GROUP 8 – WESTERN PORTION OF AREA IV
RCRA FACILITY INVESTIGATION REPORT
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

VOLUME II – RFI SITE REPORTS

APPENDIX B

BUILDING 056 LANDFILL (SWMU 7.1)

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LIST OF ACRONYMS AND ABBREVIATIONS

AI	Atomics International
AOC	Area of Concern
BBI	Brandeis-Bardin Institute
Boeing	The Boeing Company
bgs	below ground surface
B009 LF	Building 009 Leach Field
B056 Landfill	Building 056 Landfill
B100	Building 100
BMP	best management practice
CCR	Current Conditions Report
CF	Chatsworth formation
CFOU	Chatsworth Formation Operable Unit
CMI	Corrective Measures Implementation
CMS	Corrective Measures Study
COPC	chemical of potential concern
CPEC	chemical of potential environmental concern
CSM	conceptual site model
Cs-137	Cesium 137
DHS-RHB	Department of Health Services- Radiologic Health Branch
Dioxins/Furans	(a) – *see table below*
DOE	United States Department of Energy
DTSC	Department of Toxic Substances Control
ECL	Environmental Chemistry Laboratory
EPC	exposure point concentration
ERA	ecological risk assessment
ESADA	Empire State Atomic Development Authority
ETEC	Energy Technology and Engineering Center
FSDF	Former Sodium Disposal Facility
FLUTe	Flexible Liner Underground Technology
Freon 11	trichlorofluoromethane
FSTF	Flight System Test Facility
GRC	Groundwater Resource Consultants, Inc.
GWCC	groundwater comparison concentration
HRA	human health risk assessment
HI	hazard index
H&A	Haley and Aldrich

LIST OF ACRONYMS AND ABBREVIATIONS (Continued)

HSA	Historical Site Assessment
ICF	ICF Kaiser Engineers
ILCR	incremental lifetime cancer risk
LMEC	Liquid Metal Engineering Center
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
msl	mean sea level
MWH	Montgomery Watson Harza
NFA	no further action
NPDES	National Pollutant Discharge Elimination System
NSGW	near-surface groundwater
Ogden	Ogden Environmental and Energy Services Company, Inc.
OU	operable unit
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
pCi/g	picocuries per gram
QA	quality assurance
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RME	reasonable maximum exposure
Rocketdyne	Rocketdyne Propulsion and Power
SAIC	Science Applications International Corporation
SCTI	Sodium Component Testing Installation
SFOU	Surficial Media Operable Unit
SNAP	System Nuclear Auxiliary Power
SRAM	Standardized Risk Assessment Methodology
SSFL	Santa Susana Field Laboratory
SVOC	semivolatile organic compound
SWMU	Solid Waste Management Unit
TDS	total dissolved solids
TEQ	toxicity equivalency quotient
TIC	tentatively identified compound
TCE	trichloroethene
TPH	total petroleum hydrocarbons
µg/dl	micrograms per deciliter
µg/kg	micrograms per kilogram
µg/L	micrograms per liter

LIST OF ACRONYMS AND ABBREVIATIONS (Continued)

VOC	volatile organic compound
WPA	RFI Work Plan Addendum
WPAA	RFI Work Plan Addendum Amendments

(a) Definition of dioxin/furan congeners

PCDD/PCDDs	Polychlorinated dibenzo-p-dioxins/dibenzofurans
2,3,7,8-TCDD	2,3,7,8-tetrachlorodibenzo-p-dioxin
1,2,3,7,8-PeCDD	1,2,3,7,8-pentachlorodibenzo-p-dioxin
1,2,3,4,7,8-HxCDD	1,2,3,4,7,8-hexachlorodibenzo-p-dioxin
1,2,3,6,7,8-HxCDD	1,2,3,6,7,8-hexachlorodibenzo-p-dioxin
1,2,3,7,8,9-HxCDD	1,2,3,7,8,9-hexachlorodibenzo-p-dioxin
1,2,3,4,6,7,8-HpCDD	1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin
OCDD	1,2,3,4,6,7,8,9-octachlorodibenzo-p-dioxin
2,3,7,8-TCDF	2,3,7,8-tetrachlorodibenzofuran
1,2,3,7,8-PeCDF	1,2,3,7,8-pentachlorodibenzofuran
2,3,4,7,8-PeCDF	2,3,4,7,8-pentachlorodibenzofuran
1,2,3,4,7,8-HxCDF	1,2,3,4,7,8-hexachlorodibenzofuran
1,2,3,6,7,8-HxCDF	1,2,3,6,7,8-hexachlorodibenzofuran
2,3,4,6,7,8-HxCDF	2,3,4,6,7,8-hexachlorodibenzofuran
1,2,3,7,8,9-HxCDF	1,2,3,7,8,9-hexachlorodibenzofuran
1,2,3,4,6,7,8-HpCDF	1,2,3,4,6,7,8-heptachlorodibenzofuran
1,2,3,4,7,8,9-HpCDF	1,2,3,4,7,8,9-heptachlorodibenzofuran
OCDF	1,2,3,4,6,7,8,9-octachlorodibenzofuran
TEQ	Toxic Equivalency Quotient (normalized to 2,3,7,8 TCDD)

B.1 INTRODUCTION

This appendix to the Group 8 Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Report presents findings and recommendations based on the results of the investigation conducted at the Building 056 Landfill Area (B056 Landfill) RFI Site of the Santa Susana Field Laboratory (SSFL). The B056 Landfill RFI Site is comprised of one Solid Waste Management Unit (SWMU), SWMU 7.1. The RCRA Corrective Action Program at the SSFL is being conducted under the oversight of the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC).

The B056 Landfill RFI Site is one of four RFI sites included in the Group 8 RFI Report. The location of the B056 Landfill RFI Site within the SSFL and Group 8 Reporting Area is shown on Figure B.1-1. An RFI Site is an area that includes at least one SWMU and/or an Area of Concern (AOC) and some adjacent land for the purpose of characterization. The other three Group 8 RFI sites are the Former Sodium Disposal Facility (FSDF) (SWMU 7.3), the Empire State Atomic Development Authority (ESADA) (SWMU 7.9), and the Building 009 Leach Field (B009 LF) (an Area IV AOC). The B056 Landfill RFI Site is located in the northern portion of the Group 8 Reporting Area, northeast of the ESADA RFI Site, the B009 LF RFI Site, and the FSDF RFI Site (Figure B.1-1).

The B056 Landfill RFI Site, located within Area IV of the SSFL, was operated by the Energy Technology and Engineering Center (ETEC) division of Rockwell International. (predecessor companies of The Boeing Company [Boeing]), on behalf of the United States Department of Energy (DOE). Prior to 1978, ETEC was known as the Liquid Metal Engineering Center (LMEC)

The SSFL RFI was conducted to (1) characterize the presence of SSFL-operation-related chemicals in environmental media; (2) estimate risks to human health and the environment (i.e., the ecosystem); (3) gather data for the next phase of RCRA Corrective Action and the Corrective Measures Study (CMS); and, (4) identify areas for further work.

The SSFL has been divided into two operable units (OUs): the Surficial Media Operable Unit (Surficial OU) and the Chatsworth Formation Operable Unit (CFOU). The B056 Landfill RFI Site characterization presented in this appendix comprises data for both the Surficial OU and the CFOU. The Surficial OU includes soil, sediment, surface water, air, biota, and near-

surface groundwater (NSGW) at the SSFL. NSGW is defined as groundwater occurring within alluvium or weathered bedrock of the Chatsworth formation (CF). The CFOU includes CF bedrock and deeper groundwater that occurs within the unweathered bedrock of the CF.

B.1.1 Report Organization

This B056 Landfill RFI Site Report provides detailed sampling data and evaluation pertaining to the B056 Landfill RFI Site, including the relevant information needed to evaluate the completeness of characterization, risk assessment results, and site recommendations. This information is presented in sections organized as follows:

- **Section B.2 – Site History, Chemical Use, and Current Conditions.** Presents the site history and chemical use, and the current conditions including geology and groundwater conditions. Changes in site conditions and soil disturbance areas are described.
- **Section B.3 – Nature and Extent of Chemical Impacts.** Presents a summary of Surficial OU, NSGW and CFOU characterization information for the B056 Landfill RFI Site.
- **Section B.4 – Risk Assessment Findings Summary**. Presents a summary of the human health risk assessment (HRA) and ecological risk assessment (ERA) results; complete B056 Landfill RFI Risk Assessment included as Attachment F of Appendix F.
- **Section B.5 – Site Actions Recommendations**. Presents a summary of B056 Landfill areas recommended for either (1) no further action (NFA), or (2) further evaluation in the CMS. CMS Areas recommended for stabilization measures to prevent contaminant migration if any, are also identified.
- **Section B.6 – References.** Includes a summary of cited references.

Site-specific additional information is provided in the following attachments:

- **Attachment B-1**: Site-specific regulatory agency documents and correspondence.
- **Attachment B-2**: Subsurface information (soil boring, trench, piezometer, well logs, and geophysical survey).
- **Attachment B-3**: Data quality, validation and laboratory reports.

Information regarding characterization for the B056 Landfill RFI Site is provided in the following figures and tables:

- Figure B.1-1: Presents the location of the B056 Landfill RFI Site within the SSFL and the Group 8 Reporting Area.

- Figure B.2-1: Presents a plan view of the B056 Landfill RFI Site, showing known and potential chemical use areas. Tables B.2-1 through B.2-4 present summaries of buildings, tanks, transformers, and chemicals used at the B056 Landfill RFI Site.
- Figure B.2-2: Presents a plan view of the B056 Landfill RFI Site, showing soil, surface water and soil vapor sampling locations, trench location and nearby monitoring wells.
- Figure B.2-3: Present geologic cross-sections across the B056 Landfill RFI Site.
- Figure B.2-4: Presents a plan view of the isopach fill thickness and soil disturbance areas at the B056 Landfill RFI Site.
- Figures B.3-1 through B.3-6: Present characterization details for all soil, surface water and vapor sampling at the B056 Landfill RFI Site. Soil, surface water and vapor sampling results are shown on the maps and correlate with appropriate sections of Table B.3-2A.
- Table B.3-2B: Presents a summary of groundwater characterization.
- Table B.3-2C: Presents a summary of surface water analytical data.

Information regarding Group 8 area-wide conditions, transport and fate of chemicals between RFI sites, and other evaluations of area-wide issues are contained in the Group 8 RFI Report and appendices. Pertinent appendices to this Group 8 RFI Report are:

- **Appendix E:** Presents information regarding groundwater conditions in the Group 8 Reporting Area, including the B056 Landfill RFI Site. Information includes groundwater occurrence and quality, chemical transport, data set representativeness, and supporting data (monitoring results, time-series plots, and hydrographs), as well as an evaluation of naturally occurring constituents.
- **Appendix F:** Presents risk assessment information, including risk calculations, result tables, all transport and fate modeling (except groundwater), and a description of any methodology variances from the Standardized Risk Assessment Methodology (SRAM) Work Plan.

B.1.2 Historical Reference Documents

Historical documents for the Group 8 Reporting Area are being submitted to DTSC along with this report (Boeing, 2007e). These documents represent a compilation of information from multiple sources that were searched in an attempt to find SSFL documents relevant to the Group 8 RFI. Included in the document submittal are the available photographs, maps and drawings, manifests, memoranda, tabulations, facility records, correspondence, and reports relevant to site operations and types and sources of chemicals that may have been used, handled, or released in the Group 8 Reporting Area. Documents pertaining to the entire

SSFL are also included if they have relevant information also specific to Group 8. These documents were reviewed to (1) determine the history of site operations, (2) identify areas of known or potential chemical use for evaluation in the RFI, (3) compile site characterization data, and (4) identify areas where additional data were required to adequately characterize environmental site conditions. The results of the historical document review and sampling data collected relevant to the B056 Landfill RFI Site are presented in this Site Report. This document review, coupled with the site characterization data, provides a solid basis for the recommendations provided in Section B.5 of this report, including areas that are recommended for further evaluation in the CMS and areas that are recommended for NFA.

It is worth noting that information presented in this report is supplemented by other environmental reports that contain information about site and facility background, Surficial OU Program background, and methodologies/procedures. Key historical documents are listed below with brief descriptions:

- RCRA Facility Assessment (RFA) (Science Applications International Corporation [SAIC], 1991 and 1994). This report contains the following:
  - A brief description of the SSFL facility, including an operational history, physical setting information, and regulatory programs and oversight during the late 1980s and early 1990s.
  - Visual inspection records performed at facility operations.
  - Definition and description of SWMUs and AOCs identified during the assessment.
- Current Conditions Report (CCR) (ICF Kaiser Engineers [ICF], 1993). This report contains the following:
  - A general description of the SSFL facility, including an operational history, physical setting information, and regulatory programs and oversight during the late 1980s and early 1990s.
  - Descriptions of SWMUs and AOCs, including a presentation of results from environmental sampling performed to assess current conditions.
  - A draft work plan for further investigation during the RFI for selected SWMUs and AOCs.
- RFI Work Plan Addendum (WPA) [Ogden Environmental and Energy Services Company, Inc. (Ogden), 1996], and RFI Work Plan Addendum Amendments (WPAA); Ogden 2000a and b]. These reports contain the following:
  - Sampling procedures and rationale.
  - RFI site descriptions and operational history.

- Shallow groundwater characterization sampling and analysis plan for the SSFL.

- RFI Program Report (MWH, 2004). This report contains the following:
  - A general description of the SSFL facility, including an operational history, physical setting information, and regulatory programs and oversight.
  - A summary of the RCRA Corrective Action Program being conducted at the SSFL and a description of the OUs.
  - A comprehensive description of the Surficial OU field sampling program, including work plans followed, overall sampling scope, sampling methods and subcontractors used, and protocol followed.
  - Details of the analytical program for the Surficial OU RFI, including laboratories used, data validation findings, and Data Quality Assessment findings.
  - Programmatic key decision points or significant issues that influenced sampling, laboratory procedures, methodologies, or step-out requirements.
- Standardized Risk Assessment Methodology (SRAM) Work Plan, Revision 2 (MWH, 2005). This report contains the following:
  - Procedures for completing HRAs and ERAs.
  - Background soil concentrations and groundwater comparison concentrations.
  - A biological conditions report for the SSFL.
- Near-Surface Groundwater Characterization Report (MWH, 2003c). This report describes the following:
  - Nature and extent of near-surface groundwater at the SSFL.
  - Distribution, transport, and fate of trichloroethene (TCE) and other chemicals of concern, and the relationship of NSGW to CFOU groundwater.
- CFOU Characterization Reports (Montgomery Watson, 2000a; MWH, 2002 and 2003a). These reports discuss the following:
  - Geologic framework at the SSFL and hydrogeologic conditions of both NSGW and CFOU groundwater.
  - Transport and fate of TCE, and the occurrence and transport of other chemicals of concern in the CFOU.
- Annual and quarterly groundwater monitoring reports, including:
  - Annual Groundwater Monitoring Report (Haley & Aldrich, Inc. [H&A], 2006a).
  - First Quarter 2006 Groundwater Monitoring Report (H&A, 2006b).
  - Second Quarter 2006 Groundwater Monitoring Report (H&A, 2006c).
  - Third Quarter 2006 Groundwater Monitoring Report (H&A, 2006d).

- Historical Site Assessment (HSA) (Sapere, 2005). This report contains:
  - Facility descriptions and historical operational information for all buildings in Area IV.
  - Information regarding demolition activities, radiological surveys, releases, and removal actions conducted for radiological areas within Area IV.

B.2 SITE HISTORY, CHEMICAL USE AND CURRENT CONDITIONS

The B56 Landfill RFI Site is approximately 4 acres in the northwestern portion of Area IV at the SSFL. The site location within the SSFL is shown on Figure B.1-1, which also shows the Group 8 Reporting Area boundary. The site layout and the locations of identified and potential chemical use areas are shown on Figure B.2-1. The sampling locations and the locations of surficial cross-sections across the site are shown on Figure B.2-2.

During the RFA, various SMWUs and AOCs within the SSFL were identified. B056 Landfill was identified as SWMU 7.1 in the RFA (SAIC, 1994). No other SWMUs or AOCs were identified in the RFA within the boundary of the B056 Landfill RFI Site as it is defined in this report (Figure B.2-1).

A comprehensive review of historical documents generated during facility operations or in subsequent environmental investigations was performed to identify known or potential chemical use areas at or near the B056 Landfill RFI Site. As provided in the documents submitted in conjunction with this report (Boeing, 2007e), thousands of records (some dating back to 1957) were reviewed to identify areas of potential environmental concern at the Group 8 RFI sites or elsewhere within the Group 8 Reporting Area. As described in Section 1, documents reviewed included facility operational reports, maps and drawings, internal and external correspondence, regulatory compliance information, historical and aerial photographs, facility personnel interview records, and previous environmental reports. Based on a comprehensive review of this compiled information,, the B056 Landfill RFI Site boundary was defined to include operations associated with the SWMU identified above, but also nearby facilities or features that warranted assessment in the RFI. These include a Southern Debris Area, a roadside debris area, down-gradient drainages, and the B056 Excavation and associated debris area. Known and potential chemical use areas at the B056 Landfill RFI Site are shown on Figure B.2-1.

The following sections describe SWMU, site history and operations, chemical uses, and current conditions at the B056 Landfill RFI Site.

B.2.1 SWMUs and AOCs at the B056 Landfill RFI Site

The B056 Landfill RFI Site was used for disposal of soil, bedrock, and minor construction debris (asphalt, concrete, steel products, etc.) from the adjacent B056 Excavation and from other construction related excavations (ETEC 1987; ICF, 1993). The B056 Landfill RFI Site contains only one SWMU and no AOCs. A brief description of the SWMU included in this RFI Site Report is presented below.

Building 056 Landfill (SWMU 7.1)

The landfill was reportedly used during the early 1960s, for disposal of soil, bedrock, and minor construction debris (asphalt, concrete, scrap metal, etc.) that was generated during from the initial activities performed to construct Building 056 (ICF, 1993). In the late 1960s and 1970s, the landfill was used for the disposal of soil, and minor construction debris from the various construction activities in Area IV including the Sodium Component Testing Installation (SCTI) (ETEC, 1987; SAIC, 1994; Boeing 2007e). The B056 Excavation, located east of the landfill, is a circular, vertical pit that extends approximately 65 feet into bedrock that was constructed in order to build the basement for Building 056, the Systems for Nuclear Auxiliary Power (SNAP) 8 Flight System Test Facility (FSTF) (Atomics International [AI], 1962). Although the bedrock excavation was performed, the Building 056 was never built. During the period the landfill was used, soil disturbance and debris disposal occurred in an area south of the primary extent of the landfill. The landfill and Southern Debris Areas fill historical topographic lows (valleys) and cover hillslopes adjacent to the previous valleys, although the central and eastern portions of the Southern Debris Area cover a generally flat surface topography (MWH, 2003b). A site map depicting these areas is shown in Figure B.2-1.

Prior to 1980, drums containing hazardous and non-hazardous wastes were occasionally stored on top of the landfill (ETEC, 1987; MWH, 2003b; Ogden, 1996). Waste in the drums located on the top of the landfill has been identified as oils, alcohols, sodium, sodium reaction products, grease, phosphoric acid, asbestos, rags, and rope (ETEC, 1987; ICF, 1993). Empty rusty drums were also observed at the base of the ravine along the western edge of the Southern Debris Area (USEPA, 1997). Areas where drums were observed or stored are illustrated on Figure B.2-1.

B.2.2 B056 Landfill RFI Site History

A summary of the site chronology, including descriptions of site operations and investigation activities for the B056 Landfill RFI Site, is presented below. Facility correspondence, investigation reports, waste disposal records, facility maps, drawings, photographs, and personnel interview records were reviewed and evaluated to compile the site history information presented below (Boeing, 2007e). Primary sources of information include the following:

- CERCLA Program Phase II – Site Characterization (ETEC, 1987)
- Radiological Survey of the T056 Landfill; Area From 23rd Street to Building T100; And An Area Across From Building T011 (ETEC, 1988)
- RFA (SAIC, 1991 and 1994)
- Environmental Monitoring Program Plan (ETEC 1992)
- CCR (ICF, 1993)
- RFI WPA (Ogden, 1996)
- Area IV Radiological Characterization Survey Final Report (Rocketdyne Propulsion and Power [Rocketdyne], 1996)
- Aerial Photographic Analysis (USEPA, 1997)
- RCRA Facility Investigation Work Plan Addendum Amendment, Building 56 Landfill (SWMU 7.1) Investigation (MWH, 2003b)
- Area IV HSA (Sapere, 2005)
- Evaluation of the AI Nuclear Development Field Laboratory as a Location of Reactor Facilities. (AI, 1962)

Site Chronology

1960s	In the early 1960s, historical photographs show the B056 Landfill and the Southern Debris Area being used for disposal of soil, bedrock, and minor construction debris from the adjacent B056 Excavation and from other Area IV construction-related excavations (Boeing, 2007e, ETEC, 1987; ETEC, 1992; ICF, 1993). Design reports and drawings indicate a target completion date for Building 056 of 1964, but this structure was never built (AI, 1962). Historical photographs from 1962 show a thin vegetative cover over the northern B056 Landfill area, while the Southern Debris Area shows a large area of soil disturbance. At this time, the B056Excavation was near completion (USEPA, 1997; Boeing, 2007e).

	Historical photographs from 1968 show additional vegetative re-growth over the northern landfill, a dirt road in the Southern Debris Area, and a completed B056 Excavation (Boeing, 2007e). Aerial photographs (Boeing, 2007e) indicate that there was a large fire in Area IV. Portions of the entire B056 Landfill RFI Site, including the drainages, were burned. In 1969, soil from the SCTI facility was deposited at the B056 Landfill (SAIC, 1994).
1970s	Historical photographs from 1974 and 1975 display renewed disposal of soil and debris in the southern and northern portions of the site. A dirt road is visible in the Southern Debris Area, and surface water existed in the B056 Excavation (Boeing, 2007e). In a 1975 aerial photograph, drums were observed at the base of the ravine along the western edge of the Southern Debris Area (USEPA, 1997). Continued disposal of soil and construction debris is visible in the B056 Landfill historical photographs from 1979. Drums are evident in historical photographs and were occasionally stored on the relatively flat surface in the middle portion of the site (Boeing, 2007e; ETEC, 1987).
1980s	After the B056 Landfill became inactive, drums were removed in the early 1980s and disposed of properly offsite (ETEC, 1987, Boeing 2007e). Based on the Group 8 documents reviewed (Boeing, 2007e), there are no documented disposal activities at the site during this period other than its use as a drum storage area. In 1988, Rockwell International conducted a radiological survey of the B056 Landfill (ETEC, 1988). Survey results were below the acceptable limits. Aerial photographs from 1988 show both the B056 Landfill and the Southern Debris Area as re-vegetated and inactive (USEPA, 1997).

1990s	An aerial photograph from 1995 shows a dirt road into the northern B056 Landfill area, exposed soil in the top flat part of the B056 Landfill, and re-vegetation at the Southern Debris Area. The west ramp of the B056 Excavation had been backfilled (USEPA 1997). An Area IV Radiological Characterization Survey was conducted in 1996 (Rocketdyne, 1996). Soil samples were taken at two different locations in the vicinity of the B056 Landfill. None of the measurements were distinguishable from background, and all the measurements were below the acceptable concentration levels established for the SSFL (Rocketdyne, 1996; Sapere, 2005). In February 1999, the area around RD-74 and the well cuttings were surveyed for radiation. Measurements were all indistinguishable from background. Wipes taken of well cuttings were all non-detect. In May 1999, a surface water sample was taken from the B056 Excavation. No gamma-emitting radionuclides were detected (Boeing, 2007c). In June 1999, radiation instrument surveys of the locations of chemical sampling were all indistinguishable from background.
2000 to present	In 2002, prior to RCRA B056 Landfill investigation, a GPS data logger was used to map the radiation levels at the B056 Landfill. No abnormal exposure levels were noted. One asphalt and two soil samples were collected at the locations of the highest radiation levels observed. Man-made gamma emitting radionuclides were not detected in the asphalt sample. One soil sample contained 0.17 picocuries per gram (pCi/g) of Cesium-137 (Cs-137), within the range of natural background, and concentrations of man-made gamma emitting radionuclides were not detected in the second sample (Boeing 2007c).

Site Inventories

Inventories of buildings, tanks, transformers, and chemicals used at the B056 Landfill RFI Site were compiled during preparation of this RFI report. Historical reports and facility drawings were reviewed, personnel interviews were conducted, and visual site inspections were performed. No buildings and transformers were identified at the B056 Landfill RFI site. At the B056 Landfill, one 500-gallon polyethylene aboveground tank was observed adjacent to the access road near RS-16. It is estimated that the tank was onsite between 2000

and 2007. The tank was going to be used for purge groundwater storage from well installation activities, but it was never used (Boeing, 2007d), and the tank was removed in September 2007. Site inventories are included as the following tables:

- Building inventory – Table B.2-1
- Fuel and solvent storage tank inventory – Table B.2-2
- Transformer inventory – Table B.2-3
- Documented chemical storage and disposal – Table B.2-4

B.2.3 B056 Landfill RFI Site Chemical Use Areas

Chemical use areas are locations where chemicals were documented to have been (or potentially may have been) used, stored, spilled, discharged and/or disposed of. Chemical use areas at the B056 Landfill RFI Site are shown on Figure B.2-1 and described in detail in Section B.3. Three types (five individual) of chemical use areas evaluated at or near the site are listed below in order of chemical use area number:

- 1 – B056 Landfill
- 2a and 2b – Southern and Roadside Debris Areas
- 3a and 3b – B056 Excavation and Debris Area

The site characterization information is described relative to these chemical use areas in Section B.3. In addition to known areas of chemical use, samples were collected to assess conditions in the drainages down-slope of all of these chemical use areas.

B.2.4 Site Conditions

This section provides summaries of site conditions near the B056 Landfill RFI Site, including topography, geology, soils, groundwater, surface water, seeps and springs, and biology.

General Conditions and Topography

The B56 Landfill RFI Site is located within the western portion of Area IV. The site is currently inactive and vacant, with no former structures except for two chain-link fences, one at the entrance to the landfill and the other around the B056 Excavation.

Surface topography in the eastern portion of the site is generally flat, with the exception of the B056 Excavation, which is a 65-foot excavation into bedrock (Figures B.2-1 and B.2-2). The B056 Landfill has a level upper surface with steep slopes to the north and west. South of a large rock outcrop, the Southern Debris Area consists of hummocky terrain and steep slope to the west. Current surface elevations at the B056 Landfill RFI Site range from a low of approximately 1,750 feet above mean sea level (msl) in the western drainage of the RFI Site to a high of approximately 1,850 feet msl in the southern and southwestern portions of the site. Topography for the site is shown in two geologic cross sections, one oriented northwest-southeast, and one oriented southwest-northeast (surficial cross sections A-A' and B-B' B056 Landfill RFI Site, Figure B.2-3). Locations of the cross-sections are shown on Figure B.2-2.

Geology

The B056 Landfill RFI site is located north of the Burro Flats Fault, in the Upper Burro Flats member of the Upper Chatsworth formation (Dibblee, 1992; MWH 2002). A series of deformation bands is also present southwest of the B056 Landfill RFI Site. These deformation bands generally strike northeast-southwest and have currently been defined by geologic site mapping to comprise the western extent of the North Fault zone (MWH, 2002; MWH, 2007).

Beds of the Upper Burro Flats member generally strike N70˚E and dip 25˚NW. The Upper Burro Flats member is predominantly composed of medium-grained sandstone with minor interbeds of siltstone and shale. Figure 2-5 of the Group 8 RFI Report (Volume I) shows the geologic units represented within the RFI site. The locations of the Burro Flats Fault and the deformation bands are shown on Plate E-1 in Group 8 Groundwater Appendix E. Additional geologic information is presented in Appendix E of the Group 8 RFI Report.

Soils

Soils and bedrock from the B056 Excavation were deposited into the B056 Landfill and the Southern Debris Area. Fill soils in the northern landfill area overlay a thin layer of alluvial soil and typically range in thickness from less than 1 foot to approximately 20 to 25 feet. Fill soils in the Southern Debris Area range from less than 1 foot to 14 feet. Throughout most of the B056 Landfill RFI Site, alluvial soils range up to 8 feet thick. When the western ramp of the B056 Excavation was filled, sediment and fill sloughed off the side and were deposited at the bottom of the B056 Excavation. The sediment is thickest in the western portion of the

excavation and thins toward the eastern portion. The thickness of the sediment and fill is unknown because the bottom of the B056. Excavation is inaccessible. When the excavation was drained during dewatering activities in 1999, some concrete and metal debris were observed within the fill at the base.

The thickness of fill soils and the areas of soil disturbance are shown in Figure B.2-4 and in Figure 2-4 in the Group 8 RFI Report (Volume I). The distribution of fill soils predates the RFI sampling, so all soil depths are representative of current conditions. Fill soils primarily consist of silty fine sands, and sandy silts with sandstone gravels and cobbles. Alluvial soils of the site consist of weathered Chatsworth formation materials, which are primarily silty/clayey fine sands. Soil boring and trench logs are included as Attachment B-2 to this appendix.

Groundwater

The groundwater system and monitoring network in RFI Group 8 is presented in detail in Appendix E. At the B056 Landfill RFI Site, one piezometer (PZ-124) and one shallow well (RS-16) were installed to monitor groundwater conditions in alluvium and weathered bedrock (i.e., NSGW), while two wells (RD-07 and RD-74) were installed to monitor groundwater conditions in the unweathered bedrock (i.e., CFOU groundwater). Construction data for these wells/piezometers are shown in Figure E-4 (Appendix E), and their locations are shown in Figure B.2-1.

Dewatering of the B056 Excavation (conducted between March 1999 and August 2004), has had a significant impact on groundwater occurrence at this site. During the initial dewatering effort, conducted between March 23 and May 14, 1999, approximately 2.5 million gallons of water were pumped from the B056 Excavation (GRC, 1999). During this period, the water level in the B056 Excavation was lowered a total of 49 feet. An automated pumping system was installed in the B056 Excavation to maintain the water level below 1748 feet above msl. Periodic pumping of the B056 Excavation continued until August 2004, when the Building 059 SNAP facility was demolished and dewatering was no longer required.

Prior to dewatering activities, NSGW was encountered in well RS-16 at depths as shallow as 6.3 feet bgs (1802.8 feet msl). Water levels measured in nearby well RD-07 were typically 40 to 50 feet lower than those measured in RS-16, which suggests that the NSGW monitored by well RS-16 was perched above the regional water table. Perched groundwater elevations dropped below the screened interval of RS-16 during dewatering and returned only briefly

after two consecutive years of above-average rainfall in 2004 and 2005. Well RD-74 was installed in January 1999, approximately two months before dewatering activities commenced at the B056 Excavation. Water levels in RD-74 are highly responsive to seasonal rainfall and can vary over 40 feet within a season. This behavior may be attributable to the fact that RD-74 is located near a drainage where recharge conditions may be higher relative to those outside of the drainage. No information is available regarding the temporal variability of groundwater occurrence at PZ-124 (this well was mostly dry when measured), but field records indicate that groundwater was encountered during installation at a depth of 21.6 feet bgs (1742.5 feet msl). In order to conservatively assess exposure risks, groundwater elevations measured in RS-16 prior to dewatering have been used to represent first-encountered groundwater in the risk assessment. The occurrence of NSGW at the B056 Landfill RFI Site is shown in plan view of Figure E-7 of Appendix E.

NSGW flow direction at the B056 Landfill RFI cannot be determined because only one perched groundwater well (RS-16) exists. NSGW flow at the SSFL generally follows topography along drainage pathways (MWH, 2003c). At the B056 Landfill site, PZ-124 located within the drainage below the site is typically dry. Chatsworth formation groundwater flow is estimated to be to the northwest, with a lateral gradient of 0.1 ft/ft based on recent groundwater levels. Additional description of groundwater occurrence and flow is provided in Appendix E.

Surface Water

Surface water flow at the B056 Landfill Site is predominantly to the north, but a north-south surface water divide exists separating the B056 Excavation Area from the landfill area. Surface water flow to the east of the divide, is into the B056 Excavation. The B056 Excavation has no discharge.

West of the surface water divide, surface water discharge is via sheet flow over the topographically flat portions of the site toward a well developed, natural drainage to the west. The northern portion of the landfill drains to an east-west tributary to the primary drainage. The primary north-trending drainage begins south of the B056 Landfill, north of Building 100. Surface water discharge from the Building 100 developed area is directed to asphalt-lined ditches that drain north towards National Pollutant Discharge Elimination System (NPDES) Outfall 007. Erosion control measures using best management practices (BMPs)

have been installed upstream of Outfall 007 to help prevent sediment erosion and migration into the surface water drainage (MWH, 2006a).

Below Outfall 007, the drainage flows north, along the west side of the B056 Landfill and Southern Debris Area, continues north, and joins with the FSDF drainage Channel C. At this confluence, FSDF Channel D begins and which continues offsite to the property owned by the Brandeis-Bardin Institute (BBI).

Seeps and Springs

There are three springs (S19, S20, S21) located offsite to the north of the Group 8 Reporting Area. Spring S19 is located to the east of the RD-59 well cluster and emerges from bedrock. Spring S21 is located closer to the RD-59 well cluster and emerges from colluvium at the base of a road cut. Spring S20 is located near S19 but it has never been sampled. Due to their proximity and down-gradient location relative to the Group 8 Reporting Area, groundwater quality and occurrence at S19 and S21 are described further in Appendix E.

Biology

Biological conditions at the B056 Landfill RFI Site, including vegetation types and sensitive species, are shown in Figure 2-13 of the Group 8 RFI Report. The vegetation identified onsite include Santa Susana mountain tarplant, coast live oak woodland, chaparral, disturbed ruderal, developed ruderal, and non-native grassland. The majority of the site is disturbed, but coastal live oak characterizes most of the drainage (MWH, 2005). The base of the B056 Excavation is disturbed and the excavation is typically filled with water. Sensitive plant species at the site were flagged prior to RFI sampling activities. Sensitive species identified at or in the vicinity of the B056 Landfill RFI Site include the Santa Susana tarplant, valley oak, turkey vulture, bobcat, mule deer, and great blue heron.

During the September/October 2005 Topanga Fire, vegetation across the vast majority of the B056 Landfill RFI Site was burned, and significant ash was deposited, especially in drainages. The northern and eastern edges of the site were burned, but in areas with limited vegetation (e.g., rock outcrops or developed areas) effects of the fire were minimal. Areas with more vegetation (e.g., trees and chaparral), including surface water drainages, were impacted significantly by burning and deposition of ash. At the time of this report, the plant community in these burned areas is in a transitional state, and early post-fire plant species are

growing. It is expected that the plant community will continue to grow and transition until a more stable plant community is established.

In June 2007, reconnaissance-level vegetation mapping was conducted at the Group 8 RFI Sites in support of the site-specific ecological risk assessment, and the vegetation map is included as Attachment F6 of Appendix F.

B.3 NATURE AND EXTENT OF CHEMICAL IMPACTS

This section describes the data used to define the nature and extent of chemical impacts to environmental media at the B056 Landfill RFI Site. The presentation includes sampling objectives, scope, key decision points related to characterization activities, and findings.

Transport and fate evaluations are discussed in the following sections of the report:

- Group 8 RFI Report, Section 5, Contaminant Transport and Fate - Potential migration via surface water flow;
- Group 8 RFI Report Appendix E, Groundwater Characterization - Potential migration from soil to groundwater, and groundwater migration
- Group 8 RFI Report Appendix F, Risk Assessment - Potential volatile organic compound (VOC) migration from groundwater to soil, soil to indoor air.

B.3.1 Sampling Objectives

Soil and sediment samples were collected to characterize the extent of potential chemical impacts at the B056 Landfill RFI Site. As described in Section 1, extensive historical documents (Boeing, 2007e) were reviewed to identify potential chemical use areas for RFI sampling. The process of selecting sampling locations, depths and analytical methods considered the following objectives:

- Defining the lateral and vertical extent of landfill debris
- Identifying types of waste and chemical impacts within the landfill and defining potential chemical gradients in down-gradient discharge areas
- Obtaining sufficient data for risk assessment
- Obtaining data sufficient to estimate CMS soil volumes to within a factor of 10

To achieve these objectives, soil sampling was conducted as described in the RFI Work Plans (Ogden, 1996 and 2000b) and the B056 Landfill Work Plan Addendum Amendment (MWH, 2003b), or as directed by DTSC direction during the RFI field program. In July 2003, DTSC approved the B056 Landfill Work Plan Addendum Amendment (DTSC, 2003). Additional sampling was also performed to achieve the objectives outlined above, considering the following:

- Additional information regarding site use and observed site conditions
- Site sampling results and data trends
- Knowledge of chemical properties (e.g. mobility, volatility, association with other chemicals, etc.)
- SSFL metals and dioxin background concentrations
- SSFL SRAM-based screening concentrations for human health and ecological receptors
- Risk assessment results and knowledge of areas recommended to require further evaluation during the CMS

Groundwater has been sampled to meet site-wide routine monitoring requirements and additional characterization objectives according to regulatory agency-approved work plans (see Section B.3.2). Based on detected site chemicals, chemical distribution, and site conditions, additional groundwater sampling and analysis was also conducted to complete characterization of individual RFI sites and provide data sufficient for risk assessment. Groundwater sampling was conducted as described in the Sampling Analysis Plans (GRC, 1995a and b) and the *Shallow Zone Groundwater Investigation Work Plan* (Ogden, 2000a).

B.3.2 Sampling Scope

A total of 205 soil matrix samples, 95 soil vapor samples, and 4 surface water samples were collected between March 1987 and May 2007 to assess potential impact associated with the chemical use areas at the B056 Landfill RFI Site. Sampling locations and analytical suites were based on DTSC-approved work plans (MWH, 2003b; Ogden 1996), sampling results from previous investigations, geophysical survey results, additional facility information from site inspections or personnel interviews, historical and/or aerial photographs, DTSC site inspections in December 2001 and August 2002, and DTSC work plan review comments. Sample depths within trench locations were based on field observations (i.e., staining or debris observed). Sampling schedules are presented in Tables B.3-1A through B.3-1D.

Both Chatsworth formation groundwater and NSGW have been sampled and analyzed according to agency-approved work plans (GRC, 1995a and 1995b; Ogden 2000b). Four monitoring wells and/or piezometers were used to characterize groundwater specifically at the B056 Landfill RFI Site (PZ-124, RD-07, RD-74, and RS-16). As described in the risk assessment, groundwater monitoring data from the most impacted well within the Group 8

Reporting Area were used to characterize the direct exposure route to human receptors. RFI site groundwater monitoring data were used for potential indirect groundwater exposures at that site. Groundwater characterization data for the B056 Landfill RFI Site are presented with the entire Group 8 groundwater data set in Appendix E.

Based on a quality assurance (QA) review conducted on soil, soil vapor, sediment, and piezometer sampling results, data have been deemed usable and meet RFI program requirements as defined by DTSC-approved Quality Assurance Project Plans (Ogden, 2000b). The RFI QA program included individual sample data validation, assessment of each laboratory's performance, and a qualitative review of the precision, accuracy, representativeness, reliability, and completeness parameters for the datasets. Historical samples (collected prior to the beginning of the RFI in 1996) were typically not validated for the subsequent RFI, but are deemed useable for the RFI since they were collected and reviewed according to the QA protocols for those programs. Overall data quality is described in the RFI Program Report (MWH, 2004). Site-specific data quality summaries for the B056 Landfill RFI Site are described by media in the sections below.

As an ongoing, additional QA measure, DTSC's Environmental Chemistry Laboratory (ECL, formerly the Hazardous Materials Laboratory) is performing independent data quality audits of up to 5 to 10 percent of the surficial media analyses performed for the RFI. The ECL data quality audits included data validation, electronic data file audits, and split sample comparisons. The ECL findings are compiled in a report for each audit and those available by 2004 are published in the RFI Program Report (MWH, 2004). In these reports, the ECL deemed the sample results acceptable or qualified as estimated data points.

This report presents characterization results for all media sampled at the B056 Landfill RFI Site, including the following:

- Soil vapor
- Soil matrix (including soil and pond/drainage sediment)
- Groundwater
- Surface Water

B.3.3 Key Decision Points

DTSC has been an integral part of the decision-making process during the SSFL RFI program. The B056 Landfill RFI Site was included in the RFI since 1993 (ICF, 1993), and additional sampling performed according to DTSC-approved RFI work plans (Ogden, 1996; MWH, 2003b). Evaluation of shallow groundwater conditions was also requested by DTSC and was included in the Shallow Groundwater Work Plan (Ogden, 2000b). DTSC provided review during the SSFL RFI field sampling, selected additional step-out sample locations, and reviewed field sampling protocols. Additional site assessment has recently been performed to address revised, DTSC-approved requirements for risk assessment (MWH, 2005), and evaluate new potential chemical use areas. Sampling of new chemical use areas and recent step-out sampling followed DTSC-approved work plan protocols for the RFI.

Site-specific characterization decision points are listed below. These decision points represent either assumptions upon which sampling was based, or decisions made during step-out sampling or data evaluation. Programmatic decision points (those common to all RFI sites) are described and included in the RFI Program Report (MWH, 2004).

1) Areas where further assessment in the CMS is recommended were not characterized beyond the need for the CMS.

2) Representative trenches and soil borings were conducted in the landfill and Southern Debris Area to define the extent and type of fill materials. Soil samples were collected at representative locations within the investigation trenches or borings to assess chemical characteristics of the fill material. Additional soil samples were also collected based on observations in the trench or boring (debris, soil staining, odor, etc.). In contrast to other types of chemical use areas, step-out samples were not collected within the fill material when high concentrations were detected; rather, sufficient investigation locations were performed within the landfill area to ensure representative characterization of potential chemical impacts within the fill.

3) Soil samples were collected in the northern and western drainages down-slope of the landfill and Southern Debris Areas to assess down-gradient conditions. In addition, soil samples were targeted down-slope of and within the drainage below where drums were observed in the western slope of the Southern Debris Area during the RFI.

4) Active soil vapor samples were collected throughout the B056 Landfill RFI site to access potential discharge of solvents at the site since VOCs have been detected in groundwater at RD-07.

5) Landfill and debris area samples were collected for VOCs, semivolatile organic compound (SVOCs), total petroleum hydrocarbons (TPH), metals, pH, and perchlorate following work plan requirements (Ogden, 1996; MWH, 2003b).

Additional sampling was performed for terphenyls, fluoride, glycols, and energetics since these types of chemicals were used elsewhere in Area IV and may have been disposed at the B056 Landfill RFI Site. Glycols were analyzed as a tentatively identified compound (TIC), using analytical Method 8270.

6) Debris areas near the entrance of the B056 Landfill and adjacent to the B056 Excavation were targeted for sampling for VOCs, SVOCs, TPH, PCBs, and metals because debris included containers, scrap metal, and construction debris.
7) The surface water discharge area from Building 100 was sampled to determine if this area was a source of dioxin and metals detected above permit limits in NPDES surface water samples collected at Outfall 007. The area around Building 100 was screened for VOCs to evaluate potential contribution of contaminants to groundwater since TCE has been detected in groundwater at RD-91.
8) Water samples from the B056 Excavation were collected and analyzed for metals, perchlorate, VOCs, general minerals and total dissolved solids (TDS). Sediment samples with in the B056 Excavation were collected and analyzed for metals, PCBs, SVOCs, TPH, VOCs, and inorganics.

B.3.4 Soil Matrix and Soil Vapor Findings

All soil sampling results and characterization findings are presented in Table B.3-2A. The goals of the table are to:

1. Present summaries of sampling results, including nature and extent.
2. Demonstrate that soil characterization is adequate and that no further sampling is warranted.
3. For areas recommended for CMS evaluation, indicate that soil volumes are estimable within a factor of ten for comparison of remedial alternatives.

Goals 2 and 3 are achieved through an iterative evaluation process that takes into account the risk assessment results and CMS recommendations as well as the soil analytical data. For example, if detected concentrations are sufficiently high to indicate that further evaluation in the CMS will be necessary, the data are considered to be adequate for the purpose of risk assessment. Similarly, the risk assessment results can be used along with the soil analytical results to delineate CMS areas and estimate soil volumes within an order of magnitude (Goal 3). Other criteria used to evaluate characterization completeness include the sampling results compared to screening levels, the presence and magnitude of concentration gradients, the types of historical site operations and chemical uses, and analytical detection limits. Data quality summaries for the B056 Landfill RFI Site are provided in Tables B.3-3A (soil) and B.3-3B (soil vapor).

B.3.4.1 Soil Data Presentation

Relevant site information, sampling rationale, analytical results, and evaluation of results are presented in Table B.3-2A. This table refers to chemical results that are shown by chemical group category on Figures B.3-1 through B.3-5B. Table B.3-2A presents the following site characterization information by each Chemical Use Area (Figure B.2-1) for each relevant chemical group within each Chemical Use Area:

- Relevant site history, site characteristics, and activities related to chemical use for each Chemical Use Area by Chemical Use Number.
- Sampling scope and rationale for each Chemical Use Area by Chemical Use Number.
- Summary of sampling results for soil and soil vapor for each Chemical Use Area by Chemical Use Number. As appropriate, sample results are compared to established SSFL background concentrations (metals and dioxins only) and/or SSFL RBSLs[1]. The screening levels are also displayed on Figures B.3-1 through B.3-2A.
- Determination if characterization of chemical gradients is sufficient such that the risk assessment reflects the approximate maximum analyte concentration OR a concentration sufficiently high to result in risk requiring a recommendation for evaluation during CMS.
- Determination if nature and extent of landfill materials and/or chemicals is defined sufficiently to estimate soil volumes for areas that require further consideration in the CMS.

B.3.4.2 Soil Data Summary

As detailed in Table B.3-2A, five confirmed and potential Chemical Use Areas were investigated at the B056 Landfill RFI Site. The following describes the overall findings regarding the nature and extent of landfill debris, and provides a summary of the chemicals detected above screening criteria by chemical analytical group.

[1] The use of the SRAM-based screening levels for comparison purpose does not serve as a risk assessment. These screening levels are not used to determine the significance of detected chemical concentrations or if a chemical use area will be recommended for further consideration in the CMS, but only to provide the reader another tool to evaluate the characterization data. The SRAM-based screening levels represent conservative concentrations that pose a low level of risk. See Appendix F.

Debris Extent

- Fill materials at the site have been identified in the B056 Landfill (Chemical Use Area 1) and in the Southern Debris Area (Chemical Use Area 2a). The extent of fill in these areas was determined based on information from trench or hand auger borings and the extent of bedrock outcrop. The extent of fill materials are shown as the boundaries of each of these chemical use areas on the sampling data figures (Figures B.3-1 through Figures B.3-5B). Figure B.2-4 shows fill thickness at the B056 Landfill RFI site.

  - In the northern area (Chemical Use Area 1, the B056 Landfill), fill thickness ranges from less than 1 foot (BLBS0032) at the edges of the fill area to approximately 20 to 25 feet thick (BLTS15) in the central portion of the area

  - In the southern area (Chemical Use Area 2a, the Southern Debris Area), fill is less than 1 foot thick (BLBS0056) in the drainage in the western portion of the area, and up to approximately 14 feet thick (BLTS07) in the hummocky terrain in the eastern portion of the area.

- Fill materials were observed to consist predominantly of soils and bedrock boulders, with large concrete blocks (up to 5 feet in size), asphalt, scrap metal, and some wood products. Generally, the Southern Debris Area contains less fill material than that observed in the B056 Landfill. In one trench, BLTS12, an empty projectile shell cartridge was also identified. There were seven asbestos removal areas: four in the B056 Landfill area and three in the Southern Debris Area. Figure B.3-6 shows asbestos removal areas.
- Surficial debris observed during the RFI and during site walks conducted with DTSC in 1996, 1999, 2001, and 2002 included rebar, sheet metal, concrete, asphalt, and glass. No drums were observed except in on the western hill slope of the Southern Debris Area (Chemical Use Area 2a).
- As required by DTSC, radiation surveys and sampling were conducted prior to and during the subsurface investigation. No elevated radiation levels were observed in the surface surveys or in subsequent soil or wipe samples of materials found within the landfill (Boeing, 2007c).
- Prior to backfill of investigation trenches, subsurface sampling results were reviewed by DTSC and the Department of Health Services Radiological Health Branch (DHS-RHB). DTSC and DHS-RHB approved the excavated soils to be used as backfill (Boeing, 2003a).

VOCs

- At the B056 Landfill (Chemical Use Area 1), methane was detected just above laboratory reporting limits at a concentration of 10 µg/L at two locations within the landfill. In the Southern Debris Area (Chemical Use Area 2a), methane was also detected at ten locations, with concentrations ranging up to 27 µg/L.

- At the B056 Landfill (Chemical Use Area 1), methylene chloride and acetone was detected in soil matrix samples up to 23 micrograms per kilogram (µg/kg) and 5000 ug/kg (estimated), respectively. The methylene chloride results in these samples exceed the residential RBSL. These detections are considered a likely result of contamination from the mobile laboratory. Methylene chloride was not detected in any other sample collected at the B056 Landfill, and acetone was not detected at concentrations greater than RBSLs in any other sample.
- At the Southern Debris Area (Chemical Use Area 2a), trichlorofluoromethane (Freon 11) was detected in one historical soil sample (LFR-1) collected in the drainage. This result exceeds the residential RBSL. Freon 11 was not detected in subsequent soil samples collected in vicinity of this location in the drainage and no in any other sample collected elsewhere within the site.

SVOCs

- 15 polynuclear hydrocarbons (PAHs) and two phthalates were detected at the site, including the B056 Landfill (Chemical Use Area 1), Southern Debris Area (Chemical Use Area 2a), B056 Excavation (Chemical Use Area 3a), and the down-gradient drainages. Only two locations had detections above residential RBSLs. Both occurred within the B056 Landfill (Chemical Use Area 1), ranging up to 960 µg/L.

TPH

- At the B056 Landfill (Chemical Use Area 1), 10 samples within the B056 Landfill had detections of TPH. Most detections were less than RBSLs, however, one sample within the landfill contained diesel-range TPH up to 23,000 milligrams per kilogram (mg/kg). At the toe of the landfill, lubricant oil-range hydrocarbons were detected up to 1,100 mg/kg, less than RBSLs. TPH was not detected in the down-gradient drainage.
- TPH was not detected above RBSLs at any other chemical use areas at the site.

PCBs

- In the B056 Landfill (Chemical Use Area 1), PCBs were detected in only two sample locations within the landfill. Aroclor 1254 and Aroclor 1260 were detected up to 1,000 µg/kg and 200 µg/kg, respectively, exceeding residential and ecological RBSLs. Down-gradient drainage samples were non detect for PCBs.
- At the B056 Excavation Debris Area (Chemical Use Area 3b), PCBs were detected in two soil samples that targeted an empty drum location. Concentrations ranged up to 246 µg/kg (Aroclor 1248), 134 µg/kg (Aroclor 1254), and 99.8 µg/kg (Aroclor 1248), exceeding ecological RBSLs. PCBs were not detected in the B056 Excavation sediments.

Dioxins

- In the discharge area north of the Building 100 (B100 Discharge Area), dioxins were detected above background and RBSLs. Dioxin TEQs ranged up to 16.95 ng/kg in the field duplicate sample, and up to 3.08 ng/kg in the primary sample.

Metals

- At the B056 Landfill (Chemical Use Area 1), 11 metals were detected in above background. Hexavalent chromium was also detected in one sample at a concentration of 0.3 mg/kg, exceeding the RBSL. Of the metals detected above background, the following were detected at concentrations exceeding residential or ecological RBSLs:
  - Barium up to 150 mg/kg (background 140 mg/kg) in one sample
  - Boron up to 13.4 mg/kg (background 9.7 mg/kg) in one samples
  - Cadmium up to 1.3 mg/kg (background 1.0 mg/kg) in one sample
  - Copper up to 130 mg/kg (background 29 mg/kg) in three samples
  - Lead up to 94 mg/kg (background 34 mg/kg) in two samples
  - Mercury up to 1.7 mg/kg (background 0.09 mg/kg) in five samples
  - Molybdenum up to 7.5 mg/kg (background 5.3 mg/kg) in one sample
  - Selenium up to 5.3 mg/kg (background 0.655 mg/kg) at seventeen samples
  - Zinc up to 140 mg/kg (background 110 mg/kg) in three samples

- At the Southern Debris Area (Chemical Use Area 2a), six metals were detected in representative soil locations above background. Of the metals detected above background, the following were detected at concentrations exceeding residential or ecological RBSLs:
  - Aluminum up to 25,000 mg/kg (background 20,000 mg/kg) in one sample
  - Boron up to 11.8 mg/kg (background 9.7 mg/kg) in two samples
  - Cadmium up to 2 mg/kg (background 1.0 mg/kg) in one sample
  - Copper up to 73 mg/kg (background 29 mg/kg) in one sample
  - Selenium up to 3.4 mg/kg (background 0.655 mg/kg) in eleven samples
- In the combined FSDF-B056 drainage north of the site (FSDF Channel D), arsenic was detected above background in one location at and beyond the property boundary. This data is described in more detail in the FSDF Site Report (Appendix D). At this location, arsenic concentrations ranged up to 34.9 mg/kg, and were detected in samples collected adjacent to or downgradient of shale bedrock outcrops. Arsenic concentrations in soil were not detected above background at the B056 Landfill RFI site, or in the channel sediments upstream of this location.

Perchlorate

- Perchlorate was not detected in any of the 52 soil leachate samples collected at the Building 056 landfill and the Southern Debris Area. Perchlorate was not detected in surface water collected at the B056 Excavation.

Energetics

- Energetics were not detected in soils at the Building 056 Landfill.

Asbestos

- During investigation of the B056 Landfill, ACM was identified and removed of throughout the landfill B056 Landfill (Chemical Use Area 1) and Southern Debris Area (Chemical Use Area 2a). Bulk insulation material collected by Boeing contractors contained 20% amosite, and floor tile contained 3% chrysotile (T&T, 2003). Six soil samples were collected and analyzed for asbestos underneath suspected ACM. Only one soil sample contained asbestos, with trace amounts of chrysotile and less than 1 percent amosite. There were four asbestos removal areas at the B056 Landfill (Chemical Use Area 1) and three asbestos removal actions at the Southern Debris Area (Chemical Use Area 2a)

The potential contribution of the 2005 Topanga Fire to the concentrations of dioxin and metals in soil has been considered in the characterization of the nature and extent of chemicals at the B056 Landfill RFI Site. This evaluation was done to determine if any elevated concentrations of six metals (barium, boron, copper, lead, thallium and zinc) or dioxins in soil samples collected after the fire could be due to the presence of ash and burned materials deposited in surficial soil. Only surficial soil samples (i.e., samples from depths of 0 to 8 inches) collected after the fire were considered in this evaluation. For the B056 Landfill RFI Site, there was one post-fire soil sample (plus one split sample) analyzed for dioxins and approximately 20 post-fire soil samples analyzed for metals. While the ash deposition could have contributed to dioxin concentrations, the two post-fire samples do not show concentrations suggestive of fire-related impacts, because dioxins were detected in samples collected from depths of 6 to 12 inches at higher concentrations than the surficial soil samples from the same B100 area. Of the approximately 20 samples analyzed for metals, one sample (BLBS0049) had an elevated concentration of zinc (up to 116 mg/kg) that may be fire-related . Since this sample location is included within a recommended CMS Area (see Section B.5), the potential for fire-related impacts should be further evaluated during the corrective measures study.

B.3.5 Groundwater Findings

Groundwater occurrence and impacts at the B056 Landfill RFI Site are described below.

B.3.5.1 Groundwater Data Presentation

Groundwater sampling results and characterization findings are summarized in Table B.3-2B. The purposes of the table are to:

- Summarize soil impacts as they potentially relate to groundwater impacts.
- Summarize groundwater sampling results.
- Demonstrate that groundwater characterization is sufficient for the purposes of risk assessment, including:
  - That groundwater characterization is adequate for detected site chemical constituents.
  - That site soil characterization is adequate for detected groundwater chemical constituents.

Similar to Table B.3-2A, Table B.3-2B describes groundwater data by chemical group (metals, VOCs, SVOCs, etc.). Table B.3-2B is organized as follows:

- Column 1 – Analytical group
- Column 2 – Site soil impacts
- Column 3 – Confirmation that chemicals detected in site soil are monitored in groundwater
- Column 4 –Summary of groundwater impacts
- Column 5 – Discussion of whether chemicals are site-related
- Column 6 – Conclusion regarding adequacy of groundwater characterization

A detailed compilation of groundwater data is provided in Appendix E of this Group 8 RFI Report. The groundwater appendix contains a description of hydrogeologic conditions (occurrence, water levels, recharge, yield, etc.), groundwater quality, and transport and fate. These data include the following:

- Laboratory analytical results
- Hydrographs
- Time-series plots
- Cumulative distribution plots

A site-wide report on SSFL groundwater will be prepared as part of the RFI Program. This report will comprehensively address across the site characterization and transport and fate issues addressed in Appendix E.

B.3.5.2 Groundwater Data Summary

Groundwater conditions at the B056 Landfill RFI Site are characterized by one piezometer (PZ-124) and one shallow well (RS-16) screened in alluvium and/or weathered bedrock (i.e., NSGW), and two wells screened in unweathered bedrock (i.e., CFOU groundwater) (RD-07 and RD-74). PZ-124 is a dry well and groundwater samples have not been collected. Groundwater findings from these wells are presented in Table B.3-2B.

The primary chemicals detected in groundwater water above regulatory criteria are VOCs. TCE concentrations detected in RD-07 have historically ranged up to 130 micrograms per liter (µg/L), and are currently not detected. VOCs have not been detected in RS-16. VOCs in groundwater are considered related to historical, incidental, and small spills in the area. Current soil sample data at the B056 Landfill RFI site do not indicate a significant release; however, historical releases from which no mass remains in surficial media may have occurred within the sampling area (Table A3.2-B). Further evaluation of VOC groundwater conditions near the B056 Landfill RFI Site is ongoing, and will be reported in the Group 5 RFI Report and in the Site-Wide Groundwater RFI Report.

TPH, PCBs, and dioxins have not been monitored in groundwater wells at the B056 Landfill RFI Site. The TPH-related compounds benzene and toluene were detected in RD-07 at concentrations ranging up to 0.67 µg/L and 24 µg/L, respectively. These are considered related to the Flexible Liner Underground Technology (FLUTe) discrete interval monitoring equipment installed in this well (Table A.3-2B). TPH-related SVOCs were not detected in groundwater. PCBs and dioxins are large organic molecules that sorb to soil, and do not migrate easily to groundwater. PCB and dioxin groundwater sample results at the other sites with high concentrations in soil recharge areas have been low to non-detect (MWH, 2006b). At the B056 Landfill RFI Site, these constituents are not expected to be found in significant concentrations in groundwater, but additional groundwater samples are being collected and will be reported to DTSC when available.

Several metals were detected in groundwater at concentrations above groundwater comparison concentrations (GWCCs) (Table 3-2B). Of these, selenium and copper are considered potentially related to site operations since these metals were detected above background levels within soil fill materials.

Perchlorate was detected in two discrete interval samples during one RD-07 sampling event in February 2003, up to 11 micrograms per liter (µg/L). Perchlorate was not detected in the three previous single samples from RD-07, or in the subsequent discrete interval samples collected in 2004. Perchlorate was not detected in any samples collected from RS-16 or RD-74. The groundwater perchlorate detections in the discrete interval monitoring event were not replicated in 25 other RD-07, RS-16, or RD-74 groundwater samples. The source of the unrepeatable 2003 perchlorate detections is unknown since all other groundwater and soil perchlorate data at the B056 Landfill RFI Site are non detect.

