Technical Memorandum

Co-Located Chemical Sampling Results at Historical Site Assessment Subarea 5A in Area IV

Santa Susana Field Laboratory
Ventura County, California

Prepared for:

Department of Energy
Energy Technology and Engineering Center
P.O. Box 10300
Canoga Park, California 91309

Prepared by:

CDM Federal Programs Corporation (CDM Smith)

Prepared under:

US Department of Energy
EM Consolidated Business Center
Contract DE-AM09-05SR22404
CDM Task Order DE-AT30-08CC60021/ET17

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I certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

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Acronyms and Abbreviations

%D	percent difference/percent drift
%R	percent recovery
mg/L	milligram per liter
pg/L	pictogram per liter
µg/L	micrograms per liter
AOC	Administrative Order on Consent
ASTM	American Society for Testing of Materials
bgs	below ground surface
CDM Smith	CDM Federal Programs Corporation
CoC	chain of custody
DOE	Department of Energy
DPT	direct push technology
DQI	data quality indicator
DQO	data quality objective
DTSC	Department of Toxic Substances Control
DUAR	data usability assessment review
EFH	extractable fuel hydrocarbon
EPA	U.S. Environmental Protection Agency
FTL	field team leader
GRO	gasoline range organics
HGL	HydroGeoLogic, Inc.
HSA	Historical Site Assessment
ICP	inductively coupled plasma
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
LLI	Lancaster Laboratories, Inc.
MDL	method detection limit
mL	milliliters
MS	matrix spike
MSD	matrix spike duplicate
NDMA	n-Nitrosodimethylamine
PAH	polycyclic aromatic hydrocarbon
PARCCS	precision, accuracy, representativeness, comparability, completeness and sensitivity
PCB	polychlorinated biphenyl
PCT	polychlorinated triphenyl
PID	photoionization detector
QA	quality assurance
QAPP	quality assurance project plan
QC	quality control
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RL	reporting limit
RPD	relative percent difference
SDG	sample delivery group

SIM	selective ion monitoring
SOW	statement of work
SSFL	Santa Susana Field Laboratory
SVOC	semi-volatile organic compound
TM	technical memorandum
TPH	total petroleum hydrocarbon
VOC	volatile organic compound
WP/FSAP	Work Plan/Field Sampling and Analysis Plan

Section 1
Introduction

This Technical Memorandum (TM) presents the results of chemical analyses of surface and subsurface soil, and soil from intermittent drainages collected under the *Master Work Plan/ Field Sampling and Analysis Plan, Co-Located Chemical Sampling at Area IV, Santa Susana Field Laboratory, Ventura County, California* (CDM Federal Programs Corporation [CDM] 2011a) (WP/FSAP) and *Addendum No. 2 to Master Work Plan/Field Sampling and Analysis Plan, Co-Located Chemical Sampling at Area IV, Santa Susana Field Laboratory, Ventura County, California, EPA Subarea 5A Soil Sampling* (CDM 2011b) (Addendum to the WP/FSAP).

This TM addresses sampling within U.S. Environmental Protection Agency (EPA) Historical Site Assessment (HSA) Subarea 5A of Area IV at Santa Susana Field Laboratory (SSFL) and provides a description of the sampling activities, the analytical results, and a discussion of the analytical data review findings. The TM does not provide detailed interpretation of the results. The data provided in this TM are intended to be combined with data collected under the prior Resource Conversation and Recovery Act (RCRA) Facility Investigation (RFI) efforts within the Area IV soil chemical database. A data gap analysis will be performed to assess the adequacy of Area IV data as a whole in defining nature and extent of chemicals in soil for purposes of remedy determination.

1.1 Co-Located Soil Chemical Sampling Objectives

The radiological characterization study being performed by EPA includes collection of surface and subsurface soil, as well as drainage soil samples throughout Area IV of SSFL and the Northern Buffer Zone for analysis of radionuclides. The California Department of Toxic Substances Control (DTSC) and Department of Energy (DOE) agreed in the *Administrative Order on Consent for Remedial Action (AOC,* Docket Number HSA-CO 10/11-037) that soil/sediment samples collected by EPA to also be analyzed for chemical analytes. EPA's contractor, Hydrogeologic, Inc. (HGL) was responsible for the collection of the EPA-proposed soil samples. DTSC and DOE agreed that the chemical analyses of the soil samples provided by EPA would be done by DOE's contractor, CDM. CDM was responsible for the management, shipment, and laboratory analyses of the samples collected for chemical analyses.

The AOC was signed by DTSC and DOE on December 6, 2010. The AOC is a legally binding order that requires and describes the characterization of Area IV and Northern Buffer Zone soils/sediments and further defines DOE's obligations in relation to radiologic and chemical cleanup of soils within these areas. It also stipulates that during Phase 1 of the chemical investigation activities, DOE is to analyze soil samples for chemical constituents at locations where EPA collects a sample for radiological analysis.

1.2 Basis for the HSA Subarea 5A Soil Sampling

HGL's *Field Sampling Plan for Soil Sampling, Area IV Radiological Study, Santa Susana Field Laboratory, Ventura County, California* (HGL 2010) includes a description of the project objectives, the scope of work, laboratory analytical suites, and sample collection and other standard field operation methods for EPA's radiological characterization study.

Subarea 5A FSP Addendum, Santa Susana Field Laboratory Site, Area IV Radiological Study (HGL 2011) was prepared by HGL to support the field implementation specific to their soil sampling program in Subarea 5A. The addendum provides the technical justification for location of the drainage, surface, and subsurface soil samples in Subarea 5A. CDM obtained split soil samples for chemical analysis at each location where HGL collected soil samples for radionuclides analyses.

1.3 Geology

Subarea 5A of Area IV is within the Chatsworth Formation, which is composed predominantly of sandstone interbedded with siltstone and shale. The overlying native soil encountered in this area range from predominantly silty sands to sandy silts at shallow depths with increasing clay content to 10 feet below ground surface (bgs). Disturbed locations comprise fill soil of unknown origin and debris such as concrete, asphalt, and wood. The observed contact with the lithified Chatsworth Formation within Subarea 5A occurs between one and nine feet bgs.

Additional information regarding the geology in Area IV can be found in Volume I of *Group 5 – Central Portion of Areas III and IV RCRA Facility Investigation Report Santa Susana Field Laboratory, Ventura County, California* (CH2M Hill 2008).

1.4 Technical Memorandum Organization

This TM includes the following sections:

- **Section 1 - Introduction** – Summarizes the basis and objectives of the co-located soil sampling in Subarea 5A
- **Section 2 - Field Sampling and Analytical Methods** – Provides details regarding field sampling procedures and laboratory analytical methods
- **Section 3 - Soil Sample Analytical Results** – Provides a summary of detected analytical results for each chemical; the appendices provide the overall results
- **Section 4 - Data Usability Assessment** – Discusses the results of the data review and validation processes
- **Section 5 - References**

Section 2
Field Sampling and Analytical Methods

Soil samples at surface and drainage locations in Subarea 5A were collected from February 16, 2011 through March 2, 2011 and on April 22, 2011. Subsurface sampling was performed from February 7, 2011 through April 22, 2011 and on May 16, 2011. All soil sample locations are shown on Figure 2-1 (North) and Figure 2-2 (South).

Table 2-1 provides the rationale for sampling each location, sample number and date of collection for the soil samples; location description; description of any fill materials encountered, and reasons for not sampling some of the locations proposed by EPA.

All soil sampling equipment described in Sections 2.1 and 2.2 that came into contact with sample materials was decontaminated prior to sample collection in accordance with the WP/FSAP.

2.1 Surface and Drainage Sampling

Surface soil and drainage samples in Subarea 5A were collected from the ground surface to 6-inches bgs. The surface of the sample area was prepared by HGL sampling personnel by removing leaves, grass, and any other surface debris. Surface samples to be analyzed for semivolatile organic compounds (SVOCs), polycyclic aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs)/polychlorinated triphenyls (PCTs) were collected first using a slide hammer equipped with a 2-inch diameter and 6-inch long stainless steel sample liner. The sampler was pounded into the soil until its top was flush with the ground surface and then removed from the soil. The sample sleeve was removed from the sampler and both ends capped with a Teflon® liner and a plastic cap.

The soil for the remaining sample analytes was collected from a circular hole, approximately 12 inches in diameter to a depth of 6 inches bgs, using a stainless steel trowel and transferred to a stainless steel bowl and homogenized. Debris, wood, or other materials larger than 0.25 inches were removed prior to homogenization. After homogenization, the sample was placed into one or more 16-ounce glass jars. Adhesive sample labels, completed with all sampling information, were affixed to both the sample sleeves and jars. All sleeves and jars were placed into plastic baggies, and placed in a cooler with double bagged ice.

All surface and drainage samples were analyzed for primary sample analytes (i.e., SVOCs, PAHs, metals [including mercury], hexavalent chromium, fluoride, PCBs/PCTs, dioxins, perchlorate, pesticides, and herbicides). Selected samples were analyzed for the secondary analytes (i.e., total petroleum hydrocarbons - extractable fuel hydrocarbons [TPH-EFH], TPH-gasoline range organics [TPH-GRO], nitrates, pH, formaldehyde, n-Nitrosodimethylamine [NDMA], energetics, cyanide, terphenyls, glycols, and alcohols).

Table 2-1
Soil Samples Collected from HSA Subarea 5A

Sample Type	EPA Location ID	Location Description From EPA	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Surface	1	Inside footprint of Bldg 4023 (Liquid Metal Component Test Building)	This building was used for sodium component testing and later, for research of radioactivity migration in sodium loops and radioactivity separation technology. This is the approx. location of the sodium loop (Dwg 303-023-A7)	0.5	"15% gravel (fill rock)"	2/23/2011	Primary	SL-001-SA5A-SS-0.0-0.5
Subsurface	1	Inside footprint of Bldg 4023 (Liquid Metal Component Test Building)	This building was used for sodium component testing and later, for research of radioactivity migration in sodium loops and radioactivity separation technology. This is the approx. location of the sodium loop (Dwg 303-023-A7)	7.0	"Trace crushed medium gravel near surface." "1.0 - 6.0 ft: Trace crushed medium gravel." Refusal on sandstone	3/14/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-001-SA5A-SB-4.5 SL-001-SA5A-SB-4.0-5.0
Surface	2	Inside footprint of Bldg 4023 (Liquid Metal Component Test Building)	This building was used for sodium component testing and later, for research of radioactivity migration in sodium loops and radioactivity separation technology. This is the approx. location of the pump test loop (Dwg 303-023-A7)	0.5	"20% gravel (fill rock)"	2/23/2011	Primary	SL-002-SA5A-SS-0.0-0.5
Subsurface	2	Inside footprint of Bldg 4023 (Liquid Metal Component Test Building)	This building was used for sodium component testing and later, for research of radioactivity migration in sodium loops and radioactivity separation technology. This is the approx. location of the pump test loop (Dwg 303-023-A7)	1.5	"0.0 - 1.3 ft: Angular 3/4" fill rock" Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 3/8/2011	NA	NA
Surface	4	Inside footprint of Bldg 4023 (Liquid Metal Component Test Building)	This building was used for sodium component testing and later, for research of radioactivity migration in sodium loops and radioactivity separation technology. This is the approx. location of the sodium loop (Dwg 303-023-A7)	0.5	"15% gravel (fill rock)"	2/23/2011	Primary	SL-004-SA5A-SS-0.0-0.5MS
Subsurface	4	Inside footprint of Bldg 4023 (Liquid Metal Component Test Building)	This building was used for sodium component testing and later, for research of radioactivity migration in sodium loops and radioactivity separation technology. This is the approx. location of the pump test loop (Dwg 303-023-A7)	0.5	"0.0 - 0.5 ft: Trace fine gravel" Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 3/8/2011	NA	NA
Surface	6	Inside footprint of Bldg 4023 (Liquid Metal Component Test Building)	This building was used for sodium component testing and later, for research of radioactivity migration in sodium loops and radioactivity separation technology. This is the approx. location of the sodium loop (Dwg 303-023-A7)	0.5	None indicated	2/23/2011	Primary	SL-006-SA5A-SS-0.0-0.5
Subsurface	6	Inside footprint of Bldg 4023 (Liquid Metal Component Test Building)	This building was used for sodium component testing and later, for research of radioactivity migration in sodium loops and radioactivity separation technology. This is the approx. location of the pump test loop (Dwg 303-023-A7)	3.0	None indicated Refusal on sandstone	3/8/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-006-SA5A-SB-2.5 SL-006-SA5A-SB-2.0-3.0
Surface	7	Inside footprint of Bldg 4023 (Liquid Metal Component Test Building)	Location of the service sink and presence of a gamma anomaly (Dwg 303-023-A7)	0.5	None indicated	2/24/2011	Primary	SL-007-SA5A-SS-0.0-0.5
Subsurface	7	Inside footprint of Bldg 4023 (Liquid Metal Component Test Building)	Location of the service sink and presence of a gamma anomaly (Dwg 303-023-A7)	10.0	None indicated	3/7/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-007-SA5A-SB-4.5 SL-007-SA5A-SB-4.0-5.0
Surface	8	Inside footprint of Bldg 4023 (Liquid Metal Component Test Building)	Scan results indicate presence of a gamma anomaly	0.5	None indicated	2/24/2011	Primary	SL-008-SA5A-SS-0.0-0.5
Subsurface	8	Inside footprint of Bldg 4023 (Liquid Metal Component Test Building)	Scan results indicate presence of a gamma anomaly	2.0	None indicated Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 3/7/2011	NA	NA
Surface	9	Inside footprint of Bldg 4023 (Liquid Metal Component Test Building)	Scan results indicate presence of a gamma anomaly	0.5	None indicated	2/23/2011	Primary	SL-009-SA5A-SS-0.0-0.5
Subsurface	9	Inside footprint of Bldg 4023 (Liquid Metal Component Test Building)	Scan results indicate presence of a gamma anomaly	1.0	None indicated Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 3/7/2011	NA	NA
Surface	10	Immediately east of Bldg 4023 footprint	Scan results indicate presence of a gamma anomaly	0.5	None indicated	2/23/2011	Primary	SL-010-SA5A-SS-0.0-0.5
Subsurface	10	Immediately east of Bldg 4023 footprint	Scan results indicate presence of a gamma anomaly	2.0	None indicated Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 3/7/2011	NA	NA
Surface	12	Northeast corner of Bldg 4023 footprint	Survey results indicate presence of buried metal	0.5	None indicated	2/23/2011	Primary	SL-012-SA5A-SS-0.0-0.5
Subsurface	12	Northeast corner of Bldg 4023 footprint	Survey results indicate presence of buried metal	3.0	"1.5 - 2.5 ft: asphalt trace" Refusal on sandstone	3/7/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-012-SA5A-SB-2.5 SL-012-SA5A-SB-2.0-3.0

Table 2-1
Soil Samples Collected from HSA Subarea 5A

Sample Type	EPA Location ID	Location Description From EPA	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Surface	13	Immediately east of Bldg 4023 footprint	Scan results indicate presence of a gamma anomaly	0.5	None indicated	2/23/2011	Primary	SL-013-SA5A-SS-0.0-0.5
Subsurface	13	Immediately east of Bldg 4023 footprint	Scan results indicate presence of a gamma anomaly	3.0	None indicated Refusal on sandstone	3/7/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-013-SA5A-SB-3.0 SL-013-SA5A-SB-2.5-3.5
Drainage	14	Northwest corner of Bldg 4023 footprint	Location of catch basin identified in Dwg 303-023-P1 (sample sediment inside)	NA	NA	Not sampled - drainage grate welded shut	NA	NA
Subsurface	15	Northwest corner of Bldg 4023 footprint	Location of catch basin identified in Dwg 303-023-P1	4.0	None indicated	3/4/2011	VOCs/Dioxane Primary	SL-015-SA5A-SB-3.5 SL-015-SA5A-SB-3.0-4.0
Surface	16	Southeast corner of Bldg 4023 footprint	Location of catch basin identified in Dwg 303-023-C1	0.5	"10% rock fragments (sandstone/siltstone, asphalt)"	2/23/2011	Primary	SL-016-SA5A-SS-0.0-0.5
Subsurface	16	Southeast corner of Bldg 4023 footprint	Location of catch basin identified in Dwg 303-023-C1		NA	Location not sampled because collection of surface soil sample at this location adequately characterized potential contamination originating from surface water run-off into catchment basin.	NA	NA
Surface	17	Approx 30 feet north of Bldg 4023 footprint	Location of "AC Trench" identified in Dwg 303-023-C1	0.5	"5% rock fragments (sandstone, pea gravel)"	2/23/2011	Primary	SL-017-SA5A-SS-0.0-0.5
Subsurface	17	Approx 30 feet north of Bldg 4023 footprint	Location of "AC Trench" identified in Dwg 303-023-C1	2.0	"0.0 - 1.8 ft: 15% angular 3/4" gravel" Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 3/8/2011	NA	NA
Surface	18	Approx 30 feet north of Bldg 4023 footprint	Location of "AC Trench" identified in Dwg 303-023-C1	0.5	"5% rock fragments (sandstone, gravel fill)"	2/23/2011	Primary	SL-018-SA5A-SS-0.0-0.5
Subsurface	18	Approx 30 feet north of Bldg 4023 footprint	Location of "AC Trench" identified in Dwg 303-023-C1	1.0	None indicated Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 3/8/2011	NA	NA
Surface	19	Approx 30 feet east of Bldg 4023 footprint	Location of "AC Trench" identified in Dwg 303-023-C1	0.5	"5% asphalt pieces"	2/23/2011	Primary	SL-019-SA5A-SS-0.0-0.5
Subsurface	19	Approx 30 feet east of Bldg 4023 footprint	Location of "AC Trench" identified in Dwg 303-023-C1	2.0	None indicated Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 3/7/2011	NA	NA
Surface	21	Western portion of group 5	Location of potential gamma anomaly	0.5	None indicated	2/17/2011	Primary	SL-021-SA5A-SS-0.0-0.5
Subsurface	21	Western portion of group 5	Location of potential gamma anomaly	4.0	None indicated Refusal on sandstone	2/24/2011	VOCs/Dioxane Primary	SL-021-SA5A-SB-3.5 SL-021-SA5A-SB-3.0-4.0
Surface	22	Western portion of group 5	Location of potential gamma anomaly	0.5	"10% rock fragments (brick, sandstone)"	2/17/2011	Primary	SL-022-SA5A-SS-0.0-0.5
Subsurface	22	Western portion of group 5	Location of potential gamma anomaly	5.0	None indicated Refusal on sandstone	2/24/2011	VOCs/Dioxane Primary	SL-022-SA5A-SB-4.5 SL-022-SA5A-SB-4.0-5.0
Surface	24	Western portion of group 5	Location of potential gamma anomaly	0.5	None indicated	2/16/2011	Primary	SL-024-SA5A-SS-0.0-0.5
Subsurface	24	Western portion of group 5	Location of potential gamma anomaly	3.8	None indicated Refusal on sandstone	2/22/2011	VOCs/Dioxane Primary	SL-024-SA5A-SB-3.0 SL-024-SA5A-SB-2.5-3.5
Surface	25	Western portion of group 5	Location of aerial photography feature WDA-8 and potential geophysical anomaly	0.5	"5% gravel (fill, sandstone)"	2/16/2011	Primary	SL-025-SA5A-SS-0.0-0.5
Subsurface	25	Western portion of group 5	Location of aerial photography feature WDA-8 and potential geophysical anomaly	5.8	None indicated Refusal on sandstone	2/21/2011	VOCs/Dioxane Primary	SL-025-SA5A-SB-5.0 SL-025-SA5A-SB-4.5-5.5
Surface	26	Western portion of group 5	Location of aerial photography feature WDA-8	0.5	None indicated	2/16/2011	Primary	SL-026-SA5A-SS-0.0-0.5

Table 2-1
Soil Samples Collected from HSA Subarea 5A

Sample Type	EPA Location ID	Location Description From EPA	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Subsurface	26	Western portion of group 5	Location of aerial photography feature WDA-8	4.5	"5" - 6": asphalt" Refusal on sandstone	2/22/2011	VOCs/Dioxane Primary	SL-026-SA5A-SB-4.0 SL-026-SA5A-SB-3.5-4.5
Surface	28	Western portion of group 5	Location of aerial photography feature WDA-8	0.5	None indicated	2/16/2011	Primary	SL-028-SA5A-SS-0.0-0.5
Subsurface	28	Western portion of group 5	Location of aerial photography feature WDA-8	4.5	None indicated Refusal on sandstone	2/21/2011	VOCs/Dioxane Primary	SL-028-SA5A-SB-4.0 SL-028-SA5A-SB-3.5-4.5
Surface	29	Western portion of group 5	Location of aerial photography feature WDA-8 and potential geophysical anomaly	0.5	"20% rock fragments (brick, sandstone)"	2/16/2011	Primary	SL-029-SA5A-SS-0.0-0.5
Subsurface	29	Western portion of group 5	Location of aerial photography feature WDA-8 and potential geophysical anomaly	4.0	"0.0 - 0.5 ft: red concrete" Refusal on sandstone	2/21/2011	VOCs/Dioxane Primary	SL-029-SA5A-SB-3.5 SL-029-SA5A-SB-3.0-4.0
Surface	31	Western portion of group 5	Location of potential gamma anomaly	0.5	"15% rock fragments (gravel)"	2/16/2011	Primary	SL-031-SA5A-SS-0.0-0.5
Subsurface	31	Western portion of group 5	Location of potential gamma anomaly	5.0	"0.0 - 1.0 ft: trace gravel, subangular" Refusal on sandstone	2/22/2011	VOCs/Dioxane Primary	SL-031-SA5A-SB-4.5 SL-031-SA5A-SB-4.0-5.0
Surface	32	Western portion of group 5	Location of potential gamma anomaly	0.5	None indicated	2/16/2011	Primary	SL-032-SA5A-SS-0.0-0.5
Subsurface	32			4.0	None indicated Refusal on sandstone	4/18/2011	VOCs/Dioxane Primary	SL-032-SA5A-SB-3.5 SL-032-SA5A-SB-3.0-4.0
Surface	33	Western portion of group 5	Location of potential gamma anomaly	NA	NA	Not sampled due to Archaeological finding	NA	NA
Surface	35	Western upper portion of group 5	Location of aerial photography feature WDA-8 and potential geophysical anomaly	0.5	None indicated	2/17/2011	Primary	SL-035-SA5A-SS-0.0-0.5
Subsurface	35	Western upper portion of group 5	Location of aerial photography feature WDA-8 and potential geophysical anomaly	5.0	None indicated Refusal on sandstone	2/22/2011	VOCs/Dioxane Primary	SL-035-SA5A-SB-4.5 SL-035-SA5A-SB-4.0-5.0
Surface	36	Western upper portion of group 5	Location of aerial photography feature WDA-8 and potential geophysical anomaly	0.5	"15% rock fragments (concrete, sandstone/siltstone)"	2/17/2011	Primary	SL-036-SA5A-SS-0.0-0.5
Subsurface	36	Western upper portion of group 5	Location of aerial photography feature WDA-8 and potential geophysical anomaly	5.0	"0.0 - 4.0 in: trace gravel, surrounded" "3 in: concrete debris" "1 ft 8 in: red concrete debris and trace gravel, subangular" Refusal on sandstone	2/23/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-036-SA5A-SB-4.5MS SL-036-SA5A-SB-4.0-5.0MS
Surface	37	Western upper portion of group 5	Location of aerial photography feature WDA-8 and potential geophysical anomaly	0.5	"10% rock fragments (concrete, sandstone)"	2/17/2011	Primary	SL-037-SA5A-SS-0.0-0.5
Subsurface	37	Western upper portion of group 5	Location of aerial photography feature WDA-8 and potential geophysical anomaly	5.0	"0.0 - 0.5 ft: trace gravel, subrounded" "5 - 6 in: concrete" Refusal on sandstone	2/23/2011	VOCs/Dioxane/GRO Primary & Secondary	SL-037-SA5A-SB-4.5 SL-037-SA5A-SB-4.0-5.0
Surface	40	Western upper portion of group 5	Location of aerial photography feature WDA-8	0.5	None indicated	2/17/2011	Primary	SL-040-SA5A-SS-0.0-0.5
Subsurface	40	Western upper portion of group 5	Location of aerial photography feature WDA-8	10.0	None indicated	2/23/2011	VOCs/Dioxane/GRO Primary & Secondary VOCs/Dioxane/GRO Primary & Secondary	SL-040-SA5A-SB-4.5 SL-040-SA5A-SB-4.0-5.0 SL-040-SA5A-SB-9.5 SL-040-SA5A-SB-9.0-10.0
Surface	41	Southwest corner of group 5	Location of potential gamma anomaly	0.5	None indicated	2/16/2011	Primary	SL-041-SA5A-SS-0.0-0.5
Subsurface	41	Southwest corner of group 5	Location of potential gamma anomaly	5.0	None indicated Refusal on sandstone	4/15/2011	VOCs/Dioxane Primary	SL-041-SA5A-SB-4.5 SL-041-SA5A-SB-4.0-5.0
Surface	42	Southwest corner of group 5	Location of potential gamma anomaly	0.5	None indicated	3/2/2011	Primary	SL-042-SA5A-SS-0.0-0.5
Subsurface	42	Southwest corner of group 5	Location of potential gamma anomaly	4.5	None indicated Refusal on sandstone	5/16/2011	VOCs/Dioxane Primary	SL-042-SA5A-SB-4.0MS SL-042-SA5A-SB-3.5-4.5MS
Surface	44	Southwest corner of group 5	Location of potential gamma anomaly	0.5	None indicated	3/2/2011	Primary	SL-044-SA5A-SS-0.0-0.5

Table 2-1
Soil Samples Collected from HSA Subarea 5A

Sample Type	EPA Location ID	Location Description From EPA	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Subsurface	44	Southwest corner of group 5	Location of potential gamma anomaly	4.0	None indicated Refusal on sandstone	4/15/2011	VOCs/Dioxane Primary	SL-044-SA5A-SB-3.5 SL-044-SA5A-SB-3.0-4.0
Surface	45	Southwest corner of group 5	Location of potential gamma anomaly	0.5	None indicated	3/2/2011	Primary	SL-045-SA5A-SS-0.0-0.5
Subsurface	45	Southwest corner of group 5	Location of potential gamma anomaly	2.5	None indicated Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 2/7/2011	NA	NA
Surface	47	Southwest corner of group 5	Location of potential gamma anomaly	NA	NA	Not sampled due to Archaeological finding	NA	NA
Subsurface	47	Southwest corner of group 5	Location of potential gamma anomaly	NA	NA	Not sampled due to Archaeological finding	NA	NA
Surface	48	Southwest corner of group 5	Location of potential gamma anomaly	0.5	None indicated	3/2/2011	Primary	SL-048-SA5A-SS-0.0-0.5MS
Subsurface	48	Southwest corner of group 5	Location of potential gamma anomaly	2.8	None indicated Refusal on sandstone	2/7/2011	VOCs/Dioxane Primary	SL-048-SA5A-SB-3.5 SL-048-SA5A-SB-3.0-4.0
Surface	49	Southwest corner of group 5	Location of potential gamma anomaly	0.5	None indicated	2/18/2011	Primary	SL-049-SA5A-SS-0.0-0.5
Subsurface	49	Southwest corner of group 5	Location of potential gamma anomaly	3.0	None indicated Refusal on sandstone	2/7/2011	VOCs/Dioxane Primary	SL-049-SA5A-SB-2.5 SL-049-SA5A-SB-2.0-3.0
Surface	50	Western upper portion of group 5	Location of aerial photography feature EX (excavation)	0.5	None indicated	2/17/2011	Primary	SL-050-SA5A-SS-0.0-0.5
Subsurface	50	Western upper portion of group 5	Location of aerial photography feature EX (excavation)	5.0	None indicated Refusal on sandstone	2/24/2011	VOCs/Dioxane Primary	SL-050-SA5A-SB-4.5 SL-050-SA5A-SB-4.0-5.0
Surface	51	Western upper portion of group 5	Location of aerial photography feature POSS DO	0.5	None indicated	2/17/2011	Primary	SL-051-SA5A-SS-0.0-0.5
Subsurface	51	Western upper portion of group 5	Location of aerial photography feature POSS DO	2.8	"4 - 5 in: concrete" Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 2/23/2011	NA	NA
Surface	52	Southeast corner of group 5	Location of potential gamma anomaly	0.5	None indicated	2/18/2011	Primary	SL-052-SA5A-SS-0.0-0.5
Subsurface	52	Southeast corner of group 5	Location of potential gamma anomaly	7.0	None indicated Refusal on sandstone	4/15/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-052-SA5A-SB-4.5 SL-053-SA5A-SB-4.0-5.0
Surface	53	Southeast corner of group 5	Location of potential gamma anomaly	0.5	None indicated	2/18/2011	Primary	SL-053-SA5A-SS-0.0-0.5
Subsurface	53	Southeast corner of group 5	Location of potential gamma anomaly	4.0	None indicated Refusal on sandstone	2/25/2011	VOCs/Dioxane Primary	SL-053-SA5A-SB-3.5 SL-053-SA5A-SB-3.0-4.0
Surface	54	Northwest corner of group 5 and west of Radiation Measurement Fac. (bldg 4029)	Location of aerial photo features GS, OS-17, and POSS ST	0.5	None indicated	2/21/2011	Primary	SL-054-SA5A-SS-0.0-0.5
Subsurface	54	Northwest corner of group 5 and west of Radiation Measurement Fac. (bldg 4029)	Location of aerial photo features GS, OS-17, and POSS ST	10.0	None indicated	2/25/2011	VOCs/Dioxane Primary Primary	SL-054-SA5A-SB-4.5 SL-054-SA5A-SB-4.0-5.0 SL-054-SA5A-SB-9.0-10.0
Surface	55	Northwest corner of group 5 and west of Radiation Measurement Fac. (bldg 4029)	Location of aerial photo features GS, OS-17, and POSS ST	0.5	None indicated	2/21/2011	Primary	SL-055-SA5A-SS-0.0-0.5
Subsurface	55	Northwest corner of group 5 and west of Radiation Measurement Fac. (bldg 4029)	Location of aerial photo features GS, OS-17, and POSS ST	3.1	None indicated Refusal on sandstone	2/25/2011	VOCs/Dioxane Primary	SL-055-SA5A-SB-2.5 SL-055-SA5A-SB-2.0-3.0
Surface	56	Northwest corner of group 5 and west of Radiation Measurement Fac. (bldg 4029)	Location of aerial photo features GS, OS-17, and POSS ST	0.5	None indicated	2/21/2011	Primary	SL-056-SA5A-SS-0.0-0.5
Subsurface	56	Northwest corner of group 5 and west of Radiation Measurement Fac. (bldg 4029)	Location of aerial photo features GS, OS-17, and POSS ST	8.0	None indicated Refusal on sandstone	2/25/2011	VOCs/Dioxane Primary Primary	SL-056-SA5A-SB-4.5 SL-056-SA5A-SB-4.0-5.0 SL-056-SA5A-SB-7.0-8.0
Surface	57	Northwest corner of group 5 and west of Radiation Measurement Fac. (bldg 4029)	Location of aerial photo features GS, OS-17, and POSS ST	0.5	None indicated	2/21/2011	Primary	SL-057-SA5A-SS-0.0-0.5
Subsurface	57	Northwest corner of group 5 and west of Radiation Measurement Fac. (bldg 4029)	Location of aerial photo features GS, OS-17, and POSS ST	2.5	None indicated Refusal on siltstone	No sample collected due to shallow refusal < 2.5 ft 4/14/2011	NA	NA
Surface	58	Northwest corner of group 5 and west of Radiation Measurement Fac. (bldg 4029)	Location of aerial photo features GS, OS-17, and POSS ST	0.5	None indicated	2/21/2011	Primary	SL-058-SA5A-SS-0.0-0.5

Table 2-1
Soil Samples Collected from HSA Subarea 5A

Sample Type	EPA Location ID	Location Description From EPA	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Subsurface	58	Northwest corner of group 5 and west of Radiation Measurement Fac. (bldg 4029)	Location of aerial photo features GS, OS-17, and POSS ST	4.0	None indicated Refusal on siltstone	4/14/2011	VOCs/Dioxane Primary	SL-058-SA5A-SB-3.5MS SL-058-SA5A-SB-3.0-4.0MS
Surface	59	Northwest corner of group 5 and west of Radiation Measurement Fac. (bldg 4029)	Location of aerial photo features GS, OS-17, and POSS ST	0.5	None indicated	2/21/2011	Primary	SL-059-SA5A-SS-0.0-0.5
Subsurface	59	Northwest corner of group 5 and west of Radiation Measurement Fac. (bldg 4029)	Location of aerial photo features GS, OS-17, and POSS ST	4.0	None indicated Refusal on sandstone	4/14/2011	VOCs/Dioxane Primary	SL-059-SA5A-SB-3.5 SL-059-SA5A-SB-3.0-4.0
Surface	60	Northwest corner of group 5 and west of Radiation Measurement Fac. (bldg 4029)	Location of aerial photo features GS, OS-17, and POSS ST	0.5	None indicated	2/21/2011	Primary	SL-060-SA5A-SS-0.0-0.5
Subsurface	60	Northwest corner of group 5 and west of Radiation Measurement Fac. (bldg 4029)	Location of aerial photo features GS, OS-17, and POSS ST	9.0	None indicated Refusal on siltstone	4/13/2011	VOCs/Dioxane Primary Primary	SL-060-SA5A-SB-4.5 SL-060-SA5A-SB-4.0-5.0 SL-060-SA5A-SB-8.0-9.0
Surface	61	Northwest corner of group 5 and west of Radiation Measurement Fac. (bldg 4029)	Location of aerial photo features GS, OS-17, and POSS ST	0.5	None indicated	2/21/2011	Primary	SL-061-SA5A-SS-0.0-0.5
Subsurface	61	Northwest corner of group 5 and west of Radiation Measurement Fac. (bldg 4029)	Location of aerial photo features GS, OS-17, and POSS ST	5.0	None indicated Refusal on sandstone	4/13/2011	VOCs/Dioxane Primary	SL-061-SA5A-SB-4.5 SL-061-SA5A-SB-4.0-5.0
Surface	62	Northeast corner of group 5 and immediately east of Bldg 4029	Location of potential gamma anomaly	0.5	None indicated	2/21/2011	Primary	SL-062-SA5A-SS-0.0-0.5
Subsurface	62	Northeast corner of group 5 and immediately east of Bldg 4029	Location of potential gamma anomaly	1.2	None indicated Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 4/22/2011	NA	NA
Surface	63	Northeast corner of group 5 and immediately east of Bldg 4029	Location of potential gamma anomaly	0.5	None indicated	2/21/2011	Primary	SL-063-SA5A-SS-0.0-0.5
Subsurface	63	Northeast corner of group 5 and immediately east of Bldg 4029	Location of potential gamma anomaly	2.0	None indicated Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 4/22/2011	NA	NA
Surface	64	Northeast corner of group 5 and immediately east of Bldg 4029	Location of potential gamma anomaly	0.5	None indicated	2/21/2011	Primary	SL-064-SA5A-SS-0.0-0.5
Subsurface	64	Northeast corner of group 5 and immediately east of Bldg 4029	Location of potential gamma anomaly	4.0	None indicated Refusal on sandstone	4/22/2011	VOCs/Dioxane Primary	SL-064-SA5A-SB-3.5MS SL-064-SA5A-SB-3.0-4.0MS
Subsurface	65	Northeast corner of group 5 and immediately west of Bldg 4029	Location of aerial photo feature OS	6.0	None indicated Refusal on siltstone	4/14/2011	VOCs/Dioxane Primary	SL-065-SA5A-SB-4.5 SL-065-SA5A-SB-4.0-5.0
Surface	66	Northeast corner of group 5 and immediately west of Bldg 4029	Location of aerial photo feature OS	0.5	"15% rock fragments (siltstone, fill gravel)"	3/1/2011	Primary	SL-066-SA5A-SS-0.0-0.5
Subsurface	66	Far east portion of Group 3 and north of G Street	Survey results indicate potential geophysical anomaly	2.5	None indicated Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 4/6/2011	NA	NA
Subsurface	67	Far east portion of Group 3 and north of G Street	Survey results indicate potential geophysical anomaly	2.0	None indicated Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 4/6/2011	NA	NA
Subsurface	68	Far east portion of Group 3 and north of G Street	Survey results indicate potential geophysical anomaly	2.5	"0.0 - 1.0 ft: 5% angular gravel" Refusal on siltstone	No sample collected due to shallow refusal < 2.5 ft 4/6/2011	NA	NA

Table 2-1
Soil Samples Collected from HSA Subarea 5A

Sample Type	EPA Location ID	Location Description From EPA	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Subsurface	69	Far east portion of Group 3 and north of G Street	Survey results indicate potential geophysical anomaly	2.0	None indicated Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 4/6/2011	NA	NA
Subsurface	70	Far east portion of Group 3 and north of G Street	Survey results indicate potential geophysical anomaly	2.0	None indicated Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 4/1/2011	NA	NA
Subsurface	71	Far east portion of Group 3 and north of G Street	Survey results indicate potential geophysical anomaly	6.0	"fill rock (granite) near surface" Refusal on sandstone	4/1/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-071-SA5A-SB-4.5 SL-071-SA5A-SB-4.0-5.0
Surface	72	Far east portion of Group 3 and north of G Street	Survey results indicate potential geophysical anomaly	0.5	None indicated	3/1/2011	Primary	SL-072-SA5A-SS-0.0-0.5
Subsurface	72	Far east portion of Group 3 and north of G Street	Survey results indicate potential geophysical anomaly	7.0	None indicated Refusal on sandstone	4/1/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-072-SA5A-SB-4.5 SL-072-SA5A-SB-4.0-5.0
Subsurface	73	Far east portion of Group 3 and north of G Street	Survey results indicate potential geophysical anomaly	2.5	"0.0 - 1.0 ft: 15% angular granite gravel" Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 3/3/2011	NA	NA
Subsurface	74	Far east portion of Group 3 and north of G Street	Survey results indicate potential geophysical anomaly	1.5	"0.0 - 0.5 ft: 10% angular granite fill rock" Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 3/3/2011	NA	NA
Subsurface	75	Far east portion of Group 3 and north of G Street	Survey results indicate potential geophysical anomaly and gamma anomaly	3.5	"2 ft 2 in: trace red brick" Refusal on sandstone	3/31/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-075-SA5A-SB-3.0 SL-075-SA5A-SB-2.5-3.5
Surface	76	Far east portion of Group 3 and north of G Street	Survey results indicate potential geophysical anomaly and gamma anomaly	0.5	"30% gravel (fill gravel, asphalt)"	3/1/2011	Primary	SL-076-SA5A-SS-0.0-0.5
Subsurface	76	Far east portion of Group 3 and north of G Street	Survey results indicate potential geophysical anomaly and gamma anomaly	7.0	None indicated Refusal on sandstone	4/1/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-076-SA5A-SB-4.5 SL-076-SA5A-SB-4.0-5.0
Surface	77	Far east portion of Group 3 and north of G Street	Survey results indicate potential geophysical anomaly and gamma anomaly	0.5	None indicated	3/1/2011	Primary	SL-077-SA5A-SS-0.0-0.5
Subsurface	77	Far east portion of Group 3 and north of G Street	Survey results indicate potential geophysical anomaly and gamma anomaly	3.0	None indicated Refusal on mudstone	No sample collected due to shallow refusal < 2.5 ft 3/31/2011	NA	NA
Surface	78	Far east portion of Group 3 and north of G Street	Survey results indicate potential geophysical anomaly and gamma anomaly	0.5	"20% gravel (fill gravel, asphalt, siltstone)"	3/1/2011	Primary	SL-078-SA5A-SS-0.0-0.5
Subsurface	78	Far east portion of Group 3 and north of G Street	Survey results indicate potential geophysical anomaly and gamma anomaly	2.75	None indicated Refusal on siltstone	No sample collected due to shallow refusal < 2.5 ft 3/31/2011	NA	NA
Subsurface	79	Far east portion of Group 3 and north of G Street	Survey results indicate potential geophysical anomaly and gamma anomaly	5.2	None indicated	4/7/2011	VOCs/Dioxane Primary	SL-079-SA5A-SB-4.5 SL-079-SA5A-SB-4.0-5.0
Subsurface	80	Far east portion of Group 3 and north of G Street	Survey results indicate potential geophysical anomaly and gamma anomaly	4.3	"0.0 to 0.5 ft: trace asphalt" Refusal on sandstone	4/7/2011	VOCs/Dioxane Primary	SL-080-SA5A-SB-3.5 SL-080-SA5A-SB-3.0-4.0
Subsurface	81	Far east portion of Group 3 and north of G Street	Survey results indicate potential geophysical anomaly and gamma anomaly	3.3	None indicated Refusal on sandstone	4/7/2011	VOCs/Dioxane Primary	SL-081-SA5A-SB-2.5 SL-081-SA5A-SB-2.0-3.0
Subsurface	82	Central part of Group 3 inside Shipping and Receiving Bldg footprint	Survey results indicate potential geophysical anomaly	5.0	"0.0 - 3.0 ft: 5% angular fine to coarse gravel" "2 ft 1 in: concrete debris" Refusal on fill	3/30/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-082-SA5A-SB-4.5 SL-082-SA5A-SB-4.0-5.0

Table 2-1
Soil Samples Collected from HSA Subarea 5A

Sample Type	EPA Location ID	Location Description From EPA	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Subsurface	83	Central part of Group 3 inside Shipping and Receiving Bldg footprint	Survey results indicate potential geophysical anomaly	10.0	"0 to 2 ft 7 in: 15% angular fine to coarse gravel (granite or sandstone" "2 ft 1 in: concrete debris"	3/30/2011	VOCs/Dioxane/GRO Primary/Secondary VOCs/Dioxane/GRO Primary/Secondary	SL-083-SA5A-SB-4.5 SL-083-SA5A-SB-4.0-5.0 SL-083-SA5A-SB-9.5 SL-083-SA5A-SB-9.0-10.0
Subsurface	84	Southeast corner of Group 3 and north of 11th Street	Location of aerial photo feature DG (Disturbed Ground)	2.0	None indicated Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 4/1/2011	NA	NA
Subsurface	85	Southeast corner of Group 3 and north of 11th Street	Location of aerial photo feature DG (Disturbed Ground)	7.0	None indicated Refusal on sandstone	4/4/2011	VOCs/Dioxane Primary	SL-085-SA5A-SB-4.5 SL-085-SA5A-SB-4.0-5.0
Surface	87	Southeast corner of Group 3 and north of 11th Street	Location of potential gamma anomaly	0.5	None indicated	2/28/2011	Primary	SL-087-SA5A-SS-0.0-0.5MS
Subsurface	87	Southeast corner of Group 3 and north of 11th Street	Location of potential gamma anomaly	3.0	None indicated Refusal on sandstone	4/4/2011	VOCs/Dioxane Primary	SL-087-SA5A-SB-2.5 SL-087-SA5A-SB-2.0-3.0
Subsurface	88	Northern portion of Group 3 and inside building 4046 footprint	Location of aerial photo feature OS-24	4.5	"0.0 to 2.0 ft: 5% angular gravel" Refusal on sandstone	4/7/2011	VOCs/Dioxane Primary	SL-088-SA5A-SB-4.5 SL-080-SA5A-SB-4.0-5.0
Subsurface	89	North of Shipping and Receiving (bldg 4641) footprint	Location of aerial photo feature PROB OS (Probable Open Storage)	10.0	"9 in to 1ft 8 in: debris in SM (drywall/gypsum board, asphalt, charcoal, volcanic gravel, trace fiberous material, glass shards)"	3/31/2011	VOCs/Dioxane Primary Primary	SL-089-SA5A-SB-4.5 SL-089-SA5A-SB-4.0-5.0 SL-089-SA5A-SB-9.0-10.0
Subsurface	90	Northern portion of Group 3 and inside building 4046 footprint	Location of aerial photo feature PROB OS (Probable Open Storage) and potential location of leach field drain line	5.5	"1 ft 1 in: 1/2 in fill rock gravel, angular" Refusal on sandstone	3/30/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-090-SA5A-SB-4.5 SL-090-SA5A-SB-4.0-5.0
Subsurface	91	Northern portion of Group 3 and south of building 4046 footprint	Location of aerial photo feature PROB OS (Probable Open Storage) and potential location of leach field drain line	2.5	None indicated Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 3/29/2011	NA	NA
Subsurface	92	Northern portion of Group 3 and south of building 4046 footprint	Location of aerial photo feature PROB OS (Probable Open Storage) and potential location of leach field drain line	4.0	"15% angular fine to coarse gravel or concrete" "8 in bgs: 5 in of concrete" Refusal on sandstone	3/29/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-092-SA5A-SB-3.5 SL-092-SA5A-SB-3.0-4.0
Subsurface	93	Northern portion of Group 3 and inside building 4641 footprint	Location of potential leach field drain line	5.0	"10% angular medium gravel (fill crushed rock)" "3 ft: pocket of fine granite gravel 1 in thick" "3 ft 8 in to 4 ft 1 in: debris: angular 3/4 in crushed fill gravel, charcoal, trace drywall, red brick." Refusal on sandstone	3/30/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-093-SA5A-SB-4.0 SL-093-SA5A-SB-3.5-4.5

Table 2-1
Soil Samples Collected from HSA Subarea 5A

Sample Type	EPA Location ID	Location Description From EPA	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Subsurface	94	Northern portion of Group 3 and inside building 4641 footprint	Location of potential leach field drain line	10.0	"0.0 - 2.0 ft: 15% fine to coarse angular gravel (siltstone, sandstone, concrete)" "2.0 - 4.0 ft: 15% angular fine to coarse gravel (sandstone, crushed fill rock)" "4.0 ft: red concrete and charcoal" "5.0 - 10.0 ft: Artificial fill noted. 15% subangular, fine to coarse gravel (volcanic gravel, sandstone and siltstone, trace asphalt)" "7 ft 5 in: 1/4 in thick drywall (gypsum board)"	3/31/2011	VOCs/Dioxane/GRO Primary/Secondary VOCs/Dioxane/GRO Primary/Secondary	SL-094-SA5A-SB-4.5 SL-094-SA5A-SB-4.0-5.0 SL-094-SA5A-SB-9.5 SL-094-SA5A-SB-9.0-10.0
Drainage	95	Eastern side of group 5 along drainage that follows road to bldg 4029	Storm runoff from subareas 5A and 6 flows thru this drainage onto group 5 of subarea 5A	0.5	"asphalt pieces"	2/21/2011	Primary	SL-095-SA5A-SS-0.0-0.5
Drainage	96	South of G Street in northeast corner of group 5	Storm runoff from subareas 5A and 6 flows thru this drainage onto group 5 of subarea 5A	0.5	None indicated	2/18/2011	Primary	SL-096-SA5A-SS-0.0-0.5
Drainage	97	South of G Street in northeast corner of group 5	Storm runoff from subareas 5A and 6 flows thru this drainage onto group 5 of subarea 5A	NA	NA	Not sampled due to Archaeological finding	NA	NA
Drainage	98	Eastern side of group 5	Storm runoff from subareas 5A and 6 flow thru this drainage further into southern part of group 5	0.5	None indicated	2/18/2011	Primary	SL-098-SA5A-SS-0.0-0.5
Drainage	99	Eastern side of group 5	Storm runoff from subareas 5A and 6 flow thru this drainage further into southern part of group 5	0.5	None indicated	2/18/2011	Primary	SL-099-SA5A-SS-0.0-0.5MS
Drainage	100	Eastern side of group 5	Storm runoff from subareas 5A and 6 flow thru this drainage further into southern part of group 5	0.5	"5% rock fragments (sandstone, concrete)	2/18/2011	Primary	SL-100-SA5A-SS-0.0-0.5
Drainage	101	Lower eastern portion of group 5 just south of existing barbed wire fence	Storm runoff from subareas 5A and 6 flow thru this drainage further into southern part of group 5	0.5	None indicated	2/18/2011	Primary	SL-101-SA5A-SS-0.0-0.5
Drainage	102	Lower eastern portion of group 5 just south of existing barbed wire fence	Storm runoff from subareas 5A and 6 flow thru this drainage further into southern part of group 5	0.5	None indicated	2/18/2011	Primary	SL-102-SA5A-SS-0.0-0.5
Drainage	103	North of G Street in southeast corner of group 3	Storm runoff from subareas 5A and 6 flows thru this drainage and onto group 5 via this culvert	0.5	None indicated	3/1/2011	Primary	SL-103-SA5A-SS-0.0-0.5
Drainage	104	North of G Street in southeast corner of group 3	Storm runoff from subareas 5A and 6 flows thru this drainage and onto group 5 via this culvert	0.5	None indicated	3/1/2011	Primary	SL-104-SA5A-SS-0.0-0.5
Drainage	105	North of G Street in southern portion of group 3	Storm runoff from subareas 5A and 6 flows thru this drainage and onto group 5 via this culvert	0.5	"Trace asphalt and gravel"	2/28/2011	Primary	SL-105-SA5A-SS-0.0-0.5
Drainage	106	North of G Street in southern portion of group 3	Storm runoff from subareas 5A and 6 flows thru this drainage and onto group 5 via this culvert	0.5	None indicated	2/28/2011	Primary	SL-106-SA5A-SS-0.0-0.5
Drainage	107	North of G Street in southern portion of group 2	Storm runoff from subarea 5A flows thru this drainage and onto the 17th Street drainage in subarea 5B	0.5	"10% gravel (sandstone, gravel fill, asphalt)"	2/28/2011	Primary	SL-107-SA5A-SS-0.0-0.5
Drainage	108	North of G Street in southern portion of group 2	Storm runoff from subarea 5A flows thru this drainage and onto the 17th Street drainage in subarea 5B	0.5	"Trace rock fragments (asphalt, sandstone)"	2/28/2011	Primary	SL-108-SA5A-SS-0.0-0.5
Drainage	109	North of G Street in southern portion of group 2	Storm runoff from subarea 5A flows thru this drainage and onto the 17th Street drainage in subarea 5B	0.5	"Trace gravel fill"	2/28/2011	Primary	SL-109-SA5A-SS-0.0-0.5

