Sample SS53LSS at 65 mg/Kg and Sample SS60LSS at 45.8 mg/Kg were above the 95% UPL of 38.3 mg/Kg for background chromium concentrations at NSS. An additional sample was collected from each of these locations and analyzed for hexavalent chromium, both of which were non-detect.

Cadmium and **mercury** were detected above both 95% UPLs and project action limits in SS60LSS at 15.6 mg/Kg and 1,920 µg/Kg, respectively. The calculated 95% UPLs for cadmium and mercury are below project action limits.

VOC detections above project action limits were limited to methylene chloride in three samples (SS53LSS, SS59LSS, and SS61LSS), ranging from 26.1 to 68.3 µg/Kg. However,

these detections were determined to be attributable to laboratory contamination during data validation.

SVOCs were detected above project action limits in Samples SS59LSS and SS60LSS. Benzo(a)pyrene was detected in both samples at 0.568 and 2.83 mg/Kg, respectively. Sample SS60LSS also had detections of benzo(b)fluoranthene at 6.15 mg/Kg (above the project action limit of 4.9 mg/Kg) and pentachlorophenol at 46.5 mg/Kg (above the project action limit of 0.047 mg/Kg).

No other analytes were detected above project action limits in surface soil samples collected from the Septic Tank and Outfall.

6.3.10.2 Subsurface Soil

Arsenic was detected above the project action limit of 3.9 mg/Kg in both subsurface soil samples at 7.5 and 7.86 mg/Kg, both below the 95% UPL of 12.5 mg/Kg for background arsenic concentrations at NSS.

Total chromium was detected above the project action limit of 25 mg/Kg in both subsurface soil samples at 31.2 and 34.5 mg/Kg, both below the 95% UPL of 38.3 mg/Kg for background chromium concentrations at NSS.

VOCs detections above project action limits were limited to TCE in both samples at 362 and 83.4 µg/Kg.

No other analytes were detected above project action limits in subsurface soil samples collected from the Septic Tank and Outfall.

6.4 LSS DISCUSSION AND CONCLUSIONS

Two of the eight LSS subareas sampled during the RFI are not likely to require further action (Guided Missile Maintenance Facility and Missile Warhead Magazine). COPCs detected above project action limits at the other six LSS subareas are discussed below – excluding methylene chloride detections that were determined to be attributable to laboratory contamination, and metals that are above project action limits but below their respective 95% UPL for background at NSS. Specific recommendations on future potential actions will be made in the FS.

Launch Control Building – There appear to be two primary sources of contamination at the Launch control Building, the former UST on the west side of the building and the former AST on the east side of the building. It is evident from the results that releases occurred from each of the tanks. The discontinuous presence of TCE at LSS leads to the conclusion that it was not exclusively mobilized by the fuel spills, but may have been distributed overland simply by direct discharge to the ground surface. The wide variety of SVOCs found in samples from Test Pits TP06LSS and TP07LSS indicate that a petroleum spill from the former AST to the surface was likely.

Missile Launch Pad and Control Building 1 & 2 – The COPCs at this area above project action limits were DRO and benzo(a)pyrene in surface soil samples located at the terminus of the Launch Pads near the guided cables. Presumably, the DRO detections were associated with either surface spills of fuel or lubricants used for the cable or guide rails. The presence of benzo(a)pyrene may be consistent with the combustion byproducts from the missile launches.

Vehicle Maintenance Shop – The source of contamination at the Vehicle Maintenance Shop is presumably from waste oil, vehicular, and cleaning fluids discharged from either the lube pit or directly onto the ground surface during operation of the facility. The presence of nickel at 143 mg/Kg, along with TCE, in BH01LSS is consistent with these assumptions.

Electrical Substation B – Based on the analytical results, it appears that contamination at Electrical Substation B is limited to small areas of surface staining containing DRO and low levels of TCE. The DRO detections are presumably from spills of non-PCB containing dielectric fluid in the former transformers. The TCE was presumably used as a solvent for cleaning the transformer leads and connections.

Electrical Substations D and D2 – Based on the analytical results, it appears that contamination at Electrical Substations D and D2 is limited to small areas of surface staining containing low levels of TCE. The TCE was presumably used as a solvent for cleaning the transformer leads and connections.

Septic Tank and Outfall – the COPCs at this area included DRO, RRO, chromium, and benzo(a)pyrene in surface soil samples located in the stained area to the northwest of the septic tank and septic tank pump house. This combination of analytes leads to the conclusion that releases of waste oil and diesel fuel had occurred and potentially burned, based on the presence of benzo(a)pyrene. TCE in the test pit located north of the septic tank and east of the septic tank pump house is likely consistent with a surface release of cleaning fluids in that vicinity.

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Table 6-1 LSS - Surface Soil Samples, Analytical Detections Above Project Action Limits

Location Identification		SS01LSS		SS02LSS		SS03LSS		SS04LSS		SS05LSS		SS06LSS		SS07LSS	
Field Sample Identification		10NSS001SS01LSS		10NSS001SS02LSS		10NSS001SS03LSS		10NSS001SS04LSS		10NSS001SS05LSS		10NSS001SS06LSS		10NSS001SS07LSS	
Date Collected		8/5/2010		8/5/2010		8/5/2010		8/5/2010		8/5/2010		8/5/2010		8/5/2010	
Depth (ft)		0.5		0.5		0.5		0.5		0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**														
Total Petroleum Hydrocarbons (mg/kg)															
Diesel Range Organics (DRO)/AK102	250	21.2	U	22.2	U	**13.6**	F	21.6	U	21.7	U	**1110**	D	22	U
Residual Range Organics (RRO)/AK103	10000	**39.5**		**40.9**		**111**		**34.9**		**14.8**	F	**8240**	D	**37.6**	
Metals (SW6020A) (mg/kg)															
Arsenic	3.9	**5.13**		**7.55**		**6.74**		NA		NA		NA		**7.66**	
Cadmium	5	**0.22**		**0.158**	F	**0.144**	F	NA		NA		NA		**0.13**	F
Chromium	25	**19.5**		**28.6**		**23.2**		NA		NA		NA		**31.6**	
Mercury/SW7471A (µg/kg)	1400	**66.9**		**61.2**		**63.9**		NA		NA		NA		**41.7**	F
Volatile Organic Compounds (SW8260B) (µg/kg)															
Methylene chloride	16	*29.7*	U	**28.8**	F,UB	*33.3*	*U*	*32.5*	*U*	**37.2**	F,UB	*44.6*	U	*39.3*	U
trans-1,3-Dichloropropene	0.15	*7.47*	U	*5.77*	U	*8.37*	*U*	*8.19*	*U*	*7.69*	U	*11.2*	U	*9.88*	U
Trichloroethene (TCE)	20	*7.47*	U	*5.77*	U	*8.37*	*U*	*8.19*	*U*	*7.69*	U	*11.2*	U	*9.88*	U
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)															
Benzo(a)pyrene	0.49	*0.0831*	U	*0.0861*	U	**0.518**		*0.0849*	*U*	*0.084*	U	*0.0953*	U	*0.085*	U
Benzo(b)fluoranthene	4.9	0.266	U	0.276	U	**0.665**		0.272	U	0.269	U	0.305	U	0.272	U
Pentachlorophenol	0.047	*0.66*	U	*0.684*	U	*0.736*	*U*	*0.674*	*U*	*0.668*	U	*0.757*	U	*0.675*	U

Table 6-1 LSS - Surface Soil Samples, Analytical Detections Above Project Action Limits

Location Identification		SS07LSS Dup		SS08LSS		SS09LSS		SS10LSS		SS10LSS Dup	SS11LSS		SS12LSS	
Field Sample Identification		10NSS201SS07LSS		10NSS001SS08LSS		10NSS001SS09LSS		10NSS001SS10LSS		10NSS201SS10LSS	10NSS001SS11LSS		10NSS001SS12LSS	
Date Collected		8/5/2010		8/5/2010		8/5/2010		8/5/2010		8/5/2010	8/5/2010		8/5/2010	
Depth (ft)		0.5		0.5		0.5		0.5		0.5	0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**													
Total Petroleum Hydrocarbons (mg/kg)														
Diesel Range Organics (DRO)/AK102	250	21.7	U	21.6	U	**7360**	D	**4350**	D	NA	**47.4**	F	**4210**	D
Residual Range Organics (RRO)/AK103	10000	**34.7**		**11**	F	**2250**	D	**976**	D	NA	**417**	D	**361**	
Metals (SW6020A) (mg/kg)														
Arsenic	3.9	**6.47**		**5.86**		**7.57**		**8.98**		NA	**5.91**		**8.19**	
Cadmium	5	**0.11**	F	**0.0789**	F	**0.833**		**1.34**		NA	**0.153**	F	**0.461**	
Chromium	25	**26.6**		**25.3**		**29.6**		**27**		NA	**19.3**		**34.8**	
Mercury/SW7471A (µg/kg)	1400	**73.9**		**22.9**	F	**134**		**84.6**		NA	**58.4**		**104**	
Volatile Organic Compounds (SW8260B) (µg/kg)														
Methylene chloride	16	**38.4**	F,UB	*36.6*	U	*26.2*	U	*36.1*	U	NA	*33.9*	U	*32*	U
trans-1,3-Dichloropropene	0.15	*9.02*	U	*9.22*	U	*6.58*	U	*9.09*	U	NA	*8.53*	U	*8.06*	U
Trichloroethene (TCE)	20	*9.02*	U	*9.22*	U	*6.58*	U	*9.09*	U	NA	*8.53*	U	*8.06*	U
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)														
Benzo(a)pyrene	0.49	*0.0844*	U	*0.0844*	U	**0.924**		**2.55**		NA	*0.0878*	U	**0.631**	
Benzo(b)fluoranthene	4.9	0.27	U	0.271	U	**1.53**		**3.37**	D	NA	0.281	U	**0.999**	
Pentachlorophenol	0.047	*0.67*	U	*0.671*	U	*0.68*	U	*0.687*	U	NA	*0.698*	U	*0.67*	U

Table 6-1 LSS - Surface Soil Samples, Analytical Detections Above Project Action Limits

Location Identification		SS13LSS		SS13LSS	SS14LSS		SS15LSS		SS15LSS Dup		SS16LSS	
Field Sample Identification		10NSS001SS13LSS		10NSS001SS13LSS	10NSS001SS14LSS		10NSS001SS15LSS		10NSS201SS15LSS		10NSS001SS16LSS	
Date Collected		8/5/2010		10/14/2010	8/5/2010		8/6/2010		8/6/2010		8/6/2010	
Depth (ft)		0.5		0.5	0.5		0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**											
Total Petroleum Hydrocarbons (mg/kg)												
Diesel Range Organics (DRO)/AK102	250	**200**	D	NA	**22.7**	F	**951**	D	**973**	D	**120**	D
Residual Range Organics (RRO)/AK103	10000	**254**	D	NA	**91.5**		**2070**	D	**2130**	D	**573**	D
Metals (SW6020A) (mg/kg)												
Arsenic	3.9	**7.68**		NA	**7.72**		**7.05**		**6.68**		**7.8**	
Cadmium	5	**2.18**		NA	**0.139**	F	**0.154**	F	**0.188**	F	**0.15**	F
Chromium	25	**44.7**		NA	**26.8**		**21.4**		**23.8**		**25**	
Mercury/SW7471A (µg/kg)	1400	**105**		NA	**61.2**		**99.8**		**77.5**		**136**	
Volatile Organic Compounds (SW8260B) (µg/kg)												
Methylene chloride	16	*39.2*	U	NA	*29.7*	U	*5.9*	U	*6.3*	UJ	*6.1*	U
trans-1,3-Dichloropropene	0.15	*9.87*	U	NA	*7.47*	U	**0.27**	F,J-	*0.18*	UJ	*0.17*	U
Trichloroethene (TCE)	20	*9.87*	U	NA	*7.47*	U	**5.9**	J-	**6.3**	J-	**5.6**	
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)												
Benzo(a)pyrene	0.49	**1.44**		NA	*0.089*	U	*0.83*	U	*0.83*	U	*0.0831*	U
Benzo(b)fluoranthene	4.9	**2**		NA	0.285	U	*0.83*	U	*0.83*	U	0.266	U
Pentachlorophenol	0.047	*0.683*	U	NA	*0.707*	U	*6.59*	U	*6.6*	U	*0.66*	U

Table 6-1 LSS - Surface Soil Samples, Analytical Detections Above Project Action Limits

Location Identification		SS17LSS		SS18LSS		SS19LSS		SS24LSS		SS24LSS Dup		SS28LSS	
Field Sample Identification		10NSS001SS17LSS		10NSS001SS18LSS		10NSS001SS19LSS		10NSS001SS24LSS		10NSS201SS24LSS		10NSS001SS28LSS	
Date Collected		8/6/2010		8/6/2010		8/6/2010		8/25/2010		8/25/2010		8/25/2010	
Depth (ft)		0.5		0.5		0.5		0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**												
Total Petroleum Hydrocarbons (mg/kg)													
Diesel Range Organics (DRO)/AK102	250	**117**		**37**		**756**	D	**44.6**		**49.3**		**450**	
Residual Range Organics (RRO)/AK103	10000	**582**		**197**		**4590**	D	**71**		**69**		**67.4**	
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	**6.87**		**7.81**		**10.5**		**19**		**5.96**		**6.77**	
Cadmium	5	**0.215**		**0.222**		**1.85**		**0.455**		**0.319**		**0.391**	
Chromium	25	**23.4**		**29.5**		**46.1**		**22.5**		**21**		**21.4**	
Mercury/SW7471A (µg/kg)	1400	**112**		**71.6**		**110**		**121**		**112**		**96.7**	
Volatile Organic Compounds (SW8260B) (µg/kg)													
Methylene chloride	16	*6.3*	U	*6.3*	U	*6.3*	UJ	*28.9*	U	**32.9**	F,UB	*28.1*	U
trans-1,3-Dichloropropene	0.15	*0.18*	U	*0.18*	U	*0.17*	UJ	*7.27*	U	*7.55*	U	*7.06*	U
Trichloroethene (TCE)	20	**22**		**0.38**	F	0.98	UJ	**116**		**87.9**		**290**	
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)													
Benzo(a)pyrene	0.49	*0.0847*	U	**0.228**	F	*0.0939*	U	*0.0798*	U	**0.123**	F	*0.0805*	U
Benzo(b)fluoranthene	4.9	0.271	U	0.267	U	0.301	U	**0.134**	F	**0.183**	F	0.258	U
Pentachlorophenol	0.047	*0.673*	U	*0.663*	U	*0.746*	U	*0.635*	U	*0.638*	U	*0.64*	U

Table 6-1 LSS - Surface Soil Samples, Analytical Detections Above Project Action Limits

Location Identification		SS40LSS		SS41LSS		SS41LSS		SS45LSS		SS50LSS		SS53LSS	
Field Sample Identification		10NSS001SS40LSS		10NSS001SS41LSS		10NSS001SS41LSS		10NSS001SS45LSS		10NSS001SS50LSS		10NSS001SS53LSS	
Date Collected		8/25/2010		8/25/2010		10/14/2010		8/25/2010		8/25/2010		8/25/2010	
Depth (ft)		0.5		0.5		0.5		0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**												
Total Petroleum Hydrocarbons (mg/kg)													
Diesel Range Organics (DRO)/AK102	250	21.3	U	**23.6**		NA		**16**	F	**20.9**	F	**4960**	F
Residual Range Organics (RRO)/AK103	10000	**20.4**	F	**53.2**		NA		**87.4**		**128**		**24400**	D
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	**5.5**		**5.95**		NA		**6.88**		**6.98**		**9.49**	
Cadmium	5	**0.13**	F	**0.442**		NA		**0.27**		**0.33**		**0.319**	
Chromium	25	**22.9**		**39.3**		NA		**32.5**		**36.8**		**65**	
Mercury/SW7471A (µg/kg)	1400	**98.2**		**97.4**		NA		**79**		**73.7**		**130**	
Volatile Organic Compounds (SW8260B) (µg/kg)													
Methylene chloride	16	**49.5**	F,UB	*27.9*	U	NA		*22.6*	U	**40.4**	F,UB	**26.1**	F,UB
trans-1,3-Dichloropropene	0.15	*7.92*	U	*7.02*	U	NA		*5.7*	U	*7.89*	U	*6.28*	U
Trichloroethene (TCE)	20	*7.92*	U	*7.02*	U	NA		**16.8**	F	**139**		*6.28*	U
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)													
Benzo(a)pyrene	0.49	*0.0821*	U	*0.0835*	U	NA		*0.0827*	U	*0.0896*	U	*0.75*	U
Benzo(b)fluoranthene	4.9	0.263	U	0.268	U	NA		0.265	U	0.287	U	2.4	U
Pentachlorophenol	0.047	*0.653*	U	*0.664*	U	NA		*0.657*	U	*0.712*	U	*5.96*	U

Table 6-1 LSS - Surface Soil Samples, Analytical Detections Above Project Action Limits

Analyte/Methods (Units)	Location Identification / Field Sample Identification / Date Collected / Depth (ft)	Project Action Limit	SS53LSS 10NSS001SS53LSS 10/14/2010 0.5		SS59LSS 10NSS001SS59LSS 8/25/2010 0.5		SS60LSS 10NSS001SS60LSS 8/25/2010 0.5		SS60LSS 10NSS001SS60LSS 10/14/2010 0.5		SS61LSS 10NSS001SS61LSS 8/25/2010 0.5	
Total Petroleum Hydrocarbons (mg/kg)												
Diesel Range Organics (DRO)/AK102		250	NA		**237**	D	**1230**	D	NA		**45.4**	F
Residual Range Organics (RRO)/AK103		10000	NA		**1390**	D	**5160**	D	NA		**442**	D
Metals (SW6020A) (mg/kg)												
Arsenic		3.9	NA		**7.07**		**5.33**		NA		**8.29**	
Cadmium		5	NA		**0.343**		**15.6**		NA		**0.322**	
Chromium		25	NA		**31.2**		**45.8**		NA		**32.6**	
Mercury/SW7471A (µg/kg)		1400	NA		**99.4**		**1920**		NA		**107**	
Volatile Organic Compounds (SW8260B) (µg/kg)												
Methylene chloride		16	NA		**65.9**	F,UB	*158*	U	NA		**68.3**	F,UB
trans-1,3-Dichloropropene		0.15	NA		*7.16*	U	*39.7*	U	NA		*12.1*	U
Trichloroethene (TCE)		20	NA		*7.16*	U	*39.7*	U	NA		*12.1*	U
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)												
Benzo(a)pyrene		0.49	NA		**0.568**		**2.83**	F	NA		*0.106*	U
Benzo(b)fluoranthene		4.9	NA		**0.729**		**6.15**		NA		0.338	U
Pentachlorophenol		0.047	NA		*0.664*	U	**46.5**		NA		*0.839*	U

µg/kg	micrograms per kilogram.
mg/kg	milligrams per kilogram.
Italic	Italicized result indicates analyte reported to the laboratory detection limit.
	Indicates concentration, LOQ, or LOD is above the established project action limit
Bold	Bolded result indicates positively identified compound.
AK	Alaska Test Method
NA	Not analyzed.
B	Analyte detected in an associated blank.
D	Sample dilution required for analysis; reported values reflect the dilution.
F	Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the LOQ but greater than the LOD.
UJ	Potential low bias, possible false negative.
UB	Analyte considered not detected, based on an associated blank concentration.
U	Analyte is not detected at the reported LOQ or LOD
J-	Data are estimated, potentially biased low, based on associated quality control data.
LOD	Limit of detection
LOQ	Limit of quantitation
SW	U.S. Environmental Protection Agency Solid Waste Method

Table 6-2 LSS - Subsurface Soil Samples, Analytical Detections Above Project Action Limits

Location Identification		BH01LSS		BH01LSS		BH02LSS		BH02LSS		BH03LSS		BH03LSS	
Field Sample Identification		10NSS001SL01LSS		10NSS004SL01LSS		10NSS001SL02LSS		10NSS004SL02LSS		10NSS004SL03LSS		10NSS006SL03LSS	
Date Collected		8/11/2010		8/11/2010		8/12/2010		8/12/2010		8/12/2010		8/12/2010	
Depth (ft)		2 - 4		8 - 10		2 - 4		8 - 10		8 - 10		12 - 14	
Analyte/Methods (Units)	**Project Action Limit**												
Total Petroleum Hydrocarbons (mg/kg)													
Diesel Range Organics (DRO)/AK102	250	31.5	U	21	U	**4170**	D	**1060**	D	21.2	U	**1720**	D
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	**7.51**		**6.91**		NA		NA		NA		NA	
Chromium	25	**24.4**		**171**		NA		NA		NA		NA	
Nickel	86	**29.5**		**143**		NA		NA		NA		NA	
Volatile Organic Compounds (SW8260B) (µg/kg)													
1,1,2,2-Tetrachloroethane	17	*7.66*	U	*7.35*	U	*7.91*	U	*6.86*	U	*5.67*	U	*7.61*	U
1,1,2-Trichloroethane	18	*7.66*	U	*7.35*	U	*7.91*	U	*6.86*	U	*5.67*	U	*7.61*	U
1,2,3-Trichlorobenzene	87	24.5	U	23.6	U	25.4	U	22	U	18.2	U	24.4	U
1,2,3-Trichloropropane	0.53	*7.66*	U	*7.35*	U	*7.91*	U	*6.86*	U	*5.67*	U	*7.61*	U
1,2-Dibromo-3-chloropropane	0.00014	*30.4*	U	*29.2*	U	*31.5*	U	*27.3*	U	*22.5*	U	*30.3*	U
2-Hexanone	11	*76.6*	U	*73.5*	U	*79.1*	U	*68.6*	U	*56.7*	U	*76.1*	U
Benzene	25	12.3	U	11.8	U	*3.96*	U	11	U	9.09	U	12.2	U
Methylene chloride	16	**30.7**	F,UB	**35.4**	F,UB	*31.5*	U	*27.3*	U	*22.5*	U	*30.3*	U
Trichloroethene (TCE)	20	**111**		**151**		*7.91*	U	*6.86*	U	**36.2**		**9.52**	F
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)													
Benzo(a)anthracene	3.6	0.263	U	0.26	U	**0.249**	F	**0.25**	F	0.264	U	0.264	U
Benzo(a)pyrene	0.49	*0.0819*	U	*0.0812*	U	**0.332**		**0.347**		*0.0823*	U	*0.0823*	U
Benzo(b)fluoranthene	4.9	0.263	U	0.26	U	**0.449**		**0.391**		0.264	U	0.264	U
Dibenz(a,h)anthracene	0.49	*0.0819*	U	*0.0812*	U	*0.0839*	U	*0.0858*	U	*0.0823*	U	*0.0823*	U
Indeno(1,2,3-c,d)Pyrene	4.9	0.263	U	0.26	U	**0.192**	F	**0.233**	F	0.264	U	0.264	U

Table 6-2 LSS - Subsurface Soil Samples, Analytical Detections Above Project Action Limits

Location Identification		BH04LSS		BH04LSS		BH05LSS		BH05LSS		BH06LSS		BH06LSS	
Field Sample Identification		10NSS005SL04LSS		10NSS007SL04LSS		10NSS006SL05LSS		10NSS007SL05LSS		10NSS001SL06LSS		10NSS002SL06LSS	
Date Collected		8/12/2010		8/12/2010		8/17/2010		8/17/2010		8/17/2010		8/17/2010	
Depth (ft)		10 - 12		14 - 16		12 - 14		14 - 16		2 - 4		4 - 6	
Analyte/Methods (Units)	**Project Action Limit**												
Total Petroleum Hydrocarbons (mg/kg)													
Diesel Range Organics (DRO)/AK102	250	21.2	U	22.4	U	20.7	U	20.9	U	20.9	U	20.8	U
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	NA		NA		NA		NA		NA		NA	
Chromium	25	NA		NA		NA		NA		NA		NA	
Nickel	86	NA		NA		NA		NA		NA		NA	
Volatile Organic Compounds (SW8260B) (µg/kg)													
1,1,2,2-Tetrachloroethane	17	*8.1*	U	*7.76*	U	*6.61*	U	*8.72*	U	*6.53*	U	*6.69*	U
1,1,2-Trichloroethane	18	*8.1*	U	*7.76*	U	*6.61*	U	*8.72*	U	*6.53*	U	*6.69*	U
1,2,3-Trichlorobenzene	87	26	U	24.9	U	21.2	U	27.9	U	20.9	U	21.4	U
1,2,3-Trichloropropane	0.53	*8.1*	U	*7.76*	U	*6.61*	U	*8.72*	U	*6.53*	U	*6.69*	U
1,2-Dibromo-3-chloropropane	0.00014	*32.2*	U	*30.9*	U	*26.3*	U	*34.6*	U	*25.9*	U	*26.6*	U
2-Hexanone	11	*81*	U	*77.6*	U	*66.1*	U	*87.2*	U	*65.3*	U	*66.9*	U
Benzene	25	*4.05*	U	12.4	U	10.6	U	*4.36*	U	10.5	U	10.7	U
Methylene chloride	16	*32.2*	U	*30.9*	U	*26.3*	U	*34.6*	U	*25.9*	U	*26.6*	U
Trichloroethene (TCE)	20	*8.1*	U	**110**		*6.61*	U	*8.72*	U	**234**		**613**	
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)													
Benzo(a)anthracene	3.6	0.264	U	0.278	U	0.261	U	0.259	U	0.259	U	0.256	U
Benzo(a)pyrene	0.49	*0.0824*	U	*0.0866*	U	*0.0815*	U	*0.0808*	U	*0.0809*	U	*0.0797*	U
Benzo(b)fluoranthene	4.9	0.264	U	0.278	U	0.261	U	0.259	U	0.259	U	0.256	U
Dibenz(a,h)anthracene	0.49	*0.0824*	U	*0.0866*	U	*0.0815*	U	*0.0808*	U	*0.0809*	U	*0.0797*	U
Indeno(1,2,3-c,d)Pyrene	4.9	0.264	U	0.278	U	0.261	U	0.259	U	0.259	U	0.256	U

Table 6-2 LSS - Subsurface Soil Samples, Analytical Detections Above Project Action Limits

Location Identification		BH07LSS		BH07LSS		BH07LSS Dup		BH08LSS		BH08LSS		BH09LSS	
Field Sample Identification		10NSS001SL07LSS		10NSS002SL07LSS		10NSS202SL07LSS		10NSS001SL08LSS		10NSS002SL08LSS		10NSS001SL09LSS	
Date Collected		8/17/2010		8/17/2010		8/17/2010		8/17/2010		8/17/2010		8/19/2010	
Depth (ft)		2 - 4		4 - 6		4 - 6		2 - 4		4 - 6		1	
Analyte/Methods (Units)	**Project Action Limit**												
Total Petroleum Hydrocarbons (mg/kg)													
Diesel Range Organics (DRO)/AK102	250	**4130**	D	**1860**	D	**1960**	D	21.4	U	20.3	U	**7.81**	F
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	NA		NA		NA		**5.61**		**3.66**		**4.88**	
Chromium	25	NA		NA		NA		**21.7**		**25.6**		**20.5**	
Nickel	86	NA		NA		NA		**17.5**		**14.3**		**21.8**	
Volatile Organic Compounds (SW8260B) (µg/kg)													
1,1,2,2-Tetrachloroethane	17	**1210**	D	*81.5*	U	*82.9*	U	*10.4*	U	*6.38*	U	*7.05*	U
1,1,2-Trichloroethane	18	**1650**	D	*81.5*	U	*82.9*	U	*10.4*	U	*6.38*	U	*7.05*	U
1,2,3-Trichlorobenzene	87	**131**	F	*81.5*	U	*82.9*	U	33.5	U	20.4	U	22.6	U
1,2,3-Trichloropropane	0.53	**491**	D	*81.5*	U	*82.9*	U	*10.4*	U	*6.38*	U	*7.05*	U
1,2-Dibromo-3-chloropropane	0.00014	**3040**	D	*324*	U	*330*	U	*41.5*	U	*25.3*	U	*28*	U
2-Hexanone	11	**942**	F	*815*	U	*829*	U	*104*	U	*63.8*	U	*70.5*	U
Benzene	25	**43.1**	F	**49.7**	F	**47.9**	F	*5.22*	U	10.2	U	11.3	U
Methylene chloride	16	*255*	U	*324*	U	*330*	U	*41.5*	U	*25.3*	U	*28*	U
Trichloroethene (TCE)	20	**90.3**	F	*81.5*	U	*82.9*	U	*10.4*	U	*6.38*	U	*7.05*	U
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)													
Benzo(a)anthracene	3.6	**0.0907**	F	0.26	U	0.262	U	0.265	U	0.255	U	**0.106**	F
Benzo(a)pyrene	0.49	*0.0809*	U	*0.0811*	U	*0.0818*	U	*0.0827*	U	*0.0795*	U	*0.082*	U
Benzo(b)fluoranthene	4.9	0.259	U	0.26	U	0.262	U	0.265	U	0.255	U	0.263	U
Dibenz(a,h)anthracene	0.49	*0.0809*	U	*0.0811*	U	*0.0818*	U	*0.0827*	U	*0.0795*	U	*0.082*	U
Indeno(1,2,3-c,d)Pyrene	4.9	0.259	U	0.26	U	0.262	U	0.265	U	0.255	U	0.263	U

Table 6-2 LSS - Subsurface Soil Samples, Analytical Detections Above Project Action Limits

	Location Identification	BH09LSS		BH10LSS		BH10LSS		BH11LSS		BH11LSS	
	Field Sample Identification	10NSS002SL09LSS		10NSS003SL10LSS		10NSS006SL10LSS		10NSS003SL11LSS		10NSS011SL11LSS	
	Date Collected	8/19/2010		8/19/2010		8/19/2010		8/19/2010		8/19/2010	
	Depth (ft)	2		6 - 8		12 - 14		6 - 8		22 - 24	
Analyte/Methods (Units)	**Project Action Limit**										
Total Petroleum Hydrocarbons (mg/kg)											
Diesel Range Organics (DRO)/AK102	250	20.4	U	21.6	U	21.2	U	21.6	U	20.6	U
Metals (SW6020A) (mg/kg)											
Arsenic	3.9	**4.14**		**7.25**		**8.57**		NA		NA	
Chromium	25	**29.3**		**24**		**22**		NA		NA	
Nickel	86	**15.9**		**23**		**24.2**		NA		NA	
Volatile Organic Compounds (SW8260B) (µg/kg)											
1,1,2,2-Tetrachloroethane	17	*5.64*	U	*6.43*	U	*5.64*	U	*5.81*	U	*2.91*	U
1,1,2-Trichloroethane	18	*5.64*	U	*6.43*	U	*5.64*	U	*5.81*	U	*2.91*	U
1,2,3-Trichlorobenzene	87	18.1	U	20.6	U	18.1	U	18.6	U	9.32	U
1,2,3-Trichloropropane	0.53	*5.64*	U	*6.43*	U	*5.64*	U	*5.81*	U	*2.91*	U
1,2-Dibromo-3-chloropropane	0.00014	*22.4*	U	*25.5*	U	*22.4*	U	*23.1*	U	*11.6*	U
2-Hexanone	11	*56.4*	U	*64.3*	U	*56.4*	U	*58.1*	U	*29.1*	U
Benzene	25	9.04	U	10.3	U	9.03	U	9.31	U	4.66	U
Methylene chloride	16	**27.9**	UK,F	*25.5*	U	*22.4*	U	*23.1*	U	**14.1**	UK,F
Trichloroethene (TCE)	20	*5.64*	U	*6.43*	U	**35.6**		*5.81*	U	9.32	U
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)											
Benzo(a)anthracene	3.6	0.255	U	0.269	U	0.265	U	0.269	U	0.255	U
Benzo(a)pyrene	0.49	*0.0795*	U	*0.084*	U	*0.0826*	U	*0.084*	U	*0.0794*	U
Benzo(b)fluoranthene	4.9	0.255	U	0.269	U	0.265	U	0.269	U	0.255	U
Dibenz(a,h)anthracene	0.49	*0.0795*	U	*0.084*	U	*0.0826*	U	*0.084*	U	*0.0794*	U
Indeno(1,2,3-c,d)Pyrene	4.9	0.255	U	0.269	U	0.265	U	0.269	U	0.255	U

Table 6-2 LSS - Subsurface Soil Samples, Analytical Detections Above Project Action Limits

Location Identification		TP01LSS		TP01LSS		TP02LSS		TP02LSS		TP03LSS		TP03LSS	
Field Sample Identification		10NSS001TP01LSS		10NSS002TP01LSS		10NSS001TP02LSS		10NSS002TP02LSS		10NSS001TP03LSS		10NSS002TP03LSS	
Date Collected		8/23/2010		8/23/2010		8/23/2010		8/23/2010		8/23/2010		8/23/2010	
Depth (ft)		8		8		6		6		2		6	
Analyte/Methods (Units)	**Project Action Limit**												
Total Petroleum Hydrocarbons (mg/kg)													
Diesel Range Organics (DRO)/AK102	250	**9.41**	F	**7.29**	F	21.7	U	**42**		**8.66**	F	21.1	U
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	**7.5**		**7.86**		**7.21**		**7.26**		**7.47**		**6.68**	
Chromium	25	**31.2**		**34.5**		**27.2**		**31**		**23.6**		**30.4**	
Nickel	86	**32.3**		**35.7**		**27.7**		**29.4**		**31.4**		**32.2**	
Volatile Organic Compounds (SW8260B) (µg/kg)													
1,1,2,2-Tetrachloroethane	17	*7.41*	U	*7.59*	U	*7.12*	U	*6.35*	U	*6.19*	U	*5.4*	U
1,1,2-Trichloroethane	18	*7.41*	U	*7.59*	U	*7.12*	U	*6.35*	U	*6.19*	U	*5.4*	U
1,2,3-Trichlorobenzene	87	23.8	U	24.3	U	22.8	U	20.3	U	19.8	U	17.3	U
1,2,3-Trichloropropane	0.53	*7.41*	U	*7.59*	U	*7.12*	U	*6.35*	U	*6.19*	U	*5.4*	U
1,2-Dibromo-3-chloropropane	0.00014	*29.5*	U	*30.2*	U	*28.3*	U	*25.2*	U	*24.6*	U	*21.5*	U
2-Hexanone	11	*74.1*	U	*75.9*	U	*71.2*	U	*63.5*	U	*61.9*	U	*54*	U
Benzene	25	11.9	U	12.2	U	11.4	U	10.2	U	9.91	U	8.65	U
Methylene chloride	16	*29.5*	U	*30.2*	U	*28.3*	U	*25.2*	U	*24.6*	U	*21.5*	U
Trichloroethene (TCE)	20	**362**		**83.4**		**210**		**257**		**171**		**43.3**	
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)													
Benzo(a)anthracene	3.6	0.277	U	0.272	U	0.273	U	0.273	U	0.267	U	0.264	U
Benzo(a)pyrene	0.49	*0.0865*	U	*0.085*	U	*0.0851*	U	*0.0853*	U	*0.0833*	U	*0.0824*	U
Benzo(b)fluoranthene	4.9	0.277	U	0.272	U	0.273	U	0.273	U	0.267	U	0.264	U
Dibenz(a,h)anthracene	0.49	*0.0865*	U	*0.085*	U	*0.0851*	U	*0.0853*	U	*0.0833*	U	*0.0824*	U
Indeno(1,2,3-c,d)Pyrene	4.9	0.277	U	0.272	U	0.273	U	0.273	U	0.267	U	0.264	U

Table 6-2 LSS - Subsurface Soil Samples, Analytical Detections Above Project Action Limits

Location Identification		TP03LSS Dup		TP04LSS		TP04LSS		TP05LSS		TP05LSS		TP06LSS	
Field Sample Identification		10NSS202TP03LSS		10NSS001TP04LSS		10NSS002TP04LSS		10NSS001TP05LSS		10NSS002TP05LSS		10NSS001TP06LSS	
Date Collected		8/23/2010		8/23/2010		8/23/2010		8/23/2010		8/23/2010		8/23/2010	
Depth (ft)		6		8		8		1		4		2	
Analyte/Methods (Units)	**Project Action Limit**												
Total Petroleum Hydrocarbons (mg/kg)													
Diesel Range Organics (DRO)/AK102	250	21.1	U	21	U	20.9	U	**376**		**55.5**		**2830**	D
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	**6.74**		**4.38**		**3.79**		**5.88**		**6.47**		**6.55**	
Chromium	25	**22.6**		**15.7**		**20.2**		**18**		**21.5**		**15.6**	
Nickel	86	**21**		**18.1**		**20.7**		**24.3**		**23**		**21.5**	
Volatile Organic Compounds (SW8260B) (µg/kg)													
1,1,2,2-Tetrachloroethane	17	*5.55*	U	*5.1*	U	*5.61*	U	*4.71*	U	*5.93*	U	*5.82*	U
1,1,2-Trichloroethane	18	*5.55*	U	*5.1*	U	*5.61*	U	*4.71*	U	*5.93*	U	*5.82*	U
1,2,3-Trichlorobenzene	87	17.8	U	16.3	U	18	U	15.1	U	19	U	18.6	U
1,2,3-Trichloropropane	0.53	*5.55*	U	*5.1*	U	*5.61*	U	*4.71*	U	*5.93*	U	*5.82*	U
1,2-Dibromo-3-chloropropane	0.00014	*22.1*	U	*20.3*	U	*22.3*	U	*18.7*	U	*23.6*	U	*23.1*	U
2-Hexanone	11	*55.5*	U	*51*	U	*56.1*	U	*47.1*	U	*59.3*	U	*58.2*	U
Benzene	25	8.9	U	8.17	U	8.99	U	7.54	U	9.51	U	9.32	U
Methylene chloride	16	*22.1*	U	*20.3*	U	*22.3*	U	*18.7*	U	*23.6*	U	*23.1*	U
Trichloroethene (TCE)	20	**42.5**		**119**		**108**		*4.71*	U	**16.4**	F	*5.82*	U
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)													
Benzo(a)anthracene	3.6	0.262	U	0.267	U	0.262	U	**0.765**		0.272	U	**37**	D
Benzo(a)pyrene	0.49	*0.0818*	U	*0.0833*	U	*0.0818*	U	**1.21**		*0.0848*	U	**35.7**	D
Benzo(b)fluoranthene	4.9	0.262	U	0.267	U	0.262	U	**1.22**		0.272	U	**40.1**	D
Dibenz(a,h)anthracene	0.49	*0.0818*	U	*0.0833*	U	*0.0818*	U	**0.19**	F	*0.0848*	U	**6.12**	D
Indeno(1,2,3-c,d)Pyrene	4.9	0.262	U	0.267	U	0.262	U	**0.956**		0.272	U	**16.1**	D

Table 6-2 LSS - Subsurface Soil Samples, Analytical Detections Above Project Action Limits

Analyte/Methods (Units)	Project Action Limit	TP06LSS 10NSS002TP06LSS 8/23/2010 2		TP07LSS 10NSS001TP07LSS 9/2/2010 1.3		TP08LSS 10NSS001TP08LSS 9/2/2010 1.9		TP08LSS Dup 10NSS201TP08LSS 9/2/2010 1.9		TP09LSS 10NSS001TP09LSS 9/2/2010 2.3		TP10LSS 10NSS001TP10LSS 9/2/2010 2.3	
Total Petroleum Hydrocarbons (mg/kg)													
Diesel Range Organics (DRO)/AK102	250	**2750**	D	**111**		**135**	D	**139**	D	21.1	U	30.3	U
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	**9.56**		**6.08**		**6.34**		**5.87**		**8.25**		**7.68**	
Chromium	25	**23.2**		**17.1**		**31.3**		**30.2**		**26.8**		**25.5**	
Nickel	86	**31.1**		**21.5**		**34.9**		**36**		**28.9**		**30.8**	
Volatile Organic Compounds (SW8260B) (µg/kg)													
1,1,2,2-Tetrachloroethane	17	*6.68*	U	*13.2*	U	*12.4*	U	*12.6*	U	*10.2*	U	*12.1*	U
1,1,2-Trichloroethane	18	*6.68*	U	*6.84*	U	*6.43*	U	*6.57*	U	*5.3*	U	*6.28*	U
1,2,3-Trichlorobenzene	87	21.4	U	*13.2*	U	41.2	U	42.1	U	34	U	40.3	U
1,2,3-Trichloropropane	0.53	*6.68*	U	*6.84*	U	*6.43*	U	*6.57*	U	*5.3*	U	*6.28*	U
1,2-Dibromo-3-chloropropane	0.00014	*26.5*	U	*27.2*	U	*25.5*	U	*26.1*	U	*21.1*	U	*25*	U
2-Hexanone	11	*66.8*	U	*68.4*	U	*64.3*	U	*65.7*	U	*53*	U	*62.8*	U
Benzene	25	10.7	U	11	U	10.3	U	10.5	U	8.5	U	10.1	U
Methylene chloride	16	*26.5*	U	*27.2*	U	*25.5*	U	*26.1*	U	*21.1*	U	*25*	U
Trichloroethene (TCE)	20	*6.68*	U	**32.5**		**38.1**		**49.3**		**319**		**171**	
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)													
Benzo(a)anthracene	3.6	**32**	D	**1.48**		0.265	U	0.271	U	0.26	U	**0.133**	F
Benzo(a)pyrene	0.49	**30.4**	D	**2.52**		*0.0828*	U	**0.0855**	F	*0.0811*	U	**0.112**	F
Benzo(b)fluoranthene	4.9	**31.8**	D	**2.01**		0.265	U	0.271	U	0.26	U	**0.124**	F
Dibenz(a,h)anthracene	0.49	**4.14**	D	*0.0853*	U	*0.0828*	U	*0.0844*	U	*0.0811*	U	*0.0879*	U
Indeno(1,2,3-c,d)Pyrene	4.9	**14.7**	D	**1.45**		**0.277**		**0.255**	F	0.26	U	0.282	U

µg/kg micrograms per kilogram.
mg/kg milligrams per kilogram.
Italic Italicized result indicates analyte reported to the laboratory detection limit
Indicates concentration, LOQ, or LOD is above the established project action limi
Bold Bolded result indicates positively identified compound
AK Alaska Test Method
NA Not analyzed.
B Analyte detected in an associated blank
D Sample dilution required for analysis; reported values reflect the dilution
F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the LOQ but greater than the LOD.
UJ Potential low bias, possible false negative
UB Analyte considered not detected, based on an associated blank concentration
UK Analyte considered not detected, based on professional judgment of Validation Chemist
U Analyte is not detected at the reported LOQ or LOD
J+ Data are estimated, potentially biased high, based on associated quality control data.
J- Data are estimated, potentially biased low, based on associated quality control data.
LOD Limit of detection
LOQ Limit of quantitation
SW U.S. Environmental Protection Agency Solid Waste Method

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Table 6-3 LSS - Groundwater Samples, Analytical Detections Above Project Action Limits

Location Identification Field Sample Identification Date Collected Analyte/Methods (Units)	Project Action Limit	MW02LSS 10NSS001GW02LSS 9/1/2010		MW03LSS 10NSS001GW03LSS 8/31/2010		MW03LSS Dup 10NSS201GW03LSS 8/31/2010		MW04LSS 10NSS001GW04LSS 9/1/2010	
Total Petroluem Hydrocarbons (mg/l)									
Diesel Range Organics (DRO)/AK102	1.5	**1.72**		**29.4**	D	**27.9**	D	*0.259*	U
Metals (SW6020) (µg/l)		**Total**	**Dissolved**	**Total**	**Dissolved**	**Total**	**Dissolved**	**Total**	**Dissolved**
Arsenic	10	**15.8**	**3.1** F	**23.6**	**3.96** F	**32.2**	**4.54** F	**28.5**	*1.5* U
Lead	15	**23.3**	1 U	**31.7**	1 U	**33.3**	1 U	**25.4**	1 U
Volatile Organic Compounds (SW8260B) (µg/l)									
Benzene	5	0.4 U		**1.08**		**1.11**		0.4 U	
Trichloroethylene (TCE)	5	**0.62** F		**0.7** F		**0.69** F		**3.72**	

Table 6-3 LSS - Groundwater Samples, Analytical Detections Above Project Action Limits

Location Identification		MW05LSS				MW06LSS				MW07LSS				MW10LSS			
Field Sample Identification		10NSS001GW05LSS				10NSS001GW06LSS				10NSS001GW07LSS				10NSS001GW10LSS			
Date Collected		8/31/2010				9/1/2010				9/1/2010				8/31/2010		9/14/2010	
Analyte/Methods (Units)	**Project Action Limit**																
Total Petroluem Hydrocarbons (mg/l)																	
Diesel Range Organics (DRO)/AK102	1.5	**0.405**	F			*0.27*	U			**9.28**				**0.403**	F		
Metals (SW6020) (µg/l)		**Total**		**Dissolved**		**Total**		**Dissolved**		**Total**		**Dissolved**		**Total**		**Dissolved**	
Arsenic	10	**17.7**		*1.5*	U	*1.5*	U	*1.5*	U	**8.74**		**4.79**	F	**28**		**6.81**	NA
Lead	15	**25**		1	U	1	U	1	U	**7.77**		1	U	**27.6**		**6.08**	NA
Volatile Organic Compounds (SW8260B) (µg/l)																	
Benzene	5	0.4	U			0.4	U			**5.39**				0.4	U		
Trichloroethylene (TCE)	5	1	U			**17.5**				1	U			1	U		

µg/l	micrograms per liter.
mg/l	milligrams per liter.
	Indicates concentration, LOQ or LOD is above the established project action limit
Italic	Italicized result indicates analyte reported to the limit of detection
Bold	Bolded result indicates positively identified compound.
AK	Alaska Test Method
NA	Not analyzed.
B	Analyte detected in an associated blank.
D	Sample dilution required for analysis; reported values reflect the dilution.
F	Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the LOQ, but greater than the LOD.
U	Analyte is not detected at the reported LOQ or LOD
LOD	Limit of detection
LOQ	Limit of quantitation
SW	U.S. Environmental Protection Agency Solid Waste Method

NORTH

SCALE IN FEET

0 200

FIGURE 6-1 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

LSS – KEY MAP

JOB No. 1008300.83010401 TIME: 18-APR-2012 11:43 FILE: D:\CAD\Proj\AFCEE\Ft Richardson-Nike Site Summit _ 1008300\RI_Report\FINAL\FIG 6-1 - lower site.dgn

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SS17LSS	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**6.87 mg/Kg**
CrVI [3]	Not detected above action limit
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
EDB & DCA [3]	Not detected above action limit
TCE [3]	**22 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS15LSS	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	**951 mg/Kg**
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**7.05 mg/Kg**
CrVI [3]	Not detected above action limit
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
EDB & DCA [3]	Not detected above action limit
trans-1,3-Dichloropropene [3, 6]	**0.27 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS15LSS (DUPLICATE)	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	**973 mg/Kg**
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**6.68 mg/Kg**
CrVI [3]	Not detected above action limit
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
EDB & DCA [3]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS16LSS	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**7.8 mg/Kg**
Chromium, Total [3]	**25 mg/Kg**
CrVI [3]	Not detected above action limit
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
EDB & DCA [3]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS18LSS	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**7.81 mg/Kg**
Chromium, Total [3]	**29.5 mg/Kg**
CrVI [3]	Not detected above action limit
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
EDB & DCA [3]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS19LSS	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	**756 mg/Kg**
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**10.5 mg/Kg**
Chromium, Total [3]	**46.1 mg/Kg**
CrVI [3]	Not detected above action limit
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
EDB & DCA [3]	Not detected above action limit
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

BH01LSS	2-4' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**7.51 mg/Kg**
CrVI [3]	Not detected above action limit
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
EDB & DCA [3]	Not detected above action limit
Methylene chloride [3]	**30.7 ug/Kg**
TCE [3]	**111 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

BH01LSS	8-10' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**6.91 mg/Kg**
Chromium, Total [3]	**171 mg/Kg**
CrVI [3]	Not detected above action limit
Ni [3]	**143 mg/Kg**
All other RCRA metals, plus V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
EDB & DCA [3]	Not detected above action limit
Methylene chloride [3]	**35.4 ug/Kg**
TCE [3]	**151 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

LEGEND:

- SURFACE SOIL SAMPLE LOCATION
- BOREHOLE/SUBSURFACE SOIL
- APPROXIMATE LOCATION OF BURIED DRAIN LINE
- ' bgs — FEET BELOW GROUND SURFACE
- mg/Kg — MILLIGRAMS PER KILOGRAM
- ug/Kg — MICROGRAMS PER KILOGRAM
- **Bold/Red** — DETECTED ABOVE THE ACTION LIMIT

CrVI	HEXAVALENT CHROMIUM
DCA	1, 2 - DICHLOROETHANE
DRO	DIESEL RANGE ORGANICS
EDB	1, 2 - DIBROMOETHANE
GRO	GASOLINE RANGE ORGANICS
Ni	NICKEL
PCBs	POLYCHLORINATED BIPHENYLS
PHCs	PETROLEUM HYDROCARBONS
RCRA	RESOURCE CONSERVATION AND RECOVERY ACT
RRO	RESIDUAL RANGE ORGANICS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
TCE	TRICHLOROETHENE
UST	UNDERGROUND STORAGE TANK
V	VANADIUM
VOCs	VOLATILE ORGANIC COMPOUNDS

KEY:

[1] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Migration-to-Groundwater)

[2] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Ingestion)

[3] Reference: 18 AAC 75, Table B1 (Migration-to-Groundwater)

[4] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Direct Contact)

[5] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Outdoor Inhalation)

[6] Reference: U.S. EPA Risk Based Soil Screening Regional Screening Levels (Region 9)

[7] Reference: 18 AAC 75.345, Table C (Groundwater Cleanup Levels)

[8] Reference: U.S. EPA Total Carciogenic Risk Regional Screening Levels (Region 9)

[9] Reference: U.S. EPA Total Non-Carciogenic Risk Regional Screening Levels (Region 9)

[10] Reference: No appropriate criteria could be located.

NORTH

SCALE IN FEET

0 50

FIGURE 6-2 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

LSS – VEHICLE MAINTENANCE SHOP SOIL SAMPLE LOCATIONS AND ANALYTICAL RESULTS

JOB No. 1008300.83010401 TIME: 18-APR-2012 11:45 FILE: D:\CAD\Proj\AFCEE\R Richardson-Nike Site Summit _ 1008300\RI_Report\FINAL\FIG 6-2- lower site - vehicle mnnance bldg.dgn

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BH02LSS (MW02LSS - see Figure 6-4)	2-4' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	**4,170 mg/Kg**
RRO [2]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

BH02LSS	8-10' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	**1,060 mg/Kg**
RRO [2]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS04LSS	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

TP10LSS	2.3' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**7.68 mg/Kg**
Chromium, Total [3]	**25.5 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
TCE [3]	**171 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

BH06LSS (MW06LSS - see Figure 6-4)	2-4' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
VOCs	
TCE [3]	**234 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

BH06LSS	4-6' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
VOCs	
TCE [3]	**613 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

TP09LSS	2.3' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**8.25 mg/Kg**
Chromium, Total [3]	**26.8 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
TCE [3]	**319 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

LEGEND:

- BOREHOLE/ MONITORING WELL
- SURFACE SOIL SAMPLE LOCATION
- TEST PIT
- APPROXIMATE LOCATION OF BURIED DRAIN LINE
- [1] bgs — FEET BELOW GROUND SURFACE
- mg/Kg — MILLIGRAMS PER KILOGRAM
- ug/Kg — MICROGRAMS PER KILOGRAM
- **Bold/Red** — DETECTED ABOVE THE ACTION LIMIT

DRO	DIESEL RANGE ORGANICS
GRO	GASOLINE RANGE ORGANICS
Ni	NICKEL
PCBs	POLYCHLORINATED BIPHENYLS
PHCs	PETROLEUM HYDROCARBONS
RCRA	RESOURCE CONSERVATION AND RECOVERY ACT
RRO	RESIDUAL RANGE ORGANICS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
TCE	TRICHLOROETHENE
UST	UNDERGROUND STORAGE TANK
V	VANADIUM
VOCs	VOLATILE ORGANIC COMPOUNDS

BH04LSS (MW04LSS - see Figure 6-4)	10-12' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

BH04LSS	14-16' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
VOCs	
TCE [3]	**110 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

BH05LSS (MW05LSS - see Figure 6-4)	12-14' bgs, 14-16' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

BH03LSS (MW03LSS - see Figure 6-4)	8-10' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
VOCs	
TCE [3]	**36.2 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

BH03LSS	12-14' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	**1,720 mg/Kg**
RRO [2]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS05LSS	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
VOCs	
Methylene chloride [3]	**37.2 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

KEY:

[1] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Migration-to-Groundwater)

[2] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Ingestion)

[3] Reference: 18 AAC 75, Table B1 (Migration-to-Groundwater)

[4] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Direct Contact)

[5] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Outdoor Inhalation)

[6] Reference: U.S. EPA Risk Based Soil Screening Regional Screening Levels (Region 9)

[7] Reference: 18 AAC 75.345, Table C (Groundwater Cleanup Levels)

[8] Reference: U.S. EPA Total Carcigogenic Risk Regional Screening Levels (Region 9)

[9] Reference: U.S. EPA Total Non-Carcigogenic Risk Regional Screening Levels (Region 9)

[10] Reference: No appropriate criteria could be located.

NORTH

SCALE IN FEET

0 50

FIGURE 6-3 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

LSS – LAUNCH CONTROL BUILDING (WEST) SOIL SAMPLE LOCATIONS AND ANALYTICAL RESULTS

JOB No. 1008300.83010401 TIME: 18-APR-2012 11:46 FILE: D:\CAD\Proj\AFCEE\R Richardson-Nike Site Summit_1008300\RI_Report\FINAL\FIG 6-3 - lower site - launch cntrl bldg.dgn

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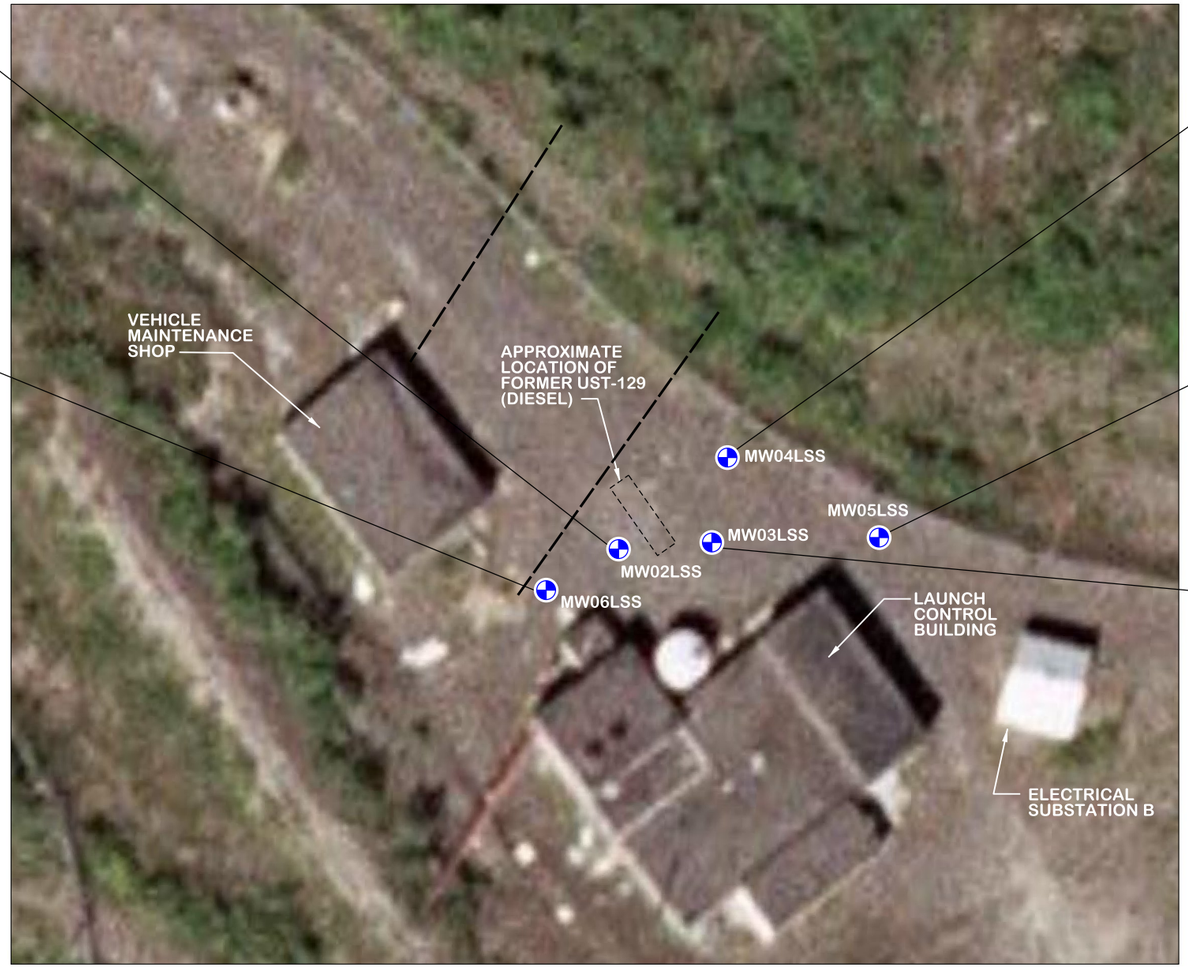
MW02LSS

PHCs	
GRO [7]	Not detected above action limit
DRO [7]	**1.72 mg/L**
RRO [7]	Not detected above action limit
Metals	
Arsenic, Total [7]	**15.8 ug/L**
Lead, Total [7]	**23.3 ug/L**
All other RCRA metals, plus Ni and V [7]	Not detected above action limit
VOCs [7, 8, 9]	Not detected above action limit
SVOCs [7, 8, 9]	Not detected above action limit

MW06LSS

PHCs	
GRO [7]	Not detected above action limit
DRO [7]	Not detected above action limit
RRO [7]	Not detected above action limit
Metals	
All RCRA metals, plus Ni and V [7]	Not detected above action limit
VOCs	
TCE [7]	**17.5 ug/L**
All other VOCs [7, 8, 9]	Not detected above action limit
SVOCs [7, 8, 9]	Not detected above action limit



MW04LSS

PHCs	
GRO [7]	Not detected above action limit
DRO [7]	Not detected above action limit
RRO [7]	Not detected above action limit
Metals	
Arsenic, Total [7]	**28.5 ug/L**
Lead, Total [7]	**25.4 ug/L**
All other RCRA metals, plus Ni and V [7]	Not detected above action limit
VOCs [7, 8, 9]	Not detected above action limit
SVOCs [7, 8, 9]	Not detected above action limit

MW05LSS

PHCs	
GRO [7]	Not detected above action limit
DRO [7]	Not detected above action limit
RRO [7]	Not detected above action limit
Metals	
Arsenic, Total [7]	**17.7 ug/L**
Lead, Total [7]	**25 ug/L**
All other RCRA metals, plus Ni and V [7]	Not detected above action limit
VOCs [7, 8, 9]	Not detected above action limit
SVOCs [7, 8, 9]	Not detected above action limit

MW03LSS

PHCs	
GRO [7]	Not detected above action limit
DRO [7]	**29.4 mg/L**
RRO [7]	Not detected above action limit
Metals	
Arsenic, Total [7]	**23.6 ug/L**
Lead, Total [7]	**31.7 ug/L**
All other RCRA metals, plus Ni and V [7]	Not detected above action limit
VOCs [7, 8, 9]	Not detected above action limit
SVOCs [7, 8, 9]	Not detected above action limit

MW03LSS (DUPLICATE)

PHCs	
GRO [7]	Not detected above action limit
DRO [7]	**27.9 mg/L**
RRO [7]	Not detected above action limit
Metals	
Arsenic, Total [7]	**32.2 ug/L**
Lead, Total [7]	**33.3 ug/L**
All other RCRA metals, plus Ni and V [7]	Not detected above action limit
VOCs [7, 8, 9]	Not detected above action limit
SVOCs [7, 8, 9]	Not detected above action limit

LEGEND:

- BOREHOLE/MONITORING WELL LOCATION
- APPROXIMATE LOCATION OF BURIED DRAIN LINE
- mg/L — MILLIGRAMS PER LITER
- ug/L — MICROGRAMS PER LITER
- **Bold/Red** — DETECTED ABOVE THE ACTION LIMIT

DRO	DIESEL RANGE ORGANICS
GRO	GASOLINE RANGE ORGANICS
Ni	NICKEL
PHCs	PETROLEUM HYDROCARBONS
RCRA	RESOURCE CONSERVATION AND RECOVERY ACT
RRO	RESIDUAL RANGE ORGANICS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
TCE	TRICHLOROETHENE
UST	UNDERGROUND STORAGE TANK
V	VANADIUM
VOCs	VOLATILE ORGANIC COMPOUNDS

NORTH

SCALE IN FEET

0 50

KEY:

[1] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Migration-to-Groundwater)

[2] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Ingestion)

[3] Reference: 18 AAC 75, Table B1 (Migration-to-Groundwater)

[4] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Direct Contact)

[5] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Outdoor Inhalation)

[6] Reference: U.S. EPA Risk Based Soil Screening Regional Screening Levels (Region 9)

[7] Reference: 18 AAC 75.345, Table C (Groundwater Cleanup Levels)

[8] Reference: U.S. EPA Total Carciogenic Risk Regional Screening Levels (Region 9)

[9] Reference: U.S. EPA Total Non-Carciogenic Risk Regional Screening Levels (Region 9)

[10] Reference: No appropriate criteria could be located.

FIGURE 6-4 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

LSS – LAUNCH CONTROL BUILDING (WEST) WATER SAMPLE LOCATIONS AND ANALYTICAL RESULTS

JOB No. 1008300.83010401 TIME: 18-APR-2012 11:47 FILE: D:\CAD\Proj\AFCEE\Ft Richardson-Nike Site Summit_ 1008300\RI_Report\FINAL\FIG 6-4 - lower site - launch cntrl bldg.dgn

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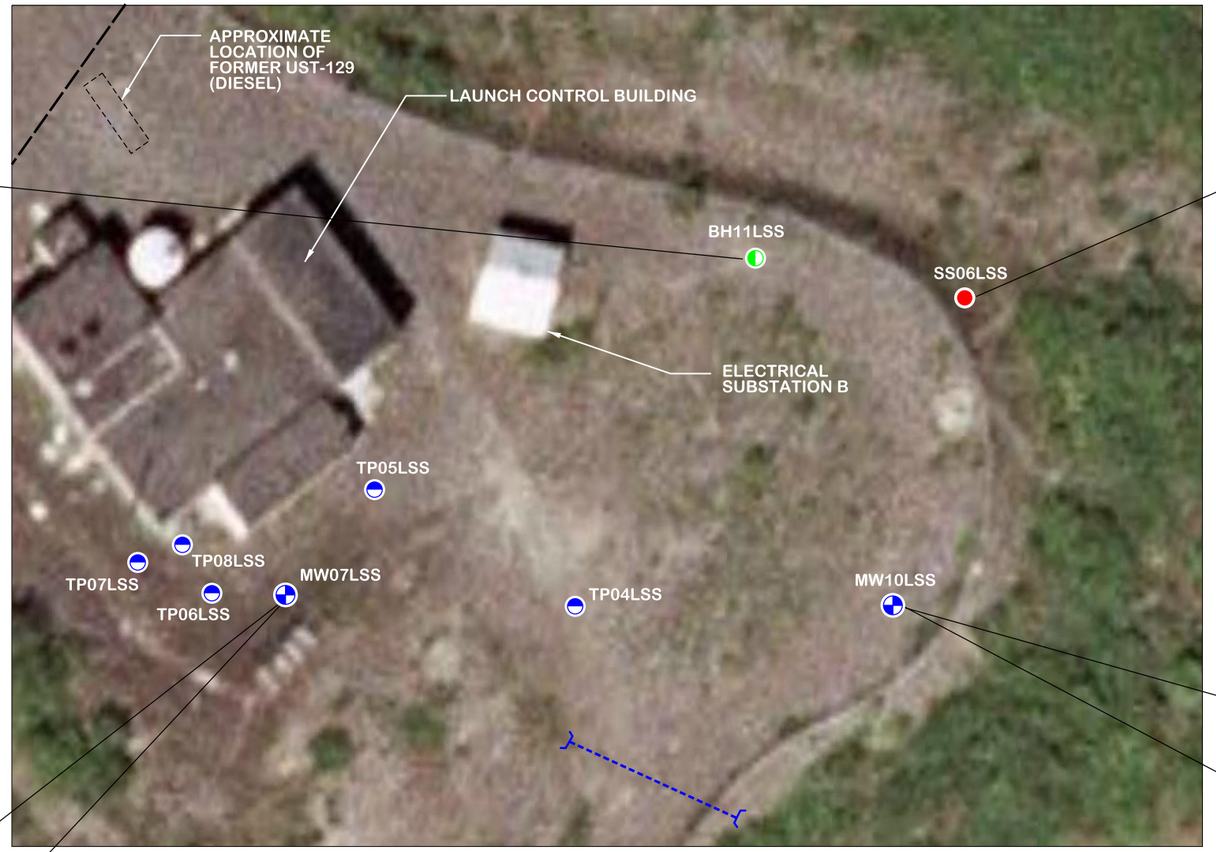

BH11LSS 6-8' bgs, 22-24' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	Not detected above action limit
RRO[2]	Not detected above action limit
PCBs[4]	Not detected above action limit
VOCs[3, 4, 5, 6]	Not detected above action limit
SVOCs[3, 4, 6]	Not detected above action limit

BH07LSS 2-4' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	**4,130 mg/Kg**
RRO[2]	Not detected above action limit
VOCs	
1,1,2,2-Tetrachloroethane[3]	**1,210 ug/Kg**
1,1,2-Trichloroethane[3]	**1,650 ug/Kg**
1,2,3-Trichlorobenzene[6]	**131 ug/Kg**
1,2,3-Trichloropropane[3]	**491 ug/Kg**
1,2-Dibromo-3-chloropropane[6]	**3,040 ug/Kg**
2-Hexanone[6]	**942 ug/Kg**
Benzene[3]	**43.1 ug/Kg**
TCE[3]	**90.3 ug/Kg**
All other VOCs[3, 4, 5, 6]	Not detected above action limit
SVOCs[3, 4, 6]	Not detected above action limit

BH07LSS 4-6' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	**1,860 mg/Kg**
RRO[2]	Not detected above action limit
VOCs	
Benzene[3]	**49.7 ug/Kg**
All other VOCs[3, 4, 5, 6]	Not detected above action limit
SVOCs[3, 4, 6]	Not detected above action limit

BH07LSS (DUPLICATE) 4-6' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	**1,960 mg/Kg**
RRO[2]	Not detected above action limit
VOCs	
Benzene[3]	**47.9 ug/Kg**
All other VOCs[3, 4, 5, 6]	Not detected above action limit
SVOCs[3, 4, 6]	Not detected above action limit

MW07LSS

PHCs	
GRO[7]	Not detected above action limit
DRO[7]	**9.28 mg/L**
RRO[7]	Not detected above action limit
Metals	
All RCRA metals, plus Ni and V[7]	Not detected above action limit
VOCs	
Benzene[7]	**5.39 ug/L**
All other VOCs[7, 8, 9]	Not detected above action limit
SVOCs[3, 4, 6]	Not detected above action limit

SS06LSS 0.5' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	**1,110 mg/Kg**
RRO[2]	Not detected above action limit
VOCs[3, 4, 5, 6]	Not detected above action limit
SVOCs[3, 4, 6]	Not detected above action limit

BH10LSS 6-8' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	Not detected above action limit
RRO[2]	Not detected above action limit
Metals	
Arsenic[3]	**7.25 mg/Kg**
All other RCRA metals, plus Ni and V[3, 4]	Not detected above action limit
PCBs[4]	Not detected above action limit
VOCs[3, 4, 5, 6]	Not detected above action limit
SVOCs[3, 4, 6]	Not detected above action limit

BH10LSS 12-14' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	Not detected above action limit
RRO[2]	Not detected above action limit
Metals	
Arsenic[3]	**8.57 mg/Kg**
All other RCRA metals, plus Ni and V[3, 4]	Not detected above action limit
PCBs[4]	Not detected above action limit
VOCs	
TCE[3]	**35.6 ug/Kg**
All other VOCs[3, 4, 5, 6]	Not detected above action limit
SVOCs[3, 4, 6]	Not detected above action limit

MW10LSS

PHCs	
GRO[7]	Not detected above action limit
DRO[7]	Not detected above action limit
RRO[7]	Not detected above action limit
Metals	
Arsenic, Total[7]	**28 ug/L**
Lead, Total[7]	**27.6 ug/L**
All other RCRA metals, plus Ni and V[7]	Not detected above action limit
VOCs[7, 8, 9]	Not detected above action limit
SVOCs[7, 8, 9]	Not detected above action limit

LEGEND:

	BOREHOLE/MONITORING WELL LOCATION
	SURFACE SOIL SAMPLE LOCATION
	BOREHOLE/ SUBSURFACE SOIL
	TEST PIT LOCATION
	APPROXIMATE LOCATION OF BURIED DRAIN LINE
	CULVERT
' bgs	FEEET BELOW GROUND SURFACE
mg/Kg	MILLIGRAMS PER KILOGRAM
ug/Kg	MICROGRAMS PER KILOGRAM
mg/L	MILLIGRAMS PER LITER
ug/L	MICROGRAMS PER LITER
Bold/Red	DETECTED ABOVE THE ACTION LIMIT

DRO	DIESEL RANGE ORGANICS
GRO	GASOLINE RANGE ORGANICS
Ni	NICKEL
PCBs	POLYCHLORINATED BIPHENYLS
PHCs	PETROLEUM HYDROCARBONS
RCRA	RESOURCE CONSERVATION AND RECOVERY ACT
RRO	RESIDUAL RANGE ORGANICS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
TCE	TRICHLOROETHENE
UST	UNDERGROUND STORAGE TANK
V	VANADIUM
VOCs	VOLATILE ORGANIC COMPOUNDS

NOTE:

TEST PIT RESULTS - SEE FIGURE 6-6

KEY:

[1]Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Migration-to-Groundwater)

[2]Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Ingestion)

[3]Reference: 18 AAC 75, Table B1 (Migration-to-Groundwater)

[4]Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Direct Contact)

[5]Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Outdoor Inhalation)

[6]Reference: U.S. EPA Risk Based Soil Screening Regional Screening Levels (Region 9)

[7]Reference: 18 AAC 75.345, Table C (Groundwater Cleanup Levels)

[8]Reference: U.S. EPA Total Carciogenic Risk Regional Screening Levels (Region 9)

[9]Reference: U.S. EPA Total Non-Carciogenic Risk Regional Screening Levels (Region 9)

[10]Reference: No appropriate criteria could be located.

NORTH

SCALE IN FEET

0 50

FIGURE 6-5 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT
LSS – LAUNCH CONTROL BUILDING (EAST)
SOIL AND WATER
SAMPLE LOCATIONS AND ANALYTICAL RESULTS

JOB No. 1008300.83010401 TIME: 18-APR-2012 11:49 FILE: D:\CAD\Proj\AFCEE\Ft Richardson-Nike Site Summit _ 1008300\RI_Report\FINAL\FIG 6-5 - lower site - launch cntrl bldg - east.dgn

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TP05LSS	1' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	**376 mg/Kg**
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**5.88 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs	
Benzo(a)pyrene [3, 4]	**1.21 mg/Kg**
All other SVOCs [3, 4, 6]	Not detected above action limit

TP05LSS	4' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**6.47 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

TP08LSS	1.9' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**6.34 mg/Kg**
Chromium, Total [3]	**31.3 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
TCE [3]	**38.1 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

TP08LSS (DUPLICATE)	1.9' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**5.87 mg/Kg**
Chromium, Total [3]	**30.2 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
TCE [3]	**49.3 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

TP07LSS	1.3' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**6.08 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
TCE [3]	**32.5 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs	
Benzo(a)pyrene [3, 4]	**2.52 mg/Kg**
All other SVOCs [3, 4, 6]	Not detected above action limit

TP04LSS	8' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**4.38 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
TCE [3]	**119 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

TP04LSS (DUPLICATE)	8' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
All RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
TCE [3]	**108 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

TP06LSS	2' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	**2,830 mg/Kg**
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**6.55 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs	
Benzo(a)anthracene [3]	**37 mg/Kg**
Benzo(a)pyrene [3, 4]	**35.7 mg/Kg**
Benzo(b)fluoranthene [3, 4]	**40.1 mg/Kg**
Dibenzo(a,h)anthracene [3, 4]	**6.12 mg/Kg**
Indeno(1,2,3-c,d)Pyrene [3, 4]	**16.1 mg/Kg**
All other SVOCs [3, 4, 6]	Not detected above action limit

TP06LSS (DUPLICATE)	2' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	**2,750 mg/Kg**
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**9.56 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs	
Benzo(a)anthracene [3]	**32 mg/Kg**
Benzo(a)pyrene [3, 4]	**30.4 mg/Kg**
Benzo(b)fluoranthene [3, 4]	**31.8 mg/Kg**
Dibenzo(a,h)anthracene [3, 4]	**4.14 mg/Kg**
Indeno(1,2,3-c,d)Pyrene [3, 4]	**14.7 mg/Kg**
All other SVOCs [3, 4, 6]	Not detected above action limit

LEGEND:

- BOREHOLE/MONITORING WELL LOCATION
- SURFACE SOIL SAMPLE LOCATION
- BOREHOLE/ SUBSURFACE SOIL
- TEST PIT
- APPROXIMATE LOCATION OF BURIED DRAIN LINE
- CULVERT
- ' bgs — FEET BELOW GROUND SURFACE
- mg/Kg — MILLIGRAMS PER KILOGRAM
- ug/Kg — MICROGRAMS PER KILOGRAM
- **Bold/Red** — DETECTED ABOVE THE ACTION LIMIT

DRO	DIESEL RANGE ORGANICS
GRO	GASOLINE RANGE ORGANICS
Ni	NICKEL
PCBs	POLYCHLORINATED BIPHENYLS
PHCs	PETROLEUM HYDROCARBONS
RCRA	RESOURCE CONSERVATION AND RECOVERY ACT
RRO	RESIDUAL RANGE ORGANICS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
TCE	TRICHLOROETHENE
UST	UNDERGROUND STORAGE TANK
V	VANADIUM
VOCs	VOLATILE ORGANIC COMPOUNDS

NOTE:

SOIL SAMPLE AND MONITORING WELL RESULTS - SEE FIGURE 6-5

KEY:

[1] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Migration-to-Groundwater)

[2] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Ingestion)

[3] Reference: 18 AAC 75, Table B1 (Migration-to-Groundwater)

[4] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Direct Contact)

[5] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Outdoor Inhalation)

[6] Reference: U.S. EPA Risk Based Soil Screening Regional Screening Levels (Region 9)

[7] Reference: 18 AAC 75.345, Table C (Groundwater Cleanup Levels)

[8] Reference: U.S. EPA Total Carciogenic Risk Regional Screening Levels (Region 9)

[9] Reference: U.S. EPA Total Non-Carciogenic Risk Regional Screening Levels (Region 9)

[10] Reference: No appropriate criteria could be located.

NORTH

SCALE IN FEET

0 50

FIGURE 6-6 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

LSS – LAUNCH CONTROL BUILDING (EAST) SOIL AND WATER SAMPLE LOCATIONS AND ANALYTICAL RESULTS (ADDITIONAL)

JOB No. 1008300.63010401 TIME: 18-APR-2012 11:50 FILE: D:\CAD\Proj\AFCEE\FI Richardson-Nike Site Summit_ 1008300\RI_Report\FINAL\FIG 6-6 - lower site - launch cntrl bldg - east.dgn

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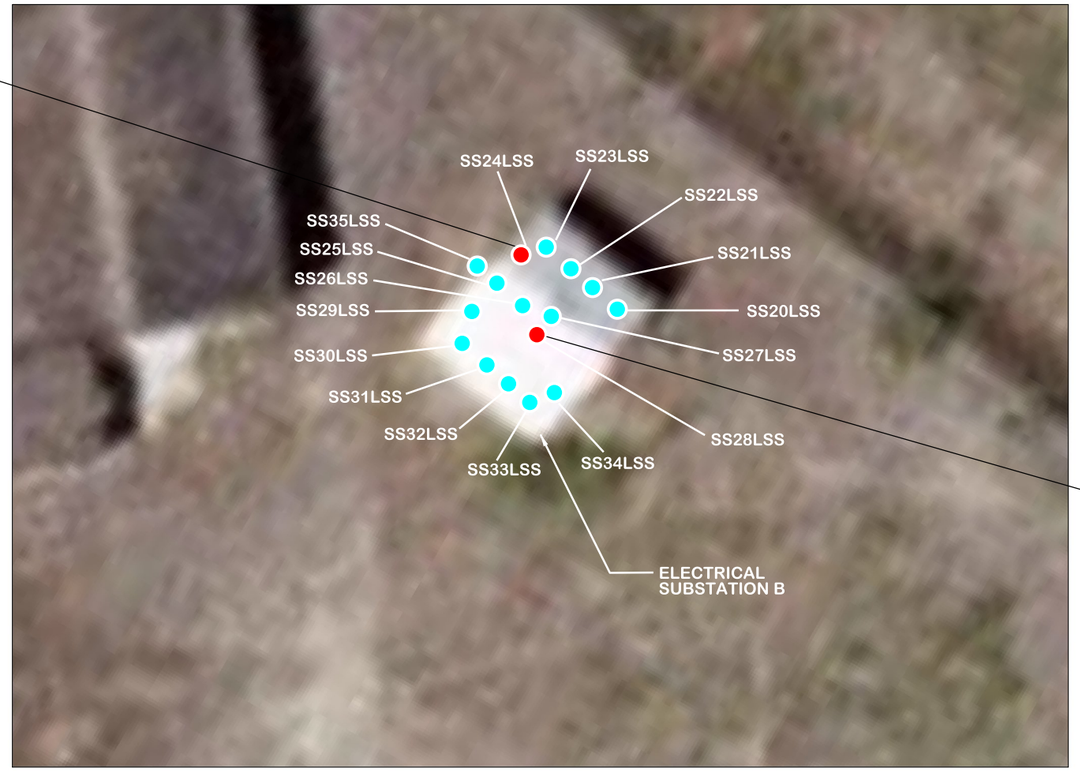
SS24LSS	0.5' bgs
PHCs	
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**19 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
TCE [3]	**116 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS24LSS (DUPLICATE)	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**5.96 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
Methylene chloride [3]	**32.9 ug/Kg**
TCE [3]	**87.9 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit



SS28LSS	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	**450 mg/Kg**
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**6.77 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
TCE [3]	**290 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

FIELD SCREENING RESULTS

Location	EnSys PCB reading	(1 ppm)
SS20LSS	0.21	= < 1 ppm
SS21LSS	0.23	= < 1 ppm
SS22LSS	0.21	= < 1 ppm
SS23LSS	0.28	= < 1 ppm
SS24LSS	0.17	= < 1 ppm
SS25LSS	0.19	= < 1 ppm
SS26LSS	0.20	= < 1 ppm
SS27LSS	0.21	= < 1 ppm
SS28LSS	0.12	= < 1 ppm
SS29LSS	0.18	= < 1 ppm
SS30LSS	0.18	= < 1 ppm
SS31LSS	0.18	= < 1 ppm
SS32LSS	0.28	= < 1 ppm
SS33LSS	0.20	= < 1 ppm
SS34LSS	0.18	= < 1 ppm
SS35LSS	0.19	= < 1 ppm

LEGEND:

●	SURFACE SOIL SAMPLE LOCATION
●	SURFACE SOIL FIELD SCREENING ONLY
' bgs	FEET BELOW GROUND SURFACE
ppm	PART PER MILLION
mg/Kg	MILLIGRAMS PER KILOGRAM
ug/Kg	MICROGRAMS PER KILOGRAM
Bold/Red	DETECTED ABOVE THE ACTION LIMIT
<	LESS THAN

DRO	DIESEL RANGE ORGANICS
GRO	GASOLINE RANGE ORGANICS
Ni	NICKEL
PCBs	POLYCHLORINATED BIPHENYLS
PHCs	PETROLEUM HYDROCARBONS
RCRA	RESOURCE CONSERVATION AND RECOVERY ACT
RRO	RESIDUAL RANGE ORGANICS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
TCE	TRICHLOROETHENE
V	VANADIUM
VOCs	VOLATILE ORGANIC COMPOUNDS

NORTH

SCALE IN FEET

0 25

KEY:

[1] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Migration-to-Groundwater)

[2] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Ingestion)

[3] Reference: 18 AAC 75, Table B1 (Migration-to-Groundwater)

[4] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Direct Contact)

[5] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Outdoor Inhalation)

[6] Reference: U.S. EPA Risk Based Soil Screening Regional Screening Levels (Region 9)

[7] Reference: 18 AAC 75.345, Table C (Groundwater Cleanup Levels)

[8] Reference: U.S. EPA Total Carciogenic Risk Regional Screening Levels (Region 9)

[9] Reference: U.S. EPA Total Non-Carciogenic Risk Regional Screening Levels (Region 9)

[10] Reference: No appropriate criteria could be located.

FIGURE 6-7 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

LSS – ELECTRICAL SUBSTATION B
SAMPLE LOCATIONS AND ANALYTICAL RESULTS

JOB No. 1008300.83010401 TIME: 18-APR-2012 11:52 FILE: D:\CAD\Proj\AFCEE\R Richardson-Nike Site Summit_1008300\RI_Report\FINAL\FIG 6-7 - lower site - el subst B.dgn

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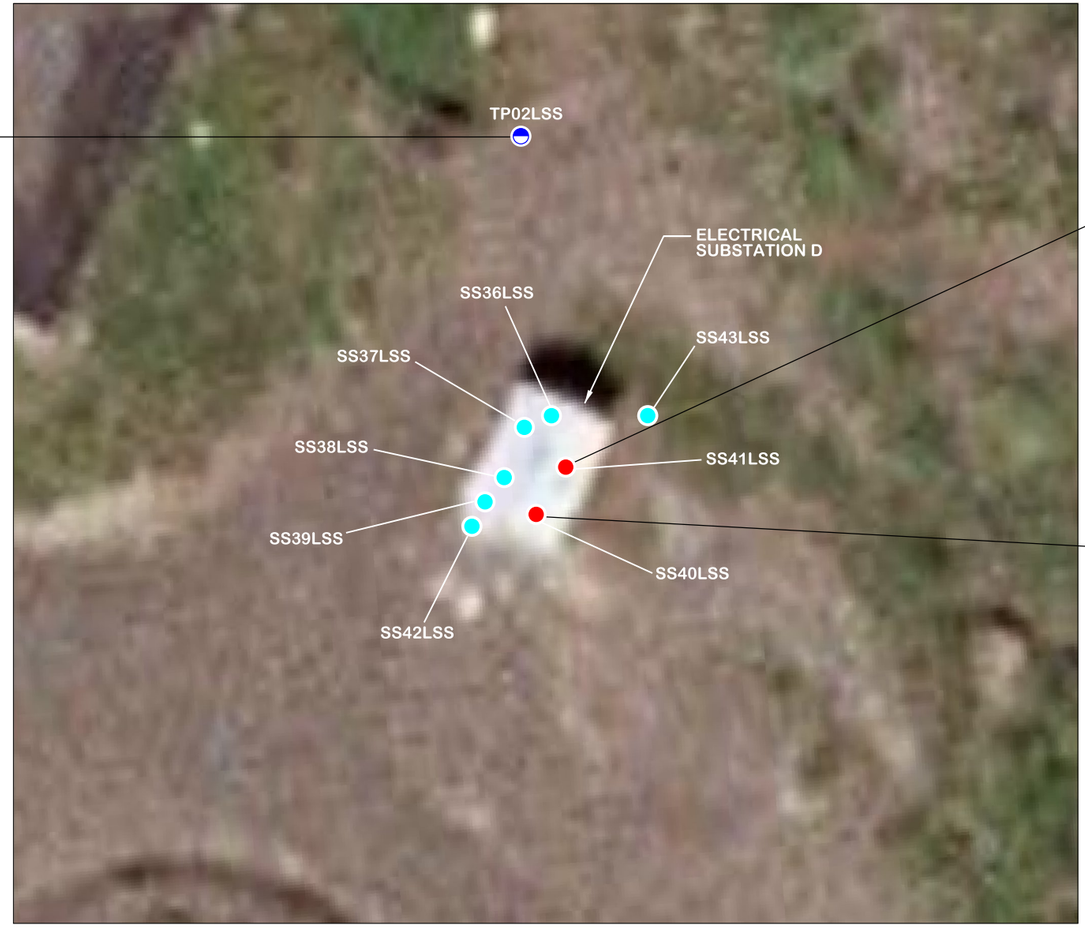
TP02LSS	6' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**7.21 mg/Kg**
Chromium, Total [3]	**27.2 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
TCE [3]	**210 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

TP02LSS	6' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**7.26 mg/Kg**
Chromium, Total [3]	**31 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
TCE [3]	**257 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit



SS40LSS	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**5.5 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
Methylene chloride [3]	**49.5 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS41LSS	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**5.95 mg/Kg**
Chromium, Total [3]	**39.3 mg/Kg**
CrVI [3]	Not detected above action limit
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

FIELD SCREENING RESULTS

Location	EnSys PCB reading	(1 ppm)
SS36LSS	0.24	= < 1 ppm
SS37LSS	0.12	= < 1 ppm
SS38LSS	0.18	= < 1 ppm
SS39LSS	0.13	= < 1 ppm
SS40LSS	0.05	= < 1 ppm
SS41LSS	0.03	= < 1 ppm
SS42LSS	0.25	= < 1 ppm
SS43LSS	0.31	= < 1 ppm

LEGEND:

●	SURFACE SOIL SAMPLE LOCATION
●	SURFACE SOIL FIELD SCREENING ONLY
◓	TEST PIT LOCATION
' bgs	FEET BELOW GROUND SURFACE
ppm	PART PER MILLION
mg/Kg	MILLIGRAMS PER KILOGRAM
ug/Kg	MICROGRAMS PER KILOGRAM
Bold/Red	DETECTED ABOVE THE ACTION LIMIT
<	LESS THAN

CrVI	HEXAVALENT CHROMIUM
DRO	DIESEL RANGE ORGANICS
GRO	GASOLINE RANGE ORGANICS
Ni	NICKEL
PCBs	POLYCHLORINATED BIPHENYLS
PHCs	PETROLEUM HYDROCARBONS
RCRA	RESOURCE CONSERVATION AND RECOVERY ACT
RRO	RESIDUAL RANGE ORGANICS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
TCE	TRICHLOROETHENE
V	VANADIUM
VOCs	VOLATILE ORGANIC COMPOUNDS

NORTH

SCALE IN FEET

0 25

KEY:

[1] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Migration-to-Groundwater)

[2] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Ingestion)

[3] Reference: 18 AAC 75, Table B1 (Migration-to-Groundwater)

[4] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Direct Contact)

[5] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Outdoor Inhalation)

[6] Reference: U.S. EPA Risk Based Soil Screening Regional Screening Levels (Region 9)

[7] Reference: 18 AAC 75.345, Table C (Groundwater Cleanup Levels)

[8] Reference: U.S. EPA Total Carciogenic Risk Regional Screening Levels (Region 9)

[9] Reference: U.S. EPA Total Non-Carciogenic Risk Regional Screening Levels (Region 9)

[10] Reference: No appropriate criteria could be located.

FIGURE 6-8 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

LSS – ELECTRICAL SUBSTATION D SAMPLE LOCATIONS AND ANALYTICAL RESULTS

JOB No. 1008300.83010401 TIME: 18-APR-2012 11:53 FILE: D:\CAD\Proj\AFCEE\Ft Richardson-Nike Site Summit_1008300\RI_Report\FINAL\FIG 6-8 - lower site - el subst D.dgn

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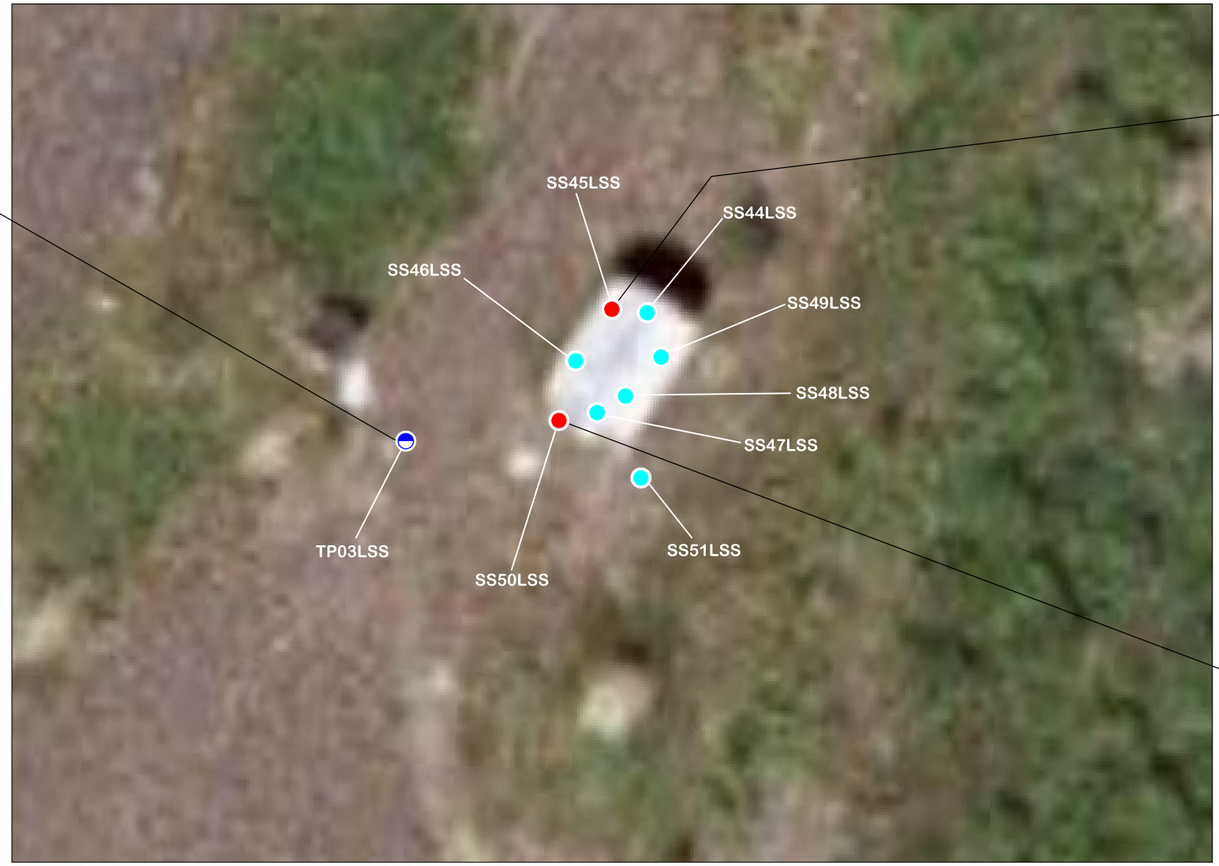
TP03LSS	2' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**7.47 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	Not detected above action limit
TCE [3]	**171 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

TP03LSS	6' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**6.68 mg/Kg**
Chromium, Total [3]	**30.4 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
TCE [3]	**43.3 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

TP03LSS (DUPLICATE)	6' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**6.74 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
TCE [3]	**42.5 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit



SS45LSS	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**6.88 mg/Kg**
Chromium, Total [3]	**32.5 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS50LSS	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**6.98 mg/Kg**
Chromium, Total [3]	**36.8 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
Methylene chloride [3]	**40.4 ug/Kg**
TCE [3]	**139 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

FIELD SCREENING RESULTS

Location	EnSys PCB reading	(1 ppm)
SS44LSS	0.28	= < 1 ppm
SS45LSS	0.24	= < 1 ppm
SS46LSS	0.31	= < 1 ppm
SS47LSS	0.30	= < 1 ppm
SS48LSS	0.25	= < 1 ppm
SS49LSS	0.26	= < 1 ppm
SS50LSS	0.13	= < 1 ppm
SS51LSS	0.25	= < 1 ppm

LEGEND:

●	SURFACE SOIL SAMPLE LOCATION
●	SURFACE SOIL FIELD SCREENING ONLY
◓	TEST PIT LOCATION
' bgs	FEET BELOW GROUND SURFACE
ppm	PART PER MILLION
mg/Kg	MILLIGRAMS PER KILOGRAM
ug/Kg	MICROGRAMS PER KILOGRAM
Bold/Red	DETECTED ABOVE THE ACTION LIMIT
<	LESS THAN

DRO	DIESEL RANGE ORGANICS
GRO	GASOLINE RANGE ORGANICS
Ni	NICKEL
PCBs	POLYCHLORINATED BIPHENYLS
PHCs	PETROLEUM HYDROCARBONS
RCRA	RESOURCE CONSERVATION AND RECOVERY ACT
RRO	RESIDUAL RANGE ORGANICS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
TCE	TRICHLOROETHENE
V	VANADIUM
VOCs	VOLATILE ORGANIC COMPOUNDS

NORTH

SCALE IN FEET

0 25

KEY:

[1] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Migration-to-Groundwater)

[2] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Ingestion)

[3] Reference: 18 AAC 75, Table B1 (Migration-to-Groundwater)

[4] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Direct Contact)

[5] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Outdoor Inhalation)

[6] Reference: U.S. EPA Risk Based Soil Screening Regional Screening Levels (Region 9)

[7] Reference: 18 AAC 75.345, Table C (Groundwater Cleanup Levels)

[8] Reference: U.S. EPA Total Carcinogenic Risk Regional Screening Levels (Region 9)

[9] Reference: U.S. EPA Total Non-Carcinogenic Risk Regional Screening Levels (Region 9)

[10] Reference: No appropriate criteria could be located.

FIGURE 6-9 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

LSS – ELECTRICAL SUBSTATION D2
SAMPLE LOCATIONS AND ANALYTICAL RESULTS

JOB No. 1008300.83010401 TIME: 18-APR-2012 11:55 FILE: D:\CAD\Proj\AFCEE\FI Richardson-Nike Site Summit_ 1008300\RI_Report\FINAL\FIG 6-9 - lower site - el subst D2.dgn

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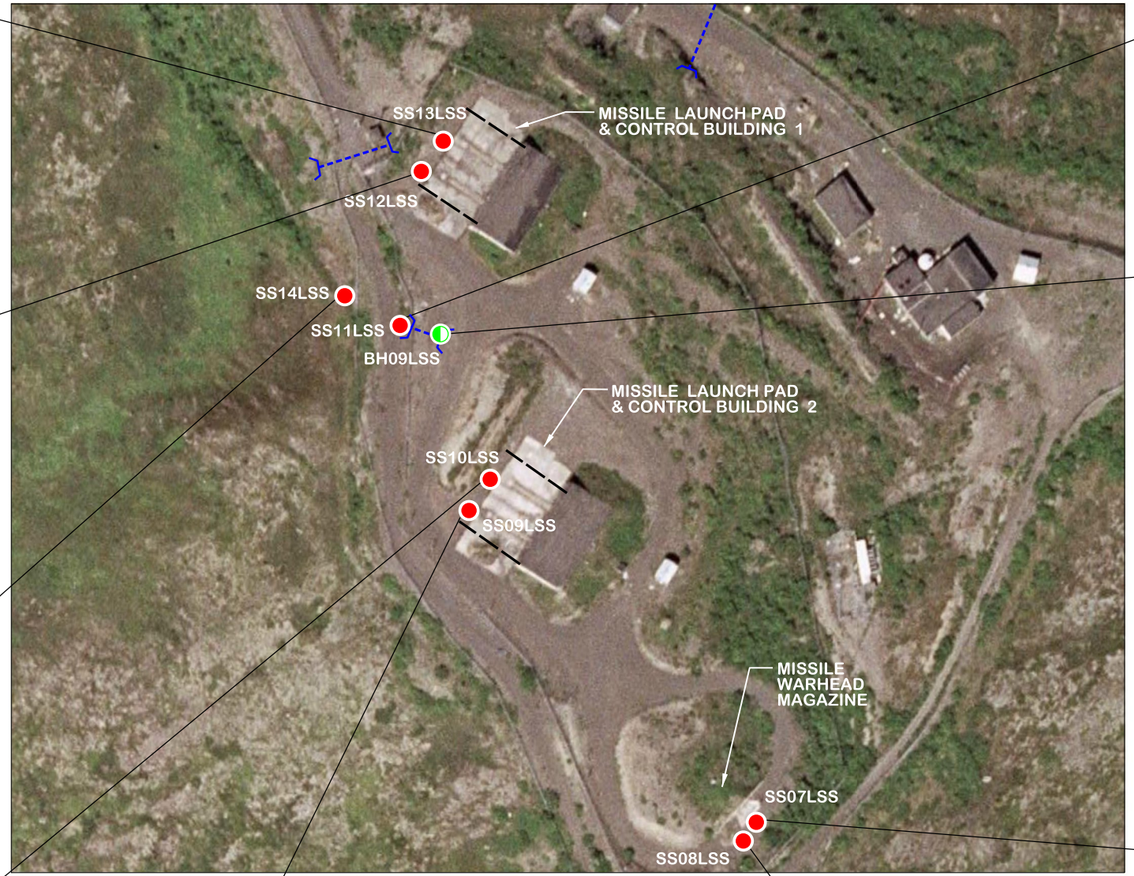
SS13LSS	0.5' bgs
PHCs	
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**7.68 mg/Kg**
Chromium, Total [3]	**44.7 mg/Kg**
CrVI [3]	Not detected above action limit
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs	
Benzo(a)pyrene [3, 4]	**1.44 mg/Kg**
All other SVOCs [3, 4, 6]	Not detected above action limit
Perchlorates [3]	Not detected above action limit

SS12LSS	0.5' bgs
PHCs	
DRO [1]	**4,210 mg/Kg**
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**8.19 mg/Kg**
Chromium, Total [3]	**34.8 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs	
Benzo(a)pyrene [3, 4]	**0.631 mg/Kg**
All other SVOCs [3, 4, 6]	Not detected above action limit
Perchlorates [3]	Not detected above action limit

SS14LSS	0.5' bgs
PHCs	
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**7.72 mg/Kg**
Chromium, Total [3]	**26.8 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit
Perchlorates [3]	Not detected above action limit

SS10LSS	0.5' bgs
PHCs	
DRO [1]	**4,350 mg/Kg**
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**8.98 mg/Kg**
Chromium, Total [3]	**27 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs	
Benzo(a)pyrene [3, 4]	**2.55 mg/Kg**
All other SVOCs [3, 4, 6]	Not detected above action limit
Perchlorates [3]	Not detected above action limit



SS09LSS	0.5' bgs
PHCs	
DRO [1]	**7,360 mg/Kg**
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**7.57 mg/Kg**
Chromium, Total [3]	**29.6 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs	
Benzo(a)pyrene [3, 4]	**0.924 mg/Kg**
All other SVOCs [3, 4, 6]	Not detected above action limit
Perchlorates [3]	Not detected above action limit

SS08LSS	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**5.86 mg/Kg**
Chromium, Total [3]	**25.3 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS11LSS	0.5' bgs
PHCs	
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**5.91 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit
Perchlorates [3]	Not detected above action limit

BH09LSS	1' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**4.88 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit
Perchlorates [3]	Not detected above action limit

BH09LSS	2' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**4.14 mg/Kg**
Chromium, Total [3]	**29.3 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
Methylene chloride [3]	**27.9 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit
Perchlorates [3]	Not detected above action limit

SS07LSS	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**7.66 mg/Kg**
Chromium, Total [3]	**31.6 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS07LSS (DUPLICATE)	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**6.47 mg/Kg**
Chromium, Total [3]	**26.6 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
Methylene chloride [3]	**38.4 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

LEGEND:

- SURFACE SOIL SAMPLE LOCATION
- BOREHOLE/ SUBSURFACE SOIL SAMPLE
- BURIED DRAIN LINE
- CULVERT
- ' bgs — FEET BELOW GROUND SURFACE

mg/Kg	MILLIGRAMS PER KILOGRAM
ug/Kg	MICROGRAMS PER KILOGRAM
CrVI	HEXAVALENT CHROMIUM
DRO	DIESEL RANGE ORGANICS
GRO	GASOLINE RANGE ORGANICS
Ni	NICKEL
PCBs	POLYCHLORINATED BIPHENYLS
PHCs	PETROLEUM HYDROCARBONS
RCRA	RESOURCE CONSERVATION AND RECOVERY ACT
RRO	RESIDUAL RANGE ORGANICS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
V	VANADIUM
VOCs	VOLATILE ORGANIC COMPOUNDS
Bold/Red	DETECTED ABOVE THE ACTION LIMIT

KEY:

[1] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Migration-to-Groundwater)

[2] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Ingestion)

[3] Reference: 18 AAC 75, Table B1 (Migration-to-Groundwater)

[4] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Direct Contact)

[5] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Outdoor Inhalation)

[6] Reference: U.S. EPA Risk Based Soil Screening Regional Screening Levels (Region 9)

[7] Reference: 18 AAC 75.345, Table C (Groundwater Cleanup Levels)

[8] Reference: U.S. EPA Total Carciogenic Risk Regional Screening Levels (Region 9)

[9] Reference: U.S. EPA Total Non-Carciogenic Risk Regional Screening Levels (Region 9)

[10] Reference: No appropriate criteria could be located.