B.3.5.2 Surface Water Findings

Surface water exists perennially at the B056 Excavation, but only intermittently as the result of storms within the remainder of the site. The B056 Excavation contains a mixture of perched groundwater, surface water, and rain water that fills the excavation. The water level within the excavation is higher in winter, and fluctuates with the perched groundwater elevations and presence of surface water runoff. For the RFI, four surface water samples have been collected from the B056 Excavation, and samples were analyzed for general minerals, metals, perchlorate, VOCs, and radiological parameters (Table B.3-1D). In summary, these data indicate only trace detections of barium (up to 0.03 milligrams per liter [mg/L]), manganese (up to 0.58 mg/L) and iron (up to 0.33 mg/L). Of these detections, only the manganese concentration is greater than the GWCC (150 mg/L). VOCs, cyanide, mercury, nitrate, and radiological parameters were not detected (GRC, 1999).

Storm water discharge has been monitored routinely at Outfall 007 as part of the NPDES program since 1992, and analyzed for constituents specified in the permit. NPDES sampling results that exceeded permit limits are provided in Table B.3-2C and listed below. Most exceedances are considered as sporadic detections related to background soil conditions or those caused by naturally-occurring metals and dioxins in ash deposited at the site following regional fires at or very near the SSFL (Boeing, 2004, 2005; 2006; 2007a and 2007b). Continued evaluation of the NPDES exceedances is ongoing. Also, as described in Section B.5, further evaluation of the source and extent of dioxins present at the B100 Discharge Area is recommended as part of the Group 5 RFI Report.

Since 1998, the following constituents were detected above NPDES permit limits at Outfall 007 (Boeing, 1999; 2000; 2001; 2002; 2003b; 2004, 2005; 2006; 2007a, 2007b):

- Antimony (2 times)
- Cadmium (2 times)
- Copper (4 times)
- Lead (2 times)
- Mercury (1 time)
- Dioxins (6 times)

B.4 RISK ASSESSMENT FINDINGS SUMMARY

The following sections summarize the findings of the HRA and ERA performed for the B056 Landfill RFI Site within the Group 8 RFI Reporting Area. Details regarding how the HRA and ERA were conducted are presented in the SRAM (MWH, 2005) and in Attachment F2 of Appendix F of this Group 8 RFI Report.

B.4.1 Key Decision Points

Site-specific key decision points for the HRA and ERA are listed below and described more fully in Appendix F and Attachment F2 of Appendix F. These decisions were made for the risk assessments based on site-specific conditions, chemical characteristics, and assessment findings. Programmatic decision points are described and included in the RFI Program Report (MWH, 2004). Site-specific key decision points include the following:

1. While both direct (drinking water) and indirect (vapor) exposures were evaluated in the risk assessment (Appendix F), only indirect exposures are presented here because there is no current or planned future use of groundwater for drinking water.
2. Exposure Point Concentration (EPC) calculations were based on collected characterization data, as follows:
   - All groundwater EPCs were based on maximum levels detected in a single highest-concentration well at the B056 Landfill RFI Site (RD-07) for indirect exposure or detected within a single highest-concentration well within the Group 8 area (RS-54) for direct exposure.
   - A review of time series plots for chemical constituents, groundwater gradients, and source areas indicates maximum concentrations detected during the last consecutive three years conservatively represent potential future conditions for the purpose of estimating future risks
   - Soil EPCs were based on maximum concentrations (either detected concentrations or the detection limit if sufficient evidence that the chemical is present) unless there were sufficient data to calculate a statistical upper bound estimate of the concentration.
3. Large-home range receptors were assumed to live only in source areas within the B056 Landfill RFI Site. Risks for these receptors using home range adjusted exposures were calculated for the purpose of comparing to the RFI site only risks. Large-home range receptor cumulative risk across SSFL will be presented later in a Site-Wide Large Home-Range Report.

4. Characterization data from sediment and surface water at the bottom of the B056 Excavation was not included in the site dataset evaluated in the risk assessment. This decision was made because of the configuration of the excavation (65 feet deep, vertical bedrock walls), and there are assumed to be no complete human or ecological exposure pathways.

B.4.2 Human Heath Risk Assessment Findings

The receptors included in the HRA are the current worker and potential trespasser and the future resident, worker, and recreator. Since the current potential trespasser and the future recreator have the same exposure parameters, they have been presented together as the future recreator.

Supporting information for the HRA is presented in the following tables and figure:

- Chemicals of Potential Concern (COPC) for Human Health – Table B.4-1
- Human Health Risk Estimates – Table B.4-2
- HRA Uncertainty Analysis – Table B.4-3
- Generalized Conceptual Site Model (CSM) of HRA Exposures – Figure B.4-1

A summary of the HRA findings is presented below. For comparison purposes, excess upper bound incremental lifetime cancer risks (ILCRs) at 10^{-6} or less associated with multimedia exposures are considered acceptable. Potential risks between 10^{-6} and 10^{-4} require risk-management decisions, and potential risks above 10^{-4} usually require remediation. Likewise, Hazard Indices (HI) below 1 is considered acceptable, and those above 1 usually require remediation. Also, blood lead concentrations less than 10 micrograms per deciliter (µg/dl) are generally considered to be acceptable for making decisions regarding the necessity for remediation (DTSC, 1992). These criteria were used to make evaluation recommendations for the CMS.

<u>Exposure to Surficial Media Plus Indirect Groundwater Exposure</u>

The Reasonable Maximum Exposure (RME) risks presented in this section were based on exposures to all relevant surficial media plus indirect exposure to VOCs in groundwater due to vapor migration. The risk assessment results are summarized as follows:

- Estimated cancer risks for all receptors ranged up to 2×10^{-6} (Future Child Resident), and all HIs were below 1. For the Future Child Resident scenario, the risk estimate exceeding 1×10^{-6} was not attributable to any single chemical, but contributors included Aroclor 1254 and PAHs.

- Estimated blood lead levels associated with soil exposures were less than 10 µg/dl for all receptors. Estimated blood lead levels for the Child Resident ranged from 1 µg/dl at the 95th percentile to 4 µg/dl at the 99th percentile (RME).

The major issues related to uncertainty and conservatism in these risk estimates are presented in Table B.4-3.

B.4.3 Ecological Risk Assessment Findings

The ecological receptors representing the B056 Landfill RFI Site are the deer mouse, the thrush, the hawk, the bobcat, and the mule deer. Supporting information for the ERA is presented in the following tables and figure:

- Chemicals of Potential Ecological Concern (CPEC) – Table B.4-4
- Risk Estimates for Ecological Receptors – Table B.4-5
- Ecological Risk Assessment Uncertainty Analysis – Table B.4-6
- Graphical CSM for ERA Exposures – Figure B.4-2

A summary of the ERA findings is presented below, including Hazard Quotient (HQ) and Hazard Index (HI) information. HQs are hazard estimates for single CPECs, while HIs are cumulative hazard estimates for all CPECs. For comparison purposes, HQ or HI values less than 1 represent conditions that would not cause unacceptable ecological impacts. HQ or HI values greater than 1 typically require additional evaluation, and may be deemed acceptable or unacceptable by risk managers. The ERA findings included the following:

- Estimated HIs for all receptors ranged from greater than 4 to 100 at the B056 Landfill Site. The hawk has an estimated HI of 100; this value is reduced to 3 when home range is considered. The estimated HIs for the deer mouse and the bobcat are greater than 10. The estimated HIs for the thrush and mule deer are less than 10. These HIs are primarily associated with cadmium, molybdenum, selenium, and lead.
- The deer mouse burrow air inhalation pathway does not contribute significantly to the deer mouse risks, compared to risks from other non-volatile constituents.

The major items related to uncertainty and conservatism in these risk estimates are presented in Table B.4-6.

B.5 B056 LANDFILL RFI SITE ACTION RECOMMENDATIONS

This section presents a summary of RFI reporting requirements as they apply to the B056 Landfill RFI Site. Section B.5.1 describes RFI reporting requirements, particularly with respect to the identification of areas recommended for further work, or 'site action' recommendations. The process and criteria used for making site action recommendations is described in Section B.5.2, and site action recommendations for the B056 Landfill RFI Site are summarized in Section B.5.3.

B.5.1 RFI Reporting Requirements

As described in regulatory guidance documents for the SSFL RCRA Corrective Action Program (see Section 1.2.3 of that document), the purposes of the RFI are to: (1) characterize the nature and extent of contamination, and identify potential source areas; (2) assess potential migration pathways; (3) estimate risks to actual or potential receptors; and, (4) gather necessary data to support the CMS (DTSC, 1995). The RFI Report is required to (1) present findings regarding the above information, (2) describe completeness of the investigation, and (3) indicate if additional work is needed.

The B056 Landfill RFI Site Report accomplishes these requirements by:

1) Presenting detailed characterization findings, source area identification, and investigation completeness determinations by media and by chemical class for all chemical use areas (and associated down-drainage locations) (Tables B.3-2A and B.3.3-2B). Section B.3 summarizes the overall characterization of contamination nature and extent, potential source areas, and an assessment of investigation completeness.
2) Evaluating groundwater migration pathways in Appendix E of the Group 8 RFI Site Report, and other potential transport pathways in Appendix F of the Group 8 RFI Site Report.
3) Identifying potential receptors and estimating potential risks at the B056 Landfill RFI Site (Section B.4 and Appendix F).
4) Identifying B056 Landfill RFI Site areas requiring further work (this Section)

B.5.2 Basis for Site Action Recommendations

In summary, site action recommendations included in the B056 Landfill RFI Site Report identify areas for the following:

- Further evaluation in the CMS (CMS Areas)
- No further action (NFA Areas)
- Interim corrective measures to stabilize source areas and control contaminant migration (Stabilization Areas)

Site action recommendations are based on information in historical documents, site characterization data, and risk assessment findings. Historical document review findings are used to determine areas of potential chemical use and identify areas for additional RFI sampling and characterization. Characterization findings provide definition of the nature and extent of site contaminants, based on chemical data and transport and fate evaluation. As described in Section B.3, characterization of the primary landfill areas (the B056 Landfill and the Southern Debris Area), focused on defining the extent of fill material and the types of potential chemical contaminants present in the fill. Risk assessments evaluate characterization data, estimate human health and ecological risks based on specified land use scenarios, and identify chemicals that drive or contribute to those risks.

Based on the review and evaluation of extensive historical records and environmental sampling data collected prior to and during the RFI, additional sampling was performed in areas where chemicals were potentially used, handled, stored, or released within the Group 8 Reporting Area. Samples were also collected in areas where the existing analytical data were considered to be inadequate for site characterization and/or risk assessment (including down-gradient locations). Similarly, for areas where no historical chemical use, storage, or handling was indicated in the historical documents (i.e., for areas determined to have very limited or no potential for environmental concern), no samples were collected. Based on the documents reviewed and nearby sampling results, if any, these non-chemical use areas are recommended for NFA.

NFA and CMS Area recommendations for the sampled areas within the Group 8 Reporting Area are based on an integrated evaluation of characterization and risk assessment results. Information in the historical documents indicating past chemical use practices and areas, coupled with site characterization data indicating environmental impacts or lack thereof, provide a solid basis for the NFA and CMS recommendations made in this report.

Stabilization Area recommendations rely on characterization evaluations, including transport and fate analysis, and comparison to risk-based levels. Each process is described further below.

CMS and NFA Site Action Evaluation Process

CMS or NFA site action recommendations are based on a 4-step process, which is presented in detail in Section 7.1 of the Group 8 RFI Report, is summarized as follows:

- **Site Action Evaluation Step 1.** Risk assessment results for human and ecological receptors are compared to "acceptable" levels published by the USEPA or DTSC as guidance for site managers (DTSC, 1992; USEPA, 1992). The low end of the risk range (i.e., 1 x 10^{-6}, or 1 in 1,000,000, or HI = 1.0) is used to conservatively estimate the areal extent that is recommended for site action.
- **Site Action Evaluation Step 2.** When estimated RFI site risks are greater than 1 x 10^{-6} (cancer risks) or HI values greater than 1 (noncancer and ecological risks), the RFI site's risks are reviewed on a chemical-by-chemical basis to identify risk-drivers and significant risk contributors to cumulative, total risk for each potential receptor.
- **Site Action Evaluation Step 3.** Characterization findings from the entire RFI site are evaluated to identify areas where higher concentrations of risk drivers and contributors are detected. The identified areas are termed in this report 'CMS Areas' and represent locations recommended for further evaluation during the CMS. Areas recommended for further evaluation during the CMS are comprehensive of all potential receptors or land use scenarios.
- **Site Action Evaluation Step 4.** The fourth step identifies any uncertainties in the RFI Site characterization and risk assessments that may affect the findings. For example, some chemicals are assumed to be present in soil based on TPH extrapolation factors (e.g., benzene and PAHs) and contribute to total risk for the RFI site above acceptable levels. Since this assumption is often highly conservative, its use as a basis for CMS recommendations may be further evaluated in the CMS.

As described in Step 3 above, the areas of the RFI sites proposed for further evaluation in the CMS (i.e., CMS Areas) are based on identifying chemical concentrations that are above their respective RBSL. This process results in CMS Areas that are larger than would need to be addressed during cleanup to achieve acceptable risks. This is due to comparing individual soil sample results to RBSLs as 'bright-line' criteria, instead of using an area-average concentration. Area-averaged concentrations will be used in the CMS to refine the cleanup extent at these recommended CMS Areas.

Site action recommendations are tabulated by chemical use area, and chemical risk drivers/contributors are identified for each appropriate receptor in Table B.5-1. CMS Areas are also depicted graphically in Figure B.5-1 to illustrate locations and approximate areal extents, and summarized in Table B.5-2.

Two additional aspects of RFI reporting will serve to confirm and/or finalize the areas recommended in Group RFI Reports for evaluation in the CMS. The first is an ecological evaluation for large-home range receptors (e.g., mule deer and hawk). The second is a groundwater evaluation that will be reported in the Site-Wide Groundwater RFI Report.

Source Area Stabilization Site Action Evaluation Process

Chemical data collected during the RFI are evaluated to determine the potential for contaminant migration. Resulting site action recommendations focus on stabilization measures related to sediment transport via the surface water pathway.

Criteria used to evaluate if source area stabilization measures are needed to control surface water migration include the following:

- Presence of chemical concentrations above background or RBSLs in surficial (not deeper) soils
- Proximity of surficial impacts to an active surface water drainage pathway
- Moderate to steep topography
- Absence of containment features (e.g., surface coatings, dams)
- Concentration gradients that indicate prior transport away from the surficial source of surficial impacts

Each criterion is considered important, and a weight-of-evidence evaluation is used to make a recommendation for source area stabilization measures. Source area stabilization measures, which include the use of BMPs, are used to prevent migration to surface water. BMPs may include the installation of straw bales, fiber rolls, and silt fencing, and/or covering of areas with plastic tarps. Erosion control measures have been applied to many surficial soil source areas at the SSFL to prevent contaminant migration. These are described in the SSFL Storm Water Pollution and Prevention Plan (MWH, 2006).

B.5.3 B056 Landfill RFI Site Recommendations

The B056 Landfill RFI Site action recommendations are listed in Table B.5-1 and are presented on Figure B.5-1. Table B.5-1 lists CMS and NFA recommendations and identifies chemical risk drivers and contributors for each appropriate receptor. A summary of the B056 Landfill RFI Site CMS Areas is presented in Table B.5-2. As noted above, recommendations reported in this document will be reviewed upon completion of the site-wide groundwater report and large-home range receptor evaluations, and updates to this report prepared as needed.

B056 Landfill RFI Site areas recommended for evaluation in the CMS are summarized below. Three CMS Areas were identified, including:

- **B056-1**: Building 056 Landfill and Southern Debris Area. Chemical risk drivers and contributors include Aroclor 1254, PAHs, cadmium, selenium, lead, and molybdenum. These areas also represent the extent of landfill materials at the site.

- **B056-2**: B056 Excavation Debris Area. Chemical risk drivers and contributors include Aroclors 1248, 1254, and 1260. Given this area's proximity to surface water in the B056 Excavation, this area is recommended for stabilization measures.

- **B056-3**: B100 Discharge Area. Chemical risk drivers are dioxins. Given this area's proximity to the drainage west of the B056 Landfill, this area is recommended for stabilization measures. The source and extent of dioxins is also recommended for further evaluation in the Group 5 RFI.

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TABLES

TABLE B.2-1
BUILDING 056 LANDFILL RFI SITE BUILDING INVENTORY
(Page 1 of 1)

Building[a]	Chemical Use Area Location	Current Use	Former Use	Operational Status Existing/Removed	DTSC Site Visit Date
None					March 1999; June 1999; Sept 2003[b]

Notes:

(a) Buildings are sometimes identified with the Administrative Area number followed by the building number (e.g Building 886 vs. Building 4886).

(b) DTSC was onsite prior to landfill investigation to select trench locations, and during the investigation to inspect site conditions, select sampling depths, and collect split samples.

Sources:

Field inspection and facility records (Boeing, 2007e)

TABLE B.2-2
BUILDING 056 LANDFILL RFI SITE TANK INVENTORY
(Page 1 of 1)

Tank Designator[a]	Chemical Use Area Location	Location	Contents	Tank Size (gallons)	Operational Status Existing / Removed
Aboveground Tanks - Other					
Not identified [b]	1	Adjacent to landfill access road	Unknown	500	Removed
Underground Tanks					
None					

Notes:

(a) Tanks listed by category (fuel, solvent, other). If category not indicated on table, then that type of tank was not present on site.

(b) One 500-gallon, white, polypropylene storage tank observed onsite between approximately 2000 and 2007. The tank was intended to be used for purge groundwater storage from well installation activities, however it was never used (Boeing, 2007d). The tank was removed in September 2007.

Sources:

Field inspection, interviews (Boeing, 2007c), aerial photographs (USEPA, 1997), and facility records (Boeing, 2007e)

TABLE B.2-3
BUILDING 056 LANDFILL RFI SITE TRANSFORMER INVENTORY
(Page 1 of 1)

SSFL Identification Number	Chemical Use Area Location	Description	Location	Status	Transformer Oil Sampled for PCBs (Date/ Results)	Soil Sampled (Date/ Results)	Transformer Condition After 2005 Fire
None							

Notes:
PCB = polychlorinated biphenyl

Sources:
Field inspection and facility records (Boeing, 2007e)

TABLE B.2-4
BUILDING 056 LANDFILL RFI SITE DOCUMENTED CHEMICAL STORAGE / DISPOSAL
(Page 1 of 1)

Chemicals Stored / Disposed	Reference
Alcohols	ETEC, 1987
Asbestos	ETEC, 1987
Grease	ETEC, 1987
Oil	ETEC, 1987
Phosphoric acid	ETEC, 1987
Sodium	ETEC, 1987
Sodium reaction products	ETEC, 1987

TABLE B.3-1A
B056 LANDFILL RFI SITE SAMPLING SUMMARY
(Page 1 of 1)

Sample Type (1,5)	Total Number of Samples (2)	Total QC Samples (3)	Total Agency Samples (4)	Total Validated Samples
Soil Vapor Samples (Table B.3-1B)	92	10	0	95
Soil Matrix Samples (Table B.3-1C)	190	19	0	205
Surface Water Samples (Table B.3-1D)	4	0	0	4

Notes:
1. Detailed sample and analytical program information is contained in Tables B.3-1B , B.3-1C and B.3-1D as indicated above.
2. Total samples = total primary site investigation samples, including historical samples and composite samples.
3. Quality Control (QC) samples = Site-specific QC Samples, co-located duplicates and laboratory split samples.
   The total QC sample count in this table DOES NOT include Trip Blanks, Equipment Rinsates or Field Blanks.
   According to RFI sampling protocols, these types of QC samples are not site-specific and findings will be summarized in the RFI Program report.
4. Agency Samples = Department of Toxic Substance Control (DTSC) or United States Environmental Protection Agency (USEPA) split samples.
5. All groundwater data presented in Appendix E of the Group 8 RFI Report.

TABLE B.3-1B
B056 LANDFILL RFI SITE SOIL VAPOR SAMPLING AND ANALYTICAL SUMMARY
(Page 1 of 4)

Sample Location Identification	Unique Sample ID	Sample Identification	Date Collected	Sample Method	Depth (feet bgs)	Sample Type	Sample Analyses (Validated Y/N) [a]		Rationale [(b)]	Consultant [(c)]	Reference Document [(d)]
							Methane	VOC			
BHSV0006	BHSV0006S01	BHSV0006S01	03/05/07	Active	3	Primary Sample		Y	DGA	MWH	This report
BHSV0007	BHSV0007S02	BHSV0007S02	03/05/07	Active	8	Primary Sample		Y	DGA	MWH	This report
BHSV0008	BHSV0008S02	BHSV0008S02	03/05/07	Active	10	Primary Sample		Y	DGA	MWH	This report
BHSV0009	BHSV0009D01	BHSV0009D01	03/05/07	Active	5	Field Duplicate		Y	DGA	MWH	This report
BHSV0009	BHSV0009S01	BHSV0009S01	03/05/07	Active	5	Primary Sample		Y	DGA	MWH	This report
BLSV01	MV130	BLSV01S01	08/22/03	Active	5	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV01	MV131	BLSV01S02	08/22/03	Active	10	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV01	MV132	BLSV01S03	08/22/03	Active	15	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV01	MV133	BLSV01S04	08/22/03	Active	20	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV01	MV134	BLSV01S04	08/25/03	Active	20	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV01	MV135	BLSV01S05	08/25/03	Active	26	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV01	MV144	BLSV01S01	08/25/03	Active	5	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV01	MV145	BLSV01S02	08/25/03	Active	10	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV01	MV146	BLSV01S03	08/25/03	Active	15	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV01	MV147	BLSV01S04	08/25/03	Active	20	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV01	MV148	BLSV01S05	08/25/03	Active	26	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV02	MV164	BLSV02S01	08/26/03	Active	5	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV02	MV165	BLSV02S02	08/26/03	Active	10	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV02	MV166	BLSV02S03	08/26/03	Active	15	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV02	MV175	BLSV02S01	08/26/03	Active	5	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV02	MV176	BLSV02S02	08/26/03	Active	10	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV02	MV177	BLSV02S03	08/26/03	Active	15	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV03	MV157	BLSV03S01	08/26/03	Active	4	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV03	MV158	BLSV03S02	08/26/03	Active	8	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV03	MV168	BLSV03S01	08/26/03	Active	4	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV03	MV169	BLSV03S02	08/26/03	Active	8	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV04	MV141	BLSV04S01	08/25/03	Active	5	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV04	MV142	BLSV04S02	08/25/03	Active	10	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV04	MV143	BLSV04S03	08/25/03	Active	15	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV04	MV154	BLSV04S01	08/25/03	Active	5	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV04	MV155	BLSV04S02	08/25/03	Active	10	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV04	MV156	BLSV04S03	08/25/03	Active	15	Primary Sample	Y		WP	MWH	MWH, 2004

TABLE B.3-1B
B056 LANDFILL RFI SITE SOIL VAPOR SAMPLING AND ANALYTICAL SUMMARY
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Sample Location Identification	Unique Sample ID	Sample Identification	Date Collected	Sample Method	Depth (feet bgs)	Sample Type	Sample Analyses (Validated Y/N) [a]		Rationale [(b)]	Consultant [(c)]	Reference Document [(d)]
							Methane	VOC			
BLSV05	MV138	BLSV05S01	08/25/03	Active	4	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV05	MV140	BLSV05S02	08/25/03	Active	9	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV05	MV150	BLSV05S01	08/25/03	Active	4	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV05	MV151	BLSV05S02	08/25/03	Active	9	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV06	MV137	BLSV06S01	08/25/03	Active	4	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV06	MV139	BLSV06S02	08/25/03	Active	8	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV06	MV152	BLSV06S01	08/25/03	Active	4	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV06	MV153	BLSV06S02	08/25/03	Active	8	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV07	MV203	BLSV07S01	08/27/03	Active	4	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV07	MV204	BLSV07S02	08/27/03	Active	12	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV07	MV205	BLSV07S01	08/28/03	Active	6	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV07	MV206	BLSV07D01	08/28/03	Active	6	Field Duplicate		Y	WP	MWH	MWH, 2004
BLSV07	MV207	BLSV07S02	08/28/03	Active	12	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV07	MV208	BLSV07D02	08/28/03	Active	12	Field Duplicate		Y	WP	MWH	MWH, 2004
BLSV08	MV159	BLSV08S01	08/26/03	Active	5	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV08	MV160	BLSV08S02	08/26/03	Active	10	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV08	MV161	BLSV08S03	08/26/03	Active	15	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV08	MV170	BLSV08S01	08/26/03	Active	5	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV08	MV171	BLSV08S02	08/26/03	Active	10	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV08	MV172	BLSV08S03	08/26/03	Active	15	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV09	MV162	BLSV09S01	08/26/03	Active	6	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV09	MV163	BLSV09S02	08/26/03	Active	12	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV09	MV173	BLSV09S01	08/26/03	Active	6	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV09	MV174	BLSV09S02	08/26/03	Active	12	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV10	MV183	BLSV10S01	08/27/03	Active	6	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV10	MV192	BLSV10S01	08/27/03	Active	6	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV10	MV220	BLSV10D01	08/28/03	Active	6	Field Duplicate	Y		WP	MWH	MWH, 2004
BLSV11	MV167	BLSV11S01	08/26/03	Active	4	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV11	MV178	BLSV11S01	08/26/03	Active	4	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV11	MV179	BLSV11S02	08/26/03	Active	8	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV11	MV180	BLSV11S02	08/27/03	Active	8	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV12	MV200	BLSV12S01	08/27/03	Active	4	Primary Sample	Y		WP	MWH	MWH, 2004

TABLE B.3-1B
B056 LANDFILL RFI SITE SOIL VAPOR SAMPLING AND ANALYTICAL SUMMARY
(Page 3 of 4)

Sample Location Identification	Unique Sample ID	Sample Identification	Date Collected	Sample Method	Depth (feet bgs)	Sample Type	Sample Analyses (Validated Y/N) [a]		Rationale [(b)]	Consultant [(c)]	Reference Document [(d)]
							Methane	VOC			
BLSV12	MV201	BLSV12S02	08/27/03	Active	8	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV12	MV211	BLSV12S01	08/28/03	Active	4	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV12	MV212	BLSV12D01	08/28/03	Active	4	Field Duplicate		Y	WP	MWH	MWH, 2004
BLSV12	MV213	BLSV12S02	08/28/03	Active	8	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV12	MV214	BLSV12D02	08/28/03	Active	8	Field Duplicate		Y	WP	MWH	MWH, 2004
BLSV13	MV189	BLSV13S01	08/27/03	Active	5	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV13	MV198	BLSV13S01	08/27/03	Active	5	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV13	MV199	BLSV13S02	08/27/03	Active	10	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV13	MV209	BLSV13S02	08/28/03	Active	10	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV13	MV210	BLSV13D02	08/28/03	Active	10	Field Duplicate		Y	WP	MWH	MWH, 2004
BLSV14	MV187	BLSV14S01	08/27/03	Active	5	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV14	MV188	BLSV14S02	08/27/03	Active	14	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV14	MV193	BLSV14S01	08/27/03	Active	5	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV14	MV194	BLSV14S02	08/27/03	Active	10	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV15	MV181	BLSV15S01	08/27/03	Active	5	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV15	MV182	BLSV15S02	08/27/03	Active	10	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV15	MV190	BLSV15S01	08/27/03	Active	5	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV15	MV191	BLSV15S02	08/27/03	Active	10	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV16	MV184	BLSV16S01	08/27/03	Active	6	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV16	MV195	BLSV16S01	08/27/03	Active	9	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV16	MV221	BLSV16D01	08/28/03	Active	6	Field Duplicate	Y		WP	MWH	MWH, 2004
BLSV17	MV185	BLSV17S01	08/27/03	Active	5	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV17	MV186	BLSV17S02	08/27/03	Active	9	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV17	MV196	BLSV17S01	08/27/03	Active	5	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV17	MV197	BLSV17S02	08/27/03	Active	9	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV17	MV222	BLSV17D01	08/28/03	Active	5	Field Duplicate	Y		WP	MWH	MWH, 2004
BLSV17	MV223	BLSV17D02	08/28/03	Active	9	Field Duplicate	Y		WP	MWH	MWH, 2004
BLSV18	MV202	BLSV18S01	08/27/03	Active	3	Primary Sample	Y		WP	MWH	MWH, 2004
BLSV18	MV215	BLSV18S01	08/28/03	Active	3	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV20	MV136	BLSV20S01	08/25/03	Active	3	Primary Sample		Y	WP	MWH	MWH, 2004
BLSV20	MV149	BLSV20S01	08/25/03	Active	3	Primary Sample	Y		WP	MWH	MWH, 2004
SV-7.1-1	SV-7.1-1-10	SV-7.1-1-10	08/20/93	Active	10	Primary Sample		N	WP	ICF Kaiser	CCR, 1993

TABLE B.3-1B
B056 LANDFILL RFI SITE SOIL VAPOR SAMPLING AND ANALYTICAL SUMMARY
(Page 4 of 4)

Sample Location Identification	Unique Sample ID	Sample Identification	Date Collected	Sample Method	Depth (feet bgs)	Sample Type	Sample Analyses (Validated Y/N) [a]		Rationale [(b)]	Consultant [(c)]	Reference Document [(d)]
							Methane	VOC			
SV-7.1-1	SV-7.1-1-25	SV-7.1-1-25	08/20/93	Active	25	Primary Sample		N	WP	ICF Kaiser	CCR, 1993
SV-7.1-2	SV-7.1-2-10	SV-7.1-2-10	08/20/93	Active	10	Primary Sample		N	WP	ICF Kaiser	CCR, 1993
SV-7.1-2	SV-7.1-2-20	SV-7.1-2-20	08/20/93	Active	20	Primary Sample		N	WP	ICF Kaiser	CCR, 1993
SV-7.1-3	SV-7.1-3-4.5	SV-7.1-3	08/20/93	Active	4.5	Primary Sample		N	WP	ICF Kaiser	CCR, 1993
SV-7.1-4	SV-7.1-4-2.5	SV-7.1-4	08/20/93	Active	2.5	Primary Sample		N	WP	ICF Kaiser	CCR, 1993
SV-7.1-5	SV-7.1-5-4.5	SV-7.1-5	08/20/93	Active	4.5	Primary Sample		N	WP	ICF Kaiser	CCR, 1993

Total Primary Samples:	92
Total QC (Duplicate) Samples:	10
Number of B056 Landfill RFI Site Soil Vapor Samples:	**102**

	Methane	VOC
Validated:	44	51
Not Validated	0	7

Notes:

Sample Location Identification - Vapor probe number

Unique Sample ID - Laboratory reporting code

Sample Identification - RFI site and sample identifier code

(a) **Validated** indicates at least one analysis has been validated following RFI protocols; agency split samples were not validated but were reviewed for comparability.
Data collected prior to the RFI were not typically subsequently validated using RFI protocols but were collected and reviewed following QA procedures established for earlier investigation programs.

(b) **Rationale (see below):**

DGA - Indicates samples collected in 2007 as a part of the Data Gaps Analysis to address delineation with stepout samples, elevated detection limit issues, and specific DTSC resquests.

WP - Indicates samples collected based on DTSC-approved Work Plan scope.

STEP - Indicates stepout samples were collected as a part of the RFI program (prior to Data Gaps Analysis) to delineate concentrations above comparison levels or anomalous conditions.

(c) **Consultant** - indicates contractor responsible for sampling and reporting for each location.

(d) **Reference Document** indicates where data are published; "This report" includes the RFI site appendix and the Group 8 RFI Report (See References, Section B.6).

Laboratory Analytical Methods Represented (EPA Method No.)

VOC - 8240, 8260B

Methane - 8015B

VOC - Volatile Organic Compound

TABLE B.3-1C
B056 LANDFILL RFI SITE SOIL MATRIX SAMPLING AND ANALYTICAL SUMMARY
(Page 1 of 5)

Sample Location Identification	Unique Sample ID	Sample Identification	Date Collected	Sample Method (a)	Depth (feet bgs)	Sample Type	Sample Analyses (Validated Yes/No)										Validated (b)	Rationale (c)	Consultant (d)	Reference Document (e)
							Dioxins	Energetics	Inorganics	Metals	PCBs	Perchlorate	SVOCs	Terphenyls	TPH	VOCs				
BHBS0005	BHBS0005S01	BHBS0005S01	2/13/2007	HA	0.5	Primary Sample	Y		Y	Y							Y	DGA	MWH	This report
BHBS0005	BHBS0005S01SP	BHBS0005S01SP	2/13/2007	HA	0.5	Split Sample	Y		Y	Y							Y	DGA	MWH	This report
BHBS0006	BHBS0006S01	BHBS0006S01	4/2/2007	HA	1	Primary Sample	Y										Y	DGA	MWH	This report
BHBS0007	BHBS0007D01	BHBS0007D01	4/2/2007	HA	1	Field Duplicate	Y										Y	DGA	MWH	This report
BHBS0007	BHBS0007S01	BHBS0007S01	4/2/2007	HA	1	Primary Sample	Y										Y	DGA	MWH	This report
BHBS0008	BHBS0008S01	BHBS0008S01	4/2/2007	HA	1	Primary Sample	Y										Y	DGA	MWH	This report
BLBN01	MT504	BLBN01S01	8/22/2003	G	NA	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLBN01	MT547	BLBN01S01	9/4/2003	G	NA	Primary Sample										Y	Y	WP	MWH	MWH, 2004
BLBN02	MT505	BLBN02S01	8/22/2003	G	NA	Primary Sample			Y	Y	Y		Y		Y		Y	WP	MWH	MWH, 2004
BLBN02	MT548	BLBN02S01	9/4/2003	G	NA	Primary Sample										Y	Y	WP	MWH	MWH, 2004
BLBN03	MT534	BLBN03S01	9/4/2003	G	NA	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLBN04	MT535	BLBN04S01	9/4/2003	G	NA	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLBN05	MT536	BLBN05S01	9/4/2003	G	NA	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLBN06	MT537	BLBN06S01	9/4/2003	G	NA	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLBN07	MT538	BLBN07S01	9/4/2003	G	NA	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLBS0030	BLBS0030AS01	BLBS0030AS01	5/15/2007	GP	0.5	Primary Sample			Y				Y	Y			Y	DGA	MWH	This report
BLBS0030	BLBS0030AS02	BLBS0030AS02	5/15/2007	GP	5.5	Primary Sample			Y				Y	Y			Y	DGA	MWH	This report
BLBS0030	BLBS0030D01	BLBS0030D01	2/21/2007	GP	3.5	Field Duplicate			Y	Y							Y	DGA	MWH	This report
BLBS0030	BLBS0030S01	BLBS0030S01	2/21/2007	GP	3.5	Primary Sample			Y	Y							Y	DGA	MWH	This report
BLBS0031	BLBS0031S01	BLBS0031S01	2/12/2007	HA	0.5	Primary Sample			Y	Y			Y				Y	DGA	MWH	This report
BLBS0032	BLBS0032D01	BLBS0032D01	2/12/2007	HA	0.5	Field Duplicate		Y	Y	Y	Y						Y	DGA	MWH	This report
BLBS0032	BLBS0032S01	BLBS0032S01	2/12/2007	HA	0.5	Primary Sample		Y	Y	Y	Y						Y	DGA	MWH	This report
BLBS0033	BLBS0033S01	BLBS0033S01	2/13/2007	HA	0.5	Primary Sample			Y	Y							Y	DGA	MWH	This report
BLBS0034	BLBS0034S01	BLBS0034S01	2/13/2007	HA	0.2	Primary Sample				Y			Y				Y	DGA	MWH	This report
BLBS0034	BLBS0034S02	BLBS0034S02	2/13/2007	HA	0.5	Primary Sample				Y			Y				Y	DGA	MWH	This report
BLBS0035	BLBS0035S01	BLBS0035S01	2/13/2007	HA	0.5	Primary Sample			Y	Y							Y	DGA	MWH	This report
BLBS0036	BLBS0036S01	BLBS0036S01	2/12/2007	HA	0.7	Primary Sample			Y	Y	Y		Y		Y		Y	DGA	MWH	This report
BLBS0036	BLBS0036S01SP	BLBS0036S01SP	2/12/2007	HA	0.7	Split Sample			Y	Y	Y		Y		Y		Y	DGA	MWH	This report
BLBS0036	BLBS0036S02	BLBS0036S02	2/12/2007	HA	3.75	Primary Sample			Y								Y	DGA	MWH	This report
BLBS0037	BLBS0037S01	BLBS0037S01	2/12/2007	HA	0.5	Primary Sample			Y	Y	Y		Y		Y		Y	DGA	MWH	This report
BLBS0037	BLBS0037S02	BLBS0037S02	2/12/2007	HA	2	Primary Sample			Y								Y	DGA	MWH	This report
BLBS0038	BLBS0038S01	BLBS0038S01	2/12/2007	HA	0.5	Primary Sample			Y	Y	Y		Y		Y		Y	DGA	MWH	This report
BLBS0039	BLBS0039S01	BLBS0039S01	4/2/2007	HA	0.5	Primary Sample			Y	Y							Y	DGA	MWH	This report
BLBS0040	BLBS0040S01	BLBS0040S01	4/2/2007	HA	0.5	Primary Sample			Y	Y							Y	DGA	MWH	This report
BLBS0041	BLBS0041S01	BLBS0041S01	4/2/2007	HA	0.5	Primary Sample			Y	Y							Y	DGA	MWH	This report
BLBS0047	BLBS0047S01	BLBS0047S01	4/2/2007	HA	0.5	Primary Sample			Y	Y							Y	DGA	MWH	This report
BLBS0048	BLBS0048S01	BLBS0048S01	4/2/2007	HA	0.5	Primary Sample			Y	Y							Y	DGA	MWH	This report
BLBS0049	BLBS0049S01	BLBS0049S01	5/17/2007	HA	0.5	Primary Sample				Y	Y		Y		Y		Y	DGA	MWH	This report
BLBS0050	BLBS0050D01	BLBS0050D01	5/17/2007	HA	1	Field Duplicate				Y	Y		Y		Y		Y	DGA	MWH	This report
BLBS0050	BLBS0050S01	BLBS0050S01	5/17/2007	HA	1	Primary Sample				Y	Y		Y		Y		Y	DGA	MWH	This report
BLBS0051	BLBS0051S01	BLBS0051S01	5/17/2007	HA	1	Primary Sample				Y	Y		Y		Y		Y	DGA	MWH	This report
BLBS0052	BLBS0052S01	BLBS0052S01	5/16/2007	Trowel	0.5	Primary Sample			Y				Y	Y			Y	DGA	MWH	This report
BLBS0053	BLBS0053S01	BLBS0053S01	5/16/2007	HA	0.5	Primary Sample			Y				Y	Y			Y	DGA	MWH	This report
BLBS0055	BLBS0055S01	BLBS0055S01	5/15/2007	GP	0.5	Primary Sample			Y				Y	Y			Y	DGA	MWH	This report
BLBS0055	BLBS0055S02	BLBS0055S02	5/15/2007	GP	11	Primary Sample			Y				Y	Y			Y	DGA	MWH	This report
BLBS0056	BLBS0056S01	BLBS0056S01	5/17/2007	HA	0.5	Primary Sample			Y				Y	Y			Y	DGA	MWH	This report
BLBS0056	BLBS0056S02	BLBS0056S02	5/17/2007	HA	2	Primary Sample			Y				Y	Y			Y	DGA	MWH	This report
BLBS0057	BLBS0057S01	BLBS0057S01	5/16/2007	HA	0.5	Primary Sample			Y				Y	Y			Y	DGA	MWH	This report
BLBS0058	BLBS0058S01	BLBS0058S01	5/16/2007	HA	0.5	Primary Sample			Y				Y	Y			Y	DGA	MWH	This report
BLBS0058	BLBS0058S01SP	BLBS0058S01SP	5/16/2007	HA	0.5	Split Sample			Y								Y	DGA	MWH	This report
BLBS0060	BLBS0060S01	BLBS0060S01	5/16/2007	HA	0.5	Primary Sample			Y				Y	Y			Y	DGA	MWH	This report
BLBS0060	BLBS0060S01SP	BLBS0060S01SP	5/16/2007	HA	0.5	Split Sample			Y								Y	DGA	MWH	This report
BLBS0062	BLBS0062D01	BLBS0062D01	5/17/2007	HA	0.5	Field Duplicate			Y				Y	Y			Y	DGA	MWH	This report
BLBS0062	BLBS0062S01	BLBS0062S01	5/17/2007	HA	0.5	Primary Sample			Y				Y	Y			Y	DGA	MWH	This report
BLBS0063	BLBS0063S01	BLBS0063S01	5/17/2007	HA	0.5	Primary Sample			Y				Y	Y			Y	DGA	MWH	This report
BLBS0063	BLBS0063S01SP	BLBS0063S01SP	5/17/2007	HA	0.5	Split Sample			Y								Y	DGA	MWH	This report

TABLE B.3-1C
B056 LANDFILL RFI SITE SOIL MATRIX SAMPLING AND ANALYTICAL SUMMARY
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Sample Location Identification	Unique Sample ID	Sample Identification	Date Collected	Sample Method (a)	Depth (feet bgs)	Sample Type	Sample Analyses (Validated Yes/No)										Validated (b)	Rationale (c)	Consultant (d)	Reference Document (e)
							Dioxins	Energetics	Inorganics	Metals	PCBs	Perchlorate	SVOCs	Terphenyls	TPH	VOCs				
BLBS01	RD143	BLBS01S01	10/29/1997	GP	0.5	Primary Sample									Y	Y	Y	WP	OGDEN	MWH, 2004
BLBS01	RD144	BLBS01S02	10/29/1997	GP	5	Primary Sample									Y	Y	Y	WP	OGDEN	MWH, 2004
BLBS01	RD145	BLBS01S03	10/29/1997	GP	9.5	Primary Sample									Y	Y	Y	WP	OGDEN	MWH, 2004
BLBS01	RF143	BLBS01S01	10/29/1997	GP	0.5	Primary Sample			Y	Y							Y	WP	OGDEN	MWH, 2004
BLBS01	RF144	BLBS01S02	10/29/1997	GP	5	Primary Sample			Y	Y							Y	WP	OGDEN	MWH, 2004
BLBS01	RF145	BLBS01S03	10/29/1997	GP	9.5	Primary Sample			Y	Y							Y	WP	OGDEN	MWH, 2004
BLBS01	RS749	BLBS01S01	4/8/1998	HA	0.5	Primary Sample				Y							Y	WP	OGDEN	MWH, 2004
BLBS02	RD146	BLBS02S01	10/29/1997	GP	0.5	Primary Sample									Y	Y	Y	WP	OGDEN	MWH, 2004
BLBS02	RD147	BLBS02S02	10/29/1997	GP	5	Primary Sample									Y	Y	Y	WP	OGDEN	MWH, 2004
BLBS02	RD148	BLBS02S03	10/29/1997	GP	9.5	Primary Sample									Y	Y	Y	WP	OGDEN	MWH, 2004
BLBS02	RD150	BLBS02S04	10/30/1997	GP	16	Primary Sample									Y	Y	Y	WP	OGDEN	MWH, 2004
BLBS02	RF146	BLBS02S01	10/29/1997	GP	0.5	Primary Sample			Y	Y							Y	WP	OGDEN	MWH, 2004
BLBS02	RF147	BLBS02S02	10/29/1997	GP	5	Primary Sample			Y	Y							Y	WP	OGDEN	MWH, 2004
BLBS02	RF148	BLBS02S03	10/29/1997	GP	9.5	Primary Sample			Y	Y							Y	WP	OGDEN	MWH, 2004
BLBS02	RF150	BLBS02S04	10/30/1997	GP	16	Primary Sample			Y	Y							Y	WP	OGDEN	MWH, 2004
BLBS03	RD151	BLBS03S01	10/30/1997	GP	1	Primary Sample									Y	Y	Y	WP	OGDEN	MWH, 2004
BLBS03	RF151	BLBS03S01	10/30/1997	GP	1	Primary Sample			Y	Y							Y	WP	OGDEN	MWH, 2004
BLBS04	RD731	BLBS04S01	10/29/1997	HA	0.5	Primary Sample									Y		Y	WP	OGDEN	MWH, 2004
BLBS04	RF731	BLBS04S01	10/29/1997	HA	0.5	Primary Sample			Y	Y							Y	WP	OGDEN	MWH, 2004
BLBS05	RD732	BLBS05S01	10/29/1997	HA	0.5	Primary Sample									Y		Y	WP	OGDEN	MWH, 2004
BLBS05	RF732	BLBS05S01	10/29/1997	HA	0.5	Primary Sample			Y	Y							Y	WP	OGDEN	MWH, 2004
BLBS05	RS693	BLBS05S01	1/29/1998	HA	0.5	Primary Sample				Y							Y	WP	OGDEN	MWH, 2004
BLBS06	RD733	BLBS06S01	10/29/1997	HA	0.5	Primary Sample									Y	Y	Y	WP	OGDEN	MWH, 2004
BLBS06	RF733	BLBS06S01	10/29/1997	HA	0.5	Primary Sample			Y	Y							Y	WP	OGDEN	MWH, 2004
BLBS07	RD734	BLBS07S01	10/29/1997	HA	0.5	Primary Sample									Y		Y	WP	OGDEN	MWH, 2004
BLBS07	RF734	BLBS07S01	10/29/1997	HA	0.5	Primary Sample			Y	Y							Y	WP	OGDEN	MWH, 2004
BLBS08	RD735	BLBS08S01	10/29/1997	HA	0.5	Primary Sample									Y	Y	Y	WP	OGDEN	MWH, 2004
BLBS08	RF735	BLBS08S01	10/29/1997	HA	0.5	Primary Sample			Y	Y							Y	WP	OGDEN	MWH, 2004
BLBS09	RD736	BLBS09S01	10/30/1997	HA	0.5	Primary Sample									Y	Y	Y	WP	OGDEN	MWH, 2004
BLBS09	RF736	BLBS09S01	10/30/1997	HA	0.5	Primary Sample			Y	Y							Y	WP	OGDEN	MWH, 2004
BLBS10	RS601	BLBS10S01	12/18/1997	HA	0.5	Primary Sample									Y		Y	WP	OGDEN	MWH, 2004
BLBS11	RS602	BLBS11S01	12/18/1997	HA	0.5	Primary Sample									Y		Y	WP	OGDEN	MWH, 2004
BLBS12	RS874	BLBS12S01	6/14/1999	HA	1	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	OGDEN	MWH, 2004
BLBS13	RS875	BLBS13S01	6/14/1999	HA	1	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	OGDEN	MWH, 2004
BLBS14	RS876	BLBS14S01	6/14/1999	HA	1	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	OGDEN	MWH, 2004
BLBS16	RS906	BLBS16S01	9/28/1999	GP	2	Primary Sample					Y						Y	WP	OGDEN	MWH, 2004
BLBS17	RS907	BLBS17S01	9/28/1999	GP	1.5	Primary Sample					Y						Y	WP	OGDEN	MWH, 2004
BLBS18	RS908	BLBS18S01	9/28/1999	GP	1.5	Primary Sample					Y						Y	WP	OGDEN	MWH, 2004
BLBS19	RS905	BLBS19S01	9/28/1999	GP	0.5	Primary Sample					Y						Y	WP	OGDEN	MWH, 2004
BLBS20	MT511	BLBS20S01	8/26/2003	HA	2.5	Primary Sample			N	Y	Y		Y		Y		Y	WP	MWH	MWH, 2004
BLBS20	MT517	BLBS20S01	8/26/2003	HA	2.5	Primary Sample										Y	Y	WP	MWH	MWH, 2004
BLBS21	MT512	BLBS21S01	8/26/2003	HA	2	Primary Sample			N	Y	Y		Y		Y		Y	WP	MWH	MWH, 2004
BLBS21	MT518	BLBS21S01	8/26/2003	HA	2	Primary Sample										Y	Y	WP	MWH	MWH, 2004
BLBS22	MF001	BLBS22S01	9/5/2003	HA	2	Split Sample			Y	Y	Y	Y	Y		Y	Y	Y	WP	MWH	MWH, 2004
BLBS22	MT546	BLBS22S01	9/5/2003	HA	2	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLBS23	MT550	BLBS23S01	9/8/2003	HA	0.5	Primary Sample			Y	Y	Y		Y				Y	WP	MWH	MWH, 2004
BLBS24	MT551	BLBS24S01	9/8/2003	HA	0.5	Primary Sample			Y		Y		Y				Y	WP	MWH	MWH, 2004
BLBS25	MT552	BLBS25S01	9/8/2003	HA	0.5	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLBS26	MT553	BLBS26S01	9/8/2003	HA	1	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLBS26	MT557	BLBS26D01	9/8/2003	HA	1	Field Duplicate			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLBS27	MT554	BLBS27S01	9/8/2003	HA	1	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLBS28	MT555	BLBS28S01	9/8/2003	HA	1	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLBS29	MT556	BLBS29S01	9/8/2003	HA	0.5	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLLS01	MT680	BLLS01S01	9/8/2003	NL	0.5	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS01	MT683	BLLS01S99	9/8/2003	DL	0.5	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS02	MT670	BLLS02S01	9/8/2003	NL	0.5	Primary Sample						Y					Y	WP	MWH	MWH, 2004

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							Dioxins	Energetics	Inorganics	Metals	PCBs	Perchlorate	SVOCs	Terphenyls	TPH	VOCs				
BLLS03	MT672	BLLS03S01	9/8/2003	NL	0.5	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS04	MT668	BLLS04S01	9/10/2003	NL	2	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS05	MT678	BLLS05S01	9/10/2003	NL	3	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS06	MT677	BLLS06S01	9/10/2003	NL	12	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS06	MT682	BLLS06S99	9/10/2003	DL	3	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS07	MT667	BLLS07S01	9/10/2003	NL	8	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS08	MT664	BLLS08S01	9/10/2003	NL	2	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS09	MT671	BLLS09S01	9/10/2003	NL	8	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS10	MT665	BLLS10S01	9/10/2003	NL	12	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS11	MT675	BLLS11S01	9/10/2003	NL	11	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS12	MT673	BLLS12S01	9/10/2003	NL	10	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS13	MT681	BLLS13S01	9/10/2003	NL	3	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS14	MT674	BLLS14S01	9/10/2003	NL	2	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS15	MT669	BLLS15S01	9/10/2003	NL	3	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS16	MT676	BLLS16S01	9/10/2003	NL	4	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS16	MT679	BLLS16D01	9/10/2003	NL	4	Field Duplicate						Y					Y	WP	MWH	MWH, 2004
BLLS17	MT721	BLLS17S01	9/15/2003	NL	2	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS18	MT716	BLLS18S01	9/16/2003	NL	2	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS19	MT713	BLLS19S01	9/17/2003	NL	5	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS20	MT728	BLLS20S01	9/15/2003	NL	17	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS21	MT727	BLLS21S01	9/15/2003	NL	10	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS22	MT715	BLLS22S01	9/16/2003	NL	2.5	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS23	MT720	BLLS23S01	9/16/2003	NL	8	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS24	MT726	BLLS24S01	9/16/2003	NL	11	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS25	MT723	BLLS25S01	9/16/2003	NL	12	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS26	MT719	BLLS26S01	9/16/2003	NL	2	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS27	MT714	BLLS27S01	9/16/2003	NL	2	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS28	MT718	BLLS28S01	9/16/2003	NL	2	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS29	MT724	BLLS29D01	9/16/2003	NL	2	Field Duplicate						Y					Y	WP	MWH	MWH, 2004
BLLS29	MT725	BLLS29S01	9/15/2003	NL	2	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS30	MT717	BLLS30S01	9/16/2003	NL	2	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS31	MT722	BLLS31S01	9/16/2003	NL	2	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS32	MT736	BLLS32S01	9/17/2003	NL	2	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS33	MT740	BLLS33S01	9/17/2003	NL	8	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS34	MT737	BLLS34S01	9/17/2003	NL	6	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS35	MT732	BLLS35D01	9/17/2003	NL	2	Field Duplicate						Y					Y	WP	MWH	MWH, 2004
BLLS35	MT733	BLLS35S01	9/17/2003	NL	2	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS36	MT735	BLLS36S01	9/17/2003	NL	8	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS37	MT731	BLLS37S01	9/17/2003	NL	3	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS38	MF003	BLLS38S01	9/17/2003	NL	6	Split Sample						Y					Y	WP	MWH	MWH, 2004
BLLS38	MT734	BLLS38S01	9/17/2003	NL	6	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS39	MT739	BLLS39S01	9/17/2003	NL	8	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS40	MT738	BLLS40S01	9/17/2003	NL	8	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS41	MT729	BLLS41S01	9/17/2003	NL	20	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLLS42	MT730	BLLS42S01	9/17/2003	NL	20	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLSS01	BL1S1	BLSS01S01	5/23/1996	G	NA	Primary Sample			Y	Y							Y	WP	OGDEN	MWH, 2004
BLSS01	BL2S1	BLSS01S02	5/23/1996	G	NA	Primary Sample			Y	Y							Y	WP	OGDEN	MWH, 2004
BLST01	MT559	BLST01S01	9/5/2003	G	NA	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLST02	MT560	BLST02S01	9/5/2003	G	NA	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLST03	MT563	BLST03S01	9/8/2003	G	NA	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLST04	MT562	BLST04S01	9/9/2003	G	NA	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLST05	MT561	BLST05S01	9/9/2003	G	NA	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS01	MT686	BLTS01S01	9/11/2003	T	12	Primary Sample				Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS02	MT543	BLTS02S02	9/5/2003	T	2	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS03	MT544	BLTS03S02	9/5/2003	T	2	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS04	MT692	BLTS04S02	9/15/2003	T	2	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004

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							Dioxins	Energetics	Inorganics	Metals	PCBs	Perchlorate	SVOCs	Terphenyls	TPH	VOCs				
BLTS05	MT691	BLTS05S02	9/15/2003	T	5	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS06	MT708	BLTS06S02	9/16/2003	T	8	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS07	MT685	BLTS07S02	9/11/2003	T	11	Primary Sample				Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS08	MT693	BLTS08S02	9/15/2003	T	2	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS09	MT509	BLTS09S02	8/26/2003	T	3	Primary Sample			N	Y	Y		Y		Y		Y	WP	MWH	MWH, 2004
BLTS09	MT519	BLTS09S02	8/26/2003	T	3	Primary Sample										Y	Y	WP	MWH	MWH, 2004
BLTS09	MT541	BLTS09S03	9/5/2003	T	8	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS09	MT687	BLTS09S04	9/11/2003	T	17	Primary Sample				Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS09	MT689	BLTS09S05	9/11/2003	T	17	Primary Sample					Y		Y		Y		Y	WP	MWH	MWH, 2004
BLTS10	MT694	BLTS10S02	9/15/2003	T	17	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS11	MT515	BLTS11S01	8/26/2003	T	17	Primary Sample										Y	Y	WP	MWH	MWH, 2004
BLTS11	MT690	BLTS11S02	9/15/2003	T	10	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS12	MT514	BLTS12S02	8/26/2003	T	3	Primary Sample					Y						Y	WP	MWH	MWH, 2004
BLTS13	MT521	BLTS13S01	9/2/2003	T	5	Primary Sample						Y					Y	WP	MWH	MWH, 2004
BLTS13	MT703	BLTS13S02	9/16/2003	T	7	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS14	MT542	BLTS14S02	9/5/2003	T	2	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS14	MT545	BLTS14D02	9/5/2003	T	2	Field Duplicate			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS15	MT522	BLTS15S01	9/2/2003	T	20	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS16	MT523	BLTS16S01	9/2/2003	T	10	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS17	MT524	BLTS17S01	9/2/2003	T	8	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS18	MT706	BLTS18S02	9/16/2003	T	12	Primary Sample			Y	Y	Y		Y		Y		Y	WP	MWH	MWH, 2004
BLTS19	MT699	BLTS19S02	9/16/2003	T	11	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS20	MT530	BLTS20S01	9/3/2003	T	20	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS23S01	MT528	BLTS23S01	9/3/2003	T	3	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS24	MT529	BLTS24S01	9/3/2003	T	8	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS25	MT526	BLTS25S01	9/3/2003	T	8	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS26	MF005	BLTS26S01	9/17/2003	T	6	Split Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS26	MT700	BLTS26S01	9/17/2003	T	6	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS27	MT702	BLTS27D01	9/17/2003	T	2	Field Duplicate			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS27	MT705	BLTS27S01	9/17/2003	T	2	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS30	MT531	BLTS30S01	9/3/2003	T	8	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS31	MT701	BLTS31S01	9/17/2003	T	2	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS32	MT527	BLTS32S01	9/3/2003	T	4	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS33	MT707	BLTS33S01	9/17/2003	T	6	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS34	MT688	BLTS34S01	9/11/2003	T	4	Primary Sample				Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS36	MT539	BLTS36S01	9/4/2003	T	10	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
BLTS37	MT540	BLTS37S01	9/4/2003	T	6	Primary Sample			Y	Y	Y		Y		Y	Y	Y	WP	MWH	MWH, 2004
LF-6	LF-6	LF-6	3/31/1987	T	6	Primary Sample			N	N	N			N	N	N	N	WP	ETEC	ETEC, May 1987
LFR-1	LFR-1	LFR-1	3/30/1987	HA	0.7	Primary Sample			N	N	N			N	N	N	N	WP	ETEC	ETEC, May 1987
LFR-2	LFR-2	LFR-2	3/30/1987	HA	0.7	Primary Sample			N	N	N			N	N	N	N	WP	ETEC	ETEC, May 1987
LFR-3	LFR-3	LFR-3	3/30/1987	HA	0.7	Primary Sample			N	N	N			N	N	N	N	WP	ETEC	ETEC, May 1987
						Validated:	6	2	109	104	79	50	89	14	86	73	**205**			
						Not Validated	0	0	7	4	4	0	0	4	4	4	**4**			

Total Primary Samples:	190
Total QC (Duplicate, Split) Samples:	19
Total Number of B056 Landfill RFI Site Soil Samples:	**209**

Sample Location Identification - Boring or trench number
Unique Sample ID - Laboratory reporting code
Sample Identification - RFI site and sample identifier code

(a) **Sample Method:**
G = Grab sample
B = Boring sample
DL = Leachate method used for field leachate samples until 07/29/2003
(4 to 6 soil sample sleeves mixed repeatedly with deionized water)

GP = Geoprobe - using direct push core barrel.
HA = Hand Auger sample
NL = Leachate method used for field leachate samples from 06/30/2003
(Approx. 250 grams of soil mixed w/ 250 ml of deionized water)

T = Trench sample

TABLE B.3-1C
B056 LANDFILL RFI SITE SOIL MATRIX SAMPLING AND ANALYTICAL SUMMARY
(Page 5 of 5)

Sample Location Identification	Unique Sample ID	Sample Identification	Date Collected	Sample Method (a)	Depth (feet bgs)	Sample Type	Sample Analyses (Validated Yes/No)										Validated (b)	Rationale (c)	Consultant (d)	Reference Document (e)
							Dioxins	Energetics	Inorganics	Metals	PCBs	Perchlorate	SVOCs	Terphenyls	TPH	VOCs				

(b) **Validated:** "Y" indicates that a minimum of one analysis has been validated following RFI protocols; agency split samples were not validated but were reviewed for comparability
Data collected prior to the RFI were not typically subsequently validated using RFI protocols but were collected and reviewed following QA procedures established for earlier investigation programs.

(c) **Rationale (see below):**
DGA - Indicates samples collected in 2007 as a part of the Data Gaps Analysis to address delineation with stepout samples, elevated detection limit issues, and specific DTSC resquests.
WP - Indicates samples collected based on DTSC-approved Work Plan scope.
STEP - Indicates stepout samples were collected as a part of the RFI program (prior to Data Gaps Analysis) to delineate concentrations above comparison levels or anomalous conditions.

(d) **Consultant:** Contractor responsible for sampling and reporting for each location.

(e) **Reference Document:** Document containing published data; "This report" includes the RFI site appendix and the Group 8 RFI Report. Refer to Section B.6 (References) for complete citation.

