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Via Federal Express

July 10, 2009
In reply refer to SHEA-108865

Regional Water Quality Control Board
Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013

Attention: Mr. Peter Raftery

Subject: Soil Management Plan Submittal
Final Interim Source Removal Action (ISRA) Work Plan Submitted in Response to California Water Code Section 13304 Order
(NPDES NO. CA0001309, CI NO. 6027, SCP NO. 1111, SITE ID NO. 2040109)

Dear Mr. Raftery:

The Boeing Company (Boeing), on behalf of Boeing and the National Aeronautics and Space Administration (NASA), hereby provides the attached ISRA Soil Management Plan, as referenced in the May 1, 2009 Final ISRA Work Plan for your review.

If you have any questions or require anything further, please contact Lori Blair at 818-466-8741.

Sincerely,

Tom Gallacher
Director, Santa Susana Field Laboratory
Environment, Health, and Safety

Attachment: ISRA Soil Management Plan

cc: Ms. Cassandra Owens, RWQCB
Mr. Buck King, DTSC
Mr. Rick Lainhart, U.S. ACOE
Mr. Allen Elliott, NASA, without attachment
Mr. Steve Slaten, NASA, without attachment
Mr. Norman Riley, DTSC, without attachment
Mr. James Pappas, DTSC, without attachment
Mr. Gerard Abrams, DTSC, without attachment

INTERIM SOURCE REMOVAL ACTION (ISRA)
SOIL MANAGEMENT PLAN
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

Prepared For:

THE BOEING COMPANY

and

THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Prepared By:

MWH
618 Michillinda Ave, Suite 200
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July 2009

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LIST OF ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
BMP	Best Management Practice
Boeing	The Boeing Company
CAO	Cleanup and Abatement Order
COC	constituent of concern
CCR	California Code of Regulations
cy	cubic yards
DTSC	Department of Toxic Substances Control
ELV	Expendable Launch Vehicle
EPA	U.S. Environmental Protection Agency
HVS	Happy Valley South
ISRA	Interim Source Removal Action
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MWH	MWH Americas, Inc.
NASA	National Aeronautics and Space Administration
NPDES	National Pollutant Discharge Elimination System
PEA	preliminary evaluation area
ppm	parts per million
QAPP	Quality Assurance Project Plan
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
ROC	Reactive Organic Compounds
RWQCB	Regional Water Quality Control Board (Los Angeles)
SMP	Soil Management Plan
SSFL	Santa Susana Field Laboratory
SRG	soil remediation goal
STLC	Soluble Threshold Limit Concentration
SWPPP	Storm Water Pollution Prevention Plan
TCE	trichloroethene
TCLP	toxicity characteristic leaching procedure
TTLC	Total Threshold Limit Concentration
VCAPCD	Ventura County Air Pollution Control District
VOC	volatile organic compound
WDR	waste discharge requirements
WET	waste extraction test

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1.0 INTRODUCTION

This Soil Management Plan (SMP) was prepared to support implementation of Interim Source Removal Action (ISRA) activities at the Santa Susana Field Laboratory (SSFL), Ventura County, California. Details of the ISRA implementation effort that this SMP supports were described in the Final ISRA Work Plan prepared by MWH Americas, Inc. (MWH) (MWH, 2009b). This SMP was prepared by MWH on behalf of The Boeing Company (Boeing) and the National Aeronautics and Space Administration (NASA).

This plan describes the waste soils generation and characterization, soil handling procedures, and stockpile management for all soils to be excavated during the ISRA implementation. Soils within planned excavation areas have been identified as impacted by former SSFL site operations during previous site investigation activities. This SMP describes the approach for managing soils consistent with all laws and regulations regarding the excavation, handling, and disposal of impacted soils, including Ventura County Air Pollution Control District (VCAPCD) Rule 55 (Fugitive Dust) and VCAPCD Rule 74.29 (Soil Decontamination Operations) (if applicable).

1.1 BACKGROUND

Stormwater discharges from the SSFL are currently regulated by National Pollution Discharge Elimination System (NPDES) permit number R4-2007-0055 issued by the Los Angeles Regional Water Quality Control Board (RWQCB), and are monitored at 15 Outfalls. On December 3, 2008, the RWQCB issued a California Water Code Section 13304 Cleanup and Abatement Order (CAO) requiring an ISRA for Outfalls 008 and 009. The CAO was issued by the RWQCB in order to achieve compliance with the Waste Discharge Requirements (WDR) for Outfalls 008 and 009 contained in Order No. R4-2004-0111, as amended by Orders No. R4-2006-0008, R4-2006-0036, and R4-2007-0055. A Final ISRA Work Plan was submitted to the RWQCB on May 1, 2009, that detailed the ISRA area identification and remedial planning process for these Outfalls (MWH, 2009b). Remedial actions consist of excavation, offsite transportation, and disposal of impacted soil; backfill, re-contouring and re-vegetation of disturbed areas; and confirmation soil sampling.

Investigations of chemical contamination in soil, groundwater, and related media (e.g., soil vapor, weathered bedrock) at the SSFL are currently being conducted under the Resource Conservation and Recovery Act (RCRA) Corrective Action Program regulated by the Department of Toxic Substances Control (DTSC). The RCRA program at the SSFL is currently in the RCRA Facility Investigation (RFI) phase, with much of the investigative sampling complete and RFI reports being prepared. Although some of this sampling and analysis is ongoing, substantial data have already been collected in many of the planned ISRA Areas. Additional sampling in the ISRA preliminary excavation areas (PEAs) that were identified in the Preliminary ISRA Work Plan (MWH, 2009a) is currently ongoing, to further define impacted soil areas for ISRA implementation. Data from these RFI and ISRA sampling efforts were used to define ISRA excavation areas and form the basis of proposed soil management procedures described in this SMP.

Remedial actions within the Happy Valley South (HVS) and Canyon RFI sites within Outfall 008 and near the Expendable Launch Vehicle (ELV) RFI site within Outfall 009 are scheduled for implementation in 2009. Remedial actions at other areas within Outfall 009 as part of the ISRA are scheduled for activity in 2010 and 2011. This SMP describes the management of soils associated with planned excavation, backfill, and restoration activities for the ISRA project.

1.2 PURPOSE AND SCOPE

The purpose of this SMP is to provide guidance for management of soils excavated during ISRA implementation activities, in order to facilitate effective project implementation and to ensure compliance with all applicable laws. The SMP includes procedures for characterization, handling, storage (including stockpile management), disposal, and documentation of soil generated during excavation activities, as well as categories and screening criteria for segregating and stockpiling excavated soil. Procedures for managing soil erosion from excavations and stockpiles, including soil erosion control Best Management Practices (BMPs), are described in the ISRA Storm Water Pollution Prevention Plan (SWPPP) (MWH, 2009d). Transport requirements for impacted soil associated with ISRA excavations are described in the project Transportation Plan (MWH, 2009e). All field activities associated with this SMP will be performed in a manner consistent with the ISRA project Health and Safety Plan (MWH, 2009c).

As stated above, ISRA implementation is defined for 2009 activities; ongoing sampling and evaluation efforts will define future activities in the Outfall 009 area that will be documented in ISRA Work Plan Addenda for RWQCB review and approval. While this SMP details specific soil management actions required for planned 2009 activities, procedures described herein will be used for 2010 and 2011 activities as well. As necessary or required, addenda to this SMP will be prepared if future activities require additional soil management procedures.