NORTH

SCALE IN FEET

0 200

FIGURE 6-10 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA

NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

LSS – MISSILE LAUNCH PAD AND CONTROL BUILDINGS 1 & 2, AND MISSILE WARHEAD MAGAZINE SAMPLE LOCATIONS AND ANALYTICAL RESULTS

FILE: D:\CAD\Proj\AFCEE\IR Richardson-Nike Site Summit_ 1008300\RI_Report\FINAL\FIG 6-10 - lower site - missile launch pad.dgn

TIME: 18-APR-2012 11:56

JOB No. 1008300.83010401

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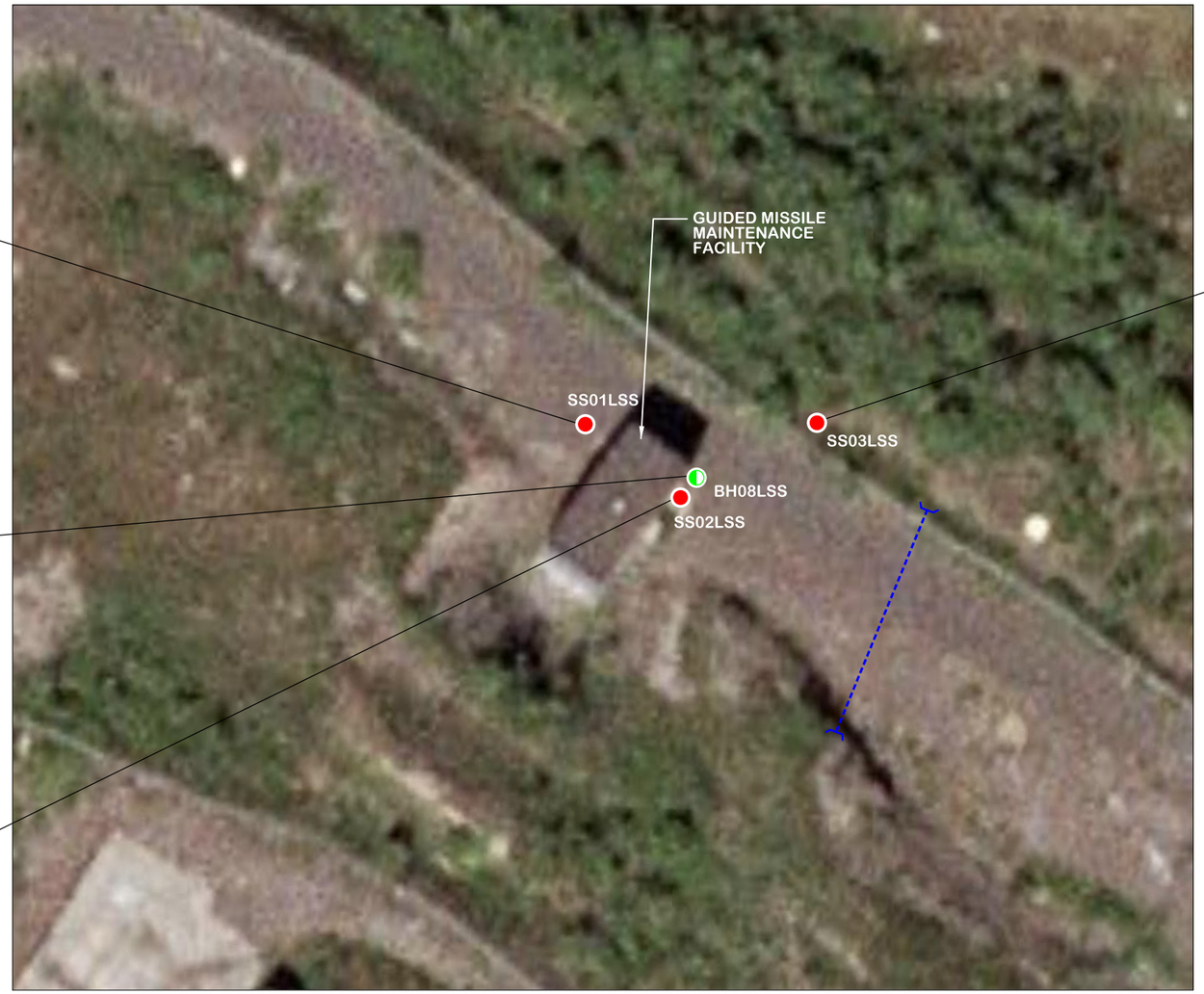
SS01LSS	0.5' bgs
PHCs	
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**5.13 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

BH08LSS	2-4' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**5.61 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

BH08LSS	4-6' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Chromium, Total [3]	**25.6 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS02LSS	0.5' bgs
PHCs	
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**7.55 mg/Kg**
Chromium, Total [3]	**28.6 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
Methylene chloride [3]	**28.8 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit



SS03LSS	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**6.74 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs	
Benzo(a)pyrene [3, 4]	**0.518 mg/Kg**
All other SVOCs [3, 4, 6]	Not detected above action limit

LEGEND:

- SURFACE SOIL SAMPLE LOCATION
- BOREHOLE/SUBSURFACE SOIL
- CULVERT
- ' bgs — FEET BELOW GROUND SURFACE
- mg/Kg — MILLIGRAMS PER KILOGRAM
- ug/Kg — MICROGRAMS PER KILOGRAM
- **Bold/Red** — DETECTED ABOVE THE ACTION LIMIT

DRO	DIESEL RANGE ORGANICS
GRO	GASOLINE RANGE ORGANICS
Ni	NICKEL
PCBs	POLYCHLORINATED BIPHENYLS
PHCs	PETROLEUM HYDROCARBONS
RCRA	RESOURCE CONSERVATION AND RECOVERY ACT
RRO	RESIDUAL RANGE ORGANICS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
V	VANADIUM
VOCs	VOLATILE ORGANIC COMPOUNDS

NORTH

SCALE IN FEET

0 50

KEY:

[1] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Migration-to-Groundwater)

[2] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Ingestion)

[3] Reference: 18 AAC 75, Table B1 (Migration-to-Groundwater)

[4] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Direct Contact)

[5] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Outdoor Inhalation)

[6] Reference: U.S. EPA Risk Based Soil Screening Regional Screening Levels (Region 9)

[7] Reference: 18 AAC 75.345, Table C (Groundwater Cleanup Levels)

[8] Reference: U.S. EPA Total Carciogenic Risk Regional Screening Levels (Region 9)

[9] Reference: U.S. EPA Total Non-Carciogenic Risk Regional Screening Levels (Region 9)

[10] Reference: No appropriate criteria could be located.

FIGURE 6-11 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

LSS – GUIDED MISSILE MAINTENANCE FACILITY SAMPLE LOCATIONS AND ANALYTICAL RESULTS

JOB No. 1008300.83010401 TIME: 18-APR-2012 11:57 FILE: D:\CAD\Proj\AFCEE\Ft Richardson-Nike Site Summit _ 1008300\RI_Report\FINAL\FIG 6-11 - lower site - missile mntnance facility.dgn

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SS53LSS	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	**4,960 mg/Kg**
RRO [2]	**24,400 mg/Kg**
Metals	
Arsenic [3]	**9.49 mg/Kg**
Chromium, Total [3]	**65 mg/Kg**
CrVI [3]	Not detected above action limit
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
Methylene chloride [3]	**26.1 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS59LSS	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**7.07 mg/Kg**
Chromium, Total [3]	**31.2 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
Methylene chloride [3]	**65.9 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs	
Benzo(a)pyrene [3, 4]	**0.568 mg/Kg**
All other SVOCs [3, 4, 6]	Not detected above action limit

001TP01LSS	8' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**7.5 mg/Kg**
Chromium, Total [3]	**31.2 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
TCE [3]	**362 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

002TP01LSS	8' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**7.86 mg/Kg**
Chromium, Total [3]	**34.5 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
TCE [3]	**83.4 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

FIELD SCREENING RESULTS

Location	PetroFLAG (ppm)
SS52LSS	0
SS53LSS	1,000
SS54LSS	4
SS55LSS	51
SS56LSS	993
SS57LSS	211
SS58LSS	938
SS59LSS	1,416

LEGEND:

- SURFACE SOIL SAMPLE LOCATION
- SURFACE SOIL FIELD SCREENING ONLY
- TEST PIT LOCATION
- CULVERT
- APPROXIMATE LOCATION OF BURIED DRAIN LINE
- ' bgs — FEET BELOW GROUND SURFACE
- mg/Kg — MILLIGRAMS PER KILOGRAM
- ppm — PART PER MILLION
- ug/Kg — MICROGRAMS PER KILOGRAM
- **Bold/Red** — DETECTED ABOVE THE ACTION LIMIT

CrVI	HEXAVALENT CHROMIUM
DRO	DIESEL RANGE ORGANICS
GRO	GASOLINE RANGE ORGANICS
Ni	NICKEL
PCBs	POLYCHLORINATED BIPHENYLS
PHCs	PETROLEUM HYDROCARBONS
RCRA	RESOURCE CONSERVATION AND RECOVERY ACT
RRO	RESIDUAL RANGE ORGANICS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
TCE	TRICHLOROETHENE
V	VANADIUM
VOCs	VOLATILE ORGANIC COMPOUNDS

NORTH

SCALE IN FEET

0 50

KEY:

[1] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Migration-to-Groundwater)

[2] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Ingestion)

[3] Reference: 18 AAC 75, Table B1 (Migration-to-Groundwater)

[4] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Direct Contact)

[5] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Outdoor Inhalation)

[6] Reference: U.S. EPA Risk Based Soil Screening Regional Screening Levels (Region 9)

[7] Reference: 18 AAC 75.345, Table C (Groundwater Cleanup Levels)

[8] Reference: U.S. EPA Total Carciogenic Risk Regional Screening Levels (Region 9)

[9] Reference: U.S. EPA Total Non-Carciogenic Risk Regional Screening Levels (Region 9)

[10] Reference: No appropriate criteria could be located.

FIGURE 6-12 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

LSS – SEPTIC TANK
SAMPLE LOCATIONS AND ANALYTICAL RESULTS

JOB No. 1008300.83010401 TIME: 18-APR-2012 12:00 FILE: D:\CAD\Proj\AFCEE\Ft Richardson-Nike Site Summit_ 1008300\RI_Report\FINAL\FG 6-12 - lower site - septic tank.dgn

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SS60LSS	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	**1,230 mg/Kg**
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**5.33 mg/Kg**
Cadmium [3]	**15.6 mg/Kg**
Chromium, Total [3]	**45.8 mg/Kg**
Mercury [3]	**1,920 ug/Kg**
CrVI [3]	Not detected above action limit
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs	
Benzo(a)pyrene [3, 4]	**2.83 mg/Kg**
Benzo(b)fluoranthene [3, 4]	**6.15 mg/Kg**
Pentachlorophenol [3]	**46.5 mg/Kg**
All other SVOCs [3, 4, 6]	Not detected above action limit

SS61LSS	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**8.29 mg/Kg**
Chromium, Total [3]	**32.6 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
Methylene chloride [3]	**68.3 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

LEGEND:

- SURFACE SOIL SAMPLE LOCATION
- APPROXIMATE LOCATION OF SEPTIC LINE AND OUTFALL
- ' bgs — FEET BELOW GROUND SURFACE
- mg/Kg — MILLIGRAMS PER KILOGRAM
- ug/Kg — MICROGRAMS PER KILOGRAM
- **Bold/Red** — DETECTED ABOVE THE ACTION LIMIT

CrVI	HEXAVALENT CHROMIUM
DRO	DIESEL RANGE ORGANICS
GRO	GASOLINE RANGE ORGANICS
Ni	NICKEL
PCBs	POLYCHLORINATED BIPHENYLS
PHCs	PETROLEUM HYDROCARBONS
RCRA	RESOURCE CONSERVATION AND RECOVERY ACT
RRO	RESIDUAL RANGE ORGANICS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
V	VANADIUM
VOCs	VOLATILE ORGANIC COMPOUNDS

NORTH
SCALE IN FEET
0 150

KEY:

[1] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Migration-to-Groundwater)
[2] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Ingestion)
[3] Reference: 18 AAC 75, Table B1 (Migration-to-Groundwater)
[4] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Direct Contact)
[5] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Outdoor Inhalation)
[6] Reference: U.S. EPA Risk Based Soil Screening Regional Screening Levels (Region 9)
[7] Reference: 18 AAC 75.345, Table C (Groundwater Cleanup Levels)
[8] Reference: U.S. EPA Total Carciogenic Risk Regional Screening Levels (Region 9)
[9] Reference: U.S. EPA Total Non-Carciogenic Risk Regional Screening Levels (Region 9)
[10] Reference: No appropriate criteria could be located.

FIGURE 6-13 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

LSS – SEPTIC OUTFALL
SAMPLE LOCATIONS AND ANALYTICAL RESULTS

JOB No. 1008300.83010401 TIME: 18-APR-2012 12:01 FILE: D:\CAD\Proj\AFCEE\R Richardson-Nike Site Summit _ 1008300\RI_Report\FINAL\FG 6-13 - lower site septic outfall.dgn

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7.0 AREA A – FORMER OPPORTUNITY STRIKES RRS

Area A (Former Opportunity Strikes RRS) includes a gravel pad with three concrete foundation slabs, a suspected disposal area, and a former borrow area (Figure 1-2). The Opportunity Strikes RRS operated independently of the NSS and little is known about its historical use; however, as mentioned previously, it is being addressed collectively with the NSS due to proximity and for administrative ease.

7.1 AREA A PHYSICAL CHARACTERISTICS

The following sections describe the physical characteristics associated with Area A.

7.1.1 Geology

The primary surface material at Area A is composed of exposed, weathered and unweathered bedrock with gravelly fill material used to level small portions within Area A, as well as composing a roadway to the site. Angular gravels were encountered during excavation of test pits, both in the suspected disposal area and the former Opportunity Strikes RRS area. Fill material was likely obtained from local borrow areas, including the borrow area within Area A.

7.1.2 Hydrogeology

Test pits excavated at Area A encountered no free water or saturated soil. All test pits were met with refusal at bedrock. There appears to be no groundwater, or perched groundwater, at Area A. Subsurface bedrock trended more toward unweathered bedrock.

7.1.3 Hydrology

There are no surface water bodies at Area A. Drainage from the site is anticipated to occur directly down slope through dissipated overland flow. Several heavy rainfall events were noted during the RFI; however, no significant runoff was documented during the preliminary site visit in May 2010, nor during the RFI from August through October 2010. Rainwater that that does not dissipate through overland flow is anticipated to percolate through the gravel fill to the bedrock and follow the contours of the bedrock until it daylights down slope. However, given the heavily vegetated slopes surrounding Area A, any seeps would be obscured.

7.2 AREA A PREVIOUS INVESTIGATIONS

During the 1996 PA/SI, surface soil samples were collected and analyzed at various Area A locations (Dowl/Ogden, 1996a; 1996b). The sample locations and analytical results are described below.

7.2.1 Concrete Foundations

A total of four surface soil samples were collected in the vicinity of Concrete Foundation 3. Samples had detections of: DRO (2,730 to 17,400 mg/Kg), TPH (9,600 to 77,900 mg/Kg), arsenic (4.7 to 6.7 mg/Kg), chromium (27 to 35 mg/Kg), and lead (11 to 45 mg/Kg).

7.2.2 Suspected Disposal Area

A total of 11 surface soil samples were collected from the suspected disposal area (previously referred to as a former landfill). Samples had detections of metals including arsenic (3.9 to 7.3 mg/Kg), chromium (28 to 43 mg/Kg), and lead (5 to 191 mg/Kg).

7.2.3 Former Borrow Area

A total of four surface soil samples were collected from the Former Borrow Area and analyzed for VOCs. There were no detections other than suspected laboratory contaminants.

7.3 AREA A REMEDIAL FIELD INVESTIGATIONS

Previous investigation reports were reviewed as the initial step in planning RFI field data collection at Area A. Laboratory data was limited to the 1996 PA/SI. As-builts for Area A, and information on operation, demolition, and disposal of the Former Opportunity Strikes RRS could not be located.

Analytical detections from RFI samples collected at Area A are summarized in Appendix C Tables C-7.1 and C-7.2 for surface and subsurface soil, respectively. Complete analytical results are provided in a separate ADR (USAF, 2012a). Photographs of Area A taken during the RFI are provided in **Appendix D3**.

Locations of the RFI samples collected at Area A, along with the analytical results above project action limits, are provided in **Figures 7-1** through **7-4**. **Tables 7-1** and **7-2** summarize detected results above project action limits for surface and subsurface soil, respectively. Details of the RFI sampling results at Area A are provided by subarea in the following subsections. The subareas include:

- Suspected Disposal Area
- Former Opportunity Strikes RRS
- Former Borrow Area

7.3.1 Suspected Disposal Area

A magnetometer survey was conducted transecting the area shown on Figure 7-1. A handheld Schonstedt 92XTd magnetometer was used to conduct the survey. Transects were walked in a north south direction approximately 10 feet apart, with anomalous readings indicating potential buried metallic debris marked with survey paint.

Two test pits (TP01ARA and TP02ARA) were excavated in the vicinity of the two locations with the greatest magnetometer reading. TP01ARA was excavated to a total depth of 7 feet bgs, and TP02ARA to 5 feet bgs. No significant metallic debris, or other waste was discovered. The items that caused the magnetic disturbances were a ½-inch diameter grounding rod located within the upper foot of TP01ARA, and miscellaneous small metallic cans and wire within the upper foot of TP02ARA. Beyond these items, no evidence of buried debris or staining was noted in the two test pits.

Five surface soil samples (SS25ARA to SS28ARA, and SS25ARA duplicate) were collected from four sample locations on the down slope perimeter of the suspected disposal area. Samples were located just off of the disturbed gravel fill area as shown in Figure 7-1.

All samples collected from the suspected disposal area within Area A were analyzed for GRO, DRO, RRO, RCRA 8 metals, nickel, vanadium, hexavalent chromium, VOCs, SVOCs, and PCBs. The following subsections detail the individual results based on media and analyte type.

7.3.1.1 Surface Soil – Suspected Disposal Area

Arsenic was detected in all four surface soil sample locations ranging from 7.04 to 9.01 mg/Kg, above the project action limit of 3.9 mg/Kg, but below the 95% UPL of 12.5 mg/Kg for background arsenic concentrations at NSS.

Total chromium was detected in all four surface soil sample locations ranging from 42.7 to 57.4 mg/Kg, above the project action limit of 25 mg/Kg and the 95% UPL of 38.3 mg/Kg for background chromium concentrations at NSS. Subsequently, samples were recollected from all four locations and analyzed for hexavalent chromium, wherein all results were nondetect.

VOC detections above project action limits were limited to methylene chloride at three of the four sample locations, with concentrations ranging from 48.1 µg/Kg to 116 µg/Kg. These detections were determined to be attributed to laboratory contamination during data validation.

No other analytes, including PHCs, SVOCs and PCBs, were detected above project action limits in surface soil samples collected from the Suspected Disposal Area.

7.3.1.2 Subsurface Soil – Suspected Disposal Area

Arsenic was detected in all of the test pit samples, ranging from 6.14 to 7.16 mg/Kg, above the project action limit of 3.9 mg/Kg, but below the 95% UPL of 12.5 mg/Kg for background arsenic concentrations at NSS.

Total chromium was detected in all of the test pit samples ranging from 28.3 mg/Kg to 45.1 mg/Kg, above the project action limit of 25 mg/Kg. Both samples from TP02ARA were above the 95% UPL of 38.3 mg/Kg for background chromium concentrations at NSS at 38.7 and 45.1 mg/Kg.

No other analytes, including PHCs, VOCs, SVOCs and PCBs, were detected above project action limits in samples collected from Test Pits TP01ARA and TP02ARA at the Suspected Disposal Area.

7.3.2 Former Opportunity Strikes RRS

A total of 24 surface soil field screening samples (SS01ARA through SS24ARA) were collected for EnSys PCB and PetroFLAG analysis. Samples were collected from around the perimeter of Concrete Foundations 1, 2, and 3 (Figure 7-2). Nine confirmation surface soils were collected from the surface soil field screening locations in areas with the highest PetroFLAG readings (SS01ARA, SS02ARA, SS03ARA, SS12ARA, SS15ARA, SS16ARA, SS17ARA, SS19ARA, and SS23ARA). Additionally, one surface soil sample was collected from the stained area in the vicinity of the burn barrel (SS29ARA). PCBs greater than the EnSys detection limit of 1 ppm were detected in only one of the 24 field survey samples.

Nine test pits (TP03ARA through TP11ARA) were excavated in the vicinity of the Former Opportunity Strikes RRS (Figure 7-3). All nine of the test pits contained primarily angular gravel, which was likely sourced on-site from the immediate vicinity of the Former Borrow Area within Area A. With the exception of TP06ARA, all soil was returned to the excavation from which it was removed. Soil from TP06ARA was removed, as described below.

TP03ARA was excavated adjacent to the eastern edge of Concrete Foundation 2 in an area suspected of either containing a former tank (either aboveground or underground), or having a fuel supply through a pipeline, based on field observations of supply lines through the foundation. TP03ARA extended to 6 feet bgs, where it met with refusal at bedrock. Two samples (001TP03ARA and 002TP03ARA) were collected. The soil was noted to be stained and had a distinct diesel odor.

TP04ARA was excavated adjacent to the southern edge of Concrete Foundation 1 in an area suspected of being supplied by fuel through buried piping, which was observed protruding from the foundation. TP04ARA extended to 11 feet bgs, where it met with refusal at bedrock. Two samples were collected from TP04ARA, one at 5 feet bgs (001TP04ARA) in a layer of darkened soil, and one at 11 feet bgs (002TP04ARA).

TP05ARA was excavated adjacent to the northeast corner of Concrete Foundation 3 in an area suspected of having surface spills, based on surface staining and its proximity to a presumed former doorway based on the remaining concrete pad. TP05ARA extended to 6 feet bgs, where it met with refusal at bedrock. Two samples were collected (001TP05ARA and 001TP05RA). Beyond the surface staining, staining was not noted as the excavation proceeded to refusal.

TP06ARA was located at the former burn barrel location. The burn barrel consisted of a 55-gallon steel drum buried approximately halfway into the surrounding soil. A previous surface soil sample from the RFI (SS29ARA) was collected from the immediate vicinity of the stained area surrounding the burn barrel. This surface soil sample was found to be grossly contaminated with DRO at 19,200 mg/Kg and RRO at 161,000 mg/Kg. As part of the RFI,

the burn barrel was removed and disposed of off-site as an interim removal action. Subsequently, a test pit was excavated to 2 feet bgs and the soil was removed and disposed of as investigative-derived waste. Two primary (001TP06ARA and 002TP06ARA) and one duplicate (201TP06ARA) soil samples were collected from the bottom limits of the excavation.

TP07ARA through TP11ARA were located along a previously unidentified buried pipeline. During the RFI, a 2-inch pipe stickup was noted between Concrete Foundation 3 and the burn barrel. The 2-inch pipe had not previously been identified prior to development of the RI/FS Work Plan. Subsequently, during the Triad process, it was agreed that exploration would occur at the 2-inch pipe stickup. TP07ARA extended to 3.5 feet bgs, where a 90 degree junction and pipeline leading northwest and down slope was discovered. Test Pits TP08ARA through TP11ARA were subsequently located along the trajectory of the buried pipeline. One sample each was collected from each of Test Pits TP07ARA through TP11ARA. This differed from the previous machine-excavated test pits at NSS during the RFI, wherein a minimum of two primary samples were collected. The buried pipeline appears to have been connected to both Concrete Foundations 1 and 2 in the vicinity of Test Pits TP03ARA and TP04ARA.

All samples collected from the Former Opportunity Strike RRS at Area A were analyzed for GRO, DRO, RRO, RCRA 8 metals, nickel, vanadium, VOCs, SVOCs, and PCBs. Additionally, Samples SS02ARA, SS02ARA, and SS17ARA were analyzed for hexavalent chromium.

The following subsections detail the individual results based on media and analyte type.

7.3.2.1 Surface Soil – Former Opportunity Strikes RRS

PHCs were detected above project action limits in Samples SS02ARA, SS03ARA, SS17ARA, SS19ARA, SS23ARA, and SS29ARA. DRO ranged from to 370 to 19,200 mg/Kg. RRO was detected at SS19ARA and SS29ARA only, and ranged from 16,300 to 161,000 mg/Kg. GRO was not detected in any of the surface soil samples above project action limits.

Arsenic was detected above the project action limit of 3.9 mg/Kg in surface soil samples from all nine locations, ranging from 5.25 to 8.87 mg/Kg. All detections were below the 95% UPL of 12.5 mg/Kg for background arsenic concentrations at NSS.

Total chromium was detected above the project action limit of 25 mg/Kg in all nine sample locations, ranging from 29.3 to 46.7 mg/Kg. Samples SS02ARA (39.4 mg/Kg), SS03ARA (46.7 mg/Kg), SS16ARA (38.7 mg/Kg), SS17ARA (41.2 mg/Kg), and SS19ARA Duplicate (38.6 mg/Kg) were above the 95% UPL of 38.3 mg/Kg for background chromium concentrations at NSS.

VOCs were detected at three surface soil sample locations. Methylene chloride was detected in Samples SS12ARA and SS29ARA, at 125 and 50.4 mg/Kg, respectively. These detections

were determined to be attributable to laboratory contamination during data validation. TCE was detected in both the primary and duplicate samples from SS19ARA at 81.8 and 81.6 µg/Kg, respectively.

No other analytes, including SVOCs and PCBs, were detected above project action limits in any of the surface soil samples collected from the Former Opportunity Strikes RRS.

7.3.2.2 Subsurface Soil – Former Opportunity Strikes RRS

PHCs were detected above project action limits from Test Pits TP03ARA (Concrete Foundation 2), TP06ARA (Former Burn Barrel), TP07ARA, TP08ARA, and TP10ARA (buried 2-inch fuel pipeline). DRO ranged from to 2,120 to 28,400 mg/Kg. RRO was detected above project action limits in only Test Pits TP06ARA and TP10ARA at 52,900 and 18,900 mg/Kg, respectively. GRO was not detected in any of the subsurface soil samples above project action limits.

Arsenic was detected above the project action limit of 3.9 mg/Kg in subsurface soil samples from all nine test pit locations, ranging from 5.4 to 11.5 mg/Kg. These are all below the 95% UPL of 12.5 mg/Kg for background arsenic concentrations at NSS.

Total chromium was detected above the project action limit of 25 mg/Kg in all nine test pit locations, ranging from 25.2 to 44 mg/Kg. Sample 001TP06ARA (44 mg/Kg) was above the 95% UPL of 38.3 mg/Kg for background chromium concentrations at NSS. However, chromium was detected at 33.9 mg/Kg in duplicate Sample 201TP06ARA.

VOCs were detected in four test pits. Methylene chloride was detected in Test Pits TP04ARA, TP05ARA, and TP10ARA, ranging from 26.8 to 52.5 µg/Kg. These detections were determined to be attributable to laboratory contamination during data validation. TCE was detected above the project action limit of 20 µg/Kg in three test pits (TP04ARA, TP05ARA, and TP11ARA), ranging from 22.3 to 86.6 µg/Kg.

No other analytes, including SVOCs and PCB, were detected above project action limits in subsurface soil samples collected from test pits at the Former Opportunity Strikes RRS.

7.3.3 Former Borrow Area

The Former Borrow Area (Figure 7-4) is located towards the northeast of Area A, north of the access road to the Former Opportunity Strikes RRS, and opposite the Suspected Disposal Area (Figure 1-2). A walkthrough of the Former Borrow Area was performed during the RFI and there were no visible signs of staining or suspected areas of contamination observed. No samples were collected from this area during the RFI.

7.4 AREA A DISCUSSION AND CONCLUSIONS

One of the three Area A subareas is not likely to require further action (Former Borrow Area). COPCs detected above project action limits at the other two Area A subareas are discussed

below – excluding methylene chloride detections that were determined to be attributable to laboratory contamination, and metals that are above project action limits but below their respective 95% UPL for background at NSS. Specific recommendations on future potential actions will be made in the FS.

Suspected Disposal Area – Total chromium was detected in all four surface soil sample locations along the southern, downslope perimeter of the suspected disposal area. Chromium detections ranged from 42.7 to 57.4 mg/Kg; however, all four sample locations were nondetect for hexavalent chromium. No sources of chromium contamination beyond naturally occurring levels were observed.

Former Opportunity Strikes RRS – PHC (DRO and RRO) contamination was found in both surface and subsurface soils. Surface soil contamination appears to be linked with surface spills in the vicinity of former pipeline delivery points (SS02ARA and SS03ARA), and surrounding Concrete Foundation 3 (SS17ARA, SS19ARA, SS23ARA). The surface contamination at the former burn barrel was removed during an Interim Removal Action as part of this RFI; however, subsurface impacted soils remain (which by default are now surface soils).

Subsurface soil contamination appears to be linked to the buried 2-inch pipeline and its joints (TP07ARA, TP08ARA, and TP10ARA) and the presumed pipeline delivery point (TP03ARA), as well as the former Burn Barrel that was removed under the Interim Removal Action. DRO ranged from to 2,120 to 28,400 mg/Kg and RRO ranged from 18,900 to 52,900 mg/Kg. Petroleum-impacted soils remain at these locations.

TCE was detected in two surface soil samples (SS19ARA and its duplicate) at 81.8 and 81.6 µg/Kg and three subsurface soil samples – ranging from 22.3 to 86.6 µg/Kg. These detections are consistent with in their proximity to surficial staining located along the northeast edge of Concrete Foundation 3. Presumably, TCE was released at the surface outside the presumed doorway. The presence of petroleum contamination and TCE at the surface, and TCE but no petroleum contamination in the subsurface, leads to the conclusion that the source was linked to surficial spills and that there was not a subsurface source.

Total chromium exceeded the 95% UPL of 38.3 mg/Kg at seven locations, six surface soil samples (SS01ARA, SS02ARA, SS03ARA, SS16ARA, SS17ARA, and SS19ARA) and one subsurface soil sample from TP06ARA – ranging from 38.6 to 46.7 mg/Kg. These chromium detections are likely associated with the collocated petroleum contamination found in these locations.

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Table 7-1 Area A - Surface Soil Samples, Analytical Detections Above Project Action Limits

Location Identification		SS01ARA		SS02ARA		SS03ARA		SS12ARA		SS15ARA		SS16ARA	
Field Sample Identification		10NSS001SS01ARA		10NSS001SS02ARA		10NSS001SS03ARA		10NSS001SS12ARA		10NSS001SS15ARA		10NSS001SS16ARA	
Date Collected		8/27/2010		8/27/2010		8/27/2010		8/27/2010		8/27/2010		8/27/2010	
Depth (ft)		0.5		0.5		0.5		0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**												
Total Petroleum Hydrocarbons (mg/kg)													
Diesel Range Organics (DRO)/AK102	250	**58.5**	F	**370**	D	**2220**	D	**25.9**		**29.6**		**206**	D
Residual Range Organics (RRO)/AK103	10000	**501**	D,B	**814**	D	**163**	B	**234**	B	**17**	F	**655**	D
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	**6.57**		**7.12**		**6.11**		**8.87**		**5.25**		**8.2**	
Chromium	25	**36.9**		**39.4**		**46.7**		**34.4**		**29.3**		**38.7**	
Volatile Organic Compounds (SW8260B) (µg/kg)													
Methylene chloride	16	*35.5*	U	*52.6*	U	*55.8*	U	**125**	F,UB	*42.5*	U	*54.5*	U
Trichloroethene (TCE)	20	*8.94*	U	*13.2*	U	*14*	U	*14.9*	U	*10.7*	U	*13.7*	U

Table 7-1 Area A - Surface Soil Samples, Analytical Detections Above Project Action Limits

Location Identification		SS17ARA		SS19ARA		SS19ARA Dup		SS23ARA		SS25ARA		SS26ARA	
Field Sample Identification		10NSS001SS17ARA		10NSS001SS19ARA		10NSS201SS19ARA		10NSS001SS23ARA		10NSS001SS25ARA		10NSS001SS26ARA	
Date Collected		8/27/2010		8/27/2010		8/27/2010		8/27/2010		8/27/2010		8/27/2010	
Depth (ft)		0.5		0.5		0.5		0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**												
Total Petroleum Hydrocarbons (mg/kg)													
Diesel Range Organics (DRO)/AK102	250	**1190**	D	**4290**	D	**3400**	D	**4240**	D	**29.8**		**41.3**	F
Residual Range Organics (RRO)/AK103	10000	**301**		**20600**	D	**16300**	D	**3560**	D	**245**		**288**	D
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	**8.58**		**8.47**		**8.37**		**7.46**		**9.01**		**7.54**	
Chromium	25	**41.2**		**34.8**		**38.6**		**37.6**		**51.4**		**42.7**	
Volatile Organic Compounds (SW8260B) (µg/kg)													
Methylene chloride	16	*45*	U	*55.1*	U	*56.2*	U	*59.2*	U	**90.7**	F,UB	**48.1**	F,UB
Trichloroethene (TCE)	20	*11.3*	U	**81.8**		**81.6**		*14.9*	U	*9.18*	U	*11*	U

Table 7-1 Area A - Surface Soil Samples, Analytical Detections Above Project Action Limits

	Location Identification	SS27ARA		SS28ARA		SS29ARA	
	Field Sample Identification	10NSS001SS27ARA		10NSS001SS28ARA		10NSS001SS29ARA	
	Date Collected	8/27/2010		8/27/2010		9/2/2010	
	Depth (ft)	0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**						
Total Petroleum Hydrocarbons (mg/kg)							
Diesel Range Organics (DRO)/AK102	250	*40.6*	U	**22.3**	F	**19200**	D
Residual Range Organics (RRO)/AK103	10000	**330**	D	**182**		**161000**	D
Metals (SW6020A) (mg/kg)							
Arsenic	3.9	**8.88**		**7.04**		**8.06**	
Chromium	25	**57.4**		**43.3**		**37.7**	
Volatile Organic Compounds (SW8260B) (µg/kg)							
Methylene chloride	16	**116**	F,UB	*30.5*	U	**50.4**	UK,F
Trichloroethene (TCE)	20	*11.4*	U	*7.66*	U	*6.83*	U

µg/kg	micrograms per kilogram.
mg/kg	milligrams per kilogram.
Italic	Italicized result indicates analyte reported to the laboratory detection limit.
	Indicates concentration, LOQ, or LOD is above the established project action limit
Bold	Bolded result indicates positively identified compound.
AK	Alaska Test Method
NA	Not analyzed.
B	Analyte detected in an associated blank.
D	Sample dilution required for analysis; reported values reflect the dilution.
F	Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the LOQ but greater than the LOD.
UB	Analyte considered not detected, based on an associated blank concentration.
UK	Analyte considered not detected, based on professional judgment of Validation Chemist.
U	Analyte is not detected at the reported LOQ or LOD
LOD	Limit of detection
LOQ	Limit of quantitation
SW	U.S. Environmental Protection Agency Solid Waste Method

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Table 7-2 Area A - Subsurface Soil Samples, Analytical Detections Above Project Action Limits

Location Identification		TP01ARA		TP01ARA		TP01ARA Dup		TP02ARA		TP02ARA	
Field Sample Identification		10NSS001TP01ARA		10NSS002TP01ARA		10NSS201TP01ARA		10NSS001TP02ARA		10NSS002TP02ARA	
Date Collected		8/24/2010		8/24/2010		8/24/2010		8/24/2010		8/24/2010	
Depth (ft)		7		7		7		5		5	
Analyte/Methods (Units)	**Project Action Limit**										
Total Petroleum Hydrocarbons (mg/kg)											
Diesel Range Organics (DRO)/AK102	250	21.2	U	21.1	U	21.3	U	21.6	U	21.8	U
Residual Range Organics (RRO)/AK103	10000	21.2	U	21.1	U	21.3	U	21.6	U	21.8	U
Metals (SW6020A) (mg/kg)											
Arsenic	3.9	**6.99**		**6.71**		**7.16**		**6.97**		**6.14**	
Chromium	25	**28.3**		**34.3**		**29.7**		**38.7**		**45.1**	
Volatile Organic Compounds (SW8260B) (µg/kg)											
Methylene chloride	16	*24.8*	U	*23.5*	U	*22.2*	U	*29.8*	U	*24.8*	U
Trichloroethene (TCE)	20	*6.24*	U	*5.91*	U	*5.58*	U	*7.51*	U	*6.23*	U

Table 7-2 Area A - Subsurface Soil Samples, Analytical Detections Above Project Action Limits

Location Identification		TP03ARA		TP03ARA		TP04ARA		TP04ARA		TP05ARA	
Field Sample Identification		10NSS001TP03ARA		10NSS002TP03ARA		10NSS001TP04ARA		10NSS002TP04ARA		10NSS001TP05ARA	
Date Collected		8/24/2010		8/24/2010		8/24/2010		8/24/2010		8/24/2010	
Depth (ft)		6		6		5		11		6	
Analyte/Methods (Units)	**Project Action Limit**										
Total Petroleum Hydrocarbons (mg/kg)											
Diesel Range Organics (DRO)/AK102	250	**2360**	D	**2120**	D	21.1	U	21.2	U	**98.4**	
Residual Range Organics (RRO)/AK103	10000	**87**		**94.2**		21.1	U	21.2	U	**79.1**	
Metals (SW6020A) (mg/kg)											
Arsenic	3.9	**6.03**		**6.18**		**5.4**		**9.94**		**10.3**	
Chromium	25	**32.9**		**31.3**		**22.4**		**30.4**		**22.3**	
Volatile Organic Compounds (SW8260B) (µg/kg)											
Methylene chloride	16	*26.4*	U	*25.9*	U	*20.4*	U	**40.4**	UK,F	**26.8**	UK,F
Trichloroethene (TCE)	20	*6.65*	U	*6.51*	U	**12.4**	F	**71.1**		**16.2**	F

Table 7-2 Area A - Subsurface Soil Samples, Analytical Detections Above Project Action Limits

Location Identification		TP05ARA		TP06ARA		TP06ARA		TP06ARA Dup		TP07ARA	
Field Sample Identification		10NSS002TP05ARA		10NSS001TP06ARA		10NSS002TP06ARA		10NSS201TP06ARA		10NSS001TP07ARA	
Date Collected		8/24/2010		10/4/2010		10/4/2010		10/4/2010		10/4/2010	
Depth (ft)		6		1.5 - 2		1.5 - 2		1.5 - 2		3 - 3.5	
Analyte/Methods (Units)	**Project Action Limit**										
Total Petroleum Hydrocarbons (mg/kg)											
Diesel Range Organics (DRO)/AK102	250	**84.1**		**6710**	D,J-	**7420**	D	**3550**	D	**28400**	D
Residual Range Organics (RRO)/AK103	10000	**338**		**49900**	D	**52900**	D	**24900**	D	**706**	D
Metals (SW6020A) (mg/kg)											
Arsenic	3.9	**6.84**		**9.17**		**7.63**		**7.15**		**7.47**	
Chromium	25	**25.2**		**44**		**32.1**		**33.9**		**30.3**	
Volatile Organic Compounds (SW8260B) (µg/kg)											
Methylene chloride	16	**35.8**	UK,F	*28.5*	U	*26.3*	U	*30.1*	U	*53.5*	U
Trichloroethene (TCE)	20	**86.6**		*7.17*	U	*6.61*	U	*7.56*	U	*13.5*	U

Table 7-2 Area A - Subsurface Soil Samples, Analytical Detections Above Project Action Limits

	Location Identification	TP08ARA		TP09ARA		TP10ARA		TP11ARA	
	Field Sample Identification	10NSS001TP08ARA		10NSS001TP09ARA		10NSS001TP10ARA		10NSS001TP11ARA	
	Date Collected	10/4/2010		10/4/2010		10/4/2010		10/4/2010	
	Depth (ft)	3 - 3.5		3 - 3.5		3 - 3.5		3 - 3.5	
Analyte/Methods (Units)	**Project Action Limit**								
Total Petroleum Hydrocarbons (mg/kg)									
Diesel Range Organics (DRO)/AK102	250	**23700**	D	**117**	F	**8110**	D	115	U,D
Residual Range Organics (RRO)/AK103	10000	**1050**	D	**525**	D,J-	**18900**	D	**198**	D
Metals (SW6020A) (mg/kg)									
Arsenic	3.9	**8.88**		**7.65**		**11.5**		**7.82**	
Chromium	25	**26.2**		**26**		**35.5**		**36.8**	
Volatile Organic Compounds (SW8260B) (µg/kg)									
Methylene chloride	16	*60.6*	U	*43.9*	U	**52.5**	UK,F	*30*	U
Trichloroethene (TCE)	20	*15.2*	U	*11.1*	U	*8.76*	U	**22.3**	F

µg/kg	micrograms per kilogram.
mg/kg	milligrams per kilogram.
Italic	Italicized result indicates analyte reported to the laboratory detection limit.
	Indicates concentration, LOQ, or LOD is above the established project action limit
Bold	Bolded result indicates positively identified compound.
AK	Alaska Test Method
NA	Not analyzed.
B	Analyte detected in an associated blank.
D	Sample dilution required for analysis; reported values reflect the dilution.
F	Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the LOQ but greater than the LOD.
UB	Analyte considered not detected, based on an associated blank concentration.
UK	Analyte considered not detected, based on professional judgment of Validation Chemist.
U	Analyte is not detected at the reported LOQ or LOD
J-	Data are estimated, potentially biased low, based on associated quality control data.
LOD	Limit of detection
LOQ	Limit of quantitation
SW	U.S. Environmental Protection Agency Solid Waste Method

SS25ARA	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**9.01 mg/Kg**
Chromium, Total [3]	**51.4 mg/Kg**
CrVI [3]	Not detected above action limit
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
Methylene chloride [3]	**90.7 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS25ARA (DUPLICATE)	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
CrVI [3]	Not detected above action limit
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS26ARA	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**7.54 mg/Kg**
Chromium, Total [3]	**42.7 mg/Kg**
CrVI [3]	Not detected above action limit
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
Methylene chloride [3]	**48.1 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS27ARA	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**8.88 mg/Kg**
Chromium, Total [3]	**57.4 mg/Kg**
CrVI [3]	Not detected above action limit
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
Methylene chloride [3]	**116 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS28ARA	0.5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**7.04 mg/Kg**
Chromium, Total [3]	**43.3 mg/Kg**
CrVI [3]	Not detected above action limit
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

TP01ARA	7' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**6.99 mg/Kg**
Chromium, Total [3]	**28.3 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

TP01ARA (DUPLICATE)	7' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**6.71 mg/Kg**
Chromium, Total [3]	**34.3 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

TP01ARA	7' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**7.16 mg/Kg**
Chromium, Total [3]	**29.7 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

TP02ARA	5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**6.97 mg/Kg**
Chromium, Total [3]	**38.7 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

TP02ARA	5' bgs
PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**6.14 mg/Kg**
Chromium, Total [3]	**45.1 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

LEGEND:

- SURFACE SOIL SAMPLE LOCATION
- TEST PIT
- MAGNETOMETER SURVEY AREA
- ' bgs — FEET BELOW GROUND SURFACE
- mg/Kg — MILLIGRAMS PER KILOGRAM
- ug/Kg — MICROGRAMS PER KILOGRAM
- **Bold/Red** — DETECTED ABOVE THE ACTION LIMIT

CrVI	HEXAVALENT CHROMIUM
DRO	DIESEL RANGE ORGANICS
GRO	GASOLINE RANGE ORGANICS
Ni	NICKEL
PCBs	POLYCHLORINATED BIPHENYLS
PHCs	PETROLEUM HYDROCARBONS
RCRA	RESOURCE CONSERVATION AND RECOVERY ACT
RRO	RESIDUAL RANGE ORGANICS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
V	VANADIUM
VOCs	VOLATILE ORGANIC COMPOUNDS

KEY:

[1] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Migration-to-Groundwater)

[2] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Ingestion)

[3] Reference: 18 AAC 75, Table B1 (Migration-to-Groundwater)

[4] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Direct Contact)

[5] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Outdoor Inhalation)

[6] Reference: U.S. EPA Risk Based Soil Screening Regional Screening Levels (Region 9)

[7] Reference: 18 AAC 75.345, Table C (Groundwater Cleanup Levels)

[8] Reference: U.S. EPA Total Carciogenic Risk Regional Screening Levels (Region 9)

[9] Reference: U.S. EPA Total Non-Carciogenic Risk Regional Screening Levels (Region 9)

[10] Reference: No appropriate criteria could be located.

NORTH

SCALE IN FEET

0 100

FIGURE 7-1 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

AREA A – SUSPECTED DISPOSAL AREA SAMPLE LOCATIONS AND ANALYTICAL RESULTS

JOB No. 1008300.83010401
TIME: 18-APR-2012 12:03
FILE: D:\CAD\Proj\AFCEE\R Richardson-Nike Site Summit_1008300\RI_Report\FINAL\FIG 7-1 - ARA- area A landfill.dgn

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FILE: D:\CAD\Proj\AFCEE\R Richardson-Nike Site Summit _ 1008300\RI_Report\FINAL\FIG 7-2 - ARA- area A bkg_SS.dgn
TIME: 18-APR-2012 12:05
JOB No. 1008300.83010401

SS12ARA 0.5' bgs

PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**8.87 mg/Kg**
Chromium, Total [3]	**34.4 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
Methylene chloride [3]	**125 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS16ARA 0.5' bgs

PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**8.2 mg/Kg**
Chromium, Total [3]	**38.7 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS15ARA 0.5' bgs

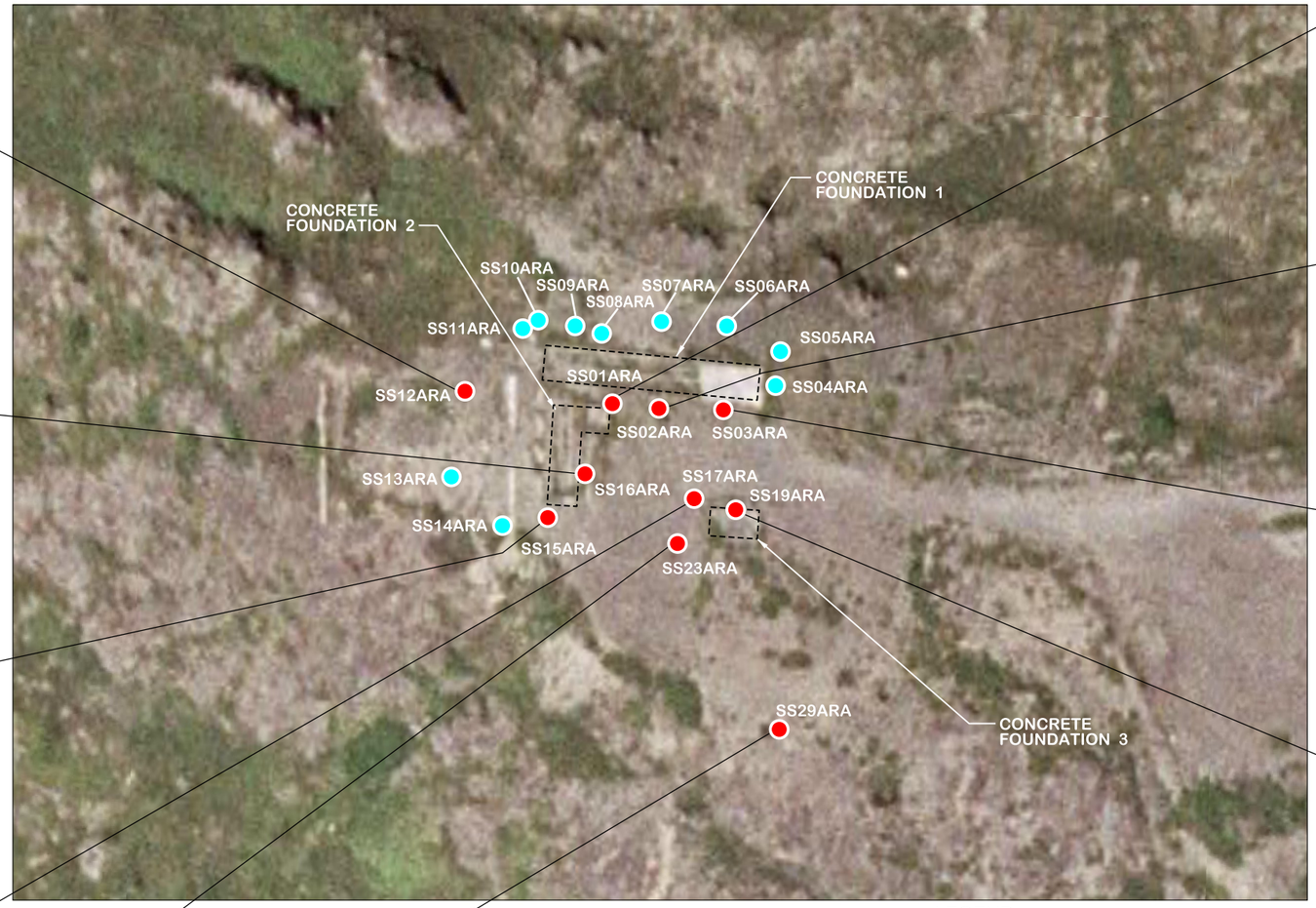
PHCs	
GRO [1]	Not detected above action limit
DRO [2]	Not detected above action limit
RRO	Not detected above action limit
Metals	
Arsenic [3]	**5.25 mg/Kg**
Chromium, Total [3]	**29.3 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS17ARA 0.5' bgs

PHCs	
GRO [1]	Not detected above action limit
DRO [1]	**1,190 mg/Kg**
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**8.58 mg/Kg**
Chromium, Total [3]	**41.2 mg/Kg**
CrVI [3]	Not detected above action limit
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS23ARA 0.5' bgs

PHCs	
GRO [1]	Not detected above action limit
DRO [1]	**4,240 mg/Kg**
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**7.46 mg/Kg**
Chromium, Total [3]	**37.6 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit



SS29ARA 0.5' bgs

PHCs	
GRO [1]	Not detected above action limit
DRO [1]	**19,200 mg/Kg**
RRO [2]	**161,000 mg/Kg**
Metals	
Arsenic [3]	**8.06 mg/Kg**
Chromium, Total [3]	**37.7 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
Methylene chloride [3]	**50.4 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

FIELD SCREENING RESULTS

Location	Petro FLAG (ppm)	EnSys PCB reading	EnSys PCB (1 ppm)
SS01ARA	540	0.17	= < 1 ppm
SS02ARA	1,040	0.26	= < 1 ppm
SS03ARA	2,421	0.20	= < 1 ppm
SS04ARA	112	0.27	= < 1 ppm
SS05ARA	130	0.42	= < 1 ppm
SS06ARA	0	0.25	= < 1 ppm
SS07ARA	1	0.35	= < 1 ppm
SS08ARA	26	0.38	= < 1 ppm
SS09ARA	136	0.29	= < 1 ppm
SS10ARA	223	0.34	= < 1 ppm
SS11ARA	90	0.32	= < 1 ppm
SS12ARA	308	0.20	= < 1 ppm
SS13ARA	66	0.29	= < 1 ppm
SS14ARA	155	0.23	= < 1 ppm
SS15ARA	668	0.31	= < 1 ppm
SS16ARA	1,497	0.20	= < 1 ppm
SS17ARA	over	0.13	= < 1 ppm
SS18ARA	over	0.17	= < 1 ppm
SS19ARA	over	-0.02	= > 1 ppm
SS20ARA	over	0.10	= < 1 ppm
SS21ARA	365	0.47	= < 1 ppm
SS22ARA	over	0.16	= < 1 ppm
SS23ARA	over	0.07	= < 1 ppm
SS24ARA	1,652	0.10	= < 1 ppm

LEGEND:

●	SURFACE SOIL SAMPLE LOCATION
●	SURFACE SOIL FIELD SCREENING ONLY
▭	CONCRETE FOUNDATION
' bgs	FEET BELOW GROUND SURFACE
mg/Kg	MILLIGRAMS PER KILOGRAM
ppm	PART PER MILLION
ug/Kg	MICROGRAMS PER KILOGRAM
CrVI	HEXAVALENT CHROMIUM
DRO	DIESEL RANGE ORGANICS
GRO	GASOLINE RANGE ORGANICS
Ni	NICKEL
PCBs	POLYCHLORINATED BIPHENYLS
PHCs	PETROLEUM HYDROCARBONS
RCRA	RESOURCE CONSERVATION AND RECOVERY ACT
RRO	RESIDUAL RANGE ORGANICS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
TCE	TRICHLOROETHENE
V	VANADIUM
VOCs	VOLATILE ORGANIC COMPOUNDS
Bold/Red	DETECTED ABOVE THE ACTION LIMIT
<	LESS THAN

SS01ARA 0.5' bgs

PHCs	
GRO [1]	Not detected above action limit
DRO [1]	Not detected above action limit
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**6.57 mg/Kg**
Chromium, Total [3]	**36.9 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS02ARA 0.5' bgs

PHCs	
GRO [1]	Not detected above action limit
DRO [1]	**370 mg/Kg**
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**7.12 mg/Kg**
Chromium, Total [3]	**39.4 mg/Kg**
CrVI [3]	Not detected above action limit
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS03ARA 0.5' bgs

PHCs	
GRO [1]	Not detected above action limit
DRO [1]	**2,220 mg/Kg**
RRO [2]	Not detected above action limit
Metals	
Arsenic [3]	**6.11 mg/Kg**
Chromium, Total [3]	**46.7 mg/Kg**
CrVI [3]	Not detected above action limit
CrVI (DUPLICATE) [3]	Not detected above action limit
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS19ARA 0.5' bgs

PHCs	
GRO [1]	Not detected above action limit
DRO [1]	**4,290 mg/Kg**
RRO [2]	**20,600 mg/Kg**
Metals	
Arsenic [3]	**8.47 mg/Kg**
Chromium, Total [3]	**34.8 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
TCE [3]	**81.8 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

SS19ARA (DUPLICATE) 0.5' bgs

PHCs	
GRO [1]	Not detected above action limit
DRO [1]	**3,400 mg/Kg**
RRO [2]	**16,300 mg/Kg**
Metals	
Arsenic [3]	**8.37 mg/Kg**
Chromium, Total [3]	**38.6 mg/Kg**
All other RCRA metals, plus Ni and V [3, 4]	Not detected above action limit
PCBs [4]	Not detected above action limit
VOCs	
TCE [3]	**81.6 ug/Kg**
All other VOCs [3, 4, 5, 6]	Not detected above action limit
SVOCs [3, 4, 6]	Not detected above action limit

KEY:

[1] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Migration-to-Groundwater)

[2] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Ingestion)

[3] Reference: 18 AAC 75, Table B1 (Migration-to-Groundwater)

[4] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Direct Contact)

[5] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Outdoor Inhalation)

[6] Reference: U.S. EPA Risk Based Soil Screening Regional Screening Levels (Region 9)

[7] Reference: 18 AAC 75.345, Table C (Groundwater Cleanup Levels)

[8] Reference: U.S. EPA Total Carciogenic Risk Regional Screening Levels (Region 9)

[9] Reference: U.S. EPA Total Non-Carciogenic Risk Regional Screening Levels (Region 9)

[10] Reference: No appropriate criteria could be located.

NORTH
SCALE IN FEET
0 80

FIGURE 7-2 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

AREA A – FORMER OPPORTUNITY STRIKES RRS SURFACE SOIL SAMPLE LOCATIONS AND ANALYTICAL RESULTS

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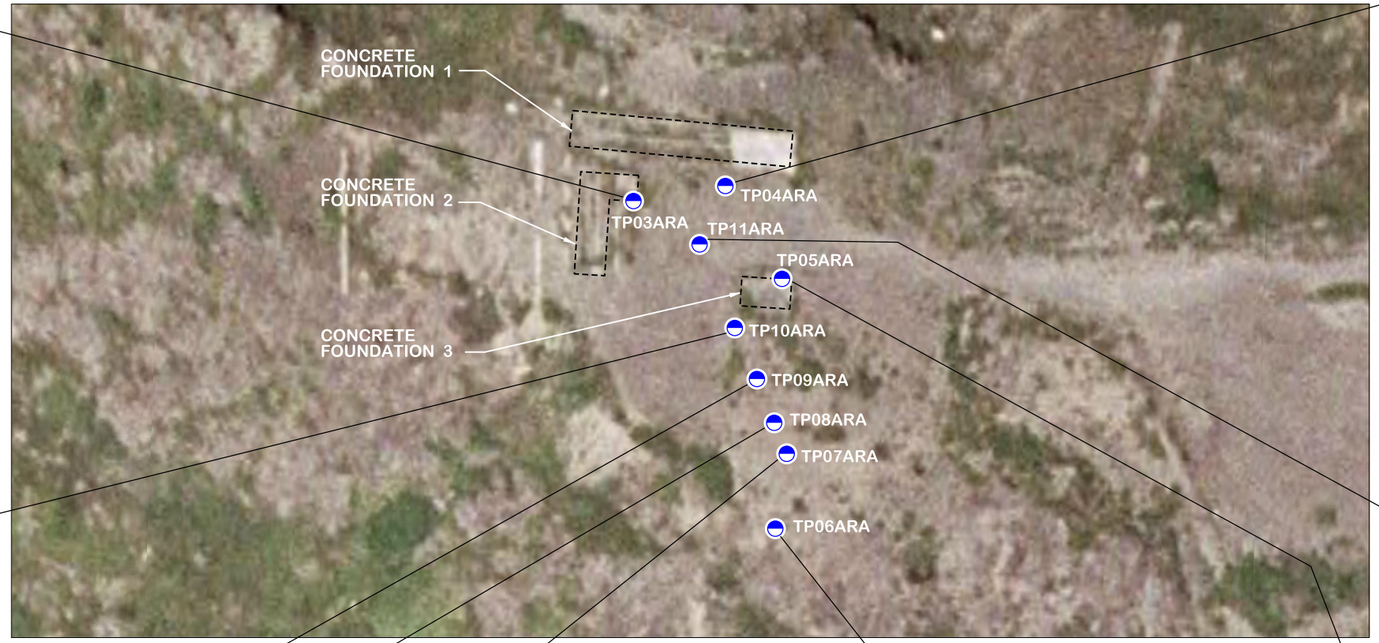

TP03ARA 6' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	**2,360 mg/Kg**
RRO[2]	Not detected above action limit
Metals	
Arsenic[3]	**6.03 mg/Kg**
Chromium, Total[3]	**32.9 mg/Kg**
All other RCRA metals, plus Ni and V[3,4]	Not detected above action limit
PCBs[4]	Not detected above action limit
VOCs[3,4,5,6]	Not detected above action limit
SVOCs[3,4,6]	Not detected above action limit

TP03ARA 6' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	**2,120 mg/Kg**
RRO[2]	Not detected above action limit
Metals	
Arsenic[3]	**6.18 mg/Kg**
Chromium, Total[3]	**31.3 mg/Kg**
All other RCRA metals, plus Ni and V[3,4]	Not detected above action limit
PCBs[4]	Not detected above action limit
VOCs[3,4,5,6]	Not detected above action limit
SVOCs[3,4,6]	Not detected above action limit

TP10ARA 3-3.5' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	**8,110 mg/Kg**
RRO[2]	**18,900 mg/Kg**
Metals	
Arsenic[3]	**11.5 mg/Kg**
Chromium, Total[3]	**35.5 mg/Kg**
All other RCRA metals, plus Ni and V[3,4]	Not detected above action limit
PCBs[4]	Not detected above action limit
VOCs	
Methylene chloride[3]	**52.5 ug/Kg**
All other VOCs[3,4,5,6]	Not detected above action limit
SVOCs[3,4,6]	Not detected above action limit

TP09ARA 3-3.5' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	Not detected above action limit
RRO[2]	Not detected above action limit
Metals	
Arsenic[3]	**7.65 mg/Kg**
Chromium, Total[3]	**26 mg/Kg**
All other RCRA metals, plus Ni and V[3,4]	Not detected above action limit
PCBs[4]	Not detected above action limit
VOCs[3,4,5,6]	Not detected above action limit
SVOCs[3,4,6]	Not detected above action limit

TP08ARA 3-3.5' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	**23,700 mg/Kg**
RRO[2]	Not detected above action limit
Metals	
Arsenic[3]	**8.88 mg/Kg**
Chromium, Total[3]	**26.2 mg/Kg**
All other RCRA metals, plus Ni and V[3,4]	Not detected above action limit
PCBs[4]	Not detected above action limit
VOCs[3,4,5,6]	Not detected above action limit
SVOCs[3,4,6]	Not detected above action limit

TP07ARA 3-3.5' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	**28,400 mg/Kg**
RRO[2]	Not detected above action limit
Metals	
Arsenic[3]	**7.47 mg/Kg**
Chromium, Total[3]	**30.3 mg/Kg**
All other RCRA metals, plus Ni and V[3,4]	Not detected above action limit
PCBs[4]	Not detected above action limit
VOCs[3,4,5,6]	Not detected above action limit
SVOCs[3,4,6]	Not detected above action limit

TP06ARA 1.5-2' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	**6,710 mg/Kg**
RRO[2]	**49,900 mg/Kg**
Metals	
Arsenic[3]	**9.17 mg/Kg**
Chromium, Total[3]	**44 mg/Kg**
All other RCRA metals, plus Ni and V[3,4]	Not detected above action limit
PCBs[4]	Not detected above action limit
VOCs[3,4,5,6]	Not detected above action limit
SVOCs[3,4,6]	Not detected above action limit

TP06ARA (DUPLICATE) 1.5-2' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	**3,550 mg/Kg**
RRO[2]	**24,900 mg/Kg**
Metals	
Arsenic[3]	**7.15 mg/Kg**
Chromium, Total[3]	**33.9 mg/Kg**
All other RCRA metals, plus Ni and V[3,4]	Not detected above action limit
PCBs[4]	Not detected above action limit
VOCs[3,4,5,6]	Not detected above action limit
SVOCs[3,4,6]	Not detected above action limit

TP06ARA 1.5-2' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	**7,420 mg/Kg**
RRO[2]	**52,900 mg/Kg**
Metals	
Arsenic[3]	**7.63 mg/Kg**
Chromium, Total[3]	**32.1 mg/Kg**
All other RCRA metals, plus Ni and V[3,4]	Not detected above action limit
PCBs[4]	Not detected above action limit
VOCs[3,4,5,6]	Not detected above action limit
SVOCs[3,4,6]	Not detected above action limit

TP04ARA 5' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	Not detected above action limit
RRO[2]	Not detected above action limit
Metals	
Arsenic[3]	**5.4 mg/Kg**
All other RCRA metals, plus Ni and V[3,4]	Not detected above action limit
PCBs[4]	Not detected above action limit
VOCs[3,4,5,6]	Not detected above action limit
SVOCs[3,4,6]	Not detected above action limit

TP04ARA 11' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	Not detected above action limit
RRO[2]	Not detected above action limit
Metals	
Arsenic[3]	**9.94 mg/Kg**
Chromium, Total[3]	**30.4 mg/Kg**
All other RCRA metals, plus Ni and V[3,4]	Not detected above action limit
PCBs[4]	Not detected above action limit
VOCs	
Methylene chloride[3]	**40.4 ug/Kg**
TCE[3]	**71.1 ug/Kg**
All other VOCs[3,4,5,6]	Not detected above action limit
SVOCs[3,4,6]	Not detected above action limit

TP11ARA 3-3.5' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	Not detected above action limit
RRO[2]	Not detected above action limit
Metals	
Arsenic[3]	**7.82 mg/Kg**
Chromium, Total[3]	**36.8 mg/Kg**
All other RCRA metals, plus Ni and V[3,4]	Not detected above action limit
PCBs[4]	Not detected above action limit
VOCs	
TCE[3]	**22.3 ug/Kg**
All other VOCs[3,4,5,6]	Not detected above action limit
SVOCs[3,4,6]	Not detected above action limit

TP05ARA 6' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	Not detected above action limit
RRO[2]	Not detected above action limit
Metals	
Arsenic[3]	**10.3 mg/Kg**
All other RCRA metals, plus Ni and V[3,4]	Not detected above action limit
PCBs[4]	Not detected above action limit
VOCs	
Methylene chloride[3]	**26.8 ug/Kg**
All other VOCs[3,4,5,6]	Not detected above action limit
SVOCs[3,4,6]	Not detected above action limit

TP05ARA 6' bgs

PHCs	
GRO[1]	Not detected above action limit
DRO[1]	Not detected above action limit
RRO[2]	Not detected above action limit
Metals	
Arsenic[3]	**6.84 mg/Kg**
Chromium, Total[3]	**25.2 mg/Kg**
All other RCRA metals, plus Ni and V[3,4]	Not detected above action limit
PCBs[4]	Not detected above action limit
VOCs	
Methylene chloride[3]	**35.8 ug/Kg**
TCE[3]	**86.6 ug/Kg**
All other VOCs[3,4,5,6]	Not detected above action limit
SVOCs[3,4,6]	Not detected above action limit

LEGEND:

	TEST PIT LOCATION
	CONCRETE FOUNDATION
' bgs	FEET BELOW GROUND SURFACE
mg/Kg	MILLIGRAMS PER KILOGRAM
ug/Kg	MICROGRAMS PER KILOGRAM
Bold/Red	DETECTED ABOVE THE ACTION LIMIT

CrVI	HEXAVALENT CHROMIUM
DRO	DIESEL RANGE ORGANICS
GRO	GASOLINE RANGE ORGANICS
Ni	NICKEL
PCBs	POLYCHLORINATED BIPHENYLS
PHCs	PETROLEUM HYDROCARBONS
RCRA	RESOURCE CONSERVATION AND RECOVERY ACT
RRO	RESIDUAL RANGE ORGANICS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
TCE	TRICHLOROETHENE
V	VANADIUM
VOCs	VOLATILE ORGANIC COMPOUNDS

KEY:

[1] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Migration-to-Groundwater)

[2] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Ingestion)

[3] Reference: 18 AAC 75, Table B1 (Migration-to-Groundwater)

[4] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Direct Contact)

[5] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Outdoor Inhalation)

[6] Reference: U.S. EPA Risk Based Soil Screening Regional Screening Levels (Region 9)

[7] Reference: 18 AAC 75.345, Table C (Groundwater Cleanup Levels)

[8] Reference: U.S. EPA Total Carciogenic Risk Regional Screening Levels (Region 9)

[9] Reference: U.S. EPA Total Non-Carciogenic Risk Regional Screening Levels (Region 9)

[10] Reference: No appropriate criteria could be located.

NORTH

SCALE IN FEET

0 80

FIGURE 7-3 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA

NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

AREA A – FORMER OPPORTUNITY STRIKES RRS SUBSURFACE SOIL SAMPLE LOCATIONS AND ANALYTICAL RESULTS

FILE: D:\CAD\Proj\AFCEE\Ft Richardson-Nike Site Summit_1008300\RI_Report\FINAL\FIG 7-3 - ARA- area A bkg_TP.dgn
TIME: 18-APR-2012 12:06
JOB No. 1008300,83010401

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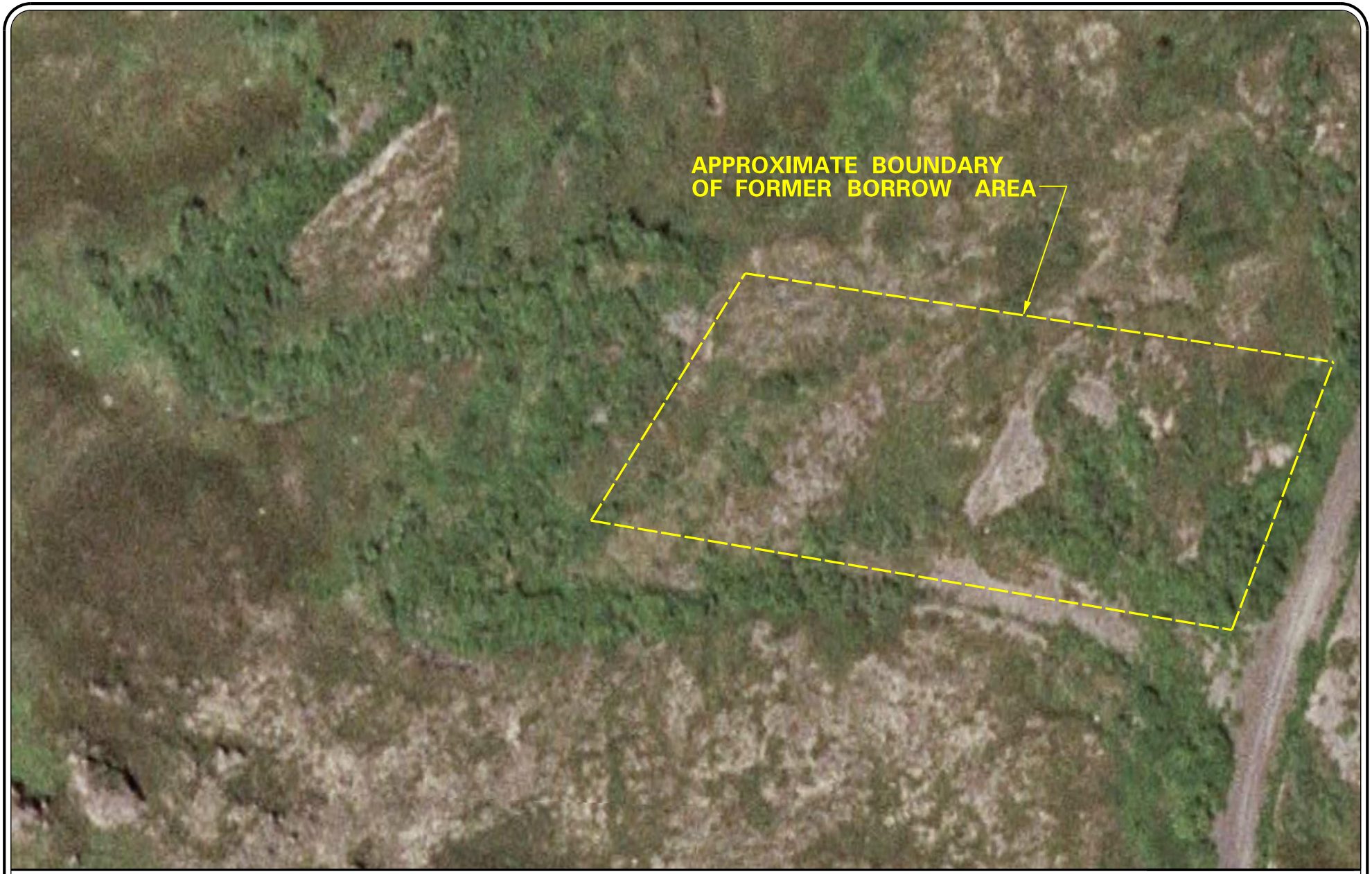
JOB No. 1008300.83010401 TIME: 18-APR-2012 12:08 FILE: D:\CAD\Proj\AFCEE\Ft Richardson-Nike Site Summit _ 1008300\RI _Report\FINAL\FIG 7-4 - area A borrow.dgn



NORTH

SCALE IN FEET

0 100

NOTE:
VISUAL INSPECTION ONLY.

FIGURE 7-4 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

AREA A – FORMER BORROW AREA LOCATION MAP

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8.0 AREA B – HIGH EXPLOSIVE AND GUIDED MISSILE MAGAZINES

Area B is located along the NSS access road between LSS and USS on the downslope side (Figure 1-2). Details of Area B are shown on **Figure 8-1**.

8.1 AREA B PHYSICAL CHARACTERISTICS

The following sections describe the physical characteristics associated with Area B, the High Explosive and Guided Missile Magazines.

8.1.1 Geology

Area B consists of angular fill along a pad and driveways, with outcroppings of both weathered and unweathered bedrock at the site.

8.1.2 Hydrogeology

Groundwater is not known to exist within Area B; however, no soil borings were advanced during the RFI to determine the presence or absence of groundwater at the High Explosive and Guided Missile Magazines.

8.1.3 Hydrology

There were no surface water bodies observed at Area B during the RFI. Surface runoff from rainfall events is anticipated to percolate through the angular gravel, as well as follow the surface gradient towards the NSS access road. However, no visible runoff was observed during the numerous rainfall events that occurred from August through October 2010 during the RFI.

8.2 AREA B PREVIOUS INVESTIGATIONS

Area B consists of the High Explosive and Guided Missile Magazines, two semi-buried concrete structures that are mounded over with only the entry exposed. During the 1996 PA/SI, an area of disturbed or distressed vegetation/earth located upgradient from the magazines was investigated. A total of six surface soil samples were collected and analyzed. Metal detections included: arsenic (6.2 to 9.9 mg/Kg), chromium (18 to 37 mg/Kg), and lead (6.2 to 12 mg/Kg). VOCs were analyzed for but not detected. The metals detections, while in some instances are above the ADEC Method Two cleanup levels, are thought to be indicative of background concentrations, and not from an anthropogenic source.

8.3 AREA B REMEDIAL FIELD INVESTIGATIONS

No RFI sampling activities were performed at Area B. Site activities were limited to a site walk to identify any potential areas of contamination based on visible signs of impacted or stained soils. No such areas were observed.

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NORTH

SCALE IN FEET

0 180

NOTE:

VISUAL INSPECTION ONLY.

FIGURE 8-1 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

AREA B – GUIDED MISSILE AND HIGH EXPLOSIVE MAGAZINES LOCATION MAP

JOB No. 1008300.83010401 TIME: 19-APR-2012 12:09 FILE: D:\CAD\Proj\AFCEE\Ft Richardson-Nike Site Summit _ 1008300\RI _Report\FINAL\FIG 8-1-area B.dgn

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9.0 AREA C – PUMP HOUSE

Area C consists of the Pump House, located near the end of Arctic Valley Road, at the intersection of utility corridors leading to LSS and USS, and an adjacent surface water weir that was used to collect surface water for supply to LSS and USS (**Figure 9-1**).

9.1 AREA C PHYSICAL CHARACTERISTICS

9.1.1 Geology

Area C is located in the valley floor formed between Mount Gordon Lyon and Rendezvous Peak. The surface materials consist primarily of angular gravel, presumably brought in as fill material during construction of Arctic Valley Road.

9.1.2 Hydrogeology

No subsurface borings were conducted at Area C during the RFI to determine the depth to groundwater. The nearest public drinking water well is located adjacent to the Alpenglow Lodge at Arctic Valley. A meeting with Triad participants was held 2 June 2011 to discuss site-specific hydrogeology in this area. Meeting materials are provided in Appendix A.

9.1.3 Hydrology

The weir at Area C was constructed to collect water to supply both USS and LSS through a conveyance pipeline to each of the sites. The primary surface water drainage at Area C is a small tributary of Ship Creek that originates near Rendezvous Peak at the Arctic Valley Ski Area. The tributary eventually discharges to Ship Creek, approximately 2 miles down slope. A meeting with Triad participants was held 2 June 2011 to discuss site-specific hydrology in this area. Meeting materials are provided in Appendix A.

9.2 AREA C PREVIOUS INVESTIGATIONS

A total of four surface water samples were collected from drainages within the transmission corridor during the 1996 PA/SI and analyzed for VOCs, SVOCs, and RCRA 8 metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver). VOCs and SVOCs were not detected, with the exception of suspected laboratory contaminants. Metals were not detected, with the exception of one barium detection at 0.015 mg/L and one lead detection at 0.0054 mg/L. Both metal detections were below the ADEC Table C drinking water levels. The locations of the samples are thought to have been random and based on observed locations of runoff.

9.3 AREA C REMEDIAL FIELD INVESTIGATIONS

Given the results from the 1996 PA/SI, the focus of the RFI was on the area immediately surrounding the Pump House. Surface soil samples were collected from three locations along the southwestern side of the pump house. It is presumed that the Pump House contained a

day tank to operate the pump; however, the presence or absence of a tank could not be determined because the Pump House was sealed closed. Based on the layout of the pump house, as-builts, and what appeared to be a tank vent pipe, it is assumed that a day tank was/is located inside the structure near the western edge.

Surface soil samples were collected from three locations along the potential drainage from this area in 2010. A total of four samples were collected, three primary and one duplicate (SS01ARC and duplicate, SS02ARC, and SS03ARC). Additionally, collocated surface water (SW01ARC and duplicate) and sediment (SD01ARC) samples were collected from the western edge of the ponded area behind the weir in 2010. A Triad meeting was held 2 June 2011 to discuss groundwater use determination at NSS. Additional surface water sampling at Area C and adjacent off-site drainages was conducted in response to that meeting. One surface water sample and one duplicate were collected from within the ponded area behind the weir in 2011. Six surface water samples were collected from adjacent off-site drainages in 2011, four upstream and two downstream of the ponded area.

All samples were analyzed for GRO, DRO, RRO, RCRA 8 metals, nickel, vanadium, VOCs, and SVOCs. The surface water samples were also analyzed for filtered RCRA 8 metals, nickel and vanadium.

Analytical detections from RFI samples collected at Area C and adjacent off-site drainages are summarized in Appendix C Tables C-9.1 and C-9.2 for surface soil/sediment and surface water, respectively. Complete analytical results are provided in a separate ADR (USAF, 2012a). Photographs of Area C and adjacent off-site drainages taken during the RFI are provided in **Appendix D4**.

Locations of the RFI soil and sediment samples collected at Area C, along with the analytical results above project action limits, are provided on **Figure 9-1**. Locations of the Area C and adjacent off-site drainage surface water samples, along with the sampling media, are shown on **Figure 9-2**. There were no detections above project action limits in surface water at Area C and adjacent off-site drainages; therefore, no analytical results are shown on the surface water figure. **Table 9-1** summarizes detected results above project action limits for surface soil/sediment. There were no detections above project action limits in the surface water samples collected at Area C and adjacent off-site drainages. Details of the RFI sampling results at Area C are provided by media in the following subsections.

9.3.1 Surface Soil – Area C

Arsenic was detected above the project action limit of 3.9 mg/Kg in all four samples and ranged from 4.1 to 7.27 mg/Kg, all below the 95% UPL of 12.5 mg/Kg for background arsenic concentrations at NSS.

Total chromium was detected above the project action limit of 25 mg/Kg in all four surface soil samples and ranged from 26.1 to 35.6 mg/Kg, all below the 95% UPL of 38.3 mg/Kg for background chromium concentrations at NSS.

No other analytes, including PHCs, VOCs, and SVOCs, were detected above project action limits in surface soil samples collected from Area C.

9.3.2 Sediment – Area C

There are no sediment specific project action limits under ADEC guidance; therefore, sediment samples were compared to 18 Alaska Administrative Code (AAC) 75 Table B1 migration-to-groundwater levels for soil.

Arsenic was detected above the project action limit of 3.9 mg/Kg in both the primary and duplicate samples at 5.77 and 5.15 mg/Kg, respectively. These detections are below the 95% UPL of 12.5 mg/Kg for background arsenic concentrations at NSS.

Total chromium was detected above the project action limit of 25 mg/Kg in both the primary and duplicate samples at 29.7 and 27.7 mg/Kg, respectively. These detections are below the 95% UPL of 38.3 mg/Kg for background chromium concentrations at NSS.

No other analytes, including PHCs, VOCs, and SVOCs, were detected above project action limits in sediment samples collected from Area A.

9.3.3 Surface Water – Area C

There were no detections above project action limits for the analytes GRO, DRO, RRO, RCRA 8 metals, nickel, vanadium, VOCs, or SVOCs in either the primary or duplicate surface water samples collected from the within the ponded area upstream of the weir face or the adjacent off-site drainages.

9.4 AREA C DISCUSSION AND CONCLUSIONS

Based on the results of the RFI, there appears to be no environmental impact from the pump house or other up-gradient areas to the surrounding surface soil, sediment, and surface water.

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Table 9-1 Area C - Surface Soil and Sediment Samples, Analytical Detections Above Project Action Limits

Location Identification		SS01ARC	SS01ARC Dup		SS02ARC		SS03ARC		SD01ARC		SD01ARC	
Field Sample Identification		10NSS001SS01ARC	10NSS201SS01ARC		10NSS001SS02ARC		10NSS001SS03ARC		10NSS001SD01ARC		10NSS201SD01ARC	
Date Collected		8/6/2010	8/6/2010		8/6/2010		8/6/2010		8/20/2010		8/20/2010	
Depth (ft)		0.5	0.5		0.5		0.5		0		0	
Analyte/Methods (Units)	**Project Action Limit**											
Metals (SW6020A) (mg/kg)												
Arsenic	3.9	**4.1**	**4.12**		**7.27**		**6.98**		**5.77**		**5.15**	
Chromium	25	**32.1**	**26.1**	J+	**28**		**35.6**		**29.7**		**27.7**	
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)												
Benzo(a)pyrene	0.49	**1.62**	**0.822**		*0.0865*	U	*0.0891*	*U*	*0.0892*	U	0.215	U

µg/kg	micrograms per kilogram.
mg/kg	milligrams per kilogram.
Italic	Italicized result indicates analyte reported to the laboratory detection limit.
	Indicates concentration, LOQ, or LOD is above the established project action limit
Bold	Bolded result indicates positively identified compound.
NA	Not analyzed.
U	Analyte is not detected at the reported LOQ or LOD
J+	Data are estimated, potentially biased high, based on associated quality control data.
LOD	Limit of detection
LOQ	Limit of quantitation
SW	U.S. Environmental Protection Agency Solid Waste Method

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SS01ARC	0.5' bgs
PHCs	
GRO[1]	Not detected above action limit
DRO[1]	Not detected above action limit
RRO[2]	Not detected above action limit
Metals	
Arsenic[3]	**4.1 mg/Kg**
Chromium, Total[3]	**32.1 mg/Kg**
All other RCRA metals, plus Ni and V[3, 4]	Not detected above action limit
VOCs[3, 4, 5, 6]	Not detected above action limit
SVOCs	
Benzo(a)pyrene[3, 4]	**1.62 mg/Kg**
All other SVOCs[3, 4, 6]	Not detected above action limit

SS01ARC (DUPLICATE)	0.5' bgs
PHCs	
GRO[1]	Not detected above action limit
DRO[1]	Not detected above action limit
RRO[2]	Not detected above action limit
Metals	
Arsenic[3]	**4.12 mg/Kg**
Chromium, Total[3]	**26.1 mg/Kg**
All other RCRA metals, plus Ni and V[3, 4]	Not detected above action limit
VOCs[3, 4, 5, 6]	Not detected above action limit
SVOCs	
Benzo(a)pyrene[3, 4]	**0.822 mg/Kg**
All other SVOCs[3, 4, 6]	Not detected above action limit

SS02ARC	0.5' bgs
PHCs	
GRO[1]	Not detected above action limit
DRO[1]	Not detected above action limit
RRO[2]	Not detected above action limit
Metals	
Arsenic[3]	**7.27 mg/Kg**
Chromium, Total[3]	**28 mg/Kg**
All other RCRA metals, plus Ni and V[3, 4]	Not detected above action limit
VOCs[3, 4, 5, 6]	Not detected above action limit
SVOCs[3, 4, 6]	Not detected above action limit

SS03ARC	0.5' bgs
PHCs	
GRO[1]	Not detected above action limit
DRO[1]	Not detected above action limit
RRO[2]	Not detected above action limit
Metals	
Arsenic[3]	**6.98 mg/Kg**
Chromium, Total[3]	**35.6 mg/Kg**
All other RCRA metals, plus Ni and V[3, 4]	Not detected above action limit
VOCs[3, 4, 5, 6]	Not detected above action limit
SVOCs[3, 4, 6]	Not detected above action limit

SD01ARC	
PHCs	
GRO[1]	Not detected above action limit
DRO[1]	Not detected above action limit
RRO[2]	Not detected above action limit
Metals	
Arsenic[3]	**5.77 mg/Kg**
Chromium, Total[3]	**29.7 mg/Kg**
All other RCRA metals, plus Ni and V[3, 4]	Not detected above action limit
VOCs[3, 4, 5, 6]	Not detected above action limit
SVOCs[3, 4, 6]	Not detected above action limit

SD01ARC (DUPLICATE)	
PHCs	
GRO[1]	Not detected above action limit
DRO[1]	Not detected above action limit
RRO[2]	Not detected above action limit
Metals	
Arsenic[3]	**5.15 mg/Kg**
Chromium, Total[3]	**27.7 mg/Kg**
All other RCRA metals, plus Ni and V[3, 4]	Not detected above action limit
VOCs[3, 4, 5, 6]	Not detected above action limit
SVOCs[3, 4, 6]	Not detected above action limit

LEGEND:

●	SURFACE SOIL SAMPLE LOCATION
■	SURFACE WATER AND SEDIMENT SAMPLE CO-LOCATION
' bgs	FEET BELOW GROUND SURFACE
mg/Kg	MILLIGRAMS PER KILOGRAM
RCRA	RESOURCE CONSERVATION AND RECOVERY ACT
Bold/Red	DETECTED ABOVE THE ACTION LIMIT

DRO	DIESEL RANGE ORGANICS
GRO	GASOLINE RANGE ORGANICS
Ni	NICKEL
PHCs	PETROLEUM HYDROCARBONS
RRO	RESIDUAL RANGE ORGANICS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
V	VANADIUM
VOCs	VOLATILE ORGANIC COMPOUNDS

NORTH

SCALE IN FEET

0 80

KEY:

[1] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Migration-to-Groundwater)

[2] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Ingestion)

[3] Reference: 18 AAC 75, Table B1 (Migration-to-Groundwater)

[4] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Direct Contact)

[5] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Outdoor Inhalation)

[6] Reference: U.S. EPA Risk Based Soil Screening Regional Screening Levels (Region 9)

[7] Reference: 18 AAC 75.345, Table C (Groundwater Cleanup Levels)

[8] Reference: U.S. EPA Total Carciogenic Risk Regional Screening Levels (Region 9)

[9] Reference: U.S. EPA Total Non-Carciogenic Risk Regional Screening Levels (Region 9)

[10] Reference: No appropriate criteria could be located.

FIGURE 9-1 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

AREA C –
SOIL SAMPLE LOCATIONS AND ANALYTICAL RESULTS

FILE: D:\CAD\Proj\AFCEE\Ft Richardson-Nike Site Summit_1008300\RI_Report\FINAL\FIG 9-1 - ARC-C detail.dgn
TIME: 19-APR-2012 09:49
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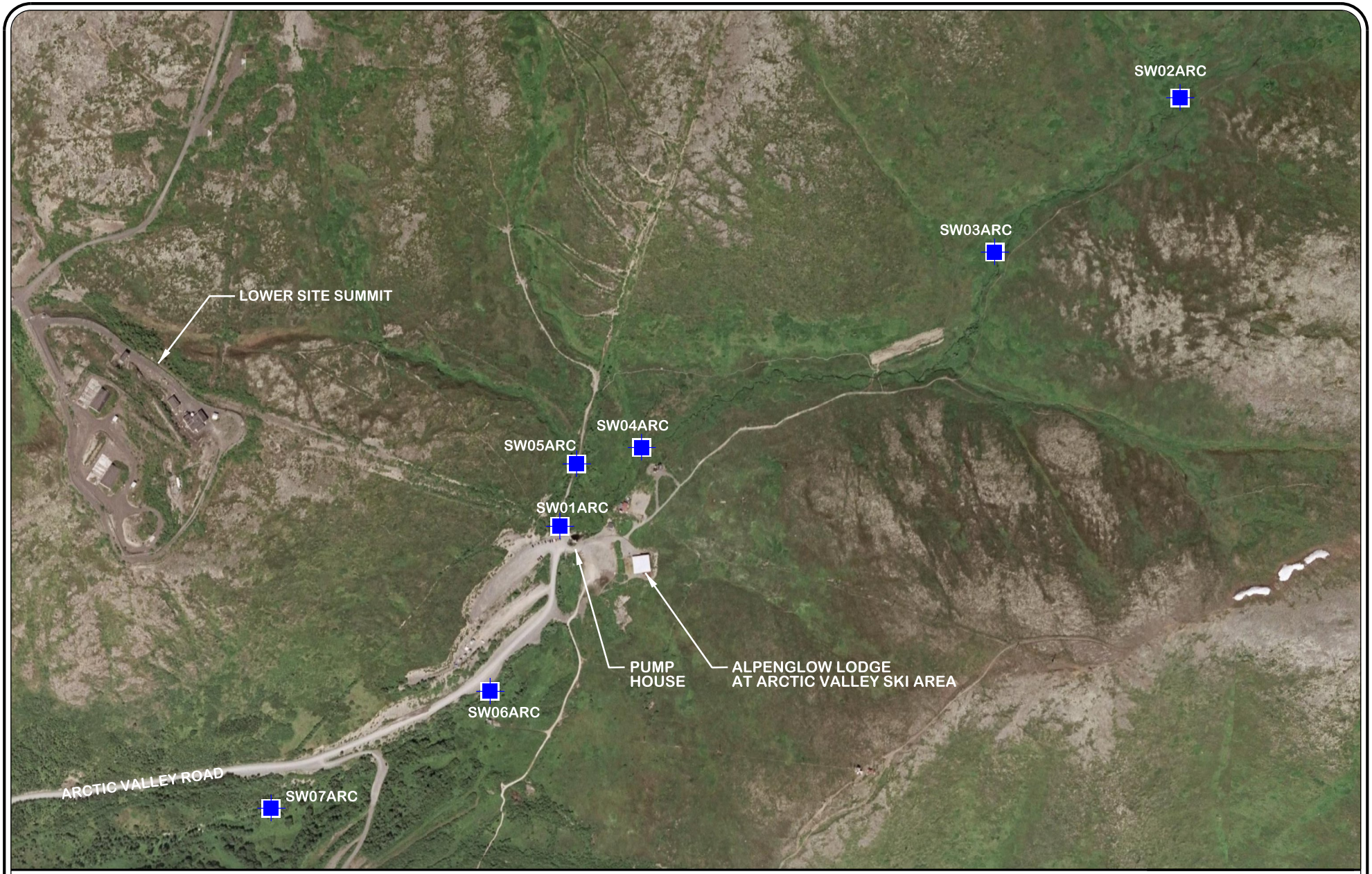
JOB No. 1008300.83010401 TIME: 18-APR-2012 11:21 FILE: D:\CAD\Proj\AFCEE\Ft Richardson-Nike Site Summit _ 1008300\RI _Report\FINAL\FIG 9-2 Area C_sample location map.dgn



NORTH

SCALE IN FEET

0 700

LEGEND:

SURFACE WATER SAMPLE LOCATION

FIGURE 9-2 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

AREA C – OFF–SITE DRAINAGES SAMPLE LOCATION MAP

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10.0 AREA D – FORMER BORROW AREA

Area D is located directly across the access road from LSS (Figure 1-2) and was used as a rock material borrow area, presumably for creation of the pads and roadways as well as ongoing maintenance.

10.1 AREA D PHYSICAL CHARACTERISTICS

The following sections describe the physical characteristics associated with Area D, the Former Borrow Area.

10.1.1 Geology

Area D consists of exposed weathered and unweathered bedrock, as well as angular fill produced from the extraction of the bedrock.

10.1.2 Hydrogeology

Groundwater is not known to exist within Area D; however, no soil borings were advanced during the RFI to determine the presence or absence of groundwater at the Former Borrow Area.

10.1.3 Hydrology

There were no surface water bodies observed at Area D during the RFI (**Figure 10-1**). Surface runoff from rainfall events is anticipated to percolate through the angular gravel, as well as follow the surface gradient towards the NSS access road. However, no visible runoff was observed during the numerous rainfall events that occurred from August through October 2010 during the RFI, nor during a spring melt reconnaissance visit in May 2010.

10.2 AREA D PREVIOUS INVESTIGATIONS

A total of six surface soil samples were collected during the 1996 PA/SI and analyzed for GRO, VOCs, and SVOCs (Dowl/Ogden, 1996a; 1996b). The basis for the sample locations is unknown, but is presumed to represent either areas of stained soil, or areas of high disturbance. There were no detections beyond suspected laboratory contaminants.

10.3 AREA D REMEDIAL FIELD INVESTIGATIONS

No sampling activities were performed at Area D during the RFI. Site activities were limited to a site walk to identify any potential areas of contamination based on visible signs of impacted or stained soils. No such areas were observed.

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JOB No. 1008300.83010401 TIME: 18-APR-2012 11:20 FILE: D:\CAD\Proj\AFCEE\Ft Richardson-Nike Site Summit _ 1008300\RI _Report\FINAL\FIG 10-1-area D.dgn

NORTH

SCALE IN FEET

0 150

NOTE:

SITE D - VISUAL INSPECTION ONLY.

FIGURE 10-1 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

AREA D – FORMER BORROW AREA LOCATION MAP

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11.0 BACKGROUND SAMPLING AREA

A Background Sampling Area was selected during the RFI Triad planning meeting held on 3 May 2010, in order to provide for collection of background metal concentration data for NSS. Background data was historically collected at many JBER locations for both groundwater and soils. However, none of these samples were taken at NSS, which has a very different physical setting and elevation range than the rest of JBER.

The selected Background Sampling Area is located along the ridgeline adjacent to and east of USS (Figure 1-2). No activities, other than recreational hiking, are known to occur within the Background Sampling Area. The Background Sampling Area was selected to allow sample collection over a range of elevations, geologic, and hydrologic conditions to best represent the NSS investigation area. The Background Sampling Area is also upgradient and removed from any potential runoff or downgradient migration of contamination from USS.

11.1 BACKGROUND SAMPLING AREA PHYSICAL CHARACTERISTICS

The following sections describe the physical characteristics associated with the Background Sampling Area.

11.1.1 Geology

The geology of the Background Sampling Area is similar to that of USS, LSS, and Area A – wherein it is composed primarily of exposed bedrock, both weathered and unweathered, with some angular gravels that are naturally occurring from the decomposition of weathered bedrock.

11.1.2 Hydrogeology

There is no known groundwater within the Background Sampling Area; however, there were no exploratory boreholes advanced at the Background Sampling Area during the RFI. Due to its proximity to USS and location on the immediate southwestern down slope edge of Mount Gordon Lyon, groundwater is not anticipated to exist.

11.1.3 Hydrology

There are no lakes, ponds, or streams located in the Background Sampling Area. Surface flow from precipitation is thought to be minimal based on the thick vegetative mat and percolation through exposed angular gravels.

11.2 BACKGROUND SAMPLING AREA PREVIOUS INVESTIGATIONS

No previous samples are known to have been taken in the Background Sampling Area.

11.3 BACKGROUND SAMPLING AREA REMEDIAL FIELD INVESTIGATIONS

A total of 12 surface soil samples (SS01BCK to SS12BCK) were collected and analyzed for RCRA 8 metals, plus nickel and vanadium, during the RFI. Samples were collected to establish site-specific background metals concentrations only. Locations of the surface soil samples collected are shown on **Figure 11-1**. **Table 11-1** provides the Background Soil Sample Data Summary.

Table 11-2 provides 95 percent upper prediction limits (95% UPLs) for each metal. The 95% UPLs were calculated using the EPA's statistical software ProUCL Version 4.1.00 (USEPA, 2011a). ProUCL data distribution tests for background samples indicated that data for each analyte was normally distributed at a 5% significance level. Therefore, the 95% UPL (t) value was selected for each metal based on a normal distribution. Samples including non-detect results were assigned values based on maximum likelihood estimates (MLE) if available and associated 95% UPLs were selected. When MLE-based values were "N/A", the ½-detection limit (DL)-based 95% UPL for a normal distribution was selected for use as the background value.

The ProUCL user's guide advises against the use of MLE- and DL-substituted values for datasets with less than 50 samples or 60% detection, because there is a higher degree of uncertainty in selecting a distribution for such data sets (USEPA, 2011b). Cadmium and mercury had detection frequencies of less than 50% in background data sets. Therefore, a nonparametric 95% UPL (t) value was selected for these metals. In both cases, the selected value was more conservative and closer to the maximum detected concentration.

Table 11-1 Background Sampling Area - Surface Soil Samples, Analytical Detections Above Project Action Limits

	Location Identification	SS01BCK	SS02BCK	SS03BCK	SS04BCK	SS05BCK	SS06BCK
	Field Sample Identification	10NSS001SS01BCK	10NSS001SS02BCK	10NSS001SS03BCK	10NSS001SS04BCK	10NSS001SS05BCK	10NSS001SS06BCK
	Date Collected	9/9/2010	9/9/2010	9/9/2010	9/9/2010	9/9/2010	9/9/2010
	Depth (ft)	0.5	0.5	0.5	0.5	0.5	0.5
Analyte/Methods (Units)	**Project Action Limit**						
Metals (SW6020A) (mg/kg)							
Arsenic	3.9	**6.93**	**8.12**	**14.2**	**6.68**	**7.43**	**4.9**
Chromium	25	**27.7**	**27.5**	**20.4**	**30.5**	**20.5**	**12.2**

Table 11-1 Background Sampling Area - Surface Soil Samples, Analytical Detections Above Project Action Limits

	Location Identification	SS07BCK	SS08BCK	SS09BCK	SS10BCK	SS11BCK	SS12BCK
	Field Sample Identification	10NSS001SS07BCK	10NSS001SS08BCK	10NSS001SS09BCK	10NSS001SS10BCK	10NSS001SS11BCK	10NSS001SS12BCK
	Date Collected	9/9/2010	9/9/2010	9/9/2010	9/9/2010	9/9/2010	9/9/2010
	Depth (ft)	0.5	0.5	0.5	0.5	0.5	0.5
Analyte/Methods (Units)	**Project Action Limit**						
Metals (SW6020A) (mg/kg)							
Arsenic	3.9	**6.84**	**8.32**	**10.3**	**5.42**	**7.05**	**4.44**
Chromium	25	**19.1**	**16.4**	**17.9**	**20.5**	**34.3**	**38**

mg/kg milligrams per kilogram.
Indicates concentration, LOQ, or LOD is above the established project action limit
Bold Bolded result indicates positively identified compound.
LOD Limit of detection
LOQ Limit of quantitation
SW U.S. Environmental Protection Agency Solid Waste Method

Table 11-2 Background Sampling Area - 95% UPL Calculations, Metals in Surface Soil

Analyte	Number of Samples[a]	Number of Detects	Frequency of Detection (%)	Maximum Detected Concentration (mg/Kg)	Minimum Detected Concentration (mg/Kg)	Mean Concentration[b,c] (mg/Kg)	Data Distribution[b]	95% UPL[b] (mg/Kg)	Background Concentration[d] (mg/Kg)
Arsenic	12	12	100	14.2	4.44	7.55	Normal	12.5 [e]	12.5
Barium	12	12	100	119	41.3	78.0	Normal	116.1 [e]	116
Cadmium	12	5	42	0.142	0.0712	0.0920	Normal	0.141 [f]	0.141
Chromium, Total	12	12	100	38.0	12.2	23.8	Normal	38.3 [e]	38.0
Lead	12	12	100	12.5	5.09	7.68	Normal	11.6 [e]	11.6
Mercury	12	6	50	0.0754	0.0243	0.0419	Normal	0.0737 [f]	0.0737
Nickel	12	12	100	28.6	8.67	20.7	Normal	31.3 [e]	28.6
Selenium	12	11	92	0.959	0.290	0.391	Normal	0.962 [g]	0.959
Silver	12	9	75	0.166	0.0337	0.0747	Normal	0.138 [h]	0.138
Vanadium	12	12	100	74.3	40.5	60.7	Normal	81.2 [e]	74.3

Notes:

% - percent

KM - Kaplan-Meier

mg/Kg - milligrams per kilogram

MLE - maximum likelihood estimate

UPL - upper prediction limit

USEPA - U.S. Environmental Protection Agency

[a] Background soil collected at 0.5 feet below ground surface from locations upgradient of potential site influences.

[b] Statistics including selection of 95% UPLs, data distributions, and mean concentrations were calculated by USEPA's ProUCL version 4.01.00 software (USEPA, 2011a)

[c] The mean corresponding to the chosen 95% UPL and associated handling of non-detects values was selected from USEPA's ProUCL version 4.01.00 software.

[d] The minimum of either the calculated 95% UPL or maximum detected concentration was selected as the background concentration for Nike Site Summit.

[e] The 95% UPL (t) for a normal distribution was selected.

[f] Although data were normally distributed according to ProUCL, a more conservative KM-based 95% UPL for nonparametric data was selected as recommended by ProUCL Technical Guide (USEPA, 2011a) for data with low detection frequency (less than 50%) and multiple reporting limits.

[g] Both an MLE-based 95% UPL and 1/2 Detection Limit 95% UPL were available for this analyte. The authors of ProUCL prefer the MLE method over the 1/2 Detection Limit for addressing non-detect values; therefore, the MLE-based value was selected.

[h] The 1/2 Detection Limit 95% UPL value was selected because no value was available for MLE-based statistics.

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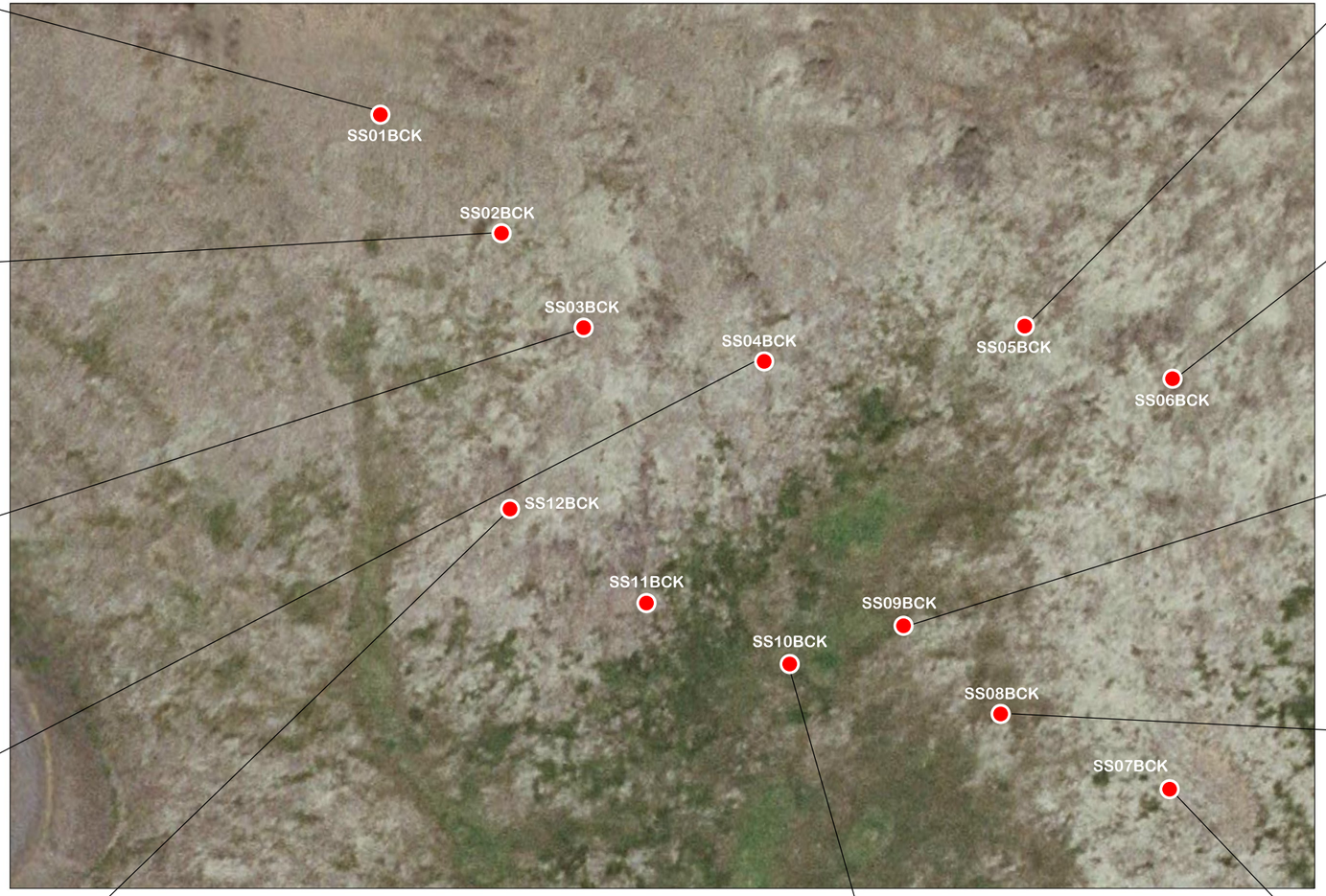

SS01BCK 0.5' bgs

Metals
- Arsenic [3] ..... **6.93 mg/Kg**
- Chromium, Total [3] ..... **27.7 mg/Kg**
- All other RCRA metals, plus Ni and V [3, 4] ..... Not detected above action limit

SS02BCK 0.5' bgs

Metals
- Arsenic [3] ..... **8.12 mg/Kg**
- Chromium, Total [3] ..... **27.5 mg/Kg**
- All other RCRA metals, plus Ni and V [3, 4] ..... Not detected above action limit

SS03BCK 0.5' bgs

Metals
- Arsenic [3] ..... **14.2 mg/Kg**
- All other RCRA metals, plus Ni and V [3, 4] ..... Not detected above action limit

SS04BCK 0.5' bgs

Metals
- Arsenic [3] ..... **6.68 mg/Kg**
- Chromium, Total [3] ..... **30.5 mg/Kg**
- All other RCRA metals, plus Ni and V [3, 4] ..... Not detected above action limit

SS05BCK 0.5' bgs

Metals
- Arsenic [3] ..... **7.43 mg/Kg**
- All other RCRA metals, plus Ni and V [3, 4] ..... Not detected above action limit

SS06BCK 0.5' bgs

Metals
- Arsenic [3] ..... **4.9 mg/Kg**
- All other RCRA metals, plus Ni and V [3, 4] ..... Not detected above action limit

SS12BCK 0.5' bgs

Metals
- Arsenic [3] ..... **4.44 mg/Kg**
- Chromium, Total [3] ..... **38 mg/Kg**
- All other RCRA metals, plus Ni and V [3, 4] ..... Not detected above action limit

SS11BCK 0.5' bgs

Metals
- Arsenic [3] ..... **7.05 mg/Kg**
- Chromium, Total [3] ..... **34.3 mg/Kg**
- All other RCRA metals, plus Ni and V [3, 4] ..... Not detected above action limit

SS10BCK 0.5' bgs

Metals
- Arsenic [3] ..... **5.42 mg/Kg**
- All other RCRA metals, plus Ni and V [3, 4] ..... Not detected above action limit

SS09BCK 0.5' bgs

Metals
- Arsenic [3] ..... **10.3 mg/Kg**
- All other RCRA metals, plus Ni and V [3, 4] ..... Not detected above action limit

SS08BCK 0.5' bgs

Metals
- Arsenic [3] ..... **8.32 mg/Kg**
- All other RCRA metals, plus Ni and V [3, 4] ..... Not detected above action limit

SS07BCK 0.5' bgs

Metals
- Arsenic [3] ..... **6.84 mg/Kg**
- All other RCRA metals, plus Ni and V [3, 4] ..... Not detected above action limit

LEGEND:

●	SURFACE SOIL SAMPLE LOCATION
' bgs	FEET BELOW GROUND SURFACE
mg/Kg	MILLIGRAMS PER KILOGRAM
Ni	NICKEL
RCRA	RESOURCE CONSERVATION AND RECOVERY ACT
V	VANADIUM
Bold/Red	DETECTED ABOVE THE ACTION LIMIT

KEY:

[1] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Migration-to-Groundwater)

[2] Reference: 18 AAC 75, Table B2 (Under 40-Inch Zone, Ingestion)

[3] Reference: 18 AAC 75, Table B1 (Migration-to-Groundwater)

[4] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Direct Contact)

[5] Reference: 18 AAC 75, Table B1 (Under 40-Inch Zone, Outdoor Inhalation)

[6] Reference: U.S. EPA Risk Based Soil Screening Regional Screening Levels (Region 9)

[7] Reference: 18 AAC 75.345, Table C (Groundwater Cleanup Levels)

[8] Reference: U.S. EPA Total Carciogenic Risk Regional Screening Levels (Region 9)

[9] Reference: U.S. EPA Total Non-Carciogenic Risk Regional Screening Levels (Region 9)

[10] Reference: No appropriate criteria could be located.