Table 2-1
Soil Samples Collected from HSA Subarea 5A

Sample Type	EPA Location ID	Location Description From EPA	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Drainage	110	Along 12th Street in west portion of group 2	Storm runoff from subarea 5A flows thru this drainage and onto the 17th Street drainage in subarea 5B	0.5	None indicated	2/24/2011	Primary	SL-110-SA5A-SS-0.0-0.5
Drainage	111	Along 12th Street in west portion of group 2	Storm runoff from subarea 5A flows thru this drainage and onto the 17th Street drainage in subarea 5B	0.5	None indicated	2/28/2011	Primary	SL-111-SA5A-SS-0.0-0.5
Subsurface	112	Area near southeast corner of Bldg 4024	Location of three radioactive gas hold-up tanks identified in Dwg 303-024-C2	15.0	Artificial fill noted: "0.0 - 1.7 ft: fine to coarse gravel" Artificial fill noted: "1.7 - 4.5 ft: trace fine gravel" Artificial fill noted: "5.0 - 9.5 ft: 5% sandstone gravel" Artificial fill noted: "9.5 - 9.7 ft: pocket of asphalt" Artificial fill noted: "9.5 - 10 ft: trace asphalt" Artificial fill noted: "10.5 - 14.5 ft: 5% fine angular gravel" Artificial fill noted: "14.5 - 15.0 ft: 5% fine angular gravel" Refusal on sandstone	3/11/2011	VOCs/Dioxane/GRO Primary/Secondary VOCs/Dioxane/GRO Primary/Secondary	SL-112-SA5A-SB-9.5 SL-112-SA5A-SB-9.0-10.0 SL-112-SA5A-SB-14.5 SL-112-SA5A-SB-14.0-15.0
Subsurface	113	Area near southeast corner of Bldg 4024	Location of three radioactive gas hold-up tanks identified in Dwg 303-024-C2	15.0	Artificial fill noted: "0.0 - 2.0 ft: angular 3/4 in crushed gravel" Artificial fill noted: "2.0 - 5.0 ft: 10% fine to coarse subangular gravel" Artificial fill noted: "5.0 - 7.0 ft: trace fine subrounded gravel" Artificial fill noted: "7.0 - 10.0 ft: 10% fine to coarse subround (fill rock) gravel" Artificial fill noted: "11.0 - 14.5 ft: fine gravel" Refusal on sandstone	3/11/2011	VOCs/Dioxane/GRO Primary/Secondary VOCs/Dioxane/GRO Primary/Secondary	SL-113-SA5A-SB-9.0 SL-113-SA5A-SB-8.5-9.5 SL-113-SA5A-SB-14.5 SL-113-SA5A-SB-14.0-15.0
Subsurface	114	Area near southeast corner of Bldg 4024	Location of two radioactive liquid waste hold-up tanks identified in Dwg 303-024-C2	11.0	Artificial fill noted: "trace angular gravel @ 6.0 ft bgs" Refusal on concrete	3/11/2011	VOCs/Dioxane/GRO Primary/Secondary VOCs/Dioxane/GRO Primary/Secondary	SL-114-SA5A-SB-4.5MS SL-114-SA5A-SB-4.0-5.0MS SL-114-SA5A-SB-9.5 SL-114-SA5A-SB-9.0-10.0

Table 2-1
Soil Samples Collected from HSA Subarea 5A

Sample Type	EPA Location ID	Location Description From EPA	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Subsurface	115	Area near southeast corner of Bldg 4024	Location of three radioactive gas hold-up tanks identified in Dwg 303-024-C2	15.0	Artificial fill noted: "0.0 - 0.75 ft: 5% fine gravel" Artificial fill noted: "0.75 - 3.5 ft: trace asphalt" Artificial fill noted: "3.5 - 5.0 ft: 5% angular gravel or asphalt chunks" Artificial fill noted: "5.5 - 6.0 ft: 5% angular gravel or asphalt chunks" Artificial fill noted: "6.0 - 7.5 ft: 20% angular to subangular gravel" Artificial fill noted: "7.5 - 7.9 ft: large 3/4 in to fine asphalt pieces, dry" Artificial fill noted: "8.0 - 10.0 ft: 20% angular to subangular gravel" Artificial fill noted: "11.0 - 13.5 ft: 15% fine to coarse gravel" Artificial fill noted: "13.5 - 15.0 ft: 95% asphalt" Refusal on fill	3/10/2011	VOCs/Dioxane/GRO Primary/Secondary VOCs/Dioxane/GRO Primary/Secondary	SL-115-SA5A-SB-7.0 SL-115-SA5A-SB-6.5-7.5 SL-115-SA5A-SB-13.5 SL-115-SA5A-SB-13.0-14.0
Subsurface	116	Area near southeast corner of Bldg 4024	Location of three radioactive gas hold-up tanks identified in Dwg 303-024-C2	15.0	Artificial fill noted: "0 - 7 in: trace angular gravel" Artificial fill noted: "6.75 - 9.0 ft: 5% fine gravel" Artificial fill noted: "10.0 - 12.0 ft: trace gravel" Artificial fill noted: "12.0 - 13.0 ft: trace fine gravel" Artificial fill noted: "13.0 - 13.2 ft: concrete" Artificial fill noted: "13.2 - 13.8 ft: 5% angular gravel" Artificial fill noted: "13.8 - 14.0 ft: concrete" Refusal on concrete	3/10/2011	VOCs/Dioxane/GRO Primary/Secondary VOCs/Dioxane/GRO Primary/Secondary	SL-116-SA5A-SB-6.5 SL-116-SA5A-SB-6.0-7.0 SL-116-SA5A-SB-14.5 SL-116-SA5A-SB-14.0-15.0
Subsurface	117	Area east of Bldg 4024 along gantry crane rails	Location of eight radioactive waste storage tanks identified in Dwg 303-024-C2	6.0	Artificial fill noted: "0.0 - 3.5 in: asphalt surface" Artificial fill noted: "3.5 in - 4 ft 10 in: trace gravel fine" Refusal on sandstone	3/14/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-117-SA5A-SB-5.5 SL-117-SA5A-SB-5.0-6.0
Subsurface	118	Area east of Bldg 4024 along gantry crane rails	Location of eight radioactive waste storage tanks identified in Dwg 303-024-C2	3.5	Artificial fill noted: "0.0 - 3.0 in: asphalt surface" Artificial fill noted: "0.25 - 1.5 ft: 15% angular pea gravel" Refusal on sandstone	3/14/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-118-SA5A-SB-3.0 SL-118-SA5A-SB-2.5-3.5
Surface	119	Area north of bldg 4024	Location of discharge point from 6-inch storm-runoff line that originates in RMHF	0.5	"15% asphalt fragments"	2/24/2011	Primary	SL-119-SA5A-SS-0.0-0.5

Table 2-1
Soil Samples Collected from HSA Subarea 5A

Sample Type	EPA Location ID	Location Description From EPA	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Subsurface	119	Area north of bldg 4024	Location of discharge point from 6-inch storm-runoff line that originates in RMHF	2.5	"2 - 7 in: 10% angular gravel fine" Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 4/18/2011	NA	NA
Surface	120	Area north of bldg 4024	Location of "AC Trench" that receives discharge from 6-inch storm-run line from RMHF	0.5	"2 - 3 in of asphalt on top" "15% asphalt fragments"	2/24/2011	Primary	SL-120-SA5A-SS-0.0-0.5
Subsurface	120	Area north of bldg 4024	Location of "AC Trench" that receives discharge from 6-inch storm-run line from RMHF	1.5	"2 in asphalt on top" "0.0 - 0.5 ft: 15% angular fine gravel" Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 4/18/2011	NA	NA
Surface	121	Inside footprint of Bldg 4027	Scan results indicate presence of a potential gamma anomaly	0.5	"15% rock fragments (sandstone, gravel fill)"	2/24/2011	Primary	SL-121-SA5A-SS-0.0-0.5
Subsurface	121	Inside footprint of Bldg 4027	Scan results indicate presence of a potential gamma anomaly	3.0	None indicated Refusal on sandstone	3/14/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-121-SA5A-SB-2.5 SL-121-SA5A-SB-2.0-3.0
Surface	122	Inside footprint of Bldg 4027	Scan results indicate presence of both a potential gamma and geophysical anomaly	0.5	"15% rock fragments (sandstone, fill gravel, asphalt)"	2/24/2011	Primary	SL-121-SA5A-SS-0.0-0.5
Subsurface	122	Inside footprint of Bldg 4027	Scan results indicate presence of both a potential gamma and geophysical anomaly	1.0	NA	No sample collected due to shallow refusal < 2.5 ft 5/16/2011	NA	NA
Drainage	123	Southeast of Bldg 4036 footprint	Location of a catch basin (sample sediment inside)	NA	NA	Not sampled - drainage grate welded shut	NA	NA
Drainage	124	Northwest corner of Bldg 4032 footprint	Location of catch basin identified in Dwg 303-023-P1 (sample sediment inside)	NA	NA	Not sampled - drainage grate welded shut	NA	NA
Drainage	125	East of Bldg 4023 footprint	Location of catch basin identified in Dwg 303-023-P1 (sample sediment inside)	NA	NA	Not sampled - drainage grate welded shut	NA	NA
Surface	126	West area of group 2 and along 12th Street	Survey results indicate presence of a geophysical anomaly	0.5	None indicated	2/25/2011	Primary	SL-126-SA5A-SS-0.0-0.5
Subsurface	126	West area of group 2 and along 12th Street	Survey results indicate presence of a geophysical anomaly	6.0	Artificial fill noted: "0.0 - 1.5 ft: 10% angular concrete fine gravel" Artificial fill noted: "1.5 ft: concrete gravel concentration" Refusal on sandstone	4/19/2011	VOCs/Dioxane Primary	SL-126-SA5A-SB-4.5 SL-121-SA5A-SB-4.0-5.0
Surface	127	West area of group 2	Survey results indicate presence of a geophysical anomaly	0.5	None indicated	2/25/2011	Primary	SL-127-SA5A-SS-0.0-0.5
Subsurface	127	West area of group 2	Survey results indicate presence of a geophysical anomaly	3.0	None indicated Refusal on sandstone	4/19/2011	VOCs/Dioxane Primary	SL-127-SA5A-SB-2.5 SL-127-SA5A-SB-2.0-3.0
Subsurface	128	Area of KEWB Reactor Test Building and support structures	North of KEWB Exhaust Building	10.0	Artificial fill noted: "3 ft 7 in: asphalt piece 1 in diameter 2 in long" Artificial fill noted: "4.5 - 5.0 ft: 25% asphalt and concrete gravel fine to coarse" Artificial fill noted: "5.0 - 7.0 ft: trace angular fine gravel" Artificial fill noted: "7.0 - 8.5 ft: 5% asphalt and concrete gravel" Artificial fill noted: "8.5 - 10.0 ft: 15% sandstone and concrete gravel" Artificial fill noted: "9.66 ft: 1 in concrete gravel"	3/16/2011	VOCs/Dioxane/GRO Primary/Secondary VOCs/Dioxane/GRO Primary/Secondary	SL-128-SA5A-SB-4.5 SL-128-SA5A-SB-4.0-5.0 SL-128-SA5A-SB-9.5 SL-128-SA5A-SB-9.0-10.0

Table 2-1
Soil Samples Collected from HSA Subarea 5A

Sample Type	EPA Location ID	Location Description From EPA	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Surface	132	Area of KEWB Reactor Test Building and support structures	South of KEWB Reactor Test Building	0.5	None indicated	2/25/2011	Primary	SL-132-SA5A-SS-0.0-0.5
Subsurface	132	Area of KEWB Reactor Test Building and support structures	South of KEWB Reactor Test Building	3.0	None indicated Refusal on sandstone	3/15/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-132-SA5A-SB-2.5 SL-132-SA5A-SB-2.0-3.0
Surface	133	Area of KEWB Reactor Test Building and support structures	Southeast corner of KEWB Exhaust building	0.5	None indicated	2/25/2011	Primary	SL-133-SA5A-SS-0.0-0.5
Subsurface	133	Area of KEWB Reactor Test Building and support structures	Southeast corner of KEWB Exhaust building	5.0	Artificial fill noted: "1.33 - 3.0 ft: 10% fine angular gravel and asphalt pieces" Artificial fill noted: "3.0 - 5.0 ft: 5% fine asphalt gravel" Artificial fill noted: "3.75 ft: large asphalt pieces up to 3/4 in diameter" Refusal on sandstone	3/16/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-133-SA5A-SB-4.5 SL-133-SA5A-SB-4.0-5.0
Surface	136	Area of KEWB Reactor Test Building and support structures	South of KEWB Waste Storage Building	0.5	"5% gravel (fill rock and sandstone)"	2/24/2011	Primary	SL-136-SA5A-SS-0.0-0.5
Subsurface	136	Area of KEWB Reactor Test Building and support structures	South of KEWB Waste Storage Building	5.0	None indicated Refusal on sandstone	3/17/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-136-SA5A-SB-4.5 SL-136-SA5A-SB-4.0-5.0
Surface	137	Area of KEWB Reactor Test Building and support structures	West of KEWB Waste Storage Building	0.5	None indicated	2/24/2011	Primary	SL-137-SA5A-SS-0.0-0.5
Subsurface	137	Area of KEWB Reactor Test Building and support structures	West of KEWB Waste Storage Building	5.0	None indicated Refusal on sandstone	3/15/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-137-SA5A-SB-4.5 SL-137-SA5A-SB-4.0-5.0
Surface	138	Area of KEWB Reactor Test Building and support structures	North of KEWB Waste Storage Building	0.5	None indicated	2/24/2011	Primary	SL-138-SA5A-SS-0.0-0.5
Subsurface	138	Area of KEWB Reactor Test Building and support structures	North of KEWB Waste Storage Building	7.5	None indicated Refusal on sandstone	3/15/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-138-SA5A-SB-4.5 SL-138-SA5A-SB-4.0-5.0
Subsurface	139	Area of KEWB Reactor Test Building and support structures	West of KEWB Reactor Test Bldg in location of 300 gallon gas hold-up tank (HSA fig. 2.2.1c)	3.5	"0.0 - 1.25 ft: 5% trace asphalt towards surface" Refusal on sandstone	3/17/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-139-SA5A-SB-3.0 SL-139-SA5A-SB-2.5-3.5
Subsurface	141	Area of KEWB Reactor Test Building and support structures	SW of KEWB Reactor Test Bldg in location of 2-inch drain line (HSA fig. 2.2.1c)	2.5	None indicated Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 3/15/2011	NA	NA
Surface	143	Along 11th Street and west of RD-17 and east side of road	Sample is located along the "AC Ditch" that serves as a surface drainage.	0.5	None indicated	2/24/2011	Primary	SL-143-SA5A-SS-0.0-0.5
Subsurface	143	Along 11th Street and west of RD-17 and east side of road	Sample is located along the "AC Ditch" that serves as a surface drainage.	9.0	None indicated Refusal on sandstone	3/25/2011	VOCs/Dioxane/GRO Primary/Secondary VOCs/Dioxane/GRO Primary/Secondary	SL-143-SA5A-SB-4.5 SL-143-SA5A-SB-4.0-5.0 SL-143-SA5A-SB-8.5 SL-143-SA5A-SB-8.0-9.0
Surface	144	Along 11th Street and north of RD-17 and east side of road	Sample is located along the "AC Ditch" that serves as a surface drainage.	0.5	None indicated	2/25/2011	Primary	SL-144-SA5A-SS-0.0-0.5

Table 2-1
Soil Samples Collected from HSA Subarea 5A

Sample Type	EPA Location ID	Location Description From EPA	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Subsurface	144	Along 11th Street and north of RD-17 and east side of road	Sample is located along the "AC Ditch" that serves as a surface drainage.	8.0	"Surface asphalt V-ditch 2" thick" Artificial fill noted: "2 in - 4.5 ft: trace fine gravel" Artificial fill noted: "4.5 ft: subrounded fine gravel (fill rock)" Refusal on sandstone	3/25/2011	VOCs/Dioxane/GRO Primary/Secondary VOCs/Dioxane/GRO Primary/Secondary	SL-144-SA5A-SB-4.5 SL-144-SA5A-SB-4.0-5.0 SL-144-SA5A-SB-7.5 SL-144-SA5A-SB-7.0-8.0
Surface	145	Along 11th Street and northeast of RD-17 and east side of road	Sample is located along the "AC Ditch" that serves as a surface drainage.	0.5	"trace asphalt and sandstone fragments"	2/28/2011	Primary	SL-145-SA5A-SS-0.0-0.5
Subsurface	145	Along 11th Street and northeast of RD-17 and east side of road	Sample is located along the "AC Ditch" that serves as a surface drainage.	1.5	"Surface asphalt V-ditch 1.5" thick" Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 4/20/2011	NA	NA
Surface	146	Between KEWB Reactor Test Bldg and parking area to the east	Sample is located along the "AC Ditch" that serves as a surface drainage.	0.5	None indicated	2/25/2011	Primary	SL-146-SA5A-SS-0.0-0.5
Subsurface	146	Between KEWB Reactor Test Bldg and parking area to the east	Sample is located along the "AC Ditch" that serves as a surface drainage.	4.0	"Surface asphalt V-ditch 3" thick" Artificial fill noted: "1.0 - 1.5 ft" Refusal on sandstone	3/16/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-146-SA5A-SB-3.5 SL-146-SA5A-SB-3.0-4.0
Subsurface	148	Area approximately 125 feet southwest of building 4093.	Results of the geophysical survey in this area indicate the presence of buried pipe in a leach field config. and debris	10.0	Artificial fill noted: "0.0 - 1.0 ft"	4/20/2011	VOCs/Dioxane/GRO Primary/Secondary VOCs/Dioxane/GRO Primary/Secondary	SL-148-SA5A-SB-4.5MS SL-148-SA5A-SB-4.0-5.0MS SL-148-SA5A-SB-9.5 SL-148-SA5A-SB-9.0-10.0
Subsurface	151	Area approximately 125 feet southwest of building 4093.	Results of the geophysical survey in this area indicate the presence of buried pipe in a leach field config. and debris	7.5	Artificial fill noted: "0.0 - 1.25 ft: 15% angular gravel" Refusal on sandstone	4/6/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-151-SA5A-SB-4.5 SL-151-SA5A-SB-4.0-5.0
Subsurface	154	Area approximately 125 feet southwest of building 4093.	Results of the geophysical survey in this area indicate the presence of buried pipe in a leach field config. and debris	8.0	None indicated Refusal on sandstone	4/5/2011	VOCs/Dioxane/GRO Primary/Secondary VOCs/Dioxane/GRO Primary/Secondary	SL-154-SA5A-SB-4.5 SL-154-SA5A-SB-4.0-5.0 SL-154-SA5A-SB-7.5 SL-154-SA5A-SB-7.0-8.0
Subsurface	156	Area approximately 125 feet southwest of building 4093.	Results of the geophysical survey in this area indicate the presence of buried pipe in a leach field config. and debris	4.0	"1.0 ft: asphalt debris (fill material)" "2.0 ft: asphalt debris" Refusal on sandstone	4/5/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-156-SA5A-SB-3.5 SL-156-SA5A-SB3.0-4.0
Subsurface	158	Area southwest of Control Building	Downstream of 6-inch galvanized pipe end	6.5	None indicated Refusal on sandstone	3/17/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-158-SA5A-SB-4.5 SL-158-SA5A-SB-4.0-5.0
Subsurface	159	Area west of building 4093	Downstream of 6-inch pipe end	4.0	Artificial fill noted: "0.0 - 1.5 ft" Refusal on sandstone	3/18/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-159-SA5A-SB-4.5 SL-159-SA5A-SB-4.0-5.0
Subsurface	160	Area southwest of Building 4093	Along the concrete slab edge with intention of sampling as close as possible to AE-6 reactor pit	10.0	Artificial fill noted: "0 ft - 1 ft 11 in"	3/18/2011	VOCs/Dioxane/GRO Primary/Secondary VOCs/Dioxane/GRO Primary/Secondary	SL-160-SA5A-SB-4.5 SL-160-SA5A-SB-4.0-5.0 SL-160-SA5A-SB-9.5 SL-160-SA5A-SB-9.0-10.0
Subsurface	161	Area southwest of Building 4093	Along the concrete slab edge with intention of sampling as close as possible to AE-6 reactor pit	8.5	"Surface: asphalt 2" thick" Artificial fill noted: "0 ft - 2 ft 5 in" Refusal on sandstone	3/21/2011	VOCs/Dioxane/GRO Primary/Secondary VOCs/Dioxane/GRO Primary/Secondary	SL-161-SA5A-SB-4.5 SL-161-SA5A-SB-4.0-5.0 SL-161-SA5A-SB-8.0 SL-161-SA5A-SB-7.5-8.5

Table 2-1
Soil Samples Collected from HSA Subarea 5A

Sample Type	EPA Location ID	Location Description From EPA	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Subsurface	163	Area southwest of Building 4093	Along the concrete slab edge with intention of sampling as close as possible to AE-6 reactor pit	5.5	"Surface: asphalt" Artificial fill noted: "0.0 - 1.0 ft"	3/21/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-163-SA5A-SB-4.5 SL-163-SA5A-SB-4.0-5.0
Subsurface	165	Area southeast of Building 4093	Along the concrete slab edge with intention of sampling as close as possible to AE-6 reactor pit	1.5	"Surface: asphalt 2" thick" Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 3/21/2011	NA	NA
Surface	166	Area north of Building 4093	Along the concrete slab edge with intention of sampling as close as possible to AE-6 reactor pit	0.5	None indicated	4/22/2011	Primary	SL-166-SA5A-SS-0.0-0.5
Subsurface	166	Area north of Building 4093	Along the concrete slab edge with intention of sampling as close as possible to AE-6 reactor pit	0.5	None indicated Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 3/18/2011	NA	NA
Subsurface	167	Area north of Building 4093	Along the concrete slab edge with intention of sampling as close as possible to AE-6 reactor pit	2.0	"5% fill gravel"	5/16/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-167-SA5A-SB-1.5 SL-167-SA5A-SB-1.0-2.0
Subsurface	168	Area north of Building 4083	Sample is located along the "AC Ditch" that serves as a surface drainage.	5.0	None indicated Refusal on sandstone	3/18/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-168-SA5A-SB-4.5 SL-168-SA5A-SB-4.0-5.0
Subsurface	169	Area north of Building 4083	Sample is located along the "AC Ditch" that serves as a surface drainage.	5.0	None indicated Refusal on sandstone	3/18/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-169-SA5A-SB-4.5 SL-169-SA5A-SB-4.0-5.0
Drainage	170	Area north of Building 4083	Sample is located along a floor trench that contains enough sediment for sampling	NA	NA	Not sampled by EPA - located in area likely to undergo decontamination and decommissioning. EPA will sample after removal.	NA	NA
Surface	171	Fuel Handling Building to the south of building 4093	Along each edge of the remaining concrete slab to verify absence of subsurface radiological contamination	0.5	None indicated	2/25/2011	Primary	SL-171-SA5A-SS-0.0-0.5
Subsurface	171	Fuel Handling Building to the south of building 4093	Along each edge of the remaining concrete slab to verify absence of subsurface radiological contamination	3.0	None indicated Refusal on sandstone	4/19/2011	VOCs/Dioxane Primary	SL-171-SA5A-SB-2.5 SL-171-SA5A-SB-2.0-3.0
Surface	172	Fuel Handling Building to the south of building 4093	Along each edge of the remaining concrete slab to verify absence of subsurface radiological contamination	0.5	"9" asphalt with thin gravel fill underlying"	2/25/2011	Primary	SL-172-SA5A-SS-0.0-0.5
Subsurface	172	Fuel Handling Building to the south of building 4093	Along each edge of the remaining concrete slab to verify absence of subsurface radiological contamination	5.0	None indicated Refusal on sandstone	4/18/2011	VOCs/Dioxane Primary	SL-172-SA5A-SB-4.5 SL-171-SA5A-SB-4.0-5.0
Surface	173	Fuel Handling Building to the south of building 4093	Along each edge of the remaining concrete slab to verify absence of subsurface radiological contamination	0.5	None indicated	2/25/2011	Primary	SL-173-SA5A-SS-0.0-0.5
Subsurface	173	Fuel Handling Building to the south of building 4093	Along each edge of the remaining concrete slab to verify absence of subsurface radiological contamination	1.5	None indicated Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 4/19/2011	NA	NA
Surface	174	Fuel Handling Building to the south of building 4093	Along each edge of the remaining concrete slab to verify absence of subsurface radiological contamination	0.5	None indicated	2/25/2011	Primary	SL-174-SA5A-SS-0.0-0.5
Subsurface	174	Fuel Handling Building to the south of building 4093	Along each edge of the remaining concrete slab to verify absence of subsurface radiological contamination	3.5	None indicated Refusal on sandstone	4/18/2011	VOCs/Dioxane Primary	SL-174-SA5A-SB-2.5 SL-171-SA5A-SB-2.0-3.0
Drainage	175	Western portion of group 4 in area of Building 4005	Ground/floor trench 12 inches wide and 8 inches deep covered with steel grating installed to collect drainage	0.5	"trace pea gravel" "concrete hit at 4 in"	2/22/2011	Primary	SL-175-SA5A-SS-0.0-0.3
Drainage	176	Western portion of group 4 in area of Building 4005	Ground/floor trench 12 inches wide and 8 inches deep covered with steel grating installed to collect drainage	0.5	"5 in depth - concrete basin of drain"	3/2/2011	Primary	SL-176-SA5A-SS-0.0-0.3
Drainage	178	Western portion of group 4 in area of Building 4005	Ground/floor trench 12 inches wide and 8 inches deep covered with steel grating installed to collect drainage	0.5	"15% gravel fill and asphalt" "5in depth - concrete barrier of drainage"	3/2/2011	Primary	SL-178-SA5A-SS-0.0-0.4

Table 2-1
Soil Samples Collected from HSA Subarea 5A

Sample Type	EPA Location ID	Location Description From EPA	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Drainage	179	Western portion of group 4 in area of Building 4005	Ground/floor trench 12 inches wide and 8 inches deep covered with steel grating installed to collect drainage	0.5	"15% gravel fill" "4 in depth to concrete drain base"	3/2/2011	Primary	SL-179-SA5A-SS-0.0-0.3
Surface	180	Area between 17th Street and Building 4005	Location of a Septic Tank (previously removed)	0.5	None indicated	2/22/2011	Primary	SL-180-SA5A-SS-0.0-0.3
Subsurface	180	Area between 17th Street and Building 4005	Location of a Septic Tank (previously removed)	5.0	"1 in asphalt surface" Artificial fill noted: "0.0 - 3.33 ft" Refusal on sandstone	3/22/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-180-SA5A-SB-4.5 SL-180-SA5A-SB-4.0-5.0
Surface	181	Area between 17th Street and Building 4005	Location of a Septic Tank (previously removed)	0.5	"5:% rock fragments (asphalt, pea gravel)"	2/22/2011	Primary	SL-181-SA5A-SS-0.0-0.5MS
Subsurface	181	Area between 17th Street and Building 4005	Location of a Septic Tank (previously removed)	7.0	Artificial fill noted: "1.0 - 4.0 ft: 5% angular medium crushed gravel" "@5.0 ft: 3 pieces of blue plastic sheeting" Refusal on sandstone	3/22/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-181-SA5A-SB-4.5 SL-181-SA5A-SB-4.0-5.0
Subsurface	184	Area between Building 4049 and Building 4005	Location of a potential gamma anomaly and ponding area	NA	NA	Not sampled by HGL - located in likely remediation zone	NA	NA
Surface	186	Area northeast of Building 4005	Location of radioactive liquid hold-up tank	0.5	"20% gravel (asphalt, fill gravel)"	3/2/2011	Primary	SL-186-SA5A-SS-0.0-0.5
Subsurface	186	Area northeast of Building 4005	Location of radioactive liquid hold-up tank	4.5	Artificial fill noted: "0 ft - 2 ft 1 in: 5% fine gravel" Artificial fill noted: "2 ft 1 in - 4 ft 1 in: 10% angular medium to fine gravel" Refusal on sandstone	4/11/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-186-SA5A-SB-4.0 SL-186-SA5A-SB-3.5-4.5
Surface	187	Area northeast of Building 4005	Location of radioactive liquid hold-up tank	0.5	"surface 1 in weathered asphalt" "trace gravel"	3/2/2011	Primary	SL-187-SA5A-SS-0.0-0.5
Subsurface	187	Area northeast of Building 4005	Location of radioactive liquid hold-up tank	6.5	Artificial fill noted throughout "0.0 - 2.66 ft: trace angular gravel" Refusal on sandstone	4/11/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-187-SA5A-SB-4.5MS SL-187-SA5A-SB-4.5-5.0MS
Surface	188	Area northeast of Building 4005	Location of radioactive liquid hold-up tank	0.5	"5% gravel (fill and asphalt)"	3/2/2011	Primary	SL-188-SA5A-SS-0.0-0.5
Subsurface	188	Area northeast of Building 4005	Location of radioactive liquid hold-up tank	7.0	Fill "silty sand " and "silt with gravel" from 0 to 7.0 ft Refusal on sandstone	4/11/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-188-SA5A-SB-5.0 SL-188-SA5A-SB-4.5-5.5
Surface	189	Area northeast of Building 4005	Location of radioactive liquid hold-up tank	0.5	"5% gravel fill"	3/2/2011	Primary	SL-189-SA5A-SS-0.0-0.5
Subsurface	189	Area northeast of Building 4005	Location of radioactive liquid hold-up tank	9.5	Artificial fill noted throughout 0-3.5: poorly graded sand with gravel; 3.5-9.5: silt and silt with sand Refusal on sandstone	4/11/2011	VOCs/Dioxane/GRO Primary/Secondary VOCs/Dioxane/GRO Primary/Secondary	SL-189-SA5A-SB-5.5 SL-189-SA5A-SB-5.0-6.0 SL-189-SA5A-SB-9.0 SL-189-SA5A-SB-8.5-9.5
Drainage	191	Southwest corner of group 4 just east of 17th Street	Location of concrete junction box for both storm water collection lines/trench before diversion into 17th St. drainage	0.5	"15% gravel fill"	3/1/2011	Primary	SL-191-SA5A-SS-0.0-0.5
Drainage	194	Southwest corner of group 4 just east of 17th Street	Ground/floor trench 12 inches wide and 8 inches deep covered with steel grating installed to collect drainage	0.5	"30% gravel (pea gravel fill)"	3/1/2011	Primary	SL-194-SA5A-SS-0.0-0.3
Drainage	195	Southwest corner of group 4 just east of 17th Street	Location of concrete junction box for both storm water collection lines/trench before diversion into 17th St. drainage	0.5	No fill indicated	3/1/2011	Primary	SL-195-SA5A-SS-0.0-0.2
Drainage	196	Southwest corner of group 4 just east of 17th Street and north of G Street	Location of surface drainage channel that runs along G Street	0.5	"20% rock fragments (sandstone, asphalt, gravel)	2/22/2011	Primary	SL-196-SA5A-SS-0.0-0.5
Surface	197	Southwest corner of group 4 just east of 17th Street and north of G Street	Location of potential gamma anomaly	0.5	"Silt with sand and rock fragments; 15% cobbles (rounded)"	2/22/2011	Primary	SL-197-SA5A-SS-0.0-0.5

Table 2-1
Soil Samples Collected from HSA Subarea 5A

Sample Type	EPA Location ID	Location Description From EPA	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Subsurface	197	Southwest corner of group 4 just east of 17th Street and north of G Street	Location of potential gamma anomaly	9.5	Artificial Fill @ 0.0 to 2.1' bgs Refusal on sandstone	3/23/2011	VOCs/Dioxane Primary Primary	SL-197-SA5A-SB-4.5 SL-197-SA5A-SB-4.0-5.0 SL-197-SA5A-SB-9.0-9.5
Subsurface	198	Southwest corner of group 4 just east of 17th Street and north of G Street	Location of an "Open Storage" aerial photography feature	4.0	Artificial Fill @ 0.0 to 1.0' bgs Refusal on sandstone	3/23/2011	VOCs/Dioxane Primary	SL-198-SA5A-SB-3.5 SL-198-SA5A-SB-3.0-4.0
Subsurface	199	Southwest corner of group 4 just east of 17th Street and north of G Street	Location of an "Ground Scar" aerial photography feature	3.5	Artificial Fill @ 0.0 to 1.0' bgs Refusal on sandstone	3/24/2011	VOCs/Dioxane Primary	SL-199-SA5A-SB-3.0 SL-199-SA5A-SB-2.5-3.5
Subsurface	200	Southwest corner of group 4 just east of 17th Street and north of G Street	Location of an "Dark Toned Material" aerial photography feature	6.0	No fill indicated Refusal on sandstone	3/23/2011	VOCs/Dioxane Primary	SL-200-SA5A-SB-4.5 SL-200-SA5A-SB-4.0-5.0
Subsurface	201	Southwest corner of group 4 just east of 17th Street and north of G Street	Location of an "Possible Stain" aerial photography feature	2.5	Artificial Fill @ 0.0 to 1.5' bgs "5% fine angular fill rock gravel crushed" Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 3/23/2011	NA	NA
Subsurface	202	Eastern portion of group 4	Along the curved "AC Ditch"	4.0	None indicated Refusal on sandstone	4/12/2011	VOCs/Dioxane Primary	SL-202-SA5A-SB-3.5 SL-202-SA5A-SB-3.0-4.0
Subsurface	203	Eastern portion of group 4	Along the curved "AC Ditch"	1.0	None indicated Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 4/12/2011	NA	NA
Subsurface	204	Eastern portion of group 4	Along the curved "AC Ditch"	5.0	None indicated Refusal on sandstone	4/13/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-204-SA5A-SB-4.5 SL-204-SA5A-SB-4.0-5.0
Subsurface	205	Eastern portion of group 4	Along the curved "AC Ditch"	9.0	None indicated Refusal on sandstone	4/13/2011	VOCs/Dioxane Primary Primary	SL-205-SA5A-SB-4.5 SL-205-SA5A-SB-4.0-5.0 SL-205-SA5A-SB-8.0-9.0
Subsurface	206	Eastern portion of group 4	Geophysical survey indicates presence of buried metal	5.0	None indicated Refusal on sandstone	4/12/2011	VOCs/Dioxane Primary	SL-206-SA5A-SB-4.5 SL-206-SA5A-SB-4.0-5.0
Subsurface	207	Eastern portion of group 4	Geophysical survey indicates presence of buried metal	4.0	None indicated Refusal on sandstone	4/12/2011	VOCs/Dioxane Primary	SL-207-SA5A-SB-3.5 SL-207-SA5A-SB-3.0-4.0
Subsurface	208	Eastern portion of group 4	Geophysical survey indicates presence of buried metal	8.5	"5% fine gravel (subangular fill rock) @ 0.0 to 2.0' bgs Refusal on sandstone	3/29/2011	VOCs/Dioxane/GRO Primary/Secondary VOCs/Dioxane/GRO Primary/Secondary	SL-208-SA5A-SB-4.5 SL-208-SA5A-SB-4.0-5.0 SL-208-SA5A-SB-8.0 SL-208-SA5A-SB-7.5-8.5
Subsurface	209	Eastern portion of group 4	Geophysical survey indicates presence of buried metal	5.0	None indicated Refusal on sandstone	3/28/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-209-SA5A-SB-4.5 SL-209-SA5A-SB-4.0-5.0
Surface	210	Southeast corner of group 4	Location of potential gamma anomaly and buried metal	0.5	"10 % rock fragments (sandstone, asphalt, pea gravel)	2/22/2011	Primary	SL-210-SA5A-SS-0.0-0.5
Subsurface	210	Southeast corner of group 4	Location of potential gamma anomaly and buried metal	2.5	"trace asphalt near surface" Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 3/28/2011	NA	NA
Surface	211	Southeast corner of group 4	Location of potential gamma anomaly and buried metal	0.5	"5% rock fragments (asphalt, sandstone"	2/22/2011	Primary	SL-211-SA5A-SS-0.0-0.5
Subsurface	211	Southeast corner of group 4	Location of potential gamma anomaly and buried metal	3.5	"5% angular asphalt gravel" @ 0.0 to 8" bgs Refusal on sandstone	3/28/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-211-SA5A-SB-3.0 SL-211-SA5A-SB-2.5-3.5
Surface	212	Southeast corner of group 4	Location of potential gamma anomaly and geophysical anomaly	0.5	"10 % rock fragments (sandstone, gravel, asphalt)	2/22/2011	Primary	SL-212-SA5A-SS-0.0-0.5
Subsurface	212	Southeast corner of group 4	Location of potential gamma anomaly and geophysical anomaly	2.0	No fill indicated Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 3/25/2011	NA	NA
Subsurface	213	Southeast corner of group 4	Location of potential gamma anomaly and geophysical anomaly	9.0	No fill indicated Refusal on sandstone	3/25/2011	VOCs/Dioxane Primary Primary	SL-213-SA5A-SB-4.5 SL-213-SA5A-SB-4.0-5.0 SL-213-SA5A-SB-8.0-9.0
Surface	214	Southeast corner of group 4	Location of potential gamma anomaly and geophysical anomaly	0.5	"15 % rock fragments (asphalt, sandstone, fill gravel"	2/22/2011	Primary	SL-214-SA5A-SS-0.0-0.5

Table 2-1
Soil Samples Collected from HSA Subarea 5A

Sample Type	EPA Location ID	Location Description From EPA	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Subsurface	214	Southeast corner of group 4	Location of potential gamma anomaly and geophysical anomaly	9.5	"trace asphalt" @ 0.0 to 3.2 ' bgs Refusal on sandstone	3/28/2011	VOCs/Dioxane Primary Primary	SL-214-SA5A-SB-4.5 SL-214-SA5A-SB-4.0-5.0 SL-214-SA5A-SB-8.5-9.5
Surface	215	Southeast corner of group 4	Location of potential gamma anomaly and geophysical anomaly	0.5	"5 % rock fragments (sandstone, asphalt)	2/22/2011	Primary	SL-215-SA5A-SS-0.0-0.5
Subsurface	215	Southeast corner of group 4	Location of potential gamma anomaly and geophysical anomaly	6.5	"5% fine angular gravel (fill rock)" @ 0.0 to 2.0 ' bgs "5% angular gravel" @ 2.0 to 5.5 ' bgs Refusal on sandstone	3/28/2011	VOCs/Dioxane Primary	SL-215-SA5A-SB-4.5 SL-215-SA5A-SB-4.0-5.0
Subsurface	216	Southeast corner of group 4	Geophysical survey indicates presence of buried metal	6.5	"10% angular siltstone and asphalt gravel (fine to coarse gravel) @ 0.0 to 3.5 'bgs Refusal on sandstone	3/28/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-216-SA5A-SB-4.5 SL-216-SA5A-SB-4.0-5.0
Drainage	217	Southeast corner of group 4	Location of surface drainage channel that runs along 12th Street	0.5	"5% rock fragments (sandstone)	2/22/2011	Primary	SL-217-SA5A-SS-0.0-0.5
Drainage	218	Southeast corner of group 4	Location of surface drainage channel that runs along 12th Street	0.5	"10 % rock fragments (sandstone)"	2/22/2011	Primary	SL-218-SA5A-SS-0.0-0.5
Subsurface	219	Between Buildings 4035 and 4641 footprints	Potential location of Building 4046 septic tank and leach field drain lines	2.5	Artificial Fill indicated @ 0.0 to 0.5' bgs "fine concrete gravel ~1.5"thick" Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 3/29/2011	NA	NA
Subsurface	220	Between Buildings 4035 and 4641 footprints	Potential location of Building 4046 septic tank and leach field drain lines	2.0	None indicated Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 3/29/2011	NA	NA
Subsurface	221	Between Buildings 4035 and 4641 footprints	Potential location of Building 4046 septic tank and leach field drain lines	4.5	Artificial fill indicated @ 0.0 to 4.0' bgs "1'8" charcoal deposit" "@3' large concrete gravel" "3'6" lense of broken glass" Refusal on sandstone	3/29/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-221-SA5A-SB-3.5 SL-221-SA5A-SB-3.0-4.0
Subsurface	222	Between Buildings 4035 and 4641 footprints	Potential location of Building 4046 septic tank and leach field drain lines	7.5	Artificial fill indicated @ 0.0 to 5,5' bgs "Fill:1'9" poorly graded sand; pale olive (5Y 6/3)moist, medium dense, on order, 10% angular sandstone gravel" Fill from 3.0-4.0"trace glass and charcoal" "6'6" crushed rock gravel" Refusal on sandstone	3/30/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-222-SA5A-SB-4.0MS SL-222-SA5A-SB-3.5-4.5MS
Subsurface	223	North central portion of group 4 in vicinity of Building 4042 footprint	Geophysical survey indicates presence of buried metal	9.5	"20% angular sandstone and concrete gravel" @ 0.0 to 3.8 ' bgs Refusal on sandstone	3/24/2011	VOCs/Dioxane/GRO Primary/Secondary VOCs/Dioxane/GRO Primary/Secondary	SL-223-SA5A-SB-4.5MS SL-223-SA5A-SB-4.0-5.0MS SL-223-SA5A-SB-9.0 SL-223-SA5A-SB-8.5-9.5
Subsurface	224	North central portion of group 4 in vicinity of Building 4042 footprint	Geophysical survey indicates presence of buried line	5.5	"5% fine angular gravel" @ 0.0 to 2.5' bgs Refusal on sandstone	3/24/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-224-SA5A-SB-4.5 SL-224-SA5A-SB-4.0-5.0
Subsurface	225	North central portion of group 4 in vicinity of Building 4042 footprint	Location of ponding area	6.0	Artificial fill @ 0.0 to 3.0' bgs Refusal on sandstone	3/24/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-225-SA5A-SB-4.5 SL-225-SA5A-SB-4.0-5.0
Subsurface	226	North central portion of group 4 in vicinity of Building 4042 footprint	Location of ponding area	7.5	Artificial fill @ 0.0 to 4.0' bgs Refusal on sandstone	3/24/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-226-SA5A-SB-4.5 SL-226-SA5A-SB-4.0-5.0
Subsurface	227	North central portion of group 4 in vicinity of Building 4049 footprint	Geophysical survey indicates presence of buried line	4.0	Artificial fill @ 0.0 to 1.2' bgs Refusal on sandstone	4/12/2011	VOCs/Dioxane Primary	SL-227-SA5A-SB-3.5 SL-227-SA5A-SB-3.0-4.0
Subsurface	228	North central portion of group 4 in vicinity of Building 4049 footprint	Geophysical survey indicates presence of buried line	4.0	Artificial fill @ 0.0 to 1.8' bgs Refusal on sandstone	4/12/2011	VOCs/Dioxane Primary	SL-228-SA5A-SB-3.5 SL-228-SA5A-SB-3.0-4.0

Table 2-1
Soil Samples Collected from HSA Subarea 5A

Sample Type	EPA Location ID	Location Description From EPA	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Subsurface	229	North central portion of group 4 in vicinity of Building 4049 footprint	Geophysical survey indicates presence of buried line	1.5	Artificial fill @ 0.0 to 0.5' bgs Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 3/22/2011	NA	NA
Subsurface	231	Central portion of group 4	Location of aerial photography feature POSS LTMM	3.0	Artificial fill @ 0.0 to 0.5' bgs "15 % angular gravel, fine to coarse crushed gravel" Refusal on sandstone	3/22/2011	VOCs/Dioxane Primary	SL-231-SA5A-SB-2.5 SL-231-SA5A-SB-2.0-3.0
Subsurface	232	Central portion of group 4	Location of aerial photography feature POSS LTMM	2.5	"15% angular crushed gravel (fine to coarse)" Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 3/22/2011	NA	NA
Surface	233	Northeast corner of Building 4032 footprint	Scan results indicate presence of a potential gamma anomaly	0.5	"10% gravel (fill rock, sandstone fragments)"	2/24/2011	Primary	SL-233-SA5A-SS-0.0-0.5
Subsurface	233	Northeast corner of Building 4032 footprint	Scan results indicate presence of a potential gamma anomaly	10.0	Artificial fill @ 0.0 to 1.0' bgs	3/4/2011	VOCs/Dioxane Primary Primary	SL-233-SA5A-SB-4.5 SL-233-SA5A-SB-4.0-5.0 SL-233-SA5A-SB-9.0-10.0
Subsurface	234	Within Building 4032 footprint	Location of aerial photography feature LTMM	10.0	Artificial fill @ 0.0 to 2.5' bgs "15% angular fill gravel"	3/3/2011	VOCs/Dioxane Primary Primary	SL-234-SA5A-SB-4.5 SL-234-SA5A-SB-4.0-5.0 SL-234-SA5A-SB-9.0-10.0
Subsurface	235	Within Building 4032	Location of aerial photography feature LTMM	9.5	Artificial fill @ 0.0 to 6.5' bgs Refusal on sandstone	3/3/2011	VOCs/Dioxane Primary Primary	SL-235-SA5A-SB-4.5 SL-235-SA5A-SB-4.0-5.0 SL-235-SA5A-SB-8.5-9.5
Subsurface	236	Southeast of Building 4024	Location of aerial photography feature OS-19	10.0	None indicated	3/3/2011	VOCs/Dioxane Primary Primary	SL-236-SA5A-SB-4.5 SL-236-SA5A-SB-4.0-5.0 SL-236-SA5A-SB-9.0-10.0
Subsurface	237	West of Building 4024	Location of aerial photography feature OS-2	10.0	None indicated	2/28/2011	VOCs/Dioxane Primary Primary	SL-237-SA5A-SB-4.5 SL-237-SA5A-SB-4.0-5.0 SL-237-SA5A-SB-9.0-10.0
Subsurface	238	West of Building 4024	Location of aerial photography feature OS-2	2.5	None indicated Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 2/28/2011	NA	NA
Subsurface	239	Southwest portion of group 4	Location of aerial photography feature OS	5.0	Artificial fill @ 0.0 to 1.0' bgs Refusal on sandstone	3/23/2011	VOCs/Dioxane Primary	SL-239-SA5A-SB-4.5 SL-239-SA5A-SB-4.0-5.0
Subsurface	240	Southwest portion of group 4	Location of aerial photography feature OS	10.0	Artificial fill @ 0.0 to 2.0' bgs "10% angular crushed medium gravel"	3/23/2011	VOCs/Dioxane Primary Primary	SL-240-SA5A-SB-4.5 SL-240-SA5A-SB-4.0-5.0 SL-240-SA5A-SB-9.0-10.0
Drainage	241	South central area of group 5	Within location of storage area known as "South East Drum Storage Yard"	0.5	"cable found"	2/18/2011	Primary	SL-241-SA5A-SS-0.0-0.5
Surface	242	South central area of group 5	Within location of storage area known as "South East Drum Storage Yard"	0.5	No fill indicated	2/18/2011	Primary	SL-242-SA5A-SS-0.0-0.5
Subsurface	242	South central area of group 5	Within location of storage area known as "South East Drum Storage Yard"	3.5	None indicated Refusal on sandstone	4/14/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-242-SA5A-SB-3.0 SL-242-SA5A-SB-2.5-3.5
Subsurface	243	South central area of group 5	Within location of storage area known as "South East Drum Storage Yard"	5.5	None indicated Refusal on sandstone	4/15/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-243-SA5A-SB-4.5 SL-243-SA5A-SB-4.0-5.0
Subsurface	244	Northwest corner of Building 4024	Request during Stakeholder meeting on 2Feb11 to target potential subsurface radiological contamination. Collection interval is 1-5 feet and 35-40 ft bgs.	11.5	Artificial Fill @ 0.0 to 1.5' bgs @ "1'2" concrete" Refusal on sandstone	3/1/2011	VOCs/Dioxane Primary Primary	SL-244-SA5A-SB-4.5 SL-244-SA5A-SB-4.0-5.0 SL-244-SA5A-SB-9.0-10.0
Subsurface	245	Northwest corner of Building 4024	Request during Stakeholder meeting on 2Feb11 to target potential subsurface radiological contamination. Collection interval is 35-40 feet bgs.	30.0	From 1'4" to 4' 9" bgs -"asphalt around core" Refusal on sandstone	3/2/2011	VOCs/Dioxane Primary Primary Primary	SL-245-SA5A-SB-4.5MS SL-245-SA5A-SB-4.0-5.0MS SL-245-SA5A-SB-9.0-10.0 SL-245-SA5A-SB-29.0-30.0