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2.0 WASTE GENERATION AND CHARACTERIZATION

2.1 EXCAVATION DESCRIPTION

ISRA implementation activities are planned for 2009 at seven areas in the Outfall 008 watershed and two areas in the Outfall 009 watershed near ELV. Planned excavation boundaries for the Outfall 008 ISRA Areas are shown in Figure 2-1, and planned excavation boundaries for the Outfall 009 ISRA Areas are shown in Figure 2-2. Planned excavation boundaries were defined based on impacted soil areas revealed by historical and ISRA data gap soil sampling analytical results available at the time of Work Plan preparation and are described in the Final ISRA Work Plan (MWH, 2009b). Final excavation boundaries may vary from those shown on these figures based on field conditions or confirmation sampling results. Variations in the planned-versus-actual extents of the ISRA Areas will be documented and reported to the RWQCB.

Projected excavation volumes in 2009 provided in the Final ISRA Work Plan are presented in Table 2-1. The estimated total volume of soil to be excavated during 2009 ISRA construction is approximately 5,500 cubic yards (cy) from Outfall 008 ISRA Areas and 2,110 cy from Outfall 009 ISRA Areas. Planned depths of excavations are generally 2 to 3 feet below ground surface (bgs). After the initial planned excavations are completed for each ISRA area, confirmation soil samples will be collected from excavation sidewalls and floors to confirm that site-specific soil remediation goals (SRGs) were reached. Site-specific SRGs were presented in the Final ISRA Work Plan (MWH, 2009b). If confirmation soil sample analytical results indicate that SRGs were not met, additional soil will be excavated from the area surrounding the sample and additional confirmation samples will be collected. Once confirmation sampling results indicate that SRGs have been reached, the lateral and vertical extents of the excavation will be surveyed and the excavations will be restored to achieve general pre-existing conditions (e.g., grade, slope, drainage patterns).

Most of the ISRA areas will be re-contoured using soils adjacent to the excavation. If additional backfill is needed, soil will be obtained from a local borrow source (within the watershed and near the RFI site, but not impacted by operational activities), or from a RWQCB-approved offsite borrow source. If a local borrow soil is used for backfill, soil samples will be collected

for analysis of ISRA constituents of concern (COCs) and other appropriate site-related chemicals of potential concern identified in the RFI prior to use as backfill. Borrow soil confirmation sampling frequency will follow or exceed DTSC guidelines specified below for import fill (DTSC, 2001), as follows:

1. For stockpiles up to 1,000 cy, 1 sample will be collected per 250 cy.
2. For stockpiles from 1,000 to 5,000 cy, 4 samples will be collected for the first 1,000 cy and 1 sample per each additional 500 cy.
3. For stockpiles with greater than 5,000 cy, 12 samples will be collected for the first 5,000 cy, and 1 sample for each additional 1,000 cy.

Amounts and sources of backfill, and associated sampling results will be documented in the ISRA Implementation Report described in Section 4.2.

2.2 WASTE CHARACTERIZATION

The guidelines presented in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," U.S. EPA publication SW-846, will be followed to characterize soil removed from the ISRA excavations as either nonhazardous or hazardous waste. Waste characterization will incorporate documented historical information and analytical data whenever possible, including data from ongoing RFI and ISRA data gap sampling. Additional analytical data will also be obtained from randomly identified, *in situ* sample collection points within the excavation locations.

If further sampling of stockpiles or roll-off bins is required, this will be carried out in accordance with SW-846. Additional confirmation samples may be collected and analyzed to meet waste characterization requirements specified in Section 2.3.

Waste characterization samples will be analyzed for the particular ISRA COCs and RCRA risk drivers associated with the ISRA Area, as specified for confirmation sampling in the Final ISRA Work Plan (MWH, 2009b), or future ISRA Work Plan Addenda. Sample analysis will use laboratory methods and reporting limits that have been previously approved by DTSC for the RFI Program. Table 2-2 provides laboratory methods and reporting limits that will be used for 2009 ISRA implementation as well as for future ISRA implementation activities. For ISRA

activities in 2009, waste characterization samples will be analyzed for metals using U.S. Environmental Protection Agency (EPA) Method 6010B/7000, dioxins using EPA Method 8290, and volatile organic compounds (VOCs) using EPA Method 5035/8260B (EPA Method 5035 is a preparation method that uses encore samplers). Specific waste characterization requirements for the 2009 ISRA areas include:

Outfall 008 ISRA Areas

- CYN-1: metals
- DRG-1: dioxins
- HVS-1: dioxins, metals
- HVS-2A: metals
- HVS-2B: metals
- HVS-2C: metals
- HVS-3: dioxins

Outfall 009 ISRA Areas

- ELV-1C: dioxins
- ELV-1D: dioxins, metals, VOCs

Excavated soil waste will also be analyzed for a designated suite of radionuclides as described in Attachment A. The radionuclide sampling and analysis protocol for waste characterization sampling in this plan is the same as that for the Northern Drainage cleanup action approved by DTSC. Sampling frequency will be determined based on waste characterization requirements as described above, augmented by any additional samples required for statistical analysis as specified in Section 2.3 for offsite disposal waste characterization requirements. Soil samples collected for offsite waste characterization will be analyzed for the following radionuclides as follows:

- Gamma emitting radionuclides using HASL Method 300;
- Strontium-90 by EPA Method 905.0, and
- Tritium by EPA Method 906.

Laboratory requirements for radionuclide analysis are presented in Attachment A. As described in this attachment, the gamma spectroscopy library shall include the following isotopes as a minimum: Na-22, K-40, Mn-54, Co-60, Cs-134, Cs-137, Eu-152, Eu-154, Th-228, Th-232, U-235, U-238, and Am-241.

2.3 WASTE CLASSIFICATION CRITERIA

Pursuant to Title 22 of the California Code of Regulations (CCR), a waste exhibits the characteristic of toxicity if:

1. Representative samples are tested using the Toxicity Characteristic Leaching Procedure (TCLP) and the extract from that procedure contains any of the chemicals listed in Table 2-3 at a concentration equal to or greater than the regulatory threshold limit; or,
2. Representative samples contain a chemical listed in Table 2-4 at a concentration in milligrams per liter (mg/L) of waste extract, as determined using the Waste Extraction Test (WET) method, which equals or exceeds its Soluble Threshold Limit Concentration (STLC); or contain a chemical listed in Table 2-4 at a total concentration in milligrams per kilogram (mg/kg) in the sample which equals or exceeds its listed Total Threshold Limit Concentration (TTLC).

To determine hazardous or nonhazardous classification, the concentrations of ISRA COCs and any collocated RCRA risk drivers in soil samples used for waste characterization will be compared to the TTLC for those compounds (Table 2-4). If the soil concentration exceeds the TTLC, then the soil meets hazardous waste criteria and further evaluation is not required. If the soil concentration does not exceed the TTLC, then analytical results will be used to determine whether additional waste characterization by the TCLP (EPA Method 1311) and/or the WET method. The regulatory threshold limits will be compared to the theoretical maximum soluble results to determine TCLP and WET analysis requirements as follows:

- A factor of 20 will be used to compare the soil concentration in mg/kg of individual compounds to the corresponding TCLP threshold limit (i.e., if the soil concentration divided by 20 is greater than or equal to the TCLP limit, TCLP will be analyzed); and,
- A factor of 10 will be used to compare the soil concentration in mg/kg of individual compounds to the corresponding STLC (i.e., if the soil concentration divided by 10 is greater or equal to the STLC limit, then the sample will be analyzed by the WET method).