NORTH

SCALE IN FEET

0 150

FIGURE 11-1 FINAL

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT - REMEDIAL FIELD INVESTIGATION REPORT

BACKGROUND SAMPLING AREA – SAMPLE LOCATIONS AND ANALYTICAL RESULTS

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TIME: 19-APR-2012 09:50
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12.0 CONTAMINANT FATE AND TRANSPORT

12.1 POTENTIAL ROUTES OF MIGRATION

Potential pathways at NSS are depicted in HHERA report conceptual site model figures and described in the HHERA report contaminant fate and transport section (USAF, 2012b). Brief summaries are included in the below subsections.

12.1.1 Upper Site Summit

USS is characterized by limited vegetation and disturbed soils. Contaminants in surficial soils may be transported through surface runoff, weathering and erosion, infiltration and percolation of groundwater, and wind-blown particulates. Volatile chemicals in subsurface soils may diffuse into aboveground ambient and indoor air. There are no drainages immediately downgradient from USS, and infiltration capacity at USS typically exceeds rainfall. Thus, the extent of potentially affected surface water is limited to subsurface flow reemerging at downgradient off-site drainages. Groundwater at USS is also extremely limited.

12.1.2 Lower Site Summit, Area A, and Area C

Lower NSS Areas (LSS, Area A, and Area C) are characterized by disturbed soils around the facilities and crowberry/blueberry dwarf shrub tundra where soils are not disturbed. Contaminants in surficial soils may be transported through surface runoff, weathering and erosion, wind-blown particulates, infiltration and percolation of groundwater, and accumulation into the food chain via biota uptake. Volatile chemicals in surface soils, subsurface soils, and groundwater may diffuse into ambient air.

At the lower NSS Areas, surface water and sediment are seasonally present in small, ephemeral swales or gullies to the north and south of Area A, and to the south and east of LSS. Surface water to the south of Area A and LSS drains to Ship Creek far to the south. Surface water that collects on the east side of LSS drains towards a small tributary that also eventually discharges to Ship Creek. The drainages on the north side of Area A do not discharge to any major tributaries. The surface water runoff in gullies and drainages to the east of LSS and south of USS drains towards Area C and collects in a pond behind a small weir near the Pump House.

The groundwater that is present at LSS appears to exist primarily in the fill material that was placed as building pads for LSS facilities. Such groundwater may potentially mobilize through fractures in bedrock or along the surface of the underlying bedrock, and emerge as surface water downgradient. Groundwater at LSS is expected to have limited mobility and groundwater leaving the site is likely to be intercepted by three sentry wells. The unnamed creek present at the base of the valley represents the surface water divide, and presumed hydrologic groundwater divide between the east (NSS) and west (Arctic Valley Ski Area) ridgelines within Arctic Valley.

12.2 CONTAMINANT PERSISTENCE AND MIGRATION

The RFI results indicate that most contamination present at NSS is likely associated with historic fuel leaks or spills. There are also indications of historic chlorinated solvent releases, likely associated with historic vehicle and/or missile maintenance activities. No contaminant migration modeling has been conducted at NSS. Plume monitoring is likely to be a more applicable approach than modeling at NSS, given the age of the suspected releases and site-specific subsurface characteristics. Persistence and migration characteristics of the most prevalent NSS organic COPCs are discussed in the below subsections.

12.2.1 Petroleum Hydrocarbons

RFI results indicate that petroleum hydrocarbons are the most prevalent organic COPCs at NSS, primarily DRO and RRO.

Petroleum products are complex mixtures of hundreds of compounds, many of which are susceptible to chemical, physical, and biological attenuation mechanisms in the subsurface. Chemical analysis for all individual compounds in a petroleum bulk product released to the environment is generally unrealistic due to the complexity of these mixtures and the laboratory expense. Determining the chemical composition of a petroleum release is further complicated by hydrodynamic, abiotic, and biotic processes (collectively referred to as attenuation or weathering) that act on the release to change the chemical character. The longer the release is exposed to the environment, the greater the change in chemical character and the harder it is to obtain accurate analytical results reflecting the identity of the release. After extensive weathering, as has occurred at NSS, detailed knowledge of the original bulk product or its individual components is often less valuable than current site-specific information on aggregate hydrocarbon fractions, such as DRO and RRO.

Petroleum products released to the environment migrate through soil via two general pathways: (1) as bulk oil flow infiltrating the soil under the forces of gravity and capillary action, and (2) as individual compounds separating from the bulk petroleum mixture and volatilizing to air or dissolving in water. Migration is also affected by sorption of contaminants to the surfaces of soil particles and partitioning of contaminants to organic components in soil.

Lighter petroleum hydrocarbon compounds (i.e., less than 16 carbon atoms) tend to be more mobile due to greater solubility, greater volatility, and lower organic partitioning coefficients. Heavier petroleum hydrocarbon compounds are typically less soluble, less volatile, and tend to adsorb more strongly to the organic fraction of soil. DRO (10 to 25 carbon atoms) is considered a mid-range petroleum hydrocarbon compound and can have components with both light and heavy mobility characteristics. RRO (25 to 36 carbon atoms) is considered a heavy petroleum hydrocarbon compound.

Typically the majority of petroleum hydrocarbon mass will be partitioned within the soil phase. Depending on the characteristics and volume of a petroleum product release, petroleum hydrocarbons can also be encountered as phase separated liquids, which may be present near

the water table due to buoyancy and capillary effects. While in contact with groundwater, some petroleum hydrocarbon components will dissolve into groundwater, while other components will volatilize to soil vapor in the unsaturated zone. The partitioning among phases is linked to the original composition of the source, the geological and hydrogeological conditions of the site, and the amount of time since the spillage occurred.

As bulk oil migrates through the soil column, a small amount of the product mass is retained by soil particles. The bulk product retained by the soil particles is known as residual saturation. Depending upon the persistence of the bulk oil, residual saturation can potentially reside in the soil for years. Residual saturation is important as it determines the degree of soil contamination and can act as a continuing source of contamination for individual compounds to separate from the bulk product and migrate independently in air or groundwater. If the release is persistent in the environment, there can be impacts to extensive areas as the individual compounds continue to separate and migrate away from the spill area via air or groundwater.

12.2.2 TCE

RFI results indicate that TCE is a COPC at NSS. TCE is a man-made chlorinated solvent, used primarily to remove grease from metal parts. It is one of the most frequently reported organic contaminants in groundwater nationwide. Once released to the subsurface, TCE undergoes volatilization, dissolution, and degradation. TCE is moderately soluble in water. The major route of removal of TCE from water is volatilization. Volatilization of TCE from soil is slower than it is from water but more rapid than that of many other VOCs.

TCE can be degraded in the subsurface by various processes. TCE can be biologically degraded under a range of environmental conditions, if certain microbial populations are present and substrate and nutrients are available. In the absence of oxygen, biological degradation of TCE typically produces dichloroethene (DCE), which can be further degraded. DCE was not detected above the project action limit at NSS, despite the age of the suspected TCE releases. TCE can also be biologically degraded when oxygen is present, although breakdown products are more difficult to detect. Abiotically, TCE can be effectively degraded by some iron- and sulfide-containing materials.

The residence time of TCE in groundwater is much longer than in surface waters. Additionally, TCE does not break down very readily in soil, and it can pass through the soil into groundwater. While a small amount of TCE may dissolve in groundwater, it may also form pools of dense non-aqueous phase liquid as a “plume,” or it may volatilize, possibly resulting in emission as a soil vapor gas and accumulation in buildings through the process of vapor intrusion. Based on historical uses of TCE at NSS and the relatively low concentrations observed in soil and water samples, the presence of TCE as a dense non-aqueous phase liquid is not suspected at NSS. This is consistent with small volume TCE release scenarios at NSS.

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13.0 REFERENCES

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APPENDIX A

Triad Documents

Nike Site Summit
TRAID
Systematic Planning Meeting

SIGN IN SHEET **May 3, 2010**

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Nike Site Summit
TRAID
Systematic Planning Meeting

SIGN IN SHEET **May 3, 2010**

NAME	ORGANIZATION	EMAIL/TELEPHONE
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No.	Uncertainty	Recommended Resolution	Responsibility	Timing	Significance	Status
Electrical Substation C						
1	What type of transformers are present in the building and where are they located?	Obtain permission to enter the building and perform a visual inspection.	MWH	Prior to field work	Medium (impacts RI)	Open
2	Are there PCBs in the surface soils around the building?	Perform grid sampling and PCB field screening to determine analytical sampling locations	MWH	Work Plan	High	Open
Radar Towers						
1	Potential contaminant sources that may be associated with the towers are unknown.	Conduct a visual inspection to determine possible sources. If potential sources are discovered, confer with stakeholders on possible sampling.	MWH	Prior to field work	Medium	Open
Gasoline UST						
1	Is lead or are lead scavengers present in the soil or groundwater?	Lead is included under the metals analysis for samples associated with the gasoline UST. The lead scavengers ethylene dibromide (**EDB**; also called 1,2-dibromoethane), ethylene dichloride (**EDC**; also called 1,2-dichloroethane), and 1,2-dibromo-3-chloropropane (**DBCP**) are on the Method SW8260B analyte list. Samples associated with the gasoline UST are already planned to be analyzed by 8260B.	MWH	Work Plan	Low	Closed
Electrical Substation B						
1	Are there PCBs in the surface soils around the building?	Perform grid sampling and PCB field screening to determine analytical sampling locations	MWH	Field Work	High	Open

No.	Uncertainty	Recommended Resolution	Responsibility	Timing	Significance	Status
Launch Buildings						
1	Should triacetin and 2-nitrodiphenylamine be added to the analyte list?	Research the chemicals and possible analytical methods. Discussion and conclusions below: **Triacetin** is listed in the FDA's Generally Regarded as Safe (GRAS) substance database. The conclusion is listed as "There is no evidence in the available information for triacetin that demonstrates, or suggests reasonable grounds to suspect, a hazard to the public when they are used at levels that are now current or might reasonably be expected in the future." We interpret that to mean that it is not a health risk and therefore, we recommend not adding triacetin the analyte list. There is very little documentation on **2-Nitrodiphenylamine**. It is not known to be toxic or carcinogenic but that is mainly from lack of evidence. We could not find any regulatory levels for this compound. It was added to propellants as a stabilizer (around 1-2% of the total). We did not find a common analytical method to analyze for this compound. We recommend not adding **2-Nitrodiphenylamine** the analyte list.	MWH	Work Plan	Medium	Closed
Electrical Substation D and D2						
1	Should grid sampling for PCBs be performed at these structures?	Perform visual inspection and determine if increased level of sampling is warranted.	MWH	Prior to field work	Medium	Open
Opportunity Strikes Landfill						
1	What is buried in this location?	Survey the area with a magnetometer and then dig a test pit in each of the two locations with the largest magnetic disturbance and collect one analytical sample from each test pit.	MWH	Work Plan	Medium	Open

No.	Uncertainty	Recommended Resolution	Responsibility	Timing	Significance	Status
Background Metals						
1	What are the natural concentrations of metals at the site?	Conduct background sampling for soil and sediment (from ephemeral drainages). Samples to be collected from upgradient and on the same ridge as Nike Site Summit.	MWH	Work Plan	Medium	Open

No.	Uncertainty	Recommended Resolution	Responsibility	Timing	Significance	Status
Site-Wide						
1	What type of access will the site have in the long term?	Currently used for military training. Soldiers go into sites (upper and lower) but do not go inside of the buildings. Trespassing by general public is common. Currently considering limited public access –guided tours. Some of the buildings may be opened for public access during the tours. Some buildings are slated for demo, slabs will remain in place. Final site access has yet to be determined.	Army/Air Force	Does not affect RI.	Low	Ongoing
2	Is site cleanup going to be conducted under State oversite or will it remain under the CERCLA process?	The process under which the cleanup will occur is dependent on the results of the RI.	Army/Air Force/EPA	Does not affect RI.	Low	Ongoing
3	Are recreational users allowed at the site?	DPW will check on if recreational passes are given for Nike Site Summit.	Army	HHERA work plan	Medium (impacts HHERA)	Closed. Per Lisa Graham, recreational access is currently allowed.
4	How is the consumption of berries picked from around the site going to be handled?	It will be handled qualitatively in the risk assessment.	MWH	Evaluate during field activities	Medium (impacts HHERA)	Open
5	What are the site groundwater characteristics?	Need to determine groundwater characteristics (quantity, quality, etc.) during the RI.	MWH	Field work	Medium (impacts field work and HHERA)	Open

No.	Uncertainty	Recommended Resolution	Responsibility	Timing	Significance	Status
6	Are there seeps associated with the site?	Look for seeps during the RI.	MWH	Evaluate during field activities	Medium (impacts HHERA)	Open
7	Does the weir pond still exist?	Determine during field investigation.	MWH	Evaluate during field activities	Medium (impacts HHERA)	Open
8	What ecological receptors may be present in the weir pond?	Look for their presence during the RI.	MWH	Evaluate during field activities	Medium (impacts HHERA)	Open
9	Should sampling be conducted beneath building foundations (e.g., floor drains)?	Currently are not planning to sample beneath buildings.	Army	NA	Low	Closed
10	Where were the TCE and lead concentrations that exceeded Method II located (Mentioned in 2000 E&E report)?	Review report and determine where these samples came from. The detections came from surface soil samples collected at Lower Site Summit during the PA/SI. Additional sampling in these areas is already planned for in the draft work plan being prepared.	MWH	Work Plan	Medium	Closed

Nike Site Summit - TRIAD Field Status Meeting
August 26, 2010

SIGN-IN SHEET

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Nike Site Summit - TRIAD Field Status Meeting
September 28, 2010

SIGN-IN SHEET

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Marty Brewer	BY PHONE	ADEC	
Earl Crapps	BY PHONE	ADEC	
Bill Adams	BY PHONE	EPA	

TECHNICAL MEMORANDUM

MWH

To: Dick Nenahlo
JBER, Alaska

Date: June 6, 2011

From: Heather Williams

Subject: June 2, 2011 Meeting Notes
Nike Site Summit Groundwater Use Determination

INTRODUCTION

A meeting was held June 2, 2011 to discuss ADEC comments dated April 20, 2011 regarding groundwater use at Nike Site Summit. Meeting materials, including a participant sign-in sheet, are attached here.

RESULTS

The meeting resulted in the following agreements:

1) Meeting participants concurred that GW to GW pathways from USS (potentially impacting the Alpenglow well) are not viable and that there is no need to include those pathways in the risk assessment CSM
2) ADEC believes that GW to SW pathways from USS are viable (percolation from USS through fractured bedrock, daylighting within the Ship Creek watershed that is classified by ADEC Drinking Water Program as a Zone C Surface Water (Watershed) – Drinking Water Protection Area). This pathway will need to be considered in the risk assessment CSM.
3) Meeting participants concurred that GW to GW, GW to SW and SW to SW pathways should all be considered for the lower areas of NSS.

FOLLOWUP ACTIONS

ADEC requested an additional figure, similar to Figure 4, to provide an up-valley perspective of the relative elevations of Upper Site Summit, the intermediate Ship Creek tributary surface water divide and the Alpenglow well. Figure 5 is attached here.

Nike Site Summit – GW 350 RTC Meeting
June 2, 2011

SIGN-IN SHEET

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Matt Morley	on phone	MWH	
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2 June 2011

Nike Site Summit
GW 350 Determination Tech Memo
Response To Comments Meeting

MWH

BUILDING A BETTER WORLD

GW Pathway Discussions To Date

- 2010 TRIAD Meetings Defined Conceptual Site Model (CSM) Pathways
- Approved Risk Assessment Work Plan (RAWP) CSMs (August 2010) do not include groundwater (GW) pathway for Upper Site Summit (USS) portion of Nike Site Summit (NSS)
- Army submitted a Tech Memo dated 2/16/11 to agencies requesting GW 350 Determination for USS portion of NSS. Tech Memo did not include graphic depictions of wet and dry wells encountered during field work, local topography, etc.
- ADEC comments dated 4/20/11 reject 350 Determination for NSS
- Today's meeting is intended to provide additional information and discussions relative to ADEC's 4/20/11 comments

ADEC Comments Received

- ADEC 4/20/11 comment summary
  - **Intro** - ADEC will not approve 350 determination for NSS, but will consider risk-based ACLs under Method 4
  - **Analysis 1B** - ADEC disagrees with assessment that NSS is not within the zone of contribution for Alpenglow and/or MOA Intake. Lack of surface water indicates that water is migrating through soil/bedrock to GW.
  - **Analysis 1C** - ADEC indicates that NSS is within a recharge area and a wellhead protection area
    - USS in Zone A GW Protection Area for Alpenglow well (Several Months Time of Travel) and Zone C SW Protection Area (Watershed) for Ship Creek
    - Lower Site Summit (LSS) in Zone C SW Protection Area (Watershed) for Ship Creek
  - **Conclusions** - Table C GW cleanup levels apply and groundwater pathway must be evaluated in risk assessment

Discussion Topics

1. Lower Site Summit (LSS) was not included in GW 350 determination request
   - LSS GW pathway was included in approved Work Plan CSM
   - LSS GW Pathway will be considered in the risk assessment
   - Army and agencies appear to be in agreement regarding LSS?

Discussion Topics (cont.)

2. USS Water Use and Land Use
   A. USS Water Use History
      - No evidence of GW use for personnel stationed at USS and LSS during historical operations
      - Water for former USS and LSS operations pumped from impounded SW pond far below the sites
   B. USS Land Use
      - USS is located on Joint Base Elmendorf-Richardson and is controlled by the U.S. Army
      - No housing facilities exist at USS, only communications towers
      - Visits are currently limited to maintenance and training personnel (not likely to change)

Discussion Topics (cont.)

3. USS Water Availability and Transport
   A. Locations of water encountered during field work (Figure 1)
      - USS GW in very limited areal extent
      - USS GW locations are outside the Zone A Alpenglow well boundary as drawn by ADEC Drinking Water
      - Some USS GW locations are within the Zone C Ship Creek boundary as drawn by ADEC Drinking Water
      - SW was not encountered at USS during field work
   B. Minimal volume of GW was encountered in the three USS wells (Figure 2)
      - Two wells had GW within localized UST excavations
      - Third well went dry and did not recover
      - The three wells were bounded by dry boreholes drilled to bedrock

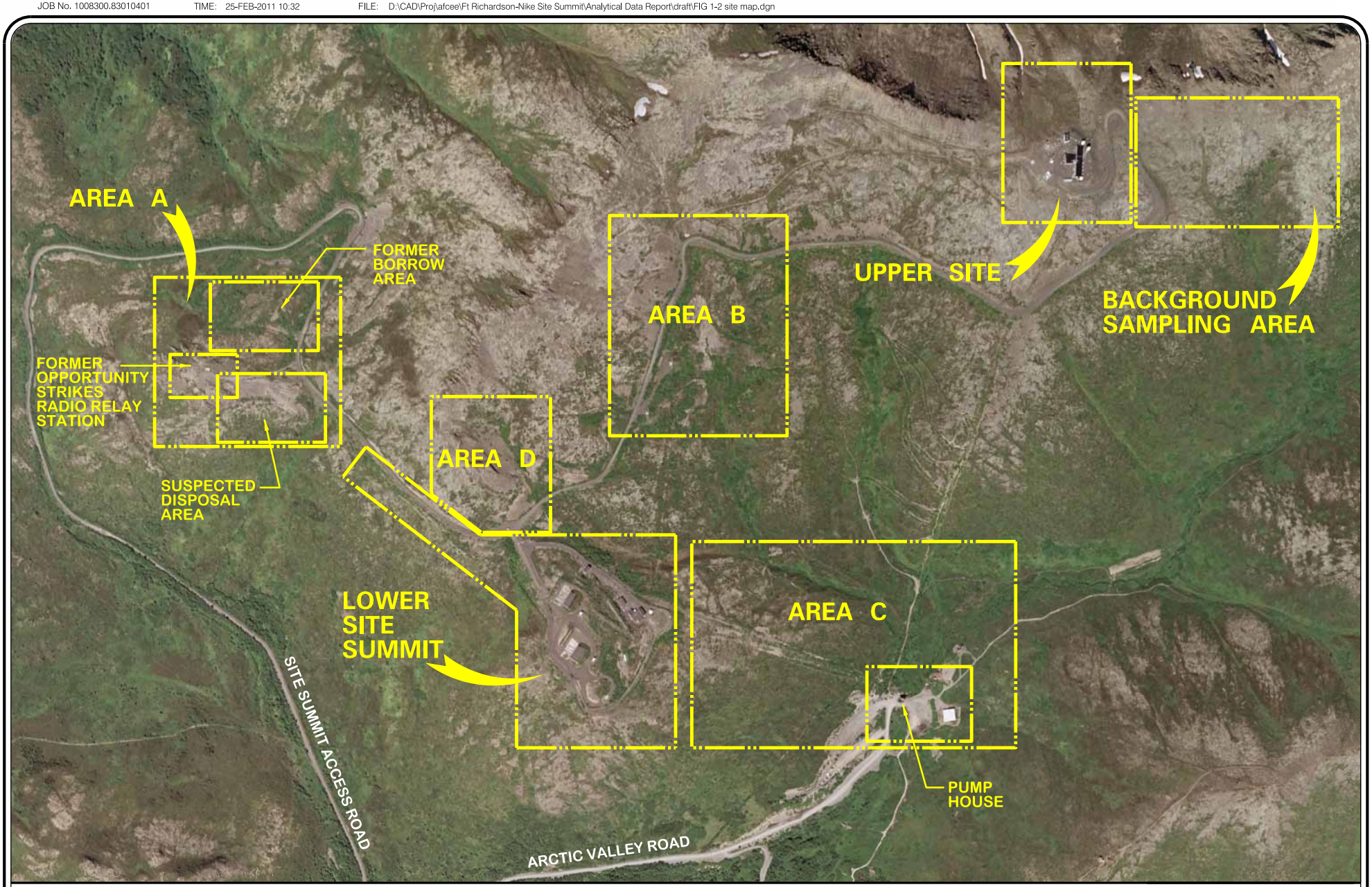
Discussion Topics (cont.)

3. USS Water Availability and Transport (cont.)
   C. Flow paths for surface and subsurface USS drainage (Figures 2 and 3 and Google Earth flyover)
      - Zone C Ship Creek boundary doesn't account for site-specific topography
      - Due to USS pad construction fill placement and original bedrock contours, site-specific data indicates:
        – USS surface flows drain toward center of pad and permeate into the former UST excavation areas
        – USS subsurface flows likely follow pre-construction bedrock contours away from Ship Creek watershed
      - USS water most likely flows away from Alpenglow well and Ship Creek watershed

Discussion Topics (cont.)

3. USS Water Availability and Transport (cont.)
   D. USS and Alpenglow well are hydraulically isolated
      - Site-specific surface water drainage (Figure 3)
      - Relative elevations and distances (Figure 4)
      - Alpenglow well is not classified as under the influence of surface water
        – classification supported by draw-down test data indicating small zone of well influence
   E. Analytical data from Alpenglow well
      - No evidence of anomalous compounds, although the data set is rather limited
      - Not directly relevant to GW 350 determination, but a positive indicator nonetheless

JOB No. 1008300.83010401 TIME: 25-FEB-2011 10:32 FILE: D:\CAD\Proj\afcee\Ft Richardson-Nike Site Summit\Analytical Data Report\draft\FIG 1-2 site map.dgn



NORTH

SCALE IN FEET

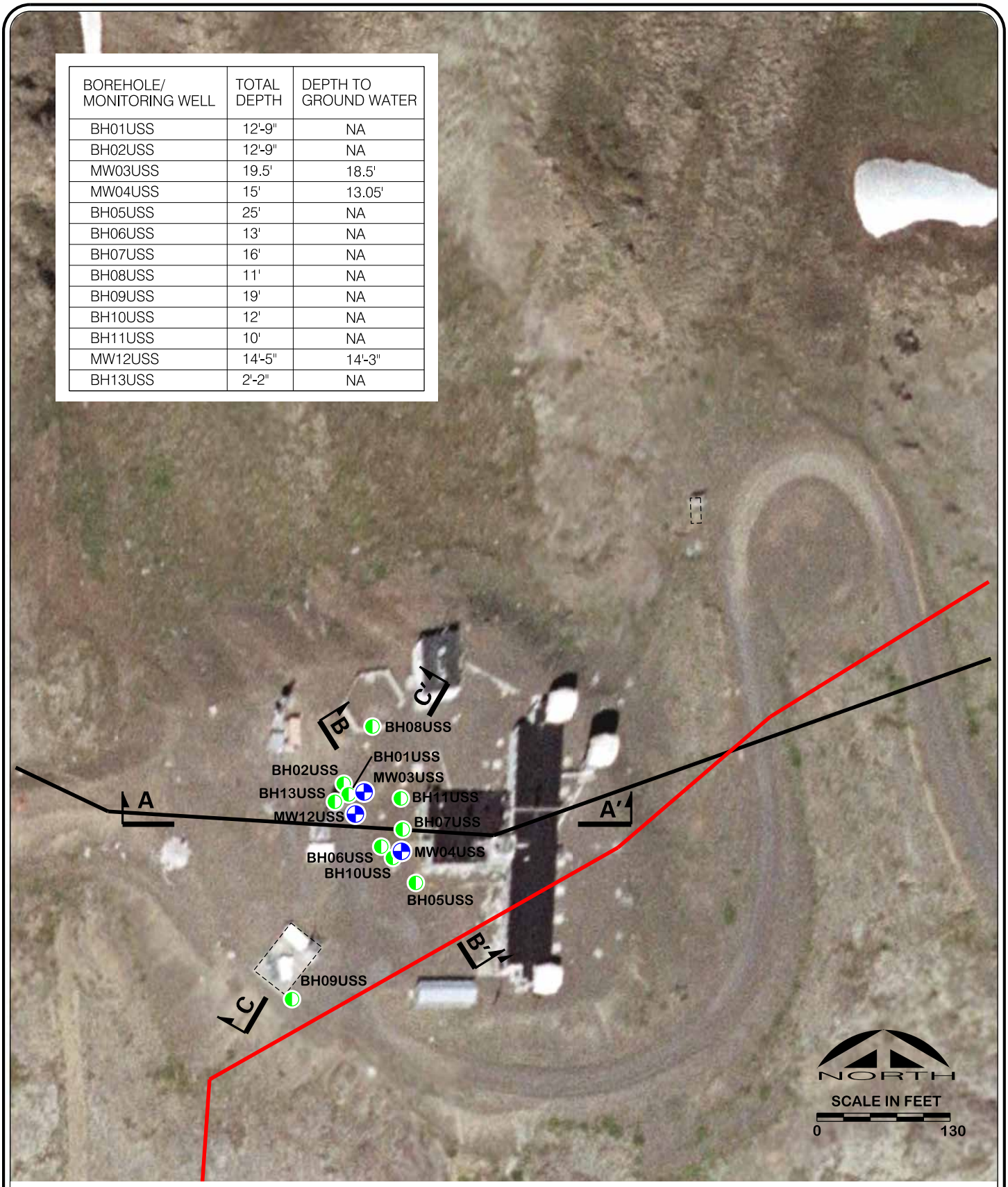
0 1000

FIGURE 1-2 DRAFT

FORT RICHARDSON, ANCHORAGE, ALASKA
NIKE SITE SUMMIT - ANALYTICAL DATA REPORT

SITE MAP

BOREHOLE/ MONITORING WELL	TOTAL DEPTH	DEPTH TO GROUND WATER
BH01USS	12'-9"	NA
BH02USS	12'-9"	NA
MW03USS	19.5'	18.5'
MW04USS	15'	13.05'
BH05USS	25'	NA
BH06USS	13'	NA
BH07USS	16'	NA
BH08USS	11'	NA
BH09USS	19'	NA
BH10USS	12'	NA
BH11USS	10'	NA
MW12USS	14'-5"	14'-3"
BH13USS	2'-2"	NA



Source Data:
Alaska Department of Environmental Conservation
http://map.dec.state.ak.us/ArcGIS/rest/services/EH/DWP_Drinking_Water_Protection_Area_ArcGISOnline/MapServer

LEGEND:

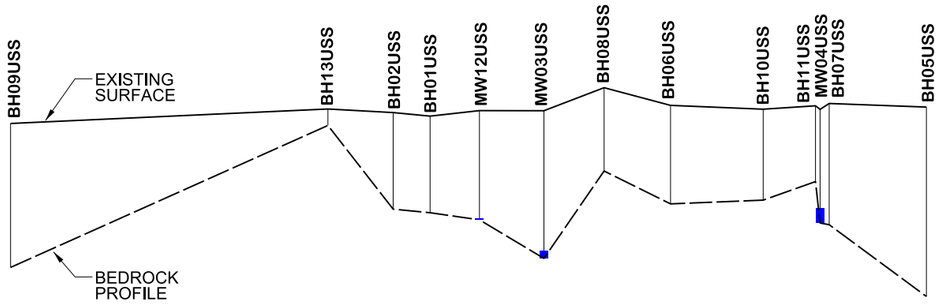
- DRINKING WATER PROTECTION AREA (SURFACE WATER) ZONE C (WATERSHED)
- DRINKING WATER PROTECTION AREA (GROUND WATER) ZONE A (SEVERAL MONTHS TIME TRAVEL)
- MONITORING WELL
- BOREHOLE/ SUBSURFACE SOIL

FIGURE 1

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT

UPPER SITE SUMMIT USS GROUND WATER MAP

JOB No. 1008300.83010205 TIME: 02-JUN-2011 11:30 FILE: D:\CAD\Proj\afcee\Ft Richardson-Nike Site Summit _1008300\GW_Determination\draft\FIG 01 - upper site.dgn



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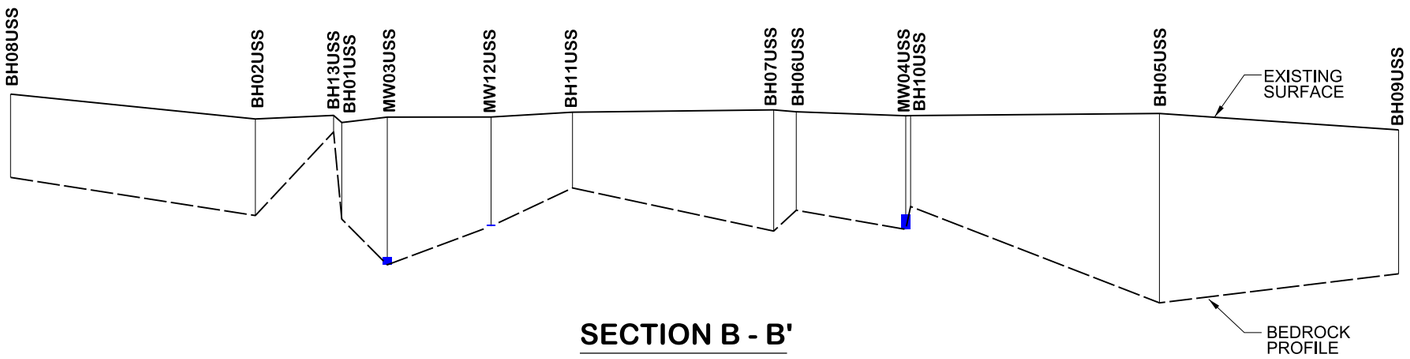

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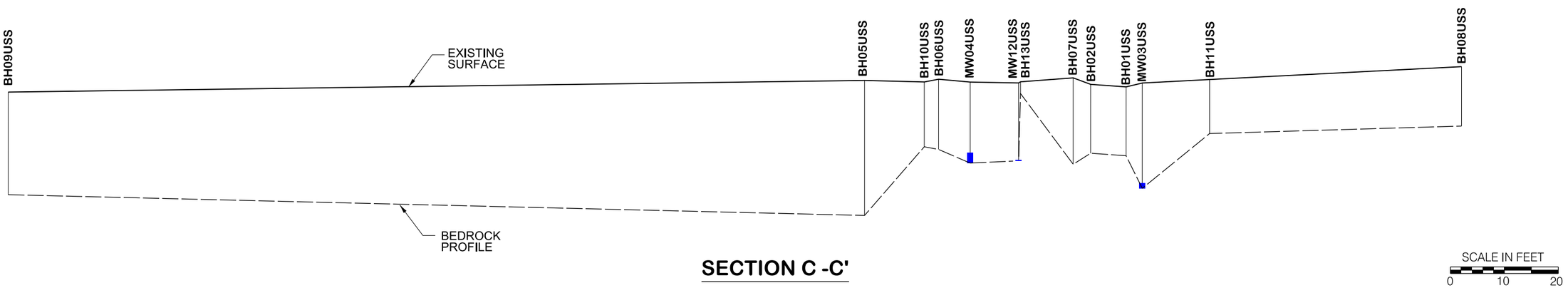


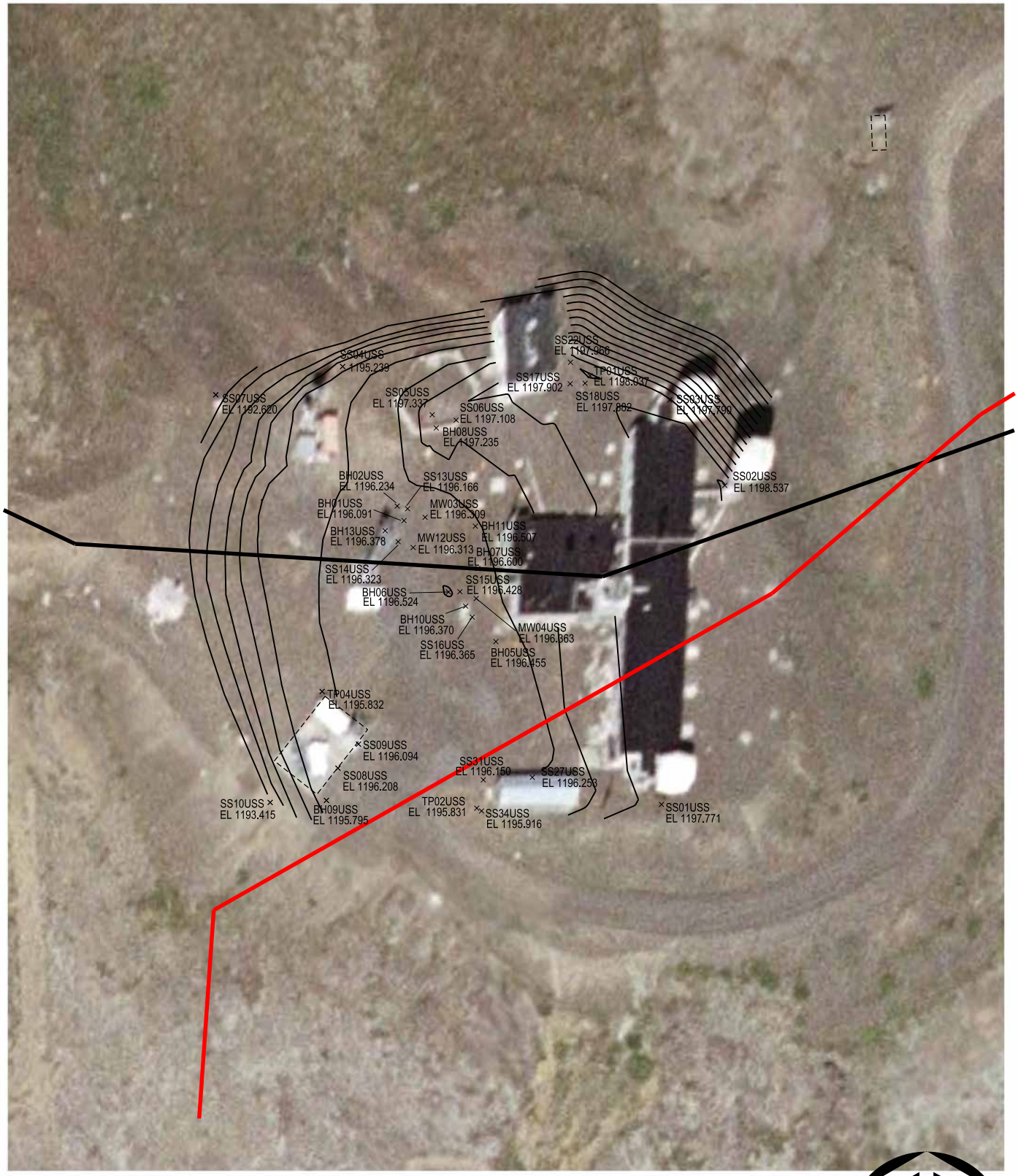
SECTION C -C'

FIGURE 2

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT

USS CROSS SECTIONS

JOB No. 1008300,83010205 TIME: 02-JUN-2011 11:31 FILE: D:\CAD\Proj\afcee\Ft Richardson-Nike Site Summit _ 1008300\GW_Determination\draft\FIG 02 - section.dgn



NORTH

SCALE IN FEET

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Source Data:
Alaska Department of Environmental Conservation
http://map.dec.state.ak.us/ArcGIS/rest/services/EH/DWP_Drinking_Water_Protection_Area_ArcGISOnline/MapServer

LEGEND:

DRINKING WATER PROTECTION AREA (SURFACE WATER) ZONE C (WATERSHED)

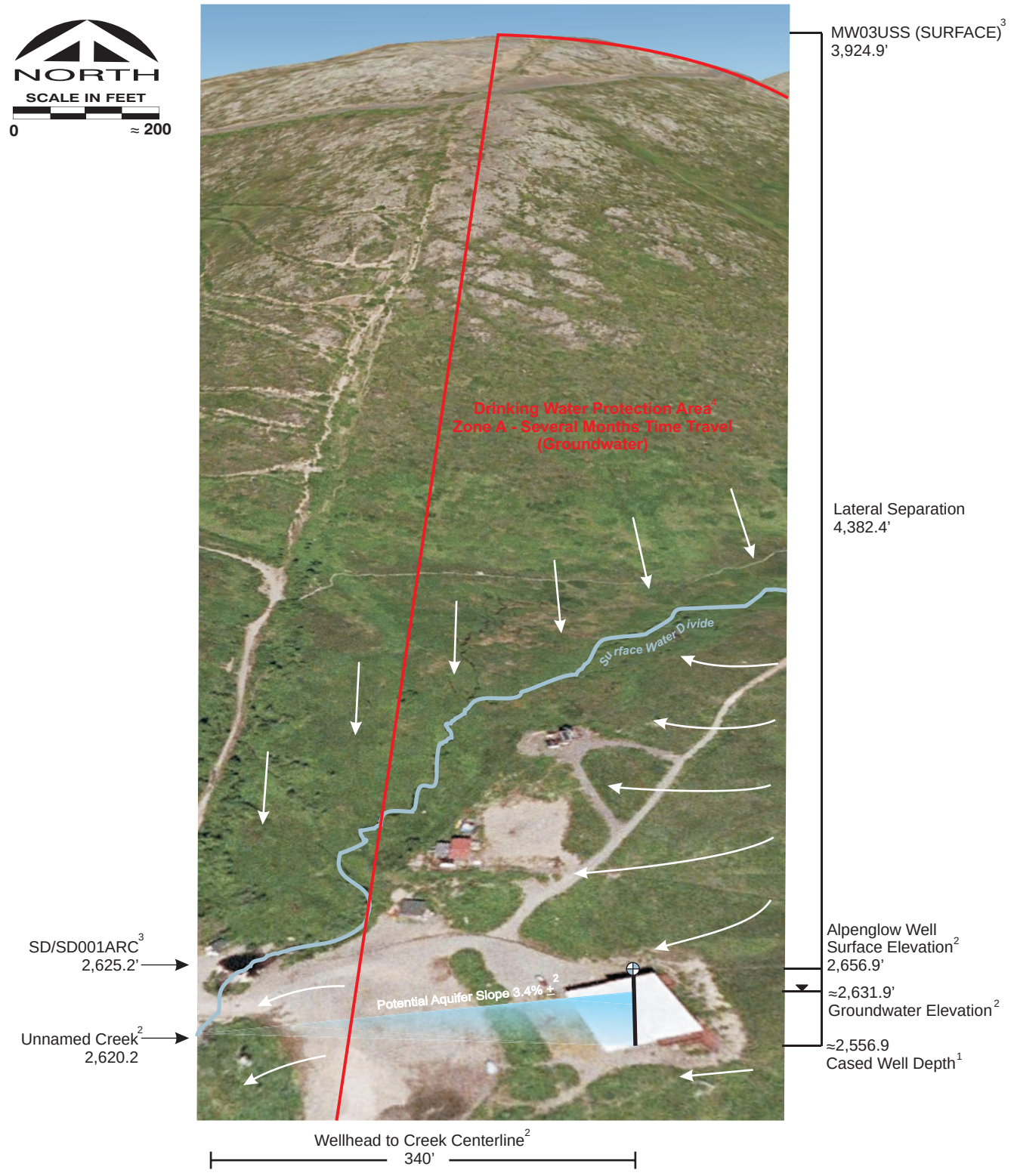
DRINKING WATER PROTECTION AREA (GROUND WATER) ZONE A (SEVERAL MONTHS TIME TRAVEL)

FIGURE 3

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT

SURFACE CONTOURS

JOB No. 1008300.83010205 TIME: 02-JUN-2011 11:33 FILE: D:\CAD\Proj\afcee\Ft Richardson-Nike Site Summit _1008300\GW_Determination\draft\FIG 03 - comtours.dgn



NOTES:

[1] WELL LOG INFORMATION FROM PENN JERSEY DRILLING COMPANY SEPTEMBER 1972.

[2] GROUNDWATER AQUIFER PLAN AND PROFILE FROM HAWTHORNE ENGINEERING, 7/9/1992.

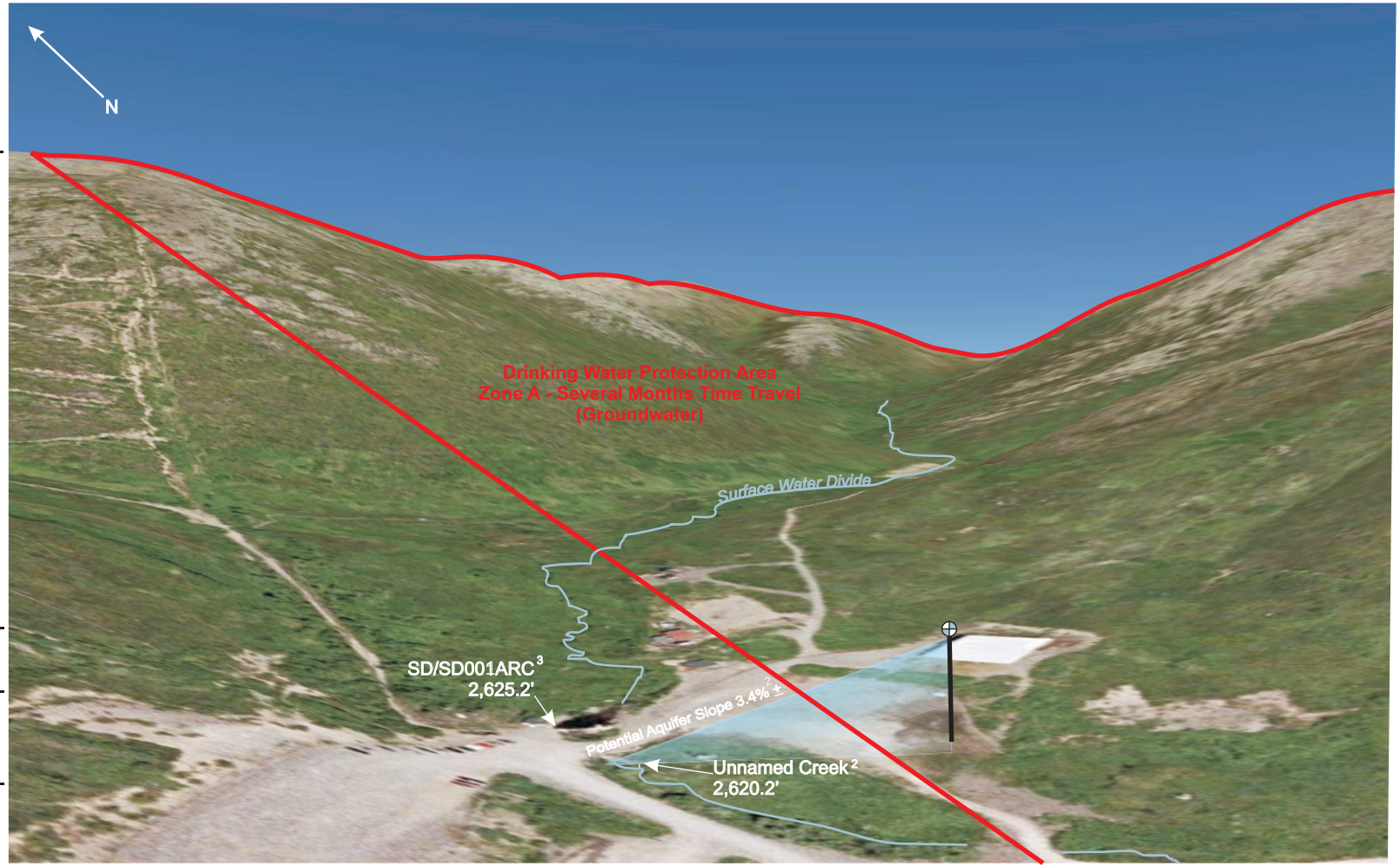
[3] NIKE SITE SUMMIT SAMPLE ELEVATIONS 2010 REMEDIAL FIELD INVESTIGATION 9/13-14/2010

[4] ZONE A - DRINKING WATER PROTECTION AREA - Alaska Department of Environmental Conservation http://map.dec.state.ak.us/ArcGIS/rest/services/EH/DWP_Drinking_Water_Protection_Area_ArcGISOnline/MapServer

FIGURE 4

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT

ALPENGLOW WATER WELL PUBLIC WATER SYSTEM # 217908 RELATIVE DISTANCES



NOTES:

WELL LOG INFORMATION FROM PENN JERSEY DRILLING COMPANY SEPTEMBER 1972.

[2] GROUNDWATER AQUIFER PLAN AND PROFILE FROM HAWTHORNE ENGINEERING, 7/9/1992.

[3] NIKE SITE SUMMIT SAMPLE ELEVATIONS 2010 REMEDIAL FIELD INVESTIGATION 9/13-14/2010

[4] ZONE A - DRINKING WATER PROTECTION AREA - Alaska Department of Environmental Conservation http://map.dec.state.ak.us/ArcGIS/rest/services/EH/DWP_Drinking_Water_Protection_Area_ArcGISOnline/MapServer

FIGURE 5

JOINT BASE ELMENDORF-RICHARDSON, ALASKA
NIKE SITE SUMMIT

ALPENGLOW WATER WELL
PUBLIC WATER SYSTEM # 217908
RELATIVE DISTANCES FROM UPPER SITE SUMMIT

APPENDIX B

Stakeholder Comments and Responses

APPENDIX C

Summary Tables of Analytical Detections

Table C-5.1 Upper Site Summit - Surface Soil Samples, Analytical Detections

Location Identification		SS01USS		SS02USS		SS03USS		SS04USS		SS05USS		SS06USS	
Field Sample Identification		10NSS001SS01USS		10NSS001SS02USS		10NSS001SS03USS		10NSS001SS04USS		10NSS001SS05USS		10NSS001SS06USS	
Date Collected		8/4/2010		8/4/2010		8/4/2010		8/4/2010		8/4/2010		8/4/2010	
Depth (ft)		0.5		0.5		0.5		0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**												
Total Petroleum Hydrocarbons (mg/kg)													
Gasoline Range Organics (GRO)/AK101	300	1.83	U	2.31	U	1.85	U	1.85	U	3.27	U	2.31	U
Diesel Range Organics (DRO)/AK102	250	**93.5**	D	**2270**	D	**32.8**		**14.1**	F	**51.6**		**127**	
Residual Range Organics (RRO)/AK103	10000	**243**	D	**608**	D	**227**	D	**88.9**		**122**		**31.9**	
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	**3.1**		**5.35**		**19.1**		NA		NA		NA	
Barium	1100	**326**		**162**		**188**		NA		NA		NA	
Cadmium	5	**0.144**	F	**0.115**	F	**0.162**	F	NA		NA		NA	
Chromium	25	**29.7**		**21.2**		**25**		NA		NA		NA	
Chromium, Hexavalent/SW7196	25	NA		NA		NA		NA		NA		NA	
Lead	400	**12.1**		**8.85**		**20.3**		NA		NA		NA	
Nickel	86	**22.3**		**21.1**		**24.6**		NA		NA		NA	
Selenium	3.4	0.492	U	**0.185**	F	**0.19**	F	NA		NA		NA	
Silver	11.2	**0.0434**	F	**0.0603**	F	**0.0714**	F	NA		NA		NA	
Vanadium	710	**75.3**		**64.8**		**74.1**		NA		NA		NA	
Mercury/SW7471A (µg/kg)	1400	**29.4**	F	**53.9**		**57.2**		NA		NA		NA	
Polychlorinated Biphenyls (PCBs)/SW8082 (µg/kg)													
PCB-1260 (Aroclor 1260)	1000	52.2	U	53.4	U	52.7	U	53.4	U	NA		NA	
Volatile Organic Compounds (SW8260B) (µg/kg)													
1,2,3-Trichlorobenzene	87	18.3	U	23.1	U	18.5	U	18.5	U	32.7	U	23.1	U
1,2,3-Trichloropropane	0.53	*5.7*	U	*7.19*	U	*5.78*	*U*	*5.78*	U	*10.2*	U	*7.22*	U
1,2,4-Trichlorobenzene	850	18.3	U	23.1	U	18.5	U	18.5	U	32.7	U	23.1	U
1,2,4-Trimethylbenzene	23000	18.3	U	23.1	U	18.5	U	**10.6**	F	32.7	U	**11.1**	F
1,2-Dibromoethane (EDB)	0.16	*5.7*	U	*7.19*	U	*5.78*	*U*	*5.78*	U	*10.2*	U	*7.22*	U
1,3,5-Trimethylbenzene	23000	18.3	U	23.1	U	18.5	U	18.5	U	32.7	U	23.1	U
2-Butanone (MEK)	59000	183	U	231	U	185	U	185	U	327	U	231	U
4-Methyl-2-pentanone (MIBK)	8100	183	U	231	U	185	U	185	U	327	U	231	U
Acetone	88000	NA		NA		NA		NA		NA		NA	
Benzene	25	9.13	U	11.5	U	9.27	U	9.27	U	*5.09*	U	11.6	U
Carbon disulfide	12000	18.3	U	23.1	U	18.5	U	18.5	U	32.7	U	23.1	U
Ethylbenzene	6900	18.3	U	23.1	U	18.5	U	18.5	U	32.7	U	23.1	U
Isopropylbenzene	51000	18.3	U	23.1	U	18.5	U	18.5	U	32.7	U	23.1	U
m,p-Xylene (Sum of isomers)	63000	36.5	U	46.1	U	37.1	U	37.1	U	65.3	U	46.3	U
Methylene chloride	16	*22.7*	U	**33.9**	F,UB	**35**	F,UB	**28.7**	F,UB	**50.6**	F,UB	**34.5**	F,UB
Naphthalene	20000	**39.5**		**32.3**	F	**44.1**		**42.1**		**57.8**	F	46.3	U
n-Butylbenzene	15000	18.3	U	23.1	U	18.5	U	18.5	U	32.7	U	23.1	U
n-Propylbenzene	15000	18.3	U	23.1	U	18.5	U	**21.9**		32.7	U	23.1	U
o-Xylene	63000	18.3	U	**15.9**	F	18.5	U	**13.2**	F	32.7	U	**17.4**	F
p-Isopropyltoluene	NE	18.3	U	23.1	U	18.5	U	18.5	U	32.7	U	**13.7**	F
sec-Butylbenzene	12000	18.3	U	23.1	U	18.5	U	18.5	U	32.7	U	23.1	U
Styrene	960	18.3	U	23.1	U	18.5	U	18.5	U	32.7	U	23.1	U
Toluene	6500	18.3	U	23.1	U	18.5	U	18.5	U	32.7	U	23.1	U
Trichloroethene (TCE)	20	*5.7*	U	*7.19*	U	*5.78*	*U*	*5.78*	U	*10.2*	U	*7.22*	U
Xylenes, Total	63000	54.8	U	69.2	U	55.6	U	55.6	U	98	U	69.4	U

Table C-5.1 Upper Site Summit - Surface Soil Samples, Analytical Detections

Location Identification		SS01USS		SS02USS		SS03USS		SS04USS		SS05USS		SS06USS	
Field Sample Identification		10NSS001SS01USS		10NSS001SS02USS		10NSS001SS03USS		10NSS001SS04USS		10NSS001SS05USS		10NSS001SS06USS	
Date Collected		8/4/2010		8/4/2010		8/4/2010		8/4/2010		8/4/2010		8/4/2010	
Depth (ft)		0.5		0.5		0.5		0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**												
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)													
2-Methylnaphthalene	6.1	**0.109**	F	0.264	U	0.263	U	0.267	U	0.293	U	0.262	U
4-Chloroaniline	0.057	*0.0822*	U	*0.0824*	U	*0.0819*	*U*	*0.0832*	U	*0.0916*	U	*0.0816*	U
Acenaphthene	180	**1.49**		**0.282**		**0.472**		0.267	U	0.293	U	0.262	U
Acenaphthylene	180	0.263	U	0.264	U	0.263	U	0.267	U	0.293	U	0.262	U
Anthracene	3000	**2.3**		**0.454**		**0.865**		**0.134**	F	0.293	U	0.262	U
Benzo(a)anthracene	3.6	**4.16**		**1.22**		**1.11**		**0.207**	F	0.293	U	0.262	U
Benzo(a)pyrene	0.49	**3.85**		**1.12**		**1**		**0.198**	F	*0.0916*	U	*0.0816*	U
Benzo(b)fluoranthene	4.9	**3.79**		**3.18**		**1.05**		**0.242**	F	0.293	U	0.262	U
Benzo(g,h,i)perylene	1400	**1.96**		**1.58**		**0.515**		**0.103**	F	0.293	U	0.262	U
Benzo(k)fluoranthene	49	**1.82**		**0.941**		**0.415**		**0.0848**	F	0.293	U	0.262	U
bis(2-ethylhexyl) Phthalate	13	0.263	U	0.264	U	0.263	U	0.267	U	0.293	U	0.262	U
Chrysene	360	**4.8**		**2.56**		**1.25**		**0.245**	F	0.293	U	0.262	U
Dibenz(a,h)anthracene	0.49	**0.64**		**2.42**		**0.16**	F	*0.0832*	U	*0.0916*	U	*0.0816*	U
Dibenzofuran	11	**0.424**		**0.144**	F	**0.243**	F	0.267	U	0.293	U	0.262	U
Fluoranthene	1400	**11.6**	D	**2.82**		**2.61**		**0.504**		**0.105**	F	0.262	U
Fluorene	220	**1.14**		**0.257**	F	**0.513**		0.267	U	0.293	U	0.262	U
Indeno(1,2,3-c,d)Pyrene	4.9	**1.88**		**1.5**		**0.486**		**0.105**	F	0.293	U	0.262	U
Naphthalene	20	**0.145**	F	0.264	U	**0.105**	F	0.267	U	0.293	U	0.262	U
Phenanthrene	3000	**8.93**	D	**1.3**		**2.97**		**0.462**		**0.124**	F	0.262	U
Pyrene	1000	**9.91**	D	**5.15**		**2.45**		**0.468**		**0.145**	F	0.262	U

Table C-5.1 Upper Site Summit - Surface Soil Samples, Analytical Detections

Location Identification		SS07USS		SS08USS		SS08USS Dup		SS09USS		SS10USS		SS11USS	
Field Sample Identification		10NSS001SS07USS		10NSS001SS08USS		10NSS201SS08USS		10NSS001SS09USS		10NSS001SS10USS		10NSS001SS11USS	
Date Collected		8/4/2010		8/4/2010		8/4/2010		8/4/2010		8/4/2010		8/5/2010	
Depth (ft)		0.5		0.5		0.5		All		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**												
Total Petroleum Hydrocarbons (mg/kg)													
Gasoline Range Organics (GRO)/AK101	300	1.95	U	1.99	U	2	U	1.96	U	2.36	U	11.4	UJ
Diesel Range Organics (DRO)/AK102	250	21.4	U	**6.8**	F	21.3	U	**23**		**554**	D	**562**	D
Residual Range Organics (RRO)/AK103	10000	**38.9**		**61.4**		**46.7**		**158**		**3330**	D	**2910**	D
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	**3.36**		**6.45**		**8.21**		**6.37**		**15.2**		**11.2**	
Barium	1100	**222**		**72.2**		**69.2**		**93.9**		**129**		**1240**	
Cadmium	5	**0.191**	F	**0.221**		**0.218**		**0.278**		**2.92**		**23.9**	
Chromium	25	**28.8**		**30**		**33.7**		**63.2**		**35.2**		**54.5**	
Chromium, Hexavalent/SW7196	25	NA		**0.16**	F	**0.14**	F	**0.89**		**0.26**	F	NA	
Lead	400	**9.29**		**23.2**		**26.8**		**94.7**		**113**		**950**	
Nickel	86	**23**		**37**		**47.6**		**33.2**		**32.7**		**14.1**	
Selenium	3.4	0.514	U	**0.175**	F	0.534	U	0.503	U	**0.299**	F	**2.91**	
Silver	11.2	**0.051**	F	**0.12**		**0.0675**	F	**0.0751**	F	**0.0814**	F	**2.62**	
Vanadium	710	**95.3**		**134**		**56.8**		**59.8**		**64.9**		**18.1**	
Mercury/SW7471A (µg/kg)	1400	**107**		**57.7**		**73.5**		**77.2**		**52.6**		**815**	
Polychlorinated Biphenyls (PCBs)/SW8082 (µg/kg)													
PCB-1260 (Aroclor 1260)	1000	53.3	U	53.3	U	52.7	U	53	U	**21.4**	F	112	U
Volatile Organic Compounds (SW8260B) (µg/kg)													
1,2,3-Trichlorobenzene	87	19.5	U	19.9	U	20	U	19.6	U	23.6	U	*35.6*	U
1,2,3-Trichloropropane	0.53	*6.08*	U	*6.21*	U	*6.24*	U	*6.1*	U	*7.37*	U	*35.6*	U
1,2,4-Trichlorobenzene	850	19.5	U	19.9	U	20	U	19.6	U	23.6	U	114	U
1,2,4-Trimethylbenzene	23000	19.5	U	19.9	U	20	U	19.6	U	23.6	U	114	U
1,2-Dibromoethane (EDB)	0.16	*6.08*	U	*6.21*	U	*6.24*	U	*6.1*	U	*7.37*	U	*35.6*	U
1,3,5-Trimethylbenzene	23000	19.5	U	19.9	U	20	U	19.6	U	23.6	U	114	U
2-Butanone (MEK)	59000	195	U	199	U	200	U	196	U	236	U	1140	U
4-Methyl-2-pentanone (MIBK)	8100	195	U	199	U	200	U	196	U	236	U	1140	U
Acetone	88000	NA		NA		NA		NA		NA		NA	
Benzene	25	9.74	U	9.95	U	10	U	9.78	U	11.8	U	*17.8*	U
Carbon disulfide	12000	19.5	U	19.9	U	20	U	19.6	U	23.6	U	114	U
Ethylbenzene	6900	19.5	U	19.9	U	20	U	19.6	U	23.6	U	114	U
Isopropylbenzene	51000	19.5	U	19.9	U	20	U	19.6	U	23.6	U	114	U
m,p-Xylene (Sum of isomers)	63000	39	U	39.8	U	40	U	39.1	U	47.2	U	228	U
Methylene chloride	16	**45.8**	F,UB	**54.1**	F,UB	**28**	F,UB	**44.8**	F,UB	**39.9**	F,UB	**148**	F,UB
Naphthalene	20000	39	U	**21.9**	F	**33**	F	**24.8**	F	**25.5**	F	228	U
n-Butylbenzene	15000	19.5	U	19.9	U	20	U	19.6	U	23.6	U	114	U
n-Propylbenzene	15000	19.5	U	19.9	U	20	U	19.6	U	23.6	U	114	U
o-Xylene	63000	19.5	U	19.9	U	20	U	19.6	U	23.6	U	114	U
p-Isopropyltoluene	NE	19.5	U	19.9	U	20	U	19.6	U	23.6	U	114	U
sec-Butylbenzene	12000	19.5	U	19.9	U	20	U	19.6	U	23.6	U	114	U
Styrene	960	19.5	U	19.9	U	20	U	19.6	U	**14.4**	F	114	U
Toluene	6500	19.5	U	19.9	U	20	U	19.6	U	23.6	U	114	U
Trichloroethene (TCE)	20	*6.08*	U	*6.21*	U	*6.24*	U	*6.1*	U	*7.37*	U	*35.6*	U
Xylenes, Total	63000	58.4	U	59.7	U	60	U	58.7	U	70.9	U	342	U

Table C-5.1 Upper Site Summit - Surface Soil Samples, Analytical Detections

Location Identification		SS07USS		SS08USS		SS08USS Dup		SS09USS		SS10USS		SS11USS	
Field Sample Identification		10NSS001SS07USS		10NSS001SS08USS		10NSS201SS08USS		10NSS001SS09USS		10NSS001SS10USS		10NSS001SS11USS	
Date Collected		8/4/2010		8/4/2010		8/4/2010		8/4/2010		8/4/2010		8/5/2010	
Depth (ft)		0.5		0.5		0.5		All		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**												
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)													
2-Methylnaphthalene	6.1	0.268	U	0.268	U	0.268	U	0.267	U	0.293	U	2.26	U
4-Chloroaniline	0.057	*0.0835*	U	*0.0835*	U	*0.0837*	U	*0.0832*	U	*0.0913*	U	**5.52**	
Acenaphthene	180	0.268	U	0.268	U	0.268	U	0.267	U	0.293	U	2.26	U
Acenaphthylene	180	0.268	U	0.268	U	0.268	U	0.267	U	0.293	U	**0.783**	F
Anthracene	3000	0.268	U	0.268	U	0.268	U	0.267	U	0.293	U	**1.34**	F
Benzo(a)anthracene	3.6	0.268	U	0.268	U	0.268	U	0.267	U	**0.108**	F	**3.47**	
Benzo(a)pyrene	0.49	*0.0835*	U	*0.0835*	U	*0.0837*	U	*0.0832*	U	*0.0913*	U	**2.23**	F
Benzo(b)fluoranthene	4.9	0.268	U	0.268	U	0.268	U	0.267	U	0.293	U	**10.6**	
Benzo(g,h,i)perylene	1400	0.268	U	0.268	U	0.268	U	0.267	U	0.293	U	**1.6**	F
Benzo(k)fluoranthene	49	0.268	U	0.268	U	0.268	U	0.267	U	0.293	U	**4.48**	
bis(2-ethylhexyl) Phthalate	13	0.268	U	0.268	U	0.268	U	0.267	U	0.293	U	**2.12**	F
Chrysene	360	0.268	U	0.268	U	0.268	U	0.267	U	**0.128**	F	**9.72**	
Dibenz(a,h)anthracene	0.49	*0.0835*	U	*0.0835*	U	*0.0837*	U	*0.0832*	U	*0.0913*	U	*0.706*	U
Dibenzofuran	11	0.268	U	0.268	U	0.268	U	0.267	U	0.293	U	2.26	U
Fluoranthene	1400	0.268	U	0.268	U	0.268	U	0.267	U	**0.146**	F	**3.91**	
Fluorene	220	0.268	U	0.268	U	0.268	U	0.267	U	0.293	U	2.26	U
Indeno(1,2,3-c,d)Pyrene	4.9	0.268	U	0.268	U	0.268	U	0.267	U	0.293	U	**1.87**	F
Naphthalene	20	0.268	U	0.268	U	0.268	U	0.267	U	0.293	U	2.26	U
Phenanthrene	3000	0.268	U	0.268	U	0.268	U	0.267	U	**0.125**	F	2.26	U
Pyrene	1000	0.268	U	0.268	U	0.268	U	0.267	U	**0.23**	F	**6.24**	

Table C-5.1 Upper Site Summit - Surface Soil Samples, Analytical Detections

Location Identification		SS11USS		SS12USS		SS13USS		SS13USS		SS14USS		SS14USS	
Field Sample Identification		10NSS001SS11USS		10NSS001SS12USS		10NSS001SS13USS		10NSS001SS13USS		10NSS001SS14USS		10NSS001SS14USS	
Date Collected		10/14/2010		8/5/2010		8/6/2010		9/7/2010		8/6/2010		9/7/2010	
Depth (ft)		0.5		0.5		0.5		0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**												
Total Petroleum Hydrocarbons (mg/kg)													
Gasoline Range Organics (GRO)/AK101	300	NA		11.3	U	2.39	U	NA		2.8	U	NA	
Diesel Range Organics (DRO)/AK102	250	NA		**613**	D	**170**		NA		21.1	U	NA	
Residual Range Organics (RRO)/AK103	10000	NA		**3220**	D	**838**	D	NA		**40.4**		NA	
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	NA		**2.16**		NA		NA		NA		NA	
Barium	1100	NA		**381**		NA		NA		NA		NA	
Cadmium	5	NA		**2.98**		NA		NA		NA		NA	
Chromium	25	NA		**27**		NA		NA		NA		NA	
Chromium, Hexavalent/SW7196	25	1.4	U	NA		NA		NA		NA		NA	
Lead	400	NA		**54.7**		NA		NA		NA		NA	
Nickel	86	NA		**23.4**		NA		NA		NA		NA	
Selenium	3.4	NA		**2.2**		NA		NA		NA		NA	
Silver	11.2	NA		**38.2**		NA		NA		NA		NA	
Vanadium	710	NA		**24.7**		NA		NA		NA		NA	
Mercury/SW7471A (µg/kg)	1400	NA		**439**		NA		NA		NA		NA	
Polychlorinated Biphenyls (PCBs)/SW8082 (µg/kg)													
PCB-1260 (Aroclor 1260)	1000	NA		104	U	NA		NA		NA		NA	
Volatile Organic Compounds (SW8260B) (µg/kg)													
1,2,3-Trichlorobenzene	87	NA		*35.3*	U	NA		33	U	NA		40.7	U
1,2,3-Trichloropropane	0.53	NA		*35.3*	U	NA		*5.14*	U	NA		*6.36*	U
1,2,4-Trichlorobenzene	850	NA		113	U	NA		16.5	U	NA		20.4	U
1,2,4-Trimethylbenzene	23000	NA		113	U	NA		33	U	NA		**19.1**	F
1,2-Dibromoethane (EDB)	0.16	NA		*35.3*	U	NA		*5.14*	U	NA		*6.36*	U
1,3,5-Trimethylbenzene	23000	NA		113	U	NA		16.5	U	NA		20.4	U
2-Butanone (MEK)	59000	NA		1130	U	NA		165	U	NA		204	U
4-Methyl-2-pentanone (MIBK)	8100	NA		1130	U	NA		165	U	NA		204	U
Acetone	88000	NA		NA		NA		NA		NA		NA	
Benzene	25	NA		*17.6*	U	NA		8.24	U	NA		10.2	U
Carbon disulfide	12000	NA		113	U	NA		66	U	NA		81.5	U
Ethylbenzene	6900	NA		113	U	NA		16.5	U	NA		20.4	U
Isopropylbenzene	51000	NA		113	U	NA		16.5	U	NA		20.4	U
m,p-Xylene (Sum of isomers)	63000	NA		226	U	NA		33	U	NA		**26.5**	F
Methylene chloride	16	NA		*140*	U	NA		*20.4*	U	NA		*25.3*	U
Naphthalene	20000	NA		226	U	NA		33	U	NA		**57**	
n-Butylbenzene	15000	NA		113	U	NA		16.5	U	NA		20.4	U
n-Propylbenzene	15000	NA		113	U	NA		16.5	U	NA		20.4	U
o-Xylene	63000	NA		113	U	NA		33	U	NA		**15.7**	F
p-Isopropyltoluene	NE	NA		113	U	NA		16.5	U	NA		20.4	U
sec-Butylbenzene	12000	NA		113	U	NA		16.5	U	NA		20.4	U
Styrene	960	NA		113	U	NA		16.5	U	NA		20.4	U
Toluene	6500	NA		**44.1**	F	NA		33	U	NA		**18.9**	F
Trichloroethene (TCE)	20	NA		*35.3*	U	NA		*5.14*	U	NA		*6.36*	U
Xylenes, Total	63000	NA		339	U	NA		66	U	NA		**42.2**	F

Table C-5.1 Upper Site Summit - Surface Soil Samples, Analytical Detections

Location Identification		SS11USS	SS12USS		SS13USS		SS13USS	SS14USS		SS14USS
Field Sample Identification		10NSS001SS11USS	10NSS001SS12USS		10NSS001SS13USS		10NSS001SS13USS	10NSS001SS14USS		10NSS001SS14USS
Date Collected		10/14/2010	8/5/2010		8/6/2010		9/7/2010	8/6/2010		9/7/2010
Depth (ft)		0.5	0.5		0.5		0.5	0.5		0.5
Analyte/Methods (Units)	**Project Action Limit**									
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)										
2-Methylnaphthalene	6.1	NA	1.32	U	0.27	U	NA	0.26	U	NA
4-Chloroaniline	0.057	NA	**7.8**		*0.0841*	U	NA	*0.081*	U	NA
Acenaphthene	180	NA	1.32	U	0.27	U	NA	0.26	U	NA
Acenaphthylene	180	NA	1.32	U	0.27	U	NA	0.26	U	NA
Anthracene	3000	NA	1.32	U	0.27	U	NA	0.26	U	NA
Benzo(a)anthracene	3.6	NA	1.32	U	0.27	U	NA	0.26	U	NA
Benzo(a)pyrene	0.49	NA	*0.411*	U	*0.0841*	U	NA	*0.081*	U	NA
Benzo(b)fluoranthene	4.9	NA	1.32	U	0.27	U	NA	0.26	U	NA
Benzo(g,h,i)perylene	1400	NA	1.32	U	0.27	U	NA	0.26	U	NA
Benzo(k)fluoranthene	49	NA	1.32	U	0.27	U	NA	0.26	U	NA
bis(2-ethylhexyl) Phthalate	13	NA	**0.923**	F	0.27	U	NA	0.26	U	NA
Chrysene	360	NA	1.32	U	0.27	U	NA	0.26	U	NA
Dibenz(a,h)anthracene	0.49	NA	*0.411*	U	*0.0841*	U	NA	*0.081*	U	NA
Dibenzofuran	11	NA	1.32	U	0.27	U	NA	0.26	U	NA
Fluoranthene	1400	NA	1.32	U	0.27	U	NA	0.26	U	NA
Fluorene	220	NA	1.32	U	0.27	U	NA	0.26	U	NA
Indeno(1,2,3-c,d)Pyrene	4.9	NA	1.32	U	0.27	U	NA	0.26	U	NA
Naphthalene	20	NA	1.32	U	0.27	U	NA	0.26	U	NA
Phenanthrene	3000	NA	1.32	U	0.27	U	NA	0.26	U	NA
Pyrene	1000	NA	1.32	U	0.27	U	NA	0.26	U	NA

Table C-5.1 Upper Site Summit - Surface Soil Samples, Analytical Detections

Location Identification		SS15USS		SS16USS		SS17USS		SS18USS		SS22USS		SS27USS	
Field Sample Identification		10NSS001SS15USS		10NSS001SS16USS		10NSS001SS17USS		10NSS001SS18USS		10NSS001SS22USS		10NSS001SS27USS	
Date Collected		8/6/2010		8/6/2010		8/16/2010		8/16/2010		8/16/2010		8/16/2010	
Depth (ft)		0.5		0.5		0.5		0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**												
Total Petroleum Hydrocarbons (mg/kg)													
Gasoline Range Organics (GRO)/AK101	300	**0.924**	F	**1.8**	F	2.61	U	3.06	U	3.16	U	2.75	U
Diesel Range Organics (DRO)/AK102	250	**13.2**	F	**48.2**		**9.35**	F	21.4	U	**8.87**	F	**12.9**	F
Residual Range Organics (RRO)/AK103	10000	**65.9**		**202**	J+	**58.6**		**59.5**		**76.2**		**82.2**	
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	**7.48**		**9.15**		NA		NA		NA		**5.19**	
Barium	1100	**105**		**113**		NA		NA		NA		**95.2**	
Cadmium	5	**0.133**	F	**0.157**	F	NA		NA		NA		**0.289**	
Chromium	25	**16**		**20.4**		NA		NA		NA		**29.9**	
Chromium, Hexavalent/SW7196	25	NA		NA		NA		NA		NA		NA	
Lead	400	**11.7**		**18.7**		NA		NA		NA		**20.4**	
Nickel	86	**22.6**		**26.1**		NA		NA		NA		**26.9**	
Selenium	3.4	0.523	U	**0.174**	F	NA		NA		NA		**0.216**	F
Silver	11.2	**0.0737**	F	**0.0797**	F	NA		NA		NA		**0.064**	F
Vanadium	710	**39.4**		**46.8**		NA		NA		NA		**54**	
Mercury/SW7471A (µg/kg)	1400	**66.3**		**66.5**		NA		NA		NA		**69.5**	
Polychlorinated Biphenyls (PCBs)/SW8082 (µg/kg)													
PCB-1260 (Aroclor 1260)	1000	NA		NA		52.4	U	53	U	53.4	U	53.3	U
Volatile Organic Compounds (SW8260B) (µg/kg)													
1,2,3-Trichlorobenzene	87	2	U	**0.57**	F,B	**15.4**	F	**17.2**	F	*22.3*	U	27.5	U
1,2,3-Trichloropropane	0.53	*0.35*	U	*0.32*	U	*8.14*	U	*9.56*	U	*22.3*	U	*8.59*	U
1,2,4-Trichlorobenzene	850	2	U	**0.61**	F,B	**8.34**	F	30.6	U	71.5	U	27.5	U
1,2,4-Trimethylbenzene	23000	**0.43**	F	**0.48**	F	**30**		30.6	U	**39.3**	F	27.5	U
1,2-Dibromoethane (EDB)	0.16	*0.13*	U	*0.12*	U	*8.14*	U	*9.56*	U	*22.3*	U	*8.59*	U
1,3,5-Trimethylbenzene	23000	4.9	U	4.4	U	**15.6**	F	30.6	U	**32.2**	F	<27.5	U
2-Butanone (MEK)	59000	**3.3**	F	**5.6**		261	U	306	U	715	U	275	U
4-Methyl-2-pentanone (MIBK)	8100	**1.1**	F,B	**1**	F,B	261	U	306	U	715	U	275	U
Acetone	88000	**36**		**59**		NA		NA		NA		NA	
Benzene	25	**0.37**	F	**0.39**	F	*4.07*	U	*4.78*	U	*11.1*	U	*4.3*	U
Carbon disulfide	12000	0.98	U	**0.17**	F	26.1	U	30.6	U	71.5	U	27.5	U
Ethylbenzene	6900	**0.21**	F	**0.2**	F	26.1	U	30.6	U	71.5	U	27.5	U
Isopropylbenzene	51000	2	U	**0.13**	F	26.1	U	30.6	U	71.5	U	27.5	U
m,p-Xylene (Sum of isomers)	63000	**0.78**	F,B	**0.81**	F,B	**30.2**	F	61.3	U	143	U	55.1	U
Methylene chloride	16	*6.3*	U	*5.6*	U	*32.3*	U	*38*	U	*88.6*	U	*34.2*	U
Naphthalene	20000	**0.81**	F,B	**0.86**	F,B	**21.4**	F	61.3	U	143	U	**29.2**	F
n-Butylbenzene	15000	2	U	1.8	U	26.1	U	30.6	U	71.5	U	27.5	U
n-Propylbenzene	15000	0.98	U	0.88	U	26.1	U	30.6	U	71.5	U	27.5	U
o-Xylene	63000	**0.39**	F,B	**0.46**	F,B	**22.7**	F	30.6	U	**47.2**	F	27.5	U
p-Isopropyltoluene	NE	2	U	1.8	U	26.1	U	30.6	U	71.5	U	27.5	U
sec-Butylbenzene	12000	2	U	**0.37**	F,B	26.1	U	30.6	U	71.5	U	27.5	U
Styrene	960	2	U	1.8	U	26.1	U	30.6	U	71.5	U	27.5	U
Toluene	6500	**1**	F,B	**1.2**	F,B	**18**	F	30.6	U	71.5	U	**10.5**	F
Trichloroethene (TCE)	20	**2.6**		**1.4**		*8.14*	U	*9.56*	U	*22.3*	U	*8.59*	U
Xylenes, Total	63000	NA		NA		**52.9**	F	91.9	U	214	U	82.6	U

Table C-5.1 Upper Site Summit - Surface Soil Samples, Analytical Detections

Location Identification		SS15USS		SS16USS		SS17USS		SS18USS		SS22USS		SS27USS	
Field Sample Identification		10NSS001SS15USS		10NSS001SS16USS		10NSS001SS17USS		10NSS001SS18USS		10NSS001SS22USS		10NSS001SS27USS	
Date Collected		8/6/2010		8/6/2010		8/16/2010		8/16/2010		8/16/2010		8/16/2010	
Depth (ft)		0.5		0.5		0.5		0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**												
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)													
2-Methylnaphthalene	6.1	1.33	U,D	**0.112**	F	0.264	U	0.265	U	0.267	U	0.266	U
4-Chloroaniline	0.057	*0.416*	U	*0.0831*	U	*0.0824*	U	*0.0828*	U	*0.0833*	U	*0.0829*	U
Acenaphthene	180	1.33	U,D	**0.125**	F	0.264	U	0.265	U	0.267	U	0.266	U
Acenaphthylene	180	1.33	U,D	0.266	U	0.264	U	0.265	U	0.267	U	0.266	U
Anthracene	3000	**1.87**	D	**0.608**		0.264	U	0.265	U	0.267	U	0.266	U
Benzo(a)anthracene	3.6	**8.61**	D	**2.56**		0.264	U	0.265	U	0.267	U	**0.0944**	F
Benzo(a)pyrene	0.49	**5.75**	D	**2**		*0.0824*	U	*0.0828*	U	*0.0833*	U	*0.0829*	U
Benzo(b)fluoranthene	4.9	**6.93**	D	**2.57**		0.264	U	0.265	U	0.267	U	0.266	U
Benzo(g,h,i)perylene	1400	1.33	U,D	**0.854**		0.264	U	0.265	U	0.267	U	0.266	U
Benzo(k)fluoranthene	49	**2.61**	D	**0.851**		0.264	U	0.265	U	0.267	U	0.266	U
bis(2-ethylhexyl) Phthalate	13	1.33	U,D	0.266	U	0.264	U	0.265	U	0.267	U	0.266	U
Chrysene	360	**8.16**	D	**3.51**		0.264	U	0.265	U	0.267	U	**0.118**	F
Dibenz(a,h)anthracene	0.49	**0.488**	F	**0.383**		*0.0824*	U	*0.0828*	U	*0.0833*	U	*0.0829*	U
Dibenzofuran	11	1.33	U,D	0.266	U	0.264	U	0.265	U	0.267	U	0.266	U
Fluoranthene	1400	**16**	D	**3.41**		0.264	U	0.265	U	0.267	U	**0.199**	F
Fluorene	220	1.33	U,D	**0.138**	F	0.264	U	0.265	U	0.267	U	0.266	U
Indeno(1,2,3-c,d)Pyrene	4.9	**1.88**	D	**0.287**		0.264	U	0.265	U	0.267	U	0.266	U
Naphthalene	20	1.33	U,D	0.266	U	0.264	U	0.265	U	0.267	U	0.266	U
Phenanthrene	3000	**3.87**	D	**1.43**		0.264	U	0.265	U	0.267	U	**0.198**	F
Pyrene	1000	**16.6**	D	**3.37**		0.264	U	0.265	U	0.267	U	**0.191**	F

Table C-5.1 Upper Site Summit - Surface Soil Samples, Analytical Detections

Location Identification		SS31USS		SS34USS	
Field Sample Identification		10NSS001SS31USS		10NSS001SS34USS	
Date Collected		8/16/2010		8/16/2010	
Depth (ft)		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**				
Total Petroleum Hydrocarbons (mg/kg)					
Gasoline Range Organics (GRO)/AK101	300	2.93	U	3.2	U
Diesel Range Organics (DRO)/AK102	250	**11.2**	F	**56.2**	
Residual Range Organics (RRO)/AK103	10000	**60.5**		**103**	
Metals (SW6020A) (mg/kg)					
Arsenic	3.9	**5.54**		**4.59**	
Barium	1100	**110**		**129**	
Cadmium	5	**0.239**		**0.176**	F
Chromium	25	**25.1**		**19**	
Chromium, Hexavalent/SW7196	25	NA		NA	
Lead	400	**18.5**		**9.29**	
Nickel	86	**25.7**		**21.7**	
Selenium	3.4	**0.211**	F	**0.224**	F
Silver	11.2	**0.0725**	F	**0.0513**	F
Vanadium	710	**58.3**		**58.6**	
Mercury/SW7471A (µg/kg)	1400	**48.5**		**63.1**	
Polychlorinated Biphenyls (PCBs)/SW8082 (µg/kg)					
PCB-1260 (Aroclor 1260)	1000	52.9	U	54	U
Volatile Organic Compounds (SW8260B) (µg/kg)					
1,2,3-Trichlorobenzene	87	29.3	U	32	U
1,2,3-Trichloropropane	0.53	*9.14*	U	*9.97*	U
1,2,4-Trichlorobenzene	850	29.3	U	32	U
1,2,4-Trimethylbenzene	23000	29.3	U	32	U
1,2-Dibromoethane (EDB)	0.16	*9.14*	U	*9.97*	U
1,3,5-Trimethylbenzene	23000	29.3	U	32	U
2-Butanone (MEK)	59000	293	U	320	U
4-Methyl-2-pentanone (MIBK)	8100	293	U	320	U
Acetone	88000	NA		NA	
Benzene	25	*4.57*	U	*4.98*	U
Carbon disulfide	12000	29.3	U	32	U
Ethylbenzene	6900	29.3	U	32	U
Isopropylbenzene	51000	29.3	U	32	U
m,p-Xylene (Sum of isomers)	63000	58.6	U	63.9	U
Methylene chloride	16	*36.3*	U	*39.6*	U
Naphthalene	20000	**36.6**	F	63.9	U
n-Butylbenzene	15000	29.3	U	32	U
n-Propylbenzene	15000	29.3	U	32	U
o-Xylene	63000	29.3	U	32	U
p-Isopropyltoluene	NE	29.3	U	32	U
sec-Butylbenzene	12000	29.3	U	32	U
Styrene	960	29.3	U	32	U
Toluene	6500	**32.2**		32	U
Trichloroethene (TCE)	20	*9.14*	U	*9.97*	U
Xylenes, Total	63000	87.9	U	95.9	U

Table C-5.1 Upper Site Summit - Surface Soil Samples, Analytical Detections

	Location Identification	SS31USS		SS34USS	
	Field Sample Identification	10NSS001SS31USS		10NSS001SS34USS	
	Date Collected	8/16/2010		8/16/2010	
	Depth (ft)	0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**				
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)					
2-Methylnaphthalene	6.1	0.265	U	0.271	U
4-Chloroaniline	0.057	*0.0828*	U	*0.0847*	U
Acenaphthene	180	0.265	U	0.271	U
Acenaphthylene	180	0.265	U	0.271	U
Anthracene	3000	**0.108**	F	0.271	U
Benzo(a)anthracene	3.6	**0.212**	F	0.271	U
Benzo(a)pyrene	0.49	**0.197**	F	*0.0847*	U
Benzo(b)fluoranthene	4.9	**0.213**	F	0.271	U
Benzo(g,h,i)perylene	1400	**0.113**	F	0.271	U
Benzo(k)fluoranthene	49	0.265	U	0.271	U
bis(2-ethylhexyl) Phthalate	13	0.265	U	0.271	U
Chrysene	360	**0.277**		0.271	U
Dibenz(a,h)anthracene	0.49	*0.0828*	U	*0.0847*	U
Dibenzofuran	11	0.265	U	0.271	U
Fluoranthene	1400	**0.473**		0.271	U
Fluorene	220	0.265	U	0.271	U
Indeno(1,2,3-c,d)Pyrene	4.9	**0.0957**	F	0.271	U
Naphthalene	20	0.265	U	0.271	U
Phenanthrene	3000	**0.468**		0.271	U
Pyrene	1000	**0.441**		0.271	U

µg/kg	micrograms per kilogram.
mg/kg	milligrams per kilogram.
Italic	Italicized result indicates analyte reported to the laboratory detection limit.
	Indicates concentration, LOQ, or LOD is above the established project action limit
Bold	Bolded result indicates positively identified compound.
AK	Alaska Test Method
NA	Not analyzed.
NE	Not established
B	Analyte detected in an associated blank.
D	Sample dilution required for analysis; reported values reflect the dilution.
F	Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the LOQ but greater than the LOD.
J	Data are estimated based on associated quality control data.
UJ	Potential low bias, possible false negative.
UB	Analyte considered not detected, based on an associated blank concentration.
U	Analyte is not detected at the reported LOQ or LOD
J+	Data are estimated, potentially biased high, based on associated quality control data.
J-	Data are estimated, potentially biased low, based on associated quality control data.
LOD	Limit of detection
LOQ	Limit of quantitation
SW	U.S. Environmental Protection Agency Solid Waste Method

Table C-5.2 Upper Site Summit - Subsurface Soil Samples, Analytical Detections

Location Identification		BH01USS		BH01USS		BH01USS Dup		BH02USS		BH02USS		BH03USS	
Field Sample Identification		10NSS002SL01USS		10NSS004SL01USS		10NSS202SL01USS		10NSS003SL02USS		10NSS006SL02USS		10NSS006SL03USS	
Date Collected		8/9/2010		8/9/2010		8/9/2010		8/9/2010		8/9/2010		8/9/2010	
Depth (ft)		4 - 6		8 - 10		4 - 6		6 - 8		12 - 14		12 - 14	
Analyte/Methods (Units)	**Project Action Limit**												
Total Petroleum Hydrocarbons (mg/kg)													
Gasoline Range Organics (GRO)/AK101	300	**8.38**		**4.26**		**8.48**		**3.46**		**5.24**	J+	**0.65**	F
Diesel Range Organics (DRO)/AK102	250	**2240**	D,J+	**1100**	D	**2270**	D	**591**		**487**	D	**9.03**	F
Residual Range Organics (RRO)/AK103	10000	**3340**	D,J+	**3050**	D	**3210**	D	**64.7**		81	U,D	**14.2**	F
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	NA		NA		NA		NA		NA		NA	
Barium	1100	NA		NA		NA		NA		NA		NA	
Cadmium	5	NA		NA		NA		NA		NA		NA	
Chromium	25	NA		NA		NA		NA		NA		NA	
Chromium, Hexavalent/SW7196	25	NA		NA		NA		NA		NA		NA	
Lead	400	NA		NA		NA		NA		NA		NA	
Nickel	86	NA		NA		NA		NA		NA		NA	
Selenium	3.4	NA		NA		NA		NA		NA		NA	
Silver	11.2	NA		NA		NA		NA		NA		NA	
Vanadium	710	NA		NA		NA		NA		NA		NA	
Mercury/SW7471A (µg/kg)	1400	NA		NA		NA		NA		NA		NA	
Volatile Organic Compounds (SW8260B) (µg/kg)													
1,2,3-Trichlorobenzene	87	27.5	UJ	23.5	U	26.9	U	19.2	U	16.8	U	17.7	U
1,2,3-Trichloropropane	0.53	*8.57*	U	*7.32*	U	*8.4*	U	*5.99*	U	**24.7**		*5.53*	U
1,2,4-Trichlorobenzene	850	27.5	UJ	23.5	U	26.9	U	19.2	U	16.8	U	17.7	U
1,2,4-Trimethylbenzene	23000	**8.79**	F	**13.8**	F	**16.2**	F	19.2	U	**38.1**		17.7	U
1,2-Dibromoethane (EDB)	0.16	*8.57*	U	*7.32*	U	*8.4*	U	*5.99*	U	*5.24*	U	*5.53*	U
1,3,5-Trimethylbenzene	23000	27.5	U	23.5	U	26.9	U	19.2	U	**30.6**		17.7	U
2-Butanone (MEK)	59000	275	U	235	U	269	U	192	U	168	U	177	U
4-Methyl-2-pentanone (MIBK)	8100	275	U	235	U	269	U	192	U	168	U	177	U
Acetone	88000	NA		NA		NA		NA		NA		NA	
Benzene	25	*4.29*	U	11.7	U	*4.2*	U	9.59	U	8.4	U	8.87	U
Carbon disulfide	12000	27.5	U	23.5	U	26.9	U	19.2	U	16.8	U	17.7	U
Ethylbenzene	6900	27.5	U	23.5	U	26.9	U	19.2	U	16.8	U	17.7	U
Isopropylbenzene	51000	27.5	U	23.5	U	26.9	U	19.2	U	16.8	U	17.7	U
m,p-Xylene (Sum of isomers)	63000	55	U	46.9	U	53.9	U	38.4	U	33.6	U	35.5	U
Methylene chloride	16	*34.1*	U	*29.1*	U	*33.4*	U	*23.8*	U	*20.8*	U	*22*	U
Naphthalene	20000	**39**	F	**44.4**	F	**105**		**26.7**	F	**47.9**		35.5	U
n-Butylbenzene	15000	27.5	U	23.5	U	26.9	U	19.2	U	16.8	U	17.7	U
n-Propylbenzene	15000	27.5	U	23.5	U	26.9	U	19.2	U	16.8	U	17.7	U
o-Xylene	63000	27.5	U	23.5	U	26.9	U	19.2	U	16.8	U	17.7	U
p-Isopropyltoluene	NE	27.5	U	23.5	U	26.9	U	19.2	U	**77.4**		17.7	U
sec-Butylbenzene	12000	27.5	U	23.5	U	26.9	U	19.2	U	**9.58**	F	17.7	U
Styrene	960	27.5	U	23.5	U	26.9	U	19.2	U	16.8	U	17.7	U
Toluene	6500	**12.9**	F	**21.4**	F	**11.3**	F	19.2	U	16.8	U	17.7	U
Trichloroethene (TCE)	20	**31.1**		**42.9**		**23.4**	F	**8.06**	F	**5.71**	F	*5.53*	U
Xylenes, Total	63000	82.4	U	70.4	U	80.8	U	57.6	U	50.4	U	53.2	U

Table C-5.2 Upper Site Summit - Subsurface Soil Samples, Analytical Detections

Location Identification		BH01USS		BH01USS		BH01USS Dup		BH02USS		BH02USS		BH03USS	
Field Sample Identification		10NSS002SL01USS		10NSS004SL01USS		10NSS202SL01USS		10NSS003SL02USS		10NSS006SL02USS		10NSS006SL03USS	
Date Collected		8/9/2010		8/9/2010		8/9/2010		8/9/2010		8/9/2010		8/9/2010	
Depth (ft)		4 - 6		8 - 10		4 - 6		6 - 8		12 - 14		12 - 14	
Analyte/Methods (Units)	**Project Action Limit**												
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)													
2-Methylnaphthalene	6.1	0.262	U	0.263	U	0.265	U	0.259	U	**0.104**	F	0.253	U
4-Chloroaniline	0.057	*0.0817*	U	*0.082*	U	*0.0826*	U	*0.0808*	U	*0.079*	U	*0.0788*	U
Acenaphthene	180	0.262	U	0.263	U	0.265	U	0.259	U	0.253	U	0.253	U
Acenaphthylene	180	0.262	U	0.263	U	0.265	U	0.259	U	0.253	U	0.253	U
Anthracene	3000	0.262	U	0.263	U	0.265	U	0.259	U	0.253	U	0.253	U
Benzo(a)anthracene	3.6	0.262	U	0.263	U	0.265	U	0.259	U	0.253	U	0.253	U
Benzo(a)pyrene	0.49	*0.0817*	U	*0.082*	U	*0.0826*	U	*0.0808*	U	*0.079*	U	*0.0788*	U
Benzo(b)fluoranthene	4.9	**0.123**	F	**0.111**	F	**0.171**	F	0.259	U	0.253	U	0.253	U
Benzo(g,h,i)perylene	1400	0.262	U	0.263	U	**0.0865**	F	0.259	U	0.253	U	0.253	U
Benzo(k)fluoranthene	49	0.262	U	0.263	U	0.265	U	0.259	U	0.253	U	0.253	U
bis(2-ethylhexyl) Phthalate	13	0.262	U	0.263	U	0.265	U	0.259	U	0.253	U	0.253	U
Chrysene	360	**0.117**	F	**0.0897**	F	**0.13**	F	0.259	U	0.253	U	0.253	U
Dibenz(a,h)anthracene	0.49	*0.0817*	U	*0.082*	U	*0.0826*	U	*0.0808*	U	*0.079*	U	*0.0788*	U
Dibenzofuran	11	0.262	U	0.263	U	0.265	U	0.259	U	0.253	U	0.253	U
Fluoranthene	1400	**0.156**	F	**0.138**	F	**0.208**	F	0.259	U	0.253	U	0.253	U
Fluorene	220	0.262	U	0.263	U	0.265	U	0.259	U	0.253	U	0.253	U
Indeno(1,2,3-c,d)Pyrene	4.9	0.262	U	0.263	U	0.265	U	0.259	U	0.253	U	0.253	U
Naphthalene	20	0.262	U	0.263	U	0.265	U	0.259	U	0.253	U	0.253	U
Phenanthrene	3000	**0.138**	F	**0.137**	F	**0.216**	F	0.259	U	0.253	U	0.253	U
Pyrene	1000	**0.177**	F	**0.143**	F	**0.222**	F	0.259	U	0.253	U	0.253	U

Table C-5.2 Upper Site Summit - Subsurface Soil Samples, Analytical Detections

Location Identification		BH03USS		BH04USS		BH04USS		BH05USS		BH05USS		BH06USS	
Field Sample Identification		10NSS007SL03USS		10NSS005SL04USS		10NSS006SL04USS		10NSS006SL05USS		10NSS009SL05USS		10NSS001SL06USS	
Date Collected		8/9/2010		8/10/2010		8/10/2010		8/10/2010		8/10/2010		8/10/2010	
Depth (ft)		14 - 16		10 - 12		12 - 14		12 - 14		18 - 20		2 - 4	
Analyte/Methods (Units)	**Project Action Limit**												
Total Petroleum Hydrocarbons (mg/kg)													
Gasoline Range Organics (GRO)/AK101	300	**1.07**	F	**10.2**		**12.7**		2	U	1.66	U	1.95	U
Diesel Range Organics (DRO)/AK102	250	**70.9**		**92.3**		**1870**	D	20.7	U	20.5	U	**8.71**	F
Residual Range Organics (RRO)/AK103	10000	**41.6**		**292**		**2670**	D	20.7	U	20.5	U	**33.7**	
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	NA		**5.77**		**5.57**		**2.24**		**1.75**		**4.72**	
Barium	1100	NA		**45.9**		**132**		**21.7**		**232**		**208**	
Cadmium	5	NA		**0.103**	F	**0.164**	F	**0.0701**	**F**	**0.107**	F	**0.107**	F
Chromium	25	NA		**13.2**		**30**		**13.7**		**17.3**		**33.2**	
Chromium, Hexavalent/SW7196	25	NA		0.51	U	0.53	U	0.51	U	0.51	U	**0.11**	F
Lead	400	NA		**15.7**		**16.9**		**2.07**		**2.86**		**4.39**	
Nickel	86	NA		**13**		**24.2**		**13.5**		**16.9**		**20.3**	
Selenium	3.4	NA		**0.164**	F	**0.256**	F	0.486	U	0.501	U	0.477	U
Silver	11.2	NA		**0.0647**	F	**0.0474**	F	0.0973	U	**0.0435**	F	**0.0551**	F
Vanadium	710	NA		**34.4**		**50.9**		**62.9**		**59.1**		**84.3**	
Mercury/SW7471A (µg/kg)	1400	NA		**41.6**		**45.4**		**13.7**	**F**	39.7	U	**20**	F
Volatile Organic Compounds (SW8260B) (µg/kg)													
1,2,3-Trichlorobenzene	87	16.9	U	20.2	U	20.7	U	20	U	16.6	U	19.5	U
1,2,3-Trichloropropane	0.53	*5.26*	U	*6.31*	U	*6.46*	U	*6.25*	U	*5.17*	U	*6.07*	U
1,2,4-Trichlorobenzene	850	16.9	U	20.2	U	20.7	U	20	U	16.6	U	19.5	U
1,2,4-Trimethylbenzene	23000	16.9	U	**303**		**107**		20	U	16.6	U	19.5	U
1,2-Dibromoethane (EDB)	0.16	*5.26*	U	*0.13*	U	*0.13*	U	*0.13*	U	*0.13*	U	*0.12*	U
1,3,5-Trimethylbenzene	23000	16.9	U	**106**		**45.6**		20	U	16.6	U	19.5	U
2-Butanone (MEK)	59000	169	U	202	U	207	U	200	U	166	U	195	U
4-Methyl-2-pentanone (MIBK)	8100	169	U	202	U	207	U	200	U	166	U	195	U
Acetone	88000	NA		NA		NA		NA		NA		NA	
Benzene	25	8.43	U	**29.1**		**8.49**	F	10	U	8.29	U	9.73	U
Carbon disulfide	12000	16.9	U	20.2	U	20.7	U	20	U	16.6	U	19.5	U
Ethylbenzene	6900	16.9	U	**30.9**		**8.49**	F	20	U	16.6	U	19.5	U
Isopropylbenzene	51000	16.9	U	**18**	F	**14.1**	F	20	U	16.6	U	19.5	U
m,p-Xylene (Sum of isomers)	63000	33.7	U	**146**		**81.2**		40.1	U	33.2	U	38.9	U
Methylene chloride	16	*20.9*	U	*25.1*	U	*25.7*	U	*24.9*	U	*20.6*	U	*24.1*	U
Naphthalene	20000	33.7	U	**115**		41.4	U	40.1	U	33.2	U	38.9	U
n-Butylbenzene	15000	16.9	U	**69.6**		20.7	U	20	U	16.6	U	19.5	U
n-Propylbenzene	15000	16.9	U	**22**		20.7	U	20	U	16.6	U	19.5	U
o-Xylene	63000	16.9	U	**58**		**36.7**		20	U	16.6	U	19.5	U
p-Isopropyltoluene	NE	16.9	U	**38**		**21.3**		20	U	16.6	U	19.5	U
sec-Butylbenzene	12000	16.9	U	**10.3**	F	20.7	U	20	U	16.6	U	19.5	U
Styrene	960	16.9	U	20.2	U	20.7	U	20	U	16.6	U	19.5	U
Toluene	6500	16.9	U	**167**		**39.3**		20	U	16.6	U	19.5	U
Trichloroethene (TCE)	20	*5.26*	U	**60.3**		**21.1**		*6.25*	U	*5.17*	U	**29.2**	
Xylenes, Total	63000	50.6	U	**204**		**118**		60.1	U	49.7	U	58.4	U

Table C-5.2 Upper Site Summit - Subsurface Soil Samples, Analytical Detections

Location Identification		BH03USS		BH04USS		BH04USS		BH05USS		BH05USS		BH06USS	
Field Sample Identification		10NSS007SL03USS		10NSS005SL04USS		10NSS006SL04USS		10NSS006SL05USS		10NSS009SL05USS		10NSS001SL06USS	
Date Collected		8/9/2010		8/10/2010		8/10/2010		8/10/2010		8/10/2010		8/10/2010	
Depth (ft)		14 - 16		10 - 12		12 - 14		12 - 14		18 - 20		2 - 4	
Analyte/Methods (Units)	**Project Action Limit**												
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)													
2-Methylnaphthalene	6.1	0.255	U	**0.154**	F	0.265	U	0.257	U	0.254	U	0.257	U
4-Chloroaniline	0.057	*0.0794*	U	*0.0799*	U	*0.0828*	U	*0.0802*	U	*0.0791*	U	*0.0801*	U
Acenaphthene	180	0.255	U	0.256	U	0.265	U	0.257	U	0.254	U	0.257	U
Acenaphthylene	180	0.255	U	0.256	U	0.265	U	0.257	U	0.254	U	0.257	U
Anthracene	3000	0.255	U	**0.181**	F	0.265	U	0.257	U	0.254	U	0.257	U
Benzo(a)anthracene	3.6	0.255	U	**1.11**		0.265	U	0.257	U	0.254	U	0.257	U
Benzo(a)pyrene	0.49	*0.0794*	U	**1.62**		*0.0828*	U	*0.0802*	U	*0.0791*	U	*0.0801*	U
Benzo(b)fluoranthene	4.9	0.255	U	**1.53**		0.265	U	0.257	U	0.254	U	0.257	U
Benzo(g,h,i)perylene	1400	0.255	U	**0.859**		0.265	U	0.257	U	0.254	U	0.257	U
Benzo(k)fluoranthene	49	0.255	U	**0.39**		0.265	U	0.257	U	0.254	U	0.257	U
bis(2-ethylhexyl) Phthalate	13	0.255	U	**0.237**	F	0.265	U	0.257	U	0.254	U	0.257	U
Chrysene	360	0.255	U	**1.49**		0.265	U	0.257	U	0.254	U	0.257	U
Dibenz(a,h)anthracene	0.49	*0.0794*	U	**0.273**		*0.0828*	U	*0.0802*	U	*0.0791*	U	*0.0801*	U
Dibenzofuran	11	0.255	U	0.256	U	0.265	U	0.257	U	0.254	U	0.257	U
Fluoranthene	1400	0.255	U	**1.66**		0.265	U	0.257	U	0.254	U	0.257	U
Fluorene	220	0.255	U	0.256	U	0.265	U	0.257	U	0.254	U	0.257	U
Indeno(1,2,3-c,d)Pyrene	4.9	0.255	U	**0.853**		0.265	U	0.257	U	0.254	U	0.257	U
Naphthalene	20	0.255	U	0.256	U	0.265	U	0.257	U	0.254	U	0.257	U
Phenanthrene	3000	0.255	U	**0.412**		0.265	U	0.257	U	0.254	U	0.257	U
Pyrene	1000	0.255	U	**2.19**		**0.0985**	F	0.257	U	0.254	U	0.257	U