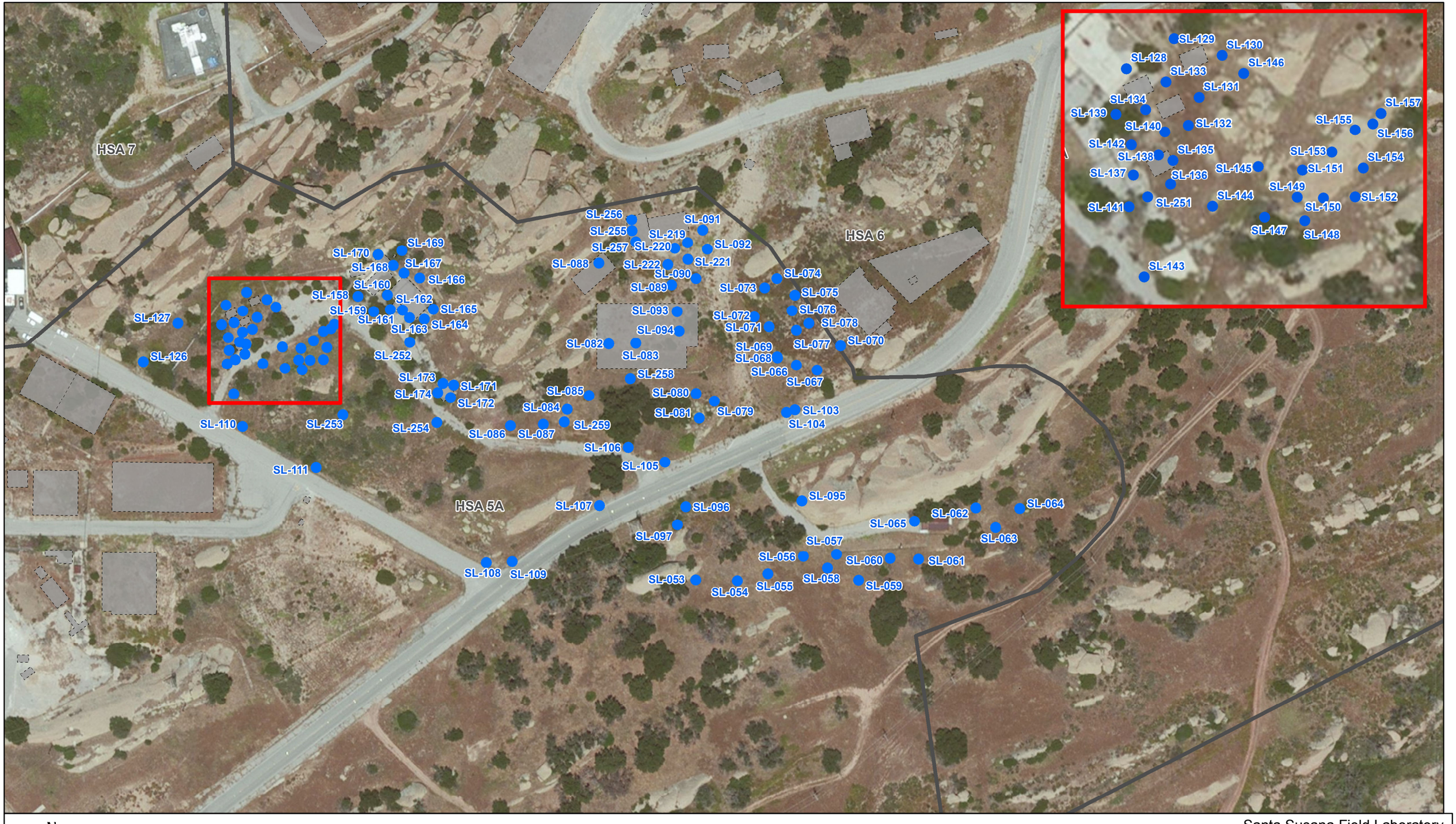
Table 2-1
Soil Samples Collected from HSA Subarea 5A

Sample Type	EPA Location ID	Location Description From EPA	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Subsurface	246	West of Building 4024	Request during Stakeholder meeting on 2Feb11 to target potential subsurface radiological contamination. Collection interval is 1-5 feet and 35-40 ft bgs.	10.5	"trace glass shards" @ 0.0 to 3.2 ft bgs Refusal on sandstone	3/2/2011	VOCs/Dioxane Primary Primary	SL-246-SA5A-SB-4.5 SL-246-SA5A-SB-4.0-5.0 SL-246-SA5A-SB-9.0-10.0
Subsurface	247	West of Building 4024	Request during Stakeholder meeting on 2Feb11 to target potential subsurface radiological contamination. Collection interval is 35-40 feet bgs.	12.0	No fill indicated Refusal on sandstone	3/2/2011	VOCs/Dioxane Primary Primary	SL-247-SA5A-SB-4.5 SL-247-SA5A-SB-4.0-5.0 SL-247-SA5A-SB-9.0-10.0
Subsurface	248	Southwest corner of Building 4024	Request during Stakeholder meeting on 2Feb11 to target potential subsurface radiological contamination. Collection interval is 1-5 feet and 35-40 ft bgs.	NA	NA	Location not sampled due to health and safety concern relating to underground utility lines next to Building 4024.	NA	NA
Subsurface	249	Southwest corner of Building 4024	Request during Stakeholder meeting on 2Feb11 to target potential subsurface radiological contamination. Collection interval is 35-40 feet bgs.	10.0	Artificial fill @ 0.0 to 5.0 ft bgs "greenish sandstone gravel"	3/3/2011	VOCs/Dioxane/GRO Primary/Secondary VOCs/Dioxane/GRO Primary/Secondary	SL-249-SA5A-SB-3.0 SL-249-SA5A-SB-2.5-3.5 SL-249-SA5A-SB-9.5 SL-249-SA5A-SB-9.0-10.0
Surface	250	South of Building 4024	Request during Stakeholder meeting on 2Feb11 to target potential subsurface radiological contamination. Collection interval is 1-5 feet and 35-40 ft bgs.	0.5	"15% rock fragments (sandstone, mainly fill gravel"	2/24/2011	Primary	SL-250-SA5A-SS-0.0-0.5
Subsurface	250	South of Building 4024	Request during Stakeholder meeting on 2Feb11 to target potential subsurface radiological contamination. Collection interval is 35-40 feet bgs.	2.0	None indicated Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 3/11/2011	NA	NA
Surface	251	East of Building 4024	Request during Stakeholder meeting on 2Feb11 to target potential subsurface radiological contamination. Collection interval is 1-5 feet and 35-40 ft bgs.	0.5	None indicated	2/24/2011	Primary	SL-251-SA5A-SS-0.0-0.5
Subsurface	251	East of Building 4024	Request during Stakeholder meeting on 2Feb11 to target potential subsurface radiological contamination. Collection interval is 35-40 feet bgs.	2.5	None indicated Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 3/17/2011	No sample collected Refusal at 2.5 ft 3/17/11	NA
Subsurface	252	West of Building 4032 footprint	Request during Stakeholder meeting on 2Feb11 to target potential location of 5500-ga. sodium drain tank.	5.5	Artificial fill @ 0.0 to 1.0 ft bgs	3/21/2011	VOCs/Dioxane Primary/Secondary	SL-252-SA5A-SB-4.5 SL-252-SA5A-SB-4.0-5.0
Surface	253	Area between 11th Street and 12th Street	Request during Stakeholder meeting on 2Feb11 to target potential subsurface radiological contamination.	0.5	No fill indicated	2/28/2011	Primary	SL-253-SA5A-SS-0.0-0.5
Subsurface	253	Area between 11th Street and 12th Street	Request during Stakeholder meeting on 2Feb11 to target potential subsurface radiological contamination.	9.0	None indicated Refusal on sandstone	4/22/2011	VOCs/Dioxane Primary Primary	SL-253-SA5A-SB-4.5 SL-253-SA5A-SB-4.0-5.0 SL-253-SA5A-SB-8.0-9.0
Surface	254	South of building 4453 footprint	Request during Stakeholder meeting on 2Feb11 to target potential subsurface radiological contamination.	0.5	None indicated	5/16/2011	Primary	SL-254-SA5A-SS-0.0-0.5
Subsurface	254	South of building 4453 footprint	Request during Stakeholder meeting on 2Feb11 to target potential subsurface radiological contamination.	3.5	None indicated Refusal on sandstone	4/18/2011	VOCs/Dioxane Primary	SL-254-SA5A-SB-3.0 SL-254-SA5A-SB-2.5-3.5
Surface	255	Inside building 4030 footprint	Request during Stakeholder meeting on 2Feb11 to target potential subsurface radiological contamination.	0.5	None indicated	2/28/2011	Primary	SL-255-SA5A-SS-0.0-0.5
Subsurface	255	Inside building 4030 footprint	Request during Stakeholder meeting on 2Feb11 to target potential subsurface radiological contamination.	2.5	None indicated Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 3/29/2011	NA	NA
Surface	256	Inside building 4030 footprint	Request during Stakeholder meeting on 2Feb11 to target potential subsurface radiological contamination.	0.5	"trace asphalt"	3/1/2011	Primary	SL-256-SA5A-SS-0.0-0.5MS
Subsurface	256	Inside building 4030 footprint	Request during Stakeholder meeting on 2Feb11 to target potential subsurface radiological contamination.	2.5	No fill indicated Refusal on sandstone	No sample collected due to shallow refusal < 2.5 ft 3/29/2011	NA	NA
Surface	257	Inside building 4030 footprint	Request during Stakeholder meeting on 2Feb11 to target potential subsurface radiological contamination.	0.5	"20% rock fragments (fill gravel and sandstone)"	3/1/2011	Primary	SL-257-SA5A-SS-0.0-0.5
Subsurface	257	Inside building 4030 footprint	Request during Stakeholder meeting on 2Feb11 to target potential subsurface radiological contamination.	3.5	None indicated Refusal on sandstone	3/30/2011	VOCs/Dioxane/GRO Primary/Secondary	SL-257-SA5A-SB-3.0 SL-257-SA5A-SB-2.5-3.5

Table 2-1
Soil Samples Collected from HSA Subarea 5A

Sample Type	EPA Location ID	Location Description From EPA	EPA Technical Justification for Sample Collection	Boring Total Depth (ft bgs)	Description of Fill Encountered (from EPA Soil Boring Log)	Sample Date	Laboratory Analyses	Co-Located Chemical Sample Number
Subsurface	258	Inside building 4030 footprint	Request during Stakeholder meeting on 2Feb11 to target potential subsurface radiological contamination.	7.0	Artificial fill indicated @ 0.0 to 6.5' bgs Silty sand Fill described throughout entire section with trace gravel Refusal on sandstone	4/7/2011	VOCs/Dioxane Primary/Secondary	SL-258-SA5A-SB-4.5 SL-258-SA5A-SB-4.0-5.0

ft bgs = feet below ground surface
NA = not applicable
Primary analyses include: SVOCs, Metals, Chromium VI, Fluoride, Perchlorate PCBs/PCTs, Pesticides, Herbicides, Dioxins/Furans,pH.
Secondary analyses include: Alcohols, terphenyls, glycols, TPH (GRO and EFH), Formaldehyde, n-Nitrosodimethylamine, Energetics, Nitrate, Cyanide, pH



N

Legend

- Sample Locations
- Area IV Subarea
- Removed Building

Aerial Source: Bing Maps, (c) 2010 Microsoft Corporation and its data suppliers

Subarea 5A Sample Locations North

0 25 50 100 150 200 Feet

Santa Susana Field Laboratory
Ventura County, California
Figure 2-1

CDM Smith

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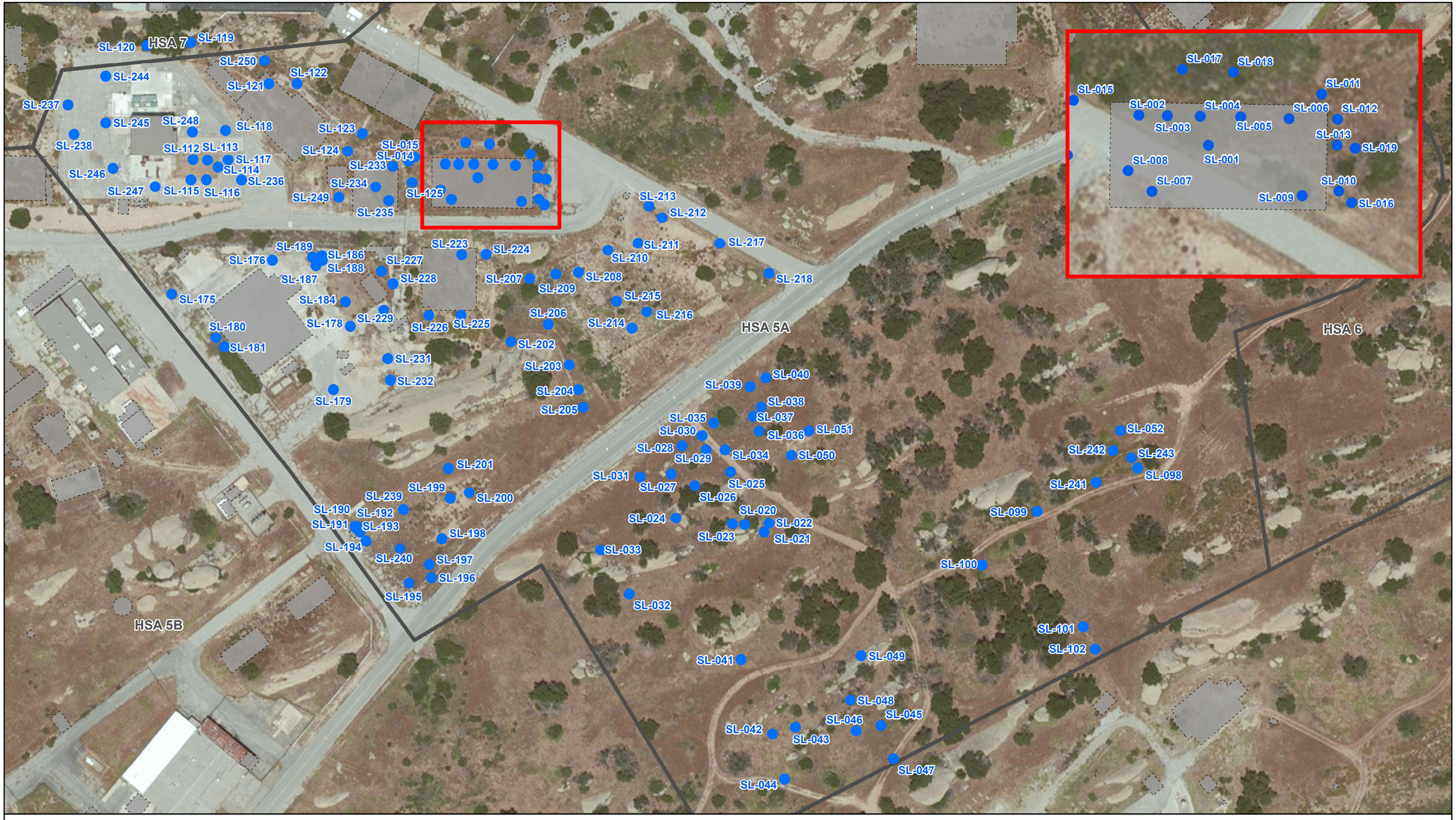

N

Legend

- Sample Locations
- Area IV Subarea
- Removed Building

Aerial Source: Bing Maps, (c) 2010 Microsoft Corporation and its data suppliers

Subarea 5A Sample Locations South

Santa Susana Field Laboratory
Ventura County, California
Figure 2-2

0 25 50 100 150 200 Feet

CDM Smith

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2.2 Subsurface Sampling

Most of the subsurface soil sampling was performed by a California-licensed direct push technology (DPT) subcontractor under HGL oversight. The majority of the DPT borings in Subarea 5A were advanced to a targeted depth of between approximately 5 and 10 feet bgs. Table 2-1 provides the actual depths achieved at each location.

Soil cores were collected using the Geoprobe® dual-tube sampling method, which consisted of a 2 inch outer steel drive casing and an inner 1¾ inch diameter acetate soil sampling sleeve. After the acetate liner was retracted from the core barrel, it was opened length wise with a cutting tool. The core was screened for radioactivity using Micro R (for gamma radiation) and Pancake (for alpha and beta radiation) probes, followed by screening with a photoionization detector (PID). Based on the instrument readings and/or visual evidence of possible contamination, the sample depths were determined. If no elevated radiation or PID readings were indicated, samples were collected from the acetate sleeve by the CDM sampler at the default depths of 4 to 5 feet bgs and 9 to 10 feet bgs.

Soil for volatile organic compound (VOCs), 1,4-dioxane, and TPH-GRO analyses was collected from the sleeve using EnCore® samplers. Subsurface soil for SVOC, PAH, and PCB/PCT analyses was removed from the acetate sleeve in a manner causing minimal soil disturbance and placed into 16-ounce glass jars. Soil for all other analyses was also placed into 16-ounce glass jars. Adhesive sample labels were completed with all sampling information and affixed to each sample jar, and then placed into plastic baggies. The EnCore® samplers were all placed into one of the bags in which they were received, and the sample label affixed to the outside of the bag. All jars, and EnCore® Samplers were placed in a cooler with double bagged ice.

Several subsurface locations were not accessible by the Geoprobe® rig; therefore, these borings were advanced using a hand auger. Each location was augered to the target depth of 5-feet bgs. Each foot of augered soil was retrieved to the surface, placed in plastic bags and screened using the Micro R, Pancake, and PID. All borings were sampled by CDM for chemical analyses at approximately 4 to 5 feet bgs, or in some cases at a shallower depth (see Table 2-1). The EnCore® Samplers were filled first from the soil placed in the plastic bag, and the jars then filled from the remaining sample material using a decontaminated stainless steel trowel. This process was repeated at those locations where a deeper sample (i.e., target depth of 9 to 10 feet bgs) could also be collected. Because sampling using a hand auger was not addressed in the FSAP Addendum for Subarea 5A, this sampling method constitutes a variance from the FSAP (see Section 2.7.1).

After all samples were collected from each boring and hand augered hole, the soil cuttings were used to backfill the hole and the hole was topped off with a bentonite chip seal. At locations in asphalt, asphalt patch material was applied on top of the bentonite.

2.3 Sample Handling

All soil samples collected by HGL for chemical analyses were relinquished by the field sampler to CDM Smith's Field Team Leader (FTL). The FTL ensured that the sample labels were completed legibly and correctly. Any discrepancies were discussed with the field samplers and corrections to the sample labels were made as needed. All sample labels were covered with clear tape, the sleeves and jars placed back into their plastic baggie, and refrigerated.

All sampling information was recorded onto one or more chain-of-custody (CoC) forms. Each sampler reviewed the CoC and any discrepancies were corrected by the FTL. Each completed CoC was signed

by the sampler and the FTL as the individual responsible for release of the samples to the courier. All samples were packed into coolers in accordance with Section 6.4 of the *Master Work Plan/ Field Sampling and Analysis Plan, Co-Located Chemical Sampling at Area IV, Santa Susana Field Laboratory, Ventura County, California* (CDM 2011a).

2.4 Field Quality Control Procedures

Quality control (QC) samples collected in the field included field duplicates, matrix spike (MS)/matrix spike duplicate (MSD) samples, equipment rinsate blanks, and field blanks. Trip blanks filled with laboratory analyte-free water were sent to the site from the laboratory and were submitted unopened with any samples to be analyzed for VOCs, 1,4-dioxane, and/or TPH-GRO.

2.4.1 Field Duplicates and MS/MSD Samples

Both field duplicates and MS/MSD samples were collected at a frequency of one per 20 "parent" soil samples collected, thus both the field duplicate and MS/MSD samples were collected from the same location. The duplicate samples were submitted to the laboratory as separate (and blind) from the parent samples. The MS/MSD samples are additional volume of the parent samples collected in triple volume for the DPT subsurface samples; a double volume of soil was sufficient for the surface and hand-augered MS/MSD samples.

Seven duplicate samples and MS/MSD samples were collected in association with the surface samples and analyzed for primary analytes. Two of these samples were also analyzed for VOCs and 1,4-dioxane, and one sample was also analyzed for the secondary analytes. For the subsurface samples, nine duplicate/MS/MSD samples were collected for the primary analyses, and seven of these duplicate/MS/MSD samples were also analyzed for VOCs and 1,4-dioxane. Six of the nine subsurface duplicate/MS/MSD samples were collected for the secondary analyses.

2.4.2 Equipment Rinsate Blank Samples

Equipment rinsate blanks were prepared and submitted for chemical analysis at a minimum frequency of one per 20 parent soil samples collected for each sampling technique and whenever there were changes in the sample collection procedures, sampling decontamination procedures, or sampling equipment.

Five equipment blanks associated with the surface soil samples were collected and analyzed for primary surface soil analytes only. Seven equipment blanks associated with the subsurface soil samples were collected and analyzed for primary analytes and VOCs/1,4-dioxane. Two of these seven blanks were also analyzed for secondary analytes. Three equipment blanks were collected for secondary analyses only.

2.4.3 Field Blank Samples

Field blanks are to be collected once for each lot number of American Society for Testing and Materials (ASTM) Type II water that HGL used for decontamination. No field blanks were collected during the period of time samples were collected in Subarea 5A.

2.4.4 Decontamination of Sampling Equipment

All drilling equipment was cleaned by HGL and their DPT subcontractor before and after completing each boring. This included the sampling device and drill rods. The external surfaces of the equipment were washed with potable water and Alconox, or equivalent laboratory-grade detergent. Equipment

was scrubbed until all visible dirt, grime, grease, oil, loose paint, rust flakes, etc., was removed. The equipment was then rinsed with potable water.

Hand sampling equipment used to collect the surface and drainage samples, including shovels, hand trowels, and mixing bowls, were decontaminated as follows:

- Washed with a solution of potable water and Liquinox, or equivalent laboratory-grade detergent
- Rinsed thoroughly with potable water
- Given a final rinse with ASTM Type II water

If the sampling device was not used immediately after being decontaminated, it was wrapped in oil-free aluminum foil, or placed in a closed plastic, stainless steel, glass, or Teflon® container.

2.5 Analytical Laboratory Methods and Procedures

2.5.1 Analytical Methods

The analytical methods for the co-located chemical soil samples were divided into two "suites." The primary suite performed on all samples includes:

- Metals using EPA Methods 6010B/6020, 7471A (mercury), and 7199 (chromium VI)
- Soil pH using EPA Method 9045C (pH was originally a secondary analyte under the original WP/FSAP. All Subarea 5A samples that were analyzed for secondary analytes included pH analysis)
- Fluoride using EPA Method 300.0
- SVOCs using EPA Method 8270C and PAHs using Method 8270C selective ion monitoring (SIM)
- PCBs and PCTs using EPA Method 8082
- Dioxins and furans using EPA Method 1613B
- Perchlorate using EPA Method 314.0 (and EPA Method 6850 for verification of non-detects at a rate of 10 percent of the samples submitted)

Also included as primary analytes for all surface soil samples only are:

- Pesticides using EPA Method 8081A
- Herbicides using EPA Method 8151A

Locations selected for sampling for the secondary suite of analyses were based on several factors including locations with a process history of the specific chemical usage, sample sites with elevated instrument readings, soil fill, waste, or visually contaminated materials. The secondary list of analyses includes:

- Nitrates using EPA Method 300.0
- Formaldehyde using EPA Method 8315A

- TPH-GRO/TPH-EFH/glycols using EPA Method 8015M
- NDMA using EPA Method 1625C
- Energetics using EPA Method 8330A
- Cyanide using EPA Method 9012B
- Alcohols and terphenyls using EPA Method 8015B

All shallow (i.e., target depth of 4 to 5 ft bgs) subsurface soil samples and any deeper subsurface soil samples at locations where both the primary and secondary suites were to be sampled, were also analyzed for:

- EPA Method 8260B for VOCs and
- EPA Method 8260B SIM for 1,4-dioxane

These analyses were also to be performed on samples collected from deeper target depths at locations that were originally proposed for primary analyses only, but that exhibited elevated instrument readings, soil fill, waste, or visually contaminated materials.

2.5.2 Analytical Method Modifications

The analytical laboratory used for the Subarea 5A co-located soil sampling effort was Lancaster Laboratories, Inc. (LLI) of Lancaster, Pennsylvania. LLI was selected by competitive procurement (out of five laboratories that submitted proposals) based on their proposed method detection limits (MDLs). Selection of LLI as the co-located soil analytical laboratory was discussed with the community on October 10, 2010.

The analytical methods identified for the co-located soil sampling were selected to be consistent with the methods used for the RFI. These analytical methods are presented in the *Quality Assurance Project Plan, Santa Susana Field Laboratory RCRA Facility Investigation, Surficial Media Operable Unit* (MECx 2009) (RFI Quality Assurance Project Plan [QAPP]) and are listed in Table 2-2. For the Subarea 5A sampling, CDM Smith also evaluated the RFI QAPP detection limits relative to risk-based soil criteria. There were several instances where risk-based soil values were lower than the RFI QAPP limits. To determine whether the analytical MDL could be lowered, method modifications were discussed with DTSC and LLI chemists at the time of implementation. The ability of the laboratory to achieve project reporting limits (RLs) and QC criteria using these method modifications remains under evaluation by the project chemists. Table 2-2 also identifies methods that have been modified in an effort to lower respective MDLs and RLs.

Table 2-2 Analytical Methods and Method Modifications for Soil

Parameter Group	Analytical Method	Method Modified?
Volatile Organic Compounds	EPA 8260B	No
1,4-Dioxane	EPA 8260B SIM	No
Primary Analytes		
Select SVOCs	EPA 8270C SIM	No
SVOCs	EPA 8270C	No
Metals (including Mercury)	EPA 6010B/6020/7471A	No
Chromium VI	EPA 7199	No
Fluoride	EPA 300.0	No
Perchlorate[1]	EPA 6850	No
Perchlorate	EPA 314.0	No

Table 2-2 Analytical Methods and Method Modifications for Soil

Parameter Group	Analytical Method	Method Modified?
PCBs/PCTs	EPA 8082	Yes
Pesticides	EPA 8081A	Yes
Herbicides	EPA 8151	Yes
Dioxins/Furans	EPA 1613B	No
Secondary Analytes		
Alcohols	EPA 8015B	Yes
Terphenyls	EPA 8015B	Yes
Glycols	EPA 8015M	Yes
TPH (GRO and EFH)	EPA 8015M	Yes
Formaldehyde	EPA 8315A	Yes
n-Nitrosodimethylamine[2]	EPA 1625C	No
Energetics	EPA 8330A	Yes
Nitrate	EPA 300.0	No
Cyanide	EPA 9012B	No
pH	EPA 9045C	No

[1] Perchlorate by Method EPA 6850 was analyzed on 10 percent of samples analyzed by Method EPA 314.0

[2] n-Nitrosodimethylamine was analyzed by both Methods 8270C and 8270C SIM in addition to 1625C

The method modifications primarily involved increasing the prescribed sample volume (soil mass extracted) and concentrating the resulting extract to a smaller final volume, as follows:

- Method 8082 (PCBs and PCTs) – 60 grams of sample prepared and concentrated 5 fold to a final volume of 2 milliliters (mL)
- Method 8081A (Pesticides) – 60 grams of sample prepared and taken to a final volume of 4 mL (due to extract cleanup techniques)
- Method 8151A (Herbicides) – 60 grams of sample prepared and taken to a final volume of 2 mL
- Method 8330A (Energetics) – 5 grams of sample prepared in 10 mL of solvent
- Method 8315A (Formaldehyde) – 20 grams of sample used to prepare the leachate
- Method 8015M (TPH-EFH) – 60 grams of sample prepared and taken to a final volume of 1 mL
- Method 8015B (Alcohols) – 10 grams of sample prepared and taken to a final volume of 5 mL
- Method 8015M (Glycols) – 10 grams of sample prepared and taken to a final volume of 5 mL
- Method 8015B (Terphenyls) – 60 grams of sample prepared and extract concentrated to a final volume of 5 mL instead of 10 mL

For samples analyzed for glycols, an additional method modification was used. The normal method prescribes water extraction of the soils followed by concentration and then analysis by direct injection of the extract. The extraction procedure was altered by using acetone as the extraction solvent followed by concentration and then direct injection into the gas chromatograph. This modification was developed as a response to observed continuing calibration exceedences that could not be corrected using the standard procedure. These exceedances were due to the analytical column experiencing rapid degradation as a result of injecting water.

2.6 Data Review Processes

Analytical data produced by LLI were subject to multiple review steps to coincide with the start of distinct tasks. These steps were performed in a timely manner to ensure appropriate feedback and correction of errors. These steps included:

- Cross-reference check of sample CoC documents against the laboratory acknowledgement of sample receipt form. The laboratory acknowledgement of sample receipt was typically transmitted to the data manager via e-mail two to three days after sample receipt and login and includes a summary of the requested analyses to be performed per sample. Sample log-in errors were identified and corrected at this step.
- Tracking of sample collection, receipt, and laboratory sample delivery group (SDG) numbers on a sample tracking spreadsheet. This spreadsheet also includes field QC sample information, sample location coordinates, and required laboratory deliverables including reports, electronic data deliverables, raw data, and the status of validation.
- Upon receipt of the laboratory report (delivered via e-mail), a preliminary review of the data was performed. This review consisted of:
    - Reconciliation of the reported analyses against the analyses that were requested on the CoCs.
    - Review of the laboratory case narratives. The case narrative identifies and explains quality issues encountered during the analysis of the samples. Quality issues may include (but are not limited to) missed holding times, poor spike recoveries in matrix or batch-specific QC samples, instrument calibration exceedences, and blank contamination. The laboratory normally consults with the project chemists on these issues and receives instruction on how to proceed before reporting the sample results.
    - Review of the laboratory-specific QC data. These data are provided by the laboratory in summary form. Any unanticipated deviations from the project or method-specific criteria are reconciled with the laboratory at this stage.

2.7 Deviations from the WP/FSAP

A number of occurrences during the field sampling and analytical programs required modifications from the WP/FSAP (CDM 2011b). These deviations and associated resolutions, depending on their perceived impact to the program were typically discussed with the FTL, the PM, and in some cases with the DTSC representative prior to implementation. These deviations are described below.

2.7.1 Field Sampling

SL-254 was included in HGL's work plan addendum (Table 1) (and thus in CDM's Addendum No. 2 to the Master WP/FSAP [CDM 2011b]). This location was only planned to have a subsurface sample collected. However, the location was shown on HGL's Work Plan figure to be sampled for both surface and subsurface soils. Therefore, a subsurface sample and a surface sample were both collected from this location by CDM.

As indicated in Table 2-1, 221 locations were to be sampled at one or more depths. Four drainage locations (SL-014, SL-123, SL-124, and SL-125) were not sampled as the drainage grate was welded

shut. Three locations (SL-033, SL-047, SL-097) were not sampled due to archeological findings. One location proximate to Building 4024 was not sampled due to health and safety concerns relative to the nearby underground utility lines. There were also 57 locations that were not sampled due to shallow refusal at less than 2.5 feet.

As mentioned in Section 2.2, subsurface sampling using hand augers was not originally planned in the Master WP/FSAP or FSAP Addendum for Subarea 5A. The planned approach for subsurface sample collection was to obtain soil material from the soil core contained within the acetate sleeve produced by the DPT rig. Samples for VOC and SVOC analyses were to be collected directly from the core with minimal disturbance to reduce the loss of VOCs and SVOCs. The process of hand augering soil and the subsequent transfer of the sample material into a baggie had the potential for loss of VOCs and SVOCs. Review of the data is ongoing to ascertain whether VOC and SVOC results should be qualified based on changes to the planned sampling procedure. The results of this review will be reported in a future revision of this document.

2.7.2 Analytical

As noted in Section 2.5.2, some analytical methods have been modified for this project. All modifications were discussed with DTSC representatives prior to their implementation. Review of the analytical methods and sample results indicates that the objectives for the project were addressed for all non-modified analyses. All modified analyses are undergoing further studies evaluating the effect of the modifications on precision and accuracy. An independent study evaluating the precision and accuracy of the modified herbicide method has been completed. Review of these herbicide results indicate that the method modifications did not achieve precision and accuracy goals at this lower reporting limit for some of the analytes. Data are currently under further review and it is likely that reporting limits may be elevated for some analytes.

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Section 3

Area IV Subarea 5A Soil Sampling Results

Because this TM only provides a presentation of the analytical results, data in this section are presented in a summary fashion. Table 3-1 provides a summary of the Subarea 5A surface and drainage soil data. The table details the chemicals analyzed, their associated frequency of detection, the minimum and maximum detected concentrations, the range of observed detection limits and RLs, and the sample location where the maximum concentration of each analyte was measured. When screening criteria are developed to assess the presence/absence of contamination (above/below the applicable criteria) these Subarea 5A data will be combined with RFI data to better define the nature and extent of surface soil contamination throughout Subarea 5A.

Table 3-2 provides the same information for subsurface soil data. The table also indicates at what depth the maximum concentrations were observed. Table 3-3 provides a summary of the Subarea 5A data for the combined surface and subsurface datasets.

Appendix A provides tables for all validated data by analytical method and sample location. Data validation qualifier codes and their definitions are presented in these tables. Appendix B provides the summary analytical data reports as received from LLI. Appendix C presents the data usability and assessment report (DUAR) which details specific qualifications of sample results along with all validation reports. Appendix D is the master database of all sample results including the data validation "flags" (qualifiers).

Table 3-1
Summary of Analytical Results for Chemicals - Validated Data
Surface Soils
HSA-5A

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Inorganic	Fluoride	16984-48-8	110 / 121	0.88 J	5.2 J	0.82 - 1.1	1 - 1.4	mg/kg	SL-212-SA5A	0 - 0.5
Inorganic	Aluminum	7429-90-5	121 / 121	3460	28100	4.97 - 7.04	19.7 - 28	mg/kg	SL-042-SA5A	0 - 0.5
Inorganic	Iron	7439-89-6	121 / 121	5100	39900	4.65 - 27.3	19.7 - 116	mg/kg	SL-076-SA5A	0 - 0.5
Inorganic	Lead	7439-92-1	121 / 121	2.22 J	110 J	0.0105 - 0.0267	0.202 - 0.513	mg/kg	SL-179-SA5A	0 - 0.3
Inorganic	Lithium	7439-93-2	121 / 121	2.6	47.7	0.22 - 0.31	2 - 2.8	mg/kg	SL-042-SA5A	0 - 0.5
Inorganic	Magnesium	7439-95-4	121 / 121	1020	7430	2.51 - 3.56	9.87 - 14	mg/kg	SL-077-SA5A	0 - 0.5
Inorganic	Manganese	7439-96-5	121 / 121	126	524	0.077 - 0.109	0.494 - 0.7	mg/kg	SL-013-SA5A	0 - 0.5
Inorganic	Mercury	7439-97-6	78 / 121	0.0031 J	4.82	0.0028 - 0.0299	0.0994 - 1.04	mg/kg	SL-136-SA5A	0 - 0.5
Inorganic	Molybdenum	7439-98-7	120 / 121	0.291	14.5 J	0.0504 - 0.0687	0.101 - 0.137	mg/kg	SL-105-SA5A	0 - 0.5
Inorganic	Nickel	7440-02-0	121 / 121	6.9 J	80.4 J	0.101 - 0.137	0.403 - 0.549	mg/kg	SL-191-SA5A	0 - 0.5
Inorganic	Potassium	7440-09-7	121 / 121	575 J	5800	17.8 - 25.2	49.4 - 70	mg/kg	SL-045-SA5A	0 - 0.5
Inorganic	Silver	7440-22-4	94 / 121	0.0181 J	59.2 J	0.0121 - 0.0165	0.101 - 0.137	mg/kg	SL-042-SA5A	0 - 0.5
Inorganic	Sodium	7440-23-5	116 / 121	42.0 J	672	36.8 - 52.2	98.7 - 140	mg/kg	SL-178-SA5A	0 - 0.4
Inorganic	Strontium	7440-24-6	121 / 121	11.6	70.9	0.0612 - 0.0868	0.494 - 0.7	mg/kg	SL-120-SA5A	0 - 0.5
Inorganic	Thallium	7440-28-0	96 / 121	0.0581 J	0.580 J	0.0302 - 0.0412	0.101 - 0.137	mg/kg	SL-077-SA5A	0 - 0.5
Inorganic	Tin	7440-31-5	1 / 121	17.6	17.6	0.987 - 1.4	9.87 - 14	mg/kg	SL-137-SA5A	0 - 0.5
Inorganic	Titanium	7440-32-6	121 / 121	254	1620	0.375 - 0.532	0.987 - 1.4	mg/kg	SL-195-SA5A	0 - 0.2
Inorganic	Antimony	7440-36-0	86 / 121	0.0667 J	1.19 J	0.0605 - 0.0824	0.202 - 0.275	mg/kg	SL-009-SA5A	0 - 0.5
Inorganic	Arsenic	7440-38-2	121 / 121	3.03	30.4 J	0.0806 - 0.11	0.403 - 0.549	mg/kg	SL-076-SA5A	0 - 0.5
Inorganic	Beryllium	7440-41-7	121 / 121	0.174 J	1.86 J	0.0161 - 0.022	0.101 - 0.137	mg/kg	SL-077-SA5A	0 - 0.5
Inorganic	Barium	7440-39-3	121 / 121	23.4	191 J	0.109 - 0.148	0.403 - 0.549	mg/kg	SL-042-SA5A	0 - 0.5
Inorganic	Boron	7440-42-8	113 / 121	1.41 J	15.7	0.879 - 1.25	4.94 - 7	mg/kg	SL-195-SA5A	0 - 0.2
Inorganic	Cadmium	7440-43-9	111 / 121	0.0767 J	7.18 J	0.0403 - 0.0549	0.101 - 0.137	mg/kg	SL-179-SA5A	0 - 0.3
Inorganic	Chromium	7440-47-3	121 / 121	12.6 J	77.5 J	0.121 - 0.165	0.403 - 0.549	mg/kg	SL-119-SA5A	0 - 0.5
Inorganic	Cobalt	7440-48-4	121 / 121	2.38 J	45.6 J	0.0202 - 0.0275	0.101 - 0.137	mg/kg	SL-076-SA5A	0 - 0.5
Inorganic	Copper	7440-50-8	121 / 121	4.88 J	117 J	0.0665 - 0.0906	0.403 - 0.549	mg/kg	SL-178-SA5A	0 - 0.4
Inorganic	Vanadium	7440-62-2	121 / 121	15.7	82.7 J	0.0222 - 0.0302	0.101 - 0.137	mg/kg	SL-077-SA5A	0 - 0.5
Inorganic	Zinc	7440-66-6	121 / 121	18.8	944 J	0.564 - 6.96	3.02 - 37.3	mg/kg	SL-191-SA5A	0 - 0.5
Inorganic	Zirconium	7440-67-7	86 / 121	0.953 J	16.1	0.829 - 1.18	4.94 - 7	mg/kg	SL-120-SA5A	0 - 0.5
Inorganic	Calcium	7440-70-2	121 / 121	1760	20000	6.05 - 8.59	19.7 - 28	mg/kg	SL-191-SA5A	0 - 0.5
Inorganic	Phosphorus	7723-14-0	121 / 121	169	835 J	0.553 - 0.784	9.87 - 14	mg/kg	SL-195-SA5A	0 - 0.2
Inorganic	Selenium	7782-49-2	88 / 121	0.0544 J	0.554 J	0.0403 - 0.0549	0.403 - 0.549	mg/kg	SL-048-SA5A	0 - 0.5
Inorganic	Chromium VI	18540-29-9	92 / 121	0.25 J	6.6	0.21 - 0.28	1 - 1.4	mg/kg	SL-109-SA5A	0 - 0.5
Inorganic	Perchlorate	14797-73-0	1 / 121	13.8 J	13.8 J	9.2 - 12.6	30.8 - 42	ug/kg	SL-036-SA5A	0 - 0.5
Inorganic	Perchlorate	14797-73-0	0 / 19	-	-	2.3 - 2.7	5.4 - 6.3	ug/kg		
PCBs and Dioxins	2,3,7,8-TCDD	1746-01-6	83 / 121	0.0156 J	3.34	0.00836 - 0.207	1.01 - 1.4	ng/kg	SL-173-SA5A	0 - 0.5
PCBs and Dioxins	1,2,3,7,8,9-HxCDD	19408-74-3	113 / 121	0.0786 J	57.4	0.0192 - 0.472	5.05 - 7	ng/kg	SL-096-SA5A	0 - 0.5
PCBs and Dioxins	OCDD	3268-87-9	121 / 121	2.28 J	75800 J	0.0222 - 2.52	10.1 - 14	ng/kg	SL-016-SA5A	0 - 0.5
PCBs and Dioxins	1,2,3,4,6,7,8-HpCDD	35822-46-9	120 / 121	2.38 J	6140 J	0.0191 - 1.22	5.05 - 7	ng/kg	SL-016-SA5A	0 - 0.5
PCBs and Dioxins	OCDF	39001-02-0	114 / 121	0.904 J	910	0.0148 - 0.723	10.1 - 14	ng/kg	SL-042-SA5A	0 - 0.5
PCBs and Dioxins	1,2,3,4,7,8-HxCDD	39227-28-6	106 / 121	0.0537 J	26.1	0.0195 - 0.478	5.05 - 7	ng/kg	SL-096-SA5A	0 - 0.5
PCBs and Dioxins	1,2,3,7,8-PeCDD	40321-76-4	94 / 121	0.0494 J	14.0	0.0118 - 0.304	5.05 - 7	ng/kg	SL-096-SA5A	0 - 0.5
PCBs and Dioxins	2,3,7,8-TCDF	51207-31-9	78 / 121	0.0152 J	11.5	0.00772 - 0.515	1.01 - 1.4	ng/kg	SL-191-SA5A	0 - 0.5
PCBs and Dioxins	1,2,3,4,7,8,9-HpCDF	55673-89-7	75 / 121	0.166 J	53.0	0.017 - 0.592	5.05 - 7	ng/kg	SL-042-SA5A	0 - 0.5
PCBs and Dioxins	2,3,4,7,8-PeCDF	57117-31-4	73 / 121	0.345 J	17.3	0.00561 - 0.312	5.05 - 7	ng/kg	SL-191-SA5A	0 - 0.5

Table 3-1
Summary of Analytical Results for Chemicals - Validated Data
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Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
PCBs and Dioxins	1,2,3,7,8-PeCDF	57117-41-6	76 / 121	0.0814 J	7.21	0.00538 - 0.336	5.05 - 7	ng/kg	SL-191-SA5A	0 - 0.5
PCBs and Dioxins	1,2,3,6,7,8-HxCDF	57117-44-9	81 / 121	0.0970 J	21.0	0.0125 - 0.594	5.05 - 7	ng/kg	SL-042-SA5A	0 - 0.5
PCBs and Dioxins	1,2,3,6,7,8-HxCDD	57653-85-7	119 / 121	0.159 J	99.6	0.02 - 0.507	5.05 - 7	ng/kg	SL-042-SA5A	0 - 0.5
PCBs and Dioxins	2,3,4,6,7,8-HxCDF	60851-34-5	78 / 121	0.115 J	35.3	0.0118 - 0.393	5.05 - 7	ng/kg	SL-042-SA5A	0 - 0.5
PCBs and Dioxins	1,2,3,4,6,7,8-HpCDF	67562-39-4	108 / 121	0.416 J	396	0.0122 - 0.793	5.05 - 7	ng/kg	SL-042-SA5A	0 - 0.5
PCBs and Dioxins	1,2,3,4,7,8-HxCDF	70648-26-9	99 / 121	0.0877 J	31.7	0.0146 - 0.726	5.05 - 7	ng/kg	SL-042-SA5A	0 - 0.5
PCBs and Dioxins	1,2,3,7,8,9-HxCDF	72918-21-9	68 / 121	0.202 J	8.32	0.0148 - 0.423	5.05 - 7	ng/kg	SL-146-SA5A	0 - 0.5
PCBs and Dioxins	Aroclor 1260	11096-82-5	81 / 121	0.51 J	2300	0.4 - 83	1.7 - 360	ug/kg	SL-178-SA5A	0 - 0.4
PCBs and Dioxins	Aroclor 1254	11097-69-1	55 / 121	0.54 J	75 J	0.34 - 70	1.7 - 360	ug/kg	SL-042-SA5A	0 - 0.5
PCBs and Dioxins	Aroclor 1268	11100-14-4	8 / 121	3.2	37	0.34 - 70	1.7 - 360	ug/kg	SL-009-SA5A	0 - 0.5
PCBs and Dioxins	Aroclor 1221	11104-28-2	0 / 121	-	-	0.34 - 70	1.7 - 360	ug/kg		
PCBs and Dioxins	Aroclor 5460	11126-42-4	85 / 121	1.2 J	210	1 - 210	3.4 - 700	ug/kg	SL-217-SA5A	0 - 0.5
PCBs and Dioxins	Aroclor 1232	11141-16-5	0 / 121	-	-	0.34 - 70	1.7 - 360	ug/kg		
PCBs and Dioxins	Aroclor 5442	12642-23-8	0 / 121	-	-	1 - 210	3.4 - 700	ug/kg		
PCBs and Dioxins	Aroclor 1248	12672-29-6	8 / 121	0.71 J	15	0.34 - 70	1.7 - 360	ug/kg	SL-119-SA5A	0 - 0.5
PCBs and Dioxins	Aroclor 1016	12674-11-2	0 / 121	-	-	0.34 - 70	1.7 - 360	ug/kg		
PCBs and Dioxins	Aroclor 1262	37324-23-5	0 / 121	-	-	0.34 - 70	1.7 - 360	ug/kg		
PCBs and Dioxins	Aroclor 1242	53469-21-9	0 / 121	-	-	0.34 - 70	1.7 - 360	ug/kg		
PCBs and Dioxins	Aroclor 5432	63496-31-1	0 / 121	-	-	1 - 210	3.4 - 700	ug/kg		
Pesticides	Dichlorprop	120-36-5	11 / 120	1.0 J	9.5	0.84 - 3.2	1.8 - 3.2	ug/kg	SL-051-SA5A	0 - 0.5
Pesticides	Dicamba	1918-00-9	19 / 120	0.46 J	2.2	0.41 - 0.56	1.2 - 1.7	ug/kg	SL-051-SA5A	0 - 0.5
Pesticides	2,2-Dichlor-Propionic Acid	75-99-0	0 / 120	-	-	4.5 - 6.2	9.2 - 13	ug/kg		
Pesticides	Dinitrobutyl Phenol	88-85-7	0 / 120	-	-	0.82 - 3.5	2.5 - 3.5	ug/kg		
Pesticides	MCPP	93-65-2	12 / 120	160 J	750	79 - 1400	260 - 1400	ug/kg	SL-105-SA5A	0 - 0.5
Pesticides	2,4,5-TP	93-72-1	24 / 120	0.12 J	0.83	0.077 - 0.57	0.17 - 0.57	ug/kg	SL-194-SA5A	0 - 0.3
Pesticides	2,4,5-T	93-76-5	7 / 120	0.17 J	1.0	0.084 - 1	0.17 - 1	ug/kg	SL-194-SA5A	0 - 0.3
Pesticides	MCPA	94-74-6	45 / 120	110 J	2300	78 - 1500	260 - 1500	ug/kg	SL-253-SA5A	0 - 0.5
Pesticides	2,4-D	94-75-7	2 / 120	1.5 J	2.0 J	1.2 - 1.7	3.7 - 5	ug/kg	SL-253-SA5A	0 - 0.5
Pesticides	2,4 DB	94-82-6	23 / 120	1.1 J	38	0.66 - 39	1.8 - 39	ug/kg	SL-194-SA5A SL-195-SA5A	0 - 0.3 0 0.2
Pesticides	Toxaphene	8001-35-2	0 / 120	-	-	2.4 - 120	7.1 - 350	ug/kg		
Pesticides	Heptachlor Epoxide	1024-57-3	10 / 120	0.048 J	0.58 J	0.037 - 1.8	0.17 - 8.8	ug/kg	SL-197-SA5A	0 - 0.5
Pesticides	Endosulfan Sulfate	1031-07-8	7 / 120	0.10 J	2.1	0.071 - 3.5	0.35 - 18	ug/kg	SL-197-SA5A	0 - 0.5
Pesticides	Mirex	2385-85-5	22 / 120	0.079 J	30	0.071 - 44	0.35 - 44	ug/kg	SL-031-SA5A	0 - 0.5
Pesticides	Aldrin	309-00-2	1 / 120	6.5	6.5	0.068 - 3.5	0.17 - 8.8	ug/kg	SL-037-SA5A	0 - 0.5
Pesticides	Alpha-BHC	319-84-6	2 / 120	0.13 J	0.21	0.035 - 1.8	0.17 - 8.8	ug/kg	SL-064-SA5A	0 - 0.5
Pesticides	Beta-BHC	319-85-7	10 / 120	0.19	1.8	0.062 - 3.2	0.17 - 8.8	ug/kg	SL-104-SA5A	0 - 0.5
Pesticides	Delta-BHC	319-86-8	9 / 120	0.046 J	0.13 J	0.037 - 1.9	0.17 - 8.8	ug/kg	SL-042-SA5A	0 - 0.5
Pesticides	Endosulfan II	33213-65-9	10 / 120	0.074 J	1.0	0.071 - 6.7	0.35 - 18	ug/kg	SL-217-SA5A	0 - 0.5
Pesticides	4,4'-DDT	50-29-3	81 / 120	0.082 J	52	0.071 - 130	0.37 - 130	ug/kg	SL-217-SA5A	0 - 0.5
Pesticides	Endrin Ketone	53494-70-5	15 / 120	0.083 J	0.99	0.068 - 3.5	0.35 - 18	ug/kg	SL-217-SA5A	0 - 0.5
Pesticides	Chlordane	57-74-9	0 / 120	-	-	0.82 - 42	3.5 - 180	ug/kg		-
Pesticides	Gamma-BHC (Lindane)	58-89-9	5 / 120	0.052 J	0.15 J	0.035 - 1.8	0.17 - 8.8	ug/kg	SL-095-SA5A	0 - 0.5
Pesticides	Dieldrin	60-57-1	27 / 120	0.085 J	5.9	0.071 - 30	0.35 - 30	ug/kg	SL-257-SA5A	0 - 0.5
Pesticides	Endrin	72-20-8	0 / 120	-	-	0.068 - 15	0.35 - 18	ug/kg		-