If waste characterization or stockpile samples meet either of the toxicity criteria above, the entire stockpile will be managed as toxic hazardous waste direct shipped to a Class I disposal facility following Department of Transportation approved Bulk Packaging Specifications [49 Code of Federal Regulations 173.240] or the analytical results from that stockpile will be used to calculate the number of additional samples that will be required to determine the average

characteristics with a 80% confidence level and a 2% measurement error, per a Stockpile Statistics Worksheet (Attachment B). If additional sampling and analysis is performed and the soil in the stockpile is determined to exceed hazardous waste thresholds, it will be shipped to a Class 1 disposal facility as described above.

If stockpile samples do not meet either of the toxicity criteria (1) or (2) above, the CCR Title 22 Fathead Minnow Hazardous Waste Screen Bioassay may be performed on the sample, if required for waste characterization purposes. If the samples do not pass the bioassay, the stockpile will be managed as toxic hazardous waste as described above.

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3.0 SOIL HANDLING PROCEDURES

3.1 GENERAL PROCEDURES

Non-hazardous soil excavated from the Outfall 008 ISRA areas will be loaded directly into haul trucks and transported to a temporary stockpile location at the Lower Parking Lot near the SSFL facility entrance. Non-hazardous soil excavated from the Outfall 009 ISRA areas will be stockpiled at the parking lot adjacent to the helipad, located west of excavation areas ELV-1C and ELV-1D. Non-hazardous soil may be stockpiled until shipment offsite. Soil that is determined to be, or suspected of being, hazardous will be contained in lined and covered roll-off bins from the time it is excavated until it is shipped to and appropriately permitted facility for disposal. All roll-off bins and stockpiles of soil for the Outfall 008 and 009 excavations will be located in these pre-designated locations. Planned locations of stockpiles and roll-off bins from ISRA areas are shown in Figure 3-1.

- ISRA waste soil will be transported for disposal in accordance with the project Transportation Plan. Based upon waste characterization determinations, the soil in stockpiles and/or bins will be shipped to appropriately permitted offsite disposal facilities. Offsite disposal facilities for nonhazardous soil that may be used include the Antelope Valley and the McKittrick Class III landfills, or an appropriately permitted Class I landfill. Offsite disposal facilities for hazardous soil that may be used include the Buttonwillow and Kettleman City Class I landfills.

Waste soil characterization analytical results will be submitted to the appropriate disposal facilities for approval and disposal of waste. Once approval from the disposal facility is obtained, the waste will be handled and transported to the disposal facility. All generated wastes will be sampled, analyzed, and managed in accordance with CCR Title 22, Division 4.5.

3.2 STOCKPILE EROSION CONTROL AND DUST CONTROL MEASURES

All stockpiles will be managed according to requirements outlined in the ISRA project SWPPP, including standard construction BMPs. At a minimum, the following types of BMPs will be used to properly manage stockpiles:

- Stockpiles will be located a minimum of 50 feet away from concentrated flows of stormwater, drainage courses, and inlets.

- Stockpiles will be protected from stormwater run-on using a temporary perimeter sediment barrier such as berms, dikes, fiber rolls, silt fences, sandbag, gravel bags, or straw bale barriers.
- Wind erosion control practices will be implemented for all stockpiled material.
- Stockpiles will be protected with a temporary linear sediment barrier and covered with plastic sheeting prior to the onset of precipitation.
- Stockpiles will be placed on a liner.

Dust control measures will be implemented for all stockpiles pursuant to VCAPCD Rule 55 (Fugitive Dust), including water application for active stockpiles, and tarp cover for inactive stockpiles.

3.3 STOCKPILE ROC EMISSIONS MANAGEMENT

Stockpiles containing "contaminated" soil as defined by VCAPCD and not classified as hazardous will be managed according to requirements outlined in Rule 74.29. The VCAPCD defines "contaminated" soil as "those containing jet, gasoline, or diesel fuel" which would thereby require monitoring to determine whether reactive organic compounds (ROC) emissions are in excess of 50 parts per million (ppm) by volume as hexanes. ROCs are determined by measuring a portion of soil 3 inches in depth and no less than 6 inches in diameter shall be removed from the soil surface and the probe inlet shall be placed near the center of the resulting hole, level with the soil surface surrounding the hole. The only ISRA area anticipated to contain soil that may fit this definition is ELV-1D, where soil borings show that elevated levels of TPH in the C10 to C24 range may be present. (Jet fuel is typically C8-C16, Diesel is C8-C21, and gasoline is C4-C12 range for carbon). ROC emissions from all stockpiles will be measured using a photo ionization detector when soils are initially excavated and stockpiled to determine if mitigation measures are required. A record keeping form for ROC emissions is provided in Attachment C.

Pursuant to VCAPCD Rule 74.29, during excavation, all active and inactive exposed "contaminated" soil surfaces will be kept visibly moist by water spray, treated with a vapor suppressant, or covered with a continuous heavy duty plastic sheeting (4 mil or greater) or other covering to minimize emissions of ROC to the atmosphere. The covering will be overlapped at the seams and securely anchored to minimize headspace where vapors could accumulate. Soil

stockpiles with measured ROC emissions exceeding 50 ppm by volume will be disposed of offsite within 30 days of excavation.

Per VCAPCD Rule 74.29 requirements, records summarizing soil stockpile dates, ROC emission measurements, descriptions of monitoring equipment and techniques, descriptions of mitigation measures employed for dust, odor, and ROC emissions; and details of treatment or disposal of ROC contaminated soil will be provided in the ISRA Final Report, described in Section 5.

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4.0 STOCKPILE AND CONTAINER MANAGEMENT

4.1 SOIL SEGREGATION AND LABELLING

Soil excavated during construction activities will be segregated into stockpiles and containers (roll-off bins), with labels appropriate for each, according to origin and waste classification based on previous sampling results compared to hazardous waste criteria. The soil waste classifications "Potential Nonhazardous Soil" and "Potential Hazardous Soil" will be used. The only excavated soil waste that may have portions classified as 'Potentially Hazardous Soil' are dry, ephemeral pond sediments from ISRA Area ELV-1D. Potentially nonhazardous soil will be stored in stockpiles, and potentially hazardous soil will be stored in bins. Stockpiles will be labeled with the waste classification and a location identifier (e.g., HVS-2B). All "Potentially Hazardous Soil" will be labeled with a Hazardous Waste Label and marked "To Be Determined" on the label where type of waste is required".

4.2 DOCUMENTATION AND REPORTING

A daily soil management field oversight log will be maintained in which the following information will be recorded for each stockpile or container:

- Excavation location,
- Stockpile or container designation,
- Assigned stockpile or container number,
- Estimated stockpile or container volume,
- Start and finish date of excavation,
- Stockpile or container location,
- Sample(s) collected from stockpile or container and analyses performed,
- Description of mitigation measures employed for dust,
- Stockpile or container disposal details, and
- Notes/comments.

Stockpile and container locations will be recorded on a map during field work, and stockpiles and containers will be labeled with the assigned stockpile/container number. No containers, stockpiles or portions of a stockpile will be moved or relocated to another area at SSFL without documenting the stockpile/container number, volume, date/time of relocation, and new location.