Laboratory Analytical Methods Represented (EPA Method No.)
Dioxins - 1613B
Energetics - 8330
Inorganics - 9002 PLM, 300.0, 9056, 9045, 9045C
Metals - 6010, 6010B, 6020, 7041, 7060, 7130, 7190, 7196, 7199, 7210, 7420, 7471, 7471A, 7740, 7841
PCB - 8080, 8082
Perchlorate - 314.0, 314.0M, 8321
SVOCs - 8270C, 8270C SIM
Terphenyls - 8015B
TPH - 503B, 8015B, 8015M
VOCs - 8021A, 8021B, 8240, 8260B

Inorganics - Asbestos, Fluoride and pH
PCB - Polychlorinated biphenyls
SVOCs - Semivolatile Organic Compound
TPH - Total Petroleum Hydrocarbons
VOCs - Volatile Organic Compound

NA - Not Applicable

TABLE B.3-1D
B056 LANDFILL RFI SITE SURFACE WATER SAMPLING AND ANALYTICAL SUMMARY
(Page 1 of 1)

Sample Location Identification	Unique Sample ID	Sample Identification	Date Collected	Sample Method (a)	Depth (feet bgs)	Sample Type	Sample Analyses (Validated Yes/No)				Validated (b)	Rationale (c)	Consultant (d)	Reference Document (e)
							Inorganics	Metals	Perchlorate	VOCs				
B-56 PIT	B/56 PIT	B/56 PIT	4/8/1999	G	0	Primary Sample				Y	Y	SITE	GRC	MWH, 2004
B-56 PIT	B/56 PIT-1	B/56 PIT	2/22/1999	G	0	Primary Sample	Y	Y		Y	Y	SITE	GRC	MWH, 2004
B-56 PIT	B/56 PIT-2	B/56 PIT	4/29/1999	G	0	Primary Sample	Y	Y		Y	Y	SITE	GRC	MWH, 2004
BLSW0001	BLSW0001S01	BLSW0001S01	2/14/2007	G	0	Primary Sample			Y		Y	DGA	MWH	This report
			Total Primary Samples:	4		**Validated:**	2	2	1	3	**4**			
			Total QC (Duplicate, Split) Samples:	0		**Not Validated**	0	0	0	0	**0**			
			Total Number of B056 Landfill RFI Site Surface Water Samples:	**4**										

Sample Location Identification - Boring or trench number
Unique Sample ID - Laboratory reporting code
Sample Identification - RFI site and sample identifier code

(a) **Sample Method:**
G = Grab sample

(b) **Validated:** "Y" indicates that a minimum of one analysis has been validated following RFI protocols; agency split samples were not validated but were reviewed for comparabilit
Data collected prior to the RFI were not typically subsequently validated using RFI protocols but were collected and reviewed following QA procedures established for earlier investigation programs.

(c) **Rationale (see below):**
DGA - Indicates samples collected in 2007 as a part of the Data Gaps Analysis to address delineation with stepout samples, elevated detection limit issues, and specific DTSC resquests.
SITE - Indicates samples collected to assess site conditions.

(d) **Consultant:** Contractor responsible for sampling and reporting for each location.
(e) **Reference Document:** Document containing published data; "This report" includes the RFI site appendix and the Group 8 RFI Report. Refer to Section B.6 (References) for complete citation.

Laboratory Analytical Methods Represented (EPA Method No.)
Inorganics - 160.1, WetChem
Metals - 6010/7000
Perchlorate - 314.0
VOCs - 8021B, 8260B

Inorganics - Bicarbonate, Chloride, Cyanides, Fluoride, Nitrate, Sulfate, Total Dissolved Solids
VOCs - Volatile Organic Compound

Table B.3-2A (Page 1 of 12)

Description of Chemical Use Areas at the B056 Landfill RFI Site and Soil Sampling Results Summary

Map Key[1]	**Chemical Use Area Name** Status, How Used and Physical Characteristics (Site History in Section B.2)	**Potential Chemicals Used / Stored**[2]	**Sampling Scope and Rationale**[2] [See Figure B.2-2 for sampling locations]	**Soil Vapor and Soil Matrix Sampling Results**[3,4]	**Potential concentration gradients sufficiently evaluated for risk assessment?** [5]	**Is delineation sufficient to estimate soil volume in CMS?**[6, 7] [see Figure B.5-1 for CMS areas]
1	**Building 056 Landfill** The Building 56 Landfill (B056 Landfill) is located north of the intersection of F Street and 24th Street, in northwestern Area IV. The B056 Landfill area included in Chemical Use Area 1 comprises approximately 1 acre of the 4-acre RFI Site. The upper southern portion of the B056 Landfill is relatively flat, bordered by sandstone outcrops to the south and northeast and sloping down to ephemeral drainages to the north and west. In the 1960s, the B056 Landfill was used for disposal of excavated soils and storage of construction debris during the construction of the Building 056 System for Nuclear Auxiliary Power (SNAP). Other construction activities, such as the Sodium Component Test Installation (SCTI) excavation, also used the B056 Landfill site to dispose of soil, bedrock, and other construction-related materials. Concrete, asphalt, steel products, and asbestos-containing materials were temporarily stored on the landfill surface. Drums were stored in the flat, southern portion of the B056 Landfill. Drums were opened and the contents analyzed. Contents included oils, alcohols, sodium, sodium reaction products, grease, phosphoric acid, asbestos, rags, and rope. The drums were removed in the early 1980s. Surface water is generally conveyed by sheet flow off the landfill into the north or western drainage. The two drainages converge at the northwestern landfill toe and continue north until it joins with the FSDF drainage (Channel C), where it becomes "Channel D." Channel D flows north, combining with other drainages offsite and flows ultimately to the Arroyo Simi. Landfill soil thickness at the B056 Landfill ranges from less than 1 to approximately 20 to 25 feet (BLTS15, BLBS02, BLSV01) (below ground surface (bgs). Landfill soil overlays native alluvial soil, which ranges from 0 to approximately 4 feet (BLTS17) in thickness. Soil is primarily comprised of sands to silty/clayey sands.	**VOCs:** VOCs potentially associated with drum storage or landfill debris**.**	Overall, 36 soil vapor samples, and 37 soil samples were collected at representative locations across the B056 Landfill and within the associated drainage for VOC analysis. Sample locations also targeted observed geophysical anomalies to provide data near potential chemical sources and trench locations based on field observations (i.e., staining or debris). <u>1987 Soil and Soil Vapor Sampling</u>: • 6 trenches, LF-1 through LF-6, within the B056 Landfill and 3 soil borings (LFR-1, LFR-2, LRF-3) within the drainage; four soil samples analyzed for VOCs. • 7 soil vapor samples (SV-7.1-1 thru SV-7.1-5) <u>1996 – 2003 Soil and Soil Vapor Sampling:</u> A geophysical survey was conducted and additional soil and soil vapor locations were sampled based on previous soil vapor sampling locations and geophysical anomalies. An additional 34 soil samples and 29 soil vapor samples were collected and analyzed for VOCs. • 20 trenches, BLTS01 through BLTS20, within the B056 Landfill and 32 soil borings, BLBS01 through BLBS08, BLBS10, BLBS11, BLBS20 through BLBS25, BLBS0030 through BLBS0035, BLBS0039, BLBS0040, BLBS0041, BLBS0047, BLBS0048, BLBS00052, BLBS0055, BLBS0057, BLBS0058 and BLBS0060. • 11 soil vapor probes were installed, BLSV01 through BLSV09, BLSV11 and BLSV20	VOC results are shown on Figure B.3-1. Acetone was detected in three soil samples from the landfill: one from a trench within the landfill, one from the toe of the landfill, and one in the drainage to the north. The highest concentration was 5,000 µg/kg at the landfill toe (BLBS06), decreasing to 1,520 µg/kg in the downstream sample (BLBS08, both 1997). Acetone detections in 1997 are considered a likely result of mobile laboratory contamination. Methylene chloride was detected at 23 µg/kg in one soil sample (BLBS25) from the drainage west of the landfill. This concentration is above the ResRBSL of 4 µg/kg; detected acetone was well below RBSLs. Both methylene chloride and acetone detections in 1997 are considered a likely result of mobile laboratory contamination. Methane was detected at 10 µg/L in two samples (BLSV07 at 7 and 12 feet bgs). Note: detection limit for all other samples was 9.8 µg/L. VOCs were not detected in any of the 35 other soil vapor samples or 33 soil samples collected from the landfill. Low concentrations of VOCs were detected in a few of the numerous representative and targeted samples collected throughout the landfill and drainage. Therefore, no further characterization is warranted.	**Yes.** Potential presence and distribution of VOCs adequately defined by representative and targeted soil vapor and soil sampling locations.	**Yes** Area is recommended for further evaluation in CMS based on Metals, PAHs and PCBs. VOCs are not a driver for CMS.
		SVOCs: Potential SVOCs associated with drum storage or landfill debris. Sealing compounds from pavement or roofing debris found during investigations.	A total of 41 soil samples were collected from representative locations across the B056 Landfill to screen for SVOCs and assess potential migration within the drainage. Locations also targeted pavement debris to evaluate potential SVOC impacts.	SVOC results are shown on Figure B.3-2A. PAHs were detected, up to 2000 µg/kg (Fluoranthane), in 13 soil samples from within and near the landfill top, with. benzo(a)pyrene (BaP) detected up to 430 µg/kg. Two samples from BLTS09 on the northeast side and one sample (BLBS22) to the southwest contained PAHs above ResRBSLs (maximum BaP at BLBS22). Black roofing material was identified in BLTS09 at 17 feet. PAHs were detected up to 130 µg/kg (naphthalene) in 5 of 12 soil samples from the landfill toe and adjacent drainages (west and north); BaP was not detected (< 100 µg/kg). Phthalates were also detected in several samples up to 475 µg/kg (bis(2-Ethylhexyl) phthalate). Detected SVOCs were below RBSLs. SVOCs were not detected in sample BLBS24, collected	**Yes** SVOC distribution adequately defined by representative and targeted sample locations.	**Yes** Area is recommended for further evaluation in CMS based on Metals, PAHs and PCBs.

Table B.3-2A (Page 2 of 12)

Description of Chemical Use Areas at the B056 Landfill RFI Site and Soil Sampling Results Summary

Map Key[1]	**Chemical Use Area Name** Status, How Used and Physical Characteristics (Site History in Section B.2)	**Potential Chemicals Used / Stored**[2]	**Sampling Scope and Rationale**[2] [See Figure B.2-2 for sampling locations]	**Soil Vapor and Soil Matrix Sampling Results**[3,4]	**Potential concentration gradients sufficiently evaluated for risk assessment?** [5]	**Is delineation sufficient to estimate soil volume in CMS?**[6, 7] [see Figure B.5-1 for CMS areas]
				downstream and north of the point where the north and west drainages converge. Based extensive sampling at representative and targeted locations, and low concentrations of detected SVOCs in the B056 Landfill, no further characterization is warranted.		
		TPH: Potential hydrocarbons associated with drum storage or landfill debris. Approximately 80 drums were stored on top of the B056 Landfill; some drums were found to contain oil.	43 soil samples and 44 soil vapor sample were collected and analyzed for TPH in the B056 Landfill. 1987 Soil Sampling: Historical sampling conducted to investigate the presence of hazardous material at the B056 Landfill. Six trenches in the B056 Landfill and three soil borings in the B056 drainage were advanced, and four soil samples were submitted and analyzed for TPH. 1996 – 2003 Soil Sampling: Collect and analyze soil samples at the B056 Landfill for TPH. Screen and evaluate the presence of TPH impacts from drum storage at the B056 Landfill. Site walks were conducted by (Department of Toxic Substances Control) DTSC during March and June of 1999 as part of the comprehensive RFI site review process and to select initial sampling locations. Trench locations were selected based on previous soil analytical results, geophysical survey results, observations made during previous site walks with DTSC in December 2001 and August 2002, and DTSC work plan review comments (DTSC 2002). 2007 Soil sampling:. Targeted soil samples were selected based on previous soil analytical results. Lube oil range hydrocarbons detected above RBSLs. Collect and analyze sample from drainage to assess potential migration of lube oil range hydrocarbons from the toe of the landfill in to the drainage.	TPH results are shown on Figure B.3-3A. TPH was detected in 10 of 43 samples collected within the B056 Landfill, two of which contained concentrations above ResRBSLs: ➢ The maximum detected concentration was 23,000 mg/kg lubricant oil range organics in BLTS09S05, collected at 17 feet bgs from a trench in the northeast part of the landfill. This result is above the ResRBSL of 1,400 mg/kg. Two other samples in the trench contained less than 200 mg/kg lubricant oil organics. Black roofing material was identified in BLTS09 at 17 feet and asphalt at 4 feet below grade surface (bgs). ➢ 1.8 mg/kg gasoline range organics was detected in BLBS22, above the ResRBSL of 1.1 mg/kg. Two other samples within the landfill contained between 460 mg/kg (BLTS10) and 500 mg/kg (LF-6) oil range hydrocarbons, with the few remaining samples containing less than 200 mg/kg. With the exception of the sample described above containing gasoline range organics, all detected TPH within the landfill was lubricant oil range. TPH was detected in several samples in the west drainage, up to 1,100 mg/kg (“oil content”) at LFR-3 near the landfill toe and 820 mg/kg lubricant oil range organics at BLBS08. TPH was not detected in two downstream samples BLBS10 and BLBS11). Based on extensive sampling at targeted and representative locations within and downstream of the landfill, and generally low or not detected in sampling results, no further characterization is warranted.	**Yes** TPH distribution adequately defined by targeted, representative, and step-out sample locations.	**Yes** Area is recommended for further evaluation in CMS based on Metals, PAHs and PCBs. TPH is not a driver for CMS.

Table B.3-2A (Page 3 of 12)

Description of Chemical Use Areas at the B056 Landfill RFI Site and Soil Sampling Results Summary

Map Key[1]	**Chemical Use Area Name** Status, How Used and Physical Characteristics (Site History in Section B.2)	**Potential Chemicals Used / Stored**[2]	**Sampling Scope and Rationale**[2] [See Figure B.2-2 for sampling locations]	**Soil Vapor and Soil Matrix Sampling Results**[3,4]	**Potential concentration gradients sufficiently evaluated for risk assessment?** [5]	**Is delineation sufficient to estimate soil volume in CMS?**[6, 7] [see Figure B.5-1 for CMS areas]
		PCBs: Potential PCBs associated with drum storage or landfill debris.	34 soil samples were collected and analyzed for PCBs in the B056 Landfill. Soil Sampling 1996-2003: Collect and analyze soil samples at the B056 Landfill for PCBs. Screen and evaluate the presence of impacts from undocumented storage and waste disposal at the B056 Landfill. 2007 Soil sampling: Aroclor 1254 was detected in BLTS02, up to 1000 µg/kg, above Res and EcoRBSL. Collect and analyze samples from drainage to assess potential migration of PCBs from landfill down slope and whether PCBs are present at concentrations greater than screening levels.	PCB results are shown in Table B.3-1C and on Figure B.3-4. PCBs were detected in 3 of 34 samples: ➢ 200 µg/kg Aroclor 1260 at 3 feet bgs and 190 µg/kg Aroclor 1254 at 8 feet bgs in trench BLTS09, located in the northeast part of the landfill. These results are above the EcoRBSL of 79 µg/kg. ➢ 1,000 µg/kg Aroclor 1254 at 2 feet in trench BLTS02 bgs, near the landfill toe. This result is above both the Eco and ResRBSLs (350 µg/kg). PCBs were not detected any other samples within the landfill or within the drainage. Based on limited PCBs detected in targeted and representative samples within the landfill, no further characterization is warranted.	**Yes** PCBs distribution adequately defined by targeted, representative, and step-out sample locations.	**Yes** Area is recommended for further evaluation in CMS based on Metals, PAHs and PCBs.
		Perchlorate: Potential perchlorate associated with drum storage or landfill debris.	A total of 29 soil samples were collected from representative locations throughout the landfill for perchlorate analysis.	Perchlorate sampling locations are shown on Figure B.2-2. Perchlorate was not detected; no further characterization is warranted.	**Yes** Perchlorate was not detected. Representative samples adequately define potential presence of perchlorate.	**Yes** Area is recommended for further evaluation in CMS based on Metals, PAHs and PCBs. Perchlorate is not a driver for CMS.
		Terphenyls: Terphenyls are reported to have been used in Area IV.	A total 6 trenches in the B056 Landfill and 9 soil borings were conducted, and 11 soil samples were collected from representative locations for terphenyl analysis	Terphenyls sampling locations are shown on Figure B.2-2. No terphenyls were detected in soils at the B056 Landfill, no further characterization is warranted.	**Yes** Terphenyls were not detected. Representative samples adequately define potential presence of terphenyls.	**Yes** Area is recommended for further evaluation in CMS based on Metals, PAHs and PCBs. Terphenyls are not a driver for CMS.
		Energetics: Explosives used during excavation/rock removal.	2007 Soil Sampling: One sample, BLBS0032, was collected from the drainage downstream of the landfill to screen for potential residual energetics from use at Building 56 Excavation	Energetics results are shown on Figure B.3-5A. No energetics were detected in soils at the B056 Landfill, no further characterization is warranted.	**Yes** Energetics was not detected. Representative samples adequately define potential presence of energetics.	**Yes** Area is recommended for further evaluation in CMS based on Metals, PAHs and PCBs. Energetics is not a driver for CMS.
		Metals: Potential metals associated with drum storage or landfill debris. Approximately 80 drums stored at	57 soil samples were collected analyzed for metals at the B056 Landfill. 1987 Metals Sampling: Historical sampling conducted to investigate the presence of hazardous material at	Metals results are shown in Table B3-1C and on Figure B.3-5A. A total of 11 metals were detected above background ranges in samples throughout the landfill:	**Yes** Metals distribution adequately assessed by representative, targeted	**Yes** Area is recommended for further evaluation in CMS based on Metals,

Table B.3-2A (Page 4 of 12)

Description of Chemical Use Areas at the B056 Landfill RFI Site and Soil Sampling Results Summary

Map Key[1]	**Chemical Use Area Name** Status, How Used and Physical Characteristics (Site History in Section B.2)	**Potential Chemicals Used / Stored**[2]	**Sampling Scope and Rationale**[2] [See Figure B.2-2 for sampling locations]	**Soil Vapor and Soil Matrix Sampling Results**[3,4]	**Potential concentration gradients sufficiently evaluated for risk assessment?** [5]	**Is delineation sufficient to estimate soil volume in CMS?**[6, 7] [see Figure B.5-1 for CMS areas]
		the B056 Landfill with sodium and sodium reaction products. Metal debris was observed at the B056 Landfill during the 2003 investigation.	the B056 Landfill. • 6 trenches in the B056 Landfill and 3 soil borings in the B056 drainage were advanced and only 4 soil samples were submitted and analyzed for Metals. • Sample depths with in the trenches were made during field observations. <u>1995 – 2003 Metals Sampling:</u> Screen and evaluate the presence of metal impacts from drum and debris storage at the B056 Landfill. • Collect and analyze soil samples at the B056 Landfill for Metals. • Representative soil sample locations were selected based on previous soil analytical results, geophysical survey results, observations made during previous site walks with DTSC in December 2001 and August 2002, and DTSC work plan review comments (DTSC 2002). Sample depths within representative trench locations were based on field observations (i.e. staining or debris observed). Sample depths at representative soil boring locations were collected at the surface and above bedrock. <u>2007 Metals Sampling:</u> Assess data gaps from previous soil sampling. • BLTS09 contained chromium above background; no samples historically tested for hexavalent chromium. Sample location with highest detected chromium to check for hexavalent chromium. • Re-collect samples from locations BLBS06 and BLBS08 and test for metals and pH. Aluminum not analyzed in previous samples collected from the drainage; detection limits (DLs) for several metals were greater than background concentrations. • Analyze samples from drainage to assess potential migration of metals from landfill down slope. Collect sample from base of drainage at 1 location downstream in ravine and analyze for the full metals suite and pH.	➢ Barium, boron, chromium, molybdenum, and zinc were detected up to 1.4 times background, each in a single sample ➢ Cadmium, copper, lead, mercury, selenium, and sodium were detected at maximum concentrations over 2 times background range ▪ Cadmium up to 1.3 mg/kg (background 1 mg/kg) in 1 sample ▪ Copper up to 130 mg/kg (background 29 mg/kg) in 3 samples ▪ Lead up to 94 mg/kg (background 34 mg/kg) in 2 samples ▪ Mercury up to 1.7 mg/kg (background 0.09 mg/kg) in 5 samples ▪ Selenium up to 5.3 (background 0.655 mg/kg) in 17 samples ▪ Sodium up to 390 mg/kg (background 110 mg/kg) in 6 samples The highest concentrations relative to background were detected in BLTS10 (mercury) BLTS11 (selenium) and BLTS09 (copper), located in the northeast part of the landfill. Metals concentrations were lower in the adjacent drainages and, with the exception of sodium, were within background ranges in downstream samples. None of the detected metals were above ResRBSLs; however, all but chromium was above EcoRBSLs since all but this metal and mercury have EcoRBSLs below background. None of the other metals analyzed at the landfill were detected above background ranges. pH range = 5.75 to 9.51 Based on extensive representative and targeted sampling conducted within and downstream of the landfill and limited extent of metals above background (primarily within the landfill), and background range metals detected in downstream drainages, no further characterization is warranted.	and step-out sampling data.	PAHs and PCBs.
2a	**Southern Debris Areas** The Southern Debris Area is approximately 0.8 acre and located to the south of the B056 Landfill. The Southern Debris Area is a topographically flat	**VOCs.** VOCs potentially associated with drum storage or landfill debris	Soil Vapor: 16 representative soil vapor samples were collected in the Southern Debris Area and analyzed for VOCs.	VOC results are shown on Table B.3-1B and B.3-1C and Figure B.3-1.	**Yes** VOC distribution adequately assessed by representative, targeted,	**Yes** Area is recommended for further evaluation in CMS based on Metals.

Table B.3-2A (Page 5 of 12)

Description of Chemical Use Areas at the B056 Landfill RFI Site and Soil Sampling Results Summary

Map Key[1]	**Chemical Use Area Name** Status, How Used and Physical Characteristics (Site History in Section B.2)	**Potential Chemicals Used / Stored**[2]	**Sampling Scope and Rationale**[2] [See Figure B.2-2 for sampling locations]	**Soil Vapor and Soil Matrix Sampling Results**[3,4]	**Potential concentration gradients sufficiently evaluated for risk assessment?** [5]	**Is delineation sufficient to estimate soil volume in CMS?**[6, 7] [see Figure B.5-1 for CMS areas]
	area with a hillside and ravine to the west. Surface water flows toward the west via sheet flow, draining off the Southern Debris Area hillside and into the western drainage. Surface water then flows to the north. The Southern Debris Area is shown as a disturbed area in a 1963 photograph. Soil, bedrock, and construction debris generated during the Building 056 excavation were placed in the Southern Debris Area, located adjacent to the Building 056 excavation. Drums are visible at the base of the ravine along the western edge of the Southern Debris Area in an aerial photograph dated 1975 . These drums were removed during the 1980s. Drums were recently observed, still partially buried on the hillside of the Southern Debris Area. Landfill soil at the Southern Debris Area, is less than 1 to 14 (BLTS07) feet thick. Artificial landfill soils overlay approximately 8 feet of native alluvial soils (BLTS26, BLTS31, and BLTS31). Soils at the Southern Debris Area are primarily sands to silty/clayey sands. Building 100 (B100) is located up stream from the Southern Debris Area of the B056 Landfill RFI Site, and is discussed here to provide context for upstream sampling. B100 was constructed in 1960 and was the site of various reactor core studies programs that were terminated in 1974. The Nuclear Regulatory Commission (NRC) released the building for unrestricted use in 1980. More Recently, Building 100 has been used for Sodium fire compression experiments, high energy Computer Aided Topography, a radioactive sample-counting laboratory, and instrumentation calibration. The B100 trench, located east of B100, was historically used for burning and disposal construction debris (Sapere, 2005). This area is a Solid Waste Management Unit (SMWU 7.5) and will be evaluated in the Group 5 RFI report. Ash	No documented use of VOCs at B100. .	Soil: 23 representative soil samples were collected in the Southern Debris Area and analyzed for VOCs <u>1987 Soil Sampling</u>: Historical sampling conducted to investigate the presence of hazardous material at the B056 Landfill and associated drainage. • 3 soil borings in the B056 drainage were advanced and only 2 soil sample (LFR-1 and LFR-2) was submitted and analyzed for VOCs. LFR-1 and LFR-2 are located in the western drainage and are in a direct migration pathway from the Southern Debris Area. <u>1996 – 2003 Soil and Soil Vapor Sampling:</u> Screen for VOCs to evaluate potential presence of VOCs. • Representative soil and soil vapor locations were selected to characterize the landfill and debris area based on previous soil vapor sampling locations, and the mapped extent and location of the geophysical anomalies. • Sample depths within representative trench locations were based on field observations (i.e. staining or debris observed). • Sample depths at representative soil boring locations were collected at the surface and above bedrock. • Representative soil vapor depths were generally every five feet bgs and above bedrock. • 21 soil samples and 16 soil vapor samples were collected and analyzed for VOCs in the southern debris. • 16 trenches, BLTS07, BLBS21, BLBS22, BLTS21 through BLTS34, BLTS36, BLTS37 and BLTS38 • 10 soil borings BLBS03, BLBS09, BLBS26 through BLBS29, BLBS0053, BLBS0056, BLBS0062, and BLBS0063. **B100 Sampling (upstream)** <u>2007 Soil Vapor Sampling</u>: Groundwater impacted with VOCs, source undetermined. Sample soil vapor to evaluate potential contribution of VOCs from Building 100 area. Collect 4 soil vapor samples around B100 at 5 feet and 10 feet bgs.	<u>Soil Vapor</u> Methane was detected in 10 samples from 7 locations at concentrations ranging from 10 to 27 µg/L. No other VOCs were detected in soil vapor samples. <u>Soil Matrix</u> Trichlorofluoromethane was detected at 900 µg/kg (above the ResRBSL of 110 µg/kg) in one historical soil sample (LFR-1) within the drainage west of the Southern Debris Area. Nearby sample BLBS29 was analyzed for VOCs to confirm VOC results; no VOCs were detected in this sample. Trichlorofluoromethane was also detected at 2 µg/kg approximately 100 feet to the southeast near a rock outcrop. Acetone was detected in four samples, BLTS26, BLBS27, BLTS36, and BLTS37 at concentrations between 10 and 41 µg/kg. Concentrations are well below RBSLs (lowest RBSL 46,000 µg/kg). No other VOCs were detected in any other samples within the southern debris area or associated drainage. Only low concentrations of VOCs were detected in a few of the numerous representative and targeted samples collected in the Southern Debris Area. Elevated trichlorofluoromethane was not confirmed in recent sampling. No VOCs were detected in soil vapor. No further characterization is warranted. **B100 Sampling (upstream)** No VOCs were detected in soil vapor at the targeted sampled locations.	and step-out sampling data.	VOCs are not a driver for CMS.

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Description of Chemical Use Areas at the B056 Landfill RFI Site and Soil Sampling Results Summary

Map Key[1]	**Chemical Use Area Name** Status, How Used and Physical Characteristics (Site History in Section B.2)	**Potential Chemicals Used / Stored**[2]	**Sampling Scope and Rationale**[2] [See Figure B.2-2 for sampling locations]	**Soil Vapor and Soil Matrix Sampling Results**[3,4]	**Potential concentration gradients sufficiently evaluated for risk assessment?** [5]	**Is delineation sufficient to estimate soil volume in CMS?**[6, 7] [see Figure B.5-1 for CMS areas]
	from these burning activities could have become airborne and accumulated in areas north of B100. Surface water samples from Outfall 007 have contained exceedances of metals and dioxins. Groundwater is impacted with VOCs from an undetermined source.		Soil vapor probes: BHSV0006, BHSV0007, BHSV0008 and BHSB0009			
		SVOCs: Sealing compounds from pavement debris found during investigations.	25 representative soil samples were collected and analyzed for SVOCs in the Southern Debris Area. <u>1996 – 2003 Soil Sampling:</u> Screen for SVOCs and evaluate the presence of SVOC impacts from pavement debris storage. Representative soil sample locations were selected based on previous soil analytical results, geophysical survey results, observations made during previous site walks with DTSC in December 2001 and August 2002, and DTSC work plan review comments (DTSC 2002). <u>2007 Soil Sampling</u>: Assess data gaps from previous soil sampling. DTSC requires storage areas be tested for any chemicals potentially used in Group 8 / Area IV.	SVOC results are shown on Figure B.3-2B. PAHs were detected up to 100 µg/kg naphthalene (BLTS24) in five samples distributed across the Southern Debris Area; benzo(a)pyrene (BaP) was detected in one sample at 16.5 µg/kg (BLBS0063). One sample contained di-n-butyl-phthalate at 4 µg/kg (BLTS26). All detected concentrations are below RBSLs. Based on low SVOC concentrations in four of 25 samples collected at representative locations across the Southern Debris Area, no further characterization is warranted.	**Yes.** SVOC distribution adequately assessed by representative sampling data.	**Yes.** Area is recommended for further evaluation in CMS based on Metals. SVOCs are not a driver for CMS.
		TPH: Approximately 80 drums where stored on top of the B056 Landfill, some drums were found to contain oil. Drums were discovered in the drainage west of the Southern Debris Area.	A total of 24 soil samples and 3 soil vapor sample were collected from representative locations for TPH analysis in the Southern Debris Area. <u>1987 Soil Sampling</u>: Historical sampling conducted to investigate the presence of hazardous material at the B056 Landfill. 3 soil borings in the B056 drainage were advanced and only 2 soil sample (LFR-1 and LFR-2) was submitted and analyzed for TPH. LFR-1 and LFR-2 are located in the western drainage and are in a direct migration pathway from the Southern Debris Area. <u>1996 – 2003 Soil sampling</u>: Screen and evaluate the presence of TPH impacts from drum storage at the B056 Landfill and drums observed in the drainage west of the Southern Debris Area. Representative soil sample locations were selected based on previous soil analytical results, geophysical survey results, observations made during previous site walks with DTSC in December 2001 and August 2002, and DTSC work plan review comments (DTSC 2002). • Sample depths within representative trench locations were based on field observations (i.e. staining or debris observed). • Sample depths at representative soil boring locations were collected at the surface and above bedrock.	TPH results are shown on Figure B.3-3B. Lubricant oil range organics were detected up to 76 mg/kg in 9 of 24 samples in various locations within the Southern Debris Area. Detected concentrations are below RBSLs. Based on low TPH concentrations detected in approximately 1/3 of samples collected from representative locations across the Southern Debris Area, no further characterization is warranted.	**Yes** TPH distribution is adequately assessed by representative sampling data.	**Yes.** Area is recommended for further evaluation in CMS based on Metals. TPH is not a driver for CMS.

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Description of Chemical Use Areas at the B056 Landfill RFI Site and Soil Sampling Results Summary

Map Key[1]	**Chemical Use Area Name** Status, How Used and Physical Characteristics (Site History in Section B.2)	**Potential Chemicals Used / Stored**[2]	**Sampling Scope and Rationale**[2] [See Figure B.2-2 for sampling locations]	**Soil Vapor and Soil Matrix Sampling Results**[3,4]	**Potential concentration gradients sufficiently evaluated for risk assessment?** [5]	**Is delineation sufficient to estimate soil volume in CMS?**[6, 7] [see Figure B.5-1 for CMS areas]
			• Representative soil vapor depths were generally every five feet bgs and above bedrock. • 22 soil samples and 3 soil vapor samples were collected and analyzed for TPH in the southern debris. No additional TPH samples were collected in the Southern Debris Area in 2007 sampling events.			
		PCBs: Potential PCBs associated with drum storage or landfill debris.	See B056 Landfill sample rationale. A total of 21 soil samples were collected from representative locations across the Southern Debris Area for PCB analysis.	PCBs results are shown on Figure B.3-4. PCBs were not detected in any soil samples at representative locations within the Southern Debris Area, no further characterization is warranted.	**Yes** PCBs were not detected. Representative samples adequately define potential presence of PCBs.	**Yes** Area is recommended for further evaluation in CMS based on Metals. PCBs are not a driver for CMS.
		Perchlorate: No documented use of perchlorate.	See B056 Landfill sample rationale. 23 representative soil samples were collected and analyzed for perchlorate in the Southern Debris Area.	Perchlorate sampling locations are shown on Figure B.3-5B. Perchlorate was not detected in any soil samples at representative locations within the Southern Debris Area, no further characterization is warranted.	**Yes** Perchlorate was not detected. Representative samples adequately define potential presence of Perchlorate.	**Yes** Area is recommended for further evaluation in CMS based on Metals. Perchlorate is not a driver for CMS.
		Terphenyls: No documented use of terphenyls.	See B056 Landfill sample rationale. 8 representative soil samples were collected and analyzed for terphenyls in the Southern Debris Area.	Terphenyls sampling locations are shown on Figure B.2-2. Terphenyls were not detected in any soil samples at representative locations within the Southern Debris Area, no further characterization is warranted.	**Yes** Terphenyls were not detected. Representative samples adequately define potential presence of terphenyls.	**Yes** Area is recommended for further evaluation in CMS based on Metals. Terphenyls are not a driver for CMS.
		Dioxins: No identified source of dioxins at Building 100.	<u>2007 Soil sampling</u>: Surface water samples from Outfall 7 impacted with dioxins. Sample shallow soil to evaluate potential contribution of contaminants from Building 100 area. Collect 4 soil sample (1 shallow, 1 deep) from area just outside of Bldg 100 drainage. 4 soil borings: BHBS0005, BHBS0006, BHBS0007 and BHBS0008	Dioxins results are presented on Figure B.3-4. Dioxin TEQs exceeded background in three soil samples collected from the asphalt drainage, north of Building 100, ranging up to 16.9 in BHBS0007, above both Eco and ResRBSLs. Additional assessment to determine the source or extent of dioxins will be performed as part of Group 5.	--	--
		Metals: Approximately 80 drums stored at the B056 Landfill with sodium and sodium reaction products. Metal debris was found in the southern debris area Southern Debris Area during 2003 investigation.	23 soil samples were collected analyzed for metals at the southern debris area. <u>1987 Metals Sampling:</u> Historical sampling conducted to investigate the presence of hazardous material at the B056 Landfill. • 3 soil borings in the B056 drainage were advanced and only 2 soil sample (LFR-1 and	Metals results are shown in on Figure B.3-5B. A total of 7 metals were detected above background ranges in samples throughout the Southern Debris Area: ➢ Aluminum, beryllium, boron, and mercury were detected up to 1.7 times background, each in a single sample with the exception of boron which was above background in two samples.	**Yes** Metals distribution adequately assessed by representative, targeted and step-out sampling data.	**Yes** Area is recommended for further evaluation in CMS based on Metals.

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Description of Chemical Use Areas at the B056 Landfill RFI Site and Soil Sampling Results Summary

Map Key[1]	**Chemical Use Area Name** Status, How Used and Physical Characteristics (Site History in Section B.2)	**Potential Chemicals Used / Stored**[2]	**Sampling Scope and Rationale**[2] [See Figure B.2-2 for sampling locations]	**Soil Vapor and Soil Matrix Sampling Results**[3,4]	**Potential concentration gradients sufficiently evaluated for risk assessment?** [5]	**Is delineation sufficient to estimate soil volume in CMS?**[6, 7] [see Figure B.5-1 for CMS areas]
		B100 Sampling (upstream) 2007 Soil sampling: Surface water samples from Outfall 7 impacted with metals.	LFR-2) was submitted and analyzed for VOCs. LFR-1 and LFR-2 are in the western drainage and are in a direct migration pathway from the southern debris area. 1995 – 2003 Metals Sampling: Screen and evaluate the presence of metal impacts from drum and debris storage at the southern debris area. • Collect and analyze representative soil samples at the southern debris are for Metals. • Representative soil sample locations were selected based on previous soil analytical results, geophysical survey results, observations made during previous site walks with DTSC in December 2001 and August 2002, and DTSC work plan review comments (DTSC 2002). • Sample depths within representative trench locations were based on field observations (i.e. staining or debris observed). • Sample depths at representative soil boring locations were collected at the surface and above bedrock. 2007 Metals Sampling: Assess data gaps from previous soil sampling. • BLTS09 contained chromium above background; no samples historically tested for hexavalent chromium. Sample location with highest detected chromium to check for hexavalent chromium. • Re-collect samples from locations BLBS06 and BLBS08 and test for metals and pH. Aluminum not analyzed in previous samples collected from the drainage; DLs for several metals were greater than background concentrations. • Analyze samples from drainage to assess potential migration of metals from landfill down slope. Collect sample from base of drainage at 1 location downstream in ravine and analyze for the full metals suite, and pH. **B100 Sampling (upstream)** Sample shallow soil to evaluate potential metals contribution from Building 100 area. Collect two soil samples (1 shallow, 1 deep) from area just outside of Bldg 100 drainage. 1 soil boring: BHBS0005	➢ Cadmium, copper and selenium were detected at maximum concentrations from 2 to over 5 times background range ▪ Cadmium at 2 mg/kg (background 1 mg/kg) in 1 sample in one historical sample (LFR-2) within the drainage downstream of the Southern Debris Area; a confirmation sample (BLBS0056) collected nearby contained cadmium within background range ▪ Copper at 73 mg/kg (background 29 mg/kg) in 1 historical sample (LFR-1) within the drainage adjacent to the Southern Debris Area; a confirmation sample (BLBS29) collected nearby contained copper within background range ▪ Selenium up to 3.4 (background 0.655 mg/kg) in 12 samples None of the detected metals are above ResRBSLs; however, all but mercury and beryllium are above EcoRBSLs since they have EcoRBSLs below background. None of the other metals analyzed at the Southern Debris Area were detected above background ranges. pH range = 5.75 to 9.51 Based on extensive representative and targeted sampling conducted within and downstream of the Southern Debris Area and limited extent of metals above background, no further characterization is warranted. **B100 Sampling (upstream)** No metals were detected above background in soil sample collected at the asphalt drainage north of Building 100.		

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Description of Chemical Use Areas at the B056 Landfill RFI Site and Soil Sampling Results Summary

Map Key[1]	**Chemical Use Area Name** Status, How Used and Physical Characteristics (Site History in Section B.2)	**Potential Chemicals Used / Stored**[2]	**Sampling Scope and Rationale**[2] [See Figure B.2-2 for sampling locations]	**Soil Vapor and Soil Matrix Sampling Results**[3,4]	**Potential concentration gradients sufficiently evaluated for risk assessment?** [5]	**Is delineation sufficient to estimate soil volume in CMS?**[6, 7] [see Figure B.5-1 for CMS areas]
2b	**Roadside Debris Area** In May 2006, three debris piles were discovered near the roadside entrance of the B056 Landfill, adjacent to sandstone bedrock. The Roadside Debris Area was discovered after the vegetation was burned in the Topanga Wildfire in October 2005. The debris piles, which were composed of concrete, asphalt, a small paint can, and some metal debris, was removed in February 2007. The Roadside Debris Area is less than 0.1 acre. Surface water flows to the west, along the gravel road, toward Outfall 007. Surface water from Outfall 007 flows north to the B056 Landfill drainage and into Channel D. Soil at the Roadside Debris Area is 0.5 to 3.8 feet thick. Soils at the Roadside Debris Area Southern Debris Area are primarily sands to silty/clayey sands.	**SVOCs:** Potential SVOCs associated with drum storage or landfill debris. Sealing compounds from pavement debris found during investigations.	Collect samples of soil underlying fill/debris at three representative locations for SVOC analysis. 3 soil borings: BLBS0036, BLBS0037 and BLBS0038	SVOC results are shown on Figure B.3-2B. PAHs were detected at less than 1 µg/kg in the three samples. Phthalates were detected up to 15 µg/kg (bis(2-Ethylhexyl) phthalate). Detected concentrations are below RBSLs. Minor SVOC concentrations detected in three representative locations within the Roadside Debris Area, no further characterization is warranted.	**Yes** SVOC distribution adequately defined by representative and targeted sample locations.	**Yes** Area is not recommended for further evaluation in CMS based on sampling and risk assessment results.
		TPH: Potential TPH associated with drum storage or landfill debris.	Collect three samples as described above for SVOCs.	TPH results are shown on Figure B.3-3B. Lubricant oil range organics were detected in one sample (BLBS0038) AT 9.5 mg/kg. TPH were not detected in the other two samples and the detected concentration is well below RBSLs; no further characterization is warranted.	**Yes** TPH distribution adequately assessed by representative sampling data.	**Yes.** Area is not recommended for further evaluation in CMS based on sampling and risk assessment results.
		PCBs: Potential PCBs associated with drum storage or landfill debris.	Collect three samples as described above for SVOCs. 6 sediments samples: BLBS12, BLBS13 and BLBS14, BLBS15, BLBS16, BLBS17, BLBS18 and BLBS19 3 Soil borings: BLBS0049, BLBS0050 and BLBS0051	PCB results are shown on Figure B.3-4. PCBs were not detected in the roadside debris area, no further characterization is warranted.	**Yes** PCBs were not detected. Representative samples adequately define potential presence of PCBs.	**Yes** Area is not recommended for further evaluation in CMS.
		Metals: Metal debris observed in roadside debris piles during investigation. Paint can with paint contents spilled on exposed soil.	Collect three samples as described above for SVOCs.	Metals results are presented on Figure B.3-5B. Cadmium was detected in BLBS0038 at 1.1 mg/kg (background 1 mg/kg). All other metals were within background ranges in BLBS0038 and the other two samples. No further characterization is warranted.	**Yes** Metals distribution adequately assessed by representative sample locations.	**Yes** Area is not recommended for further evaluation in CMS based on sampling and risk assessment results.
3a	**Building 056 Excavation** The B056 Excavation is approximately 150 feet in diameter with a steep-sided, nearly vertical pit approximately 65 feet deep. The B056 Excavation was dug for the construction of the Building 056 SNAP 8 Flight System Test Facility, which was never built. B056 Excavation started in early 1960s. The excavation remains uncovered. A mixture of groundwater, surface	**VOCs** No documented use of VOCs. Historically groundwater in surrounding wells impacted with VOCs and the source is undetermined.	In 1999, soil matrix samples were collected from the exposed fill within the Building 56 excavation under direction of DTSC. <u>1999 Soil sampling</u> Water and sediment samples were collected from the B056 excavation: • Three representative water sampls • Three representative sediment samples 3 Soil sediment samples: BLBS12, BLBS13, and BLBS14.	VOCs results are presented on Figure B.3-1. VOCs were not detected at the representative or targeted locations. No further characterization needed.	**Yes.** VOCs were not detected. Representative and targeted samples adequately define potential presence of VOCs.	**Yes,** Area is not recommended for further evaluation in CMS based on sampling and risk assessment results.

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Description of Chemical Use Areas at the B056 Landfill RFI Site and Soil Sampling Results Summary

Map Key[1]	**Chemical Use Area Name** Status, How Used and Physical Characteristics (Site History in Section B.2)	**Potential Chemicals Used / Stored[2]**	**Sampling Scope and Rationale[2]** [See Figure B.2-2 for sampling locations]	**Soil Vapor and Soil Matrix Sampling Results[3,4]**	**Potential concentration gradients sufficiently evaluated for risk assessment? [5]**	**Is delineation sufficient to estimate soil volume in CMS?[6, 7]** [see Figure B.5-1 for CMS areas]
	water, and rain water fills the excavation, and the water level fluctuates with the groundwater elevation and amount of precipitation. In 1999, the B056 Excavation was pumped to reduce the level of water and to eliminate recharge into the groundwater. The water (a total of approximately 2.5 million gallons) was pumped from the B056 excavation into an asphalt-lined ditch along G Street. From G street surface water flows via storm water drains into R-2 pond and eventually discharges at Outfall 002. Surface water flows into the B056 Excavation from all directions around the B056 Excavation. Soils thickness around the top of the B056 Excavation varies from approximately 0 to 15 feet bgs. Sediment thickness at the bottom of the B056 Excavation in unknown but is thicker in the west and gradually thins out to the west side of the excavation. Sandstone with interbedded siltstone and shale are exposed within the excavation.					
		SVOCs: No documented use of SVOCs.	1999 Soil sampling: Collect three representative sediment samples in the B056 Excavation for SVOC analysis. 3 sediments samples: BLBS12, BLBS13 and BLBS14	SVOCs results are shown on Figure B.3-2B. SVOCs were not detected at the representative locations within the excavation. No further characterization is warranted.	**Yes** SVOCs were not detected. Representative samples adequately define potential presence of SVOCs.	**Yes** Area is not recommended for further evaluation in CMS based on sampling and risk assessment results.
		TPH: No documented use of TPH.	Three representative sediment samples were collected within the B056 Excavation as described above for SVOCs.	TPH results are shown on Figure B.3-3B. Lubricant oil range organics were detected in one of three representative samples within the B056 Excavation at 26 mg/kg. TPH was not detected in the other two excavation samples. All detected concentrations were well below RBSLs. No further characterization is warranted.	**Yes** TPH distribution adequately assessed by representative sampling data.	**Yes** Area is not recommended for further evaluation in CMS based on sampling and risk assessment results.
		PCBs: No documented use of PCBs.	Six representative sediment/soil samples were collected from within the B056 excavation, 6 sediments samples: BLBS12, BLBS13 and BLBS14, BLBS15, BLBS16, BLBS17, BLBS18 and BLBS19	PCBs results are shown on Figure B.3-4. PCBs were not detected in any of the six samples collected within the B056 excavation.	**Yes** PCBs were not detected. Representative samples adequately define potential presence of PCBs.	**Yes** Area is not recommended for further evaluation in CMS based on sampling and risk assessment results.
		Metals: No documented use of Metals.	Three representative sediment samples were collected within the B056 Excavation as described above for SVOCs.	Metals results are presented on Figure B.3-5B. Zinc was detected above background in one sample (BLBS13) within the B056 Excavation at 130 mg/kg (background 110 mg/kg) No other samples contained metals above background range. No additional characterization is warranted.	**Yes** Metals distribution adequately assessed by representative sample locations.	**Yes** Area is not recommended for further evaluation in CMS based on sampling and risk assessment results.
		Perchlorate: No documented use of perchlorate.	B056 excavation was never historically sampled for perchlorate. Surface water from bottom of excavation was collected to assess if perchlorate is present in sediment.	Perchlorate sampling locations are shown on Figure B.3-5B. Perchlorate was not detected in the surface water sample in the B056 excavation, no further characterization is warranted.	**Yes** Perchlorate was not detected. Representative samples adequately define potential presence of Perchlorate.	**Yes** Area is not recommended for further evaluation in CMS based on sampling and risk assessment results.
3b	**Building 056 Excavation Debris Area** During 2007 sampling activities, an empty 30 gallon drum was located in the eastern ramp into the B056 Excavation.	**SVOCs:** Potential SVOCs associated with drum or debris.	During 2007 sampling activities, an empty 30 gallon drum was located in the road cut into the B056 excavation. 2007 Soil sampling: Collect three soil samples	SVOCs results are shown on Figure B.3-2B. Phthalates were detected in two of three samples near the former drum outside the excavation, up to 72.4 µg/kg (bis(2-Ethylhexyl) phthalate). Detected phthalate	**Yes** SVOC distribution adequately defined by targeted and step out	**Yes** Area is recommended for further evaluation in CMS based on PCBs.

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Description of Chemical Use Areas at the B056 Landfill RFI Site and Soil Sampling Results Summary

Map Key[1]	**Chemical Use Area Name** Status, How Used and Physical Characteristics (Site History in Section B.2)	**Potential Chemicals Used / Stored**[2]	**Sampling Scope and Rationale**[2] [See Figure B.2-2 for sampling locations]	**Soil Vapor and Soil Matrix Sampling Results**[3,4]	**Potential concentration gradients sufficiently evaluated for risk assessment?** [5]	**Is delineation sufficient to estimate soil volume in CMS?**[6, 7] [see Figure B.5-1 for CMS areas]
	Debris including concrete, asphalt, scrap metal, spray paint cans was also identified. The debris area is in a topographic low. Surface water flows to the west and into the B056 excavation. Soils were generally thin and ranged from 0.5 foot to 1.5 feet bgs.		targeting the former drum, up-gradient and down-slope locations. 3 Soil borings: BLBS0049, BLBS0050 and BLBS0051	concentrations were well below RBSLs. No other SVOCs were detected at these targeted locations. No further characterization is warranted.	sample locations.	SVOCs are not a driver for CMS.
		TPH: Potential TPH associated with drum or debris.	In 2007, three targeted soil samples were collected at the empty former drum as described above for SVOCs.	TPH results are shown on Figure B.3-3B. Diesel (up to 16.5 mg/kg) and lubricant oil range hydrocarbons organics (up to 107 mg/kg) were detected at two the three targeted samples at the former drum. The highest results were beneath for former drum location and step out locations contained less than 12 mg/kg TPH. All detected concentrations were well below RBSLs. Targeted samples contained low concentrations of TPH and were delineated by step out samples. No further characterization is warranted.	**Yes** TPH distribution adequately assessed by representative, targeted and step-out sampling data.	**Yes** Area is recommended for further evaluation in CMS based on PCBs. TPH are not a driver for CMS.
		PCBs: Potential PCBs associated with drum or debris.	In 2007, three targeted soil samples were collected at the empty former drum as described above for SVOCs.	PCBs results are shown on Figure B.3-4. PCBs were detected at two locations within the B056 Excavation near the former drum, one up slope and one down gradient:. • The up-slope sample (BLBS0051) contained Aroclor 1248, Aroclor 1254, and Aroclor 1260 up to 111 µg/kg (Aroclor 1248) • The down gradient sample (BLSBS0050) contained Aroclor 1248 up to 246 mg/kg and Aroclor 1254 up to 134 µg/kg. The sample closest to the former drum did not contain detectable PCBs. Detected concentrations are above the EcoRBSL but below the ResRBSL in BLBS0050, down drainage from the empty drum. Targeted samples near the former drum adequately define PCB impacts in the area; PCBs were not detected in down gradient samples within the excavation. No further characterization is warranted.	**Yes** PCB distribution adequately assessed by representative, targeted and step-out sampling data.	**Yes** Area is recommended for further evaluation in CMS based on PCBs.
		Metals: Potential Metals associated with drum or debris.	In 2007, three targeted soil samples were collected at the empty former drum as described above for SVOCs.	Metals results are presented on Figure B.3-5B. Zinc was detected above background in one sample BLBS0049 targeting the former drum at 116 mg/kg No other step-out samples contained metals above background from the former drum location. No additional characterization is warranted.	**Yes** Metals distribution adequately assessed by representative, targeted and step-out sampling data.	**Yes** Area is recommended for further evaluation in CMS based on PCBs. Metals are not a driver for CMS.

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Description of Chemical Use Areas at the B056 Landfill RFI Site and Soil Sampling Results Summary

Sources:
AI 1962; ETEC, 1987; Boeing 2007e; DTSC 2002; ICF 1993; Sapere 2005; SAIC 1994; GRC 1999.

Notes:
1. Map Key refers to numbered chemical use area as shown on Figures B.3-1A through B.3-5B.
2. Where historical records and physical characteristics do not suggest the presence of a chemical group, that chemical group was not analyzed in samples from the respective chemical use area and is not reflected in this table.
3. Complete sample analytical results are presented in Attachment B-3.
4. The use of the SRAM-based screening levels for comparison purposes does not serve as a risk assessment. These screening levels are not used to determine the significance of detected chemical concentrations or if a chemical use area will be recommended for further consideration in the CMS, but only as a tool to evaluate the characterization data. The SRAM-based screening levels represent conservative concentrations that pose a low level of risk.
5. Concentration gradients must be defined such that the risk assessment reflects the approximate maximum analyte concentration OR a concentration sufficiently high to result in risk requiring a recommendation for evaluation during CMS or other closure actions.
6. Chemicals listed as a basis for CMS recommendations include both chemical drivers (above 1 x 10-6 risk and HI of 1.0) and significant chemical contributors to overall risk.
7. Potential volumes for CMS evaluation must be estimable within a factor of ten for comparison of remedial alternatives.

ABREVIATIONS
ACM = Asbestos contained material
B100 = Building 100
B056 Landfill = Building 56 Landfill
bgs = below ground surface
CMS = Corrective Measures Study
DTSC = Department of Toxic Substances Control
DL = Detection limits
EcoRBSL = Ecological Risk Based Screening Level
FSDF = Former Sodium Disposal Facility
mg/kg = milligrams per kilogram
ng/kg = nanograms per kilogram
NRC = Nuclear Regulatory Commission
PAH = Polynuclear Aromatic Hydrocarbon
PCB = Polychlorinated Biphenyls
ResRBSL = Residential Risk Based Screening Level
RFI = Resource Conservation and Recovery Act (RCRA) Facility Investigation
SCTI = Sodium Component Test Installation
SNAP = System for Nuclear Auxiliary Power
SVOC = Semivolatile Organic Compounds
SMWU = Solid Waste Management Unit
TEQ = Total Equivalency Quotient (normalized to 2,3,7,8 TCDD)
TPH = Total Petroleum Hydrocarbons
µg/kg = micrograms per kilogram
VOC = Volatile Organic Compound

TABLE B3-2B
B056 LANDFILL RFI SITE SUMMARY AND EVALUATION OF GROUNDWATER SAMPLING RESULTS
(PAGE 1 OF 5)

Analytical Group	Site Soil Impacts? (Summary of Relevant Impacts)[1]	Monitored in Groundwater? (Number of Samples/Date Range)[2]	Constituents Detected in Groundwater? (Above GWCC or Regulatory Criteria?)[3]	RFI Site Related?	Groundwater Characterized Sufficiently for Risk Assessment?
VOCs	Concentrations of trichlorofluoromethane (up to 900 µg/kg) were detected in one soil sample in the drainage west of the Southern Debris Area. Trichlorofluoromethane was not detected in a subsequent sample from this location. Acetone and methylene chloride were also detected up to 5,000 and 23 µg/kg, respectively, in early RFI samples. Both methylene chloride and acetone detections in 1997 are considered a likely result of mobile laboratory contamination. Methane was detected at several locations within the Southern Debris Area at concentrations up to 27 µg/L. No other VOCs were detected in any B056 Landfill RFI site soil matrix or soil vapor samples.	YES Since 1985, a total of 65 samples have been collected from perched well RS-16 and Chatsworth formation wells RD-07 and RD-74 and analyzed for VOCs.	YES Thirteen VOCs have been detected in groundwater, and the following three have been detected at concentrations above screening levels: • TCE was detected in RD-07 above the regulatory criteria at a maximum concentration of 130 µg/L. Concentrations of TCE have gradually decreased to non-detect over time. No TCE has been detected in NSGW well RS-16 or CFGW well RD-74. • Since August 2003, cis-1,2-DCE has been detected in RD-07 above the regulatory criteria. Concentrations have increased over time, up to a maximum concentration of 73 µg/L. • 1,2-DCA was detected once in RD-07, in 1995, at a concentration of 0.69 µg/L, slightly above the regulatory criteria. Methylene Chloride and trichlorofluoromethane were detected only sporadically and well below the screening values. Benzene was detected u p to 0.67 µg/L and toluene was detected up to 26 µg/L.	NO VOCs were not frequently detected in soil or soil vapor. Groundwater VOCs are considered related to historical, incidental, small spills in the area. Current soil sample data at B056 Landfill RFI Site do not indicate a significant release; however, historical releases may have occurred within the sampling area from which no mass remains in surficial media.	NSGW-YES CFGW-YES
SVOCs	SVOCs were detected at several locations within the B056 Landfill RFI Site, with concentrations generally decreasing down-drainage. • 15 PAHs were detected at the B056 Landfill, up to 2000 µg/kg (Fluoranthene). • 2 phthalates were detected up to 475 µg/kg (bis(2-Ethylhexyl) phthalate).	YES One sample was collected from perched well RS-16 in 1992, and one sample was collected from Chatsworth formation well RD-74 in 1999 for SVOC analysis.	NO No SVOCs were detected in near surface or Chatsworth formation groundwater from the B056 Landfill.	NO SVOCs were not detected in groundwater. Detected SVOC concentrations in soil were generally low.	NSGW-YES CFGW-YES

TABLE B3-2B
B056 LANDFILL RFI SITE SUMMARY AND EVALUATION OF GROUNDWATER SAMPLING RESULTS
(PAGE 2 OF 5)

Analytical Group	Site Soil Impacts? (Summary of Relevant Impacts)[1]	Monitored in Groundwater? (Number of Samples/Date Range)[2]	Constituents Detected in Groundwater? (Above GWCC or Regulatory Criteria?)[3]	RFI Site Related?	Groundwater Characterized Sufficiently for Risk Assessment?
TPH	TPH was detected in 21 samples from the B056 Landfill RFI Site: • The maximum concentration of diesel range organics (C21-C30), 23,000 mg/kg (BLTS09), was in a sample from the top of the landfill. • Historical sample LFR-3, collected at the toe of the B056 Landfill in March 1997, contained elevated lubricant oil range hydrocarbons (up to 1100 mg/kg).	NO TPH not monitored; however, samples have been tested for related chemicals (VOCs and SVOCs, see above).	TPH not analyzed. However, as noted above: • TPH-related VOCs benzene and toluene were detected in RD-07. • TPH-related SVOCs have not been detected in groundwater.	UNLIKELY Only diesel and lubricant oil range hydrocarbons detected in soil, and associated SVOCs (PAHs) were not detected in groundwater. While fuel related VOCs were detected in groundwater, gasoline-range hydrocarbons were not detected in soil. Therefore, significant TPH impacts to groundwater are considered unlikely.	NSGW and CFGW-YES However, additional groundwater sampling will be conducted at B056 Landfill to confirm the absence of TPH impacts.
PCBs	PCBs were detected in 9 soil samples from within the B056 Landfill RFI: Aroclor 1248, 1254, and 1260 were detected at the B056 Landfill RFI site. • Aroclor 1254 was detected at a maximum concentration of 1,000 mg/kg at the toe of the B056 Landfill.	NO Based on low mobility of PCBs within the subsurface and infrequent detections in soil, the potential for migration to groundwater has been considered low and PCB groundwater analysis has not been conducted. However, PCBs were analyzed in groundwater from other SSFL RFI sites, targeting soil containing high PCB concentrations in recharge areas (see MWH, 2006b), and PCBs not been detected in groundwater.	PCBs not analyzed in groundwater	UNLIKELY Transport of large organic molecules unlikely because of strong association with soil particles. PCBs not detected in groundwater from other high PCB soil detection areas.	NSGW-YES CFGW-YES Potential for presence of PCBs in groundwater is low. However, additional groundwater sampling will be conducted at B056 Landfill to confirm the absence of PCB impacts.
Dioxins	Dioxins were only analyzed in the area north of Building 100 to evaluate potential sources of surface water impacts detected at Outfall 007. TEQs for dioxins exceeded background in 3 soil samples north of Building 100. The maximum TEQ, up to 16.95 ng/kg, was detected in the step-out duplicate soil sample, BHBS0007. Dioxins were not analyzed in any other parts of the B056 Landfill RFI Site.	NO	Dioxins not analyzed in groundwater	UNLIKELY Dioxin source materials (e.g., burned wood) not observed in fill materials. Transport of large organic molecules unlikely because of strong association with soil particles.	NSGW-YES CFGW-YES Potential for presence of dioxins in groundwater is low.