Table 3-1
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Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Pesticides	Methoxychlor	72-43-5	2 / 120	0.49 J	0.66 J	0.35 - 170	1.7 - 170	ug/kg	SL-077-SA5A	0 - 0.5
Pesticides	4,4'-DDD	72-54-8	16 / 120	0.087 J	9.3	0.071 - 9.4	0.35 - 18	ug/kg	SL-197-SA5A	0 - 0.5
Pesticides	4,4'-DDE	72-55-9	52 / 120	0.081 J	39	0.071 - 3.5	0.37 - 18	ug/kg	SL-217-SA5A	0 - 0.5
Pesticides	Endrin Aldehyde	7421-93-4	36 / 120	0.073 J	2.7	0.071 - 64	0.35 - 64	ug/kg	SL-217-SA5A	0 - 0.5
Pesticides	Heptachlor	76-44-8	7 / 120	0.090 J	1.2 J	0.062 - 3.2	0.17 - 8.8	ug/kg	SL-002-SA5A	0 - 0.5
Pesticides	Endosulfan I	959-98-8	0 / 120	-	-	0.045 - 2.3	0.17 - 8.8	ug/kg		
Semivolatiles	N-Nitrosodimethylamine	62-75-9	0 / 121	-	-	0.68 - 9.2	1.7 - 23	ug/kg		
Semivolatiles	2,4-Dinitrotoluene	121-14-2	0 / 121	-	-	34 - 73	170 - 230	ug/kg		
Semivolatiles	Nitrobenzene	98-95-3	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	1,4-Dichlorobenzene	106-46-7	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	1,2,4-Trichlorobenzene	120-82-1	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	1,3-Dichlorobenzene	541-73-1	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	Hexachlorobutadiene	87-68-3	0 / 121	-	-	68 - 93	170 - 230	ug/kg		
Semivolatiles	1,2-Dichlorobenzene	95-50-1	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	4-Nitroaniline	100-01-6	0 / 121	-	-	68 - 93	170 - 230	ug/kg		
Semivolatiles	4-Nitrophenol	100-02-7	0 / 121	-	-	170 - 230	510 - 700	ug/kg		
Semivolatiles	4-Bromophenyl Phenyl Ether	101-55-3	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	2,4-Dimethylphenol	105-67-9	0 / 121	-	-	34 - 73	170 - 230	ug/kg		
Semivolatiles	4-Methylphenol	106-44-5	0 / 121	-	-	34 - 73	170 - 230	ug/kg		
Semivolatiles	4-Chloroaniline	106-47-8	0 / 121	-	-	68 - 93	170 - 230	ug/kg		
Semivolatiles	3,5-Dimethylphenol	108-68-9	0 / 121	-	-	34 - 47	170 - 230	ug/kg		
Semivolatiles	Phenol	108-95-2	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	Bis(2-Chloroethyl) ether	111-44-4	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	Bis(2-Chloroethoxy) methane	111-91-1	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	Bis(2-Ethylhexyl) phthalate	117-81-7	45 / 55	21 J	770	18 - 21	360 - 420	ug/kg	SL-066-SA5A	0 - 0.5
Semivolatiles	Bis(2-Ethylhexyl) phthalate	117-81-7	37 / 67	7.6 J	6000	6.1 - 680	18 - 2000	ug/kg	SL-029-SA5A	0 - 0.5
Semivolatiles	Di-N-Octyl Phthalate	117-84-0	2 / 22	190	230	18 - 23	180 - 230	ug/kg	SL-195-SA5A	0 - 0.2
Semivolatiles	Di-N-Octyl Phthalate	117-84-0	40 / 99	7.7 J	870	6.1 - 38	18 - 110	ug/kg	SL-194-SA5A	0 - 0.3
Semivolatiles	Hexachlorobenzene	118-74-1	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	Anthracene	120-12-7	5 / 5	25 J	99 J	18 - 20	180 - 200	ug/kg	SL-178-SA5A	0 - 0.4
Semivolatiles	Anthracene	120-12-7	58 / 116	0.35 J	270	0.34 - 4.6	1.7 - 23	ug/kg	SL-191-SA5A	0 - 0.5
Semivolatiles	2,4-Dichlorophenol	120-83-2	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	1,2-Diphenylhydrazine	122-66-7	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	Pyrene	129-00-0	16 / 16	19 J	1600	18 - 21	180 - 210	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Pyrene	129-00-0	77 / 106	0.74 J	2500	0.68 - 42	1.7 - 100	ug/kg	SL-191-SA5A	0 - 0.5
Semivolatiles	Dimethylphthalate	131-11-3	1 / 23	180	180	18 - 23	180 - 230	ug/kg	SL-121-SA5A	0 - 0.5
Semivolatiles	Dimethylphthalate	131-11-3	3 / 98	8.0 J	15 J	6.1 - 35	18 - 110	ug/kg	SL-181-SA5A	0 - 0.5
Semivolatiles	Dibenzofuran	132-64-9	6 / 121	19 J	110 J	17 - 36	170 - 230	ug/kg	SL-194-SA5A	0 - 0.3
Semivolatiles	Benzo(g,h,i)perylene	191-24-2	17 / 17	21 J	560	18 - 21	180 - 210	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Benzo(g,h,i)perylene	191-24-2	73 / 104	0.77 J	180	0.68 - 9.2	1.7 - 23	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	Indeno(1,2,3-Cd)Pyrene	193-39-5	11 / 11	21 J	590	18 - 21	180 - 210	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Indeno(1,2,3-Cd)Pyrene	193-39-5	58 / 110	0.77 J	230	0.68 - 9.2	1.7 - 23	ug/kg	SL-188-SA5A	0 - 0.5
Semivolatiles	Benzo(b)fluoranthene	205-99-2	8 / 8	22 J	1500	19 - 20	190 - 200	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Benzo(b)fluoranthene	205-99-2	89 / 113	0.92 J	1600	0.68 - 9.2	1.7 - 23	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	Fluoranthene	206-44-0	18 / 18	19 J	1900	18 - 23	180 - 230	ug/kg	SL-031-SA5A	0 - 0.5

Table 3-1
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Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Semivolatiles	Fluoranthene	206-44-0	76 / 103	0.74 J	2900	0.68 - 42	1.7 - 100	ug/kg	SL-191-SA5A	0 - 0.5
Semivolatiles	Benzo(k)fluoranthene	207-08-9	8 / 8	26 J	580	18 - 20	180 - 200	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Benzo(k)fluoranthene	207-08-9	67 / 113	0.75 J	660	0.68 - 9.2	1.7 - 23	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	Acenaphthylene	208-96-8	40 / 121	0.35 J	9.1 J	0.34 - 4.6	1.7 - 23	ug/kg	SL-194-SA5A	0 - 0.3
Semivolatiles	Chrysene	218-01-9	18 / 18	20 J	1300	18 - 21	180 - 210	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Chrysene	218-01-9	80 / 103	0.51 J	1200	0.34 - 4.6	1.7 - 23	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	bis(2-Chloroisopropyl) ether	39638-32-9	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	Benzo(a)pyrene	50-32-8	14 / 14	26 J	800	18 - 20	180 - 200	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Benzo(a)pyrene	50-32-8	71 / 107	0.76 J	870	0.68 - 9.2	1.7 - 23	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	2,4-Dinitrophenol	51-28-5	0 / 121	-	-	340 - 470	1000 - 1400	ug/kg		
Semivolatiles	4,6-Dinitro-2-Methylphenol	534-52-1	0 / 121	-	-	170 - 230	510 - 700	ug/kg		
Semivolatiles	Dibenzo(a,h)anthracene	53-70-3	6 / 6	22 J	180 J	18 - 20	180 - 200	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Dibenzo(a,h)anthracene	53-70-3	31 / 115	0.75 J	78	0.68 - 9.2	1.7 - 23	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	Benzo(a)anthracene	56-55-3	13 / 13	18 J	910	18 - 21	180 - 210	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Benzo(a)anthracene	56-55-3	61 / 108	0.78 J	1300	0.68 - 9.2	1.7 - 23	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	4-Chloro-3-Methylphenol	59-50-7	0 / 121	-	-	34 - 73	170 - 230	ug/kg		
Semivolatiles	N-Nitroso-Di-N-Propylamine	621-64-7	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	Aniline	62-53-3	0 / 121	-	-	170 - 230	510 - 700	ug/kg		
Semivolatiles	Benzoic Acid	65-85-0	2 / 121	240 J	320 J	170 - 230	510 - 700	ug/kg	SL-197-SA5A	0 - 0.5
Semivolatiles	Hexachloroethane	67-72-1	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	4-Chlorophenyl Phenylether	7005-72-3	0 / 121	-	-	34 - 47	170 - 230	ug/kg		
Semivolatiles	Hexachlorocyclopentadiene	77-47-4	0 / 121	-	-	170 - 230	510 - 700	ug/kg		
Semivolatiles	Isophorone	78-59-1	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	Acenaphthene	83-32-9	3 / 3	38 J	74 J	18 - 19	180 - 190	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	Acenaphthene	83-32-9	7 / 118	0.78 J	46	0.68 - 9.2	1.7 - 23	ug/kg	SL-191-SA5A	0 - 0.5
Semivolatiles	Diethylphthalate	84-66-2	0 / 23	-	-	18 - 23	180 - 230	ug/kg		
Semivolatiles	Diethylphthalate	84-66-2	0 / 98	-	-	6.1 - 35	18 - 110	ug/kg		
Semivolatiles	Di-n-Butylphthalate	84-74-2	4 / 48	40 J	780	18 - 23	180 - 230	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	Di-n-Butylphthalate	84-74-2	14 / 72	10 J	2900	6.1 - 360	18 - 1100	ug/kg	SL-186-SA5A	0 - 0.5
Semivolatiles	Phenanthrene	85-01-8	12 / 12	29 J	770	18 - 23	180 - 230	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Phenanthrene	85-01-8	69 / 109	0.84 J	1200	0.68 - 4.2	1.7 - 10	ug/kg	SL-191-SA5A	0 - 0.5
Semivolatiles	Butylbenzylphthalate	85-68-7	7 / 35	21 J	400	18 - 23	180 - 230	ug/kg	SL-119-SA5A	0 - 0.5
Semivolatiles	Butylbenzylphthalate	85-68-7	29 / 85	6.9 J	140	6.1 - 36	18 - 110	ug/kg	SL-121-SA5A	0 - 0.5
Semivolatiles	N-Nitrosodiphenylamine	86-30-6	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	Fluorene	86-73-7	3 / 3	26 J	62 J	18 - 19	180 - 190	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	Fluorene	86-73-7	11 / 118	0.92 J	35	0.68 - 9.2	1.7 - 23	ug/kg	SL-191-SA5A	0 - 0.5
Semivolatiles	Carbazole	86-74-8	8 / 121	22 J	140 J	17 - 36	170 - 230	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Pentachlorophenol	87-86-5	0 / 121	-	-	170 - 230	510 - 700	ug/kg		
Semivolatiles	2,4,6-Trichlorophenol	88-06-2	0 / 121	-	-	34 - 47	170 - 230	ug/kg		
Semivolatiles	2-Nitroaniline	88-74-4	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	2-Nitrophenol	88-75-5	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	1-Methylnaphthalene	90-12-0	1 / 1	25 J	25 J	19 - 19	190 - 190	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	1-Methylnaphthalene	90-12-0	15 / 120	0.81 J	260	0.68 - 9.2	1.7 - 23	ug/kg	SL-194-SA5A	0 - 0.3
Semivolatiles	Naphthalene	91-20-3	0 / 8	-	-	18 - 36	180 - 200	ug/kg		
Semivolatiles	Naphthalene	91-20-3	45 / 113	0.75 J	160	0.68 - 9.2	1.7 - 23	ug/kg	SL-194-SA5A	0 - 0.3

Table 3-1
Summary of Analytical Results for Chemicals - Validated Data
Surface Soils
HSA-5A

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Semivolatiles	2-Methylnaphthalene	91-57-6	1 / 1	21 J	21 J	19 - 19	190 - 190	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	2-Methylnaphthalene	91-57-6	21 / 120	0.78 J	310	0.68 - 9.2	1.7 - 23	ug/kg	SL-194-SA5A	0 - 0.3
Semivolatiles	2-Chloronaphthalene	91-58-7	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	3,3`-Dichlorobenzidine	91-94-1	0 / 121	-	-	100 - 140	340 - 470	ug/kg		
Semivolatiles	Benzidine	92-87-5	0 / 121	-	-	1200 - 1600	3400 - 4700	ug/kg		
Semivolatiles	2-Methylphenol	95-48-7	0 / 121	-	-	34 - 73	170 - 230	ug/kg		
Semivolatiles	2-Chlorophenol	95-57-8	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	2,4,5-Trichlorophenol	95-95-4	0 / 121	-	-	34 - 73	170 - 230	ug/kg		
Semivolatiles	3-Nitroaniline	99-09-2	0 / 121	-	-	34 - 73	170 - 230	ug/kg		
Semivolatiles	Benzyl Alcohol	100-51-6	0 / 121	-	-	170 - 230	510 - 700	ug/kg		
Semivolatiles	2,6-Dinitrotoluene	606-20-2	0 / 121	-	-	17 - 36	170 - 230	ug/kg		

ug/kg - microgram per kilogram
mg/kg - milligram per kilogram
ng/kg - nanogram per kilogram
J - Result is an estimated value

Table 3-2
Summary of Analytical Results for Chemicals - Validated Data
Subsurface Soils
HSA-5A

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Inorganic	Nitrate	14797-55-8	91 / 95	0.92 J	18.5	0.83 - 1	1.6 - 1.9	mg/kg	SL-093-SA5A	3.5 - 4.5
Inorganic	Fluoride	16984-48-8	161 / 178	1.1 J	21.6 J	0.83 - 1	1 - 1.3	mg/kg	SL-204-SA5A	4 - 5
Inorganic	Cyanide	57-12-5	0 / 95	-	-	0.18 - 0.23	0.5 - 0.64	mg/kg		-
Inorganic	Aluminum	7429-90-5	178 / 178	9160	37200	5.17 - 6.55	20.6 - 26	mg/kg	SL-114-SA5A	4 - 5
Inorganic	Iron	7439-89-6	178 / 178	15000	52800	4.84 - 29.3	20.6 - 125	mg/kg	SL-197-SA5A	8 - 9
Inorganic	Lead	7439-92-1	178 / 178	3.26	2890 J	0.0107 - 0.595	0.206 - 11.4	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Lithium	7439-93-2	178 / 178	11.8	64.4	0.23 - 0.29	2.1 - 2.6	mg/kg	SL-197-SA5A	8 - 9
Inorganic	Magnesium	7439-95-4	178 / 178	2660	11900	2.61 - 3.31	10.3 - 13	mg/kg	SL-197-SA5A	8 - 9
Inorganic	Manganese	7439-96-5	178 / 178	87.4 J	730	0.0802 - 0.102	0.514 - 0.651	mg/kg	SL-253-SA5A	4 - 5
Inorganic	Mercury	7439-97-6	76 / 178	0.0034 J	1.35	0.0028 - 0.0149	0.0992 - 0.52	mg/kg	SL-167-SA5A	1 - 2
Inorganic	Molybdenum	7439-98-7	177 / 178	0.166	19.5 J	0.0514 - 0.0645	0.103 - 0.129	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Nickel	7440-02-0	178 / 178	5.79 J	538 J	0.103 - 0.572	0.411 - 2.29	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Potassium	7440-09-7	178 / 178	683 J	6680 J	18.5 - 23.4	51.4 - 65.1	mg/kg	SL-258-SA5A	4 - 5
Inorganic	Silver	7440-22-4	166 / 178	0.0143 J	4.45 J	0.0123 - 0.0155	0.103 - 0.129	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Sodium	7440-23-5	178 / 178	62 J	1650	38.4 - 48.6	103 - 130	mg/kg	SL-204-SA5A	4 - 5
Inorganic	Strontium	7440-24-6	176 / 178	8.82	98.4	0.0638 - 0.0807	0.514 - 0.651	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Thallium	7440-28-0	174 / 178	0.158	0.538 J	0.0309 - 0.172	0.103 - 0.572	mg/kg	SL-055-SA5A	2 - 3
Inorganic	Tin	7440-31-5	7 / 178	2.09	42.8	1.03 - 1.3	10.3 - 13	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Titanium	7440-32-6	178 / 178	806	1690	0.391 - 0.495	1.03 - 1.3	mg/kg	SL-244-SA5A	9 - 10
Inorganic	Antimony	7440-36-0	139 / 178	0.0687 J	2.45 J	0.0617 - 0.0774	0.206 - 0.258	mg/kg	SL-093-SA5A	3.5 - 4.5
Inorganic	Arsenic	7440-38-2	178 / 178	2.98	16.9 J	0.0823 - 0.103	0.411 - 0.516	mg/kg	SL-060-SA5A	4 - 5
Inorganic	Beryllium	7440-41-7	176 / 178	0.256	1.60 J	0.0165 - 0.0456	0.103 - 0.285	mg/kg	SL-197-SA5A SL-244-SA5A	8 - 9 9 10
Inorganic	Barium	7440-39-3	178 / 178	45.1 J	781 J	0.111 - 0.654	0.411 - 2.42	mg/kg	SL-189-SA5A	5 - 6
Inorganic	Boron	7440-42-8	141 / 178	1.07 J	27.7	0.915 - 1.16	5.14 - 6.51	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Cadmium	7440-43-9	148 / 178	0.0423 J	18.6 J	0.0411 - 0.0516	0.103 - 0.129	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Chromium	7440-47-3	178 / 178	10.7	693 J	0.123 - 0.687	0.411 - 2.29	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Cobalt	7440-48-4	178 / 178	2.58 J	26.1 J	0.0206 - 0.0258	0.103 - 0.129	mg/kg	SL-234-SA5A	9 - 10
Inorganic	Copper	7440-50-8	178 / 178	3.82 J	699 J	0.0669 - 0.378	0.405 - 2.29	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Vanadium	7440-62-2	178 / 178	24.9	82.1	0.0222 - 0.0278	0.101 - 0.126	mg/kg	SL-114-SA5A	4 - 5
Inorganic	Zinc	7440-66-6	178 / 178	25.9	1100	0.576 - 5.93	3.09 - 31.8	mg/kg	SL-113-SA5A	14 - 15
Inorganic	Zirconium	7440-67-7	138 / 178	0.917 J	5.57	0.864 - 1.09	5.14 - 6.51	mg/kg	SL-114-SA5A	4 - 5
Inorganic	Calcium	7440-70-2	177 / 178	1100	61200	6.3 - 7.98	20.6 - 26	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Phosphorus	7723-14-0	178 / 178	62.4 J	801	0.576 - 0.729	10.3 - 13	mg/kg	SL-113-SA5A	14 - 15
Inorganic	Selenium	7782-49-2	172 / 178	0.0441 J	0.436 J	0.0411 - 0.0516	0.411 - 0.516	mg/kg	SL-055-SA5A	2 - 3
Inorganic	Chromium VI	18540-29-9	109 / 178	0.23 J	1.5	0.21 - 0.26	1 - 1.3	mg/kg	SL-254-SA5A	2.5 - 3.5
Inorganic	Perchlorate	14797-73-0	1 / 178	25.7 J	25.7 J	9.4 - 11.7	31.3 - 39.1	ug/kg	SL-035-SA5A	4 - 5
Inorganic	Perchlorate	14797-73-0	1 / 22	8.6	8.6	2.2 - 2.7	5.2 - 6.5	ug/kg	SL-215-SA5A	4 - 5
Inorganic	Percent Moisture	MOIST	178 / 178	4	23.2	0.5 - 0.5	0.5 - 0.5	%	SL-089-SA5A	9 - 10
Inorganic	pH	pH	178 / 178	5.88	9.26	0.01 - 0.01	0.01 - 0.01	pH unit	SL-116-SA5A	14 - 15
Misc. Organics	Ethanol	64-17-5	0 / 95	-	-	100 - 130	520 - 650	ug/kg		-
Misc. Organics	Methanol	67-56-1	4 / 95	150 J	450 J	100 - 230	520 - 650	ug/kg	SL-249-SA5A	2.5 - 3.5
Misc. Organics	2-Propanol	67-63-0	0 / 95	-	-	100 - 130	520 - 650	ug/kg		-
Misc. Organics	Ethylene Glycol	107-21-1	0 / 95	-	-	5.2 - 7.4	11 - 16	mg/kg		-
Misc. Organics	Diethylene Glycol	111-46-6	0 / 95	-	-	5.2 - 9.5	11 - 16	mg/kg		-
Misc. Organics	Propylene glycol	57-55-6	1 / 95	8.9 J	8.9 J	5.2 - 6.5	11 - 16	mg/kg	SL-189-SA5A	8.5 - 9.5
Misc. Organics	o-Terphenyl	84-15-1	0 / 95	-	-	1.6 - 22	3.6 - 51	mg/kg		-

Table 3-2
Summary of Analytical Results for Chemicals - Validated Data
Subsurface Soils
HSA-5A

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Misc. Organics	m-Terphenyl	92-06-8	0 / 95	-	-	1.6 - 22	3.6 - 51	mg/kg		-
Misc. Organics	p-Terphenyl	92-94-4	0 / 95	-	-	1.6 - 22	3.6 - 51	mg/kg		-
Misc. Organics	Formaldehyde	50-00-0	8 / 95	680 J	21000	620 - 6900	1600 - 17000	ug/kg	SL-189-SA5A	8.5 - 9.5
Misc. Organics	2,6-Dinitrotoluene	606-20-2	0 / 95	-	-	40 - 51	120 - 150	ug/kg		-
Misc. Organics	2,4,6-Trinitrotoluene	118-96-7	0 / 95	-	-	40 - 51	120 - 150	ug/kg		-
Misc. Organics	RDX	121-82-4	0 / 95	-	-	50 - 69	120 - 150	ug/kg		-
Misc. Organics	4-Amino-2,6-Dinitrotoluene	19406-51-0	0 / 95	-	-	60 - 76	120 - 150	ug/kg		-
Misc. Organics	HMX	2691-41-0	1 / 95	220 J	220 J	100 - 130	300 - 380	ug/kg	SL-242-SA5A	2.5 - 3.5
Misc. Organics	2-Amino-4,6-Dinitrotoluene	35572-78-2	0 / 95	-	-	40 - 51	120 - 150	ug/kg		-
Misc. Organics	Tetryl	479-45-8	0 / 95	-	-	61 - 78	120 - 150	ug/kg		-
Misc. Organics	Nitroglycerin	55-63-0	0 / 95	-	-	800 - 1000	2400 - 3000	ug/kg		-
Misc. Organics	2,6-Diamino-4-nitrotoluene	59229-75-3	0 / 95	-	-	80 - 100	240 - 300	ug/kg		-
Misc. Organics	2,4-Diamino-6-nitrotoluene	6629-29-4	1 / 95	98 J	98 J	80 - 100	240 - 300	ug/kg	SL-189-SA5A	8.5 - 9.5
Misc. Organics	PETN	78-11-5	0 / 95	-	-	800 - 1000	2400 - 3000	ug/kg		-
Misc. Organics	2-Nitrotoluene	88-72-2	0 / 95	-	-	80 - 100	120 - 150	ug/kg		-
Misc. Organics	3-Nitrotoluene	99-08-1	0 / 95	-	-	100 - 130	120 - 150	ug/kg		-
Misc. Organics	1,3,5-Trinitrobenzene	99-35-4	0 / 95	-	-	40 - 51	120 - 150	ug/kg		-
Misc. Organics	4-Nitrotoluene	99-99-0	0 / 95	-	-	80 - 100	120 - 150	ug/kg		-
Misc. Organics	2,4-Dinitrotoluene	121-14-2	0 / 95	-	-	40 - 51	120 - 150	ug/kg		-
Misc. Organics	Nitrobenzene	98-95-3	0 / 95	-	-	40 - 51	120 - 150	ug/kg		-
Misc. Organics	m-Dinitrobenzene	99-65-0	0 / 95	-	-	40 - 51	120 - 150	ug/kg		-
PCBs and Dioxins	2,3,7,8-TCDD	1746-01-6	54 / 178	0.0106 J	7.81	0.0086 - 0.148	1.02 - 1.3	ng/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	1,2,3,7,8,9-HxCDD	19408-74-3	45 / 178	0.0949 J	82.1	0.00767 - 0.121	5.09 - 6.48	ng/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	OCDD	3268-87-9	77 / 178	1.50 J	6490 J	0.0151 - 0.127	10.2 - 13	ng/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	1,2,3,4,6,7,8-HpCDD	35822-46-9	46 / 178	0.923 J	1810	0.0114 - 0.19	5.09 - 6.48	ng/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	OCDF	39001-02-0	29 / 178	0.846 J	624 J	0.0101 - 0.179	10.2 - 13	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	1,2,3,4,7,8-HxCDD	39227-28-6	43 / 178	0.0220 J	45.1	0.00851 - 0.123	5.09 - 6.48	ng/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	1,2,3,7,8-PeCDD	40321-76-4	25 / 178	0.0233 J	41.0	0.0083 - 0.131	5.09 - 6.48	ng/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	2,3,7,8-TCDF	51207-31-9	39 / 178	0.00904 J	56.5	0.00655 - 0.224	1.02 - 1.3	ng/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	1,2,3,4,7,8,9-HpCDF	55673-89-7	13 / 178	0.224 J	136 J	0.00518 - 0.156	5.09 - 6.48	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	2,3,4,7,8-PeCDF	57117-31-4	10 / 178	0.283 J	187 J	0.0042 - 0.0677	5.09 - 6.48	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	1,2,3,7,8-PeCDF	57117-41-6	32 / 178	0.0137 J	89.7 J	0.00419 - 0.0677	5.09 - 6.48	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	1,2,3,6,7,8-HxCDF	57117-44-9	16 / 178	0.0601 J	197 J	0.00485 - 0.117	5.09 - 6.48	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	1,2,3,6,7,8-HxCDD	57653-85-7	51 / 178	0.0181 J	104	0.00836 - 0.127	5.09 - 6.48	ng/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	2,3,4,6,7,8-HxCDF	60851-34-5	16 / 178	0.225 J	369 J	0.00477 - 0.0912	5.09 - 6.48	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	1,2,3,4,6,7,8-HpCDF	67562-39-4	27 / 178	0.576 J	964 J	0.00397 - 0.119	5.09 - 6.48	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	1,2,3,4,7,8-HxCDF	70648-26-9	22 / 178	0.140 J	225 J	0.0054 - 0.14	5.09 - 6.48	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	1,2,3,7,8,9-HxCDF	72918-21-9	34 / 178	0.0226 J	79.8 J	0.00496 - 0.102	5.09 - 6.48	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	Aroclor 1260	11096-82-5	27 / 178	0.48 J	170 J	0.4 - 46	1.8 - 200	ug/kg	SL-197-SA5A	4 - 5
PCBs and Dioxins	Aroclor 1254	11097-69-1	12 / 178	0.62 J	150	0.34 - 39	1.8 - 200	ug/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	Aroclor 1268	11100-14-4	1 / 178	0.87 J	0.87 J	0.34 - 39	1.8 - 200	ug/kg	SL-012-SA5A	2 - 3
PCBs and Dioxins	Aroclor 1221	11104-28-2	0 / 178	-	-	0.34 - 39	1.8 - 200	ug/kg		-
PCBs and Dioxins	Aroclor 5460	11126-42-4	13 / 178	1.4	120	1 - 120	3.4 - 390	ug/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	Aroclor 1232	11141-16-5	0 / 178	-	-	0.34 - 39	1.8 - 200	ug/kg		-
PCBs and Dioxins	Aroclor 5442	12642-23-8	1 / 178	2.0 J	2.0 J	1 - 120	3.4 - 390	ug/kg	SL-006-SA5A	2 - 3
PCBs and Dioxins	Aroclor 1248	12672-29-6	2 / 178	3.4	4.5	0.34 - 39	1.8 - 200	ug/kg	SL-088-SA5A	4 - 5
PCBs and Dioxins	Aroclor 1016	12674-11-2	0 / 178	-	-	0.34 - 39	1.8 - 200	ug/kg		-

Table 3-2
Summary of Analytical Results for Chemicals - Validated Data
Subsurface Soils
HSA-5A

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
PCBs and Dioxins	Aroclor 1262	37324-23-5	0 / 178	-	-	0.34 - 39	1.8 - 200	ug/kg		-
PCBs and Dioxins	Aroclor 1242	53469-21-9	0 / 178	-	-	0.34 - 39	1.8 - 200	ug/kg		-
PCBs and Dioxins	Aroclor 5432	63496-31-1	0 / 178	-	-	1 - 120	3.4 - 390	ug/kg		-
Semivolatiles	N-Nitrosodimethylamine	62-75-9	37 / 95	21.4 J	465	17.2 - 216	34.4 - 432	ng/kg	SL-092-SA5A	3 - 4
Semivolatiles	N-Nitrosodimethylamine	62-75-9	0 / 178	-	-	0.69 - 16	1.7 - 40	ug/kg		-
Semivolatiles	2,4-Dinitrotoluene	121-14-2	0 / 178	-	-	34 - 400	170 - 2000	ug/kg		-
Semivolatiles	Nitrobenzene	98-95-3	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	1,4-Dichlorobenzene	106-46-7	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	1,2,4-Trichlorobenzene	120-82-1	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	1,3-Dichlorobenzene	541-73-1	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	Hexachlorobutadiene	87-68-3	0 / 178	-	-	69 - 800	170 - 2000	ug/kg		-
Semivolatiles	1,2-Dichlorobenzene	95-50-1	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	4-Nitroaniline	100-01-6	0 / 178	-	-	69 - 800	170 - 2000	ug/kg		-
Semivolatiles	4-Nitrophenol	100-02-7	0 / 178	-	-	170 - 2000	510 - 6000	ug/kg		-
Semivolatiles	4-Bromophenyl Phenyl Ether	101-55-3	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	2,4-Dimethylphenol	105-67-9	0 / 178	-	-	34 - 400	170 - 2000	ug/kg		-
Semivolatiles	4-Methylphenol	106-44-5	0 / 178	-	-	34 - 400	170 - 2000	ug/kg		-
Semivolatiles	4-Chloroaniline	106-47-8	0 / 178	-	-	69 - 800	170 - 2000	ug/kg		-
Semivolatiles	3,5-Dimethylphenol	108-68-9	0 / 178	-	-	34 - 400	170 - 2000	ug/kg		-
Semivolatiles	Phenol	108-95-2	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	Bis(2-Chloroethyl) ether	111-44-4	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	Bis(2-Chloroethoxy) methane	111-91-1	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	Bis(2-Ethylhexyl) phthalate	117-81-7	36 / 47	18 J	200 J	18 - 200	350 - 4000	ug/kg	SL-189-SA5A	5 - 6
Semivolatiles	Bis(2-Ethylhexyl) phthalate	117-81-7	34 / 132	7.2 J	81	6.2 - 7.8	19 - 23	ug/kg	SL-012-SA5A	2 - 3
Semivolatiles	Di-N-Octyl Phthalate	117-84-0	1 / 35	92 J	92 J	18 - 190	180 - 1900	ug/kg	SL-116-SA5A	14 - 15
Semivolatiles	Di-N-Octyl Phthalate	117-84-0	28 / 143	6.6 J	25 J	6.2 - 140	19 - 430	ug/kg	SL-090-SA5A	4 - 5
Semivolatiles	Hexachlorobenzene	118-74-1	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	Anthracene	120-12-7	12 / 178	0.58 J	890	0.34 - 8	1.7 - 40	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	2,4-Dichlorophenol	120-83-2	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	1,2-Diphenylhydrazine	122-66-7	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	Pyrene	129-00-0	3 / 3	21 J	37 J	18 - 19	180 - 190	ug/kg	SL-237-SA5A	9 - 10
Semivolatiles	Pyrene	129-00-0	26 / 175	0.76 J	1800	0.69 - 16	1.7 - 40	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	Dimethylphthalate	131-11-3	0 / 6	-	-	18 - 190	180 - 1900	ug/kg		-
Semivolatiles	Dimethylphthalate	131-11-3	0 / 172	-	-	6.2 - 140	19 - 430	ug/kg		-
Semivolatiles	Dibenzofuran	132-64-9	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	Benzo(g,h,i)perylene	191-24-2	3 / 3	22 J	62 J	19 - 20	190 - 200	ug/kg	SL-116-SA5A	14 - 15
Semivolatiles	Benzo(g,h,i)perylene	191-24-2	24 / 175	0.75 J	230	0.69 - 16	1.7 - 40	ug/kg	SL-189-SA5A	5 - 6
Semivolatiles	Indeno(1,2,3-Cd)Pyrene	193-39-5	21 / 178	0.74 J	170	0.69 - 16	1.7 - 40	ug/kg	SL-189-SA5A SL-189-SA5A	5 - 6 8.5 9.5
Semivolatiles	Benzo(b)fluoranthene	205-99-2	2 / 2	25	35 J	18 - 18	180 - 180	ug/kg	SL-237-SA5A	9 - 10
Semivolatiles	Benzo(b)fluoranthene	205-99-2	34 / 176	0.78 J	510	0.69 - 16	1.7 - 40	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	Fluoranthene	206-44-0	1 / 1	20	20	18 - 18	180 - 180	ug/kg	SL-112-SA5A	8.5 - 9.5
Semivolatiles	Fluoranthene	206-44-0	32 / 177	0.77 J	2000	0.69 - 16	1.7 - 40	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	Benzo(k)fluoranthene	207-08-9	18 / 178	0.81 J	170	0.69 - 16	1.7 - 40	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	Acenaphthylene	208-96-8	5 / 178	0.42 J	150	0.34 - 8	1.7 - 40	ug/kg	SL-189-SA5A	5 - 6
Semivolatiles	Chrysene	218-01-9	3 / 3	24	100 J	18 - 19	180 - 190	ug/kg	SL-237-SA5A	9 - 10
Semivolatiles	Chrysene	218-01-9	43 / 175	0.38 J	610	0.34 - 8	1.7 - 40	ug/kg	SL-189-SA5A	8.5 - 9.5

Table 3-2
Summary of Analytical Results for Chemicals - Validated Data
Subsurface Soils
HSA-5A

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Semivolatiles	bis(2-Chloroisopropyl) ether	39638-32-9	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	Benzo(a)pyrene	50-32-8	4 / 4	20	100 J	18 - 19	180 - 190	ug/kg	SL-116-SA5A	14 - 15
Semivolatiles	Benzo(a)pyrene	50-32-8	22 / 174	0.79 J	370	0.69 - 16	1.7 - 40	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	2,4-Dinitrophenol	51-28-5	0 / 178	-	-	340 - 4000	1000 - 12000	ug/kg		-
Semivolatiles	4,6-Dinitro-2-Methylphenol	534-52-1	0 / 178	-	-	170 - 2000	510 - 6000	ug/kg		-
Semivolatiles	Dibenzo(a,h)anthracene	53-70-3	14 / 178	0.72 J	50	0.69 - 16	1.7 - 40	ug/kg	SL-189-SA5A	5 - 6
Semivolatiles	Benzo(a)anthracene	56-55-3	1 / 1	25	25	18 - 18	180 - 180	ug/kg	SL-112-SA5A	8.5 - 9.5
Semivolatiles	Benzo(a)anthracene	56-55-3	20 / 177	1.0 J	640	0.69 - 16	1.7 - 40	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	4-Chloro-3-Methylphenol	59-50-7	0 / 177	-	-	34 - 400	170 - 2000	ug/kg		-
Semivolatiles	N-Nitroso-Di-N-Propylamine	621-64-7	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	Aniline	62-53-3	0 / 178	-	-	170 - 2000	510 - 6000	ug/kg		-
Semivolatiles	Benzoic Acid	65-85-0	0 / 178	-	-	170 - 2000	510 - 6000	ug/kg		-
Semivolatiles	Hexachloroethane	67-72-1	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	4-Chlorophenyl Phenylether	7005-72-3	0 / 178	-	-	34 - 400	170 - 2000	ug/kg		-
Semivolatiles	Hexachlorocyclopentadiene	77-47-4	0 / 178	-	-	170 - 2000	510 - 6000	ug/kg		-
Semivolatiles	Isophorone	78-59-1	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	Acenaphthene	83-32-9	2 / 178	310	990	0.69 - 16	1.7 - 40	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	Diethylphthalate	84-66-2	0 / 6	-	-	18 - 190	180 - 1900	ug/kg		-
Semivolatiles	Diethylphthalate	84-66-2	17 / 172	7.0 J	11 J	6.2 - 140	19 - 430	ug/kg	SL-072-SA5A	4 - 5
Semivolatiles	Di-n-Butylphthalate	84-74-2	1 / 67	32 J	32 J	17 - 190	170 - 1900	ug/kg	SL-237-SA5A	9 - 10
Semivolatiles	Di-n-Butylphthalate	84-74-2	22 / 111	9.5 J	13 J	6.3 - 140	19 - 430	ug/kg	SL-089-SA5A SL-076-SA5A SL-156-SA5A	9 - 10 4 5 3 4
Semivolatiles	Phenanthrene	85-01-8	1 / 1	40 J	40 J	18 - 18	180 - 180	ug/kg	SL-237-SA5A	9 - 10
Semivolatiles	Phenanthrene	85-01-8	23 / 177	0.74 J	4700	0.69 - 16	1.7 - 40	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	Butylbenzylphthalate	85-68-7	1 / 6	50 J	50 J	18 - 190	180 - 1900	ug/kg	SL-116-SA5A	14 - 15
Semivolatiles	Butylbenzylphthalate	85-68-7	1 / 172	6.9 J	6.9 J	6.2 - 140	19 - 430	ug/kg	SL-080-SA5A	3 - 4
Semivolatiles	N-Nitrosodiphenylamine	86-30-6	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	Fluorene	86-73-7	2 / 2	710 J	2300	190 - 200	1900 - 2000	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	Fluorene	86-73-7	2 / 176	0.87 J	1.1 J	0.69 - 3.8	1.7 - 9.5	ug/kg	SL-090-SA5A	4 - 5
Semivolatiles	Carbazole	86-74-8	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	Pentachlorophenol	87-86-5	0 / 178	-	-	170 - 2000	510 - 6000	ug/kg		-
Semivolatiles	2,4,6-Trichlorophenol	88-06-2	0 / 178	-	-	34 - 400	170 - 2000	ug/kg		-
Semivolatiles	2-Nitroaniline	88-74-4	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	2-Nitrophenol	88-75-5	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	1-Methylnaphthalene	90-12-0	1 / 2	6500	6500	20 - 200	200 - 2000	ug/kg	SL-189-SA5A	5 - 6
Semivolatiles	1-Methylnaphthalene	90-12-0	5 / 177	0.88 J	27000	0.69 - 150	1.7 - 380	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	Naphthalene	91-20-3	1 / 1	1400 J	1400 J	200 - 200	2000 - 2000	ug/kg	SL-189-SA5A	5 - 6
Semivolatiles	Naphthalene	91-20-3	28 / 177	0.75 J	7400	0.69 - 15	1.7 - 38	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	2-Methylnaphthalene	91-57-6	1 / 1	3200	3200	200 - 200	2000 - 2000	ug/kg	SL-189-SA5A	5 - 6
Semivolatiles	2-Methylnaphthalene	91-57-6	5 / 177	0.90 J	36000	0.69 - 150	1.7 - 380	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	2-Chloronaphthalene	91-58-7	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	3,3`-Dichlorobenzidine	91-94-1	0 / 178	-	-	100 - 1200	340 - 4000	ug/kg		-
Semivolatiles	Benzidine	92-87-5	0 / 178	-	-	1200 - 14000	3400 - 40000	ug/kg		-
Semivolatiles	2-Methylphenol	95-48-7	0 / 178	-	-	34 - 400	170 - 2000	ug/kg		-
Semivolatiles	2-Chlorophenol	95-57-8	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	2,4,5-Trichlorophenol	95-95-4	0 / 178	-	-	34 - 400	170 - 2000	ug/kg		-

Table 3-2
Summary of Analytical Results for Chemicals - Validated Data
Subsurface Soils
HSA-5A

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Semivolatiles	3-Nitroaniline	99-09-2	0 / 178	-	-	34 - 400	170 - 2000	ug/kg		-
Semivolatiles	Benzyl Alcohol	100-51-6	0 / 178	-	-	170 - 2000	510 - 6000	ug/kg		-
Semivolatiles	2,6-Dinitrotoluene	606-20-2	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Volatiles	GRO (C5-C12)	GROC5C12	4 / 95	0.2 J	660	0.2 - 8.8	0.9 - 44	mg/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	EFH (C15-C20)	PHCC15C20	14 / 95	0.51 J	3400	0.42 - 93	1.3 - 280	mg/kg	SL-189-SA5A	5 - 6
Volatiles	EFH (C21-C30)	PHCC21C30	46 / 95	0.48 J	580	0.42 - 93	1.3 - 280	mg/kg	SL-012-SA5A	2 - 3
Volatiles	EFH (C30-C40)	PHCC30C40	76 / 95	0.45 J	1700	0.42 - 93	1.3 - 280	mg/kg	SL-012-SA5A	2 - 3
Volatiles	EFH (C8-C11)	PHCC8C11	14 / 95	0.43 J	710	0.42 - 93	1.3 - 280	mg/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	1,4-Dichlorobenzene	106-46-7	0 / 158	-	-	0.14 - 7.9	3.5 - 200	ug/kg		-
Volatiles	1,2,4-Trichlorobenzene	120-82-1	0 / 158	-	-	0.16 - 8.9	3.5 - 200	ug/kg		-
Volatiles	1,3-Dichlorobenzene	541-73-1	0 / 158	-	-	0.11 - 5.9	3.5 - 200	ug/kg		-
Volatiles	Hexachlorobutadiene	87-68-3	1 / 158	100 J	100 J	0.12 - 6.9	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	1,2-Dichlorobenzene	95-50-1	0 / 158	-	-	0.08 - 4.4	3.5 - 200	ug/kg		-
Volatiles	Isopropyltoluene	99-87-6	1 / 158	130 J	130 J	0.1 - 5.4	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	Ethylbenzene	100-41-4	28 / 158	0.06 J	610	0.05 - 3	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	Styrene	100-42-5	0 / 158	-	-	0.09 - 4.9	3.5 - 200	ug/kg		-
Volatiles	cis-1,3-Dichloropropene	10061-01-5	0 / 158	-	-	0.14 - 7.9	3.5 - 200	ug/kg		-
Volatiles	trans-1,3-Dichloropropene	10061-02-6	0 / 158	-	-	0.15 - 8.4	3.5 - 200	ug/kg		-
Volatiles	N-Propylbenzene	103-65-1	3 / 158	0.24 J	910	0.06 - 3.5	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	N-Butylbenzene	104-51-8	3 / 158	2.2 J	600	0.11 - 5.9	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	4-Chlorotoluene	106-43-4	0 / 158	-	-	0.12 - 6.9	3.5 - 200	ug/kg		-
Volatiles	1,2-Dibromoethane	106-93-4	0 / 158	-	-	0.15 - 8.4	3.5 - 200	ug/kg		-
Volatiles	1,2-Dichloroethane	107-06-2	1 / 158	2.3 J	2.3 J	0.13 - 7.4	3.5 - 200	ug/kg	SL-094-SA5A	9 - 10
Volatiles	4-Methyl-2-Pentanone	108-10-1	0 / 158	-	-	0.34 - 19	7 - 400	ug/kg		-
Volatiles	1,3,5-Trimethylbenzene	108-67-8	0 / 158	-	-	0.09 - 4.9	3.5 - 200	ug/kg		-
Volatiles	Bromobenzene	108-86-1	0 / 158	-	-	0.11 - 6.4	3.5 - 200	ug/kg		-
Volatiles	Toluene	108-88-3	22 / 158	0.08 J	2.3 J	0.07 - 4	3.5 - 200	ug/kg	SL-118-SA5A	2.5 - 3.5
Volatiles	Chlorobenzene	108-90-7	0 / 158	-	-	0.1 - 5.4	3.5 - 200	ug/kg		-
Volatiles	2-Chloroethyl Vinyl Ether	110-75-8	0 / 158	-	-	0.26 - 15	3.5 - 200	ug/kg		-
Volatiles	1,4-Dioxane	123-91-1	0 / 158	-	-	4.3 - 7.6	13 - 23	ug/kg		-
Volatiles	Dibromochloromethane	124-48-1	0 / 158	-	-	0.17 - 9.9	3.5 - 200	ug/kg		-
Volatiles	Tetrachloroethene	127-18-4	0 / 158	-	-	0.17 - 9.9	3.5 - 200	ug/kg		-
Volatiles	sec-Butylbenzene	135-98-8	4 / 158	0.14 J	990	0.05 - 3	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	1,3-Dichloropropane	142-28-9	0 / 158	-	-	0.07 - 4	3.5 - 200	ug/kg		-
Volatiles	cis-1,2-Dichloroethene	156-59-2	0 / 158	-	-	0.17 - 9.4	3.5 - 200	ug/kg		-
Volatiles	trans-1,2-Dichloroethene	156-60-5	0 / 158	-	-	0.11 - 5.9	3.5 - 200	ug/kg		-
Volatiles	Methyl tert-Butyl Ether	1634-04-4	0 / 158	-	-	0.18 - 10	3.5 - 200	ug/kg		-
Volatiles	m,p-Xylene	179601-23-1	25 / 158	0.18 J	16 J	0.15 - 8.4	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	Carbon tetrachloride	56-23-5	0 / 158	-	-	0.12 - 6.9	3.5 - 200	ug/kg		-
Volatiles	1,1-Dichloropropene	563-58-6	0 / 158	-	-	0.11 - 6.4	3.5 - 200	ug/kg		-
Volatiles	2-Hexanone	591-78-6	0 / 158	-	-	1.4 - 79	7 - 400	ug/kg		-
Volatiles	2,2-Dichloropropane	594-20-7	0 / 158	-	-	0.15 - 8.4	3.5 - 200	ug/kg		-
Volatiles	1,1,1,2-Tetrachloroethane	630-20-6	0 / 158	-	-	0.1 - 5.4	3.5 - 200	ug/kg		-
Volatiles	Acetone	67-64-1	10 / 158	6.7 J	71	5.8 - 330	7 - 400	ug/kg	SL-236-SA5A	4 - 5
Volatiles	Chloroform	67-66-3	0 / 158	-	-	0.11 - 5.9	3.5 - 200	ug/kg		-
Volatiles	Benzene	71-43-2	5 / 158	0.11 J	8.4 J	0.09 - 4.9	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	1,1,1-Trichloroethane	71-55-6	0 / 158	-	-	0.17 - 9.9	3.5 - 200	ug/kg		-

Table 3-2
Summary of Analytical Results for Chemicals - Validated Data
Subsurface Soils
HSA-5A