ISRA soil management information will be reported in the ISRA Implementation Report. Soil management information reported will include:

- A summary of SMP procedures performed, including information in the daily soil management field oversight logs (listed above) and ROC emissions records (if any);
- Waste characterization information, including excavated soil, *ex situ* stockpile and container waste characterization, and hazardous waste characterization sampling results;
- A summary of any modifications to procedures outlined in this SMP; and,
- Offsite soil disposal records.

In conclusion, it should be noted that all estimated soil volumes and procedures outlined in the SMP are subject to change due to preconstruction data gap sample analytical results, field conditions related to ISRA excavations, and/or stockpile and container confirmation sample analytical results. If necessary, the SMP will be modified as sampling and field work proceed. The RWQCB will be notified of any substantial deviation from the procedures outlined in the SMP, and as described above, modifications to the SMP will be documented and reported in the ISRA Implementation Report.

5.0 REFERENCES

DTSC, 2001. Information Advisory Clean Imported Fill Material. October.

MWH, 2009a. Preliminary Interim Source Removal Action (ISRA) Work Plan, Santa Susana Field Laboratory, Ventura County. February.

MWH, 2009b. Final Interim Source Removal Action (ISRA) Work Plan, Santa Susana Field Laboratory, Ventura County. May.

MWH, 2009c. Interim Source Removal Action (ISRA) Health and Safety Plan, Addendum 23 to RCRA Facility Investigation Health and Safety Plan, Santa Susana Field Laboratory, Ventura County. June.

MWH, 2009d. Storm Water Pollution Prevention Plan, Interim Source Removal Action (ISRA), Santa Susana Field Laboratory, Ventura County. June.

MWH, 2009e. Interim Source Removal Action (ISRA) Transportation Plan, Santa Susana Field Laboratory, Ventura County. June

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TABLES

Table 2-1
Planned Excavation Volumes
ISRA Soil Management Plan
(Page 1 of 1)

ISRA Area	SSFL Area	Outfall Watershed	Nearest RFI Site	Ex Situ Excavation Soil Volume Estimate[1] (cy)
CYN-1	Area I	008	Canyon	140
DRG-1	Area I	008	Canyon	170
HVS-1	Area I	008	HVS	340
HVS-2A	Area I	008	HVS	2,800
HVS-2B	Area I	008	HVS	900
HVS-2C	Area I	008	HVS	510
HVS-3	Area I	008	HVS	640
			TOTAL OUTFALL 008	**5,500**
ELV-1C	Area II	009	ELV	1,010
ELV-1D	Area II	009	ELV	1,100
			TOTAL OUTFALL 009	**2,110**
			GRAND TOTAL	**7,610**

Notes:

[1] Assumes 30% expansion or "fluff" *ex situ* soils.

cy - cubic yards
ELV - Expendable Launch Vehicle
ISRA - Interim Source Removal Action
RCRA - Resource Conservation and Recovery Act
RFI - RCRA Facility Investigation
SSFL - Santa Susana Field Laboaratory

Table 2-2
Soil Matrix Reporting Limits
ISRA Soil Management Plan
(Page 1 of 10)

SOIL REPORTING LIMITS	
Analyte	**Laboratory RL**
Volatile Organics by EPA 8260B	**µg/kg**
1,3-Dichlorobenzene	2
1,3-Dichloropropane	2
1,4-Dichlorobenzene	2
2-Chloroethyl vinyl ether	5
2-Chloro-1,1,1-trifluoroethane	5
2-Chlorotoluene	5
2-Butanone (MEK)	10
2-Hexanone	10
2,2-Dichloropropane	1
4-Chlorotoluene	5
4-Methyl-2-pentanone (MIBK)	5
Acetone	10
Benzene	2
Bromobenzene	5
Bromochloromethane	5
Bromodichloromethane	2
Bromoform	5
Bromomethane	5
n-Propylbenzene	2
p-Isopropyltoluene	2
sec-Butylbenzene	5
tert-Butylbenzene	5
Styrene	2
Tetrachloroethene	2
Toluene	2
trans-1,2-Dichloroethene	2
trans-1,3-Dichloropropene	2
Trichloroethene	2
Trichlorofluoromethane	5
o-Xylene	2
m, p-Xylene	5
Vinyl chloride	2
1,1,2-Trichloro-1,2,2-trifluoroethane	5
1,1,1-Trichloroethane	2
1,1,1,2-Tetrachloroethane	1
1,1,2,2-Tetrachloroethane	2
1,1,2-Trichloroethane	2
1,1-Dichloroethane	2
1,1-Dichloroethene	5

Table 2-2
Soil Matrix Reporting Limits
ISRA Soil Management Plan
(Page 2 of 10)

SOIL REPORTING LIMITS	
Analyte	**Laboratory RL**
1,1-Dichloropropene	2
1,2,3-Trichlorobenzene	5
1,2,3-Trichloropropane	1
1,2,4-Trichlorobenzene	5
1,2,4-Trimethylbenzene	2
1,2-Dibromo-3-chloropropane	5
1,2-Dibromoethane (EDB)	2
1,2-Dichlorobenzene	2
1,2-Dichloroethane	1
1,2-Dichloropropane	2
1,3,5-Trimethylbenzene	2
Carbon tetrachloride	1
Chlorobenzene	2
Chloroethane	5
Chloroform	2
Chloromethane	5
Chlorotrifluoroethylene	5
cis-1,2-Dichloroethene	2
cis-1,3-Dichloropropene	2
Dibromochloromethane	2
Dibromomethane	1
Dichlorodifluoromethane	5
Ethylbenzene	2
Hexachlorobutadiene	5
Isopropylbenzene	2
Methyl-tert-butyl- Ether (MTBE)	5
Methylene chloride	5
n-butylbenzene	5
Semivolatiles by EPA 8270C	**µg/kg**
1-Methylnaphthalene	330
1,2-Dichlorobenzene	330
1,2-Diphenylhydrazine/Azobenzene	330
1,3-Dichlorobenzene	330
1,4-Dichlorobenzene	330
1,2,4-Trichlorobenzene	330
2,4,5-Trichlorophenol	330
2,4,6-Trichlorophenol	330
2,4-Dichlorophenol	330
2,4-Dimethylphenol	330

Table 2-2
Soil Matrix Reporting Limits
ISRA Soil Management Plan
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SOIL REPORTING LIMITS	
Analyte	**Laboratory RL**
2,4-Dinitrophenol	660
2,4-Dinitrotoluene	330
2,6-Dinitrotoluene	330
3,3-Dichlorobenzidine	830
2-Chloronaphthalene	330
2-Chlorophenol	330
2-Methylnaphthalene	330
2-Methylphenol	330
2-Nitroaniline	330
2-Nitrophenol	330
3-Nitroaniline	330
4,6-Dinitro-2-methylphenol	420
4-Bromophenyl-phenylether	330
4-Chloroaniline	330
4-Chloro-3-methylphenol	330
4-Chlorophenyl-phenylether	330
4-Methylphenol	330
4-Nitroaniline	830
4-Nitrophenol	830
Acenaphthene	330
Acenaphthylene	330
Aniline	420
Anthracene	330
Benzidine	1600
Benzoic acid	830
Benzo(a)anthracene	330
Benzo(a)pyrene	330
Benzo(b)fluoranthene	330
Benzo(g,h,i)perylene	330
Benzo(k)fluoranthene	330
Benzyl alcohol	330
bis(2-Chloroethoxy)methane	330
Bis(2-chloroethyl)ether	330
Bis(2-chloroisopropyl)ether	330
Bis(2-ethylhexyl)phthalate	330
Butylbenzylphthalate	330
Carbazole	330
Chrysene	330
Dibenzo(a,h)anthracene	330
Dibenzofuran	330