TABLE B3-2B
B056 LANDFILL RFI SITE SUMMARY AND EVALUATION OF GROUNDWATER SAMPLING RESULTS
(PAGE 3 OF 5)

Analytical Group	Site Soil Impacts? (Summary of Relevant Impacts)[1]	Monitored in Groundwater? (Number of Samples/Date Range)[2]	Constituents Detected in Groundwater? (Above GWCC or Regulatory Criteria?)[3]	RFI Site Related?	Groundwater Characterized Sufficiently for Risk Assessment?
Metals	A total of 13 metals were detected in soils above background at the B056 Landfill RFI Site. <u>Metal concentrations less than 2 times background</u> • Aluminum up to 25,000 mg/kg (background 20,000 mg/kg) in one sample. • Barium up to 150 mg/kg (background 140 mg/kg) in one sample. • Beryllium up to 1.9 mg/kg (background 1.1 mg/kg) in one sample. • Boron up to 13.4 mg/kg (background 9.7 mg/kg) in 3 samples. • Cadmium up to 1.3 mg/kg (background 1.0 mg/kg) in 3 samples. • Chromium up to 42 mg/kg (background 36.8 mg/kg) in one sample. • Molybdenum up to 7.5 mg/kg (background 5.3 mg/kg) in one sample. • Zinc up to 140 mg/kg (background 110 mg/kg) in three samples. <u>Maximum metal concentrations more than two times background</u> • Copper up to 130 mg/kg (background 29 mg/kg) in four samples. • Lead up to 94 mg/kg (background 34 mg/kg) in two samples • Mercury up to 1.7 mg/kg (background 0.09 mg/kg) in six samples. • Selenium up to 5.3 mg/kg (background 0.655 mg/kg) at 28 sample locations throughout the B056 Landfill RFI Site. • Sodium up to 390 mg/kg (background 100 mg/kg) in six samples. In addition, hexavalent chromium was detected in soil at 0.3 mg/kg at one sample.	YES (except aluminum and tin). From 1986 to 2007, seven samples were collected from Chatsworth formation wells RD-07 (four samples) and RD-74 (two samples and one duplicate) and analyzed for metals. No samples were tested for aluminum or tin.	YES • Dissolved copper was detected above the GWCC at RD-07 with a maximum detection of 12 µg/L (GWCC 4.7 µg/L); however, copper in soil above background is limited (four samples). • Dissolved selenium was detected above the GWCC at RD-07 with a concentration up to 4 µg/L (GWCC 1.6 µg/L) and selenium in soil is present at up to 8 times background (28 locations) Other metals were reported with detection limits above the GWCC; however, these were followed (in at least one well) by detection limits or concentrations below the GWCCs. A detailed evaluation of metals in groundwater is contained in Table E23.	POSSIBLY Based on copper and selenium concentrations in soil, these metals in groundwater may be site-related.	NSGW-YES Perched NSGW very infrequently present at the site CFGW-YES However, additional groundwater sampling will be conducted at B056 Landfill to achieve adequate detection limits for RD-74 and provide additional confirmation data for RD-07.
Inorganic Compounds	Fluoride was detected at up to 5.5 mg/kg in soil, at 13 locations throughout the B056 Landfill RFI Site. All concentrations were below the background level of 6.7 mg/kg.	YES From 1986 to 1999, three samples were collected from RD-07 (2 samples) and RD-74 (1 sample) and analyzed for inorganic compounds.	YES • Fluoride was detected below the MCL in RD-07 and RD-74 with a max concentration of 44.7 mg/L • Dissolved silica was detected in RD-07 with a maximum concentration of 23 mg/L (no MCL established) • Nitrate-NO3 was detected in RD-07 and RD-74 with a max concentration of 44.7 mg/L (MCL of 45 mg/L)	NO Fluoride was detected below background in soil and below GWCC in groundwater.	NSGW-YES CFGW-YES

TABLE B3-2B
B056 LANDFILL RFI SITE SUMMARY AND EVALUATION OF GROUNDWATER SAMPLING RESULTS
(PAGE 4 OF 5)

Analytical Group	Site Soil Impacts? (Summary of Relevant Impacts)[1]	Monitored in Groundwater? (Number of Samples/Date Range)[2]	Constituents Detected in Groundwater? (Above GWCC or Regulatory Criteria?)[3]	RFI Site Related?	Groundwater Characterized Sufficiently for Risk Assessment?

Perchlorate	NO
	
	52 samples were collected and analyzed for perchlorate. No perchlorate was detected in soil at the B056 Landfill RFI Site.
		YES
		
		From 1999 to 2005, seven groundwater sampling events were conducted for perchlorate at B056 Landfill RFI Site:
		
		• 1 sample was collected from perched well RS-16
		• Chatsworth formation well RD-07 was sampled 5 times
		  ▪ 3 single samples
		  ▪ 2 multilevel monitoring events with 11 discrete interval samples each
		• 1 sample was from Chatsworth formation well RD-74
			YES
			
			Perchlorate was detected in two discrete interval samples during one RD-07 sampling event in February 2003, up to 11 micrograms per liter (µg/L). Perchlorate was not detected in the 3 previous single samples from RD-07, or the subsequent (2004) discrete interval samples. Perchlorate was not detected at RS-16 or RD-74.
				NO
				
				Perchlorate was not detected in over 52 soil samples at the B056 Landfill RFI Site.
				
				The groundwater perchlorate detections in the discrete interval monitoring event were not replicated in any other RD-07, RS-16, or RD-74 samples.
				
				The source of the unrepeatable 2003 perchlorate detections is unknown because all other groundwater and soil data at the B056 Landfill site is non detect.
					NSGW-YES
					
					CFGW-YES

NDMA and formaldehyde (indicators of hydrazine)	NDMA and formaldehyde were not detected in any soil samples from the B056 Landfill RFI Site.	YES Samples were collected and analyzed for NDMA in 1992 (one sample from perched well RS-16) and 1999 (one sample form Chatsworth formation well RD-74).	NO NDMA was not detected in groundwater, but detection limits were above the screening values.	NO NDMA was not detected in soil or groundwater.	NSGW-YES CFGW-YES
1,4-Dioxane	Soil from the B056 Landfill RFI Site has not been tested for 1,4-dioxane since 1,1,1-TCA (1,1,1-trichloroethane) has not been detected in soil.	YES From 1996 to 2001, samples were collected for 1,4-dioxane analysis from perched well RS-16 (one sample) and Chatsworth formation wells RD-07 (eight samples and three duplicates) and RD-74 (two samples and one split).	NO 1,4-dioxane was not detected in groundwater, but the detection limits were above the screening values.	NO 1,4-Dioxane was not detected in groundwater. Not analyzed in soil.	NSGW-YES CFGW-YES

Notes:
[1] See Table B.3-2A for a complete summary of soil impacts.
[2] All B056 Landfill RFI Site groundwater monitoring locations are shown on Figure E-4 in Appendix E.
[3] See Tables E-8 through E-27 for Groundwater Results.
4. All B056 Landfill RFI Site groundwater monitoring locations are shown on Figure E-4 in Appendix E.
5. Groundwater comparison concentrations (GWCCs) were developed through a conservative process and approved by DTSC to be equal to or below naturally occurring background levels.

TABLE B3-2B
B056 LANDFILL RFI SITE SUMMARY AND EVALUATION OF GROUNDWATER SAMPLING RESULTS
(PAGE 5 OF 5)

Acronyms
B056 Landfill = Building 056 Landill
AOC = Area of Concern
CFGW = Chatsworth Formation Groundwater
CMS = Corrective Measures Study
1,2-DCE = 1,2-Dichloroethene
NFA = No further action
GWCC = Groundwater Comparison Concentrations
PAH = Polynuclear aromatic hydrocarbons
MCL = Maximum Contaminant Level
PCB = polychlorinated biphenyls
NDMA = N-nitrosodimethylamine
TPH = Total Petroleum Hydrocarbons
NSGW = Near Surface Groundwater
SVOC = Semivolatile organic compound
PCB = Polychlorinated Biphenyls
PCE = tetrachloroethene
TCE = trichloroethene
TEQ = Toxicity Equivalency Quotient
VOC = Volatile Organic Compound
RFI = RCRA Facility Investigation
1,1,1-TCA = 1,1,1-trichloroethane

TABLE B.3-2C
B056 LANDFILL RFI SITE SURFACE WATER DATA SUMMARY
(Page 1 of 2)

RFI Surface Water Samples [a]

Sample ID	SAMPLE DATE	ANALYTE	CONCENTRATION	UNITS	Validation Qualifier
B/56 PIT	02/22/1999	Calcium	25	mg/L	--
B/56 PIT	02/22/1999	Iron	0.13	mg/L	--
B/56 PIT	02/22/1999	Magnesium	6.9	mg/L	--
B/56 PIT	02/22/1999	Potassium	2	mg/L	--
B/56 PIT	02/22/1999	Sodium	39	mg/L	--
B/56 PIT	04/29/1999	Barium	0.03	mg/L	--
B/56 PIT	04/29/1999	Calcium	28	mg/L	--
B/56 PIT	04/29/1999	Iron	0.33	mg/L	--
B/56 PIT	04/29/1999	Magnesium	6.9	mg/L	--
B/56 PIT	04/29/1999	Manganese	0.58	mg/L	--
B/56 PIT	04/29/1999	Potassium	2.2	mg/L	--
B/56 PIT	04/29/1999	Sodium	39	mg/L	--
B/56 PIT	02/22/1999	Total Dissolved Solids	200	mg/L	--
B/56 PIT	02/22/1999	Bicarbonate (as CaCO3)	150	mg/L	--
B/56 PIT	02/22/1999	Chloride	17	mg/L	--
B/56 PIT	02/22/1999	Fluoride	0.6	mg/L	--
B/56 PIT	02/22/1999	Sulfate	13	mg/L	--
B/56 PIT	04/29/1999	Total Dissolved Solids	210	mg/L	--
B/56 PIT	04/29/1999	Bicarbonate (as CaCO3)	160	mg/L	--
B/56 PIT	04/29/1999	Chloride	17	mg/L	--
B/56 PIT	04/29/1999	Fluoride	0.5	mg/L	--
B/56 PIT	04/29/1999	Sulfate	12	mg/L	--

Summary of NPDES Permit Limit Exceedance Sample Data [b]

OUTFALL	LOCATIONS	SAMPLE DATE	ANALYTE	RESULT	UNITS	Permit Limit - Daily Max/Monthly Average	Validation Qualifier
Outfall 007	Building 100	2/9/99	Antimony	8	µg/L	6/-	--
Outfall 007	Building 100	3/25/99	Antimony	11	µg/L	6/-	--
Outfall 007	Building 100	3/25/99	Cadmium	4	µg/L	3.7/-	--
Outfall 007	Building 100	3/31/99	Cadmium	4	µg/L	1/-	--
Outfall 007	Building 100	2/00	Copper	13	µg/L	11/-	--
Outfall 007	Building 100	2/00	Mercury	0.055	µg/L	0.012/-	--
Outfall 007	Building 100	10/18/05	Copper	19	µg/L	14.0/-	--
Outfall 007	Building 100	4/5/06	Copper	25	µg/L	14.0/-	--
Outfall 007	Building 100	4/5/06	Lead	18	µg/L	5.2/-	--
Outfall 007	Building 100	4/5/06	TCDD TEQ_NoDNQ	7.69E-07	µg/L	2.80E-08/-	--
Outfall 007	Building 100	2/18/05	TCDD TEQ_NoDNQ	6.98E-07	µg/L	2.80E-08/-	--
Outfall 007	Building 100	10/18/05	TCDD TEQ_NoDNQ	3.17E-07	µg/L	2.80E-08/-	--
Outfall 007	Building 100	1/1/06	TCDD TEQ_NoDNQ	3.25E-07	µg/L	2.80E-08/-	--
Outfall 007	Building 100	01-Jan-06	TCDD TEQ_NoDNQ	3.25E-07	µg/L	2.80E-08/-	--
Outfall 007	Building 100	05-Apr-06	Copper	25	µg/L	14.0/-	--
Outfall 007	Building 100	05-Apr-06	Lead	18	µg/L	5.2/-	--
Outfall 007	Building 100	05-Apr-06	TCDD TEQ_NoDNQ	7.69E-07	µg/L	2.80E-08/-	--

TABLE B.3-2C
B056 LANDFILL RFI SITE SURFACE WATER DATA SUMMARY
(Page 2 of 2)

Notes:
(a) Only detected analytes are shown for RFI surface water samples collected at the B056 Excavation.
(b) Results provided for constituents that have exceeded NPDES permit limits for outfall shown from 1998 to the present.

mg/L = milligrams per liter
µg/L = micrograms per liter
CaCO3 = calcium carbonate
TCDD TEQ_NoDNQ = Dioxins and Furans detected but not quantified

TABLE B.3-3A
B056 LANDFILL RFI SITE ANALYTICAL DATA SCREENING SUMMARY AND DATA QUALITY (SOIL)
(Page 1 of 7)

			Screening Levels (1)				Detect Data Summary						Non-Detect Data Summary							
Analyte Group	Constituent	Units	Residential (ResRBSL)	Ecological (EcoRBSL)	Background (2)	Total Number Samples Analyzed	Total Samples w/ Detections	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detected Concentrations > Res RBSL	Number of Detected Concentrations > Eco RBSL	Number of Detected Concentrations > Background	Total Samples ND	Minimum Detection Limit	Maximum Detection Limit	Number DLs > ResRBSL	NumberDL > EcoRBSL	Number DL > Background	Data Issue (5)	Issue Resolution (6)
Dioxin/Furan (ng/kg)																				
	1,2,3,4,6,7,8-Heptachlorodibenzofuran	ng/kg	690	1100	2.5	6	4	1.11	6.12	0	0	2	2	4.03	4.11	0	0	2	--	--
	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	ng/kg	690	820	13	6	5	5.84	1010	1	1	3	1	4.03	4.03	0	0	0	--	--
	1,2,3,4,7,8,9-Heptachlorodibenzofuran	ng/kg	690	280	0.19	6	2	0.475	0.488	0	0	2	4	0.175	0.229	0	0	2	--	--
	1,2,3,4,7,8-Hexachlorodibenzofuran	ng/kg	69	28	0.73	6	2	0.375	0.402	0	0	0	4	0.0963	0.114	0	0	0	--	--
	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	ng/kg	69	28	0.34	6	2	0.634	3.23	0	0	2	4	0.139	0.24	0	0	0	--	--
	1,2,3,6,7,8-Hexachlorodibenzofuran	ng/kg	69	28	0.3	6	3	0.134	0.375	0	0	1	3	0.0938	0.104	0	0	0	--	--
	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	ng/kg	69	130	0.95	6	5	0.499	19.3	0	0	3	1	5.2	5.2	0	0	1	--	--
	1,2,3,7,8,9-Hexachlorodibenzofuran	ng/kg	69	28	0.43	6	1	0.571	0.571	0	0	1	5	0.14	0.315	0	0	0	--	--
	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	ng/kg	69	28	1.1	6	5	0.594	11.9	0	0	3	1	0.16	0.16	0	0	0	--	--
	1,2,3,7,8-Pentachlorodibenzofuran	ng/kg	230	92	0.59	6	1	0.19	0.19	0	0	0	5	0.0857	4.22	0	0	3	--	--
	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	ng/kg	6.9	2.8	0.18	6	3	0.194	1.48	0	0	3	3	0.118	0.17	0	0	0	--	--
	2,3,4,6,7,8-Hexachlorodibenzofuran	ng/kg	69	28	0.45	6	2	0.424	0.463	0	0	1	4	0.1	0.118	0	0	0	--	--
	2,3,4,7,8-Pentachlorodibenzofuran	ng/kg	23	9.2	0.64	6	0						6	0.11	4.57	0	0	5	--	--
	2,3,7,8-TCDD	ng/kg	6.9	2.8	0.5	6	0						6	0.148	0.41	0	0	0	--	--
	2,3,7,8-Tetrachlorodibenzofuran	ng/kg	69	4.4	1.8	6	1	0.384	0.384	0	0	0	5	0.28	0.844	0	0	0	--	--
	Heptachlorodibenzofurans	ng/kg	NA (4)	NA (4)	NA (3)	6	6	1.27	24.9	NA (4)	NA (4)	NA (3)	0						--	--
	Heptachlorodibenzo-p-dioxins	ng/kg	NA (4)	NA (4)	NA (3)	6	6	4.25	1660	NA (4)	NA (4)	NA (3)	0						--	--
	Hexachlorodibenzofurans	ng/kg	NA (4)	NA (4)	NA (3)	6	6	0.889	10.1	NA (4)	NA (4)	NA (3)	0						--	--
	Hexachlorodibenzo-p-dioxins	ng/kg	NA (4)	NA (4)	NA (3)	6	6	1.71	164	NA (4)	NA (4)	NA (3)	0						--	--
	Octachlorodibenzofuran	ng/kg	23000	27000	8.1	6	3	2.2	14.1	0	0	2	3	8.06	8.23	0	0	2	--	--
	Octachlorodibenzo-p-dioxin	ng/kg	23000	37000	140	6	6	19.8	5810	0	0	4	0						--	--
	Pentachlorodibenzofurans	ng/kg	NA (4)	NA (4)	NA (3)	6	6	0.888	5.58	NA (4)	NA (4)	NA (3)	0						--	--
	Pentachlorodibenzo-p-dioxins	ng/kg	NA (4)	NA (4)	NA (3)	6	4	0.379	12	NA (4)	NA (4)	NA (3)	2	0.138	0.17	NA (4)	NA (4)	NA (3)	--	--
	TCDD TEQ (ND=0) 2005 WHO	ng/kg	6.9	2.8	0.87	6	6	0.12864	16.95213	1	3	3	0						--	--
	Tetrachlorodibenzofurans	ng/kg	NA (4)	NA (4)	NA (3)	6	6	1.03	4.6	NA (4)	NA (4)	NA (3)	0						--	--
	Tetrachlorodibenzo-p-dioxins	ng/kg	NA (4)	NA (4)	NA (3)	6	1	1.4	1.4	NA (4)	NA (4)	NA (3)	5	0.148	0.41	NA (4)	NA (4)	NA (3)	--	--
Energetics (mg/kg)																				
	1,3-Dinitrobenzene	mg/kg	NA (4)	NA (4)	NA (3)	2	0						2	0.24	0.24	NA (4)	NA (4)	NA (3)	--	--
	2,4,6-Trinitrotoluene	mg/kg	NA (4)	NA (4)	NA (3)	2	0						2	0.24	0.24	NA (4)	NA (4)	NA (3)	--	--
	2,4-diamino-6-nitrotoluene	mg/kg	NA (4)	NA (4)	NA (3)	2	0						2	0.96	0.97	NA (4)	NA (4)	NA (3)	--	--
	2,4-Dinitrotoluene	mg/kg	NA (4)	NA (4)	NA (3)	2	0						2	0.24	0.24	NA (4)	NA (4)	NA (3)	--	--
	2,6-diamino-4-nitrotoluene	mg/kg	NA (4)	NA (4)	NA (3)	2	0						2	0.96	0.97	NA (4)	NA (4)	NA (3)	--	--
	2,6-Dinitrotoluene	mg/kg	NA (4)	NA (4)	NA (3)	2	0						2	0.24	0.24	NA (4)	NA (4)	NA (3)	--	--
	2-Amino-4,6-Dinitrotoluene	mg/kg	NA (4)	NA (4)	NA (3)	2	0						2	0.24	0.24	NA (4)	NA (4)	NA (3)	--	--
	2-Nitrotoluene	mg/kg	NA (4)	NA (4)	NA (3)	2	0						2	0.24	0.24	NA (4)	NA (4)	NA (3)	--	--
	3-Nitrotoluene	mg/kg	NA (4)	NA (4)	NA (3)	2	0						2	0.24	0.24	NA (4)	NA (4)	NA (3)	--	--
	4-Amino-2,6-Dinitrotoluene	mg/kg	NA (4)	NA (4)	NA (3)	2	0						2	0.24	0.24	NA (4)	NA (4)	NA (3)	--	--
	4-Nitrotoluene	mg/kg	NA (4)	NA (4)	NA (3)	2	0						2	0.38	0.39	NA (4)	NA (4)	NA (3)	--	--
	HMX	mg/kg	3100	69	NA (3)	2	0						2	0.24	0.24	0	0	NA (3)	--	--
	Nitrobenzene	mg/kg	29	2.1	NA (3)	2	0						2	0.24	0.24	0	0	NA (3)	--	--
	Nitroglycerin	mg/kg	NA (4)	NA (4)	NA (3)	2	0						2	4.8	4.8	NA (4)	NA (4)	NA (3)	--	--
	PETN	mg/kg	NA (4)	NA (4)	NA (3)	2	0						2	3.9	3.9	NA (4)	NA (4)	NA (3)	--	--
	RDX	mg/kg	6.9	46	NA (3)	2	0						2	0.24	0.24	0	0	NA (3)	--	--
	sym-Trinitrobenzene	mg/kg	NA (4)	NA (4)	NA (3)	2	0						2	0.24	0.24	NA (4)	NA (4)	NA (3)	--	--
	Tetryl	mg/kg	NA (4)	NA (4)	NA (3)	2	0						2	0.48	0.48	NA (4)	NA (4)	NA (3)	--	--
Inorganics																				
	Asbestos					11	2						9						--	--
	Fluoride	mg/kg	4600	NA (4)	6.7	17	17	0.907	5.5	0	NA (4)	0	0						--	--
	pH	pH Units	NA (4)	NA (4)	NA (3)	92	92	5.75	9.51	NA (4)	NA (4)	NA (3)	0						--	--
METALS (Leachate) (mg/L)																				
	Aluminum	mg/L	NA (4)	NA (4)	NA (3)	2	2	9.32	20.9	NA (4)	NA (4)	NA (3)	0						--	--
	Antimony	mg/L	NA (4)	NA (4)	NA (3)	3	0						3	0.005	0.0086	NA (4)	NA (4)	NA (3)	--	--
	Arsenic	mg/L	NA (4)	NA (4)	NA (3)	3	2	0.0034	0.0041	NA (4)	NA (4)	NA (3)	1	0.005	0.005	NA (4)	NA (4)	NA (3)	--	--
	Barium	mg/L	NA (4)	NA (4)	NA (3)	3	3	0.07	0.516	NA (4)	NA (4)	NA (3)	0						--	--
	Beryllium	mg/L	NA (4)	NA (4)	NA (3)	3	0						3	0.0007	0.005	NA (4)	NA (4)	NA (3)	--	--
	Cadmium	mg/L	NA (4)	NA (4)	NA (3)	7	0						7	0.0003	0.005	NA (4)	NA (4)	NA (3)	--	--
	Chromium	mg/L	NA (4)	NA (4)	NA (3)	7	1	0.024	0.024	NA (4)	NA (4)	NA (3)	6	0.01	0.05	NA (4)	NA (4)	NA (3)	--	--
	Cobalt	mg/L	NA (4)	NA (4)	NA (3)	3	2	0.0082	0.0082	NA (4)	NA (4)	NA (3)	1	0.01	0.01	NA (4)	NA (4)	NA (3)	--	--
	Copper	mg/L	NA (4)	NA (4)	NA (3)	7	6	0.0085	0.4	NA (4)	NA (4)	NA (3)	1	0.01	0.01	NA (4)	NA (4)	NA (3)	--	--
	Lead	mg/L	NA (4)	NA (4)	NA (3)	7	5	0.0086	0.3	NA (4)	NA (4)	NA (3)	2	0.05	0.1	NA (4)	NA (4)	NA (3)	--	--

TABLE B.3-3A
B056 LANDFILL RFI SITE ANALYTICAL DATA SCREENING SUMMARY AND DATA QUALITY (SOIL)
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			Screening Levels (1)				Detect Data Summary						Non-Detect Data Summary							
Analyte Group	Constituent	Units	Residential (ResRBSL)	Ecological (EcoRBSL)	Background (2)	Total Number Samples Analyzed	Total Samples w/ Detections	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detected Concentrations > Res RBSL	Number of Detected Concentrations > Eco RBSL	Number of Detected Concentrations > Background	Total Samples ND	Minimum Detection Limit	Maximum Detection Limit	Number DLs > ResRBSL	NumberDL > EcoRBSL	Number DL > Background	Data Issue (5)	Issue Resolution (6)
	Mercury	mg/L	NA (4)	NA (4)	NA (3)	7	0						7	0.0002	0.001	NA (4)	NA (4)	NA (3)	--	--
	Molybdenum	mg/L	NA (4)	NA (4)	NA (3)	3	0						3	0.0039	0.02	NA (4)	NA (4)	NA (3)	--	--
	Nickel	mg/L	NA (4)	NA (4)	NA (3)	7	5	0.0145	0.1	NA (4)	NA (4)	NA (3)	2	0.04	0.05	NA (4)	NA (4)	NA (3)	--	--
	Selenium	mg/L	NA (4)	NA (4)	NA (3)	3	0						3	0.0023	0.005	NA (4)	NA (4)	NA (3)	--	--
	Silver	mg/L	NA (4)	NA (4)	NA (3)	3	0						3	0.0037	0.01	NA (4)	NA (4)	NA (3)	--	--
	Thallium	mg/L	NA (4)	NA (4)	NA (3)	3	0						3	0.002	0.005	NA (4)	NA (4)	NA (3)	--	--
	Vanadium	mg/L	NA (4)	NA (4)	NA (3)	3	2	0.0303	0.0542	NA (4)	NA (4)	NA (3)	1	0.01	0.01	NA (4)	NA (4)	NA (3)	--	--
	Zinc	mg/L	NA (4)	NA (4)	NA (3)	3	3	0.03	0.139	NA (4)	NA (4)	NA (3)	0						--	--
METALS (mg/kg)																				
	Aluminum	mg/kg	75000	14	20000	71	71	5500	25000	0	71	1	0						--	--
	Antimony	mg/kg	30	0.096	8.7	83	11	0.12	7.5	0	11	0	72	0.0994	14	0	72	17	Elevated DLs	a, k
	Arsenic	mg/kg	0.095	0.26	15	85	68	2	7.3	68	68	0	17	5	7	17	17	0	--	--
	Barium	mg/kg	15000	15	140	85	85	49.4	150	0	85	1	0						--	--
	Beryllium	mg/kg	150	5.9	1.1	85	71	0.23	1.9	0	0	1	14	0.41	0.7	0	0	0	--	--
	Boron	mg/kg	15000	9.3	9.7	69	16	1.1	13.4	0	3	3	53	0.96	14	0	5	4	Elevated DLs	a, b, c
	Cadmium	mg/kg	2.6	0.0026	1	89	54	0.054	2	0	54	3	35	0.017	1	0	35	0	--	--
	Calcium	mg/kg	NA (4)	NA (4)	NA (3)	2	2	4910	5330	NA (4)	NA (4)	NA (3)	0						--	--
	Chromium	mg/kg	3400	940	36.8	89	88	7	42	0	0	1	1	5	5	0	0	0	--	--
	Cobalt	mg/kg	1500	10	21	85	85	3.2	11	0	2	0	0						--	--
	Copper	mg/kg	3000	1.1	29	89	89	4	130	0	89	4	0						--	--
	Hexavalent Chromium	mg/kg	110	15	NA (3)	3	1	0.3	0.3	0	0	NA (3)	2	0.22	2	0	0	NA (3)	--	--
	Iron	mg/kg	NA (4)	NA (4)	NA (3)	2	2	17300	19500	NA (4)	NA (4)	NA (3)	0						--	--
	Lead	mg/kg	150	0.063	34	89	86	3.6	94	0	86	2	3	5	10	0	3	0	--	--
	Lithium	mg/kg	1522	43	37	14	14	11.7	27	0	0	0	0						--	--
	Magnesium	mg/kg	NA (4)	NA (4)	NA (3)	2	2	3880	4420	NA (4)	NA (4)	NA (3)	0						--	--
	Manganese	mg/kg	9500	79	495	2	2	299	315	0	2	0	0						--	--
	Mercury	mg/kg	23	0.88	0.09	89	64	0.0031	1.7	0	1	6	25	0.0031	0.3	0	0	21	--	--
	Molybdenum	mg/kg	380	0.11	5.3	85	62	0.1	7.5	0	61	1	23	0.074	14	0	22	17	Elevated DLs	a, k
	Nickel	mg/kg	1500	0.1	29	89	87	5.2	27	0	87	0	2	5	5	0	2	0	--	--
	Potassium	mg/kg	NA (4)	NA (4)	6400	16	16	1310	4200	NA (4)	NA (4)	0	0						--	--
	Selenium	mg/kg	380	0.18	0.655	85	45	0.25	5.3	0	45	34	40	0.26	7	0	40	25	Elevated DLs	a, b, c, l, k
	Silver	mg/kg	380	0.55	0.79	85	24	0.044	0.48	0	0	0	61	0.035	2.6	0	29	26	Elevated DLs	a, b, c, k
	Sodium	mg/kg	NA (4)	NA (4)	110	25	23	61	390	NA (4)	NA (4)	6	2	79.5	93.9	NA (4)	NA (4)	0	--	--
	Thallium	mg/kg	6.1	3.2	0.46	85	15	0.13	0.46	0	0	0	70	0.11	7	1	17	52	Elevated DLs	a, c, e, k
	Vanadium	mg/kg	76	1.6	62	85	85	17.7	54	0	85	0	0						--	--
	Zinc	mg/kg	23000	22	110	85	85	28.8	140	0	85	3	0						--	--
	Zirconium	mg/kg	NA (4)	NA (4)	8.6	14	7	1.1	2.9	NA (4)	NA (4)	0	7	1.6	1.9	NA (4)	NA (4)	0	--	--
PCB (ug/kg)																				
	Aroclor 1016	ug/kg	3900	1600	NA (3)	72	0						72	3.43	5000	1	1	NA (3)	Elevated DLs	f
	Aroclor 1221	ug/kg	350	1600	NA (3)	72	0						72	3.43	5000	1	1	NA (3)	Elevated DLs	f
	Aroclor 1232	ug/kg	350	79	NA (3)	72	0						72	3.43	5000	1	10	NA (3)	Elevated DLs	a, c, e, f
	Aroclor 1242	ug/kg	350	80	NA (3)	72	0						72	3.43	5000	1	10	NA (3)	Elevated DLs	a, c, e, f
	Aroclor 1248	ug/kg	350	16	NA (3)	72	3	111	246	0	3	NA (3)	69	3.43	5000	1	68	NA (3)	Elevated DLs	a, f
	Aroclor 1254	ug/kg	350	79	NA (3)	72	5	52.4	1000	1	4	NA (3)	67	3.43	5000	1	8	NA (3)	Elevated DLs	a, c, e, f
	Aroclor 1260	ug/kg	350	79	NA (3)	72	2	32.7	200	0	1	NA (3)	70	3.43	5000	1	10	NA (3)	Elevated DLs	a, c, e, f
	Biphenyl	ug/kg	NA (4)	NA (4)	NA (3)	4	0						4	10000	10000	NA (4)	NA (4)	NA (3)	--	--
	Polychlorinated biphenyls	ug/kg	NA (4)	NA (4)	NA (3)	4	0						4	100	100	NA (4)	NA (4)	NA (3)	--	--
Perchlorate																				
	Perchlorate	ug/L	NA (4)	NA (4)	NA (3)	48	0						48	1	20	NA (4)	NA (4)	NA (3)	--	--
	Perchlorate	ug/kg	9100	0.021	NA (3)	2	0						2	3.04	42	0	2	NA (3)	Elevated DLs	i
SVOC (ug/kg)																				
	1,2,4-Trichlorobenzene	ug/kg	120	68000	NA (3)	14	0						14	172	1360	14	0	NA (3)	Elevated DLs	a, j, k
	1,2-Dichlorobenzene	ug/kg	1800	390000	NA (3)	14	0						14	172	1360	0	0	NA (3)	--	--
	1,2-Diphenylhydrazine	ug/kg	NA (4)	NA (4)	NA (3)	14	0						14	172	1360	NA (4)	NA (4)	NA (3)	--	--
	1,3-Dichlorobenzene	ug/kg	1700	350000	NA (3)	14	0						14	172	1360	0	0	NA (3)	--	--
	1,4-Dichlorobenzene	ug/kg	10	170000	NA (3)	14	0						14	172	1360	14	0	NA (3)	Elevated DLs	a, j, k
	1-Methyl naphthalene	ug/kg	230000	230000	NA (3)	62	2	32	710	0	0	NA (3)	60	5.7	130	0	0	NA (3)	--	--
	2,4,5-Trichlorophenol	ug/kg	5700000	230000	NA (3)	14	0						14	172	1360	0	0	NA (3)	--	--
	2,4,6-Trichlorophenol	ug/kg	10000	460000	NA (3)	14	0						14	172	1360	0	0	NA (3)	--	--
	2,4-Dimethylphenol	ug/kg	1100000	120000	NA (3)	14	0						14	172	1360	0	0	NA (3)	--	--
	2,4-Dinitrophenol	ug/kg	110000	590	NA (3)	14	0						14	344	2720	0	10	NA (3)	Elevated DLs	c, j, k

TABLE B.3-3A
B056 LANDFILL RFI SITE ANALYTICAL DATA SCREENING SUMMARY AND DATA QUALITY (SOIL)
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			Screening Levels (1)				Detect Data Summary						Non-Detect Data Summary							
Analyte Group	Constituent	Units	Residential (ResRBSL)	Ecological (EcoRBSL)	Background (2)	Total Number Samples Analyzed	Total Samples w/ Detections	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detected Concentrations > Res RBSL	Number of Detected Concentrations > Eco RBSL	Number of Detected Concentrations > Background	Total Samples ND	Minimum Detection Limit	Maximum Detection Limit	Number DLs > ResRBSL	NumberDL > EcoRBSL	Number DL > Background	Data Issue (5)	Issue Resolution (6)
	2,4-Dinitrotoluene	ug/kg	NA (4)	NA (4)	NA (3)	14	0						14	172	1360	NA (4)	NA (4)	NA (3)	--	--
	2,6-Dichlorophenol	ug/kg	NA (4)	NA (4)	NA (3)	14	0						14	172	1360	NA (4)	NA (4)	NA (3)	--	--
	2,6-Dinitrotoluene	ug/kg	NA (4)	NA (4)	NA (3)	14	0						14	172	1360	NA (4)	NA (4)	NA (3)	--	--
	2-Chloronaphthalene	ug/kg	NA (4)	NA (4)	NA (3)	14	0						14	17.2	136	NA (4)	NA (4)	NA (3)	--	--
	2-Chlorophenol	ug/kg	290000	23000	NA (3)	14	0						14	172	1360	0	0	NA (3)	--	--
	2-Methylnaphthalene	ug/kg	230000	230000	NA (3)	78	2	58	360	0	0	NA (3)	76	3	136	0	0	NA (3)	--	--
	2-Nitroaniline	ug/kg	NA (4)	NA (4)	NA (3)	14	0						14	172	1360	NA (4)	NA (4)	NA (3)	--	--
	2-Nitrophenol	ug/kg	NA (4)	25000	NA (3)	14	0						14	172	1360	NA (4)	0	NA (3)	--	--
	3,3'-Dichlorobenzidine	ug/kg	NA (4)	NA (4)	NA (3)	14	0						14	172	1360	NA (4)	NA (4)	NA (3)	--	--
	3-Nitroaniline	ug/kg	NA (4)	NA (4)	NA (3)	14	0						14	172	1360	NA (4)	NA (4)	NA (3)	--	--
	4,6-Dinitro-o-cresol	ug/kg	5700	25000	NA (3)	14	0						14	172	1360	0	0	NA (3)	--	--
	4-Bromophenyl phenyl ether	ug/kg	NA (4)	NA (4)	NA (3)	14	0						14	172	1360	NA (4)	NA (4)	NA (3)	--	--
	4-Chlorophenylphenyl ether	ug/kg	NA (4)	NA (4)	NA (3)	14	0						14	172	1360	NA (4)	NA (4)	NA (3)	--	--
	4-Nitrophenol	ug/kg	NA (4)	25000	NA (3)	14	0						14	172	1360	NA (4)	0	NA (3)	--	--
	Acenaphthene	ug/kg	3400000	2500	NA (3)	81	2	49	420	0	0	NA (3)	79	4	420	0	0	NA (3)	--	--
	Acenaphthylene	ug/kg	1700000	810000	NA (3)	81	2	2	34	0	0	NA (3)	79	4	420	0	0	NA (3)	--	--
	Aniline	ug/kg	130000	58000	NA (3)	14	0						14	172	1360	0	0	NA (3)	--	--
	Anthracene	ug/kg	17000000	2400	NA (3)	81	4	22	900	0	0	NA (3)	77	4	420	0	0	NA (3)	--	--
	Benzidine	ug/kg	NA (4)	NA (4)	NA (3)	14	0						14	172	1360	NA (4)	NA (4)	NA (3)	--	--
	Benzo(a)anthracene	ug/kg	600	1400	NA (3)	81	8	7.92	960	2	0	NA (3)	73	4	420	0	0	NA (3)	--	--
	Benzo(a)pyrene	ug/kg	60	4700	NA (3)	81	7	16.5	960	4	0	NA (3)	74	4	420	49	0	NA (3)	Elevated DLs	a, c, k
	Benzo(b)fluoranthene	ug/kg	600	4600	NA (3)	81	7	0.22	940	1	0	NA (3)	74	4	420	0	0	NA (3)	--	--
	Benzo(ghi)perylene	ug/kg	NA (4)	6200	NA (3)	81	5	26	430	NA (4)	0	NA (3)	76	4	420	NA (4)	0	NA (3)	--	--
	Benzo(k)fluoranthene	ug/kg	600	3600	NA (3)	81	4	41	800	1	0	NA (3)	77	4	420	0	0	NA (3)	--	--
	Benzoic acid	ug/kg	230000000	4400	NA (3)	14	0						14	344	2720	0	0	NA (3)	--	--
	Benzyl alcohol	ug/kg	17000000	4400	NA (3)	14	0						14	172	1360	0	0	NA (3)	--	--
	bis(2-Chloroethoxy)methane	ug/kg	NA (4)	160000	NA (3)	14	0						14	172	1360	NA (4)	0	NA (3)	--	--
	bis(2-Chloroethyl) ether	ug/kg	290	160000	NA (3)	14	0						14	172	1360	10	0	NA (3)	--	--
	bis(2-Chloroisopropyl) ether	ug/kg	2300000	160000	NA (3)	14	0						14	172	1360	0	0	NA (3)	--	--
	bis(2-Ethylhexyl) phthalate	ug/kg	250000	4900	NA (3)	29	9	8.5	475	0	0	NA (3)	20	17.2	1400	0	0	NA (3)	--	--
	Butyl benzyl phthalate	ug/kg	11000000	370000	NA (3)	18	0						18	17	1360	0	0	NA (3)	--	--
	Chrysene	ug/kg	6000	2400	NA (3)	82	11	0.27	2800	0	1	NA (3)	71	4	420	0	0	NA (3)	--	--
	Dibenzo(a,h)anthracene	ug/kg	170	1700	NA (3)	81	2	47	140	0	0	NA (3)	79	4	420	2	0	NA (3)	Elevated DLs	d, k
	Dibenzofuran	ug/kg	110000	4600000	NA (3)	14	0						14	172	1360	0	0	NA (3)	--	--
	Diethyl phthalate	ug/kg	46000000	5200000	NA (3)	29	3	2	17	0	0	NA (3)	26	4	1400	0	0	NA (3)	--	--
	Dimethyl phthalate	ug/kg	570000000	7500000	NA (3)	18	0						18	17	1360	0	0	NA (3)	--	--
	Di-n-butyl phthalate	ug/kg	5700000	490	NA (3)	29	9	4	270	0	0	NA (3)	20	7	1400	0	3	NA (3)	Elevated DLs	e, j, k
	Di-n-octyl phthalate	ug/kg	2300000	1600000	NA (3)	18	0						18	17	1360	0	0	NA (3)	--	--
	Diphenylamine	ug/kg	NA (4)	NA (4)	NA (3)	14	0						14	172	1360	NA (4)	NA (4)	NA (3)	--	--
	Fluoranthene	ug/kg	2300000	130000	NA (3)	81	10	10.8	2000	0	0	NA (3)	71	4	420	0	0	NA (3)	--	--
	Fluorene	ug/kg	2300000	1600	NA (3)	81	2	13	120	0	0	NA (3)	79	4	420	0	0	NA (3)	--	--
	Hexachlorobenzene	ug/kg	400	370	NA (3)	14	0						14	172	1360	1	1	NA (3)	Elevated DLs	e, k
	Hexachlorobutadiene	ug/kg	9200	920	NA (3)	14	0						14	172	1360	0	1	NA (3)	--	--
	Hexachlorocyclopentadiene	ug/kg	340000	14000	NA (3)	14	0						14	172	1360	0	0	NA (3)	--	--
	Hexachloroethane	ug/kg	18000	2300	NA (3)	14	0						14	172	1360	0	0	NA (3)	--	--
	Indeno(1,2,3-cd)pyrene	ug/kg	600	3900	NA (3)	81	3	100	700	1	0	NA (3)	78	4	420	0	0	NA (3)	--	--
	Isophorone	ug/kg	750000	520000	NA (3)	14	0						14	172	1360	0	0	NA (3)	--	--
	Naphthalene	ug/kg	6000	230000	NA (3)	81	12	2	780	0	0	NA (3)	69	4	420	0	0	NA (3)	--	--
	Nitrobenzene	ug/kg	29000	2100	NA (3)	14	0						14	172	1360	0	0	NA (3)	--	--
	n-Nitrosodimethylamine	ug/kg	45	60000	NA (3)	81	0						81	2	1360	11	0	NA (3)	Elevated DLs	a, j, k
	n-Nitrosodi-n-propylamine	ug/kg	100	60000	NA (3)	14	0						14	172	1360	14	0	NA (3)	Elevated DLs	a, j, k
	n-Nitrosodiphenylamine	ug/kg	80000	60000	NA (3)	3	0						3	33	420	0	0	NA (3)	--	--
	o-Cresol	ug/kg	2867000	120000	NA (3)	14	0						14	172	1360	0	0	NA (3)	--	--
	p-Chloroaniline	ug/kg	NA (4)	NA (4)	NA (3)	14	0						14	172	1360	NA (4)	NA (4)	NA (3)	--	--
	p-Chloro-m-cresol	ug/kg	NA (4)	23000	NA (3)	14	0						14	172	1360	NA (4)	0	NA (3)	--	--
	p-Cresol	ug/kg	290000	4300	NA (3)	14	0						14	172	1360	0	0	NA (3)	--	--
	Pentachlorophenol	ug/kg	8800	14000	NA (3)	14	0						14	172	1360	0	0	NA (3)	--	--
	Phenanthrene	ug/kg	1700000	1300	NA (3)	81	10	0.49	430	0	0	NA (3)	71	4	420	0	0	NA (3)	--	--
	Phenol	ug/kg	18000000	5000	NA (3)	14	0						14	172	1360	0	0	NA (3)	--	--
	p-Nitroaniline	ug/kg	NA (4)	NA (4)	NA (3)	14	0						14	172	1360	NA (4)	NA (4)	NA (3)	--	--
	Pyrene	ug/kg	1700000	79000	NA (3)	81	12	0.32	1700	0	0	NA (3)	69	4	420	0	0	NA (3)	--	--

TABLE B.3-3A
B056 LANDFILL RFI SITE ANALYTICAL DATA SCREENING SUMMARY AND DATA QUALITY (SOIL)
(Page 4 of 7)

			Screening Levels (1)				Detect Data Summary						Non-Detect Data Summary							
Analyte Group	Constituent	Units	Residential (ResRBSL)	Ecological (EcoRBSL)	Background (2)	Total Number Samples Analyzed	Total Samples w/ Detections	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detected Concentrations > Res RBSL	Number of Detected Concentrations > Eco RBSL	Number of Detected Concentrations > Background	Total Samples ND	Minimum Detection Limit	Maximum Detection Limit	Number DLs > ResRBSL	NumberDL > EcoRBSL	Number DL > Background	Data Issue (5)	Issue Resolution (6)
SVOC (ug/kg) -TICs																				
	(1R,1S,8R,8Ar)-8-hydroxy-1-(2-acetoxyeth	ug/kg	NA (4)	NA (4)	NA (3)	1	1	610	610	NA (4)	NA (4)	NA (3)	0						--	--
	(1R,2R,8S,8Ar)-8-hydroxy-1-(2-hydroxyeth	ug/kg	NA (4)	NA (4)	NA (3)	1	1	442	442	NA (4)	NA (4)	NA (3)	0						--	--
	.beta.-Sitosterol	ug/kg	NA (4)	NA (4)	NA (3)	1	1	193	193	NA (4)	NA (4)	NA (3)	0						--	--
	1,2-Benzisothiazole, 3-(hexahydro-1H-aze	ug/kg	NA (4)	NA (4)	NA (3)	2	2	341	366	NA (4)	NA (4)	NA (3)	0						--	--
	11,13-Dimethyl-12-tetradecen-1-ol acetat	ug/kg	NA (4)	NA (4)	NA (3)	1	1	159	159	NA (4)	NA (4)	NA (3)	0						--	--
	1-Bromo-4-bromomethyldecane	ug/kg	NA (4)	NA (4)	NA (3)	1	1	584	584	NA (4)	NA (4)	NA (3)	0						--	--
	1H-Indene, 2-butyl-5-hexyloctahydro-	ug/kg	NA (4)	NA (4)	NA (3)	2	2	385.91	425	NA (4)	NA (4)	NA (3)	0						--	--
	1H-Indene, 5-butyl-6-hexyloctahydro-	ug/kg	NA (4)	NA (4)	NA (3)	4	4	324	1580	NA (4)	NA (4)	NA (3)	0						--	--
	1-Isopropenyl-4,5-dimethylbicyclo[4.3.0]	ug/kg	NA (4)	NA (4)	NA (3)	1	1	834.3	834.3	NA (4)	NA (4)	NA (3)	0						--	--
	2-(4a,8-Dimethyl-6-oxo-1,2,3,4,4a,5,6,8a	ug/kg	NA (4)	NA (4)	NA (3)	1	1	734	734	NA (4)	NA (4)	NA (3)	0						--	--
	2,2,6-Trimethyl-1-(2-methyl-cyclobut-2-e	ug/kg	NA (4)	NA (4)	NA (3)	1	1	410	410	NA (4)	NA (4)	NA (3)	0						--	--
	2,5-Furandione, 3-dodecyl-	ug/kg	NA (4)	NA (4)	NA (3)	1	1	448	448	NA (4)	NA (4)	NA (3)	0						--	--
	2,6,10,14,18,22-Tetracosahexaene, 2,6,10	ug/kg	NA (4)	NA (4)	NA (3)	1	1	219	219	NA (4)	NA (4)	NA (3)	0						--	--
	28-Nor-17.alpha.(H)-hopane	ug/kg	NA (4)	NA (4)	NA (3)	2	2	200	456	NA (4)	NA (4)	NA (3)	0						--	--
	2-Dodecen-1-yl(-)succinic anhydride	ug/kg	NA (4)	NA (4)	NA (3)	3	3	284	483	NA (4)	NA (4)	NA (3)	0						--	--
	2-Dodecen-1-yl(-)succinic anhydride 02	ug/kg	NA (4)	NA (4)	NA (3)	1	1	415	415	NA (4)	NA (4)	NA (3)	0						--	--
	2-Methyl-3-(3-methyl-but-2-enyl)-2-(4-me	ug/kg	NA (4)	NA (4)	NA (3)	1	1	282	282	NA (4)	NA (4)	NA (3)	0						--	--
	4,4,6a,6b,8a,11,12,14b-Octamethyl-1,4,4a	ug/kg	NA (4)	NA (4)	NA (3)	2	2	189	1150	NA (4)	NA (4)	NA (3)	0						--	--
	5.alpha.-Cholest-22-ene, (Z)-	ug/kg	NA (4)	NA (4)	NA (3)	1	1	496.29	496.29	NA (4)	NA (4)	NA (3)	0						--	--
	6-Isopropenyl-4,8a-dimethyl-4a,5,6,7,8,8	ug/kg	NA (4)	NA (4)	NA (3)	2	2	252	508.33	NA (4)	NA (4)	NA (3)	0						--	--
	6-Isopropenyl-4,8a-dimethyl-4a,5,6,7,8,8-01	ug/kg	NA (4)	NA (4)	NA (3)	1	1	231	231	NA (4)	NA (4)	NA (3)	0						--	--
	6-Isopropenyl-4,8a-dimethyl-4a,5,6,7,8,8-02	ug/kg	NA (4)	NA (4)	NA (3)	1	1	281	281	NA (4)	NA (4)	NA (3)	0						--	--
	7-(1,3-Dimethylbuta-1,3-dienyl)-1,6,6-tr	ug/kg	NA (4)	NA (4)	NA (3)	2	2	502.98	531	NA (4)	NA (4)	NA (3)	0						--	--
	Androstane	ug/kg	NA (4)	NA (4)	NA (3)	2	2	199	1520	NA (4)	NA (4)	NA (3)	0						--	--
	Androstane, (5.beta.)-	ug/kg	NA (4)	NA (4)	NA (3)	2	2	486	1580	NA (4)	NA (4)	NA (3)	0						--	--
	Bicyclo[2.2.1]heptane-2,5-dione, 1,7,7-t	ug/kg	NA (4)	NA (4)	NA (3)	1	1	319	319	NA (4)	NA (4)	NA (3)	0						--	--
	Cholestan-3-one, (5.beta.)-	ug/kg	NA (4)	NA (4)	NA (3)	1	1	792	792	NA (4)	NA (4)	NA (3)	0						--	--
	Cyclohexane, 1-methyl-2-propyl-	ug/kg	NA (4)	NA (4)	NA (3)	1	1	89.5	89.5	NA (4)	NA (4)	NA (3)	0						--	--
	Cyclopropane carboxamide, 2-cyclopropyl-	ug/kg	NA (4)	NA (4)	NA (3)	1	1	1290	1290	NA (4)	NA (4)	NA (3)	0						--	--
	Cyclotetradecane, 1,7,11-trimethyl-4-(1-	ug/kg	NA (4)	NA (4)	NA (3)	2	2	316	366	NA (4)	NA (4)	NA (3)	0						--	--
	Decahydro-8a-ethyl-1,1,4a,6-tetramethyln	ug/kg	NA (4)	NA (4)	NA (3)	1	1	196	196	NA (4)	NA (4)	NA (3)	0						--	--
	D-Homoandrostane, (5.alpha.,13.alpha.)-	ug/kg	NA (4)	NA (4)	NA (3)	6	6	70	2290	NA (4)	NA (4)	NA (3)	0						--	--
	D-Homoandrostane, (5.alpha.,13.alpha.)-01	ug/kg	NA (4)	NA (4)	NA (3)	1	1	154	154	NA (4)	NA (4)	NA (3)	0						--	--
	D-Homoandrostane, (5.alpha.,13.alpha.)-02	ug/kg	NA (4)	NA (4)	NA (3)	1	1	296	296	NA (4)	NA (4)	NA (3)	0						--	--
	Eicosane	ug/kg	NA (4)	NA (4)	NA (3)	9	9	193	813	NA (4)	NA (4)	NA (3)	0						--	--
	Eicosane, 10-methyl-	ug/kg	NA (4)	NA (4)	NA (3)	1	1	3550	3550	NA (4)	NA (4)	NA (3)	0						--	--
	Eicosane, 2-methyl-	ug/kg	NA (4)	NA (4)	NA (3)	1	1	1510	1510	NA (4)	NA (4)	NA (3)	0						--	--
	Ethane, 1,1,2,2-tetrachloro-	ug/kg	NA (4)	NA (4)	NA (3)	1	1	76.8	76.8	NA (4)	NA (4)	NA (3)	0						--	--
	Heneicosane	ug/kg	NA (4)	NA (4)	NA (3)	1	1	1280	1280	NA (4)	NA (4)	NA (3)	0						--	--
	Heptacosane	ug/kg	NA (4)	NA (4)	NA (3)	2	2	593	741.68	NA (4)	NA (4)	NA (3)	0						--	--
	Heptadecane	ug/kg	NA (4)	NA (4)	NA (3)	1	1	177	177	NA (4)	NA (4)	NA (3)	0						--	--
	Heptadecane, 9-octyl-	ug/kg	NA (4)	NA (4)	NA (3)	2	2	704	2090	NA (4)	NA (4)	NA (3)	0						--	--
	Hexadecane, 1-chloro-	ug/kg	NA (4)	NA (4)	NA (3)	1	1	341	341	NA (4)	NA (4)	NA (3)	0						--	--
	Hexadecane, 2-methyl-	ug/kg	NA (4)	NA (4)	NA (3)	1	1	960	960	NA (4)	NA (4)	NA (3)	0						--	--
	Methyl 5-methyl-2-ethenyl-cyclohexane-1-	ug/kg	NA (4)	NA (4)	NA (3)	2	2	223	457.13	NA (4)	NA (4)	NA (3)	0						--	--
	Naphthalene, decahydro-1,6-dimethyl-4-(1	ug/kg	NA (4)	NA (4)	NA (3)	1	1	835.68	835.68	NA (4)	NA (4)	NA (3)	0						--	--
	n-Hexadecanoic acid	ug/kg	NA (4)	NA (4)	NA (3)	1	1	503	503	NA (4)	NA (4)	NA (3)	0						--	--
	Nonadecane	ug/kg	NA (4)	NA (4)	NA (3)	1	1	154	154	NA (4)	NA (4)	NA (3)	0						--	--
	Oct-5-en-2-ol, 8-(1,4,4a,5,6,7,8,8a-octa	ug/kg	NA (4)	NA (4)	NA (3)	1	1	436	436	NA (4)	NA (4)	NA (3)	0						--	--
	Octadecane	ug/kg	NA (4)	NA (4)	NA (3)	3	3	255	392	NA (4)	NA (4)	NA (3)	0						--	--
	Octadecane, 1-chloro-	ug/kg	NA (4)	NA (4)	NA (3)	2	2	188	428	NA (4)	NA (4)	NA (3)	0						--	--
	Octadecane, 1-iodo-	ug/kg	NA (4)	NA (4)	NA (3)	1	1	1090	1090	NA (4)	NA (4)	NA (3)	0						--	--
	Oxalic acid, isobutyl heptadecyl ester	ug/kg	NA (4)	NA (4)	NA (3)	1	1	392	392	NA (4)	NA (4)	NA (3)	0						--	--
	Pentadec-7-ene, 7-bromomethyl-	ug/kg	NA (4)	NA (4)	NA (3)	1	1	395	395	NA (4)	NA (4)	NA (3)	0						--	--
	Pentadecane, 8-hexyl-	ug/kg	NA (4)	NA (4)	NA (3)	1	1	868	868	NA (4)	NA (4)	NA (3)	0						--	--
	Pyridine, 4-[5-(2-methoxyphenyl)-[1,3,4]	ug/kg	NA (4)	NA (4)	NA (3)	3	3	629	1150	NA (4)	NA (4)	NA (3)	0						--	--
	Pyridine-3-carboxamide, oxime, N-(2-trif	ug/kg	NA (4)	NA (4)	NA (3)	2	2	693	1036.3	NA (4)	NA (4)	NA (3)	0						--	--
	Spiro[4.5]decan-7-one, 1,8-dimethyl-8,9-	ug/kg	NA (4)	NA (4)	NA (3)	2	2	202	254	NA (4)	NA (4)	NA (3)	0						--	--
	Stigmast-4-en-3-one	ug/kg	NA (4)	NA (4)	NA (3)	2	2	333	593	NA (4)	NA (4)	NA (3)	0						--	--
	Stigmastane	ug/kg	NA (4)	NA (4)	NA (3)	1	1	368	368	NA (4)	NA (4)	NA (3)	0						--	--

TABLE B.3-3A
B056 LANDFILL RFI SITE ANALYTICAL DATA SCREENING SUMMARY AND DATA QUALITY (SOIL)
(Page 5 of 7)

			Screening Levels (1)				Detect Data Summary						Non-Detect Data Summary							
Analyte Group	Constituent	Units	Residential (ResRBSL)	Ecological (EcoRBSL)	Background (2)	Total Number Samples Analyzed	Total Samples w/ Detections	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detected Concentrations > Res RBSL	Number of Detected Concentrations > Eco RBSL	Number of Detected Concentrations > Background	Total Samples ND	Minimum Detection Limit	Maximum Detection Limit	Number DLs > ResRBSL	NumberDL > EcoRBSL	Number DL > Background	Data Issue (5)	Issue Resolution (6)
	Tricosane	ug/kg	NA (4)	NA (4)	NA (3)	1	1	351	351	NA (4)	NA (4)	NA (3)	0						--	--
	Tritetracontane	ug/kg	NA (4)	NA (4)	NA (3)	2	2	609	783	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown 1	ug/kg	NA (4)	NA (4)	NA (3)	11	11	151	1580	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown 10	ug/kg	NA (4)	NA (4)	NA (3)	10	10	187	3040	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown 11	ug/kg	NA (4)	NA (4)	NA (3)	9	9	209	1420	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown 12	ug/kg	NA (4)	NA (4)	NA (3)	8	8	227	1600	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown 13	ug/kg	NA (4)	NA (4)	NA (3)	8	8	220	2030	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown 14	ug/kg	NA (4)	NA (4)	NA (3)	8	8	178	1850	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown 15	ug/kg	NA (4)	NA (4)	NA (3)	8	8	188	1490	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown 16	ug/kg	NA (4)	NA (4)	NA (3)	7	7	217	3260	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown 17	ug/kg	NA (4)	NA (4)	NA (3)	7	7	252	1720	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown 18	ug/kg	NA (4)	NA (4)	NA (3)	5	5	254	2310	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown 19	ug/kg	NA (4)	NA (4)	NA (3)	5	5	282	1930	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown 2	ug/kg	NA (4)	NA (4)	NA (3)	13	13	112	1550	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown 20	ug/kg	NA (4)	NA (4)	NA (3)	5	5	230	2240	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown 21	ug/kg	NA (4)	NA (4)	NA (3)	5	5	171	1550	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown 22	ug/kg	NA (4)	NA (4)	NA (3)	4	4	256	1860	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown 23	ug/kg	NA (4)	NA (4)	NA (3)	2	2	341	2660	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown 24	ug/kg	NA (4)	NA (4)	NA (3)	1	1	2050	2050	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown 25	ug/kg	NA (4)	NA (4)	NA (3)	1	1	2030	2030	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown 3	ug/kg	NA (4)	NA (4)	NA (3)	13	13	75.5	1470	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown 4	ug/kg	NA (4)	NA (4)	NA (3)	11	11	171	1600	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown 5	ug/kg	NA (4)	NA (4)	NA (3)	10	10	150	1430	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown 6	ug/kg	NA (4)	NA (4)	NA (3)	10	10	166	1790	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown 7	ug/kg	NA (4)	NA (4)	NA (3)	10	10	146	1850	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown 8	ug/kg	NA (4)	NA (4)	NA (3)	10	10	155	1850	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown 9	ug/kg	NA (4)	NA (4)	NA (3)	10	10	181	2060	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown Amide	ug/kg	NA (4)	NA (4)	NA (3)	3	3	153	370	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown Hydrocarbon	ug/kg	NA (4)	NA (4)	NA (3)	1	1	348	348	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown Hydrocarbon 1	ug/kg	NA (4)	NA (4)	NA (3)	1	1	155	155	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown Hydrocarbon 2	ug/kg	NA (4)	NA (4)	NA (3)	2	2	160	363	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown Hydrocarbon 3	ug/kg	NA (4)	NA (4)	NA (3)	1	1	172	172	NA (4)	NA (4)	NA (3)	0						--	--
	Unknown Sulfur	ug/kg	NA (4)	NA (4)	NA (3)	1	1	161	161	NA (4)	NA (4)	NA (3)	0						--	--
Terphenyls (mg/kg)																				
	m-Terphenyl	mg/kg	NA (4)	NA (4)	NA (3)	18	0						18	0.171	10	NA (4)	NA (4)	NA (3)	--	--
	o-Terphenyl	mg/kg	NA (4)	NA (4)	NA (3)	18	0						18	0.171	10	NA (4)	NA (4)	NA (3)	--	--
	p-Terphenyl	mg/kg	NA (4)	NA (4)	NA (3)	18	0						18	0.171	10	NA (4)	NA (4)	NA (3)	--	--
TPH (mg/kg)																				
	Diesel Range Organics	mg/kg	1400	NA (4)	NA (3)	4	0						4	10	10	0	NA (4)	NA (3)	--	--
	Diesel Range Organics (C14-C20)	mg/kg	1400	NA (4)	NA (3)	21	1	180	180	0	NA (4)	NA (3)	20	4	14	0	NA (4)	NA (3)	--	--
	Diesel Range Organics (C15-C20)	mg/kg	1400	NA (4)	NA (3)	58	2	2.42	16.5	0	NA (4)	NA (3)	56	3.41	1500	1	NA (4)	NA (3)	Elevated DLs	f, k
	Gasoline Range Organics (C8-C11)	mg/kg	1.1	NA (4)	NA (3)	79	1	1.8	1.8	1	NA (4)	NA (3)	78	3.41	1500	78	NA (4)	NA (3)	Elevated DLs	a, f, l, k
	Kerosene Range Organics (C11-C14)	mg/kg	1400	NA (4)	NA (3)	21	0						21	4	54	0	NA (4)	NA (3)	--	--
	Kerosene Range Organics (C12-C14)	mg/kg	1400	NA (4)	NA (3)	58	0						58	3.41	1500	1	NA (4)	NA (3)	Elevated DLs	f, k
	Lubricant Oil Range Organics (C20-C30)	mg/kg	1400	NA (4)	NA (3)	21	3	13	820	0	NA (4)	NA (3)	18	4	14	0	NA (4)	NA (3)	--	--
	Lubricant Oil Range Organics (C21-C30)	mg/kg	1400	NA (4)	NA (3)	58	22	1.41	23000	1	NA (4)	NA (3)	36	4.5	54	0	NA (4)	NA (3)	--	--
	Oil content	mg/kg	1400	NA (4)	NA (3)	4	4	42	1100	0	NA (4)	NA (3)	0						--	--
VOC (ug/kg) (7)																				
	1,1,1,2-Tetrachloroethane	ug/kg	0.25	82000	NA (3)	65	0						65	4.4	107	65	0	NA (3)	Elevated DLs	a, k
	1,1,1-Trichloroethane	ug/kg	490	2100000	NA (3)	69	0						69	1.7	30	0	0	NA (3)	--	--
	1,1,2,2-Tetrachloroethane	ug/kg	1.4	6400	NA (3)	69	0						69	1.7	30	69	0	NA (3)	Elevated DLs	a, k
	1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	16000	230000	NA (3)	67	0						67	2.4	107	0	0	NA (3)	--	--
	1,1,2-Trichloroethane	ug/kg	1.2	9000	NA (3)	69	0						69	1.7	30	69	0	NA (3)	Elevated DLs	a, k
	1,1-Dichloroethane	ug/kg	1.6	230000	NA (3)	69	0						69	1.7	30	69	0	NA (3)	Elevated DLs	a, k
	1,1-Dichloroethene	ug/kg	23	320	NA (3)	69	0						69	4.4	30	5	0	NA (3)	Elevated DLs	a. k
	1,1-Dichloropropene	ug/kg	NA (4)	NA (4)	NA (3)	49	0						49	1.7	2.6	NA (4)	NA (4)	NA (3)	--	--
	1,2,3-Trichlorobenzene	ug/kg	120	68000	NA (3)	49	0						49	4.4	6.5	0	0	NA (3)	--	--
	1,2,3-Trichloropropane	ug/kg	0.051	13000	NA (3)	51	0						51	5	13	51	0	NA (3)	Elevated DLs	a, k
	1,2,4-Trichlorobenzene	ug/kg	120	68000	NA (3)	49	0						49	4.4	6.5	0	0	NA (3)	--	--
	1,2,4-Trimethylbenzene	ug/kg	35	140000	NA (3)	65	0						65	1.7	107	1	0	NA (3)	Elevated DLs	g
	1,2-Dibromo-3-chloropropane	ug/kg	29	23000	NA (3)	65	0						65	4.4	107	1	0	NA (3)	Elevated DLs	g