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Volatiles	Bromomethane	74-83-9	0 / 158	-	-	0.22 - 12	3.5 - 200	ug/kg		-
Volatiles	Chloromethane	74-87-3	0 / 158	-	-	0.29 - 16	3.5 - 200	ug/kg		-
Volatiles	Dibromomethane	74-95-3	0 / 158	-	-	0.21 - 12	3.5 - 200	ug/kg		-
Volatiles	Bromochloromethane	74-97-5	0 / 158	-	-	0.29 - 16	3.5 - 200	ug/kg		-
Volatiles	Chloroethane	75-00-3	0 / 158	-	-	0.11 - 6.4	3.5 - 200	ug/kg		-
Volatiles	Vinyl Chloride	75-01-4	0 / 158	-	-	0.17 - 9.9	3.5 - 200	ug/kg		-
Volatiles	Methylene chloride	75-09-2	12 / 158	0.70	13	0.21 - 12	3.5 - 200	ug/kg	SL-156-SA5A	3 - 4
Volatiles	Bromoform	75-25-2	0 / 158	-	-	0.35 - 20	3.5 - 200	ug/kg		-
Volatiles	Bromodichloromethane	75-27-4	1 / 158	50 J	50 J	0.07 - 4	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	1,1-Dichloroethane	75-34-3	0 / 158	-	-	0.09 - 4.9	3.5 - 200	ug/kg		-
Volatiles	1,1-Dichloroethene	75-35-4	0 / 158	-	-	0.34 - 19	3.5 - 200	ug/kg		-
Volatiles	Trichlorofluoromethane	75-69-4	0 / 158	-	-	0.25 - 14	3.5 - 200	ug/kg		-
Volatiles	Dichlorodifluoromethane	75-71-8	0 / 158	-	-	0.11 - 5.9	3.5 - 200	ug/kg		-
Volatiles	Freon 113a	75-88-7	0 / 158	-	-	0.44 - 25	4.4 - 250	ug/kg		-
Volatiles	Freon 113	76-13-1	0 / 158	-	-	0.1 - 5.4	3.5 - 200	ug/kg		-
Volatiles	1,2-Dichloropropane	78-87-5	0 / 158	-	-	0.15 - 8.4	3.5 - 200	ug/kg		-
Volatiles	2-Butanone	78-93-3	5 / 158	1.7 J	11	1.1 - 60	7 - 400	ug/kg	SL-236-SA5A	4 - 5
Volatiles	1,1,2-Trichloroethane	79-00-5	0 / 158	-	-	0.24 - 13	3.5 - 200	ug/kg		-
Volatiles	Trichloroethene	79-01-6	1 / 158	0.16 J	0.16 J	0.13 - 7.4	3.5 - 200	ug/kg	SL-158-SA5A	4 - 5
Volatiles	1,1,2,2-Tetrachloroethane	79-34-5	0 / 158	-	-	0.2 - 11	3.5 - 200	ug/kg		-
Volatiles	Chlorotrifluoroethene	79-38-9	0 / 158	-	-	0.44 - 25	4.4 - 250	ug/kg		-
Volatiles	1,2,3-Trichlorobenzene	87-61-6	1 / 158	85 J	85 J	0.12 - 6.9	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	o-Xylene	95-47-6	3 / 158	0.19 J	13 J	0.15 - 8.4	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	2-Chlorotoluene	95-49-8	0 / 158	-	-	0.12 - 6.9	3.5 - 200	ug/kg		-
Volatiles	1,2,4-Trimethylbenzene	95-63-6	1 / 158	32 J	32 J	0.35 - 20	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	1,2-Dibromo-3-chloropropane	96-12-8	0 / 158	-	-	0.61 - 35	3.5 - 200	ug/kg		-
Volatiles	1,2,3-Trichloropropane	96-18-4	0 / 158	-	-	0.29 - 16	3.5 - 200	ug/kg		-
Volatiles	tert-Butylbenzene	98-06-6	1 / 158	47 J	47 J	0.14 - 7.9	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	Isopropylbenzene	98-82-8	4 / 158	0.21 J	490	0.05 - 3	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5

ug/kg - microgram per kilogram
mg/kg - milligram per kilogram
ng/kg - nanogram per kilogram
% - percent
J - Result is an estimated value

Table 3-3
Summary of Analytical Results for Chemicals - Validated Data
Combined Subsurface and Surface Soils
HSA-5A

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Inorganic	Nitrate	14797-55-8	91 / 95	0.92 J	18.5	0.83 - 1	1.6 - 1.9	mg/kg	SL-093-SA5A	3.5 - 4.5
Inorganic	Fluoride	16984-48-8	271 / 299	0.88 J	21.6 J	0.82 - 1.1	1 - 1.4	mg/kg	SL-204-SA5A	4 - 5
Inorganic	Cyanide	57-12-5	0 / 95	-	-	0.18 - 0.23	0.5 - 0.64	mg/kg		
Inorganic	Aluminum	7429-90-5	299 / 299	3460	37200	4.97 - 7.04	19.7 - 28	mg/kg	SL-114-SA5A	4 - 5
Inorganic	Iron	7439-89-6	299 / 299	5100	52800	4.65 - 29.3	19.7 - 125	mg/kg	SL-197-SA5A	8 - 9
Inorganic	Lead	7439-92-1	299 / 299	2.22 J	2890 J	0.0105 - 0.595	0.202 - 11.4	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Lithium	7439-93-2	299 / 299	2.6	64.4	0.22 - 0.31	2 - 2.8	mg/kg	SL-197-SA5A	8 - 9
Inorganic	Magnesium	7439-95-4	299 / 299	1020	11900	2.51 - 3.56	9.87 - 14	mg/kg	SL-197-SA5A	8 - 9
Inorganic	Manganese	7439-96-5	299 / 299	87.4 J	730	0.077 - 0.109	0.494 - 0.7	mg/kg	SL-253-SA5A	4 - 5
Inorganic	Mercury	7439-97-6	154 / 299	0.0031 J	4.82	0.0028 - 0.0299	0.0992 - 1.04	mg/kg	SL-136-SA5A	0 - 0.5
Inorganic	Molybdenum	7439-98-7	297 / 299	0.166	19.5 J	0.0504 - 0.0687	0.101 - 0.137	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Nickel	7440-02-0	299 / 299	5.79 J	538 J	0.101 - 0.572	0.403 - 2.29	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Potassium	7440-09-7	299 / 299	575 J	6680 J	17.8 - 25.2	49.4 - 70	mg/kg	SL-258-SA5A	4 - 5
Inorganic	Silver	7440-22-4	260 / 299	0.0143 J	59.2 J	0.0121 - 0.0165	0.101 - 0.137	mg/kg	SL-042-SA5A	0 - 0.5
Inorganic	Sodium	7440-23-5	294 / 299	42.0 J	1650	36.8 - 52.2	98.7 - 140	mg/kg	SL-204-SA5A	4 - 5
Inorganic	Strontium	7440-24-6	297 / 299	8.82	98.4	0.0612 - 0.0868	0.494 - 0.7	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Thallium	7440-28-0	270 / 299	0.0581 J	0.580 J	0.0302 - 0.172	0.101 - 0.572	mg/kg	SL-077-SA5A	0 - 0.5
Inorganic	Tin	7440-31-5	8 / 299	2.09	42.8	0.987 - 1.4	9.87 - 14	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Titanium	7440-32-6	299 / 299	254	1690	0.375 - 0.532	0.987 - 1.4	mg/kg	SL-244-SA5A	9 - 10
Inorganic	Antimony	7440-36-0	225 / 299	0.0667 J	2.45 J	0.0605 - 0.0824	0.202 - 0.275	mg/kg	SL-093-SA5A	3.5 - 4.5
Inorganic	Arsenic	7440-38-2	299 / 299	2.98	30.4 J	0.0806 - 0.11	0.403 - 0.549	mg/kg	SL-076-SA5A	0 - 0.5
Inorganic	Beryllium	7440-41-7	297 / 299	0.174 J	1.86 J	0.0161 - 0.0456	0.101 - 0.285	mg/kg	SL-077-SA5A	0 - 0.5
Inorganic	Barium	7440-39-3	299 / 299	23.4	781 J	0.109 - 0.654	0.403 - 2.42	mg/kg	SL-189-SA5A	5 - 6
Inorganic	Boron	7440-42-8	254 / 299	1.07 J	27.7	0.879 - 1.25	4.94 - 7	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Cadmium	7440-43-9	259 / 299	0.0423 J	18.6 J	0.0403 - 0.0549	0.101 - 0.137	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Chromium	7440-47-3	299 / 299	10.7	693 J	0.121 - 0.687	0.403 - 2.29	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Cobalt	7440-48-4	299 / 299	2.38 J	45.6 J	0.0202 - 0.0275	0.101 - 0.137	mg/kg	SL-076-SA5A	0 - 0.5
Inorganic	Copper	7440-50-8	299 / 299	3.82 J	699 J	0.0665 - 0.378	0.403 - 2.29	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Vanadium	7440-62-2	299 / 299	15.7	82.7 J	0.0222 - 0.0302	0.101 - 0.137	mg/kg	SL-077-SA5A	0 - 0.5
Inorganic	Zinc	7440-66-6	299 / 299	18.8	1100	0.564 - 6.96	3.02 - 37.3	mg/kg	SL-113-SA5A	14 - 15
Inorganic	Zirconium	7440-67-7	224 / 299	0.917 J	16.1	0.829 - 1.18	4.94 - 7	mg/kg	SL-120-SA5A	0 - 0.5
Inorganic	Calcium	7440-70-2	298 / 299	1100	61200	6.05 - 8.59	19.7 - 28	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Phosphorus	7723-14-0	299 / 299	62.4 J	835 J	0.553 - 0.784	9.87 - 14	mg/kg	SL-195-SA5A	0 - 0.2
Inorganic	Selenium	7782-49-2	260 / 299	0.0441 J	0.554 J	0.0403 - 0.0549	0.403 - 0.549	mg/kg	SL-048-SA5A	0 - 0.5
Inorganic	Chromium VI	18540-29-9	201 / 299	0.23 J	6.6	0.21 - 0.28	1 - 1.4	mg/kg	SL-109-SA5A	0 - 0.5
Inorganic	Perchlorate	14797-73-0	2 / 299	13.8 J	25.7 J	9.2 - 12.6	30.8 - 42	ug/kg	SL-035-SA5A	4 - 5
Inorganic	Perchlorate	14797-73-0	1 / 41	8.6	8.6	2.2 - 2.7	5.2 - 6.5	ug/kg	SL-215-SA5A	4 - 5
Misc. Organics	Ethanol	64-17-5	0 / 95	-	-	100 - 130	520 - 650	ug/kg		
Misc. Organics	Methanol	67-56-1	4 / 95	150 J	450 J	100 - 230	520 - 650	ug/kg	SL-249-SA5A	2.5 - 3.5
Misc. Organics	2-Propanol	67-63-0	0 / 95	-	-	100 - 130	520 - 650	ug/kg		
Misc. Organics	Ethylene Glycol	107-21-1	0 / 95	-	-	5.2 - 7.4	11 - 16	mg/kg		
Misc. Organics	Diethylene Glycol	111-46-6	0 / 95	-	-	5.2 - 9.5	11 - 16	mg/kg		
Misc. Organics	Propylene glycol	57-55-6	1 / 95	8.9 J	8.9 J	5.2 - 6.5	11 - 16	mg/kg	SL-189-SA5A	8.5 - 9.5
Misc. Organics	o-Terphenyl	84-15-1	0 / 95	-	-	1.6 - 22	3.6 - 51	mg/kg		
Misc. Organics	m-Terphenyl	92-06-8	0 / 95	-	-	1.6 - 22	3.6 - 51	mg/kg		
Misc. Organics	p-Terphenyl	92-94-4	0 / 95	-	-	1.6 - 22	3.6 - 51	mg/kg		
Misc. Organics	Formaldehyde	50-00-0	8 / 95	680 J	21000	620 - 6900	1600 - 17000	ug/kg	SL-189-SA5A	8.5 - 9.5

Table 3-3
Summary of Analytical Results for Chemicals - Validated Data
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Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Misc. Organics	2,6-Dinitrotoluene	606-20-2	0 / 95	-	-	40 - 51	120 - 150	ug/kg		
Misc. Organics	2,4,6-Trinitrotoluene	118-96-7	0 / 95	-	-	40 - 51	120 - 150	ug/kg		
Misc. Organics	RDX	121-82-4	0 / 95	-	-	50 - 69	120 - 150	ug/kg		
Misc. Organics	4-Amino-2,6-Dinitrotoluene	19406-51-0	0 / 95	-	-	60 - 76	120 - 150	ug/kg		
Misc. Organics	HMX	2691-41-0	1 / 95	220 J	220 J	100 - 130	300 - 380	ug/kg	SL-242-SA5A	2.5 - 3.5
Misc. Organics	2-Amino-4,6-Dinitrotoluene	35572-78-2	0 / 95	-	-	40 - 51	120 - 150	ug/kg		
Misc. Organics	Tetryl	479-45-8	0 / 95	-	-	61 - 78	120 - 150	ug/kg		
Misc. Organics	Nitroglycerin	55-63-0	0 / 95	-	-	800 - 1000	2400 - 3000	ug/kg		
Misc. Organics	2,6-Diamino-4-nitrotoluene	59229-75-3	0 / 95	-	-	80 - 100	240 - 300	ug/kg		
Misc. Organics	2,4-Diamino-6-nitrotoluene	6629-29-4	1 / 95	98 J	98 J	80 - 100	240 - 300	ug/kg	SL-189-SA5A	8.5 - 9.5
Misc. Organics	PETN	78-11-5	0 / 95	-	-	800 - 1000	2400 - 3000	ug/kg		
Misc. Organics	2-Nitrotoluene	88-72-2	0 / 95	-	-	80 - 100	120 - 150	ug/kg		
Misc. Organics	3-Nitrotoluene	99-08-1	0 / 95	-	-	100 - 130	120 - 150	ug/kg		
Misc. Organics	1,3,5-Trinitrobenzene	99-35-4	0 / 95	-	-	40 - 51	120 - 150	ug/kg		
Misc. Organics	4-Nitrotoluene	99-99-0	0 / 95	-	-	80 - 100	120 - 150	ug/kg		
Misc. Organics	2,4-Dinitrotoluene	121-14-2	0 / 95	-	-	40 - 51	120 - 150	ug/kg		
Misc. Organics	Nitrobenzene	98-95-3	0 / 95	-	-	40 - 51	120 - 150	ug/kg		
Misc. Organics	m-Dinitrobenzene	99-65-0	0 / 95	-	-	40 - 51	120 - 150	ug/kg		
PCBs and Dioxins	2,3,7,8-TCDD	1746-01-6	137 / 299	0.0106 J	7.81	0.00836 - 0.207	1.01 - 1.4	ng/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	1,2,3,7,8,9-HxCDD	19408-74-3	158 / 299	0.0786 J	82.1	0.00767 - 0.472	5.05 - 7	ng/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	OCDD	3268-87-9	198 / 299	1.50 J	75800 J	0.0151 - 2.52	10.1 - 14	ng/kg	SL-016-SA5A	0 - 0.5
PCBs and Dioxins	1,2,3,4,6,7,8-HpCDD	35822-46-9	166 / 299	0.923 J	6140 J	0.0114 - 1.22	5.05 - 7	ng/kg	SL-016-SA5A	0 - 0.5
PCBs and Dioxins	OCDF	39001-02-0	143 / 299	0.846 J	910	0.0101 - 0.723	10.1 - 14	ng/kg	SL-042-SA5A	0 - 0.5
PCBs and Dioxins	1,2,3,4,7,8-HxCDD	39227-28-6	149 / 299	0.0220 J	45.1	0.00851 - 0.478	5.05 - 7	ng/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	1,2,3,7,8-PeCDD	40321-76-4	119 / 299	0.0233 J	41.0	0.0083 - 0.304	5.05 - 7	ng/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	2,3,7,8-TCDF	51207-31-9	117 / 299	0.00904 J	56.5	0.00655 - 0.515	1.01 - 1.4	ng/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	1,2,3,4,7,8,9-HpCDF	55673-89-7	88 / 299	0.166 J	136 J	0.00518 - 0.592	5.05 - 7	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	2,3,4,7,8-PeCDF	57117-31-4	83 / 299	0.283 J	187 J	0.0042 - 0.312	5.05 - 7	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	1,2,3,7,8-PeCDF	57117-41-6	108 / 299	0.0137 J	89.7 J	0.00419 - 0.336	5.05 - 7	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	1,2,3,6,7,8-HxCDF	57117-44-9	97 / 299	0.0601 J	197 J	0.00485 - 0.594	5.05 - 7	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	1,2,3,6,7,8-HxCDD	57653-85-7	170 / 299	0.0181 J	104	0.00836 - 0.507	5.05 - 7	ng/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	2,3,4,6,7,8-HxCDF	60851-34-5	94 / 299	0.115 J	369 J	0.00477 - 0.393	5.05 - 7	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	1,2,3,4,6,7,8-HpCDF	67562-39-4	135 / 299	0.416 J	964 J	0.00397 - 0.793	5.05 - 7	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	1,2,3,4,7,8-HxCDF	70648-26-9	121 / 299	0.0877 J	225 J	0.0054 - 0.726	5.05 - 7	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	1,2,3,7,8,9-HxCDF	72918-21-9	102 / 299	0.0226 J	79.8 J	0.00496 - 0.423	5.05 - 7	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	Aroclor 1260	11096-82-5	108 / 299	0.48 J	2300	0.4 - 83	1.7 - 360	ug/kg	SL-178-SA5A	0 - 0.4
PCBs and Dioxins	Aroclor 1254	11097-69-1	67 / 299	0.54 J	150	0.34 - 70	1.7 - 360	ug/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	Aroclor 1268	11100-14-4	9 / 299	0.87 J	37	0.34 - 70	1.7 - 360	ug/kg	SL-009-SA5A	0 - 0.5
PCBs and Dioxins	Aroclor 1221	11104-28-2	0 / 299	-	-	0.34 - 70	1.7 - 360	ug/kg		
PCBs and Dioxins	Aroclor 5460	11126-42-4	98 / 299	1.2 J	210	1 - 210	3.4 - 700	ug/kg	SL-217-SA5A	0 - 0.5
PCBs and Dioxins	Aroclor 1232	11141-16-5	0 / 299	-	-	0.34 - 70	1.7 - 360	ug/kg		
PCBs and Dioxins	Aroclor 5442	12642-23-8	1 / 299	2.0 J	2.0 J	1 - 210	3.4 - 700	ug/kg	SL-006-SA5A	2 - 3
PCBs and Dioxins	Aroclor 1248	12672-29-6	10 / 299	0.71 J	15	0.34 - 70	1.7 - 360	ug/kg	SL-119-SA5A	0 - 0.5
PCBs and Dioxins	Aroclor 1016	12674-11-2	0 / 299	-	-	0.34 - 70	1.7 - 360	ug/kg		
PCBs and Dioxins	Aroclor 1262	37324-23-5	0 / 299	-	-	0.34 - 70	1.7 - 360	ug/kg		
PCBs and Dioxins	Aroclor 1242	53469-21-9	0 / 299	-	-	0.34 - 70	1.7 - 360	ug/kg		
PCBs and Dioxins	Aroclor 5432	63496-31-1	0 / 299	-	-	1 - 210	3.4 - 700	ug/kg		

Table 3-3
Summary of Analytical Results for Chemicals - Validated Data
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Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Pesticides	Dichlorprop	120-36-5	11 / 120	1.0 J	9.5	0.84 - 3.2	1.8 - 3.2	ug/kg	SL-051-SA5A	0 - 0.5
Pesticides	Dicamba	1918-00-9	19 / 120	0.46 J	2.2	0.41 - 0.56	1.2 - 1.7	ug/kg	SL-051-SA5A	0 - 0.5
Pesticides	2,2-Dichlor-Propionic Acid	75-99-0	0 / 120	-	-	4.5 - 6.2	9.2 - 13	ug/kg		
Pesticides	Dinitrobutyl Phenol	88-85-7	0 / 120	-	-	0.82 - 3.5	2.5 - 3.5	ug/kg		
Pesticides	MCPP	93-65-2	12 / 120	160 J	750	79 - 1400	260 - 1400	ug/kg	SL-105-SA5A	0 - 0.5
Pesticides	2,4,5-TP	93-72-1	24 / 120	0.12 J	0.83	0.077 - 0.57	0.17 - 0.57	ug/kg	SL-194-SA5A	0 - 0.3
Pesticides	2,4,5-T	93-76-5	7 / 120	0.17 J	1.0	0.084 - 1	0.17 - 1	ug/kg	SL-194-SA5A	0 - 0.3
Pesticides	MCPA	94-74-6	45 / 120	110 J	2300	78 - 1500	260 - 1500	ug/kg	SL-253-SA5A	0 - 0.5
Pesticides	2,4-D	94-75-7	2 / 120	1.5 J	2.0 J	1.2 - 1.7	3.7 - 5	ug/kg	SL-253-SA5A	0 - 0.5
Pesticides	2,4 DB	94-82-6	23 / 120	1.1 J	38	0.66 - 39	1.8 - 39	ug/kg	SL-194-SA5A SL-195-SA5A	0 - 0.3 0 0.2
Pesticides	Toxaphene	8001-35-2	0 / 120	-	-	2.4 - 120	7.1 - 350	ug/kg		
Pesticides	Heptachlor Epoxide	1024-57-3	10 / 120	0.048 J	0.58 J	0.037 - 1.8	0.17 - 8.8	ug/kg	SL-197-SA5A	0 - 0.5
Pesticides	Endosulfan Sulfate	1031-07-8	7 / 120	0.10 J	2.1	0.071 - 3.5	0.35 - 18	ug/kg	SL-197-SA5A	0 - 0.5
Pesticides	Mirex	2385-85-5	22 / 120	0.079 J	30	0.071 - 44	0.35 - 44	ug/kg	SL-031-SA5A	0 - 0.5
Pesticides	Aldrin	309-00-2	1 / 120	6.5	6.5	0.068 - 3.5	0.17 - 8.8	ug/kg	SL-037-SA5A	0 - 0.5
Pesticides	Alpha-BHC	319-84-6	2 / 120	0.13 J	0.21	0.035 - 1.8	0.17 - 8.8	ug/kg	SL-064-SA5A	0 - 0.5
Pesticides	Beta-BHC	319-85-7	10 / 120	0.19	1.8	0.062 - 3.2	0.17 - 8.8	ug/kg	SL-104-SA5A	0 - 0.5
Pesticides	Delta-BHC	319-86-8	9 / 120	0.046 J	0.13 J	0.037 - 1.9	0.17 - 8.8	ug/kg	SL-042-SA5A	0 - 0.5
Pesticides	Endosulfan II	33213-65-9	10 / 120	0.074 J	1.0	0.071 - 6.7	0.35 - 18	ug/kg	SL-217-SA5A	0 - 0.5
Pesticides	4,4'-DDT	50-29-3	81 / 120	0.082 J	52	0.071 - 130	0.37 - 130	ug/kg	SL-217-SA5A	0 - 0.5
Pesticides	Endrin Ketone	53494-70-5	15 / 120	0.083 J	0.99	0.068 - 3.5	0.35 - 18	ug/kg	SL-217-SA5A	0 - 0.5
Pesticides	Chlordane	57-74-9	0 / 120	-	-	0.82 - 42	3.5 - 180	ug/kg		
Pesticides	Gamma-BHC (Lindane)	58-89-9	5 / 120	0.052 J	0.15 J	0.035 - 1.8	0.17 - 8.8	ug/kg	SL-095-SA5A	0 - 0.5
Pesticides	Dieldrin	60-57-1	27 / 120	0.085 J	5.9	0.071 - 30	0.35 - 30	ug/kg	SL-257-SA5A	0 - 0.5
Pesticides	Endrin	72-20-8	0 / 120	-	-	0.068 - 15	0.35 - 18	ug/kg		
Pesticides	Methoxychlor	72-43-5	2 / 120	0.49 J	0.66 J	0.35 - 170	1.7 - 170	ug/kg	SL-077-SA5A	0 - 0.5
Pesticides	4,4'-DDD	72-54-8	16 / 120	0.087 J	9.3	0.071 - 9.4	0.35 - 18	ug/kg	SL-197-SA5A	0 - 0.5
Pesticides	4,4'-DDE	72-55-9	52 / 120	0.081 J	39	0.071 - 3.5	0.37 - 18	ug/kg	SL-217-SA5A	0 - 0.5
Pesticides	Endrin Aldehyde	7421-93-4	36 / 120	0.073 J	2.7	0.071 - 64	0.35 - 64	ug/kg	SL-217-SA5A	0 - 0.5
Pesticides	Heptachlor	76-44-8	7 / 120	0.090 J	1.2 J	0.062 - 3.2	0.17 - 8.8	ug/kg	SL-002-SA5A	0 - 0.5
Pesticides	Endosulfan I	959-98-8	0 / 120	-	-	0.045 - 2.3	0.17 - 8.8	ug/kg		
Semivolatiles	N-Nitrosodimethylamine	62-75-9	37 / 95	21.4 J	465	17.2 - 216	34.4 - 432	ng/kg	SL-092-SA5A	3 - 4
Semivolatiles	N-Nitrosodimethylamine	62-75-9	0 / 299	-	-	0.68 - 16	1.7 - 40	ug/kg		
Semivolatiles	2,4-Dinitrotoluene	121-14-2	0 / 299	-	-	34 - 400	170 - 2000	ug/kg		
Semivolatiles	Nitrobenzene	98-95-3	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	1,4-Dichlorobenzene	106-46-7	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	1,2,4-Trichlorobenzene	120-82-1	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	1,3-Dichlorobenzene	541-73-1	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	Hexachlorobutadiene	87-68-3	0 / 299	-	-	68 - 800	170 - 2000	ug/kg		
Semivolatiles	1,2-Dichlorobenzene	95-50-1	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	4-Nitroaniline	100-01-6	0 / 299	-	-	68 - 800	170 - 2000	ug/kg		
Semivolatiles	4-Nitrophenol	100-02-7	0 / 299	-	-	170 - 2000	510 - 6000	ug/kg		
Semivolatiles	4-Bromophenyl Phenyl Ether	101-55-3	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	2,4-Dimethylphenol	105-67-9	0 / 299	-	-	34 - 400	170 - 2000	ug/kg		
Semivolatiles	4-Methylphenol	106-44-5	0 / 299	-	-	34 - 400	170 - 2000	ug/kg		
Semivolatiles	4-Chloroaniline	106-47-8	0 / 299	-	-	68 - 800	170 - 2000	ug/kg		

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Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Semivolatiles	3,5-Dimethylphenol	108-68-9	0 / 299	-	-	34 - 400	170 - 2000	ug/kg		
Semivolatiles	Phenol	108-95-2	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	Bis(2-Chloroethyl) ether	111-44-4	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	Bis(2-Chloroethoxy) methane	111-91-1	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	Bis(2-Ethylhexyl) phthalate	117-81-7	81 / 102	18 J	770	18 - 200	350 - 4000	ug/kg	SL-066-SA5A	0 - 0.5
Semivolatiles	Bis(2-Ethylhexyl) phthalate	117-81-7	71 / 199	7.2 J	6000	6.1 - 680	18 - 2000	ug/kg	SL-029-SA5A	0 - 0.5
Semivolatiles	Di-N-Octyl Phthalate	117-84-0	3 / 57	92 J	230	18 - 190	180 - 1900	ug/kg	SL-195-SA5A	0 - 0.2
Semivolatiles	Di-N-Octyl Phthalate	117-84-0	68 / 242	6.6 J	870	6.1 - 140	18 - 430	ug/kg	SL-194-SA5A	0 - 0.3
Semivolatiles	Hexachlorobenzene	118-74-1	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	Anthracene	120-12-7	5 / 5	25 J	99 J	18 - 20	180 - 200	ug/kg	SL-178-SA5A	0 - 0.4
Semivolatiles	Anthracene	120-12-7	70 / 294	0.35 J	890	0.34 - 8	1.7 - 40	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	2,4-Dichlorophenol	120-83-2	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	1,2-Diphenylhydrazine	122-66-7	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	Pyrene	129-00-0	19 / 19	19 J	1600	18 - 21	180 - 210	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Pyrene	129-00-0	103 / 281	0.74 J	2500	0.68 - 42	1.7 - 100	ug/kg	SL-191-SA5A	0 - 0.5
Semivolatiles	Dimethylphthalate	131-11-3	1 / 29	180	180	18 - 190	180 - 1900	ug/kg	SL-121-SA5A	0 - 0.5
Semivolatiles	Dimethylphthalate	131-11-3	3 / 270	8.0 J	15 J	6.1 - 140	18 - 430	ug/kg	SL-181-SA5A	0 - 0.5
Semivolatiles	Dibenzofuran	132-64-9	6 / 299	19 J	110 J	17 - 200	170 - 2000	ug/kg	SL-194-SA5A	0 - 0.3
Semivolatiles	Benzo(g,h,i)perylene	191-24-2	20 / 20	21 J	560	18 - 21	180 - 210	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Benzo(g,h,i)perylene	191-24-2	97 / 279	0.75 J	230	0.68 - 16	1.7 - 40	ug/kg	SL-189-SA5A	5 - 6
Semivolatiles	Indeno(1,2,3-Cd)Pyrene	193-39-5	11 / 11	21 J	590	18 - 21	180 - 210	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Indeno(1,2,3-Cd)Pyrene	193-39-5	79 / 288	0.74 J	230	0.68 - 16	1.7 - 40	ug/kg	SL-188-SA5A	0 - 0.5
Semivolatiles	Benzo(b)fluoranthene	205-99-2	10 / 10	22 J	1500	18 - 20	180 - 200	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Benzo(b)fluoranthene	205-99-2	123 / 289	0.78 J	1600	0.68 - 16	1.7 - 40	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	Fluoranthene	206-44-0	19 / 19	19 J	1900	18 - 23	180 - 230	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Fluoranthene	206-44-0	108 / 280	0.74 J	2900	0.68 - 42	1.7 - 100	ug/kg	SL-191-SA5A	0 - 0.5
Semivolatiles	Benzo(k)fluoranthene	207-08-9	8 / 8	26 J	580	18 - 20	180 - 200	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Benzo(k)fluoranthene	207-08-9	85 / 291	0.75 J	660	0.68 - 16	1.7 - 40	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	Acenaphthylene	208-96-8	45 / 299	0.35 J	150	0.34 - 8	1.7 - 40	ug/kg	SL-189-SA5A	5 - 6
Semivolatiles	Chrysene	218-01-9	21 / 21	20 J	1300	18 - 21	180 - 210	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Chrysene	218-01-9	123 / 278	0.38 J	1200	0.34 - 8	1.7 - 40	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	bis(2-Chloroisopropyl) ether	39638-32-9	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	Benzo(a)pyrene	50-32-8	18 / 18	20	800	18 - 20	180 - 200	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Benzo(a)pyrene	50-32-8	93 / 281	0.76 J	870	0.68 - 16	1.7 - 40	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	2,4-Dinitrophenol	51-28-5	0 / 299	-	-	340 - 4000	1000 - 12000	ug/kg		
Semivolatiles	4,6-Dinitro-2-Methylphenol	534-52-1	0 / 299	-	-	170 - 2000	510 - 6000	ug/kg		
Semivolatiles	Dibenzo(a,h)anthracene	53-70-3	6 / 6	22 J	180 J	18 - 20	180 - 200	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Dibenzo(a,h)anthracene	53-70-3	45 / 293	0.72 J	78	0.68 - 16	1.7 - 40	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	Benzo(a)anthracene	56-55-3	14 / 14	18 J	910	18 - 21	180 - 210	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Benzo(a)anthracene	56-55-3	81 / 285	0.78 J	1300	0.68 - 16	1.7 - 40	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	4-Chloro-3-Methylphenol	59-50-7	0 / 298	-	-	34 - 400	170 - 2000	ug/kg		
Semivolatiles	N-Nitroso-Di-N-Propylamine	621-64-7	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	Aniline	62-53-3	0 / 299	-	-	170 - 2000	510 - 6000	ug/kg		
Semivolatiles	Benzoic Acid	65-85-0	2 / 299	240 J	320 J	170 - 2000	510 - 6000	ug/kg	SL-197-SA5A	0 - 0.5
Semivolatiles	Hexachloroethane	67-72-1	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	4-Chlorophenyl Phenylether	7005-72-3	0 / 299	-	-	34 - 400	170 - 2000	ug/kg		
Semivolatiles	Hexachlorocyclopentadiene	77-47-4	0 / 299	-	-	170 - 2000	510 - 6000	ug/kg		

Table 3-3
Summary of Analytical Results for Chemicals - Validated Data
Combined Subsurface and Surface Soils
HSA-5A

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Semivolatiles	Isophorone	78-59-1	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	Acenaphthene	83-32-9	3 / 3	38 J	74 J	18 - 19	180 - 190	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	Acenaphthene	83-32-9	9 / 296	0.78 J	990	0.68 - 16	1.7 - 40	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	Diethylphthalate	84-66-2	0 / 29	-	-	18 - 190	180 - 1900	ug/kg		
Semivolatiles	Diethylphthalate	84-66-2	17 / 270	7.0 J	11 J	6.1 - 140	18 - 430	ug/kg	SL-072-SA5A	4 - 5
Semivolatiles	Di-n-Butylphthalate	84-74-2	5 / 115	32 J	780	17 - 190	170 - 1900	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	Di-n-Butylphthalate	84-74-2	36 / 183	9.5 J	2900	6.1 - 360	18 - 1100	ug/kg	SL-186-SA5A	0 - 0.5
Semivolatiles	Phenanthrene	85-01-8	13 / 13	29 J	770	18 - 23	180 - 230	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Phenanthrene	85-01-8	92 / 286	0.74 J	4700	0.68 - 16	1.7 - 40	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	Butylbenzylphthalate	85-68-7	8 / 41	21 J	400	18 - 190	180 - 1900	ug/kg	SL-119-SA5A	0 - 0.5
Semivolatiles	Butylbenzylphthalate	85-68-7	30 / 257	6.9 J	140	6.1 - 140	18 - 430	ug/kg	SL-121-SA5A	0 - 0.5
Semivolatiles	N-Nitrosodiphenylamine	86-30-6	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	Fluorene	86-73-7	5 / 5	26 J	2300	18 - 200	180 - 2000	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	Fluorene	86-73-7	13 / 294	0.87 J	35	0.68 - 9.2	1.7 - 23	ug/kg	SL-191-SA5A	0 - 0.5
Semivolatiles	Carbazole	86-74-8	8 / 299	22 J	140 J	17 - 200	170 - 2000	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Pentachlorophenol	87-86-5	0 / 299	-	-	170 - 2000	510 - 6000	ug/kg		
Semivolatiles	2,4,6-Trichlorophenol	88-06-2	0 / 299	-	-	34 - 400	170 - 2000	ug/kg		
Semivolatiles	2-Nitroaniline	88-74-4	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	2-Nitrophenol	88-75-5	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	1-Methylnaphthalene	90-12-0	2 / 3	25 J	6500	19 - 200	190 - 2000	ug/kg	SL-189-SA5A	5 - 6
Semivolatiles	1-Methylnaphthalene	90-12-0	20 / 297	0.81 J	27000	0.68 - 150	1.7 - 380	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	Naphthalene	91-20-3	1 / 9	1400 J	1400 J	18 - 200	180 - 2000	ug/kg	SL-189-SA5A	5 - 6
Semivolatiles	Naphthalene	91-20-3	73 / 290	0.75 J	7400	0.68 - 15	1.7 - 38	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	2-Methylnaphthalene	91-57-6	2 / 2	21 J	3200	19 - 200	190 - 2000	ug/kg	SL-189-SA5A	5 - 6
Semivolatiles	2-Methylnaphthalene	91-57-6	26 / 297	0.78 J	36000	0.68 - 150	1.7 - 380	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	2-Chloronaphthalene	91-58-7	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	3,3`-Dichlorobenzidine	91-94-1	0 / 299	-	-	100 - 1200	340 - 4000	ug/kg		
Semivolatiles	Benzidine	92-87-5	0 / 299	-	-	1200 - 14000	3400 - 40000	ug/kg		
Semivolatiles	2-Methylphenol	95-48-7	0 / 299	-	-	34 - 400	170 - 2000	ug/kg		
Semivolatiles	2-Chlorophenol	95-57-8	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	2,4,5-Trichlorophenol	95-95-4	0 / 299	-	-	34 - 400	170 - 2000	ug/kg		
Semivolatiles	3-Nitroaniline	99-09-2	0 / 299	-	-	34 - 400	170 - 2000	ug/kg		
Semivolatiles	Benzyl Alcohol	100-51-6	0 / 299	-	-	170 - 2000	510 - 6000	ug/kg		
Semivolatiles	2,6-Dinitrotoluene	606-20-2	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Volatiles	GRO (C5-C12)	GROC5C12	4 / 95	0.2 J	660	0.2 - 8.8	0.9 - 44	mg/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	EFH (C15-C20)	PHCC15C20	14 / 95	0.51 J	3400	0.42 - 93	1.3 - 280	mg/kg	SL-189-SA5A	5 - 6
Volatiles	EFH (C21-C30)	PHCC21C30	46 / 95	0.48 J	580	0.42 - 93	1.3 - 280	mg/kg	SL-012-SA5A	2 - 3
Volatiles	EFH (C30-C40)	PHCC30C40	76 / 95	0.45 J	1700	0.42 - 93	1.3 - 280	mg/kg	SL-012-SA5A	2 - 3
Volatiles	EFH (C8-C11)	PHCC8C11	14 / 95	0.43 J	710	0.42 - 93	1.3 - 280	mg/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	1,4-Dichlorobenzene	106-46-7	0 / 158	-	-	0.14 - 7.9	3.5 - 200	ug/kg		
Volatiles	1,2,4-Trichlorobenzene	120-82-1	0 / 158	-	-	0.16 - 8.9	3.5 - 200	ug/kg		
Volatiles	1,3-Dichlorobenzene	541-73-1	0 / 158	-	-	0.11 - 5.9	3.5 - 200	ug/kg		
Volatiles	Hexachlorobutadiene	87-68-3	1 / 158	100 J	100 J	0.12 - 6.9	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	1,2-Dichlorobenzene	95-50-1	0 / 158	-	-	0.08 - 4.4	3.5 - 200	ug/kg		
Volatiles	Isopropyltoluene	99-87-6	1 / 158	130 J	130 J	0.1 - 5.4	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	Ethylbenzene	100-41-4	28 / 158	0.06 J	610	0.05 - 3	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	Styrene	100-42-5	0 / 158	-	-	0.09 - 4.9	3.5 - 200	ug/kg		

Table 3-3
Summary of Analytical Results for Chemicals - Validated Data
Combined Subsurface and Surface Soils
HSA-5A

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Volatiles	cis-1,3-Dichloropropene	10061-01-5	0 / 158	-	-	0.14 - 7.9	3.5 - 200	ug/kg		
Volatiles	trans-1,3-Dichloropropene	10061-02-6	0 / 158	-	-	0.15 - 8.4	3.5 - 200	ug/kg		
Volatiles	N-Propylbenzene	103-65-1	3 / 158	0.24 J	910	0.06 - 3.5	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	N-Butylbenzene	104-51-8	3 / 158	2.2 J	600	0.11 - 5.9	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	4-Chlorotoluene	106-43-4	0 / 158	-	-	0.12 - 6.9	3.5 - 200	ug/kg		
Volatiles	1,2-Dibromoethane	106-93-4	0 / 158	-	-	0.15 - 8.4	3.5 - 200	ug/kg		
Volatiles	1,2-Dichloroethane	107-06-2	1 / 158	2.3 J	2.3 J	0.13 - 7.4	3.5 - 200	ug/kg	SL-094-SA5A	9 - 10
Volatiles	4-Methyl-2-Pentanone	108-10-1	0 / 158	-	-	0.34 - 19	7 - 400	ug/kg		
Volatiles	1,3,5-Trimethylbenzene	108-67-8	0 / 158	-	-	0.09 - 4.9	3.5 - 200	ug/kg		
Volatiles	Bromobenzene	108-86-1	0 / 158	-	-	0.11 - 6.4	3.5 - 200	ug/kg		
Volatiles	Toluene	108-88-3	22 / 158	0.08 J	2.3 J	0.07 - 4	3.5 - 200	ug/kg	SL-118-SA5A	2.5 - 3.5
Volatiles	Chlorobenzene	108-90-7	0 / 158	-	-	0.1 - 5.4	3.5 - 200	ug/kg		
Volatiles	2-Chloroethyl Vinyl Ether	110-75-8	0 / 158	-	-	0.26 - 15	3.5 - 200	ug/kg		
Volatiles	1,4-Dioxane	123-91-1	0 / 158	-	-	4.3 - 7.6	13 - 23	ug/kg		
Volatiles	Dibromochloromethane	124-48-1	0 / 158	-	-	0.17 - 9.9	3.5 - 200	ug/kg		
Volatiles	Tetrachloroethene	127-18-4	0 / 158	-	-	0.17 - 9.9	3.5 - 200	ug/kg		
Volatiles	sec-Butylbenzene	135-98-8	4 / 158	0.14 J	990	0.05 - 3	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	1,3-Dichloropropane	142-28-9	0 / 158	-	-	0.07 - 4	3.5 - 200	ug/kg		
Volatiles	cis-1,2-Dichloroethene	156-59-2	0 / 158	-	-	0.17 - 9.4	3.5 - 200	ug/kg		
Volatiles	trans-1,2-Dichloroethene	156-60-5	0 / 158	-	-	0.11 - 5.9	3.5 - 200	ug/kg		
Volatiles	Methyl tert-Butyl Ether	1634-04-4	0 / 158	-	-	0.18 - 10	3.5 - 200	ug/kg		
Volatiles	m,p-Xylene	179601-23-1	25 / 158	0.18 J	16 J	0.15 - 8.4	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	Carbon tetrachloride	56-23-5	0 / 158	-	-	0.12 - 6.9	3.5 - 200	ug/kg		
Volatiles	1,1-Dichloropropene	563-58-6	0 / 158	-	-	0.11 - 6.4	3.5 - 200	ug/kg		
Volatiles	2-Hexanone	591-78-6	0 / 158	-	-	1.4 - 79	7 - 400	ug/kg		
Volatiles	2,2-Dichloropropane	594-20-7	0 / 158	-	-	0.15 - 8.4	3.5 - 200	ug/kg		
Volatiles	1,1,1,2-Tetrachloroethane	630-20-6	0 / 158	-	-	0.1 - 5.4	3.5 - 200	ug/kg		
Volatiles	Acetone	67-64-1	10 / 158	6.7 J	71	5.8 - 330	7 - 400	ug/kg	SL-236-SA5A	4 - 5
Volatiles	Chloroform	67-66-3	0 / 158	-	-	0.11 - 5.9	3.5 - 200	ug/kg		
Volatiles	Benzene	71-43-2	5 / 158	0.11 J	8.4 J	0.09 - 4.9	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	1,1,1-Trichloroethane	71-55-6	0 / 158	-	-	0.17 - 9.9	3.5 - 200	ug/kg		
Volatiles	Bromomethane	74-83-9	0 / 158	-	-	0.22 - 12	3.5 - 200	ug/kg		
Volatiles	Chloromethane	74-87-3	0 / 158	-	-	0.29 - 16	3.5 - 200	ug/kg		
Volatiles	Dibromomethane	74-95-3	0 / 158	-	-	0.21 - 12	3.5 - 200	ug/kg		
Volatiles	Bromochloromethane	74-97-5	0 / 158	-	-	0.29 - 16	3.5 - 200	ug/kg		
Volatiles	Chloroethane	75-00-3	0 / 158	-	-	0.11 - 6.4	3.5 - 200	ug/kg		
Volatiles	Vinyl Chloride	75-01-4	0 / 158	-	-	0.17 - 9.9	3.5 - 200	ug/kg		
Volatiles	Methylene chloride	75-09-2	12 / 158	0.70	13	0.21 - 12	3.5 - 200	ug/kg	SL-156-SA5A	3 - 4
Volatiles	Bromoform	75-25-2	0 / 158	-	-	0.35 - 20	3.5 - 200	ug/kg		
Volatiles	Bromodichloromethane	75-27-4	1 / 158	50 J	50 J	0.07 - 4	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	1,1-Dichloroethane	75-34-3	0 / 158	-	-	0.09 - 4.9	3.5 - 200	ug/kg		
Volatiles	1,1-Dichloroethene	75-35-4	0 / 158	-	-	0.34 - 19	3.5 - 200	ug/kg		
Volatiles	Trichlorofluoromethane	75-69-4	0 / 158	-	-	0.25 - 14	3.5 - 200	ug/kg		
Volatiles	Dichlorodifluoromethane	75-71-8	0 / 158	-	-	0.11 - 5.9	3.5 - 200	ug/kg		
Volatiles	Freon 113a	75-88-7	0 / 158	-	-	0.44 - 25	4.4 - 250	ug/kg		
Volatiles	Freon 113	76-13-1	0 / 158	-	-	0.1 - 5.4	3.5 - 200	ug/kg		
Volatiles	1,2-Dichloropropane	78-87-5	0 / 158	-	-	0.15 - 8.4	3.5 - 200	ug/kg		

Table 3-1
Summary of Analytical Results for Chemicals - Validated Data
Surface Soils
HSA-5A

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Inorganic	Fluoride	16984-48-8	110 / 121	0.88 J	5.2 J	0.82 - 1.1	1 - 1.4	mg/kg	SL-212-SA5A	0 - 0.5
Inorganic	Aluminum	7429-90-5	121 / 121	3460	28100	4.97 - 7.04	19.7 - 28	mg/kg	SL-042-SA5A	0 - 0.5
Inorganic	Iron	7439-89-6	121 / 121	5100	39900	4.65 - 27.3	19.7 - 116	mg/kg	SL-076-SA5A	0 - 0.5
Inorganic	Lead	7439-92-1	121 / 121	2.22 J	110 J	0.0105 - 0.0267	0.202 - 0.513	mg/kg	SL-179-SA5A	0 - 0.3
Inorganic	Lithium	7439-93-2	121 / 121	2.6	47.7	0.22 - 0.31	2 - 2.8	mg/kg	SL-042-SA5A	0 - 0.5
Inorganic	Magnesium	7439-95-4	121 / 121	1020	7430	2.51 - 3.56	9.87 - 14	mg/kg	SL-077-SA5A	0 - 0.5
Inorganic	Manganese	7439-96-5	121 / 121	126	524	0.077 - 0.109	0.494 - 0.7	mg/kg	SL-013-SA5A	0 - 0.5
Inorganic	Mercury	7439-97-6	78 / 121	0.0031 J	4.82	0.0028 - 0.0299	0.0994 - 1.04	mg/kg	SL-136-SA5A	0 - 0.5
Inorganic	Molybdenum	7439-98-7	120 / 121	0.291	14.5 J	0.0504 - 0.0687	0.101 - 0.137	mg/kg	SL-105-SA5A	0 - 0.5
Inorganic	Nickel	7440-02-0	121 / 121	6.9 J	80.4 J	0.101 - 0.137	0.403 - 0.549	mg/kg	SL-191-SA5A	0 - 0.5
Inorganic	Potassium	7440-09-7	121 / 121	575 J	5800	17.8 - 25.2	49.4 - 70	mg/kg	SL-045-SA5A	0 - 0.5
Inorganic	Silver	7440-22-4	94 / 121	0.0181 J	59.2 J	0.0121 - 0.0165	0.101 - 0.137	mg/kg	SL-042-SA5A	0 - 0.5
Inorganic	Sodium	7440-23-5	116 / 121	42.0 J	672	36.8 - 52.2	98.7 - 140	mg/kg	SL-178-SA5A	0 - 0.4
Inorganic	Strontium	7440-24-6	121 / 121	11.6	70.9	0.0612 - 0.0868	0.494 - 0.7	mg/kg	SL-120-SA5A	0 - 0.5
Inorganic	Thallium	7440-28-0	96 / 121	0.0581 J	0.580 J	0.0302 - 0.0412	0.101 - 0.137	mg/kg	SL-077-SA5A	0 - 0.5
Inorganic	Tin	7440-31-5	1 / 121	17.6	17.6	0.987 - 1.4	9.87 - 14	mg/kg	SL-137-SA5A	0 - 0.5
Inorganic	Titanium	7440-32-6	121 / 121	254	1620	0.375 - 0.532	0.987 - 1.4	mg/kg	SL-195-SA5A	0 - 0.2
Inorganic	Antimony	7440-36-0	86 / 121	0.0667 J	1.19 J	0.0605 - 0.0824	0.202 - 0.275	mg/kg	SL-009-SA5A	0 - 0.5
Inorganic	Arsenic	7440-38-2	121 / 121	3.03	30.4 J	0.0806 - 0.11	0.403 - 0.549	mg/kg	SL-076-SA5A	0 - 0.5
Inorganic	Beryllium	7440-41-7	121 / 121	0.174 J	1.86 J	0.0161 - 0.022	0.101 - 0.137	mg/kg	SL-077-SA5A	0 - 0.5
Inorganic	Barium	7440-39-3	121 / 121	23.4	191 J	0.109 - 0.148	0.403 - 0.549	mg/kg	SL-042-SA5A	0 - 0.5
Inorganic	Boron	7440-42-8	113 / 121	1.41 J	15.7	0.879 - 1.25	4.94 - 7	mg/kg	SL-195-SA5A	0 - 0.2
Inorganic	Cadmium	7440-43-9	111 / 121	0.0767 J	7.18 J	0.0403 - 0.0549	0.101 - 0.137	mg/kg	SL-179-SA5A	0 - 0.3
Inorganic	Chromium	7440-47-3	121 / 121	12.6 J	77.5 J	0.121 - 0.165	0.403 - 0.549	mg/kg	SL-119-SA5A	0 - 0.5
Inorganic	Cobalt	7440-48-4	121 / 121	2.38 J	45.6 J	0.0202 - 0.0275	0.101 - 0.137	mg/kg	SL-076-SA5A	0 - 0.5
Inorganic	Copper	7440-50-8	121 / 121	4.88 J	117 J	0.0665 - 0.0906	0.403 - 0.549	mg/kg	SL-178-SA5A	0 - 0.4
Inorganic	Vanadium	7440-62-2	121 / 121	15.7	82.7 J	0.0222 - 0.0302	0.101 - 0.137	mg/kg	SL-077-SA5A	0 - 0.5
Inorganic	Zinc	7440-66-6	121 / 121	18.8	944 J	0.564 - 6.96	3.02 - 37.3	mg/kg	SL-191-SA5A	0 - 0.5
Inorganic	Zirconium	7440-67-7	86 / 121	0.953 J	16.1	0.829 - 1.18	4.94 - 7	mg/kg	SL-120-SA5A	0 - 0.5
Inorganic	Calcium	7440-70-2	121 / 121	1760	20000	6.05 - 8.59	19.7 - 28	mg/kg	SL-191-SA5A	0 - 0.5
Inorganic	Phosphorus	7723-14-0	121 / 121	169	835 J	0.553 - 0.784	9.87 - 14	mg/kg	SL-195-SA5A	0 - 0.2
Inorganic	Selenium	7782-49-2	88 / 121	0.0544 J	0.554 J	0.0403 - 0.0549	0.403 - 0.549	mg/kg	SL-048-SA5A	0 - 0.5
Inorganic	Chromium VI	18540-29-9	92 / 121	0.25 J	6.6	0.21 - 0.28	1 - 1.4	mg/kg	SL-109-SA5A	0 - 0.5
Inorganic	Perchlorate	14797-73-0	1 / 121	13.8 J	13.8 J	9.2 - 12.6	30.8 - 42	ug/kg	SL-036-SA5A	0 - 0.5
Inorganic	Perchlorate	14797-73-0	0 / 19	-	-	2.3 - 2.7	5.4 - 6.3	ug/kg		
PCBs and Dioxins	2,3,7,8-TCDD	1746-01-6	83 / 121	0.0156 J	3.34	0.00836 - 0.207	1.01 - 1.4	ng/kg	SL-173-SA5A	0 - 0.5
PCBs and Dioxins	1,2,3,7,8,9-HxCDD	19408-74-3	113 / 121	0.0786 J	57.4	0.0192 - 0.472	5.05 - 7	ng/kg	SL-096-SA5A	0 - 0.5
PCBs and Dioxins	OCDD	3268-87-9	121 / 121	2.28 J	75800 J	0.0222 - 2.52	10.1 - 14	ng/kg	SL-016-SA5A	0 - 0.5
PCBs and Dioxins	1,2,3,4,6,7,8-HpCDD	35822-46-9	120 / 121	2.38 J	6140 J	0.0191 - 1.22	5.05 - 7	ng/kg	SL-016-SA5A	0 - 0.5
PCBs and Dioxins	OCDF	39001-02-0	114 / 121	0.904 J	910	0.0148 - 0.723	10.1 - 14	ng/kg	SL-042-SA5A	0 - 0.5
PCBs and Dioxins	1,2,3,4,7,8-HxCDD	39227-28-6	106 / 121	0.0537 J	26.1	0.0195 - 0.478	5.05 - 7	ng/kg	SL-096-SA5A	0 - 0.5
PCBs and Dioxins	1,2,3,7,8-PeCDD	40321-76-4	94 / 121	0.0494 J	14.0	0.0118 - 0.304	5.05 - 7	ng/kg	SL-096-SA5A	0 - 0.5
PCBs and Dioxins	2,3,7,8-TCDF	51207-31-9	78 / 121	0.0152 J	11.5	0.00772 - 0.515	1.01 - 1.4	ng/kg	SL-191-SA5A	0 - 0.5
PCBs and Dioxins	1,2,3,4,7,8,9-HpCDF	55673-89-7	75 / 121	0.166 J	53.0	0.017 - 0.592	5.05 - 7	ng/kg	SL-042-SA5A	0 - 0.5
PCBs and Dioxins	2,3,4,7,8-PeCDF	57117-31-4	73 / 121	0.345 J	17.3	0.00561 - 0.312	5.05 - 7	ng/kg	SL-191-SA5A	0 - 0.5