Table C-5.2 Upper Site Summit - Subsurface Soil Samples, Analytical Detections

Location Identification		BH06USS		BH06USS Dup		BH07USS		BH07USS		BH08USS		BH08USS	
Field Sample Identification		10NSS005SL06USS		10NSS201SL06USS		10NSS006SL07USS		10NSS007SL07USS		10NSS004SL08USS		10NSS005SL08USS	
Date Collected		8/10/2010		8/10/2010		8/10/2010		8/10/2010		8/11/2010		8/11/2010	
Depth (ft)		12 - 14		2 - 4		12 - 14		14 - 16		8 - 10		10 - 12	
Analyte/Methods (Units)	**Project Action Limit**												
Total Petroleum Hydrocarbons (mg/kg)													
Gasoline Range Organics (GRO)/AK101	300	1.7	U	1.87	U	**4.61**	J+	**7.62**	J+	1.81	U	1.78	U
Diesel Range Organics (DRO)/AK102	250	20.1	U	20.2	U	**150**		**367**		20.6	U	20.8	U
Residual Range Organics (RRO)/AK103	10000	20.1	U	**14.3**	F	**117**		**178**		**16.9**	F	20.8	U
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	**2.14**		**4.95**		**2.26**		**3.79**		NA		NA	
Barium	1100	**213**		**101**		**72.8**		**98.1**		NA		NA	
Cadmium	5	**0.0757**	F	**0.0898**	F	**0.0841**	F	**0.0988**	F	NA		NA	
Chromium	25	**31**		**46.8**		**32.7**		**28.2**		NA		NA	
Chromium, Hexavalent/SW7196	25	0.51	U	0.51	U	0.51	U	0.51	U	NA		NA	
Lead	400	**3.9**		**4.81**		**3.43**		**4.68**		NA		NA	
Nickel	86	**18.4**		**25.8**		**23.3**		**20.6**		NA		NA	
Selenium	3.4	0.472	U	**0.183**	F	**0.17**	F	**0.167**	F	NA		NA	
Silver	11.2	**0.0314**	F	**0.0557**	F	0.102	U	**0.0585**	F	NA		NA	
Vanadium	710	**83.4**		**93.1**		**69.4**		**61.8**		NA		NA	
Mercury/SW7471A (µg/kg)	1400	**12.7**	F	40.1	U	**22.3**	F	**62.9**		NA		NA	
Volatile Organic Compounds (SW8260B) (µg/kg)													
1,2,3-Trichlorobenzene	87	17	U	18.7	U	16.7	U	19.4	U	18.1	U	**8.88**	F
1,2,3-Trichloropropane	0.53	*5.3*	U	*5.82*	U	*5.21*	U	*6.07*	U	*5.65*	U	*5.54*	U
1,2,4-Trichlorobenzene	850	17	U	18.7	U	16.7	U	19.4	U	18.1	U	**8.88**	F
1,2,4-Trimethylbenzene	23000	17	U	18.7	U	**18.2**		**21.6**		18.1	U	17.8	U
1,2-Dibromoethane (EDB)	0.16	*0.13*	U	*0.13*	U	**0.12**	F,J+	*0.16*	U	*5.65*	U	*5.54*	U
1,3,5-Trimethylbenzene	23000	17	U	18.7	U	**49.6**		**90.8**		18.1	U	17.8	U
2-Butanone (MEK)	59000	170	U	187	U	167	U	194	U	181	U	178	U
4-Methyl-2-pentanone (MIBK)	8100	170	U	187	U	167	U	194	U	181	U	178	U
Acetone	88000	NA		NA		NA		NA		NA		NA	
Benzene	25	8.49	U	9.33	U	8.35	U	9.72	U	9.06	U	8.88	U
Carbon disulfide	12000	17	U	18.7	U	16.7	U	19.4	U	18.1	U	17.8	U
Ethylbenzene	6900	17	U	18.7	U	16.7	U	19.4	U	18.1	U	17.8	U
Isopropylbenzene	51000	17	U	18.7	U	**11.7**	F	**13.8**	F	18.1	U	17.8	U
m,p-Xylene (Sum of isomers)	63000	33.9	U	37.3	U	**10.5**	F	38.9	U	36.2	U	35.5	U
Methylene chloride	16	*21*	U	*23.1*	U	*20.7*	U	*24.1*	U	*22.5*	U	*22*	U
Naphthalene	20000	33.9	U	37.3	U	**310**		**874**		36.2	U	**17.6**	F
n-Butylbenzene	15000	17	U	18.7	U	**64.2**		19.4	U	18.1	U	17.8	U
n-Propylbenzene	15000	17	U	18.7	U	16.7	U	19.4	U	18.1	U	17.8	U
o-Xylene	63000	17	U	18.7	U	**12**	F	**12.1**	F	**12.7**	F	17.8	U
p-Isopropyltoluene	NE	17	U	18.7	U	**33.8**		**80.5**		18.1	U	17.8	U
sec-Butylbenzene	12000	17	U	18.7	U	**10.9**	F	**19.4**		18.1	U	17.8	U
Styrene	960	17	U	18.7	U	16.7	U	19.4	U	18.1	U	17.8	U
Toluene	6500	17	U	18.7	U	**5.51**	F	19.4	U	18.1	U	17.8	U
Trichloroethene (TCE)	20	**15.4**	F	**27**		**79**		**78.7**		*5.65*	U	*5.54*	U
Xylenes, Total	63000	50.9	U	56	U	**22.6**	F	**21.8**	F	54.3	U	53.3	U

Table C-5.2 Upper Site Summit - Subsurface Soil Samples, Analytical Detections

	Location Identification	BH06USS		BH06USS Dup		BH07USS		BH07USS		BH08USS		BH08USS	
	Field Sample Identification	10NSS005SL06USS		10NSS201SL06USS		10NSS006SL07USS		10NSS007SL07USS		10NSS004SL08USS		10NSS005SL08USS	
	Date Collected	8/10/2010		8/10/2010		8/10/2010		8/10/2010		8/11/2010		8/11/2010	
	Depth (ft)	12 - 14		2 - 4		12 - 14		14 - 16		8 - 10		10 - 12	
Analyte/Methods (Units)	**Project Action Limit**												
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)													
2-Methylnaphthalene	6.1	0.253	U	0.253	U	**0.212**	F	**0.762**		0.259	U	0.259	U
4-Chloroaniline	0.057	*0.0791*	U	*0.079*	U	*0.0794*	U	*0.0795*	U	*0.0808*	U	*0.0808*	U
Acenaphthene	180	0.253	U	0.253	U	0.255	U	0.255	U	0.259	U	0.259	U
Acenaphthylene	180	0.253	U	0.253	U	0.255	U	0.255	U	0.259	U	0.259	U
Anthracene	3000	0.253	U	0.253	U	0.255	U	0.255	U	0.259	U	0.259	U
Benzo(a)anthracene	3.6	0.253	U	0.253	U	0.255	U	0.255	U	0.259	U	0.259	U
Benzo(a)pyrene	0.49	*0.0791*	U	*0.079*	U	*0.0794*	U	*0.0795*	U	*0.0808*	U	*0.0808*	U
Benzo(b)fluoranthene	4.9	0.253	U	0.253	U	0.255	U	0.255	U	0.259	U	0.259	U
Benzo(g,h,i)perylene	1400	0.253	U	0.253	U	0.255	U	0.255	U	0.259	U	0.259	U
Benzo(k)fluoranthene	49	0.253	U	0.253	U	0.255	U	0.255	U	0.259	U	0.259	U
bis(2-ethylhexyl) Phthalate	13	0.253	U	0.253	U	0.255	U	0.255	U	0.259	U	0.259	U
Chrysene	360	0.253	U	0.253	U	0.255	U	0.255	U	0.259	U	0.259	U
Dibenz(a,h)anthracene	0.49	*0.0791*	U	*0.079*	U	*0.0794*	U	*0.0795*	U	*0.0808*	U	*0.0808*	U
Dibenzofuran	11	0.253	U	0.253	U	0.255	U	0.255	U	0.259	U	0.259	U
Fluoranthene	1400	0.253	U	0.253	U	0.255	U	0.255	U	0.259	U	0.259	U
Fluorene	220	0.253	U	0.253	U	0.255	U	0.255	U	0.259	U	0.259	U
Indeno(1,2,3-c,d)Pyrene	4.9	0.253	U	0.253	U	0.255	U	0.255	U	0.259	U	0.259	U
Naphthalene	20	0.253	U	0.253	U	**0.0836**	F	**0.268**		0.259	U	0.259	U
Phenanthrene	3000	0.253	U	0.253	U	0.255	U	0.255	U	0.259	U	0.259	U
Pyrene	1000	0.253	U	0.253	U	0.255	U	0.255	U	0.259	U	0.259	U

Table C-5.2 Upper Site Summit - Subsurface Soil Samples, Analytical Detections

Location Identification		BH09USS		BH09USS		BH09USS Dup		BH10USS		BH10USS		BH11USS	
Field Sample Identification		10NSS003SL09USS		10NSS006SL09USS		10NSS203SL09USS		10NSS001SL10USS		10NSS005SL10USS		10NSS003SL11USS	
Date Collected		8/11/2010		8/11/2010		8/11/2010		8/11/2010		8/11/2010		8/19/2010	
Depth (ft)		6 - 8		12 - 14		6 - 8		2 - 4		10 - 12		6 - 8	
Analyte/Methods (Units)	**Project Action Limit**												
Total Petroleum Hydrocarbons (mg/kg)													
Gasoline Range Organics (GRO)/AK101	300	2.46	U	2.92	U	2.47	U	**0.819**	F	1.76	U	2.9	U
Diesel Range Organics (DRO)/AK102	250	21.5	U	**8.64**	F	21.6	U	**6.45**	F	20.3	U	51.3	U
Residual Range Organics (RRO)/AK103	10000	**25.8**		**79.7**		**25.2**		**28.1**		20.3	U	51.3	U
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	**3.66**		**3.74**		**3.71**		**4.64**		**4.89**		**1.32**	
Barium	1100	**113**		**122**		**145**		**358**		**154**		**212**	
Cadmium	5	**0.0991**	F	**0.113**	F	**0.132**	F	**0.129**	F	**0.125**	F	**0.116**	F
Chromium	25	**30.5**		**37.3**		**31.6**		**23.2**		**31.4**		**33.3**	
Chromium, Hexavalent/SW7196	25	**0.09**	F	**0.11**	F	0.52	U	0.51	U	0.51	U	NA	
Lead	400	**5.8**		**5.34**		**5.77**		**8.07**		**5.86**		**3.92**	
Nickel	86	**19.2**		**23.9**		**20.2**		**17.9**		**17.3**		**21.9**	
Selenium	3.4	**0.156**	F	**0.276**	F	**0.188**	F	**0.225**	F	**0.423**	F	**0.228**	F
Silver	11.2	**0.157**		**0.0473**	F	**0.053**	F	**0.0592**	F	**0.0561**	F	**0.0487**	F
Vanadium	710	**85.7**		**101**		**84.9**		**72.7**		**52.3**		**102**	
Mercury/SW7471A (µg/kg)	1400	**15.6**	F	**31.8**	F	**27.6**	F	**43.7**		**43.4**		**53.1**	
Volatile Organic Compounds (SW8260B) (µg/kg)													
1,2,3-Trichlorobenzene	87	24.6	U	29.2	U	24.7	U	25.5	U	17.6	U	29	U
1,2,3-Trichloropropane	0.53	*7.66*	U	*9.1*	U	*7.71*	U	*7.94*	U	*5.5*	U	*9.04*	U
1,2,4-Trichlorobenzene	850	24.6	U	29.2	U	24.7	U	25.5	U	17.6	U	29	U
1,2,4-Trimethylbenzene	23000	24.6	U	29.2	U	24.7	U	**21.1**	F	**8.45**	F	29	U
1,2-Dibromoethane (EDB)	0.16	*0.12*	U	*0.12*	U	*0.13*	U	*0.13*	U	*0.11*	U	*9.04*	U
1,3,5-Trimethylbenzene	23000	24.6	U	29.2	U	24.7	U	**15.8**	F	17.6	U	29	U
2-Butanone (MEK)	59000	246	U	292	U	247	U	255	U	176	U	290	U
4-Methyl-2-pentanone (MIBK)	8100	246	U	292	U	247	U	255	U	176	U	290	U
Acetone	88000	NA		NA		NA		NA		NA		NA	
Benzene	25	12.3	U	*4.55*	U	12.4	U	**4.07**	F	**2.82**	F	*4.52*	U
Carbon disulfide	12000	24.6	U	29.2	U	24.7	U	25.5	U	17.6	U	29	U
Ethylbenzene	6900	24.6	U	29.2	U	24.7	U	25.5	U	17.6	U	29	U
Isopropylbenzene	51000	24.6	U	29.2	U	24.7	U	**13**	F	17.6	U	29	U
m,p-Xylene (Sum of isomers)	63000	49.1	U	58.4	U	49.4	U	**19.1**	F	35.2	U	57.9	U
Methylene chloride	16	**32.9**	F,UB	*36.2*	U	*30.6*	U	**32.8**	F,UB	**31.9**	F,UB	**41.4**	F
Naphthalene	20000	49.1	U	58.4	U	49.4	U	**36.1**	F	35.2	U	57.9	U
n-Butylbenzene	15000	24.6	U	29.2	U	24.7	U	25.5	U	17.6	U	29	U
n-Propylbenzene	15000	24.6	U	29.2	U	24.7	U	**30**		17.6	U	29	U
o-Xylene	63000	24.6	U	29.2	U	24.7	U	**22.4**	F	**13.2**	F	29	U
p-Isopropyltoluene	NE	24.6	U	29.2	U	24.7	U	25.5	U	17.6	U	29	U
sec-Butylbenzene	12000	24.6	U	29.2	U	24.7	U	25.5	U	17.6	U	29	U
Styrene	960	24.6	U	29.2	U	24.7	U	25.5	U	17.6	U	29	U
Toluene	6500	24.6	U	29.2	U	24.7	U	**25.7**		**13.9**	F	29	U
Trichloroethene (TCE)	20	*7.66*	U	*9.1*	U	*7.71*	U	**78.4**		**38.2**		*9.04*	U
Xylenes, Total	63000	73.7	U	87.5	U	74.1	U	**41.5**	F	**17.8**	F	86.9	U

Table C-5.2 Upper Site Summit - Subsurface Soil Samples, Analytical Detections

Location Identification		BH09USS		BH09USS		BH09USS Dup		BH10USS		BH10USS		BH11USS	
Field Sample Identification		10NSS003SL09USS		10NSS006SL09USS		10NSS203SL09USS		10NSS001SL10USS		10NSS005SL10USS		10NSS003SL11USS	
Date Collected		8/11/2010		8/11/2010		8/11/2010		8/11/2010		8/11/2010		8/19/2010	
Depth (ft)		6 - 8		12 - 14		6 - 8		2 - 4		10 - 12		6 - 8	
Analyte/Methods (Units)	**Project Action Limit**												
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)													
2-Methylnaphthalene	6.1	0.269	U	0.272	U	0.266	U	0.256	U	0.255	U	0.253	U
4-Chloroaniline	0.057	*0.0839*	U	*0.0848*	U	*0.0831*	U	*0.0798*	U	*0.0796*	U	*0.079*	U
Acenaphthene	180	0.269	U	0.272	U	0.266	U	0.256	U	0.255	U	0.253	U
Acenaphthylene	180	0.269	U	0.272	U	0.266	U	0.256	U	0.255	U	0.253	U
Anthracene	3000	0.269	U	0.272	U	0.266	U	0.256	U	0.255	U	0.253	U
Benzo(a)anthracene	3.6	0.269	U	0.272	U	0.266	U	**0.268**		0.255	U	0.253	U
Benzo(a)pyrene	0.49	*0.0839*	U	*0.0848*	U	*0.0831*	U	**0.231**	F	*0.0796*	U	*0.079*	U
Benzo(b)fluoranthene	4.9	0.269	U	0.272	U	0.266	U	**0.218**	F	0.255	U	0.253	U
Benzo(g,h,i)perylene	1400	0.269	U	0.272	U	0.266	U	**0.12**	F	0.255	U	0.253	U
Benzo(k)fluoranthene	49	0.269	U	0.272	U	0.266	U	**0.135**	F	0.255	U	0.253	U
bis(2-ethylhexyl) Phthalate	13	0.269	U	**0.118**	F	0.266	U	0.256	U	0.255	U	**0.0994**	F
Chrysene	360	0.269	U	0.272	U	0.266	U	**0.446**		0.255	U	0.253	U
Dibenz(a,h)anthracene	0.49	*0.0839*	U	*0.0848*	U	*0.0831*	U	*0.0798*	U	*0.0796*	U	*0.079*	U
Dibenzofuran	11	0.269	U	0.272	U	0.266	U	0.256	U	0.255	U	0.253	U
Fluoranthene	1400	0.269	U	0.272	U	0.266	U	**0.406**		0.255	U	0.253	U
Fluorene	220	0.269	U	0.272	U	0.266	U	0.256	U	0.255	U	0.253	U
Indeno(1,2,3-c,d)Pyrene	4.9	0.269	U	0.272	U	0.266	U	**0.111**	F	0.255	U	0.253	U
Naphthalene	20	0.269	U	0.272	U	0.266	U	0.256	U	0.255	U	0.253	U
Phenanthrene	3000	0.269	U	0.272	U	0.266	U	**0.235**	F	0.255	U	0.253	U
Pyrene	1000	0.269	U	0.272	U	0.266	U	**0.402**		0.255	U	0.253	U

Table C-5.2 Upper Site Summit - Subsurface Soil Samples, Analytical Detections

Location Identification		BH11USS		BH12USS		BH12USS		BH12USS Dup		BH13USS		TP01USS	
Field Sample Identification		10NSS004SL11USS		10NSS005SL12USS		10NSS006SL12USS		10NSS206SL12USS		10NSS001SL13USS		10NSS001TP01USS	
Date Collected		8/19/2010		8/19/2010		8/19/2010		8/19/2010		8/19/2010		8/23/2010	
Depth (ft)		8 - 10		10 - 12		12 - 14		12 - 14		2		5	
Analyte/Methods (Units)	**Project Action Limit**												
Total Petroleum Hydrocarbons (mg/kg)													
Gasoline Range Organics (GRO)/AK101	300	1.78	U	2.07	U	**1.63**	F	**1.76**	F	1.47	U	**0.875**	F
Diesel Range Organics (DRO)/AK102	250	**11.8**	F	**51.8**		**3690**	D	**3560**	D	20.3	U	20.9	U
Residual Range Organics (RRO)/AK103	10000	20.3	U	**31.2**		**646**	D	**609**	D	**8.06**	F	**26.2**	B
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	**1.79**		NA		NA		NA		NA		**6.2**	
Barium	1100	**341**		NA		NA		NA		NA		**89.8**	
Cadmium	5	**0.128**	F	NA		NA		NA		NA		**0.0807**	F
Chromium	25	**31.9**		NA		NA		NA		NA		**25.7**	
Chromium, Hexavalent/SW7196	25	NA		NA		NA		NA		NA		NA	
Lead	400	**4.19**		NA		NA		NA		NA		**6.09**	
Nickel	86	**22.1**		NA		NA		NA		NA		**27.7**	
Selenium	3.4	**0.2**	F	NA		NA		NA		NA		**0.162**	F
Silver	11.2	**0.0381**	F	NA		NA		NA		NA		**0.0732**	F
Vanadium	710	**95.3**		NA		NA		NA		NA		**51.5**	
Mercury/SW7471A (µg/kg)	1400	**29.5**	F	NA		NA		NA		NA		**102**	
Volatile Organic Compounds (SW8260B) (µg/kg)													
1,2,3-Trichlorobenzene	87	17.8	U	20.7	U	31.1	U	23.8	U	14.7	U	16.8	U
1,2,3-Trichloropropane	0.53	*5.56*	U	*6.46*	U	*9.69*	U	*7.44*	U	*4.58*	U	*5.25*	U
1,2,4-Trichlorobenzene	850	17.8	U	20.7	U	31.1	U	23.8	U	14.7	U	16.8	U
1,2,4-Trimethylbenzene	23000	17.8	U	20.7	U	**29.2**	F	**22.4**	F	**6.47**	F	**18.7**	B
1,2-Dibromoethane (EDB)	0.16	*5.56*	U	*6.46*	U	*9.69*	U	*7.44*	U	*4.58*	U	*5.25*	U
1,3,5-Trimethylbenzene	23000	17.8	U	20.7	U	**17.7**	F	**15.5**	F	**6.17**	F	**10.3**	F,B
2-Butanone (MEK)	59000	178	U	207	U	311	U	238	U	147	U	168	U
4-Methyl-2-pentanone (MIBK)	8100	178	U	207	U	311	U	238	U	147	U	168	U
Acetone	88000	NA		NA		NA		NA		NA		NA	
Benzene	25	8.9	U	10.4	U	*4.85*	U	**4.05**	F	7.35	U	8.41	U
Carbon disulfide	12000	17.8	U	20.7	U	31.1	U	23.8	U	14.7	U	16.8	U
Ethylbenzene	6900	17.8	U	20.7	U	31.1	U	23.8	U	14.7	U	16.8	U
Isopropylbenzene	51000	17.8	U	20.7	U	**16.8**	F	23.8	U	14.7	U	16.8	U
m,p-Xylene (Sum of isomers)	63000	35.6	U	41.4	U	**25.2**	F	**18.4**	F	29.4	U	**23.2**	F
Methylene chloride	16	**29.6**	F	*25.7*	U	*38.5*	U	*29.6*	U	**26.7**	F	*20.9*	U
Naphthalene	20000	35.6	U	41.4	U	62.1	U	47.7	U	29.4	U	33.6	U
n-Butylbenzene	15000	17.8	U	20.7	U	31.1	U	23.8	U	14.7	U	16.8	U
n-Propylbenzene	15000	17.8	U	20.7	U	31.1	U	23.8	U	14.7	U	16.8	U
o-Xylene	63000	17.8	U	20.7	U	**28.3**	F	**21.9**	F	**9.55**	F	**16.5**	F
p-Isopropyltoluene	NE	17.8	U	20.7	U	31.1	U	23.8	U	14.7	U	16.8	U
sec-Butylbenzene	12000	17.8	U	20.7	U	31.1	U	23.8	U	14.7	U	16.8	U
Styrene	960	17.8	U	20.7	U	31.1	U	23.8	U	14.7	U	16.8	U
Toluene	6500	17.8	U	20.7	U	**33.9**		**28.4**		14.7	U	**17.5**	
Trichloroethene (TCE)	20	**5.7**	F	**8.08**	F	**49.4**		**44.8**		**17.3**		*5.25*	U
Xylenes, Total	63000	53.4	U	62.1	U	**53.4**	F	**40.3**	F	44.1	U	**39.7**	F

Table C-5.2 Upper Site Summit - Subsurface Soil Samples, Analytical Detections

Location Identification		BH11USS		BH12USS		BH12USS		BH12USS Dup		BH13USS		TP01USS	
Field Sample Identification		10NSS004SL11USS		10NSS005SL12USS		10NSS006SL12USS		10NSS206SL12USS		10NSS001SL13USS		10NSS001TP01USS	
Date Collected		8/19/2010		8/19/2010		8/19/2010		8/19/2010		8/19/2010		8/23/2010	
Depth (ft)		8 - 10		10 - 12		12 - 14		12 - 14		2		5	
Analyte/Methods (Units)	**Project Action Limit**												
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)													
2-Methylnaphthalene	6.1	0.255	U	0.278	U	0.279	U	0.276	U	0.252	U	0.263	U
4-Chloroaniline	0.057	*0.0796*	U	*0.0868*	U	*0.0871*	U	*0.086*	U	*0.0787*	U	*0.082*	U
Acenaphthene	180	0.255	U	0.278	U	0.279	U	0.276	U	0.252	U	0.263	U
Acenaphthylene	180	0.255	U	0.278	U	0.279	U	0.276	U	0.252	U	0.263	U
Anthracene	3000	0.255	U	0.278	U	**0.617**		**0.865**		0.252	U	0.263	U
Benzo(a)anthracene	3.6	0.255	U	0.278	U	**2.15**		**3.43**		0.252	U	0.263	U
Benzo(a)pyrene	0.49	*0.0796*	U	*0.0868*	U	**2.47**		**3.71**		*0.0787*	U	*0.082*	U
Benzo(b)fluoranthene	4.9	0.255	U	0.278	U	0.279	U	0.276	U	0.252	U	0.263	U
Benzo(g,h,i)perylene	1400	0.255	U	0.278	U	0.279	U	**2.07**		0.252	U	0.263	U
Benzo(k)fluoranthene	49	0.255	U	0.278	U	**3.82**		**5.63**		0.252	U	0.263	U
bis(2-ethylhexyl) Phthalate	13	0.255	U	0.278	U	0.279	U	0.276	U	0.252	U	0.263	U
Chrysene	360	0.255	U	0.278	U	**6.29**		**8.77**	D	0.252	U	0.263	U
Dibenz(a,h)anthracene	0.49	*0.0796*	U	*0.0868*	U	**0.653**		**0.846**		*0.0787*	U	*0.082*	U
Dibenzofuran	11	0.255	U	0.278	U	0.279	U	0.276	U	0.252	U	0.263	U
Fluoranthene	1400	0.255	U	0.278	U	**2.24**		**3.97**		0.252	U	0.263	U
Fluorene	220	0.255	U	0.278	U	0.279	U	0.276	U	0.252	U	0.263	U
Indeno(1,2,3-c,d)Pyrene	4.9	0.255	U	0.278	U	**1.62**		**2.09**		0.252	U	0.263	U
Naphthalene	20	0.255	U	0.278	U	0.279	U	0.276	U	0.252	U	0.263	U
Phenanthrene	3000	0.255	U	0.278	U	**0.814**		**1.18**		0.252	U	0.263	U
Pyrene	1000	0.255	U	0.278	U	**2.22**		**3.77**		0.252	U	0.263	U

Table C-5.2 Upper Site Summit - Subsurface Soil Samples, Analytical Detections

	Location Identification	TP01USS		TP02USS		TP02USS		TP03USS		TP03USS	
	Field Sample Identification	10NSS002TP01USS		10NSS001TP02USS		10NSS002TP02USS		10NSS001TP03USS		10NSS002TP03USS	
	Date Collected	8/23/2010		8/23/2010		8/23/2010		8/23/2010		8/23/2010	
	Depth (ft)	5		3		3		6		6	
Analyte/Methods (Units)	**Project Action Limit**										
Total Petroleum Hydrocarbons (mg/kg)											
Gasoline Range Organics (GRO)/AK101	300	**1.11**	F	1.77	U	1.76	U	2.23	U	2.17	U
Diesel Range Organics (DRO)/AK102	250	21.1	U	**7.65**	F	21.1	U	22.2	U	22	U
Residual Range Organics (RRO)/AK103	10000	**26.8**	B	**22.5**	B	**23.6**	B	**57.8**	B	**65.5**	B
Metals (SW6020A) (mg/kg)											
Arsenic	\	**5.46**		**3.8**		**3.74**		**5**		**5.51**	
Barium	1100	**76.5**		**114**		**89.7**		**127**		**121**	
Cadmium	5	**0.0767**	F	**0.127**	F	**0.104**	F	**0.0829**	F	**0.0889**	F
Chromium	25	**23.3**		**31.1**		**31.8**		**29**		**31.6**	
Chromium, Hexavalent/SW7196	25	NA		NA		NA		NA		NA	
Lead	400	**5.39**		**5.96**		**4.68**		**4.69**		**5.02**	
Nickel	86	**27.5**		**28.3**		**29.7**		**27.5**		**29.5**	
Selenium	3.4	**0.148**	F	**0.178**	F	**0.168**	F	**0.351**	F	**0.231**	F
Silver	11.2	**0.062**	F	**0.0544**	F	**0.0455**	F	**0.0454**	F	**0.0417**	F
Vanadium	710	**43.5**		**84**		**78.4**		**65.8**		**70.8**	
Mercury/SW7471A (µg/kg)	1400	**87.5**		**52.5**		**40.5**	F	**81.8**		**43.8**	F
Volatile Organic Compounds (SW8260B) (µg/kg)											
1,2,3-Trichlorobenzene	87	**12.7**	F	17.7	U	17.6	U	22.3	U	21.7	U
1,2,3-Trichloropropane	0.53	*6.11*	U	*5.53*	U	*5.5*	U	*6.97*	U	*6.76*	U
1,2,4-Trichlorobenzene	850	**6.46**	F	17.7	U	17.6	U	22.3	U	21.7	U
1,2,4-Trimethylbenzene	23000	**19.6**	B	17.7	U	17.6	U	22.3	U	21.7	U
1,2-Dibromoethane (EDB)	0.16	*6.11*	U	*5.53*	U	*5.5*	U	*6.97*	U	*6.76*	U
1,3,5-Trimethylbenzene	23000	**11.2**	F,B	17.7	U	17.6	U	22.3	U	21.7	U
2-Butanone (MEK)	59000	196	U	177	U	176	U	223	U	217	U
4-Methyl-2-pentanone (MIBK)	8100	196	U	177	U	176	U	223	U	217	U
Acetone	88000	NA		NA		NA		NA		NA	
Benzene	25	9.79	U	8.87	U	8.81	U	11.2	U	10.8	U
Carbon disulfide	12000	19.6	U	17.7	U	17.6	U	22.3	U	21.7	U
Ethylbenzene	6900	19.6	U	17.7	U	17.6	U	22.3	U	21.7	U
Isopropylbenzene	51000	**10.2**	F	17.7	U	17.6	U	22.3	U	21.7	U
m,p-Xylene (Sum of isomers)	63000	**25.7**	F	35.5	U	35.3	U	44.7	U	43.4	U
Methylene chloride	16	*24.3*	U	*22*	U	*21.9*	U	*27.7*	U	*26.9*	U
Naphthalene	20000	**15.9**	F	**14**	F	35.3	U	44.7	U	43.4	U
n-Butylbenzene	15000	**12.3**	F,B	17.7	U	17.6	U	22.3	U	21.7	U
n-Propylbenzene	15000	19.6	U	17.7	U	17.6	U	22.3	U	21.7	U
o-Xylene	63000	**18.2**	F	17.7	U	17.6	U	22.3	U	21.7	U
p-Isopropyltoluene	NE	19.6	U	17.7	U	17.6	U	22.3	U	21.7	U
sec-Butylbenzene	12000	**10.2**	F	17.7	U	17.6	U	22.3	U	21.7	U
Styrene	960	19.6	U	17.7	U	17.6	U	22.3	U	21.7	U
Toluene	6500	**19.8**		17.7	U	17.6	U	22.3	U	21.7	U
Trichloroethene (TCE)	20	*6.11*	U	*5.53*	U	*5.5*	U	*6.97*	U	*6.76*	U
Xylenes, Total	63000	**43.9**	F	53.2	U	52.9	U	67	U	65	U

Table C-5.2 Upper Site Summit - Subsurface Soil Samples, Analytical Detections

	Location Identification	TP01USS		TP02USS		TP02USS		TP03USS		TP03USS	
	Field Sample Identification	10NSS002TP01USS		10NSS001TP02USS		10NSS002TP02USS		10NSS001TP03USS		10NSS002TP03USS	
	Date Collected	8/23/2010		8/23/2010		8/23/2010		8/23/2010		8/23/2010	
	Depth (ft)	5		3		3		6		6	
Analyte/Methods (Units)	**Project Action Limit**										
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)											
2-Methylnaphthalene	6.1	0.264	U	0.267	U	0.266	U	0.278	U	0.272	U
4-Chloroaniline	0.057	*0.0822*	U	*0.0832*	U	*0.083*	U	*0.0868*	U	*0.0847*	U
Acenaphthene	180	0.264	U	0.267	U	0.266	U	0.278	U	0.272	U
Acenaphthylene	180	0.264	U	0.267	U	0.266	U	0.278	U	0.272	U
Anthracene	3000	0.264	U	0.267	U	0.266	U	0.278	U	0.272	U
Benzo(a)anthracene	3.6	0.264	U	0.267	U	0.266	U	0.278	U	0.272	U
Benzo(a)pyrene	0.49	*0.0822*	U	*0.0832*	U	*0.083*	U	*0.0868*	U	*0.0847*	U
Benzo(b)fluoranthene	4.9	0.264	U	0.267	U	0.266	U	0.278	U	0.272	U
Benzo(g,h,i)perylene	1400	0.264	U	0.267	U	0.266	U	0.278	U	0.272	U
Benzo(k)fluoranthene	49	0.264	U	0.267	U	0.266	U	0.278	U	0.272	U
bis(2-ethylhexyl) Phthalate	13	0.264	U	0.267	U	0.266	U	0.278	U	0.272	U
Chrysene	360	0.264	U	0.267	U	0.266	U	0.278	U	0.272	U
Dibenz(a,h)anthracene	0.49	*0.0822*	U	*0.0832*	U	*0.083*	U	*0.0868*	U	*0.0847*	U
Dibenzofuran	11	0.264	U	0.267	U	0.266	U	0.278	U	0.272	U
Fluoranthene	1400	0.264	U	0.267	U	0.266	U	0.278	U	0.272	U
Fluorene	220	0.264	U	0.267	U	0.266	U	0.278	U	0.272	U
Indeno(1,2,3-c,d)Pyrene	4.9	0.264	U	0.267	U	0.266	U	0.278	U	0.272	U
Naphthalene	20	0.264	U	0.267	U	0.266	U	0.278	U	0.272	U
Phenanthrene	3000	0.264	U	0.267	U	0.266	U	0.278	U	0.272	U
Pyrene	1000	0.264	U	0.267	U	0.266	U	0.278	U	0.272	U

Table C-5.2 Upper Site Summit - Subsurface Soil Samples, Analytical Detections

	Location Identification	TP04USS		TP04USS	
	Field Sample Identification	10NSS001TP04USS		10NSS002TP04USS	
	Date Collected	8/27/2010		8/27/2010	
	Depth (ft)	2.3		2.5	
Analyte/Methods (Units)	**Project Action Limit**				
Total Petroleum Hydrocarbons (mg/kg)					
Gasoline Range Organics (GRO)/AK101	300	2.01	U	1.76	U
Diesel Range Organics (DRO)/AK102	250	**119**	F	**139**	D
Residual Range Organics (RRO)/AK103	10000	**912**	D	**897**	D
Metals (SW6020A) (mg/kg)					
Arsenic	\	**5.55**		**4.67**	
Barium	1100	**141**		**135**	
Cadmium	5	**0.335**		**0.253**	
Chromium	25	**25.9**		**27.9**	
Chromium, Hexavalent/SW7196	25	NA		NA	
Lead	400	**50**		**33.1**	
Nickel	86	**24.8**		**29.5**	
Selenium	3.4	0.498	U	**0.171**	F
Silver	11.2	**0.0705**	F	**0.0552**	F
Vanadium	710	**60.6**		**48.5**	
Mercury/SW7471A (µg/kg)	1400	**45.8**		**79.3**	
Volatile Organic Compounds (SW8260B) (µg/kg)					
1,2,3-Trichlorobenzene	87	40.2	U	35.3	U
1,2,3-Trichloropropane	0.53	*6.27*	U	*5.51*	U
1,2,4-Trichlorobenzene	850	20.1	U	17.6	U
1,2,4-Trimethylbenzene	23000	40.2	U	35.3	U
1,2-Dibromoethane (EDB)	0.16	*6.27*	U	*5.51*	U
1,3,5-Trimethylbenzene	23000	20.1	U	17.6	U
2-Butanone (MEK)	59000	201	U	176	U
4-Methyl-2-pentanone (MIBK)	8100	201	U	176	U
Acetone	88000	NA		NA	
Benzene	25	10.1	U	8.82	U
Carbon disulfide	12000	80.4	U	70.6	U
Ethylbenzene	6900	20.1	U	17.6	U
Isopropylbenzene	51000	20.1	U	17.6	U
m,p-Xylene (Sum of isomers)	63000	40.2	U	**14.1**	F
Methylene chloride	16	*24.9*	U	**27.3**	F,UB
Naphthalene	20000	40.2	U	35.3	U
n-Butylbenzene	15000	20.1	U	17.6	U
n-Propylbenzene	15000	20.1	U	17.6	U
o-Xylene	63000	40.2	U	35.3	U
p-Isopropyltoluene	NE	20.1	U	17.6	U
sec-Butylbenzene	12000	20.1	U	17.6	U
Styrene	960	20.1	U	17.6	U
Toluene	6500	40.2	U	**13.9**	F
Trichloroethene (TCE)	20	*6.27*	U	*5.51*	U
Xylenes, Total	63000	80.4	U	70.6	U

Table C-5.2 Upper Site Summit - Subsurface Soil Samples, Analytical Detections

Location Identification		TP04USS		TP04USS	
Field Sample Identification		10NSS001TP04USS		10NSS002TP04USS	
Date Collected		8/27/2010		8/27/2010	
Depth (ft)		2.3		2.5	
Analyte/Methods (Units)	**Project Action Limit**				
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)					
2-Methylnaphthalene	6.1	0.272	U	0.3	U
4-Chloroaniline	0.057	*0.0849*	U	*0.0936*	U
Acenaphthene	180	0.272	U	0.3	U
Acenaphthylene	180	0.272	U	0.3	U
Anthracene	3000	0.272	U	0.3	U
Benzo(a)anthracene	3.6	0.272	U	0.3	U
Benzo(a)pyrene	0.49	*0.0849*	U	*0.0936*	U
Benzo(b)fluoranthene	4.9	0.272	U	0.3	U
Benzo(g,h,i)perylene	1400	0.272	U	0.3	U
Benzo(k)fluoranthene	49	0.272	U	0.3	U
bis(2-ethylhexyl) Phthalate	13	0.272	U	0.3	U
Chrysene	360	0.272	U	0.3	U
Dibenz(a,h)anthracene	0.49	*0.0849*	U	*0.0936*	U
Dibenzofuran	11	0.272	U	0.3	U
Fluoranthene	1400	0.272	U	0.3	U
Fluorene	220	0.272	U	0.3	U
Indeno(1,2,3-c,d)Pyrene	4.9	0.272	U	0.3	U
Naphthalene	20	0.272	U	0.3	U
Phenanthrene	3000	0.272	U	0.3	U
Pyrene	1000	0.272	U	0.3	U

µg/kg	micrograms per kilogram.
mg/kg	milligrams per kilogram.
Italic	Italicized result indicates analyte reported to the laboratory detection limit.
	Indicates concentration, LOQ, or LOD is above the established project action limit
Bold	Bolded result indicates positively identified compound.
AK	Alaska Test Method
NA	Not analyzed.
NE	Not established
B	Analyte detected in an associated blank.
D	Sample dilution required for analysis; reported values reflect the dilution.
F	Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the LOQ but greater than the LOD.
J	Data are estimated based on associated quality control data.
UJ	Potential low bias, possible false negative.
UB	Analyte considered not detected, based on an associated blank concentration.
UK	Analyte considered not detected, based on professional judgment of Validation Chemist.
U	Analyte is not detected at the reported LOQ or LOD
J+	Data are estimated, potentially biased high, based on associated quality control data.
J-	Data are estimated, potentially biased low, based on associated quality control data.
LOD	Limit of detection
LOQ	Limit of quantitation
SW	U.S. Environmental Protection Agency Solid Waste Method

Table C-5.3 Upper Site Summit - Groundwater Samples, Analytical Detections

Location Identification		MW03USS				MW04USS				MW12USS	
Field Sample Identification		10NSS001GW03USS				10NSS001GW04USS				10NSS001GW12USS	
Date Collected		9/1/2010	9/2/2010	10/4/2010	10/14/2010	9/1/2010				9/1/2010	
Analyte/Methods (Units)	**Project Action Limit**										
Total Petroluem Hydrocarbons (mg/l)											
Gasoline Range Organics (GRO)/AK101	2.2	**0.0888** F				**0.941**				0.25	U,D
Diesel Range Organics (DRO)/AK102	1.5	**9.43**				**32.3** D				NA	
Residual Range Organics (RRO)/AK103	1.1	**4.14**				**31** D				NA	
Metals (SW6020) (µg/l)			**Total**		**Dissolved**	**Total**		**Dissolved**			
Arsenic	10		**156**	NA	*1.5* U	**73**		**4.8** F		NA	
Barium	2000		**16200**	NA	**65.9**	**11600**		**136**		NA	
Cadmium	5		**4.95** F	NA	2 U	**6.88**		2 U		NA	
Chromium	100		**1790**	NA	4 U	**694**		**5.27**		NA	
Lead	15		**189**	NA	1 U	**653**		**43.5**		NA	
Mercury/SW7470	2		**0.811**	NA	0.2 U	**0.0945** F		0.2 U		NA	
Nickel	100		**916**	NA	**1.65** F	**531**		**4.89**		NA	
Selenium	50		*7.5* U	NA	*1.5* U	**3.43** F		5 U		NA	
Silver	100		10 U	NA	2 U	**1.56** F		2 U		NA	
Vanadium	260		**2450**	NA	20 U	**1610**		**18.2** F		NA	
Volatile Organic Compounds (SW8260B) (µg/l)											
1,2,4-Trimethylbenzene	1800	**1.51**				**24.7**				**1.3**	F
1,2-Dibromoethane (EDB)/E504.1	0.05	NA				**0.047** J-				NA	
1,3,5-Trimethylbenzene	1800	**8.21**				**23.6**				**0.66**	F
Benzene	5	**0.94**				**2.01**				**4.12**	D
Carbon disulfide	3700	**2.13**				**0.9** F				4	U,D
Ethylbenzene	700	1 U				**2.25**				**1.82**	F
Isopropylbenzene	3700	**0.89** F				**0.72** F				**1.08**	F
m,p-Xylene (Sum of isomers)	10000	2 U				**20.4** J+				**8.62**	D
2-Butanone (MEK)	22000	**7.09** F				10 U				20	U,D
4-Methyl-2-pentanone (MIBK)	2900	10 U				**4.66** F				20	U,D
n-Butylbenzene	370	1 U				1 U				**1.34**	F
n-Propylbenzene	370	**0.34** F				**0.5** F				2	U,D
Naphthalene	730	**10.3**				**11.2**				**2.56**	F
o-Xylene	10000	**0.91** F				**3.59**				**3.8**	D
p-Isopropyltoluene	NE	**2.29**				**1.32**				**1.02**	F
sec-Butylbenzene	370	**0.82** F				1 U				2	U,D
Toluene	1000	**0.57** F				**7.22**				**18.7**	D
Trichloroethylene (TCE)	5	**1.53**				**2.46**				**0.64**	F
Xylenes, Total	10000	**1.27** F				**24**				**12.4**	D

Table C-5.3 Upper Site Summit - Groundwater Samples, Analytical Detections

Location Identification		MW03USS				MW04USS		MW12USS
Field Sample Identification		10NSS001GW03USS				10NSS001GW04USS		10NSS001GW12USS
Date Collected		9/1/2010	9/2/2010	10/4/2010	10/14/2010	9/1/2010		9/1/2010
Analyte/Methods (Units)	**Project Action Limit**							
Semi-Volatile Organic Compounds (SW8270C) (mg/l)								
2-Methylnaphthalene	0.15			NA		**0.0552**		NA
Acenaphthene	2.2			NA		**0.005**	F	NA
Anthracene	11			NA		**0.0051**	F	NA
Benzo(a)anthracene	0.0012			NA		**0.0168**		NA
Benzo(a)pyrene	0.0002			NA		**0.0131**		NA
Benzo(b)fluoranthene	0.0012			NA		**0.0142**		NA
Benzo(g,h,i)perylene	1.1			NA		**0.0054**	F	NA
Benzo(k)fluoranthene	0.012			NA		**0.0038**	F	NA
bis(2-ethylhexyl) Phthalate	0.006			NA		**0.0115**		NA
Chrysene	0.12			NA		**0.0177**		NA
Fluoranthene	1.5			NA		**0.0296**		NA
Fluorene	1.5			NA		**0.0048**	F	NA
Indeno(1,2,3-c,d)Pyrene	0.0012			NA		**0.0051**	F	NA
Phenanthrene	11			NA		**0.0116**		NA
Pyrene	1.1			NA		**0.0329**		NA

µg/l micrograms per liter.
mg/l milligrams per liter.
Indicates concentration, LOQ or LOD is above the established project action limit
Italic Italicized result indicates analyte reported to the limit of detection
Bold Bolded result indicates positively identified compound.
AK Alaska Test Method
NA Not analyzed.
NE Not established
B Analyte detected in an associated blank.
D Sample dilution required for analysis; reported values reflect the dilution.
F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the LOQ, but greater than the LOD.
J Data are estimated based on associated quality control data.
UJ Potential low bias, possible false negative.
U Analyte is not detected at the reported LOQ or LOD
J+ Data are estimated, potentially biased high, based on associated quality control data.
LOD Limit of detection
LOQ Limit of quantitation
SW U.S. Environmental Protection Agency Solid Waste Method

Table C-6.1 Lower Site Summit - Surface Soil Samples, Analytical Detections

Location Identification		SS01LSS		SS02LSS		SS03LSS		SS04LSS		SS05LSS		SS06LSS		SS07LSS	
Field Sample Identification		10NSS001SS01LSS		10NSS001SS02LSS		10NSS001SS03LSS		10NSS001SS04LSS		10NSS001SS05LSS		10NSS001SS06LSS		10NSS001SS07LSS	
Date Collected		8/5/2010		8/5/2010		8/5/2010		8/5/2010		8/5/2010		8/5/2010		8/5/2010	
Depth (ft)		0.5		0.5		0.5		0.5		0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**														
General Parameters															
Perchlorate/SW6860 (µg/kg)	67	NA		NA		NA		NA		NA		NA		NA	
Total Petroleum Hydrocarbons (mg/kg)															
Gasoline Range Organics (GRO)/AK101	300	NA		NA		2.68	U	2.62	U	2.46	U	3.6	U	3.17	U
Diesel Range Organics (DRO)/AK102	250	21.2	U	22.2	U	**13.6**	F	21.6	U	21.7	U	**1110**	D	22	U
Residual Range Organics (RRO)/AK103	10000	**39.5**		**40.9**		**111**		**34.9**		**14.8**	F	**8240**	D	**37.6**	
Metals (SW6020A) (mg/kg)															
Arsenic	3.9	**5.13**		**7.55**		**6.74**		NA		NA		NA		**7.66**	
Barium	1100	**106**		**106**		**160**		NA		NA		NA		**109**	
Cadmium	5	**0.22**		**0.158**	F	**0.144**	F	NA		NA		NA		**0.13**	F
Chromium	25	**19.5**		**28.6**		**23.2**		NA		NA		NA		**31.6**	
Chromium, Hexavalent/SW7196	25	NA		NA		NA		NA		NA		NA		NA	
Lead	400	**10.7**		**16.1**		**11**		NA		NA		NA		**7.77**	
Nickel	86	**21**		**49.1**		**23.9**		NA		NA		NA		**32.9**	
Selenium	3.4	0.492	U	0.544	U	**0.188**	F	NA		NA		NA		0.529	U
Silver	11.2	**0.0585**	F	**0.0646**	F	**0.0659**	F	NA		NA		NA		**0.0723**	F
Vanadium	710	**44.3**		**50.3**		**49.9**		NA		NA		NA		**54.5**	
Mercury/SW7471A (µg/kg)	1400	**66.9**		**61.2**		**63.9**		NA		NA		NA		**41.7**	F
Polychlorinated Biphenyls (PCBs)/SW8082 (µg/kg)															
PCB-1254 (Aroclor 1254)	1000	53.4	U	54.7	U	59.2	U	NA		NA		NA		54.5	U
PCB-1260 (Aroclor 1260)	1000	53.4	U	54.7	U	59.2	U	NA		NA		NA		54.5	U
Volatile Organic Compounds (SW8260B) (µg/kg)															
1,1,1-Trichloroethane	820	24	U	18.5	U	26.8	U	26.2	U	24.6	U	36	U	31.7	U
1,1,2,2-Tetrachloroethane	17	*7.47*	U	*5.77*	U	*8.37*	*U*	*8.19*	*U*	*7.69*	U	*11.2*	U	*9.88*	U
1,1,2-Trichloroethane	18	*7.47*	U	*5.77*	U	*8.37*	*U*	*8.19*	*U*	*7.69*	U	*11.2*	U	*9.88*	U
1,2,3-Trichlorobenzene	87	24	U	18.5	U	26.8	U	26.2	U	24.6	U	36	U	31.7	U
1,2,3-Trichloropropane	0.53	*7.47*	U	*5.77*	U	*8.37*	*U*	*8.19*	*U*	*7.69*	U	*11.2*	U	*9.88*	U
1,2,4-Trichlorobenzene	850	24	U	18.5	U	26.8	U	26.2	U	24.6	U	36	U	31.7	U
1,2,4-Trimethylbenzene	23000	24	U	18.5	U	26.8	U	26.2	U	24.6	U	36	U	31.7	U
1,2-Dibromo-3-chloropropane	0.00014	*29.7*	U	*22.9*	U	*33.3*	*U*	*32.5*	*U*	*30.6*	U	*44.6*	U	*39.3*	U
1,3,5-Trimethylbenzene	23000	24	U	18.5	U	26.8	U	26.2	U	24.6	U	36	U	31.7	U
2-Butanone (MEK)	59000	240	U	185	U	268	U	262	U	246	U	360	U	317	U
2-Hexanone	11	*74.7*	U	*57.7*	U	*83.7*	*U*	*81.9*	*U*	*76.9*	U	*112*	U	*98.8*	U
4-Chlorotoluene	2500	24	U	18.5	U	26.8	U	26.2	U	24.6	U	36	U	31.7	U
4-Methyl-2-pentanone (MIBK)	8100	240	U	185	U	268	U	262	U	246	U	360	U	317	U
Acetone	88000	NA		NA		NA		NA		NA		NA		NA	
Benzene	25	12	U	9.24	U	*4.19*	*U*	*4.09*	*U*	12.3	U	*5.61*	U	*4.94*	U
Carbon disulfide	12000	24	U	18.5	U	26.8	U	26.2	U	24.6	U	36	U	31.7	U
Ethylbenzene	6900	24	U	18.5	U	26.8	U	26.2	U	24.6	U	36	U	31.7	U
Isopropylbenzene	51000	24	U	18.5	U	26.8	U	26.2	U	24.6	U	36	U	31.7	U
m,p-Xylene (Sum of isomers)	63000	47.9	U	37	U	53.7	U	52.5	U	49.3	U	71.9	U	63.3	U
Methylene chloride	16	*29.7*	U	**28.8**	F,UB	*33.3*	*U*	*32.5*	*U*	**37.2**	F,UB	*44.6*	U	*39.3*	U
Naphthalene	20000	47.9	U	37	U	53.7	U	52.5	U	49.3	U	71.9	U	63.3	U
n-Butylbenzene	15000	24	U	18.5	U	26.8	U	26.2	U	24.6	U	36	U	31.7	U
n-Propylbenzene	15000	24	U	18.5	U	26.8	U	26.2	U	24.6	U	36	U	31.7	U

Table C-6.1 Lower Site Summit - Surface Soil Samples, Analytical Detections

Location Identification		SS01LSS		SS02LSS		SS03LSS		SS04LSS		SS05LSS		SS06LSS		SS07LSS	
Field Sample Identification		10NSS001SS01LSS		10NSS001SS02LSS		10NSS001SS03LSS		10NSS001SS04LSS		10NSS001SS05LSS		10NSS001SS06LSS		10NSS001SS07LSS	
Date Collected		8/5/2010		8/5/2010		8/5/2010		8/5/2010		8/5/2010		8/5/2010		8/5/2010	
Depth (ft)		0.5		0.5		0.5		0.5		0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**														
Volatile Organic Compounds (SW8260B) (µg/kg) (continued)															
o-Xylene	63000	24	U	18.5	U	26.8	U	26.2	U	24.6	U	36	U	31.7	U
p-Isopropyltoluene	NE	24	U	18.5	U	26.8	U	26.2	U	24.6	U	36	U	31.7	U
sec-Butylbenzene	12000	24	U	18.5	U	26.8	U	26.2	U	24.6	U	36	U	31.7	U
Styrene	960	24	U	18.5	U	26.8	U	26.2	U	24.6	U	36	U	31.7	U
Toluene	6500	24	U	18.5	U	26.8	U	26.2	U	24.6	U	36	U	31.7	U
trans-1,3-Dichloropropene	0.15	*7.47*	U	*5.77*	U	*8.37*	*U*	*8.19*	*U*	*7.69*	U	*11.2*	U	*9.88*	U
Trichloroethene (TCE)	20	*7.47*	U	*5.77*	U	*8.37*	*U*	*8.19*	*U*	*7.69*	U	*11.2*	U	*9.88*	U
Xylenes, Total	63000	71.9	U	55.4	U	80.5	U	78.7	U	73.9	U	108	U	95	U
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)															
2,4-Dimethyl phenol	8.8	0.266	U	0.276	U	0.297	U	0.272	U	0.269	U	0.305	U	0.272	U
2-Methylnaphthalene	6.1	0.266	U	0.276	U	0.297	U	0.272	U	0.269	U	0.305	U	0.272	U
Acenaphthene	180	0.266	U	0.276	U	0.297	U	0.272	U	0.269	U	0.305	U	0.272	U
Anthracene	3000	0.266	U	0.276	U	0.297	U	0.272	U	0.269	U	0.305	U	0.272	U
Benzo(a)anthracene	3.6	0.266	U	0.276	U	**0.466**		0.272	U	0.269	U	0.305	U	0.272	U
Benzo(a)pyrene	0.49	*0.0831*	U	*0.0861*	U	**0.518**		*0.0849*	*U*	*0.084*	U	*0.0953*	U	*0.085*	U
Benzo(b)fluoranthene	4.9	0.266	U	0.276	U	**0.665**		0.272	U	0.269	U	0.305	U	0.272	U
Benzo(g,h,i)perylene	1400	0.266	U	0.276	U	**0.247**	F	0.272	U	0.269	U	0.305	U	0.272	U
Benzo(k)fluoranthene	49	0.266	U	0.276	U	**0.261**	F	0.272	U	0.269	U	0.305	U	0.272	U
Benzoic acid	410	1.6	U	1.66	U	1.78	U	1.63	U	1.62	U	1.83	U	1.63	U
Benzyl butyl phthalate	920	0.266	U	0.276	U	0.297	U	0.272	U	0.269	U	0.305	U	0.272	U
bis(2-ethylhexyl) Phthalate	13	0.266	U	0.276	U	0.297	U	0.272	U	0.269	U	0.305	U	0.272	U
Chrysene	360	0.266	U	0.276	U	**0.468**		0.272	U	0.269	U	0.305	U	0.272	U
Di-n-octylphthalate	3800	0.266	U	0.276	U	0.297	U	0.272	U	0.269	U	0.305	U	0.272	U
Dibenz(a,h)anthracene	0.49	*0.0831*	U	*0.0861*	U	*0.0926*	*U*	*0.0849*	*U*	*0.084*	U	*0.0953*	U	*0.085*	U
Dibenzofuran	11	0.266	U	0.276	U	0.297	U	0.272	U	0.269	U	0.305	U	0.272	U
Fluoranthene	1400	**0.0918**	F	**0.16**	F	**0.507**		0.272	U	0.269	U	0.305	U	0.272	U
Fluorene	220	0.266	U	0.276	U	0.297	U	0.272	U	0.269	U	0.305	U	0.272	U
Indeno(1,2,3-c,d)Pyrene	4.9	0.266	U	0.276	U	**0.243**	F	0.272	U	0.269	U	0.305	U	0.272	U
Naphthalene	20	0.266	U	0.276	U	0.297	U	0.272	U	0.269	U	0.305	U	0.272	U
Pentachlorophenol	0.047	*0.66*	U	*0.684*	U	*0.736*	*U*	*0.674*	*U*	*0.668*	U	*0.757*	U	*0.675*	U
Phenanthrene	3000	0.266	U	**0.207**	F	**0.184**	F	0.272	U	0.269	U	0.305	U	0.272	U
Pyrene	1000	**0.0965**	F	**0.133**	F	**0.503**		0.272	U	0.269	U	0.305	U	0.272	U

Table C-6.1 Lower Site Summit - Surface Soil Samples, Analytical Detections

Location Identification		SS07LSS Dup		SS08LSS		SS09LSS		SS10LSS		SS10LSS Dup		SS11LSS		SS12LSS	
Field Sample Identification		10NSS201SS07LSS		10NSS001SS08LSS		10NSS001SS09LSS		10NSS001SS10LSS		10NSS201SS10LSS		10NSS001SS11LSS		10NSS001SS12LSS	
Date Collected		8/5/2010		8/5/2010		8/5/2010		8/5/2010		8/5/2010		8/5/2010		8/5/2010	
Depth (ft)		0.5		0.5		0.5		0.5		0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**														
General Parameters															
Perchlorate/SW6860 (µg/kg)	67	NA		NA		0.49	U	**0.2**	F	0.48	U	**0.43**	F	0.47	U
Total Petroleum Hydrocarbons (mg/kg)															
Gasoline Range Organics (GRO)/AK101	300	2.89	U	2.95	U	NA		NA		NA		NA		NA	
Diesel Range Organics (DRO)/AK102	250	21.7	U	21.6	U	**7360**	D	**4350**	D	NA		**47.4**	F	**4210**	D
Residual Range Organics (RRO)/AK103	10000	**34.7**		**11**	F	**2250**	D	**976**	D	NA		**417**	D	**361**	
Metals (SW6020A) (mg/kg)															
Arsenic	3.9	**6.47**		**5.86**		**7.57**		**8.98**		NA		**5.91**		**8.19**	
Barium	1100	**98.9**		**98.7**		**83.6**		**103**		NA		**109**		**95.7**	
Cadmium	5	**0.11**	F	**0.0789**	F	**0.833**		**1.34**		NA		**0.153**	F	**0.461**	
Chromium	25	**26.6**		**25.3**		**29.6**		**27**		NA		**19.3**		**34.8**	
Chromium, Hexavalent/SW7196	25	NA		NA		NA		NA		NA		NA		NA	
Lead	400	**6.34**		**6.14**		**33.3**		**70.7**		NA		**12.6**		**79.5**	
Nickel	86	**27.9**		**27.4**		**33.2**		**33.2**		NA		**20.4**		**28.9**	
Selenium	3.4	0.535	U	0.523	U	**0.24**	F	**0.21**	F	NA		**0.175**	F	**0.261**	F
Silver	11.2	**0.0576**	F	**0.0552**	F	**0.082**	F	**0.0871**	F	NA		**0.0641**	F	**0.0899**	F
Vanadium	710	**47.1**		**41.6**		**45.6**		**50.3**		NA		**41.2**		**40.3**	
Mercury/SW7471A (µg/kg)	1400	**73.9**		**22.9**	F	**134**		**84.6**		NA		**58.4**		**104**	
Polychlorinated Biphenyls (PCBs)/SW8082 (µg/kg)															
PCB-1254 (Aroclor 1254)	1000	54.1	U	54	U	54.9	U	55.7	U	NA		56	U	54.2	U
PCB-1260 (Aroclor 1260)	1000	54.1	U	54	U	54.9	U	55.7	U	NA		56	U	54.2	U
Volatile Organic Compounds (SW8260B) (µg/kg)															
1,1,1-Trichloroethane	820	28.9	U	29.5	U	21.1	U	**70.5**		NA		27.3	U	25.8	U
1,1,2,2-Tetrachloroethane	17	*9.02*	U	*9.22*	U	*6.58*	U	*9.09*	U	NA		*8.53*	U	*8.06*	U
1,1,2-Trichloroethane	18	*9.02*	U	*9.22*	U	*6.58*	U	**14.9**	F	NA		*8.53*	U	*8.06*	U
1,2,3-Trichlorobenzene	87	28.9	U	29.5	U	21.1	U	29.1	U	NA		27.3	U	25.8	U
1,2,3-Trichloropropane	0.53	*9.02*	U	*9.22*	U	*6.58*	U	*9.09*	U	NA		*8.53*	U	*8.06*	U
1,2,4-Trichlorobenzene	850	28.9	U	29.5	U	21.1	U	29.1	U	NA		27.3	U	25.8	U
1,2,4-Trimethylbenzene	23000	**14.2**	F	29.5	U	21.1	U	29.1	U	NA		27.3	U	25.8	U
1,2-Dibromo-3-chloropropane	0.00014	*35.8*	U	*36.6*	U	*26.2*	U	*36.1*	U	NA		*33.9*	U	*32*	U
1,3,5-Trimethylbenzene	23000	28.9	U	29.5	U	21.1	U	29.1	U	NA		27.3	U	25.8	U
2-Butanone (MEK)	59000	289	U	295	U	211	U	291	U	NA		273	U	258	U
2-Hexanone	11	*90.2*	U	*92.2*	U	*65.8*	U	*90.9*	U	NA		*85.3*	U	*80.6*	U
4-Chlorotoluene	2500	28.9	U	29.5	U	21.1	U	29.1	U	NA		27.3	U	25.8	U
4-Methyl-2-pentanone (MIBK)	8100	289	U	295	U	211	U	291	U	NA		273	U	258	U
Acetone	88000	NA		NA		NA		NA		NA		NA		NA	
Benzene	25	*4.51*	U	*4.61*	U	10.5	U	*4.55*	U	NA		*4.26*	U	*4.03*	U
Carbon disulfide	12000	28.9	U	29.5	U	21.1	U	29.1	U	NA		27.3	U	25.8	U
Ethylbenzene	6900	28.9	U	29.5	U	21.1	U	29.1	U	NA		27.3	U	25.8	U
Isopropylbenzene	51000	28.9	U	29.5	U	21.1	U	29.1	U	NA		27.3	U	25.8	U
m,p-Xylene (Sum of isomers)	63000	57.8	U	59.1	U	42.2	U	58.3	U	NA		54.7	U	51.6	U
Methylene chloride	16	**38.4**	F,UB	*36.6*	U	*26.2*	U	*36.1*	U	NA		*33.9*	U	*32*	U
Naphthalene	20000	57.8	U	59.1	U	42.2	U	**30.9**	F	NA		54.7	U	51.6	U
n-Butylbenzene	15000	28.9	U	29.5	U	21.1	U	29.1	U	NA		27.3	U	25.8	U
n-Propylbenzene	15000	28.9	U	29.5	U	21.1	U	29.1	U	NA		27.3	U	25.8	U

Table C-6.1 Lower Site Summit - Surface Soil Samples, Analytical Detections

Location Identification		SS07LSS Dup		SS08LSS		SS09LSS		SS10LSS		SS10LSS Dup	SS11LSS		SS12LSS	
Field Sample Identification		10NSS201SS07LSS		10NSS001SS08LSS		10NSS001SS09LSS		10NSS001SS10LSS		10NSS201SS10LSS	10NSS001SS11LSS		10NSS001SS12LSS	
Date Collected		8/5/2010		8/5/2010		8/5/2010		8/5/2010		8/5/2010	8/5/2010		8/5/2010	
Depth (ft)		0.5		0.5		0.5		0.5		0.5	0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**													
Volatile Organic Compounds (SW8260B) (µg/kg) (continued)														
o-Xylene	63000	28.9	U	29.5	U	21.1	U	29.1	U	NA	27.3	U	25.8	U
p-Isopropyltoluene	NE	28.9	U	29.5	U	21.1	U	29.1	U	NA	27.3	U	25.8	U
sec-Butylbenzene	12000	28.9	U	29.5	U	21.1	U	29.1	U	NA	27.3	U	25.8	U
Styrene	960	28.9	U	29.5	U	21.1	U	29.1	U	NA	27.3	U	25.8	U
Toluene	6500	28.9	U	29.5	U	21.1	U	29.1	U	NA	27.3	U	25.8	U
trans-1,3-Dichloropropene	0.15	*9.02*	U	*9.22*	U	*6.58*	U	*9.09*	U	NA	*8.53*	U	*8.06*	U
Trichloroethene (TCE)	20	*9.02*	U	*9.22*	U	*6.58*	U	*9.09*	U	NA	*8.53*	U	*8.06*	U
Xylenes, Total	63000	86.7	U	88.6	U	63.3	U	87.4	U	NA	82	U	77.5	U
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)														
2,4-Dimethyl phenol	8.8	0.27	U	0.271	U	0.274	U	0.277	U	NA	0.281	U	**0.21**	F
2-Methylnaphthalene	6.1	0.27	U	0.271	U	**0.0925**	F	**0.542**		NA	0.281	U	0.27	U
Acenaphthene	180	0.27	U	0.271	U	**0.461**		**1.88**		NA	0.281	U	0.27	U
Anthracene	3000	0.27	U	0.271	U	**0.645**		**2.04**		NA	0.281	U	**0.103**	F
Benzo(a)anthracene	3.6	0.27	U	0.271	U	**0.98**		**2.84**		NA	0.281	U	**0.511**	
Benzo(a)pyrene	0.49	*0.0844*	U	*0.0844*	U	**0.924**		**2.55**		NA	*0.0878*	U	**0.631**	
Benzo(b)fluoranthene	4.9	0.27	U	0.271	U	**1.53**		**3.37**	D	NA	0.281	U	**0.999**	
Benzo(g,h,i)perylene	1400	0.27	U	0.271	U	**0.667**		**1.23**		NA	0.281	U	**0.44**	
Benzo(k)fluoranthene	49	0.27	U	0.271	U	**1.73**		**1.32**	F	NA	0.281	U	**0.28**	
Benzoic acid	410	1.62	U	1.62	U	1.65	U	1.66	U	NA	1.69	U	1.62	U
Benzyl butyl phthalate	920	0.27	U	0.271	U	0.274	U	0.277	U	NA	0.281	U	0.27	U
bis(2-ethylhexyl) Phthalate	13	0.27	U	0.271	U	0.274	U	0.277	U	NA	0.281	U	0.27	U
Chrysene	360	0.27	U	0.271	U	**1.19**		**3.28**		NA	0.281	U	**0.473**	
Di-n-octylphthalate	3800	0.27	U	0.271	U	0.274	U	0.277	U	NA	0.281	U	0.27	U
Dibenz(a,h)anthracene	0.49	*0.0844*	U	*0.0844*	U	**0.154**	F	**0.368**		NA	*0.0878*	U	*0.0843*	U
Dibenzofuran	11	0.27	U	0.271	U	**0.188**	F	**1.11**		NA	0.281	U	0.27	U
Fluoranthene	1400	0.27	U	0.271	U	**2.27**		**6.57**		NA	0.281	U	**1.02**	
Fluorene	220	0.27	U	0.271	U	**0.414**		**1.76**		NA	0.281	U	0.27	U
Indeno(1,2,3-c,d)Pyrene	4.9	0.27	U	0.271	U	**0.661**		**1.17**		NA	0.281	U	**0.428**	
Naphthalene	20	0.27	U	0.271	U	**0.127**	F	**0.939**		NA	0.281	U	0.27	U
Pentachlorophenol	0.047	*0.67*	U	*0.671*	U	*0.68*	U	*0.687*	U	NA	*0.698*	U	*0.67*	U
Phenanthrene	3000	0.27	U	0.271	U	**2.71**		**10.8**	D	NA	0.281	U	**0.563**	
Pyrene	1000	0.27	U	0.271	U	**2.52**		**7.27**		NA	0.281	U	**1.04**	

Table C-6.1 Lower Site Summit - Surface Soil Samples, Analytical Detections

Location Identification		SS13LSS		SS13LSS		SS14LSS		SS15LSS		SS15LSS Dup		SS16LSS	
Field Sample Identification		10NSS001SS13LSS		10NSS001SS13LSS		10NSS001SS14LSS		10NSS001SS15LSS		10NSS201SS15LSS		10NSS001SS16LSS	
Date Collected		8/5/2010		10/14/2010		8/5/2010		8/6/2010		8/6/2010		8/6/2010	
Depth (ft)		0.5		0.5		0.5		0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**												
General Parameters													
Perchlorate/SW6860 (µg/kg)	67	0.46	U	NA		0.46	U	NA		NA		NA	
Total Petroleum Hydrocarbons (mg/kg)													
Gasoline Range Organics (GRO)/AK101	300	NA		NA		NA		2.19	U	2.16	U	**0.681**	F
Diesel Range Organics (DRO)/AK102	250	**200**	D	NA		**22.7**	F	**951**	D	**973**	D	**120**	D
Residual Range Organics (RRO)/AK103	10000	**254**	D	NA		**91.5**		**2070**	D	**2130**	D	**573**	D
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	**7.68**		NA		**7.72**		**7.05**		**6.68**		**7.8**	
Barium	1100	**99.8**		NA		**104**		**128**		**129**		**138**	
Cadmium	5	**2.18**		NA		**0.139**	F	**0.154**	F	**0.188**	F	**0.15**	F
Chromium	25	**44.7**		NA		**26.8**		**21.4**		**23.8**		**25**	
Chromium, Hexavalent/SW7196	25	NA		**6.8**	D	NA		**0.1**	F	**0.12**	F	0.53	U
Lead	400	**130**		NA		**12.5**		**51.8**		**67.4**		**10.4**	
Nickel	86	**31.7**		NA		**32.4**		**28.2**		**27.3**		**33.2**	
Selenium	3.4	**0.288**	F	NA		**0.258**	F	**0.18**	F	0.521	U	**0.28**	F
Silver	11.2	**0.11**		NA		**0.0546**	F	**0.0815**	F	**0.0662**	F	**0.0824**	F
Vanadium	710	**45**		NA		**51.6**		**43.4**		**48.3**		**50.4**	
Mercury/SW7471A (µg/kg)	1400	**105**		NA		**61.2**		**99.8**		**77.5**		**136**	
Polychlorinated Biphenyls (PCBs)/SW8082 (µg/kg)													
PCB-1254 (Aroclor 1254)	1000	**44.4**	F	NA		56.7	U	52.8	U	52.5	U	53.4	U
PCB-1260 (Aroclor 1260)	1000	55.5	U	NA		56.7	U	52.8	U	52.5	U	53.4	U
Volatile Organic Compounds (SW8260B) (µg/kg)													
1,1,1-Trichloroethane	820	31.6	U	NA		23.9	U	0.92	UJ	0.98	UJ	0.95	U
1,1,2,2-Tetrachloroethane	17	*9.87*	U	NA		*7.47*	U	1.8	UJ	2	UJ	1.9	U
1,1,2-Trichloroethane	18	*9.87*	U	NA		*7.47*	U	0.92	U	0.98	UJ	0.95	U
1,2,3-Trichlorobenzene	87	31.6	U	NA		23.9	U	1.8	UJ	2	UJ	1.9	U
1,2,3-Trichloropropane	0.53	*9.87*	U	NA		*7.47*	U	*0.33*	UJ	*0.35*	UJ	*0.34*	U
1,2,4-Trichlorobenzene	850	31.6	U	NA		23.9	U	**0.58**	F,J-,B	**0.64**	F,B,J-	**0.61**	F,B
1,2,4-Trimethylbenzene	23000	31.6	U	NA		23.9	U	1.8	UJ	2	UJ	1.9	U
1,2-Dibromo-3-chloropropane	0.00014	*39.2*	U	NA		*29.7*	U	*0.17*	U	*0.18*	UJ	*0.17*	U
1,3,5-Trimethylbenzene	23000	31.6	U	NA		23.9	U	4.6	UJ	4.9	UJ	4.8	U
2-Butanone (MEK)	59000	316	U	NA		239	U	**100**	J+	**110**	J-	**12**	
2-Hexanone	11	*98.7*	U	NA		*74.7*	U	**8.4**	J+	**7.3**	J-	**1.8**	F
4-Chlorotoluene	2500	31.6	U	NA		23.9	U	1.8	UJ	2	UJ	1.9	U
4-Methyl-2-pentanone (MIBK)	8100	316	U	NA		239	U	**2.7**	F,B	**2.5**	F,B,J-	**1.1**	F,B
Acetone	88000	NA		NA		NA		**1200**		**1300**	J-	**110**	
Benzene	25	*4.94*	U	NA		12	U	**0.15**	F,J-	**0.17**	F,J-	**0.15**	F
Carbon disulfide	12000	31.6	U	NA		23.9	U	**0.65**	F	**0.25**	F,J-	**0.27**	F
Ethylbenzene	6900	31.6	U	NA		23.9	U	0.92	UJ	0.98	UJ	0.95	U
Isopropylbenzene	51000	31.6	U	NA		23.9	U	1.8	UJ	2	UJ	1.9	U
m,p-Xylene (Sum of isomers)	63000	63.3	U	NA		47.9	U	1.8	UJ	2	UJ	**0.19**	F,B
Methylene chloride	16	*39.2*	U	NA		*29.7*	U	*5.9*	U	*6.3*	UJ	*6.1*	U
Naphthalene	20000	63.3	U	NA		47.9	U	**0.77**	F,J-,B	**0.83**	F,B,J-	**0.78**	F,B
n-Butylbenzene	15000	31.6	U	NA		23.9	U	1.8	UJ	2	UJ	1.9	U
n-Propylbenzene	15000	31.6	U	NA		23.9	U	0.92	UJ	0.98	UJ	0.95	U

Table C-6.1 Lower Site Summit - Surface Soil Samples, Analytical Detections

Location Identification		SS13LSS		SS13LSS		SS14LSS		SS15LSS		SS15LSS Dup		SS16LSS	
Field Sample Identification		10NSS001SS13LSS		10NSS001SS13LSS		10NSS001SS14LSS		10NSS001SS15LSS		10NSS201SS15LSS		10NSS001SS16LSS	
Date Collected		8/5/2010		10/14/2010		8/5/2010		8/6/2010		8/6/2010		8/6/2010	
Depth (ft)		0.5		0.5		0.5		0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**												
Volatile Organic Compounds (SW8260B) (µg/kg) (continued)													
o-Xylene	63000	31.6	U	NA		23.9	U	**0.094**	F,J-,B	**0.11**	F,B,J-	**0.18**	F,B
p-Isopropyltoluene	NE	31.6	U	NA		23.9	U	1.8	UJ	2	UJ	1.9	U
sec-Butylbenzene	12000	31.6	U	NA		23.9	U	1.8	UJ	2	UJ	1.9	U
Styrene	960	31.6	U	NA		23.9	U	1.8	UJ	2	UJ	1.9	U
Toluene	6500	31.6	U	NA		23.9	U	**0.12**	F,J-,B	**0.12**	F,B,J-	**0.4**	F,B
trans-1,3-Dichloropropene	0.15	*9.87*	U	NA		*7.47*	U	**0.27**	F,J-	*0.18*	UJ	*0.17*	U
Trichloroethene (TCE)	20	*9.87*	U	NA		*7.47*	U	**5.9**	J-	**6.3**	J-	**5.6**	
Xylenes, Total	63000	94.9	U	NA		71.8	U	NA		NA		NA	
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)													
2,4-Dimethyl phenol	8.8	0.275	U	NA		0.285	U	2.66	D,UJ	2.66	U,D	0.266	U
2-Methylnaphthalene	6.1	0.275	U	NA		0.285	U	2.66	U,D	2.66	U,D	0.266	U
Acenaphthene	180	**0.347**		NA		0.285	U	2.66	U,D	2.66	U,D	0.266	U
Anthracene	3000	**0.435**		NA		0.285	U	2.66	U,D	2.66	U,D	0.266	U
Benzo(a)anthracene	3.6	**1.19**		NA		0.285	U	*0.83*	U	*0.83*	U	0.266	U
Benzo(a)pyrene	0.49	**1.44**		NA		*0.089*	U	*0.83*	U	*0.83*	U	*0.0831*	U
Benzo(b)fluoranthene	4.9	**2**		NA		0.285	U	*0.83*	U	*0.83*	U	0.266	U
Benzo(g,h,i)perylene	1400	**0.908**		NA		0.285	U	2.66	U,D	2.66	U,D	0.266	U
Benzo(k)fluoranthene	49	**0.551**		NA		0.285	U	2.66	U,D	2.66	U,D	0.266	U
Benzoic acid	410	1.65	U	NA		1.71	U	16	U,D	16	U,D	1.6	U
Benzyl butyl phthalate	920	0.275	U	NA		0.285	U	2.66	U,D	2.66	U,D	0.266	U
bis(2-ethylhexyl) Phthalate	13	**0.128**	F	NA		0.285	U	2.66	U,D	2.66	U,D	0.266	U
Chrysene	360	**1.38**		NA		0.285	U	2.66	U,D	2.66	U,D	0.266	U
Di-n-octylphthalate	3800	0.275	U	NA		0.285	U	2.66	U,D	2.66	U,D	0.266	U
Dibenz(a,h)anthracene	0.49	*0.0859*	U	NA		*0.089*	U	*0.83*	U	*0.83*	U	*0.0831*	U
Dibenzofuran	11	**0.113**	F	NA		0.285	U	2.66	U,D	2.66	U,D	0.266	U
Fluoranthene	1400	**2.56**		NA		0.285	U	2.66	U,D	2.66	U,D	**0.0851**	F
Fluorene	220	**0.269**	F	NA		0.285	U	2.66	U,D	2.66	U,D	0.266	U
Indeno(1,2,3-c,d)Pyrene	4.9	**0.828**		NA		0.285	U	*0.83*	U	*0.83*	U	0.266	U
Naphthalene	20	0.275	U	NA		0.285	U	2.66	U,D	2.66	U,D	0.266	U
Pentachlorophenol	0.047	*0.683*	U	NA		*0.707*	U	*6.59*	U	*6.6*	U	*0.66*	U
Phenanthrene	3000	**1.88**		NA		0.285	U	2.66	U,D	2.66	U,D	**0.0974**	F
Pyrene	1000	**2.5**		NA		0.285	U	2.66	U,D	2.66	U,D	**0.0832**	F

Table C-6.1 Lower Site Summit - Surface Soil Samples, Analytical Detections

Location Identification		SS17LSS		SS18LSS		SS19LSS		SS24LSS		SS24LSS Dup		SS28LSS	
Field Sample Identification		10NSS001SS17LSS		10NSS001SS18LSS		10NSS001SS19LSS		10NSS001SS24LSS		10NSS201SS24LSS		10NSS001SS28LSS	
Date Collected		8/6/2010		8/6/2010		8/6/2010		8/25/2010		8/25/2010		8/25/2010	
Depth (ft)		0.5		0.5		0.5		0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**												
General Parameters													
Perchlorate/SW6860 (µg/kg)	67	NA		NA		NA		NA		NA		NA	
Total Petroleum Hydrocarbons (mg/kg)													
Gasoline Range Organics (GRO)/AK101	300	1.63	U	2.28	U	3.51	U	**0.738**	F,B	**0.743**	F,B	**0.69**	F,B
Diesel Range Organics (DRO)/AK102	250	**117**		**37**		**756**	D	**44.6**		**49.3**		**450**	
Residual Range Organics (RRO)/AK103	10000	**582**		**197**		**4590**	D	**71**		**69**		**67.4**	
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	**6.87**		**7.81**		**10.5**		**19**		**5.96**		**6.77**	
Barium	1100	**109**		**111**		**118**		**119**		**112**		**104**	
Cadmium	5	**0.215**		**0.222**		**1.85**		**0.455**		**0.319**		**0.391**	
Chromium	25	**23.4**		**29.5**		**46.1**		**22.5**		**21**		**21.4**	
Chromium, Hexavalent/SW7196	25	0.54	U	**0.26**	F	**0.15**	F	NA		NA		NA	
Lead	400	**19.2**		**16.1**		**124**		**11.8**		**10.3**		**8.01**	
Nickel	86	**26.2**		**31.6**		**32**		**30.1**		**27.6**		**26.8**	
Selenium	3.4	**0.167**	F	**0.189**	F	**0.314**	F	**0.602**		**0.17**	F	**0.217**	F
Silver	11.2	**0.0725**	F	**0.0816**	F	**0.0733**	F	**0.173**		**0.137**		**0.103**	
Vanadium	710	**40.7**		**58**		**55.7**		**44.2**		**41.3**		**45**	
Mercury/SW7471A (µg/kg)	1400	**112**		**71.6**		**110**		**121**		**112**		**96.7**	
Polychlorinated Biphenyls (PCBs)/SW8082 (µg/kg)													
PCB-1254 (Aroclor 1254)	1000	53.2	U	53.5	U	60.6	U	51.8	U	51.5	U	51.8	U
PCB-1260 (Aroclor 1260)	1000	53.2	U	53.5	U	60.6	U	**28.5**	F	**26.1**	F	51.8	U
Volatile Organic Compounds (SW8260B) (µg/kg)													
1,1,1-Trichloroethane	820	0.99	U	0.99	U	0.98	UJ	23.3	U	24.2	U	22.6	U
1,1,2,2-Tetrachloroethane	17	2	U	2	U	2	UJ	*7.27*	U	*7.55*	U	*13.6*	U
1,1,2-Trichloroethane	18	0.99	U	0.99	U	0.98	UJ	*7.27*	U	*7.55*	U	*7.06*	U
1,2,3-Trichlorobenzene	87	2	U	2	U	**0.67**	F,B,J-	23.3	U	24.2	U	*13.6*	U
1,2,3-Trichloropropane	0.53	*0.36*	U	*0.35*	U	*0.35*	UJ	*7.27*	U	*7.55*	U	*7.06*	U
1,2,4-Trichlorobenzene	850	**0.62**	F,B	**0.65**	F,B	**0.73**	F,B,J-	23.3	U	24.2	U	22.6	U
1,2,4-Trimethylbenzene	23000	2	U	2	U	2	UJ	**10.7**	F	**10.2**	F	45.3	U
1,2-Dibromo-3-chloropropane	0.00014	*0.18*	U	*0.18*	U	*0.18*	UJ	*28.9*	U	*30*	U	*28.1*	U
1,3,5-Trimethylbenzene	23000	4.9	U	4.9	U	4.9	UJ	23.3	U	24.2	U	22.6	U
2-Butanone (MEK)	59000	**37**		**6**		**49**	J-	233	U	242	U	226	U
2-Hexanone	11	**3.2**	F	4.9	U	**4.5**	F,J-	*72.7*	U	*75.5*	U	*70.6*	U
4-Chlorotoluene	2500	2	U	2	U	2	UJ	23.3	U	24.2	U	22.6	U
4-Methyl-2-pentanone (MIBK)	8100	**1.6**	F,B	**1.2**	F,B	**2.2**	F,B,J-	233	U	242	U	226	U
Acetone	88000	**330**		**67**		**950**	J-	NA		NA		NA	
Benzene	25	**0.089**	F	0.99	U	**0.1**	F,J-	11.6	U	12.1	U	11.3	U
Carbon disulfide	12000	**0.14**	F	**0.2**	F	0.98	UJ	23.3	U	24.2	U	90.5	U
Ethylbenzene	6900	0.99	U	0.99	U	0.98	UJ	23.3	U	24.2	U	22.6	U
Isopropylbenzene	51000	2	U	2	U	2	UJ	23.3	U	24.2	U	22.6	U
m,p-Xylene (Sum of isomers)	63000	2	U	2	U	2	UJ	46.6	U	48.4	U	45.3	U
Methylene chloride	16	*6.3*	U	*6.3*	U	*6.3*	UJ	*28.9*	U	**32.9**	F,UB	*28.1*	U
Naphthalene	20000	**0.92**	F,B	**0.82**	F,B	**0.91**	F,B,J-	46.6	U	48.4	U	**38.5**	F
n-Butylbenzene	15000	2	U	2	U	2	UJ	23.3	U	24.2	U	22.6	U
n-Propylbenzene	15000	0.99	U	0.99	U	0.98	UJ	23.3	U	24.2	U	22.6	U

Table C-6.1 Lower Site Summit - Surface Soil Samples, Analytical Detections

Location Identification		SS17LSS		SS18LSS		SS19LSS		SS24LSS		SS24LSS Dup		SS28LSS	
Field Sample Identification		10NSS001SS17LSS		10NSS001SS18LSS		10NSS001SS19LSS		10NSS001SS24LSS		10NSS201SS24LSS		10NSS001SS28LSS	
Date Collected		8/6/2010		8/6/2010		8/6/2010		8/25/2010		8/25/2010		8/25/2010	
Depth (ft)		0.5		0.5		0.5		0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**												
Volatile Organic Compounds (SW8260B) (µg/kg) (continued)													
o-Xylene	63000	**0.14**	F,B	**0.07**	F,B	**0.13**	F,B,J-	23.3	U	24.2	U	45.3	U
p-Isopropyltoluene	NE	2	U	2	U	2	UJ	23.3	U	24.2	U	22.6	U
sec-Butylbenzene	12000	2	U	**0.38**	F,B	**0.39**	F,B,J-	23.3	U	24.2	U	22.6	U
Styrene	960	2	U	2	U	2	UJ	23.3	U	24.2	U	22.6	U
Toluene	6500	2	U	2	U	2	UJ	**11.9**	F	**10.2**	F	**23.1**	F
trans-1,3-Dichloropropene	0.15	*0.18*	U	*0.18*	U	*0.17*	UJ	*7.27*	U	*7.55*	U	*7.06*	U
Trichloroethene (TCE)	20	**22**		**0.38**	F	0.98	UJ	**116**		**87.9**		**290**	
Xylenes, Total	63000	NA		NA		NA		69.9	U	72.6	U	90.5	U
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)													
2,4-Dimethyl phenol	8.8	0.271	U	0.267	U	0.301	U	0.256	U	0.257	U	0.258	U
2-Methylnaphthalene	6.1	0.271	U	0.267	U	0.301	U	0.256	U	0.257	U	0.258	U
Acenaphthene	180	0.271	U	**0.0855**	F	**0.243**	F	0.256	U	0.257	U	0.258	U
Anthracene	3000	0.271	U	**0.0936**	F	**0.261**	F	0.256	U	0.257	U	0.258	U
Benzo(a)anthracene	3.6	0.271	U	**0.241**	F	0.301	U	**0.0973**	F	**0.146**	F	0.258	U
Benzo(a)pyrene	0.49	*0.0847*	U	**0.228**	F	*0.0939*	U	*0.0798*	U	**0.123**	F	*0.0805*	U
Benzo(b)fluoranthene	4.9	0.271	U	0.267	U	0.301	U	**0.134**	F	**0.183**	F	0.258	U
Benzo(g,h,i)perylene	1400	0.271	U	**0.109**	F	0.301	U	0.256	U	0.257	U	0.258	U
Benzo(k)fluoranthene	49	0.271	U	0.267	U	0.301	U	0.256	U	0.257	U	0.258	U
Benzoic acid	410	1.63	U	1.6	U	1.8	U	1.54	U	1.54	U	1.55	U
Benzyl butyl phthalate	920	0.271	U	0.267	U	0.301	U	0.256	U	0.257	U	**0.326**	
bis(2-ethylhexyl) Phthalate	13	0.271	U	0.267	U	0.301	U	0.256	U	0.257	U	0.258	U
Chrysene	360	0.271	U	**0.308**		0.301	U	**0.138**	F	**0.182**	F	0.258	U
Di-n-octylphthalate	3800	0.271	U	0.267	U	0.301	U	**0.205**	F	0.257	U	0.258	U
Dibenz(a,h)anthracene	0.49	*0.0847*	U	*0.0834*	U	*0.0939*	U	*0.0798*	U	*0.0803*	U	*0.0805*	U
Dibenzofuran	11	0.271	U	0.267	U	**0.118**	F	0.256	U	0.257	U	0.258	U
Fluoranthene	1400	**0.134**	F	**0.535**		**1.58**		**0.141**	F	**0.252**	F	0.258	U
Fluorene	220	0.271	U	0.267	U	**0.211**	F	0.256	U	0.257	U	0.258	U
Indeno(1,2,3-c,d)Pyrene	4.9	0.271	U	**0.117**	F	0.301	U	0.256	U	0.257	U	0.258	U
Naphthalene	20	0.271	U	0.267	U	0.301	U	0.256	U	0.257	U	0.258	U
Pentachlorophenol	0.047	*0.673*	U	*0.663*	U	*0.746*	U	*0.635*	U	*0.638*	U	*0.64*	U
Phenanthrene	3000	**0.149**	F	**0.533**		**1.61**		**0.117**	F	**0.258**		0.258	U
Pyrene	1000	**0.127**	F	**0.525**		**1.68**		**0.19**	F	**0.292**		0.258	U

Table C-6.1 Lower Site Summit - Surface Soil Samples, Analytical Detections

Location Identification		SS40LSS		SS41LSS		SS41LSS		SS45LSS		SS50LSS		SS53LSS	
Field Sample Identification		10NSS001SS40LSS		10NSS001SS41LSS		10NSS001SS41LSS		10NSS001SS45LSS		10NSS001SS50LSS		10NSS001SS53LSS	
Date Collected		8/25/2010		8/25/2010		10/14/2010		8/25/2010		8/25/2010		8/25/2010	
Depth (ft)		0.5		0.5		0.5		0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**												
General Parameters													
Perchlorate/SW6860 (µg/kg)	67	NA		NA		NA		NA		NA		NA	
Total Petroleum Hydrocarbons (mg/kg)													
Gasoline Range Organics (GRO)/AK101	300	2.54	U	2.25	U	NA		1.83	U	**0.944**	F,B	2.01	U
Diesel Range Organics (DRO)/AK102	250	21.3	U	**23.6**		NA		**16**	F	**20.9**	F	**4960**	F
Residual Range Organics (RRO)/AK103	10000	**20.4**	F	**53.2**		NA		**87.4**		**128**		**24400**	D
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	**5.5**		**5.95**		NA		**6.88**		**6.98**		**9.49**	
Barium	1100	**119**		**104**		NA		**116**		**100**		**117**	
Cadmium	5	**0.13**	F	**0.442**		NA		**0.27**		**0.33**		**0.319**	
Chromium	25	**22.9**		**39.3**		NA		**32.5**		**36.8**		**65**	
Chromium, Hexavalent/SW7196	25	NA		NA		0.51	UJ	NA		NA		NA	
Lead	400	**7.61**		**6.89**		NA		**7.47**		**20**		**208**	
Nickel	86	**27**		**30.6**		NA		**31.8**		**35.7**		**29.7**	
Selenium	3.4	**0.178**	F	**0.288**	F	NA		**0.227**	F	**0.193**	F	**0.346**	F
Silver	11.2	**0.105**		**0.117**		NA		**0.084**	F	**0.088**	F	**0.0787**	F
Vanadium	710	**48.8**		**45.8**		NA		**59.9**		**54.6**		**50.1**	
Mercury/SW7471A (µg/kg)	1400	**98.2**		**97.4**		NA		**79**		**73.7**		**130**	
Polychlorinated Biphenyls (PCBs)/SW8082 (µg/kg)													
PCB-1254 (Aroclor 1254)	1000	53.3	U	54	U	NA		53.2	U	57.3	U	40	UJ
PCB-1260 (Aroclor 1260)	1000	53.3	U	54	U	NA		53.2	U	57.3	U	40	UJ
Volatile Organic Compounds (SW8260B) (µg/kg)													
1,1,1-Trichloroethane	820	25.4	U	22.5	U	NA		18.3	U	25.3	U	20.1	U
1,1,2,2-Tetrachloroethane	17	*15.2*	U	*13.5*	U	NA		*11*	U	*15.2*	U	*12.1*	U
1,1,2-Trichloroethane	18	*7.92*	U	*7.02*	U	NA		*5.7*	U	*7.89*	U	*6.28*	U
1,2,3-Trichlorobenzene	87	*15.2*	U	*13.5*	U	NA		36.5	U	*15.2*	U	40.2	U
1,2,3-Trichloropropane	0.53	*7.92*	U	*7.02*	U	NA		*5.7*	U	*7.89*	U	*6.28*	U
1,2,4-Trichlorobenzene	850	25.4	U	22.5	U	NA		18.3	U	25.3	U	20.1	U
1,2,4-Trimethylbenzene	23000	50.8	U	45	U	NA		36.5	U	50.5	U	40.2	U
1,2-Dibromo-3-chloropropane	0.00014	*31.5*	U	*27.9*	U	NA		*22.6*	U	*31.3*	U	*24.9*	U
1,3,5-Trimethylbenzene	23000	25.4	U	22.5	U	NA		18.3	U	25.3	U	20.1	U
2-Butanone (MEK)	59000	254	U	225	U	NA		183	U	253	U	201	U
2-Hexanone	11	*79.2*	U	*70.2*	U	NA		*57*	U	*78.9*	U	*62.8*	U
4-Chlorotoluene	2500	25.4	U	22.5	U	NA		18.3	U	25.3	U	20.1	U
4-Methyl-2-pentanone (MIBK)	8100	254	U	225	U	NA		183	U	253	U	201	U
Acetone	88000	NA		NA		NA		NA		NA		NA	
Benzene	25	*3.96*	U	11.3	U	NA		9.13	U	*3.94*	U	10.1	U
Carbon disulfide	12000	102	U	90.1	U	NA		73	U	101	U	80.5	U
Ethylbenzene	6900	25.4	U	22.5	U	NA		18.3	U	25.3	U	20.1	U
Isopropylbenzene	51000	25.4	U	22.5	U	NA		18.3	U	25.3	U	20.1	U
m,p-Xylene (Sum of isomers)	63000	50.8	U	45	U	NA		36.5	U	50.5	U	40.2	U
Methylene chloride	16	**49.5**	F,UB	*27.9*	U	NA		*22.6*	U	**40.4**	F,UB	**26.1**	F,UB
Naphthalene	20000	50.8	U	45	U	NA		36.5	U	50.5	U	**35.6**	F
n-Butylbenzene	15000	25.4	U	22.5	U	NA		18.3	U	25.3	U	20.1	U
n-Propylbenzene	15000	25.4	U	22.5	U	NA		18.3	U	25.3	U	20.1	U

Table C-6.1 Lower Site Summit - Surface Soil Samples, Analytical Detections

Location Identification		SS40LSS		SS41LSS		SS41LSS	SS45LSS		SS50LSS		SS53LSS	
Field Sample Identification		10NSS001SS40LSS		10NSS001SS41LSS		10NSS001SS41LSS	10NSS001SS45LSS		10NSS001SS50LSS		10NSS001SS53LSS	
Date Collected		8/25/2010		8/25/2010		10/14/2010	8/25/2010		8/25/2010		8/25/2010	
Depth (ft)		0.5		0.5		0.5	0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**											
Volatile Organic Compounds (SW8260B) (µg/kg) (continued)												
o-Xylene	63000	50.8	U	45	U	NA	36.5	U	50.5	U	40.2	U
p-Isopropyltoluene	NE	25.4	U	22.5	U	NA	18.3	U	25.3	U	20.1	U
sec-Butylbenzene	12000	25.4	U	22.5	U	NA	18.3	U	25.3	U	20.1	U
Styrene	960	25.4	U	22.5	U	NA	18.3	U	25.3	U	20.1	U
Toluene	6500	50.8	U	45	U	NA	36.5	U	50.5	U	40.2	U
trans-1,3-Dichloropropene	0.15	*7.92*	U	*7.02*	U	NA	*5.7*	U	*7.89*	U	*6.28*	U
Trichloroethene (TCE)	20	*7.92*	U	*7.02*	U	NA	**16.8**	F	**139**		*6.28*	U
Xylenes, Total	63000	102	U	90.1	U	NA	73	U	101	U	80.5	U
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)												
2,4-Dimethyl phenol	8.8	0.263	U	0.268	U	NA	0.265	U	0.287	U	2.4	U
2-Methylnaphthalene	6.1	0.263	U	0.268	U	NA	0.265	U	0.287	U	2.4	U
Acenaphthene	180	0.263	U	0.268	U	NA	0.265	U	0.287	U	2.4	U
Anthracene	3000	0.263	U	0.268	U	NA	0.265	U	0.287	U	2.4	U
Benzo(a)anthracene	3.6	0.263	U	**0.086**	F	NA	0.265	U	0.287	U	*0.75*	U
Benzo(a)pyrene	0.49	*0.0821*	U	*0.0835*	U	NA	*0.0827*	U	*0.0896*	U	*0.75*	U
Benzo(b)fluoranthene	4.9	0.263	U	0.268	U	NA	0.265	U	0.287	U	2.4	U
Benzo(g,h,i)perylene	1400	0.263	U	0.268	U	NA	0.265	U	0.287	U	2.4	U
Benzo(k)fluoranthene	49	0.263	U	0.268	U	NA	0.265	U	0.287	U	2.4	U
Benzoic acid	410	1.58	U	1.61	U	NA	1.59	U	**1.16**	F	14.4	U
Benzyl butyl phthalate	920	0.263	U	0.268	U	NA	0.265	U	0.287	U	2.4	U
bis(2-ethylhexyl) Phthalate	13	0.263	U	0.268	U	NA	0.265	U	**0.382**		2.4	U
Chrysene	360	0.263	U	0.268	U	NA	0.265	U	0.287	U	2.4	U
Di-n-octylphthalate	3800	0.263	U	0.268	U	NA	0.265	U	0.287	U	2.4	U
Dibenz(a,h)anthracene	0.49	*0.0821*	U	*0.0835*	U	NA	*0.0827*	U	*0.0896*	U	*0.75*	U
Dibenzofuran	11	0.263	U	0.268	U	NA	0.265	U	0.287	U	2.4	U
Fluoranthene	1400	0.263	U	**0.15**	F	NA	0.265	U	0.287	U	2.4	U
Fluorene	220	0.263	U	0.268	U	NA	0.265	U	0.287	U	2.4	U
Indeno(1,2,3-c,d)Pyrene	4.9	0.263	U	0.268	U	NA	0.265	U	0.287	U	2.4	U
Naphthalene	20	0.263	U	0.268	U	NA	0.265	U	0.287	U	2.4	U
Pentachlorophenol	0.047	*0.653*	U	*0.664*	U	NA	*0.657*	U	*0.712*	U	*5.96*	U
Phenanthrene	3000	0.263	U	**0.125**	F	NA	0.265	U	0.287	U	2.4	U
Pyrene	1000	0.263	U	**0.125**	F	NA	0.265	U	0.287	U	2.4	U

Table C-6.1 Lower Site Summit - Surface Soil Samples, Analytical Detections

Location Identification		SS53LSS		SS59LSS		SS60LSS		SS60LSS		SS61LSS	
Field Sample Identification		10NSS001SS53LSS		10NSS001SS59LSS		10NSS001SS60LSS		10NSS001SS60LSS		10NSS001SS61LSS	
Date Collected		10/14/2010		8/25/2010		8/25/2010		10/14/2010		8/25/2010	
Depth (ft)		0.5		0.5		0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**										
General Parameters											
Perchlorate/SW6860 (µg/kg)	67	NA		NA		NA		NA		NA	
Total Petroleum Hydrocarbons (mg/kg)											
Gasoline Range Organics (GRO)/AK101	300	NA		**0.747**	F,B	12.7	U	NA		3.88	U
Diesel Range Organics (DRO)/AK102	250	NA		**237**	D	**1230**	D	NA		**45.4**	F
Residual Range Organics (RRO)/AK103	10000	NA		**1390**	D	**5160**	D	NA		**442**	D
Metals (SW6020A) (mg/kg)											
Arsenic	3.9	NA		**7.07**		**5.33**		NA		**8.29**	
Barium	1100	NA		**117**		**313**		NA		**104**	
Cadmium	5	NA		**0.343**		**15.6**		NA		**0.322**	
Chromium	25	NA		**31.2**		**45.8**		NA		**32.6**	
Chromium, Hexavalent/SW7196	25	**0.3**	F	NA		NA		12	U,D	NA	
Lead	400	NA		**62.4**		**183**		NA		**12.6**	
Nickel	86	NA		**30**		**24.3**		NA		**32.2**	
Selenium	3.4	NA		0.497	U	**1.34**		NA		**0.286**	F
Silver	11.2	NA		**0.0857**	F	**0.359**		NA		**0.059**	F
Vanadium	710	NA		**49.7**		**37.8**		NA		**52.4**	
Mercury/SW7471A (µg/kg)	1400	NA		**99.4**		**1920**		NA		**107**	
Polychlorinated Biphenyls (PCBs)/SW8082 (µg/kg)											
PCB-1254 (Aroclor 1254)	1000	NA		53.8	U	94	U	NA		67.3	U
PCB-1260 (Aroclor 1260)	1000	NA		**24.9**	F	94	U	NA		67.3	U
Volatile Organic Compounds (SW8260B) (µg/kg)											
1,1,1-Trichloroethane	820	NA		23	U	127	U	NA		38.8	U
1,1,2,2-Tetrachloroethane	17	NA		*13.8*	U	*76.3*	U	NA		*23.3*	U
1,1,2-Trichloroethane	18	NA		*7.16*	U	*39.7*	U	NA		*12.1*	U
1,2,3-Trichlorobenzene	87	NA		*13.8*	U	*76.3*	U	NA		*23.3*	U
1,2,3-Trichloropropane	0.53	NA		*7.16*	U	*39.7*	U	NA		*12.1*	U
1,2,4-Trichlorobenzene	850	NA		23	U	127	U	NA		38.8	U
1,2,4-Trimethylbenzene	23000	NA		45.9	U	254	U	NA		77.6	U
1,2-Dibromo-3-chloropropane	0.00014	NA		*28.5*	U	*158*	U	NA		*48.1*	U
1,3,5-Trimethylbenzene	23000	NA		23	U	127	U	NA		38.8	U
2-Butanone (MEK)	59000	NA		230	U	1270	U	NA		388	U
2-Hexanone	11	NA		*71.6*	U	*397*	U	NA		*121*	U
4-Chlorotoluene	2500	NA		23	U	127	U	NA		38.8	U
4-Methyl-2-pentanone (MIBK)	8100	NA		230	U	1270	U	NA		388	U
Acetone	88000	NA		NA		NA		NA		NA	
Benzene	25	NA		11.5	U	*19.8*	U	NA		*6.05*	U
Carbon disulfide	12000	NA		91.8	U	509	U	NA		155	U
Ethylbenzene	6900	NA		23	U	127	U	NA		38.8	U
Isopropylbenzene	51000	NA		23	U	127	U	NA		38.8	U
m,p-Xylene (Sum of isomers)	63000	NA		45.9	U	254	U	NA		77.6	U
Methylene chloride	16	NA		**65.9**	F,UB	*158*	U	NA		**68.3**	F,UB
Naphthalene	20000	NA		45.9	U	254	U	NA		77.6	U
n-Butylbenzene	15000	NA		23	U	127	U	NA		38.8	U
n-Propylbenzene	15000	NA		23	U	127	U	NA		38.8	U

Table C-6.1 Lower Site Summit - Surface Soil Samples, Analytical Detections

Analyte/Methods (Units)	Project Action Limit	Location Identification	SS53LSS		SS59LSS		SS60LSS		SS60LSS		SS61LSS	
		Field Sample Identification	10NSS001SS53LSS		10NSS001SS59LSS		10NSS001SS60LSS		10NSS001SS60LSS		10NSS001SS61LSS	
		Date Collected	10/14/2010		8/25/2010		8/25/2010		10/14/2010		8/25/2010	
		Depth (ft)	0.5		0.5		0.5		0.5		0.5	
Volatile Organic Compounds (SW8260B) (µg/kg) (continued)												
o-Xylene	63000	NA	45.9	U	254	U	NA		77.6	U		
p-Isopropyltoluene	NE	NA	23	U	127	U	NA		38.8	U		
sec-Butylbenzene	12000	NA	23	U	127	U	NA		38.8	U		
Styrene	960	NA	23	U	127	U	NA		38.8	U		
Toluene	6500	NA	45.9	U	254	U	NA		77.6	U		
trans-1,3-Dichloropropene	0.15	NA	*7.16*	U	*39.7*	U	NA		*12.1*	U		
Trichloroethene (TCE)	20	NA	*7.16*	U	*39.7*	U	NA		*12.1*	U		
Xylenes, Total	63000	NA	91.8	U	509	U	NA		155	U		
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)												
2,4-Dimethyl phenol	8.8	NA	0.268	U	3.17	U	NA		0.338	U		
2-Methylnaphthalene	6.1	NA	0.268	U	*0.989*	U	NA		0.338	U		
Acenaphthene	180	NA	**0.236**	F	3.17	U	NA		0.338	U		
Anthracene	3000	NA	**0.304**		**1.18**	F	NA		0.338	U		
Benzo(a)anthracene	3.6	NA	**0.573**		*0.989*	U	NA		0.338	U		
Benzo(a)pyrene	0.49	NA	**0.568**		**2.83**	F	NA		*0.106*	U		
Benzo(b)fluoranthene	4.9	NA	**0.729**		**6.15**		NA		0.338	U		
Benzo(g,h,i)perylene	1400	NA	**0.387**		**1.32**	F	NA		0.338	U		
Benzo(k)fluoranthene	49	NA	**0.182**	F	**1.48**	F	NA		0.338	U		
Benzoic acid	410	NA	1.61	U	19	U	NA		**1.39**	F		
Benzyl butyl phthalate	920	NA	0.268	U	3.17	U	NA		0.338	U		
bis(2-ethylhexyl) Phthalate	13	NA	0.268	U	**5.44**		NA		0.338	U		
Chrysene	360	NA	**0.72**		3.17	U	NA		0.338	U		
Di-n-octylphthalate	3800	NA	0.268	U	3.17	U	NA		0.338	U		
Dibenz(a,h)anthracene	0.49	NA	*0.0836*	U	*0.989*	U	NA		*0.106*	U		
Dibenzofuran	11	NA	**0.124**	F	3.17	U	NA		0.338	U		
Fluoranthene	1400	NA	**1.25**		3.17	U	NA		0.338	U		
Fluorene	220	NA	**0.223**	F	3.17	U	NA		0.338	U		
Indeno(1,2,3-c,d)Pyrene	4.9	NA	**0.365**		**1.5**	F	NA		0.338	U		
Naphthalene	20	NA	**0.097**	F	3.17	U	NA		0.338	U		
Pentachlorophenol	0.047	NA	*0.664*	U	**46.5**		NA		*0.839*	U		
Phenanthrene	3000	NA	**1.32**		3.17	U	NA		0.338	U		
Pyrene	1000	NA	**1.21**		3.17	U	NA		0.338	U		