TABLE B.3-3A
B056 LANDFILL RFI SITE ANALYTICAL DATA SCREENING SUMMARY AND DATA QUALITY (SOIL)
(Page 6 of 7)

			Screening Levels (1)				Detect Data Summary						Non-Detect Data Summary							
Analyte Group	Constituent	Units	Residential (ResRBSL)	Ecological (EcoRBSL)	Background (2)	Total Number Samples Analyzed	Total Samples w/ Detections	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detected Concentrations > Res RBSL	Number of Detected Concentrations > Eco RBSL	Number of Detected Concentrations > Background	Total Samples ND	Minimum Detection Limit	Maximum Detection Limit	Number DLs > ResRBSL	NumberDL > EcoRBSL	Number DL > Background	Data Issue (5)	Issue Resolution (6)
	1,2-Dibromoethane	ug/kg	NA (4)	NA (4)	NA (3)	49	0						49	1.7	2.6	NA (4)	NA (4)	NA (3)	--	--
	1,2-Dichlorobenzene	ug/kg	1800	390000	NA (3)	69	0						69	1.7	100	0	0	NA (3)	--	--
	1,2-Dichloroethane	ug/kg	0.5	76000	NA (3)	69	0						69	1.7	30	69	0	NA (3)	Elevated DLs	a, k
	1,2-Dichloroethenes	ug/kg	14	74000	NA (3)	2	0						2	10	11	0	0	NA (3)	--	--
	1,2-Dichloropropane	ug/kg	NA (4)	NA (4)	NA (3)	69	0						69	1.7	30	NA (4)	NA (4)	NA (3)	--	--
	1,3,5-Trimethylbenzene	ug/kg	36	140000	NA (3)	65	0						65	1.7	107	1	0	NA (3)	Elevated DLs	g
	1,3-Dichlorobenzene	ug/kg	1700	350000	NA (3)	69	0						69	1.7	100	0	0	NA (3)	--	--
	1,3-Dichloropropane	ug/kg	NA (4)	NA (4)	NA (3)	49	0						49	1.7	2.6	NA (4)	NA (4)	NA (3)	--	--
	1,4-Dichlorobenzene	ug/kg	10	170000	NA (3)	69	0						69	1.7	100	18	0	NA (3)	Elevated DLs	a, d
	1-Chlorohexane	ug/kg	NA (4)	NA (4)	NA (3)	2	0						2	5	5	NA (4)	NA (4)	NA (3)	--	--
	2-Chloro-1,1,1-trifluoroethane	ug/kg	NA (4)	NA (4)	NA (3)	63	0						63	21	250	NA (4)	NA (4)	NA (3)	--	--
	2-Chloroethylvinyl ether	ug/kg	0.0096	780	NA (3)	66	0						66	2.4	266	66	0	NA (3)	Elevated DLs	a, k
	2-Hexanone	ug/kg	NA (4)	2600000	NA (3)	51	0						51	8.7	13	NA (4)	0	NA (3)	--	--
	Acetone	ug/kg	51000	46000	NA (3)	69	7	10	5000	0	0	NA (3)	62	8.7	600	0	0	NA (3)	--	--
	Benzene	ug/kg	0.13	4600	NA (3)	69	0						69	1.7	30	69	0	NA (3)	Elevated DLs	a, k
	Bromobenzene	ug/kg	NA (4)	NA (4)	NA (3)	49	0						49	4.4	6.5	NA (4)	NA (4)	NA (3)	--	--
	Bromochloromethane	ug/kg	NA (4)	NA (4)	NA (3)	49	0						49	4.4	6.5	NA (4)	NA (4)	NA (3)	--	--
	Bromodichloromethane	ug/kg	0.31	16000	NA (3)	69	0						69	1.7	30	69	0	NA (3)	Elevated DLs	a, k
	Bromoform	ug/kg	NA (4)	NA (4)	NA (3)	69	0						69	4.4	54	NA (4)	NA (4)	NA (3)	--	--
	Bromomethane	ug/kg	NA (4)	NA (4)	NA (3)	69	0						69	4.4	54	NA (4)	NA (4)	NA (3)	--	--
	Carbon Disulfide	ug/kg	68	51000	NA (3)	2	0						2	5	5	0	0	NA (3)	--	--
	Carbon Tetrachloride	ug/kg	0.042	1600	NA (3)	69	0						69	4.4	30	69	0	NA (3)	Elevated DLs	a, k
	Chlorobenzene	ug/kg	97	94000	NA (3)	69	0						69	1.7	30	0	0	NA (3)	--	--
	Chloroethane	ug/kg	NA (4)	NA (4)	NA (3)	69	0						69	4.4	54	NA (4)	NA (4)	NA (3)	--	--
	Chloroform	ug/kg	0.77	260	NA (3)	69	0						69	1.7	54	69	0	NA (3)	Elevated DLs	a, k
	Chloromethane	ug/kg	NA (4)	NA (4)	NA (3)	69	0						69	4.4	54	NA (4)	NA (4)	NA (3)	--	--
	Chlorotrifluoroethylene	ug/kg	NA (4)	17000	NA (3)	65	0						65	5	250	NA (4)	0	NA (3)	--	--
	cis-1,2-Dichloroethene	ug/kg	14	74000	NA (3)	65	0						65	1.7	27	1	0	NA (3)	Elevated DLs	g
	cis-1,3-Dichloropropene	ug/kg	NA (4)	NA (4)	NA (3)	69	0						69	1.7	30	NA (4)	NA (4)	NA (3)	--	--
	Cumene	ug/kg	380	447000	NA (3)	49	0						49	1.7	2.6	0	0	NA (3)	--	--
	Dibromochloromethane	ug/kg	NA (4)	NA (4)	NA (3)	55	0						55	1.7	30	NA (4)	NA (4)	NA (3)	--	--
	Dibromomethane	ug/kg	NA (4)	NA (4)	NA (3)	49	0						49	1.7	2.6	NA (4)	NA (4)	NA (3)	--	--
	Dichlorodifluoromethane	ug/kg	15	69000	NA (3)	65	0						65	4.4	54	1	0	NA (3)	Elevated DLs	g
	Ethylbenzene	ug/kg	1200	220000	NA (3)	69	0						69	1.7	30	0	0	NA (3)	--	--
	Hexachlorobutadiene	ug/kg	9200	920	NA (3)	49	0						49	4.4	6.5	0	0	NA (3)	--	--
	Isopropanol	ug/kg	NA (4)	NA (4)	NA (3)	4	0						4	600	600	NA (4)	NA (4)	NA (3)	--	--
	Methyl ethyl ketone	ug/kg	62000	8200000	NA (3)	64	0						64	8.7	266	0	0	NA (3)	--	--
	Methyl isobutyl ketone (MIBK)	ug/kg	20000	2625000	NA (3)	51	0						51	4.4	11	0	0	NA (3)	--	--
	Methyl tert-butyl ether	ug/kg	NA (4)	NA (4)	NA (3)	4	0						4	5	6.3	NA (4)	NA (4)	NA (3)	--	--
	Methylene chloride	ug/kg	4	27000	NA (3)	69	1	23	23	1	0	NA (3)	68	11	107	68	0	NA (3)	Elevated DLs	a, h, k
	m-Xylene & p-Xylene	ug/kg	150	140000	NA (3)	65	0						65	1.7	27	0	0	NA (3)	--	--
	Naphthalene	ug/kg	6000	230000	NA (3)	49	0						49	4.4	6.5	0	0	NA (3)	--	--
	n-Butylbenzene	ug/kg	NA (4)	NA (4)	NA (3)	49	0						49	4.4	6.5	NA (4)	NA (4)	NA (3)	--	--
	n-Propylbenzene	ug/kg	200	447000	NA (3)	49	0						49	1.7	2.6	0	0	NA (3)	--	--
	o-Chlorotoluene	ug/kg	1222000	345000	NA (3)	49	0						49	4.4	6.5	0	0	NA (3)	--	--
	o-Xylene	ug/kg	190	140000	NA (3)	65	0						65	1.7	27	0	0	NA (3)	--	--
	p-Chlorotoluene	ug/kg	1222000	345000	NA (3)	49	0						49	4.4	6.5	0	0	NA (3)	--	--
	p-Cymene	ug/kg	NA (4)	NA (4)	NA (3)	49	0						49	1.7	2.6	NA (4)	NA (4)	NA (3)	--	--
	sec-Butylbenzene	ug/kg	77000	447000	NA (3)	49	0						49	4.4	6.5	0	0	NA (3)	--	--
	sec-Dichloropropane	ug/kg	NA (4)	NA (4)	NA (3)	49	0						49	1.7	2.6	NA (4)	NA (4)	NA (3)	--	--
	Styrene	ug/kg	7200	690000	NA (3)	51	0						51	1.7	5	0	0	NA (3)	--	--
	tert-Butylbenzene	ug/kg	NA (4)	NA (4)	NA (3)	49	0						49	4.4	6.5	NA (4)	NA (4)	NA (3)	--	--
	Tetrachloroethene	ug/kg	0.43	2300	NA (3)	69	0						69	1.7	30	69	0	NA (3)	--	--
	Toluene	ug/kg	300	2700	NA (3)	69	0						69	1.7	30	0	0	NA (3)	--	--
	trans-1,2-Dichloroethene	ug/kg	16	1000000	NA (3)	69	0						69	1.7	30	5	0	NA (3)	Elevated DLs	a, k
	trans-1,3-Dichloropropene	ug/kg	NA (4)	NA (4)	NA (3)	69	0						69	1.7	30	NA (4)	NA (4)	NA (3)	--	--
	Trichloroethene	ug/kg	2.2	3200	NA (3)	69	0						69	1.7	30	26	0	NA (3)	Elevated DLs	a, g
	Trichlorofluoromethane	ug/kg	110	320000	NA (3)	69	2	2	900	1	0	NA (3)	67	4.4	30	0	0	NA (3)	--	--
	Vinyl chloride	ug/kg	0.0096	780	NA (3)	69	0						69	4.4	54	69	0	NA (3)	Elevated DLs	a
	Xylenes, Total	ug/kg	150	140000	NA (3)	2	0						2	16	16	0	0	NA (3)	--	--

TABLE B.3-3A
B056 LANDFILL RFI SITE ANALYTICAL DATA SCREENING SUMMARY AND DATA QUALITY (SOIL)
(Page 7 of 7)

			Screening Levels (1)				Detect Data Summary						Non-Detect Data Summary							
Analyte Group	Constituent	Units	Residential (ResRBSL)	Ecological (EcoRBSL)	Background (2)	Total Number Samples Analyzed	Total Samples w/ Detections	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detected Concentrations > Res RBSL	Number of Detected Concentrations > Eco RBSL	Number of Detected Concentrations > Background	Total Samples ND	Minimum Detection Limit	Maximum Detection Limit	Number DLs > ResRBSL	NumberDL > EcoRBSL	Number DL > Background	Data Issue (5)	Issue Resolution (6)

Notes:

(1) Risk-based screening levels for human health (ResRBSL) and Ecological (EcoRBSL) receptors are provided as reference points for assessing adequacy of data quality. ResRBSL is based on residential receptor for a risk level of 1×10^{-6} cancer risk or noncancer Hazard Index.
(2) Reference: Soil Background Report (MWH 2005)
(3) Not applicable - Background values only established for naturally occuring constituents.
(4) RBSL not available for this constituent.
(5) Elevated DLs are DLs that are above one or both of the RBSLs. For metals and dioxins, elevated DLs are DLs that are above background, EcoRBSL, or ResRBSL. In cases that DLs are below background but above an RBSL, the DL is not considered to be elevated.
(6) The following statements indicate standard DL issue resolutions throughout the group. Each issue resolution note listed for each analyte do not apply to all elevated DLs for that analyte. Instead, each issue resolution note may only apply to a subset of samples with elevated DLs for the analyte, but taken as a whole, the list of issue resolutions addresses all of the elevated DLs.
(7) Soil matrix VOC results reported by Columbia Analytical Services (CAS) during 1997-98 have been conservatively multiplied by 2 to address uncertainty in the data.

Data Issue Resolution Notes:

-- Indicates that the constituent does not have elevated detection limits.
(a) DL concentrations achieved were within practicable laboratory reporting limits at the time the sample was collected. The adequacy assessment of sample results for characterization decisions was made based on surrounding sampling results, potential for laboratory interference, data trends, and reporting limits with respect to screening leve
(b) DL are below background levels.
(c) The MDL is less than the RBSL, so if the compound was present at concentrations greater than the RBSL but less that the DL, it would have been reported.
(d) Source of elevated DL is unknown.
(e) Sample diluted due to matrix effect.
(f) Sample diluted due to high concentrations of other constituents.
(g) Sample contains high TPH levels which may have caused elevated DLs.
(h) Compound is a commonly used laboratory solvent and often has elevated DLs due to laboratory contamination.
(i) Duplicate samples and recollected samples at representative locations had adequate DLs; Results do not indicate that elevated DLs in earlier samples are an issue.
(j) DLs are elevated for SVOCs analyzed by method 8270C rather than 8270CSIM, which was used to target the presence of tentatively identified compounds (TICs). Elevated detection limits are typical for this method.
(k) Elevated DLs are located within an area recommended for further evaluation in CMS.
(l) Elevated DLs were observed group-wide in areas with no indications of a source.
(m) Site history does not indicate a source; results of other analytes in the same area suggest low concentrations.

Acronyms

DL - detection limit	ng/kg - nanograms per kilogram
EcoRBSL - ecological screening level	mg/L - milligrams per liter
ResRBSL - residential screening level	mg/kg - milligrams per kilogram
NA - not applicable	ug/kg - micrograms per kilogram

TABLE B.3-3B
B056 LANDFILL RFI SITE ANALYTICAL DATA SCREENING SUMMARY AND DATA QUALITY (SOIL VAPOR)
(Page 1 of 1)

Analyte Group	Constituent	Units	Screening Levels (1)		Total Number Samples Analyzed	Detect Data Summary					Non-Detect Data Summary					Data Issue (3)	Issue Resolution (4)
			Residential (ResRBSL)	Ecological (EcoRBSL)		Total Samples w/ Detections	Minimum Detected Concentration	Maximum Detected Concentration	Number of Detected Concentrations > Res RBSL	Number of Detected Concentrations > Eco RBSL	Total Samples ND	Minimum Detection Limit	Maximum Detection Limit	Number DLs > ResRBSL	Number DLs > EcoRBSL		
VOC (ug/L)																	
	1,1,1,2-Tetrachloroethane	ug/L	0.048	NA (2)	50	0					50	1	1	50	NA (2)	Elevated DLs	a, k
	1,1,1-Trichloroethane	ug/L	640	38	50	0					50	1	1	0	0	--	--
	1,1,2,2-Tetrachloroethane	ug/L	0.048	NA (2)	50	0					50	2	2	50	NA (2)	Elevated DLs	a, k
	1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	8800	NA (2)	50	0					50	5	5	0	NA (2)	--	--
	1,1,2-Trichloroethane	ug/L	0.17	0.057	50	0					50	1	1	50	50	Elevated DLs	a. k
	1,1-Dichloroethane	ug/L	1.7	36	50	0					50	1	1	0	0	--	--
	1,1-Dichloroethene	ug/L	58	0.6	50	0					50	1	1	0	50	Elevated DLs	a, k
	1,2-Dichloroethane	ug/L	0.13	42	50	0					50	1	1	50	0	Elevated DLs	a, k
	Benzene	ug/L	0.095	0.57	50	0					50	1	1	50	50	Elevated DLs	a, k
	Carbon Tetrachloride	ug/L	0.063	0.63	50	0					50	1	1	50	50	Elevated DLs	a, k
	Chloroethane	ug/L	NA (2)	NA (2)	50	0					50	1	1	NA (2)	NA (2)	--	--
	Chloroform	ug/L	0.5	0.24	50	0					50	1	1	50	50	Elevated DLs	a, k
	cis-1,2-Dichloroethene	ug/L	10	1.9	50	0					50	1	1	0	0	--	--
	Dichlorodifluoromethane	ug/L	58	91	50	0					50	1	1	0	0	--	--
	Ethylbenzene	ug/L	290	23	50	0					50	1	1	0	0	--	--
	Methane	ug/L	NA (2)	NA (2)	44	12	9.9	27	NA (2)	NA (2)	32	9.8	9.8	NA (2)	NA (2)	--	--
	Methylene chloride	ug/L	2.7	0.87	50	0					50	10	50	50	50	Elevated DLs	a, k
	m-Xylene & p-Xylene	ug/L	NA (2)	NA (2)	50	0					50	2	2	NA (2)	NA (2)	--	--
	o-Xylene	ug/L	29	15	50	0					50	1	1	0	0	--	--
	Tetrachloroethene	ug/L	0.45232	24	50	0					50	1	1	50	0	Elevated DLs	a, k
	Toluene	ug/L	110	0.084	50	0					50	1	1	0	50	Elevated DLs	a, k
	trans-1,2-Dichloroethene	ug/L	20	1.9	50	0					50	1	1	0	0	--	--
	Trichloroethene	ug/L	1.4	6.4	50	0					50	1	1	0	0	--	--
	Trichlorofluoromethane	ug/L	200	91	50	0					50	1	1	0	0	--	--
	Vinyl chloride	ug/L	0.035	0.56	50	0					50	1	2	50	50	Elevated DLs	a, k
	VOC in vapor screen (All ND)	ug/L	NA (2)	NA (2)	7	0					7	0	0	NA (2)	NA (2)	--	--

Notes:

Soil matrix VOC results reported by Columbia Analytical Services (CAS) during 1977-98 have been conservatively multiplied by 2 to address uncertainty in the data.

(1) Risk-based screening levels for human health (ResRBSL) and Ecological (EcoRBSL) receptors are provided as reference points for assessing adequacy of data quality. ResRBSL is based on residential receptor for a risk level of 1 x 10-6 cancer risk or noncancer Hazard Index.

(2) RBSL not available for this constituent.

(3) Elevated DLs are DLs that are above one or both of the RBSLs. For metals and dioxins, elevated DLs are DLs that are above background, EcoRBSL, or ResRBSL. In cases that DLs are below background but above an RBSL, the DL is not considered to be elevated.

(4) The following statements indicate standard DL issue resolutions throughout the group. Each issue resolution note listed for each analyte do not apply to all elevated DLs for that analyte. Instead, each issue resolution note may only apply to a subset of samples with elevated DLs for the analyte, but taken as a whole, the list of issue resolutions addresses all of the elevated DLs.

Data Issue Resolution Notes:

-- Indicates that the constituent does not have elevated detection limits.

(a) DL concentrations achieved were within practicable laboratory reporting limits at the time the sample was collected. The adequacy assessment of sample results for characterization decisions was made based on surrounding sampling results, potential for laboratory interference, data trends, and reporting limits with respect to screening levels.

(b) DL are below background levels.

(c) The MDL is less than the RBSL, so if the compound was present at concentrations greater than the RBSL but less that the DL, it would have been reported.

(d) Elevated DL for sodium is not significant because there is no RBSL associated with this metal.

(e) Sample diluted due to matrix effect.

(f) Sample diluted due to high concentrations of other constituents.

(g) Sample contains high TPH levels which may have caused elevated DLs.

(h) Compound is a commonly used laboratory solvent and often has elevated DLs due to laboratory contamination.

(i) Duplicate samples and recollected samples at representative locations had adequate DLs; Results do not indicate that elevated DLs in earlier samples are an issue.

(j) DLs are elevated for SVOCs analyzed by method 8270C rather than 8270CSIM, which was used to target the presence of tentatively identified compounds (TICs). Elevated detection limits are typical for this method.

(k) Elevated DLs are located within an area recommended for further evaluation in CMS.

(l) Elevated DLs were observed group-wide in areas with no indications of a source.

Acronyms

DL - detection limit
EcoRBSL - ecological screening level
ResRBSL - residential screening level
NA - not applicable
ug/L - micrograms per liter

TABLE B.3-3C
B056 LANDFILL RFI SITE ANALYTICAL DATA SCREENING SUMMARY AND DATA QUALITY (SURFACE WATER)
(Page 1 of 2)

Analyte Group	Constituent	Units	Total Number Samples Analyzed	Detect Data Summary			Non-Detect Data Summary		
				Total Samples w/ Detections	Minimum Detected Concentration	Maximum Detected Concentration	Total Samples ND	Minimum Detection Limit	Maximum Detection Limit
Inorganics (mg/L)									
	Bicarbonate Alkalinity as CaCO3	mg/L	2	2	150	160	0		
	Chloride	mg/L	2	2	17	17	0		
	Cyanides	mg/L	1	0			1	0.05	0.05
	Fluoride	mg/L	2	2	0.5	0.6	0		
	Nitrate-N	mg/L	2	0			2	0.2	0.2
	Sulfate	mg/L	2	2	12	13	0		
	Total Dissolved solids	mg/L	2	2	200	210	0		
METALS (mg/L)									
	Arsenic	mg/L	2	0			2	0.005	0.005
	Barium	mg/L	2	1	0.03	0.03	1	0.02	0.02
	Cadmium	mg/L	2	0			2	0.005	0.005
	Calcium	mg/L	2	2	25	28	0		
	Chromium	mg/L	2	0			2	0.01	0.01
	Iron	mg/L	2	2	0.13	0.33	0		
	Lead	mg/L	2	0			2	0.05	0.05
	Magnesium	mg/L	2	2	6.9	6.9	0		
	Manganese	mg/L	2	1	0.58	0.58	1	0.01	0.01
	Mercury	mg/L	2	0			2	0.0005	0.0005
	Potassium	mg/L	2	2	2	2.2	0		
	Selenium	mg/L	2	0			2	0.005	0.005
	Silver	mg/L	2	0			2	0.01	0.01
	Sodium	mg/L	2	2	39	39	0		
Perchlorate (ug/L)									
	Perchlorate	ug/L	1	0			1	4	4
VOC (ug/L)									
	1,1,1-Trichloroethane	ug/L	3	1	5	5	2	1	10
	1,1,2,2-Tetrachloroethane	ug/L	3	1	5	5	2	0.5	10
	1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	2	1	5	5	1	5	5
	1,1,2-Trichloroethane	ug/L	3	1	5	5	2	0.5	10
	1,1-Dichloroethane	ug/L	3	1	5	5	2	0.5	10
	1,1-Dichloroethene	ug/L	3	1	5	5	2	2	10
	1,2-Dichlorobenzene	ug/L	3	1	5	5	2	1	10
	1,2-Dichloroethane	ug/L	3	1	5	5	2	0.5	10
	1,2-Dichloropropane	ug/L	3	1	5	5	2	0.5	10
	1,3-Dichlorobenzene	ug/L	3	1	5	5	2	1	10
	1,4-Dichlorobenzene	ug/L	3	1	5	5	2	1	10
	2-Chloroethylvinyl ether	ug/L	3	1	5	5	2	5	10
	2-Hexanone	ug/L	1	1	10	10	0		
	Acetone	ug/L	1	1	20	20	0		
	Acrolein	ug/L	1	1	100	100	0		
	Acrylonitrile	ug/L	1	1	100	100	0		
	Benzene	ug/L	1	1	5	5	0		
	Bromodichloromethane	ug/L	3	1	5	5	2	0.5	10

TABLE B.3-3C
B056 LANDFILL RFI SITE ANALYTICAL DATA SCREENING SUMMARY AND DATA QUALITY (SURFACE WATER)
(Page 2 of 2)

Analyte Group	Constituent	Units	Total Number Samples Analyzed	Detect Data Summary			Non-Detect Data Summary		
				Total Samples w/ Detections	Minimum Detected Concentration	Maximum Detected Concentration	Total Samples ND	Minimum Detection Limit	Maximum Detection Limit
	Bromoform	ug/L	3	1	5	5	2	2	10
	Bromomethane	ug/L	3	1	5	5	2	2	10
	Carbon Disulfide	ug/L	1	1	5	5	0		
	Carbon Tetrachloride	ug/L	3	1	5	5	2	0.5	10
	Chlorobenzene	ug/L	3	1	5	5	2	0.5	10
	Chloroethane	ug/L	3	1	5	5	2	2	10
	Chloroform	ug/L	3	1	5	5	2	0.5	10
	Chloromethane	ug/L	3	1	5	5	2	2	10
	cis-1,2-Dichloroethene	ug/L	3	1	5	5	2	0.5	10
	cis-1,3-Dichloropropene	ug/L	3	1	5	5	2	0.5	10
	Dibromochloromethane	ug/L	3	1	5	5	2	0.5	10
	Dichlorodifluoromethane	ug/L	2	0			2	2	10
	Ethylbenzene	ug/L	1	1	5	5	0		
	Methyl ethyl ketone	ug/L	1	1	10	10	0		
	Methyl isobutyl ketone (MIBK)	ug/L	1	1	10	10	0		
	Methylene chloride	ug/L	3	1	5	5	2	2	10
	m-Xylene & p-Xylene	ug/L	1	1	5	5	0		
	o-Xylene	ug/L	1	1	5	5	0		
	Styrene	ug/L	1	1	5	5	0		
	Tetrachloroethene	ug/L	3	1	5	5	2	0.5	10
	Toluene	ug/L	1	1	5	5	0		
	trans-1,2-Dichloroethene	ug/L	3	1	5	5	2	0.5	10
	trans-1,3-Dichloropropene	ug/L	3	1	5	5	2	0.5	10
	Trichloroethene	ug/L	3	1	5	5	2	0.5	10
	Trichlorofluoromethane	ug/L	3	1	5	5	2	2	10
	Vinyl acetate	ug/L	1	1	5	5	0		
	Vinyl chloride	ug/L	3	1	5	5	2	0.5	10

Notes: NPDES data collected at Outfall 007, and data summary provided in Table B.3-2C.
ug/L - micrograms per liter

Table B.4-1

Chemicals of Potential Concern for Human Health
B056 Landfill RFI Site

Chemical	Soil (0 to 2 feet bgs)	Soil (0 to 10 feet bgs)	B056 RFI Site Chatsworth Groundwater (Indirect Pathway)	Group 8 Perched Groundwater (Direct Pathway)	Soil Vapor
Inorganic Compounds					
Boron	X	X			
Cadmium	X	X		X	
Hexavalent chromium		X			
Cobalt				X	
Copper		X		X	
Lead		X			
Mercury		X			
Molybdenum	X	X		X	
Nickel				X	
Perchlorate				X	
Selenium	X	X			
Silver	X	X			
Thallium	X	X			
VOCs					
1,1,1-Trichloroethane				X	
1,1,2-Trichloro-1,2,2-trifluoroethane				X	
1,1-Dichloroethane				X	
1,1-Dichloroethene				X	
1,2-Dichloroethane				X	
Acetone		X	X		
Benzene			X		
Chlorobenzene			X		
Chloromethane			X		
cis-1,2-Dichloroethene			X	X	
Methylene chloride				X	
o-Xylene				X	
Tetrachloroethene				X	
trans-1,2-Dichloroethene			X		
Trichloroethene			X	X	
SVOCs					
Acenaphthene	X	X			
Acenaphthylene	X	X			
Anthracene	X	X			
Benzo(a)anthracene	X	X			
Benzo(a)pyrene	X	X			
Benzo(b)fluoranthene	X	X			
Benzo(e)pyrene	X	X			
Benzo(g,h,i)perylene	X	X			
Benzo(k)fluoranthene	X	X			
bis(2-Ethylhexyl)phthalate	X	X			
Chrysene	X	X			
Dibenz(a,h)anthracene	X	X			
Diethylphthalate	X	X			
Di-n-butylphthalate	X	X			
Fluoranthene	X	X			
Fluorene	X	X			
Indeno(1,2,3-cd)pyrene	X	X			
Naphthalene	X	X			
Perylene	X	X			
Phenanthrene	X	X			
Pyrene	X	X			
Total Petroleum Hydrocarbons					
C14-C20(Diesel Range)	X	X			
C20-C30(Lubricant Oil Range)	X	X			

Table B.4-1

Chemicals of Potential Concern for Human Health
B056 Landfill RFI Site

Chemical	Soil (0 to 2 feet bgs)	Soil (0 to 10 feet bgs)	B056 RFI Site Chatsworth Groundwater (Indirect Pathway)	Group 8 Perched Groundwater (Direct Pathway)	Soil Vapor
Dioxins					
2,3,7,8-TCDD	X	X			
1,2,3,7,8-PeCDD	X	X			
1,2,3,4,7,8-HxCDD	X	X			
1,2,3,6,7,8-HxCDD	X	X			
1,2,3,7,8,9-HxCDD	X	X			
1,2,3,4,6,7,8-HpCDD	X	X			
OCDD	X	X			
2,3,7,8-TCDF	X	X			
1,2,3,7,8-PeCDF	X	X			
2,3,4,7,8-PeCDF	X	X			
1,2,3,4,7,8-HxCDF	X	X			
1,2,3,6,7,8-HxCDF	X	X			
2,3,4,6,7,8-HxCDF	X	X			
1,2,3,7,8,9-HxCDF	X	X			
1,2,3,4,6,7,8-HpCDF	X	X			
1,2,3,4,7,8,9-HpCDF	X	X			
PCBs					
Aroclor-1248	X				
Aroclor-1254	X	X			
PCB-105	X	X			
PCB-114	X	X			
PCB-118	X	X			
PCB-123	X	X			
PCB-126	X	X			
PCB-156	X	X			
PCB-157	X	X			
PCB-167	X	X			
PCB-169	X	X			
PCB-189	X	X			
PCB-77	X	X			
PCB-81	X	X			

Notes:
X - selected as a chemical of potential concern
VOC - volatile organic compound
SVOC - semi-volatile organic compound
PCDD/PCDF - polychlorinated dibenzo-p-dioxin and dibenzofurans
PCBs - polychlorinated biphenyls
bgs - below ground surface

Table B.4-2 (1 of 1)

Human Health Risk Estimates[1]
B056 Landfill RFI Site

Receptor	Soil Media[2]				Groundwater[3]				Total for Site Media			
	HI Range	CD[4]	Risk Range	CD	HI Range	CD	Risk Range	CD	HI Range	CD	Risk Range	CD
Adult Worker	0.004 - 0.03		5E-08 - 1E-06		<0.001 - <0.001		9E-10 - 6E-09		0.005 - 0.04		5E-08 - 1E-06	
Future Adult Recreator	<0.001 - 0.02		5E-09 - 8E-07		<0.001 - <0.001		1E-12 - 6E-12		<0.001 - 0.02		5E-09 - 8E-07	
Future Child Recreator	0.01 - 0.06		7E-08 - 7E-07		<0.001 - <0.001		6E-12 - 3E-11		0.01 - 0.06		7E-08 - 7E-07	
Future Adult Resident	0.007 - 0.03		6E-08 - 1E-06		<0.001 - 0.002		3E-09 - 2E-08		0.008 - 0.03		6E-08 - 1E-06	
Future Child Resident	0.07 - 0.2		4E-07 - 2E-06	a, b	0.003 - 0.005		1E-08 - 2E-08		0.07 - 0.2		4E-07 - 2E-06	a, b

Notes:

1. Risk estimates shown are a sum of all exposure pathways per media; the range reported is for the central tendency and reasonable maximum exposures, respectively.
2. Soil media risk estimates are a sum of all direct and indirect exposure so site soil and soil vapor.
3. Groundwater media risk estimates are a sum of indirect and direct exposure to site groundwater, except where indicated that direct exposure due to domestic groundwater use is excluded.
4. Chemical risk drivers are those COPCs detected onsite with an HI > 1, risk > $1x10^{-6}$ or significant risk contributors if HI < 1, risk < $1x10^{-6}$. Only major risk contributors listed if cumulative HI >> 1 or cancer risk >> $1x10^{-6}$.
5. Groundwater media risk estimates are for indirect exposure only and assume no domestic use of groundwater.

CD = Chemical risk driver
COPC = Chemical of potential concern
HI = Hazard index
NA = Not Applicable
PAHs = polynuclear aromatic hydrocarbons

a = Aroclor 1254
b = PAHs

Table B.4-3 (1 of 1)

Human Health Risk Assessment Uncertainty Analysis
B056 Landfill RFI Site

Assessment Element	Uncertainty	Magnitude of Impact	Direction of Impact
COPC Selection	A number of inorganics (copper, lead, and mercury) that were demonstrated to be consistent with background concentrations through Wilcoxon Rank Sum test were included as COPCs because the maximum detected concentrations were substantially above the maximum detected background concentration, and were located in areas of suspected metals impacts.	Moderate	Conservative
	One inorganic (molybdenum) that was selected as a COPC exhibited maximum detected concentrations equal to, or less than, the maximum background concentration for the site.	Moderate	Conservative
Exposure Pathways	Risks associated with drinking of groundwater are not realistic because the groundwater beneath the SSFL is not currently used as a drinking water source and the presence of the contamination will likely require a restriction on its future use as well.	High	Conservative
	Due to the configuration of the excavation (65 feet deep, vertical bedrock walls) there are no complete human/ecological exposure pathways. Therefore neither sediment nor surface water data from the bottom of the excavation was included in the HRA/ERA and no potential exposures evaluated.	Low	Not Conservative
	Future land use of the site is currently undecided but may be commercial or recreational, which have lower risks than residential.	Moderate	Uncertain
EPC Calculations	The extrapolation of soil TPH concentrations to individual petroleum constituent (i.e., PAHs) concentrations introduces some uncertainty into the EPC estimates for petroleum constituents.	Low	Conservative
	The 95% UCL concentration of some chemicals is greater than the maximum concentration, therefore the maximum was used as the EPC. This is considered to be a likely overestimation of the representative exposure point concentration because samples were collected in areas with the highest likelihood to detect the highest concentrations at the site.	Moderate	Conservative
	The maximum detected concentration of each COPC detected in groundwater was used as the EPC.	Moderate	Conservative
	The evaluation of metals concentrations in groundwater was based on both filtered and unfiltered samples. Additional unfiltered groundwater data is being collected per DTSC direction that might affect this evaluation.	Moderate	Conservative
	Vapor migration into indoor air has been estimated using a model which is being validated for the site. Preliminary findings show that the model conservatively over-predicts air concentrations when compared to flux measurements.	Moderate	Conservative
Cancer Slope Factor	Extrapolation of dose-response data from laboratory animals to humans.	High	Conservative
	Assumes that all carcinogens do not have a threshold below which carcinogenic response occurs, and therefore, any dose, no matter how small, results in some potential risk.	Moderate	Conservative
	Cancer slope factors derived from animal studies are the upper-bound maximum likelihood estimates based on a linear dose-response curve, and therefore, overstate carcinogenic potency.	Moderate	Conservative
Reference Dose	High degree of uncertainty in extrapolation of dose-response data from laboratory animals to humans.	High	Conservative

Notes:
COPC - chemical of potential concern
PAH - polycyclic aromatic hydrocarbon
TPH - total petroleum hydrocarbons
BTEX - benzene, toluene, ethylbenzene, and xylenes
EPC - exposure point concentration
UCL - upper confidence limit
HRA - human health risk assessment
DL - detection limit

Table B.4-4

Summary of Chemicals of Potential Ecological Concern
B056 Landfill RFI Site

Chemical	Soil (0 to 2 feet bgs)	Soil (0 to 4 feet bgs)	Soil (0 to 6 feet bgs)	Soil Vapor (0 to 6 feet bgs)
Inorganic Compounds				
Boron	X	X	X	
Cadmium	X	X	X	
Hexavalent chromium		X	X	
Copper		X	X	
Lead		X	X	
Molybdenum	X	X	X	
Perchlorate	X	X	X	
Selenium	X	X	X	
Silver	X	X	X	
Thallium	X	X	X	
VOCs				
Acetone	X	X	X	X
Benzene		X	X	X
Chlorobenzene				X
Chloromethane				X
cis-1,2-Dichloroethene				X
Ethylbenzene		X	X	
m,p-Xylene		X	X	
Methane				X
o-Xylene		X	X	
Toluene		X	X	
trans-1,2-Dichloroethene				X
Trichloroethene				X
Xylenes (total)		X	X	
SVOCs				
2,4-Dinitrophenol	X	X	X	
2-Methylnaphthalene		X	X	
4,6-Dinitro-o-cresol	X	X	X	
Acenaphthene	X	X	X	
Acenaphthylene	X	X	X	
Anthracene	X	X	X	
Benzo(a)anthracene	X	X	X	
Benzo(a)pyrene	X	X	X	
Benzo(b)fluoranthene	X	X	X	
Benzo(e)pyrene	X	X	X	
Benzo(g,h,i)perylene	X	X	X	
Benzo(k)fluoranthene	X	X	X	
bis(2-Ethylhexyl)phthalate	X	X	X	
Chrysene	X	X	X	
Dibenz(a,h)anthracene	X	X	X	
Diethylphthalate	X	X	X	
Di-n-butylphthalate	X	X	X	
Fluoranthene	X	X	X	
Fluorene	X	X	X	
Hexachlorobenzene			X	
Hexachlorobutadiene			X	
Indeno(1,2,3-cd)pyrene	X	X	X	
Naphthalene	X	X	X	
Perylene	X	X	X	
Phenanthrene	X	X	X	
Pyrene	X	X	X	

Table B.4-4

Summary of Chemicals of Potential Ecological Concern
B056 Landfill RFI Site

Chemical	Soil (0 to 2 feet bgs)	Soil (0 to 4 feet bgs)	Soil (0 to 6 feet bgs)	Soil Vapor (0 to 6 feet bgs)
Total Petroleum Hydrocarbons				
C08-C11(Gasoline Range)		X	X	
C14-C20(Diesel Range)	X	X	X	
C20-C30(Lubricant Oil Range)	X	X	X	
Dioxins				
2,3,7,8-TCDD	X	X	X	
1,2,3,7,8-PeCDD	X	X	X	
1,2,3,4,7,8-HxCDD	X	X	X	
1,2,3,6,7,8-HxCDD	X	X	X	
1,2,3,7,8,9-HxCDD	X	X	X	
1,2,3,4,6,7,8-HpCDD	X	X	X	
OCDD	X	X	X	
2,3,7,8-TCDF	X	X	X	
1,2,3,7,8-PeCDF	X	X	X	
2,3,4,7,8-PeCDF	X	X	X	
1,2,3,4,7,8-HxCDF	X	X	X	
1,2,3,6,7,8-HxCDF	X	X	X	
2,3,4,6,7,8-HxCDF	X	X	X	
1,2,3,7,8,9-HxCDF	X	X	X	
1,2,3,4,6,7,8-HpCDF	X	X	X	
1,2,3,4,7,8,9-HpCDF	X	X	X	
OCDF	X	X	X	
PCBs				
Aroclor-1248	X	X	X	
Aroclor-1254	X	X	X	
PCB-105	X	X	X	
PCB-114	X	X	X	
PCB-118	X	X	X	
PCB-123	X	X	X	
PCB-126	X	X	X	
PCB-156	X	X	X	
PCB-157	X	X	X	
PCB-167	X	X	X	
PCB-169	X	X	X	
PCB-189	X	X	X	
PCB-77	X	X	X	
PCB-81	X	X	X	

Notes:
X - selected as a chemical of potential ecological concern
VOC - volatile organic compound
SVOC - semi-volatile organic compound
PCB - polychlorinated biphenyl
PCDD/PCDF - polychlorinated dibenzo-p-dioxin and dibenzofurans
CPEC - chemical of potential ecological concern
bgs - below ground surface

Table B.4-5 (1 of 1)

Risk Estimates for Ecological Receptors
B056 Landfill RFI Site

Receptor	**Total for Site Media (Soil Only)**	
	HI Range[1]	CD[2]
Deer Mouse	21 - 29	Cadmium, molybdenum, selenium
without inhalation pathway	21 - 29	Cadmium, molybdenum, selenium
Thrush	2 - 4	Cadmium, selenium
Hawk	58 - 100	Lead, selenium
Using Large Home Range Factor[3]	2 - 3	Lead
Bobcat	6 - 11	Molybdenum, selenium
Using Large Home Range Factor[3]	0.03 - 0.05	None
Mule Deer	7 - 8	Cadmium, molybdenum, selenium
Using Large Home Range Factor[3]	0.2 - 0.2	None

Notes:
1. HI Range is the sum of the hazard quotients for all exposure pathways; the range reported is for the mean and 95% upper confidence limit estimates, respectively.
2. Chemical risk drivers are those CPECs detected onsite with an HQ > 1, or major risk contributors if cumulative HIs >> 1. "None" indicates that no chemical's HQs > 1.
3. The HIs for hawk, mule deer, and bobcat assume that their home ranges are equal to the RFI site acreage. This is an extremely conservative assumption; RFI site acreage is typically only a small fraction of a large animal's home range. The estimated HIs decrease to the values indicated above if an adjustment is made to reflect a more realistic home range for these receptors.

CD = Chemical risk driver
CPEC = Chemical of potential ecological concern
HI = Hazard Index
HQ = Hazard Quotient

Table B.4-6 (1 of 1)

Ecological Risk Assessment Uncertainty Analysis
B056 Landfill RFI Site

Assessment Element	Uncertainty	Magnitude of Impact	Direction of Impact
CPEC Selection	A number of inorganics (copper and lead) that were demonstrated to be consistent with background concentrations through Wilcoxon Rank Sum test were included as CPECs because the maximum detected concentrations were substantially above the maximum detected background concentration, were located in suspected areas of metals impacts and in some cases SQLs were above ESLs.	Moderate	Conservative
	One inorganic (molybdenum) that was selected as a CPEC exhibited maximum detected concentrations equal to, or less than, the maximum background concentration for the site.	Moderate	Conservative
EPC Calculations	The extrapolation of soil TPH concentrations to individual petroleum constituent (i.e. PAHs) concentrations introduces some uncertainty into the EPC estimates for petroleum constituents. Because several samples collected for SVOCs did not detect PAHs, the uncertainty associated with this procedure is low.	Low	Conservative
	The 95% UCL concentration of some chemicals is greater than the maximum concentration, therefore the maximum was used as the EPC. This is considered to be a likely overestimation of the representative exposure point concentration because samples were collected in areas with the highest likelihood to detect the highest concentrations at the site.	Moderate	Conservative
	The mean concentration for some chemicals exceeded the selected RME concentrations, therefore the RME concentration was also used as the CTE concentration under some circumstances. The mean could be biased high by higher detection limits.	Moderate	Conservative
	Estimation of soil vapor concentrations overstates actual burrow concentrations: 1. Model is conservative. 2. Air flow in burrows is not accounted for.	Moderate	Conservative
Wildlife Exposure Factors	Some wildlife exposure factors were based on allometric adjustments or taxonmically similar species	Low	Conservative
Exposure Pathways	Dermal and inhalation (for surface-dwelling animals) exposure pathway not quantified	Low	Not Conservative
	Due to the configuration of the excavation (65 feet deep, vertical bedrock walls) there are no complete human/ecological exposure pathways. Therefore neither sediment nor surface water data from the bottom of the excavation was included in the HRA/ERA and no potential exposures evaluated.	Low	Not Conservative
Toxicity Reference Value	High degree of uncertainty in extrapolation of dose-response data from laboratory animals to representative receptors.	High	Uncertain
	Lead exposures are based upon toxicity values derived from lead acetate, which is a form of lead that is significantly more bioavailable than weathered lead expected to be present in RFI site soils.	High	Conservative
	Avian toxicity values are only available for a limited number of chemicals. For the types of chemicals observed at the ESADA RFI site, there is likely little difference in the degree of toxicity between mammals and avian species.	Moderate	Not conservative
	Use of acute/subchronic-to-chronic and endpoint-to-NOAEL uncertainty factors to estimate chronic NOAEL-equivalent TRVs.	Moderate	Conservative
	Lack of TRVs for amphibians and reptiles -- note that no threatened or endangered amphibians or reptiles are known to reside at SSFL	Moderate	Not conservative
	Use of chronic NOAEL-equivalent TRVs	High	Conservative

Notes:
CPEC - chemical of potential ecological concern
UCL - upper confidence limit
PAH - polycyclic aromatic hydrocarbon
EPC - exposure point concentration
bgs - below ground surface
TPH - total petroleum hydrocarbons
SVOC - semivolatile organic chemicals
BTEX - benzene, toluene, ethylbenzene, and xylenes
SQL - sample quantitation limit
ESL - ecological screening level

TABLE B.5-1
B056 LANDFILL RFI SITE SURFICIAL MEDIA SITE ACTION RECOMMENDATIONS
(Page 1 of 1)

Area	Associated Chemical Use Area Location	CMS Areas (1) (Figure B.5-1)	Recommended for Further Consideration in CMS Based On:			
			Residential Receptor (2)	Industrial Receptor (2)	Recreational Receptor (2)	Ecological Receptor (2)
B056 Landfill	1	B056-1	Aroclor 1254, PAHs	--	--	Cadmium, selenium, lead, molybdenum
Southern Debris Area	2a	B056-1	--	--	--	Selenium
Roadside Debris Area	2b	--	--	--	--	--
B056 Excavation	3a	--	--	--	--	--
B056 Excavation Debris Area	3b	B056-2*	--	--	--	Aroclor 1248, 1254, 1260
B100 Discharge Area	Upgradient of 1 and 2a	B056-3*	Dioxins (3)	--	--	Dioxins (3)

General Notes:

'--' Indicates area is recommended for No Further Action (NFA) for respective receptor, or parameter not applicable; Not recommended for CMS evaluation.

' * ' Indicates area also recommended for source stabilization to address potential surficial migration of contamination.

Notes:

(1) CMS Areas are numbered in sequence. Extent of CMS Areas shown on Figures B.5-1 and are approximate and reflect site action recommendations based on characterization and risk assessment results inclusive for all receptors (See Section B.5).

(2) CMS recommendations are based on compounds considered risk drivers (excess cancer risk > 1 x 10^{-6} or hazard index > 1) and/or significant risk contributors.

(3) Source and extent of dioxins also recommended for evaluation in Group 5 RFI Report.

Acronyms:

AOC = Area of Concern

CMS = Corrective Measures Study

PAHs = Polynuclear aromatic hydrocarbons

B100 = Building 100

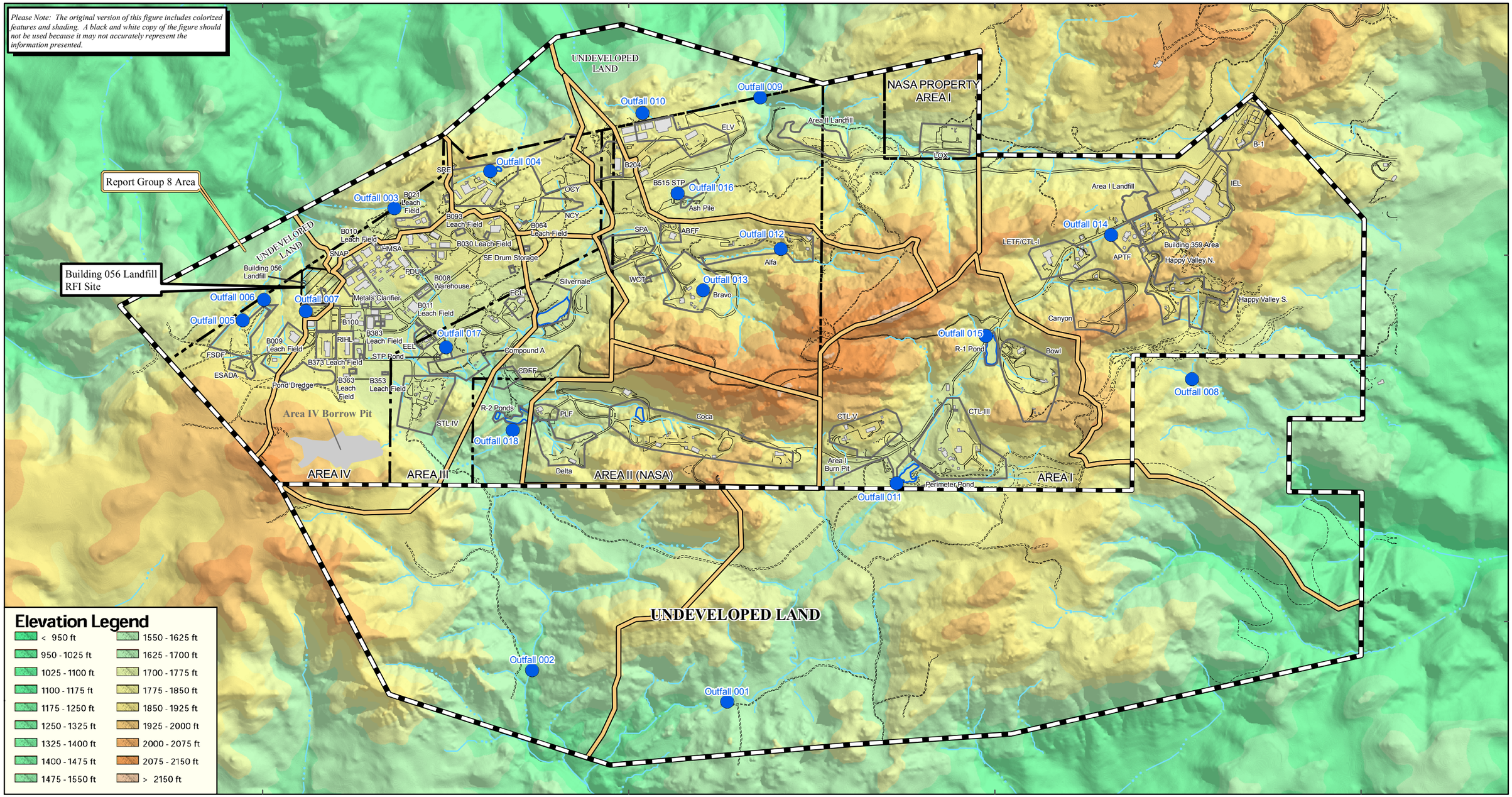
B056 = Building 056

TABLE B.5-2
SUMMARY OF B056 LANDFILL RFI SITE SURFICIAL MEDIA CMS AREA RECOMMENDATIONS
(Page 1 of 1)

CMS Area	Description	Chemical Risk Drivers and Contributors	Rationale
B056-1	B056 Landfill and Southern Debris Area (Chemical Use Areas 1 and 2a)	Cadmium, lead, molybdenum, selenium, PAHs, Aroclor 1254	The B056 Landfill and Southern Debris Area contain fill materials with elevated chemical concentrations of metals, PAHs, and PCBs in a few localized areas. Fill materials primarily consist of inert soil, bedrock, and concrete, but scrap metal, drums, and wood also noted. Extent of fill materials delineated by soil investigation areas, historical photographs and bedrock outcrops.
B056-2*	B056 Excavation Debris Area (Chemical Use Area 3b)	Aroclors 1248, 1254, and 1260	Debris area with elevated PCBs in soil. Extent delineated by observed debris and bedrock outcrops. Given proximity to surface water in the B056 Excavation, this area is recommended for stabilization measures.
B056-3*	Building 100 Discharge Area (Upgradient from Chemical Use Area 2a)	Dioxins	Soil with elevated dioxins along north slope of Building 100 and near lined discharge ditch. Extent shown considered approximated until further evaluation of extent and source conducted as part of Group 5 RFI Report. Given proximity to the drainage west of the B056 Landfill, this area is recommended for stabilization measures.

* Indicates area also recommended for source stabilization to address potential surficial migration of contaminants.

FIGURES



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0 1,300
FEET

MAP COORDINATES IN STATEPLANE, NAD 27, ZONE V

RFI SITES

AREA I
SWMU 4.1 - B-1 Area
SWMU 4.2 - Area I Landfill
SWMUs 4.3, 4.4 and AOC - Instrument and Equipment Laboratories (IEL)
SWMU 4.5, 4.6 - LOX Plant Former Sump/Clarifier and Drum Disposal Area
SWMU 4.7 - Component Test Laboratory III (CTL-III) Area
SWMU 4.8 - Area I Burn Pit
SWMU 4.9, AOC - Advanced Propulstion Test Facility (APTF) Area
SWMU 4.12 - Laser Engineering Test Facility (LETF)/Component Test Lab I (CTL-I) Area
SWMU 4.14 - Canyon Area
SWMU 4.15 and AOC - Bowl Area and Building 901 Leachfield
SWMU 4.16 - Area I Reservoir (R-1 Pond)
SWMU 4.17 - Perimeter Pond
AOC - Building 359 Sump
AOC - Happy Valley Area

AREA II
SWMU 5.1 - Area II Landfill
SWMU 5.2 - ELV Final Assembly, Building 206
SWMU 5.5 and AOC - Building 204 Area
SWMU 5.6 - Former Incinerator Ash Pile
SWMU 5.7 - Hazardous Waste Storage Area Waste Coolant Tank (WCT)
SWMU 5.9, 5.10, 5.11 - Alfa Area
SWMU 5.12, 5.13, 5.14, 5.15 - Alfa/Bravo Skim Pond and Bravo Area
SWMU 5.18, 5.19 - Coca Area
SWMU 5.20, 5.21, 5.22 - Propellant Load Facility (PLF)
SWMU 5.23 - Delta Area
SWMU 5.26 - R-2A and R-2B Ponds
AOC - Building 515 Sewage Treatment Plant
AOC - Storable Propellant Area (SPA)
AOC - Alfa/Bravo Fuel Farm
AOC - Coca/Delta Fuel Farm
AOC - Building 224 Leach Field

AREA III
SWMUs 6.1, 6.3, AOC - Engineering Chemistry Laboratory (ECL) Area
SWMU 6.4 Compound A Facility
SWMU 6.5 Systems Test Laboratory IV (STL-IV) Area
SWMU 6.8 - Silvernale Reservoir
SWMU 6.9 - Environmental Effects Laboratory (EEL)
AOC - Sewage Treatment Plant (STP) Pond Area

AREA IV
SWMU 7.1 - Building 56 Landfill
SWMU 7.3 - Former Sodium Disposal Facility (FSDF)
SWMU 7.4 - Old Conservation Yard (OCY)
SWMU 7.5 - Building 100 Trench
SWMU 7.6 - Radioactive Materials Handling Facility (RMHF)

AREA IV (cont)
SWMU 7.7 - Rockwell International Hot Laboratory (RIHL)
SWMU 7.8 - New Conservation Yard (NCY)
SWMU 7.9 - ESADA Chemical Storage Area
SWMU 7.10 - Former Coal Gasification PDU
AOC - Former Hazardous Materials Storage Area (HMSA)
AOC - Chemistry Laboratory Metals Clarifier
AOC - Pond Dredge Area
AOC - Sodium Reactor Experiment (SRE) Area
AOC - SE Drum Storage Yard
AOC - SNAP Facility
AOC - Boeing Area IV Leach Fields
AOC - DOE Area IV Leach Fields

Legend
SSFL Property Boundary
Report Group Boundary
Administrative Boundary
RFI Boundary
Building 056 Landfill
Building
Pond
Drainage
Dirt Road
Road
NPDES Outfall

Site Location Map
B056 Landfill RFI Site

SANTA SUSANA FIELD LABORATORY

Date: Oct 01, 2007

Document: RFI-Report-Group8_B056_RFI.mxd

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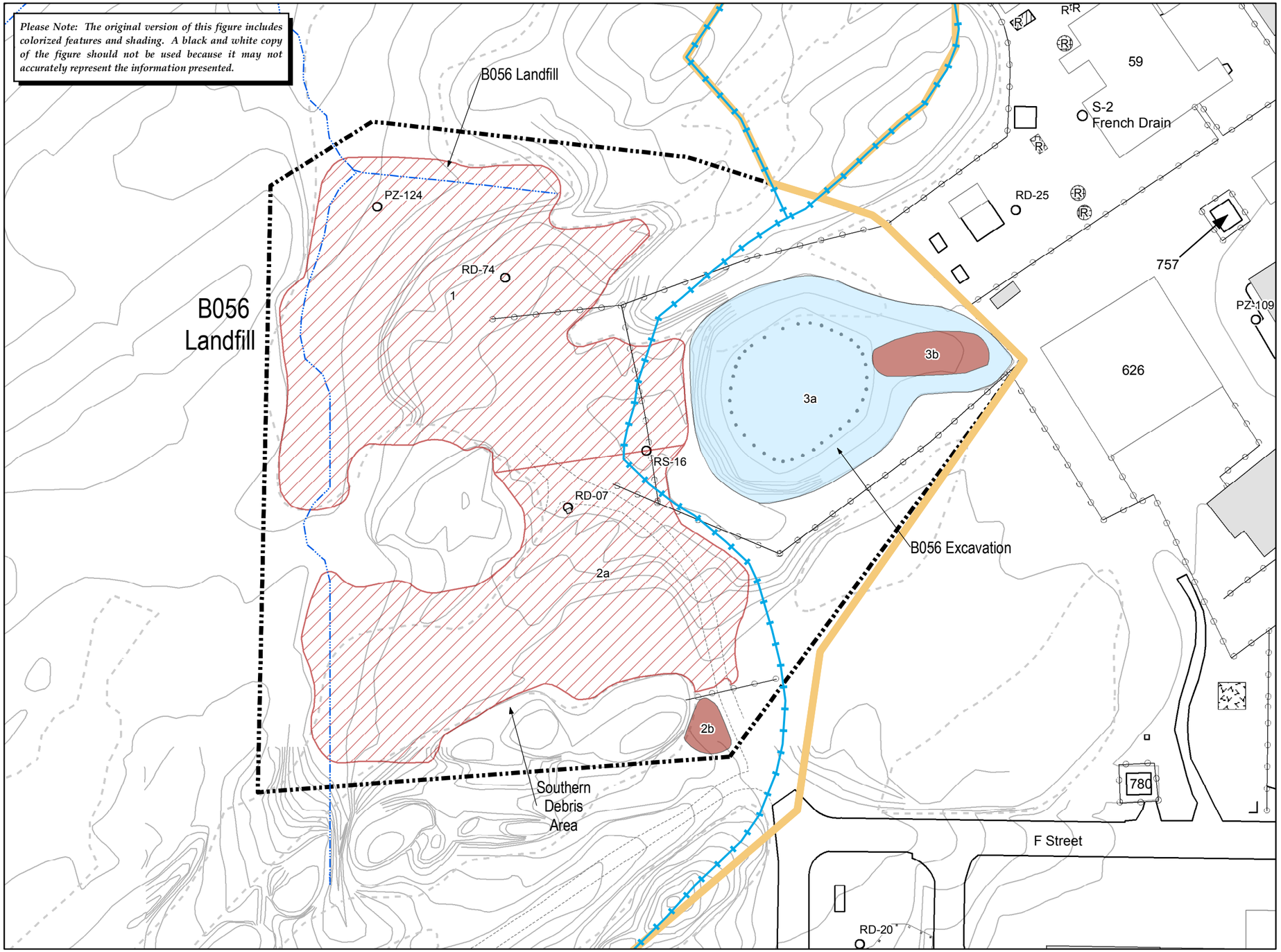
FIGURE B.1-1



Base Map Legend

- Report Group Boundary
- RFI Site Boundary
- Existing Building or Structure
- Removed Building or Structure
- Awning
- Other Tanks
- Solvent Tank
- Petroleum Fuel/Oil Tank
- Hydrazine Tank
- Dirt Road
- A/C Curbing
- Fence
- Rock Outcrop
- Elevation Contour
- Surface Water Divide
- Drainage
- Pond
- Possible Pond
- Leach Field
- Pipe
- Well

Note: R = Removed Tank

Chemical Use Areas

- Multiple Use
- Solvent
- Petroleum
- Oils / PCBs
- Metal
- Perchlorate
- Hydrazine
- * Debris
- * Landfill
- Leach Field
- * Potential

(* Chemical Use Area present in this RFI site)

CODE	CATEGORY	Chemical Use Area Name
1	Landfill	Building 056 Landfill
2a	Landfill	Southern Debris Area
2b	Debris	Roadside Debris Area
3a	Potential	Building 056 Excavation
3b	Debris	Building 056 Excavation Debris Area

Chemical Use Areas
B056 Landfill RFI Site

Date: Sep 30, 2007

Document: RFI-Report-Group8_B056_Chemical_Use_11x17.mxd

1 inch equals 80 feet

0 80 160 Feet

SANTA SUSANA FIELD LABORATORY

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FIGURE B.2-1

Soil Sample Location Symbol Legend

▼ Soil Matrix Sample ● Soil Vapor Sample

This figure accurately depicts the locations of bedrock and samples BLBS056, BLTS18, and BLLS25; these are not accurately shown on other site figures.