Table 3-1
Summary of Analytical Results for Chemicals - Validated Data
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Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
PCBs and Dioxins	1,2,3,7,8-PeCDF	57117-41-6	76 / 121	0.0814 J	7.21	0.00538 - 0.336	5.05 - 7	ng/kg	SL-191-SA5A	0 - 0.5
PCBs and Dioxins	1,2,3,6,7,8-HxCDF	57117-44-9	81 / 121	0.0970 J	21.0	0.0125 - 0.594	5.05 - 7	ng/kg	SL-042-SA5A	0 - 0.5
PCBs and Dioxins	1,2,3,6,7,8-HxCDD	57653-85-7	119 / 121	0.159 J	99.6	0.02 - 0.507	5.05 - 7	ng/kg	SL-042-SA5A	0 - 0.5
PCBs and Dioxins	2,3,4,6,7,8-HxCDF	60851-34-5	78 / 121	0.115 J	35.3	0.0118 - 0.393	5.05 - 7	ng/kg	SL-042-SA5A	0 - 0.5
PCBs and Dioxins	1,2,3,4,6,7,8-HpCDF	67562-39-4	108 / 121	0.416 J	396	0.0122 - 0.793	5.05 - 7	ng/kg	SL-042-SA5A	0 - 0.5
PCBs and Dioxins	1,2,3,4,7,8-HxCDF	70648-26-9	99 / 121	0.0877 J	31.7	0.0146 - 0.726	5.05 - 7	ng/kg	SL-042-SA5A	0 - 0.5
PCBs and Dioxins	1,2,3,7,8,9-HxCDF	72918-21-9	68 / 121	0.202 J	8.32	0.0148 - 0.423	5.05 - 7	ng/kg	SL-146-SA5A	0 - 0.5
PCBs and Dioxins	Aroclor 1260	11096-82-5	81 / 121	0.51 J	2300	0.4 - 83	1.7 - 360	ug/kg	SL-178-SA5A	0 - 0.4
PCBs and Dioxins	Aroclor 1254	11097-69-1	55 / 121	0.54 J	75 J	0.34 - 70	1.7 - 360	ug/kg	SL-042-SA5A	0 - 0.5
PCBs and Dioxins	Aroclor 1268	11100-14-4	8 / 121	3.2	37	0.34 - 70	1.7 - 360	ug/kg	SL-009-SA5A	0 - 0.5
PCBs and Dioxins	Aroclor 1221	11104-28-2	0 / 121	-	-	0.34 - 70	1.7 - 360	ug/kg		
PCBs and Dioxins	Aroclor 5460	11126-42-4	85 / 121	1.2 J	210	1 - 210	3.4 - 700	ug/kg	SL-217-SA5A	0 - 0.5
PCBs and Dioxins	Aroclor 1232	11141-16-5	0 / 121	-	-	0.34 - 70	1.7 - 360	ug/kg		
PCBs and Dioxins	Aroclor 5442	12642-23-8	0 / 121	-	-	1 - 210	3.4 - 700	ug/kg		
PCBs and Dioxins	Aroclor 1248	12672-29-6	8 / 121	0.71 J	15	0.34 - 70	1.7 - 360	ug/kg	SL-119-SA5A	0 - 0.5
PCBs and Dioxins	Aroclor 1016	12674-11-2	0 / 121	-	-	0.34 - 70	1.7 - 360	ug/kg		
PCBs and Dioxins	Aroclor 1262	37324-23-5	0 / 121	-	-	0.34 - 70	1.7 - 360	ug/kg		
PCBs and Dioxins	Aroclor 1242	53469-21-9	0 / 121	-	-	0.34 - 70	1.7 - 360	ug/kg		
PCBs and Dioxins	Aroclor 5432	63496-31-1	0 / 121	-	-	1 - 210	3.4 - 700	ug/kg		
Pesticides	Dichlorprop	120-36-5	11 / 120	1.0 J	9.5	0.84 - 3.2	1.8 - 3.2	ug/kg	SL-051-SA5A	0 - 0.5
Pesticides	Dicamba	1918-00-9	19 / 120	0.46 J	2.2	0.41 - 0.56	1.2 - 1.7	ug/kg	SL-051-SA5A	0 - 0.5
Pesticides	2,2-Dichlor-Propionic Acid	75-99-0	0 / 120	-	-	4.5 - 6.2	9.2 - 13	ug/kg		
Pesticides	Dinitrobutyl Phenol	88-85-7	0 / 120	-	-	0.82 - 3.5	2.5 - 3.5	ug/kg		
Pesticides	MCPP	93-65-2	12 / 120	160 J	750	79 - 1400	260 - 1400	ug/kg	SL-105-SA5A	0 - 0.5
Pesticides	2,4,5-TP	93-72-1	24 / 120	0.12 J	0.83	0.077 - 0.57	0.17 - 0.57	ug/kg	SL-194-SA5A	0 - 0.3
Pesticides	2,4,5-T	93-76-5	7 / 120	0.17 J	1.0	0.084 - 1	0.17 - 1	ug/kg	SL-194-SA5A	0 - 0.3
Pesticides	MCPA	94-74-6	45 / 120	110 J	2300	78 - 1500	260 - 1500	ug/kg	SL-253-SA5A	0 - 0.5
Pesticides	2,4-D	94-75-7	2 / 120	1.5 J	2.0 J	1.2 - 1.7	3.7 - 5	ug/kg	SL-253-SA5A	0 - 0.5
Pesticides	2,4 DB	94-82-6	23 / 120	1.1 J	38	0.66 - 39	1.8 - 39	ug/kg	SL-194-SA5A SL-195-SA5A	0 - 0.3 0 0.2
Pesticides	Toxaphene	8001-35-2	0 / 120	-	-	2.4 - 120	7.1 - 350	ug/kg		
Pesticides	Heptachlor Epoxide	1024-57-3	10 / 120	0.048 J	0.58 J	0.037 - 1.8	0.17 - 8.8	ug/kg	SL-197-SA5A	0 - 0.5
Pesticides	Endosulfan Sulfate	1031-07-8	7 / 120	0.10 J	2.1	0.071 - 3.5	0.35 - 18	ug/kg	SL-197-SA5A	0 - 0.5
Pesticides	Mirex	2385-85-5	22 / 120	0.079 J	30	0.071 - 44	0.35 - 44	ug/kg	SL-031-SA5A	0 - 0.5
Pesticides	Aldrin	309-00-2	1 / 120	6.5	6.5	0.068 - 3.5	0.17 - 8.8	ug/kg	SL-037-SA5A	0 - 0.5
Pesticides	Alpha-BHC	319-84-6	2 / 120	0.13 J	0.21	0.035 - 1.8	0.17 - 8.8	ug/kg	SL-064-SA5A	0 - 0.5
Pesticides	Beta-BHC	319-85-7	10 / 120	0.19	1.8	0.062 - 3.2	0.17 - 8.8	ug/kg	SL-104-SA5A	0 - 0.5
Pesticides	Delta-BHC	319-86-8	9 / 120	0.046 J	0.13 J	0.037 - 1.9	0.17 - 8.8	ug/kg	SL-042-SA5A	0 - 0.5
Pesticides	Endosulfan II	33213-65-9	10 / 120	0.074 J	1.0	0.071 - 6.7	0.35 - 18	ug/kg	SL-217-SA5A	0 - 0.5
Pesticides	4,4'-DDT	50-29-3	81 / 120	0.082 J	52	0.071 - 130	0.37 - 130	ug/kg	SL-217-SA5A	0 - 0.5
Pesticides	Endrin Ketone	53494-70-5	15 / 120	0.083 J	0.99	0.068 - 3.5	0.35 - 18	ug/kg	SL-217-SA5A	0 - 0.5
Pesticides	Chlordane	57-74-9	0 / 120	-	-	0.82 - 42	3.5 - 180	ug/kg		-
Pesticides	Gamma-BHC (Lindane)	58-89-9	5 / 120	0.052 J	0.15 J	0.035 - 1.8	0.17 - 8.8	ug/kg	SL-095-SA5A	0 - 0.5
Pesticides	Dieldrin	60-57-1	27 / 120	0.085 J	5.9	0.071 - 30	0.35 - 30	ug/kg	SL-257-SA5A	0 - 0.5
Pesticides	Endrin	72-20-8	0 / 120	-	-	0.068 - 15	0.35 - 18	ug/kg		-

Table 3-1
Summary of Analytical Results for Chemicals - Validated Data
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Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Pesticides	Methoxychlor	72-43-5	2 / 120	0.49 J	0.66 J	0.35 - 170	1.7 - 170	ug/kg	SL-077-SA5A	0 - 0.5
Pesticides	4,4'-DDD	72-54-8	16 / 120	0.087 J	9.3	0.071 - 9.4	0.35 - 18	ug/kg	SL-197-SA5A	0 - 0.5
Pesticides	4,4'-DDE	72-55-9	52 / 120	0.081 J	39	0.071 - 3.5	0.37 - 18	ug/kg	SL-217-SA5A	0 - 0.5
Pesticides	Endrin Aldehyde	7421-93-4	36 / 120	0.073 J	2.7	0.071 - 64	0.35 - 64	ug/kg	SL-217-SA5A	0 - 0.5
Pesticides	Heptachlor	76-44-8	7 / 120	0.090 J	1.2 J	0.062 - 3.2	0.17 - 8.8	ug/kg	SL-002-SA5A	0 - 0.5
Pesticides	Endosulfan I	959-98-8	0 / 120	-	-	0.045 - 2.3	0.17 - 8.8	ug/kg		
Semivolatiles	N-Nitrosodimethylamine	62-75-9	0 / 121	-	-	0.68 - 9.2	1.7 - 23	ug/kg		
Semivolatiles	2,4-Dinitrotoluene	121-14-2	0 / 121	-	-	34 - 73	170 - 230	ug/kg		
Semivolatiles	Nitrobenzene	98-95-3	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	1,4-Dichlorobenzene	106-46-7	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	1,2,4-Trichlorobenzene	120-82-1	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	1,3-Dichlorobenzene	541-73-1	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	Hexachlorobutadiene	87-68-3	0 / 121	-	-	68 - 93	170 - 230	ug/kg		
Semivolatiles	1,2-Dichlorobenzene	95-50-1	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	4-Nitroaniline	100-01-6	0 / 121	-	-	68 - 93	170 - 230	ug/kg		
Semivolatiles	4-Nitrophenol	100-02-7	0 / 121	-	-	170 - 230	510 - 700	ug/kg		
Semivolatiles	4-Bromophenyl Phenyl Ether	101-55-3	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	2,4-Dimethylphenol	105-67-9	0 / 121	-	-	34 - 73	170 - 230	ug/kg		
Semivolatiles	4-Methylphenol	106-44-5	0 / 121	-	-	34 - 73	170 - 230	ug/kg		
Semivolatiles	4-Chloroaniline	106-47-8	0 / 121	-	-	68 - 93	170 - 230	ug/kg		
Semivolatiles	3,5-Dimethylphenol	108-68-9	0 / 121	-	-	34 - 47	170 - 230	ug/kg		
Semivolatiles	Phenol	108-95-2	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	Bis(2-Chloroethyl) ether	111-44-4	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	Bis(2-Chloroethoxy) methane	111-91-1	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	Bis(2-Ethylhexyl) phthalate	117-81-7	45 / 55	21 J	770	18 - 21	360 - 420	ug/kg	SL-066-SA5A	0 - 0.5
Semivolatiles	Bis(2-Ethylhexyl) phthalate	117-81-7	37 / 67	7.6 J	6000	6.1 - 680	18 - 2000	ug/kg	SL-029-SA5A	0 - 0.5
Semivolatiles	Di-N-Octyl Phthalate	117-84-0	2 / 22	190	230	18 - 23	180 - 230	ug/kg	SL-195-SA5A	0 - 0.2
Semivolatiles	Di-N-Octyl Phthalate	117-84-0	40 / 99	7.7 J	870	6.1 - 38	18 - 110	ug/kg	SL-194-SA5A	0 - 0.3
Semivolatiles	Hexachlorobenzene	118-74-1	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	Anthracene	120-12-7	5 / 5	25 J	99 J	18 - 20	180 - 200	ug/kg	SL-178-SA5A	0 - 0.4
Semivolatiles	Anthracene	120-12-7	58 / 116	0.35 J	270	0.34 - 4.6	1.7 - 23	ug/kg	SL-191-SA5A	0 - 0.5
Semivolatiles	2,4-Dichlorophenol	120-83-2	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	1,2-Diphenylhydrazine	122-66-7	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	Pyrene	129-00-0	16 / 16	19 J	1600	18 - 21	180 - 210	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Pyrene	129-00-0	77 / 106	0.74 J	2500	0.68 - 42	1.7 - 100	ug/kg	SL-191-SA5A	0 - 0.5
Semivolatiles	Dimethylphthalate	131-11-3	1 / 23	180	180	18 - 23	180 - 230	ug/kg	SL-121-SA5A	0 - 0.5
Semivolatiles	Dimethylphthalate	131-11-3	3 / 98	8.0 J	15 J	6.1 - 35	18 - 110	ug/kg	SL-181-SA5A	0 - 0.5
Semivolatiles	Dibenzofuran	132-64-9	6 / 121	19 J	110 J	17 - 36	170 - 230	ug/kg	SL-194-SA5A	0 - 0.3
Semivolatiles	Benzo(g,h,i)perylene	191-24-2	17 / 17	21 J	560	18 - 21	180 - 210	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Benzo(g,h,i)perylene	191-24-2	73 / 104	0.77 J	180	0.68 - 9.2	1.7 - 23	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	Indeno(1,2,3-Cd)Pyrene	193-39-5	11 / 11	21 J	590	18 - 21	180 - 210	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Indeno(1,2,3-Cd)Pyrene	193-39-5	58 / 110	0.77 J	230	0.68 - 9.2	1.7 - 23	ug/kg	SL-188-SA5A	0 - 0.5
Semivolatiles	Benzo(b)fluoranthene	205-99-2	8 / 8	22 J	1500	19 - 20	190 - 200	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Benzo(b)fluoranthene	205-99-2	89 / 113	0.92 J	1600	0.68 - 9.2	1.7 - 23	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	Fluoranthene	206-44-0	18 / 18	19 J	1900	18 - 23	180 - 230	ug/kg	SL-031-SA5A	0 - 0.5

Table 3-1
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Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Semivolatiles	Fluoranthene	206-44-0	76 / 103	0.74 J	2900	0.68 - 42	1.7 - 100	ug/kg	SL-191-SA5A	0 - 0.5
Semivolatiles	Benzo(k)fluoranthene	207-08-9	8 / 8	26 J	580	18 - 20	180 - 200	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Benzo(k)fluoranthene	207-08-9	67 / 113	0.75 J	660	0.68 - 9.2	1.7 - 23	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	Acenaphthylene	208-96-8	40 / 121	0.35 J	9.1 J	0.34 - 4.6	1.7 - 23	ug/kg	SL-194-SA5A	0 - 0.3
Semivolatiles	Chrysene	218-01-9	18 / 18	20 J	1300	18 - 21	180 - 210	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Chrysene	218-01-9	80 / 103	0.51 J	1200	0.34 - 4.6	1.7 - 23	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	bis(2-Chloroisopropyl) ether	39638-32-9	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	Benzo(a)pyrene	50-32-8	14 / 14	26 J	800	18 - 20	180 - 200	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Benzo(a)pyrene	50-32-8	71 / 107	0.76 J	870	0.68 - 9.2	1.7 - 23	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	2,4-Dinitrophenol	51-28-5	0 / 121	-	-	340 - 470	1000 - 1400	ug/kg		
Semivolatiles	4,6-Dinitro-2-Methylphenol	534-52-1	0 / 121	-	-	170 - 230	510 - 700	ug/kg		
Semivolatiles	Dibenzo(a,h)anthracene	53-70-3	6 / 6	22 J	180 J	18 - 20	180 - 200	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Dibenzo(a,h)anthracene	53-70-3	31 / 115	0.75 J	78	0.68 - 9.2	1.7 - 23	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	Benzo(a)anthracene	56-55-3	13 / 13	18 J	910	18 - 21	180 - 210	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Benzo(a)anthracene	56-55-3	61 / 108	0.78 J	1300	0.68 - 9.2	1.7 - 23	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	4-Chloro-3-Methylphenol	59-50-7	0 / 121	-	-	34 - 73	170 - 230	ug/kg		
Semivolatiles	N-Nitroso-Di-N-Propylamine	621-64-7	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	Aniline	62-53-3	0 / 121	-	-	170 - 230	510 - 700	ug/kg		
Semivolatiles	Benzoic Acid	65-85-0	2 / 121	240 J	320 J	170 - 230	510 - 700	ug/kg	SL-197-SA5A	0 - 0.5
Semivolatiles	Hexachloroethane	67-72-1	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	4-Chlorophenyl Phenylether	7005-72-3	0 / 121	-	-	34 - 47	170 - 230	ug/kg		
Semivolatiles	Hexachlorocyclopentadiene	77-47-4	0 / 121	-	-	170 - 230	510 - 700	ug/kg		
Semivolatiles	Isophorone	78-59-1	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	Acenaphthene	83-32-9	3 / 3	38 J	74 J	18 - 19	180 - 190	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	Acenaphthene	83-32-9	7 / 118	0.78 J	46	0.68 - 9.2	1.7 - 23	ug/kg	SL-191-SA5A	0 - 0.5
Semivolatiles	Diethylphthalate	84-66-2	0 / 23	-	-	18 - 23	180 - 230	ug/kg		
Semivolatiles	Diethylphthalate	84-66-2	0 / 98	-	-	6.1 - 35	18 - 110	ug/kg		
Semivolatiles	Di-n-Butylphthalate	84-74-2	4 / 48	40 J	780	18 - 23	180 - 230	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	Di-n-Butylphthalate	84-74-2	14 / 72	10 J	2900	6.1 - 360	18 - 1100	ug/kg	SL-186-SA5A	0 - 0.5
Semivolatiles	Phenanthrene	85-01-8	12 / 12	29 J	770	18 - 23	180 - 230	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Phenanthrene	85-01-8	69 / 109	0.84 J	1200	0.68 - 4.2	1.7 - 10	ug/kg	SL-191-SA5A	0 - 0.5
Semivolatiles	Butylbenzylphthalate	85-68-7	7 / 35	21 J	400	18 - 23	180 - 230	ug/kg	SL-119-SA5A	0 - 0.5
Semivolatiles	Butylbenzylphthalate	85-68-7	29 / 85	6.9 J	140	6.1 - 36	18 - 110	ug/kg	SL-121-SA5A	0 - 0.5
Semivolatiles	N-Nitrosodiphenylamine	86-30-6	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	Fluorene	86-73-7	3 / 3	26 J	62 J	18 - 19	180 - 190	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	Fluorene	86-73-7	11 / 118	0.92 J	35	0.68 - 9.2	1.7 - 23	ug/kg	SL-191-SA5A	0 - 0.5
Semivolatiles	Carbazole	86-74-8	8 / 121	22 J	140 J	17 - 36	170 - 230	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Pentachlorophenol	87-86-5	0 / 121	-	-	170 - 230	510 - 700	ug/kg		
Semivolatiles	2,4,6-Trichlorophenol	88-06-2	0 / 121	-	-	34 - 47	170 - 230	ug/kg		
Semivolatiles	2-Nitroaniline	88-74-4	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	2-Nitrophenol	88-75-5	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	1-Methylnaphthalene	90-12-0	1 / 1	25 J	25 J	19 - 19	190 - 190	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	1-Methylnaphthalene	90-12-0	15 / 120	0.81 J	260	0.68 - 9.2	1.7 - 23	ug/kg	SL-194-SA5A	0 - 0.3
Semivolatiles	Naphthalene	91-20-3	0 / 8	-	-	18 - 36	180 - 200	ug/kg		
Semivolatiles	Naphthalene	91-20-3	45 / 113	0.75 J	160	0.68 - 9.2	1.7 - 23	ug/kg	SL-194-SA5A	0 - 0.3

Table 3-1
Summary of Analytical Results for Chemicals - Validated Data
Surface Soils
HSA-5A

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Semivolatiles	2-Methylnaphthalene	91-57-6	1 / 1	21 J	21 J	19 - 19	190 - 190	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	2-Methylnaphthalene	91-57-6	21 / 120	0.78 J	310	0.68 - 9.2	1.7 - 23	ug/kg	SL-194-SA5A	0 - 0.3
Semivolatiles	2-Chloronaphthalene	91-58-7	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	3,3`-Dichlorobenzidine	91-94-1	0 / 121	-	-	100 - 140	340 - 470	ug/kg		
Semivolatiles	Benzidine	92-87-5	0 / 121	-	-	1200 - 1600	3400 - 4700	ug/kg		
Semivolatiles	2-Methylphenol	95-48-7	0 / 121	-	-	34 - 73	170 - 230	ug/kg		
Semivolatiles	2-Chlorophenol	95-57-8	0 / 121	-	-	17 - 36	170 - 230	ug/kg		
Semivolatiles	2,4,5-Trichlorophenol	95-95-4	0 / 121	-	-	34 - 73	170 - 230	ug/kg		
Semivolatiles	3-Nitroaniline	99-09-2	0 / 121	-	-	34 - 73	170 - 230	ug/kg		
Semivolatiles	Benzyl Alcohol	100-51-6	0 / 121	-	-	170 - 230	510 - 700	ug/kg		
Semivolatiles	2,6-Dinitrotoluene	606-20-2	0 / 121	-	-	17 - 36	170 - 230	ug/kg		

ug/kg - microgram per kilogram
mg/kg - milligram per kilogram
ng/kg - nanogram per kilogram
J - Result is an estimated value

Table 3-2
Summary of Analytical Results for Chemicals - Validated Data
Subsurface Soils
HSA-5A

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Inorganic	Nitrate	14797-55-8	91 / 95	0.92 J	18.5	0.83 - 1	1.6 - 1.9	mg/kg	SL-093-SA5A	3.5 - 4.5
Inorganic	Fluoride	16984-48-8	161 / 178	1.1 J	21.6 J	0.83 - 1	1 - 1.3	mg/kg	SL-204-SA5A	4 - 5
Inorganic	Cyanide	57-12-5	0 / 95	-	-	0.18 - 0.23	0.5 - 0.64	mg/kg		-
Inorganic	Aluminum	7429-90-5	178 / 178	9160	37200	5.17 - 6.55	20.6 - 26	mg/kg	SL-114-SA5A	4 - 5
Inorganic	Iron	7439-89-6	178 / 178	15000	52800	4.84 - 29.3	20.6 - 125	mg/kg	SL-197-SA5A	8 - 9
Inorganic	Lead	7439-92-1	178 / 178	3.26	2890 J	0.0107 - 0.595	0.206 - 11.4	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Lithium	7439-93-2	178 / 178	11.8	64.4	0.23 - 0.29	2.1 - 2.6	mg/kg	SL-197-SA5A	8 - 9
Inorganic	Magnesium	7439-95-4	178 / 178	2660	11900	2.61 - 3.31	10.3 - 13	mg/kg	SL-197-SA5A	8 - 9
Inorganic	Manganese	7439-96-5	178 / 178	87.4 J	730	0.0802 - 0.102	0.514 - 0.651	mg/kg	SL-253-SA5A	4 - 5
Inorganic	Mercury	7439-97-6	76 / 178	0.0034 J	1.35	0.0028 - 0.0149	0.0992 - 0.52	mg/kg	SL-167-SA5A	1 - 2
Inorganic	Molybdenum	7439-98-7	177 / 178	0.166	19.5 J	0.0514 - 0.0645	0.103 - 0.129	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Nickel	7440-02-0	178 / 178	5.79 J	538 J	0.103 - 0.572	0.411 - 2.29	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Potassium	7440-09-7	178 / 178	683 J	6680 J	18.5 - 23.4	51.4 - 65.1	mg/kg	SL-258-SA5A	4 - 5
Inorganic	Silver	7440-22-4	166 / 178	0.0143 J	4.45 J	0.0123 - 0.0155	0.103 - 0.129	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Sodium	7440-23-5	178 / 178	62 J	1650	38.4 - 48.6	103 - 130	mg/kg	SL-204-SA5A	4 - 5
Inorganic	Strontium	7440-24-6	176 / 178	8.82	98.4	0.0638 - 0.0807	0.514 - 0.651	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Thallium	7440-28-0	174 / 178	0.158	0.538 J	0.0309 - 0.172	0.103 - 0.572	mg/kg	SL-055-SA5A	2 - 3
Inorganic	Tin	7440-31-5	7 / 178	2.09	42.8	1.03 - 1.3	10.3 - 13	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Titanium	7440-32-6	178 / 178	806	1690	0.391 - 0.495	1.03 - 1.3	mg/kg	SL-244-SA5A	9 - 10
Inorganic	Antimony	7440-36-0	139 / 178	0.0687 J	2.45 J	0.0617 - 0.0774	0.206 - 0.258	mg/kg	SL-093-SA5A	3.5 - 4.5
Inorganic	Arsenic	7440-38-2	178 / 178	2.98	16.9 J	0.0823 - 0.103	0.411 - 0.516	mg/kg	SL-060-SA5A	4 - 5
Inorganic	Beryllium	7440-41-7	176 / 178	0.256	1.60 J	0.0165 - 0.0456	0.103 - 0.285	mg/kg	SL-197-SA5A SL-244-SA5A	8 - 9 9 10
Inorganic	Barium	7440-39-3	178 / 178	45.1 J	781 J	0.111 - 0.654	0.411 - 2.42	mg/kg	SL-189-SA5A	5 - 6
Inorganic	Boron	7440-42-8	141 / 178	1.07 J	27.7	0.915 - 1.16	5.14 - 6.51	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Cadmium	7440-43-9	148 / 178	0.0423 J	18.6 J	0.0411 - 0.0516	0.103 - 0.129	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Chromium	7440-47-3	178 / 178	10.7	693 J	0.123 - 0.687	0.411 - 2.29	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Cobalt	7440-48-4	178 / 178	2.58 J	26.1 J	0.0206 - 0.0258	0.103 - 0.129	mg/kg	SL-234-SA5A	9 - 10
Inorganic	Copper	7440-50-8	178 / 178	3.82 J	699 J	0.0669 - 0.378	0.405 - 2.29	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Vanadium	7440-62-2	178 / 178	24.9	82.1	0.0222 - 0.0278	0.101 - 0.126	mg/kg	SL-114-SA5A	4 - 5
Inorganic	Zinc	7440-66-6	178 / 178	25.9	1100	0.576 - 5.93	3.09 - 31.8	mg/kg	SL-113-SA5A	14 - 15
Inorganic	Zirconium	7440-67-7	138 / 178	0.917 J	5.57	0.864 - 1.09	5.14 - 6.51	mg/kg	SL-114-SA5A	4 - 5
Inorganic	Calcium	7440-70-2	177 / 178	1100	61200	6.3 - 7.98	20.6 - 26	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Phosphorus	7723-14-0	178 / 178	62.4 J	801	0.576 - 0.729	10.3 - 13	mg/kg	SL-113-SA5A	14 - 15
Inorganic	Selenium	7782-49-2	172 / 178	0.0441 J	0.436 J	0.0411 - 0.0516	0.411 - 0.516	mg/kg	SL-055-SA5A	2 - 3
Inorganic	Chromium VI	18540-29-9	109 / 178	0.23 J	1.5	0.21 - 0.26	1 - 1.3	mg/kg	SL-254-SA5A	2.5 - 3.5
Inorganic	Perchlorate	14797-73-0	1 / 178	25.7 J	25.7 J	9.4 - 11.7	31.3 - 39.1	ug/kg	SL-035-SA5A	4 - 5
Inorganic	Perchlorate	14797-73-0	1 / 22	8.6	8.6	2.2 - 2.7	5.2 - 6.5	ug/kg	SL-215-SA5A	4 - 5
Inorganic	Percent Moisture	MOIST	178 / 178	4	23.2	0.5 - 0.5	0.5 - 0.5	%	SL-089-SA5A	9 - 10
Inorganic	pH	pH	178 / 178	5.88	9.26	0.01 - 0.01	0.01 - 0.01	pH unit	SL-116-SA5A	14 - 15
Misc. Organics	Ethanol	64-17-5	0 / 95	-	-	100 - 130	520 - 650	ug/kg		-
Misc. Organics	Methanol	67-56-1	4 / 95	150 J	450 J	100 - 230	520 - 650	ug/kg	SL-249-SA5A	2.5 - 3.5
Misc. Organics	2-Propanol	67-63-0	0 / 95	-	-	100 - 130	520 - 650	ug/kg		-
Misc. Organics	Ethylene Glycol	107-21-1	0 / 95	-	-	5.2 - 7.4	11 - 16	mg/kg		-
Misc. Organics	Diethylene Glycol	111-46-6	0 / 95	-	-	5.2 - 9.5	11 - 16	mg/kg		-
Misc. Organics	Propylene glycol	57-55-6	1 / 95	8.9 J	8.9 J	5.2 - 6.5	11 - 16	mg/kg	SL-189-SA5A	8.5 - 9.5
Misc. Organics	o-Terphenyl	84-15-1	0 / 95	-	-	1.6 - 22	3.6 - 51	mg/kg		-

Table 3-2
Summary of Analytical Results for Chemicals - Validated Data
Subsurface Soils
HSA-5A

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Misc. Organics	m-Terphenyl	92-06-8	0 / 95	-	-	1.6 - 22	3.6 - 51	mg/kg		-
Misc. Organics	p-Terphenyl	92-94-4	0 / 95	-	-	1.6 - 22	3.6 - 51	mg/kg		-
Misc. Organics	Formaldehyde	50-00-0	8 / 95	680 J	21000	620 - 6900	1600 - 17000	ug/kg	SL-189-SA5A	8.5 - 9.5
Misc. Organics	2,6-Dinitrotoluene	606-20-2	0 / 95	-	-	40 - 51	120 - 150	ug/kg		-
Misc. Organics	2,4,6-Trinitrotoluene	118-96-7	0 / 95	-	-	40 - 51	120 - 150	ug/kg		-
Misc. Organics	RDX	121-82-4	0 / 95	-	-	50 - 69	120 - 150	ug/kg		-
Misc. Organics	4-Amino-2,6-Dinitrotoluene	19406-51-0	0 / 95	-	-	60 - 76	120 - 150	ug/kg		-
Misc. Organics	HMX	2691-41-0	1 / 95	220 J	220 J	100 - 130	300 - 380	ug/kg	SL-242-SA5A	2.5 - 3.5
Misc. Organics	2-Amino-4,6-Dinitrotoluene	35572-78-2	0 / 95	-	-	40 - 51	120 - 150	ug/kg		-
Misc. Organics	Tetryl	479-45-8	0 / 95	-	-	61 - 78	120 - 150	ug/kg		-
Misc. Organics	Nitroglycerin	55-63-0	0 / 95	-	-	800 - 1000	2400 - 3000	ug/kg		-
Misc. Organics	2,6-Diamino-4-nitrotoluene	59229-75-3	0 / 95	-	-	80 - 100	240 - 300	ug/kg		-
Misc. Organics	2,4-Diamino-6-nitrotoluene	6629-29-4	1 / 95	98 J	98 J	80 - 100	240 - 300	ug/kg	SL-189-SA5A	8.5 - 9.5
Misc. Organics	PETN	78-11-5	0 / 95	-	-	800 - 1000	2400 - 3000	ug/kg		-
Misc. Organics	2-Nitrotoluene	88-72-2	0 / 95	-	-	80 - 100	120 - 150	ug/kg		-
Misc. Organics	3-Nitrotoluene	99-08-1	0 / 95	-	-	100 - 130	120 - 150	ug/kg		-
Misc. Organics	1,3,5-Trinitrobenzene	99-35-4	0 / 95	-	-	40 - 51	120 - 150	ug/kg		-
Misc. Organics	4-Nitrotoluene	99-99-0	0 / 95	-	-	80 - 100	120 - 150	ug/kg		-
Misc. Organics	2,4-Dinitrotoluene	121-14-2	0 / 95	-	-	40 - 51	120 - 150	ug/kg		-
Misc. Organics	Nitrobenzene	98-95-3	0 / 95	-	-	40 - 51	120 - 150	ug/kg		-
Misc. Organics	m-Dinitrobenzene	99-65-0	0 / 95	-	-	40 - 51	120 - 150	ug/kg		-
PCBs and Dioxins	2,3,7,8-TCDD	1746-01-6	54 / 178	0.0106 J	7.81	0.0086 - 0.148	1.02 - 1.3	ng/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	1,2,3,7,8,9-HxCDD	19408-74-3	45 / 178	0.0949 J	82.1	0.00767 - 0.121	5.09 - 6.48	ng/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	OCDD	3268-87-9	77 / 178	1.50 J	6490 J	0.0151 - 0.127	10.2 - 13	ng/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	1,2,3,4,6,7,8-HpCDD	35822-46-9	46 / 178	0.923 J	1810	0.0114 - 0.19	5.09 - 6.48	ng/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	OCDF	39001-02-0	29 / 178	0.846 J	624 J	0.0101 - 0.179	10.2 - 13	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	1,2,3,4,7,8-HxCDD	39227-28-6	43 / 178	0.0220 J	45.1	0.00851 - 0.123	5.09 - 6.48	ng/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	1,2,3,7,8-PeCDD	40321-76-4	25 / 178	0.0233 J	41.0	0.0083 - 0.131	5.09 - 6.48	ng/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	2,3,7,8-TCDF	51207-31-9	39 / 178	0.00904 J	56.5	0.00655 - 0.224	1.02 - 1.3	ng/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	1,2,3,4,7,8,9-HpCDF	55673-89-7	13 / 178	0.224 J	136 J	0.00518 - 0.156	5.09 - 6.48	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	2,3,4,7,8-PeCDF	57117-31-4	10 / 178	0.283 J	187 J	0.0042 - 0.0677	5.09 - 6.48	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	1,2,3,7,8-PeCDF	57117-41-6	32 / 178	0.0137 J	89.7 J	0.00419 - 0.0677	5.09 - 6.48	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	1,2,3,6,7,8-HxCDF	57117-44-9	16 / 178	0.0601 J	197 J	0.00485 - 0.117	5.09 - 6.48	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	1,2,3,6,7,8-HxCDD	57653-85-7	51 / 178	0.0181 J	104	0.00836 - 0.127	5.09 - 6.48	ng/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	2,3,4,6,7,8-HxCDF	60851-34-5	16 / 178	0.225 J	369 J	0.00477 - 0.0912	5.09 - 6.48	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	1,2,3,4,6,7,8-HpCDF	67562-39-4	27 / 178	0.576 J	964 J	0.00397 - 0.119	5.09 - 6.48	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	1,2,3,4,7,8-HxCDF	70648-26-9	22 / 178	0.140 J	225 J	0.0054 - 0.14	5.09 - 6.48	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	1,2,3,7,8,9-HxCDF	72918-21-9	34 / 178	0.0226 J	79.8 J	0.00496 - 0.102	5.09 - 6.48	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	Aroclor 1260	11096-82-5	27 / 178	0.48 J	170 J	0.4 - 46	1.8 - 200	ug/kg	SL-197-SA5A	4 - 5
PCBs and Dioxins	Aroclor 1254	11097-69-1	12 / 178	0.62 J	150	0.34 - 39	1.8 - 200	ug/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	Aroclor 1268	11100-14-4	1 / 178	0.87 J	0.87 J	0.34 - 39	1.8 - 200	ug/kg	SL-012-SA5A	2 - 3
PCBs and Dioxins	Aroclor 1221	11104-28-2	0 / 178	-	-	0.34 - 39	1.8 - 200	ug/kg		-
PCBs and Dioxins	Aroclor 5460	11126-42-4	13 / 178	1.4	120	1 - 120	3.4 - 390	ug/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	Aroclor 1232	11141-16-5	0 / 178	-	-	0.34 - 39	1.8 - 200	ug/kg		-
PCBs and Dioxins	Aroclor 5442	12642-23-8	1 / 178	2.0 J	2.0 J	1 - 120	3.4 - 390	ug/kg	SL-006-SA5A	2 - 3
PCBs and Dioxins	Aroclor 1248	12672-29-6	2 / 178	3.4	4.5	0.34 - 39	1.8 - 200	ug/kg	SL-088-SA5A	4 - 5
PCBs and Dioxins	Aroclor 1016	12674-11-2	0 / 178	-	-	0.34 - 39	1.8 - 200	ug/kg		-

Table 3-2
Summary of Analytical Results for Chemicals - Validated Data
Subsurface Soils
HSA-5A

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
PCBs and Dioxins	Aroclor 1262	37324-23-5	0 / 178	-	-	0.34 - 39	1.8 - 200	ug/kg		-
PCBs and Dioxins	Aroclor 1242	53469-21-9	0 / 178	-	-	0.34 - 39	1.8 - 200	ug/kg		-
PCBs and Dioxins	Aroclor 5432	63496-31-1	0 / 178	-	-	1 - 120	3.4 - 390	ug/kg		-
Semivolatiles	N-Nitrosodimethylamine	62-75-9	37 / 95	21.4 J	465	17.2 - 216	34.4 - 432	ng/kg	SL-092-SA5A	3 - 4
Semivolatiles	N-Nitrosodimethylamine	62-75-9	0 / 178	-	-	0.69 - 16	1.7 - 40	ug/kg		-
Semivolatiles	2,4-Dinitrotoluene	121-14-2	0 / 178	-	-	34 - 400	170 - 2000	ug/kg		-
Semivolatiles	Nitrobenzene	98-95-3	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	1,4-Dichlorobenzene	106-46-7	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	1,2,4-Trichlorobenzene	120-82-1	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	1,3-Dichlorobenzene	541-73-1	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	Hexachlorobutadiene	87-68-3	0 / 178	-	-	69 - 800	170 - 2000	ug/kg		-
Semivolatiles	1,2-Dichlorobenzene	95-50-1	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	4-Nitroaniline	100-01-6	0 / 178	-	-	69 - 800	170 - 2000	ug/kg		-
Semivolatiles	4-Nitrophenol	100-02-7	0 / 178	-	-	170 - 2000	510 - 6000	ug/kg		-
Semivolatiles	4-Bromophenyl Phenyl Ether	101-55-3	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	2,4-Dimethylphenol	105-67-9	0 / 178	-	-	34 - 400	170 - 2000	ug/kg		-
Semivolatiles	4-Methylphenol	106-44-5	0 / 178	-	-	34 - 400	170 - 2000	ug/kg		-
Semivolatiles	4-Chloroaniline	106-47-8	0 / 178	-	-	69 - 800	170 - 2000	ug/kg		-
Semivolatiles	3,5-Dimethylphenol	108-68-9	0 / 178	-	-	34 - 400	170 - 2000	ug/kg		-
Semivolatiles	Phenol	108-95-2	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	Bis(2-Chloroethyl) ether	111-44-4	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	Bis(2-Chloroethoxy) methane	111-91-1	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	Bis(2-Ethylhexyl) phthalate	117-81-7	36 / 47	18 J	200 J	18 - 200	350 - 4000	ug/kg	SL-189-SA5A	5 - 6
Semivolatiles	Bis(2-Ethylhexyl) phthalate	117-81-7	34 / 132	7.2 J	81	6.2 - 7.8	19 - 23	ug/kg	SL-012-SA5A	2 - 3
Semivolatiles	Di-N-Octyl Phthalate	117-84-0	1 / 35	92 J	92 J	18 - 190	180 - 1900	ug/kg	SL-116-SA5A	14 - 15
Semivolatiles	Di-N-Octyl Phthalate	117-84-0	28 / 143	6.6 J	25 J	6.2 - 140	19 - 430	ug/kg	SL-090-SA5A	4 - 5
Semivolatiles	Hexachlorobenzene	118-74-1	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	Anthracene	120-12-7	12 / 178	0.58 J	890	0.34 - 8	1.7 - 40	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	2,4-Dichlorophenol	120-83-2	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	1,2-Diphenylhydrazine	122-66-7	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	Pyrene	129-00-0	3 / 3	21 J	37 J	18 - 19	180 - 190	ug/kg	SL-237-SA5A	9 - 10
Semivolatiles	Pyrene	129-00-0	26 / 175	0.76 J	1800	0.69 - 16	1.7 - 40	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	Dimethylphthalate	131-11-3	0 / 6	-	-	18 - 190	180 - 1900	ug/kg		-
Semivolatiles	Dimethylphthalate	131-11-3	0 / 172	-	-	6.2 - 140	19 - 430	ug/kg		-
Semivolatiles	Dibenzofuran	132-64-9	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	Benzo(g,h,i)perylene	191-24-2	3 / 3	22 J	62 J	19 - 20	190 - 200	ug/kg	SL-116-SA5A	14 - 15
Semivolatiles	Benzo(g,h,i)perylene	191-24-2	24 / 175	0.75 J	230	0.69 - 16	1.7 - 40	ug/kg	SL-189-SA5A	5 - 6
Semivolatiles	Indeno(1,2,3-Cd)Pyrene	193-39-5	21 / 178	0.74 J	170	0.69 - 16	1.7 - 40	ug/kg	SL-189-SA5A SL-189-SA5A	5 - 6 8.5 9.5
Semivolatiles	Benzo(b)fluoranthene	205-99-2	2 / 2	25	35 J	18 - 18	180 - 180	ug/kg	SL-237-SA5A	9 - 10
Semivolatiles	Benzo(b)fluoranthene	205-99-2	34 / 176	0.78 J	510	0.69 - 16	1.7 - 40	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	Fluoranthene	206-44-0	1 / 1	20	20	18 - 18	180 - 180	ug/kg	SL-112-SA5A	8.5 - 9.5
Semivolatiles	Fluoranthene	206-44-0	32 / 177	0.77 J	2000	0.69 - 16	1.7 - 40	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	Benzo(k)fluoranthene	207-08-9	18 / 178	0.81 J	170	0.69 - 16	1.7 - 40	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	Acenaphthylene	208-96-8	5 / 178	0.42 J	150	0.34 - 8	1.7 - 40	ug/kg	SL-189-SA5A	5 - 6
Semivolatiles	Chrysene	218-01-9	3 / 3	24	100 J	18 - 19	180 - 190	ug/kg	SL-237-SA5A	9 - 10
Semivolatiles	Chrysene	218-01-9	43 / 175	0.38 J	610	0.34 - 8	1.7 - 40	ug/kg	SL-189-SA5A	8.5 - 9.5

Table 3-2
Summary of Analytical Results for Chemicals - Validated Data
Subsurface Soils
HSA-5A