µg/kg micrograms per kilogram.
mg/kg milligrams per kilogram.
Italic Italicized result indicates analyte reported to the laboratory detection limit.
Indicates concentration, LOQ, or LOD is above the established project action limit
Bold Bolded result indicates positively identified compound.
AK Alaska Test Method
NA Not analyzed.
NE Not established
B Analyte detected in an associated blank.
D Sample dilution required for analysis; reported values reflect the dilution.
F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the LOQ but greater than the LOD.
J Data are estimated based on associated quality control data.
UJ Potential low bias, possible false negative.
UB Analyte considered not detected, based on an associated blank concentration.
UK Analyte considered not detected, based on professional judgment of Validation Chemist.
U Analyte is not detected at the reported LOQ or LOD
J+ Data are estimated, potentially biased high, based on associated quality control data.
J- Data are estimated, potentially biased low, based on associated quality control data.
LOD Limit of detection
LOQ Limit of quantitation
SW U.S. Environmental Protection Agency Solid Waste Method

Table C-6.2 Lower Site Summit - Subsurface Soil Samples, Analytical Detections

Location Identification		BH01LSS		BH01LSS		BH02LSS		BH02LSS		BH03LSS		BH03LSS		BH04LSS	
Field Sample Identification		10NSS001SL01LSS		10NSS004SL01LSS		10NSS001SL02LSS		10NSS004SL02LSS		10NSS004SL03LSS		10NSS006SL03LSS		10NSS005SL04LSS	
Date Collected		8/11/2010		8/11/2010		8/12/2010		8/12/2010		8/12/2010		8/12/2010		8/12/2010	
Depth (ft)		2 - 4		8 - 10		2 - 4		8 - 10		8 - 10		12 - 14		10 - 12	
Analyte/Methods (Units)	**Project Action Limit**														
General Parameters															
Perchlorate/SW6860 (µg/kg)	67	NA		NA		NA		NA		NA		NA		NA	
Total Petroleum Hydrocarbons (mg/kg)															
Gasoline Range Organics (GRO)/AK101	300	2.45	U	2.36	U	**14.8**		**5.72**		**0.594**	F	**19.5**	J+	**1.24**	F
Diesel Range Organics (DRO)/AK102	250	31.5	U	21	U	**4170**	D	**1060**	D	21.2	U	**1720**	D	21.2	U
Residual Range Organics (RRO)/AK103	10000	31.5	U	**23**		**106**		**135**		21.2	U	**11.3**	F	**16.7**	F
Metals (SW6020A) (mg/kg)															
Arsenic	3.9	**7.51**		**6.91**		NA		NA		NA		NA		NA	
Barium	1100	**125**		**117**		NA		NA		NA		NA		NA	
Cadmium	5	**0.112**	F	**0.0997**	F	NA		NA		NA		NA		NA	
Chromium	25	**24.4**		**171**		NA		NA		NA		NA		NA	
Chromium, Hexavalent/SW719(	25	**0.22**		**0.3**	F	NA		NA		NA		NA		NA	
Lead	400	**8.89**		**5.45**		NA		NA		NA		NA		NA	
Nickel	86	**29.5**		**143**		NA		NA		NA		NA		NA	
Selenium	3.4	**0.325**	F	**0.308**	F	NA		NA		NA		NA		NA	
Silver	11.2	**0.0772**	F	**0.0822**	F	NA		NA		NA		NA		NA	
Vanadium	710	**50.7**		**106**		NA		NA		NA		NA		NA	
Mercury/SW7471A (µg/kg)	1400	**95.6**		**60.2**		NA		NA		NA		NA		NA	
Polychlorinated Biphenyls (PCBs)/SW8082 (µg/kg)															
PCB-1254 (Aroclor 1254)	1000	52.5	U	52.2	U	NA		NA		NA		NA		NA	
PCB-1260 (Aroclor 1260)	1000	52.5	U	52.2	U	NA		NA		NA		NA		NA	
Volatile Organic Compounds (SW8260B) (µg/kg)															
1,1,1-Trichloroethane	820	24.5	U	23.6	U	25.4	U	22	U	18.2	U	24.4	U	26	U
1,1,2,2-Tetrachloroethane	17	*7.66*	U	*7.35*	U	*7.91*	U	*6.86*	U	*5.67*	U	*7.61*	U	*8.1*	U
1,1,2-Trichloroethane	18	*7.66*	U	*7.35*	U	*7.91*	U	*6.86*	U	*5.67*	U	*7.61*	U	*8.1*	U
1,2,3-Trichlorobenzene	87	24.5	U	23.6	U	25.4	U	22	U	18.2	U	24.4	U	26	U
1,2,3-Trichloropropane	0.53	*7.66*	U	*7.35*	U	*7.91*	U	*6.86*	U	*5.67*	U	*7.61*	U	*8.1*	U
1,2,4-Trichlorobenzene	850	24.5	U	23.6	U	25.4	U	22	U	18.2	U	24.4	U	26	U
1,2,4-Trimethylbenzene	23000	24.5	U	23.6	U	25.4	U	22	U	18.2	U	24.4	U	26	U
1,2-Dibromo-3-chloropropane	0.00014	*30.4*	U	*29.2*	U	*31.5*	U	*27.3*	U	*22.5*	U	*30.3*	U	*32.2*	U
1,3,5-Trimethylbenzene	23000	24.5	U	23.6	U	25.4	U	22	U	18.2	U	**46.4**		26	U
2-Butanone (MEK)	59000	245	U	236	U	254	U	220	U	182	U	244	U	260	U
2-Hexanone	11	*76.6*	U	*73.5*	U	*79.1*	U	*68.6*	U	*56.7*	U	*76.1*	U	*81*	U
4-Chlorotoluene	2500	24.5	U	23.6	U	25.4	U	22	U	18.2	U	24.4	U	26	U
4-Methyl-2-pentanone (MIBK)	8100	245	U	236	U	254	U	220	U	182	U	244	U	260	U
Acetone	88000	NA		NA		NA		NA		NA		NA		NA	
Benzene	25	12.3	U	11.8	U	*3.96*	U	11	U	9.09	U	12.2	U	*4.05*	U
Carbon disulfide	12000	24.5	U	23.6	U	25.4	U	22	U	18.2	U	24.4	U	26	U
Ethylbenzene	6900	24.5	U	23.6	U	25.4	U	22	U	18.2	U	**17.8**	F	26	U
Isopropylbenzene	51000	24.5	U	23.6	U	25.4	U	22	U	18.2	U	**55.9**		26	U
m,p-Xylene (Sum of isomers)	63000	49.1	U	47.1	U	50.7	U	44	U	36.3	U	48.8	U	51.9	U
Methylene chloride	16	**30.7**	F,UB	**35.4**	F,UB	*31.5*	U	*27.3*	U	*22.5*	U	*30.3*	U	*32.2*	U
Naphthalene	20000	49.1	U	47.1	U	50.7	U	44	U	36.3	U	48.8	U	51.9	U
n-Butylbenzene	15000	24.5	U	23.6	U	25.4	U	22	U	18.2	U	**255**		26	U

Table C-6.2 Lower Site Summit - Subsurface Soil Samples, Analytical Detections

Location Identification		BH01LSS		BH01LSS		BH02LSS		BH02LSS		BH03LSS		BH03LSS		BH04LSS	
Field Sample Identification		10NSS001SL01LSS		10NSS004SL01LSS		10NSS001SL02LSS		10NSS004SL02LSS		10NSS004SL03LSS		10NSS006SL03LSS		10NSS005SL04LSS	
Date Collected		8/11/2010		8/11/2010		8/12/2010		8/12/2010		8/12/2010		8/12/2010		8/12/2010	
Depth (ft)		2 - 4		8 - 10		2 - 4		8 - 10		8 - 10		12 - 14		10 - 12	
Analyte/Methods (Units)	**Project Action Limit**														
Volatile Organic Compounds (SW8260B) (µg/kg) (continued)															
n-Propylbenzene	15000	24.5	U	23.6	U	25.4	U	22	U	18.2	U	24.4	U	26	U
o-Xylene	63000	24.5	U	23.6	U	25.4	U	22	U	18.2	U	24.4	U	26	U
p-Isopropyltoluene	NE	24.5	U	23.6	U	25.4	U	22	U	18.2	U	**619**		26	U
sec-Butylbenzene	12000	24.5	U	23.6	U	25.4	U	22	U	18.2	U	**225**		26	U
Styrene	960	**17.7**		23.6	U	25.4	U	22	U	18.2	U	24.4	U	26	U
Toluene	6500	**24.5**		23.6	U	25.4	U	22	U	18.2	U	24.4	U	26	U
trans-1,3-Dichloropropene	0.15	*7.66*	U	*7.35*	U	*7.91*	U	*6.86*	U	*5.67*	U	*7.61*	U	*8.1*	U
Trichloroethene (TCE)	20	**111**		**151**		*7.91*	U	*6.86*	U	**36.2**		**9.52**	F	*8.1*	U
Xylenes, Total	63000	73.6	U	70.7	U	76.1	U	66	U	54.5	U	73.2	U	77.9	U
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)															
2,4-Dimethyl phenol	8.8	0.263	U	0.26	U	0.269	U	0.275	U	0.264	U	0.264	U	0.264	U
2-Methylnaphthalene	6.1	0.263	U	0.26	U	0.269	U	**0.109**	F	0.264	U	**0.45**		0.264	U
Acenaphthene	180	0.263	U	0.26	U	0.269	U	**0.0996**	F	0.264	U	0.264	U	0.264	U
Anthracene	3000	0.263	U	0.26	U	**0.0894**	F	**0.0923**	F	0.264	U	0.264	U	0.264	U
Benzo(a)anthracene	3.6	0.263	U	0.26	U	**0.249**	F	**0.25**	F	0.264	U	0.264	U	0.264	U
Benzo(a)pyrene	0.49	*0.0819*	U	*0.0812*	U	**0.332**		**0.347**		*0.0823*	U	*0.0823*	U	*0.0824*	U
Benzo(b)fluoranthene	4.9	0.263	U	0.26	U	**0.449**		**0.391**		0.264	U	0.264	U	0.264	U
Benzo(g,h,i)perylene	1400	0.263	U	0.26	U	**0.2**	F	**0.26**	F	0.264	U	0.264	U	0.264	U
Benzo(k)fluoranthene	49	0.263	U	0.26	U	0.269	U	**0.144**	F	0.264	U	0.264	U	0.264	U
Benzoic acid	410	1.58	U	1.56	U	1.61	U	1.65	U	1.58	U	1.58	U	1.58	U
Benzyl butyl phthalate	920	0.263	U	0.26	U	0.269	U	0.275	U	0.264	U	0.264	U	0.264	U
bis(2-ethylhexyl) Phthalate	13	0.263	U	0.26	U	0.269	U	**0.119**	F	0.264	U	0.264	U	0.264	U
Chrysene	360	0.263	U	0.26	U	**0.352**		**0.403**		0.264	U	0.264	U	0.264	U
Di-n-octylphthalate	3800	0.263	U	0.26	U	0.269	U	0.275	U	0.264	U	0.264	U	0.264	U
Dibenz(a,h)anthracene	0.49	*0.0819*	U	*0.0812*	U	*0.0839*	U	*0.0858*	U	*0.0823*	U	*0.0823*	U	*0.0824*	U
Dibenzofuran	11	0.263	U	0.26	U	0.269	U	0.275	U	0.264	U	0.264	U	0.264	U
Fluoranthene	1400	0.263	U	0.26	U	**0.487**		**0.44**		0.264	U	**0.172**	F	0.264	U
Fluorene	220	0.263	U	0.26	U	0.269	U	0.275	U	0.264	U	**0.114**	F	0.264	U
Indeno(1,2,3-c,d)Pyrene	4.9	0.263	U	0.26	U	**0.192**	F	**0.233**	F	0.264	U	0.264	U	0.264	U
Naphthalene	20	0.263	U	0.26	U	0.269	U	0.275	U	0.264	U	0.264	U	0.264	U
Pentachlorophenol	0.047	*0.651*	U	*0.645*	U	*0.667*	U	*0.682*	U	*0.654*	U	*0.654*	U	*0.655*	U
Phenanthrene	3000	0.263	U	0.26	U	**0.453**		**0.446**		0.264	U	0.264	U	0.264	U
Pyrene	1000	0.263	U	0.26	U	**0.715**		**0.505**		0.264	U	**0.229**	F	0.264	U

Table C-6.2 Lower Site Summit - Subsurface Soil Samples, Analytical Detections

Location Identification		BH04LSS		BH05LSS		BH05LSS		BH06LSS		BH06LSS		BH07LSS		BH07LSS	
Field Sample Identification		10NSS007SL04LSS		10NSS006SL05LSS		10NSS007SL05LSS		10NSS001SL06LSS		10NSS002SL06LSS		10NSS001SL07LSS		10NSS002SL07LSS	
Date Collected		8/12/2010		8/17/2010		8/17/2010		8/17/2010		8/17/2010		8/17/2010		8/17/2010	
Depth (ft)		14 - 16		12 - 14		14 - 16		2 - 4		4 - 6		2 - 4		4 - 6	
Analyte/Methods (Units)	**Project Action Limit**														
General Parameters															
Perchlorate/SW6860 (µg/kg)	67	NA		NA		NA		NA		NA		NA		NA	
Total Petroleum Hydrocarbons (mg/kg)															
Gasoline Range Organics (GRO)/AK101	300	2.49	U	2.12	U	2.79	U	**1.1**	F	**1.05**	F	**128**	D	**82.4**	D
Diesel Range Organics (DRO)/AK102	250	22.4	U	20.7	U	20.9	U	20.9	U	20.8	U	**4130**	D	**1860**	D
Residual Range Organics (RRO)/AK103	10000	22.4	U	20.7	U	20.9	U	20.9	U	20.8	U	**30.6**		**28.4**	
Metals (SW6020A) (mg/kg)															
Arsenic	3.9	NA		NA		NA		NA		NA		NA		NA	
Barium	1100	NA		NA		NA		NA		NA		NA		NA	
Cadmium	5	NA		NA		NA		NA		NA		NA		NA	
Chromium	25	NA		NA		NA		NA		NA		NA		NA	
Chromium, Hexavalent/SW719(	25	NA		NA		NA		NA		NA		NA		NA	
Lead	400	NA		NA		NA		NA		NA		NA		NA	
Nickel	86	NA		NA		NA		NA		NA		NA		NA	
Selenium	3.4	NA		NA		NA		NA		NA		NA		NA	
Silver	11.2	NA		NA		NA		NA		NA		NA		NA	
Vanadium	710	NA		NA		NA		NA		NA		NA		NA	
Mercury/SW7471A (µg/kg)	1400	NA		NA		NA		NA		NA		NA		NA	
Polychlorinated Biphenyls (PCBs)/SW8082 (µg/kg)															
PCB-1254 (Aroclor 1254)	1000	NA		NA		NA		NA		NA		NA		NA	
PCB-1260 (Aroclor 1260)	1000	NA		NA		NA		NA		NA		NA		NA	
Volatile Organic Compounds (SW8260B) (µg/kg)															
1,1,1-Trichloroethane	820	24.9	U	21.2	U	27.9	U	**8.58**	F	**7.51**	F	205	U,D	261	U,D
1,1,2,2-Tetrachloroethane	17	*7.76*	U	*6.61*	U	*8.72*	U	*6.53*	U	*6.69*	U	**1210**	D	*81.5*	U
1,1,2-Trichloroethane	18	*7.76*	U	*6.61*	U	*8.72*	U	*6.53*	U	*6.69*	U	**1650**	D	*81.5*	U
1,2,3-Trichlorobenzene	87	24.9	U	21.2	U	27.9	U	20.9	U	21.4	U	**131**	F	*81.5*	U
1,2,3-Trichloropropane	0.53	*7.76*	U	*6.61*	U	*8.72*	U	*6.53*	U	*6.69*	U	**491**	D	*81.5*	U
1,2,4-Trichlorobenzene	850	24.9	U	21.2	U	27.9	U	20.9	U	21.4	U	205	U,D	261	U,D
1,2,4-Trimethylbenzene	23000	24.9	U	21.2	U	27.9	U	**7.32**	F	21.4	U	**152**	F	**706**	D
1,2-Dibromo-3-chloropropane	0.00014	*30.9*	U	*26.3*	U	*34.6*	U	*25.9*	U	*26.6*	U	**3040**	D	*324*	U
1,3,5-Trimethylbenzene	23000	24.9	U	21.2	U	27.9	U	20.9	U	21.4	U	**407**	D	**233**	F
2-Butanone (MEK)	59000	249	U	212	U	279	U	209	U	214	U	2050	U,D	2610	U,D
2-Hexanone	11	*77.6*	U	*66.1*	U	*87.2*	U	*65.3*	U	*66.9*	U	**942**	F	*815*	U
4-Chlorotoluene	2500	24.9	U	21.2	U	27.9	U	20.9	U	21.4	U	**501**	D	261	U,D
4-Methyl-2-pentanone (MIBK)	8100	249	U	212	U	279	U	209	U	214	U	2050	U,D	2610	U,D
Acetone	88000	NA		NA		NA		NA		NA		NA		NA	
Benzene	25	12.4	U	10.6	U	*4.36*	U	10.5	U	10.7	U	**43.1**	F	**49.7**	F
Carbon disulfide	12000	24.9	U	21.2	U	27.9	U	20.9	U	21.4	U	205	U,D	261	U,D
Ethylbenzene	6900	24.9	U	21.2	U	27.9	U	20.9	U	21.4	U	**67.8**	F	261	U,D
Isopropylbenzene	51000	24.9	U	21.2	U	27.9	U	20.9	U	21.4	U	**67.8**	F	261	U,D
m,p-Xylene (Sum of isomers)	63000	49.8	U	42.3	U	55.9	U	41.8	U	42.9	U	**146**	F	**196**	F
Methylene chloride	16	*30.9*	U	*26.3*	U	*34.6*	U	*25.9*	U	*26.6*	U	*255*	U	*324*	U
Naphthalene	20000	49.8	U	42.3	U	55.9	U	**23.8**	F	**28.7**	F	**3090**	D	**3690**	D
n-Butylbenzene	15000	24.9	U	21.2	U	27.9	U	**10.5**	F	21.4	U	**807**	D	**680**	D

Table C-6.2 Lower Site Summit - Subsurface Soil Samples, Analytical Detections

Location Identification		BH04LSS		BH05LSS		BH05LSS		BH06LSS		BH06LSS		BH07LSS		BH07LSS	
Field Sample Identification		10NSS007SL04LSS		10NSS006SL05LSS		10NSS007SL05LSS		10NSS001SL06LSS		10NSS002SL06LSS		10NSS001SL07LSS		10NSS002SL07LSS	
Date Collected		8/12/2010		8/17/2010		8/17/2010		8/17/2010		8/17/2010		8/17/2010		8/17/2010	
Depth (ft)		14 - 16		12 - 14		14 - 16		2 - 4		4 - 6		2 - 4		4 - 6	
Analyte/Methods (Units)	**Project Action Limit**														
Volatile Organic Compounds (SW8260B) (µg/kg) (continued)															
n-Propylbenzene	15000	24.9	U	21.2	U	27.9	U	20.9	U	21.4	U	205	U,D	261	U,D
o-Xylene	63000	24.9	U	21.2	U	27.9	U	20.9	U	21.4	U	205	U,D	261	U,D
p-Isopropyltoluene	NE	24.9	U	21.2	U	27.9	U	**8.37**	F	21.4	U	**513**	D	**1700**	D
sec-Butylbenzene	12000	24.9	U	21.2	U	27.9	U	20.9	U	21.4	U	205	U,D	**107**	F
Styrene	960	24.9	U	21.2	U	27.9	U	20.9	U	21.4	U	**119**	F	261	U,D
Toluene	6500	24.9	U	21.2	U	27.9	U	**429**		**362**		**76**	F	261	U,D
trans-1,3-Dichloropropene	0.15	*7.76*	U	*6.61*	U	*8.72*	U	*6.53*	U	*6.69*	U	*64.1*	U	*81.5*	U
Trichloroethene (TCE)	20	**110**		*6.61*	U	*8.72*	U	**234**		**613**		**90.3**	F	*81.5*	U
Xylenes, Total	63000	74.6	U	63.5	U	83.8	U	62.8	U	64.3	U	**209**	F	**272**	F
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)															
2,4-Dimethyl phenol	8.8	0.278	U	0.261	U	0.259	U	0.259	U	0.256	U	0.259	U	0.26	U
2-Methylnaphthalene	6.1	0.278	U	0.261	U	0.259	U	0.259	U	0.256	U	**1.6**		**4.41**	
Acenaphthene	180	0.278	U	0.261	U	0.259	U	0.259	U	0.256	U	0.259	U	0.26	U
Anthracene	3000	0.278	U	0.261	U	0.259	U	0.259	U	0.256	U	0.259	U	0.26	U
Benzo(a)anthracene	3.6	0.278	U	0.261	U	0.259	U	0.259	U	0.256	U	**0.0907**	F	0.26	U
Benzo(a)pyrene	0.49	*0.0866*	U	*0.0815*	U	*0.0808*	U	*0.0809*	U	*0.0797*	U	*0.0809*	U	*0.0811*	U
Benzo(b)fluoranthene	4.9	0.278	U	0.261	U	0.259	U	0.259	U	0.256	U	0.259	U	0.26	U
Benzo(g,h,i)perylene	1400	0.278	U	0.261	U	0.259	U	0.259	U	0.256	U	0.259	U	0.26	U
Benzo(k)fluoranthene	49	0.278	U	0.261	U	0.259	U	0.259	U	0.256	U	0.259	U	0.26	U
Benzoic acid	410	1.67	U	1.57	UJ	1.55	UJ	1.56	UJ	1.53	UJ	1.56	UJ	1.56	UJ
Benzyl butyl phthalate	920	0.278	U	0.261	U	0.259	U	0.259	U	0.256	U	0.259	U	0.26	U
bis(2-ethylhexyl) Phthalate	13	0.278	U	0.261	U	**0.168**	F	0.259	U	0.256	U	0.259	U	0.26	U
Chrysene	360	0.278	U	0.261	U	0.259	U	0.259	U	0.256	U	0.259	U	0.26	U
Di-n-octylphthalate	3800	0.278	U	0.261	U	0.259	U	0.259	U	0.256	U	0.259	U	0.26	U
Dibenz(a,h)anthracene	0.49	*0.0866*	U	*0.0815*	U	*0.0808*	U	*0.0809*	U	*0.0797*	U	*0.0809*	U	*0.0811*	U
Dibenzofuran	11	0.278	U	0.261	U	0.259	U	0.259	U	0.256	U	0.259	U	0.26	U
Fluoranthene	1400	0.278	U	0.261	U	0.259	U	0.259	U	0.256	U	**0.311**		**0.191**	F
Fluorene	220	0.278	U	0.261	U	0.259	U	0.259	U	0.256	U	0.259	U	**0.231**	F
Indeno(1,2,3-c,d)Pyrene	4.9	0.278	U	0.261	U	0.259	U	0.259	U	0.256	U	0.259	U	0.26	U
Naphthalene	20	0.278	U	0.261	U	0.259	U	0.259	U	0.256	U	0.259	U	**2.1**	
Pentachlorophenol	0.047	*0.688*	U	*0.648*	U	*0.642*	U	*0.643*	U	*0.634*	U	*0.643*	U	*0.645*	U
Phenanthrene	3000	0.278	U	0.261	U	0.259	U	0.259	U	**0.0862**	F	**0.105**	F	**0.167**	F
Pyrene	1000	0.278	U	0.261	U	0.259	U	0.259	U	0.256	U	**0.244**	F	**0.16**	F

Table C-6.2 Lower Site Summit - Subsurface Soil Samples, Analytical Detections

Location Identification		BH07LSS Dup		BH08LSS		BH08LSS		BH09LSS		BH09LSS		BH10LSS		BH10LSS	
Field Sample Identification		10NSS202SL07LSS		10NSS001SL08LSS		10NSS002SL08LSS		10NSS001SL09LSS		10NSS002SL09LSS		10NSS003SL10LSS		10NSS006SL10LSS	
Date Collected		8/17/2010		8/17/2010		8/17/2010		8/19/2010		8/19/2010		8/19/2010		8/19/2010	
Depth (ft)		4 - 6		2 - 4		4 - 6		1		2		6 - 8		12 - 14	
Analyte/Methods (Units)	**Project Action Limit**														
General Parameters															
Perchlorate/SW6860 (µg/kg)	67	NA		NA		NA		**0.22**	F	0.51	U	NA		NA	
Total Petroleum Hydrocarbons (mg/kg)															
Gasoline Range Organics (GRO)/AK101	300	**101**	D	3.35	U	2.04	U	2.26	U	1.81	U	2.06	U	1.81	U
Diesel Range Organics (DRO)/AK102	250	**1960**	D	21.4	U	20.3	U	**7.81**	F	20.4	U	21.6	U	21.2	U
Residual Range Organics (RRO)/AK103	10000	**43.7**		21.4	U	20.3	U	**29.4**		20.4	U	**46.6**		21.2	U
Metals (SW6020A) (mg/kg)															
Arsenic	3.9	NA		**5.61**		**3.66**		**4.88**		**4.14**		**7.25**		**8.57**	
Barium	1100	NA		**321**		**168**		**106**		**330**		**119**		**104**	
Cadmium	5	NA		**0.098**	F	**0.0844**	F	**0.122**	F	**0.0841**	F	**0.0828**	F	**0.113**	F
Chromium	25	NA		**21.7**		**25.6**		**20.5**		**29.3**		**24**		**22**	
Chromium, Hexavalent/SW719(	25	NA		NA		NA		NA		NA		NA		NA	
Lead	400	NA		**6.11**		**4.83**		**13.2**		**7.28**		**7.25**		**8.03**	
Nickel	86	NA		**17.5**		**14.3**		**21.8**		**15.9**		**23**		**24.2**	
Selenium	3.4	NA		0.524	U	0.48	U	**0.313**	F	**0.173**	F	**0.213**	F	**0.317**	F
Silver	11.2	NA		**0.0864**	F	**0.0724**	F	**0.0557**	F	**0.0452**	F	**0.0611**	F	**0.0424**	F
Vanadium	710	NA		**49.7**		**71.7**		**41.2**		**59.6**		**52**		**46.5**	
Mercury/SW7471A (µg/kg)	1400	NA		**70**		**44**		**55.4**		**46.9**		**35.8**	F	**67.9**	
Polychlorinated Biphenyls (PCBs)/SW8082 (µg/kg)															
PCB-1254 (Aroclor 1254)	1000	NA		53.2	U	50.6	U	53.3	U	51	U	55.3	U	52.9	U
PCB-1260 (Aroclor 1260)	1000	NA		53.2	U	50.6	U	53.3	U	51	U	55.3	U	52.9	U
Volatile Organic Compounds (SW8260B) (µg/kg)															
1,1,1-Trichloroethane	820	266	U,D	33.5	U	20.4	U	22.6	U	18.1	U	20.6	U	18.1	U
1,1,2,2-Tetrachloroethane	17	*82.9*	U	*10.4*	U	*6.38*	U	*7.05*	U	*5.64*	U	*6.43*	U	*5.64*	U
1,1,2-Trichloroethane	18	*82.9*	U	*10.4*	U	*6.38*	U	*7.05*	U	*5.64*	U	*6.43*	U	*5.64*	U
1,2,3-Trichlorobenzene	87	*82.9*	U	33.5	U	20.4	U	22.6	U	18.1	U	20.6	U	18.1	U
1,2,3-Trichloropropane	0.53	*82.9*	U	*10.4*	U	*6.38*	U	*7.05*	U	*5.64*	U	*6.43*	U	*5.64*	U
1,2,4-Trichlorobenzene	850	266	U,D	33.5	U	20.4	U	22.6	U	18.1	U	20.6	U	18.1	U
1,2,4-Trimethylbenzene	23000	**949**	D	33.5	U	20.4	U	22.6	U	18.1	U	20.6	U	**14.3**	F
1,2-Dibromo-3-chloropropane	0.00014	*330*	U	*41.5*	U	*25.3*	U	*28*	U	*22.4*	U	*25.5*	U	*22.4*	U
1,3,5-Trimethylbenzene	23000	**322**	D	33.5	U	20.4	U	22.6	U	18.1	U	20.6	U	**9.76**	F
2-Butanone (MEK)	59000	2660	U,D	335	U	204	U	226	U	181	U	206	U	181	U
2-Hexanone	11	*829*	U	*104*	U	*63.8*	U	*70.5*	U	*56.4*	U	*64.3*	U	*56.4*	U
4-Chlorotoluene	2500	266	U,D	33.5	U	20.4	U	22.6	U	18.1	U	20.6	U	18.1	U
4-Methyl-2-pentanone (MIBK)	8100	2660	U,D	335	U	204	U	226	U	181	U	206	U	181	U
Acetone	88000	NA		NA		NA		NA		NA		NA		NA	
Benzene	25	**47.9**	F	*5.22*	U	10.2	U	11.3	U	9.04	U	10.3	U	9.03	U
Carbon disulfide	12000	266	U,D	33.5	U	20.4	U	22.6	U	18.1	U	20.6	U	18.1	U
Ethylbenzene	6900	266	U,D	33.5	U	20.4	U	22.6	U	18.1	U	20.6	U	18.1	U
Isopropylbenzene	51000	266	U,D	33.5	U	20.4	U	22.6	U	18.1	U	20.6	U	**9.94**	F
m,p-Xylene (Sum of isomers)	63000	**213**	F	66.9	U	40.9	U	45.2	U	36.2	U	41.2	U	**15.5**	F
Methylene chloride	16	*330*	U	*41.5*	U	*25.3*	U	*28*	U	**27.9**	UK,F	*25.5*	U	*22.4*	U
Naphthalene	20000	**4320**	D	**43.8**	F	**24.1**	F	**18.8**	F	**15.9**	F	41.2	U	**39.4**	
n-Butylbenzene	15000	**747**	D	33.5	U	20.4	U	22.6	U	18.1	U	20.6	U	**13.6**	F

Table C-6.2 Lower Site Summit - Subsurface Soil Samples, Analytical Detections

Location Identification		BH07LSS Dup		BH08LSS		BH08LSS		BH09LSS		BH09LSS		BH10LSS		BH10LSS	
Field Sample Identification		10NSS202SL07LSS		10NSS001SL08LSS		10NSS002SL08LSS		10NSS001SL09LSS		10NSS002SL09LSS		10NSS003SL10LSS		10NSS006SL10LSS	
Date Collected		8/17/2010		8/17/2010		8/17/2010		8/19/2010		8/19/2010		8/19/2010		8/19/2010	
Depth (ft)		4 - 6		2 - 4		4 - 6		1		2		6 - 8		12 - 14	
Analyte/Methods (Units)	**Project Action Limit**														
Volatile Organic Compounds (SW8260B) (µg/kg) (continued)															
n-Propylbenzene	15000	266	U,D	33.5	U	20.4	U	22.6	U	18.1	U	20.6	U	18.1	U
o-Xylene	63000	266	U,D	33.5	U	20.4	U	22.6	U	18.1	U	20.6	U	**18.6**	
p-Isopropyltoluene	NE	**2240**	D	33.5	U	20.4	U	22.6	U	18.1	U	20.6	U	**12.1**	F
sec-Butylbenzene	12000	**157**	F	33.5	U	20.4	U	22.6	U	18.1	U	20.6	U	18.1	U
Styrene	960	266	U,D	33.5	U	20.4	U	22.6	U	18.1	U	20.6	U	18.1	U
Toluene	6500	266	U,D	33.5	U	20.4	U	22.6	U	18.1	U	20.6	U	**20.4**	
trans-1,3-Dichloropropene	0.15	*82.9*	U	*10.4*	U	*6.38*	U	*7.05*	U	*5.64*	U	*6.43*	U	*5.64*	U
Trichloroethene (TCE)	20	*82.9*	U	*10.4*	U	*6.38*	U	*7.05*	U	*5.64*	U	*6.43*	U	**35.6**	
Xylenes, Total	63000	**290**	F	100	U	61.3	U	67.8	U	54.3	U	61.8	U	**34.2**	F
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)															
2,4-Dimethyl phenol	8.8	0.262	U	0.265	U	0.255	U	0.263	U	0.255	U	0.269	U	0.265	U
2-Methylnaphthalene	6.1	**4.6**		0.265	U	0.255	U	0.263	U	0.255	U	0.269	U	0.265	U
Acenaphthene	180	0.262	U	0.265	U	0.255	U	0.263	U	0.255	U	0.269	U	0.265	U
Anthracene	3000	0.262	U	0.265	U	0.255	U	0.263	U	0.255	U	0.269	U	0.265	U
Benzo(a)anthracene	3.6	0.262	U	0.265	U	0.255	U	**0.106**	F	0.255	U	0.269	U	0.265	U
Benzo(a)pyrene	0.49	*0.0818*	U	*0.0827*	U	*0.0795*	U	*0.082*	U	*0.0795*	U	*0.084*	U	*0.0826*	U
Benzo(b)fluoranthene	4.9	0.262	U	0.265	U	0.255	U	0.263	U	0.255	U	0.269	U	0.265	U
Benzo(g,h,i)perylene	1400	0.262	U	0.265	U	0.255	U	0.263	U	0.255	U	0.269	U	0.265	U
Benzo(k)fluoranthene	49	0.262	U	0.265	U	0.255	U	0.263	U	0.255	U	0.269	U	0.265	U
Benzoic acid	410	1.57	UJ	1.59	UJ	1.53	UJ	1.58	U	1.53	U	1.62	U	1.59	U
Benzyl butyl phthalate	920	0.262	U	0.265	U	0.255	U	0.263	U	0.255	U	0.269	U	0.265	U
bis(2-ethylhexyl) Phthalate	13	0.262	U	0.265	U	0.255	U	0.263	U	0.255	U	0.269	U	0.265	U
Chrysene	360	0.262	U	0.265	U	0.255	U	0.263	U	0.255	U	0.269	U	0.265	U
Di-n-octylphthalate	3800	0.262	U	0.265	U	0.255	U	0.263	U	0.255	U	0.269	U	0.265	U
Dibenz(a,h)anthracene	0.49	*0.0818*	U	*0.0827*	U	*0.0795*	U	*0.082*	U	*0.0795*	U	*0.084*	U	*0.0826*	U
Dibenzofuran	11	0.262	U	0.265	U	0.255	U	0.263	U	0.255	U	0.269	U	0.265	U
Fluoranthene	1400	**0.214**	F	0.265	U	0.255	U	**0.229**	F	**0.106**	F	0.269	U	0.265	U
Fluorene	220	**0.268**		0.265	U	0.255	U	0.263	U	0.255	U	0.269	U	0.265	U
Indeno(1,2,3-c,d)Pyrene	4.9	0.262	U	0.265	U	0.255	U	0.263	U	0.255	U	0.269	U	0.265	U
Naphthalene	20	**2.19**		0.265	U	0.255	U	0.263	U	0.255	U	0.269	U	0.265	U
Pentachlorophenol	0.047	*0.65*	U	*0.658*	U	*0.632*	U	*0.651*	U	*0.632*	U	*0.668*	U	*0.657*	U
Phenanthrene	3000	**0.197**	F	0.265	U	0.255	U	**0.236**	F	**0.131**	F	0.269	U	0.265	U
Pyrene	1000	**0.189**	F	0.265	U	0.255	U	**0.223**	F	**0.11**	F	0.269	U	0.265	U

Table C-6.2 Lower Site Summit - Subsurface Soil Samples, Analytical Detections

Location Identification		BH11LSS		BH11LSS		TP01LSS		TP01LSS		TP02LSS		TP02LSS		TP03LSS	
Field Sample Identification		10NSS003SL11LSS		10NSS011SL11LSS		10NSS001TP01LSS		10NSS002TP01LSS		10NSS001TP02LSS		10NSS002TP02LSS		10NSS001TP03LSS	
Date Collected		8/19/2010		8/19/2010		8/23/2010		8/23/2010		8/23/2010		8/23/2010		8/23/2010	
Depth (ft)		6 - 8		22 - 24		8		8		6		6		2	
Analyte/Methods (Units)	**Project Action Limit**														
General Parameters															
Perchlorate/SW6860 (µg/kg)	67	NA		NA		NA		NA		NA		NA		NA	
Total Petroleum Hydrocarbons (mg/kg)															
Gasoline Range Organics (GRO)/AK101	300	1.86	U	2.36	U	2.38	U	2.43	U	**0.87**	F	**0.75**	F	1.98	U
Diesel Range Organics (DRO)/AK102	250	21.6	U	20.6	U	**9.41**	F	**7.29**	F	21.7	U	**42**		**8.66**	F
Residual Range Organics (RRO)/AK103	10000	21.6	U	20.6	U	**51.6**	B	**57.8**	B	**21**	F,B	**71.1**	B	**54.5**	B
Metals (SW6020A) (mg/kg)															
Arsenic	3.9	NA		NA		**7.5**		**7.86**		**7.21**		**7.26**		**7.47**	
Barium	1100	NA		NA		**104**		**116**		**158**		**202**		**85.8**	
Cadmium	5	NA		NA		**0.103**	F	**0.122**	F	**0.0973**	F	**0.12**	F	**0.471**	
Chromium	25	NA		NA		**31.2**		**34.5**		**27.2**		**31**		**23.6**	
Chromium, Hexavalent/SW719(	25	NA		NA		NA		NA		NA		NA		NA	
Lead	400	NA		NA		**6.94**		**7.48**		**6.54**		**8.6**		**7.27**	
Nickel	86	NA		NA		**32.3**		**35.7**		**27.7**		**29.4**		**31.4**	
Selenium	3.4	NA		NA		**0.301**	F	**0.315**	F	**0.234**	F	**0.249**	F	**0.332**	F
Silver	11.2	NA		NA		**0.0945**	F	**0.0805**	F	**0.0656**	F	**0.065**	F	**0.0736**	F
Vanadium	710	NA		NA		**52.8**		**57.9**		**49.8**		**50.3**		**47.6**	
Mercury/SW7471A (µg/kg)	1400	NA		NA		**139**		**94.1**		**99.9**		**79.8**		**138**	
Polychlorinated Biphenyls (PCBs)/SW8082 (µg/kg)															
PCB-1254 (Aroclor 1254)	1000	54.1	U	51.3	U	54.9	U	54.8	U	54.5	U	**55.1**		53.7	U
PCB-1260 (Aroclor 1260)	1000	54.1	U	51.3	U	54.9	U	54.8	U	54.5	U	53.9	U	53.7	U
Volatile Organic Compounds (SW8260B) (µg/kg)															
1,1,1-Trichloroethane	820	18.6	U	9.32	U	23.8	U	24.3	U	22.8	U	20.3	U	19.8	U
1,1,2,2-Tetrachloroethane	17	*5.81*	U	*2.91*	U	*7.41*	U	*7.59*	U	*7.12*	U	*6.35*	U	*6.19*	U
1,1,2-Trichloroethane	18	*5.81*	U	*2.91*	U	*7.41*	U	*7.59*	U	*7.12*	U	*6.35*	U	*6.19*	U
1,2,3-Trichlorobenzene	87	18.6	U	9.32	U	23.8	U	24.3	U	22.8	U	20.3	U	19.8	U
1,2,3-Trichloropropane	0.53	*5.81*	U	*2.91*	U	*7.41*	U	*7.59*	U	*7.12*	U	*6.35*	U	*6.19*	U
1,2,4-Trichlorobenzene	850	18.6	U	9.32	U	23.8	U	24.3	U	22.8	U	20.3	U	19.8	U
1,2,4-Trimethylbenzene	23000	**7.82**	F	9.32	U	23.8	U	24.3	U	22.8	U	20.3	U	**10.3**	F
1,2-Dibromo-3-chloropropane	0.00014	*23.1*	U	*11.6*	U	*29.5*	U	*30.2*	U	*28.3*	U	*25.2*	U	*24.6*	U
1,3,5-Trimethylbenzene	23000	**7.63**	F	9.32	U	23.8	U	24.3	U	22.8	U	20.3	U	**8.53**	F
2-Butanone (MEK)	59000	186	U	93.2	U	238	U	243	U	228	U	203	U	198	U
2-Hexanone	11	*58.1*	U	*29.1*	U	*74.1*	U	*75.9*	U	*71.2*	U	*63.5*	U	*61.9*	U
4-Chlorotoluene	2500	18.6	U	9.32	U	23.8	U	24.3	U	22.8	U	20.3	U	19.8	U
4-Methyl-2-pentanone (MIBK)	8100	186	U	93.2	U	238	U	243	U	228	U	203	U	198	U
Acetone	88000	NA		NA		NA		NA		NA		NA		NA	
Benzene	25	9.31	U	4.66	U	11.9	U	12.2	U	11.4	U	10.2	U	9.91	U
Carbon disulfide	12000	18.6	U	9.32	U	23.8	U	24.3	U	22.8	U	20.3	U	19.8	U
Ethylbenzene	6900	18.6	U	9.32	U	23.8	U	24.3	U	22.8	U	20.3	U	19.8	U
Isopropylbenzene	51000	18.6	U	9.32	U	23.8	U	24.3	U	22.8	U	20.3	U	19.8	U
m,p-Xylene (Sum of isomers)	63000	37.2	U	18.6	U	47.5	U	48.6	U	45.7	U	40.7	U	39.7	U
Methylene chloride	16	*23.1*	U	**14.1**	UK,F	*29.5*	U	*30.2*	U	*28.3*	U	*25.2*	U	*24.6*	U
Naphthalene	20000	37.2	U	18.6	U	47.5	U	48.6	U	45.7	U	40.7	U	39.7	U
n-Butylbenzene	15000	18.6	U	9.32	U	23.8	U	24.3	U	22.8	U	20.3	U	**12.3**	F

Table C-6.2 Lower Site Summit - Subsurface Soil Samples, Analytical Detections

Location Identification		BH11LSS		BH11LSS		TP01LSS		TP01LSS		TP02LSS		TP02LSS		TP03LSS	
Field Sample Identification		10NSS003SL11LSS		10NSS011SL11LSS		10NSS001TP01LSS		10NSS002TP01LSS		10NSS001TP02LSS		10NSS002TP02LSS		10NSS001TP03LSS	
Date Collected		8/19/2010		8/19/2010		8/23/2010		8/23/2010		8/23/2010		8/23/2010		8/23/2010	
Depth (ft)		6 - 8		22 - 24		8		8		6		6		2	
Analyte/Methods (Units)	**Project Action Limit**														
Volatile Organic Compounds (SW8260B) (µg/kg) (continued)															
n-Propylbenzene	15000	18.6	U	9.32	U	23.8	U	24.3	U	22.8	U	20.3	U	19.8	U
o-Xylene	63000	18.6	U	9.32	U	23.8	U	24.3	U	22.8	U	20.3	U	**13.1**	F
p-Isopropyltoluene	NE	18.6	U	9.32	U	23.8	U	24.3	U	22.8	U	20.3	U	**10.7**	F
sec-Butylbenzene	12000	18.6	U	9.32	U	23.8	U	24.3	U	22.8	U	20.3	U	19.8	U
Styrene	960	18.6	U	9.32	U	23.8	U	24.3	U	22.8	U	20.3	U	19.8	U
Toluene	6500	18.6	U	9.32	U	23.8	U	24.3	U	**25.1**		**13.6**	F	19.8	U
trans-1,3-Dichloropropene	0.15	*5.81*	U	*2.91*	U	*7.41*	U	*7.59*	U	*7.12*	U	*6.35*	U	*6.19*	U
Trichloroethene (TCE)	20	*5.81*	U	9.32	U	**362**		**83.4**		**210**		**257**		**171**	
Xylenes, Total	63000	55.8	U	28	U	71.3	U	73	U	68.5	U	61	U	59.5	U
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)															
2,4-Dimethyl phenol	8.8	0.269	U	0.255	U	0.277	U	0.272	U	0.273	U	0.273	U	0.267	U
2-Methylnaphthalene	6.1	0.269	U	0.255	U	0.277	U	0.272	U	0.273	U	0.273	U	0.267	U
Acenaphthene	180	0.269	U	0.255	U	0.277	U	0.272	U	0.273	U	0.273	U	0.267	U
Anthracene	3000	0.269	U	0.255	U	0.277	U	0.272	U	0.273	U	0.273	U	0.267	U
Benzo(a)anthracene	3.6	0.269	U	0.255	U	0.277	U	0.272	U	0.273	U	0.273	U	0.267	U
Benzo(a)pyrene	0.49	*0.084*	U	*0.0794*	U	*0.0865*	U	*0.085*	U	*0.0851*	U	*0.0853*	U	*0.0833*	U
Benzo(b)fluoranthene	4.9	0.269	U	0.255	U	0.277	U	0.272	U	0.273	U	0.273	U	0.267	U
Benzo(g,h,i)perylene	1400	0.269	U	0.255	U	0.277	U	0.272	U	0.273	U	0.273	U	0.267	U
Benzo(k)fluoranthene	49	0.269	U	0.255	U	0.277	U	0.272	U	0.273	U	0.273	U	0.267	U
Benzoic acid	410	1.62	U	1.53	U	1.66	U	1.63	U	1.64	U	1.64	U	1.6	U
Benzyl butyl phthalate	920	0.269	U	0.255	U	0.277	U	0.272	U	0.273	U	0.273	U	0.267	U
bis(2-ethylhexyl) Phthalate	13	0.269	U	0.255	U	0.277	U	0.272	U	0.273	U	0.273	U	0.267	U
Chrysene	360	0.269	U	0.255	U	0.277	U	0.272	U	0.273	U	0.273	U	0.267	U
Di-n-octylphthalate	3800	0.269	U	0.255	U	0.277	U	0.272	U	0.273	U	0.273	U	0.267	U
Dibenz(a,h)anthracene	0.49	*0.084*	U	*0.0794*	U	*0.0865*	U	*0.085*	U	*0.0851*	U	*0.0853*	U	*0.0833*	U
Dibenzofuran	11	0.269	U	0.255	U	0.277	U	0.272	U	0.273	U	0.273	U	0.267	U
Fluoranthene	1400	0.269	U	0.255	U	0.277	U	0.272	U	0.273	U	0.273	U	0.267	U
Fluorene	220	0.269	U	0.255	U	0.277	U	0.272	U	0.273	U	0.273	U	0.267	U
Indeno(1,2,3-c,d)Pyrene	4.9	0.269	U	0.255	U	0.277	U	0.272	U	0.273	U	0.273	U	0.267	U
Naphthalene	20	0.269	U	0.255	U	0.277	U	0.272	U	0.273	U	0.273	U	0.267	U
Pentachlorophenol	0.047	*0.668*	U	*0.631*	U	*0.688*	U	*0.675*	U	*0.676*	U	*0.678*	U	*0.662*	U
Phenanthrene	3000	0.269	U	0.255	U	0.277	U	0.272	U	0.273	U	0.273	U	0.267	U
Pyrene	1000	0.269	U	0.255	U	0.277	U	0.272	U	0.273	U	0.273	U	0.267	U

Table C-6.2 Lower Site Summit - Subsurface Soil Samples, Analytical Detections

Location Identification		TP03LSS		TP03LSS Dup		TP04LSS		TP04LSS		TP05LSS		TP05LSS		TP06LSS	
Field Sample Identification		10NSS002TP03LSS		10NSS202TP03LSS		10NSS001TP04LSS		10NSS002TP04LSS		10NSS001TP05LSS		10NSS002TP05LSS		10NSS001TP06LSS	
Date Collected		8/23/2010		8/23/2010		8/23/2010		8/23/2010		8/23/2010		8/23/2010		8/23/2010	
Depth (ft)		6		6		8		8		1		4		2	
Analyte/Methods (Units)	**Project Action Limit**														
General Parameters															
Perchlorate/SW6860 (µg/kg)	67	NA		NA		NA		NA		NA		NA		NA	
Total Petroleum Hydrocarbons (mg/kg)															
Gasoline Range Organics (GRO)/AK101	300	1.73	U	1.78	U	**0.491**	F	1.8	U	**0.454**	F	1.9	U	**9.61**	
Diesel Range Organics (DRO)/AK102	250	21.1	U	21.1	U	21	U	20.9	U	**376**		**55.5**		**2830**	D
Residual Range Organics (RRO)/AK103	10000	**13.6**	F,B	**9.94**	F,B	**14.7**	F,B	**8.66**	F,B	**159**	B	**12.2**	F,B	**1760**	D,B
Metals (SW6020A) (mg/kg)															
Arsenic	3.9	**6.68**		**6.74**		**4.38**		**3.79**		**5.88**		**6.47**		**6.55**	
Barium	1100	**114**		**87.4**		**93.6**		**90.6**		**94.8**		**97**		**61.7**	
Cadmium	5	**0.0981**	F	**0.0857**	F	**0.1**	F	**0.0849**	F	**0.092**	F	**0.0899**	F	**0.0962**	F
Chromium	25	**30.4**		**22.6**		**15.7**		**20.2**		**18**		**21.5**		**15.6**	
Chromium, Hexavalent/SW719(	25	NA		NA		NA		NA		NA		NA		NA	
Lead	400	**5.53**		**4.91**		**3.86**		**3.49**		**7.01**		**6.12**		**16.1**	
Nickel	86	**32.2**		**21**		**18.1**		**20.7**		**24.3**		**23**		**21.5**	
Selenium	3.4	**0.193**	F	0.487	U	**0.23**	F	0.526	U	**0.235**	F	0.536	U	**0.273**	F
Silver	11.2	**0.0498**	F	**0.0356**	F	**0.0555**	F	**0.0475**	F	**0.0666**	F	**0.0542**	F	**0.0717**	F
Vanadium	710	**51.8**		**45**		**42.2**		**46.7**		**35.8**		**48.1**		**31.4**	
Mercury/SW7471A (µg/kg)	1400	**23.1**	F	**40.2**	F	41.7	U	**17.6**	F	**89.7**		**28.1**	F	**144**	
Polychlorinated Biphenyls (PCBs)/SW8082 (µg/kg)															
PCB-1254 (Aroclor 1254)	1000	52.9	U	52.7	U	53.1	U	52.4	U	52.7	U	55.1	U	54.8	U
PCB-1260 (Aroclor 1260)	1000	52.9	U	52.7	U	53.1	U	52.4	U	52.7	U	55.1	U	**30.9**	F
Volatile Organic Compounds (SW8260B) (µg/kg)															
1,1,1-Trichloroethane	820	17.3	U	17.8	U	16.3	U	18	U	15.1	U	19	U	18.6	U
1,1,2,2-Tetrachloroethane	17	*5.4*	U	*5.55*	U	*5.1*	U	*5.61*	U	*4.71*	U	*5.93*	U	*5.82*	U
1,1,2-Trichloroethane	18	*5.4*	U	*5.55*	U	*5.1*	U	*5.61*	U	*4.71*	U	*5.93*	U	*5.82*	U
1,2,3-Trichlorobenzene	87	17.3	U	17.8	U	16.3	U	18	U	15.1	U	19	U	18.6	U
1,2,3-Trichloropropane	0.53	*5.4*	U	*5.55*	U	*5.1*	U	*5.61*	U	*4.71*	U	*5.93*	U	*5.82*	U
1,2,4-Trichlorobenzene	850	17.3	U	17.8	U	16.3	U	18	U	15.1	U	19	U	18.6	U
1,2,4-Trimethylbenzene	23000	17.3	U	17.8	U	16.3	U	18	U	15.1	U	**7.8**	F,B	18.6	U
1,2-Dibromo-3-chloropropane	0.00014	*21.5*	U	*22.1*	U	*20.3*	U	*22.3*	U	*18.7*	U	*23.6*	U	*23.1*	U
1,3,5-Trimethylbenzene	23000	17.3	U	17.8	U	16.3	U	18	U	15.1	U	**7.61**	F,B	18.6	U
2-Butanone (MEK)	59000	173	U	178	U	163	U	180	U	151	U	190	U	186	U
2-Hexanone	11	*54*	U	*55.5*	U	*51*	U	*56.1*	U	*47.1*	U	*59.3*	U	*58.2*	U
4-Chlorotoluene	2500	17.3	U	17.8	U	16.3	U	18	U	15.1	U	19	U	18.6	U
4-Methyl-2-pentanone (MIBK)	8100	173	U	178	U	163	U	180	U	151	U	190	U	186	U
Acetone	88000	NA		NA		NA		NA		NA		NA		NA	
Benzene	25	8.65	U	8.9	U	8.17	U	8.99	U	7.54	U	9.51	U	9.32	U
Carbon disulfide	12000	17.3	U	17.8	U	16.3	U	18	U	15.1	U	19	U	18.6	U
Ethylbenzene	6900	17.3	U	17.8	U	16.3	U	18	U	15.1	U	19	U	18.6	U
Isopropylbenzene	51000	17.3	U	17.8	U	16.3	U	18	U	15.1	U	19	U	18.6	U
m,p-Xylene (Sum of isomers)	63000	34.6	U	35.6	U	32.7	U	36	U	30.2	U	38	U	**12.7**	F
Methylene chloride	16	*21.5*	U	*22.1*	U	*20.3*	U	*22.3*	U	*18.7*	U	*23.6*	U	*23.1*	U
Naphthalene	20000	34.6	U	35.6	U	32.7	U	36	U	30.2	U	38	U	37.3	U
n-Butylbenzene	15000	17.3	U	17.8	U	16.3	U	18	U	15.1	U	19	U	18.6	U

Table C-6.2 Lower Site Summit - Subsurface Soil Samples, Analytical Detections

Analyte/Methods (Units)	Project Action Limit	TP03LSS 10NSS002TP03LSS 8/23/2010 6		TP03LSS Dup 10NSS202TP03LSS 8/23/2010 6		TP04LSS 10NSS001TP04LSS 8/23/2010 8		TP04LSS 10NSS002TP04LSS 8/23/2010 8		TP05LSS 10NSS001TP05LSS 8/23/2010 1		TP05LSS 10NSS002TP05LSS 8/23/2010 4		TP06LSS 10NSS001TP06LSS 8/23/2010 2	
Volatile Organic Compounds (SW8260B) (µg/kg) (continued)															
n-Propylbenzene	15000	17.3	U	17.8	U	16.3	U	18	U	15.1	U	19	U	18.6	U
o-Xylene	63000	17.3	U	17.8	U	16.3	U	18	U	**9.65**	F	**12.2**	F	**15.1**	F
p-Isopropyltoluene	NE	17.3	U	17.8	U	16.3	U	18	U	15.1	U	19	U	18.6	U
sec-Butylbenzene	12000	17.3	U	17.8	U	16.3	U	18	U	15.1	U	19	U	18.6	U
Styrene	960	17.3	U	17.8	U	16.3	U	18	U	15.1	U	19	U	18.6	U
Toluene	6500	17.3	U	17.8	U	16.3	U	18	U	**22.9**		19	U	**9.88**	F
trans-1,3-Dichloropropene	0.15	*5.4*	U	*5.55*	U	*5.1*	U	*5.61*	U	*4.71*	U	*5.93*	U	*5.82*	U
Trichloroethene (TCE)	20	**43.3**		**42.5**		**119**		**108**		*4.71*	U	**16.4**	F	*5.82*	U
Xylenes, Total	63000	51.9	U	53.4	U	49	U	53.9	U	45.2	U	57.1	U	**27.8**	F
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)															
2,4-Dimethyl phenol	8.8	0.264	U	0.262	U	0.267	U	0.262	U	0.262	U	0.272	U	1.36	U,D
2-Methylnaphthalene	6.1	0.264	U	0.262	U	0.267	U	0.262	U	0.262	U	0.272	U	**2.44**	D
Acenaphthene	180	0.264	U	0.262	U	0.267	U	0.262	U	**0.296**		0.272	U	**15.3**	D
Anthracene	3000	0.264	U	0.262	U	0.267	U	0.262	U	**0.37**		0.272	U	**24.1**	D
Benzo(a)anthracene	3.6	0.264	U	0.262	U	0.267	U	0.262	U	**0.765**		0.272	U	**37**	D
Benzo(a)pyrene	0.49	*0.0824*	U	*0.0818*	U	*0.0833*	U	*0.0818*	U	**1.21**		*0.0848*	U	**35.7**	D
Benzo(b)fluoranthene	4.9	0.264	U	0.262	U	0.267	U	0.262	U	**1.22**		0.272	U	**40.1**	D
Benzo(g,h,i)perylene	1400	0.264	U	0.262	U	0.267	U	0.262	U	**1.03**		0.272	U	**17.1**	D
Benzo(k)fluoranthene	49	0.264	U	0.262	U	0.267	U	0.262	U	**0.495**		0.272	U	**10.8**	D
Benzoic acid	410	1.58	U	1.57	U	1.6	U	1.57	U	1.57	U	1.63	U	8.14	U,D
Benzyl butyl phthalate	920	0.264	U	0.262	U	0.267	U	0.262	U	0.262	U	0.272	U	1.36	U,D
bis(2-ethylhexyl) Phthalate	13	0.264	U	0.262	U	0.267	U	0.262	U	0.262	U	0.272	U	1.36	U,D
Chrysene	360	0.264	U	0.262	U	0.267	U	0.262	U	**1.02**		0.272	U	**43.4**	D
Di-n-octylphthalate	3800	0.264	U	0.262	U	0.267	U	0.262	U	0.262	U	0.272	U	1.36	U,D
Dibenz(a,h)anthracene	0.49	*0.0824*	U	*0.0818*	U	*0.0833*	U	*0.0818*	U	**0.19**	F	*0.0848*	U	**6.12**	D
Dibenzofuran	11	0.264	U	0.262	U	0.267	U	0.262	U	0.262	U	0.272	U	**7.09**	D
Fluoranthene	1400	0.264	U	0.262	U	0.267	U	0.262	U	**1.34**		0.272	U	**80.6**	D
Fluorene	220	0.264	U	0.262	U	0.267	U	0.262	U	**0.192**	F	0.272	U	**15.1**	D
Indeno(1,2,3-c,d)Pyrene	4.9	0.264	U	0.262	U	0.267	U	0.262	U	**0.956**		0.272	U	**16.1**	D
Naphthalene	20	0.264	U	0.262	U	0.267	U	0.262	U	0.262	U	0.272	U	**2.91**	D
Pentachlorophenol	0.047	*0.655*	U	*0.65*	U	*0.662*	U	*0.65*	U	*0.65*	U	*0.674*	U	*3.37*	U
Phenanthrene	3000	0.264	U	0.262	U	0.267	U	0.262	U	**1.23**		0.272	U	**60.1**	D
Pyrene	1000	0.264	U	0.262	U	0.267	U	0.262	U	**1.67**		0.272	U	**78**	D

Table C-6.2 Lower Site Summit - Subsurface Soil Samples, Analytical Detections

Location Identification		TP06LSS		TP07LSS		TP08LSS		TP08LSS Dup		TP09LSS		TP10LSS	
Field Sample Identification		10NSS002TP06LSS		10NSS001TP07LSS		10NSS001TP08LSS		10NSS201TP08LSS		10NSS001TP09LSS		10NSS001TP10LSS	
Date Collected		8/23/2010		9/2/2010		9/2/2010		9/2/2010		9/2/2010		9/2/2010	
Depth (ft)		2		1.3		1.9		1.9		2.3		2.3	
Analyte/Methods (Units)	**Project Action Limit**												
General Parameters													
Perchlorate/SW6860 (µg/kg)	67	NA		NA		NA		NA		NA		NA	
Total Petroleum Hydrocarbons (mg/kg)													
Gasoline Range Organics (GRO)/AK101	300	**14.5**	J+	**0.989**	F	**0.728**	F	**0.782**	F	**1.12**	F	**0.716**	F
Diesel Range Organics (DRO)/AK102	250	**2750**	D	**111**		**135**	D	**139**	D	21.1	U	30.3	U
Residual Range Organics (RRO)/AK103	10000	**1930**	D,B	**134**	B	**1390**	D	**1390**	D	**26.7**		**47.9**	
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	**9.56**		**6.08**		**6.34**		**5.87**		**8.25**		**7.68**	
Barium	1100	**107**		**64.4**		**65.4**		**74.5**		**123**		**112**	
Cadmium	5	**0.159**	F	**0.0857**	F	**0.0928**	F	**0.107**	F	**0.0982**	F	**0.103**	F
Chromium	25	**23.2**		**17.1**		**31.3**		**30.2**		**26.8**		**25.5**	
Chromium, Hexavalent/SW7196	25	NA		NA		NA		NA		NA		NA	
Lead	400	**14**		**8.45**		**6.83**		**6.84**		**9.87**		**9.33**	
Nickel	86	**31.1**		**21.5**		**34.9**		**36**		**28.9**		**30.8**	
Selenium	3.4	**0.446**	F	0.546	U	0.491	U	0.522	U	**0.264**	F	**0.163**	F
Silver	11.2	**0.0911**	F	**0.0633**	F	**0.0553**	F	**0.0568**	F	**0.0723**	F	**0.0719**	F
Vanadium	710	**48.6**		**34.9**		**46**		**48.2**		**62.2**		**44.1**	
Mercury/SW7471A (µg/kg)	1400	**74.9**		**149**		**149**		**74.9**		**116**		**211**	
Polychlorinated Biphenyls (PCBs)/SW8082 (µg/kg)													
PCB-1254 (Aroclor 1254)	1000	54.6	U	54.9	U	53.2	U	53.4	U	52.8	U	57.4	U
PCB-1260 (Aroclor 1260)	1000	**23.6**	F	54.9	U	53.2	U	53.4	U	52.8	U	57.4	U
Volatile Organic Compounds (SW8260B) (µg/kg)													
1,1,1-Trichloroethane	820	21.4	U	21.9	U	20.6	U	21.1	U	17	U	20.1	U
1,1,2,2-Tetrachloroethane	17	*6.68*	U	*13.2*	U	*12.4*	U	*12.6*	U	*10.2*	U	*12.1*	U
1,1,2-Trichloroethane	18	*6.68*	U	*6.84*	U	*6.43*	U	*6.57*	U	*5.3*	U	*6.28*	U
1,2,3-Trichlorobenzene	87	21.4	U	*13.2*	U	41.2	U	42.1	U	34	U	40.3	U
1,2,3-Trichloropropane	0.53	*6.68*	U	*6.84*	U	*6.43*	U	*6.57*	U	*5.3*	U	*6.28*	U
1,2,4-Trichlorobenzene	850	21.4	U	21.9	U	20.6	U	21.1	U	17	U	20.1	U
1,2,4-Trimethylbenzene	23000	21.4	U	**38.8**	F	41.2	U	**17.3**	F	**21.4**	F	40.3	U
1,2-Dibromo-3-chloropropane	0.00014	*26.5*	U	*27.2*	U	*25.5*	U	*26.1*	U	*21.1*	U	*25*	U
1,3,5-Trimethylbenzene	23000	21.4	U	**23.9**		20.6	U	21.1	U	**15.5**	F	20.1	U
2-Butanone (MEK)	59000	214	U	219	U	206	U	211	U	170	U	201	U
2-Hexanone	11	*66.8*	U	*68.4*	U	*64.3*	U	*65.7*	U	*53*	U	*62.8*	U
4-Chlorotoluene	2500	21.4	U	21.9	U	20.6	U	21.1	U	17	U	20.1	U
4-Methyl-2-pentanone (MIBK)	8100	214	U	219	U	206	U	211	U	170	U	201	U
Acetone	88000	NA		NA		NA		NA		NA		NA	
Benzene	25	10.7	U	11	U	10.3	U	10.5	U	8.5	U	10.1	U
Carbon disulfide	12000	21.4	U	87.8	U	82.4	U	84.2	U	68	U	80.5	U
Ethylbenzene	6900	21.4	U	**11.8**	F	**7.42**	F	**6.74**	F	**7.31**	F	**7.85**	F
Isopropylbenzene	51000	21.4	U	**14.5**	F	20.6	U	21.1	U	17	U	20.1	U
m,p-Xylene (Sum of isomers)	63000	**15.8**	F	**66.9**		**22.9**	F	**24.2**	F	**34.2**		**29.4**	F
Methylene chloride	16	*26.5*	U	*27.2*	U	*25.5*	U	*26.1*	U	*21.1*	U	*25*	U
Naphthalene	20000	42.8	U	**105**		**40.2**	F	42.1	U	34	U	40.3	U
n-Butylbenzene	15000	21.4	U	21.9	U	20.6	U	21.1	U	17	U	20.1	U

Table C-6.2 Lower Site Summary - Subsurface Soil Samples, Analytical Detections

Location Identification		TP06LSS		TP07LSS		TP08LSS		TP08LSS Dup		TP09LSS		TP10LSS	
Field Sample Identification		10NSS002TP06LSS		10NSS001TP07LSS		10NSS001TP08LSS		10NSS201TP08LSS		10NSS001TP09LSS		10NSS001TP10LSS	
Date Collected		8/23/2010		9/2/2010		9/2/2010		9/2/2010		9/2/2010		9/2/2010	
Depth (ft)		2		1.3		1.9		1.9		2.3		2.3	
Analyte/Methods (Units)	**Project Action Limit**												
Volatile Organic Compounds (SW8260B) (µg/kg) (continued)													
n-Propylbenzene	15000	21.4	U	**20.2**	F	**15.4**	F	**15.6**	F	**14.4**	F	20.1	U
o-Xylene	63000	**16.9**	F	**32.2**	F	**15.9**	F	**15.2**	F	**18.9**	F	**18.9**	F
p-Isopropyltoluene	NE	21.4	U	21.9	U	20.6	U	21.1	U	17	U	20.1	U
sec-Butylbenzene	12000	21.4	U	21.9	U	20.6	U	21.1	U	17	U	20.1	U
Styrene	960	21.4	U	21.9	U	20.6	U	21.1	U	17	U	20.1	U
Toluene	6500	**10.5**	F	**36.6**	F	41.2	U	**13.9**	F	**437**		**42.7**	
trans-1,3-Dichloropropene	0.15	*6.68*	U	*6.84*	U	*6.43*	U	*6.57*	U	*5.3*	U	*6.28*	U
Trichloroethene (TCE)	20	*6.68*	U	**32.5**		**38.1**		**49.3**		**319**		**171**	
Xylenes, Total	63000	**32.8**	F	**99.2**		**38.7**	F	**39.4**	F	**53**	F	**48.3**	F
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)													
2,4-Dimethyl phenol	8.8	1.37	U,D	0.273	U	0.265	U	0.271	U	0.26	U	0.282	U
2-Methylnaphthalene	6.1	**1.68**	D	**0.0947**	F	0.265	U	0.271	U	0.26	U	0.282	U
Acenaphthene	180	**14**	D	**0.701**		0.265	U	0.271	U	0.26	U	0.282	U
Anthracene	3000	**26**	D	**0.828**		0.265	U	0.271	U	0.26	U	0.282	U
Benzo(a)anthracene	3.6	**32**	D	**1.48**		0.265	U	0.271	U	0.26	U	**0.133**	F
Benzo(a)pyrene	0.49	**30.4**	D	**2.52**		*0.0828*	U	**0.0855**	F	*0.0811*	U	**0.112**	F
Benzo(b)fluoranthene	4.9	**31.8**	D	**2.01**		0.265	U	0.271	U	0.26	U	**0.124**	F
Benzo(g,h,i)perylene	1400	**15.3**	D	**1.43**		**0.393**		**0.366**		0.26	U	0.282	U
Benzo(k)fluoranthene	49	**10.8**	D	**1.23**		0.265	U	0.271	U	0.26	U	0.282	U
Benzoic acid	410	8.2	U,D	1.64	U	1.59	U	1.62	U	1.56	U	1.69	U
Benzyl butyl phthalate	920	1.37	U,D	0.273	U	0.265	U	0.271	U	0.26	U	0.282	U
bis(2-ethylhexyl) Phthalate	13	1.37	U,D	0.273	U	0.265	U	0.271	U	0.26	U	0.282	U
Chrysene	360	**38.7**	D	**1.98**		0.265	U	0.271	U	0.26	U	**0.139**	F
Di-n-octylphthalate	3800	1.37	U,D	0.273	U	0.265	U	0.271	U	0.26	U	0.282	U
Dibenz(a,h)anthracene	0.49	**4.14**	D	*0.0853*	U	*0.0828*	U	*0.0844*	U	*0.0811*	U	*0.0879*	U
Dibenzofuran	11	**6.28**	D	**0.226**	F	0.265	U	0.271	U	0.26	U	0.282	U
Fluoranthene	1400	**73.4**	D	**3.2**		0.265	U	**0.107**	F	**0.12**	F	**0.297**	
Fluorene	220	**13.9**	D	**0.597**		0.265	U	0.271	U	0.26	U	0.282	U
Indeno(1,2,3-c,d)Pyrene	4.9	**14.7**	D	**1.45**		**0.277**		**0.255**	F	0.26	U	0.282	U
Naphthalene	20	**1.9**	D	0.273	U	0.265	U	0.271	U	0.26	U	0.282	U
Pentachlorophenol	0.047	*3.39*	U	*0.678*	U	*0.658*	U	*0.671*	U	*0.645*	U	*0.699*	U
Phenanthrene	3000	**51.1**	D	**3.09**		0.265	U	**0.0884**	F	**0.124**	F	**0.264**	F
Pyrene	1000	**71.3**	D	**3.45**		0.265	U	**0.107**	F	**0.119**	F	**0.264**	F

µg/kg micrograms per kilogram
mg/kg milligrams per kilogram
Italic Italicized result indicates analyte reported to the laboratory detection limit
Indicates concentration, LOQ, or LOD is above the established project action limi
Bold Bolded result indicates positively identified compound
AK Alaska Test Method
NA Not analyzed.
NE Not established
B Analyte detected in an associated blank.
D Sample dilution required for analysis; reported values reflect the dilution
F Analyte was positively identified but the reported concentration is estimated; reporte concentration is less than the LOQ but greater than the LOD.
J Data are estimated based on associated quality control data.
UJ Potential low bias, possible false negative.
UB Analyte considered not detected, based on an associated blank concentration.
UK Analyte considered not detected, based on professional judgment of Validation Chemist
U Analyte is not detected at the reported LOQ or LOD
J+ Data are estimated, potentially biased high, based on associated quality control data.
J- Data are estimated, potentially biased low, based on associated quality control data.
LOD Limit of detection
LOQ Limit of quantitatior
SW U.S. Environmental Protection Agency Solid Waste Methoc

Table C-6.3 Lower Site Summit - Groundwater Samples, Analytical Detections

Location Identification		MW02LSS				MW03LSS				MW03LSS Dup				MW04LSS			
Field Sample Identification		10NSS001GW02LSS				10NSS001GW03LSS				10NSS201GW03LSS				10NSS001GW04LSS			
Date Collected		9/1/2010				8/31/2010				8/31/2010				9/1/2010			
Analyte/Methods (Units)	**Project Action Limit**																
Total Petroluem Hydrocarbons (mg/l)																	
Gasoline Range Organics (GRO)/AK101	2.2	0.1	U			**0.252**	J+			**0.209**	J+			0.1	U		
Diesel Range Organics (DRO)/AK102	1.5	**1.72**				**29.4**	D			**27.9**	D			*0.259*	U		
Residual Range Organics (RRO)/AK103	1.1	**0.468**	F			**0.679**	B			**0.699**	B			0.518	U		
Metals (SW6020) (µg/l)		**Total**		**Dissolved**		**Total**		**Dissolved**		**Total**		**Dissolved**		**Total**		**Dissolved**	
Arsenic	10	**15.8**		**3.1**	**F**	**23.6**		**3.96**	F	**32.2**		**4.54**	F	**28.5**		*1.5*	U
Barium	2000	**345**		**21.3**		**414**		**45**		**442**		**44.6**		**526**		**32.6**	
Cadmium	5	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Chromium	100	**47.5**		4	U	**39.3**		4	U	**52.5**		4	U	**79.7**		4	U
Lead	15	**23.3**		1	U	**31.7**		1	U	**33.3**		1	U	**25.4**		1	U
Mercury/SW7470	2	**0.0744**	F	0.2	U	**0.299**		0.2	U	**0.157**	F	0.2	U	**0.123**	F	0.2	U
Nickel	100	**54.9**		**3.74**		**47.2**		**2.57**		**60.6**		**2.64**		**61.3**		**2.68**	
Selenium	50	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Silver	100	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Vanadium	260	**93.7**		20	U	**89.5**		20	U	**109**		20	U	**87.4**		20	U
Volatile Organic Compounds (SW8260B) (µg/l)																	
1,1,1-Trichloroethane	200	1	U			1	U			1	U			1	U		
1,1-Dichloroethane	7	1	U			1	U			1	U			1	U		
1,2,4-Trimethylbenzene	1800	1	U			**3.57**				**3.76**				1	U		
1,2-Dichloroethane	5	0.5	U			0.5	U			0.5	U			0.5	U		
1,3,5-Trimethylbenzene	1800	1	U			**8.09**				**8.05**				1	U		
Benzene	5	0.4	U			**1.08**				**1.11**				0.4	U		
Carbon disulfide	3700	2	U			2	U			2	U			**0.83**	F		
Chloromethane	66	**0.33**	F			**0.53**	F			1	U			1	U		
Ethylbenzene	700	1	U			**7.2**				**7.17**				1	U		
Isopropylbenzene	3700	1	U			**9.9**				**9.65**				1	U		
m,p-Xylene (Sum of isomers)	10000	2	U			**1.92**	F			**1.87**	F			2	U		
4-Methyl-2-pentanone (MIBK)	2900	10	U			10	U			10	U			10	U		
Methylene chloride	5	**1.1**	F,B			*1*	U			*1*	U			*1*	U		
n-Butylbenzene	370	1	U			**6.23**				**9.75**				1	U		
n-Propylbenzene	370	1	U			**11.7**				**11.4**				1	U		
Naphthalene	730	**1.76**	F			**67.7**				**68.5**				2	U		
o-Xylene	10000	1	U			**0.71**	F			**0.71**	F			1	U		
p-Isopropyltoluene	NE	**0.52**	F			**7.26**				**6.95**				1	U		
sec-Butylbenzene	370	1	U			**9.98**				**9.59**				1	U		
t-Butylbenzene	370	1	U			**0.71**	F			**0.77**	F			1	U		
Toluene	1000	1	U			**0.32**	F			**0.32**	F			1	U		
Trichloroethylene (TCE)	5	**0.62**	F			**0.7**	F			**0.69**	F			**3.72**			
Xylenes, Total	10000	3	U			**2.63**	F			**2.58**	F			3	U		

Table C-6.3 Lower Site Summit - Groundwater Samples, Analytical Detections

Analyte/Methods (Units)	Location Identification / Field Sample Identification / Date Collected / Project Action Limit	MW02LSS 10NSS001GW02LSS 9/1/2010		MW03LSS 10NSS001GW03LSS 8/31/2010		MW03LSS Dup 10NSS201GW03LSS 8/31/2010		MW04LSS 10NSS001GW04LSS 9/1/2010	
Semi-Volatile Organic Compounds (SW8270C) (mg/l)									
2-Methylnaphthalene	0.15	0.0101	U	**0.0735**		**0.0702**		0.0105	U
Acenaphthene	2.2	0.0101	U	**0.0036**	F	**0.0033**	F	0.0105	U
Fluorene	1.5	0.0101	U	**0.0039**	F	**0.0034**	F	0.0105	U
Naphthalene	0.73	0.0101	U	**0.0662**		**0.0657**		0.0105	U

Table C-6.3 Lower Site Summit - Groundwater Samples, Analytical Detections

Location Identification		MW05LSS				MW06LSS				MW07LSS				MW10LSS					
Field Sample Identification		10NSS001GW05LSS				10NSS001GW06LSS				10NSS001GW07LSS				10NSS001GW10LSS					
Date Collected		8/31/2010				9/1/2010				9/1/2010				8/31/2010				9/14/2010	
Analyte/Methods (Units)	**Project Action Limit**																		
Total Petroluem Hydrocarbons (mg/l)																			
Gasoline Range Organics (GRO)/AK101	2.2	0.1	U			0.1	U			**0.383**				0.1	U				
Diesel Range Organics (DRO)/AK102	1.5	**0.405**	F			*0.27*	U			**9.28**				**0.403**	F				
Residual Range Organics (RRO)/AK103	1.1	**0.267**	F,B			0.541	U			**1.03**				**0.335**	F,B				
Metals (SW6020) (µg/l)		**Total**		**Dissolved**		**Total**		**Dissolved**		**Total**		**Dissolved**		**Total**		**Dissolved**		**Total**	**Dissolved**
Arsenic	10	**17.7**		*1.5*	U	*1.5*	U	*1.5*	U	**8.74**		**4.79**	F	**28**		**6.81**		NA	NA
Barium	2000	**964**		**51.9**		**37.2**		**36.1**		**210**		**104**		**475**	J+	**141**	J+	NA	NA
Cadmium	5	**1.07**	F	2	U	2	U	2	U	2	U	2	U	2	U	2	U	NA	NA
Chromium	100	**60.7**		4	U	4	U	4	U	**17**		4	U	**85.7**		**15.9**		NA	NA
Lead	15	**25**		1	U	1	U	1	U	**7.77**		1	U	**27.6**		**6.08**		NA	NA
Mercury/SW7470	2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	NA		NA		0.2	U 0.2 U
Nickel	100	**79.8**		**2.52**		**1.08**	F	**1.13**	F	**15.9**		**3.9**		**66.2**		**14.2**		NA	NA
Selenium	50	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	NA	NA
Silver	100	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	NA	NA
Vanadium	260	**126**		20	U	20	U	20	U	**32.9**		20	U	**137**		**32.7**		NA	NA
Volatile Organic Compounds (SW8260B) (µg/l)																			
1,1,1-Trichloroethane	200	1	U			**6.86**				1	U			1	U				
1,1-Dichloroethane	7	1	U			**0.35**	F			1	U			1	U				
1,2,4-Trimethylbenzene	1800	1	U			1	U			**35.6**	D			1	U				
1,2-Dichloroethane	5	0.5	U			**0.52**				0.5	U			0.5	U				
1,3,5-Trimethylbenzene	1800	1	U			1	U			**16.4**				1	U				
Benzene	5	0.4	U			0.4	U			**5.39**				0.4	U				
Carbon disulfide	3700	2	U			2	U			2	U			2	U				
Chloromethane	66	1	U			1	U			1	U			1	U				
Ethylbenzene	700	1	U			1	U			**7.13**				1	U				
Isopropylbenzene	3700	1	U			1	U			**4.78**				1	U				
m,p-Xylene (Sum of isomers)	10000	2	U			2	U			**19.6**				2	U				
4-Methyl-2-pentanone (MIBK)	2900	10	U			10	U			**4.68**	F			10	U				
Methylene chloride	5	*1*	U			**1.21**	F,B			**1.04**	F,B			**1.1**	F,B				
n-Butylbenzene	370	1	U			1	U			1	U			1	U				
n-Propylbenzene	370	1	U			1	U			**3.56**				1	U				
Naphthalene	730	2	U			2	U			**168**	D			2	U				
o-Xylene	10000	1	U			1	U			**3.13**				1	U				
p-Isopropyltoluene	NE	1	U			1	U			**9.47**				1	U				
sec-Butylbenzene	370	1	U			1	U			**2.87**				1	U				
t-Butylbenzene	370	1	U			1	U			**0.74**	F			1	U				
Toluene	1000	1	U			1	U			**1.28**				1	U				
Trichloroethylene (TCE)	5	1	U			**17.5**				1	U			1	U				
Xylenes, Total	10000	3	U			3	U			**22.7**				3	U				

Table C-6.3 Lower Site Summit - Groundwater Samples, Analytical Detections

Location Identification		MW05LSS		MW06LSS		MW07LSS		MW10LSS		
Field Sample Identification		10NSS001GW05LSS		10NSS001GW06LSS		10NSS001GW07LSS		10NSS001GW10LSS		
Date Collected		8/31/2010		9/1/2010		9/1/2010		8/31/2010		9/14/2010
Analyte/Methods (Units)	**Project Action Limit**									
Semi-Volatile Organic Compounds (SW8270C) (mg/l)										
2-Methylnaphthalene	0.15	0.0108	U	0.0106	U	**0.0466**		0.0105	U	
Acenaphthene	2.2	0.0108	U	0.0106	U	0.0101	U	0.0105	U	
Fluorene	1.5	0.0108	U	0.0106	U	0.0101	U	0.0105	U	
Naphthalene	0.73	0.0108	U	0.0106	U	**0.0611**		0.0105	U	

µg/l micrograms per liter.
mg/l milligrams per liter.
Indicates concentration, LOQ or LOD is above the established project action limit
Italic Italicized result indicates analyte reported to the limit of detection
Bold Bolded result indicates positively identified compound.
AK Alaska Test Method
NA Not analyzed.
NE Not established
B Analyte detected in an associated blank.
D Sample dilution required for analysis; reported values reflect the dilution.
F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the LOQ, but greater than the LOD.
J Data are estimated based on associated quality control data.
UJ Potential low bias, possible false negative.
U Analyte is not detected at the reported LOQ or LOD
J+ Data are estimated, potentially biased high, based on associated quality control data
LOD Limit of detection
LOQ Limit of quantitation
SW U.S. Environmental Protection Agency Solid Waste Method

Table C-7.1 Area A - Surface Soil Samples, Analytical Detections

Location Identification		SS01ARA		SS02ARA		SS02ARA		SS03ARA		SS03ARA		SS03ARA Dup		SS12ARA	
Field Sample Identification		10NSS001SS01ARA		10NSS001SS02ARA		10NSS001SS02ARA		10NSS001SS03ARA		10NSS001SS03ARA		10NSS201SS03ARA		10NSS001SS12ARA	
Date Collected		8/27/2010		8/27/2010		10/14/2010		8/27/2010		10/14/2010		10/14/2010		8/27/2010	
Depth (ft)		0.5		0.5		0.5		0.5		0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**														
Total Petroleum Hydrocarbons (mg/kg)															
Gasoline Range Organics (GRO)/AK101	300	2.86	U	4.24	U	NA		**1.71**	F,B	NA		NA		**1.61**	F,B
Diesel Range Organics (DRO)/AK102	250	**58.5**	F	**370**	D	NA		**2220**	D	NA		NA		**25.9**	
Residual Range Organics (RRO)/AK103	10000	**501**	D,B	**814**	D	NA		**163**	B	NA		NA		**234**	B
Metals (SW6020A) (mg/kg)															
Arsenic	3.9	**6.57**		**7.12**		NA		**6.11**		NA		NA		**8.87**	
Barium	1100	**114**		**77.8**		NA		**69.1**		NA		NA		**71.9**	
Cadmium	5	**0.283**		**0.212**	F	NA		**0.0903**	F	NA		NA		**0.0739**	F
Chromium	25	**36.9**		**39.4**		NA		**46.7**		NA		NA		**34.4**	
Chromium, Hexavalent/SW7196	25	NA		NA		**0.29**	F	NA		**0.32**	F	**0.3**	F	NA	
Lead	400	**10.8**		**51.8**		NA		**7.73**		NA		NA		**12.9**	
Nickel	86	**36**		**39.7**		NA		**52.2**		NA		NA		**31.6**	
Selenium	3.4	**0.217**	F	**0.186**	F	NA		**0.478**	F	NA		NA		**0.243**	F
Silver	11.2	**0.058**	F	**0.0702**	F	NA		**0.0731**	F	NA		NA		**0.0599**	F
Vanadium	710	**53.2**		**53**		NA		**54.2**		NA		NA		**52.7**	
Mercury/SW7471A (µg/kg)	1400	**33.4**	F	**96**		NA		**36.5**	F	NA		NA		**68.9**	
Volatile Organic Compounds (SW8260B) (µg/kg)															
Methylene chloride	16	*35.5*	U	*52.6*	U	NA		*55.8*	U	NA		NA		**125**	F,UB
Toluene	6500	**11.5**	F	84.9	U	NA		90	U	NA		NA		95.4	U
Trichloroethene (TCE)	20	*8.94*	U	*13.2*	U	NA		*14*	U	NA		NA		*14.9*	U
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)															
Benzoic acid	410	1.61	U	**1.31**	F	NA		1.75	U	NA		NA		**1.31**	F

Table C-7.1 Area A - Surface Soil Samples, Analytical Detections

Location Identification		SS15ARA		SS16ARA		SS16ARA		SS17ARA		SS17ARA		SS19ARA		SS19ARA		SS19ARA Dup	
Field Sample Identification		10NSS001SS15ARA		10NSS001SS16ARA		10NSS001SS16ARA		10NSS001SS17ARA		10NSS001SS17ARA		10NSS001SS19ARA		10NSS001SS19ARA		10NSS201SS19ARA	
Date Collected		8/27/2010		8/27/2010		10/14/2010		8/27/2010		10/14/2010		8/27/2010		10/14/2010		8/27/2010	
Depth (ft)		0.5		0.5		0.5		0.5		0.5		0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**																
Total Petroleum Hydrocarbons (mg/kg)																	
Gasoline Range Organics (GRO)/AK101	300	**1.27**	F,B	**1.35**	F,B	NA		3.63	U	NA		**1.62**	F,B	NA		**1.59**	F,B
Diesel Range Organics (DRO)/AK102	250	**29.6**		**206**	D	NA		**1190**	D	NA		**4290**	D	NA		**3400**	D
Residual Range Organics (RRO)/AK103	10000	**17**	F	**655**	D	NA		**301**		NA		**20600**	D	NA		**16300**	D
Metals (SW6020A) (mg/kg)																	
Arsenic	3.9	**5.25**		**8.2**		NA		**8.58**		NA		**8.47**		NA		**8.37**	
Barium	1100	**118**		**105**		NA		**119**		NA		**830**		NA		**908**	
Cadmium	5	**0.0865**	F	**3.06**		NA		**0.138**	F	NA		**1.21**		NA		**1.2**	
Chromium	25	**29.3**		**38.7**		NA		**41.2**		NA		**34.8**		NA		**38.6**	
Chromium, Hexavalent/SW7196	25	NA		NA		0.57	UJ	NA		**0.19**	F	NA		**1.98**		NA	
Lead	400	**5.37**		**21.8**		NA		**8.49**		NA		**108**		NA		**116**	
Nickel	86	**27.7**		**38.6**		NA		**42**		NA		**31.6**		NA		**35.5**	
Selenium	3.4	**0.166**	F	**0.255**	F	NA		**0.234**	F	NA		**0.314**	F	NA		**0.234**	F
Silver	11.2	**0.0382**	F	**0.0731**	F	NA		**0.0525**	F	NA		**0.0764**	F	NA		**0.0672**	F
Vanadium	710	**50.3**		**54.1**		NA		**52.5**		NA		**48.8**		NA		**52.9**	
Mercury/SW7471A (µg/kg)	1400	**16.7**	F	**42.9**	F	NA		**39.3**	F	NA		**77.6**		NA		**51.8**	
Volatile Organic Compounds (SW8260B) (µg/kg)																	
Methylene chloride	16	*42.5*	U	*54.5*	U	NA		*45*	U	NA		*55.1*	U	NA		*56.2*	U
Toluene	6500	**24**	F	87.9	U	NA		72.5	U	NA		88.9	U	NA		90.7	U
Trichloroethene (TCE)	20	*10.7*	U	*13.7*	U	NA		*11.3*	U	NA		**81.8**		NA		**81.6**	
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)																	
Benzoic acid	410	1.62	U	**1.24**	F	NA		1.68	U	NA		50.4	U,D	NA		44.4	U,D

Table C-7.1 Area A - Surface Soil Samples, Analytical Detections

Location Identification		SS23ARA		SS25ARA		SS25ARA		SS25ARA		SS26ARA		SS26ARA		SS27ARA	
Field Sample Identification		10NSS001SS23ARA		10NSS001SS25ARA		10NSS001SS25ARA		10NSS201SS25ARA		10NSS001SS26ARA		10NSS001SS26ARA		10NSS001SS27ARA	
Date Collected		8/27/2010		8/27/2010		10/14/2010		10/14/2010		8/27/2010		10/14/2010		8/27/2010	
Depth (ft)		0.5		0.5		0.5		0.5		0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**														
Total Petroleum Hydrocarbons (mg/kg)															
Gasoline Range Organics (GRO)/AK101	300	4.77	U	2.94	U	NA		NA		3.54	U	NA		3.64	U
Diesel Range Organics (DRO)/AK102	250	**4240**	D	**29.8**		NA		NA		**41.3**	F	NA		*40.6*	U
Residual Range Organics (RRO)/AK103	10000	**3560**	D	**245**		NA		NA		**288**	D	NA		**330**	D
Metals (SW6020A) (mg/kg)															
Arsenic	3.9	**7.46**		**9.01**		NA		NA		**7.54**		NA		**8.88**	
Barium	1100	**121**		**81.7**		NA		NA		**79.9**		NA		**110**	
Cadmium	5	**0.206**	F	**0.0803**	F	NA		NA		0.207	U	NA		**0.122**	F
Chromium	25	**37.6**		**51.4**		NA		NA		**42.7**		NA		**57.4**	
Chromium, Hexavalent/SW7196	25	NA		NA		0.58	U	0.58	U	NA		**1.02**		NA	
Lead	400	**11.5**		**7.6**		NA		NA		**9.72**		NA		**8.47**	
Nickel	86	**38**		**45.9**		NA		NA		**32.9**		NA		**41.9**	
Selenium	3.4	**0.333**	F	**0.444**	F	NA		NA		**0.316**	F	NA		**0.425**	F
Silver	11.2	**0.0596**	F	**0.0851**	F	NA		NA		**0.0904**	F	NA		**0.0735**	F
Vanadium	710	**55.5**		**58.2**		NA		NA		**50.9**		NA		**63.3**	
Mercury/SW7471A (µg/kg)	1400	**69.5**		**57.4**		NA		NA		**68.2**		NA		**47**	F
Volatile Organic Compounds (SW8260B) (µg/kg)															
Methylene chloride	16	*59.2*	U	**90.7**	F,UB	NA		NA		**48.1**	F,UB	NA		**116**	F,UB
Toluene	6500	95.4	U	29.4	U	NA		NA		35.4	U	NA		36.4	U
Trichloroethene (TCE)	20	*14.9*	U	*9.18*	U	NA		NA		*11*	U	NA		*11.4*	U
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)															
Benzoic acid	410	1.72	U	**1.29**	F	NA		NA		**1.52**	F	NA		1.95	U

Table C-7.1 Area A - Surface Soil Samples, Analytical Detections

Location Identification		SS27ARA		SS28ARA		SS28ARA		SS29ARA	
Field Sample Identification		10NSS001SS27ARA		10NSS001SS28A		10NSS001SS28ARA		10NSS001SS29ARA	
Date Collected		10/14/2010		8/27/2010		10/14/2010		9/2/2010	
Depth (ft)		0.5		0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**								
Total Petroleum Hydrocarbons (mg/kg)									
Gasoline Range Organics (GRO)/AK101	300	NA		2.46	U	NA		**1.09**	F
Diesel Range Organics (DRO)/AK102	250	NA		**22.3**	F	NA		**19200**	D
Residual Range Organics (RRO)/AK103	10000	NA		**182**		NA		**161000**	D
Metals (SW6020A) (mg/kg)									
Arsenic	3.9	NA		**7.04**		NA		**8.06**	
Barium	1100	NA		**117**		NA		**98.5**	
Cadmium	5	NA		**0.47**		NA		**0.0861**	F
Chromium	25	NA		**43.3**		NA		**37.7**	
Chromium, Hexavalent/SW7196	25	**0.13**	F	NA		0.55	U	NA	
Lead	400	NA		**27.8**		NA		**9**	
Nickel	86	NA		**40.8**		NA		**36.6**	
Selenium	3.4	NA		**0.34**	F	NA		**0.194**	F
Silver	11.2	NA		**0.11**	F	NA		**0.0344**	F
Vanadium	710	NA		**55.2**		NA		**49.1**	
Mercury/SW7471A (µg/kg)	1400	NA		**110**		NA		43.5	U
Volatile Organic Compounds (SW8260B) (µg/kg)									
Methylene chloride	16	NA		*30.5*	U	NA		**50.4**	UK,F
Toluene	6500	NA		24.6	U	NA		43.8	U
Trichloroethene (TCE)	20	NA		*7.66*	U	NA		*6.83*	U
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)									
Benzoic acid	410	NA		1.71	U	NA		48.1	U,D

µg/kg	micrograms per kilogram.
mg/kg	milligrams per kilogram.
Italic	Italicized result indicates analyte reported to the laboratory detection limit.
	Indicates concentration, LOQ, or LOD is above the established project action limit
Bold	Bolded result indicates positively identified compound.
AK	Alaska Test Method
NA	Not analyzed.
NE	Not established
B	Analyte detected in an associated blank.
D	Sample dilution required for analysis; reported values reflect the dilution.
F	Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the LOQ but greater than the LOD.
J	Data are estimated based on associated quality control data.
UJ	Potential low bias, possible false negative.
UB	Analyte considered not detected, based on an associated blank concentration.
UK	Analyte considered not detected, based on professional judgment of Validation Chemist.
U	Analyte is not detected at the reported LOQ or LOD
J+	Data are estimated, potentially biased high, based on associated quality control data.
J-	Data are estimated, potentially biased low, based on associated quality control data.
LOD	Limit of detection
LOQ	Limit of quantitation
SW	U.S. Environmental Protection Agency Solid Waste Method

Table C-7.2 Area A - Subsurface Soil Samples, Analytical Detections

Location Identification		TP01ARA		TP01ARA		TP01ARA Dup		TP02ARA		TP02ARA	
Field Sample Identification		10NSS001TP01ARA		10NSS002TP01ARA		10NSS201TP01ARA		10NSS001TP02ARA		10NSS002TP02ARA	
Date Collected		8/24/2010		8/24/2010		8/24/2010		8/24/2010		8/24/2010	
Depth (ft)		7		7		7		5		5	
Analyte/Methods (Units)	**Project Action Limit**										
Total Petroleum Hydrocarbons (mg/kg)											
Gasoline Range Organics (GRO)/AK101	300	2	U	1.89	U	1.79	U	2.41	U	2	U
Diesel Range Organics (DRO)/AK102	250	21.2	U	21.1	U	21.3	U	21.6	U	21.8	U
Residual Range Organics (RRO)/AK103	10000	21.2	U	21.1	U	21.3	U	21.6	U	21.8	U
Metals (SW6020A) (mg/kg)											
Arsenic	3.9	**6.99**		**6.71**		**7.16**		**6.97**		**6.14**	
Barium	1100	**115**		**126**		**126**		**149**		**115**	
Cadmium	5	**0.0892**	F	**0.111**	F	**0.113**	F	**0.116**	F	**0.105**	F
Chromium	25	**28.3**		**34.3**		**29.7**		**38.7**		**45.1**	
Chromium, Hexavalent/SW7196	25	NA		NA		NA		NA		NA	
Lead	400	**6.85**		**6.94**		**6.24**		**6.03**		**5.92**	
Nickel	86	**26.5**		**31.1**		**33.3**		**38.1**		**39.3**	
Selenium	3.4	0.496	U	0.509	U	0.513	U	0.51	U	0.509	U
Silver	11.2	**0.0553**	F	**0.0671**	F	**0.0562**	F	**0.0586**	F	**0.0746**	F
Vanadium	710	**41.5**		**52**		**53.5**		**49.6**		**49**	
Mercury/SW7471A (µg/kg)	1400	**56.1**		**44.3**		**51.5**		**64.9**		**88.4**	
Volatile Organic Compounds (SW8260B) (µg/kg)											
1,2,4-Trimethylbenzene	23000	**10.8**	F	18.9	U	17.9	U	24.1	U	20	U
1,3,5-Trimethylbenzene	23000	**9.59**	F	18.9	U	17.9	U	24.1	U	20	U
Ethylbenzene	6900	**38.8**		18.9	U	17.9	U	24.1	U	20	U
m,p-Xylene (Sum of isomers)	63000	**203**		37.9	U	35.8	U	48.1	U	40	U
Methylene chloride	16	*24.8*	U	*23.5*	U	*22.2*	U	*29.8*	U	*24.8*	U
n-Butylbenzene	15000	20	U	18.9	U	17.9	U	24.1	U	20	U
n-Propylbenzene	15000	20	U	18.9	U	17.9	U	24.1	U	20	U
o-Xylene	63000	**57.6**		18.9	U	17.9	U	24.1	U	20	U
Toluene	6500	**26**		18.9	U	17.9	U	24.1	U	20	U
Trichloroethene (TCE)	20	*6.24*	U	*5.91*	U	*5.58*	U	*7.51*	U	*6.23*	U
Xylenes, Total	63000	**261**		56.8	U	53.7	U	72.2	U	59.9	U

Table C-7.2 Area A - Subsurface Soil Samples, Analytical Detections

Location Identification		TP03ARA		TP03ARA		TP04ARA		TP04ARA		TP05ARA	
Field Sample Identification		10NSS001TP03ARA		10NSS002TP03ARA		10NSS001TP04ARA		10NSS002TP04ARA		10NSS001TP05ARA	
Date Collected		8/24/2010		8/24/2010		8/24/2010		8/24/2010		8/24/2010	
Depth (ft)		6		6		5		11		6	
Analyte/Methods (Units)	**Project Action Limit**										
Total Petroleum Hydrocarbons (mg/kg)											
Gasoline Range Organics (GRO)/AK101	300	**2.22**	B	**2.38**	B	**0.842**	F,B	**0.881**	F,B	**1.57**	F,B
Diesel Range Organics (DRO)/AK102	250	**2360**	D	**2120**	D	21.1	U	21.2	U	**98.4**	
Residual Range Organics (RRO)/AK103	10000	**87**		**94.2**		21.1	U	21.2	U	**79.1**	
Metals (SW6020A) (mg/kg)											
Arsenic	3.9	**6.03**		**6.18**		**5.4**		**9.94**		**10.3**	
Barium	1100	**105**		**95.3**		**88.8**		**119**		**67**	
Cadmium	5	**0.114**	F	**0.107**	F	**0.0752**	F	**0.124**	F	**0.105**	F
Chromium	25	**32.9**		**31.3**		**22.4**		**30.4**		**22.3**	
Chromium, Hexavalent/SW7196	25	NA		NA		NA		NA		NA	
Lead	400	**5.93**		**6.42**		**4.58**		**9.05**		**12**	
Nickel	86	**30.4**		**27.9**		**39.6**		**36.9**		**25.6**	
Selenium	3.4	0.502	U	0.5	U	0.525	U	**0.162**	F	0.509	U
Silver	11.2	**0.0524**	F	**0.0506**	F	**0.039**	F	**0.11**		**0.102**	
Vanadium	710	**55.1**		**47.8**		**38.1**		**56.6**		**41.3**	J+
Mercury/SW7471A (µg/kg)	1400	**33.9**	F	**50.5**		**45.5**		**238**		**123**	
Volatile Organic Compounds (SW8260B) (µg/kg)											
1,2,4-Trimethylbenzene	23000	21.3	U	20.9	U	16.5	U	21.7	U	**33.8**	
1,3,5-Trimethylbenzene	23000	21.3	U	20.9	U	16.5	U	21.7	U	**8.3**	F
Ethylbenzene	6900	21.3	U	20.9	U	16.5	U	21.7	U	**11.6**	F
m,p-Xylene (Sum of isomers)	63000	42.6	U	41.7	U	32.9	U	43.5	U	**39.4**	F
Methylene chloride	16	*26.4*	U	*25.9*	U	*20.4*	U	**40.4**	UK,F	**26.8**	UK,F
n-Butylbenzene	15000	21.3	U	20.9	U	16.5	U	21.7	U	20.7	U
n-Propylbenzene	15000	21.3	U	20.9	U	16.5	U	21.7	U	**14.7**	F
o-Xylene	63000	21.3	U	20.9	U	**12.7**	F	21.7	U	**24.9**	
Toluene	6500	21.3	U	20.9	U	**12.2**	F	**15.9**	F	**53.7**	
Trichloroethene (TCE)	20	*6.65*	U	*6.51*	U	**12.4**	F	**71.1**		**16.2**	F
Xylenes, Total	63000	63.9	U	62.6	U	**21.4**	F	65.2	U	**64.3**	

Table C-7.2 Area A - Subsurface Soil Samples, Analytical Detections

Location Identification		TP05ARA		TP06ARA		TP06ARA	TP06ARA		TP06ARA Dup		TP07ARA	
Field Sample Identification		10NSS002TP05ARA		10NSS001TP06ARA		10NSS001TP06ARA	10NSS002TP06ARA		10NSS201TP06ARA		10NSS001TP07ARA	
Date Collected		8/24/2010		10/4/2010		10/14/2010	10/4/2010		10/4/2010		10/4/2010	
Depth (ft)		6		1.5 - 2		1.5 - 2	1.5 - 2		1.5 - 2		3 - 3.5	
Analyte/Methods (Units)	**Project Action Limit**											
Total Petroleum Hydrocarbons (mg/kg)												
Gasoline Range Organics (GRO)/AK101	300	**1.08**	F,B	2.3	U	NA	2.12	U	2.42	U	4.32	U
Diesel Range Organics (DRO)/AK102	250	**84.1**		**6710**	D,J-	NA	**7420**	D	**3550**	D	**28400**	D
Residual Range Organics (RRO)/AK103	10000	**338**		**49900**	D	NA	**52900**	D	**24900**	D	**706**	D
Metals (SW6020A) (mg/kg)												
Arsenic	3.9	**6.84**		**9.17**		NA	**7.63**		**7.15**		**7.47**	
Barium	1100	**94.8**		**130**		NA	**110**		**116**		**113**	
Cadmium	5	**0.111**	F	**0.0784**	F	NA	**0.0894**	F	**0.0708**	F	**0.13**	F
Chromium	25	**25.2**		**44**		NA	**32.1**		**33.9**		**30.3**	
Chromium, Hexavalent/SW7196	25	NA		NA		**0.84**	NA		NA		NA	
Lead	400	**7.75**		**8.63**		NA	**8.17**		**6.74**		**11.7**	
Nickel	86	**27.4**		**42.1**		NA	**35.2**		**37.8**		**29.2**	
Selenium	3.4	0.498	U	**0.445**	F	NA	**0.402**	F	**0.434**	F	**0.469**	F
Silver	11.2	**0.066**	F	**0.137**		NA	**0.0339**	F	**0.0344**	F	**0.0587**	F
Vanadium	710	**45.9**		**55.7**		NA	**51.7**		**45.3**		**54**	
Mercury/SW7471A (µg/kg)	1400	**55.8**		43.4	U	NA	**32.5**	F	**58.5**		53	U
Volatile Organic Compounds (SW8260B) (µg/kg)												
1,2,4-Trimethylbenzene	23000	**31.6**		45.9	U	NA	42.4	U	48.5	U	86.3	U
1,3,5-Trimethylbenzene	23000	19.2	U	23	U	NA	21.2	U	24.2	U	43.2	U
Ethylbenzene	6900	**11.9**	F	23	U	NA	21.2	U	24.2	U	43.2	U
m,p-Xylene (Sum of isomers)	63000	**37.3**	F	45.9	U	NA	42.4	U	48.5	U	86.3	U
Methylene chloride	16	**35.8**	UK,F	*28.5*	U	NA	*26.3*	U	*30.1*	U	*53.5*	U
n-Butylbenzene	15000	**7.89**	F	23	U	NA	21.2	U	24.2	U	43.2	U
n-Propylbenzene	15000	**11.9**	F	23	U	NA	21.2	U	24.2	U	43.2	U
o-Xylene	63000	**9.62**	F	45.9	U	NA	42.4	U	48.5	U	86.3	U
Toluene	6500	**41.2**		45.9	U	NA	42.4	U	48.5	U	86.3	U
Trichloroethene (TCE)	20	**86.6**		*7.17*	U	NA	*6.61*	U	*7.56*	U	*13.5*	U
Xylenes, Total	63000	**47**	F	91.9	U	NA	84.7	U	97	U	173	U