CODE	CATEGORY	Chemical Use Area Name
1	Landfill	Building 056 Landfill
2a	Landfill	Southern Debris Area
2b	Debris	Roadside Debris Area
3a	Potential	Building 056 Excavation
3b	Debris	Building 056 Excavation Debris Area

Chemical Use Areas (★Chemical Use Area present in this RFI site)

- Multiple Use
- Solvent
- Petroleum
- Oils / PCBs
- Metal
- Perchlorate
- Hydrazine
- ★ Debris
- ★ Landfill
- Leach Field
- ★ Potential

Base Map Legend

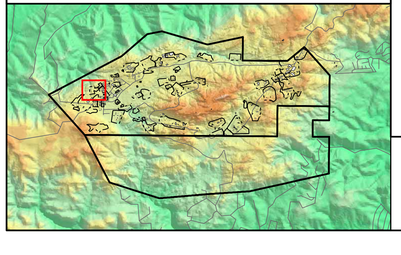
- Administrative Area Boundary
- RFI Site Boundary
- Report Group Boundary
- Existing Building or Structure
- Removed Building or Structure
- Other Tanks
- Solvent Tank
- Petroleum Fuel/Oil Tank
- Hydrazine Tank
- Awning
- Dirt Road
- A/C Curbing
- Fence
- Pipe
- Leach Field
- NPDES Outfall
- Well
- Pond
- Possible Pond
- Drainage
- Surface Water Divide
- Elevation Contour
- Rock Outcrop
- Cross Section
- Trench

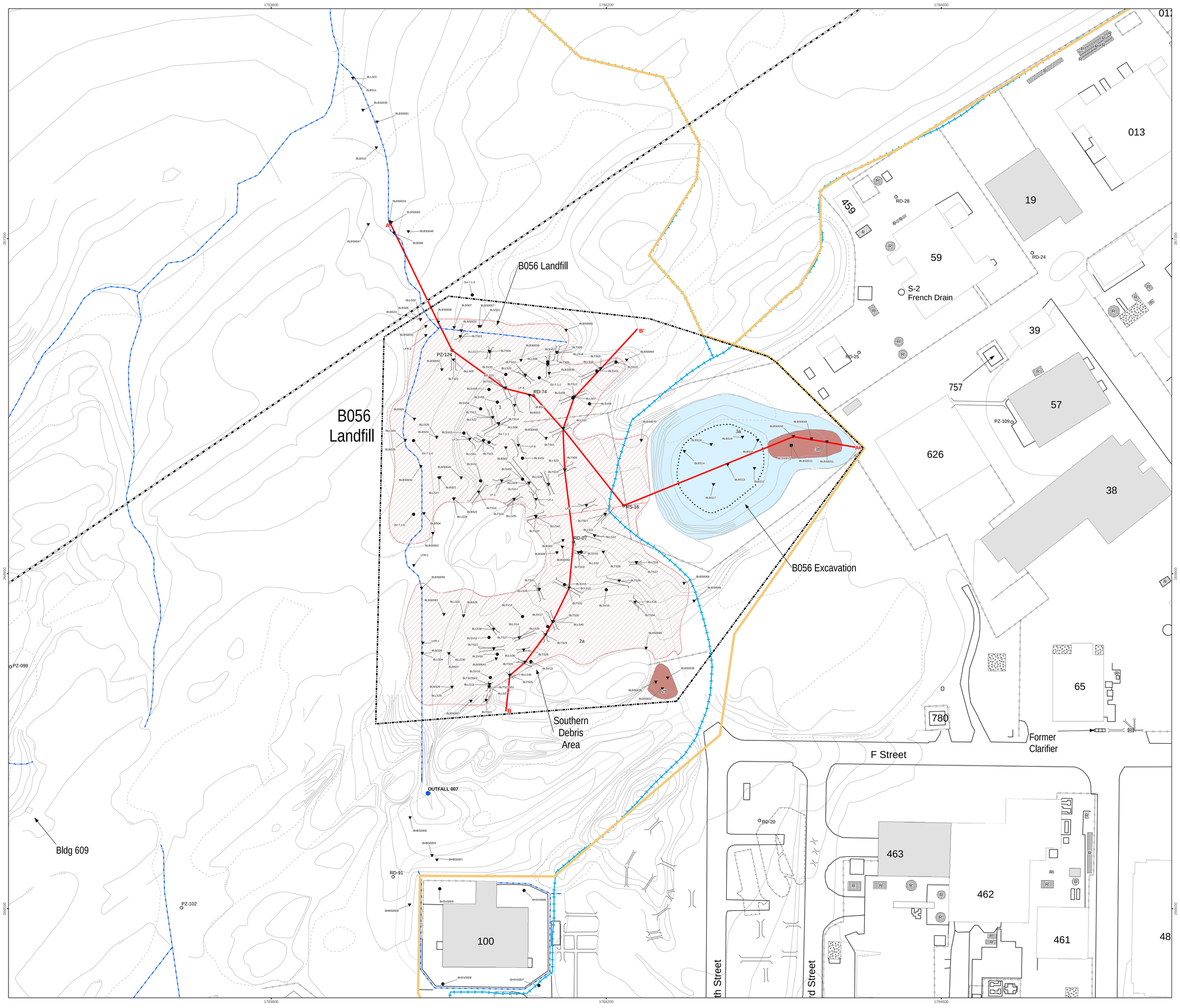
Note: R = Removed Tank

Date: Sept 30, 2007 Document: RFI-Report-Group8_B056_Samples_E.mxd

ANSI E 44x34

1 inch equals 40 feet 0 40 80 Feet





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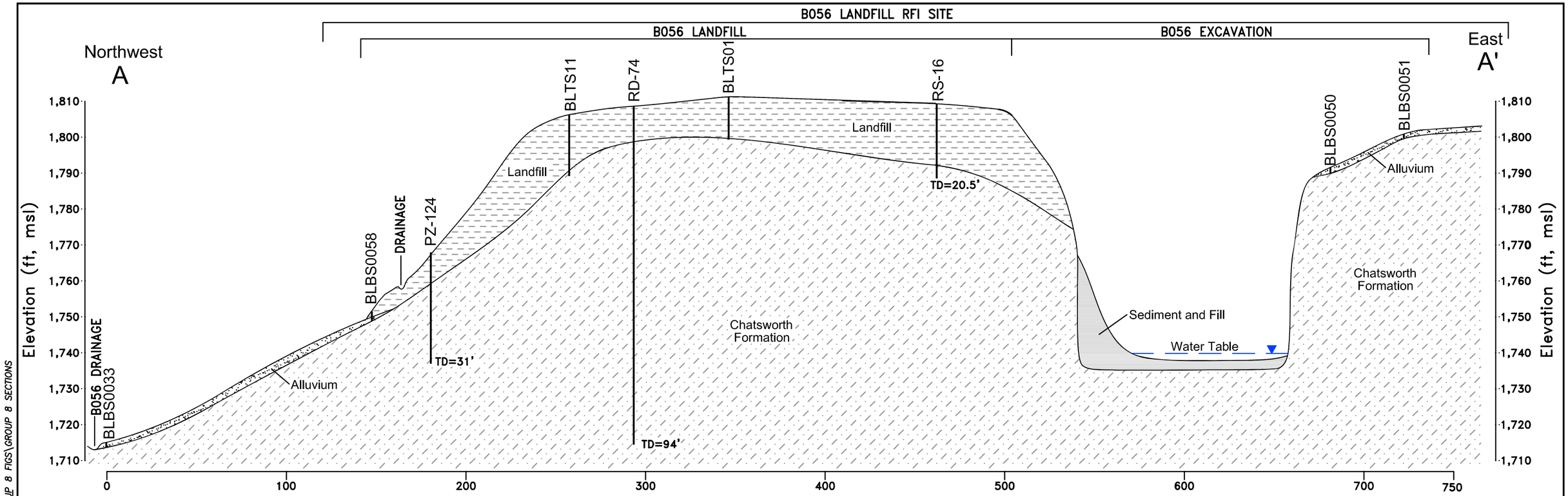
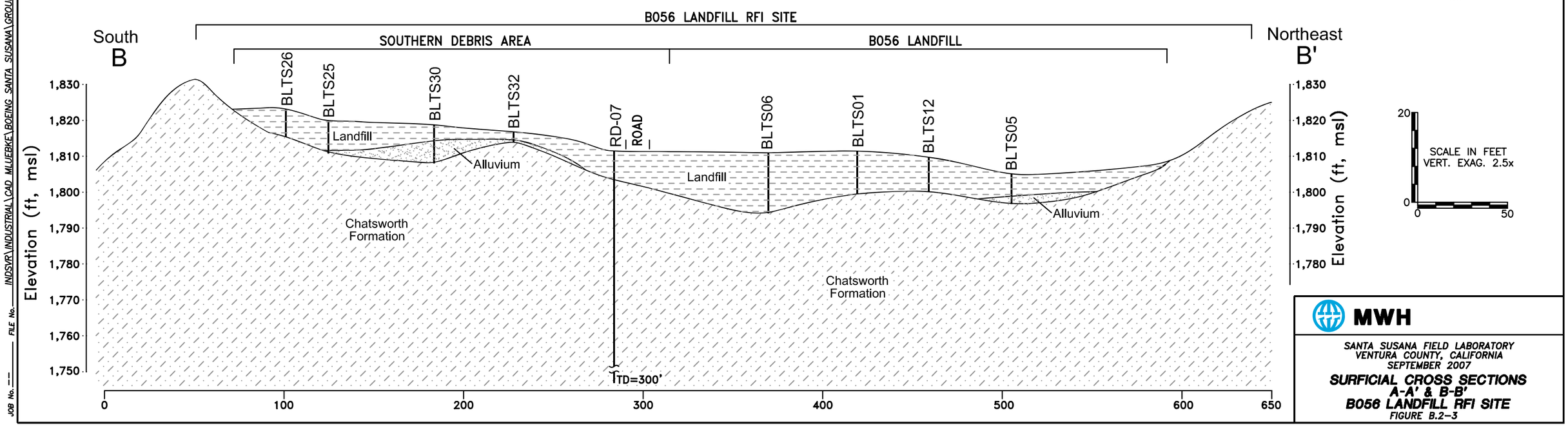
Santa Susana Field Laboratory

Sample and Trench Locations
B056 Landfill RFI Site

FIGURE B.2-2





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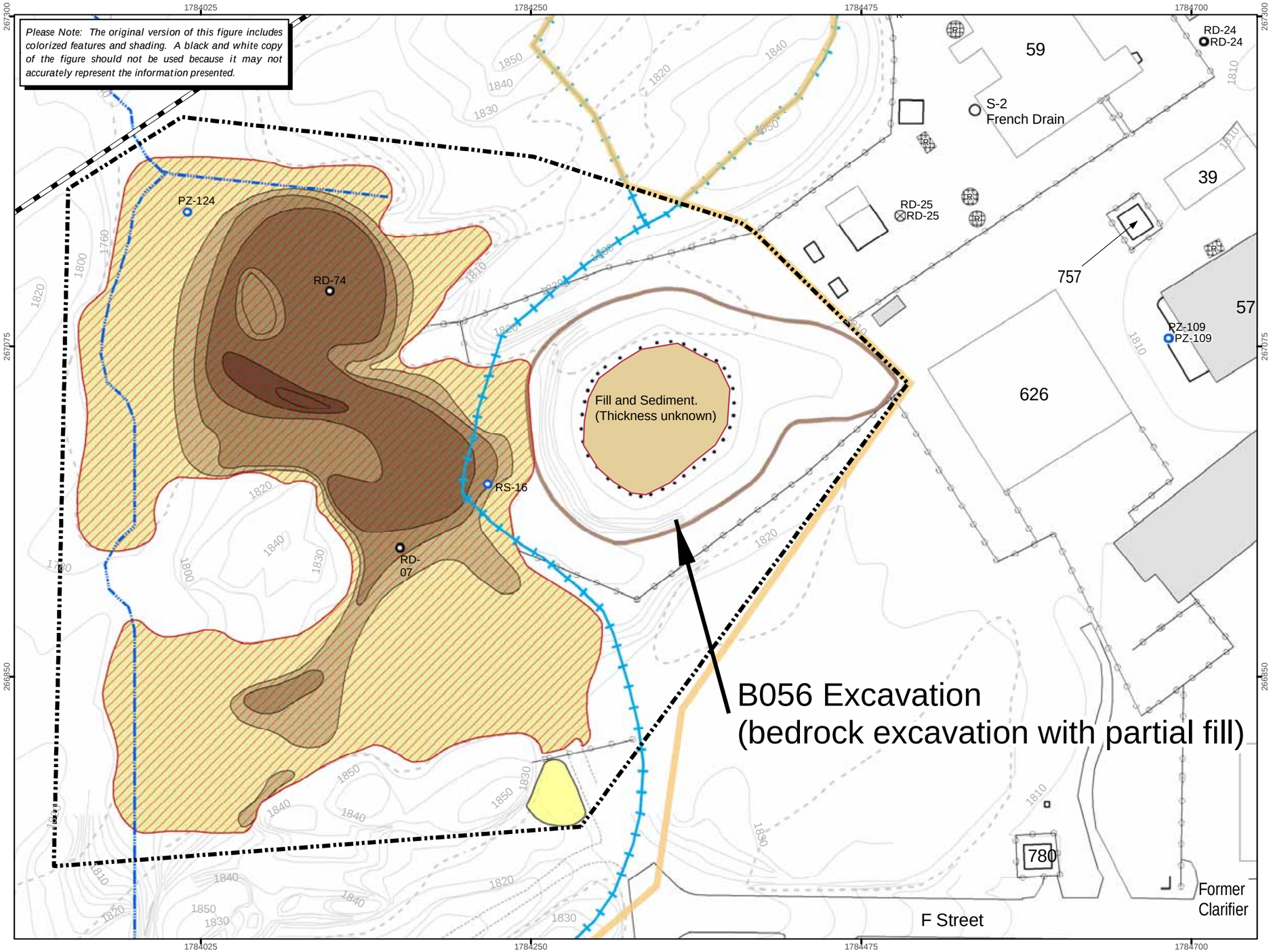
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA
SEPTEMBER 2007

SURFICIAL CROSS SECTIONS A-A' & B-B'
B056 LANDFILL RFI SITE
FIGURE B.2-3

JOB No. --- FILE No. INDSVR\INDUSTRIAL\CAD MLUEBKE\BOEING SANTA SUSANA\GROUP 8 FIGS\GROUP 8 SECTIONS



Base Map Legend

- Administrative Area Boundary
- RFI Site Boundary
- Report Group Boundary
- Existing Building or Structure
- Removed Building or Structure
- Other Tanks
- Solvent Tank
- Petroleum Fuel/Oil Tank
- Hydrazine Tank
- Dirt Road
- A/C Curbing
- Fence
- Rock Outcrop
- Elevation Contour
- Surface Water Divide
- Drainage
- Lined Drainage
- Pond
- Possible Pond
- Leach Field
- Pipe
- Well
- NPDES Outfall

Groundwater Wells

- Near Surface
- Chatsworth
- Abandoned Well

Note: R = Removed Tank

Approximate Areas of Soil Disturbance

- Excavation
- Landfill
- Other Soil Disturbance Area

Isopach Depth

- 0' - 5'
- 6' - 10'
- 11' - 15'
- 16' - 20'
- 21' - 25'

Note: Disturbed soils around buildings and/or structures are approximate and are assumed to extend 2 feet around edges of the pad.

Soil Disturbance Areas
B056 Landfill RFI Site

Date: Sep 30, 2007

Document: RFI-Report-Group8_B056_Dist.mxd

1 inch equals 70 feet

0 70 140 Feet

SANTA SUSANA FIELD LABORATORY

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FIGURE
B.2-4

Soil Sample Location Symbol Legend

- ▲ Soil sample location with detected VOC Chemical Data
- ● Soil vapor sample location with detetected VOC Chemical Data
- ▲ Soil sample location with no detected VOC Chemical Data
- ● Soil vapor sample location with no detected VOC Chemical Data
- △ Soil sample location not analyzed for VOC Chemical Data
- ○ Soil vapor sample location not analyzed for VOC Chemical Data
- △ Contained unit soil sample
- △ Refused sample (refusal depth < 1' below ground surface)
- ▲ Soil sample not analyzed by any sample method

Comparison Levels

VOCs (soil)	Background (µg/kg)	Res RBSL (µg/kg)	Eco RBSL (µg/kg)
Acetone	- -	51000	46000
Methylene chloride	- -	4	27000
Naphthalene	- -	6000	230000
Trichlorofluoromethane	- -	110	320000

VOCs (vapor)	Background (µg/L)	Res RBSL (µg/L)	Eco RBSL (µg/L)
Methane	- -	- -	- -
Methylene chloride	- -	2.7	0.87
Trichlorofluoromethane	- -	200	91

Note: (µg/kg) = micrograms per kilogram
(µg/L) = micrograms per liter

Data Date: 20070919

Background	Background Level
Res RBSL	Residential Risk-Based Screening Level
Eco RBSL	Ecological Risk-Based Screening Level

Data Box Information

Sample Location ID			
BLBS01	1.00	Depth in Feet	(Historical Sample)
	Primary	Sample Type	
	BLBS01S01	Unique Sample Identifier	
	7/10/2005	Date	

12.05	Detect with sample concentration shown
0.06	Non-Detect with lab detection limit shown
J	Analyte positively identified; Associated numerical value is considered estimated
*	Data validation not performed
NA	Analysis not conducted
[#]	If more than one result per sample depth, the maximum is presented, with number of results in backets.

Note: "12.05" and "<0.06" are for reference only and may not represent actual sample results.

Detect	Non-Detect	
12.05	<0.06	Exceeds Background
12.05	<0.06	Exceeds Background + Res RBSL
12.05	<0.06	Exceeds Background + Eco RBSL
12.05	<0.06	Exceeds Background + Res RBSL + Eco RBSL

Chemical Use Areas

(* Chemical Use Area present in this RFI site)

- Multiple Use
- Solvent
- Petroleum
- Oils / PCBs
- Metal
- Perchlorate
- Hydrazine
- * Debris
- * Landfill
- Leach Field
- * Potential

Base Map Legend

- Administrative Area Boundary
- RFI Site Boundary
- Report Group Boundary
- Existing Building or Structure
- Removed Building or Structure
- Other Tanks
- Solvent Tank
- Petroleum Fuel/Oil Tank
- Hydrazine Tank
- Awning
- Dirt Road
- A/C Curbing
- Fence
- Pipe
- Leach Field
- NPDES Outfall
- Well
- Pond
- Possible Pond
- Drainage
- Surface Water Divide
- Elevation Contour
- Rock Outcrop
- Trench

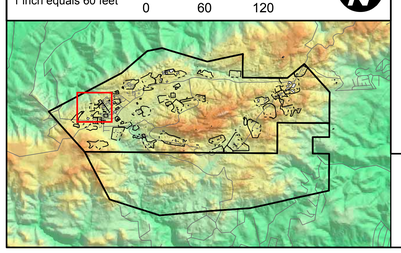
Note: R = Removed Tank

Date: Sep 30, 2007 Document: RFI-Report-Group8_B056_VOC_E.mxd

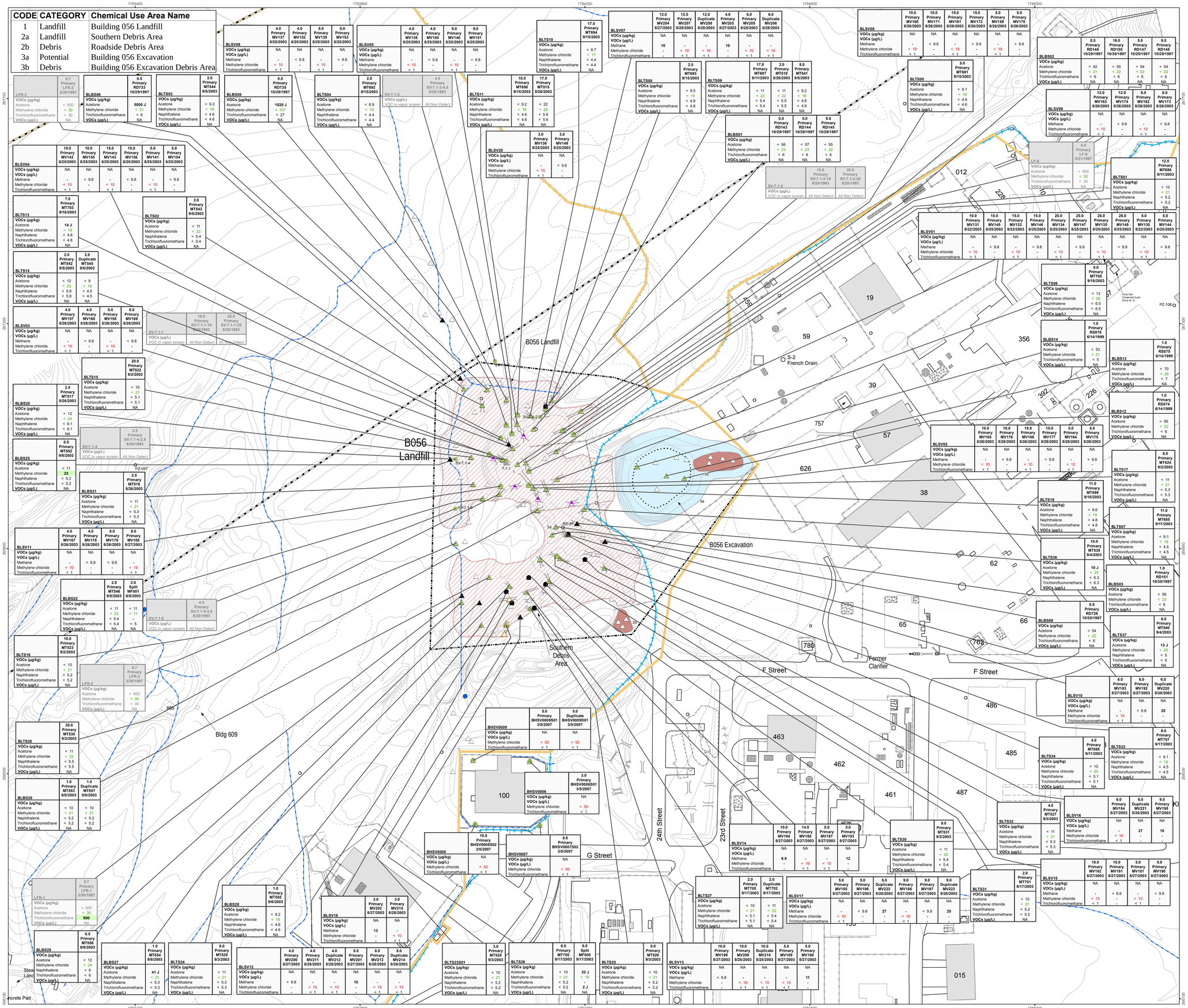
ANSI E 44x34

1 inch equals 60 feet

0 60 120 Feet



CODE	CATEGORY	Chemical Use Area Name
1	Landfill	Building 056 Landfill
2a	Landfill	Southern Debris Area
2b	Debris	Roadside Debris Area
3a	Potential	Building 056 Excavation
3b	Debris	Building 056 Excavation Debris Area



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Santa Susana Field Laboratory

VOC Chemical Data Results
B056 Landfill RFI Site

FIGURE B.3-1

Soil Sample Location Symbol Legend

- ▲ Soil sample location with detected SVOC Chemical Data
- ▲ Soil sample location with no detected SVOC Chemical Data
- △ Soil sample location not analyzed for SVOC Chemical Data
- △ Contained unit soil sample
- △ Refused sample (refusal depth < 1' below ground surface)
- ▲ Soil sample not analyzed by any sample method

Comparison Levels

SVOCs	Background (µg/kg)	Res RBSL (µg/kg)	Eco RBSL (µg/kg)
1-Methyl naphthalene	- -	230000	230000
2-Methylnaphthalene	- -	230000	230000
Acenaphthene	- -	3400000	2500
Acenaphthylene	- -	1700000	810000
Anthracene	- -	17000000	2400
Benzo(a)anthracene	- -	600	1400
Benzo(a)pyrene	- -	60	4700
Benzo(b)fluoranthene	- -	600	4600
Benzo(ghi)perylene	- -	- -	6200
Benzo(k)fluoranthene	- -	600	3600
bis(2-Ethylhexyl) phthalate	- -	250000	4900
Chrysene	- -	6000	2400
Dibenzo(a,h)anthracene	- -	170	1700
Diethyl phthalate	- -	46000000	5200000
Di-n-butyl phthalate	- -	5700000	490
Fluoranthene	- -	2300000	130000
Fluorene	- -	2300000	1600
Indeno(1,2,3-cd)pyrene	- -	600	3900
Naphthalene	- -	6000	230000
Phenanthrene	- -	1700000	1300
Pyrene	- -	1700000	79000

Note: (ng/kg) = nanograms per kilogram

Data Date: 20070919

Background Background Level
Res RBSL Residential Risk-Based Screening Level
Eco RBSL Ecological Risk-Based Screening Level

Data Box Information

Sample Location ID — BLBS01 | 1.00 Primary BLBS01S01 7/10/2005 — Depth in Feet; Sample Type; Unique Sample Identifier; Date

(Historical Sample)

12.05	Detect with sample concentration shown
< 0.06	Non-Detect with lab detection limit shown
J	Analyte positively identified; Associated numerical value is considered estimated
*	Data validation not performed
NA	Analysis not conducted
[#]	If more than one result per sample depth, the maximum is presented, with number of results in backets.

Note: "12.05" and "<0.06" are for reference only and may not represent actual sample results .

Detect	Non-Detect	
12.05	<0.06	Exceeds Background
12.05	<0.06	Exceeds Background + Res RBSL
12.05	<0.06	Exceeds Background + Eco RBSL
12.05	<0.06	Exceeds Background + Res RBSL + Eco RBSL

Chemical Use Areas

(* Chemical Use Area present in this RFI site)

Multiple Use; Solvent; Petroleum; Oils / PCBs; Metal; Perchlorate; Hydrazine; * Debris; * Landfill; Leach Field; * Potential

Base Map Legend

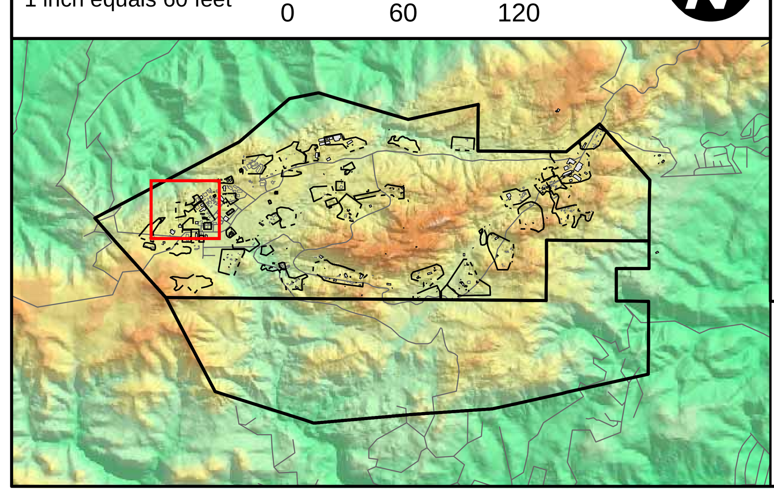
Administrative Area Boundary; RFI Site Boundary; Report Group Boundary; Existing Building or Structure; Removed Building or Structure; Other Tanks; Solvent Tank; Petroleum Fuel/Oil Tank; Hydrazine Tank; Awning; Dirt Road; A/C Curbing; Fence; Pipe; Leach Field; NPDES Outfall; Well; Pond; Possible Pond; Drainage; Surface Water Divide; Elevation Contour; Rock Outcrop; Trench

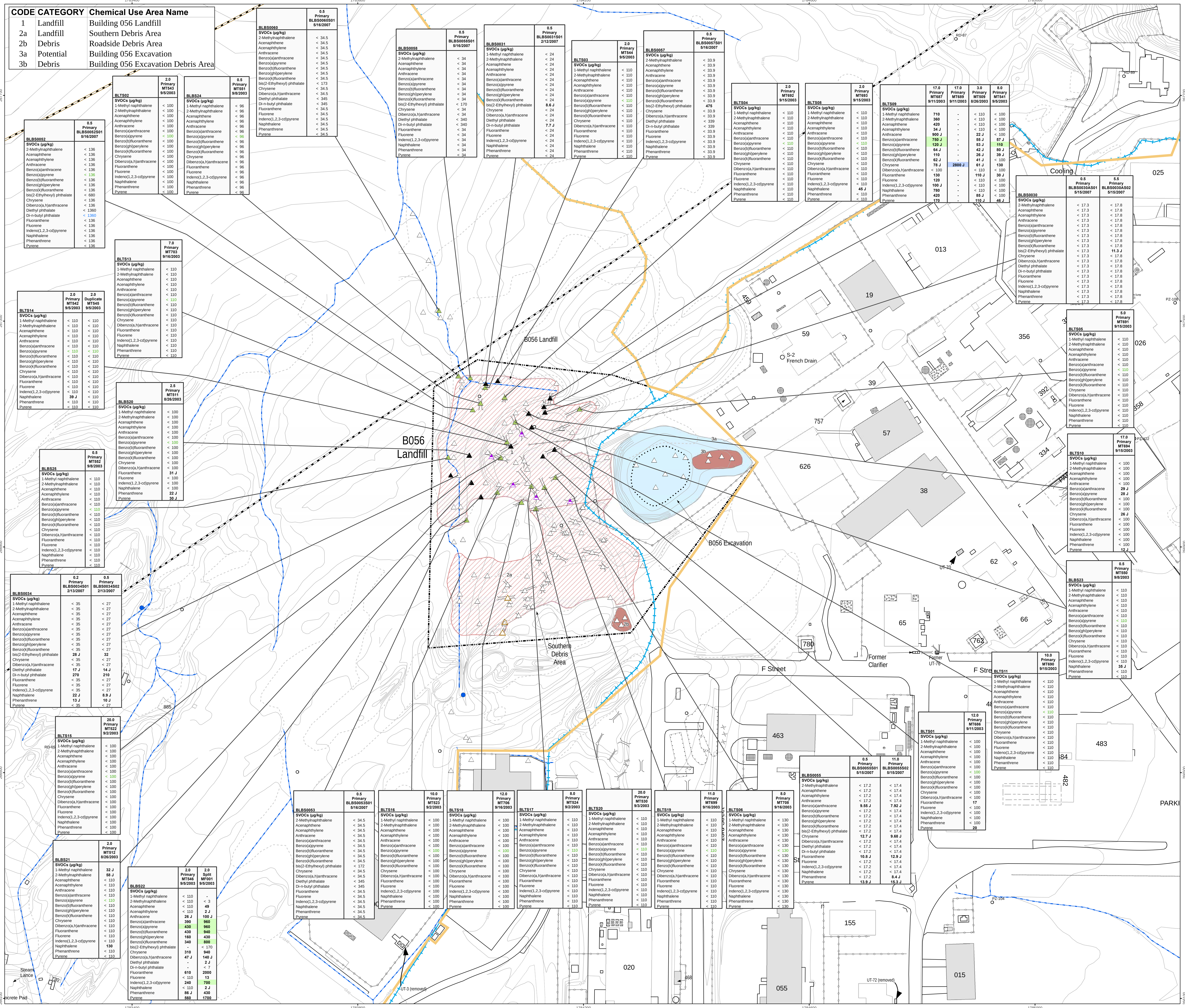
Note: R = Removed Tank

Date: Sep 29, 2007 Document: RFI-Report-Group8_B056_SVOC_N_E.mxd

ANSI E 44x34

1 inch equals 60 feet — 0 60 120 Feet





CODE	CATEGORY	Chemical Use Area Name
1	Landfill	Building 056 Landfill
2a	Landfill	Southern Debris Area
2b	Debris	Roadside Debris Area
3a	Potential	Building 056 Excavation
3b	Debris	Building 056 Excavation Debris Area

BLBS0052 SVOCs (µg/kg)	0.5 Primary BLBS0052S01 5/16/2007
2-Methylnaphthalene	< 136
Acenaphthene	< 136
Acenaphthylene	< 136
Anthracene	< 136
Benzo(a)anthracene	< 136
Benzo(a)pyrene	< 136
Benzo(b)fluoranthene	< 136
Benzo(ghi)perylene	< 136
Benzo(k)fluoranthene	< 136
bis(2-Ethylhexyl) phthalate	< 680
Chrysene	< 136
Dibenzo(a,h)anthracene	< 136
Diethyl phthalate	< 1360
Di-n-butyl phthalate	< 1360
Fluoranthene	< 136
Fluorene	< 136
Indeno(1,2,3-cd)pyrene	< 136
Naphthalene	< 136
Phenanthrene	< 136
Pyrene	< 136

BLTS02 SVOCs (µg/kg)	2.0 Primary MT543 9/5/2003
1-Methyl naphthalene	< 100
2-Methylnaphthalene	< 100
Acenaphthene	< 100
Acenaphthylene	< 100
Anthracene	< 100
Benzo(a)anthracene	< 100
Benzo(a)pyrene	< 100
Benzo(b)fluoranthene	< 100
Benzo(ghi)perylene	< 100
Benzo(k)fluoranthene	< 100
Chrysene	< 100
Dibenzo(a,h)anthracene	< 100
Fluoranthene	< 100
Fluorene	< 100
Indeno(1,2,3-cd)pyrene	< 100
Naphthalene	< 100
Phenanthrene	< 100
Pyrene	< 100

BLBS24 SVOCs (µg/kg)	0.5 Primary MT551 9/8/2003
1-Methyl naphthalene	< 96
2-Methylnaphthalene	< 96
Acenaphthene	< 96
Acenaphthylene	< 96
Anthracene	< 96
Benzo(a)anthracene	< 96
Benzo(a)pyrene	< 96
Benzo(b)fluoranthene	< 96
Benzo(ghi)perylene	< 96
Benzo(k)fluoranthene	< 96
Chrysene	< 96
Dibenzo(a,h)anthracene	< 96
Fluoranthene	< 96
Fluorene	< 96
Indeno(1,2,3-cd)pyrene	< 96
Naphthalene	< 96
Phenanthrene	< 96
Pyrene	< 96

BLBS0060 SVOCs (µg/kg)	0.5 Primary BLBS0060S01 5/16/2007
2-Methylnaphthalene	< 34.5
Acenaphthene	< 34.5
Acenaphthylene	< 34.5
Anthracene	< 34.5
Benzo(a)anthracene	< 34.5
Benzo(a)pyrene	< 34.5
Benzo(b)fluoranthene	< 34.5
Benzo(ghi)perylene	< 34.5
Benzo(k)fluoranthene	< 34.5
bis(2-Ethylhexyl) phthalate	< 173
Chrysene	< 34.5
Dibenzo(a,h)anthracene	< 34.5
Diethyl phthalate	< 345
Di-n-butyl phthalate	< 345
Fluoranthene	< 34.5
Fluorene	< 34.5
Indeno(1,2,3-cd)pyrene	< 34.5
Naphthalene	< 34.5
Phenanthrene	< 34.5
Pyrene	< 34.5

BLBS0058 SVOCs (µg/kg)	0.5 Primary BLBS0058S01 5/16/2007
2-Methylnaphthalene	< 34
Acenaphthene	< 34
Acenaphthylene	< 34
Anthracene	< 34
Benzo(a)anthracene	< 34
Benzo(a)pyrene	< 34
Benzo(b)fluoranthene	< 34
Benzo(ghi)perylene	< 34
Benzo(k)fluoranthene	< 34
bis(2-Ethylhexyl) phthalate	< 170
Chrysene	< 34
Dibenzo(a,h)anthracene	< 34
Diethyl phthalate	< 340
Di-n-butyl phthalate	< 340
Fluoranthene	< 34
Fluorene	< 34
Indeno(1,2,3-cd)pyrene	< 34
Naphthalene	< 34
Phenanthrene	< 34
Pyrene	< 34

BLBS0031 SVOCs (µg/kg)	0.5 Primary BLBS0031S01 2/12/2007
1-Methyl naphthalene	< 24
2-Methylnaphthalene	< 24
Acenaphthene	< 24
Acenaphthylene	< 24
Anthracene	< 24
Benzo(a)anthracene	< 24
Benzo(a)pyrene	< 24
Benzo(b)fluoranthene	< 24
Benzo(ghi)perylene	< 24
Benzo(k)fluoranthene	< 24
bis(2-Ethylhexyl) phthalate	8.6 J
Chrysene	< 24
Dibenzo(a,h)anthracene	< 24
Diethyl phthalate	< 24
Di-n-butyl phthalate	7.7 J
Fluoranthene	< 24
Fluorene	< 24
Indeno(1,2,3-cd)pyrene	< 24
Naphthalene	< 24
Phenanthrene	< 24
Pyrene	< 24

BLTS03 SVOCs (µg/kg)	2.0 Primary MT544 9/5/2003
1-Methyl naphthalene	< 110
2-Methylnaphthalene	< 110
Acenaphthene	< 110
Acenaphthylene	< 110
Anthracene	< 110
Benzo(a)anthracene	< 110
Benzo(a)pyrene	< 110
Benzo(b)fluoranthene	< 110
Benzo(ghi)perylene	< 110
Benzo(k)fluoranthene	< 110
Chrysene	< 110
Dibenzo(a,h)anthracene	< 110
Fluoranthene	< 110
Fluorene	< 110
Indeno(1,2,3-cd)pyrene	< 110
Naphthalene	< 110
Phenanthrene	< 110
Pyrene	< 110

BLBS0057 SVOCs (µg/kg)	0.5 Primary BLBS0057S01 5/16/2007
2-Methylnaphthalene	< 33.9
Acenaphthene	< 33.9
Acenaphthylene	< 33.9
Anthracene	< 33.9
Benzo(a)anthracene	< 33.9
Benzo(a)pyrene	< 33.9
Benzo(b)fluoranthene	< 33.9
Benzo(ghi)perylene	< 33.9
Benzo(k)fluoranthene	< 33.9
bis(2-Ethylhexyl) phthalate	475
Chrysene	< 33.9
Dibenzo(a,h)anthracene	< 33.9
Diethyl phthalate	< 339
Di-n-butyl phthalate	< 339
Fluoranthene	< 33.9
Fluorene	< 33.9
Indeno(1,2,3-cd)pyrene	< 33.9
Naphthalene	< 33.9
Phenanthrene	< 33.9
Pyrene	< 33.9

BLTS04 SVOCs (µg/kg)	2.0 Primary MT692 9/15/2003
1-Methyl naphthalene	< 110
2-Methylnaphthalene	< 110
Acenaphthene	< 110
Acenaphthylene	< 110
Anthracene	< 110
Benzo(a)anthracene	< 110
Benzo(a)pyrene	< 110
Benzo(b)fluoranthene	< 110
Benzo(ghi)perylene	< 110
Benzo(k)fluoranthene	< 110
Chrysene	< 110
Dibenzo(a,h)anthracene	< 110
Fluoranthene	< 110
Fluorene	< 110
Indeno(1,2,3-cd)pyrene	< 110
Naphthalene	< 110
Phenanthrene	< 110
Pyrene	< 110

BLTS08 SVOCs (µg/kg)	2.0 Primary MT693 9/15/2003
1-Methyl naphthalene	< 110
2-Methylnaphthalene	< 110
Acenaphthene	< 110
Acenaphthylene	< 110
Anthracene	< 110
Benzo(a)anthracene	< 110
Benzo(a)pyrene	< 110
Benzo(b)fluoranthene	< 110
Benzo(ghi)perylene	< 110
Benzo(k)fluoranthene	< 110
Chrysene	< 110
Dibenzo(a,h)anthracene	< 110
Fluoranthene	< 110
Fluorene	< 110
Indeno(1,2,3-cd)pyrene	< 110
Naphthalene	45 J
Phenanthrene	< 110
Pyrene	< 110

BLTS09 SVOCs (µg/kg)	17.0 Primary MT687 9/11/2003	17.0 Primary MT689 9/11/2003	3.0 Primary MT509 8/26/2003	8.0 Primary MT541 9/5/2003
1-Methyl naphthalene	710	-	< 110	< 100
2-Methylnaphthalene	360	-	< 110	< 100
Acenaphthene	420	-	< 110	< 100
Acenaphthylene	34 J	-	< 110	< 100
Anthracene	900 J	-	22 J	< 100
Benzo(a)anthracene	750 J	-	55 J	57 J
Benzo(a)pyrene	120 J	-	53 J	110
Benzo(b)fluoranthene	64 J	-	42 J	80 J
Benzo(ghi)perylene	110	-	26 J	39 J
Benzo(k)fluoranthene	62 J	-	41 J	< 100
Chrysene	78 J	2800 J	61 J	130
Dibenzo(a,h)anthracene	< 100	-	< 110	< 100
Fluoranthene	130	-	110 J	30 J
Fluorene	120	-	< 110	< 100
Indeno(1,2,3-cd)pyrene	100 J	-	< 110	< 100
Naphthalene	780	-	< 110	< 100
Phenanthrene	420	-	85 J	< 100
Pyrene	170	-	110 J	46 J

BLBS0030 SVOCs (µg/kg)	0.5 Primary BLBS0030AS01 5/15/2007	5.5 Primary BLBS0030AS02 5/15/2007
2-Methylnaphthalene	< 17.3	< 17.8
Acenaphthene	< 17.3	< 17.8
Acenaphthylene	< 17.3	< 17.8
Anthracene	< 17.3	< 17.8
Benzo(a)anthracene	< 17.3	< 17.8
Benzo(a)pyrene	< 17.3	< 17.8
Benzo(b)fluoranthene	< 17.3	< 17.8
Benzo(ghi)perylene	< 17.3	< 17.8
Benzo(k)fluoranthene	< 17.3	< 17.8
bis(2-Ethylhexyl) phthalate	< 17.3	11.3 J
Chrysene	< 17.3	< 17.8
Dibenzo(a,h)anthracene	< 17.3	< 17.8
Diethyl phthalate	< 17.3	< 17.8
Di-n-butyl phthalate	< 17.3	< 17.8
Fluoranthene	< 17.3	< 17.8
Fluorene	< 17.3	< 17.8
Indeno(1,2,3-cd)pyrene	< 17.3	< 17.8
Naphthalene	< 17.3	< 17.8
Phenanthrene	< 17.3	< 17.8
Pyrene	< 17.3	< 17.8

BLTS13 SVOCs (µg/kg)	7.0 Primary MT703 9/16/2003
1-Methyl naphthalene	< 110
2-Methylnaphthalene	< 110
Acenaphthene	< 110
Acenaphthylene	< 110
Anthracene	< 110
Benzo(a)anthracene	< 110
Benzo(a)pyrene	< 110
Benzo(b)fluoranthene	< 110
Benzo(ghi)perylene	< 110
Benzo(k)fluoranthene	< 110
Chrysene	< 110
Dibenzo(a,h)anthracene	< 110
Fluoranthene	< 110
Fluorene	< 110
Indeno(1,2,3-cd)pyrene	< 110
Naphthalene	< 110
Phenanthrene	< 110
Pyrene	< 110

BLTS14 SVOCs (µg/kg)	2.0 Primary MT542 9/5/2003	2.0 Duplicate MT545 9/5/2003
1-Methyl naphthalene	< 110	< 110
2-Methylnaphthalene	< 110	< 110
Acenaphthene	< 110	< 110
Acenaphthylene	< 110	< 110
Anthracene	< 110	< 110
Benzo(a)anthracene	< 110	< 110
Benzo(a)pyrene	< 110	< 110
Benzo(b)fluoranthene	< 110	< 110
Benzo(ghi)perylene	< 110	< 110
Benzo(k)fluoranthene	< 110	< 110
Chrysene	< 110	< 110
Dibenzo(a,h)anthracene	< 110	< 110
Fluoranthene	< 110	< 110
Fluorene	< 110	< 110
Indeno(1,2,3-cd)pyrene	< 110	< 110
Naphthalene	39 J	< 110
Phenanthrene	< 110	< 110
Pyrene	< 110	< 110

BLBS20 SVOCs (µg/kg)	2.5 Primary MT511 8/26/2003
1-Methyl naphthalene	< 100
2-Methylnaphthalene	< 100
Acenaphthene	< 100
Acenaphthylene	< 100
Anthracene	< 100
Benzo(a)anthracene	< 100
Benzo(a)pyrene	< 100
Benzo(b)fluoranthene	< 100
Benzo(ghi)perylene	< 100
Benzo(k)fluoranthene	< 100
Chrysene	< 100
Dibenzo(a,h)anthracene	< 100
Fluoranthene	31 J
Fluorene	< 100
Indeno(1,2,3-cd)pyrene	< 100
Naphthalene	< 100
Phenanthrene	22 J
Pyrene	30 J

BLBS25 SVOCs (µg/kg)	0.5 Primary MT552 9/8/2003
1-Methyl naphthalene	< 110
2-Methylnaphthalene	< 110
Acenaphthene	< 110
Acenaphthylene	< 110
Anthracene	< 110
Benzo(a)anthracene	< 110
Benzo(a)pyrene	< 110
Benzo(b)fluoranthene	< 110
Benzo(ghi)perylene	< 110
Benzo(k)fluoranthene	< 110
Chrysene	< 110
Dibenzo(a,h)anthracene	< 110
Fluoranthene	< 110
Fluorene	< 110
Indeno(1,2,3-cd)pyrene	< 110
Naphthalene	< 110
Phenanthrene	< 110
Pyrene	< 110

BLBS0034 SVOCs (µg/kg)	0.2 Primary BLBS0034S01 2/13/2007	0.5 Primary BLBS0034S02 2/13/2007
1-Methyl naphthalene	< 35	< 27
2-Methylnaphthalene	< 35	< 27
Acenaphthene	< 35	< 27
Acenaphthylene	< 35	< 27
Anthracene	< 35	< 27
Benzo(a)anthracene	< 35	< 27
Benzo(a)pyrene	< 35	< 27
Benzo(b)fluoranthene	< 35	< 27
Benzo(ghi)perylene	< 35	< 27
Benzo(k)fluoranthene	< 35	< 27
bis(2-Ethylhexyl) phthalate	28 J	32
Chrysene	< 35	< 27
Dibenzo(a,h)anthracene	< 35	< 27
Diethyl phthalate	17 J	14 J
Di-n-butyl phthalate	270	210
Fluoranthene	< 35	< 27
Fluorene	< 35	< 27
Indeno(1,2,3-cd)pyrene	< 35	< 27
Naphthalene	22 J	8.9 J
Phenanthrene	13 J	10 J
Pyrene	< 35	< 27

BLTS15 SVOCs (µg/kg)	20.0 Primary MT522 9/2/2003
1-Methyl naphthalene	< 100
2-Methylnaphthalene	< 100
Acenaphthene	< 100
Acenaphthylene	< 100
Anthracene	< 100
Benzo(a)anthracene	< 100
Benzo(a)pyrene	< 100
Benzo(b)fluoranthene	< 100
Benzo(ghi)perylene	< 100
Benzo(k)fluoranthene	< 100
Chrysene	< 100
Dibenzo(a,h)anthracene	< 100
Fluoranthene	< 100
Fluorene	< 100
Indeno(1,2,3-cd)pyrene	< 100
Naphthalene	< 100
Phenanthrene	< 100
Pyrene	< 100

BLBS21 SVOCs (µg/kg)	2.0 Primary MT512 8/26/2003
1-Methyl naphthalene	32 J
2-Methylnaphthalene	58 J
Acenaphthene	< 110
Acenaphthylene	< 110
Anthracene	< 110
Benzo(a)anthracene	< 110
Benzo(a)pyrene	< 110
Benzo(b)fluoranthene	< 110
Benzo(ghi)perylene	< 110
Benzo(k)fluoranthene	< 110
Chrysene	< 110
Dibenzo(a,h)anthracene	< 110
Fluoranthene	< 110
Fluorene	< 110
Indeno(1,2,3-cd)pyrene	< 110
Naphthalene	130
Phenanthrene	< 110
Pyrene	< 110

BLBS22 SVOCs (µg/kg)	2.0 Primary MT546 9/5/2003	2.0 Split MF001 9/5/2003
1-Methyl naphthalene	< 110	-
2-Methylnaphthalene	< 110	< 3
Acenaphthene	< 110	49
Acenaphthylene	< 110	2 J
Anthracene	26 J	100 J
Benzo(a)anthracene	390	960
Benzo(a)pyrene	430	960
Benzo(b)fluoranthene	430	940
Benzo(ghi)perylene	160	430
Benzo(k)fluoranthene	340	800
bis(2-Ethylhexyl) phthalate	-	< 170
Chrysene	310	940
Dibenzo(a,h)anthracene	47 J	140 J
Diethyl phthalate	-	2 J
Di-n-butyl phthalate	-	< 7
Fluoranthene	610	2000
Fluorene	< 110	13
Indeno(1,2,3-cd)pyrene	240	700
Naphthalene	< 110	2 J
Phenanthrene	86 J	430
Pyrene	560	1700

BLBS0053 SVOCs (µg/kg)	0.5 Primary BLBS0053S01 5/16/2007
2-Methylnaphthalene	< 34.5
Acenaphthene	< 34.5
Acenaphthylene	< 34.5
Anthracene	< 34.5
Benzo(a)anthracene	< 34.5
Benzo(a)pyrene	< 34.5
Benzo(b)fluoranthene	< 34.5
Benzo(ghi)perylene	< 34.5
Benzo(k)fluoranthene	< 34.5
bis(2-Ethylhexyl) phthalate	< 172
Chrysene	< 34.5
Dibenzo(a,h)anthracene	< 34.5
Diethyl phthalate	< 345
Di-n-butyl phthalate	< 345
Fluoranthene	< 34.5
Fluorene	< 34.5
Indeno(1,2,3-cd)pyrene	< 34.5
Naphthalene	< 34.5
Phenanthrene	< 34.5
Pyrene	< 34.5

BLTS16 SVOCs (µg/kg)	10.0 Primary MT523 9/2/2003
1-Methyl naphthalene	< 100
2-Methylnaphthalene	< 100
Acenaphthene	< 100
Acenaphthylene	< 100
Anthracene	< 100
Benzo(a)anthracene	< 100
Benzo(a)pyrene	< 100
Benzo(b)fluoranthene	< 100
Benzo(ghi)perylene	< 100
Benzo(k)fluoranthene	< 100
Chrysene	< 100
Dibenzo(a,h)anthracene	< 100
Fluoranthene	< 100
Fluorene	< 100
Indeno(1,2,3-cd)pyrene	< 100
Naphthalene	< 100
Phenanthrene	< 100
Pyrene	< 100

BLTS18 SVOCs (µg/kg)	12.0 Primary MT706 9/16/2003
1-Methyl naphthalene	< 100
2-Methylnaphthalene	< 100
Acenaphthene	< 100
Acenaphthylene	< 100
Anthracene	< 100
Benzo(a)anthracene	< 100
Benzo(a)pyrene	< 100
Benzo(b)fluoranthene	< 100
Benzo(ghi)perylene	< 100
Benzo(k)fluoranthene	< 100
Chrysene	< 100
Dibenzo(a,h)anthracene	< 100
Fluoranthene	< 100
Fluorene	< 100
Indeno(1,2,3-cd)pyrene	< 100
Naphthalene	< 100
Phenanthrene	< 100
Pyrene	< 100

BLTS17 SVOCs (µg/kg)	8.0 Primary MT524 9/2/2003
1-Methyl naphthalene	< 110
2-Methylnaphthalene	< 110
Acenaphthene	< 110
Acenaphthylene	< 110
Anthracene	< 110
Benzo(a)anthracene	< 110
Benzo(a)pyrene	< 110
Benzo(b)fluoranthene	< 110
Benzo(ghi)perylene	< 110
Benzo(k)fluoranthene	< 110
Chrysene	< 110
Dibenzo(a,h)anthracene	< 110
Fluoranthene	< 110
Fluorene	< 110
Indeno(1,2,3-cd)pyrene	< 110
Naphthalene	< 110
Phenanthrene	< 110
Pyrene	< 110

BLTS20 SVOCs (µg/kg)	20.0 Primary MT530 9/3/2003
1-Methyl naphthalene	< 110
2-Methylnaphthalene	< 110
Acenaphthene	< 110
Acenaphthylene	< 110
Anthracene	< 110
Benzo(a)anthracene	< 110
Benzo(a)pyrene	< 110
Benzo(b)fluoranthene	< 110
Benzo(ghi)perylene	< 110
Benzo(k)fluoranthene	< 110
Chrysene	< 110
Dibenzo(a,h)anthracene	< 110
Fluoranthene	< 110
Fluorene	< 110
Indeno(1,2,3-cd)pyrene	< 110
Naphthalene	< 110
Phenanthrene	< 110
Pyrene	< 110

BLTS19 SVOCs (µg/kg)	11.0 Primary MT699 9/16/2003
1-Methyl naphthalene	< 110
2-Methylnaphthalene	< 110
Acenaphthene	< 110
Acenaphthylene	< 110
Anthracene	< 110
Benzo(a)anthracene	< 110
Benzo(a)pyrene	< 110
Benzo(b)fluoranthene	< 110
Benzo(ghi)perylene	< 110
Benzo(k)fluoranthene	< 110
Chrysene	< 110
Dibenzo(a,h)anthracene	< 110
Fluoranthene	< 110
Fluorene	< 110
Indeno(1,2,3-cd)pyrene	< 110
Naphthalene	< 110
Phenanthrene	< 110
Pyrene	< 110

BLTS06 SVOCs (µg/kg)	8.0 Primary MT708 9/16/2003
1-Methyl naphthalene	< 130
2-Methylnaphthalene	< 130
Acenaphthene	< 130
Acenaphthylene	< 130
Anthracene	< 130
Benzo(a)anthracene	< 130
Benzo(a)pyrene	< 130
Benzo(b)fluoranthene	< 130
Benzo(ghi)perylene	< 130
Benzo(k)fluoranthene	< 130
Chrysene	< 130
Dibenzo(a,h)anthracene	< 130
Fluoranthene	< 130
Fluorene	< 130
Indeno(1,2,3-cd)pyrene	< 130
Naphthalene	< 130
Phenanthrene	< 130
Pyrene	< 130

BLBS0055 SVOCs (µg/kg)	0.5 Primary BLBS0055S01 5/15/2007	11.0 Primary BLBS0055S02 5/15/2007
2-Methylnaphthalene	< 17.2	< 17.4
Acenaphthene	< 17.2	< 17.4
Acenaphthylene	< 17.2	< 17.4
Anthracene	< 17.2	< 17.4
Benzo(a)anthracene	9.55 J	7.92 J
Benzo(a)pyrene	< 17.2	< 17.4
Benzo(b)fluoranthene	< 17.2	< 17.4
Benzo(ghi)perylene	< 17.2	< 17.4
Benzo(k)fluoranthene	< 17.2	< 17.4
bis(2-Ethylhexyl) phthalate	< 17.2	< 17.4
Chrysene	12.7 J	9.68 J
Dibenzo(a,h)anthracene	< 17.2	< 17.4
Diethyl phthalate	< 17.2	< 17.4
Di-n-butyl phthalate	< 17.2	< 17.4
Fluoranthene	10.8 J	12.9 J
Fluorene	< 17.2	< 17.4
Indeno(1,2,3-cd)pyrene	< 17.2	< 17.4
Naphthalene	< 17.2	< 17.4
Phenanthrene	< 17.2	8.4 J
Pyrene	13.9 J	15.3 J

BLTS01 SVOCs (µg/kg)	12.0 Primary MT686 9/11/2003
1-Methyl naphthalene	< 100
2-Methylnaphthalene	< 100
Acenaphthene	< 100
Acenaphthylene	< 100
Anthracene	< 100
Benzo(a)anthracene	< 100
Benzo(a)pyrene	< 100
Benzo(b)fluoranthene	< 100
Benzo(ghi)perylene	< 100
Benzo(k)fluoranthene	< 100
Chrysene	< 100
Dibenzo(a,h)anthracene	< 100
Fluoranthene	17
Fluorene	< 100
Indeno(1,2,3-cd)pyrene	< 100
Naphthalene	< 100
Phenanthrene	< 100
Pyrene	20

BLTS11 SVOCs (µg/kg)	10.0 Primary MT690 9/15/2003
1-Methyl naphthalene	< 110
2-Methylnaphthalene	< 110
Acenaphthene	< 110
Acenaphthylene	< 110
Anthracene	< 110
Benzo(a)anthracene	< 110
Benzo(a)pyrene	< 110
Benzo(b)fluoranthene	< 110
Benzo(ghi)perylene	< 110
Benzo(k)fluoranthene	< 110
Chrysene	< 110
Dibenzo(a,h)anthracene	< 110
Fluoranthene	< 110
Fluorene	< 110
Indeno(1,2,3-cd)pyrene	< 110
Naphthalene	< 110
Phenanthrene	< 110
Pyrene	< 110

BLBS23 SVOCs (µg/kg)	0.5 Primary MT550 9/8/2003
1-Methyl naphthalene	< 110
2-Methylnaphthalene	< 110
Acenaphthene	< 110
Acenaphthylene	< 110
Anthracene	< 110
Benzo(a)anthracene	< 110
Benzo(a)pyrene	< 110
Benzo(b)fluoranthene	< 110
Benzo(ghi)perylene	< 110
Benzo(k)fluoranthene	< 110
Chrysene	< 110
Dibenzo(a,h)anthracene	< 110
Fluoranthene	< 110
Fluorene	< 110
Indeno(1,2,3-cd)pyrene	< 110
Naphthalene	35 J
Phenanthrene	< 110
Pyrene	< 110

BLTS10 SVOCs (µg/kg)	17.0 Primary MT694 9/15/2003
1-Methyl naphthalene	< 100
2-Methylnaphthalene	< 100
Acenaphthene	< 100
Acenaphthylene	< 100
Anthracene	< 100
Benzo(a)anthracene	29 J
Benzo(a)pyrene	28 J
Benzo(b)fluoranthene	< 100
Benzo(ghi)perylene	< 100
Benzo(k)fluoranthene	< 100
Chrysene	26 J
Dibenzo(a,h)anthracene	< 100
Fluoranthene	< 100
Fluorene	< 100
Indeno(1,2,3-cd)pyrene	< 100
Naphthalene	< 100
Phenanthrene	< 100
Pyrene	12 J

BLTS05 SVOCs (µg/kg)	5.0 Primary MT691 9/15/2003
1-Methyl naphthalene	< 110
2-Methylnaphthalene	< 110
Acenaphthene	< 110
Acenaphthylene	< 110
Anthracene	< 110
Benzo(a)anthracene	< 110
Benzo(a)pyrene	< 110
Benzo(b)fluoranthene	< 110
Benzo(ghi)perylene	< 110
Benzo(k)fluoranthene	< 110
Chrysene	< 110
Dibenzo(a,h)anthracene	< 110
Fluoranthene	< 110
Fluorene	< 110
Indeno(1,2,3-cd)pyrene	< 110
Naphthalene	< 110
Phenanthrene	< 110
Pyrene	< 110

MWH

Santa Susana Field Laboratory

SVOC Chemical Data Results - North
B056 Landfill RFI Site

FIGURE B.3-2A

Soil Sample Location Symbol Legend

- ▲ Soil sample location with detected SVOC Chemical Data
- ▲ Soil sample location with no detected SVOC Chemical Data
- △ Soil sample location not analyzed for SVOC Chemical Data
- △ Contained unit soil sample
- △ Refused sample (refusal depth < 1' below ground surface)
- ▲ Soil sample not analyzed by any sample method

Comparison Levels

SVOCs	Background (µg/kg)	Res RBSL (µg/kg)	Eco RBSL (µg/kg)
1-Methyl naphthalene	- -	230000	230000
2-Methylnaphthalene	- -	230000	230000
Acenaphthene	- -	3400000	2500
Acenaphthylene	- -	1700000	810000
Anthracene	- -	17000000	2400
Benzo(a)anthracene	- -	600	1400
Benzo(a)pyrene	- -	60	4700
Benzo(b)fluoranthene	- -	600	4600
Benzo(ghi)perylene	- -	- -	6200
Benzo(k)fluoranthene	- -	600	3600
bis(2-Ethylhexyl) phthalate	- -	250000	4900
Chrysene	- -	6000	2400
Dibenzo(a,h)anthracene	- -	170	1700
Diethyl phthalate	- -	46000000	5200000
Di-n-butyl phthalate	- -	5700000	490
Fluoranthene	- -	2300000	130000
Fluorene	- -	2300000	1600
Indeno(1,2,3-cd)pyrene	- -	600	3900
Naphthalene	- -	6000	230000
Phenanthrene	- -	1700000	1300
Pyrene	- -	1700000	79000

Data Date: 20070919

Note: (µg/kg) = micrograms per kilogram

Background	Background Level
Res RBSL	Residential Risk-Based Screening Level
Eco RBSL	Ecological Risk-Based Screening Level

Data Box Information

Sample Location ID: BLBS01

- 1.00 — Depth in Feet
- Primary — Sample Type
- BLBS01S01 — Unique Sample Identifier
- 7/10/2005 — Date

(Historical Sample)

12.05	Detect with sample concentration shown
0.06	Non-Detect with lab detection limit shown
J	Analyte positively identified; Associated numerical value is considered estimated
*	Data validation not performed
NA	Analysis not conducted
[#]	If more than one result per sample depth, the maximum is presented, with number of results in backets.