Table 2-2
Soil Matrix Reporting Limits
ISRA Soil Management Plan
(Page 4 of 10)

SOIL REPORTING LIMITS	
Analyte	**Laboratory RL**
Diethylphthalate	330
Dimethylphthalate	330
Di-n-butylphthalate	330
Di-n-octyl-phthalate	330
Fluoranthene	330
Fluorene	330
Hexachlorobenzene	330
Hexachlorobutadiene	330
Hexachlorocyclopentadiene	830
Hexachloroethane	330
Indeno(1,2,3-cd)pyrene	330
Isophorone	330
Naphthalene	330
Nitrobenzene	330
n-Nitroso-di-n-propylamine	330
n-Nitrosodimethylamine	330
n-Nitrosodiphenylamine	330
Phenanthrene	330
Pentachlorophenol	830
Phenol	330
Pyrene	330
Semivolatiles EPA 8270C (SIM*) PAHs	**µg/kg**
1-Methylnaphthalene	20
2-Methylnaphthalene	20
Acenaphthene	20
Acenaphthylene	20
Anthracene	20
Benzo(a)anthracene	20
Benzo(a)pyrene	20
Benzo(b)fluoranthene	20
Benzo(g,h,i)perylene	20
Benzo(k)fluoranthene	20
Bis(2-ethylhexyl)phthalate	20
Butyl benzyl phthalate	20
Chrysene	20
Di-n-butyl phthalate	20
Di-n-octyl phthalate	20
Dibenz(a,h)anthracene	20
Diethyl phthalate	20

Table 2-2
Soil Matrix Reporting Limits
ISRA Soil Management Plan
(Page 5 of 10)

SOIL REPORTING LIMITS	
Analyte	**Laboratory RL**
Dimethyl phthalate	20
Fluoranthene	20
Fluorene	20
Indeno(1,2,3-cd)pyrene	20
n-Nitrosodimethylamine	20
Naphthalene	20
Phenanthrene	20
Pyrene	20
NDMA by EPA 1625C	**µg/kg*****
n-Nitrosodimethylamine	3
Dioxin/Furans By EPA 8290/1613	**ng/kg or pg/g**
2,3,7,8-TCDD	1
1,2,3,7,8-PeCDD	5
1,2,3,4,7,8-HxCDD	5
1,2,3,6,7,8-HxCDD	5
1,2,3,7,8,9-HxCDD	5
1,2,3,4,6,7,8-HpCDD	5
OCDD	10
2,3,7,8-TCDF	1
1,2,3,7,8-PeCDF	5
2,3,4,7,8-PeCDF	5
1,2,3,4,7,8-HxCDF	5
1,2,3,6,7,8-HxCDF	5
2,3,4,6,7,8-HxCDF	5
1,2,3,7,8,9-HxCDF	5
1,2,3,4,6,7,8-HpCDF	5
1,2,3,4,7,8,9-HpCDF	5
OCDF	10
Total TCDD	1
Total PeCDD	5
Total HxCDD	5
Total HpCDD	5
Total TCDF	1
Total PeCDF	5
Total HxCDF	5
Total HpCDF	5

Table 2-2
Soil Matrix Reporting Limits
ISRA Soil Management Plan
(Page 6 of 10)

SOIL REPORTING LIMITS	
Analyte	**Laboratory RL**
Metals by EPA 6010/6020B	**mg/kg**
Aluminum	10
Antimony	1
Arsenic	0.5
Barium	0.5
Beryllium	0.3
Boron	5
Cadmium	0.2
Calcium	10
Chromium	1
Cobalt	0.5
Copper	0.2
Iron	5
Lead	0.4
Lithium	6.3
Magnesium	10
Manganese	1
Molybdenum	0.1
Nickel	0.4
Phosphorus	50
Potassium	50
Selenium	1
Silver	0.2
Sodium	50
Strontium	5
Thallium	0.2
Tin	10
Titanium	2
Vanadium	1
Zinc	5
Zirconium	25
Mercury by EPA 7471A	**mg/kg**
Mercury	0.01
Chromium VI by EPA 7196A or 7199	**mg/kg**
Chromium VI	0.2
Formaldehyde by EPA 8315A	**mg/kg**
Formaldehyde	1

Table 2-2
Soil Matrix Reporting Limits
ISRA Soil Management Plan
(Page 7 of 10)

SOIL REPORTING LIMITS	
Analyte	**Laboratory RL**
Perchlorate	**µg/kg**
EPA 8321/331.0/6850/6860	2
EPA 314.0	4.0
EPA 314.0 ClO4 Soil **	4.0 (µg/L)
Pesticides by EPA 8081	**µg/kg**
Aldrin	5
Alpha-BHC	5
Beta-BHC	5
Delta-BHC	10
Gamma-BHC	5
Chlordane (Technical)	10
4,4'-DDD	5
4,4'-DDE	5
4,4'-DDT	5
Dieldrin	5
Endosulfan I	5
Endosulfan II	5
Endosulfan sulfate	10
Endrin	5
Endrin aledhyde	5
Endrin ketone	5
Heptachlor	5
Heptachlor epoxide	5
Methoxychlor	5
Mirex	5
Toxaphene	50
PCB by EPA 8082	**µg/kg**
Aroclor 1016	15
Aroclor 1221	15
Aroclor 1232	15
Aroclor 1242	15
Aroclor 1248	15
Aroclor 1254	15
Aroclor 1260	15
Herbicides by EPA 8151A	**µg/kg**
2,4-D	20
2,4-DB	80

Table 2-2
Soil Matrix Reporting Limits
ISRA Soil Management Plan
(Page 8 of 10)

SOIL REPORTING LIMITS	
Analyte	**Laboratory RL**
2,4,5-T	20
2,4,5-TP (Silvex)	80
Dalapon	50
Dicamba	40
Dichloroprop	80
Dinoseb	12
MCPA	8000
MCPP	8000
Energetics by EPA 8330A	**µg/kg**
HMX	250
Nitrobenzene	250
Nitroglycerin	5000
PETN	4000
RDX	250
Tetryl	500
1,3-Dinitrobenzene	250
1,3,5-Trinitrobenzene	250
2-Amino-4,6-dinitrotoluene	250
2-Nitrotoluene	250
2,4-diamino-6-nitrotoluene	1000
2,4-Dinitrotoluene	250
2,4,6-Trinitrotoluene	250
2,6-diamino-4-nitrotoluene	1000
2,6-Dinitrotoluene	250
3-Nitrotoluene	250
4-Amino-2,6-dinitrotoluene	250
4-Nitrotoluene	400
Anions by EPA 300.0/9056A	**mg/kg**
Bromide	5
Chloride	5
Fluoride	5
Nitrate-NO3	5
Nitrite-NO2	5
Orthophosphate - PO4	5
Sulfate	5
	pH
pH by EPA 9045C	0.1 pH units

Table 2-2
Soil Matrix Reporting Limits
ISRA Soil Management Plan
(Page 9 of 10)