Table C-7.2 Area A - Subsurface Soil Samples, Analytical Detections

Location Identification		TP08ARA		TP09ARA		TP10ARA		TP11ARA	
Field Sample Identification		10NSS001TP08ARA		10NSS001TP09ARA		10NSS001TP10ARA		10NSS001TP11ARA	
Date Collected		10/4/2010		10/4/2010		10/4/2010		10/4/2010	
Depth (ft)		3 - 3.5		3 - 3.5		3 - 3.5		3 - 3.5	
Analyte/Methods (Units)	**Project Action Limit**								
Total Petroleum Hydrocarbons (mg/kg)									
Gasoline Range Organics (GRO)/AK101	300	**2.14**	F	**1.35**	F	**1.44**	F	**0.986**	F
Diesel Range Organics (DRO)/AK102	250	**23700**	D	**117**	F	**8110**	D	115	U,D
Residual Range Organics (RRO)/AK103	10000	**1050**	D	**525**	D,J-	**18900**	D	**198**	D
Metals (SW6020A) (mg/kg)									
Arsenic	3.9	**8.88**		**7.65**		**11.5**		**7.82**	
Barium	1100	**128**		**101**		**206**		**116**	
Cadmium	5	**0.0986**	F	**0.187**	F	**0.97**		**0.101**	F
Chromium	25	**26.2**		**26**		**35.5**		**36.8**	
Chromium, Hexavalent/SW7196	25	NA		NA		NA		NA	
Lead	400	**7.56**		**6.98**		**15.5**		**7.71**	
Nickel	86	**26.2**		**32.2**		**34.8**		**35.8**	
Selenium	3.4	**0.43**	F	**0.565**	F	**0.531**	F	**0.387**	F
Silver	11.2	**0.0611**	F	**0.0619**	F	**0.0685**	F	**0.0657**	F
Vanadium	710	**55**		**53**		**51.7**		**54.6**	
Mercury/SW7471A (µg/kg)	1400	**37.7**	F	**49**		**42.3**	F	**65.4**	
Volatile Organic Compounds (SW8260B) (µg/kg)									
1,2,4-Trimethylbenzene	23000	97.7	U	70.8	U	56.2	U	48.4	U
1,3,5-Trimethylbenzene	23000	48.9	U	35.4	U	28.1	U	24.2	U
Ethylbenzene	6900	48.9	U	35.4	U	28.1	U	24.2	U
m,p-Xylene (Sum of isomers)	63000	97.7	U	70.8	U	56.2	U	48.4	U
Methylene chloride	16	*60.6*	U	*43.9*	U	**52.5**	UK,F	*30*	U
n-Butylbenzene	15000	48.9	U	35.4	U	28.1	U	24.2	U
n-Propylbenzene	15000	48.9	U	35.4	U	28.1	U	24.2	U
o-Xylene	63000	97.7	U	70.8	U	56.2	U	48.4	U
Toluene	6500	97.7	U	70.8	U	56.2	U	48.4	U
Trichloroethene (TCE)	20	*15.2*	U	*11.1*	U	*8.76*	U	**22.3**	F
Xylenes, Total	63000	195	U	142	U	112	U	96.8	U

µg/kg micrograms per kilogram.
mg/kg milligrams per kilogram.
Italic Italicized result indicates analyte reported to the laboratory detection limit.
Indicates concentration, LOQ, or LOD is above the established project action limit
Bold Bolded result indicates positively identified compound.
AK Alaska Test Method
NA Not analyzed.
NE Not established
B Analyte detected in an associated blank.
D Sample dilution required for analysis; reported values reflect the dilution.
F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the LOQ but greater than the LOD.
J Data are estimated based on associated quality control data.
UJ Potential low bias, possible false negative.
UB Analyte considered not detected, based on an associated blank concentration.
UK Analyte considered not detected, based on professional judgment of Validation Chemist.
U Analyte is not detected at the reported LOQ or LOD
J+ Data are estimated, potentially biased high, based on associated quality control data.
J- Data are estimated, potentially biased low, based on associated quality control data.
LOD Limit of detection
LOQ Limit of quantitation
SW U.S. Environmental Protection Agency Solid Waste Method

Table C-9.1 Area C - Surface Soil and Sediment Samples, Analytical Detections

Location Identification		SS01ARC		SS01ARC Dup		SS01ARC		SS01ARC Dup		SS02ARC		SS02ARC	
Field Sample Identification		10NSS001SS01ARC		10NSS201SS01ARC		10NSS001SS01ARC		10NSS201SS01ARC		10NSS001SS02ARC		10NSS001SS02ARC	
Date Collected		8/6/2010		8/6/2010		9/7/2010		9/7/2010		8/6/2010		9/7/2010	
Depth (ft)		0.5		0.5		0.5		0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**												
Total Petroleum Hydrocarbons (mg/kg)													
Diesel Range Organics (DRO)/AK102	250	**55.8**	F	**62.6**	F	NA		NA		21.2	U	NA	
Residual Range Organics (RRO)/AK103	10000	**260**	D	**249**	D	NA		NA		**57.3**		NA	
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	**4.1**		**4.12**		NA		NA		**7.27**		NA	
Barium	1100	**60.8**		**55.4**		NA		NA		**88.9**		NA	
Cadmium	5	**0.168**	F	**0.153**	F	NA		NA		**0.167**	F	NA	
Chromium	25	**32.1**		**26.1**	J+	NA		NA		**28**		NA	
Lead	400	**16.7**		**18.5**		NA		NA		**8.65**		NA	
Nickel	86	**31.9**		**25.8**	J+	NA		NA		**32.8**		NA	
Selenium	3.4	0.674	U	0.687	U	NA		NA		**0.237**	F	NA	
Silver	11.2	**0.0566**	F	**0.0549**	F	NA		NA		**0.0827**	F	NA	
Vanadium	710	**46**		**40.4**	J+	NA		NA		**49.8**		NA	
Mercury/SW7471A (µg/kg)	1400	**25.7**	F	**21.6**	F	NA		NA		**119**		NA	
Volatile Organic Compounds (SW8260B) (µg/kg)													
Toluene	6500	NA		NA		113	U	85.4	U	NA		**16.5**	F
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)													
2-Methylnaphthalene	6.1	**0.231**	F	**0.166**	F	NA		NA		0.277	U	NA	
Acenaphthene	180	**1.14**		**0.576**		NA		NA		0.277	U	NA	
Anthracene	3000	**1.24**		**0.653**		NA		NA		0.277	U	NA	
Benzo(a)anthracene	3.6	**1.8**		**0.95**		NA		NA		0.277	U	NA	
Benzo(a)pyrene	0.49	**1.62**		**0.822**		NA		NA		*0.0865*	U	NA	
Benzo(b)fluoranthene	4.9	**2.08**		**0.9**		NA		NA		0.277	U	NA	
Benzo(g,h,i)perylene	1400	**0.794**		**0.432**		NA		NA		0.277	U	NA	
Benzo(k)fluoranthene	49	**0.599**		**0.414**		NA		NA		0.277	U	NA	
bis(2-ethylhexyl) Phthalate	13	**0.126**	F	0.339	U	NA		NA		0.277	U	NA	
Chrysene	360	**2.19**		**1.05**		NA		NA		0.277	U	NA	
Di-n-octylphthalate	3800	0.36	U	0.339	U	NA		NA		0.277	U	NA	
Dibenzofuran	11	**0.767**		**0.383**		NA		NA		0.277	U	NA	
Fluoranthene	1400	**4.77**		**2.3**		NA		NA		0.277	U	NA	
Fluorene	220	**1.24**		**0.662**		NA		NA		0.277	U	NA	
Indeno(1,2,3-c,d)Pyrene	4.9	**0.818**		**0.405**		NA		NA		0.277	U	NA	
Naphthalene	20	**0.542**		**0.239**	F	NA		NA		0.277	U	NA	
Phenanthrene	3000	**6.49**		**3.09**		NA		NA		0.277	U	NA	
Pyrene	1000	**4.36**		**2.03**		NA		NA		0.277	U	NA	

Table C-9.1 Area C - Surface Soil and Sediment Samples, Analytical Detections

Location Identification		SS03ARC		SS03ARC		SD01ARC		SD01ARC	
Field Sample Identification		10NSS001SS03ARC		10NSS001SS03ARC		10NSS001SD01ARC		10NSS201SD01ARC	
Date Collected		8/6/2010		9/7/2010		8/20/2010		8/20/2010	
Depth (ft)		0.5		0.5		0		0	
Analyte/Methods (Units)	**Project Action Limit**								
Total Petroleum Hydrocarbons (mg/kg)									
Diesel Range Organics (DRO)/AK102	250	22.7	U	NA		**34.3**		**31**	
Residual Range Organics (RRO)/AK103	10000	**67.3**		NA		**90.2**	J+	**96.9**	
Metals (SW6020A) (mg/kg)									
Arsenic	3.9	**6.98**		NA		**5.77**		**5.15**	
Barium	1100	**80.7**		NA		**52.3**		**53.1**	
Cadmium	5	**0.108**	F	NA		**0.12**	F	**0.0969**	F
Chromium	25	**35.6**		NA		**29.7**		**27.7**	
Lead	400	**8.44**		NA		**11.8**		**8.5**	
Nickel	86	**37.7**		NA		**31.9**		**32.5**	
Selenium	3.4	**0.25**	F	NA		**0.208**	F	**0.284**	F
Silver	11.2	**0.0693**	F	NA		**0.0471**	F	**0.0467**	F
Vanadium	710	**57.9**		NA		**50.8**	J+	**48**	
Mercury/SW7471A (µg/kg)	1400	**46**		NA		**44.5**	F	**42.1**	F
Volatile Organic Compounds (SW8260B) (µg/kg)									
Toluene	6500	NA		41.7	U	22.9	U	25.3	U
Semi-Volatile Organic Compounds (SW8270C) (mg/kg)									
2-Methylnaphthalene	6.1	0.286	U	NA		0.286	U	0.215	U
Acenaphthene	180	0.286	U	NA		0.286	U	0.215	U
Anthracene	3000	0.286	U	NA		0.286	U	0.215	U
Benzo(a)anthracene	3.6	0.286	U	NA		0.286	U	**0.0707**	F
Benzo(a)pyrene	0.49	*0.0891*	*U*	NA		*0.0892*	U	0.215	U
Benzo(b)fluoranthene	4.9	0.286	U	NA		0.286	U	0.215	U
Benzo(g,h,i)perylene	1400	0.286	U	NA		0.286	U	0.215	U
Benzo(k)fluoranthene	49	0.286	U	NA		0.286	U	0.215	U
bis(2-ethylhexyl) Phthalate	13	0.286	U	NA		**0.121**	F	**0.12**	F
Chrysene	360	0.286	U	NA		0.286	U	**0.0772**	F
Di-n-octylphthalate	3800	0.286	U	NA		**0.239**	F	**0.182**	F
Dibenzofuran	11	0.286	U	NA		0.286	U	0.215	U
Fluoranthene	1400	0.286	U	NA		0.286	U	**0.171**	F
Fluorene	220	0.286	U	NA		0.286	U	0.215	U
Indeno(1,2,3-c,d)Pyrene	4.9	0.286	U	NA		0.286	U	0.215	U
Naphthalene	20	0.286	U	NA		0.286	U	0.215	U
Phenanthrene	3000	0.286	U	NA		0.286	U	**0.179**	F
Pyrene	1000	0.286	U	NA		0.286	U	**0.146**	F

µg/kg micrograms per kilogram.
mg/kg milligrams per kilogram.
Italic Italicized result indicates analyte reported to the laboratory detection limit.
Indicates concentration, LOQ, or LOD is above the established project action limit
Bold Bolded result indicates positively identified compound.
AK Alaska Test Method
NA Not analyzed.
NE Not established
B Analyte detected in an associated blank.
D Sample dilution required for analysis; reported values reflect the dilution.
F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the LOQ but greater than the LOD.
J Data are estimated based on associated quality control data.
UJ Potential low bias, possible false negative.
UB Analyte considered not detected, based on an associated blank concentration.
UK Analyte considered not detected, based on professional judgment of Validation Chemist.
U Analyte is not detected at the reported LOQ or LOD
J+ Data are estimated, potentially biased high, based on associated quality control data.
J- Data are estimated, potentially biased low, based on associated quality control data.
LOD Limit of detection
LOQ Limit of quantitation
SW U.S. Environmental Protection Agency Solid Waste Method

Table C-9.2 Area C - Surface Water Samples, Analytical Detections

Location Identification		SW01ARC				SW01ARC Dup				SW01ARC				SW01ARC Dup				SW02ARC			
Field Sample Identification		10NSS001SW01ARC				10NSS201SW01ARC				11NSS001SW01ARC				11NSS201SW01ARC				11NSS001SW02ARC			
Date Collected		8/20/2010				8/20/2010				7/7/2011				7/7/2011				7/7/2011			
Analyte/Methods (Units)	**Project Action Limit**	**Total**		**Dissolved**		**Total**		**Dissolved**		**Total**		**Dissolved**		**Total**		**Dissolved**		**Total**		**Dissolved**	
Metals (SW6020) (µg/l)																					
Barium	2000	**8.05**		**8.58**		**8.34**		**8.13**		**9.63**		**8.99**		**9.45**		**9.56**		**9.59**		**10.9**	
Chromium	100	4	U	4	U	4	U	4	U	<4	U	**1.51**	F,B	<4	U	<4	U	**1.26**	F,B	<4	U
Mercury/SW7470	2	0.2	UJ	0.2	U	0.2	U	0.2	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U
Nickel	100	2	U	2	U	2	U	**1.05**	F	**0.889**	F	**0.817**	F	**0.828**	F	**0.906**	F	**0.758**	F	**0.859**	F

Table C-9.2 Area C - Surface Water Samples, Analytical Detections

Analyte/Methods (Units)	Location Identification / Field Sample Identification / Date Collected / Project Action Limit	SW03ARC 11NSS001SW03ARC 7/7/2011				SW04ARC 11NSS001SW04ARC 7/7/2011				SW05ARC 11NSS001SW05ARC 7/7/2011				SW06ARC 11NSS001SW06ARC 7/7/2011				SW07ARC 11NSS001SW07ARC 7/7/2011			
Metals (SW6020) (µg/l)		**Total**		**Dissolved**		**Total**		**Dissolved**		**Total**		**Dissolved**		**Total**		**Dissolved**		**Total**		**Dissolved**	
Barium	2000	**10.5**		**10.5**		**9.31**		**9.69**		**5.85**		**6.5**		**9.74**		**12.3**		**9.67**		**10.4**	
Chromium	100	**1.38**	F,B	<4	U	**1.21**	F,B	<4	U	**2.06**	F,B	<4	U	**1.45**	F,B	<4	U	<4	U	<4	U
Mercury/SW7470	2	<1	U	**0.322**	F	<1	U	**0.438**	F	<1	U	**0.823**	F	<1	U	<1	U	<1	U	<1	U
Nickel	100	**0.727**	F	**1.21**	F	**0.813**	F	**0.81**	F	**1.01**	F	**1.21**	F	**0.782**	F	**0.753**	F	**0.688**	F	**0.87**	F

µg/l micrograms per liter.
mg/l milligrams per liter.
Indicates concentration, LOQ or LOD is above the established project action limit
Italic Italicized result indicates analyte reported to the limit of detection
Bold Bolded result indicates positively identified compound.
AK Alaska Test Method
NA Not analyzed.
NE Not established
B Analyte detected in an associated blank.
D Sample dilution required for analysis; reported values reflect the dilution.
F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the LOQ, but greater than the LOD.
J Data are estimated based on associated quality control data.
UJ Potential low bias, possible false negative.
U Analyte is not detected at the reported LOQ or LOD
J+ Data are estimated, potentially biased high, based on associated quality control data.
LOD Limit of detection
LOQ Limit of quantitation
SW U.S. Environmental Protection Agency Solid Waste Method

Table C-11.1 Background Sampling Area - Surface Soil Samples, Analytical Detections

	Location Identification	SS01BCK		SS02BCK		SS03BCK		SS04BCK		SS05BCK		SS06BCK	
	Field Sample Identification	10NSS001SS01BCK		10NSS001SS02BCK		10NSS001SS03BCK		10NSS001SS04BCK		10NSS001SS05BCK		10NSS001SS06BCK	
	Date Collected	9/9/2010		9/9/2010		9/9/2010		9/9/2010		9/9/2010		9/9/2010	
	Depth (ft)	0.5		0.5		0.5		0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**												
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	**6.93**		**8.12**		**14.2**		**6.68**		**7.43**		**4.9**	
Barium	1100	**79.5**		**71.3**		**81.2**		**59**		**91.7**		**68**	
Cadmium	5	0.273	U	0.288	U	0.255	U	**0.0751**	F	0.308	U	0.42	U
Chromium	25	**27.7**		**27.5**		**20.4**		**30.5**		**20.5**		**12.2**	
Lead	400	**6.89**		**7.53**		**12.5**		**8.41**		**8.86**		**6.06**	
Nickel	86	**23.5**		**21.1**		**18**		**27.1**		**18.8**		**8.67**	
Selenium	3.4	**0.424**	F	**0.579**	F	**0.959**		**0.339**	F	**0.394**	F	**0.723**	F
Silver	11.2	**0.0776**	F	**0.0667**	F	**0.0783**	F	0.112	U	**0.0746**	F	**0.166**	F
Vanadium	710	**67.8**		**68.5**		**61.6**		**62.1**		**71.6**		**40.5**	
Mercury/SW7471A (µg/kg)	1400	**49.5**	F	**24.3**	F	**75.4**		45.7	U	**68.6**		**59.2**	F

Table C-11.1 Background Sampling Area - Surface Soil Samples, Analytical Detections

	Location Identification	SS07BCK		SS08BCK		SS09BCK		SS10BCK		SS11BCK		SS12BCK	
	Field Sample Identification	10NSS001SS07BCK		10NSS001SS08BCK		10NSS001SS09BCK		10NSS001SS10BCK		10NSS001SS11BCK		10NSS001SS12BCK	
	Date Collected	9/9/2010		9/9/2010		9/9/2010		9/9/2010		9/9/2010		9/9/2010	
	Depth (ft)	0.5		0.5		0.5		0.5		0.5		0.5	
Analyte/Methods (Units)	**Project Action Limit**												
Metals (SW6020A) (mg/kg)													
Arsenic	3.9	**6.84**		**8.32**		**10.3**		**5.42**		**7.05**		**4.44**	
Barium	1100	**41.3**		**57.2**		**85.3**		**92.3**		**119**		**90.1**	
Cadmium	5	0.214	U	**0.0797**	F	0.306	U	**0.0712**	F	**0.142**	F	**0.0922**	F
Chromium	25	**19.1**		**16.4**		**17.9**		**20.5**		**34.3**		**38**	
Lead	400	**5.89**		**9.39**		**8.4**		**5.24**		**7.88**		**5.09**	
Nickel	86	**16.8**		**16.8**		**19.7**		**21.9**		**28.6**		**27.9**	
Selenium	3.4	**0.352**	F	**0.412**	F	**0.665**	F	**0.29**	F	**0.333**	F	0.516	U
Silver	11.2	0.107	U	**0.0631**	F	**0.107**	F	0.107	U	**0.0668**	F	**0.0337**	F
Vanadium	710	**54.6**		**59.1**		**48**		**48**		**72.3**		**74.3**	
Mercury/SW7471A (µg/kg)	1400	45.1	U	45.7	U	**38.1**	F	45.1	U	47.3	U	43.9	U

mg/kg milligrams per kilogram.
Italic Italicized result indicates analyte reported to the laboratory detection limit.
Indicates concentration, LOQ, or LOD is above the established project action limit
Bold Bolded result indicates positively identified compound.
F Analyte was positively identified but the reported concentration is estimated; reported concentration is less than the LOQ but greater than the LOD.
U Analyte is not detected at the reported LOQ or LOD
LOD Limit of detection
LOQ Limit of quantitation
SW U.S. Environmental Protection Agency Solid Waste Method

APPENDIX D

Site Photos

D1 USS Site Photos

SS11USS

SS12USS

Septic System Pumphouse

TP03USS

TP03USS Post Excavation

UPPER SITE SUMMIT - SITE PHOTOGRAPHS

SS01USS

SS01USS

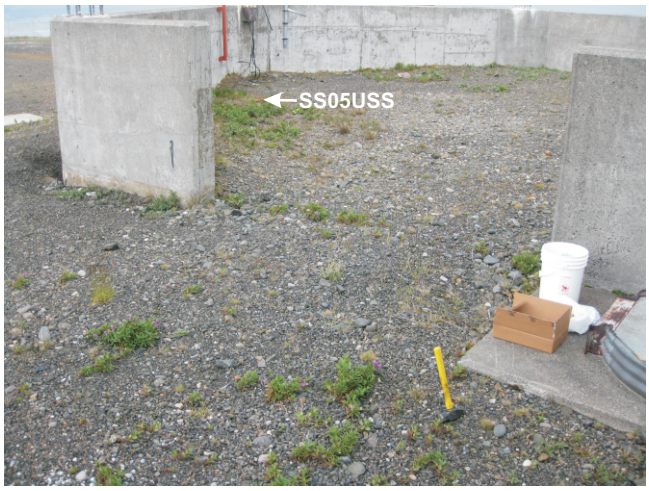
SS02USS

SS02USS

SS03USS

SS03USS

SS04USS



SS05USS

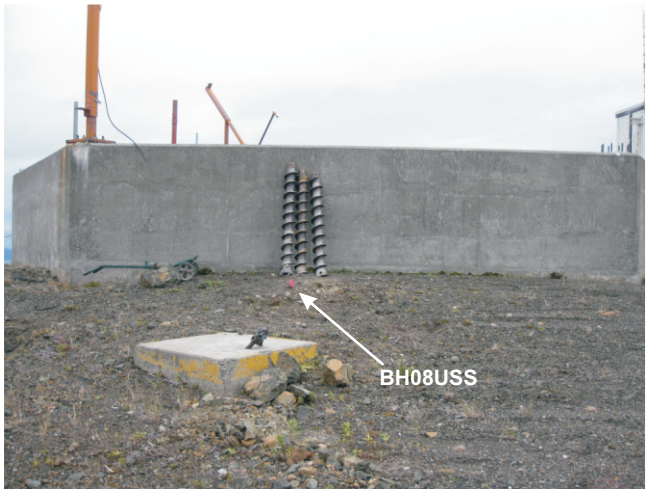
SS05USS

SS06USS

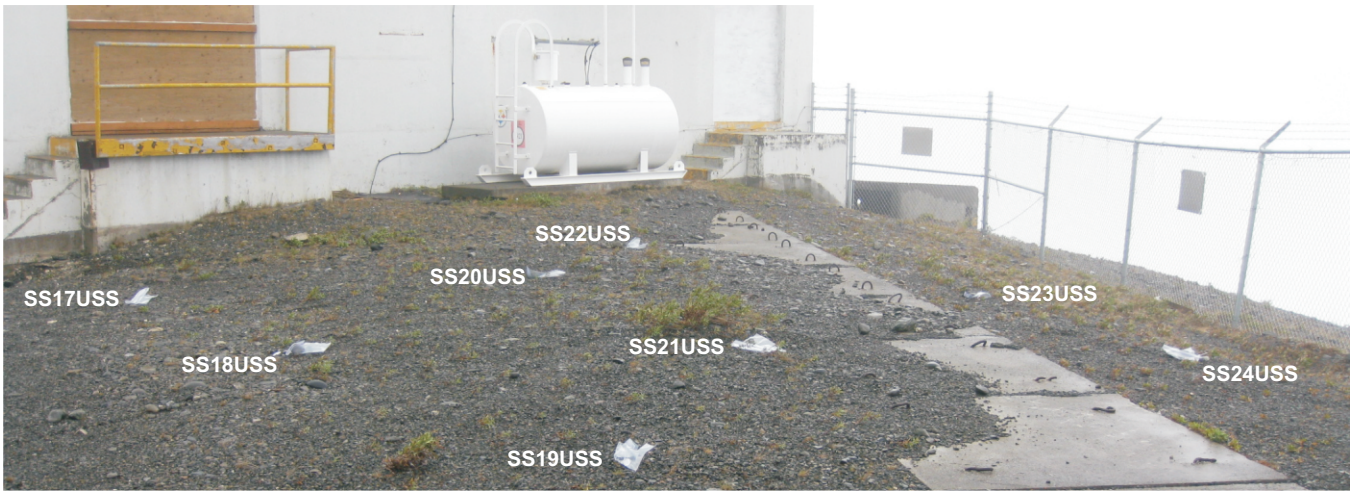
SS06USS

UPPER SITE SUMMIT - SITE PHOTOGRAPHS

BH08USS



BH08USS

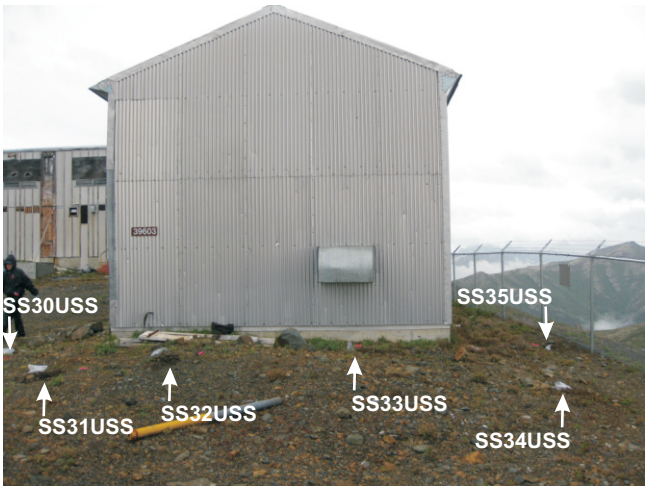


SS17USS to SS24USS (field screening): SS17USS, SS18USS, and SS22USS (analytical samples)

TP01USS

TP01USS (post excavation)

SS25USS to SS29USS (field screening)

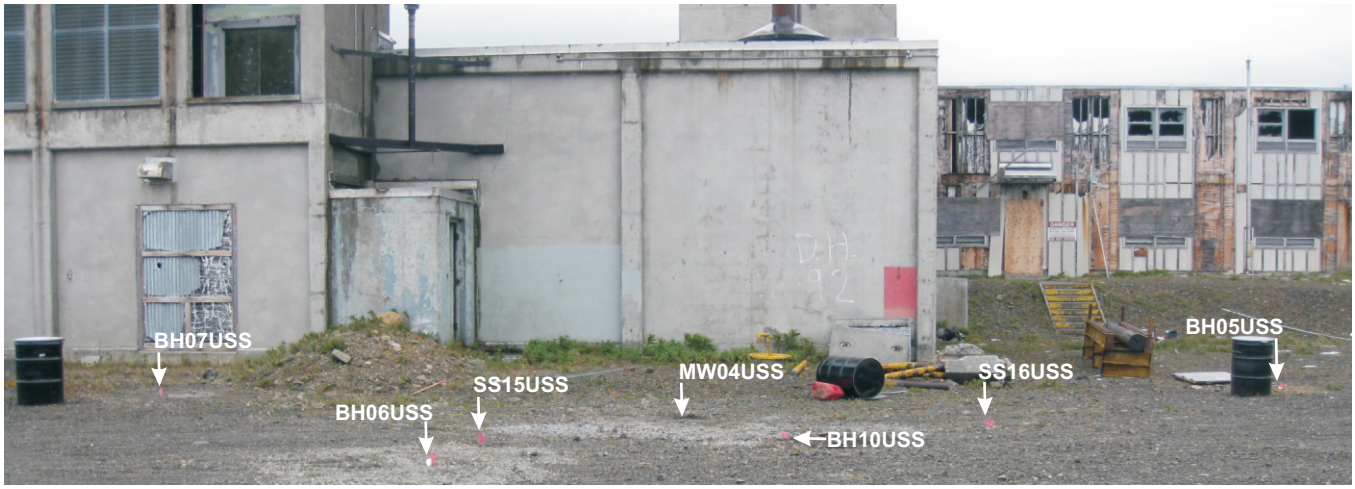


SS30USS to SS35USS (field screening)

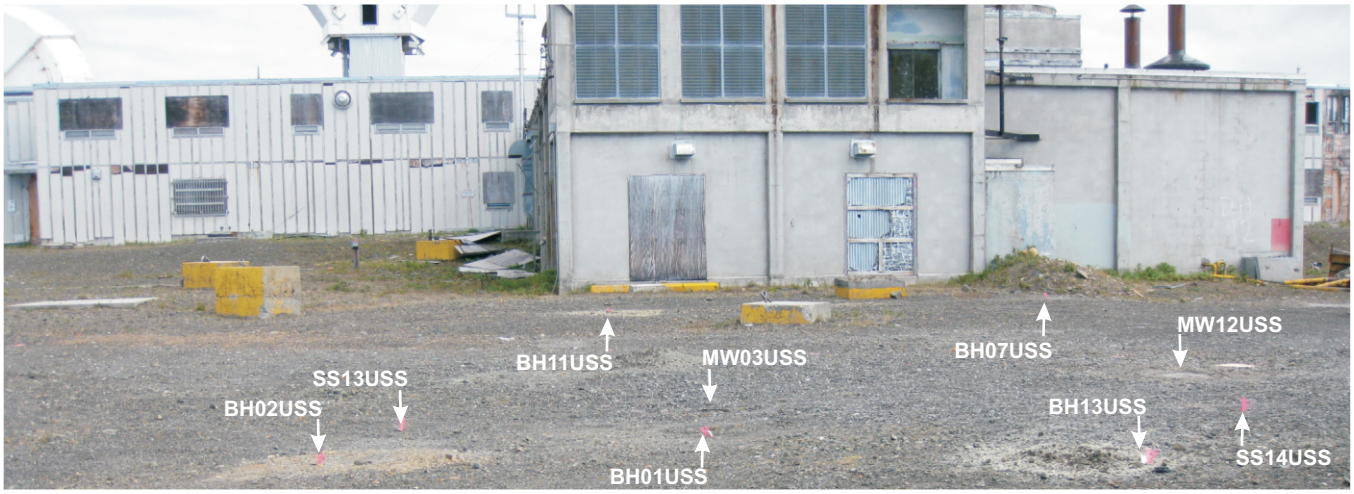
SS35USS to SS40USS (field screening)

TP02USS

TP02USS (post excavation)

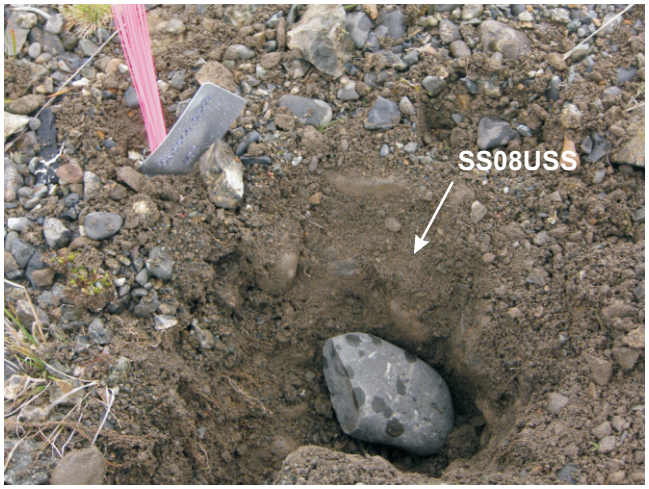


Former UST-57 (gasoline) Area Overview



Former UST-112 (diesel) Area Overview

SS07USS - Outfall



SS08USS

SS09USS

SS10USS Outfall

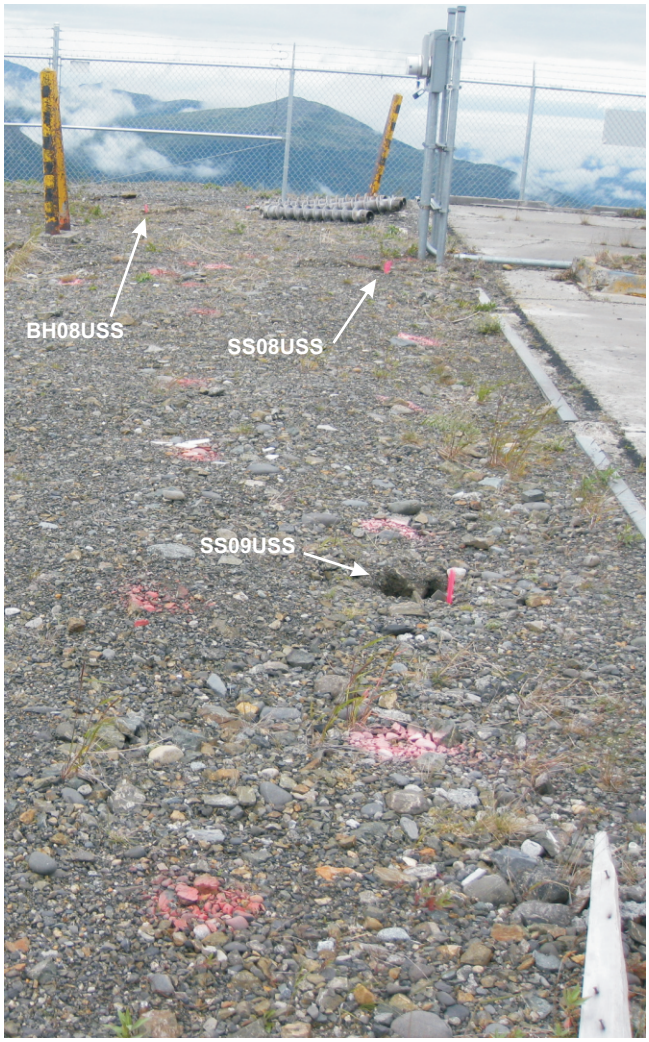
SS10USS

TP04USS

UPPER SITE SUMMIT - SITE PHOTOGRAPHS

TP04USS

TP04USS



BH08USS, SS08USS, and SS09USS

BH08USS

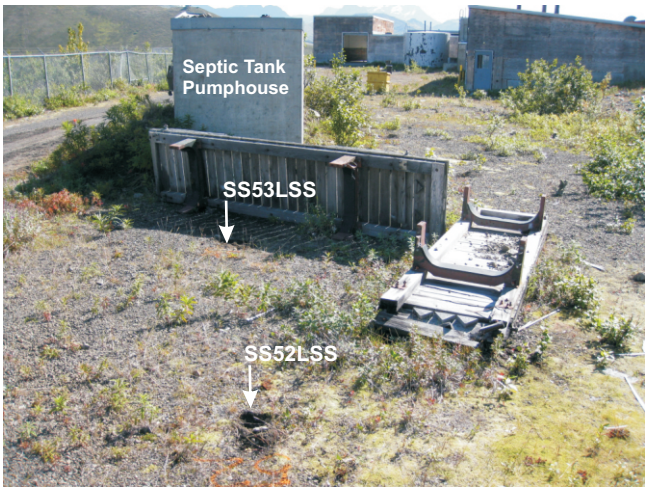
D2 LSS Site Photos

SS01LSS

SS02LSS

LOWER SITE SUMMIT - SITE PHOTOGRAPHS

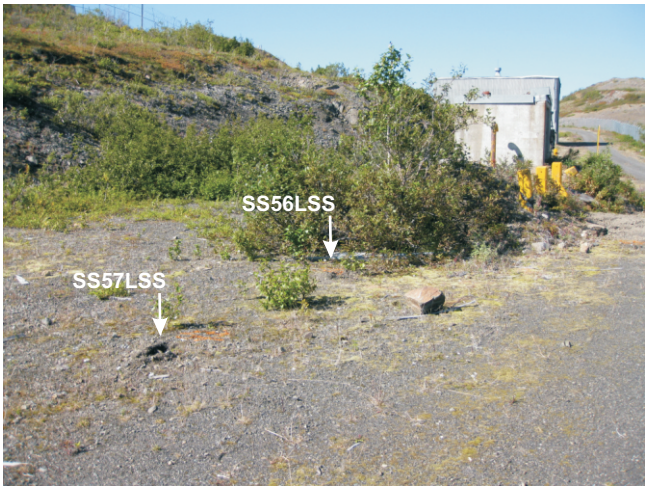
SS03LSS



SS52LSS (field screening only); SS53LSS

SS54LSS (field screening only)

SS55LSS (field screening only)



SS56LSS; SS57LSS (field screening only)

SS58LSS (field screening only)

SS59LSS

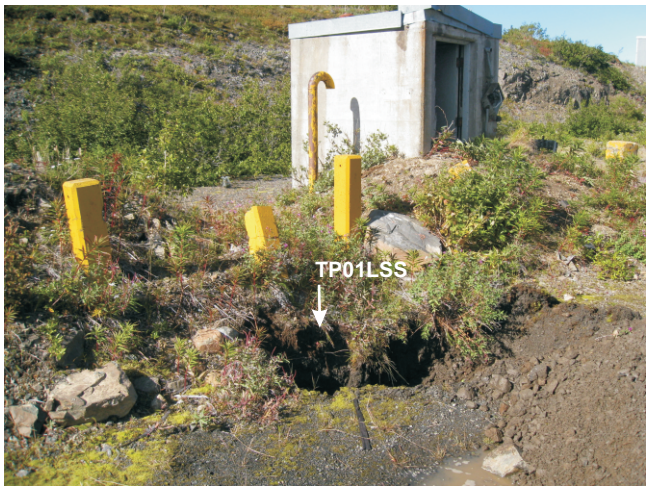
Septic Outfall Road Marker

SS60LSS

SS60LSS

SS61LSS

SS61LSS



TP01LSS

TP01LSS

TP01LSS

TP01LSS (post excavation)

TP01LSS (post excavation)

SS36LSS through SS38LSS (field screening only)

SS39LSS (field screening only)

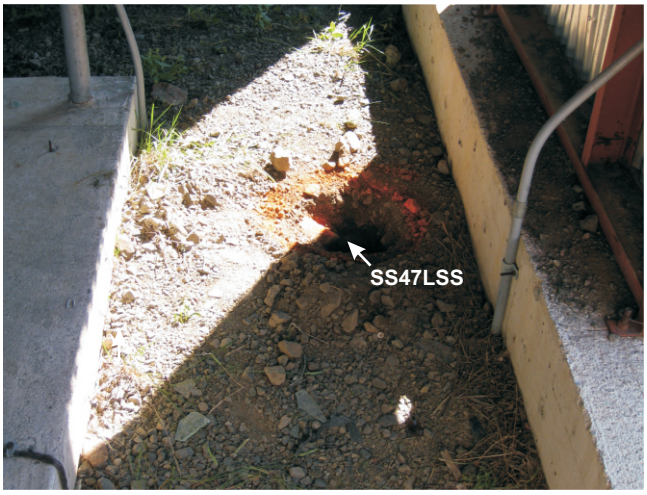
SS40LSS and SS41LSS

SS42LSS (field screening only)

SS043LSS (field screening only)

SS043LSS (field screening only)

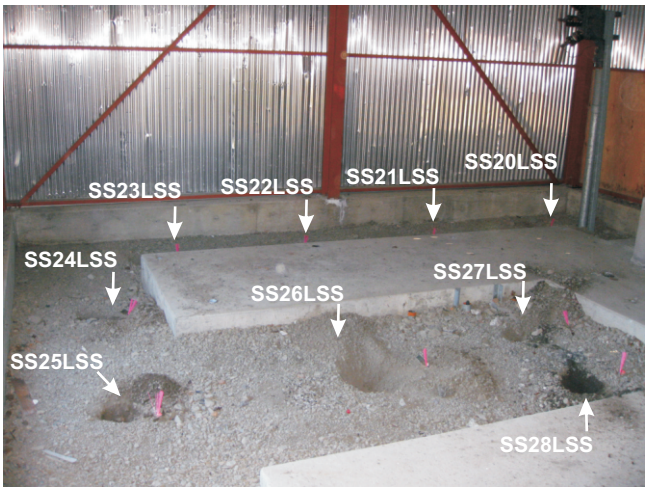
SS45LSS; SS43LSS, SS44LSS, SS46LSS, and SS49LSS (field screening only)



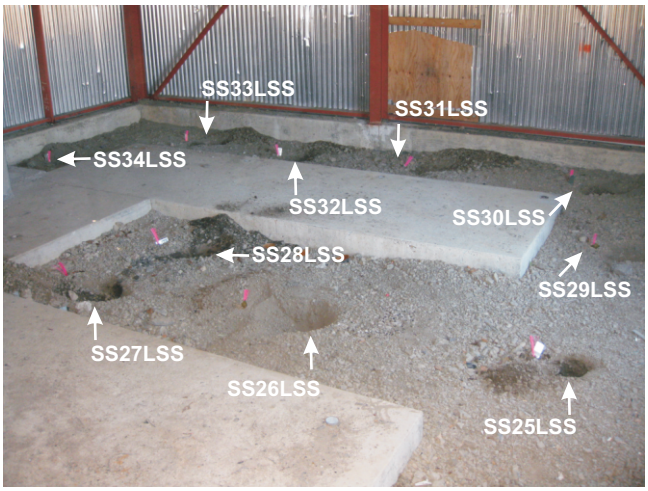
SS47LSS (field screening only)

SS48LSS and SS49LSS (field screening only)

SS50LSS; SS51LSS (field screening only)



SS20LSS through SS28LSS (field screening)



SS25LSS through SS34LSS (field screening)

SS24LSS

SS28LSS

SS35LSS (field screening only)

SS07LSS

SS08LSS

SS07LSS

SS09LSS (South Bay of Launch Pad 2)

SS10LSS (North Bay of Launch Pad 2)

TP03LSS

TP03LSS

TP03LSS (post excavation)

SS13LSS (North Bay of Launch Pad 1)

SS12LSS (South Bay of Launch Pad 1)

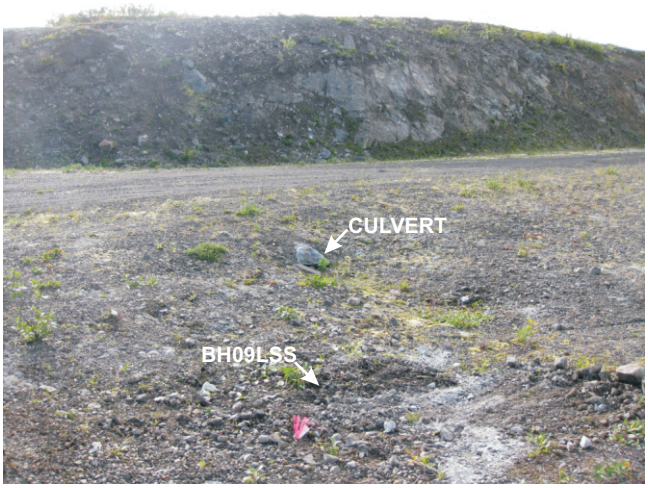
SS11LSS (culvert outfall)

SS14LSS (drainage from culvert outfall SS11LSS)

TP02LSS (setup on excavation)

TP02LSS (post excavation)

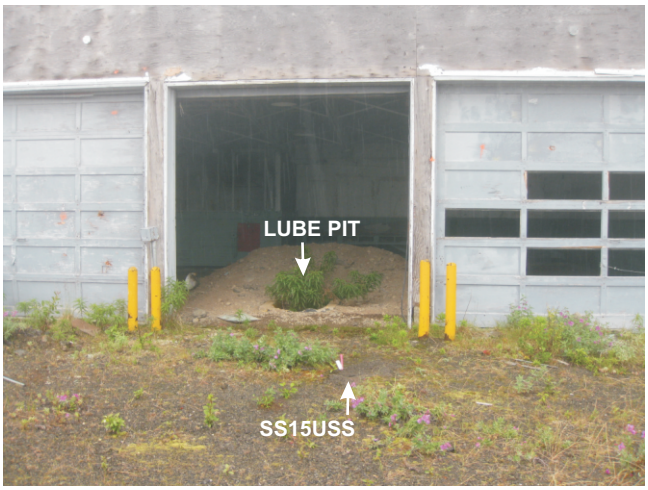
BH09LSS (looking west)



BH09LSS (looking east)

BH09LSS (shallow bedrock)

Vehicle Maintenance Shop Overview (SS15LSS through SS18LSS)

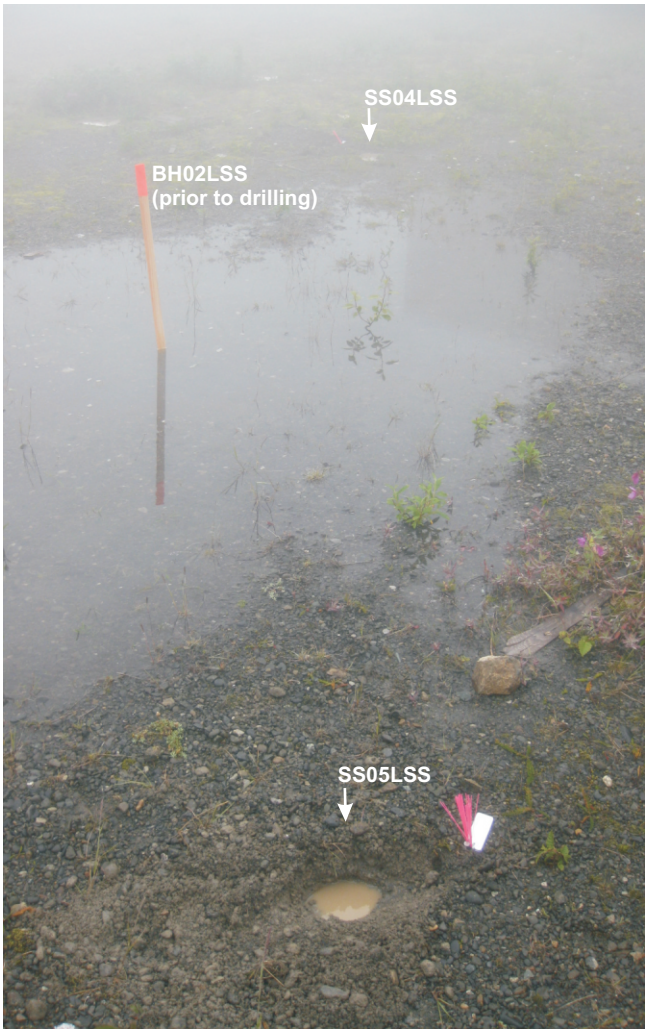


SS15LSS

SS19LSS

BH01LSS

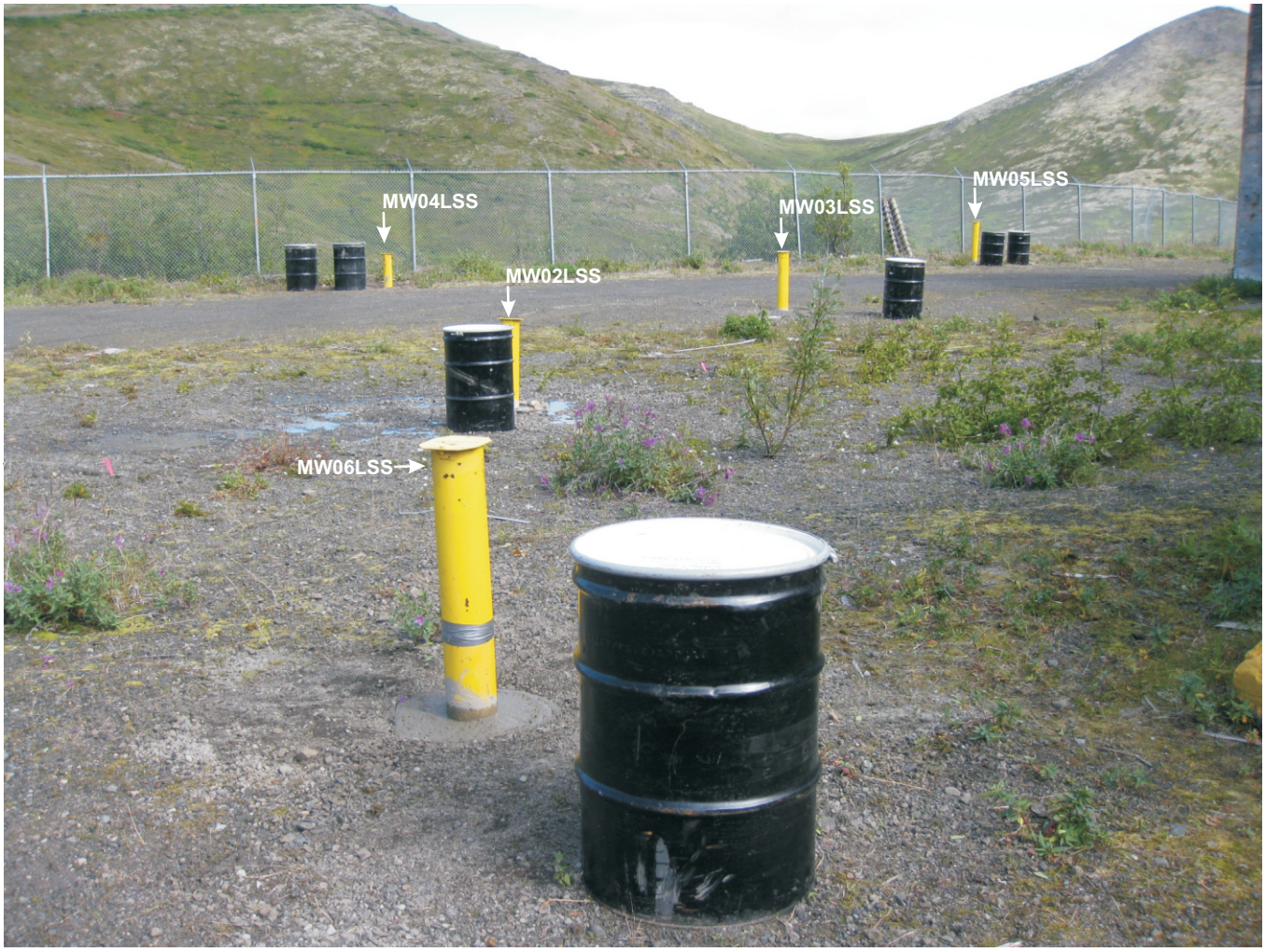
SS04LSS



SS04LSS, SS05LSS, and BH02LSS location

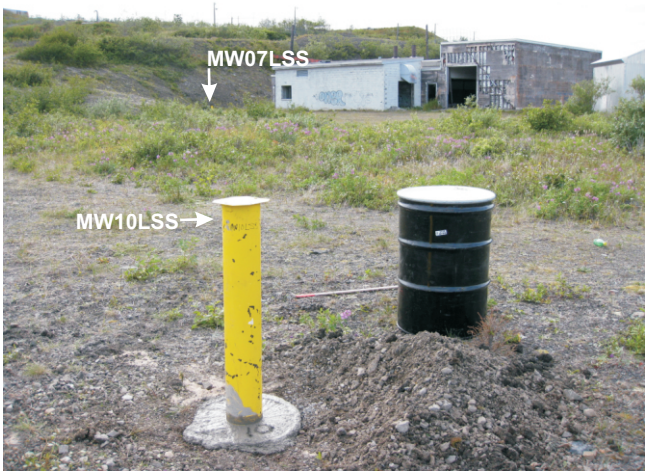
SS06LSS

SS06LSS



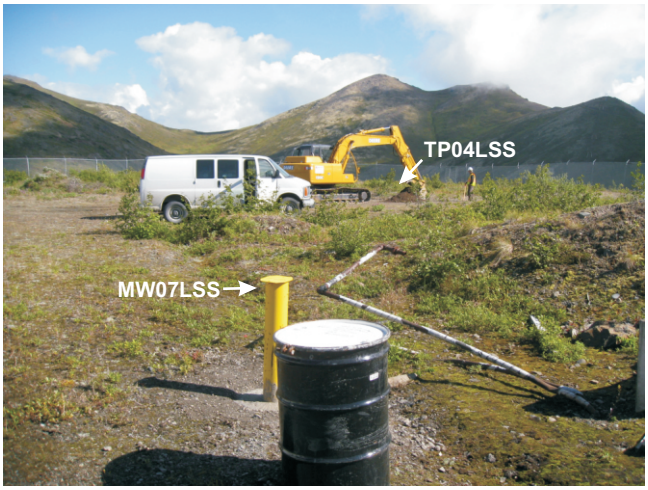
Launch Control Building Overview (MW02LSS through MW06LSS)

MW07LSS and TP05LSS

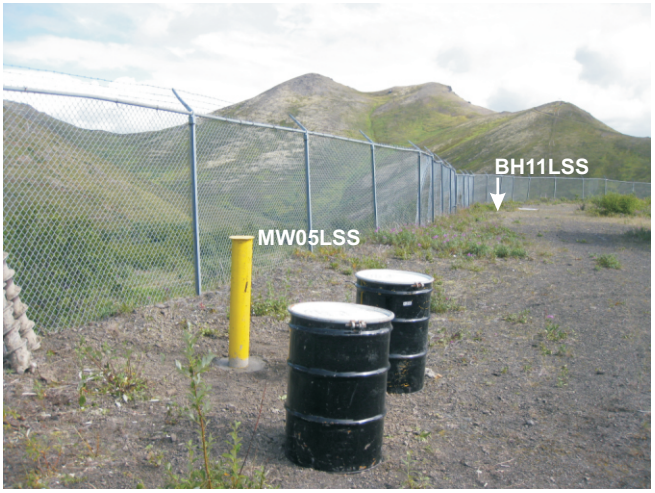


MW10LSS and MS07LSS

Launch Control Building Overview (BH01LSS, MW02LSS through MW06LSS)



MW07LSS and TP04LSS



MW05LSS and BH11LSS

TP04LSS

TP05LSS and MW07LSS

TP05LSS, TP06LSS, and MW07LSS

TP06LSS

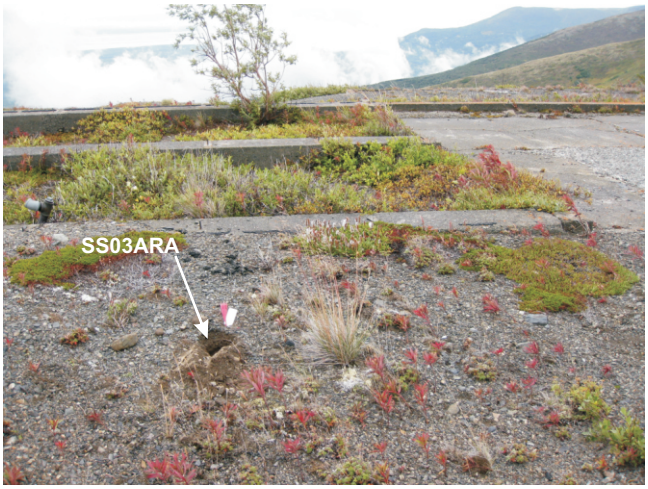
TP06LSS, TP07LSS, TP08LSS, and MW07LSS

TP09LSS, TP10LSS, and MW06LSS

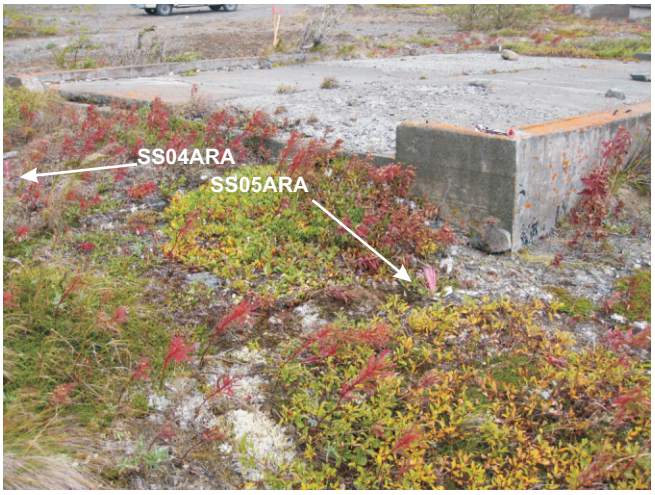
D3 Area A Site Photos

SS01ARA

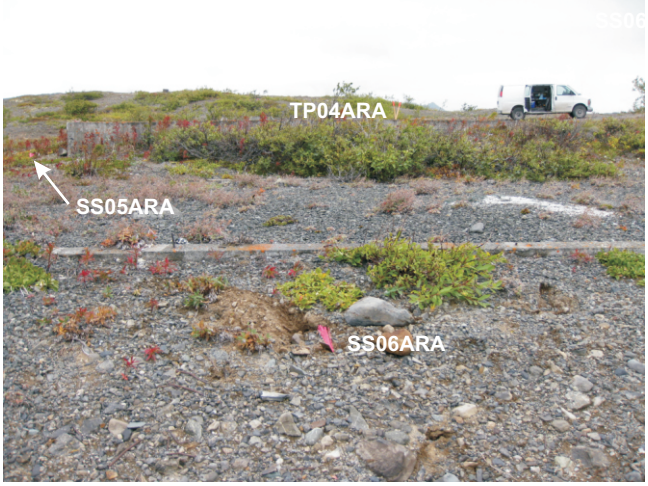
SS02ARA



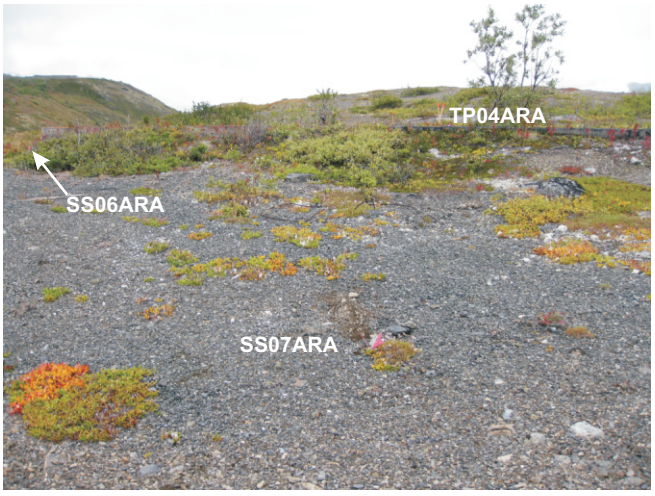
SS03ARA



SS04ARA AND SS05ARA (field screening only)



SS06ARA (field screening only)

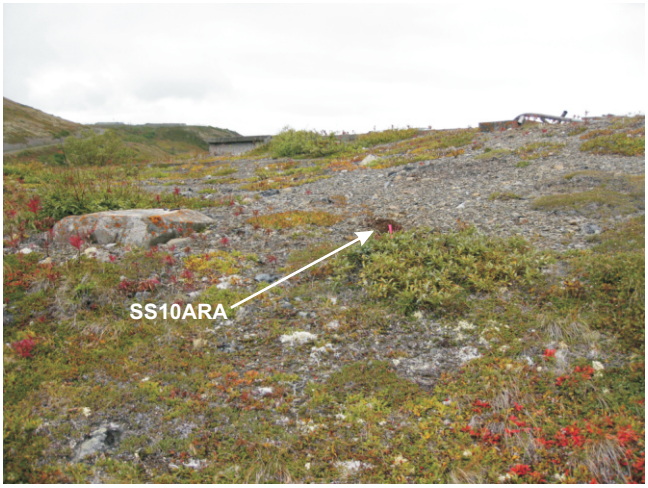


SS07ARA (FIELD SCREENING ONLY)

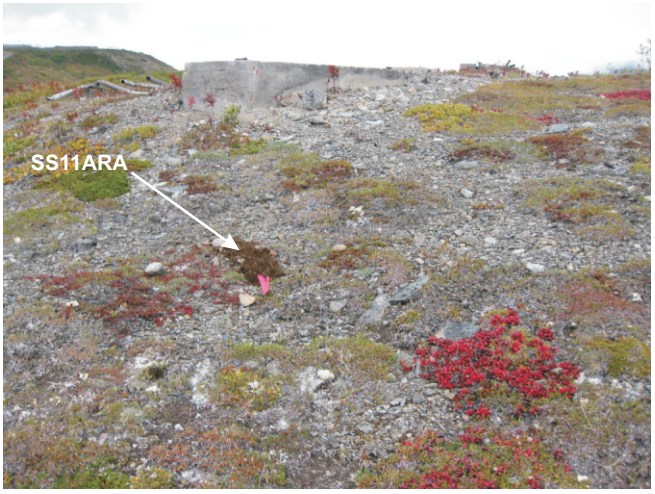
AREA A - SITE PHOTOGRAPHS

SS08ARA (field screening only)

SS09ARA (field screening only)

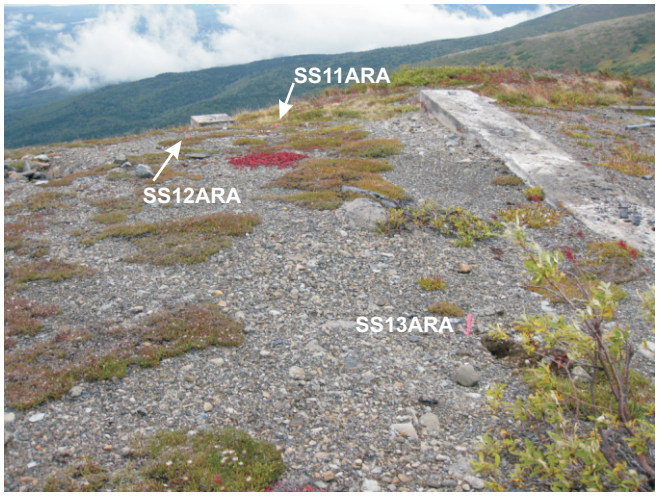


SS010ARA (field screening only)



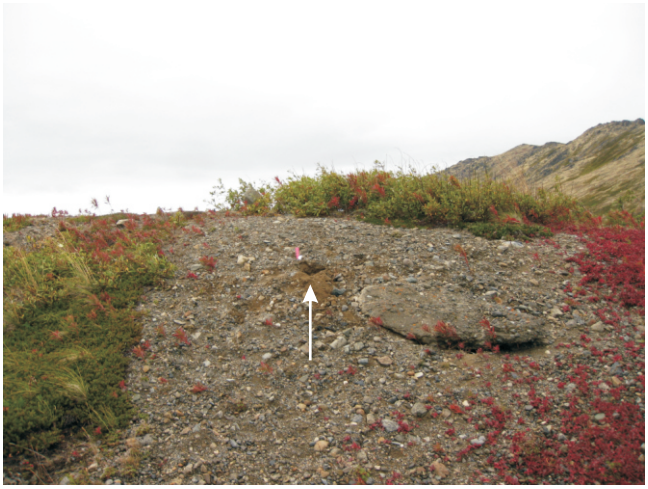
SS11ARA (field screening only)

SS12ARA

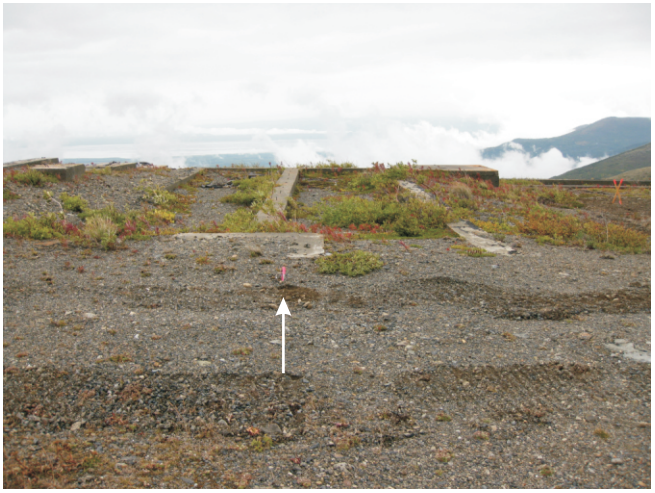


SS11ARA, SS12ARA,and
SS13ARA (field screening only)

AREA A - SITE PHOTOGRAPHS

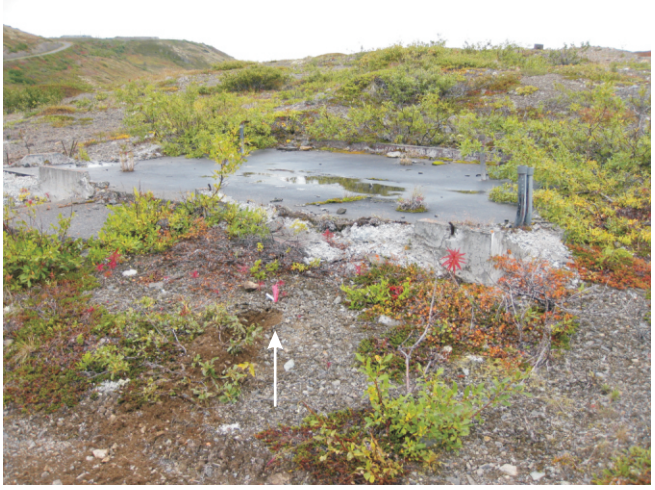


SS14ARA (field screening only)

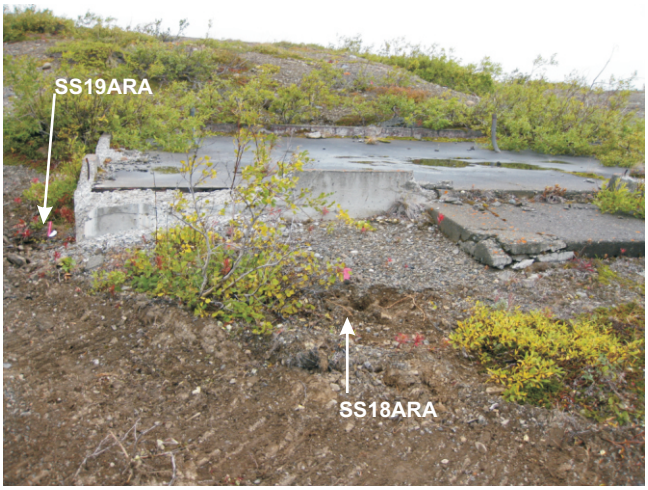


SS15ARA (field screening only)

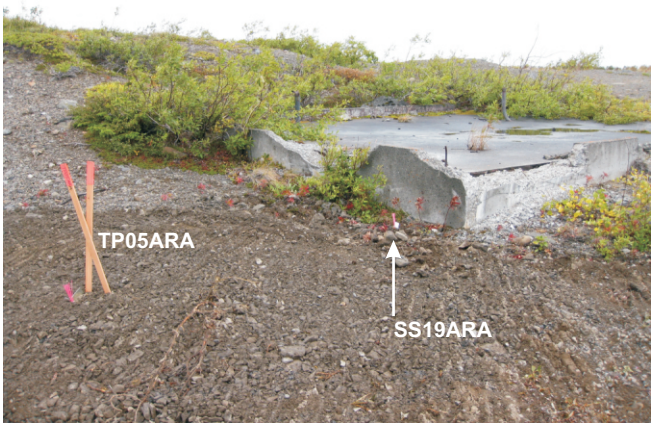
SS16ARA



SS17ARA



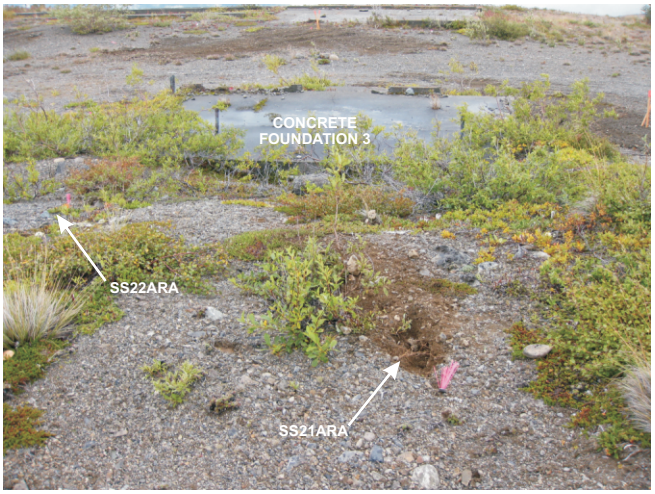
SS18ARA (field screening only) and SS19ARA



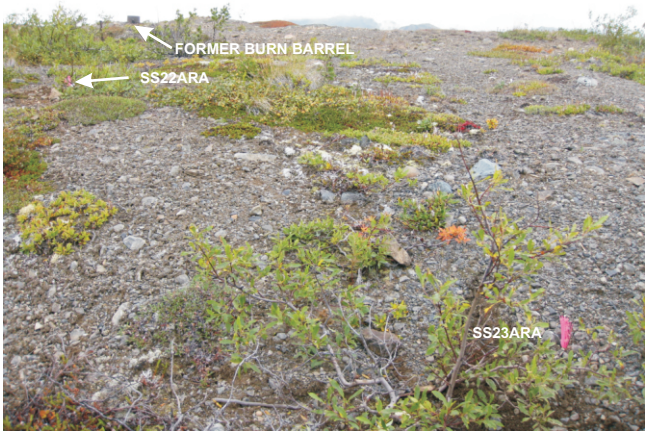
SS19ARA AND TP05ARA

AREA A - SITE PHOTOGRAPHS

SS20ARA (field screening only)

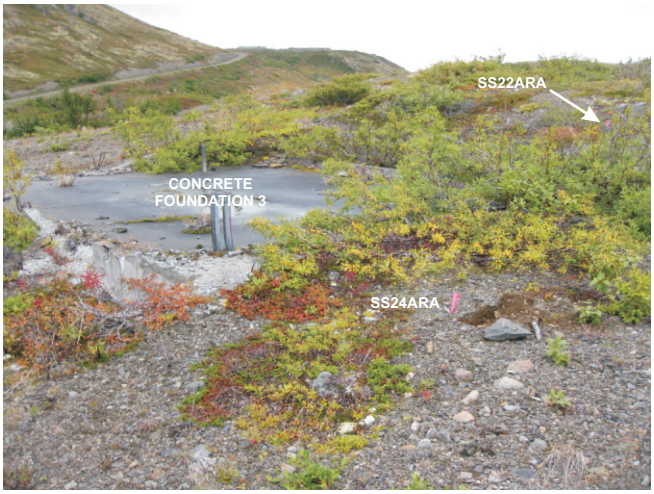


SS21ARA and SS22ARA (field screening only)



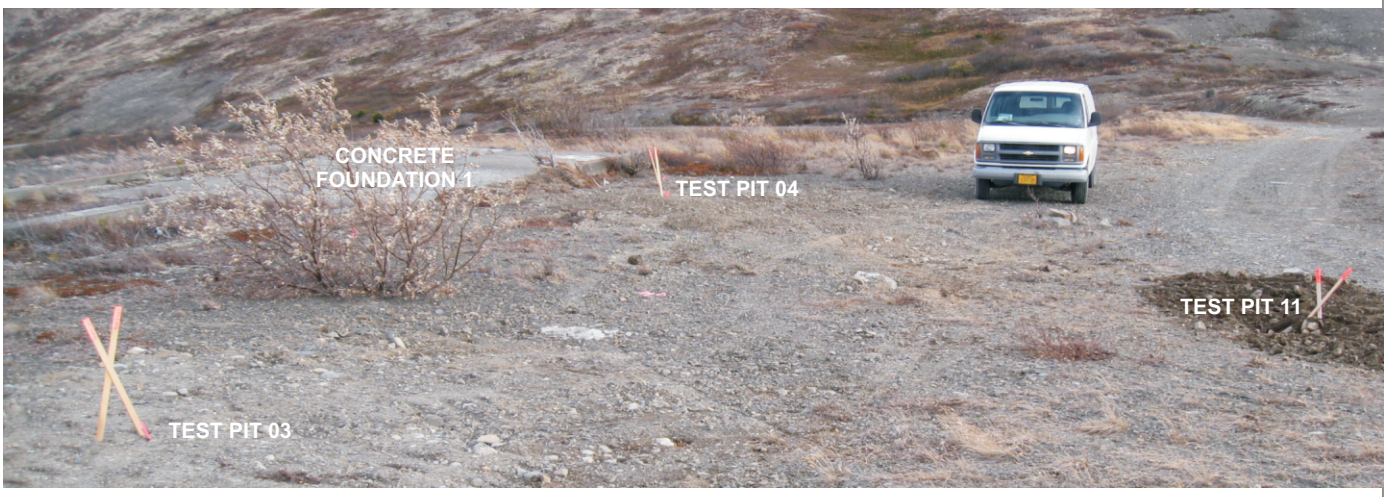
SS23ARA

SS22ARA (field screening only), SS23ARA, and TP05ARA

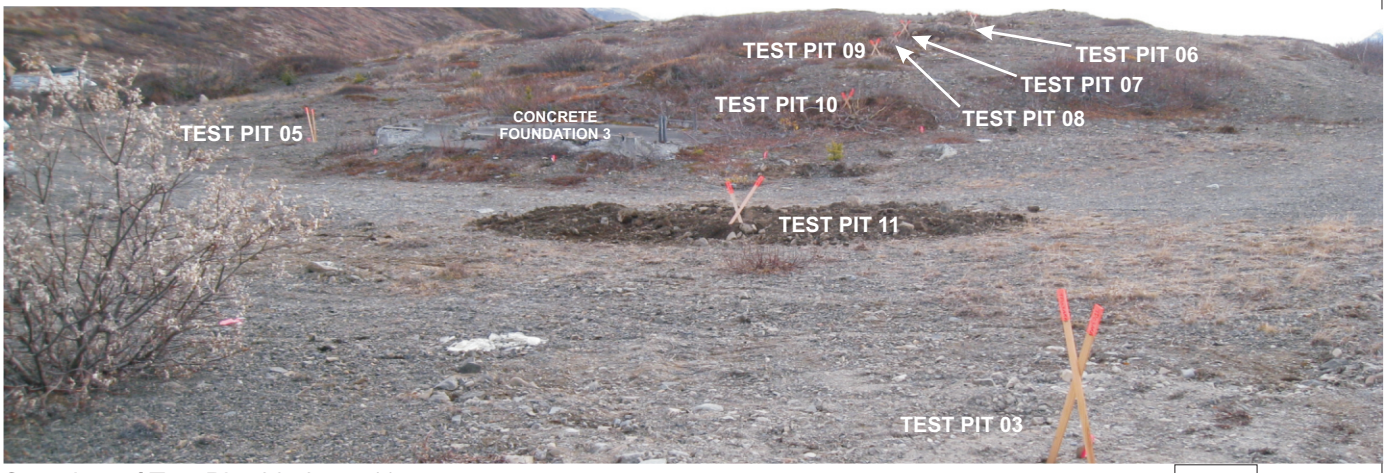


SS24ARA and SS22ARA (field screening only)

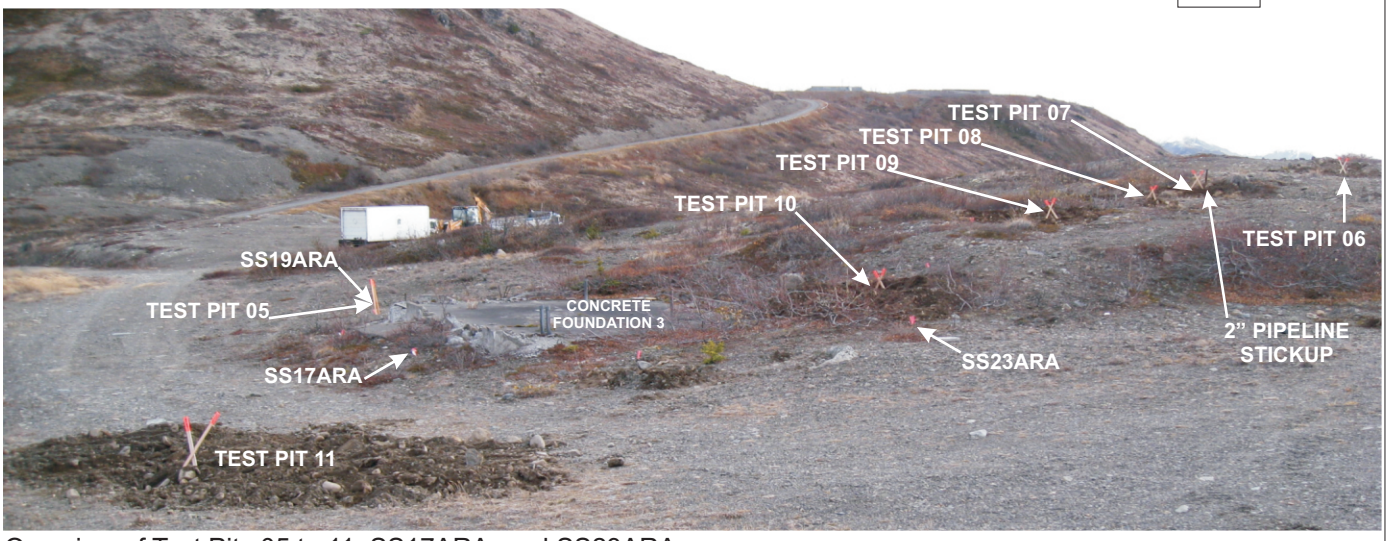
AREA A - SITE PHOTOGRAPHS



Overview of Test Pits 03, 04, and 11

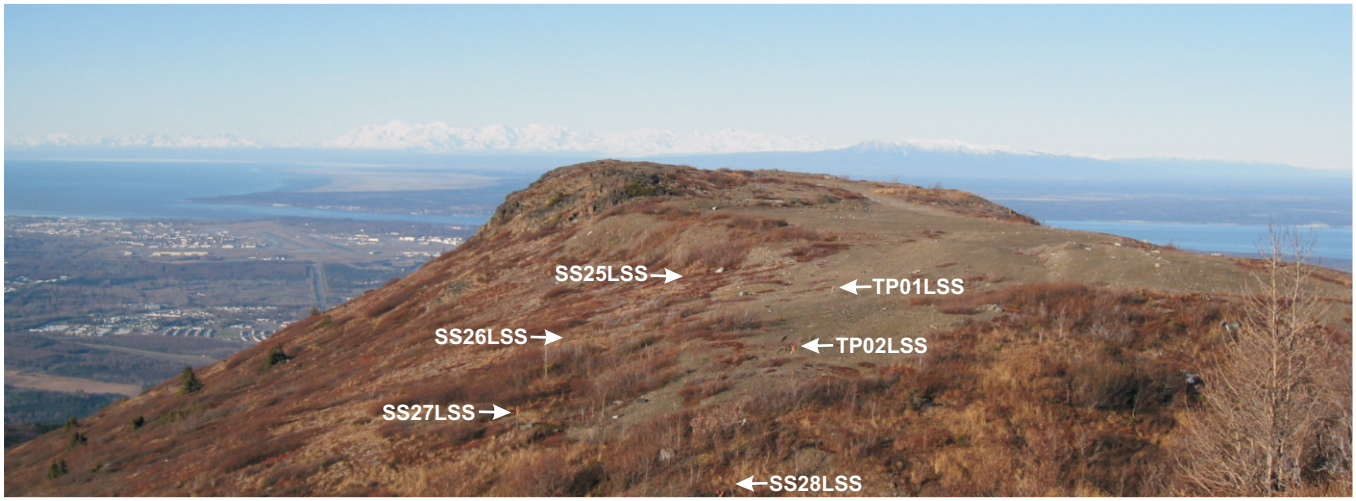


Overview of Test Pits 03, 05 to 11



Overview of Test Pits 05 to 11, SS17ARA, and SS23ARA

AREA A - SITE PHOTOGRAPHS



Suspected Disposal Area Overview

SS25ARA

SS26ARA

SS27ARA

SS28ARA

AREA A - SITE PHOTOGRAPHS

D4 Area C Site Photos

SS01ARC

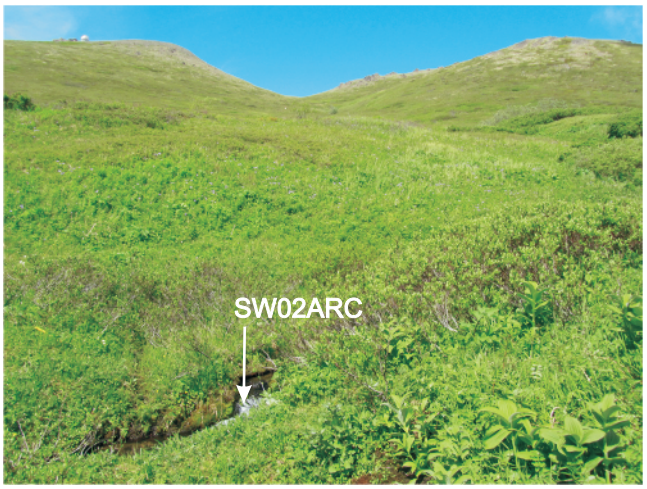
SS01ARC, SS02ARC, and SS03ARC

SS02ARC and SS03ARC

SW01ARC / SD01ARC

Weir and pond looking toward Arctic Valley Ski Area

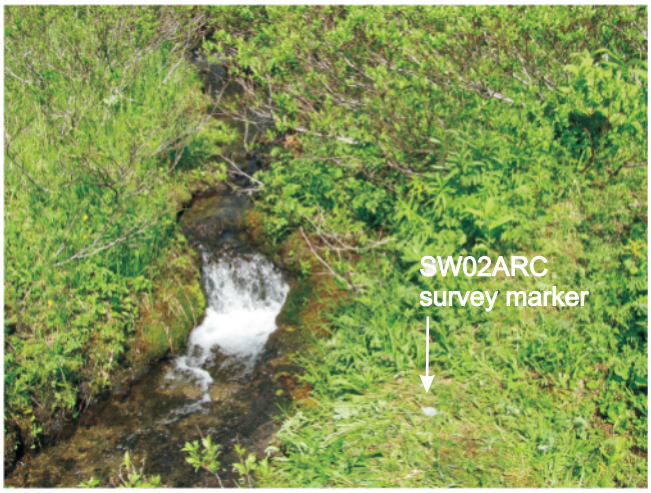
AREA C - SITE PHOTOGRAPHS



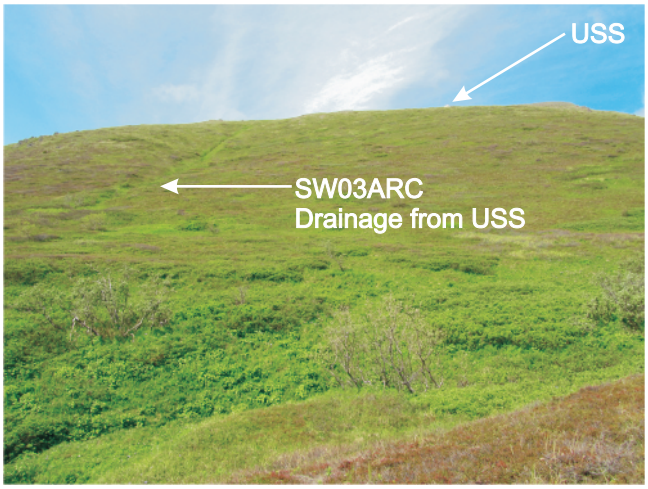
SW02ARC

SW02ARC looking up drainage,
USS in upper left

SW02ARC survey marker



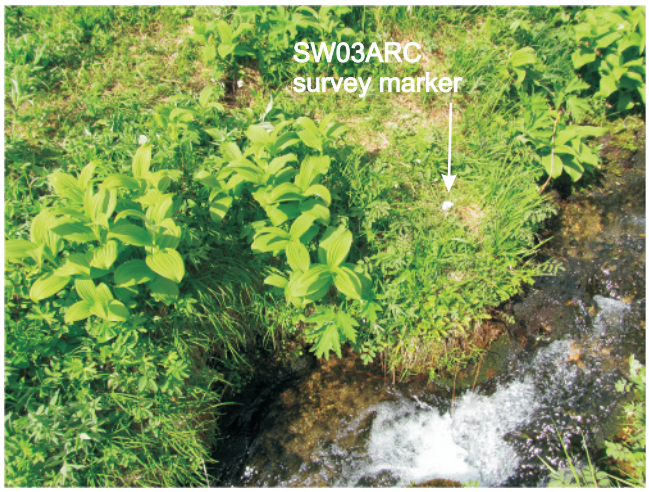
SW02ARC



SW03ARC Drainage from USS

SW03ARC

SW03ARC sampling



SW03ARC survey marker

AREA C - SITE PHOTOGRAPHS

SW04ARC

SW04ARC looking up drainage

SW04ARC survey marker

SW04ARC looking downstream

AREA C - SITE PHOTOGRAPHS

SW05ARC

SW05ARC looking up drainage, LSS towards upper left

SW05ARC

SW05ARC Survey Marker

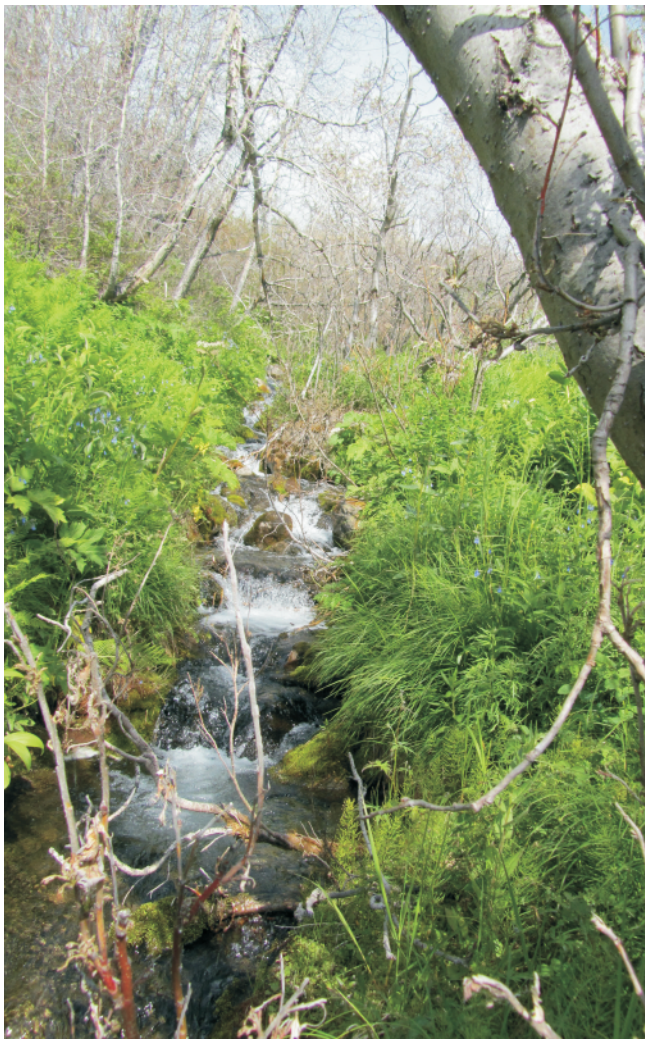
SW06ARC survey marker

SW06ARC looking downstream

SW06ARC looking upstream

AREA C - SITE PHOTOGRAPHS

SW07ARC



SW07ARC looking upstream

SW07ARC sampling, looking downstream

SW07ARC survey marker

AREA C - SITE PHOTOGRAPHS

APPENDIX E

Field Forms

Book 57, # 25
57 25

COMPLETED

EXCAVATION CLEARANCE REQUEST

DIRECTORATE OF PUBLIC WORKS, FORT RICHARDSON, ALASKA

NOTE: Locates require 10 working days advance notice (except where indicated)

Request clearance to proceed with work at: Nike Site Summit
(specific location)

Work Order /Contract #: TD83 Contractor Firm: MWH

Contractor POC Name/Phone: Heather Williams 276-1165 / Doug Quist 301-5900

Government POC/PM Mr. Nenahlo

TYPE OF WORK REQUIRED: (provide brief but complete description of work to be performed. Attach additional sheets as necessary.)
Drilling and Excavation to support Remedial Investigation / Feasibility Study at Nike Site Summit, (Upper Site Summit, Lower Site Summit, former Opportunity Strike/ RRS)

JUL 22 2010

Project Dates: 8/2/2010 thru 9/30/2010. Above Construction Checked for Conflicts with the Following:

Department	Conflict	Signing Official	Date
Environmental, Bldg. 658 (west end basement) 384-3042 / 3295 /3010	Yes (No)		7/21/10
Engineering, Contract Mgmt., Bldg. 977 (second floor east end) 384-3054	Yes (No)		21 Jul 10
Davis Hwy. Borrow Pit / Mat'l disposal site coordinator	Yes (No)		
Master Planning, TMD 03/04 (near Bldg 604)	Yes (No)		7/22/10
Fire Department, Bldg. 654 384-3130 / 3131	Yes (No)		7/21/10
59th Signal Bn, Bldg. 652 384-0003 (communications)	Yes (No)		7-21-10 7-293
DPW, Facilities Management, Bldg. 700 Outages Coordinator, 384-6161	Yes (No)		26 July 2010
Utilities, Bldg 700, Door G112 384-3643 (Alarms)	Yes (No)		
Utilities, Bldg 704 384-2078 (UST)	Yes (No)		
Storm Sewers DPW Bldg 704 384-1717	Yes (No)		7-26-10
Railroads on FRA Chief Logistics Support Div Bldg 977, 384-1898	Yes No		N/A

Alaska Dig Line (www.akonecall.com) Local Request No.: 300523
278-3121

Explanation of Conflicts Identified Above (annotate on drawings or include additional information sheets)

If Required:

Alaska Railroad – if excavation within 100 ft. of railroad right-of-way, (907) 265-2401 (10 day advance notice required)
Ammo Storage Area A or B, Bldg. 700, Robert Holl, 384-3643 (Security only)
Provost Marshal, Bldg. 656, 384-0801 (Road closures only)
DPW Customer Service Desk, Bldg. 730, 384-3664 / 3620 (Loss of utility only)
Fire Department, Bldg. 654, 384-0774 (Loss of hydrant water or road closures)

We would like to be on site during locates, if possible.
Call Doug @ 301-5900

GENERAL REQUIREMENTS FOR EXCAVATION / SOIL BORING WORK

247-DAW-11834/08

In conducting excavation and/or soil boring work on Fort Richardson, the unit or contractor may uncover or expose soil and/or groundwater CONTAMINATED with hazardous waste. The unit or contractor is required to recognize the following REQUIREMENTS during the course of any / all work at Fort Richardson, *regardless of location or environmental status of the work site:*

MONITORING: The unit or contractor shall monitor the excavation or boring for signs or indications of contaminated soil or water. These may include active or passive, physical or instrumental, or other methods. DPW Environment Resources may stipulate the methods or procedures for monitoring. Evidence of contamination includes (but is not limited to):

a) Chemical, hydrocarbon, or petroleum odors

b) Iridescent / petroleum sheen on water or soil surfaces

c) Free/floating non-aqueous liquids. Such liquids frequently float on water.

d) Observation of colored or off-color inclusions or concretions of non-soil material

e) Articles, materials, or containers which may contain hazardous chemicals or hazardous waste

f) Instrumental field screening (PID instrument) and/or sampling and laboratory analysis for specific chemicals or classes of chemicals

g) Other indicators as appropriate or necessary or as specified by DPW Environment Resources.

NOTIFICATION: At the first sign or indication of hazardous waste contamination in the excavated soil or purged water, the unit or contractor project manager must notify the Fire Department (384-0774) or 911. Work must cease and not resume until DPW Environment Resources has investigated the problem and authorized work to continue. Proper notification in cases of suspected contamination is a condition of continuing project approval.

STOP WORK: The unit or contractor will immediately stop work if evidence of contamination is encountered during excavation or soil boring work.

MONITORING RECORDS: The unit or contractor is required to create and maintain monitoring records during the course of the work. He may be required to provide originals or copies of monitoring records to DPW Environment Resources.

SITE INSPECTIONS: DPW Environment Resources will conduct site inspection(s) during the course of work. The unit or contractor's project manager will notify DPW Environment Resources' project manager on the first day of site work and both managers will schedule the inspection(s). The DPW Environment Resources project manager for this project is:

Richard Nenahlo @ 384-3295 or Cynthia Tomlinson @ 384-3010

DPW Environment Resources Project Manager's Name — Phone number

GENERAL CONDITIONS OF PROJECT APPROVAL

1. This clearance authorizes commencement of excavation work only and THIS IS NEITHER A NOTICE TO PROCEED NOR A WORK AUTHORIZATION.

2. This excavation clearance is effective upon the date of signature by DPW official below: EXCAVATION SHALL COMMENCE WITHIN 30 CALENDAR DAYS.

3. Requester's Project Manager will provide two copies of required work site drawings with Excavation Clearance Request form. DPW Environment Resources will retain one copy of these drawings.

4. Requester will retain original completed Excavation Clearance Request (ECR) form. Requestor shall keep a copy of the completed ECR at the excavation site for inspection, upon request by government personnel. DPW Customer Service Desk will retain a copy of the approved request form.

5. Boring locations must be marked on a 1/100 scale drawing.

6- All soil and/or water excavated or removed from the work site shall be disposed of in accordance with guidance from DPW Environmental Resources.

7. Obtain written instruction from Environment Resources Project Manager on procedures for sampling, analysis, soil/water containerization, storage, removal, etc.

8. An after action report concerning work at sites where institutional controls are in place shall be submitted to the project manager, DPW Environment Resources Dept. NLT 30 days following completion of work.

9 Approval of this Excavation Clearance Request is conditional upon Unit/Contractor's continued compliance with the terms and conditions of mandated Institutional Controls, environmental monitoring, notification, record-keeping, etc., requirements specified in this document and any attachments. Failure to comply with these conditions and requirements may result in immediate repeal of this approval.

10. Requestor shall maintain identified locations marks for the life of the ECR (usually 30 days)

Area has been located by Doyon Utilities
(229-6064)

7-29-10
Doyon Utilities/Date

APPROVED: 29 July 2010
DPW Deputy Director or Department Chief / Date

Unit/Contractor Project Manager's Signature — Date

EXPIRATION DATE (+30 days from above approval date): 30 Aug 2010

☐ Additional sheets/instructions attached. Number of sheets attached: _____

☐ Institutional Controls and / or additional control or monitoring requirements attached. Number of sheets attached: _____

ALASKA DIGLINE, INC.
(907) 278-0696 Statewide FAX
(907) 278-3121 Anchorage Area 1-800-478-3121 Statewide
www.eticket@alaskacall.com

LOCATE REQUEST

Center ID# 300523
Company Name Fort Richardson Department of Public Works/MWH
Address Bldg 658
CITY/STATE/ZIP Ft Rich, Alaska
Contact Name(s) Doug Quist
Phone(s) 907-301-5900
Fax
Email douglas.quist@mwhglobal.com

Date: 7-20-10

****DO NOT FAX OR EMAIL AN EMERGENCY, PLEASE STOP NOW & CALL IT IN****

AK Borough:
City: Fort Richardson.
Work Order #
Customer Name: Fort Richardson DPW

Subdivision: (Single Address or Multiples in same Subdivision)

Street Address — Arctic Valley Road.

Street Address	Lot	Block
Upper Nike Site Summit	NA	NA
Lower Nike Site Summit	NA	NA
Former Opportunity Strike (ARRS)	NA	NA
See Attached Figures.		

Cross Streets 1 2
Grid Page Twn/Rng/Sec

Type of Work: Drilling, Excavation.

Will You be Digging: *(You MUST check Yes or No)*

In/Near a Road Right of Way?	☐ Yes	☒ No	Front of Lot?	☐ Yes	☐ No NA
In/Near a Railroad R.O.W.?	☐ Yes	☒ No	Back of Lot?	☐ Yes	☐ No NA
In/Near an Easement?	☐ Yes	☒ No	Open Access to Property?	☐ Yes	☒ No
Deeper than 4 feet?	☒ Yes	☐ No 10 ft ☐ Yes	Dig Area is Premarked.	☐ Yes	☒ No

Dig Info: *(Basic scope of work where the excavation will take place MUST be included.)*

See Attached maps for drilling and Excavation locations.
We would like to be on site during locates, if possible.
Call Doug @ 301-5900

METER NUMBER POLE NUMBER

FOR SITE MEET: (Contact Person & Phone #)
☐ SHORT NOTICE Requested before required 2 day notification---NOT GUARANTEED (by date/time)

By submitting this request for utility locates you agree to Hand Dig within 2 feet of either side of a buried utility, if digging deeper than 10 feet to hand dig within 30 horizontal inches; comply with State and Local Ordinances and to proof read your confirmation request for accuracy. Notify the center if changes are needed. Member Utilities notified are listed on your confirmation as well as the date/time your locates will be completed. Please note: Depth of facilities is NOT guaranteed. Private service lines are not located. Only the area described above will be located. Requests are processed M-F in the order received. Orders received after 3:30 p.m. may be processed the following business day.

THANK YOU FOR SUPPORTING DAMAGE PREVENTION IN ALASKA!

SHOP CODE: 247 SERVICE ORDER PCN AKJ-008
RICH

RECEIVED: 22-JUL-2010 10:35 RECEPTIONIST: DMILLER

**** DOCUMENT NUMBER ****				RPF SITE	FACILITY	EQUIPMENT	BLDG	LS
CUST ID	SER NO	FY	TYPE	ABBREV	NUMBER	ID	MOD NO	MOD NO
DPW	11834	0	R					

WORK POC NAME	WORK POC PHONE	STREET ADDRESS
WILLIAMS	266-1165	

WORK DESCRIPTION

BOOK 57, #25, PERFORM UTILITY LOCATES AT SEVERAL NIKE SITE LOCATIONS.

REMARK:

WORKCLASS CODE: M
COMPONENT CODE: 09
TECH DAT ACT CD: 79.A1C
APC:
CONTRACT NUMBER:
HOUSNG CLASS CD:

SO PRIORITY: 4
REIMB CUST ID:
SPEC INT CODE:
PROG IND CODE:
TASK CODE: 99
TASK DESC: UTILITY LOCATES.
TASK UNIT: 1

Heather Williams

From: lcc@akonecall.com
Sent: Wednesday, July 21, 2010 2:59 PM
To: Heather Williams
Subject: DO NOT REPLY Request 2010300523

ALASKA DIGLINE INC.
Locate Request Confirmation

Ticket #:2010300523 Priority Code:STANDARD
Request Type:
Update of:
Work to Begin Date: 07/23/2010 Time: 02:52:00 PM

CALLER INFORMATION

HEATHER WILLIAMS Excavator Type:CONTRACTOR
MWH AMERICAS INC. Tel.:(907)266-1165
Cell.:

DIG LOCATION

City:FORT RICHARDSON
Subdivision:NIKE SITE SUMMIT
Address : Unit #: To:
Street : ARCTIC VALLEY RD
Nearest Intersecting Street :
Second Intersecting Street :
Latitude: 61.24683000 Longitude: -149.55169850

Excavator/Owner: FORT RICHARDSON
WO/JOB #:

Type of Work: TEST HOLES
Additional Dig Information:
USING DRILL RIG & EXCAVATOR, THERE ARE SEVERAL DIG SITES @ UPPER SITE SUMMIT & LOWER SITE SUMMIT.
REQ SITE MEET CONTACT DOUG @ 301-5900 FOR ACCESS

Remarks:

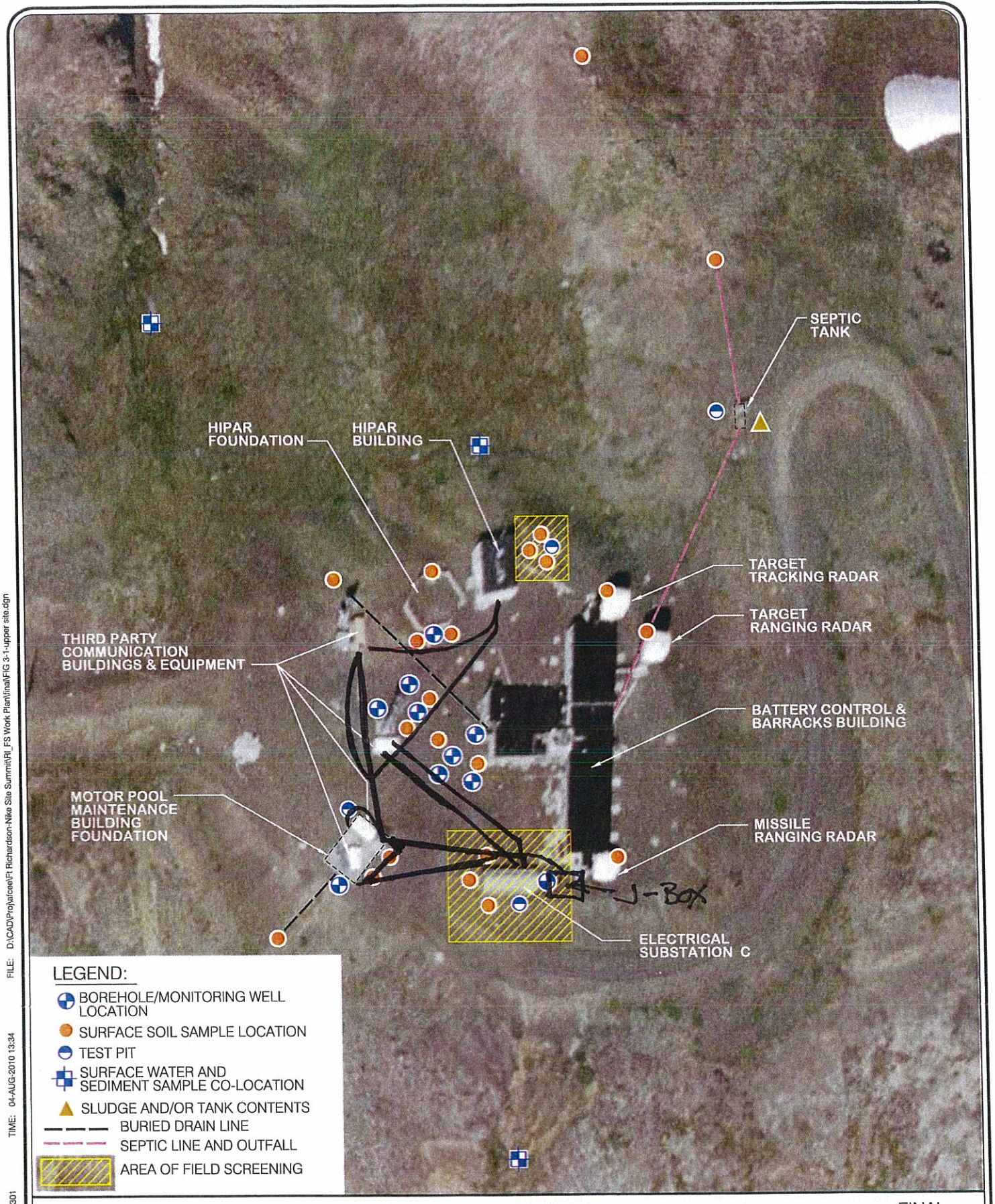
MAP PAGE: AN0853 MAP PAGE: AN0852
Dig deeper than 4 ft.: Y 10 ft.: Y Easement: Y
Road R/O/W: N Railroad R/O/W: N Front lot: Y Back lot: N
Contact caller to arrange site meeting: Y Open access to property: N

The following utility owners have been notified of your proposed excavation site:
ACS ENS A/E GCI A/E DOYON_FRGAS DOYON_FRWTSWR

PLEASE REMEMBER:

HAND DIG WITHIN 2FT OF EITHER SIDE OF BURIED UTILITIES; IF DIGGING DEEPER THAN 10FT HAND DIG WITHIN 30 HORIZONTAL INCHES EITHER SIDE OF FACILITIES. DEPTH OF FACILITIES CANNOT BE GUARANTEED.
IF THE INFORMATION ABOVE REQUIRES MODIFICATION, CONTACT THE CENTER AT 278-3121 OR FAX 278-0696. DO NOT REPLY TO THIS MESSAGE, EMAIL MODIFICATIONS/NOTIFICATIONS WILL NOT BE PROCESSED.
LOCATES WILL BE COMPLETED BY MEMBER UTILITIES INDICATED BY THE WORK TO BEGIN DATE LISTED ABOVE. PRIVATE/CONSUMER OWNED LINES CANNOT BE LOCATED THRU THIS SERVICE.