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Semivolatiles	bis(2-Chloroisopropyl) ether	39638-32-9	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	Benzo(a)pyrene	50-32-8	4 / 4	20	100 J	18 - 19	180 - 190	ug/kg	SL-116-SA5A	14 - 15
Semivolatiles	Benzo(a)pyrene	50-32-8	22 / 174	0.79 J	370	0.69 - 16	1.7 - 40	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	2,4-Dinitrophenol	51-28-5	0 / 178	-	-	340 - 4000	1000 - 12000	ug/kg		-
Semivolatiles	4,6-Dinitro-2-Methylphenol	534-52-1	0 / 178	-	-	170 - 2000	510 - 6000	ug/kg		-
Semivolatiles	Dibenzo(a,h)anthracene	53-70-3	14 / 178	0.72 J	50	0.69 - 16	1.7 - 40	ug/kg	SL-189-SA5A	5 - 6
Semivolatiles	Benzo(a)anthracene	56-55-3	1 / 1	25	25	18 - 18	180 - 180	ug/kg	SL-112-SA5A	8.5 - 9.5
Semivolatiles	Benzo(a)anthracene	56-55-3	20 / 177	1.0 J	640	0.69 - 16	1.7 - 40	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	4-Chloro-3-Methylphenol	59-50-7	0 / 177	-	-	34 - 400	170 - 2000	ug/kg		-
Semivolatiles	N-Nitroso-Di-N-Propylamine	621-64-7	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	Aniline	62-53-3	0 / 178	-	-	170 - 2000	510 - 6000	ug/kg		-
Semivolatiles	Benzoic Acid	65-85-0	0 / 178	-	-	170 - 2000	510 - 6000	ug/kg		-
Semivolatiles	Hexachloroethane	67-72-1	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	4-Chlorophenyl Phenylether	7005-72-3	0 / 178	-	-	34 - 400	170 - 2000	ug/kg		-
Semivolatiles	Hexachlorocyclopentadiene	77-47-4	0 / 178	-	-	170 - 2000	510 - 6000	ug/kg		-
Semivolatiles	Isophorone	78-59-1	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	Acenaphthene	83-32-9	2 / 178	310	990	0.69 - 16	1.7 - 40	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	Diethylphthalate	84-66-2	0 / 6	-	-	18 - 190	180 - 1900	ug/kg		-
Semivolatiles	Diethylphthalate	84-66-2	17 / 172	7.0 J	11 J	6.2 - 140	19 - 430	ug/kg	SL-072-SA5A	4 - 5
Semivolatiles	Di-n-Butylphthalate	84-74-2	1 / 67	32 J	32 J	17 - 190	170 - 1900	ug/kg	SL-237-SA5A	9 - 10
Semivolatiles	Di-n-Butylphthalate	84-74-2	22 / 111	9.5 J	13 J	6.3 - 140	19 - 430	ug/kg	SL-089-SA5A SL-076-SA5A SL-156-SA5A	9 - 10 4 5 3 4
Semivolatiles	Phenanthrene	85-01-8	1 / 1	40 J	40 J	18 - 18	180 - 180	ug/kg	SL-237-SA5A	9 - 10
Semivolatiles	Phenanthrene	85-01-8	23 / 177	0.74 J	4700	0.69 - 16	1.7 - 40	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	Butylbenzylphthalate	85-68-7	1 / 6	50 J	50 J	18 - 190	180 - 1900	ug/kg	SL-116-SA5A	14 - 15
Semivolatiles	Butylbenzylphthalate	85-68-7	1 / 172	6.9 J	6.9 J	6.2 - 140	19 - 430	ug/kg	SL-080-SA5A	3 - 4
Semivolatiles	N-Nitrosodiphenylamine	86-30-6	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	Fluorene	86-73-7	2 / 2	710 J	2300	190 - 200	1900 - 2000	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	Fluorene	86-73-7	2 / 176	0.87 J	1.1 J	0.69 - 3.8	1.7 - 9.5	ug/kg	SL-090-SA5A	4 - 5
Semivolatiles	Carbazole	86-74-8	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	Pentachlorophenol	87-86-5	0 / 178	-	-	170 - 2000	510 - 6000	ug/kg		-
Semivolatiles	2,4,6-Trichlorophenol	88-06-2	0 / 178	-	-	34 - 400	170 - 2000	ug/kg		-
Semivolatiles	2-Nitroaniline	88-74-4	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	2-Nitrophenol	88-75-5	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	1-Methylnaphthalene	90-12-0	1 / 2	6500	6500	20 - 200	200 - 2000	ug/kg	SL-189-SA5A	5 - 6
Semivolatiles	1-Methylnaphthalene	90-12-0	5 / 177	0.88 J	27000	0.69 - 150	1.7 - 380	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	Naphthalene	91-20-3	1 / 1	1400 J	1400 J	200 - 200	2000 - 2000	ug/kg	SL-189-SA5A	5 - 6
Semivolatiles	Naphthalene	91-20-3	28 / 177	0.75 J	7400	0.69 - 15	1.7 - 38	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	2-Methylnaphthalene	91-57-6	1 / 1	3200	3200	200 - 200	2000 - 2000	ug/kg	SL-189-SA5A	5 - 6
Semivolatiles	2-Methylnaphthalene	91-57-6	5 / 177	0.90 J	36000	0.69 - 150	1.7 - 380	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	2-Chloronaphthalene	91-58-7	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	3,3`-Dichlorobenzidine	91-94-1	0 / 178	-	-	100 - 1200	340 - 4000	ug/kg		-
Semivolatiles	Benzidine	92-87-5	0 / 178	-	-	1200 - 14000	3400 - 40000	ug/kg		-
Semivolatiles	2-Methylphenol	95-48-7	0 / 178	-	-	34 - 400	170 - 2000	ug/kg		-
Semivolatiles	2-Chlorophenol	95-57-8	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Semivolatiles	2,4,5-Trichlorophenol	95-95-4	0 / 178	-	-	34 - 400	170 - 2000	ug/kg		-

Table 3-2
Summary of Analytical Results for Chemicals - Validated Data
Subsurface Soils
HSA-5A

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Semivolatiles	3-Nitroaniline	99-09-2	0 / 178	-	-	34 - 400	170 - 2000	ug/kg		-
Semivolatiles	Benzyl Alcohol	100-51-6	0 / 178	-	-	170 - 2000	510 - 6000	ug/kg		-
Semivolatiles	2,6-Dinitrotoluene	606-20-2	0 / 178	-	-	17 - 200	170 - 2000	ug/kg		-
Volatiles	GRO (C5-C12)	GROC5C12	4 / 95	0.2 J	660	0.2 - 8.8	0.9 - 44	mg/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	EFH (C15-C20)	PHCC15C20	14 / 95	0.51 J	3400	0.42 - 93	1.3 - 280	mg/kg	SL-189-SA5A	5 - 6
Volatiles	EFH (C21-C30)	PHCC21C30	46 / 95	0.48 J	580	0.42 - 93	1.3 - 280	mg/kg	SL-012-SA5A	2 - 3
Volatiles	EFH (C30-C40)	PHCC30C40	76 / 95	0.45 J	1700	0.42 - 93	1.3 - 280	mg/kg	SL-012-SA5A	2 - 3
Volatiles	EFH (C8-C11)	PHCC8C11	14 / 95	0.43 J	710	0.42 - 93	1.3 - 280	mg/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	1,4-Dichlorobenzene	106-46-7	0 / 158	-	-	0.14 - 7.9	3.5 - 200	ug/kg		-
Volatiles	1,2,4-Trichlorobenzene	120-82-1	0 / 158	-	-	0.16 - 8.9	3.5 - 200	ug/kg		-
Volatiles	1,3-Dichlorobenzene	541-73-1	0 / 158	-	-	0.11 - 5.9	3.5 - 200	ug/kg		-
Volatiles	Hexachlorobutadiene	87-68-3	1 / 158	100 J	100 J	0.12 - 6.9	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	1,2-Dichlorobenzene	95-50-1	0 / 158	-	-	0.08 - 4.4	3.5 - 200	ug/kg		-
Volatiles	Isopropyltoluene	99-87-6	1 / 158	130 J	130 J	0.1 - 5.4	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	Ethylbenzene	100-41-4	28 / 158	0.06 J	610	0.05 - 3	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	Styrene	100-42-5	0 / 158	-	-	0.09 - 4.9	3.5 - 200	ug/kg		-
Volatiles	cis-1,3-Dichloropropene	10061-01-5	0 / 158	-	-	0.14 - 7.9	3.5 - 200	ug/kg		-
Volatiles	trans-1,3-Dichloropropene	10061-02-6	0 / 158	-	-	0.15 - 8.4	3.5 - 200	ug/kg		-
Volatiles	N-Propylbenzene	103-65-1	3 / 158	0.24 J	910	0.06 - 3.5	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	N-Butylbenzene	104-51-8	3 / 158	2.2 J	600	0.11 - 5.9	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	4-Chlorotoluene	106-43-4	0 / 158	-	-	0.12 - 6.9	3.5 - 200	ug/kg		-
Volatiles	1,2-Dibromoethane	106-93-4	0 / 158	-	-	0.15 - 8.4	3.5 - 200	ug/kg		-
Volatiles	1,2-Dichloroethane	107-06-2	1 / 158	2.3 J	2.3 J	0.13 - 7.4	3.5 - 200	ug/kg	SL-094-SA5A	9 - 10
Volatiles	4-Methyl-2-Pentanone	108-10-1	0 / 158	-	-	0.34 - 19	7 - 400	ug/kg		-
Volatiles	1,3,5-Trimethylbenzene	108-67-8	0 / 158	-	-	0.09 - 4.9	3.5 - 200	ug/kg		-
Volatiles	Bromobenzene	108-86-1	0 / 158	-	-	0.11 - 6.4	3.5 - 200	ug/kg		-
Volatiles	Toluene	108-88-3	22 / 158	0.08 J	2.3 J	0.07 - 4	3.5 - 200	ug/kg	SL-118-SA5A	2.5 - 3.5
Volatiles	Chlorobenzene	108-90-7	0 / 158	-	-	0.1 - 5.4	3.5 - 200	ug/kg		-
Volatiles	2-Chloroethyl Vinyl Ether	110-75-8	0 / 158	-	-	0.26 - 15	3.5 - 200	ug/kg		-
Volatiles	1,4-Dioxane	123-91-1	0 / 158	-	-	4.3 - 7.6	13 - 23	ug/kg		-
Volatiles	Dibromochloromethane	124-48-1	0 / 158	-	-	0.17 - 9.9	3.5 - 200	ug/kg		-
Volatiles	Tetrachloroethene	127-18-4	0 / 158	-	-	0.17 - 9.9	3.5 - 200	ug/kg		-
Volatiles	sec-Butylbenzene	135-98-8	4 / 158	0.14 J	990	0.05 - 3	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	1,3-Dichloropropane	142-28-9	0 / 158	-	-	0.07 - 4	3.5 - 200	ug/kg		-
Volatiles	cis-1,2-Dichloroethene	156-59-2	0 / 158	-	-	0.17 - 9.4	3.5 - 200	ug/kg		-
Volatiles	trans-1,2-Dichloroethene	156-60-5	0 / 158	-	-	0.11 - 5.9	3.5 - 200	ug/kg		-
Volatiles	Methyl tert-Butyl Ether	1634-04-4	0 / 158	-	-	0.18 - 10	3.5 - 200	ug/kg		-
Volatiles	m,p-Xylene	179601-23-1	25 / 158	0.18 J	16 J	0.15 - 8.4	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	Carbon tetrachloride	56-23-5	0 / 158	-	-	0.12 - 6.9	3.5 - 200	ug/kg		-
Volatiles	1,1-Dichloropropene	563-58-6	0 / 158	-	-	0.11 - 6.4	3.5 - 200	ug/kg		-
Volatiles	2-Hexanone	591-78-6	0 / 158	-	-	1.4 - 79	7 - 400	ug/kg		-
Volatiles	2,2-Dichloropropane	594-20-7	0 / 158	-	-	0.15 - 8.4	3.5 - 200	ug/kg		-
Volatiles	1,1,1,2-Tetrachloroethane	630-20-6	0 / 158	-	-	0.1 - 5.4	3.5 - 200	ug/kg		-
Volatiles	Acetone	67-64-1	10 / 158	6.7 J	71	5.8 - 330	7 - 400	ug/kg	SL-236-SA5A	4 - 5
Volatiles	Chloroform	67-66-3	0 / 158	-	-	0.11 - 5.9	3.5 - 200	ug/kg		-
Volatiles	Benzene	71-43-2	5 / 158	0.11 J	8.4 J	0.09 - 4.9	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	1,1,1-Trichloroethane	71-55-6	0 / 158	-	-	0.17 - 9.9	3.5 - 200	ug/kg		-

Table 3-2
Summary of Analytical Results for Chemicals - Validated Data
Subsurface Soils
HSA-5A

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Volatiles	Bromomethane	74-83-9	0 / 158	-	-	0.22 - 12	3.5 - 200	ug/kg		-
Volatiles	Chloromethane	74-87-3	0 / 158	-	-	0.29 - 16	3.5 - 200	ug/kg		-
Volatiles	Dibromomethane	74-95-3	0 / 158	-	-	0.21 - 12	3.5 - 200	ug/kg		-
Volatiles	Bromochloromethane	74-97-5	0 / 158	-	-	0.29 - 16	3.5 - 200	ug/kg		-
Volatiles	Chloroethane	75-00-3	0 / 158	-	-	0.11 - 6.4	3.5 - 200	ug/kg		-
Volatiles	Vinyl Chloride	75-01-4	0 / 158	-	-	0.17 - 9.9	3.5 - 200	ug/kg		-
Volatiles	Methylene chloride	75-09-2	12 / 158	0.70	13	0.21 - 12	3.5 - 200	ug/kg	SL-156-SA5A	3 - 4
Volatiles	Bromoform	75-25-2	0 / 158	-	-	0.35 - 20	3.5 - 200	ug/kg		-
Volatiles	Bromodichloromethane	75-27-4	1 / 158	50 J	50 J	0.07 - 4	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	1,1-Dichloroethane	75-34-3	0 / 158	-	-	0.09 - 4.9	3.5 - 200	ug/kg		-
Volatiles	1,1-Dichloroethene	75-35-4	0 / 158	-	-	0.34 - 19	3.5 - 200	ug/kg		-
Volatiles	Trichlorofluoromethane	75-69-4	0 / 158	-	-	0.25 - 14	3.5 - 200	ug/kg		-
Volatiles	Dichlorodifluoromethane	75-71-8	0 / 158	-	-	0.11 - 5.9	3.5 - 200	ug/kg		-
Volatiles	Freon 113a	75-88-7	0 / 158	-	-	0.44 - 25	4.4 - 250	ug/kg		-
Volatiles	Freon 113	76-13-1	0 / 158	-	-	0.1 - 5.4	3.5 - 200	ug/kg		-
Volatiles	1,2-Dichloropropane	78-87-5	0 / 158	-	-	0.15 - 8.4	3.5 - 200	ug/kg		-
Volatiles	2-Butanone	78-93-3	5 / 158	1.7 J	11	1.1 - 60	7 - 400	ug/kg	SL-236-SA5A	4 - 5
Volatiles	1,1,2-Trichloroethane	79-00-5	0 / 158	-	-	0.24 - 13	3.5 - 200	ug/kg		-
Volatiles	Trichloroethene	79-01-6	1 / 158	0.16 J	0.16 J	0.13 - 7.4	3.5 - 200	ug/kg	SL-158-SA5A	4 - 5
Volatiles	1,1,2,2-Tetrachloroethane	79-34-5	0 / 158	-	-	0.2 - 11	3.5 - 200	ug/kg		-
Volatiles	Chlorotrifluoroethene	79-38-9	0 / 158	-	-	0.44 - 25	4.4 - 250	ug/kg		-
Volatiles	1,2,3-Trichlorobenzene	87-61-6	1 / 158	85 J	85 J	0.12 - 6.9	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	o-Xylene	95-47-6	3 / 158	0.19 J	13 J	0.15 - 8.4	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	2-Chlorotoluene	95-49-8	0 / 158	-	-	0.12 - 6.9	3.5 - 200	ug/kg		-
Volatiles	1,2,4-Trimethylbenzene	95-63-6	1 / 158	32 J	32 J	0.35 - 20	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	1,2-Dibromo-3-chloropropane	96-12-8	0 / 158	-	-	0.61 - 35	3.5 - 200	ug/kg		-
Volatiles	1,2,3-Trichloropropane	96-18-4	0 / 158	-	-	0.29 - 16	3.5 - 200	ug/kg		-
Volatiles	tert-Butylbenzene	98-06-6	1 / 158	47 J	47 J	0.14 - 7.9	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	Isopropylbenzene	98-82-8	4 / 158	0.21 J	490	0.05 - 3	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5

ug/kg - microgram per kilogram
mg/kg - milligram per kilogram
ng/kg - nanogram per kilogram
% - percent
J - Result is an estimated value

Table 3-3
Summary of Analytical Results for Chemicals - Validated Data
Combined Subsurface and Surface Soils
HSA-5A

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Inorganic	Nitrate	14797-55-8	91 / 95	0.92 J	18.5	0.83 - 1	1.6 - 1.9	mg/kg	SL-093-SA5A	3.5 - 4.5
Inorganic	Fluoride	16984-48-8	271 / 299	0.88 J	21.6 J	0.82 - 1.1	1 - 1.4	mg/kg	SL-204-SA5A	4 - 5
Inorganic	Cyanide	57-12-5	0 / 95	-	-	0.18 - 0.23	0.5 - 0.64	mg/kg		
Inorganic	Aluminum	7429-90-5	299 / 299	3460	37200	4.97 - 7.04	19.7 - 28	mg/kg	SL-114-SA5A	4 - 5
Inorganic	Iron	7439-89-6	299 / 299	5100	52800	4.65 - 29.3	19.7 - 125	mg/kg	SL-197-SA5A	8 - 9
Inorganic	Lead	7439-92-1	299 / 299	2.22 J	2890 J	0.0105 - 0.595	0.202 - 11.4	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Lithium	7439-93-2	299 / 299	2.6	64.4	0.22 - 0.31	2 - 2.8	mg/kg	SL-197-SA5A	8 - 9
Inorganic	Magnesium	7439-95-4	299 / 299	1020	11900	2.51 - 3.56	9.87 - 14	mg/kg	SL-197-SA5A	8 - 9
Inorganic	Manganese	7439-96-5	299 / 299	87.4 J	730	0.077 - 0.109	0.494 - 0.7	mg/kg	SL-253-SA5A	4 - 5
Inorganic	Mercury	7439-97-6	154 / 299	0.0031 J	4.82	0.0028 - 0.0299	0.0992 - 1.04	mg/kg	SL-136-SA5A	0 - 0.5
Inorganic	Molybdenum	7439-98-7	297 / 299	0.166	19.5 J	0.0504 - 0.0687	0.101 - 0.137	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Nickel	7440-02-0	299 / 299	5.79 J	538 J	0.101 - 0.572	0.403 - 2.29	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Potassium	7440-09-7	299 / 299	575 J	6680 J	17.8 - 25.2	49.4 - 70	mg/kg	SL-258-SA5A	4 - 5
Inorganic	Silver	7440-22-4	260 / 299	0.0143 J	59.2 J	0.0121 - 0.0165	0.101 - 0.137	mg/kg	SL-042-SA5A	0 - 0.5
Inorganic	Sodium	7440-23-5	294 / 299	42.0 J	1650	36.8 - 52.2	98.7 - 140	mg/kg	SL-204-SA5A	4 - 5
Inorganic	Strontium	7440-24-6	297 / 299	8.82	98.4	0.0612 - 0.0868	0.494 - 0.7	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Thallium	7440-28-0	270 / 299	0.0581 J	0.580 J	0.0302 - 0.172	0.101 - 0.572	mg/kg	SL-077-SA5A	0 - 0.5
Inorganic	Tin	7440-31-5	8 / 299	2.09	42.8	0.987 - 1.4	9.87 - 14	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Titanium	7440-32-6	299 / 299	254	1690	0.375 - 0.532	0.987 - 1.4	mg/kg	SL-244-SA5A	9 - 10
Inorganic	Antimony	7440-36-0	225 / 299	0.0667 J	2.45 J	0.0605 - 0.0824	0.202 - 0.275	mg/kg	SL-093-SA5A	3.5 - 4.5
Inorganic	Arsenic	7440-38-2	299 / 299	2.98	30.4 J	0.0806 - 0.11	0.403 - 0.549	mg/kg	SL-076-SA5A	0 - 0.5
Inorganic	Beryllium	7440-41-7	297 / 299	0.174 J	1.86 J	0.0161 - 0.0456	0.101 - 0.285	mg/kg	SL-077-SA5A	0 - 0.5
Inorganic	Barium	7440-39-3	299 / 299	23.4	781 J	0.109 - 0.654	0.403 - 2.42	mg/kg	SL-189-SA5A	5 - 6
Inorganic	Boron	7440-42-8	254 / 299	1.07 J	27.7	0.879 - 1.25	4.94 - 7	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Cadmium	7440-43-9	259 / 299	0.0423 J	18.6 J	0.0403 - 0.0549	0.101 - 0.137	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Chromium	7440-47-3	299 / 299	10.7	693 J	0.121 - 0.687	0.403 - 2.29	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Cobalt	7440-48-4	299 / 299	2.38 J	45.6 J	0.0202 - 0.0275	0.101 - 0.137	mg/kg	SL-076-SA5A	0 - 0.5
Inorganic	Copper	7440-50-8	299 / 299	3.82 J	699 J	0.0665 - 0.378	0.403 - 2.29	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Vanadium	7440-62-2	299 / 299	15.7	82.7 J	0.0222 - 0.0302	0.101 - 0.137	mg/kg	SL-077-SA5A	0 - 0.5
Inorganic	Zinc	7440-66-6	299 / 299	18.8	1100	0.564 - 6.96	3.02 - 37.3	mg/kg	SL-113-SA5A	14 - 15
Inorganic	Zirconium	7440-67-7	224 / 299	0.917 J	16.1	0.829 - 1.18	4.94 - 7	mg/kg	SL-120-SA5A	0 - 0.5
Inorganic	Calcium	7440-70-2	298 / 299	1100	61200	6.05 - 8.59	19.7 - 28	mg/kg	SL-221-SA5A	3 - 4
Inorganic	Phosphorus	7723-14-0	299 / 299	62.4 J	835 J	0.553 - 0.784	9.87 - 14	mg/kg	SL-195-SA5A	0 - 0.2
Inorganic	Selenium	7782-49-2	260 / 299	0.0441 J	0.554 J	0.0403 - 0.0549	0.403 - 0.549	mg/kg	SL-048-SA5A	0 - 0.5
Inorganic	Chromium VI	18540-29-9	201 / 299	0.23 J	6.6	0.21 - 0.28	1 - 1.4	mg/kg	SL-109-SA5A	0 - 0.5
Inorganic	Perchlorate	14797-73-0	2 / 299	13.8 J	25.7 J	9.2 - 12.6	30.8 - 42	ug/kg	SL-035-SA5A	4 - 5
Inorganic	Perchlorate	14797-73-0	1 / 41	8.6	8.6	2.2 - 2.7	5.2 - 6.5	ug/kg	SL-215-SA5A	4 - 5
Misc. Organics	Ethanol	64-17-5	0 / 95	-	-	100 - 130	520 - 650	ug/kg		
Misc. Organics	Methanol	67-56-1	4 / 95	150 J	450 J	100 - 230	520 - 650	ug/kg	SL-249-SA5A	2.5 - 3.5
Misc. Organics	2-Propanol	67-63-0	0 / 95	-	-	100 - 130	520 - 650	ug/kg		
Misc. Organics	Ethylene Glycol	107-21-1	0 / 95	-	-	5.2 - 7.4	11 - 16	mg/kg		
Misc. Organics	Diethylene Glycol	111-46-6	0 / 95	-	-	5.2 - 9.5	11 - 16	mg/kg		
Misc. Organics	Propylene glycol	57-55-6	1 / 95	8.9 J	8.9 J	5.2 - 6.5	11 - 16	mg/kg	SL-189-SA5A	8.5 - 9.5
Misc. Organics	o-Terphenyl	84-15-1	0 / 95	-	-	1.6 - 22	3.6 - 51	mg/kg		
Misc. Organics	m-Terphenyl	92-06-8	0 / 95	-	-	1.6 - 22	3.6 - 51	mg/kg		
Misc. Organics	p-Terphenyl	92-94-4	0 / 95	-	-	1.6 - 22	3.6 - 51	mg/kg		
Misc. Organics	Formaldehyde	50-00-0	8 / 95	680 J	21000	620 - 6900	1600 - 17000	ug/kg	SL-189-SA5A	8.5 - 9.5

Table 3-3
Summary of Analytical Results for Chemicals - Validated Data
Combined Subsurface and Surface Soils
HSA-5A

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Misc. Organics	2,6-Dinitrotoluene	606-20-2	0 / 95	-	-	40 - 51	120 - 150	ug/kg		
Misc. Organics	2,4,6-Trinitrotoluene	118-96-7	0 / 95	-	-	40 - 51	120 - 150	ug/kg		
Misc. Organics	RDX	121-82-4	0 / 95	-	-	50 - 69	120 - 150	ug/kg		
Misc. Organics	4-Amino-2,6-Dinitrotoluene	19406-51-0	0 / 95	-	-	60 - 76	120 - 150	ug/kg		
Misc. Organics	HMX	2691-41-0	1 / 95	220 J	220 J	100 - 130	300 - 380	ug/kg	SL-242-SA5A	2.5 - 3.5
Misc. Organics	2-Amino-4,6-Dinitrotoluene	35572-78-2	0 / 95	-	-	40 - 51	120 - 150	ug/kg		
Misc. Organics	Tetryl	479-45-8	0 / 95	-	-	61 - 78	120 - 150	ug/kg		
Misc. Organics	Nitroglycerin	55-63-0	0 / 95	-	-	800 - 1000	2400 - 3000	ug/kg		
Misc. Organics	2,6-Diamino-4-nitrotoluene	59229-75-3	0 / 95	-	-	80 - 100	240 - 300	ug/kg		
Misc. Organics	2,4-Diamino-6-nitrotoluene	6629-29-4	1 / 95	98 J	98 J	80 - 100	240 - 300	ug/kg	SL-189-SA5A	8.5 - 9.5
Misc. Organics	PETN	78-11-5	0 / 95	-	-	800 - 1000	2400 - 3000	ug/kg		
Misc. Organics	2-Nitrotoluene	88-72-2	0 / 95	-	-	80 - 100	120 - 150	ug/kg		
Misc. Organics	3-Nitrotoluene	99-08-1	0 / 95	-	-	100 - 130	120 - 150	ug/kg		
Misc. Organics	1,3,5-Trinitrobenzene	99-35-4	0 / 95	-	-	40 - 51	120 - 150	ug/kg		
Misc. Organics	4-Nitrotoluene	99-99-0	0 / 95	-	-	80 - 100	120 - 150	ug/kg		
Misc. Organics	2,4-Dinitrotoluene	121-14-2	0 / 95	-	-	40 - 51	120 - 150	ug/kg		
Misc. Organics	Nitrobenzene	98-95-3	0 / 95	-	-	40 - 51	120 - 150	ug/kg		
Misc. Organics	m-Dinitrobenzene	99-65-0	0 / 95	-	-	40 - 51	120 - 150	ug/kg		
PCBs and Dioxins	2,3,7,8-TCDD	1746-01-6	137 / 299	0.0106 J	7.81	0.00836 - 0.207	1.01 - 1.4	ng/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	1,2,3,7,8,9-HxCDD	19408-74-3	158 / 299	0.0786 J	82.1	0.00767 - 0.472	5.05 - 7	ng/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	OCDD	3268-87-9	198 / 299	1.50 J	75800 J	0.0151 - 2.52	10.1 - 14	ng/kg	SL-016-SA5A	0 - 0.5
PCBs and Dioxins	1,2,3,4,6,7,8-HpCDD	35822-46-9	166 / 299	0.923 J	6140 J	0.0114 - 1.22	5.05 - 7	ng/kg	SL-016-SA5A	0 - 0.5
PCBs and Dioxins	OCDF	39001-02-0	143 / 299	0.846 J	910	0.0101 - 0.723	10.1 - 14	ng/kg	SL-042-SA5A	0 - 0.5
PCBs and Dioxins	1,2,3,4,7,8-HxCDD	39227-28-6	149 / 299	0.0220 J	45.1	0.00851 - 0.478	5.05 - 7	ng/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	1,2,3,7,8-PeCDD	40321-76-4	119 / 299	0.0233 J	41.0	0.0083 - 0.304	5.05 - 7	ng/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	2,3,7,8-TCDF	51207-31-9	117 / 299	0.00904 J	56.5	0.00655 - 0.515	1.01 - 1.4	ng/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	1,2,3,4,7,8,9-HpCDF	55673-89-7	88 / 299	0.166 J	136 J	0.00518 - 0.592	5.05 - 7	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	2,3,4,7,8-PeCDF	57117-31-4	83 / 299	0.283 J	187 J	0.0042 - 0.312	5.05 - 7	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	1,2,3,7,8-PeCDF	57117-41-6	108 / 299	0.0137 J	89.7 J	0.00419 - 0.336	5.05 - 7	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	1,2,3,6,7,8-HxCDF	57117-44-9	97 / 299	0.0601 J	197 J	0.00485 - 0.594	5.05 - 7	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	1,2,3,6,7,8-HxCDD	57653-85-7	170 / 299	0.0181 J	104	0.00836 - 0.507	5.05 - 7	ng/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	2,3,4,6,7,8-HxCDF	60851-34-5	94 / 299	0.115 J	369 J	0.00477 - 0.393	5.05 - 7	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	1,2,3,4,6,7,8-HpCDF	67562-39-4	135 / 299	0.416 J	964 J	0.00397 - 0.793	5.05 - 7	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	1,2,3,4,7,8-HxCDF	70648-26-9	121 / 299	0.0877 J	225 J	0.0054 - 0.726	5.05 - 7	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	1,2,3,7,8,9-HxCDF	72918-21-9	102 / 299	0.0226 J	79.8 J	0.00496 - 0.423	5.05 - 7	ng/kg	SL-222-SA5A	3.5 - 4.5
PCBs and Dioxins	Aroclor 1260	11096-82-5	108 / 299	0.48 J	2300	0.4 - 83	1.7 - 360	ug/kg	SL-178-SA5A	0 - 0.4
PCBs and Dioxins	Aroclor 1254	11097-69-1	67 / 299	0.54 J	150	0.34 - 70	1.7 - 360	ug/kg	SL-221-SA5A	3 - 4
PCBs and Dioxins	Aroclor 1268	11100-14-4	9 / 299	0.87 J	37	0.34 - 70	1.7 - 360	ug/kg	SL-009-SA5A	0 - 0.5
PCBs and Dioxins	Aroclor 1221	11104-28-2	0 / 299	-	-	0.34 - 70	1.7 - 360	ug/kg		
PCBs and Dioxins	Aroclor 5460	11126-42-4	98 / 299	1.2 J	210	1 - 210	3.4 - 700	ug/kg	SL-217-SA5A	0 - 0.5
PCBs and Dioxins	Aroclor 1232	11141-16-5	0 / 299	-	-	0.34 - 70	1.7 - 360	ug/kg		
PCBs and Dioxins	Aroclor 5442	12642-23-8	1 / 299	2.0 J	2.0 J	1 - 210	3.4 - 700	ug/kg	SL-006-SA5A	2 - 3
PCBs and Dioxins	Aroclor 1248	12672-29-6	10 / 299	0.71 J	15	0.34 - 70	1.7 - 360	ug/kg	SL-119-SA5A	0 - 0.5
PCBs and Dioxins	Aroclor 1016	12674-11-2	0 / 299	-	-	0.34 - 70	1.7 - 360	ug/kg		
PCBs and Dioxins	Aroclor 1262	37324-23-5	0 / 299	-	-	0.34 - 70	1.7 - 360	ug/kg		
PCBs and Dioxins	Aroclor 1242	53469-21-9	0 / 299	-	-	0.34 - 70	1.7 - 360	ug/kg		
PCBs and Dioxins	Aroclor 5432	63496-31-1	0 / 299	-	-	1 - 210	3.4 - 700	ug/kg		

Table 3-3
Summary of Analytical Results for Chemicals - Validated Data
Combined Subsurface and Surface Soils
HSA-5A

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Pesticides	Dichlorprop	120-36-5	11 / 120	1.0 J	9.5	0.84 - 3.2	1.8 - 3.2	ug/kg	SL-051-SA5A	0 - 0.5
Pesticides	Dicamba	1918-00-9	19 / 120	0.46 J	2.2	0.41 - 0.56	1.2 - 1.7	ug/kg	SL-051-SA5A	0 - 0.5
Pesticides	2,2-Dichlor-Propionic Acid	75-99-0	0 / 120	-	-	4.5 - 6.2	9.2 - 13	ug/kg		
Pesticides	Dinitrobutyl Phenol	88-85-7	0 / 120	-	-	0.82 - 3.5	2.5 - 3.5	ug/kg		
Pesticides	MCPP	93-65-2	12 / 120	160 J	750	79 - 1400	260 - 1400	ug/kg	SL-105-SA5A	0 - 0.5
Pesticides	2,4,5-TP	93-72-1	24 / 120	0.12 J	0.83	0.077 - 0.57	0.17 - 0.57	ug/kg	SL-194-SA5A	0 - 0.3
Pesticides	2,4,5-T	93-76-5	7 / 120	0.17 J	1.0	0.084 - 1	0.17 - 1	ug/kg	SL-194-SA5A	0 - 0.3
Pesticides	MCPA	94-74-6	45 / 120	110 J	2300	78 - 1500	260 - 1500	ug/kg	SL-253-SA5A	0 - 0.5
Pesticides	2,4-D	94-75-7	2 / 120	1.5 J	2.0 J	1.2 - 1.7	3.7 - 5	ug/kg	SL-253-SA5A	0 - 0.5
Pesticides	2,4 DB	94-82-6	23 / 120	1.1 J	38	0.66 - 39	1.8 - 39	ug/kg	SL-194-SA5A SL-195-SA5A	0 - 0.3 0 0.2
Pesticides	Toxaphene	8001-35-2	0 / 120	-	-	2.4 - 120	7.1 - 350	ug/kg		
Pesticides	Heptachlor Epoxide	1024-57-3	10 / 120	0.048 J	0.58 J	0.037 - 1.8	0.17 - 8.8	ug/kg	SL-197-SA5A	0 - 0.5
Pesticides	Endosulfan Sulfate	1031-07-8	7 / 120	0.10 J	2.1	0.071 - 3.5	0.35 - 18	ug/kg	SL-197-SA5A	0 - 0.5
Pesticides	Mirex	2385-85-5	22 / 120	0.079 J	30	0.071 - 44	0.35 - 44	ug/kg	SL-031-SA5A	0 - 0.5
Pesticides	Aldrin	309-00-2	1 / 120	6.5	6.5	0.068 - 3.5	0.17 - 8.8	ug/kg	SL-037-SA5A	0 - 0.5
Pesticides	Alpha-BHC	319-84-6	2 / 120	0.13 J	0.21	0.035 - 1.8	0.17 - 8.8	ug/kg	SL-064-SA5A	0 - 0.5
Pesticides	Beta-BHC	319-85-7	10 / 120	0.19	1.8	0.062 - 3.2	0.17 - 8.8	ug/kg	SL-104-SA5A	0 - 0.5
Pesticides	Delta-BHC	319-86-8	9 / 120	0.046 J	0.13 J	0.037 - 1.9	0.17 - 8.8	ug/kg	SL-042-SA5A	0 - 0.5
Pesticides	Endosulfan II	33213-65-9	10 / 120	0.074 J	1.0	0.071 - 6.7	0.35 - 18	ug/kg	SL-217-SA5A	0 - 0.5
Pesticides	4,4'-DDT	50-29-3	81 / 120	0.082 J	52	0.071 - 130	0.37 - 130	ug/kg	SL-217-SA5A	0 - 0.5
Pesticides	Endrin Ketone	53494-70-5	15 / 120	0.083 J	0.99	0.068 - 3.5	0.35 - 18	ug/kg	SL-217-SA5A	0 - 0.5
Pesticides	Chlordane	57-74-9	0 / 120	-	-	0.82 - 42	3.5 - 180	ug/kg		
Pesticides	Gamma-BHC (Lindane)	58-89-9	5 / 120	0.052 J	0.15 J	0.035 - 1.8	0.17 - 8.8	ug/kg	SL-095-SA5A	0 - 0.5
Pesticides	Dieldrin	60-57-1	27 / 120	0.085 J	5.9	0.071 - 30	0.35 - 30	ug/kg	SL-257-SA5A	0 - 0.5
Pesticides	Endrin	72-20-8	0 / 120	-	-	0.068 - 15	0.35 - 18	ug/kg		
Pesticides	Methoxychlor	72-43-5	2 / 120	0.49 J	0.66 J	0.35 - 170	1.7 - 170	ug/kg	SL-077-SA5A	0 - 0.5
Pesticides	4,4'-DDD	72-54-8	16 / 120	0.087 J	9.3	0.071 - 9.4	0.35 - 18	ug/kg	SL-197-SA5A	0 - 0.5
Pesticides	4,4'-DDE	72-55-9	52 / 120	0.081 J	39	0.071 - 3.5	0.37 - 18	ug/kg	SL-217-SA5A	0 - 0.5
Pesticides	Endrin Aldehyde	7421-93-4	36 / 120	0.073 J	2.7	0.071 - 64	0.35 - 64	ug/kg	SL-217-SA5A	0 - 0.5
Pesticides	Heptachlor	76-44-8	7 / 120	0.090 J	1.2 J	0.062 - 3.2	0.17 - 8.8	ug/kg	SL-002-SA5A	0 - 0.5
Pesticides	Endosulfan I	959-98-8	0 / 120	-	-	0.045 - 2.3	0.17 - 8.8	ug/kg		
Semivolatiles	N-Nitrosodimethylamine	62-75-9	37 / 95	21.4 J	465	17.2 - 216	34.4 - 432	ng/kg	SL-092-SA5A	3 - 4
Semivolatiles	N-Nitrosodimethylamine	62-75-9	0 / 299	-	-	0.68 - 16	1.7 - 40	ug/kg		
Semivolatiles	2,4-Dinitrotoluene	121-14-2	0 / 299	-	-	34 - 400	170 - 2000	ug/kg		
Semivolatiles	Nitrobenzene	98-95-3	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	1,4-Dichlorobenzene	106-46-7	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	1,2,4-Trichlorobenzene	120-82-1	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	1,3-Dichlorobenzene	541-73-1	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	Hexachlorobutadiene	87-68-3	0 / 299	-	-	68 - 800	170 - 2000	ug/kg		
Semivolatiles	1,2-Dichlorobenzene	95-50-1	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	4-Nitroaniline	100-01-6	0 / 299	-	-	68 - 800	170 - 2000	ug/kg		
Semivolatiles	4-Nitrophenol	100-02-7	0 / 299	-	-	170 - 2000	510 - 6000	ug/kg		
Semivolatiles	4-Bromophenyl Phenyl Ether	101-55-3	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	2,4-Dimethylphenol	105-67-9	0 / 299	-	-	34 - 400	170 - 2000	ug/kg		
Semivolatiles	4-Methylphenol	106-44-5	0 / 299	-	-	34 - 400	170 - 2000	ug/kg		
Semivolatiles	4-Chloroaniline	106-47-8	0 / 299	-	-	68 - 800	170 - 2000	ug/kg		

Table 3-3
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Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Semivolatiles	3,5-Dimethylphenol	108-68-9	0 / 299	-	-	34 - 400	170 - 2000	ug/kg		
Semivolatiles	Phenol	108-95-2	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	Bis(2-Chloroethyl) ether	111-44-4	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	Bis(2-Chloroethoxy) methane	111-91-1	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	Bis(2-Ethylhexyl) phthalate	117-81-7	81 / 102	18 J	770	18 - 200	350 - 4000	ug/kg	SL-066-SA5A	0 - 0.5
Semivolatiles	Bis(2-Ethylhexyl) phthalate	117-81-7	71 / 199	7.2 J	6000	6.1 - 680	18 - 2000	ug/kg	SL-029-SA5A	0 - 0.5
Semivolatiles	Di-N-Octyl Phthalate	117-84-0	3 / 57	92 J	230	18 - 190	180 - 1900	ug/kg	SL-195-SA5A	0 - 0.2
Semivolatiles	Di-N-Octyl Phthalate	117-84-0	68 / 242	6.6 J	870	6.1 - 140	18 - 430	ug/kg	SL-194-SA5A	0 - 0.3
Semivolatiles	Hexachlorobenzene	118-74-1	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	Anthracene	120-12-7	5 / 5	25 J	99 J	18 - 20	180 - 200	ug/kg	SL-178-SA5A	0 - 0.4
Semivolatiles	Anthracene	120-12-7	70 / 294	0.35 J	890	0.34 - 8	1.7 - 40	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	2,4-Dichlorophenol	120-83-2	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	1,2-Diphenylhydrazine	122-66-7	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	Pyrene	129-00-0	19 / 19	19 J	1600	18 - 21	180 - 210	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Pyrene	129-00-0	103 / 281	0.74 J	2500	0.68 - 42	1.7 - 100	ug/kg	SL-191-SA5A	0 - 0.5
Semivolatiles	Dimethylphthalate	131-11-3	1 / 29	180	180	18 - 190	180 - 1900	ug/kg	SL-121-SA5A	0 - 0.5
Semivolatiles	Dimethylphthalate	131-11-3	3 / 270	8.0 J	15 J	6.1 - 140	18 - 430	ug/kg	SL-181-SA5A	0 - 0.5
Semivolatiles	Dibenzofuran	132-64-9	6 / 299	19 J	110 J	17 - 200	170 - 2000	ug/kg	SL-194-SA5A	0 - 0.3
Semivolatiles	Benzo(g,h,i)perylene	191-24-2	20 / 20	21 J	560	18 - 21	180 - 210	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Benzo(g,h,i)perylene	191-24-2	97 / 279	0.75 J	230	0.68 - 16	1.7 - 40	ug/kg	SL-189-SA5A	5 - 6
Semivolatiles	Indeno(1,2,3-Cd)Pyrene	193-39-5	11 / 11	21 J	590	18 - 21	180 - 210	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Indeno(1,2,3-Cd)Pyrene	193-39-5	79 / 288	0.74 J	230	0.68 - 16	1.7 - 40	ug/kg	SL-188-SA5A	0 - 0.5
Semivolatiles	Benzo(b)fluoranthene	205-99-2	10 / 10	22 J	1500	18 - 20	180 - 200	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Benzo(b)fluoranthene	205-99-2	123 / 289	0.78 J	1600	0.68 - 16	1.7 - 40	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	Fluoranthene	206-44-0	19 / 19	19 J	1900	18 - 23	180 - 230	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Fluoranthene	206-44-0	108 / 280	0.74 J	2900	0.68 - 42	1.7 - 100	ug/kg	SL-191-SA5A	0 - 0.5
Semivolatiles	Benzo(k)fluoranthene	207-08-9	8 / 8	26 J	580	18 - 20	180 - 200	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Benzo(k)fluoranthene	207-08-9	85 / 291	0.75 J	660	0.68 - 16	1.7 - 40	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	Acenaphthylene	208-96-8	45 / 299	0.35 J	150	0.34 - 8	1.7 - 40	ug/kg	SL-189-SA5A	5 - 6
Semivolatiles	Chrysene	218-01-9	21 / 21	20 J	1300	18 - 21	180 - 210	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Chrysene	218-01-9	123 / 278	0.38 J	1200	0.34 - 8	1.7 - 40	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	bis(2-Chloroisopropyl) ether	39638-32-9	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	Benzo(a)pyrene	50-32-8	18 / 18	20	800	18 - 20	180 - 200	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Benzo(a)pyrene	50-32-8	93 / 281	0.76 J	870	0.68 - 16	1.7 - 40	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	2,4-Dinitrophenol	51-28-5	0 / 299	-	-	340 - 4000	1000 - 12000	ug/kg		
Semivolatiles	4,6-Dinitro-2-Methylphenol	534-52-1	0 / 299	-	-	170 - 2000	510 - 6000	ug/kg		
Semivolatiles	Dibenzo(a,h)anthracene	53-70-3	6 / 6	22 J	180 J	18 - 20	180 - 200	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Dibenzo(a,h)anthracene	53-70-3	45 / 293	0.72 J	78	0.68 - 16	1.7 - 40	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	Benzo(a)anthracene	56-55-3	14 / 14	18 J	910	18 - 21	180 - 210	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Benzo(a)anthracene	56-55-3	81 / 285	0.78 J	1300	0.68 - 16	1.7 - 40	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	4-Chloro-3-Methylphenol	59-50-7	0 / 298	-	-	34 - 400	170 - 2000	ug/kg		
Semivolatiles	N-Nitroso-Di-N-Propylamine	621-64-7	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	Aniline	62-53-3	0 / 299	-	-	170 - 2000	510 - 6000	ug/kg		
Semivolatiles	Benzoic Acid	65-85-0	2 / 299	240 J	320 J	170 - 2000	510 - 6000	ug/kg	SL-197-SA5A	0 - 0.5
Semivolatiles	Hexachloroethane	67-72-1	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	4-Chlorophenyl Phenylether	7005-72-3	0 / 299	-	-	34 - 400	170 - 2000	ug/kg		
Semivolatiles	Hexachlorocyclopentadiene	77-47-4	0 / 299	-	-	170 - 2000	510 - 6000	ug/kg		

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Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Semivolatiles	Isophorone	78-59-1	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	Acenaphthene	83-32-9	3 / 3	38 J	74 J	18 - 19	180 - 190	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	Acenaphthene	83-32-9	9 / 296	0.78 J	990	0.68 - 16	1.7 - 40	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	Diethylphthalate	84-66-2	0 / 29	-	-	18 - 190	180 - 1900	ug/kg		
Semivolatiles	Diethylphthalate	84-66-2	17 / 270	7.0 J	11 J	6.1 - 140	18 - 430	ug/kg	SL-072-SA5A	4 - 5
Semivolatiles	Di-n-Butylphthalate	84-74-2	5 / 115	32 J	780	17 - 190	170 - 1900	ug/kg	SL-176-SA5A	0 - 0.3
Semivolatiles	Di-n-Butylphthalate	84-74-2	36 / 183	9.5 J	2900	6.1 - 360	18 - 1100	ug/kg	SL-186-SA5A	0 - 0.5
Semivolatiles	Phenanthrene	85-01-8	13 / 13	29 J	770	18 - 23	180 - 230	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Phenanthrene	85-01-8	92 / 286	0.74 J	4700	0.68 - 16	1.7 - 40	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	Butylbenzylphthalate	85-68-7	8 / 41	21 J	400	18 - 190	180 - 1900	ug/kg	SL-119-SA5A	0 - 0.5
Semivolatiles	Butylbenzylphthalate	85-68-7	30 / 257	6.9 J	140	6.1 - 140	18 - 430	ug/kg	SL-121-SA5A	0 - 0.5
Semivolatiles	N-Nitrosodiphenylamine	86-30-6	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	Fluorene	86-73-7	5 / 5	26 J	2300	18 - 200	180 - 2000	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	Fluorene	86-73-7	13 / 294	0.87 J	35	0.68 - 9.2	1.7 - 23	ug/kg	SL-191-SA5A	0 - 0.5
Semivolatiles	Carbazole	86-74-8	8 / 299	22 J	140 J	17 - 200	170 - 2000	ug/kg	SL-031-SA5A	0 - 0.5
Semivolatiles	Pentachlorophenol	87-86-5	0 / 299	-	-	170 - 2000	510 - 6000	ug/kg		
Semivolatiles	2,4,6-Trichlorophenol	88-06-2	0 / 299	-	-	34 - 400	170 - 2000	ug/kg		
Semivolatiles	2-Nitroaniline	88-74-4	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	2-Nitrophenol	88-75-5	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	1-Methylnaphthalene	90-12-0	2 / 3	25 J	6500	19 - 200	190 - 2000	ug/kg	SL-189-SA5A	5 - 6
Semivolatiles	1-Methylnaphthalene	90-12-0	20 / 297	0.81 J	27000	0.68 - 150	1.7 - 380	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	Naphthalene	91-20-3	1 / 9	1400 J	1400 J	18 - 200	180 - 2000	ug/kg	SL-189-SA5A	5 - 6
Semivolatiles	Naphthalene	91-20-3	73 / 290	0.75 J	7400	0.68 - 15	1.7 - 38	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	2-Methylnaphthalene	91-57-6	2 / 2	21 J	3200	19 - 200	190 - 2000	ug/kg	SL-189-SA5A	5 - 6
Semivolatiles	2-Methylnaphthalene	91-57-6	26 / 297	0.78 J	36000	0.68 - 150	1.7 - 380	ug/kg	SL-189-SA5A	8.5 - 9.5
Semivolatiles	2-Chloronaphthalene	91-58-7	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	3,3`-Dichlorobenzidine	91-94-1	0 / 299	-	-	100 - 1200	340 - 4000	ug/kg		
Semivolatiles	Benzidine	92-87-5	0 / 299	-	-	1200 - 14000	3400 - 40000	ug/kg		
Semivolatiles	2-Methylphenol	95-48-7	0 / 299	-	-	34 - 400	170 - 2000	ug/kg		
Semivolatiles	2-Chlorophenol	95-57-8	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Semivolatiles	2,4,5-Trichlorophenol	95-95-4	0 / 299	-	-	34 - 400	170 - 2000	ug/kg		
Semivolatiles	3-Nitroaniline	99-09-2	0 / 299	-	-	34 - 400	170 - 2000	ug/kg		
Semivolatiles	Benzyl Alcohol	100-51-6	0 / 299	-	-	170 - 2000	510 - 6000	ug/kg		
Semivolatiles	2,6-Dinitrotoluene	606-20-2	0 / 299	-	-	17 - 200	170 - 2000	ug/kg		
Volatiles	GRO (C5-C12)	GROC5C12	4 / 95	0.2 J	660	0.2 - 8.8	0.9 - 44	mg/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	EFH (C15-C20)	PHCC15C20	14 / 95	0.51 J	3400	0.42 - 93	1.3 - 280	mg/kg	SL-189-SA5A	5 - 6
Volatiles	EFH (C21-C30)	PHCC21C30	46 / 95	0.48 J	580	0.42 - 93	1.3 - 280	mg/kg	SL-012-SA5A	2 - 3
Volatiles	EFH (C30-C40)	PHCC30C40	76 / 95	0.45 J	1700	0.42 - 93	1.3 - 280	mg/kg	SL-012-SA5A	2 - 3
Volatiles	EFH (C8-C11)	PHCC8C11	14 / 95	0.43 J	710	0.42 - 93	1.3 - 280	mg/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	1,4-Dichlorobenzene	106-46-7	0 / 158	-	-	0.14 - 7.9	3.5 - 200	ug/kg		
Volatiles	1,2,4-Trichlorobenzene	120-82-1	0 / 158	-	-	0.16 - 8.9	3.5 - 200	ug/kg		
Volatiles	1,3-Dichlorobenzene	541-73-1	0 / 158	-	-	0.11 - 5.9	3.5 - 200	ug/kg		
Volatiles	Hexachlorobutadiene	87-68-3	1 / 158	100 J	100 J	0.12 - 6.9	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	1,2-Dichlorobenzene	95-50-1	0 / 158	-	-	0.08 - 4.4	3.5 - 200	ug/kg		
Volatiles	Isopropyltoluene	99-87-6	1 / 158	130 J	130 J	0.1 - 5.4	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	Ethylbenzene	100-41-4	28 / 158	0.06 J	610	0.05 - 3	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	Styrene	100-42-5	0 / 158	-	-	0.09 - 4.9	3.5 - 200	ug/kg		