SOIL REPORTING LIMITS	
Analyte	**Laboratory RL**
TPH by EPA 8015B	**mg/kg**
Total Petroleum Hydrocarbons as Gasoline (C4-C12)	5
Total Petroleum Hydrocarbons as Diesel – Specific Carbon Ranges	
EFH(C8-C11)	5
EFH(C12-C14)	5
EFH(C15-C20)	5
EFH(C21-C30)	5
Total Petroleum Hydrocarbons as Oil (C30-C40)	25
% Solids by D2216	**percent**
Percent Solids	0.1
Total Solids by 160.3	**percent**
Total Solids	0.1

Table 2-2
Soil Matrix Reporting Limits
ISRA Soil Management Plan
(Page 10 of 10)

Notes:

na	Not applicable
a	MDA are goals and are dependent on sample volume and count times, methods will optimize to the lowest MDA achievable which meets DQOs.
*	SIM not required if RL is achievable in full scan mode.
**	SSFL site specific prep and analysis with 1:1 leaching ratio. Reporting limits of µg/kg to represent soil concentrations and µg/L to represent leaching potential from a solid.
***	Data reported to RL only.

Table 2-3
Maximum Concentration of Contaminants
for the Toxicity Characteristic Leaching Procedure
ISRA Soil Management Plan
(Page 1 of 1)

EPA Hazardous Waste Number	Toxic Substance	Regulatory Threshold (mg/L)
D004	Arsenic	5.0
D005	Barium	100.0
D018	Benzene	0.5
D006	Cadmium	1.0
D019	Carbon Tetrachloride	0.5
D020	Chlordane	0.03
D021	Chlorobenzene	100.0
D022	Chloroform	6.0
D007	Chromium	5.0
D023	o-Cresol	200.0 [1]
D025	m-Cresol	200.0 [1]
D025	p-Cresol	200.0 [1]
D026	Cresol	200.0 [1]
D016	2,4-D	10.0
D027	1,4-Dichlorobenzene	7.5
D028	1,2-Dichloroethane	0.5
D029	1,1-Dichloroethylene	0.7
D030	2,4-Dinitrotoluene	0.13
D012	Endrin	0.02
D031	Heptachlor(and its epoxide)	0.008
D032	Hexachlorobenzene	0.13
D033	Hexachlorobutadiene	0.5
D034	Hexachloroethane	3.0
D008	Lead	5.0
D013	Lindane	0.4
D009	Mercury	0.2
D014	Methoxychlor	10.0
D035	Methyl ethyl ketone	200.0
D036	Nitrobenzene	2.0
D037	Pentachlorophenol	100.0
D038	Pyridine	5.0 [2]
D010	Selenium	1.0
D011	Silver	5.0
D039	Tetrachlorethylene	0.7
D015	Toxaphene	0.5
D040	Trichloroethylene	0.5
D041	2,4,5-Trichlorophenol	400.0
D042	2,4,6-Trichlorophenol	2.0
D017	2,4,5-TP (Silvex)	1.0
D043	Vinyl chloride	0.2

Notes:
1. If o-, m- and p- Cresol concentrations cannot be differentiated the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 mg/l.
2. Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level.

Acronyms:
EPA - Environmental Protection Agency
mg/L - milligrams per liter

Table 2-4
Soluble Threshold Limit Concentration and
Total Threshold Limit Concentration Values
ISRA Soil Management Plan

Organic Chemicals

Substance	STLC (mg/L)	TTLC Wet Weight (mg/kg)
Aldrin	0.14	1.4
Chlordane	0.25	2.5
DDT, DDE, DDD	0.1	1
2,4-Dichlorophenoxyacetic acid	10	100
Dieldren	0.8	8
Dioxin (2,3,7,8-TCDD)	0.001	0.01
Endrin	0.02	0.2
Heptachlor	0.47	4.7
Kepone	2.1	21
Lead compounds, organic	--	13
Lindane	0.4	4
Methoxychlor	10	100
Mirex	2.1	21
Pentachlorophenol	1.7	17
Polychlorinated biphenyls (PCBs)	5	50
Toxaphene	0.5	5
Trichloroethylene	204	2040
2,4,5-Trichlorophenoxypropionic acid	1	10

Inorganic Chemicals

Substance [a,b]	STLC (mg/L)	TTLC Wet Weight (mg/kg)
Antimony and/or antimony compounds	15	500
Arsenic and/or arsenic compounds	5	500
Asbestos		1.0 (as percent)
Barium and/or barium compounds (excluding barite)	100	10,000[c]
Beryllium and/or beryllium compounds	0.75	75
Cadmium and/or cadmium compounds	1	100
Chromium (VI) compounds	5	500
Chromium and/or chromium (III) compounds	5[d]	2500
Cobalt and/or cobalt compounds	80	8000
Copper and/or copper compounds	25	2500
Fluoride salts	180	18000
Lead and/or lead compounds	5	1000
Mercury and/or mercury compounds	0.2	20
Molybdenum and/or molybdenum compounds	350	3,500[e]
Nickel and/or nickel compounds	20	2000
Selenium and/or selenium compounds	1	100
Silver and/or silver compounds	5	500
Thallium and/or thallium compounds	7	700
Vanadium and/or vanadium compounds	24	2400
Zinc and/or zinc compounds	250	5000

Notes:

[a] STLC and TTLC values are calculated on the concentrations of the elements, not the compounds.

[b] In the case of asbestos and elemental metals, the specified concentration limits apply only if the substances are in a friable, powdered or finely divided state. Asbestos includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite.

[c] Excluding barium sulfate.

[d] If the soluble chromium, as determined by the TCLP set forth in Appendix I of Chapter 18 of this division, is less than 5 mg/L, and the soluble chromium, as determined by the procedures set forth in Appendix II of Chapter 11, equals or exceeds 560 mg/L and the waste is not otherwise identified as a RCRA hazardous waste pursuant to §66261.100, then the waste is a non‑RCRA hazardous waste.

[e] Excluding molybdenum disulfide.

Acronyms:
STLC - Soluble Threshold Limit Concentration
TTLC - Total Threshold Limit Concentration
mg/L - milligrams per liter
mg/kg - milligrams per kilogram