UTILITY LOCATES - POWER ONLY



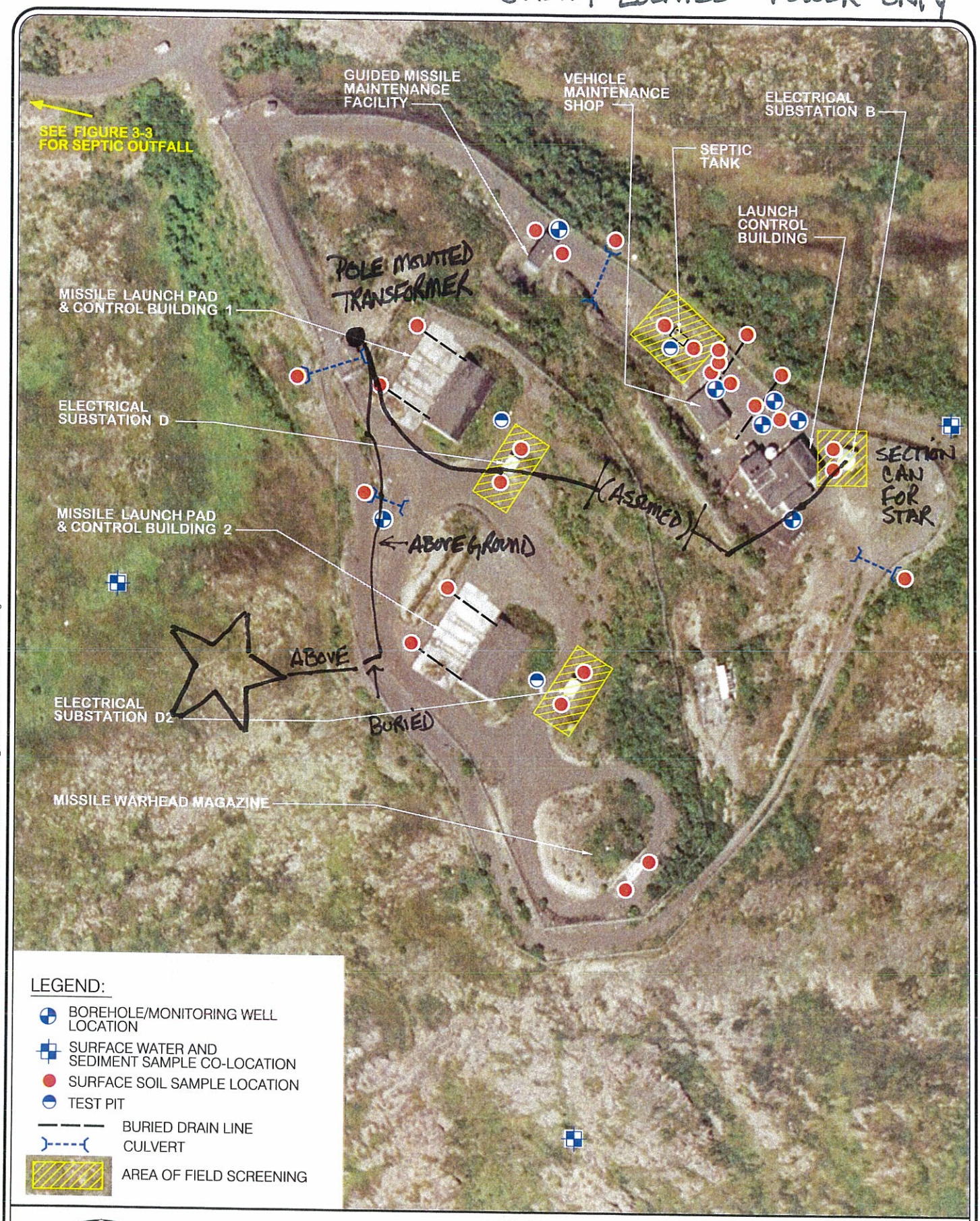
FILE: D:\CAD\Proj\alceee\Ft Richardson-Nike Site Summit\RI_FS Work Plan\final\FIG 3-1-upper site.dgn
TIME: 04-AUG-2010 13:34
JOB No. 1008300.830103O1

FIGURE 3-1 FINAL

FORT RICHARDSON, ANCHORAGE, ALASKA
NIKE SITE SUMMIT RI/FS WORK PLAN

UPPER SITE SUMMIT SAMPLE LOCATION MAP

UTILITY LOCATES- POWER ONLY



FILE: D:\CAD\Projs\tcea\Ft Richardson-Nike Site Summit\RI_FS Work Plan\final\FIG 3-2-lower site.dgn
TIME: 12-AUG-2010 11:22
JOB No. 1008300.83010301

FIGURE 3-2 FINAL

FORT RICHARDSON, ANCHORAGE, ALASKA
NIKE SITE SUMMIT RI/FS WORK PLAN

LOWER SITE SUMMIT SAMPLE LOCATION MAP

TAILGATE SAFETY MEETING FORM

Date: 6/4/2010 Time: 1100 Job Number: 1008300

Client: AFCEE

Site Specific Location: Nike Site Summit

Safety Topics Presented

Protective Clothing/Equipment: NA

Chemical Hazards: HCl, HNO_3, Hexane, Methanol

Physical Hazards: slip, trip, fall, - gravel debris

Special Equipment: pH / cond / ec

Other (IIPP):

Emergency Procedures: Call 911, then Range Control 384-6230/6232 or by radio

Hospital: Providence Hospital Anchorage Phone: (907) 562-2221

Ambulance Phone: 911

Hospital Address and Route: air service to hospital for serious injuries.

ATTENDEES

NAME PRINTED	SIGNATURE
Heather Williams	Heather R. Williams
Rick Gironard	Rick Gironard
Mark Prickett	Mark Prickett

Meeting Conducted By: Douglas Quist (Name Printed) Douglas Quist (Signature)

Project Safety Officer: _____ Project Manager: Heather Williams

TAILGATE SAFETY MEETING FORM

Date: 8/4/2010 Time: 1030 Job Number: 1008300

Client: AFCEE

Site Specific Location: Nike Site Summit

Safety Topics Presented

Protective Clothing/Equipment: Level D PPE

Chemical Hazards: Chemical Preservatives - Methanol.

Physical Hazards: Slip, Trip, Fall.

Special Equipment: —

Other (IIPP):

Emergency Procedures: Call 911, then Range Control 384-6230/6232 or by radio

Hospital: Providence Hospital Anchorage Phone: (907) 562-2221

Ambulance Phone: 911

Hospital Address and Route: air service to hospital for serious injuries.

ATTENDEES

NAME PRINTED	SIGNATURE
Nicole Neuman	

Meeting Conducted By: Douglas Doist (Name Printed) Douglas Doist (Signature)

Project Safety Officer: _____ Project Manager: Heather Williams

TAILGATE SAFETY MEETING FORM

Date: 8/5/10 Time: _____ Job Number: 1008300

Client: AFCEE

Site Specific Location: Nike Site Summit

Safety Topics Presented

Protective Clothing/Equipment: Level D PPE

Chemical Hazards: MeOH

Physical Hazards: Slip trip fall

Special Equipment: Magnetometer.

Other (IIPP): _____

Emergency Procedures: Call 911, then Range Control 384-6230/6232 or by radio

Hospital: Providence Hospital Anchorage Phone: (907) 562-2221

Ambulance Phone: 911

Hospital Address and Route: air service to hospital for serious injuries.

ATTENDEES

NAME PRINTED	SIGNATURE
Nicole Neiman	

Meeting Conducted By: Douglas Dust / Name Printed — Signature

Project Safety Officer: _____ Project Manager: Heather Williams

TAILGATE SAFETY MEETING FORM

Date: 8/6/10 Time: 0930 Job Number: 1008300

Client: AFCEE

Site Specific Location: Nike Site Summit

Safety Topics Presented

Protective Clothing/Equipment: Level D PPE

Chemical Hazards: MeOH, $NAHSO_4$

Physical Hazards: Slip trip fall, Barbed Wire

Special Equipment: Magnetometer,

Other (IIPP):

Emergency Procedures: Call 911, then Range Control 384-6230/6232 or by radio

Hospital: Providence Hospital Anchorage Phone:(907) 562-2221

Ambulance Phone: 911

Hospital Address and Route: air service to hospital for serious injuries.

ATTENDEES

NAME PRINTED	SIGNATURE
Nicole Newman	

Meeting Conducted By: Douglas Poist (Name Printed) Douglas Poist (Signature)

Project Safety Officer: Project Manager: Heather Williams

TAILGATE SAFETY MEETING FORM

Date: 8/9/2010 Time: 0930 Job Number: 1008300

Client: AFCEE

Site Specific Location: Nike Site Summit

Safety Topics Presented

Protective Clothing/Equipment: Level D PPE; Hard Hat, Steel Toed, Hearing Protection

Chemical Hazards: Fuel Contaminated Soils.

Physical Hazards: Slip, trip fall, Wind, Drill Rig.

Special Equipment: PID

Other (IIPP):

Emergency Procedures: Call 911, then Range Control 384-6230/6232 or by radio

Hospital: Providence Hospital Anchorage Phone: (907) 562-2221

Ambulance Phone: 911

Hospital Address and Route: air service to hospital for serious injuries.

ATTENDEES

NAME PRINTED	SIGNATURE
Max Cardenas	
Tim Beckner	
Nicole Pearson	

Meeting Conducted By: Douglas Quist (Name Printed) Douglas Quist (Signature)

Project Safety Officer: Project Manager: Heather Williams

TAILGATE SAFETY MEETING FORM

Date: 8/10/10 Time: 0900 Job Number: 1008300

Client: AFCEE

Site Specific Location: Nike Site Summit

Safety Topics Presented

Protective Clothing/Equipment: Level D PPE, Hard Hat, Steel Toed, Ear Protection.

Chemical Hazards: Fuel Contaminated Soils, MeOH, NaHSO4

Physical Hazards: Slip, Trip, Fall, Drill Rig, EXTREME WINDS.

Special Equipment: CME 55, Mini RAE

Other (IIPP):

Emergency Procedures: Call 911, then Range Control 384-6230/6232 or by radio

Hospital: Providence Hospital Anchorage Phone: (907) 562-2221

Ambulance Phone: 911

Hospital Address and Route: air service to hospital for serious injuries.

ATTENDEES

NAME PRINTED	SIGNATURE
Nicole Newman	
Tim Beccaria	
Tim Beckmeier Sr.	

Meeting Conducted By: Douglas Quist / Douglas Quist
Name Printed Signature

Project Safety Officer: Project Manager: Heather Williams

TAILGATE SAFETY MEETING FORM

Date: 8/11/10 Time: 0850 Job Number: 1008300

Client: AFCEE

Site Specific Location: Nike Site Summit

Safety Topics Presented

Protective Clothing/Equipment: Level D, Hard Hat, Steel Toed, Ear Protection, Eye protection.

Chemical Hazards: Fuel Contaminated Soils, MeOH, NaHSO4

Physical Hazards: Drill Rig, EXTREME Wind, Slip, trip, fall.

Special Equipment: MiniRae 3000

Other (IIPP):

Emergency Procedures: Call 911, then Range Control 384-6230/6232 or by radio

Hospital: Providence Hospital Anchorage Phone: (907) 562-2221

Ambulance Phone: 911

Hospital Address and Route: air service to hospital for serious injuries.

ATTENDEES

NAME PRINTED	SIGNATURE
Niki Neuman	
Tim Beckner Sr.	
Tim Beckner	

Meeting Conducted By: Douglas Quist (Name Printed) Douglas Quist (Signature)

Project Safety Officer: Project Manager: Heather Williams

TAILGATE SAFETY MEETING FORM

Date: 8/12/10 Time: 0830 Job Number: 1008300

Client: AFCEE

Site Specific Location: Nike Site Summit

Safety Topics Presented

Protective Clothing/Equipment: Level D PPE, Hardhat, Protective Eyewear, Steel toed,

Chemical Hazards: MeOH, Fuel Contaminated Soils

Physical Hazards: Wind, Slip, trip, fall, Drill Rig.

Special Equipment: PID, CME 55

Other (IIPP):

Emergency Procedures: Call 911, then Range Control 384-6230/6232 or by radio

Hospital: Providence Hospital Anchorage Phone: (907) 562-2221

Ambulance Phone: 911

Hospital Address and Route: air service to hospital for serious injuries.

ATTENDEES

NAME PRINTED	SIGNATURE
Tim Beckner	
Tim Beckner Jr.	
Nicole Neuman	

Meeting Conducted By: Douglas Quist (Name Printed) Douglas Quist (Signature)

Project Safety Officer: Project Manager: Heather Williams

TAILGATE SAFETY MEETING FORM

Date: 8/17/10 Time: 0815 Job Number: 1008300

Client: AFCEE

Site Specific Location: Nike Site Summit

Safety Topics Presented

Protective Clothing/Equipment: Level D, PPE, Hard Hat, Steel Toes, Hearing Protection.

Chemical Hazards: MeOH, Contaminated Soil.

Physical Hazards: Slip, trip, fall, Drill Rig.

Special Equipment: Drill Rig, MiniRae.

Other (IIPP):

Emergency Procedures: Call 911, then Range Control 384-6230/6232 or by radio

Hospital: Providence Hospital Anchorage Phone: (907) 562-2221

Ambulance Phone: 911

Hospital Address and Route: air service to hospital for serious injuries.

ATTENDEES

NAME PRINTED	SIGNATURE
Tim Beckner	
Tim Beckner	
John Marshall	

Meeting Conducted By: Douglas Quist (Name Printed) Douglas Quist (Signature)

Project Safety Officer: Project Manager: Heather Williams

TAILGATE SAFETY MEETING FORM

Date: 8/19/10 Time: 0820 Job Number: 1008300

Client: AFCEE

Site Specific Location: Nike Site Summit

Safety Topics Presented

Protective Clothing/Equipment: level D PPE, Hardhat, Steel toed,

Chemical Hazards: MeOH, Petroleum Contaminated Soils.

Physical Hazards: Drill Rig, Slip, Trip, fall, Live 50 cal Range.

Special Equipment: MiniRae 3000

Other (IIPP):

Emergency Procedures: Call 911, then Range Control 384-6230/6232 or by radio

Hospital: Providence Hospital Anchorage Phone: (907) 562-2221

Ambulance Phone: 911

Hospital Address and Route: air service to hospital for serious injuries.

ATTENDEES

NAME PRINTED	SIGNATURE
Douglas Quist	Douglas Quist
Timothy Beckon	
John Marshall	
Tim Bedkner	Tim Bedkner

Meeting Conducted By: Douglas Quist (Name Printed) Douglas Quist (Signature)

Project Safety Officer: _____ Project Manager: Heather Williams

TAILGATE SAFETY MEETING FORM

Date: 8/23/10 Time: 0900 Job Number: 1008300

Client: AFCEE

Site Specific Location: Nike Site Summit

Safety Topics Presented

Protective Clothing/Equipment: Level D PPE, Hard Hat Steel Toes.

Chemical Hazards: Petroleum Contaminated Soil

Physical Hazards: Excavator, Slip trip Fall.

Special Equipment: Excavator, MiniRae PID.

Other (IIPP):

Emergency Procedures: Call 911, then Range Control 384-6230/6232 or by radio

Hospital: Providence Hospital Anchorage Phone:(907) 562-2221

Ambulance Phone: 911

Hospital Address and Route: air service to hospital for serious injuries.

ATTENDEES

NAME PRINTED	SIGNATURE
John Marshall	
Robert Notti	
Don Maloney	

Meeting Conducted By: Douglas Dust (Name Printed) Douglas Dust (Signature)

Project Safety Officer: _____ Project Manager: Heather Williams

TAILGATE SAFETY MEETING FORM

Date: 8/24/10 Time: 0830 Job Number: 1008300

Client: AFCEE

Site Specific Location: Nike Site Summit

Safety Topics Presented

Protective Clothing/Equipment: level D PPE, Hardhat, steel toes,

Chemical Hazards: MeOH, Petroleum Contaminated Soils.

Physical Hazards: Excavator, slip, trip, fall

Special Equipment: Mini Rae 3000

Other (IIPP):

Emergency Procedures: Call 911, then Range Control 384-6230/6232 or by radio

Hospital: Providence Hospital Anchorage Phone:(907) 562-2221

Ambulance Phone: 911

Hospital Address and Route: air service to hospital for serious injuries.

ATTENDEES

NAME PRINTED	SIGNATURE
Don Maloney	
John Marshall	
ROBERT NOTTI	

Meeting Conducted By: Douglas Quist (Name Printed) Douglas Quist (Signature)

Project Safety Officer: Project Manager: Heather Williams

TAILGATE SAFETY MEETING FORM

Date: 8-25-10 Time: 0855 Job Number: 1008300

Client: AFCEE

Site Specific Location: Nike Site Summit

Safety Topics Presented

Protective Clothing/Equipment: Level D PPE, steel Toes.

Chemical Hazards: MeOH, Petroleum & Potentially PCB contaminated Soils.

Physical Hazards: Slip, trip, Fall,

Special Equipment:

Other (IIPP):

Emergency Procedures: Call 911, then Range Control 384-6230/6232 or by radio

Hospital: Providence Hospital Anchorage Phone:(907) 562-2221

Ambulance Phone: 911

Hospital Address and Route: air service to hospital for serious injuries.

ATTENDEES

NAME PRINTED	SIGNATURE
John Marshall	

Meeting Conducted By: Douglas Quist (Name Printed) Douglas Quist (Signature)

Project Safety Officer: Project Manager: Heather Williams

TAILGATE SAFETY MEETING FORM

Date: 8/27/10 Time: 0800 Job Number: 1008300

Client: AFCEE

Site Specific Location: Nike Site Summit

Safety Topics Presented

Protective Clothing/Equipment: Level D PPE

Chemical Hazards: MeOH, Potential Petroleum & PCB contaminated Soils

Physical Hazards: Slip, Trip, Fall

Special Equipment:

Other (IIPP):

Emergency Procedures: Call 911, then Range Control 384-6230/6232 or by radio

Hospital: Providence Hospital Anchorage Phone:(907) 562-2221

Ambulance Phone: 911

Hospital Address and Route: air service to hospital for serious injuries.

ATTENDEES

NAME PRINTED	SIGNATURE
John Marshall	

Meeting Conducted By: Douglas Dirst (Name Printed) Douglas Dirst (Signature)

Project Safety Officer: Project Manager: Heather Williams

TAILGATE SAFETY MEETING FORM

Date: 8/30/10 Time: 0950 Job Number: 1008300

Client: AFCEE

Site Specific Location: Nike Site Summit

Safety Topics Presented

Protective Clothing/Equipment: Level D PPE

Chemical Hazards: MeOH, Potentially Petrolum & PCB contaminated ~~soils~~ groundwater.

Physical Hazards: Slip, trip, fall

Special Equipment:

Other (IIPP):

Emergency Procedures: Call 911, then Range Control 384-6230/6232 or by radio

Hospital: Providence Hospital Anchorage Phone:(907) 562-2221

Ambulance Phone: 911

Hospital Address and Route: air service to hospital for serious injuries.

ATTENDEES

NAME PRINTED	SIGNATURE
John Marshall	

Meeting Conducted By: Douglas Quist (Name Printed) (Signature)

Project Safety Officer: Project Manager: Heather Williams

TAILGATE SAFETY MEETING FORM

Date: 8/31/10 Time: 0815 Job Number: 1008300

Client: AFCEE

Site Specific Location: Nike Site Summit

Safety Topics Presented

Protective Clothing/Equipment: Level D PPE

Chemical Hazards: Bottle Preservatives HCL, HNO_3, Petroleum Contaminated Water.

Physical Hazards: Slip, trip, fall

Special Equipment:

Other (IIPP):

Emergency Procedures: Call 911, then Range Control 384-6230/6232 or by radio

Hospital: Providence Hospital Anchorage Phone:(907) 562-2221

Ambulance Phone: 911

Hospital Address and Route: air service to hospital for serious injuries.

ATTENDEES

NAME PRINTED	SIGNATURE
John Marshall	

Meeting Conducted By: Douglas Dewit (Name Printed) (Signature)

Project Safety Officer: Project Manager: Heather Williams

TAILGATE SAFETY MEETING FORM

Date: 9/1/10 Time: 0830 Job Number: 1008300

Client: AFCEE

Site Specific Location: Nike Site Summit

Safety Topics Presented

Protective Clothing/Equipment: Level D PPE

Chemical Hazards: Chemical Preservatives HCL, HNO_3, Petroleum Contaminated Water.

Physical Hazards: Bears, slip, trip, fall

Special Equipment:

Other (IIPP):

Emergency Procedures: Call 911, then Range Control 384-6230/6232 or by radio

Hospital: Providence Hospital Anchorage Phone:(907) 562-2221

Ambulance Phone: 911

Hospital Address and Route: air service to hospital for serious injuries.

ATTENDEES

NAME PRINTED	SIGNATURE
John Marshall	

Meeting Conducted By: Douglas Durst (Name Printed) Douglas Durst (Signature)

Project Safety Officer: Project Manager: Heather Williams

TAILGATE SAFETY MEETING FORM

Date: 9/2/10 Time: 0820 Job Number: 1008300

Client: AFCEE

Site Specific Location: Nike Site Summit

Safety Topics Presented

Protective Clothing/Equipment: Level D PPE

Chemical Hazards: MeOH, HNO_3, Potentially Petroleum Contaminated Soils/Groundwater

Physical Hazards: slip, trip, fall

Special Equipment:

Other (IIPP):

Emergency Procedures: Call 911, then Range Control 384-6230/6232 or by radio

Hospital: Providence Hospital Anchorage Phone:(907) 562-2221

Ambulance Phone: 911

Hospital Address and Route: air service to hospital for serious injuries.

ATTENDEES

NAME PRINTED	SIGNATURE
John Marshall	

Meeting Conducted By: Douglas Dust (Name Printed) (Signature)

Project Safety Officer: Project Manager: Heather Williams

TAILGATE SAFETY MEETING FORM

Date: 9/7/2010 Time: 0815 Job Number: 1008300

Client: AFCEE

Site Specific Location: Nike Site Summit

Safety Topics Presented

Protective Clothing/Equipment: Level D

Chemical Hazards: MeOH,

Physical Hazards: Slip, trip, fall, Wind.

Special Equipment:

Other (IIPP):

Emergency Procedures: Call 911, then Range Control 384-6230/6232 or by radio

Hospital: Providence Hospital Anchorage Phone: (907) 562-2221

Ambulance Phone: 911

Hospital Address and Route: air service to hospital for serious injuries.

ATTENDEES

NAME PRINTED	SIGNATURE
Stephen Trimble	

Meeting Conducted By: Douglas Quist (Name Printed) Douglas Quist (Signature)

Project Safety Officer: Project Manager: Heather Williams

TAILGATE SAFETY MEETING FORM

Date: 9/13/10 Time: 0820 Job Number: 1008300

Client: AFCEE

Site Specific Location: Nike Site Summit

Safety Topics Presented

Protective Clothing/Equipment:

Chemical Hazards: ϕ

Physical Hazards: Slip, trip, fall, Bears.

Special Equipment:

Other (IIPP):

Emergency Procedures: Call 911, then Range Control 384-6230/6232 or by radio

Hospital: Providence Hospital Anchorage Phone:(907) 562-2221

Ambulance Phone: 911

Hospital Address and Route: air service to hospital for serious injuries.

ATTENDEES

NAME PRINTED	SIGNATURE
Doug Popham	Doug Popham

Meeting Conducted By: Douglas Quist (Name Printed) Douglas Quist (Signature)

Project Safety Officer: _____ Project Manager: Heather Williams

TAILGATE SAFETY MEETING FORM

Date: 7/14/10 Time: 0845 Job Number: 1008300

Client: AFCEE

Site Specific Location: Nike Site Summit

Safety Topics Presented

Protective Clothing/Equipment:

Chemical Hazards: ϕ

Physical Hazards: Slip, trip, fall, Bears

Special Equipment:

Other (IIPP):

Emergency Procedures: Call 911, then Range Control 384-6230/6232 or by radio

Hospital: Providence Hospital Anchorage Phone:(907) 562-2221

Ambulance Phone: 911

Hospital Address and Route: air service to hospital for serious injuries.

ATTENDEES

NAME PRINTED	SIGNATURE
Jesse Bookless	

Meeting Conducted By: Douglas Durst (Name Printed) Douglas Durst (Signature)

Project Safety Officer: Project Manager: Heather Williams

TAILGATE SAFETY MEETING FORM

Date: 10/4/2010 Time: 0828 Job Number: 1008300

Client: AFCEE

Site Specific Location: Nike Site Summit

Safety Topics Presented

Protective Clothing/Equipment: Level D PPE - Hardhat / Steel Toed

Chemical Hazards:

Physical Hazards:

Special Equipment:

Other (IIPP):

Emergency Procedures: Call 911, then Range Control 384-6230/6232 or by radio

Hospital: Providence Hospital Anchorage Phone:(907) 562-2221

Ambulance Phone: 911

Hospital Address and Route: air service to hospital for serious injuries.

ATTENDEES

NAME PRINTED	SIGNATURE
Norm Lapinskas	
Sam Womack	

Meeting Conducted By: Doug Quist (Name Printed) (Signature)

Project Safety Officer: Project Manager: Heather Williams

TAILGATE SAFETY MEETING FORM

Date: 7/7/2011 Time: 1030 Job Number: 1008300

Client: AFCEE

Site Specific Location: Nike Site Summit

Safety Topics Presented

Protective Clothing/Equipment: Level D

Chemical Hazards: HCL, HNO_3 Preservatives.

Physical Hazards: Slip trip Fall

Special Equipment:

Other (IIPP):

Emergency Procedures: Call 911, then Range Control 384-6230/6232 or by radio

Hospital: Providence Hospital Anchorage Phone:(907) 562-2221

Ambulance Phone: 911

Hospital Address and Route: air service to hospital for serious injuries.

ATTENDEES

NAME PRINTED	SIGNATURE
DICK NENAHLO	
John Marshall	

Meeting Conducted By: Douglas Quist (Name Printed) Douglas Quist (Signature)

Project Safety Officer: Project Manager: Heather Williams

K200 W/ MW/V Depth TL

LOG OF DRILLING OPERATIONS

Project Number:	Boring Number:	Sheet
1008300	01 USS	1 of 1

Project: Nike Site Summit Site: USS Client: Army – Fort Richardson

Start Date: 8/9/10 Finish Date: 8/9/10 Geologist: Doug Quist

Drilling Company: Discovery Drilling Drilling Method: Hollow Stem Auger Rig Type: CME 55

Boring Size: (in) 8.25 OD Total Depth: (ft) 10' 9" Depth to First Water: (ft) ϕ Depth to SWL: (ft)

Sampler Type: Split Spoon Diameter: (in) 2.0 Hammer Drop: (in) Hammer Weight: (lbs)

AK State Plane Coordinates: Northing (ft): Easting (ft): Top of Hole Elevation (ft): Elevation Datum:

Depth (ft bgs)	Time	Sample Interval	Blows/6 in	PID (ppm)	% Gravel	% Sand	% Fines	Max Size (in)	Lithologic Description/ Drilling Remarks	Soil Class	Graphic Log
0											
001	1035		2	16.2	70	25	5	3/4	Angular gravel Fill w sands.		
1			6		↓	↓	↓	↓	Slight Petroleum Odor Grey/Br		
			7						No Visible Staining		
2			6		↓	↓	↓	↓	↓		
002	1046		4	45.9	70	25	5	2	Angular gravel Fill w Sands.		
3			8		↓	↓	↓	↓	Grey/Br		
			9						Petroleum Odor Present		
4			6		↓	↓	↓	↓	↓ No Visible Staining		
003	1051		4	14.0	75	20	5	2	Angular gravel Fill w Sands		
5			6		↓	↓	↓	↓	Petroleum Odor Present Br/Grey.		
			4						No Staining		
6			2		↓	↓	↓	↓	↓ 1/2 Recovery		
004	1100		2	39.1	75	20	5	1/2	Angular and Sand Gravel fill w Sands.		
7			2		↓	↓	↓	↓	Petroleum Odor Present		
			2						No Visible Staining Br/Grey		
8			1		↓	↓	↓	↓	↓ 1/4 Recovery		
005	1106		4	2.2	70	25	5	2.5	Angular and Sand Gravel fill w Sands.		
9			4		↓	↓	↓	↓	Potential Bedrock at 10' Br/Grey		
			9						Petroleum Odor Present. (Very Faint)		
10			57		↓	↓	↓	↓	↓ 1/2 Recovery. 57 Blow Counts for last 2"		
006	1126		54	6.8							
11			60						Refusal - End of Hole - 10' 9"		
12											
									Samples Collected @		
13											
									10NSS002SL01USS + MS + MSD		
14									10NSS202SL01USS Duplicate		
									10NSS004SL01USS		
15											
16											
17											
18											
19											
20											

GRO/VOCs DRO/RRO SVOCs

Redo w/ Hand Bgrm TL

LOG OF DRILLING OPERATIONS

Project Number:	Boring Number:	Sheet
1008300	02 USS	1 of 1

Project: Nike Site Summit Site: USS Client: Army – Fort Richardson

Start Date: 8/9/10 Finish Date: 8/9/10 Geologist: Doug Quist

Drilling Company: Discovery Drilling Drilling Method: Hollow Stem Auger Rig Type: CME 55

Boring Size: (in) 8.25 OD Total Depth: (ft) Depth to First Water: (ft) Depth to SWL: (ft)

Sampler Type: Split Spoon Diameter: (in) 2.0 Hammer Drop: (in) Hammer Weight: (lbs)

AK State Plane Coordinates: Northing (ft): Easting (ft): Top of Hole Elevation (ft): Elevation Datum:

Depth (ft bgs)	Time	Sample Interval	Blows/6 in	PID (ppm)	% Gravel	% Sand	% Fines	Max Size (in)	Lithologic Description/ Drilling Remarks	Soil Class	Graphic Log
001 0	1150		8	1.2	65	30	5	2	Mixed Angular and Round Gravel Fill w/ Sand Br/Grey		
1			9						No Petroleum Odor, No Staining		
			8								
2			6		↓	↓	↓				
002	1203	13	29	0.6	65	30	5	2	Mixed Angular and Round Gravel Fill w/ Sand Br/Grey		
	1219	36	50	138	65	30	5	2	Refusal at 2.75' - Move Hole Tan at Bottom.		
3		29		Petro					4' Back towards BHOI Start at Same Tan/Grey		
		24		0004	65	30	5	15	TAN Angular Formation - Rounded Gravel - 3/4 Rock.		
003 4	1237		9	122					Tan Angular formation - Round Gravel (Grey)		
5			24						Petroleum Odor - No Staining Visible.		
			50								
6									Refusal @ 5'5" Driller Augered Through	5'5"	
004	1252		18	177	65	30	5	15	Tan Angular formation - Round Gravel -		
7			24						Petroleum Odor - No Visible Staining.		
			36						Samples Collected @		
			40		↓	↓	↓	↓			
005 8	1308		26	126	65	30	5	1.0	10NSS002SL02USS Mixed Tan/Grey Gravels w/ Some		
			42						10NSS003SL02USS Angular Formation Sand.		
9			44						10NSS004SL02USS Petroleum Odor		
			50		↓	↓	↓	↓			
004 10	1320		30	146	70	25	5	1.5	Angular formation - Tan & Grey - Some Gravel		
			50		↓	↓	↓	↓	Little Frequent, < 1/4 Sheen. Petroleum Odor.		
11									Hole Refusal at 10'9"		
12											
13											
14											
15											
16											
17											
18											
19											
20											

LOG OF DRILLING OPERATIONS

Project Number:	Boring Number:	Sheet
1008300	03 USS	1 of 1

Project: Nike Site Summit Site: Client: Army – Fort Richardson

Start Date: 8/9/10 Finish Date: 8/9/10 Geologist: Douglas Quist

Drilling Company: Discovery Drilling Drilling Method: Hollow Stem Auger Rig Type: CME

Boring Size: (in) 8.25 OD Total Depth: (ft) ~~20~~ 19.5' Depth to First Water: (ft) 16.5' Depth to SWL: (ft)

Sampler Type: Split Spoon Diameter: (in) 2.0 Hammer Drop: (in) Hammer Weight: (lbs) 340

AK State Plane Coordinates: Northing (ft): Easting (ft): Top of Hole Elevation (ft): Elevation Datum:

Depth (ft bgs)	Time	Sample Interval	Blows/6 in	PID (ppm)	% Gravel	% Sand	% Fines	Max Size (in)	Lithologic Description/ Drilling Remarks	Soil Class	Graphic Log
0											
1											
2											
001	1408		7	0.3	70	25	5	1.5	Angular & Rounded Fill - Gray / Brown		
3			7		↓	↓	↓		No Petroleum Odor - No Visible Staining		
			9								
4			10		↓	↓	↓				
002	1420		6	0.5	65	30	5	1.5	Angular & Rounded Fill - Gray Brown		
5			4						No Petroleum Odor - No Visible Stain		
			3								
6			4		↓	↓	↓				
003	1430		2	0.6	40	55	5	2	Sandy Gravel - Minimal Angular Rock		
7			3						Predominantly Well Rounded - Dark Brown.		
			6						No Petroleum Odor - No Visible Staining		
8			7		↓	↓	↓				
004	1440		17	0.5	70	25	5	1.5	Angular Formation - Gray / Brown		
9			45						No Petroleum Odor - No Visible Staining		
			50						50 BC for 5" - Blow Refusal		
10			/		↓	↓	↓		Auger Advance		
005	1447		7	1.1	80	15	5	2	Angular formation - Gray Brown No Petro		
11			50		↓	↓	↓		3" For 50 BC - Blow Refusal No Visual		
			/						Auger Advance.		
12			/								
* 006	1500		18	4.5	70	25	5	1.5	Angular formation - Gray Brown		
13			50						No Petroleum Odor - No Visible Staining		
			/						50 BC for 3" - Blow Refusal		
14			/						Auger Advance.		
* 007	1512		17	61.0	80	15	5	1.5	Angular formation - Gray Clay - Fractured		
15			50						Bed Rock. - Petroleum Odor - No Visible		
			/						Staining - 50 BC for 5" - Blow Refusal		
16			/						Auger Advance -		
GW ▽	1525		34	NA	80	15	5	1.5	Angular Formation		
			50						GW Encountered at ± 16.5 - 17.0' BGS		
17											
18									Complete as Monitoring Well		
	* Sample	10NSS006SL03USS									
		10NSS007SL03USS									
19											
20									Total Depth ~~20~~ 19.5'		

MONTGOMERY WATSON
Anchorage, Alaska

WELL CONSTRUCTION LOG

PROJECT NO.:	WELL NO.:	SHEET
1189002.360101	MW03055	1 OF 1

PROJECT: Nike Site Summit | SITE: USS | CLIENT: AFCEE | GEOLOGIST: Doug Quist

DATE: 8/9/10 | WEATHER: Cloudy, cool | LOCATION COORDINATES: (Northing) (Easting) | ELEVATION DATUM: MSL (MSL/Other)

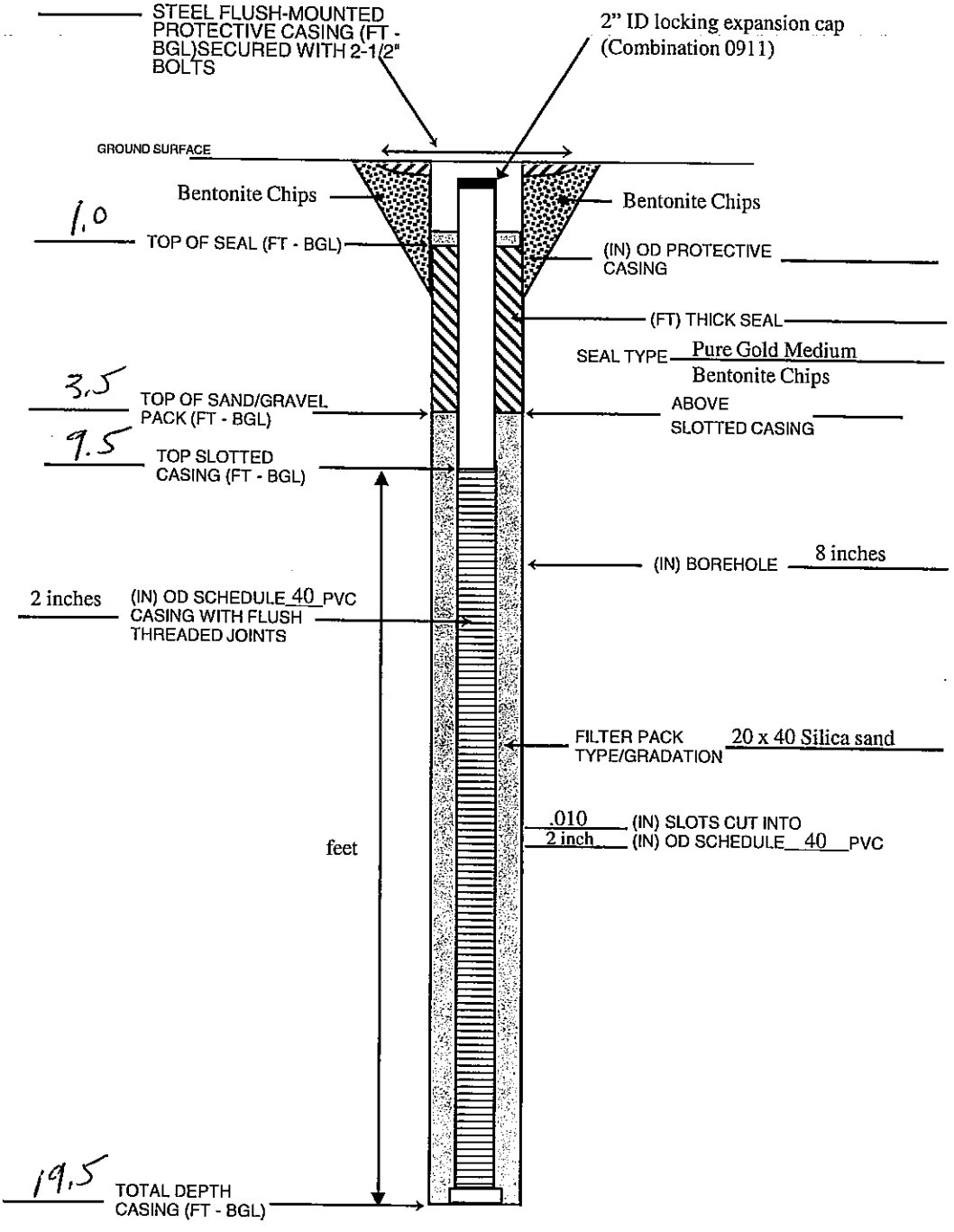
DRILLING METHOD: Hollow stem auger | BORING SIZE: 8 inches | RIG TYPE: CME 55 | DRILLER/ COMPANY: Discovery

SURVEYED ELEVATIONS | GROUND SURFACE | TOP OF PROTECTIVE CASING | TOP OF PVC CASING: 31.13

WELL SAMPLED? ☐ YES ☒ NO

QUANTITY MATERIALS USED:

Bentonite (lbs)	3 bags
Sand (lbs)	8 bags
Grout (lbs)	
Screen (ft)	10'
Blank Casing (ft)	16'
Bottom Cap (ea)	
Top Cap (ea)	
Flush Mount	
Protective Casing (ft)	
Lock	
MISC.:	



NOTES

LOG OF DRILLING OPERATIONS

Project Number:	Boring Number:	Sheet
1008300	BH04USS	1 of 1

Project: Nike Site Summit Site: USS Client: Army – Fort Richardson

Start Date: 8/10/10 Finish Date: 8/10/10 Geologist: Douglas Quist

Drilling Company: Discovery Drilling Drilling Method: Hollow Stem Auger Rig Type: CME55

Boring Size: (in) 8.25 OD Total Depth: (ft) 15' Depth to First Water: (ft) 14'3" Depth to SWL: (ft)

Sampler Type: Split Spoon Diameter: (in) 2.0 Hammer Drop: (in) Hammer Weight: (lbs) 340

AK State Plane Coordinates: Northing (ft): Easting (ft): Top of Hole Elevation (ft): Elevation Datum:

Depth (ft bgs)	Time	Sample Interval	Blows/6 in	PID (ppm)	% Gravel	% Sand	% Fines	Max Size (in)	Lithologic Description/ Drilling Remarks	Soil Class	Graphic Log
0											
1											
2											
001 2	1012		2	0.3	75	20	5	1.5	Angular and Rounded gravel fill - Grey Brown No Petroleum Odor No Visual Staining		
3			3		↓	↓	↓	↓			
			5								
4			4		↓	↓	↓	↓			
002 4	1024		2	0.5	75	20	5	1.5	Angular and Rounded gravel Fill - Grey Brown No Petroleum Odor No Visual Staining		
5			5		↓	↓	↓				
			5								
6			4		↓	↓	↓				
003 6	1033		3	0.9	70	25	5	1.5	Angular and Rounded gravel Fill - Grey / Brown. No Petroleum Odor No Visual Staining. More Sand than previous interval		
7			2		↓	↓	↓				
			1								
8			2		↓	↓	↓				
004 8	1039		2	1.2	70	25	5	2.0	Angular and Rounded gravel Fill - Grey / Brown. No Petroleum Odor No Visual Staining. Clearly Fill Based on Blow Counts and Lithology.		
9			2		↓	↓	↓				
			2								
10			1		↓	↓	↓				
*005 10	1046		3	7.9	75	20	5	2.0	Angular and Rounded gravel Fill - Grey / Brown		
11			4		↓	↓	↓		3" Petroleum Odor - No Visual Staining		
			50						Auger to 12' to advance.		
12			/		↓	↓	↓				
*006 12	1101		10	17.9	50	45	5	2.5	Angular and Rounded gravel - More Sand than previous interval Grey / Brown		
13			11		↓	↓	↓		Petroleum Odor - No Visible Staining		
			10						One Large Rock.		
14 13'11" ▽ 14	1109		14		↓	↓	↓				
			50	NA	60	35	5	2.0	3" - Refusal - Auger down to complete MW Petroleum Odor - Sheen on Water in Sampler		
15											
									Auger to 15' BGS Refusal		
16											
17											
18											
19											
20											

MONTGOMERY WATSON
Anchorage, Alaska

WELL CONSTRUCTION LOG

PROJECT NO.: 1189002.360101

WELL NO.: MW04OSS

SHEET 1 OF 1

PROJECT: Nike Site Summit | SITE: USS | CLIENT: AFCEE | GEOLOGIST: Doug Quist

DATE: 8/10/10 | WEATHER: Cloudy, cool | LOCATION COORDINATES: (Northing) (Easting) | ELEVATION DATUM: MSL (MSL/Other)

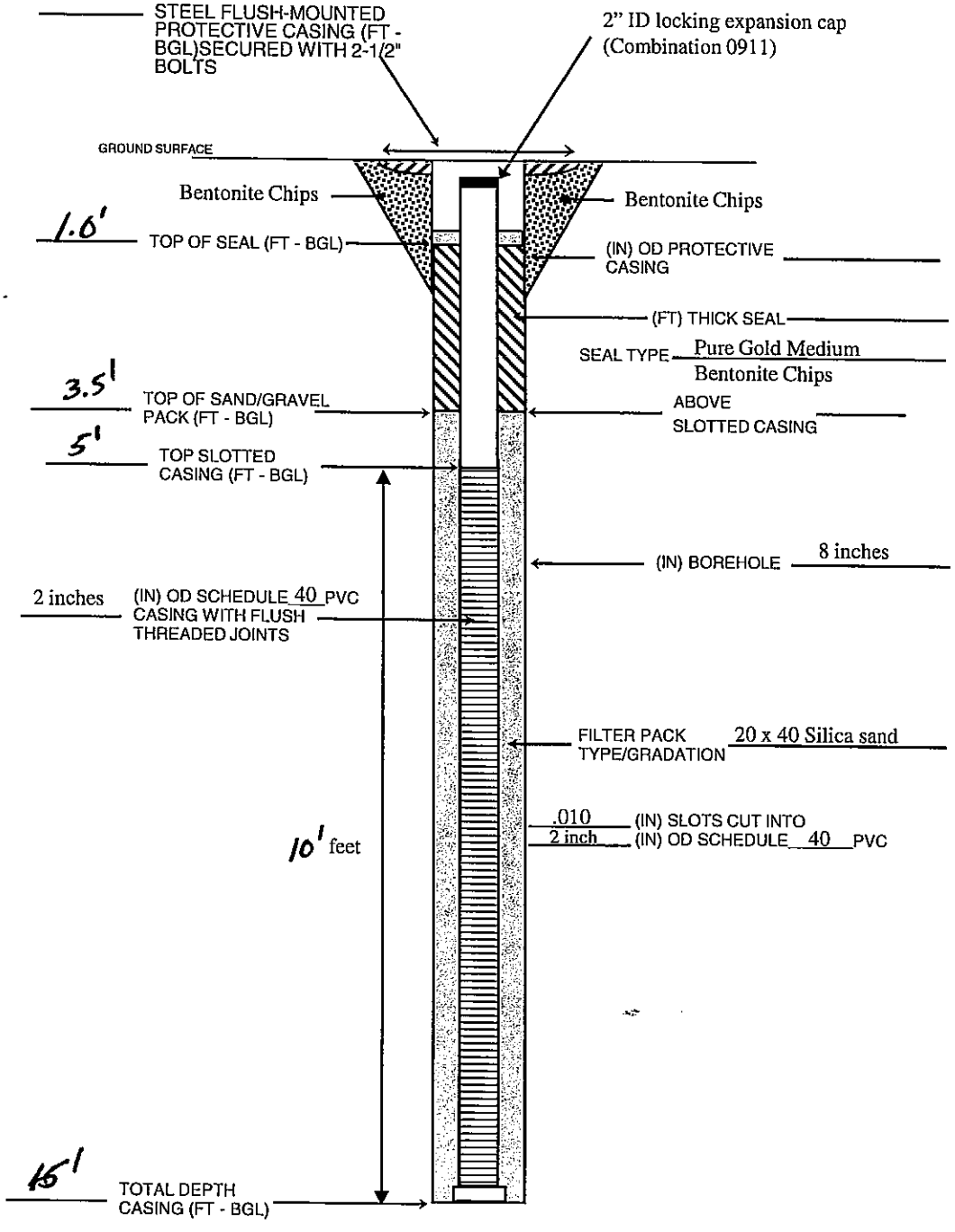
DRILLING METHOD: Hollow stem auger | BORING SIZE: 8 inches | RIG TYPE: CME 55 | DRILLER/ COMPANY: Discovery

SURVEYED ELEVATIONS | GROUND SURFACE | TOP OF PROTECTIVE CASING | TOP OF PVC CASING ~~$1.13~~

WELL SAMPLED? YES [ ] NO [X]

QUANTITY MATERIALS USED:

Bentonite (lbs)	2 X 50
Sand (lbs)	6 X 50
Grout (lbs)	
Screen (ft)	
Blank Casing (ft)	
Bottom Cap (ea)	
Top Cap (ea)	
Flush Mount	
Protective Casing (ft)	
Lock	
MISC.:	



NOTES

LOG OF DRILLING OPERATIONS

Project Number:	Boring Number:	Sheet
1008300	BH05 USS	1 of 1

Project: Nike Site Summit Site: USS Client: Army – Fort Richardson

Start Date: 8/10/10 Finish Date: 8/10/10 Geologist: Douglas Quist

Drilling Company: Discovery Drilling Drilling Method: Hollow Stem Auger Rig Type: CME 55

Boring Size: (in) 8.25 OD Total Depth: (ft) 25' Depth to First Water: (ft) NA Depth to SWL: (ft)

Sampler Type: Split Spoon Diameter: (in) 2.0 Hammer Drop: (in) Hammer Weight: (lbs) 340

AK State Plane Coordinates: Northing (ft): Easting (ft): Top of Hole Elevation (ft): Elevation Datum:

Depth (ft bgs)	Time	Sample Interval	Blows/6 in	PID (ppm)	% Gravel	% Sand	% Fines	Max Size (in)	Lithologic Description/ Drilling Remarks	Soil Class	Graphic Log
0											
1											
2											
001	1212		6	10.1	70	25	5	1.5	Angular and Rounded Fill Grey / Brown -		
3			3						No Petroleum Odor No Visual Staining.		
			2								
			3		↓	↓	↓				
4											
002	1215		3	12.7	45	50	5	1.0	Tan Sandy Soil w/ Angular and Rounded Gravel		
5			4						No Petroleum Odor No Visual Staining.		
			10								
6			16		↓	↓	↓				
003	1224		12	63	25	70	5	0.5	Tan Sandy Soil w/ Angular and Rounded gravel		
7			43						Grey / Brown		
			50						5" Recovery No Petroleum Odor, No Visible Staining		
			/		↓	↓	↓		Auger to 8'		
8											
004	1230		45	9.1	10	85	5	0.5	Tan - Heavily Compacted Sand - Some Rounded		
9			50						2" and angular Gravel		
			/						No Petroleum Odor, No Visible Staining		
			/		↓	↓	↓		Auger to 10'		
10											
005	1240		37	13.4	10	85	5	0.5	Tan - Heavily Compacted Sand - Some Rounded		
11			50						2" Angular Gravel		
			/						No Petroleum Odor, No Visible Stain		
			/		↓	↓	↓		Auger to 12'		
12											
006	1253		39	13.5	5	90	5	0.5	Tan - Heavily Compacted Sand - Angular		
13			60						3" Gravel No Petroleum Odor		
			/						No Staining		
			/		↓	↓	↓		Auger to 14. >1/4 Recovery		
14											
007	1302		50	7.5	5	90	5	0.5	3" Tan - Heavy Compacted Soil - Angular Gravel		
15			/						No Petroleum Odor, No Staining.		
			/						Auger to 16 >1/4 Recovery		
			/		↓	↓	↓				
16											
008	1309		50	8.8	5	90	5	1.0	2" Tan - Heavily Compacted Soil - Angular		
17			/						Gravel - No Petroleum Odors No		
			/						Recovery.		
			/		↓	↓	↓		Auger to 18' - Tan - Heavily Compacted Soil -		
18											
009	1320		50	3.2	5	90	5	0.5	4" Angular Gravel		
19			/						Auger to 20'		
			/								
			/		↓	↓	↓				
20											
			50						3" Auger to 25' - No More Rec.		

Backfill Hole to 8' BGS w/ Bentonite.
Backfill to Surface w/ Cuttings.

LOG OF DRILLING OPERATIONS

Project Number:	Boring Number:	Sheet
1008300	BHOGUSS	1 of 1

Project: Nike Site Summit Site: USS Client: Army – Fort Richardson

Start Date: 8/10/10 Finish Date: Geologist: Douglas Quist.

Drilling Company: Discovery Drilling Drilling Method: Hollow Stem Auger Rig Type: CME 55

Boring Size: (in) 8.25 OD Total Depth: (ft) Depth to First Water: (ft) Depth to SWL: (ft)

Sampler Type: Split Spoon Diameter: (in) 2.0 Hammer Drop: (in) Hammer Weight: (lbs) 340

AK State Plane Coordinates: Northing (ft): Easting (ft): Top of Hole Elevation (ft): Elevation Datum:

Depth (ft bgs)	Time	Sample Interval	Blows/6 in	PID (ppm)	% Gravel	% Sand	% Fines	Max Size (in)	Lithologic Description/ Drilling Remarks	Soil Class	Graphic Log
0											
1											
2 * 001	1500		5	9.6	70	25	5	2	Angular and Rounded Gravel Fill - Grey / Brown No Petroleum Odor, No Staining		
3			18								
			29								
4			50		↓	↓	↓		5" Auger to 4'		
002	1508		50	6.8	95	2.5	2.5	2.5	5" Auger to 6'		
5			/						One Large Grey Angular Rock - Little Sand and Fines -		
			/						No Petroleum Odor, No Staining		
6 003	1515		50	6.3	90	5	5	2.5	5" Auger to 8'		
7			/						Large Grey Angular Rocks - Little Sand No Petroleum Odor,		
			/						No Staining		
8 004	1521		50	5.2	95	2.5	2.5	2.5	5" Auger to 10'		
9			/						Large Grey Angular Rocks - Little Sand - Potentially Fractured Bedrock.		
			/						No Petroleum Odor,		
10 005	1530		50	6.2	95	2.5	2.5	2.5	2" No Staining.		
11			/						Auger to 12' Grey Angular Rock Potentially Fractured Bedrock.		
			/								
12 * 006	1538		50	6.8	75	25	5	1.5	1.5" No Petroleum Odor / No Staining.		
13									Refusal at 13'-		
14									Backfill w Bentonite to 8' BGS - Backfill With Remaining Cuttings.		
15											
16									Samples @ 10NSS001SLOGUSS 10NSS006SLOGUSS.		
17											
18											
19											
20											

LOG OF DRILLING OPERATIONS

Project Number:	Boring Number:	Sheet
1008300	BH07USS	1 of 1

Project: Nike Site Summit Site: USS Client: Army -- Fort Richardson

Start Date: 8/10/10 Finish Date: 8/10/10 Geologist: Douglas Quist

Drilling Company: Discovery Drilling Drilling Method: Hollow Stem Auger Rig Type: CME 55

Boring Size: (in) 8.25 OD Total Depth: (ft) ____ Depth to First Water: (ft) ____ Depth to SWL: (ft) ____

Sampler Type: Split Spoon Diameter: (in) 2.0 Hammer Drop: (in) ____ Hammer Weight: (lbs) 340

AK State Plane Coordinates: Northing (ft): Easting (ft): Top of Hole Elevation (ft): Elevation Datum:

Depth (ft bgs)	Time	Sample Interval	Blows/6 in	PID (ppm)	% Gravel	% Sand	% Fines	Max Size (in)	Lithologic Description/ Drilling Remarks	Soil Class	Graphic Log
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
001	1618		5 3 3 5	3.2	70	25	5	1.5	Angular and Rounded Gravel, Grey / Brown. No Petroleum Odor, No Staining		
002	1622		4 5 4 3	2.8	70	25	5	1.5	Angular and Rounded Gravel, Tan / Brown Difference / Hue prevails my color. No Petro Odor, No Staining		
003	1647		3 4 27 25	3.4	70	25	5	1.0	Angular Gravel Tan / Brown No Petroleum Odor, No Staining		
004	1634		50 / / /	1.6	60	35	5	1.5	5" Auger to 10' Angular Gravel Tan / Brown No Petroleum Odor, No Staining		
005	1645		50 / / /	23.9	60	35	5	2.5	5" Auger to 12' Light Tan Angular Gravel Slight No Petroleum Odor, No Staining Compacted Sands w Gravel Pot Bedrock.		
*006	1658		25 50 / /	340	45	50	5	1.0	Tan Sandy Soil w/ Petroleum Staining 3" and Odor @ ±12.5'- Angular Rock gravel Auger to 14'		
*007	1704		50 / / /	237	45	50	5	1.0	4" Tan Sandy Soil w/ Petroleum Staining and Odor @ Angular Rock Gravels - Auger to 16'		
~~008~~	~~17~~								Refusal of Auger at 16' Backfill to 8' w/ Bentonite.		

LOG OF DRILLING OPERATIONS

Project Number:	Boring Number:	Sheet
1008300	BH08 USS	1 of 1

Project: Nike Site Summit Site: HIPAR USS Client: Army – Fort Richardson

Start Date: 8/11/10 Finish Date: 8/11/10 Geologist: Douglas Quist

Drilling Company: Discovery Drilling Drilling Method: Hollow Stem Auger Rig Type: CME 55

Boring Size: (in) 8.25 OD Total Depth: (ft) ____ Depth to First Water: (ft) ____ Depth to SWL: (ft) ____

Sampler Type: Split Spoon Diameter: (in) 2.0 Hammer Drop: (in) ____ Hammer Weight: (lbs) 340

AK State Plane Coordinates: Northing (ft): Easting (ft): Top of Hole Elevation (ft): Elevation Datum:

Depth (ft bgs)	Time	Sample Interval	Blows/6 in	PID (ppm)	% Gravel	% Sand	% Fines	Max Size (in)	Lithologic Description/ Drilling Remarks	Soil Class	Graphic Log
0											
1											
2											
001 2	0935		4	0.5	60	35	5	2"	Angular and Rounded Gravel Grey/Brown		
3			9		↓	↓	↓		No Petroleum Odor, No Staining.		
			8						Appears to be Fill		
4			7		↓	↓	↓				
002 4	0939		5	2.4	60	35	5	2"	Angular and Rounded Gravel Brown/Grey		
5			4		↓	↓	↓		No Petroleum Odor, No Staining		
			3						Appears to be Fill		
6			4		↓	↓	↓	2			
003 6	0944		2	2.4	65	30	5		Angular Gravel Brown/Grey to		
7			3		↓	↓	↓		Grey/Green Rock		
			5						No Petroleum Odor, No Staining		
8			4		↓	↓	↓				
*004 8	0948		1	2.5	80	20	0	2"	Angular Grey/Green Rock		
9			2		80	20	0	2"	No Petroleum Contamination, No		
			9		65	20	0		Tan Compacted Sand Staining		
10			30		↓	↓	↓				
*005 10	0952		50	2.5	20	75	5		5" Auger to 12' Tan Compacted Sand		
11			/						REFUSAL @ 11' Auger Hits Bedrock.		
			/						No Petroleum Odor, No Staining		
12			/								
13											
14											
15											
16											
17											
18											
19											
20											

LOG OF DRILLING OPERATIONS

Project Number:	Boring Number:	Sheet
1008300	BH09 USS	1 of 1

Project: Nike Site Summit Site: Motor Pool USS Client: Army – Fort Richardson

Start Date: 8/11/10 Finish Date: 8/11/10 Geologist: Douglas Quist

Drilling Company: Discovery Drilling Drilling Method: Hollow Stem Auger Rig Type: CME 55

Boring Size: (in) 8.25 OD Total Depth: (ft) 19' Depth to First Water: (ft) Depth to SWL: (ft)

Sampler Type: Split Spoon Diameter: (in) 2.0 Hammer Drop: (in) Hammer Weight: (lbs) 340

AK State Plane Coordinates: Northing (ft): Easting (ft): Top of Hole Elevation (ft): Elevation Datum:

Depth (ft bgs)	Time	Sample Interval	Blows/6 in	PID (ppm)	% Gravel	% Sand	% Fines	Max Size (in)	Lithologic Description/ Drilling Remarks	Soil Class	Graphic Log
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
001	1030		5	2.3	65	30	5	2"	Angular and Rounded Gravel Grey/Brown. No Petroleum Odor, No Staining		
			4		↓	↓	↓	↓			
			6					1.5			
			7		↓	↓	↓	↓			
002	1034		6	2.4	65	30	5	1.5	Angular and Rounded Gravel Grey/Brown		
			5		65	30	5	↓	No Petroleum Odor, No Staining		
			10		80	15	5	2	Angular only gravel Grey/Green		
			16		80	15	5	↓	No Petroleum Odor. Pot Bedrock?		
* 003	1040		5	3.1	80	15	5	2	Angular only gravel Grey/Green		
			4		70	25	5	2	No Petro Odor Grey/Green		
			4		65	30	5	1.5	No Staining Grey/Brown		
			3		65	30	5	1.5	Grey Brown		
004	1044		3	3.1	65	30	5	1.5	Angular Gravel Grey Brown		
			3		65	30	5	1.0	No Odor No Staing. Grey Brown		
			2		60	20	20	0.5	Organic like layer Brown/Grey		
			16		60	20	20	1.5	No Odor No Staining Brown/Grey		
005	1050		2	2.9	60	20	20	1.0	Angular Gravel w/ Fines & Organics Brown/Grey		
			20		60	20	20	1.0	Moist layer, Seep but not wet like GW.		
			50		75	25	5	2.0	5" No Petro Odor, No Stain Grey/Brown		
			/						Auger to 12'		
* 006	1058		50	3.3	50	40	10	1.5	5" ± Slight Moisture - Brown/Grey		
			/						Angular Gravel Lw/Fair -		
			/						Auger to 14 No Petroleum Odor		
			/						No Staining		
007	1105		50	NA	—	—	—	—	3" No RECOVERY		
			/						Auger to 16'		
			/								
			/								
008	1117		50						3" No Recovery		
			/						Auger to 16'		
			/								
			/								
009	1124		50						2" No Recovery		
			/						Auger to 20'. Refusal at 19'		
			/								
			/						Clean BH - Backfill to 8' BGS w Bentonite		
									Use Cuttings for remaining 8'		

LOG OF DRILLING OPERATIONS

Project Number:	Boring Number:	Sheet
1008300	BH10USS	1 of 1

Project: Nike Site Summit Site: Old Tank. USS Client: Army – Fort Richardson

Start Date: 8/11/10 Finish Date: 8/11/10 Geologist: Douglas Quist

Drilling Company: Discovery Drilling Drilling Method: Hollow Stem Auger Rig Type: CME 55

Boring Size: (in) 8.25 OD Total Depth: (ft) 12 Depth to First Water: (ft) Depth to SWL: (ft)

Sampler Type: Split Spoon Diameter: (in) 2.0 Hammer Drop: (in) Hammer Weight: (lbs) 340

AK State Plane Coordinates: Northing (ft): Easting (ft): Top of Hole Elevation (ft): Elevation Datum:

Depth (ft bgs)	Time	Sample Interval	Blows/6 in	PID (ppm)	% Gravel	% Sand	% Fines	Max Size (in)	Lithologic Description/ Drilling Remarks	Soil Class	Graphic Log
0											
1											
2											
*001	1238		18	18.3	70	25	5	2.5	Angular Gravel Fill No Rounded Gravel		
3			20		↓	↓	↓	1.5	No Petroleum Odor, No Staining.		
			/					##	Hit large Rock - See if Can Grind By		
4			/						Tilting Auger - Moved 2' over - Refusal		
002	1257		16	2.5	80	15	5	3.0	Move 2' over again		
5			14		↓	↓	↓	1.5	GREY ANGULAR GRAVEL - Likely		
			17					1.5	GROUND BEDROCK FROM DRILL RIG		
6			20		↓	↓	↓	2.0	No Petroleum Odor, No Staining.		
003	1307		7	5.7	90	7.5	25	3.0	GREY ANGULAR - Pulverized fractured		
7			7		↓	↓	↓	2.0	BEDROCK - No Petroleum Odor, No Staining		
			20					2.0			
8			15		↓	↓	↓	2.0			
004	1313		11	6.5	90	7.5	2.5	1.5	Grey Angular - Pulverized Rock.		
9			11		75	20	5	2.0	No Petroleum Odor, No Visible Staining.		
			10		50	45	5	1.5	Tan Sands and Grey Angular Rock.		
10			16		50	45	5	1.5	No Petroleum Odor, No Staining.		
*005	1321		5	23.8	50	45	5	1.5	Tan Sands Heavily Compacted w Angular		
11			45		↓	↓	↓	1.5	Grey Layered Rock, No Petroleum Odor		
			50					1.5	No Staining.		
12			/						511 - Auger to 12' -		
*006									REFUSAL AT 12'		
13									Pounded with AUGER + PUSH		
									NOT MOVING		
14											
									Sample at 10NSS001SL10USS		
15									10NSS005SL10USS		
16											
17											
18											
19											
20											

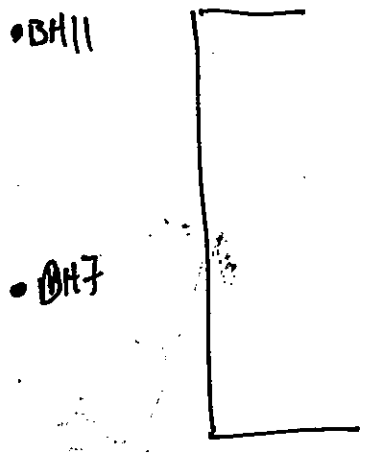
MWH

By Dang Quist Date 8/19/10 Client AFCEE Sheet 1 of 1

Chkd. By _____ Description Nike Site Summit – BH11 USS Job No. 10085300

			PID	BC	Gravel	Sand	Fines	Max	Description
1050	001	2	0.3	50	80	15	5	1.5	5" Angular Rock Gravels No Petroleum Odor, No Staining. Auger to 4'
1110	002	4	0.1	50	80	15	5	2	4" Angular Rock Gravels No Petroleum Odor, No Staining. Little Recovery. Auger to 6'
1117 *	003	6	0.2	50	95	7.5	2.5	1.5	3" Angular Weathered Bedrock No Petroleum Odor, No Staining Little Recovery.
1122 *	004	8	0.2	50	95	4.5	2.5	1.5	2" Angular Weathered Bedrock, No Petroleum Odor, No Staining Little Recovery
		10							
		12							
		14							

Sample ID: 10NSS003SL11LSS
10NSS004SL11LSS



BH12USS

MWH

By Doug Quist Date 8/19/10 Client AFCEE Sheet 1 of 1

Chkd. By _____ Description Nike Site Summit – BH12USS Job No. 108300

			PID	BZ	Gravel	Sand	Fines	Mix.	
1222	001	2	1.3	9	70	25	5	1.5	Description. Angular & Rounded gravel – Medium Brown No Petroleum Odor, No Staining. Clearly Fill
				6					
				6					
				7					
1225	002	4	1.6	5	70	25	5	1.5	Angular & Rounded gravel – Medium Brown. No Petroleum Odor, No Staining. Clearly Fill
				4				1.0	
				4				1.0	
				3				1.0	
1230	003	6	1.2	2	70	25	5	1.5	Angular & Rounded gravel
				1					– Moist layer / Let Set to see if GW –
				3	35	60	10	5	Not Groundwater, Keep drilling.
				3	30	60	10		– Moist Sandy / Gravely Soil w / fines.
1249	004	8	12.1	30	60	10	1.5		Moderate GW – Perhaps Perched ~~Surface~~ lens.
				1					
				1					
				1					
1254 *	005	10	1.1	2	30	60	10	1.5	
				1	30	60	10	1	
				2	85	10	5	1	– Angular – Weathered Bedrock. –
				2	85	10	5	1	– Angular – Weathered Bedrock. –
1314 *	006	12	227.1	1	75	20	5	0.5	Angular & Weathered Bedrock – w gravels
				1	75	20	5	1	Angular & Weathered Bedrock – w/ gravels.
				2	75	20	5	1	
				50	80	15	5	1.5	21' Rock – Slight odor of Petrol
1322	007	14	88.1	6	80	15	5	1	Masked Petrochally By Moisture.
				50	80	15	5	1	Angular Weathered Bedrock – Potential GW @ 14'2" +3'
									31'
									Auger to 16' – Auger to 19'5"
									Set Flush Mount MW.

Sample @ 10NSS20GSL12USS Duplicate.
10NSS00GSL12USS
10NSS005SL12USS.

MONTGOMERY WATSON
Anchorage, Alaska

WELL CONSTRUCTION LOG

PROJECT NO.: 18008300 | WELL NO.: MW12 USS | SHEET 1 OF 1

PROJECT: Nikz Site Summit | SITE: USS | CLIENT: ARCO | GEOLOGIST: Douglas Quist

DATE: 8/19/10 | WEATHER: P.Cloudy | LOCATION COORDINATES: (Northing) (Easting) | ELEVATION DATUM: MSL (MSL/Other)

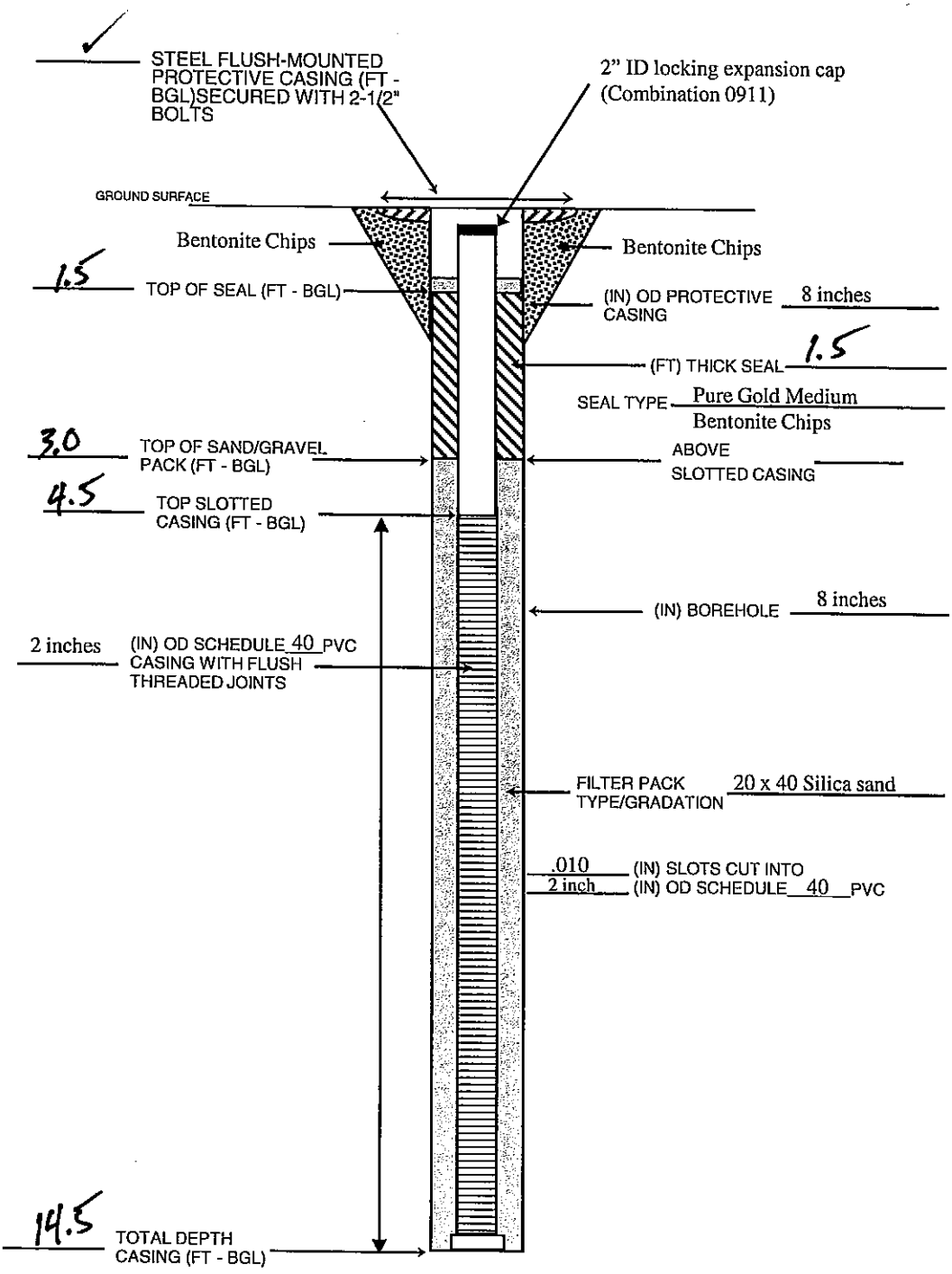
DRILLING METHOD: Hollow stem | BORING SIZE: 8 inches | RIG TYPE: CME 45 | DRILLER/ COMPANY: Discovery

SURVEYED ELEVATIONS | GROUND SURFACE | TOP OF PROTECTIVE CASING | TOP OF PVC CASING 31.13

WELL SAMPLED? ☐ YES ☒ NO

QUANTITY MATERIALS USED:

Bentonite (lbs)	2 X50
Sand (lbs)	6 X50
Grout (lbs)	
Screen (ft)	10
Blank Casing (ft)	4.5
Bottom Cap (ea)	✓
Top Cap (ea)	✓
Flush Mount	✓
Protective Casing (ft)	NA
Lock	
MISC.:	



NOTES

MWH

By Douglas Durst Date 8/19/10 Client AFCEE Sheet 1 of 1

Chkd. By _____ Description Upper Site Summit - BH 13 USS. Job No. 180430

1500 001 21.0 SD PID BC Gravel Sand Fines Moist

Description:
2"- Bedrock - Sample From lower End of Auger.
Refusal @ 2'2"

10NSS001SL13USS

BH02 SS15 BH/MW03 BH01 BH13USS SS14USS BH/MW12 Antenna Pad

26' 29.4 9.5' 21.5 31.7' 11.5 21.8'

Barracks.

BH01 64.7 71.7
BH02 78'
SS14 74.5'
BH/MW12 67'
BH13 84'
SS15 69.7'
MW03 56.7'

LOG OF DRILLING OPERATIONS

Project Number:	Boring Number:	Sheet
1008300	BH01 LSS	1 of 1

Project: Nike Site Summit Site: Motor Pool / Vehicle LSS Main Client: Army – Fort Richardson

Start Date: 8/11/10 Finish Date: Geologist: Douglas Dowsett

Drilling Company: Discovery Drilling Drilling Method: Hollow Stem Auger Rig Type: CME 55

Boring Size: (in) 8.25 OD Total Depth: (ft) Depth to First Water: (ft) Depth to SWL: (ft)

Sampler Type: Split Spoon Diameter: (in) 2.0 Hammer Drop: (in) Hammer Weight: (lbs) 340

AK State Plane Coordinates: Northing (ft): Easting (ft): Top of Hole Elevation (ft): Elevation Datum:

Depth (ft bgs)	Time	Sample Interval	Blows/6 in	PID (ppm)	% Gravel	% Sand	% Fines	Max Size (in)	Lithologic Description/ Drilling Remarks	Soil Class	Graphic Log
SO1 2	1527		3 2 3 4	15.8	40	55	5	0.5	Angular and Rounded Gravels DK Brown With Sands & Some Fines No Petroleum Odor, No Staining		
SO2 4	1531		7 6 7 5	13.7	40	55	5	0.5	Angular and Rounded Gravels DK Brown with Sand & Some Fines No Petroleum Odor, No Staining.		
SO3 6	1535		4 4 4 4	14.2	40	55	5	0.5	Angular and Rounded Gravels. DK Brown with Sands & some Fines.		
SO4 8	1540		3 6 50	14.2	40 80	55 15	5 5	0.5 0.5 2.0	DK Brown Sands w Angular and Rounded Gravels No Petrol Odor. 5" DK Grey Angular Rock Gravel/Weathered Fractured B-Rock.		
SO5 10	1545		/ 50 / / /	15.7	/ 75	/ 20	/ 5	/ 1.5	Auger to 10' 3" DK Grey Angular-Rock - May Be Some B-Rock Little Recovery No Petroleum Odor, No Staining		
SO6 12	1600		50 /						Auger to 12' 3" Refusal at 12'3" Auger Advancing no more.		
13											
14											
15											
16											
17											
18											
19											
20											

LOG OF DRILLING OPERATIONS

Project Number:	Boring Number:	Sheet
1008300	BH02 LSS	1 of 1

Project: Nike Site Summit Site: Diesel / UST @ LSS Client: Army – Fort Richardson

Start Date: 8/12/10 Finish Date: 8/12/10 Geologist: Douglas Quist

Drilling Company: Discovery Drilling Drilling Method: Hollow Stem Auger Rig Type: CME 55

Boring Size: (in) 8.25 OD Total Depth: (ft) 13.5 Depth to First Water: (ft) 9.0 Depth to SWL: (ft)

Sampler Type: Split Spoon Diameter: (in) 2.0 Hammer Drop: (in) Hammer Weight: (lbs) 340

AK State Plane Coordinates: Northing (ft): Easting (ft): Top of Hole Elevation (ft): Elevation Datum:

Depth (ft bgs)	Time	Sample Interval	Blows/6 in	PID (ppm)	% Gravel	% Sand	% Fines	Max Size (in)	Lithologic Description/ Drilling Remarks	Soil Class	Graphic Log
0											
1											
2											
#001 2	0938		7	10.7	65	30	5	1.0	Angular and Rounded gravel DK Brown Heavy Petroleum Odor / Pot Stained.		
3			8		↓	↓	↓	↓			
			9								
4			9		↓	↓	↓	↓			
002 4	0943		9	60.8	65	30	5	1.0	Angular and Rounded gravel. Dark Brown. Heavy Petroleum Odor. Pot Stained		
5			8		↓	↓	↓	↓			
			7								
6			7		↓	↓	↓	↓			
003 6	0956		4	32.2	60	35	5	1.5	Angular and Rounded gravel. Dark Brown Heavy Petroleum Odor. Potential Staining		
7			4		↓	↓	↓	1.0			
			3					1.0			
8			3		↓	↓	↓	1.0			
#004 8	1000		4	33.7	60	30	10	1.0	Angular and Rounded gravel. Dark Brown. Heavy Petroleum Odor. Potential Staining.		
9			3		60	30	10	1.5			
			3		60	30	10	1.0	Groundwater @ ± 9' BGS		
10			2		60	30	10	1.0			
									Auger to 13.5		
11											
12											
13									↓ 13.5' Refusal - Set Well		
14											
15									Sample @ 10NSS001SL02LSS		
									10NSS004SL02LSS		
16											
17											
18											
19											
20											

MONTGOMERY WATSON
Anchorage, Alaska

WELL CONSTRUCTION LOG

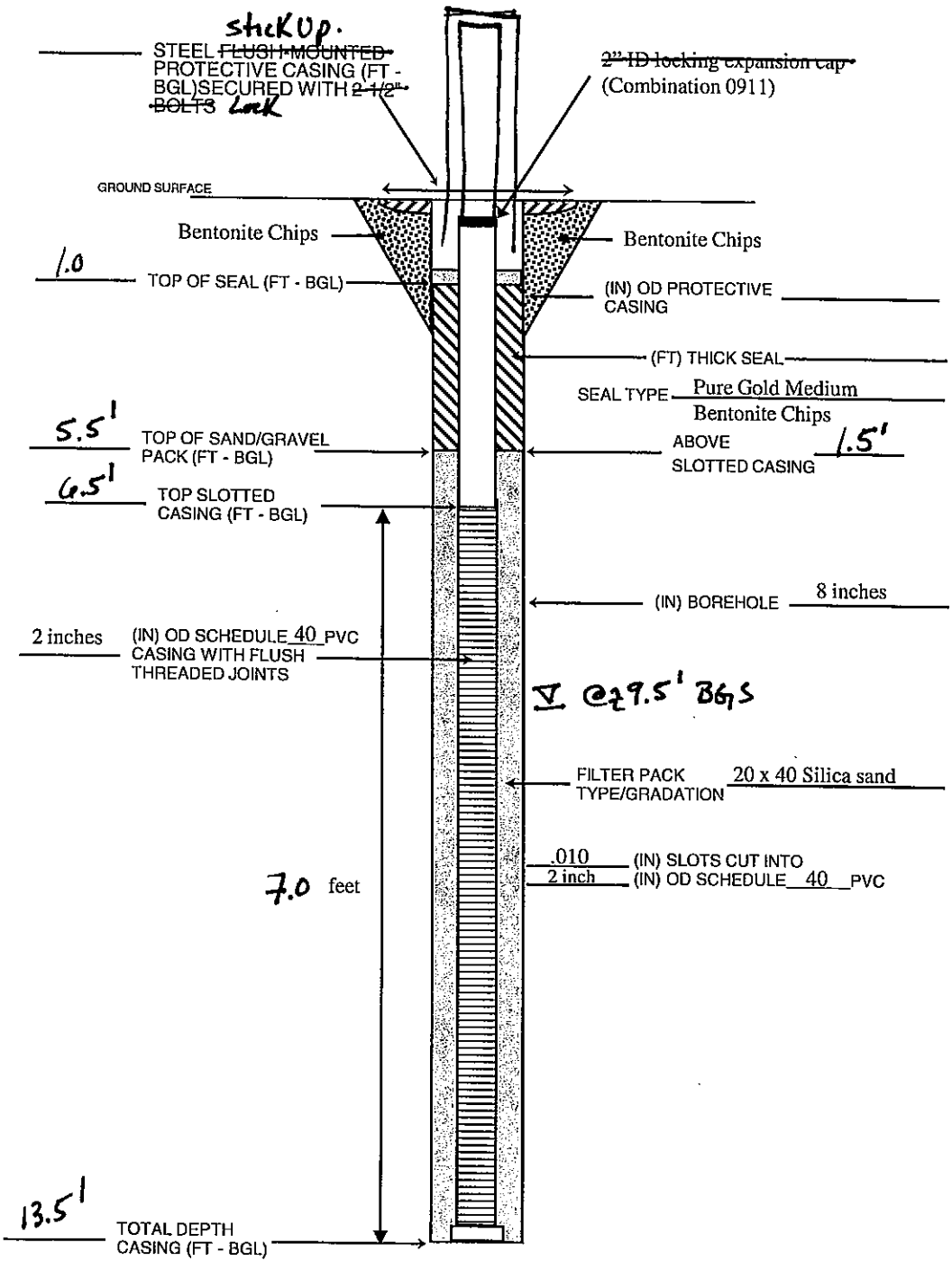
PROJECT NO.:	WELL NO.:	SHEET
1189002.360101	MW02LSS	1 OF 1

PROJECT: Nike Site Summit | SITE: USS | CLIENT: AFCEE | GEOLOGIST: Doug Quist

DATE: 8/12/10 | WEATHER: Cloudy, cool | LOCATION COORDINATES: (Northing) (Easting) | ELEVATION DATUM: MSL (MSL/Other)

DRILLING METHOD: Hollow stem auger | BORING SIZE: 8 inches | RIG TYPE: CME 55 | DRILLER/ COMPANY: Discovery

SURVEYED ELEVATIONS | GROUND SURFACE | TOP OF PROTECTIVE CASING | TOP OF PVC CASING 31.13



WELL SAMPLED? ☐ YES ☒ NO

QUANTITY MATERIALS USED:

Bentonite (lbs)	3
Sand (lbs)	4
Grout (lbs)	
Screen (ft)	
Blank Casing (ft)	
Bottom Cap (ea)	
Top Cap (ea)	
Flush Mount	
Protective Casing (ft)	
Lock	
MISC.:	

NOTES

LOG OF DRILLING OPERATIONS

Project Number:	Boring Number:	Sheet
1008300	BH03 LSS	1 of 1

Project: Nike Site Summit Site: Launch Control Bldg UST LSS Client: Army – Fort Richardson

Start Date: 8/12/10 Finish Date: 8/12/10 Geologist: Douglas Quist

Drilling Company: Discovery Drilling Drilling Method: Hollow Stem Auger Rig Type: CME 55

Boring Size: (in) 8.25 OD Total Depth: (ft) 14.3'/14.5' Depth to First Water: (ft) 14.3' Depth to SWL: (ft)

Sampler Type: Split Spoon Diameter: (in) 2.0 Hammer Drop: (in) Hammer Weight: (lbs) 340

AK State Plane Coordinates: Northing (ft): Easting (ft): Top of Hole Elevation (ft): Elevation Datum:

Depth (ft bgs)	Time	Sample Interval	Blows/6 in	PID (ppm)	% Gravel	% Sand	% Fines	Max Size (in)	Lithologic Description/ Drilling Remarks	Soil Class	Graphic Log
0											
1											
2											
001	1127		10	1.3	60	35	5	1.5	Angular and Rounded Gravel w/ Sand & Fines		
3			13						DK Brown / Gray		
			15						Slight Petroleum Odor, No Staining		
4			11								
002	1132		11	1.8	55	40	5	1.5	Angular and Rounded Gravel w/ Sand & Fines.		
5			13						Dark Brown / Gray		
			11						Slight Petroleum Odor, No Staining		
6			12						Asphalt		
003	1140		10	2.5	55	40	5	1.0	Angular Gravel w/ Sands / Fines.		
7			10						Dark Brown w/ Some Pink Granite		
			9						Pieces. No Petroleum Odor		
8			6						No Staining.		
*004	1144		5	4.0	60	35	5	1.5	Angular Gravel w/ Sands / Fines.		
9			11						Dark Brown w/ Pink Granite Pieces.		
			12						No Petroleum Odor		
10			14						No Staining.		
005	1150		17	59.3	65	30	5	1.5	Angular Gravel / Fractured Bedrock.		
11			26								
			31								
12			19								
*006	1200		16	178	70	25	5	1.5	Angular Gravel / Fractured Bedrock.		
13			20		80	15	5	1.5	Fractured Bedrock and Sand		
			15		25	70	5	1.0	Compacted Sand & Fract Bedrock		
14			17		25	70	5	0.5	Compacted Sand & Fract Bedrock		
15											
16									Sample at		
									10NSS004SL03LSS		
17									10NSS006SL03LSS		
18											
19											
20											

Potential GW interface: ∇ SS Wet But No Water in Hole
Pull drill Stem & Wait 10 min
∇ GW at 14.3'
Auger down for MW

MONTGOMERY WATSON
Anchorage, Alaska

WELL CONSTRUCTION LOG

PROJECT NO.: 1189002.360101

WELL NO.: MW03LSS

SHEET 1 OF 1

PROJECT: Nike Site Summit | SITE: USS | CLIENT: AFCEE | GEOLOGIST: Doug Quist

DATE: 8/12/10 | WEATHER: Cloudy, cool | LOCATION COORDINATES: (Northing) (Easting) | ELEVATION DATUM: MSL (MSL/Other)

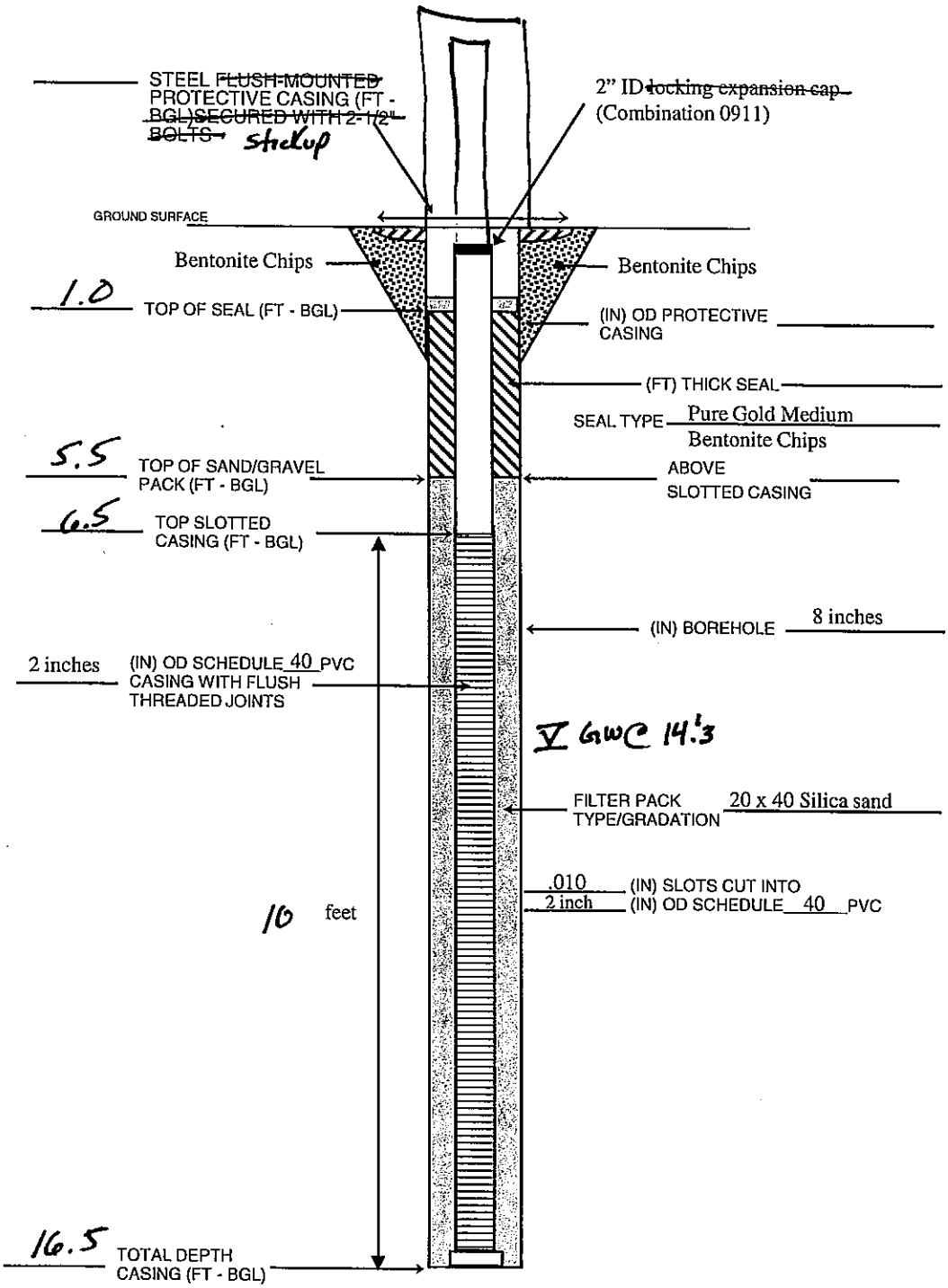
DRILLING METHOD: Hollow stem auger | BORING SIZE: 8 inches | RIG TYPE: CME 55 | DRILLER/ COMPANY: Discovery

SURVEYED ELEVATIONS | GROUND SURFACE | TOP OF PROTECTIVE CASING | TOP OF PVC CASING 31.13

WELL SAMPLED? ☐ YES ☒ NO

QUANTITY MATERIALS USED:

Bentonite (lbs)	2 x 50
Sand (lbs)	6 x 50
Grout (lbs)	
Screen (ft)	
Blank Casing (ft)	
Bottom Cap (ea)	
Top Cap (ea)	
Flush Mount	
Protective Casing (ft)	
Lock	
MISC.:	



NOTES

LOG OF DRILLING OPERATIONS

Project Number:	Boring Number:	Sheet
1008300	BH04LSS	1 of 1

Project: Nike Site Summit Site: Launch Control/UST @ LSS Client: Army -- Fort Richardson

Start Date: 8/12/10 Finish Date: Geologist: Douglas Quist

Drilling Company: Discovery Drilling Drilling Method: Hollow Stem Auger Rig Type: CME 55

Boring Size: (in) 8.25 OD Total Depth: (ft) Depth to First Water: (ft) 16.0' Depth to SWL: (ft)

Sampler Type: Split Spoon Diameter: (in) 2.0 Hammer Drop: (in) Hammer Weight: (lbs) 340

AK State Plane Coordinates: Northing (ft): Easting (ft): Top of Hole Elevation (ft): Elevation Datum:

Depth (ft bgs)	Time	Sample Interval	Blows/6 in	PID (ppm)	% Gravel	% Sand	% Fines	Max Size (in)	Lithologic Description/ Drilling Remarks	Soil Class	Graphic Log
0											
1											
2											
001	1354		5	1.4	55	40	5	1.0	Angular and Rounded Gravel w/ Sand & Fines		
3			5		↓	↓	↓	1.0	Dark Brown & Gray		
			5						No Petroleum Odor, No Staining		
4			5		↓	↓	↓	1.5			
002	1358		7	0.6	50	40	10	1.5	Angular and Rounded Gravel w Sand & Fines		
5			7		50	40	10	1.0	Dark Brown & Gray		
			6		↓	↓	↓	1.0	No Petroleum Odor, No Staining.		
			5		↓	↓	↓	1.0			
6											
003	1402		3	0.8	40	40	20	1.0	Sand / Gravel / Fines, More Mixed Heavy		
7			3		↓	↓	↓	0.5	Organic Materials, Dark Brown, No Petroleum		
			4		↓	↓	↓	0.5	Odor, No Staining.		
			9		↓	↓	↓	0.5			
8											
004	1411		3	0.5	35	40	25	0.5	Angular Gravel and Fines w/ Some Sand		
9			8		↓	↓	↓	1.0	Med Brown No Petroleum Odor,		
			12		↓	↓	↓	0.5	No Staining, Slightly Moist.		
10			40		↓	↓	↓	1.0			
* 005	1416		17	0.6	90	15	5	2+	Angular Gravel / Cored Bedrock Med Gray		
11			18		↓	↓	↓	/	No Petroleum Odor, No Staining		
			18		↓	↓	↓	/	> 4ft Recovery.		
			14		↓	↓	↓	/			
12											
006	1427		13	0.8	70	20	10	2+	Angular / Cored Bedrock, Minimal Recovery		
13			10		—	—	—	—	> 1ft Med Gray		
			7		—	—	—	—	No Petroleum Odor, No Staining.		
			6		—	—	—	—			
* 14											
007	1433		8	0.7	75	20	5	2+	Angular / Cored Bedrock, Minimal Recovery.		
15			11		/	/	/	/	No Petroleum Odor, No Staining		
			17		/	/	/	/	Med Gray B-Rock - Med Brown Soils / Slough.		
			20		/	/	/	/			
16											
008	1448		13						GW Encountered / @ 16'		
17			15						Angular / Cored Fractured Bedrock.		
			27						Rust Orange / Dark Gray.		
			23								
18											
19									Auger to 22' to install Monitoring Well		
20									Sample @ 10NSS008SL04LSS		
									10NSS007SL04LSS		

MONTGOMERY WATSON
Anchorage, Alaska

WELL CONSTRUCTION LOG

PROJECT NO.: 1189002.360101

WELL NO.: MW04LSS

SHEET 1 OF 1

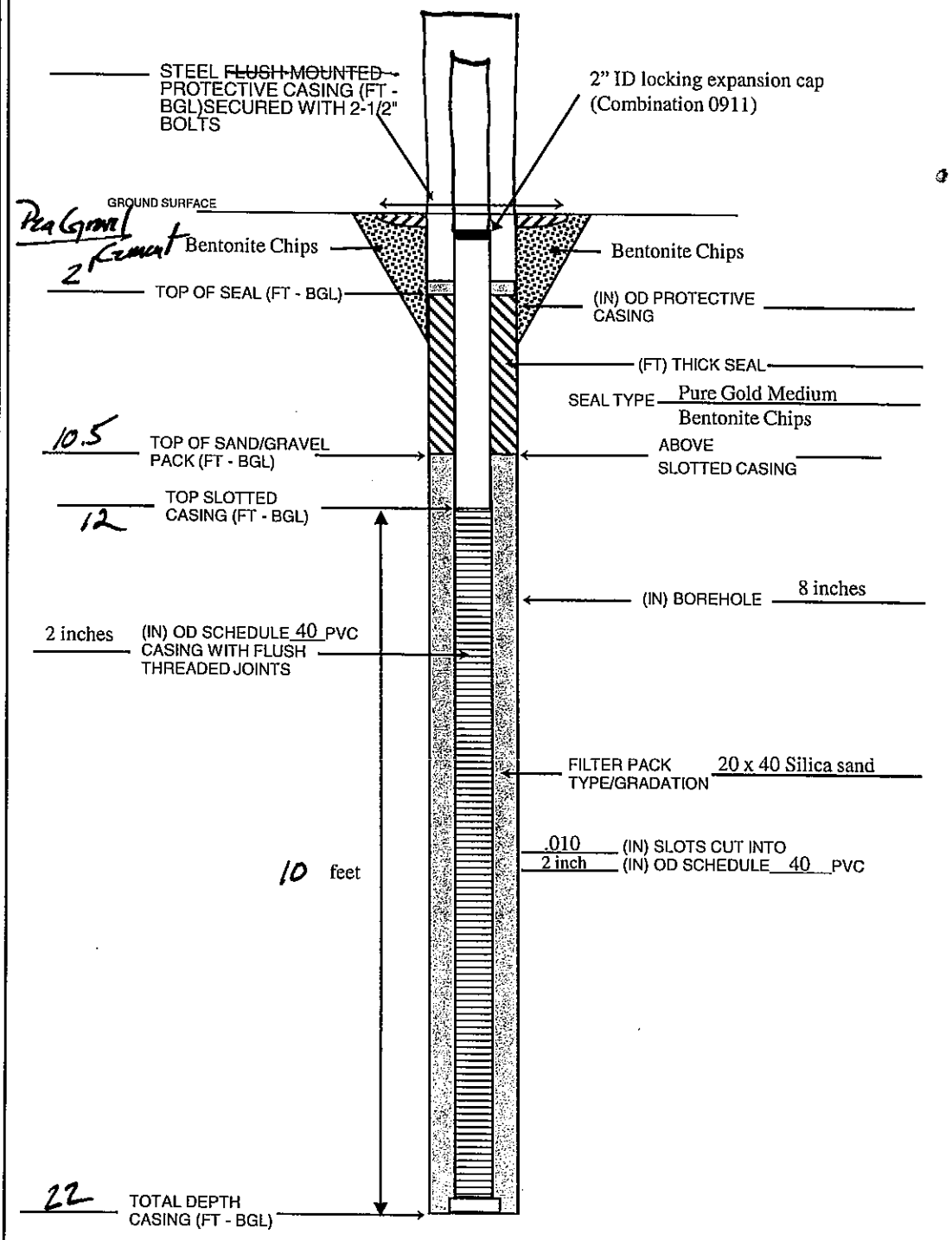
PROJECT: Nike Site Summit | SITE: USS | CLIENT: AFCEE | GEOLOGIST: Doug Quist

DATE: 8/12/10 | WEATHER: Cloudy, cool | LOCATION COORDINATES: (Northing) (Easting) | ELEVATION DATUM: MSL (MSL/Other)

DRILLING METHOD: Hollow stem auger | BORING SIZE: 8 inches | RIG TYPE: CME 55 | DRILLER/ COMPANY: Discovery

SURVEYED ELEVATIONS | GROUND SURFACE | TOP OF PROTECTIVE CASING | TOP OF PVC CASING 31.13

WELL SAMPLED? ☐ YES ☒ NO



QUANTITY MATERIALS USED:

Bentonite (lbs)	5 X 50
Sand (lbs)	5 X 50
Grout (lbs)	
Screen (ft)	
Blank Casing (ft)	
Bottom Cap (ea)	
Top Cap (ea)	
Flush Mount	
Protective Casing (ft)	
Lock	
MISC.:	

NOTES

LOG OF DRILLING OPERATIONS

Project Number:	Boring Number:	Sheet
1008300	BH05LSS	1 of

Project: Nike Site Summit Site: Launch Control Bldg LSS Client: Army – Fort Richardson

Start Date: 8-17-2010 Finish Date: 8/17/2010 Geologist: Douglas Quist

Drilling Company: Discovery Drilling Drilling Method: Hollow Stem Auger Rig Type: CME 55

Boring Size: (in) 8.25 OD Total Depth: (ft) 16/23.5 Depth to First Water: (ft) ~17-17.5 Depth to SWL: (ft)

Sampler Type: Split Spoon Diameter: (in) 2.0 Hammer Drop: (in) Hammer Weight: (lbs) 340

AK State Plane Coordinates: Northing (ft): Easting (ft): Top of Hole Elevation (ft): Elevation Datum:

Depth (ft bgs)	Time	Sample Interval	Blows/6 in	PID (ppm)	% Gravel	% Sand	% Fines	Max Size (in)	Lithologic Description/ Drilling Remarks	Soil Class	Graphic Log
0											
1											
2											
001	0837		6	0.5	60	30	10	1.5	Angular and Rounded Fill / DK Brown / DK Grey		
3			6		↓	↓	↓		No Petroleum Odor, No Staining		
			8								
4			9		↓	↓	↓				
002	0843		9	0.6	75	25	5	2+	Angular and Rounded Fill DK Brown / DK Grey.		
5			17		75	25	5	1.5	No Petroleum Odor, No Staining		
			28		90	10	/	2+	Angular Rock DK Grey		
6			22		90	10	/	2+			
003	0850		11	0.2	90	10	/	2+	Angular Rock		
7			9		45	50	5	1	Angular and Rock DK Grey		
			11		30	65	5	0.5	Sandy Soil DK-Med Brown w Angular Gravels		
8			15		15	75	10	0.5	No Petroleum Odor, No Staining		
004	0855		4	0.4	15	75	10	0.5	Fine Sand Soil w/ Angular Gravel		
9			11		15	75	10	0.25	Med Brown / DK & Light Grey		
			12		15	75	10	0.5	No Petroleum Odor, No Staining		
10			11		15	75	10	0.5			
005	0900		11	0.5	15	75	10	0.5	Sandy Soil w/ Angular Gravel		
11			9		↓	↓	↓		Light-Med Brown / DK & Light Grey,		
			9						No Petroleum Odor, No Staining		
			15		↓	↓	↓				
12											
* 006	0909		28	0.8	30	65	5	1+	Sandy Soil w/ Angular Gravel Med Brown / DK & Light Grey		
13			36		50	45	5	0.5	Angular gravels w/ Sand DK/Light Grey & Med Brown.		
			50		50	45	5	0.5	3" No Petroleum Odor, No Staining		
14			/						Auger to 14'		
007	0915		50	0.2	95	35	10	0.5	3" Angular Gravel w/ Med Brown/Grey Sand		
15			/		/	/	/		No Petroleum Odor, No Staining.		
			/		/	/	/		Little to No Recovery.		
16			/		/	/	/		Auger to 16'		
008			50						3" No Recovery		
17									Potential GW		
▽									GW interface Approximately 17 - 17.5'		
18									Auger to Install MW - No Apparent		
19									Petroleum Odor or Staining		
20											

MONTGOMERY WATSON
Anchorage, Alaska

WELL CONSTRUCTION LOG

PROJECT NO.:	WELL NO.:	SHEET
1189002.360101	~~MW-1~~ MW05L55	1 OF 1

PROJECT: ~~C-Pad HWSU Closure~~ | SITE: ~~C-Pad HWSU~~ touch Contact Bldg. L55 | CLIENT: ~~BPX~~ | GEOLOGIST: ~~J. Rodeau~~

DATE: ~~09/13/10~~ 08/17/10 | WEATHER: Cloudy, cool | LOCATION COORDINATES: (Northing) (Easting) | ELEVATION DATUM: MSL (MSL/Other)

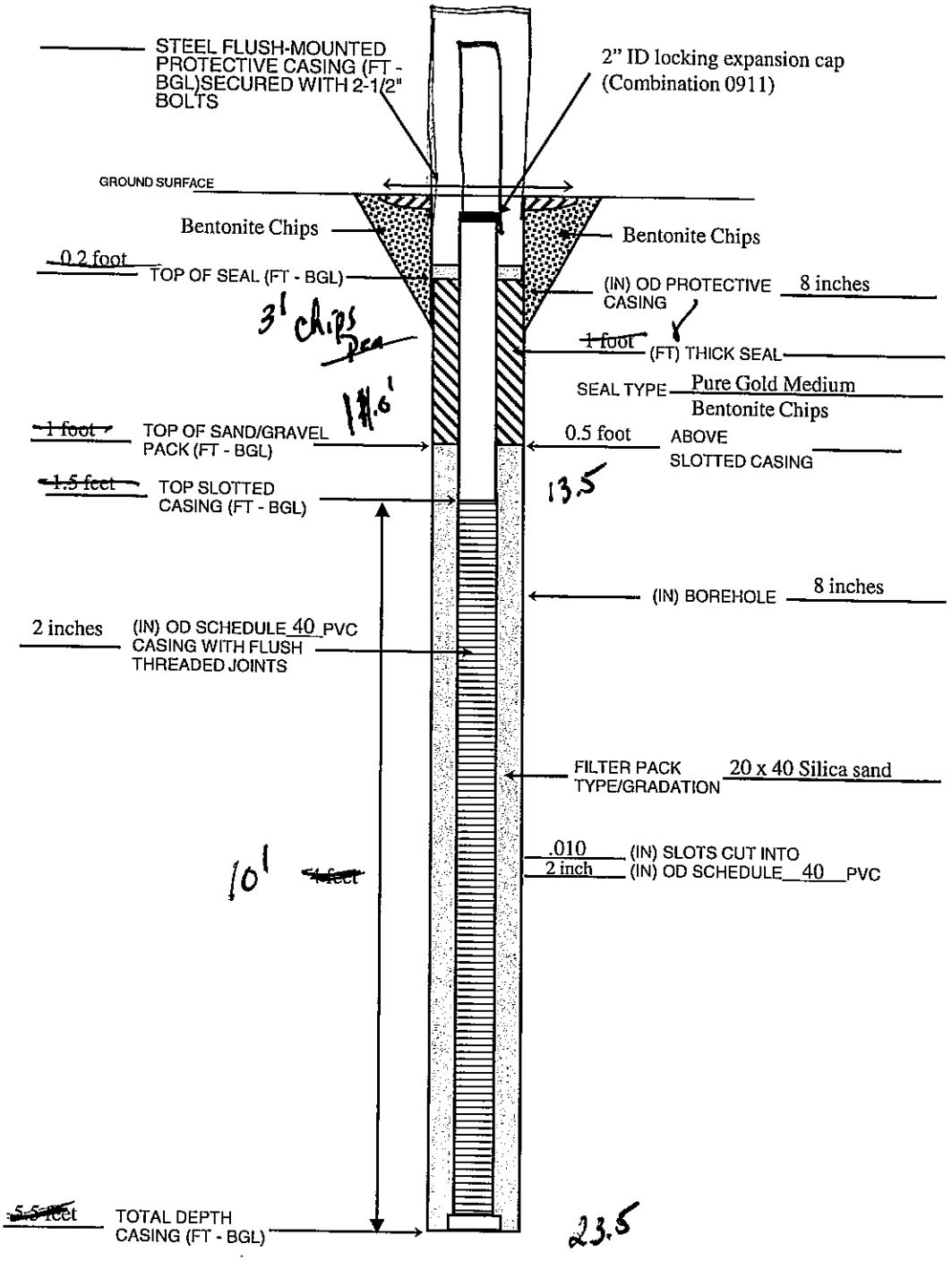
DRILLING METHOD: Hollow stem | BORING SIZE: 8 inches | RIG TYPE: CME 45 | DRILLER/ COMPANY: ~~Discovery~~

SURVEYED ELEVATIONS | GROUND SURFACE | TOP OF PROTECTIVE CASING | TOP OF PVC CASING: 31.13

WELL SAMPLED? ☐ YES ☒ NO

QUANTITY MATERIALS USED:

Bentonite (lbs)	4
Sand (lbs)	9
Grout (lbs)	
Screen (ft)	
Blank Casing (ft)	
Bottom Cap (ea)	
Top Cap (ea)	
Flush Mount	
Protective Casing (ft)	
Lock	
MISC.:	



NOTES

LOG OF DRILLING OPERATIONS

Project Number:	Boring Number:	Sheet
1008300	BH06LSS	1 of 1

Project: Nike Site Summit Site: launch Control Bldg Client: Army – Fort Richardson