Note: "12.05" and "<0.06" are for reference only and may not represent actual sample results.

Detect	Non-Detect	
12.05	<0.06	Exceeds Background
12.05	<0.06	Exceeds Background + Res RBSL
12.05	<0.06	Exceeds Background + Eco RBSL
12.05	<0.06	Exceeds Background + Res RBSL + Eco RBSL

Chemical Use Areas

(* Chemical Use Area present in this RFI site)

- Multiple Use
- Solvent
- Petroleum
- Oils / PCBs
- Metal
- Perchlorate
- Hydrazine
- * Debris
- * Landfill
- Leach Field
- * Potential

Base Map Legend

- Administrative Area Boundary
- RFI Site Boundary
- Report Group Boundary
- Existing Building or Structure
- Removed Building or Structure
- Other Tanks
- Solvent Tank
- Petroleum Fuel/Oil Tank
- Hydrazine Tank
- Awning
- Dirt Road
- A/C Curbing
- Fence
- Pipe
- Leach Field
- NPDES Outfall
- Well
- Pond
- Possible Pond
- Drainage
- Surface Water Divide
- Elevation Contour
- Rock Outcrop
- Trench

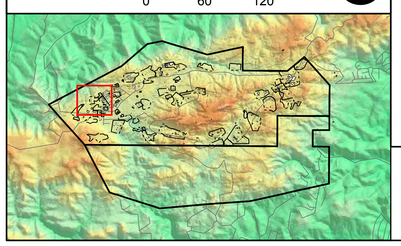
Note: R = Removed Tank

Date: Sep 29, 2007 Document: RFI-Report-Group8_B056_SVOC_S_E.mxd

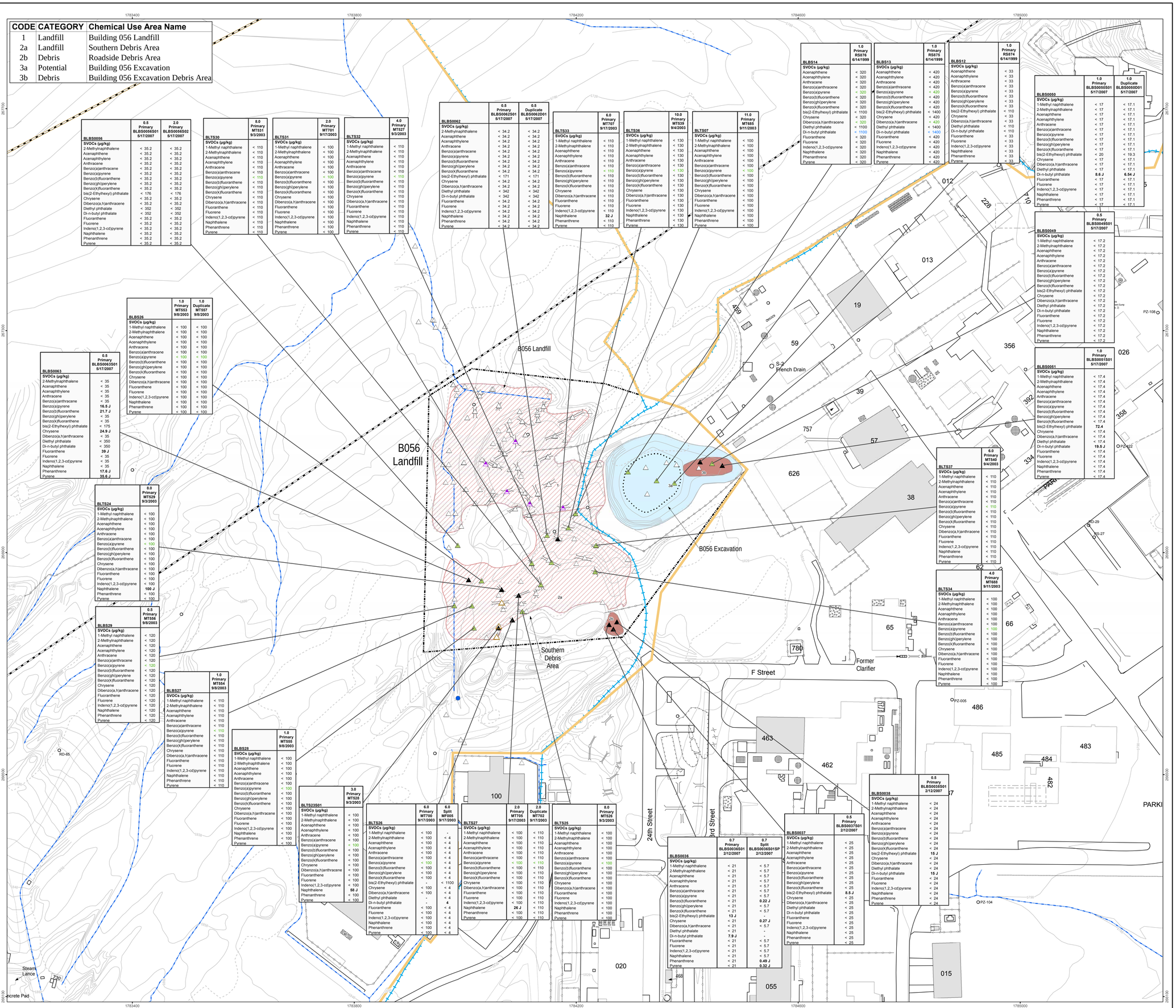
ANSI E 44x34

1 inch equals 60 feet

0 60 120 Feet



CODE	CATEGORY	Chemical Use Area Name
1	Landfill	Building 056 Landfill
2a	Landfill	Southern Debris Area
2b	Debris	Roadside Debris Area
3a	Potential	Building 056 Excavation
3b	Debris	Building 056 Excavation Debris Area



BLBS0056	0.5 Primary BLBS0056S01 5/17/2007	2.0 Primary BLBS0056S02 5/17/2007
SVOCs (µg/kg)		
2-Methylnaphthalene	< 35.2	< 35.2
Acenaphthene	< 35.2	< 35.2
Acenaphthylene	< 35.2	< 35.2
Anthracene	< 35.2	< 35.2
Benzo(a)anthracene	< 35.2	< 35.2
Benzo(a)pyrene	< 35.2	< 35.2
Benzo(b)fluoranthene	< 35.2	< 35.2
Benzo(ghi)perylene	< 35.2	< 35.2
Benzo(k)fluoranthene	< 35.2	< 35.2
bis(2-Ethylhexyl) phthalate	< 176	< 176
Chrysene	< 35.2	< 35.2
Dibenzo(a,h)anthracene	< 35.2	< 35.2
Diethyl phthalate	< 352	< 352
Di-n-butyl phthalate	< 352	< 352
Fluoranthene	< 35.2	< 35.2
Fluorene	< 35.2	< 35.2
Indeno(1,2,3-cd)pyrene	< 35.2	< 35.2
Naphthalene	< 35.2	< 35.2
Phenanthrene	< 35.2	< 35.2
Pyrene	< 35.2	< 35.2

BLTS30	8.0 Primary MT531 9/3/2003
SVOCs (µg/kg)	
1-Methyl naphthalene	< 110
2-Methylnaphthalene	< 110
Acenaphthene	< 110
Acenaphthylene	< 110
Anthracene	< 110
Benzo(a)anthracene	< 110
Benzo(a)pyrene	< 110
Benzo(b)fluoranthene	< 110
Benzo(ghi)perylene	< 110
Benzo(k)fluoranthene	< 110
Chrysene	< 110
Dibenzo(a,h)anthracene	< 110
Fluoranthene	< 110
Fluorene	< 110
Indeno(1,2,3-cd)pyrene	< 110
Naphthalene	< 110
Phenanthrene	< 110
Pyrene	< 110

BLTS31	2.0 Primary MT701 9/17/2003
SVOCs (µg/kg)	
1-Methyl naphthalene	< 100
2-Methylnaphthalene	< 100
Acenaphthene	< 100
Acenaphthylene	< 100
Anthracene	< 100
Benzo(a)anthracene	< 100
Benzo(a)pyrene	< 100
Benzo(b)fluoranthene	< 100
Benzo(ghi)perylene	< 100
Benzo(k)fluoranthene	< 100
Chrysene	< 100
Dibenzo(a,h)anthracene	< 100
Fluoranthene	< 100
Fluorene	< 100
Indeno(1,2,3-cd)pyrene	< 100
Naphthalene	< 100
Phenanthrene	< 100
Pyrene	< 100

BLTS32	4.0 Primary MT527 9/3/2003
SVOCs (µg/kg)	
1-Methyl naphthalene	< 110
2-Methylnaphthalene	< 110
Acenaphthene	< 110
Acenaphthylene	< 110
Anthracene	< 110
Benzo(a)anthracene	< 110
Benzo(a)pyrene	< 110
Benzo(b)fluoranthene	< 110
Benzo(ghi)perylene	< 110
Benzo(k)fluoranthene	< 110
Chrysene	< 110
Dibenzo(a,h)anthracene	< 110
Fluoranthene	< 110
Fluorene	< 110
Indeno(1,2,3-cd)pyrene	< 110
Naphthalene	< 110
Phenanthrene	< 110
Pyrene	< 110

BLBS0062	0.5 Primary BLBS0062S01 5/17/2007	0.5 Duplicate BLBS0062D01 5/17/2007
SVOCs (µg/kg)		
2-Methylnaphthalene	< 34.2	< 34.2
Acenaphthene	< 34.2	< 34.2
Acenaphthylene	< 34.2	< 34.2
Anthracene	< 34.2	< 34.2
Benzo(a)anthracene	< 34.2	< 34.2
Benzo(a)pyrene	< 34.2	< 34.2
Benzo(b)fluoranthene	< 34.2	< 34.2
Benzo(ghi)perylene	< 34.2	< 34.2
Benzo(k)fluoranthene	< 34.2	< 34.2
bis(2-Ethylhexyl) phthalate	< 171	< 171
Chrysene	< 34.2	< 34.2
Dibenzo(a,h)anthracene	< 34.2	< 34.2
Diethyl phthalate	< 342	< 342
Di-n-butyl phthalate	< 342	< 342
Fluoranthene	< 34.2	< 34.2
Fluorene	< 34.2	< 34.2
Indeno(1,2,3-cd)pyrene	< 34.2	< 34.2
Naphthalene	< 34.2	< 34.2
Phenanthrene	< 34.2	< 34.2
Pyrene	< 34.2	< 34.2

BLTS33	6.0 Primary MT707 9/17/2003
SVOCs (µg/kg)	
1-Methyl naphthalene	< 110
2-Methylnaphthalene	< 110
Acenaphthene	< 110
Acenaphthylene	< 110
Anthracene	< 110
Benzo(a)anthracene	< 110
Benzo(a)pyrene	< 110
Benzo(b)fluoranthene	< 110
Benzo(ghi)perylene	< 110
Benzo(k)fluoranthene	< 110
Chrysene	< 110
Dibenzo(a,h)anthracene	< 110
Fluoranthene	< 110
Fluorene	< 110
Indeno(1,2,3-cd)pyrene	< 110
Naphthalene	32 J
Phenanthrene	< 110
Pyrene	< 110

BLTS36	10.0 Primary MT539 9/4/2003
SVOCs (µg/kg)	
1-Methyl naphthalene	< 130
2-Methylnaphthalene	< 130
Acenaphthene	< 130
Acenaphthylene	< 130
Anthracene	< 130
Benzo(a)anthracene	< 130
Benzo(a)pyrene	< 130
Benzo(b)fluoranthene	< 130
Benzo(ghi)perylene	< 130
Benzo(k)fluoranthene	< 130
Chrysene	< 130
Dibenzo(a,h)anthracene	< 130
Fluoranthene	< 130
Fluorene	< 130
Indeno(1,2,3-cd)pyrene	< 130
Naphthalene	< 130
Phenanthrene	< 130
Pyrene	< 130

BLTS07	11.0 Primary MT695 9/11/2003
SVOCs (µg/kg)	
1-Methyl naphthalene	< 100
2-Methylnaphthalene	< 100
Acenaphthene	< 100
Acenaphthylene	< 100
Anthracene	< 100
Benzo(a)anthracene	< 100
Benzo(a)pyrene	< 100
Benzo(b)fluoranthene	< 100
Benzo(ghi)perylene	< 100
Benzo(k)fluoranthene	< 100
Chrysene	< 100
Dibenzo(a,h)anthracene	< 100
Fluoranthene	< 100
Fluorene	< 100
Indeno(1,2,3-cd)pyrene	< 100
Naphthalene	< 100
Phenanthrene	< 100
Pyrene	< 100

BLBS14	1.0 Primary RS876 6/14/1999
SVOCs (µg/kg)	
Acenaphthene	< 320
Acenaphthylene	< 320
Anthracene	< 320
Benzo(a)anthracene	< 320
Benzo(a)pyrene	< 320
Benzo(b)fluoranthene	< 320
Benzo(ghi)perylene	< 320
Benzo(k)fluoranthene	< 320
bis(2-Ethylhexyl) phthalate	< 1100
Chrysene	< 320
Dibenzo(a,h)anthracene	< 320
Diethyl phthalate	< 1100
Di-n-butyl phthalate	< 1100
Fluoranthene	< 320
Fluorene	< 320
Indeno(1,2,3-cd)pyrene	< 320
Naphthalene	< 320
Phenanthrene	< 320
Pyrene	< 320

BLBS13	1.0 Primary RS875 6/14/1999
SVOCs (µg/kg)	
Acenaphthene	< 420
Acenaphthylene	< 420
Anthracene	< 420
Benzo(a)anthracene	< 420
Benzo(a)pyrene	< 420
Benzo(b)fluoranthene	< 420
Benzo(ghi)perylene	< 420
Benzo(k)fluoranthene	< 420
bis(2-Ethylhexyl) phthalate	< 1400
Chrysene	< 420
Dibenzo(a,h)anthracene	< 420
Diethyl phthalate	< 1400
Di-n-butyl phthalate	< 1400
Fluoranthene	< 420
Fluorene	< 420
Indeno(1,2,3-cd)pyrene	< 420
Naphthalene	< 420
Phenanthrene	< 420
Pyrene	< 420

BLBS12	1.0 Primary RS874 6/14/1999
SVOCs (µg/kg)	
Acenaphthene	< 33
Acenaphthylene	< 33
Anthracene	< 33
Benzo(a)anthracene	< 33
Benzo(a)pyrene	< 33
Benzo(b)fluoranthene	< 33
Benzo(ghi)perylene	< 33
Benzo(k)fluoranthene	< 33
bis(2-Ethylhexyl) phthalate	< 110
Chrysene	< 33
Dibenzo(a,h)anthracene	< 33
Diethyl phthalate	< 110
Di-n-butyl phthalate	< 110
Fluoranthene	< 33
Fluorene	< 33
Indeno(1,2,3-cd)pyrene	< 33
Naphthalene	< 33
Phenanthrene	< 33
Pyrene	< 33

BLBS0050	1.0 Primary BLBS0050S01 5/17/2007	1.0 Duplicate BLBS0050D01 5/17/2007
SVOCs (µg/kg)		
1-Methyl naphthalene	< 17	< 17.1
2-Methylnaphthalene	< 17	< 17.1
Acenaphthene	< 17	< 17.1
Acenaphthylene	< 17	< 17.1
Anthracene	< 17	< 17.1
Benzo(a)anthracene	< 17	< 17.1
Benzo(a)pyrene	< 17	< 17.1
Benzo(b)fluoranthene	< 17	< 17.1
Benzo(ghi)perylene	< 17	< 17.1
Benzo(k)fluoranthene	< 17	< 17.1
bis(2-Ethylhexyl) phthalate	< 20	< 19.3
Chrysene	< 17	< 17.1
Dibenzo(a,h)anthracene	< 17	< 17.1
Diethyl phthalate	< 17	< 17.1
Di-n-butyl phthalate	8.6 J	6.54 J
Fluoranthene	< 17	< 17.1
Fluorene	< 17	< 17.1
Indeno(1,2,3-cd)pyrene	< 17	< 17.1
Naphthalene	< 17	< 17.1
Phenanthrene	< 17	< 17.1
Pyrene	< 17	< 17.1

BLBS0049	0.5 Primary BLBS0049S01 5/17/2007
SVOCs (µg/kg)	
1-Methyl naphthalene	< 17.2
2-Methylnaphthalene	< 17.2
Acenaphthene	< 17.2
Acenaphthylene	< 17.2
Anthracene	< 17.2
Benzo(a)anthracene	< 17.2
Benzo(a)pyrene	< 17.2
Benzo(b)fluoranthene	< 17.2
Benzo(ghi)perylene	< 17.2
Benzo(k)fluoranthene	< 17.2
bis(2-Ethylhexyl) phthalate	< 17.2
Chrysene	< 17.2
Dibenzo(a,h)anthracene	< 17.2
Diethyl phthalate	< 17.2
Di-n-butyl phthalate	< 17.2
Fluoranthene	< 17.2
Fluorene	< 17.2
Indeno(1,2,3-cd)pyrene	< 17.2
Naphthalene	< 17.2
Phenanthrene	< 17.2
Pyrene	< 17.2

BLBS0051	1.0 Primary BLBS0051S01 5/17/2007
SVOCs (µg/kg)	
1-Methyl naphthalene	< 17.4
2-Methylnaphthalene	< 17.4
Acenaphthene	< 17.4
Acenaphthylene	< 17.4
Anthracene	< 17.4
Benzo(a)anthracene	< 17.4
Benzo(a)pyrene	< 17.4
Benzo(b)fluoranthene	< 17.4
Benzo(ghi)perylene	< 17.4
Benzo(k)fluoranthene	< 17.4
bis(2-Ethylhexyl) phthalate	72.4
Chrysene	< 17.4
Dibenzo(a,h)anthracene	< 17.4
Diethyl phthalate	< 17.4
Di-n-butyl phthalate	19.5 J
Fluoranthene	< 17.4
Fluorene	< 17.4
Indeno(1,2,3-cd)pyrene	< 17.4
Naphthalene	< 17.4
Phenanthrene	< 17.4
Pyrene	< 17.4

BLBS26	1.0 Primary MT552 9/8/2003	1.0 Duplicate MT557 9/8/2003
SVOCs (µg/kg)		
1-Methyl naphthalene	< 100	< 100
2-Methylnaphthalene	< 100	< 100
Acenaphthene	< 100	< 100
Acenaphthylene	< 100	< 100
Anthracene	< 100	< 100
Benzo(a)anthracene	< 100	< 100
Benzo(a)pyrene	< 100	< 100
Benzo(b)fluoranthene	< 100	< 100
Benzo(ghi)perylene	< 100	< 100
Benzo(k)fluoranthene	< 100	< 100
Chrysene	< 100	< 100
Dibenzo(a,h)anthracene	< 100	< 100
Fluoranthene	< 100	< 100
Fluorene	< 100	< 100
Indeno(1,2,3-cd)pyrene	< 100	< 100
Naphthalene	< 100	< 100
Phenanthrene	< 100	< 100
Pyrene	< 100	< 100

BLBS0063	0.5 Primary BLBS0063S01 5/17/2007
SVOCs (µg/kg)	
2-Methylnaphthalene	< 35
Acenaphthene	< 35
Acenaphthylene	< 35
Anthracene	< 35
Benzo(a)anthracene	< 35
Benzo(a)pyrene	16.8 J
Benzo(b)fluoranthene	21.7 J
Benzo(ghi)perylene	< 35
Benzo(k)fluoranthene	< 35
bis(2-Ethylhexyl) phthalate	< 175
Chrysene	24.9 J
Dibenzo(a,h)anthracene	< 35
Diethyl phthalate	< 350
Di-n-butyl phthalate	< 350
Fluoranthene	39 J
Fluorene	< 35
Indeno(1,2,3-cd)pyrene	< 35
Naphthalene	< 35
Phenanthrene	17.6 J
Pyrene	35.6 J

BLTS24	8.0 Primary MT529 9/3/2003
SVOCs (µg/kg)	
1-Methyl naphthalene	< 100
2-Methylnaphthalene	< 100
Acenaphthene	< 100
Acenaphthylene	< 100
Anthracene	< 100
Benzo(a)anthracene	< 100
Benzo(a)pyrene	< 100
Benzo(b)fluoranthene	< 100
Benzo(ghi)perylene	< 100
Benzo(k)fluoranthene	< 100
Chrysene	< 100
Dibenzo(a,h)anthracene	< 100
Fluoranthene	< 100
Fluorene	< 100
Indeno(1,2,3-cd)pyrene	< 100
Naphthalene	100 J
Phenanthrene	< 100
Pyrene	< 100

BLBS29	0.5 Primary MT556 9/8/2003
SVOCs (µg/kg)	
1-Methyl naphthalene	< 120
2-Methylnaphthalene	< 120
Acenaphthene	< 120
Acenaphthylene	< 120
Anthracene	< 120
Benzo(a)anthracene	< 120
Benzo(a)pyrene	< 120
Benzo(b)fluoranthene	< 120
Benzo(ghi)perylene	< 120
Benzo(k)fluoranthene	< 120
Chrysene	< 120
Dibenzo(a,h)anthracene	< 120
Fluoranthene	< 120
Fluorene	< 120
Indeno(1,2,3-cd)pyrene	< 120
Naphthalene	< 120
Phenanthrene	< 120
Pyrene	< 120

BLBS27	1.0 Primary MT554 9/8/2003
SVOCs (µg/kg)	
1-Methyl naphthalene	< 110
2-Methylnaphthalene	< 110
Acenaphthene	< 110
Acenaphthylene	< 110
Anthracene	< 110
Benzo(a)anthracene	< 110
Benzo(a)pyrene	< 110
Benzo(b)fluoranthene	< 110
Benzo(ghi)perylene	< 110
Benzo(k)fluoranthene	< 110
Chrysene	< 110
Dibenzo(a,h)anthracene	< 110
Fluoranthene	< 110
Fluorene	< 110
Indeno(1,2,3-cd)pyrene	< 110
Naphthalene	< 110
Phenanthrene	< 110
Pyrene	< 110

BLBS28	1.0 Primary MT555 9/8/2003
SVOCs (µg/kg)	
1-Methyl naphthalene	< 100
2-Methylnaphthalene	< 100
Acenaphthene	< 100
Acenaphthylene	< 100
Anthracene	< 100
Benzo(a)anthracene	< 100
Benzo(a)pyrene	< 100
Benzo(b)fluoranthene	< 100
Benzo(ghi)perylene	< 100
Benzo(k)fluoranthene	< 100
Chrysene	< 100
Dibenzo(a,h)anthracene	< 100
Fluoranthene	< 100
Fluorene	< 100
Indeno(1,2,3-cd)pyrene	< 100
Naphthalene	< 100
Phenanthrene	< 100
Pyrene	< 100

BLTS23S01	3.0 Primary MT525 9/3/2003
SVOCs (µg/kg)	
1-Methyl naphthalene	< 100
2-Methylnaphthalene	< 100
Acenaphthene	< 100
Acenaphthylene	< 100
Anthracene	< 100
Benzo(a)anthracene	< 100
Benzo(a)pyrene	< 100
Benzo(b)fluoranthene	< 100
Benzo(ghi)perylene	< 100
Benzo(k)fluoranthene	< 100
Chrysene	< 100
Dibenzo(a,h)anthracene	< 100
Fluoranthene	< 100
Fluorene	< 100
Indeno(1,2,3-cd)pyrene	< 100
Naphthalene	58 J
Phenanthrene	< 100
Pyrene	< 100

BLTS26	6.0 Primary MT700 9/17/2003	6.0 Split MF005 9/17/2003
SVOCs (µg/kg)		
1-Methyl naphthalene	< 100	-
2-Methylnaphthalene	< 100	< 4
Acenaphthene	< 100	< 4
Acenaphthylene	< 100	< 4
Anthracene	< 100	< 4
Benzo(a)anthracene	< 100	< 4
Benzo(a)pyrene	< 100	< 4
Benzo(b)fluoranthene	< 100	< 4
Benzo(ghi)perylene	< 100	< 4
Benzo(k)fluoranthene	< 100	< 4
bis(2-Ethylhexyl) phthalate	-	< 1100
Chrysene	< 100	< 4
Dibenzo(a,h)anthracene	< 100	< 4
Diethyl phthalate	-	< 4
Di-n-butyl phthalate	-	4
Fluoranthene	< 100	< 4
Fluorene	< 100	< 4
Indeno(1,2,3-cd)pyrene	< 100	< 4
Naphthalene	< 100	< 4
Phenanthrene	< 100	< 4
Pyrene	< 100	< 4

BLTS27	2.0 Primary MT702 9/17/2003	2.0 Duplicate MT702 9/17/2003
SVOCs (µg/kg)		
1-Methyl naphthalene	< 100	< 110
2-Methylnaphthalene	< 100	< 110
Acenaphthene	< 100	< 110
Acenaphthylene	< 100	< 110
Anthracene	< 100	< 110
Benzo(a)anthracene	< 100	< 110
Benzo(a)pyrene	< 100	< 110
Benzo(b)fluoranthene	< 100	< 110
Benzo(ghi)perylene	< 100	< 110
Benzo(k)fluoranthene	< 100	< 110
Chrysene	< 100	< 110
Dibenzo(a,h)anthracene	< 100	< 110
Fluoranthene	< 100	< 110
Fluorene	< 100	< 110
Indeno(1,2,3-cd)pyrene	< 100	< 110
Naphthalene	26 J	< 110
Phenanthrene	< 100	< 110
Pyrene	< 100	< 110

BLTS25	8.0 Primary MT526 9/3/2003
SVOCs (µg/kg)	
1-Methyl naphthalene	< 100
2-Methylnaphthalene	< 100
Acenaphthene	< 100
Acenaphthylene	< 100
Anthracene	< 100
Benzo(a)anthracene	< 100
Benzo(a)pyrene	< 100
Benzo(b)fluoranthene	< 100
Benzo(ghi)perylene	< 100
Benzo(k)fluoranthene	< 100
Chrysene	< 100
Dibenzo(a,h)anthracene	< 100
Fluoranthene	< 100
Fluorene	< 100
Indeno(1,2,3-cd)pyrene	< 100
Naphthalene	< 100
Phenanthrene	< 100
Pyrene	< 100

BLTS37	6.0 Primary MT540 9/4/2003
SVOCs (µg/kg)	
1-Methyl naphthalene	< 110
2-Methylnaphthalene	< 110
Acenaphthene	< 110
Acenaphthylene	< 110
Anthracene	< 110
Benzo(a)anthracene	< 110
Benzo(a)pyrene	< 110
Benzo(b)fluoranthene	< 110
Benzo(ghi)perylene	< 110
Benzo(k)fluoranthene	< 110
Chrysene	< 110
Dibenzo(a,h)anthracene	< 110
Fluoranthene	< 110
Fluorene	< 110
Indeno(1,2,3-cd)pyrene	< 110
Naphthalene	< 110
Phenanthrene	< 110
Pyrene	< 110

BLTS34	4.0 Primary MT685 9/11/2003
SVOCs (µg/kg)	
1-Methyl naphthalene	< 100
2-Methylnaphthalene	< 100
Acenaphthene	< 100
Acenaphthylene	< 100
Anthracene	< 100
Benzo(a)anthracene	< 100
Benzo(a)pyrene	< 100
Benzo(b)fluoranthene	< 100
Benzo(ghi)perylene	< 100
Benzo(k)fluoranthene	< 100
Chrysene	< 100
Dibenzo(a,h)anthracene	< 100
Fluoranthene	< 100
Fluorene	< 100
Indeno(1,2,3-cd)pyrene	< 100
Naphthalene	< 100
Phenanthrene	< 100
Pyrene	< 100

BLBS0036	0.7 Primary BLBS0036S01 2/12/2007	0.7 Split BLBS0036S01SP 2/12/2007
SVOCs (µg/kg)		
1-Methyl naphthalene	< 21	< 5.7
2-Methylnaphthalene	< 21	< 5.7
Acenaphthene	< 21	< 5.7
Acenaphthylene	< 21	< 5.7
Anthracene	< 21	< 5.7
Benzo(a)anthracene	< 21	< 5.7
Benzo(a)pyrene	< 21	< 5.7
Benzo(b)fluoranthene	< 21	0.22 J
Benzo(ghi)perylene	< 21	< 5.7
Benzo(k)fluoranthene	< 21	< 5.7
bis(2-Ethylhexyl) phthalate	13 J	-
Chrysene	< 21	0.27 J
Dibenzo(a,h)anthracene	< 21	< 5.7
Diethyl phthalate	< 21	-
Di-n-butyl phthalate	7.9 J	-
Fluoranthene	< 21	< 5.7
Fluorene	< 21	< 5.7
Indeno(1,2,3-cd)pyrene	< 21	< 5.7
Naphthalene	< 21	< 5.7
Phenanthrene	< 21	0.49 J
Pyrene	< 21	0.32 J

BLBS0037	0.5 Primary BLBS0037S01 2/12/2007
SVOCs (µg/kg)	
1-Methyl naphthalene	< 25
2-Methylnaphthalene	< 25
Acenaphthene	< 25
Acenaphthylene	< 25
Anthracene	< 25
Benzo(a)anthracene	< 25
Benzo(a)pyrene	< 25
Benzo(b)fluoranthene	< 25
Benzo(ghi)perylene	< 25
Benzo(k)fluoranthene	< 25
bis(2-Ethylhexyl) phthalate	8.5 J
Chrysene	< 25
Dibenzo(a,h)anthracene	< 25
Diethyl phthalate	< 25
Di-n-butyl phthalate	< 25
Fluoranthene	< 25
Fluorene	< 25
Indeno(1,2,3-cd)pyrene	< 25
Naphthalene	< 25
Phenanthrene	< 25
Pyrene	< 25

BLBS0038	0.5 Primary BLBS0038S01 2/12/2007
SVOCs (µg/kg)	
1-Methyl naphthalene	< 24
2-Methylnaphthalene	< 24
Acenaphthene	< 24
Acenaphthylene	< 24
Anthracene	< 24
Benzo(a)anthracene	< 24
Benzo(a)pyrene	< 24
Benzo(b)fluoranthene	< 24
Benzo(ghi)perylene	< 24
Benzo(k)fluoranthene	< 24
bis(2-Ethylhexyl) phthalate	15 J
Chrysene	< 24
Dibenzo(a,h)anthracene	< 24
Diethyl phthalate	< 24
Di-n-butyl phthalate	15 J
Fluoranthene	< 24
Fluorene	< 24
Indeno(1,2,3-cd)pyrene	< 24
Naphthalene	< 24
Phenanthrene	< 24
Pyrene	< 24

MWH

Santa Susana Field Laboratory

SVOC Chemical Data Results - South B056 Landfill RFI Site

FIGURE B.3-2B

Soil Sample Location Symbol Legend

- ▲ Soil sample location with detected TPH Data
- ▲ Soil sample location with no detected TPH Data
- △ Soil sample location not analyzed for TPH Data
- △ Contained unit soil sample
- △ Refused sample (refusal depth < 1' below ground surface)
- ▲ Soil sample not analyzed by any sample method

Comparison Levels

TPH	Background (mg/kg)	Res RBSL (mg/kg)	Eco RBSL (mg/kg)
Gasoline Range Organics	- -	1.1	- -
Diesel Range Organics	- -	1400	- -
Diesel Range Organics	- -	1400	- -
Lubricant Oil Range	- -	1400	- -
Lubricant Oil Range	- -	1400	- -
Oil content	- -	1400	- -

Note: (mg/kg) = milligrams per kilogram

Data Date: 20070919

Note: Hydrocarbon range naming conventions shown on figure may not exactly match laboratory reports due to the varying range classifications by the different laboratories used during the RFI progarm. Carbon ranges are shown as reported by the laboratory.

Background	Background Level
Res RBSL	Residential Risk-Based Screening Level
Eco RBSL	Ecological Risk-Based Screening Level

Data Box Information

Sample Location ID: BLBS01

1.00	Depth in Feet
Primary	Sample Type
BLBS01S01	Unique Sample Identifier
7/10/2005	Date

(Historical Sample)

12.05	Detect with sample concentration shown
0.06	Non-Detect with lab detection limit shown
J	Analyte positively identified; Associated numerical value is considered estimated
*	Data validation not performed
NA	Analysis not conducted
[#]	If more than one result per sample depth, the maximum is presented, with number of results in backets.

Note: "12.05" and "<0.06" are for reference only and may not represent actual sample results .

Detect	Non-Detect	
12.05	<0.06	Exceeds Background
12.05	<0.06	Exceeds Background + Res RBSL
12.05	<0.06	Exceeds Background + Eco RBSL
12.05	<0.06	Exceeds Background + Res RBSL + Eco RBSL

Chemical Use Areas

(★ Chemical Use Area present in this RFI site)

- Multiple Use
- Solvent
- Petroleum
- Oils / PCBs
- Metal
- Perchlorate
- Hydrazine
- ★ Debris
- Leach Field
- ★ Potential
- ★ Landfill

Base Map Legend

- Administrative Area Boundary
- RFI Site Boundary
- Report Group Boundary
- Existing Building or Structure
- Removed Building or Structure
- Other Tanks
- Solvent Tank
- Petroleum Fuel/Oil Tank
- Hydrazine Tank
- Awning
- Dirt Road
- A/C Curbing
- Fence
- Pipe
- Leach Field
- NPDES Outfall
- Well
- Abandoned Well
- Pond
- Possible Pond
- Drainage
- Surface Water Divide
- Elevation Contour
- Rock Outcrop
- Trench

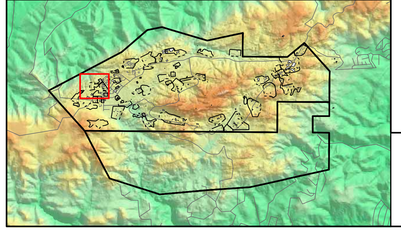
Note: R = Removed Tank

Date: Sep 29, 2007 Document: RFI-Report-Group8_B056_TPH_E.mxd

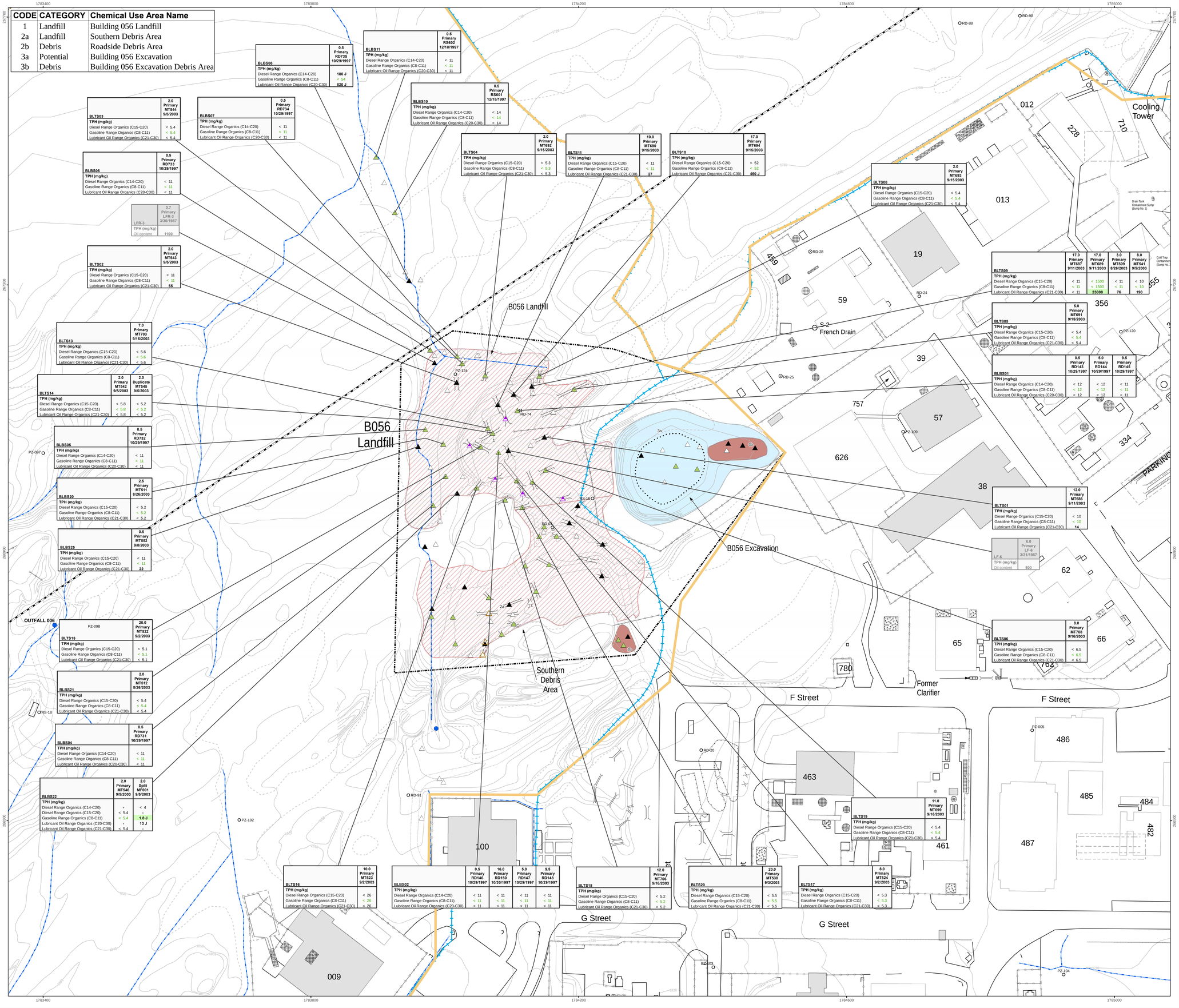
ANSI E 44x34

1 inch equals 50 feet

0 50 100 Feet



CODE	CATEGORY	Chemical Use Area Name
1	Landfill	Building 056 Landfill
2a	Landfill	Southern Debris Area
2b	Debris	Roadside Debris Area
3a	Potential	Building 056 Excavation
3b	Debris	Building 056 Excavation Debris Area



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Santa Susana Field Laboratory

TPH Chemical Data Results - North B056 Landfill RFI Site

FIGURE B.3-3A

Soil Sample Location Symbol Legend

- ▲ Soil sample location with detected TPH Data
- ▲ Soil sample location with no detected TPH Data
- △ Soil sample location not analyzed for TPH Data
- △ Contained unit soil sample
- △ Refused sample (refusal depth < 1' below ground surface)
- ▲ Soil sample not analyzed by any sample method

Comparison Levels

TPH	Background (mg/kg)	Res RBSL (mg/kg)	Eco RBSL (mg/kg)
Gasoline Range Organics	- -	1.1	- -
Diesel Range Organics	- -	1400	- -
Diesel Range Organics	- -	1400	- -
Lubricant Oil Range	- -	1400	- -
Lubricant Oil Range	- -	1400	- -
Oil content	- -	1400	- -

Note: (mg/kg) = milligrams per kilogram

Data Date: 20070919

Note: Hydrocarbon range naming conventions shown on figure may not exactly match laboratory reports due to the varying range classifications by the different laboratories used during the RFI progarm. Carbon ranges are shown as reported by the laboratory.

Background	Background Level
Res RBSL	Residential Risk-Based Screening Level
Eco RBSL	Ecological Risk-Based Screening Level

Data Box Information

Sample Location ID: BLBS01

1.00	Depth in Feet
Primary	Sample Type
BLBS01S01	Unique Sample Identifier
7/10/2005	Date

(Historical Sample)

Note: "12.05" and "<0.06" are for reference only and may not represent actual sample results .

12.05	Detect with sample concentration shown
0.06	Non-Detect with lab detection limit shown
J	Analyte positively identified; Associated numerical value is considered estimated
*	Data validation not performed
NA	Analysis not conducted
[#]	If more than one result per sample depth, the maximum is presented, with number of results in backets.

Detect	Non-Detect	
12.05	<0.06	Exceeds Background
12.05	<0.06	Exceeds Background + Res RBSL
12.05	<0.06	Exceeds Background + Eco RBSL
12.05	<0.06	Exceeds Background + Res RBSL + Eco RBSL

Chemical Use Areas

(★ Chemical Use Area present in this RFI site)

- Multiple Use
- Solvent
- Petroleum
- Oils / PCBs
- Metal
- Perchlorate
- Hydrazine
- ★ Debris
- Leach Field
- ★ Potential
- ★ Landfill

Base Map Legend

- Administrative Area Boundary
- RFI Site Boundary
- Report Group Boundary
- Existing Building or Structure
- Removed Building or Structure
- Other Tanks
- Solvent Tank
- Petroleum Fuel/Oil Tank
- Hydrazine Tank
- Awning
- Dirt Road
- A/C Curbing
- Fence
- Pipe
- Leach Field
- NPDES Outfall
- Well
- Abandoned Well
- Pond
- Possible Pond
- Drainage
- Surface Water Divide
- Elevation Contour
- Rock Outcrop
- Trench

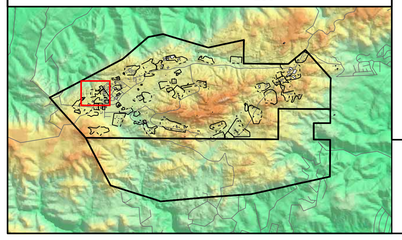
Note: R = Removed Tank

Date: Sep 29, 2007 Document: RFI-Report-Group8_B056_TPH_E.mxd

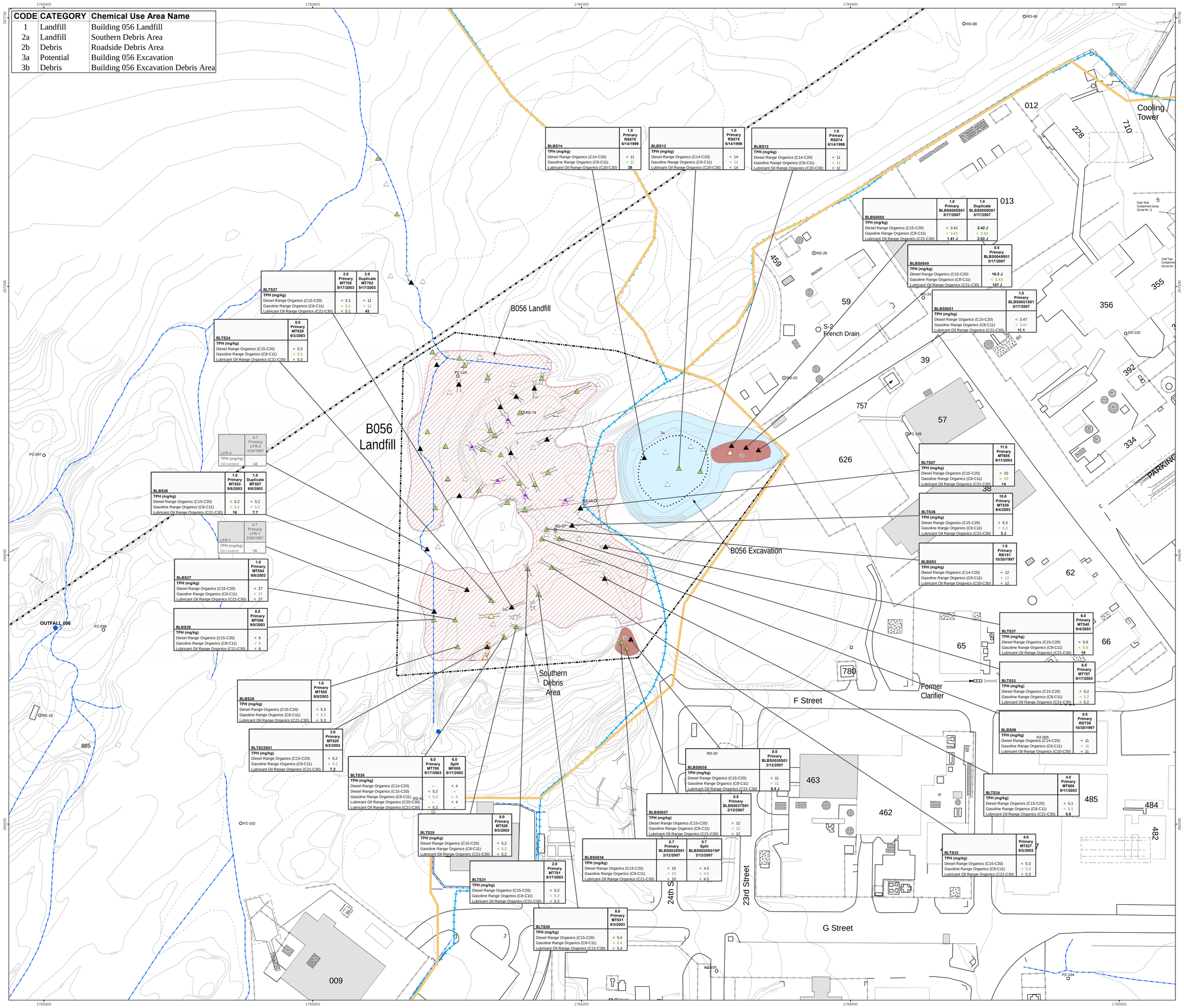
ANSI E 44x34

1 inch equals 50 feet

0 50 100 Feet



CODE	CATEGORY	Chemical Use Area Name
1	Landfill	Building 056 Landfill
2a	Landfill	Southern Debris Area
2b	Debris	Roadside Debris Area
3a	Potential	Building 056 Excavation
3b	Debris	Building 056 Excavation Debris Area



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Santa Susana Field Laboratory

TPH Chemical Data Results - South B056 Landfill RFI Site

FIGURE B.3-3B

Soil Sample Location Symbol Legend

- ▲ Soil sample location with detected PCBs/Dioxins Data
- ▲ Soil sample location with no detected PCBs/Dioxins Data
- △ Soil sample location not analyzed for PCBs/Dioxins Data
- △ Contained unit soil sample
- △ Refused sample (refusal depth < 1' below ground surface)
- ▲ Soil sample not analyzed by any sample method

Comparison Levels

Dioxins/Furans	Background (ng/kg)	Res RBSL (ng/kg)	Eco RBSL (ng/kg)
1,2,3,4,6,7,8-Heptachlorodibenzofuran	2.5	690	1100
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	13	690	820
1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.19	690	280
1,2,3,4,7,8-Hexachlorodibenzofuran	0.73	69	28
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.34	69	28
1,2,3,6,7,8-Hexachlorodibenzofuran	0.3	69	28
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.95	69	130
1,2,3,7,8,9-Hexachlorodibenzofuran	0.43	69	28
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	1.1	69	28
1,2,3,7,8-Pentachlorodibenzofuran	0.59	230	92
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	0.18	6.9	2.8
2,3,4,6,7,8-Hexachlorodibenzofuran	0.45	69	28
2,3,7,8-Tetrachlorodibenzofuran	1.8	69	4.4
Heptachlorodibenzofurans	- -	- -	- -
Heptachlorodibenzo-p-dioxins	- -	- -	- -
Hexachlorodibenzofurans	- -	- -	- -
Hexachlorodibenzo-p-dioxins	- -	- -	- -
Octachlorodibenzofuran	8.1	23000	27000
Octachlorodibenzo-p-dioxin	140	23000	37000
Pentachlorodibenzofurans	- -	- -	- -
Pentachlorodibenzo-p-dioxins	- -	- -	- -
Tetrachlorodibenzofurans	- -	- -	- -
Tetrachlorodibenzo-p-dioxins	- -	- -	- -
TCDD TEQ (ND=0) 2005 WHO	0.87	6.9	2.8

Note: (ng/kg) = nanograms per kilogram

Data Date: 20070919

Background Background Level
Res RBSL Residential Risk-Based Screening Level
Eco RBSL Ecological Risk-Based Screening Level

Data Box Information

Sample Location ID: BLBS01 | 1.00 (Depth in Feet) | Primary (Sample Type) | BLBS01S01 (Unique Sample Identifier) | 7/10/2005 (Date) | (Historical Sample)

Note: "12.05" and "<0.06" are for reference only and may not represent actual sample results .

12.05	Detect with sample concentration shown
0.06	Non-Detect with lab detection limit shown
J	Analyte positively identified; Associated numerical value is considered estimated
*	Data validation not performed
NA	Analysis not conducted
[#]	If more than one result per sample depth, the maximum is presented, with number of results in backets.

Detect	Non-Detect	
12.05	<0.06	Exceeds Background
12.05	<0.06	Exceeds Background + Res RBSL
12.05	<0.06	Exceeds Background + Eco RBSL
12.05	<0.06	Exceeds Background + Res RBSL + Eco RBSL

Chemical Use Areas

(✱ Chemical Use Area present in this RFI site)

- Multiple Use
- Solvent
- Petroleum
- Oils / PCBs
- Metal
- Perchlorate
- Hydrazine
- ✱ Debris
- Leach Field
- ✱ Potential
- ✱ Landfill

Base Map Legend

- Administrative Area Boundary
- RFI Site Boundary
- Report Group Boundary
- Existing Building or Structure
- Removed Building or Structure
- Other Tanks
- Solvent Tank
- Petroleum Fuel/Oil Tank
- Hydrazine Tank
- Awning
- Dirt Road
- A/C Curbing
- Fence
- Pipe
- Leach Field
- NPDES Outfall
- Well
- Pond
- Possible Pond
- Drainage
- Surface Water Divide
- Elevation Contour
- Rock Outcrop
- Trench

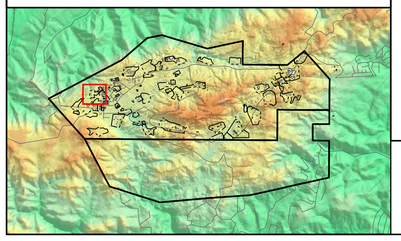
Note: R = Removed Tank

Date: Sep 29, 2007 Document: RFI-Report-Group8_B056_PCB_Dioxins_E.mxd

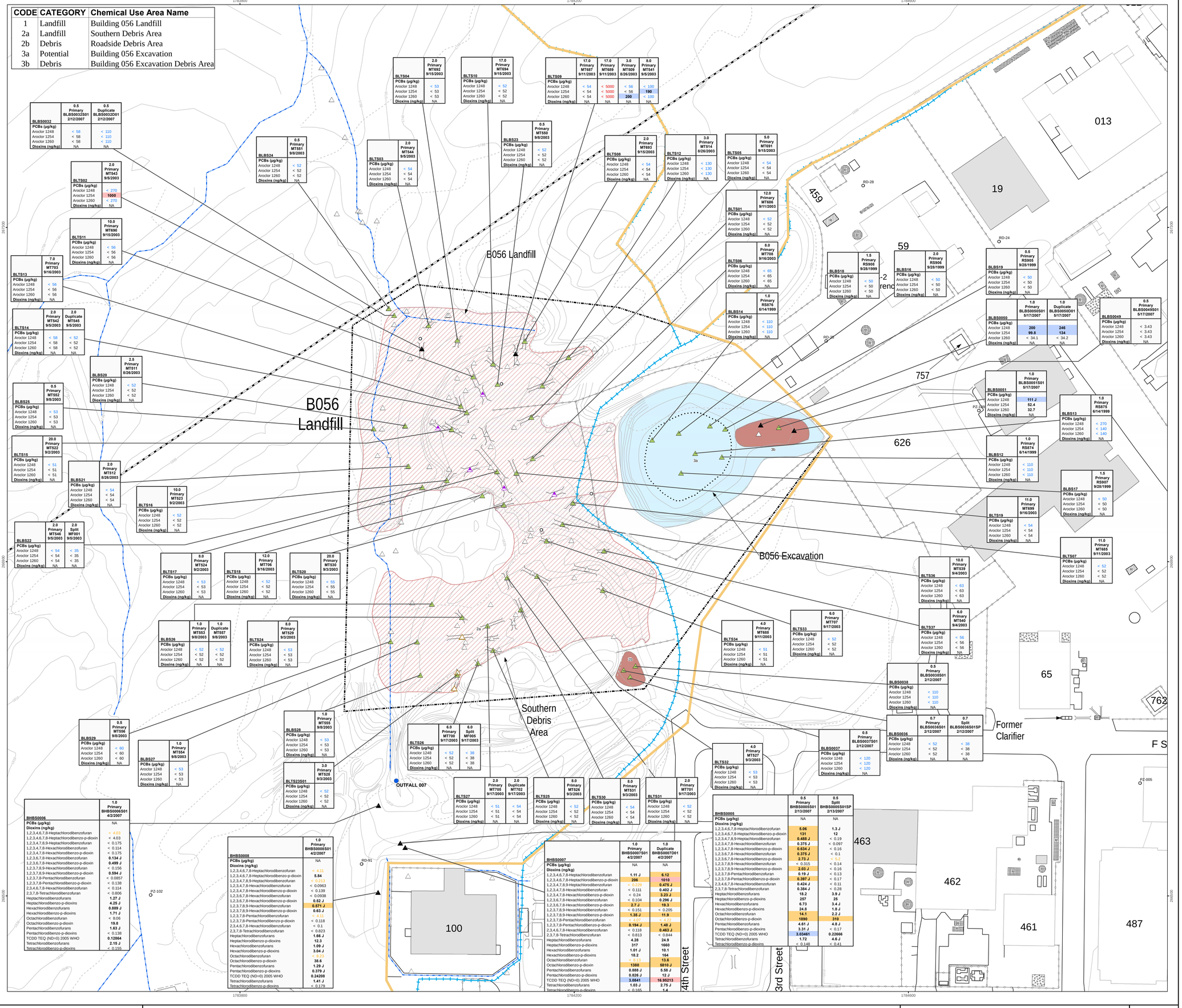
ANSI E 44x34

1 inch equals 40 feet

0 40 80 Feet



CODE	CATEGORY	Chemical Use Area Name
1	Landfill	Building 056 Landfill
2a	Landfill	Southern Debris Area
2b	Debris	Roadside Debris Area
3a	Potential	Building 056 Excavation
3b	Debris	Building 056 Excavation Debris Area



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PCBs/Dioxins Chemical Data Results
B056 Landfill RFI Site

FIGURE B.3-4

Soil Sample Location Symbol Legend

- ▲ Soil sample location with detected Metals/Energetics/pH Chemical Data
- ▲ Soil sample location with no detected Metals/Energetics/pH Chemical Data
- △ Soil sample location not analyzed for Metals/Energetics/pH Chemical Data
- △ Contained unit soil sample
- △ Refused sample (refusal depth < 1' below ground surface)
- ▲ Soil sample not analyzed by any sample method

Comparison Levels

Inorganics	Background	Res RBSL	Eco RBSL
Fluoride (mg/kg)	6.7	4600	- -
pH	- -	- -	- -

Metals	Background (mg/kg)	Res RBSL (mg/kg)	Eco RBSL (mg/kg)
Aluminum	20000	75000	14
Antimony	8.7	30	0.096
Arsenic	15	0.095	0.26
Barium	140	15000	15
Beryllium	1.1	150	5.9
Boron	9.7	15000	9.3
Cadmium	1	2.6	0.0026
Calcium	- -	- -	- -
Chromium	36.8	3400	940
Cobalt	21	1500	10
Copper	29	3000	1.1
Hexavalent Chromium	- -	110	15
Iron	- -	- -	- -
Lead	34	150	0.063
Lithium	37	1522	43
Magnesium	- -	- -	- -
Manganese	495	9500	79
Mercury	0.09	23	0.88
Molybdenum	5.3	380	0.11
Nickel	29	1500	0.1
Potassium	6400	- -	- -
Selenium	0.655	380	0.18
Silver	0.79	380	0.55
Sodium	110	- -	- -
Thallium	0.46	6.1	3.2
Vanadium	62	76	1.6
Zinc	110	23000	22
Zirconium	8.6	- -	- -

Metals - leachates	Background (mg/L)	Res RBSL (mg/L)	Eco RBSL (mg/L)
Aluminum-SPLP	- -	- -	- -
Antimony-SPLP	- -	- -	- -
Arsenic-SPLP	- -	- -	- -
Barium-SPLP	- -	- -	- -
Beryllium-SPLP	- -	- -	- -
Cadmium-SPLP	- -	- -	- -
Cadmium-STLC	- -	- -	- -
Chromium-SPLP	- -	- -	- -
Chromium-STLC	- -	- -	- -
Cobalt-SPLP	- -	- -	- -
Copper-SPLP	- -	- -	- -
Copper-STLC	- -	- -	- -
Lead-SPLP	- -	- -	- -
Lead-STLC	- -	- -	- -
Mercury-SPLP	- -	- -	- -
Mercury-STLC	- -	- -	- -
Molybdenum-SPLP	- -	- -	- -
Nickel-SPLP	- -	- -	- -
Nickel-STLC	- -	- -	- -
Selenium-SPLP	- -	- -	- -
Silver-SPLP	- -	- -	- -
Thallium-SPLP	- -	- -	- -
Vanadium-SPLP	- -	- -	- -
Zinc-SPLP	- -	- -	- -

Note: (mg/kg) = milligrams per kilogram

Data Date: 20070919

Background Background Level
Res RBSL Residential Risk-Based Screening Level
Eco RBSL Ecological Risk-Based Screening Level

Data Box Information

Sample Location ID: BLBS01

- 1.00 — Depth in Feet
- Primary — Sample Type
- BLBS01S01 — Unique Sample Identifier
- 7/10/2005 — Date

(Historical | Sample)

12.05	Detect with sample concentration shown
< 0.06	Non-Detect with lab detection limit shown
J	Analyte positively identified; Associated numerical value is considered estimated
*	Data validation not performed
NA	Analysis not conducted
[#]	If more than one result per sample depth, the maximum is presented, with number of results in backets.