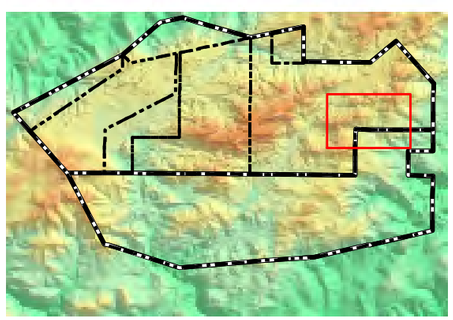
FIGURES

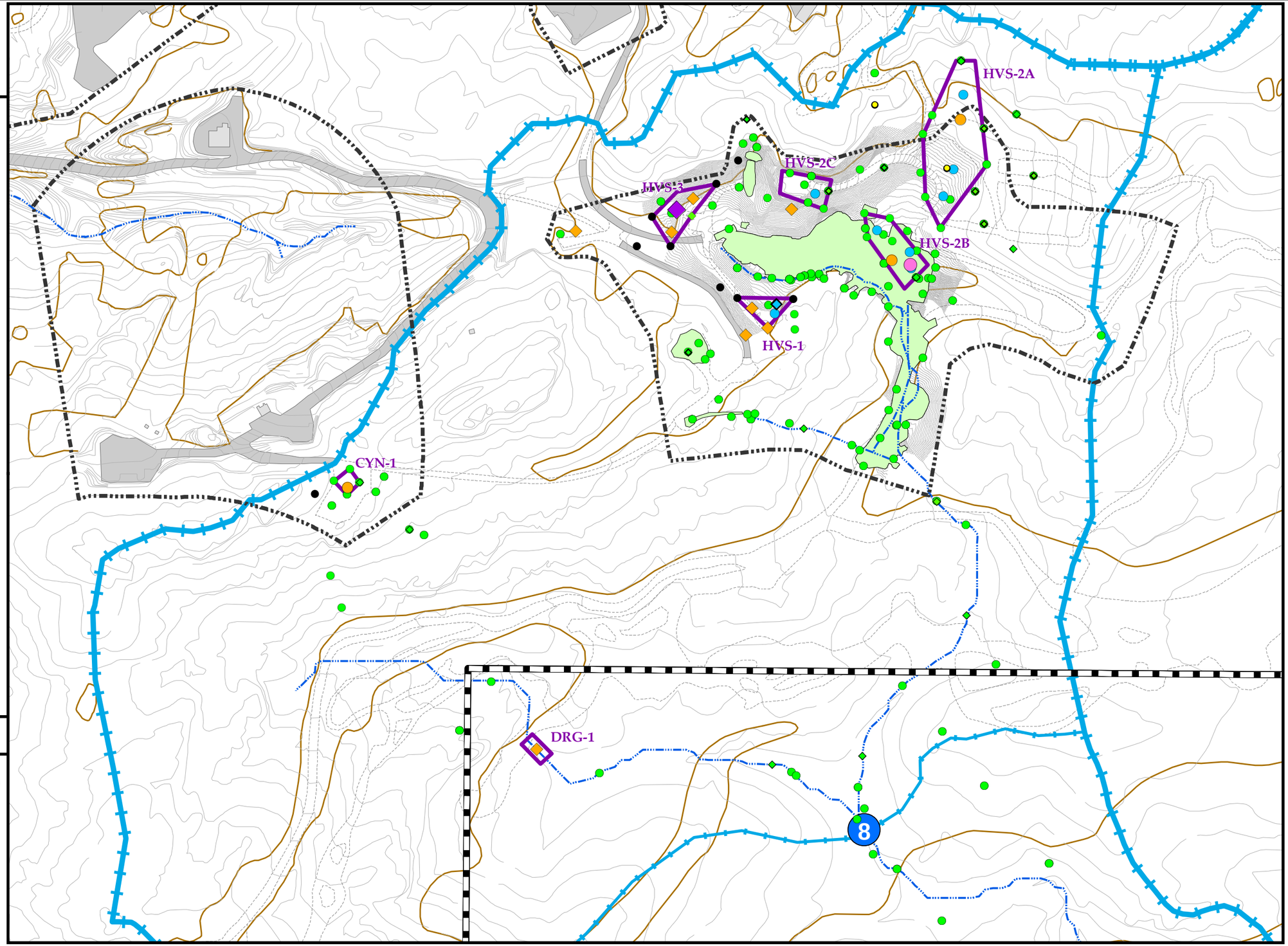
ISRA Excavation Area
Outfall 008

Base Map Legend

- Administrative Area Boundary
- RFI Site Boundary
- Existing Building or Structure
- Previously Excavated Area
- Excavation Area
- Surface Water Drainage
- Surface Water Divide
- Outfall Water Divide
- NPDES Outfall
- Dirt Road
- Paved Road
- Elevation Contour
- Bedrock Outcrop

Feet
0 100 200 400





SANTA SUSANA FIELD LABORATORY

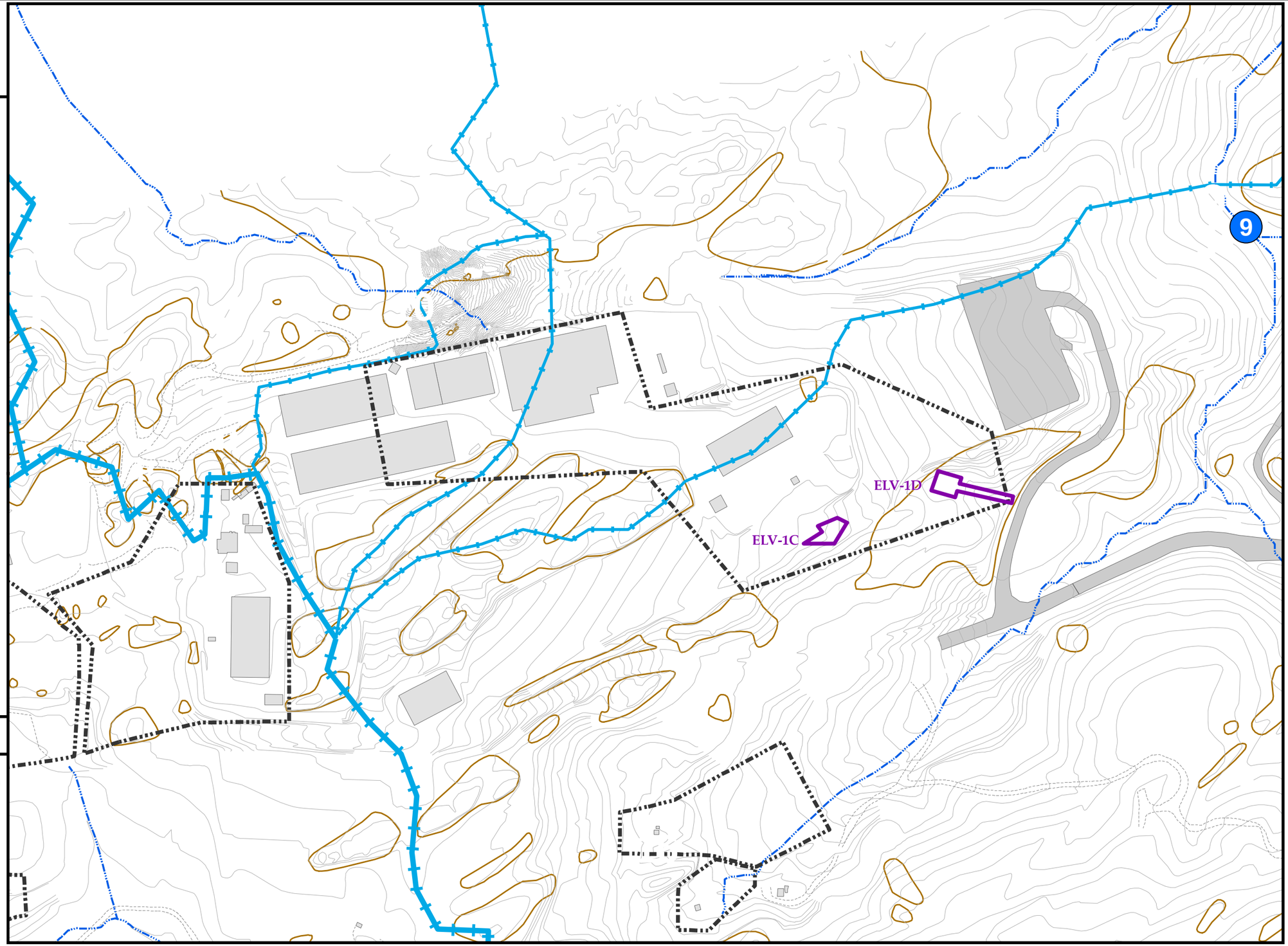
MWH FIGURE 2-1

Printing Date: June 16, 2009 File: \\uswck1netapp1\nrii\Industrial Projects\GIS\BoeingSantaSusana\MXD\Surface Water Driver Maps\ISRA-Jun2009\Figure 2-1 ISRA Excavation Area.mxd