Table 3-3
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Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Volatiles	cis-1,3-Dichloropropene	10061-01-5	0 / 158	-	-	0.14 - 7.9	3.5 - 200	ug/kg		
Volatiles	trans-1,3-Dichloropropene	10061-02-6	0 / 158	-	-	0.15 - 8.4	3.5 - 200	ug/kg		
Volatiles	N-Propylbenzene	103-65-1	3 / 158	0.24 J	910	0.06 - 3.5	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	N-Butylbenzene	104-51-8	3 / 158	2.2 J	600	0.11 - 5.9	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	4-Chlorotoluene	106-43-4	0 / 158	-	-	0.12 - 6.9	3.5 - 200	ug/kg		
Volatiles	1,2-Dibromoethane	106-93-4	0 / 158	-	-	0.15 - 8.4	3.5 - 200	ug/kg		
Volatiles	1,2-Dichloroethane	107-06-2	1 / 158	2.3 J	2.3 J	0.13 - 7.4	3.5 - 200	ug/kg	SL-094-SA5A	9 - 10
Volatiles	4-Methyl-2-Pentanone	108-10-1	0 / 158	-	-	0.34 - 19	7 - 400	ug/kg		
Volatiles	1,3,5-Trimethylbenzene	108-67-8	0 / 158	-	-	0.09 - 4.9	3.5 - 200	ug/kg		
Volatiles	Bromobenzene	108-86-1	0 / 158	-	-	0.11 - 6.4	3.5 - 200	ug/kg		
Volatiles	Toluene	108-88-3	22 / 158	0.08 J	2.3 J	0.07 - 4	3.5 - 200	ug/kg	SL-118-SA5A	2.5 - 3.5
Volatiles	Chlorobenzene	108-90-7	0 / 158	-	-	0.1 - 5.4	3.5 - 200	ug/kg		
Volatiles	2-Chloroethyl Vinyl Ether	110-75-8	0 / 158	-	-	0.26 - 15	3.5 - 200	ug/kg		
Volatiles	1,4-Dioxane	123-91-1	0 / 158	-	-	4.3 - 7.6	13 - 23	ug/kg		
Volatiles	Dibromochloromethane	124-48-1	0 / 158	-	-	0.17 - 9.9	3.5 - 200	ug/kg		
Volatiles	Tetrachloroethene	127-18-4	0 / 158	-	-	0.17 - 9.9	3.5 - 200	ug/kg		
Volatiles	sec-Butylbenzene	135-98-8	4 / 158	0.14 J	990	0.05 - 3	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	1,3-Dichloropropane	142-28-9	0 / 158	-	-	0.07 - 4	3.5 - 200	ug/kg		
Volatiles	cis-1,2-Dichloroethene	156-59-2	0 / 158	-	-	0.17 - 9.4	3.5 - 200	ug/kg		
Volatiles	trans-1,2-Dichloroethene	156-60-5	0 / 158	-	-	0.11 - 5.9	3.5 - 200	ug/kg		
Volatiles	Methyl tert-Butyl Ether	1634-04-4	0 / 158	-	-	0.18 - 10	3.5 - 200	ug/kg		
Volatiles	m,p-Xylene	179601-23-1	25 / 158	0.18 J	16 J	0.15 - 8.4	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	Carbon tetrachloride	56-23-5	0 / 158	-	-	0.12 - 6.9	3.5 - 200	ug/kg		
Volatiles	1,1-Dichloropropene	563-58-6	0 / 158	-	-	0.11 - 6.4	3.5 - 200	ug/kg		
Volatiles	2-Hexanone	591-78-6	0 / 158	-	-	1.4 - 79	7 - 400	ug/kg		
Volatiles	2,2-Dichloropropane	594-20-7	0 / 158	-	-	0.15 - 8.4	3.5 - 200	ug/kg		
Volatiles	1,1,1,2-Tetrachloroethane	630-20-6	0 / 158	-	-	0.1 - 5.4	3.5 - 200	ug/kg		
Volatiles	Acetone	67-64-1	10 / 158	6.7 J	71	5.8 - 330	7 - 400	ug/kg	SL-236-SA5A	4 - 5
Volatiles	Chloroform	67-66-3	0 / 158	-	-	0.11 - 5.9	3.5 - 200	ug/kg		
Volatiles	Benzene	71-43-2	5 / 158	0.11 J	8.4 J	0.09 - 4.9	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	1,1,1-Trichloroethane	71-55-6	0 / 158	-	-	0.17 - 9.9	3.5 - 200	ug/kg		
Volatiles	Bromomethane	74-83-9	0 / 158	-	-	0.22 - 12	3.5 - 200	ug/kg		
Volatiles	Chloromethane	74-87-3	0 / 158	-	-	0.29 - 16	3.5 - 200	ug/kg		
Volatiles	Dibromomethane	74-95-3	0 / 158	-	-	0.21 - 12	3.5 - 200	ug/kg		
Volatiles	Bromochloromethane	74-97-5	0 / 158	-	-	0.29 - 16	3.5 - 200	ug/kg		
Volatiles	Chloroethane	75-00-3	0 / 158	-	-	0.11 - 6.4	3.5 - 200	ug/kg		
Volatiles	Vinyl Chloride	75-01-4	0 / 158	-	-	0.17 - 9.9	3.5 - 200	ug/kg		
Volatiles	Methylene chloride	75-09-2	12 / 158	0.70	13	0.21 - 12	3.5 - 200	ug/kg	SL-156-SA5A	3 - 4
Volatiles	Bromoform	75-25-2	0 / 158	-	-	0.35 - 20	3.5 - 200	ug/kg		
Volatiles	Bromodichloromethane	75-27-4	1 / 158	50 J	50 J	0.07 - 4	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	1,1-Dichloroethane	75-34-3	0 / 158	-	-	0.09 - 4.9	3.5 - 200	ug/kg		
Volatiles	1,1-Dichloroethene	75-35-4	0 / 158	-	-	0.34 - 19	3.5 - 200	ug/kg		
Volatiles	Trichlorofluoromethane	75-69-4	0 / 158	-	-	0.25 - 14	3.5 - 200	ug/kg		
Volatiles	Dichlorodifluoromethane	75-71-8	0 / 158	-	-	0.11 - 5.9	3.5 - 200	ug/kg		
Volatiles	Freon 113a	75-88-7	0 / 158	-	-	0.44 - 25	4.4 - 250	ug/kg		
Volatiles	Freon 113	76-13-1	0 / 158	-	-	0.1 - 5.4	3.5 - 200	ug/kg		
Volatiles	1,2-Dichloropropane	78-87-5	0 / 158	-	-	0.15 - 8.4	3.5 - 200	ug/kg		

Table 3-3
Summary of Analytical Results for Chemicals - Validated Data
Combined Subsurface and Surface Soils
HSA-5A

Group	Chemical	CAS No	Detection Frequency	Minimum Concentration	Maximum Concentration	Range of Method Detection Limit	Range of Method Reporting Limit	Unit	Location of Maximum Concentration	Depth of Maximum Concentration
Volatiles	2-Butanone	78-93-3	5 / 158	1.7 J	11	1.1 - 60	7 - 400	ug/kg	SL-236-SA5A	4 - 5
Volatiles	1,1,2-Trichloroethane	79-00-5	0 / 158	-	-	0.24 - 13	3.5 - 200	ug/kg		
Volatiles	Trichloroethene	79-01-6	1 / 158	0.16 J	0.16 J	0.13 - 7.4	3.5 - 200	ug/kg	SL-158-SA5A	4 - 5
Volatiles	1,1,2,2-Tetrachloroethane	79-34-5	0 / 158	-	-	0.2 - 11	3.5 - 200	ug/kg		
Volatiles	Chlorotrifluoroethene	79-38-9	0 / 158	-	-	0.44 - 25	4.4 - 250	ug/kg		
Volatiles	1,2,3-Trichlorobenzene	87-61-6	1 / 158	85 J	85 J	0.12 - 6.9	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	o-Xylene	95-47-6	3 / 158	0.19 J	13 J	0.15 - 8.4	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	2-Chlorotoluene	95-49-8	0 / 158	-	-	0.12 - 6.9	3.5 - 200	ug/kg		
Volatiles	1,2,4-Trimethylbenzene	95-63-6	1 / 158	32 J	32 J	0.35 - 20	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	1,2-Dibromo-3-chloropropane	96-12-8	0 / 158	-	-	0.61 - 35	3.5 - 200	ug/kg		
Volatiles	1,2,3-Trichloropropane	96-18-4	0 / 158	-	-	0.29 - 16	3.5 - 200	ug/kg		
Volatiles	tert-Butylbenzene	98-06-6	1 / 158	47 J	47 J	0.14 - 7.9	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5
Volatiles	Isopropylbenzene	98-82-8	4 / 158	0.21 J	490	0.05 - 3	3.5 - 200	ug/kg	SL-189-SA5A	8.5 - 9.5

ug/kg - microgram per kilogram
mg/kg - milligram per kilogram
ng/kg - nanogram per kilogram
J - Result is an estimated value

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Section 4
Data Usability Assessment

The purposes of the DUAR provided in Appendix C and summarized here are to: 1) describe the data validation processes performed on the data sets and 2) determine whether the sample results meet the data quality objectives (DQOs) outlined in the *Master Work Plan/Field Sampling and Analysis Plan Co-Located Chemical Sampling at Area IV, Santa Susana Field Laboratory, Ventura County, California* (CDM 2011a).

4.1 Usability Summary

For the Subarea 5A data usability assessment, 77 data sets were reviewed. A data set consists of 20 or fewer samples grouped together by analytical method for analyses depending on the time and date the samples were received by the laboratory. A data set is called a sample delivery group or SDG. The analyses performed are discussed in Sections 2.5.1 and 2.5.2.

Samples were collected and analyzed in accordance with the WP/FSAP (CDM 2011a), with the exception of the deviations from what was prescribed during the field investigation as stated in Section 2.7.

The data generated for the Subarea 5A samples, together with the added data validation qualifiers are usable as reported, with the exception of 79 individual analyte results (0.13 percent of all analytes) that were rejected (35 herbicide results; five mercury results; one metal result; four perchlorate results; two energetic results; nine PCB results; 19 pesticide results; and four SVOC results). These rejected data do not impact project objectives and goals. Specific details are provided in the validation reports in Appendix C and Section 4.7.

4.2 Data Validation Procedures

Data were validated by the independent data validation firm Laboratory Data Consultants, Inc. All data validation was conducted in accordance with *EPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (EPA 2004), *EPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (EPA 2008), and *EPA Contract Laboratory Program National Functional Guidelines for Chlorinated Dioxin/Furan Data Review* (EPA 2005).

The data validation strategy was to validate 10 percent of the data according to EPA Level IV protocols (all QC parameters and raw data) and the remaining 90 percent according to EPA Level III protocols (all QC parameters except calibrations and raw data).

Table 4-1 shows all SDGs that include Subarea 5A soil samples and those SDGs that were validated as Level III or Level IV. Some SDGs contain samples from other subareas, but all samples in an SDG were validated together.

Table 4-1 Sample Delivery Groups and Validation Levels for Subarea 5A

Sample Delivery Group	Level of Validation Performed	CDM Review
DE077	Level III	
DE083	Level III	
DE084	Level III	
DE086	Level III	Yes
DE087	Level III	
DE088	Level III	
DE089	Level III	
DE090	Level III	
DE091	Level III	
DE092	Level III	
DE093	Level III	
DE094	Level III	
DE095	Level IV	Yes
DE096	Level III	
DE097	Level III	
DE098	Level III	
DE099	Level III	
DE100	Level III	
DE102	Level III	
DE103	Level IV	
DE104	Level III	
DE105	Level III	
DE106	Level III	Yes
DE107	Level III	
DE108	Level III	
DE109	Level III	
DE110	Level III	
DE111	Level III	
DE112	Level IV	
DE113	Level III	
DE114	Level III	
DE115	Level III	
DE116	Level III	Yes
DE117	Level III	
DE118	Level III	
DE119	Level III	
DE120	Level III	
DE121	Level III	
DE122	Level III	
DE123	Level III	
DE125	Level IV	
DE126	Level III	
DE128	Level III	
DE129	Level III	
DE130	Level IV	Yes
DE131	Level III	
DE133	Level III	
DE135	Level III	
DE151	Level III	
DE152	Level III	
DX048	Level III	
DX051	Level III	
DX052	Level III	Yes

Table 4-1 Sample Delivery Groups and Validation Levels for Subarea 5A

Sample Delivery Group	Level of Validation Performed	CDM Review
DX053	Level III	
DX054	Level III	
DX055	Level III	
DX056	Level III	
DX057	Level III	
DX058	Level III	
DX059	Level III	
DX060	Level IV	Yes
DX061	Level III	
DX062	Level III	
DX063	Level III	
DX064	Level III	
DX065	Level III	
DX066	Level III	
DX067	Level III	
DX069	Level III	
DX070	Level III	
DX071	Level III	Yes
DX072	Level IV	
DX073	Level III	
DX075	Level III	
DX077	Level III	
DX081	Level III	
DX082	Level III	

In order to evaluate the quality of the laboratory and the validation firm, CDM Smith chemists reviewed 10 percent of the Subarea 5A soil sample SDGs. The purpose of the review was to identify any QC issues with the laboratory not identified by the validation firm or any discrepancies in validation procedures by the validation firm. No additional qualifiers were applied to the data based on CDM Smith's review. The results of this review are provided in Section 4.8.

4.3 Quality Assurance Objectives

Quality assurance (QA) objectives for measurement data are expressed in terms of precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS). The QA objectives provide a mechanism for evaluating and measuring data quality.

A review of the collected data is necessary to determine if data quality objectives established in the WP/FSAP (CDM 2011a) have been met. The following data measurement tasks were evaluated:

- Specification and adherence to analytical method and reporting detection limit requirements
- Identification of the appropriate laboratory analytical QC requirements and verification of whether these QC requirements were met
- Verification that measurement performance criteria (representativeness and completeness) for the data have were met

- Verification that field procedures were followed, deviations were documented, and determination of impact on data quality as a result of these deviations

The data validation review determines if the collected data are of sufficient quality (except for the rejected results) to support their intended use.

4.4 Summary of Field and Laboratory QA Activities

CDM Smith completed sampling activities in Subarea 5A in accordance with the approved WP/FSAP (CDM Smith 2011a) and Addendum to the WP/FSAP (CDM 2011b). A total of 300 soil samples were collected and analyzed from 27 drainage locations, 95 surface locations, and 138 soil boring locations. Table 2-1 provides a summary of the samples collected and the laboratory analyses requested.

An index of samples associated with each SDG is presented at the beginning of Appendix C. The WP/FSAP (CDM 2011a) defined the procedures to be followed and the data quality requirements for the field sampling.

4.5 Field Quality QA/QC

The field QC samples were collected at a frequency of 1 per 20 samples (5 percent) for MS/MSDs and field duplicates. MS/MSD and field duplicate samples were collected by CDM at sixteen sample locations and analyzed by LLI. MS/MSD and field duplicate samples met the frequency requirements detailed in the WP/FSAP (CDM 2011a).

As discussed in Section 2.4.2, 15 equipment rinsate blank samples were collected. The equipment rinsate blank results are presented in Appendix C and a summary of the detected results is presented in Table 4-2. No field blank samples were collected during sampling in Subarea 5A.

Table 4-2 Equipment Blank for Subarea 5A Soil Samples - Detected Results Only

EB01-SA5A-022311 6214533 02/23/2011 Equipment Blank			
Analyte	**Units**	**Concentration/RL**	**Final Qualifier**
Analyte	**Units**	**Concentration/RL**	**Final Qualifier**
2,3,7,8-TCDD	pg/L	0.107/2.11	J
Di-n-octylphthalate	µg/L	0.22/1.0	J
Napthalene	µg/L	0.029/0.052	J
EB02-SA5A-022811 6217804 02/28/2011 Equipment Blank			
Analyte	**Units**	**Concentration/RL**	**Final Qualifier**
Analyte	**Units**	**Concentration/RL**	**Final Qualifier**
Chyrsene	µg/L	0.083/0.054	
Di-n-butylphthalate	µg/L	0.39/1.1	J
Napthalene	µg/L	0.035/0.054	J
Phenanthrene	µg/L	0.020/0.054	J

Table 4-2 Equipment Blank for Subarea 5A Soil Samples - Detected Results Only

EB03-SA5A-022811 6217805 02/28/2011 Equipment Blank			
Analyte	**Units**	**Concentration/RL**	**Final Qualifier**
Iron	mg/L	0.0665/0.22	J
Lead	mg/L	0.000066/0.001	J
Manganese	mg/L	0.00088/0.005	J
Napthalene	µg/L	0.035/0.053	J
EB04-SA5A-030111 6218910 03/01/2011 Equipment Blank			
Analyte	**Units**	**Concentration/RL**	**Final Qualifier**
Butylbenzylphthalate	µg/L	0.071/1.0	J
Chyrsene	µg/L	0.025/0.052	J
Napthalene	µg/L	0.033/0.052	J
EB06-SA5A-030311 6222146 03/03/2011 Equipment Blank			
Analyte	**Units**	**Concentration/RL**	**Final Qualifier**
Di-n-butylphthalate	µg/L	0.43/0.99	J
Napthalene	µg/L	0.031/0.05	J
Phenanthrene	µg/L	0.041/0.05	J
EB07-SA5A-031511 6230974 03/15/2011 Equipment Blank			
Analyte	**Units**	**Concentration/RL**	**Final Qualifier**
2,3,7,8-TCDD	pg/L	0.439/2.03	J
Diethylphthalate	µg/L	0.067/0.96	J
Di-n-butylphthalate	µg/L	0.44/0.96	J
Napthalene	µg/L	0.029/0.048	J
EB08-SA5A-032211 6236856 03/22/2011 Equipment Blank			
Analyte	**Units**	**Concentration/RL**	**Final Qualifier**
2,3,7,8-TCDD	pg/L	0.238/2.01	J
Bis(2-Ethylhexyl)Phthalate	µg/L	0.22/0.99	J
Diethylphthalate	µg/L	0.071/0.99	J
EB09-SA5A-032311 6237974 03/23/2011 Equipment Blank			
Analyte	**Units**	**Concentration/RL**	**Final Qualifier**
Diethylene Glycol	mg/L	10/100	J
Ethylene Glycol	mg/L	14/100	J

Table 4-2 Equipment Blank for Subarea 5A Soil Samples - Detected Results Only

EB10-SA5A-032911 6242771 03/29/2011 Equipment Blank			
Analyte	**Units**	**Concentration/RL**	**Final Qualifier**
Diethylphthalate	µg/L	0.091/1.1	J
Di-n-octylphthalate	µg/L	0.12/1.1	J
EB11-SA5A-SB-040511 6250044 04/05/2011 Equipment Blank			
Analyte	**Units**	**Concentration/RL**	**Final Qualifier**
Bis(2-Ethylhexyl)Phthalate	µg/L	0.098/1.1	J
Diethylphthalate	µg/L	0.066/1.1	J
Di-n-butylphthalate	µg/L	0.62/1.1	J
Magnesium	mg/L	0.0305/0.1	J
Napthalene	µg/L	0.036/0.055	J
EB12-SA5A-SB-040611 6251859 04/06/2011 Equipment Blank			
Analyte	**Units**	**Concentration/RL**	**Final Qualifier**
N-nitrosodimethylamine	ng/L	0.730/1.03	J
EB13-SA5A-SB-041811 6261707 04/18/2011 Equipment Blank			
Analyte	**Units**	**Concentration/RL**	**Final Qualifier**
2,3,7,8-TCDF	pg/L	0.269/1.98	J
Bis(2-Ethylhexyl)Phthalate	µg/L	0.30/1.0	J
Di-n-butylphthalate	µg/L	0.32/1.0	J
Di-n-octylphthalate	µg/L	0.27/1.0	J
Napthalene	µg/L	0.031/0.05	J
EB14-SA5A-SB-041911 6262842 04/19/2011 Equipment Blank			
Analyte	**Units**	**Concentration/RL**	**Final Qualifier**
N-Nitrosodimethylamine	ng/L	0.808/1.06	J
EB15-SA5A-SB-051611 6288935 05/16/2011 Equipment Blank			
Analyte	**Units**	**Concentration/RL**	**Final Qualifier**
1,2,3,7,8-PECDF	pg/L	0.168/10.7	J
1-Methylnaphthalene	µg/L	0.031/0.054	J
2-Methylnaphthalene	µg/L	0.033/0.054	J
N-Nitrosodimethylamine	µg/L	0.030/0.054	J

Notes:
µg/L - micrograms per liter
mg/L – milligrams per liter
pg/L - picograms per liter
ng/L – nanogram per liter
OCDD – Octachlorodibenzodioxin
TCDD -
PECDF – Penta-chlorodibenzo-furan

Forty-six trip blank samples were shipped with the Subarea 5A samples. The results for these samples are presented in Appendix C and a summary of the detected results is presented in Table 4-3. Data qualifications based on blank detections and impacts to the data due to contaminants detected in the all field blanks are discussed in Section 4.7.3 and in the Appendix C validation reports.

Temperature blanks were included with each shipment of samples.

Table 4-3 Trip Blank for Subarea 5A Soil Samples - Detected Results Only

TB-030111 6218913 03/01/2011 Trip Blank			
Analyte	**Units**	**Concentration/RL**	**Final Qualifier**
Benzene	µg/L	0.5/5	J
TB-030211 6220837 03/02/2011 Trip Blank			
Analyte	**Units**	**Concentration/RL**	**Final Qualifier**
Benzene	µg/L	0.6/5	J

Notes:
µg/L - micrograms per liter

The number of field QC samples collected satisfies the minimum requirements for the Subarea 5A sampling event.

Field QA/QC objectives were attained through the use of appropriate sampling techniques and collection of the required number and frequency of QC samples.

4.6 Laboratory Quality QA/QC

Analytical QA/QC was assessed by laboratory QC checks, method blanks, sample custody tracking, sample preservation, adherence to holding times, laboratory control samples (LCSs), MSs, calibration recoveries, surrogates, tuning criteria, second column confirmations, internal standards, serial dilutions, laboratory duplicates, and interference check standards. The majority of the laboratory QC sample criteria met project requirements as indicated in the data validation reports in Appendix C with the appropriate qualifiers applied. Seventy-nine individual analyte results (0.13 percent of all the analytes) were rejected as discussed in the subsections 4.7 and in Appendix C.

4.7 Data Quality Indicators

This section summarizes the validation performed. Individual SDG validation reports with specific sample detail are provided in Appendix C.

Achievement of the DQOs was determined in part by the use of data quality indicators (DQIs) described in the DUAR in Appendix C. These DQIs for measurement data are expressed in terms of PARCCS. The DQIs provide a mechanism for ongoing control to evaluate and measure data quality throughout the project. These criteria are defined in the sections below.

4.7.1 Precision

Precision is the measurement of the ability to obtain the same value on re-analysis of a sample through the entire analytical process. The closer the measurement result, the greater is the precision. Precision has nothing to do with accuracy or true values of the sample. Instead, it is focused on random errors inherent in the analysis that stem from the measurement process and are compounded by the non-homogeneous nature of some samples. Precision is measured by analyzing two portions of the sample (sample and duplicate) and then comparing the results. This comparison can be expressed in terms of relative percent difference (RPD). RPD is calculated as the absolute difference between the two measurements divided by the average of the two measurements.

$$RPD = \frac{[(A-B)/(A+B)]}{2} \times 100$$

The problem with this formula is that it depends on the average of the two measurements and the magnitude of the calculated RPD is intimately linked to the magnitude of the results. When sample results are close to the RL, the RPD is greater but does not necessarily indicate that the precision is out of control limits, just that the sample concentrations are low.

RPD as a measure of precision works very well in those cases where the same level of analyte is present in all samples; however, it does not work well as a quantitative tool when varying levels are present. Analysis of sample duplicates is valuable as a quantitative measure of precision but is not useful as a quantitative measure in environmental sample analyses. Another option that is used for evaluating the differences between sample results that are close to the RL is calculating the absolute difference between the results. In this situation, the difference between the sample results is compared to the RL (2 times the RL for soils) and if the difference is greater, the sample results are qualified as estimated "J."

Because of these problems, precision is normally calculated on spike samples, either on an MS and MSD or on a LCS and laboratory control sample duplicate (LCSD). In this case, a known concentration of analyte has been created in each sample and long and short term evaluations of RPD can be made that are applicable to the reality of the measurement. The drawback is that the precision measurement is only applicable to the particular spike level used.

For the Subarea 5A soil data set, precision was evaluated by reviewing RPD results for QC parameters consisting of MS/MSDs, LCS/LCSDs, laboratory duplicates, and field duplicates.

Laboratory RPD control limits are presented in the WP/FSAP (CDM Smith 2011a) or are laboratory specific. For laboratory duplicates, if one or both of the sample results were less than 2 times the RL, a control limit of the absolute difference value equal to the RL was used for comparison.

The field duplicate RPD criterion is 50 percent. Field duplicates for this project were validated using the following: If one result is non-detect and the other result is above the RL, the RPD result is reported at 200 percent and the field duplicate sample and parent sample results are qualified as estimated "J" for a detect value or "UJ" for a nondetect value. If the field duplicate RPD is above the 50 percent criteria (and both sample results were above the RL), the field duplicate and parent sample results for that analyte are qualified as estimated "J."

Qualifiers were applied to applicable sample analyte results during the validation process based on laboratory and field duplicate precision results. Details of the validation and the number of analytes qualified are provided in the DUAR and laboratory validation reports in Appendix C.

The following individual analyte results were qualified as estimated "J/UJ" based on precision criteria:

- Some of the dioxin, NDMA, fluoride/nitrate, metals, alcohols and terphenyls, TPHs and glycols, pesticides, PCBs, VOCs, SVOCs, SVOC SIM and energetic analyte results due to laboratory precision criteria
- Some of the dioxin, PCBs and herbicide analyte results as RPD results between the two columns were outside of criteria

The following individual analyte results were rejected "R" based on precision criteria:

- One antimony result based on laboratory precision criteria
- Four perchlorate results based on laboratory precision criteria
- One SVOC result based on laboratory precision criteria

Field duplicate precision criteria required the qualification of some dioxin results, NDMA results, fluoride/nitrate results, various metal analyte results, hexavalent chromium results, mercury results, alcohol and terphenyl results, TPH and glycol results, pesticide results, PCB results, herbicide results, VOC results, SVOC results, SVOC SIM results and formaldehyde results. The associated results were qualified as estimated "J/UJ" due to field duplicate precision criteria. No results were rejected based on field duplicate precision criteria. All field duplicate RPD results are presented in Appendix C.

There was no discernable pattern or reason for the laboratory and field sample RPD exceedances identified. No field sampling issues were identified that would cause the RPD results that were outside of criteria. These exceedances are reasonable for this type of sampling activity. Sample results that have been qualified as estimated "J/UJ" due to precision criteria are usable for project decisions. Results that have been rejected are not usable.

4.7.2 Accuracy

Accuracy is a concept from quantitative analysis that attempts to address the question of how close the analytical result is to the true value of the analyte in the sample. Accuracy is determined through a spike procedure, where a known amount of the target analyte is added to a portion of the sample then the sample and the spiked sample are analyzed. The quantitative measure of accuracy is percent recovery (%R) calculated as follows:

$$\text{Percent Recovery} = \frac{(\text{Total Analyte Found} - \text{Analyte Originally Present})}{\text{Analyte Added}} \times 100$$

Each measurement performed on a sample is subject to random and systematic error. Accuracy is related to the systematic error. Attempts to assess systematic error are always complicated by the inherent random error of the measurement.

A single detection of accuracy on a sample is not significant statistically, although it is commonly viewed as such. Statistics is the science of prediction of reality based on a limited number of

observations. The more limited the number of observations, the worse the prediction is going to be. The following QC samples are used to assess laboratory accuracy:

Matrix Spikes: MSs are a known amount of a target analyte added to a sample. Analysis of the sample that has been spiked and comparison with the results from the unspiked sample (background) gives information about the ability of the test procedure to generate a correct result from the sample.

Post Digestion Spikes: Post digestion spikes are performed after the sample has been prepared and are ready for analysis. These are also termed "analytical spikes." The technique is used in conjunction with a MS to provide data that can separate interferences produced as part of the sample preparation from interferences that are innate qualities of the sample.

Laboratory Control Samples: LCSs consist of a portion of analyte-free water or solid phase sample that is spiked with target analytes at a known concentration.

Surrogates: Surrogate recovery is a QC measure limited to use in organics analysis. Surrogates are compounds added to every sample at the beginning of the sample preparation to monitor the success of the sample preparation on an individual sample basis. Individual compounds used as surrogates are selected based on their ability to mimic the behavior of specific target analytes held to be particularly sensitive to the sample preparation manipulations.

Interference Check Samples: Interference check sample analysis is a QC measure unique to metals analysis using inductively coupled plasma atomic emission spectrometry. When excited, each element emits light of set wavelengths. The wavelengths of light emitted from a sample can be measured to provide a qualitative and a quantitative evaluation of the elemental composition of the sample.

Calibrations and Internal Standards: Calibration/internal standards determine the establishment of a quantitative relationship between the response of the analytical procedure and the concentration of the target analyte. Calibration is the technique that performs the quantitative analysis on the sample. A necessary prerequisite is that a confident identification of the target analyte has already been established.

Serial Dilution: Serial dilutions are performed on at least one sample from every batch of analyses for metals to determine if physical or chemical interferences exist in the analyte determinations.

For the Subarea 5A soil data set, accuracy was evaluated by reviewing the %R values of initial and continuing calibration (percent difference or percent drift [%D] for organic analyses), internal standards, surrogate spikes (organic analyses only), MS/MSD, LCS/LCSD, inductively coupled plasma (ICP) interferences, and by performing serial dilution checks during metals analyses, in conjunction with method blank, calibration blank, equipment rinsate blank, and trip blank results. These QC results assist in identifying the type and magnitude of effects that contributed to the system error introduced via field and/or laboratory procedures.

Analytical accuracy for the entire data collection activity is difficult to assess because several sources of error exist. Errors can be introduced by any of the following:

- Sampling procedure

- Field contamination
- Sample preservation and handling
- Sample matrix
- Sample preparation
- Analytical techniques

Accuracy is maintained to the extent possible by adhering to the EPA method and approved field and analytical standard operating procedures.

Qualifiers were applied to applicable sample analyte results during the validation process based on laboratory accuracy results. Details of the validation and the number of analytes qualified are discussed in detail in the DUAR and laboratory validation reports in Appendix C.

The following individual analyte results were qualified as estimated "J/UJ" based on accuracy criteria:

- Some of the dioxin results, NDMA results, fluoride/nitrate results, perchlorate results, metal results, hexavalent chromium results, mercury results, alcohol and terphenyl results, TPH and glycol results, pesticide results, PCB results, herbicide results, VOC results, SVOC results, SVOC SIM results and energetic results due to matrix spike accuracy criteria
- Some of the TPH and glycol results, pesticide results, PCB results, herbicide results, VOC results, SVOC results, SVOC SIM results and energetic results due to LCS accuracy criteria
- Some of the alcohol and terphenyl results, TPH and glycol results, pesticide results, PCB results and SVOC results due to surrogate criteria
- Some of the TPH and glycol results, pesticide results, PCB results, VOC results, SVOC results and SVOC SIM results due to calibration criteria
- Some of the dioxin analyte results due to internal standard recovery results
- Some of the fluoride/nitrate results and metal analyte results due to serial dilution criteria

The following individual analyte results were rejected "R" based on accuracy criteria:

- Four perchlorate results based on MS accuracy criteria
- One antimony result based on MS accuracy criteria
- Five mercury results based on MS accuracy criteria
- Nineteen pesticide results based on MS accuracy criteria and surrogate recoveries
- Nine PCB results based on surrogate recovery accuracy criteria
- Thirty-five individual herbicide analyte results based on LCS and MS accuracy criteria
- Four SVOC results based on MS accuracy criteria
- Two energetic results based on LCS accuracy criteria

Sample preservation, handling, and holding times are additional measures of accuracy of the data. Holding times are defined as the amount of time that elapses between the collection of the sample

from the source in the field and the beginning of the analysis. Preservation is defined as techniques used to maintain the target analytes at concentrations representative of those in the source sampled until the sample is analyzed in the laboratory. Published holding times are viewed as valid as long as the associated preservation and container requirements have been met. All holding times, sample preservation and handling criteria were met.

Sample results that have been qualified as estimated "J/UJ" due to accuracy criteria are usable for project decisions. Results that have been rejected are not usable.

4.7.3 Blank Contamination

Blanks are used to determine the level of laboratory and field contamination introduced into the samples, independent of the level of target analytes found in the sample source. Sources of sample contamination can include the containers and equipment used to collect the sample, preservatives added to the sample, other samples in transport coolers and laboratory sample storage refrigerators, standards and solutions used to calibrate instruments, glassware and reagents used to process samples and the analytical instrument sample introduction equipment. Each analyte group has its own particular suite of common laboratory contaminants. Laboratories continually measure the ambient contamination level and take action to discover the source of the contamination to eliminate or minimize the levels. Random spot contamination can also occur from analytes that are not common laboratory problems but that can arise as a problem for a specific project or over a short period of time. Sample equipment decontamination practices are discussed in Section 2.4.4. Field blanks, equipment blanks, trip blanks and laboratory method blanks are analyzed to identify possible sources of contamination. The DUAR and laboratory validation reports in Appendix C discuss the results that were qualified based on field and laboratory blank contamination.

In summary, some dioxins, NDMA, metals, hexavalent chromium, mercury, alcohol and terphenyls, TPH and glycols, herbicides, VOCs, SVOCs and SVOC SIM results were qualified as non-detect due to laboratory blank contamination criteria. The percentage of results qualified as non-detect based on laboratory blank contamination was less than 10%, as discussed in Appendix C, for all these analyses except for dioxins which had 50% of the analytes qualified as non-detect due to laboratory blank contamination.

For the dioxins, estimated detection limits (EDLs) are calculated for each sample. The EDLs for this analysis are very low, reported in ng/kg or parts per trillion, resulting in numerous results qualified as estimated "J" values because they are below the RL. Many of these estimated values have been subsequently qualified as nondetect "U" because the compound was detected in related laboratory blanks. Low level detections of dioxin analytes are somewhat inevitable because of the nature and universal extent of these compounds. The dioxin levels found in the blanks were well below site-related action levels. Therefore, the resulting qualification of associated sample results as not detected or "U" qualified data do not falsely diminish identification of site-related contaminants.

Tables 4-2 and 4-3 provide a summary of analytes observed in equipment and trip blank samples. All equipment blank and trip blank detected concentrations of analytes were below the RLs. No impacts to the data have occurred based on field blank contamination.

4.7.4 Representativeness, Comparability, and Sensitivity

Representativeness, comparability, and sensitivity are achieved by using EPA-approved sampling procedures and analytical methodologies. By following the procedures described in the WP/FSAP for

this sampling event and future sampling events, sample analysis should yield results representative of environmental conditions at the time of sampling. Similarly, reasonable comparability of analytical results for this and future sampling events can be achieved if approved EPA analytical methods and standardized reporting units are employed.

4.7.4.1 Representativeness

Representativeness is a qualitative term that expresses the degree to which the sample data accurately and precisely represent the environmental conditions corresponding to the location and depth interval of sample collection. Requirements and procedures for sample collection are designed to maximize sample representativeness.

Representativeness also can be monitored by reviewing field documentation and/or performing field audits. For this report, a detailed review was performed on the CoC forms, laboratory sample confirmation logs, and data validation packages. Laboratory QA/QC requirements were included in the WP/FSAP (CDM Smith 2011a) and laboratory statements of work (SOWs) to ensure that the laboratory analytical results were representative of true field conditions.

The most significant measure of representativeness is the accuracy of the sampling network/selection of appropriate locations and depths, etc. Field sampling accuracy was attained through adherence to the approved WP/FSAP for sample location and collection and by using approved standard operating procedures for field data collection. Therefore the data should represent, as near as possible, the actual field conditions at the time of sampling.

Representativeness has been achieved by the performed field work and laboratory analyses. The analytical data generated and that have not been rejected, are viewed to be a representative characterization of the project area.

4.7.4.2 Comparability

Comparability is a qualitative term that expresses the confidence with which a data set can be compared with another. Strict adherence to standard sample collection procedures, analytical detection limits, reporting units and analytical methods assures that data from like samples and sample conditions are comparable. This comparability is independent of laboratory personnel, data reviewers, or sampling personnel. Comparability criteria are met for the project if, based on data review, the sample collection and analytical procedures are determined to have been followed, or defined to show that variations did not affect the values reported.

To ensure comparability of data generated for the site, standard sample collection procedures and DTSC-reviewed analytical methods were utilized by CDM. The sample analyses were performed by LLI. Utilizing such procedures and methods enables the current data to be comparable with previous and future data sets generated using similar methods.

4.7.4.3 Sensitivity

Sensitivity is related to the ability to compare analytical results with project-specific levels of interest, such as risk-based screening levels or action levels. Analytical detection limits for the various sample analytes should be below the level of interest to allow an effective comparison.

Detection Limits

The MDL attempts to answer the question, "What is the lowest level of analyte in a sample that will result in a signal different than zero"? The study is based upon repetitive analysis of an interference-

free sample spiked with a known amount of the target analyte. The MDL is a measure of the ability of the test procedure to generate a positive response for the target analyte in the absence of any other interferences from the sample.

The RL is generally defined as the lowest concentration at which an analyte can be detected in a sample and its concentration reported with a reasonable degree of accuracy and precision. For samples that do not pose a particular matrix problem, the RL is typically about three to five times higher than the MDL.

Laboratory results are reported according to rules that provide established certainty of detection and RLs. The result for an analyte is flagged with a "U" if that analyte was not detected, or qualified with a "J" flag if blank or other QC results fall outside the appropriate tolerance limits.

If an analyte is present at a concentration between the MDL and the RL, the analytical result is flagged with a "J," indicating an estimated quantity. Qualifying the result as an estimated concentration reflects increased uncertainty in the reported value.

Qualifiers were applied to applicable sample analyte results during the validation process based on sample results being reported as detected and below the RL/MDL. Details of the validation and the number of analytes qualified are discussed in detail in the DUAR and laboratory validation reports in Appendix C.

In summary, for all methods analyzed results for some of the analytes were qualified as estimated due to RL criteria except for VOC SIM results, cyanide results, and oxidation reduction potential results.

In general, for the data validated in this report, RLs for the sample results were low enough to compare to the RLs stated in the WP/FSAP (CDM 2011a). The RLs for this project are lower than "normal" environmental data analyses for some classes of compounds. Some Analytical laboratory methods were modified in order to achieve the lowest practicable RLs in an attempt to comply with the AOC. All modified analyses are undergoing further studies evaluating the effect of the modifications on precision and accuracy. An independent study evaluating the precision and accuracy of the modified herbicide method has been completed. Review of the herbicide results indicate that the method modifications did not achieve precision and accuracy goals at this lower reporting limit for some of the analytes. Data are currently under further review and it is likely that reporting limits may be elevated for some analytes. These results are still considered usable for project decisions.

4.8 Review of Selected Validation Reports

CDM Smith performed a review of the validation reports identified in Table 4-1. This review involved comparing the validation report results against the laboratory data packages as well as the validation guidance documents. All validation report results were verified against the laboratory data packages and validation guidance documents were followed as required.

4.9 Data Completeness

Completeness of the data collection program is defined as the percentage of samples planned for collection as listed in the WP/FSAP (CDM 2011a) versus the actual number of samples collected during the field program (see equation A).

Completeness for acceptable data is defined as the percentage of acceptable data obtained judged to be valid versus the total quantity of data generated (see equation B). Acceptable data include both data that pass all the QC criteria (unqualified data) and data that may not pass all the QC criteria but had appropriate corrective actions taken (qualified but usable data).

Equation A. $$\%\text{Completeness} = Cx\frac{100}{n}$$

Where:

C = actual number of samples collected
n = total number of samples planned

Equation B. $$\%\text{Completeness} = Vx\frac{100}{n'}$$

Where:

V = number of measurements judged valid
n' = total number of measurements made

The overall completeness goal for this sampling event was 90 percent for all project data.

A total of 317 Subarea 5A soil samples including the field duplicates were collected and analyzed. As discussed in Section 2.7, 221 locations were to be sampled. Nine locations were not sampled due to the reasons cited in Table 2.1 and stated in Section 2.7. As discussed in Section 2.7, the sampling deviations do not impact completeness objectives for this sampling event. As the sampling program progresses, it may be determined during the Phase 3 Data Gap Investigation that Phase 1 locations not affected by archeological findings that were not sampled, may be sampled during Phase 3 sampling. Ninety-six percent of the sample locations identified in the WP/FSAP Addendum were collected meeting the completeness goal for the number of samples collected versus number of samples planned.

The completeness goal achieved for acceptable data was 98.3 percent of the number of measurements judged to be valid versus the total number of measurements made for all Subarea 5A samples analyzed. Table 4-3, shows a summary of all results that were estimated or rejected.

The following individual analyte results were rejected per analyses:

- Method 8151A
  - 35 individual herbicide analyte results out of 1,200 results (2.91%)
- Method 7471A
  - 5 individual mercury analyte results out of 299 results (1.67%)
- Method 6020
  - 1 individual metal analyte result out of 4,784 results (0.02%)
- Method 314
  - 4 individual perchlorate analyte results out of 299 results (1.3%)
- Method 8330A
  - 2 individual energetic analyte results out of 1,710 results (0.11%)
- Method 8082
  - 9 individual PCB analyte results out of 3,588 results (0.25%)
- Method 8081A
  - 19 individual pesticide analyte results out of 2,520 results (0.75%)
- Method 8270C
  - 4 individual SVOC analyte results out of 14,611 results (0.03%)

Table 4-4 Summary of Data Completeness Following Data Validation

	Number of Analyte Detections Without Qualifiers	Number of Estimated Results	Number of Rejected Results	Number of Nondetect Results	Number of Estimated Nondetect Results	Total Analytes Detect and Nondetect	Percent of Analyte Results Judged Valid Versus Total Analyte Results Collected
Dioxins	540	1645	0	2820	78	5083	100%
Formaldehyde	5	3	0	87	0	95	100%
Herbicides	85	58	35	1006	16	1200	97.08%
Cyanide	0	0	0	95	0	95	100%
Fluoride, Nitrate	131	231	0	10	22	394	100%
Hexavalent Chromium	17	184	0	93	5	299	100%
Mercury	18	136	5	138	2	299	93.33%
Metals – 6010B	2773	994	0	404	15	4186	100%
Metals – 6020	1431	3128	1	121	103	4784	99.98%
Perchlorate-314	0	2	4	291	2	299	98.7%
Perchlorate-6850	1	0	0	40	0	41	100%
NDMA	18	19	0	55	3	95	100%
Alcohols, terphenyls	0	4	0	554	12	570	100%
Energetics	0	2	2	1698	8	1710	99.88%
Total Petroleum Hydrocarbons, glycols	74	83	0	667	31	855	100%

Table 4-4 Summary of Data Completeness Following Data Validation

	Number of Analyte Detections Without Qualifiers	Number of Estimated Results	Number of Rejected Results	Number of Nondetect Results	Number of Estimated Nondetect Results	Total Analytes Detect and Nondetect	Percent of Analyte Results Judged Valid Versus Total Analyte Results Collected
Oxidation Reduction Potential	298	0	0	0	0	298	100%
PCBs	110	183	9	3068	218	3588	99.75%
Pesticides	105	207	19	2025	164	2520	99.25%
Semivolatiles	46	245	4	13952	364	14611	99.97%
Semivolatiles SIM	722	788	0	5355	53	6918	100%
Volatiles	28	104	0	10333	121	10586	100%
Volatiles SIM	0	0	0	158	0	158	100%
Completeness Total for All Subarea 5A Samples Collected and Judged Valid							**98.3%**

The completeness goals for both the number of samples collected and the number of measurements judged to be valid were met.

Sampling deviations from procedures described in the WP/FSAP (CDM 2011a) are discussed in Section 2.7 of this report. Deviations did not impact DQOs for this sampling event. The data reported and not rejected, are suitable for their intended use for characterization of Area IV of SSFL. The DQIs identified in the WP/FSAP (CDM 2011a) met appropriate criteria. The achievement of the completeness goals for the data indicates a sufficient amount of usable data has been generated on which to base project decisions.

4.10 Assessment of Data Usability and Reconciliation with WP/FSAP Goals

Over 98 percent of the data validated and reported in this TM are suitable for their intended use for site characterization. Sample results that were rejected are not suitable for project use. The rejected analyte results do not impact achievement of the overall project objectives. The RLs reported generally met the expected limits proposed by the analytical laboratory in their contract agreement with CDM Smith.

Sample results that were qualified as estimated are usable for project decisions. Numerous dioxin results were qualified as estimated and/or non-detect due to the low detection limits. This data is considered usable.

Field duplicate precision also met criteria a majority of the time. RPDs were outside criteria predominantly when the sample results were close to the RL and/or below the project required action limits. Decisions based on results close to the RL should be made with a degree of caution. The achievement of the completeness goals for number of samples collected, and the number of sample results acceptable for use provides sufficient quality data to support project decisions.

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Section 5
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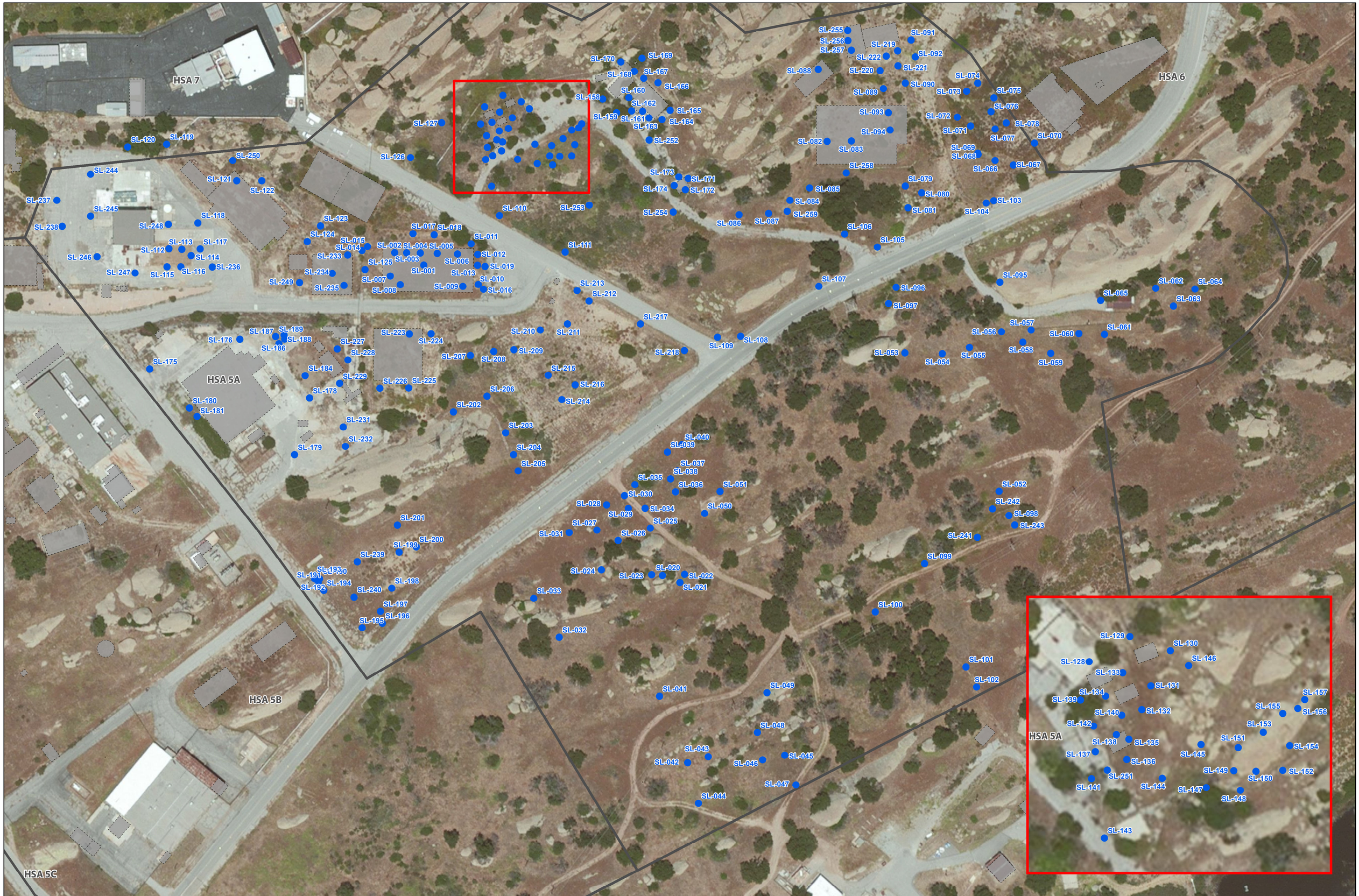

Legend

- Sample Locations
- Area IV Subarea
- Removed Building

Aerial Source: Bing Maps, (c) 2010 Microsoft Corporation and its data suppliers

Subarea 5A Sample Locations

0 50 100 200 300 Feet

Santa Susana Field Laboratory
Ventura County, California
Exhibit

CDM Smith

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