Note: "12.05" and "<0.06" are for reference only and may not represent actual sample results .

Detect	Non-Detect	
12.05	<0.06	Exceeds Res RBSL
12.05	<0.06	Exceeds Eco RBSL
12.05	<0.06	Exceeds Res RBSL + Eco RBSL

Chemical Use Areas

(* Chemical Use Area present in this RFI site)

- Multiple Use
- Solvent
- Petroleum
- Oils / PCBs
- Metal
- Perchlorate
- Hydrazine
- * Debris
- Leach Field
- * Potential

Base Map Legend

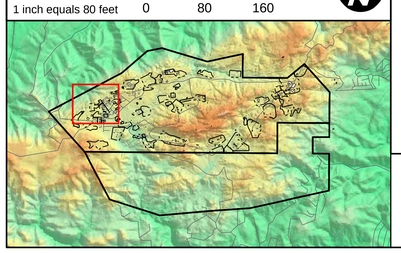
- Administrative Area Boundary
- RFI Site Boundary
- Report Group Boundary
- Existing Building or Structure
- Removed Building or Structure
- Other Tanks
- Solvent Tank
- Petroleum Fuel/Oil Tank
- Hydrazine Tank
- Awning
- Dirt Road
- A/C Curbing
- Fence
- Pipe
- Leach Field
- NPDES Outfall
- Well
- Pond
- Possible Pond
- Drainage
- Surface Water Divide
- Elevation Contour
- Rock Outcrop
- Trench

Note: R = Removed Tank

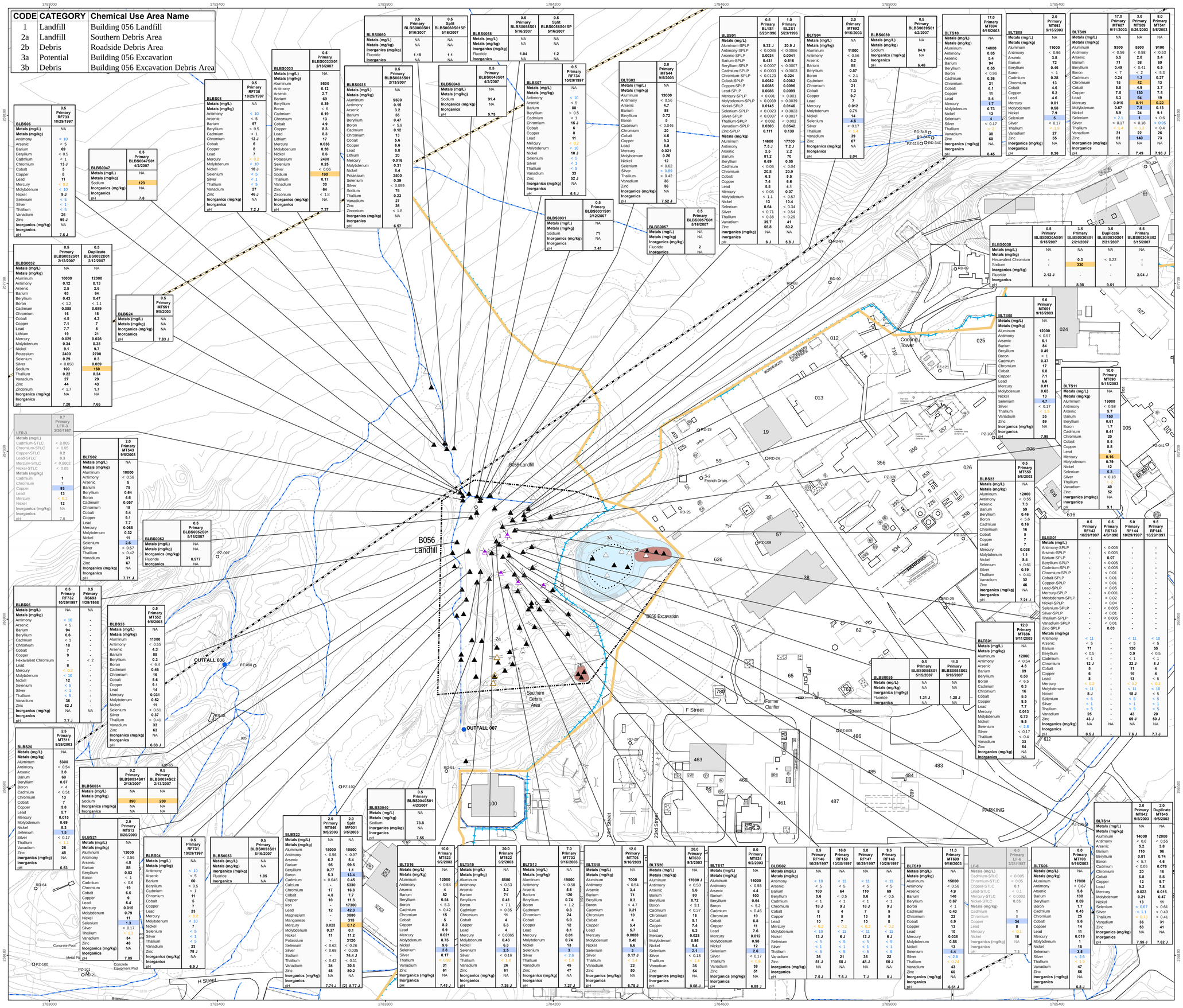
Date: Sep 30, 2007 Document: RFI-Report-Group8_B056_Metals_N_E.mxd

ANSI E 44x34

1 inch equals 80 feet — Feet: 0 80 160



CODE	CATEGORY	Chemical Use Area Name
1	Landfill	Building 056 Landfill
2a	Landfill	Southern Debris Area
2b	Debris	Roadside Debris Area
3a	Potential	Building 056 Excavation
3b	Debris	Building 056 Excavation Debris Area



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Santa Susana Field Laboratory

Metals/Energetics/Perchlorate/Inorganics Chemical Data Results - North B056 Landfill RFI Site

FIGURE B.3-5A

Soil Sample Location Symbol Legend

- ▲ Soil sample location with detected Metals/Energetics/ Perchlorate/Inorganics Chemical Data
- ▲ Soil sample location with no detected Metals/Energetics/ Perchlorate/Inorganics Chemical Data
- △ Soil sample location not analyzed for Metals/Energetics/ Perchlorate/Inorganics Chemical Data
- △ Contained unit soil sample
- △ Refused sample (refusal depth < 1' below ground surface)
- ▲ Soil sample not analyzed by any sample method

Comparison Levels

Inorganics	Background	Res RBSL	Eco RBSL
Fluoride (mg/kg)	6.7	4600	- -
pH	- -	- -	- -

Metals	Background (mg/kg)	Res RBSL (mg/kg)	Eco RBSL (mg/kg)
Aluminum	20000	75000	14
Antimony	8.7	30	0.096
Arsenic	15	0.095	0.26
Barium	140	15000	15
Beryllium	1.1	150	5.9
Boron	9.7	15000	9.3
Cadmium	1	2.6	0.0026
Calcium	- -	- -	- -
Chromium	36.8	3400	940
Cobalt	21	1500	10
Copper	29	3000	1.1
Hexavalent Chromium	- -	110	15
Iron	- -	- -	- -
Lead	34	150	0.063
Lithium	37	1522	43
Magnesium	- -	- -	- -
Manganese	495	9500	79
Mercury	0.09	23	0.88
Molybdenum	5.3	380	0.11
Nickel	29	1500	0.1
Potassium	6400	- -	- -
Selenium	0.655	380	0.18
Silver	0.79	380	0.55
Sodium	110	- -	- -
Thallium	0.46	6.1	3.2
Vanadium	62	76	1.6
Zinc	110	23000	22
Zirconium	8.6	- -	- -

Metals - leachates	Background (mg/L)	Res RBSL (mg/L)	Eco RBSL (mg/L)
Aluminum-SPLP	- -	- -	- -
Antimony-SPLP	- -	- -	- -
Arsenic-SPLP	- -	- -	- -
Barium-SPLP	- -	- -	- -
Beryllium-SPLP	- -	- -	- -
Cadmium-SPLP	- -	- -	- -
Cadmium-STLC	- -	- -	- -
Chromium-SPLP	- -	- -	- -
Chromium-STLC	- -	- -	- -
Cobalt-SPLP	- -	- -	- -
Copper-SPLP	- -	- -	- -
Copper-STLC	- -	- -	- -
Lead-SPLP	- -	- -	- -
Lead-STLC	- -	- -	- -
Mercury-SPLP	- -	- -	- -
Mercury-STLC	- -	- -	- -
Molybdenum-SPLP	- -	- -	- -
Nickel-SPLP	- -	- -	- -
Nickel-STLC	- -	- -	- -
Selenium-SPLP	- -	- -	- -
Silver-SPLP	- -	- -	- -
Thallium-SPLP	- -	- -	- -
Vanadium-SPLP	- -	- -	- -
Zinc-SPLP	- -	- -	- -

Note: (mg/kg) = milligrams per kilogram

Data Date: 20070919

Background Background Level
Res RBSL Residential Risk-Based Screening Level
Eco RBSL Ecological Risk-Based Screening Level

Data Box Information

Sample Location ID: BLBS01

1.00 — Depth in Feet
Primary — Sample Type
BLBS01S01 — Unique Sample Identifier
7/10/2005 — Date

(Historical Sample)

12.05	Detect with sample concentration shown
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Detect	Non-Detect	
12.05	<0.06	Exceeds Res RBSL
12.05	<0.06	Exceeds Eco RBSL
12.05	<0.06	Exceeds Res RBSL + Eco RBSL

Chemical Use Areas

(✱ Chemical Use Area present in this RFI site)

- Multiple Use
- Solvent
- Petroleum
- Oils / PCBs
- Metal
- Perchlorate
- Hydrazine
- ✱ Debris
- ✱ Landfill
- Leach Field
- ✱ Potential

Base Map Legend

- Administrative Area Boundary
- RFI Site Boundary
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- Other Tanks
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- Petroleum Fuel/Oil Tank
- Hydrazine Tank
- Awning
- Dirt Road
- A/C Curbing
- Fence
- Pipe
- Leach Field
- NPDES Outfall
- Well
- Pond
- Possible Pond
- Drainage
- Surface Water Divide
- Elevation Contour
- Rock Outcrop
- Trench

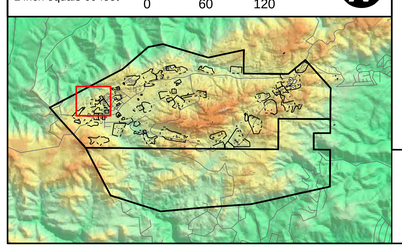
Note: R = Removed Tank

Date: Sep 30, 2007 Document: RFI-Report-Group8_B056_Metals_S_E.mxd

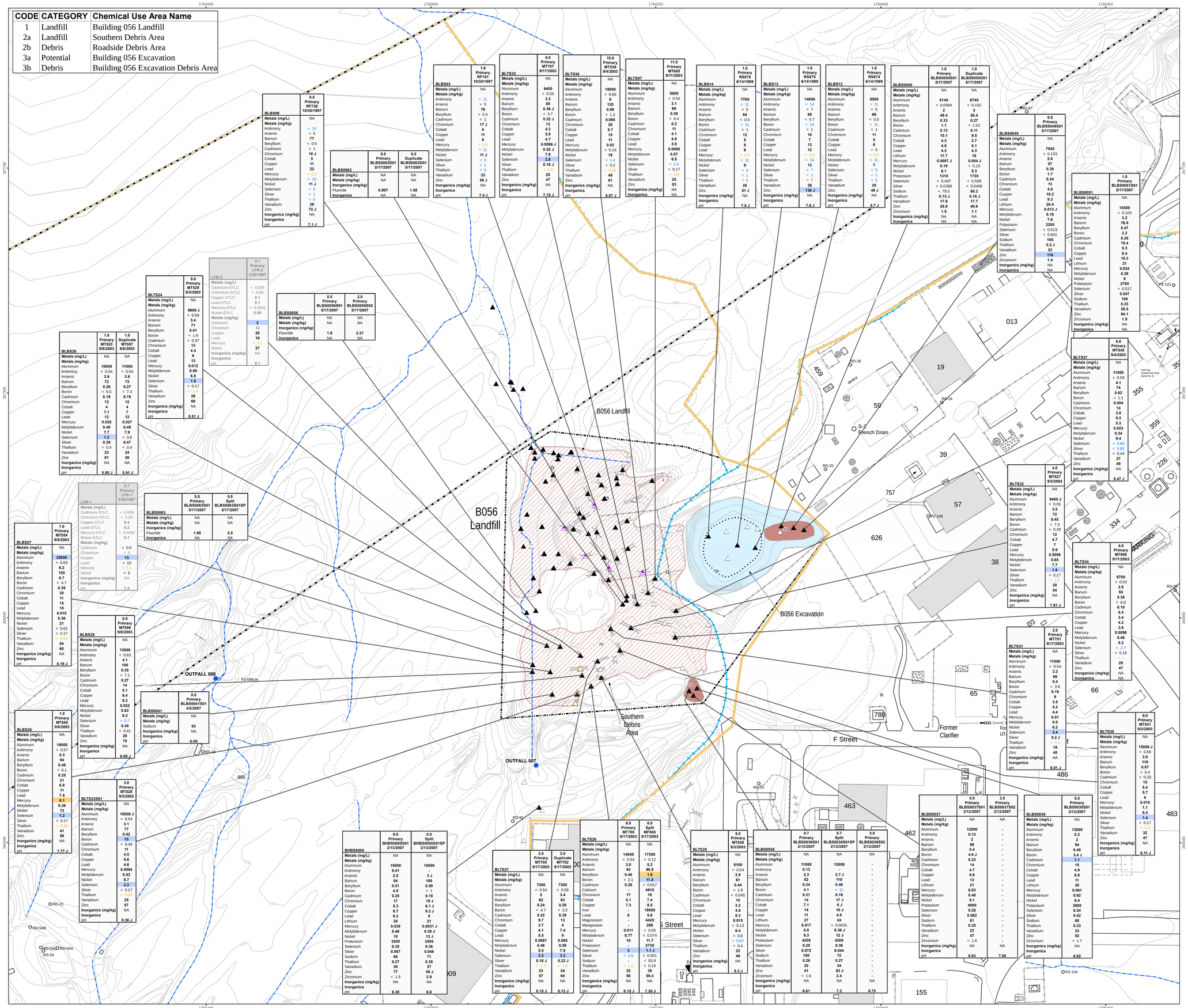
ANSI E 44x34

1 inch equals 60 feet

0 60 120 Feet



CODE	CATEGORY	Chemical Use Area Name
1	Landfill	Building 056 Landfill
2a	Landfill	Southern Debris Area
2b	Debris	Roadside Debris Area
3a	Potential	Building 056 Excavation
3b	Debris	Building 056 Excavation Debris Area



BLBS03	1.0 Primary RF151 10/30/1997
Metals (mg/L)	NA
Metals (mg/kg)	
Antimony	< 11
Arsenic	< 5
Barium	76
Beryllium	< 0.5
Cadmium	< 1
Chromium	17 J
Cobalt	6
Copper	11
Lead	8
Mercury	< 0.2
Molybdenum	< 11
Nickel	11 J
Selenium	< 5
Silver	< 1
Thallium	< 5
Vanadium	33
Zinc	56 J
Inorganics (mg/kg)	
Inorganics	
pH	7.4 J

BLBS09	0.5 Primary RF736 10/30/1997
Metals (mg/L)	NA
Metals (mg/kg)	
Antimony	< 10
Arsenic	< 5
Barium	77
Beryllium	< 0.5
Cadmium	< 1
Chromium	16 J
Cobalt	5
Copper	11
Lead	22
Mercury	< 0.2
Molybdenum	< 10
Nickel	11 J
Selenium	< 5
Silver	< 1
Thallium	< 5
Vanadium	29
Zinc	72 J
Inorganics (mg/kg)	NA
Inorganics	
pH	7.1 J

BLBS0062	0.5 Primary BLBS0062S01 5/17/2007	0.5 Duplicate BLBS0062D01 5/17/2007
Metals (mg/L)	NA	NA
Metals (mg/kg)	NA	NA
Inorganics (mg/kg)		
Fluoride	0.907	1.08
Inorganics	NA	NA

BLTS33	6.0 Primary MT707 9/17/2003
Metals (mg/L)	NA
Metals (mg/kg)	
Aluminum	9400
Antimony	< 0.55
Arsenic	3.3
Barium	80
Beryllium	0.36 J
Boron	< 3.7
Cadmium	0.22 J
Chromium	13
Cobalt	4.3
Copper	5.9
Lead	4.7
Mercury	0.0096 J
Molybdenum	0.52 J
Nickel	7.6
Selenium	2.6
Silver	0.18 J
Thallium	< 1.3
Vanadium	25
Zinc	47
Inorganics (mg/kg)	NA
Inorganics	
pH	7.15 J

BLTS36	10.0 Primary MT539 9/4/2003
Metals (mg/L)	NA
Metals (mg/kg)	
Aluminum	18000
Antimony	< 0.66
Arsenic	6
Barium	120
Beryllium	0.99
Boron	< 1.2
Cadmium	0.095
Chromium	26
Cobalt	8.7
Copper	15
Lead	11
Mercury	0.02
Molybdenum	< 0.16
Nickel	19
Selenium	< 1.4
Silver	< 0.2
Thallium	< 0.49
Vanadium	49
Zinc	61
Inorganics (mg/kg)	NA
Inorganics	
pH	6.87 J

BLTS07	11.0 Primary MT685 9/11/2003
Metals (mg/L)	NA
Metals (mg/kg)	
Aluminum	8500
Antimony	< 0.54
Arsenic	3.1
Barium	66
Beryllium	0.39
Boron	< 6.4
Cadmium	0.2
Chromium	11
Cobalt	4.1
Copper	4.9
Lead	3.9
Mercury	0.0095
Molybdenum	0.57
Nickel	6.5
Selenium	< 1.6
Silver	< 0.17
Thallium	< 1.9
Vanadium	25
Zinc	53
Inorganics (mg/kg)	NA
Inorganics	
pH	NA

BLBS14	1.0 Primary RS876 6/14/1999
Metals (mg/L)	NA
Metals (mg/kg)	
Aluminum	7700
Antimony	< 11
Arsenic	< 5
Barium	64
Beryllium	< 0.5
Boron	< 11
Cadmium	< 1
Chromium	12
Cobalt	5
Copper	8
Lead	6
Mercury	< 0.2
Molybdenum	< 11
Nickel	9
Selenium	< 5
Silver	< 1
Thallium	< 5
Vanadium	25
Zinc	51 J
Inorganics (mg/kg)	NA
Inorganics	
pH	7.8 J

BLBS13	1.0 Primary RS875 6/14/1999
Metals (mg/L)	NA
Metals (mg/kg)	
Aluminum	14000
Antimony	< 14
Arsenic	< 7
Barium	95
Beryllium	< 0.7
Boron	< 14
Cadmium	< 1
Chromium	18
Cobalt	7
Copper	13
Lead	12
Mercury	< 0.3
Molybdenum	< 14
Nickel	13
Selenium	< 7
Silver	< 1
Thallium	< 7
Vanadium	38
Zinc	130 J
Inorganics (mg/kg)	NA
Inorganics	
pH	7.6 J

BLBS12	1.0 Primary RS874 6/14/1999
Metals (mg/L)	NA
Metals (mg/kg)	
Aluminum	8500
Antimony	< 11
Arsenic	< 5
Barium	69
Beryllium	< 0.5
Boron	< 11
Cadmium	< 1
Chromium	11
Cobalt	5
Copper	6
Lead	< 5
Mercury	< 0.2
Molybdenum	< 11
Nickel	7
Selenium	< 5
Silver	< 1
Thallium	< 5
Vanadium	25
Zinc	49 J
Inorganics (mg/kg)	NA
Inorganics	
pH	8.7 J

BLBS0050	1.0 Primary BLBS0050S01 5/17/2007	1.0 Duplicate BLBS0050D01 5/17/2007
Metals (mg/L)	NA	NA
Metals (mg/kg)		
Aluminum	6140	6740
Antimony	< 0.0994	< 0.102
Arsenic	2	2
Barium	49.4	50.4
Beryllium	0.33	0.27
Boron	1.1	< 1.02
Cadmium	0.13	0.11
Chromium	10.1	9.5
Cobalt	4.3	3.7
Copper	4.8	5.1
Lead	4.3	4.3
Lithium	11.7	16
Mercury	0.0087 J	0.004 J
Molybdenum	0.19	< 0.16
Nickel	6.1	5.3
Potassium	1310	1730
Selenium	< 0.497	< 0.508
Silver	< 0.0398	< 0.0406
Sodium	< 79.5	88.2
Thallium	0.13 J	0.16 J
Vanadium	17.9	17.7
Zinc	28.8	40.6
Zirconium	1.5	1.1
Inorganics (mg/kg)	NA	NA
Inorganics	NA	NA

BLBS0049	0.5 Primary BLBS0049S01 5/17/2007
Metals (mg/L)	NA
Metals (mg/kg)	
Aluminum	7540
Antimony	< 0.103
Arsenic	2.6
Barium	57
Beryllium	0.39
Boron	1.7
Cadmium	0.24
Chromium	13
Cobalt	4.6
Copper	10.2
Lead	9.3
Lithium	20.4
Mercury	0.013 J
Molybdenum	0.19
Nickel	7.6
Potassium	2200
Selenium	< 0.513
Silver	< 0.041
Sodium	105
Thallium	0.2 J
Vanadium	23
Zinc	116
Zirconium	1.4
Inorganics (mg/kg)	NA
Inorganics	NA

BLBS0051	1.0 Primary BLBS0051S01 5/17/2007
Metals (mg/L)	NA
Metals (mg/kg)	
Aluminum	10300
Antimony	< 0.103
Arsenic	3.2
Barium	76.9
Beryllium	0.47
Boron	2.2
Cadmium	0.25
Chromium	15.4
Cobalt	5.3
Copper	8.4
Lead	10.3
Lithium	21
Mercury	0.034
Molybdenum	0.29
Nickel	9
Potassium	2750
Selenium	< 0.517
Silver	0.047
Sodium	109
Thallium	0.23
Vanadium	26.5
Zinc	94.1
Zirconium	1.9
Inorganics (mg/kg)	NA
Inorganics	NA

BLTS37	6.0 Primary MT540 9/4/2003
Metals (mg/L)	NA
Metals (mg/kg)	
Aluminum	11000
Antimony	< 0.59
Arsenic	4.1
Barium	74
Beryllium	0.62
Boron	< 1.1
Cadmium	0.054
Chromium	14
Cobalt	3.8
Copper	9.2
Lead	5.3
Mercury	0.023
Molybdenum	0.34
Nickel	9.4
Selenium	< 0.66
Silver	< 0.82
Thallium	< 0.44
Vanadium	27
Zinc	49
Inorganics (mg/kg)	NA
Inorganics	
pH	6.47 J

BLTS32	4.0 Primary MT527 9/3/2003
Metals (mg/L)	NA
Metals (mg/kg)	
Aluminum	9400 J
Antimony	< 0.55
Arsenic	3.8
Barium	72
Beryllium	0.45
Boron	< 7.3
Cadmium	< 0.39
Chromium	12
Cobalt	4.7
Copper	7
Lead	5.9
Mercury	0.0098
Molybdenum	0.65
Nickel	7.7
Selenium	1.9
Silver	< 0.17
Thallium	< 1.5
Vanadium	28
Zinc	54
Inorganics (mg/kg)	NA
Inorganics	
pH	7.91 J

BLTS34	4.0 Primary MT688 9/11/2003
Metals (mg/L)	NA
Metals (mg/kg)	
Aluminum	6700
Antimony	< 0.53
Arsenic	2.9
Barium	55
Beryllium	0.36
Boron	< 6.8
Cadmium	0.18
Chromium	8.5
Cobalt	3.4
Copper	4.2
Lead	3.6
Mercury	0.0098
Molybdenum	0.46
Nickel	5.2
Selenium	< 2.7
Silver	< 0.16
Thallium	< 1
Vanadium	20
Zinc	47
Inorganics (mg/kg)	NA
Inorganics	NA

BLTS31	2.0 Primary MT701 9/17/2003
Metals (mg/L)	NA
Metals (mg/kg)	
Aluminum	11000
Antimony	< 0.54
Arsenic	3.3
Barium	66
Beryllium	0.4
Boron	< 3.8
Cadmium	0.19
Chromium	9
Cobalt	3.5
Copper	5.2
Lead	4.4
Mercury	0.01
Molybdenum	0.5
Nickel	6.2
Selenium	3.4
Silver	0.2 J
Thallium	< 1.4
Vanadium	19
Zinc	45
Inorganics (mg/kg)	NA
Inorganics	
pH	6.01 J

BLTS30	8.0 Primary MT531 9/3/2003
Metals (mg/L)	NA
Metals (mg/kg)	
Aluminum	15000 J
Antimony	< 0.56
Arsenic	3.9
Barium	110
Beryllium	0.67
Boron	< 5.4
Cadmium	< 0.33
Chromium	15
Cobalt	5.4
Copper	8.7
Lead	6
Mercury	0.018
Molybdenum	1.1
Nickel	8.4
Selenium	1.4
Silver	< 0.17
Thallium	< 1.3
Vanadium	32
Zinc	47
Inorganics (mg/kg)	NA
Inorganics	
pH	8.11 J

BLBS0037	0.5 Primary BLBS0037S01 2/12/2007	2.0 Primary BLBS0037S02 2/12/2007
Metals (mg/L)	NA	NA
Metals (mg/kg)		
Aluminum	12000	-
Antimony	0.13	-
Arsenic	2.3	-
Barium	82	-
Beryllium	0.34	-
Boron	4.1	-
Cadmium	0.31	-
Chromium	14	-
Cobalt	7.1	-
Copper	14	-
Lead	11	-
Lithium	27	-
Mercury	0.017	-
Molybdenum	0.8	-
Nickel	9.3	-
Potassium	4200	-
Selenium	0.25	-
Silver	0.072	-
Sodium	100	-
Thallium	0.28	-
Vanadium	20	-
Zinc	41	-
Zirconium	< 1.6	-
Inorganics (mg/kg)	NA	NA
Inorganics		
pH	6.61	7.2

BLBS0038	0.5 Primary BLBS0038S01 2/12/2007
Metals (mg/L)	NA
Metals (mg/kg)	
Aluminum	13000
Antimony	0.2
Arsenic	2
Barium	94
Beryllium	0.48
Boron	3.4 J
Cadmium	1.1
Chromium	15
Cobalt	4.9
Copper	8.8
Lead	11
Lithium	20
Mercury	0.001
Molybdenum	0.62
Nickel	9.4
Potassium	3800
Selenium	0.34
Silver	0.42
Sodium	68
Thallium	0.33
Vanadium	23
Zinc	52
Zirconium	< 1.7
Inorganics (mg/kg)	NA
Inorganics	
pH	6.82

BLBS26	1.0 Primary MT553 9/8/2003	1.0 Duplicate MT557 9/8/2003
Metals (mg/L)	NA	NA
Metals (mg/kg)		
Aluminum	10000	11000
Antimony	< 0.54	< 0.54
Arsenic	3.9	3.6
Barium	72	73
Beryllium	0.26	0.27
Boron	< 6.5	< 7.4
Cadmium	0.19	0.19
Chromium	12	12
Cobalt	4	4
Copper	7.1	7
Lead	12	12
Mercury	0.028	0.027
Molybdenum	0.48	0.49
Nickel	7.7	7.9
Selenium	1.2	< 0.6
Silver	0.39	0.47
Thallium	< 0.4	< 0.4
Vanadium	23	24
Zinc	61	58
Inorganics (mg/kg)	NA	NA
Inorganics		
pH	5.85 J	5.91 J

BLTS24	8.0 Primary MT529 9/3/2003
Metals (mg/L)	NA
Metals (mg/kg)	
Aluminum	9600 J
Antimony	< 0.56
Arsenic	3.4
Barium	71
Beryllium	0.41
Boron	< 1.9
Cadmium	< 0.37
Chromium	13
Cobalt	4.4
Copper	6
Lead	13
Mercury	0.012
Molybdenum	0.58
Nickel	6.8
Selenium	1.6
Silver	< 0.17
Thallium	< 1.4
Vanadium	28
Zinc	60
Inorganics (mg/kg)	NA
Inorganics	
pH	8.51 J

LFR-2	0.7 Primary LFR-2 3/30/1987
Metals (mg/L)	
Cadmium-STLC	< 0.005
Chromium-STLC	< 0.05
Copper-STLC	0.1
Lead-STLC	0.1
Mercury-STLC	< 0.0002
Nickel-STLC	0.05
Metals (mg/kg)	
Cadmium	2
Chromium	12
Copper	20
Lead	10
Mercury	< 0.1
Nickel	27
Inorganics (mg/kg)	NA
Inorganics	
pH	8.1

BLBS0056	0.5 Primary BLBS0056S01 5/17/2007	2.0 Primary BLBS0056S02 5/17/2007
Metals (mg/L)	NA	NA
Metals (mg/kg)	NA	NA
Inorganics (mg/kg)		
Fluoride	1.6	2.21
Inorganics	NA	NA

LFR-1	0.7 Primary LFR-1 3/30/1987
Metals (mg/L)	
Cadmium-STLC	< 0.005
Chromium-STLC	< 0.05
Copper-STLC	0.4
Lead-STLC	0.2
Mercury-STLC	< 0.0002
Nickel-STLC	0.1
Metals (mg/kg)	
Cadmium	< 0.5
Chromium	< 5
Copper	73
Lead	< 10
Mercury	< 0.1
Nickel	< 5
Inorganics (mg/kg)	NA
Inorganics	
pH	7.4

BLBS0063	0.5 Primary BLBS0063S01 5/17/2007	0.5 Split BLBS0063S01SP 5/17/2007
Metals (mg/L)	NA	NA
Metals (mg/kg)	NA	NA
Inorganics (mg/kg)		
Fluoride	1.99	5.5
Inorganics	NA	NA

BLBS27	1.0 Primary MT554 9/8/2003
Metals (mg/L)	NA
Metals (mg/kg)	
Aluminum	25000
Antimony	< 0.63
Arsenic	6.2
Barium	120
Beryllium	0.7
Boron	< 4.7
Cadmium	0.35
Chromium	30
Cobalt	11
Copper	15
Lead	10
Mercury	0.015
Molybdenum	0.36
Nickel	21
Selenium	< 0.62
Silver	< 0.17
Thallium	< 0.54
Vanadium	54
Zinc	60
Inorganics (mg/kg)	NA
Inorganics	
pH	8.19 J

BLBS29	0.5 Primary MT556 9/8/2003
Metals (mg/L)	NA
Metals (mg/kg)	
Aluminum	13000
Antimony	< 0.63
Arsenic	4.1
Barium	100
Beryllium	0.35
Boron	< 7.1
Cadmium	0.27
Chromium	14
Cobalt	5.1
Copper	9.4
Lead	9.3
Mercury	0.022
Molybdenum	0.63
Nickel	9.3
Selenium	< 0.7
Silver	0.45
Thallium	< 0.41
Vanadium	28
Zinc	70
Inorganics (mg/kg)	NA
Inorganics	
pH	6.69 J

BLBS0041	0.5 Primary BLBS0041S01 4/2/2007
Metals (mg/L)	NA
Metals (mg/kg)	
Sodium	93
Inorganics (mg/kg)	NA
Inorganics	
pH	8.09

BLBS28	1.0 Primary MT555 9/8/2003
Metals (mg/L)	NA
Metals (mg/kg)	
Aluminum	18000
Antimony	< 0.57
Arsenic	5.3
Barium	94
Beryllium	0.48
Boron	< 6.1
Cadmium	0.25
Chromium	21
Cobalt	6.9
Copper	11
Lead	7.5
Mercury	0.1
Molybdenum	0.38
Nickel	13
Selenium	1.2
Silver	< 0.17
Thallium	< 0.66
Vanadium	41
Zinc	58
Inorganics (mg/kg)	NA
Inorganics	
pH	7.77 J

BLTS23S01	3.0 Primary MT528 9/3/2003
Metals (mg/L)	NA
Metals (mg/kg)	
Aluminum	10000 J
Antimony	< 0.54
Arsenic	3.1
Barium	77
Beryllium	0.42
Boron	10
Cadmium	< 0.36
Chromium	11
Cobalt	4.5
Copper	5.6
Lead	4.6
Mercury	0.0094
Molybdenum	0.53
Nickel	6.7
Selenium	2.2
Silver	< 0.17
Thallium	< 0.93
Vanadium	25
Zinc	57
Inorganics (mg/kg)	NA
Inorganics	
pH	8.36 J

BHBS0005	0.5 Primary BHBS0005S01 2/13/2007	0.5 Split BHBS0005S01SP 2/13/2007
Metals (mg/L)	NA	NA
Metals (mg/kg)		
Aluminum	15000	15000
Antimony	0.41	-
Arsenic	2.5	3 J
Barium	84	100
Beryllium	0.51	0.59
Boron	4.8	< 1
Cadmium	0.25	0.18
Chromium	17	19 J
Cobalt	5.3	6.1 J
Copper	8.7	9.2 J
Lead	9.3	9
Lithium	20	21
Mercury	0.039	0.0031 J
Molybdenum	0.46	0.38 J
Nickel	10	13 J
Potassium	3200	3400
Selenium	0.35	0.36
Silver	0.067	0.048
Sodium	68	71
Thallium	0.27	0.28
Vanadium	30	37
Zinc	77	55 J
Zirconium	< 1.9	2.9
Inorganics (mg/kg)	NA	NA
Inorganics		
pH	6.38	6.6

BLTS27	2.0 Primary MT705 9/17/2003	2.0 Duplicate MT702 9/17/2003
Metals (mg/L)	NA	NA
Metals (mg/kg)		
Aluminum	7300	7300
Antimony	< 0.54	< 0.56
Arsenic	3	3.4
Barium	62	63
Beryllium	0.24	0.26
Boron	< 4.7	< 3.2
Cadmium	0.22	0.39
Chromium	9.7	13
Cobalt	3.7	4
Copper	4.1	7.4
Lead	5.5	9
Mercury	0.0087	0.085
Molybdenum	0.46	0.58
Nickel	5.5	7.9
Selenium	3.3	3.3
Silver	0.16 J	0.22 J
Thallium	< 1.2	< 1.3
Vanadium	23	24
Zinc	57	64
Inorganics (mg/kg)	NA	NA
Inorganics		
pH	8.15 J	8.12 J

BLTS26	6.0 Primary MT700 9/17/2003	6.0 Split MF005 9/17/2003
Metals (mg/L)	NA	NA
Metals (mg/kg)		
Aluminum	14000	17300
Antimony	< 0.54	< 0.12
Arsenic	3.8	5.2
Barium	93	96.9
Beryllium	0.48	1.9
Boron	< 2.1	11.8
Cadmium	0.28	< 0.017
Calcium	-	4910
Chromium	17	18
Cobalt	5.1	7.4
Copper	7.3	8.5
Iron	-	19500
Lead	6	5.6
Magnesium	-	4420
Manganese	-	299
Mercury	0.011	< 0.05
Molybdenum	0.77	< 0.074
Nickel	10	11.7
Potassium	-	2730
Selenium	3	1.1 J
Silver	< 2.6	< 0.051
Sodium	-	< 93.9
Thallium	< 1.2	< 0.16
Vanadium	32	35
Zinc	56	59.4
Inorganics (mg/kg)	NA	NA
Inorganics		
pH	6.15 J	7.26 J

BLTS25	8.0 Primary MT526 9/3/2003
Metals (mg/L)	NA
Metals (mg/kg)	
Aluminum	8100
Antimony	< 0.54
Arsenic	2.9
Barium	61
Beryllium	0.44
Boron	< 1.9
Cadmium	< 0.045
Chromium	10
Cobalt	3.2
Copper	4.8
Lead	8.3
Mercury	0.015
Molybdenum	< 0.13
Nickel	6.4
Selenium	< 0.6
Silver	< 0.87
Thallium	< 0.4
Vanadium	23
Zinc	49
Inorganics (mg/kg)	NA
Inorganics	
pH	8.3 J

BLBS0036	0.7 Primary BLBS0036S01 2/12/2007	0.7 Split BLBS0036S01SP 2/12/2007	3.8 Primary BLBS0036S02 2/12/2007
Metals (mg/L)	NA	NA	NA
Metals (mg/kg)			
Aluminum	11000	12000	-
Antimony	0.13	-	-
Arsenic	2.3	2.7 J	-
Barium	82	110	-
Beryllium	0.34	0.46	-
Boron	4.1	< 11	-
Cadmium	0.31	0.18	-
Chromium	14	17 J	-
Cobalt	7.1	6 J	-
Copper	14	10 J	-
Lead	11	4.9	-
Lithium	27	24	-
Mercury	0.017	< 0.0031	-
Molybdenum	0.8	0.36 J	-
Nickel	9.3	12 J	-
Potassium	4200	4200	-
Selenium	0.25	0.36	-
Silver	0.072	0.044	-
Sodium	100	72	-
Thallium	0.28	0.27	-
Vanadium	20	34	-
Zinc	41	63 J	-
Zirconium	< 1.6	2.4	-
Inorganics (mg/kg)	NA	NA	NA
Inorganics			
pH	6.61	7.2	6.75

MWH

Santa Susana Field Laboratory

Metals/Energetics/Perchlorate/Inorganics Chemical Data Results - South B056 Landfill RFI Site

FIGURE B.3-5B

Soil Sample Location Symbol Legend

▼ Soil Matrix Sample ● Soil Vapor Sample

CODE	CATEGORY	Chemical Use Area Name
1	Landfill	Building 056 Landfill
2a	Landfill	Southern Debris Area
2b	Debris	Roadside Debris Area
3a	Potential	Building 056 Excavation
3b	Debris	Building 056 Excavation Debris Area

Chemical Use Areas (✱Chemical Use Area present in this RFI site)

- Multiple Use
- Solvent
- Petroleum
- Oils / PCBs
- Metal
- Perchlorate
- Hydrazine
- ✱ Debris
- ✱ Landfill
- Leach Field
- ✱ Potential

Base Map Legend

- Administrative Area Boundary
- RFI Site Boundary
- Report Group Boundary
- Existing Building or Structure
- Removed Building or Structure
- Other Tanks
- Solvent Tank
- Petroleum Fuel/Oil Tank
- Hydrazine Tank
- Awning
- Dirt Road
- A/C Curbing
- Fence
- Pipe
- Leach Field
- NPDES Outfall
- Well
- Pond
- Possible Pond
- Drainage
- Surface Water Divide
- Elevation Contour
- Rock Outcrop
- Cross Section
- Trench

Note: R = Removed Tank

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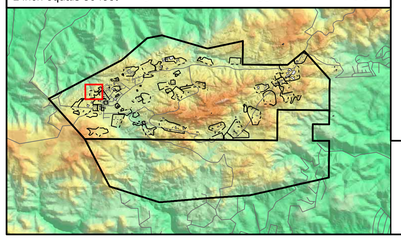
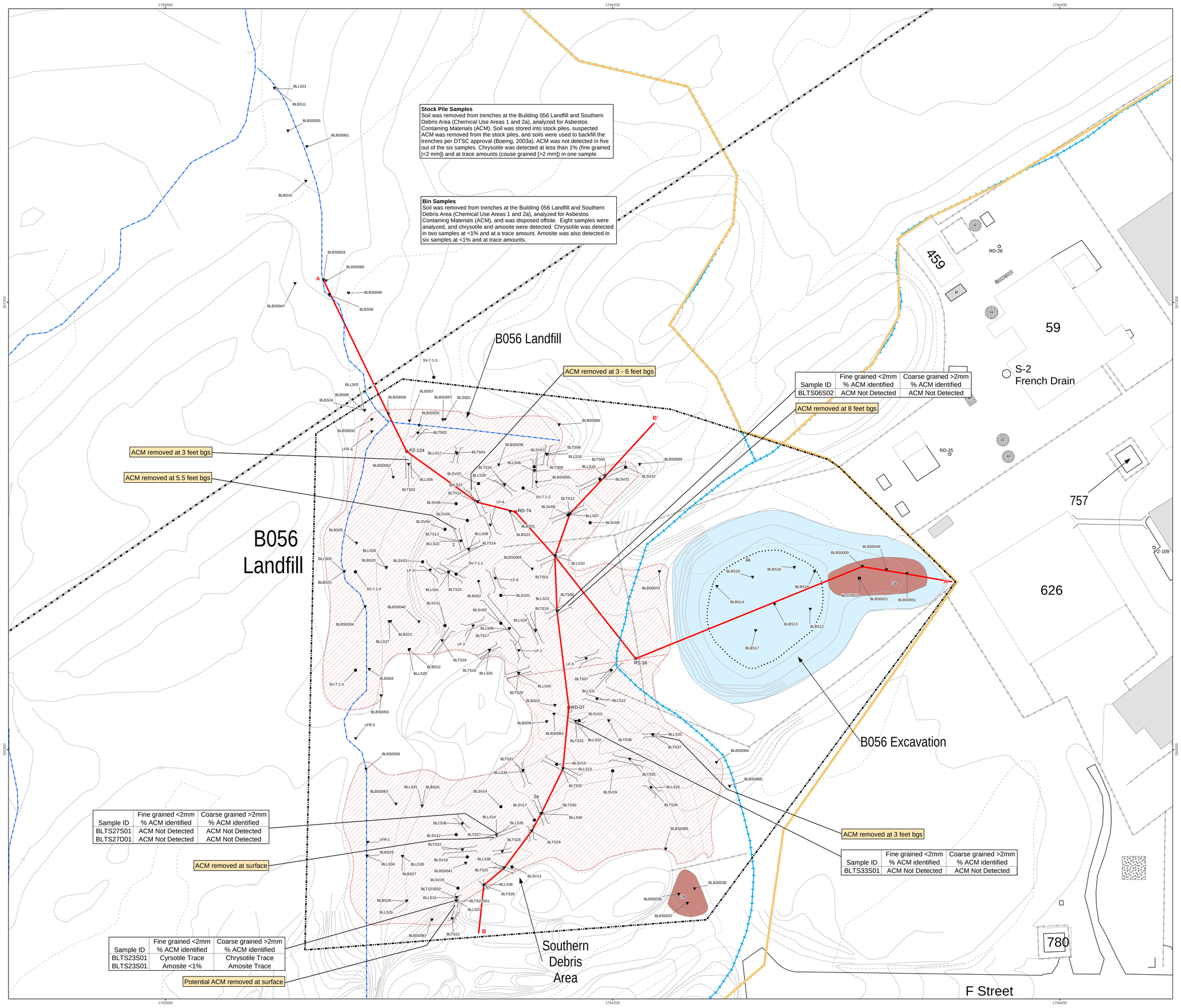
ANSI E 44x34

1 inch equals 30 feet — Feet 0 30 60





MWH

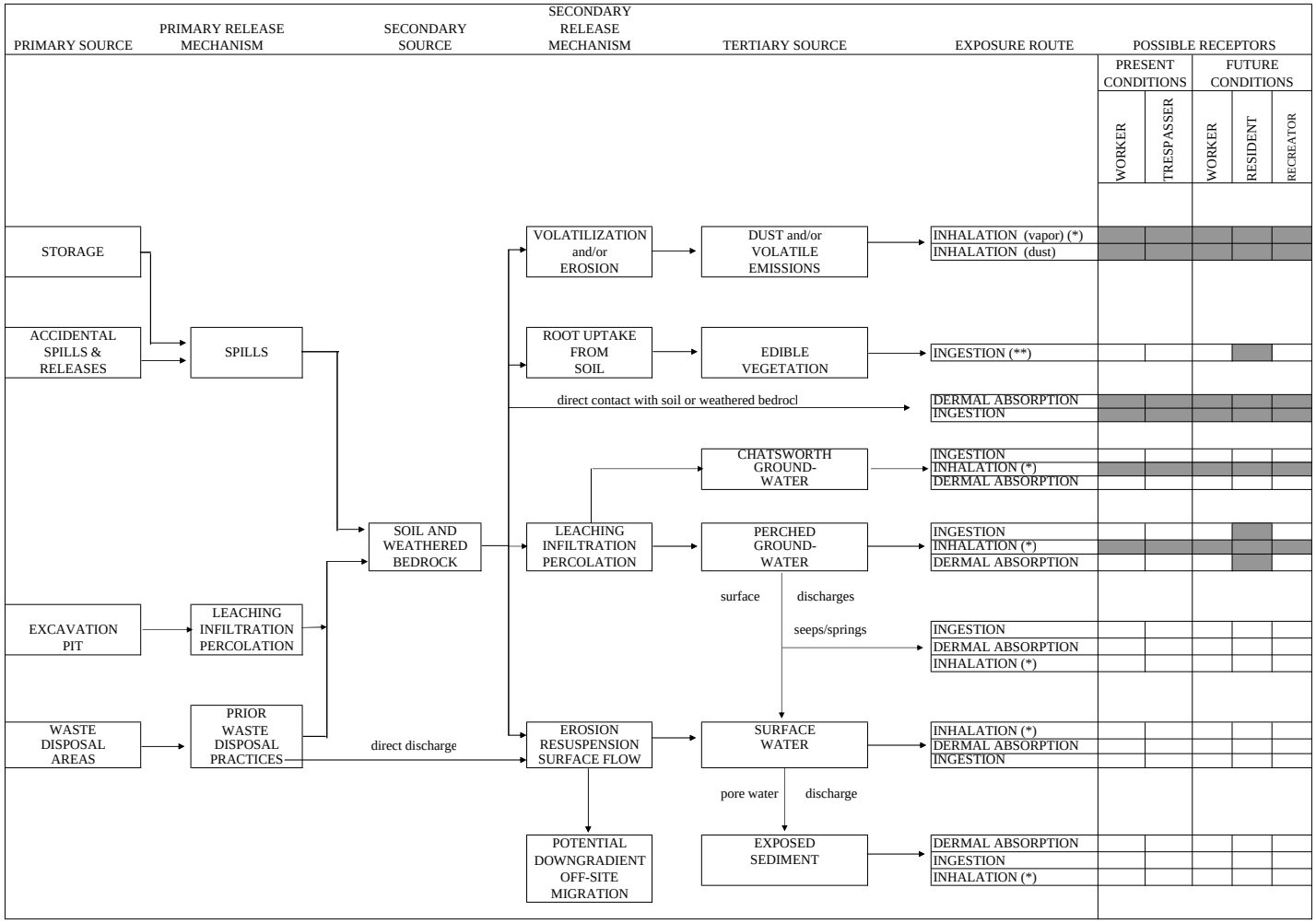
Santa Susana Field Laboratory

Asbestos Sample Results
B056 Landfill RFI Site

FIGURE B.3-6

Figure B.4-1

Human Health Risk Assessment Conceptual Site Model
B056 RFI Site



NOTES:

As described in the SRAM (MWH 2005), note that risk estimates for the potential future recreational user (recreator) are used as surrogate risk estimates for the trespasser.

(*) Exposure limited to volatile compounds as defined in the text; residential and worker receptors include both indoor and outdoor air exposure to volatiles; non-residental and non-worker receptors include only outdoor air exposure. For workers, inhalation of volatiles from groundwater beneath the RFI site includes pathways associated with both migration to indoor air and ambient air (domestic groundwater use is an incomplete exposure pathway). For residents, exposures to reporting area Chatsworth formation groundwater includes pathways associated with both migration to indoor air and ambient air, as well as domestic use. Exposure to fugitive dust is limited to non-VOC compounds. For residents, exposures to near surface groundwater includes pathways associated with migration to indoor and outdoor air.

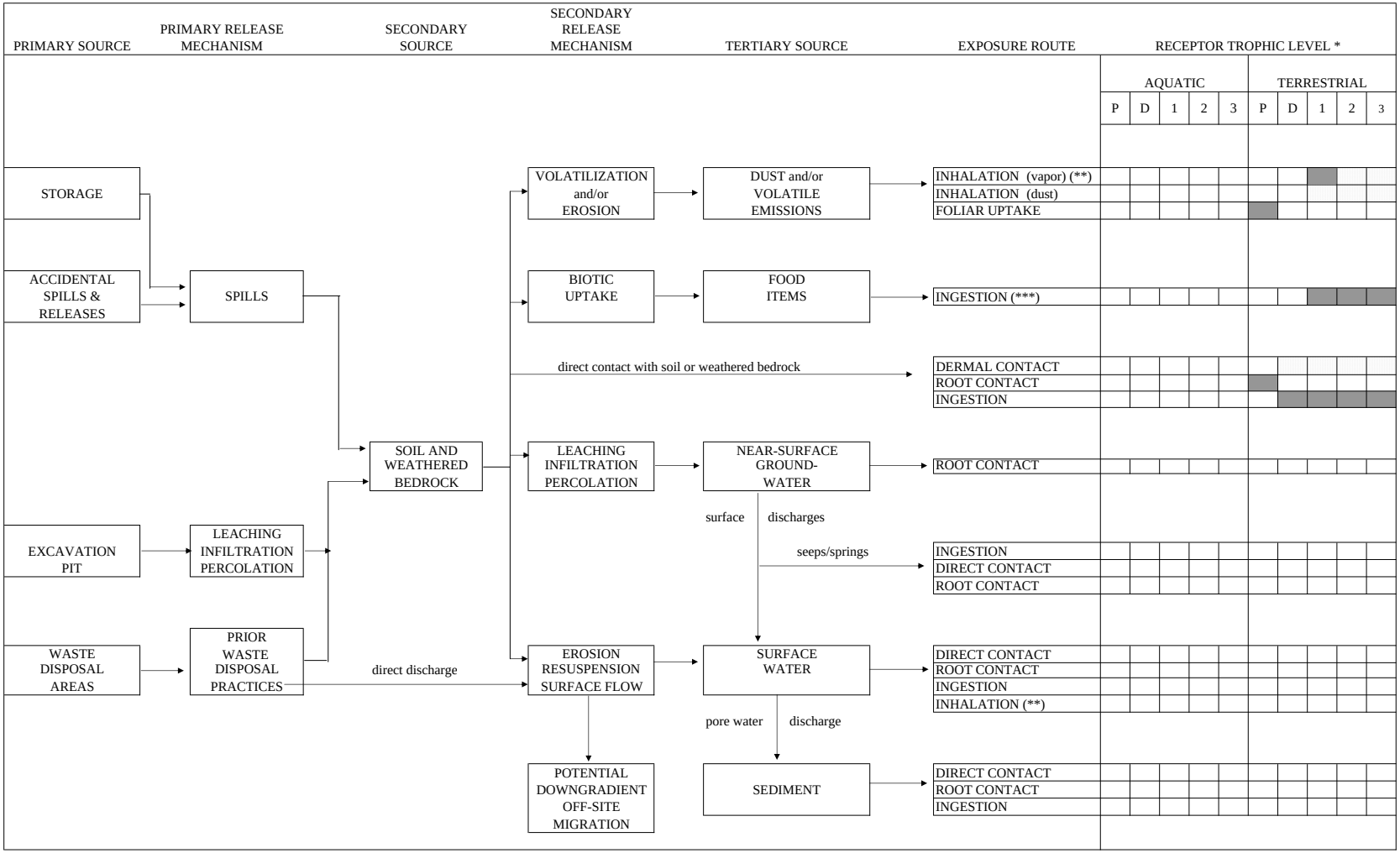
(**) Exposure limited to bioaccumulatable compounds as described in the text.

- complete and potentially complete exposure pathways evaluated in this risk assessment

- incomplete exposure pathways not evaluated in this risk assessment

Figure B.4-2

Ecological Risk Assessment Conceptual Site Model
B056 RFI Site

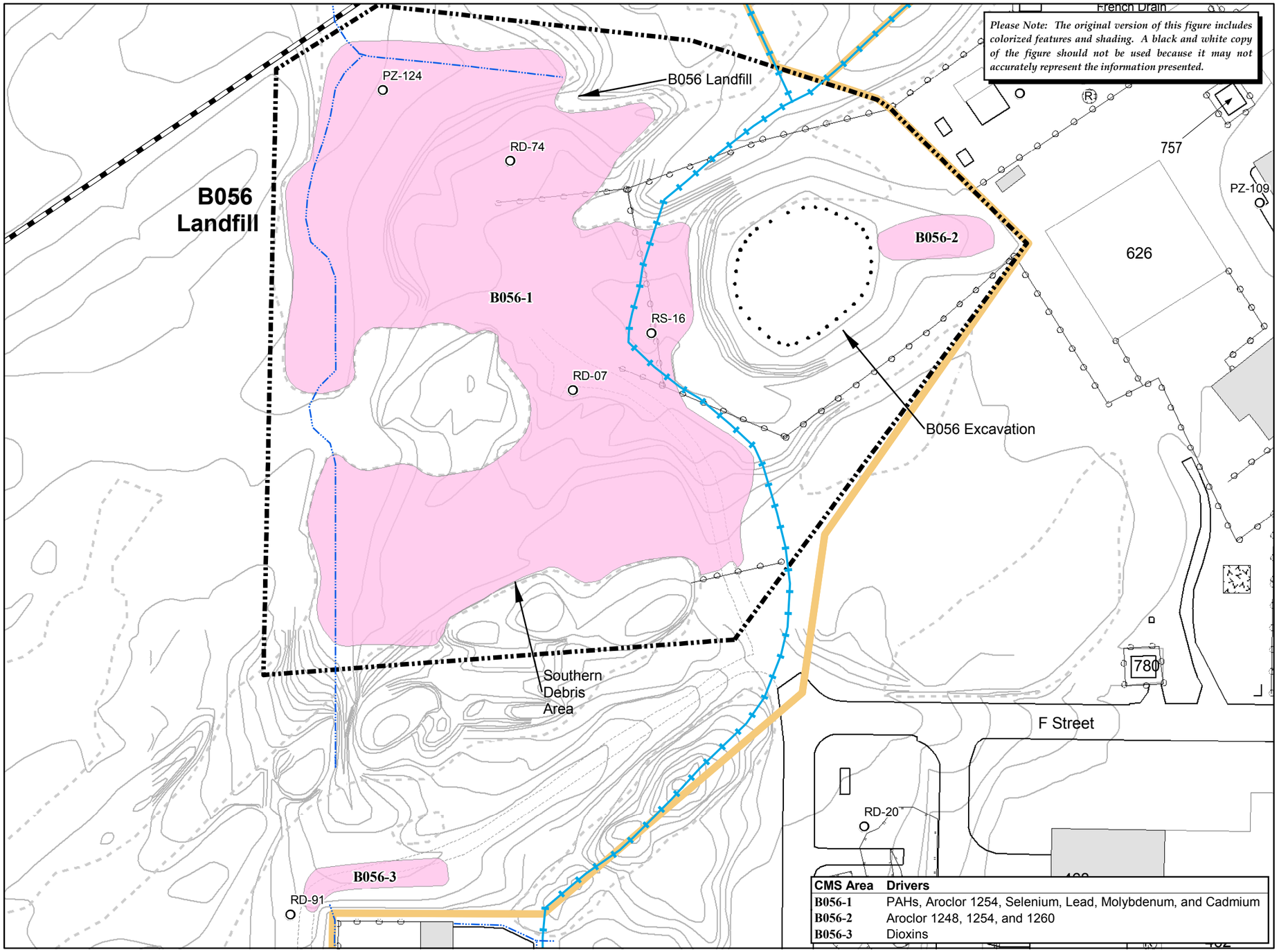


NOTES:
(*) Trophic Level: P = primary producers (e.g., plants); D = detrivores (e.g., invertabrates); 1 = 1st consumer (e.g., mule deer); 2 = 2nd consumer (e.g. deer mouse); 3 = 3rd consumer (e.g., red-tailed hawk).
(**) Exposure limited to volatile compounds as defined in the text.
(***) Exposures limited to bioacummulative compounds as defined in the text.

- complete and potentially complete exposure pathways evaluated in this risk assessment

- incomplete exposure pathways not evaluated in this risk assessment

- minor exposure pathway not evaluated in this risk assessment



CMS Area	Drivers
B056-1	PAHs, Aroclor 1254, Selenium, Lead, Molybdenum, and Cadmium
B056-2	Aroclor 1248, 1254, and 1260
B056-3	Dioxins

Base Map Legend

- Administrative Area Boundary
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- Solvent Tank
- Petroleum Fuel/Oil Tank
- Hydrazine Tank
- Dirt Road
- A/C Curbing
- Fence
- Rock Outcrop
- Elevation Contour
- Surface Water Divide
- Drainage
- Pond
- Possible Pond
- Leach Field
- Pipe
- Well

Note: R = Removed Tank

CMS Area

CMS Areas described in Table B.5-2

CMS Areas recommended for further evaluation in Corrective Measures Study (CMS)

CMS Areas Designations described in Table B.5-2

Surficial Media Site Action Recommendations

B056 Landfill RFI Site

Date: Sept 05, 2007

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1 inch equals 80 feet

0 80 160 Feet

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FIGURE B.5-1