Start Date: 8/17/2010 Finish Date: 8/17/2010 Geologist: Douglas Quist

Drilling Company: Discovery Drilling Drilling Method: Hollow Stem Auger Rig Type: CME 45

Boring Size: (in) 8.25 OD Total Depth: (ft) 7.5 Depth to First Water: (ft) ± 6.5-7.0 Depth to SWL: (ft)

Sampler Type: Split Spoon Diameter: (in) 2.0 Hammer Drop: (in) Hammer Weight: (lbs) 340

AK State Plane Coordinates: Northing (ft): Easting (ft): Top of Hole Elevation (ft): Elevation Datum:

Depth (ft bgs)	Time	Sample Interval	Blows/6 in	PID (ppm)	% Gravel	% Sand	% Fines	Max Size (in)	Lithologic Description/ Drilling Remarks	Soil Class	Graphic Log
0											
1											
2 *@1	1110		5	0.3	60	35	5	1.5	Angular Gravel w Sand DK Brown / DK Gray. No Petroleum Odor No Staining.		
3			8		↓	↓	↓	1.0			
			9					1.0			
4 *@2	1140		14	0.4	↓ 45	↓ 50	↓ 5	1.0 2+	5" Angular Gravel DK Gray fine Sandy Soil. Extremely Hard Augering.		
5			/								
			/								
6 @3	1155		/	3.0	95	2.5	2.5		4" Gray Bedrock. - No Sample Collected		
7			80						∇ GW @ ± 7' BGS - All GW		
			/								
8 @4			/						Auger to Complete Monitoring Well. MW total Depth @ ± 7.5' BGS.		
9											
10 @5											
11											
12 @6											
13											
14											
15											
16											
17											
18											
19											
20											

MONTGOMERY WATSON
Anchorage, Alaska

WELL CONSTRUCTION LOG

PROJECT NO.: 1189002.360101

WELL NO.: ~~MW-1~~ MW06-55

SHEET 1 OF 1

PROJECT: ~~C-Pad HWSU Closure~~ | SITE: ~~C-Pad HWSU~~ | CLIENT: ~~BPX~~ | GEOLOGIST: ~~J. Bodeau~~ BJ

DATE: ~~09/13/00~~ 8/17/10 | WEATHER: ~~Cloudy, cool~~ | LOCATION COORDINATES: (Northing) (Easting) | ELEVATION DATUM: MSL (MSL/Other)

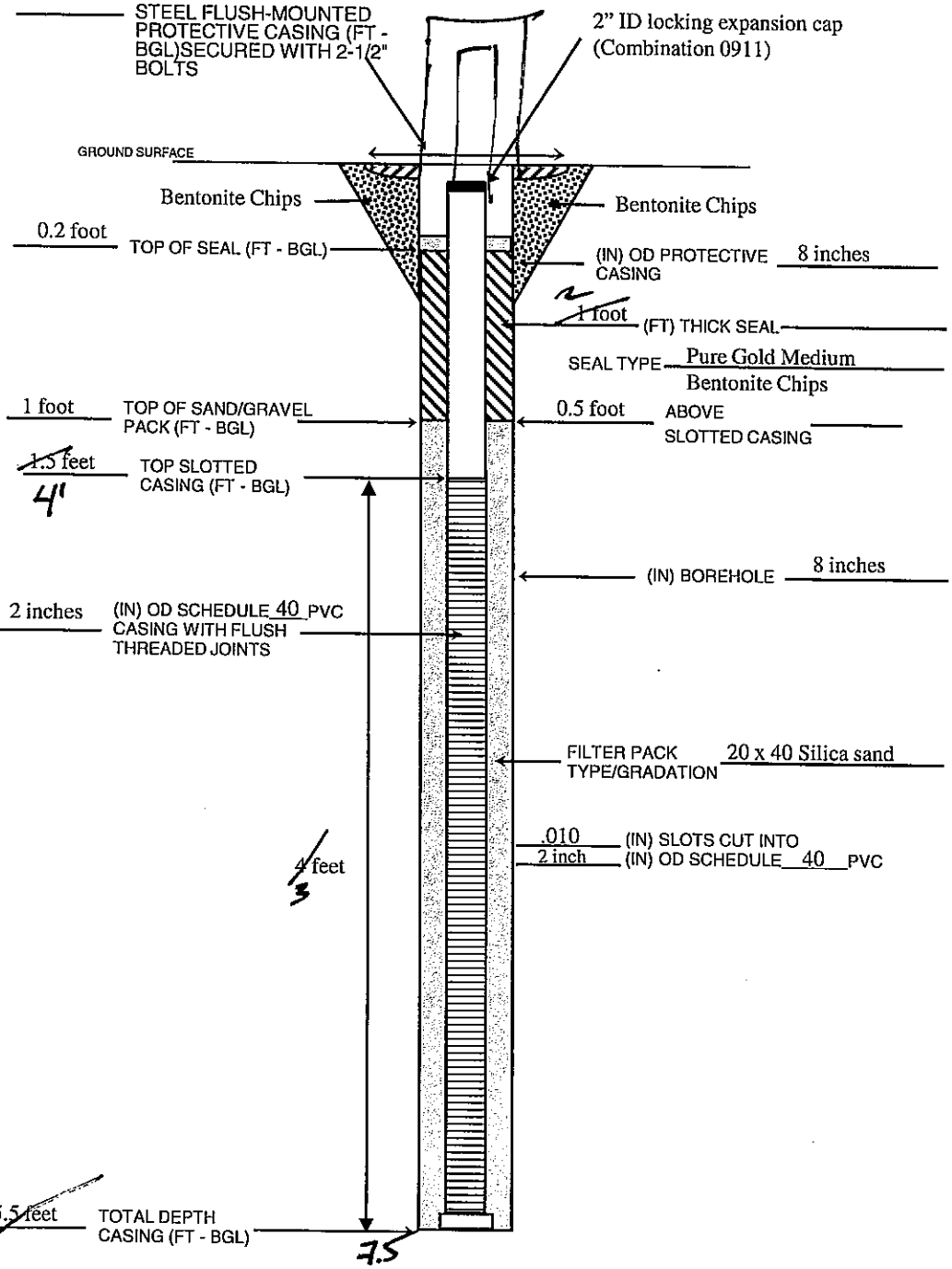
DRILLING METHOD: Hollow stem | BORING SIZE: 8 inches | RIG TYPE: CME 45 | DRILLER/COMPANY: Discovery

SURVEYED ELEVATIONS | GROUND SURFACE | TOP OF PROTECTIVE CASING | TOP OF PVC CASING: 31.13

WELL SAMPLED? ☐ YES ☒ NO

QUANTITY MATERIALS USED:

Bentonite (lbs)	1/2 x 50
Sand (lbs)	3 1/2 x 50
Grout (lbs)	
Screen (ft)	
Blank Casing (ft)	
Bottom Cap (ea)	
Top Cap (ea)	
Flush Mount	
Protective Casing (ft)	
Lock	
MISC.:	



NOTES

LOG OF DRILLING OPERATIONS

Project Number:	Boring Number:	Sheet
1008300	BH07LS5	1 of 1

Project: Nike Site Summit Site: Launch Control / Bldg AST Client: Army – Fort Richardson

Start Date: 8/17/10 Finish Date: 8/17/10 Geologist: Douglas Quist

Drilling Company: Discovery Drilling Drilling Method: Hollow Stem Auger Rig Type: CME 45

Boring Size: (in) 8.25 OD Total Depth: (ft) 5.5' Depth to First Water: (ft) ≈ 4' Depth to SWL: (ft)

Sampler Type: Split Spoon Diameter: (in) 2.0 Hammer Drop: (in) Hammer Weight: (lbs) 340

AK State Plane Coordinates: Northing (ft): Easting (ft): Top of Hole Elevation (ft): Elevation Datum:

Depth (ft bgs)	Time	Sample Interval	Blows/6 in	PID (ppm)	% Gravel	% Sand	% Fines	Max Size (in)	Lithologic Description/ Drilling Remarks	Soil Class	Graphic Log
0											
1											
2											
*001	1337		12	151	55	40	5	1	Angular Gravel and Sand / Weathered Bedrock.		
3			26	↓	↓	↓	↓	0.5	Heavily Stained / Heavy Petroleum Odor.		
			50					0.5	5"		
4			/					0.5			
*002	1345		50	314	55	40	5	0.5	5" Angular Gravel and Sand / Weathered Bedrock		
5									Heavily Stained / Heavy Petroleum Odor.		
6									GWC @ 4.5'		
7									Auger Down to Complete Well.		
8									Auger Refusal @ 5.5'		
9									Sample 10NSS001SL07LS5		
10									10NSS002SL07LS5		
11									10NSS902SL07LS5 (Duplicate)		
12											
13											
14											
15											
16											
17											
18											
19											
20											

MONTGOMERY WATSON
Anchorage, Alaska

WELL CONSTRUCTION LOG

PROJECT NO.: ~~1189002.360101~~

WELL NO.: ~~MW-1~~ MW07LSS

SHEET 1 OF 1

PROJECT: ~~C-Pad IIWSU Closure~~ NiKu

SITE: ~~C-Pad IIWSU~~ Lower Colville

CLIENT: BPX

GEOLOGIST: J. Bodeau

DATE: ~~09/13/00~~ 8/17/10

WEATHER: Cloudy, cool

LOCATION COORDINATES: (Northing) (Easting)

ELEVATION DATUM: MSL (MSL/Other)

DRILLING METHOD: Hollow stem

BORING SIZE: 8 inches

RIG TYPE: CME 45

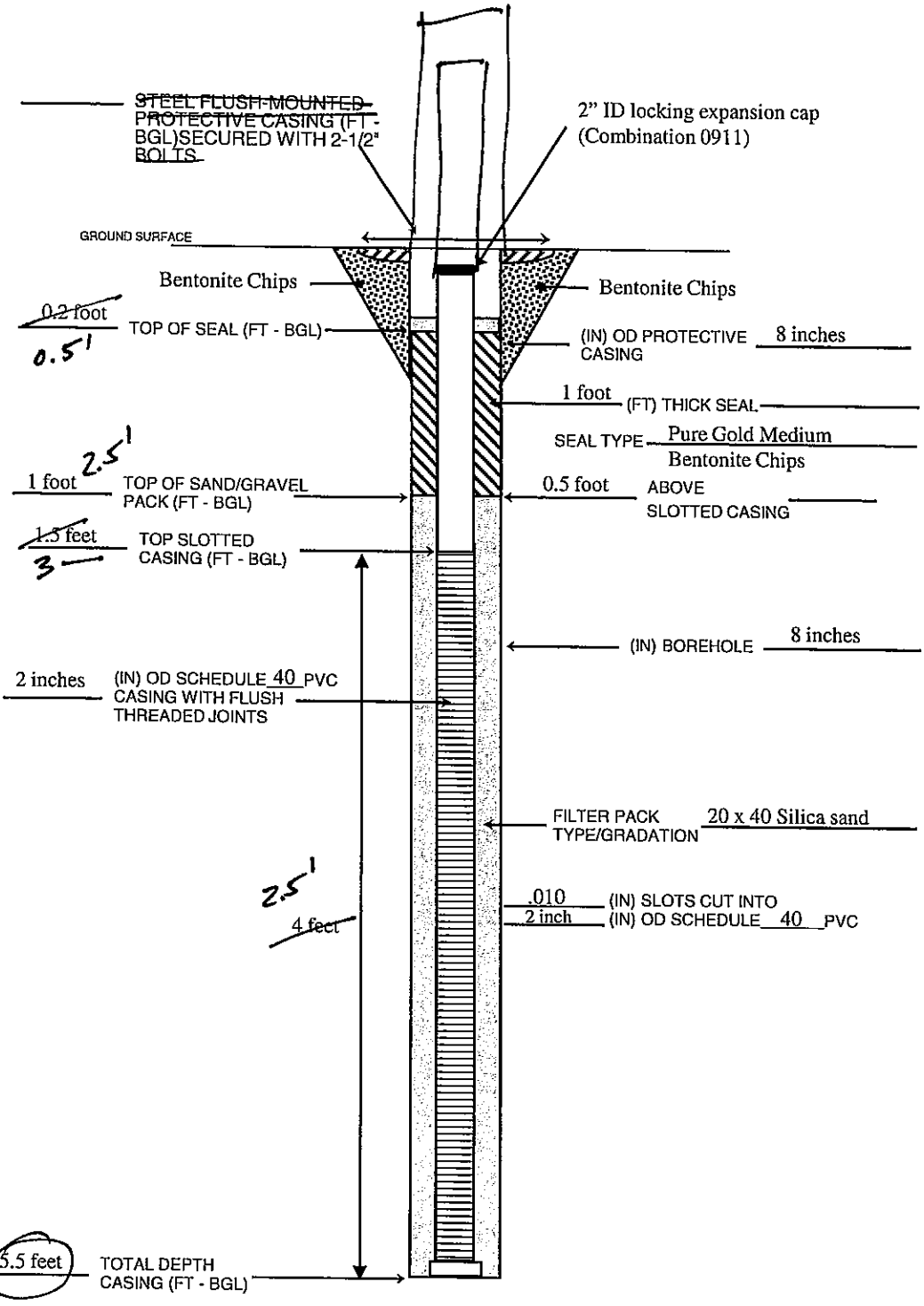
DRILLER/ COMPANY: Discovery

SURVEYED ELEVATIONS

GROUND SURFACE

TOP OF PROTECTIVE CASING

TOP OF PVC CASING: 31.13



WELL SAMPLED? YES [ ] NO [X]

QUANTITY MATERIALS USED:

Bentonite (lbs)	~~1~~ 1/2 X 50
Sand (lbs)	3 X 50
Grout (lbs)	
Screen (ft)	2.5'
Blank Casing (ft)	
Bottom Cap (ea)	✓
Top Cap (ea)	✓
Flush Mount	
Protective Casing (ft)	
Lock	
MISC.:	

NOTES

LOG OF DRILLING OPERATIONS

Project Number:	Boring Number:	Sheet
1008300	BH08LSS	1 of 1

Project: Nike Site Summit Site: Lower Sit Summit Client: Army – Fort Richardson

Start Date: 8/17/10 Finish Date: 8/ /10 Geologist: Douglas Dorsett

Drilling Company: Discovery Drilling Drilling Method: Hollow Stem Auger Rig Type: CME75

Boring Size: (in) 8.25 OD Total Depth: (ft) Depth to First Water: (ft) Depth to SWL: (ft)

Sampler Type: Split Spoon Diameter: (in) 2.0 Hammer Drop: (in) Hammer Weight: (lbs) 340

AK State Plane Coordinates: Northing (ft): Easting (ft): Top of Hole Elevation (ft): Elevation Datum:

Depth (ft bgs)	Time	Sample Interval	Blows/6 in	PID (ppm)	% Gravel	% Sand	% Fines	Max Size (in)	Lithologic Description/ Drilling Remarks	Soil Class	Graphic Log
0											
1											
2											
001 2	1535		50	1.6	75	20	5	1.0	Angular Gravel w Sand / Fines Extremely Hard Augering - Through Large Angular Cobble + 12"		
3			/		/	/	/		little Recovery. No Petroleum Odor No Staining.		
4			/		/	/	/		4" Auger to 4' - Extremely Hard Augering		
002	1550		50	1.8	10	80	10	0.5	3" - Pulverized Angular Rock.		
5			/		/	/	/		Little Recovery - No Petroleum Odor		
			/		/	/	/		Auger to 4.5' No Staining		
6			/		/	/	/				
7									Refusal @ 4.5'		
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

LOG OF DRILLING OPERATIONS

Project Number:	Boring Number:	Sheet
1008300	BH09LSS	1 of 1

Project: Nike Site Summit Site: Launch Pad 1 & 2 Client: Army – Fort Richardson

Start Date: 8/19/10 Finish Date: 8/19/10 Geologist: Douglas Quist

Drilling Company: Discovery Drilling Drilling Method: Hollow Stem Auger Rig Type: CME

Boring Size: (in) 8.25 OD Total Depth: (ft) ____ Depth to First Water: (ft) ____ Depth to SWL: (ft) ____

Sampler Type: Split Spoon Diameter: (in) 2.0 Hammer Drop: (in) ____ Hammer Weight: (lbs) 340

AK State Plane Coordinates: Northing (ft): Easting (ft): Top of Hole Elevation (ft): Elevation Datum:

Depth (ft bgs)	Time	Sample Interval	Blows/6 in	PID (ppm)	% Gravel	% Sand	% Fines	Max Size (in)	Lithologic Description/ Drilling Remarks	Soil Class	Graphic Log
0											
1					—	—	—		Angular Rock Weathered Bedrock.		
001	0920			0.3	—	—	—				
002	0925			0.3	—	—	—		Bedrock.		
3									No Soil Split Spoon Samples.		
4									10NSS001SL09LSS - Weathered Bedrock/Saprolite	Sm	
5									10NSS002SL09LSS - Bedrock.		
6									No Petroleum Odor - No Staining -		
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

MWH

By Douglas Quist Date 8/19/10 Client AFCEE Sheet 1 of 1

Chkd. By _____ Description Lower Silk Summit BH 10 LSS Job No. 1008300

			PID	BC	Gravel	Sands	Fines	Moist	Description
1553	001	2	0.0	8	70	25	5	15	Angular Gravel w/ Sand and Fines Med Brown and DK Gray No Petroleum Odor, No Staining.
				10	↓	↓	↓	↓	
				7					
				9					
1558	002	4	0.2	7	70	25	5	15	Angular Gravel w/ Sand and Fines Med Brown & Dark Gray No Petroleum Odor, No Staining
				4	↓	↓	↓	1	
				4				1	
				3				0.5	
1604	* 003	6	0.9	2	70	25	5	1.5	Angular Gravel w Sand and Fines. Mid Brown and DK Gray No Petroleum Odor, No Staining
				7	↓	↓	↓	0.5	
				23				1.0	
				19				1.0	
1608	004	8	0.5	8	70	25	5	1.0	Angular Gravel w Sand and Fines. Mid Brown and Dark Gray Same Fill As All Prior. No Petroleum Odor, No Staining
				12	↓	↓	↓	↓	
				10					
				11					
1613	005	10	0.7	2	70	25	5	1.0	Angular Gravel w/ Sands and Fines Med Brown and Dark Gray Same as Prior No Petroleum Odor, No Staining.
				7	↓	↓	↓	1	
				11				1.5	
				13				0.5	
1620	* 006	12	0.2	7	70	25	5	0.5	Angular Gravel w/ Sands & Fines Med Brown w DK Gray. Same as Prior No Petroleum Odor, No Staining
				9	↓	↓	↓	1.0	
				10				1.0	
				10				1.5	
1628 ▽	GW 007	14	NA	8	70	25	5		Groundwater @ 14'
				16	↓	↓	↓		
				19					
				23					

Auger Down to Complete MW

19' BGS Total Depth

MONTGOMERY WATSON
Anchorage, Alaska

WELL CONSTRUCTION LOG

PROJECT NO.: | WELL NO.: | SHEET 1 OF 1

PROJECT: Nike Site Summit | SITE: Lower Site Summit Lunch Cabin | CLIENT: ACEE | GEOLOGIST: Douglas Post

DATE: 8/19/10 | WEATHER: Sunny. | LOCATION COORDINATES: (Northing) (Easting) | ELEVATION DATUM: MSL (MSL/Other)

DRILLING METHOD: Hollow stem | BORING SIZE: 8 inches | RIG TYPE: CME 45 | DRILLER/ COMPANY: Discovery

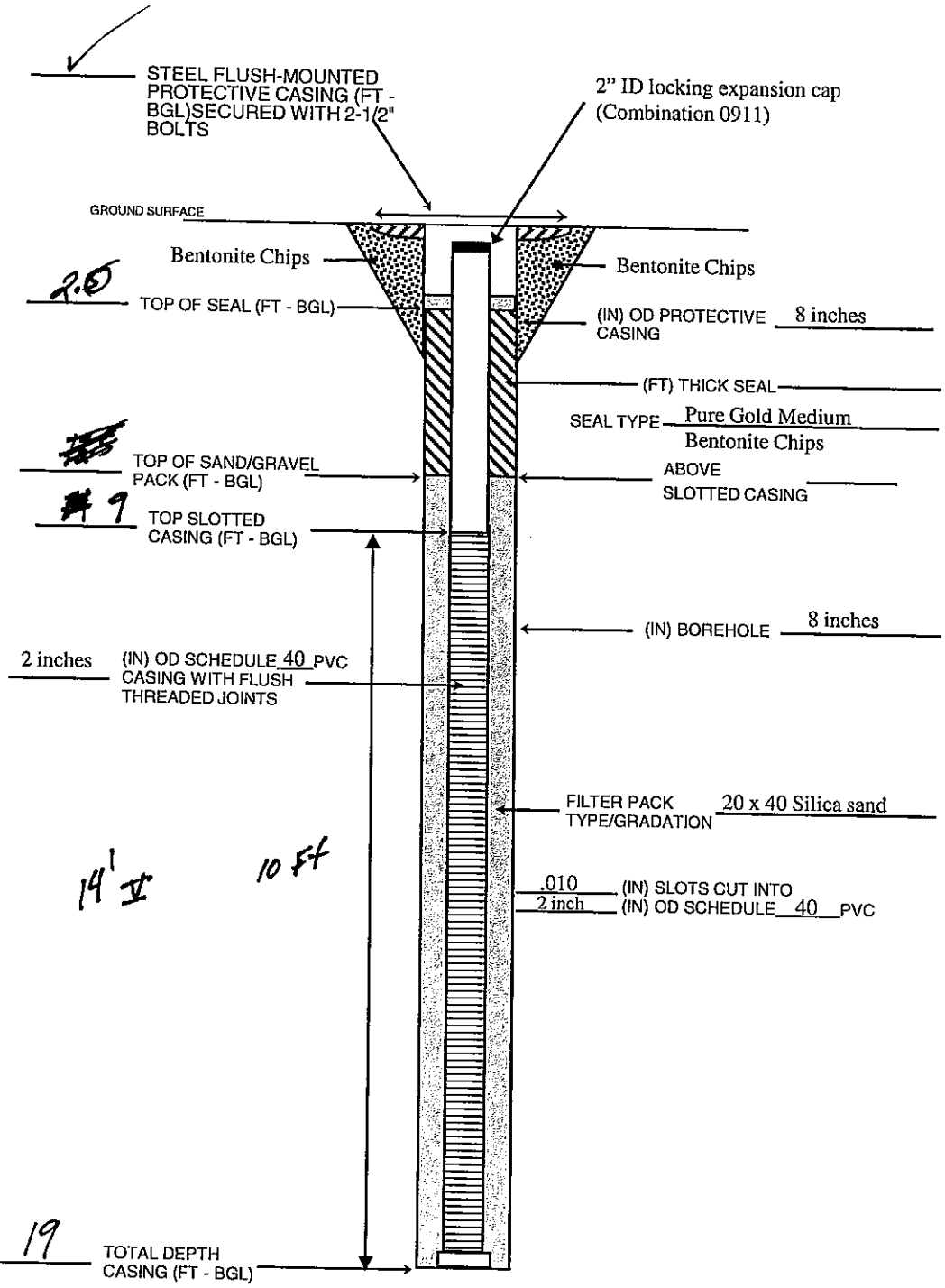
SURVEYED ELEVATIONS | GROUND SURFACE | TOP OF PROTECTIVE CASING | TOP OF PVC CASING: 31.13

WELL SAMPLED? YES [ ] NO [X]

QUANTITY MATERIALS USED:

Bentonite (lbs)	3 x 50
Sand (lbs)	8 x 50
Grout (lbs)	
Screen (ft)	10'
Blank Casing (ft)	
Bottom Cap (ea)	
Top Cap (ea)	✓
Flush Mount	•
Protective Casing (ft)	5'
Lock	
MISC.:	

NOTES



MWH

By Douglas Quist Date 8/19/10 Client AFCEE Sheet 1 of 1

Chkd. By _____ Description Lower Site Summit BH 11 LSS Job No. 1608380

			PID	% Gravel	% Sand	% Fines	Max
1722	001	2	0.0	5	75	20	5	1.5
				7	↓	↓	↓	1.0
				9				1.0
				7				1.0
1726	002	4	0.2	6	75	20	5	1.5
				6	↓	↓		1.5
				8				0.5
				7				0.5
1732*	003	6	0.7	6	75	25	5	1.0
				6	↓	↓	↓	1.0
				6				
				7				
1735	004	8	0.5	5	75	25	5	1.5
				6	↓	↓	↓	
				7				
				5				1.0
1738	005	10	0.0	6	75	25	5	2.4
				8	↓	↓	↓	6.5
				10				1.0
				15				1.5
1743	006	12	0.2	7	60	25	5	0.5
				11	↓	↓	↓	0.5
				26				0.5
				41				0.5
1749	007	14	0.4	50				
				/				
				/				
				/				
1758	008	16	0.3	50				
				/				
				/				
				/				
1806	009	18	0.3	50				
				/				
				/				
				/				
1816	010	20	0.3	50				
				50				
				/				
				/				
1833†	011	22	0.4	50				
				↓				
		24		↓				

Description:

Angular Gravel w/ Sand & Fines - No Petroleum Odor, No Staining

Angular Gravel w/ Sand & Fines Mixed Brown / DK Grey No Petroleum Odor No Staining.

Angular Gravel w/ Sand & Fines Mixed Brown / DK Grey No Petroleum Odor No Staining.

Angular Gravel w/ Sand & Fines Mixed Brown / DK Grey No Petroleum Odor No Staining.

Angular Gravel w/ Sand & Fines Mixed Brown / DK Grey No Petroleum Odor, No Staining. Moist layer Not GW

Weathered Bedrock No Petroleum Odor, No Staining.

5'11 Auger to 16' Very Little Recovery Ground Weathered Bedrock. No Petroleum Odor, No Staining.

4'11 Little Recovery Ground / Pulverized Bedrock Weathered Grey Med Brown

5'11 No Petroleum Odor, No Staining. Auger to Little Recovery / Same as Prior.

6'1" Same

4'11 Same

GROUND WATER SAMPLING FIELD NOTE FORM

LOCATION NAME: Nike Site Summit

LOCATION DESCRIPTION: MW02LSS

ELEVATION _____ (GPS or Survey) (FT or M)

SITE: MW02LSS Sample ID #: _____ DATE: 8/31/10

SAMPLE TYPE: _____ FIELD CREW: DQ/JM TIME Start: 1000 End 1115

WEATHER: SKY: P. Cloudy PRECIP: 0 WIND: C Air Temp. 80

GROUNDWATER : DEVELOPMENT X **SAMPLING** _____

Well Condition: NEW

Casing Ht. Above Ground: 2.78 (FT.) Diameter: 2 in

Well Depth: 16.28 ft. BTOC (Meas./Rec.) Static Water Level: 10.95/11.31 ft. BTOC

Casing (C) = _____ Well X Outside Protective Begin Depth: 10.95/11.31 End Depth _____ (ft.)

ONE PURGE VOLUME: 7.48 x (dia./24)^2 x 3.14 x (Depth-W. L.)= _____ gal.

PURGING:	Gallons	Time	Temperature (°C)	E.C. (µmhos/cm)*	pH*	DO/ORP Turbidity (NTU)
METHOD	5	1037	6.39	0.412/265	7.55	14.08/159.4 Muddy
	7.5	1050	6.22	0.394/253	7.44	6.34/144.6 Clearing
Bailer	10.0	1059	6.13	0.391/255	7.34	5.06/136.5 Clearing
	12.5	1107	6.10	0.388/248	7.47	5.02/137.1 Clearing
Ded. Pump						
Remove Pump Leave to flow						
Suction Pump						
Flow/Viscosity						
(other) Not Purging			DEVELOPED			

DO (% or mg/l) CO2 mg/l *TEMP. CORRECTED @ 25C

Bailed Dry Numerous times between intrinsics.

SURFACE WATER

Channel Depth: _____ Width: _____ Velocity: _____ Flow: _____ cfs (Est./Meas.)

Temp: _____ E.C: * _____ pH:* _____ Redox (eH): _____

Temp: _____ E.C: * _____ pH:* _____ Redox (eH): _____

SAMPLE COLLECTION

Method: _____ Appearance: _____

Analyte	Time	Analyte	Time	Analyte	Time
DRO AK102					
Aliphatic & Aromatic DRO					
Lab SOP					
BTEX EPA 8021B					

COMMENTS: QA/QC Label ID: Split _____ Dupl. _____ Trip Blank _____ Other _____

** METALS FIELD FILTERED: _____ . PHOTO TAKEN # _____

Calibration/Standard: pH EC Turbidity

Decon completed: by date

REMARKS:

DO, Temperature, and CO2 are factory calibrated

GROUND WATER SAMPLING FIELD NOTE FORM

LOCATION NAME: Nike Site Summit

LOCATION DESCRIPTION: Lower Site Summit -

ELEVATION _____ (GPS or Survey) (FT or M)

SITE: MW02LSS Sample ID #: 10NSS001GW02LSS DATE: 9/1/10

SAMPLE TYPE: Grab FIELD CREW: DP LJM TIME Start: 0950 End 1040

WEATHER: SKY: P. Cloudy PRECIP: 0 WIND: 0 Air Temp. 50

GROUNDWATER : DEVELOPMENT _____ **SAMPLING** X

Well Condition: NEW

Casing Ht. Above Ground: 2.78 (FT.) Diameter: 2 in

Well Depth: 14.28 ft. BTOC (Meas./Rec.) Static Water Level: 11.1/11.45 ft. BTOC

Casing (C) = _____ Well ____ Outside Protective Begin Depth 11.1/11.45 (ft.) End Depth 11.3/11.75 (ft.)

ONE PURGE VOLUME: 7.48 x (dia./24)^2 x 3.14 x (Depth-W. L.)=_____gal.

PURGING:	Gallons	Time	Temperature (°C)	E.C. (µmhos/cm)*	pH*	DO/ORP Turbidity (NTU)*
METHOD	0	0953	5.92	0.450/286	7.25	6.02/98.2
	2	1004	6.23	0.396/254	7.42	5.66/59.1
Bailer	4	1008	6.17	0.388/248	7.22	3.50/66.1
	6	1016	6.18	0.382/245	7.17	3.62/61.0
Ded. Pump	Sample	1020				
Suction Pump						
(other)						

DO (% or mg/l) CO2 mg/l * TEMP. CORRECTED @ 25C

SURFACE WATER

Channel Depth: _____ Width: _____ Velocity: _____ Flow: _____cfs (Est./Meas.)

Temp: _____ E.C: *_____ pH:*_____ Redox (eH):_____

Temp: _____ E.C: *_____ pH:*_____ Redox (eH):_____

SAMPLE COLLECTION

Method: Peristaltic Pump / Teflon Bailer Appearance: Light Grey

Analyte	Time	Analyte	Time	Analyte	Time
DRO AK102					
Aliphatic & Aromatic DRO					
Lab SOP					
BTEX EPA 8021B					

COMMENTS: QA/QC Label ID: Split_____ Dupl._____ Trip Blank_____ Other_____

** METALS FIELD FILTERED: X . PHOTO TAKEN #____

Calibration/Standard: pH 10, 7, 4 EC Turbidity

Decon completed: by date

REMARKS:

DO, Temperature, and CO2 are factory calibrated

GROUND WATER SAMPLING FIELD NOTE FORM

LOCATION NAME: Nike Site Summit

LOCATION DESCRIPTION: LSS MW03 LSS

ELEVATION _____ (GPS or Survey) (FT or M)

SITE: MW03LSS Sample ID #: _____ DATE: 8/30/10

SAMPLE TYPE: _____ FIELD CREW: DR/JM TIME Start: 1445 End _____

WEATHER: SKY: P. Cloudy PRECIP: Rain WIND: _____ Air Temp. ___

GROUNDWATER : DEVELOPMENT X **SAMPLING** _____

Well Condition: New

Casing Ht. Above Ground: 3.04' (FT.) Diameter: 2 in

Well Depth: 19.54' ft. BTOC (Meas./Rec.) Static Water Level: 15.38/15.8 ft. BTOC

Casing (C) = _____ Well X Outside Protective Begin Depth 15.38 (ft.) End Depth 18.91 (ft.)

ONE PURGE VOLUME: 7.48 x (dia./24)^2 x 3.14 x (Depth-W. L.)= _____ gal.

PURGING:	Gallons	Time	Temperature (°C)	E.C. (µmhos/cm)*	pH*	~~Turbidity (NTU)~~ DO/ORP
METHOD	5	1742	6.98	0.480/314µs/cm.	6.84	4.41/17.1
	15					
Bailer						
Ded. Pump						
Suction Pump						
_____						
(other)						

Sampled. Not recovering after 15 gallons.

DO (% or mg/l) CO2 mg/l * TEMP. CORRECTED @ 25C

SURFACE WATER

Channel Depth: _____ Width: _____ Velocity: _____ Flow: _____ cfs (Est./Meas.)

Temp: _____ E.C: * _____ pH:* _____ Redox (eH): _____

Temp: _____ E.C: * _____ pH:* _____ Redox (eH): _____

SAMPLE COLLECTION

Method: _____ Appearance: _____

Analyte	Time	Analyte	Time	Analyte	Time
DRO AK102					
Aliphatic & Aromatic DRO					
Lab SOP					
BTEX EPA 8021B					

COMMENTS: QA/QC Label ID: Split_____ Dupl._____ Trip Blank_____ Other_____

** METALS FIELD FILTERED: _____ . PHOTO TAKEN #_____

Calibration/Standard: pH EC Turbidity

Decon completed: by date

REMARKS:

DO, Temperature, and CO2 are factory calibrated

GROUND WATER SAMPLING FIELD NOTE FORM

LOCATION NAME: Nike Site Summit

LOCATION DESCRIPTION: Lower Site Summit - MW03LSS

ELEVATION _____ (GPS or Survey) (FT or M) 10NSS201GW03LSS (Dupe)

SITE: MW04LSS Sample ID #: 10NSS201GW03LSS DATE: 8/31/10

SAMPLE TYPE: GRAB FIELD CREW: AQ LM TIME Start: 1625 End 1735

WEATHER: SKY: Foggy PRECIP: 0 WIND: 0 Air Temp. 50

GROUNDWATER : DEVELOPMENT _____ **SAMPLING** X

Well Condition: NEW

Casing Ht. Above Ground: 3.04 (FT.) Diameter: 2 in

Well Depth: 19.54 ft. BTOC (Meas./Rec.) Static Water Level: 15.08 / 15.51 ft. BTOC

Casing (C) = _____ Well X Outside Protective Begin Depth 15.51 (ft.) End Depth 16.1 / 16.52 (ft.)
(BTOC - checked)

ONE PURGE VOLUME: 7.48 x (dia./24)^2 x 3.14 x (Depth-W. L.)= _____ gal.

PURGING:	Gallons	Time	Temperature (°C)	E.C. (µmhos/cm)*	pH*	~~Turbidity (NTU)~~ DO / ORP
METHOD	0	1634	4.86	0.452 / 379	6.73	14.78 / 9.8 sheen & odo
	2	1639	4.78	0.437 / 368	6.64	9.20 / -58.8
Bailer	4	1644	4.60	0.425 / 260	6.76	4.01 / -76.7
	6	1654	4.64	0.428 / 201	6.67	4.02 / -76.4
Ded. Pump	Sample	1655				
Suction Pump						
(other)						

DO (% or mg/l) CO2 mg/l * TEMP. CORRECTED @ 25C

~~SURFACE WATER~~

Channel Depth: _____ Width: _____ Velocity: _____ Flow: _____ cfs (Est./Meas.)

Temp: _____ E.C: * _____ pH:* _____ Redox (eH): _____

Temp: _____ E.C: * _____ pH:* _____ Redox (eH): _____

SAMPLE COLLECTION

Method: Bailer / Peristaltic Pump Appearance: Light Grey

Analyte	Time	Analyte	Time	Analyte	Time
DRO AK102					
Aliphatic & Aromatic DRO					
Lab SOP					
BTEX EPA 8021B					

COMMENTS: QA/QC Label ID: Split _____ Dupl. X Trip Blank _____ Other _____

** METALS FIELD FILTERED: X . PHOTO TAKEN # Y

Calibration/Standard: pH 10, 7, 4 EC Turbidity

Decon completed: by date

REMARKS: GRO, VOCs, DRO/RRO, RCRA 8 +Ni. VW. Total / Extend / SVOCs

DO, Temperature, and CO2 are factory calibrated

GROUND WATER SAMPLING FIELD NOTE FORM

LOCATION NAME: Nike Site Summit

LOCATION DESCRIPTION: LSS MW04LSS

ELEVATION _____ (GPS or Survey) (FT or M)

SITE: MW04LSS Sample ID #: NA DATE: 8/31/10

SAMPLE TYPE: NA FIELD CREW: DP/JM TIME Start: 0830 End 0955

WEATHER: SKY: D. Cloudy PRECIP: ϕ WIND: 10 Air Temp. 50

GROUNDWATER : DEVELOPMENT X **SAMPLING** _____

Well Condition: NEW.

Casing Ht. Above Ground: 2.4 (FT.) Diameter: 2 in

Well Depth: 24.4 ft. BTOC (Meas./Rec.) Static Water Level: 15.09/15.49 ft. BTOC

Casing (C) = _____ Well ____ Outside Protective Begin Depth _____(ft.) End Depth _____(ft.)

ONE PURGE VOLUME: 7.48 x (dia./24)^2 x 3.14 x (Depth-W. L.)=_____gal.

PURGING:	Gallons	Time	Temperature (°C)	E.C. (µmhos/cm)*	pH*	DO/ ORP ~~Turbidity (NTU)~~
METHOD	5	0845	3.45	0.369/218	6.45	13.46/217.0 Muddy
	15	0855	3.39	0.305/180	6.14	8.87/189.5 Brown
Bailer	25	0907	3.45	0.290/171	6.45	7.96/153.6
	35	0921	3.41	0.283/166	6.40	7.90/118.7
Ded. Pump	46	0930	3.40	0.281/165	6.25	7.99/121.2 Cleaning
	55	0944	3.40	0.282/166	6.21	6.06/114.5 Clear
~~Suction~~ Pump						
_____			Developed			
(other)						

DO (% or mg/l) CO2 mg/l * TEMP. CORRECTED @ 25C

SURFACE WATER

Channel Depth: _____ Width: _____ Velocity: _____ Flow: _____cfs (Est./Meas.)

Temp: _____ E.C: *_____ pH:*_____ Redox (eH): _____

Temp: _____ E.C: *_____ pH:*_____ Redox (eH): _____

SAMPLE COLLECTION

Method: _____ Appearance: _____

Analyte	Time	Analyte	Time	Analyte	Time
DRO AK102					
Aliphatic & Aromatic DRO					
Lab SOP					
BTEX EPA 8021B					

COMMENTS: QA/QC Label ID: Split_____ Dupl._____ Trip Blank_____ Other_____

** METALS FIELD FILTERED: _____. PHOTO TAKEN #_____

Calibration/Standard: pH EC Turbidity

Decon completed: by date

REMARKS:

DO, Temperature, and CO2 are factory calibrated

GROUND WATER SAMPLING FIELD NOTE FORM

LOCATION NAME: Nike Site Summit

LOCATION DESCRIPTION: Lower Site Summit - MW04LSS

ELEVATION _____ (GPS or Survey) (FT or M)

SITE: MW04LSS Sample ID #: 10NSS001GW04LSS DATE: 9/1/10

SAMPLE TYPE: Grab FIELD CREW: DP / JM TIME Start: 0845 End _____

WEATHER: SKY: Foggy PRECIP: ϕ WIND: ϕ Air Temp. 45

GROUNDWATER : DEVELOPMENT _____ **SAMPLING** X

Well Condition: NEW

Casing Ht. Above Ground: 2.4 (FT.) Diameter: 2 in

Well Depth: 24.4 ft. BTOC (Meas./Rec.) Static Water Level: 14.71 / 15.11 ft. BTOC

Casing (C) = _____ Well X Outside Protective Begin Depth 15.11 (ft.) End Depth _____ (ft.)

ONE PURGE VOLUME: 7.48 x (dia./24)^2 x 3.14 x (Depth-W. L.)= _____ gal.

PURGING:	Gallons	Time	Temperature (°C)	E.C. (µmhos/cm)*	pH*	DO ORP ~~Turbidity (NTU)~~
METHOD	0	0845	5.80	0.320 / 201	7.54	13.72 / 52.0
	2	0852	3.95	0.328 / 196	6.87	9.84 / 57.7
(Bailer)	4	0921	3.91	0.326 / 195	6.52	9.87 / 88.6
	6	0927	3.80	0.320 / 191	6.63	9.74 / 82.7
Ded. Pump	Sample	0930				
Suction Pump						
(other)						

DO (% or mg/l) CO2 mg/l * TEMP. CORRECTED @ 25C

SURFACE WATER

Channel Depth: _____ Width: _____ Velocity: _____ Flow: _____ cfs (Est./Meas.)

Temp: _____ E.C: * _____ pH:* _____ Redox (eH): _____

Temp: _____ E.C: * _____ pH:* _____ Redox (eH): _____

SAMPLE COLLECTION

Method: Teflon Bailer / Peristaltic Pump Appearance: Clear.

Analyte	Time	Analyte	Time	Analyte	Time
DRO AK102					
Aliphatic & Aromatic DRO					
Lab SOP					
BTEX EPA 8021B					

COMMENTS: QA/QC Label ID: Split _____ Dupl. _____ Trip Blank _____ Other _____

** METALS FIELD FILTERED: X . PHOTO TAKEN # X

Calibration/Standard: pH 10, 7, 4 EC Turbidity

Decon completed: by date

REMARKS:

DO, Temperature, and CO2 are factory calibrated

GROUND WATER SAMPLING FIELD NOTE FORM

LOCATION NAME: Nike Site Summit

LOCATION DESCRIPTION: LSS MW05LSS

ELEVATION _____ (GPS or Survey) (FT or M)

SITE: LSS MW05LSS Sample ID #: _____ DATE: 8/30/10

SAMPLE TYPE: NA FIELD CREW: DQ / JM TIME Start: 1440 End _____

WEATHER: SKY: P Cloudy PRECIP: Raining WIND: Φ Air Temp. 55

GROUNDWATER : DEVELOPMENT X **SAMPLING** _____

Well Condition: New

Casing Ht. Above Ground: 3.58 / 3.61 (FT.) Diameter: 2 in

Well Depth: 25.58 ft. BTOC (Meas./Rec.) Static Water Level: 17.27 / 17.63 ft. BTOC

Casing (C) = _____ Well X Outside Protective Begin Depth _____(ft.) End Depth _____(ft.)

ONE PURGE VOLUME: 7.48 x (dia./24)^2 x 3.14 x (Depth-W. L.)=_____gal.

PURGING:	Gallons	Time	Temperature (°C)	E.C. (µmhos/cm)*	pH*	DO / ORP ~~Turbidity (NTU)~~
METHOD	5	1459	4.74	0.546 / 335 µS/cm	7.46	11.42 / 137.7
	15	1513	3.48	0.522 / 318 µS/cm	7.33	9.87 / 106.7
Bailer	25	1597	3.42	0.516 / 328 µS/cm	7.35	9.11 / 68.3
	35	1550	4.22	0.547 / 336	7.24	9.08 / 64.6
Ded. Pump	45	1613	3.06	0.559 / 325	7.21	9.19 / 63.7
	50	1623	3.41	0.553 / 319	7.03	8.99 / 108.6
Suction Pump	55	1637	3.02	0.549 / 320	7.06	9.55 / 106.4
_____						
(other)						

DO (% or mg/l) CO2 mg/l * TEMP. CORRECTED @ 25C

SURFACE WATER

Channel Depth: _____ Width: _____ Velocity: _____ Flow: _____cfs (Est./Meas.)

Temp: _____ E.C: * _____ pH:* _____ Redox (eH): _____

Temp: _____ E.C: * _____ pH:* _____ Redox (eH): _____

SAMPLE COLLECTION

Method: _____ Appearance: _____

Analyte	Time	Analyte	Time	Analyte	Time
DRO AK102					
Aliphatic & Aromatic DRO					
Lab SOP					
BTEX EPA 8021B					

COMMENTS: QA/QC Label ID: Split_____ Dupl._____ Trip Blank_____ Other_____

** METALS FIELD FILTERED: _____. PHOTO TAKEN #_____

Calibration/Standard: pH EC Turbidity

Decon completed: by date

REMARKS:

DO, Temperature, and CO2 are factory calibrated

GROUND WATER SAMPLING FIELD NOTE FORM

LOCATION NAME: Nike Site Summit

LOCATION DESCRIPTION: Lower Sik Summit - MW05LSS

ELEVATION _____ (GPS or Survey) (FT or M)

SITE: MW05LSS Sample ID #: _____ DATE: 8/31/10

SAMPLE TYPE: GRAB FIELD CREW: DP / JHH TIME Start: 1540 End 1620

WEATHER: SKY: Foggy PRECIP: 0 WIND: 0 Air Temp. 50

GROUNDWATER : DEVELOPMENT _____ **SAMPLING** X

Well Condition: New

Casing Ht. Above Ground: 3.58 / -3.6" (FT.) Diameter: 2 in

Well Depth: 25.58 ft. BTOC (Meas./Rec.) Static Water Level: 17.0 / 17.38 ft. BTOC

Casing (C) = _____ Well X Outside Protective Begin Depth 17.38 (ft.) End Depth 17.8 / (ft.)

ONE PURGE VOLUME: 7.48 x (dia./24)^2 x 3.14 x (Depth-W. L.)=_____gal.

PURGING:	Gallons	Time	Temperature (°C)	E.C. (µmhos/cm)*	pH*	DO / ORP ~~Turbidity (NTU)~~
METHOD	0	1545	4.10	0.559 / 336	7.51	9.73 / 100.1
Peri. Bailer	2	1549	3.17	0.562 / 329	7.33	9.41 / 102.7
	4	1552	3.00	0.558 / 325	7.32	9.42 / 104.3
	6	1555	2.99	0.554 / 322	7.29	8.96 / 103.6
Ded. Pump	8	1559	2.93	0.546 / 316	7.27	8.58 / 106.9
	Sample	1600				
Suction Pump Peristaltic						
(other) Pump						

DO (% or mg/l) CO2 mg/l * TEMP. CORRECTED @ 25C

SURFACE WATER

Channel Depth: _____ Width: _____ Velocity: _____ Flow: _____cfs (Est./Meas.)

Temp: _____ E.C: * _____ pH:* _____ Redox (eH): _____

Temp: _____ E.C: * _____ pH:* _____ Redox (eH): _____

SAMPLE COLLECTION

Method: Peristaltic Pump Appearance: _____

Analyte	Time	Analyte	Time	Analyte	Time
DRO AK102	GRO / VOC's				
Aliphatic & Aromatic DRO	DRO / RRO				
Lab SOP	SVOC's				
BTEX EPA 8021B	RCRA 8 +Ni +Mn (Fe / total & total)				

COMMENTS: QA/QC Label ID: Split_____ Dupl._____ Trip Blank_____ Other_____

** METALS FIELD FILTERED: X . PHOTO TAKEN #_____

Calibration/Standard: pH 10, 7, 4 EC Turbidity

Decon completed: by date

REMARKS:

DO, Temperature, and CO2 are factory calibrated

GROUND WATER SAMPLING FIELD NOTE FORM

LOCATION NAME: Nike Site Summit

LOCATION DESCRIPTION: MW0LSS

ELEVATION _____ (GPS or Survey) (FT or M)

SITE: MW0LSS Sample ID #: —

DATE: 8/31/10

SAMPLE TYPE: —

FIELD CREW: DP / JM

TIME Start: 1115 End 1205

WEATHER: SKY: P. Cloudy PRECIP: 0

WIND: 5 Air Temp. 50.

GROUNDWATER : DEVELOPMENT — X — **SAMPLING** _____

Well Condition: New

Casing Ht. Above Ground: 2.97' (FT.)

Diameter: 2 in

Well Depth: 10.02 ft. BTOC (Meas./Rec.) 10.02

Static Water Level: 8.46/8.46 ft. BTOC

Casing (C) = _____ Well X Outside Protective

Begin Depth 8.46 (ft.) End Depth 9.03 (ft.)

ONE PURGE VOLUME: 7.48 x (dia./24)^2 x 3.14 x (Depth-W. L.)= _____ gal.

PURGING:	Gallons	Time	Temperature (°C)	E.C. (µmhos/cm)*	pH*	DO / Turbidity (NTU)	
METHOD	2.5	1132	6.86	0.335/219	7.34	8.58 / 149.2	Mod
	5.0	1143	6.75	0.327/213	7.40	7.55 / 141.4	
Bailer	7.0	1154	6.70	0.321/209	7.34	7.52 / 118.9	Clear
	7.0+ Dry	1200	6.59	0.319/208	7.18	7.89 / 73.3	Muddy
Ded. Pump							
Suction Pump							
(other)			Developed				

DO (% or mg/l) CO2 mg/l * TEMP. CORRECTED @ 25C

SURFACE WATER

Channel Depth: _____ Width: _____ Velocity: _____ Flow: _____ cfs (Est./Meas.)

Temp: _____ E.C: * _____ pH:* _____ Redox (eH): _____

Temp: _____ E.C: * _____ pH:* _____ Redox (eH): _____

SAMPLE COLLECTION

Method: _____ Appearance: _____

Analyte	Time	Analyte	Time	Analyte	Time
DRO AK102					
Aliphatic & Aromatic DRO					
Lab SOP					
BTEX EPA 8021B					

COMMENTS: QA/QC Label ID: Split — Dupl. _____ Trip Blank _____ Other _____

** METALS FIELD FILTERED: _____. PHOTO TAKEN # _____

Calibration/Standard: pH EC Turbidity

Decon completed: by date

REMARKS:

DO, Temperature, and CO2 are factory calibrated

GROUND WATER SAMPLING FIELD NOTE FORM

LOCATION NAME: Nike Site Summit

LOCATION DESCRIPTION: Lower Site Summit – MW06LSS

ELEVATION _____ (GPS or Survey) (FT or M)

SITE: MW06LSS Sample ID #: 10NSS001GWO6LSS DATE: 9/1/10

SAMPLE TYPE: GRAB FIELD CREW: DQ / JM TIME Start: 1045 End 1145

WEATHER: SKY: Foggy PRECIP: 0 WIND: 0 Air Temp. 50

GROUNDWATER : DEVELOPMENT _____ **SAMPLING** X

Well Condition: New

Casing Ht. Above Ground: 2.97' (FT.) Diameter: 2 in

Well Depth: 10.62 ft. BTOC (Meas./Rec.) Static Water Level: 8.57/9.1 ft. BTOC

Casing (C) = _____ Well X Outside Protective Begin Depth 9.1 (ft.) End Depth 0' (ft.)

ONE PURGE VOLUME: 7.48 x (dia./24)^2 x 3.14 x (Depth-W. L.)= _____ gal.

PURGING:	Gallons	Time	Temperature (°C)	E.C. (µmhos/cm)*	pH*	DO / ORP Turbidity (NTU)
METHOD	0	1047	6.91	0.334/222	7.43	7.54/59.8
	0.5	1050	6.79	0.333/218	7.43	7.62/66.4
Bailer	1	1053	6.68	0.337/219	7.37	7.22/69.0
	1.5	1056	6.68	0.339/221	7.31	7.04/69.5
Ded. Pump	Sample	1100				
Suction Pump						
(other)						

DO (% or mg/l) CO2 mg/l * TEMP: CORRECTED @ 25C

SURFACE WATER

Channel Depth: _____ Width: _____ Velocity: _____ Flow: _____ cfs (Est./Meas.)

Temp: _____ E.C: * _____ pH:* _____ Redox (eH): _____

Temp: _____ E.C: * _____ pH:* _____ Redox (eH): _____

SAMPLE COLLECTION

Method: Peristaltic Pump / Bailer Appearance: Light Grey.

Analyte	Time	Analyte	Time	Analyte	Time
DRO AK102					
Aliphatic & Aromatic DRO					
Lab SOP					
BTEX EPA 8021B					

COMMENTS: QA/QC Label ID: Split _____ Dupl. _____ Trip Blank _____ Other _____

** METALS FIELD FILTERED: X . PHOTO TAKEN # X

Calibration/Standard: pH 10, 7, 4 EC Turbidity

Decon completed: by date

REMARKS:

DO, Temperature, and CO2 are factory calibrated

GROUND WATER SAMPLING FIELD NOTE FORM

LOCATION NAME: Nike Site Summit

LOCATION DESCRIPTION: Lower Site Summit MW07

ELEVATION _____ (GPS or Survey) (FT or M)

SITE: MW07LSS Sample ID #: ✓ DATE: 8/31/10

SAMPLE TYPE: NA FIELD CREW: DQ / JM TIME Start: 1300 End 1410

WEATHER: SKY: Cldy PRECIP: 0 WIND: 5 Air Temp. 50

GROUNDWATER : DEVELOPMENT X **SAMPLING** _____

Well Condition: New

Casing Ht. Above Ground: 3' (FT.) Diameter: 2 in

Well Depth: ~~5.5~~ ft. BTOC (Meas./Rec.) 5.5 Static Water Level: 3.5/3.82 ft. BTOC

Casing (C) = _____ Well X Outside Protective Begin Depth _____(ft.) End Depth _____(ft.)

ONE PURGE VOLUME: 7.48 x (dia./24)^2 x 3.14 x (Depth-W. L.)=_____gal.

PURGING:	Gallons	Time	Temperature (°C)	E.C. (µmhos/cm)*	pH*	~~Turbidity (NTU)~~ DO/ORP
METHOD	5	1302	7.63	0.477/319	7.06	12.80/54.0
	7.5	1314	7.47	0.459/305	6.77	6.15/-0.6
Bailer	10	1333	7.69	0.458/307	6.80	6.61/19.6 Clear
	12.5	1345	7.63	0.489/326	6.73	5.87/16.4 Clear
Ded. Pump	15.0	1357	7.54	0.487 325	6.68	6.12/5.0 Clear
Suction Pump						
(other)						

DO (% or mg/l) CO2 mg/l Dontpc/ * TEMP. CORRECTED @ 25C

SURFACE WATER

Channel Depth: _____ Width: _____ Velocity: _____ Flow: _____cfs (Est./Meas.)

Temp: _____ E.C: *_____ pH:*_____ Redox (eH):_____

Temp: _____ E.C: *_____ pH:*_____ Redox (eH):_____

SAMPLE COLLECTION

Method: _____ Appearance: _____

Analyte	Time	Analyte	Time	Analyte	Time
DRO AK102					
Aliphatic & Aromatic DRO					
Lab SOP					
BTEX EPA 8021B					

COMMENTS: QA/QC Label ID: Split_____ Dupl._____ Trip Blank_____ Other_____

** METALS FIELD FILTERED: _____ . PHOTO TAKEN #_____

Calibration/Standard: pH EC Turbidity

Decon completed: by date

REMARKS:

DO, Temperature, and CO2 are factory calibrated

GROUND WATER SAMPLING FIELD NOTE FORM

LOCATION NAME: Nike Site Summit

LOCATION DESCRIPTION: LSS MW 07

ELEVATION _____ (GPS or Survey) (FT or M)

SITE: Launch Control Sample ID #: 10NSS001GW07LSS DATE: 9/1/10

SAMPLE TYPE: Grab FIELD CREW: DQ / JM TIME Start: 1200 End 1240

WEATHER: SKY: P. Cloudy PRECIP: ϕ WIND: ϕ Air Temp. 52

GROUNDWATER : DEVELOPMENT _____ **SAMPLING** X

Well Condition: New

Casing Ht. Above Ground: 3' (FT.) Diameter: 2 in

Well Depth: 65 ft. BTOC (Meas./Rec.) 55 Static Water Level: 4.31 ft. BTOC

Casing (C) = _____ Well X Outside Protective Begin Depth 5.3' (ft.) End Depth 5.2' (ft.)

ONE PURGE VOLUME: 7.48 x (dia./24)^2 x 3.14 x (Depth-W. L.)=_____gal.

PURGING:	Gallons	Time	Temperature (°C)	E.C. (µmhos/cm)*	pH*	Turbidity (NTU)
METHOD						ORP.
Teflon Bailer	0	1211	7.78	0.456/305	6.88	110
	0.5	1213	7.66	0.419/280	6.71	109.7
	1.0	1215	7.65	0.417/279	6.65	110.5
Ded. Pump	1.5	1217	7.66	0.405/271	6.68	98.6
	2.5	1219	7.62	0.411/275	6.63	81.0
Suction Pump						
_____		1220 Sample				
(other)						

DO (% or mg/l) CO2 mg/l * TEMP. CORRECTED @ 25C

~~**SURFACE WATER**~~

Channel Depth:_____ Width:_____ Velocity:_____ Flow: _____cfs (Est./Meas.)

Temp: _____ E.C: *_____ pH:*_____ Redox (eH):_____

Temp: _____ E.C: *_____ pH:*_____ Redox (eH):_____

SAMPLE COLLECTION

Method: Peristaltic Pump / Teflon Bailer Appearance: Clear No Sheen.

Analyte	Time	Analyte	Time	Analyte	Time
DRO AK102					
Aliphatic & Aromatic DRO					
Lab SOP					
BTEX EPA 8021B					

COMMENTS: QA/QC Label ID: Split_____ Dupl._____ Trip Blank_____ Other_____

** METALS FIELD FILTERED: X . PHOTO TAKEN # X

Calibration/Standard: pH 10, 7, 4 EC Turbidity

Decon completed: by date Total + Liquinox

REMARKS: GRO, VOC, DRO/RRO, RCRA 8 +Ni +VN, SVOCs.

DO, Temperature, and CO2 are factory calibrated

GROUND WATER SAMPLING FIELD NOTE FORM

LOCATION NAME: Nike Site Summit

LOCATION DESCRIPTION: LSS MW-10

ELEVATION _____ (GPS or Survey) (FT or M)

SITE: LSS MW10LSS Sample ID #: _____ DATE: 8/30/16

SAMPLE TYPE: NA FIELD CREW: DQ / JM TIME Start: 1230 End _____

WEATHER: SKY: cloud/fog. PRECIP: Rain WIND: 0 Air Temp. 55

GROUNDWATER : DEVELOPMENT X **SAMPLING** _____

Well Condition: New

Casing Ht. Above Ground: 3.35' / (4.6") (FT.) Diameter: 2 in

Well Depth: 22.35 ft. BTOC (Meas./Rec.) Static Water Level: 17.87 / 17.35 BTOC

Casing (C) = _____ Well X Outside Protective Begin Depth _____(ft.) End Depth _____(ft.)

ONE PURGE VOLUME: 7.48 x (dia./24)^2 x 3.14 x (Depth-W. L.)= _____ gal.

PURGING:	Gallons	Time	Temperature (°C)	E.C. (µmhos/cm)*	pH*	DO / ORP ~~Turbidity (NTU)~~
METHOD	0					
	5	1239	5.12	0.430/260 µS/cm	7.30	9.5 / 181
Bailer	15	1306	3.63	0.441/261 µS/cm	7.30	7.30 / 104.1
	20	1320	3.62	0.420/251 µS/cm	7.20	7.30 / 166.9
Ded. Pump	25	1350	3.81	0.421/251 µS/cm	7.17	7.37 / 167.2
	30	1406	3.50	0.398/237 µS/cm	7.14	5.06 / 153.0
Suction Pump	35	1416	3.21	0.398/233 µS/cm	6.99	6.16 / 140-9
~~Peristaltic~~	45	1431	3.42	0.413/243 µS/cm	6.94	6.25 / 131.3
(other)						

DO (% or mg/l) CO2 mg/l * TEMP. CORRECTED @ 25C

~~SURFACE WATER~~

Channel Depth: _____ Width: _____ Velocity: _____ Flow: _____ cfs (Est./Meas.)

Temp: _____ E.C: *_____ pH:*_____ Redox (eH): _____

Temp: _____ E.C: *_____ pH:*_____ Redox (eH): _____

SAMPLE COLLECTION

Method: _____ Appearance: _____

Analyte	Time	Analyte	Time	Analyte	Time
DRO AK102					
Aliphatic & Aromatic DRO					
Lab SOP					
BTEX EPA 8021B					

COMMENTS: QA/QC Label ID: Split_____ Dupl._____ Trip Blank_____ Other_____

** METALS FIELD FILTERED: _____. PHOTO TAKEN #_____

Calibration/Standard: pH EC Turbidity

Decon completed: by date

REMARKS:

DO, Temperature, and CO2 are factory calibrated

GROUND WATER SAMPLING FIELD NOTE FORM

LOCATION NAME: Nike Site Summit

LOCATION DESCRIPTION: Lower Site Summit – MW10LS5

ELEVATION _____ (GPS or Survey) (FT or M)

SITE: MW10LS5 Sample ID #: 10NSS001GW10LS5 DATE: 8/31/10

SAMPLE TYPE: GRAB FIELD CREW: DP, JM TIME Start: 1415 End 1515

WEATHER: SKY: Foggy PRECIP: 0 WIND: 5 Air Temp. 50

GROUNDWATER : DEVELOPMENT _____ **SAMPLING** X

Well Condition: New

Casing Ht. Above Ground: 3.35' / 4.6" (FT.) Diameter: 2 in

Well Depth: 22.35 ft. BTOC (Meas./Rec.) Static Water Level: 17.62 / 18.1 ft. BTOC

Casing (C) = _____ Well X Outside Protective Begin Depth 17.62 (ft.) End Depth 17.68 (ft.)

ONE PURGE VOLUME: 7.48 x (dia./24)^2 x 3.14 x (Depth-W. L.)= _____ gal.

PURGING:	Gallons	Time	Temperature (°C)	E.C. (µmhos/cm)*	pH*	DO / ORP Turbidity (NTU)
METHOD	0	1428	3.87	0.478 / 284	7.33	13.5 / 96.1
	2.5	1438	3.00	0.428 / 249	7.28	6.86 / 49.0
Bailer	5.0	1446	2.90	0.425 / 246	7.06	6.01 / 63.9
Sample		1450	2.90	0.426 / 247	7.04	6.00 / 64.2
Ded. Pump						
Suction Pump						
Peristaltic						
(other) Pump						

DO (% or mg/l) CO2 mg/l * TEMP. CORRECTED @ 25C

~~SURFACE WATER~~

Channel Depth: _____ Width: _____ Velocity: _____ Flow: _____ cfs (Est./Meas.)

Temp: _____ E.C: * _____ pH:* _____ Redox (eH): _____

Temp: _____ E.C: * _____ pH:* _____ Redox (eH): _____

SAMPLE COLLECTION

Method: Peristaltic Pump Appearance: Med Grey / Brown.

Analyte	Time	Analyte	Time	Analyte	Time
DRO AK102	GRO/VOCs 1450				
Aliphatic & Aromatic DRO	DRO/RRO				
Lab SOP	SVOCs				
BTEX EPA 8021B	RCRA 8 + Ni, +NN (Filtered + total)				

COMMENTS: QA/QC Label ID: Split _____ Dupl. _____ Trip Blank _____ Other MS/MSD

** METALS FIELD FILTERED: X . PHOTO TAKEN # Y

Calibration/Standard: pH 10, 7, 4 EC Turbidity

Decon completed: by date

REMARKS:

DO, Temperature, and CO2 are factory calibrated

GROUND WATER SAMPLING FIELD NOTE FORM

LOCATION NAME: Nike Site Summit

LOCATION DESCRIPTION: Lower Site Summit MW10LSS

ELEVATION _____ (GPS or Survey) (FT or M)

SITE: MW10LSS Sample ID #: 10NSS001GW10LSS DATE: 9/14/10

SAMPLE TYPE: Grab FIELD CREW: DP TIME Start: 1600 End 1620

WEATHER: SKY: Clear PRECIP: 0 WIND: 0 Air Temp. 50

GROUNDWATER : DEVELOPMENT _____ **SAMPLING** X

Well Condition: New

Casing Ht. Above Ground: 3.35'/4.6" (FT.) Diameter: 2 in

Well Depth: 22.35 ft. BTOC (Meas./Rec.) Static Water Level: 17.70 ft. BTOC

Casing (C) = _____ Well X Outside Protective Begin Depth 17.70 (ft.) End Depth 17.78 (ft.)

ONE PURGE VOLUME: 7.48 x (dia./24)^2 x 3.14 x (Depth-W. L.)=_____gal.

PURGING:	Gallons	Time	Temperature (°C)	E.C. (µmhos/cm)*	pH*	DO/ORP Turbidity (NTU)
METHOD	0	1600	3.41	0.441/288	7.41	9.22/54.1
	2.5	1610	3.04	0.429/262	7.08	6.11/48.0
Bailer	5.0	1620	2.90	0.427/268	7.02	6.03/66.8
				0.427/262	7.10	6.04/64.7
Ded. Pump						
Suction Pump						
Peristaltic						
(other) Dump						

DO (% or mg/l) CO2 mg/l * TEMP. CORRECTED @ 25C

~~SURFACE WATER~~

Channel Depth:_____ Width:_____ Velocity:_____ Flow: _____cfs (Est./Meas.)

Temp: _____ E.C: *_____ pH:*_____ Redox (eH):_____

Temp: _____ E.C: *_____ pH:*_____ Redox (eH):_____

SAMPLE COLLECTION

Method: Peristaltic Pump Appearance: Clear

Analyte	Time	Analyte	Time	Analyte	Time
DRO AK102					
Aliphatic & Aromatic DRO					
Lab SOP					
BTEX EPA 8021B					

COMMENTS: QA/QC Label ID: Split_____ Dupl._____ Trip Blank_____ Other_____

** METALS FIELD FILTERED: X . PHOTO TAKEN # X

Calibration/Standard: pH 10,7,4 EC Turbidity

Decon completed: by date

REMARKS: Mercury (Filtered & Total) ONLY

DO, Temperature, and CO2 are factory calibrated

GROUND WATER SAMPLING FIELD NOTE FORM

LOCATION NAME: Nike Site Summit

LOCATION DESCRIPTION: USS MW03

ELEVATION _____ (GPS or Survey) (FT or M)

SITE: USS Sample ID #: 10NSS001GW03USS DATE: 9/1/2010

SAMPLE TYPE: Grab FIELD CREW: DQ LM TIME Start: 1300 End 1330

WEATHER: SKY: P. cloudy PRECIP: 0 WIND: 5 Air Temp. 50

GROUNDWATER : DEVELOPMENT _____ **SAMPLING** X

Well Condition: New

Casing Ht. Above Ground: Flush (FT.) Diameter: 2 in

Well Depth: 19.5' ft. BTOC (Meas./Rec.) Static Water Level: 17.9 ft. BTOC

Casing (C) = X Well ____ Outside Protective Begin Depth 17.9 (ft.) End Depth Dry (ft.)

ONE PURGE VOLUME: 7.48 x (dia./24)^2 x 3.14 x (Depth-W. L.)=_____gal. Sample Direct No Purge

PURGING:	Gallons	Time	Temperature (°C)	E.C. (µmhos/cm)*	pH*	Turbidity (NTU)
METHOD						
Disposable Bailer Teflon						
Ded. Pump						
Suction Pump						
_____ (other)						

DO (% or mg/l) CO2 mg/l * TEMP. CORRECTED @ 25C

~~**SURFACE WATER**~~

Channel Depth:_____ Width:_____ Velocity:_____ Flow: _____cfs (Est./Meas.)

Temp: _____ E.C: *_____ pH:*_____ Redox (eH):_____

Temp: _____ E.C: *_____ pH:*_____ Redox (eH):_____

SAMPLE COLLECTION

Method:_____ Appearance: Silty/Muddy

Analyte	Time	Analyte	Time	Analyte	Time
DRO AK102					
Aliphatic & Aromatic DRO					
Lab SOP					
BTEX EPA 8021B					

COMMENTS: QA/QC Label ID: Split_____ Dupl._____ Trip Blank_____ Other_____

** METALS FIELD FILTERED: _____. PHOTO TAKEN #_____

Calibration/Standard: pH 10,7,4 EC Turbidity

Decon completed: by date

REMARKS: GRO, VOC's, DRO/RRO Only 1 1L Jar for DRO/RRO

DO, Temperature, and CO2 are factory calibrated

GROUND WATER SAMPLING FIELD NOTE FORM

LOCATION NAME: Nike Site Summit

LOCATION DESCRIPTION: USS MW03

ELEVATION _____ (GPS or Survey) (FT or M)

SITE: USS Sample ID #: 10NSS001GW03USS DATE: 9/2/10

SAMPLE TYPE: Grab FIELD CREW: DP/JM TIME Start: 0900 End 0915

WEATHER: SKY: P. Cloudy PRECIP: 0 WIND: 0 Air Temp. 45

GROUNDWATER : DEVELOPMENT _____ **SAMPLING** X

Well Condition: New

Casing Ht. Above Ground: Flush. (FT.) Diameter: 2 in

Well Depth: 19.5 ft. BTOC (Meas./Rec.) Static Water Level: 18.5 ft. BTOC

Casing (C) = X Well ____ Outside Protective Begin Depth 18.5 (ft.) End Depth Dry. (ft.)

ONE PURGE VOLUME: 7.48 x (dia./24)^2 x 3.14 x (Depth-W. L.)=_____gal. Sample Direct No Purge.

PURGING:	Gallons	Time	Temperature (°C)	E.C. (µmhos/cm)*	pH*	Turbidity (NTU)
METHOD						
Teflon Bailer						
Bailer Disposable						
Ded. Pump						
Suction Pump						
_____						
(other)						

DO (% or mg/l) CO2 mg/l * TEMP. CORRECTED @ 25C

~~**SURFACE WATER**~~

Channel Depth:_____ Width:_____ Velocity:_____ Flow: _____cfs (Est./Meas.)

Temp: _____ E.C: *_____ pH:*_____ Redox (eH):_____

Temp: _____ E.C: *_____ pH:*_____ Redox (eH):_____

SAMPLE COLLECTION

Method: Teflon Bailer Appearance: _____

Analyte	Time	Analyte	Time	Analyte	Time
DRO AK102					
Aliphatic & Aromatic DRO					
Lab SOP					
BTEX EPA 8021B					

COMMENTS: QA/QC Label ID: Split_____ Dupl._____ Trip Blank_____ Other_____

** METALS FIELD FILTERED: _____. PHOTO TAKEN #_____

Calibration/Standard: pH EC Turbidity

Decon completed: by date

REMARKS: RCRA 8 Metals Only + Ni, VN (Total) (Jar Only)

DO, Temperature, and CO2 are factory calibrated

GROUND WATER SAMPLING FIELD NOTE FORM

LOCATION NAME: Nike Site Summit

LOCATION DESCRIPTION: USS MW03

ELEVATION _____ (GPS or Survey) (FT or M)

SITE: USS Sample ID #: 10NSS001GW03USS DATE: 10/14/10

SAMPLE TYPE: GRAB FIELD CREW: DQ TIME Start: _____ End _____

WEATHER: SKY: P. Cloudy PRECIP: 0 Snow on Ground WIND: 10 Air Temp. >3C

GROUNDWATER : DEVELOPMENT _____ **SAMPLING** X Direct No Purge.

Well Condition: New

Casing Ht. Above Ground: Flush (FT.) Diameter: 2 in

Well Depth: 19.5 ft. BTOC (Meas./Rec.) Static Water Level: 18.5 ft. BTOC

Casing (C) = X Well ____ Outside Protective Begin Depth _____(ft.) End Depth _____(ft.)

ONE PURGE VOLUME: 7.48 x (dia./24)^2 x 3.14 x (Depth-W. L.)=_____gal. Sample Direct No Purge

PURGING:	Gallons	Time	Temperature (°C)	E.C. (µmhos/cm)*	pH*	Turbidity (NTU)
METHOD						
Bailer						
Ded. Pump						
Suction Pump						
_____ (other)						

DO (% or mg/l) CO2 mg/l * TEMP. CORRECTED @ 25C

~~SURFACE WATER~~

Channel Depth:_____ Width:_____ Velocity:_____ Flow: _____cfs (Est./Meas.)

Temp: _____ E.C: *_____ pH:*_____ Redox (eH):_____

Temp: _____ E.C: *_____ pH:*_____ Redox (eH):_____

SAMPLE COLLECTION

Method: Bailer (Teflon) Appearance: Light Gray

Analyte	Time	Analyte	Time	Analyte	Time
DRO AK102					
Aliphatic & Aromatic DRO					
Lab SOP					
BTEX EPA 8021B					

COMMENTS: QA/QC Label ID: Split_____ Dupl._____ Trip Blank_____ Other_____

** METALS FIELD FILTERED: X . PHOTO TAKEN #____

Calibration/Standard: pH 10, 7, 4 EC Turbidity

Decon completed: by date

REMARKS: RCRA 8+ Ni +VN (Filtered) ONLY

DO, Temperature, and CO2 are factory calibrated

GROUND WATER SAMPLING FIELD NOTE FORM

LOCATION NAME: Nike Site Summit

LOCATION DESCRIPTION: USS MW04

ELEVATION _____ (GPS or Survey) (FT or M)

SITE: USS Sample ID #: 10NSS001GW04USS DATE: 9/1/2010

SAMPLE TYPE: Grab FIELD CREW: DP, JM TIME Start: 1330 End 1480

WEATHER: SKY: P. Cloudy PRECIP: 0 WIND: 5 Air Temp. 50

GROUNDWATER : DEVELOPMENT _____ **SAMPLING** X Sample Direct No Purge.

Well Condition: New

Casing Ht. Above Ground: Flush. (FT.) Diameter: 2 in

Well Depth: 15 ft. BTOC (Meas./Rec.) Static Water Level: 13.05 ft. BTOC

Casing (C) = X Well ____ Outside Protective Begin Depth 13.05 (ft.) End Depth 13.3 (ft.)

ONE PURGE VOLUME: 7.48 x (dia./24)^2 x 3.14 x (Depth-W. L.)= _____ gal.

PURGING:	Gallons	Time	Temperature (°C)	E.C. (µmhos/cm)*	pH*	Turbidity (NTU)
METHOD						
Teflon Bailer Disposable						
Ded. Pump						
Suction Pump						
_____ (other)						

No Purge Direct sample.

DO (% or mg/l) CO2 mg/l * TEMP. CORRECTED @ 25C

~~SURFACE WATER~~

Channel Depth: _____ Width: _____ Velocity: _____ Flow: _____ cfs (Est./Meas.)

Temp: _____ E.C: * _____ pH:* _____ Redox (eH): _____

Temp: _____ E.C: * _____ pH:* _____ Redox (eH): _____

SAMPLE COLLECTION

Method: Teflon Bailer Appearance: Med Grey

Analyte	Time	Analyte	Time	Analyte	Time
DRO AK102					
Aliphatic & Aromatic DRO					
Lab SOP					
BTEX EPA 8021B					

COMMENTS: QA/QC Label ID: Split _____ Dupl. _____ Trip Blank _____ Other _____

** METALS FIELD FILTERED: _____ . PHOTO TAKEN # _____

Calibration/Standard: pH EC Turbidity

Decon completed: by date

REMARKS: GRO, VOC's, DRO/RRO, SVOC's, RCRA + Ni, VN., EDB, 1,2 DCA

DO, Temperature, and CO2 are factory calibrated

GROUND WATER SAMPLING FIELD NOTE FORM

LOCATION NAME: Nike Site Summit

LOCATION DESCRIPTION: USS MW12

ELEVATION _____ (GPS or Survey) (FT or M)

SITE: USS Sample ID #: 10NSS001GW12USS DATE: 9/1/10

SAMPLE TYPE: Grab FIELD CREW: DQ / JM TIME Start: 1430 End 1500

WEATHER: SKY: D. Cloudy PRECIP: 0 WIND: 5 Air Temp. 50

GROUNDWATER : DEVELOPMENT _____ **SAMPLING** X

Well Condition: New

Casing Ht. Above Ground: Flush (FT.) Diameter: 2 in

Well Depth: 19 ft. BTOC (Meas./Rec.) Static Water Level: _____ ft. BTOC

Casing (C) = _____ Well ____ Outside Protective Begin Depth _____ (ft.) End Depth _____ (ft.)

ONE PURGE VOLUME: 7.48 x (dia./24)^2 x 3.14 x (Depth-W. L.)= _____ gal. Sample Direct No Purge

PURGING:	Gallons	Time	Temperature (°C)	E.C. (µmhos/cm)*	pH*	Turbidity (NTU)
METHOD						
Disposable Bailer Teflon						
Ded. Pump						
Suction Pump						
_____ (other)						

DO (% or mg/l) CO2 mg/l * TEMP. CORRECTED @ 25C

SURFACE WATER

Channel Depth: _____ Width: _____ Velocity: _____ Flow: _____ cfs (Est./Meas.)

Temp: _____ E.C: * _____ pH:* _____ Redox (eH): _____

Temp: _____ E.C: * _____ pH:* _____ Redox (eH): _____

SAMPLE COLLECTION Purged DRY NO RECOVERY

Method: Teflon Bailer Appearance: Silty Muddy

Analyte	Time	Analyte	Time	Analyte	Time
DRO AK102					
Aliphatic & Aromatic DRO					
Lab SOP					
BTEX EPA 8021B					

COMMENTS: QA/QC Label ID: Split _____ Dupl. _____ Trip Blank _____ Other _____

** METALS FIELD FILTERED: _____ . PHOTO TAKEN # _____

Calibration/Standard: pH EC Turbidity

Decon completed: by date

REMARKS: GRO, VOC's 2 x 40ml only for VOC's ONLY

DO, Temperature, and CO2 are factory calibrated

SURFACE WATER/SEDIMENT
FIELD NOTE FORM

SITE: Nike Site Summit	AREA: Area C.	DATE: 8/20/2010
SAMPLE TYPE: Grab	FIELD CREW: DQ / JM	START TIME: 1440
WEATHER: SKY: Clear	PRECIP: 0	TEMP.: 60°F

COORDINATES(NAD 1983)

	Degrees	Minutes	Seconds
LATITUDE:	N 61		
LONGITUDE:	W 149		

SURFACE WATER SAMPLE

Sample Collection Depth (FT.):____
Temp: 6.5 E.C.*: 57.2 pH*: 8.61 Redox (eH):____
Appearance: Clear.

W*Temp ADJ. @ 25 C

COMMENTS:	QA Label ID:	Split	Dupl. ✓	Blank	Other
	METALS FIELD FILTERED: ✓		PHOTO TAKEN # ✓		
	GRO ✓		Metals ✓		
	DRO/RRO ✓		Cr VI		
	VOCs ✓		PCBs		
	SVOCs ✓				

COLLOCATED SEDIMENT WATER SAMPLE

Sample Collection Depth (FT.): 6"
Appearance: Sandy/Rocky Sediment – No Fines.

COMMENTS:	QA Label ID:	Split	Dupl. ✓	Blank	Other
			PHOTO TAKEN # ✓		
	GRO ✓		Metals ✓		
	DRO/RRO ✓		Cr VI		
	VOCs ✓		PCBs		
	SVOCs ✓				

SURFACE WATER/SEDIMENT
FIELD NOTE FORM

SITE: Nike Site Summit	AREA: Area C / SW01	DATE: 7/7/11
SAMPLE TYPE: Grab	FIELD CREW: DP JM	START TIME: 1045
WEATHER: SKY: P. Cloudy	PRECIP: 0	TEMP.: 60

COORDINATES(NAD 1983)

	Degrees	Minutes	Seconds
LATITUDE:	N 61		
LONGITUDE:	W 149		

USC 2010 data from Survey.

SURFACE WATER SAMPLE 11NS5001SW01ARC

Sample Collection Depth (FT.):____
Temp: Corrected 25.0 °C E.C.*: 23.8 pH*: 7.35 Redox (eH):____
Appearance: Clear.

W*Temp ADJ. @ 25 C

COMMENTS: QA Label ID: Split____ Dupl. ✓ Blank____ Other____

METALS FIELD FILTERED: ✓	PHOTO TAKEN # ✓	
GRO ✓	Metals ✓	+ Ni, + V
DRO/RRO ✓	Cr VI	
VOCs ✓	PCBs	
SVOCs ✓		

COLLOCATED SEDIMENT WATER SAMPLE

Sample Collection Depth (FT.):____
Appearance:____

COMMENTS: QA Label ID: Split____ Dupl.____ Blank____ Other____

	PHOTO TAKEN #	
GRO	Metals	
DRO/RRO	Cr VI	
VOCs	PCBs	
SVOCs		

SURFACE WATER/SEDIMENT
FIELD NOTE FORM

SITE: Nike Site Summit	AREA: Area C ISW2	DATE: 7/7/11
SAMPLE TYPE: Grab	FIELD CREW: DP, JM	START TIME: 1400
WEATHER: SKY: P. Cloudy	PRECIP: 0	TEMP.: 60

COORDINATES(NAD 1983)

	Degrees	Minutes	Seconds
LATITUDE:	N 61	15 . 227	
LONGITUDE:	W 149	30 . 939	

SURFACE WATER SAMPLE IINSS0015W02 ARC

Sample Collection Depth (FT.):____
Temp: Centrachem 25°C E.C.*: -44 MV pH*: 7.7 Redox (eH):____
Appearance: Clear.

W*Temp ADJ. @ 25 C

COMMENTS:	QA Label ID:	Split____	Dupl.____	Blank____	Other____

METALS FIELD FILTERED: ✓		PHOTO TAKEN # ✓	
GRO ✓		Metals ✓	+Ni, tVN
DRO/RRO ✓		Cr VI	
VOCs ✓		PCBs	
SVOCs ✓			

COLLOCATED SEDIMENT WATER SAMPLE

Sample Collection Depth (FT.):____
Appearance:____

COMMENTS:	QA Label ID:	Split____	Dupl.____	Blank____	Other____

		PHOTO TAKEN #____	
GRO		Metals	
DRO/RRO		Cr VI	
VOCs		PCBs	
SVOCs			

SURFACE WATER/SEDIMENT
FIELD NOTE FORM

SITE: Nike Site Summit	AREA: Area C / SW03	DATE: 7/7/2011
SAMPLE TYPE: Grab	FIELD CREW: DP, JM	START TIME: 1430
WEATHER: SKY: P. Cloudy	PRECIP: 0	TEMP.: 60

COORDINATES(NAD 1983)

	Degrees	Minutes	Seconds
LATITUDE:	N 61	15 . 108	
LONGITUDE:	W 149	31 . 206	

SURFACE WATER SAMPLE NNSS 00 / SW03 ARC

Sample Collection Depth (FT.): NA
Temp: Corrected 25°C E.C.*: - 59.0 pH*: 8.6 Redox (eH):
Appearance: Clear

W*Temp ADJ. @ 25 C

COMMENTS: QA Label ID: Split Dupl. Blank Other

METALS FIELD FILTERED:		PHOTO TAKEN #	
GRO	✓	Metals ✓	+Ni, + V
DRO/RRO	✓	Cr VI	
VOCs	✓	PCBs	
SVOCs	✓		

COLLOCATED SEDIMENT WATER SAMPLE

Sample Collection Depth (FT.):
Appearance:

COMMENTS: QA Label ID: Split Dupl. Blank Other

		PHOTO TAKEN #	
GRO		Metals	
DRO/RRO		Cr VI	
VOCs		PCBs	
SVOCs			

SURFACE WATER/SEDIMENT
FIELD NOTE FORM

SITE: Nike Site Summit	AREA: AREA C / SW4	DATE: 7/7/2011
SAMPLE TYPE: Grab	FIELD CREW: DP, JM	START TIME: 1252
WEATHER: SKY: Clear	PRECIP: 0	TEMP.: 65° F

COORDINATES(NAD 1983)

	Degrees	Minutes	Seconds
LATITUDE:	N 61	19.930	
LONGITUDE:	W 149	31.827	2688 FT ASL

SURFACE WATER SAMPLE //NSSGW01SW04ARC

Sample Collection Depth (FT.): 1-1.5'
Temp: (corrected) 25° C E.C.*: -27 mV pH*: 7.4 Redox (eH):
Appearance: Clear

W*Temp ADJ. @ 25 C

COMMENTS:	QA Label ID:	Split	Dupl.	Blank	Other

METALS FIELD FILTERED: ✓		PHOTO TAKEN # ✓
GRO ✓	Metals ✓	+ Ni & VN.
DRO/RRO ✓	Cr VI	
VOCs ✓	PCBs	
SVOCs ✓		

COLLOCATED SEDIMENT WATER SAMPLE

Sample Collection Depth (FT.):
Appearance:

COMMENTS:	QA Label ID:	Split	Dupl.	Blank	Other

		PHOTO TAKEN #
GRO	Metals	
DRO/RRO	Cr VI	
VOCs	PCBs	
SVOCs		

SURFACE WATER/SEDIMENT
FIELD NOTE FORM

SITE: Nike Site Summit	AREA: Area C/SW5	DATE: 1157 7/7/2011
SAMPLE TYPE: Grab	FIELD CREW: DQ, JM	START TIME: 1157
WEATHER: SKY: Clear	PRECIP: 0	TEMP.: 65°

COORDINATES(NAD 1983)

	Degrees	Minutes	Seconds
LATITUDE:	N 61		
LONGITUDE:	W 149		

SURFACE WATER SAMPLE 11NSS00/SW05 ARC

Sample Collection Depth (FT.): 6-8"
Temp: (Corrected) 25°C E.C.*: 34.8 pH*: 7.61 Redox (eH):
Appearance: Clear

W*Temp ADJ. @ 25 C

COMMENTS:	QA Label ID:	Split	Dupl.	Blank	Other

METALS FIELD FILTERED:		PHOTO TAKEN #
GRO ✓	Metals ✓	tNi, tVN
DRO/RRO ✓	Cr VI	
VOCs ✓	PCBs	
SVOCs ✓		

COLLOCATED SEDIMENT WATER SAMPLE

Sample Collection Depth (FT.):
Appearance:

COMMENTS:	QA Label ID:	Split	Dupl.	Blank	Other

		PHOTO TAKEN #
GRO	Metals	
DRO/RRO	Cr VI	
VOCs	PCBs	
SVOCs		

SURFACE WATER/SEDIMENT
FIELD NOTE FORM

SITE: Nike Site Summit	AREA: AREA C SW06	DATE: 7/7/11
SAMPLE TYPE: Grab.	FIELD CREW: DP	START TIME: 1520
WEATHER: SKY: Clear.	PRECIP: ϕ	TEMP.: 65

COORDINATES(NAD 1983)

	Degrees	Minutes	Seconds
LATITUDE:	N 61	14 . 706	
LONGITUDE:	W 149	39 . 098	

SURFACE WATER SAMPLE 11N55000/SW06 ARC

Sample Collection Depth (FT.):____
Temp: Correction 25 E.C.*: -58.6 pH*: 8.01 Redox (eH):____
Appearance: Clear

W*Temp ADJ. @ 25 C

COMMENTS:	QA Label ID:	Split____	Dupl.____	Blank____	Other____

METALS FIELD FILTERED: ✓		PHOTO TAKEN # ✓
GRO ✓	Metals ✓	+ Ni, + V
DRO/RRO ✓	Cr VI	
VOCs ✓	PCBs	
SVOCs ✓		

COLLOCATED SEDIMENT WATER SAMPLE

Sample Collection Depth (FT.):____
Appearance:____

COMMENTS:	QA Label ID:	Split____	Dupl.____	Blank____	Other____

		PHOTO TAKEN #____
GRO	Metals	
DRO/RRO	Cr VI	
VOCs	PCBs	
SVOCs		

SURFACE WATER/SEDIMENT
FIELD NOTE FORM

SITE: Nike Site Summit	AREA: AREA C SW07	DATE: 7/7/11
SAMPLE TYPE: Grab.	FIELD CREW: DP, JM	START TIME: 1600
WEATHER: SKY: Clear	PRECIP: 0	TEMP.: 65

COORDINATES(NAD 1983)	Degrees	Minutes	Seconds
LATITUDE:	N 61	19 . 617	2398
LONGITUDE:	W 149	32 . 383	

SURFACE WATER SAMPLE //NSS001SW07ARC

Sample Collection Depth (FT.):____
Temp: Corrected 25°C E.C.*: -58.7 pH*: 8.0 Redox (eH):_____
Appearance: Clear.

W*Temp ADJ. @ 25 C

COMMENTS:	QA Label ID: Split_____ Dupl._____ Blank_____ Other_____
	METALS FIELD FILTERED: ✓ PHOTO TAKEN # ✓
GRO ✓	Metals ✓ + Ni + VN.
DRO/RRO ✓	Cr VI
VOCs ✓	PCBs
SVOCs ✓	

COLLOCATED SEDIMENT WATER SAMPLE

Sample Collection Depth (FT.):____
Appearance:_____

COMMENTS:	QA Label ID: Split_____ Dupl._____ Blank_____ Other_____
	PHOTO TAKEN #_____
GRO	Metals
DRO/RRO	Cr VI
VOCs	PCBs
SVOCs	

APPENDIX F

Sample Location Coordinates

Appendix F
Nike Site Summit Remedial Field Investigation
Sample Location Coordinates

PT Number	Grid Northing (m)	Grid Easting (m)	Elevation (m)	Location Description	Survey Datum	Survey Dates	Surveyor
1501	6793658.300	362388.700	901.879	SS15ARA	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1502	6793665.526	362394.863	901.091	SS16ARA	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1503	6793672.165	362398.134	900.888	TP03ARA	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1504	6793677.105	362399.379	900.681	SS01ARA	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1505	6793676.315	362407.055	900.452	SS02ARA	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1506	6793674.592	362412.923	900.450	TP04ARA	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1507	6793676.074	362417.700	900.086	SS03ARA	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1508	6793679.153	362375.039	901.050	SS12ARA	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1509	6793661.420	362412.875	900.651	SS17ARA	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1510	6793659.592	362419.700	900.520	SS19ARA	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1511	6793659.642	362422.045	900.560	TP05ARA	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1512	6793654.024	362410.125	901.136	SS23ARA	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1513	6793634.130	362423.664	903.238	STICK UP ARA	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1514	6793623.351	362426.928	904.442	SS29ARA	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1515	6793598.050	362603.058	896.103	TP01ARA	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1516	6793583.106	362636.018	895.276	TP02ARA	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1517	6793571.902	362657.362	890.232	SS28ARA	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1518	6793564.425	362635.579	891.397	SS27ARA	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1519	6793580.837	362593.567	893.084	SS26ARA	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1520	6793599.128	362566.464	894.871	SS25ARA	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1521	6793458.561	362786.374	907.667	SS60LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1522	6793431.808	362761.120	894.108	SS61LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1523	6793229.532	363286.231	950.796	SS01LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1524	6793221.879	363296.171	950.519	SS02LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1525	6793223.948	363297.846	950.298	BH08LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1526	6793182.644	363355.373	949.022	TP01LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1527	6793185.649	363345.940	949.006	SS53LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1528	6793179.154	363347.559	948.850	SS59LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1529	6793160.197	363367.703	948.828	SS17LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1530	6793153.452	363370.592	949.000	BH01LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1531	6793156.578	363376.272	948.817	SS18LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1532	6793137.351	363381.956	948.850	TP10LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1533	6793134.243	363384.397	948.847	MW06LSS GROUND	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
			949.757	MW06LSS TOP CASE	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
			949.655	MW06LSS TOP PVC	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1534	6793131.223	363380.648	948.985	TP09LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1535	6793139.363	363387.444	948.724	SS04LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1536	6793138.374	363391.686	948.636	MW02LSS GROUND	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
			949.476	MW02LSS TOP CASE	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
			949.382	MW02LSS TOP PVC	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1537	6793137.766	363394.946	948.720	SS05LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1538	6793139.039	363401.072	948.905	MW03LSS GROUND	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
			949.827	MW03LSS TOP CASE	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
			949.712	MW03LSS TOP PVC	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1539	6793147.580	363402.732	948.887	MW04LSS GROUND	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.

Appendix F
Nike Site Summit Remedial Field Investigation
Sample Location Coordinates

PT Number	Grid Northing (m)	Grid Easting (m)	Elevation (m)	Location Description	Survey Datum	Survey Dates	Surveyor
			949.498	MW04LSS TOP PVC	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
			949.614	MW04LSS TOP CASE	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1540	6793139.531	363417.891	949.118	MW05LSS GROUND	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
			950.203	MW05LSS TOP CASE	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
			950.108	MW05LSS TOP PVC	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1541	6793128.997	363427.982	948.958	BDO	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1542	6793130.341	363430.044	949.131	BDO	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1543	6793128.126	363437.041	949.034	BDO	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1544	6793126.051	363438.586	948.990	BDO	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1545	6793118.325	363436.402	948.917	BDO	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1546	6793115.444	363433.505	948.819	BDO	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1547	6793118.406	363426.758	948.922	BDO	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1548	6793121.691	363424.295	948.929	BDO	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1549	6793127.188	363458.407	948.872	BH11LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1550	6793092.264	363472.232	948.764	MW10LSS GROUND	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
			949.782	MW10LSS TOP CASE	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
			949.650	MW10LSS TOP PVC	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1551	6793092.166	363440.270	948.959	TP04LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1552	6793103.904	363420.086	949.030	TP05LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1553	6793093.316	363411.126	948.802	MW07LSS GROUND	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
			949.736	MW07LSS TOP CASE	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
			949.652	MW07LSS TOP PVC	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1554	6793093.483	363403.721	949.084	TP06LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1555	6793096.580	363396.260	948.903	TP07LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1556	6793098.352	363400.755	949.067	TP08LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1557	6793159.454	363401.528	947.144	SS19LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1558	6793229.685	363310.422	948.378	SS03LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1559	6793123.197	363479.459	945.308	SS06LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1560	6792919.597	363333.007	965.831	SS08LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1561	6792924.162	363336.459	965.827	SS07LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1562	6793008.235	363289.387	970.659	TP03LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1563	6793009.830	363295.669	970.589	BDO	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1564	6793009.272	363297.094	970.462	SS50LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1565	6793012.302	363295.362	970.632	BDO	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1566	6793018.494	363299.290	970.534	BDO	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1567	6793019.194	363301.640	970.337	BDO	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1568	6793016.152	363305.782	970.043	BDO	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1569	6793013.978	363306.401	970.129	BDO	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1570	6793007.687	363302.549	970.258	BDO	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1571	6793007.276	363300.102	970.445	BDO	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1572	6793037.315	363232.734	970.180	SS09LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1573	6793048.629	363240.412	970.235	SS10LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1574	6793101.244	363222.353	966.187	BH09LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1575	6793090.543	363242.514	971.253	CK CP-102	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1576	6793114.788	363265.843	966.606	BDO	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.

Appendix F
Nike Site Summit Remedial Field Investigation
Sample Location Coordinates

PT Number	Grid Northing (m)	Grid Easting (m)	Elevation (m)	Location Description	Survey Datum	Survey Dates	Surveyor
1577	6793117.712	363265.514	966.617	BDO	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1578	6793123.950	363269.513	966.352	BDO	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1579	6793124.746	363272.338	966.161	BDO	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1580	6793121.553	363276.429	966.106	BDO	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1581	6793119.036	363276.853	966.175	BDO	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1582	6793111.121	363275.587	966.442	BDO	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1583	6793112.146	363270.262	966.546	BDO	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1584	6793136.406	363274.532	965.949	TP02LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1585	6793159.862	363215.730	965.729	SS12LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1586	6793170.969	363223.342	965.759	SS13LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1587	6793104.350	363207.803	966.125	SS11LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1588	6793115.094	363187.745	961.880	SS14LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1589	6793153.541	363370.492	949.005	SS15LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1590	6793150.607	363374.743	948.876	SS16LSS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1591	6794092.720	364365.607	1197.200	CK 2	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1592	6794270.258	364706.391	1140.388	SS01BCK	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1593	6794232.908	364744.529	1142.857	SS02BCK	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1594	6794203.162	364770.381	1144.300	SS03BCK	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1595	6794192.556	364827.217	1143.839	SS04BCK	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1596	6794203.670	364909.228	1156.576	SS05BCK	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1597	6794057.823	364954.852	1111.406	SS07BCK	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1598	6794116.447	364790.147	1110.277	SS11BCK	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1599	6794146.063	364747.199	1119.637	SS12BCK	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1600	6792934.405	364000.594	801.057	SS02ARC	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1601	6792933.988	364003.081	801.024	SS03ARC	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1602	6792930.549	364005.314	800.161	SW/SD01ARC	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1603	6792939.948	364000.026	801.405	SS01ARC	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1700	6794110.415	364417.973	1197.771	SS01USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1701	6794108.995	364378.846	1195.916	SS34USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1702	6794109.600	364377.810	1195.831	TP02USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1703	6794115.758	364379.220	1196.150	SS31USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1704	6794123.546	364352.074	1196.094	SS09USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1705	6794118.297	364347.620	1196.208	SS08USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1706	6794111.290	364345.106	1195.795	BH09USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1707	6794110.848	364332.872	1193.415	SS10USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1708	6794145.852	364381.961	1196.455	BH05USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1709	6794151.176	364376.817	1196.365	SS16USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1710	6794153.550	364375.393	1196.370	BH10USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1711	6794155.222	364377.683	1196.363	MW04USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1712	6794156.689	364374.137	1196.428	SS15USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1713	6794156.640	364371.664	1196.524	BH06USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1714	6794161.731	364378.049	1196.600	BH07USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1715	6794170.950	364377.498	1196.507	BH11USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1716	6794166.312	364363.974	1196.313	MW12USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1717	6794167.574	364360.712	1196.323	SS14USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.

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Nike Site Summit Remedial Field Investigation
Sample Location Coordinates

PT Number	Grid Northing (m)	Grid Easting (m)	Elevation (m)	Location Description	Survey Datum	Survey Dates	Surveyor
1718	6794172.162	364361.988	1196.091	BH01USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1719	6794174.744	364362.759	1196.166	SS13USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1720	6794172.881	364366.570	1196.309	MW03USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1721	6794175.334	364360.502	1196.234	BH02USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1722	6794169.963	364357.877	1196.378	BH13USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1723	6794192.315	364368.991	1197.235	BH08USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1724	6794194.012	364373.314	1197.108	SS06USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1725	6794195.192	364368.115	1197.337	SS05USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1726	6794205.684	364348.631	1195.239	SS04USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1727	6794134.985	364344.174	1195.832	TP04USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1728	6794201.934	364398.114	1197.902	SS17USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1729	6794206.611	364398.193	1197.966	SS22USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1730	6794203.672	364402.453	1198.037	TP01USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1731	6794202.037	364401.352	1197.882	SS18USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1732	6794198.387	364419.725	1197.790	SS03USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1752	6794256.059	364472.649	1172.478	TP03USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1753	6794179.810	364431.744	1198.537	SS02USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1754	6794187.094	364955.768	1161.962	SS06BCK	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1755	6794199.544	364321.048	1192.620	SS07USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1756	6794343.046	364428.772	1157.925	SS11USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1757	6794364.698	364428.724	1146.020	SS12USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
1758	6794116.305	364389.891	1196.253	SS27USS	UTM-6 WGS84 METERS	9-13 AND 9-14 2010	McClintock Land Associates, Inc.
	6793619.430	362420.970		TP06ARA	UTM-6 WGS84 METERS	NA	NA - estimated from field data
	6793631.480	362422.810		TP07ARA	UTM-6 WGS84 METERS	NA	NA - estimated from field data
	6793636.470	362420.790		TP08ARA	UTM-6 WGS84 METERS	NA	NA - estimated from field data
	6793643.520	362418.000		TP09ARA	UTM-6 WGS84 METERS	NA	NA - estimated from field data
	6793651.740	362414.440		TP10ARA	UTM-6 WGS84 METERS	NA	NA - estimated from field data
	6793665.180	362408.780		TP11ARA	UTM-6 WGS84 METERS	NA	NA - estimated from field data
	6793128.030	363433.030		SS24LSS	UTM-6 WGS84 METERS	NA	NA - estimated from field data
	6793124.020	363433.830		SS28LSS	UTM-6 WGS84 METERS	NA	NA - estimated from field data
	6793117.500	363275.350		SS40LSS	UTM-6 WGS84 METERS	NA	NA - estimated from field data
	6793119.760	363276.790		SS41LSS	UTM-6 WGS84 METERS	NA	NA - estimated from field data
	6793017.020	363303.010		SS45LSS	UTM-6 WGS84 METERS	NA	NA - estimated from field data
	6794081.520	364901.650		SS08BCK	UTM-6 WGS84 METERS	NA	NA - estimated from field data
	6794109.290	364871.080		SS09BCK	UTM-6 WGS84 METERS	NA	NA - estimated from field data
	6794097.250	364835.250		SS10BCK	UTM-6 WGS84 METERS	NA	NA - estimated from field data
	6793653.52	365049.13	944	SW02ARC	UTM-6 WGS84 METERS	NA	NA - estimated from GPS field data
	6793441.92	364801.97	894	SW03ARC	UTM-6 WGS84 METERS	NA	NA - estimated from GPS field data
	6793133.10	364234.12	824	SW04ARC	UTM-6 WGS84 METERS	NA	NA - estimated from GPS field data
	6793129.84	364126.56	823	SW05ARC	UTM-6 WGS84 METERS	NA	NA - estimated from GPS field data
	6792726.86	363975.74	781	SW06ARC	UTM-6 WGS84 METERS	NA	NA - estimated from GPS field data
	6792571.62	363714.52	708	SW07ARC	UTM-6 WGS84 METERS	NA	NA - estimated from GPS field data

APPENDIX G

Waste Disposal Summary

Heather Williams

From: Don Maloney [don@eccalaska.com]
Sent: Friday, October 15, 2010 4:06 PM
To: Heather Williams
Cc: Douglas Quist
Subject: RE: paperwork from ft rich disposal facility
Attachments: Waste Receipt FRA TSDF.pdf

Hi Heather,

The summary of waste generated at Site Summit and received at FRA TSDF is attached. It will be placed on a delivery order for disposal through the DRMO hazardous waste disposal contract. Please let me know if you need any other information.

Thanks
Don

From: Heather Williams [mailto:Heather.R.Williams@us.mwhglobal.com]
Sent: Wednesday, October 06, 2010 2:49 PM
To: don@eccalaska.com
Cc: Douglas Quist
Subject: paperwork from ft rich disposal facility

Hi Don –

Does the Ft Rich disposal facility issue paperwork showing what we dropped off there? If so, could I please get a copy?

Thanks, Heather

No virus found in this incoming message.
Checked by AVG - www.avg.com
Version: 9.0.862 / Virus Database: 271.1.1/3180 - Release Date: 10/05/10 22:34:00

Waste Generation - DPW ENVIRONMENTAL

Start Date: 10/12/2010 End Date: 10/15/2010

Report Date: Friday, October 15, 2010

DPW ENVIRONMENTAL

Other Waste						
Document	**ASD**	**Waste Name**	**Price**	**Unit**		**Total**
WC1JW80287H500	10/14/2010	IDW PURGE WATER Purge water	0	512	lbs	$0.00
WC1JW80287H501	10/12/2010	IDW SOIL CUTTINGS BH07 + BH10 LSS	0	697	lbs	$0.00
WC1JW80287H502	10/12/2010	IDW SOIL CUTTINGS BH1-3 LSS	0	476	lbs	$0.00
WC1JW80287H503	10/12/2010	IDW SOIL CUTTINGS BH03 LSS	0	776	lbs	$0.00
WC1JW80287H504	10/12/2010	IDW SOIL CUTTINGS BH03/BH04 LSS	0	726	lbs	$0.00
WC1JW80287H505	10/12/2010	IDW SOIL CUTTINGS BH12 LSS	0	744	lbs	$0.00
WC1JW80287H506	10/12/2010	IDW SOIL CUTTINGS BH2 + BH5 LSS	0	797	lbs	$0.00
WC1JW80287H507	10/12/2010	IDW SOIL CUTTINGS BH04 LSS	0	490	lbs	$0.00
WC1JW80287H508	10/12/2010	IDW SOIL CUTTINGS BH06 LSS	0	494	lbs	$0.00
WC1JW80287H509	10/12/2010	IDW SOIL CUTTINGS BH02 LSS	0	736	lbs	$0.00
WC1JW80287H510	10/12/2010	IDW SOIL CUTTINGS BH07 LSS	0	652	lbs	$0.00
WC1JW80287H511	10/12/2010	IDW SOIL CUTTINGS BURN BARRELS 1,2,3,4	0	3082	lbs	$0.00
		OTHER TOTALS	**Weight**	**10182**		**$0.00**
			Gallons	**0**		**$0.00**
			Count	**0**		**$0.00**

RCRA TOTALS	**Weight**	**0**	**$0.00**
	Gallons	**0**	**$0.00**
	Count	**0**	**$0.00**
OTHER TOTALS	**Weight**	**10182**	**$0.00**
	Gallons	**0**	**$0.00**
	Count	**0**	**$0.00**