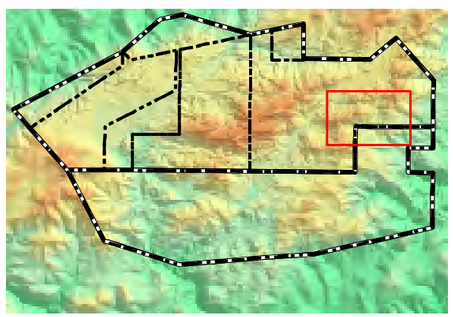
ISRA Excavation Area
Outfall 009

Base Map Legend

- Administrative Area Boundary
- RFI Site Boundary
- Existing Building or Structure
- Excavation Area
- Surface Water Drainage
- Surface Water Divide
- Outfall Water Divide
- NPDES Outfall
- Dirt Road
- Paved Road
- Elevation Contour
- Bedrock Outcrop



0 100 200 400 Feet



SANTA SUSANA FIELD LABORATORY

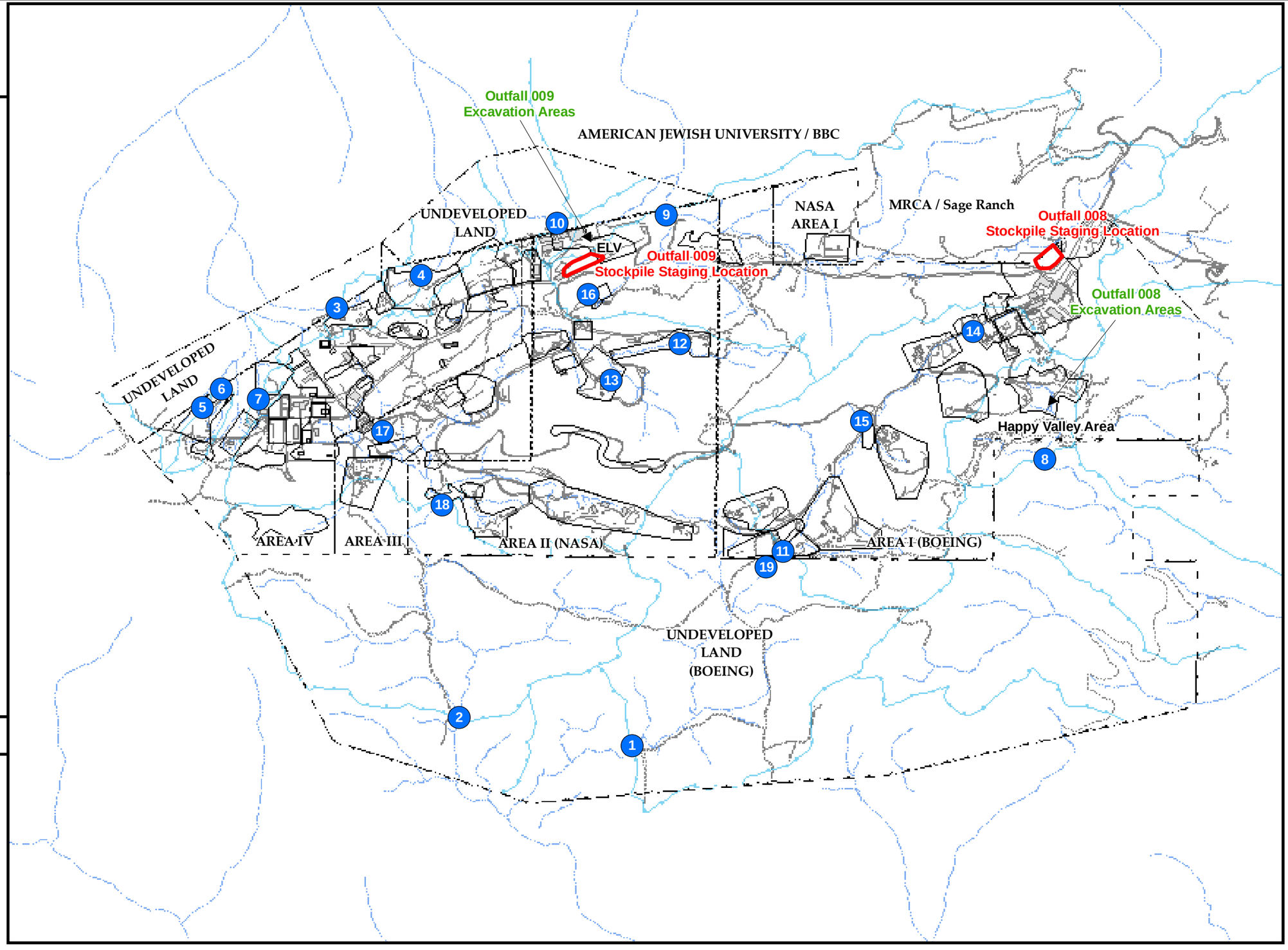
MWH FIGURE 2-2

Printing Date: June 16, 2009 File: \\uswck1netapp1\nrii\Industrial Projects\GIS\BoeingSantaSusana\MXD\Surface Water Driver Maps\ISRA-Jun2009\Figure 2-2 ISRA Excavation Area 009.mxd

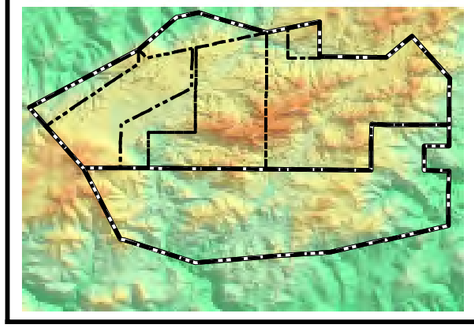
Stockpile Staging Locations

Base Map Legend

- Administrative Area Boundary
- RFI Site Boundary
- Surface Water Drainage
- Surface Water Divide
- NPDES Outfall
- Existing Building or Structure
- Dirt Road



0 750 1,500 3,000 Feet



S A N T A S U S A N A F I E L D L A B O R A T O R Y

MWH FIGURE 3-1

Printing Date: June 16, 2009 File: \\uswck1netapp1\nrii\Industrial Projects\GIS\BoeingSantaSusana\MXD\Surface Water Driver Maps\ISRA-Jun2009\Figure 3-1 Stockpile Staging Location.mxd

ATTACHMENT A

ISRA WASTE SAMPLING FOR RADIONUCLIDES

Attachment A
ISRA Waste Sampling for Radionuclides

The following provides guidance for radiological sampling of waste generated during excavation of the ISRA Areas at Outfalls 008 and 009.

All of the chemical samples taken for waste disposal characterization shall be split for potential analyses for gamma spectroscopy, strontium-90 and tritium, using an off-site laboratory. Radiological analyses shall be conducted only if the results of chemical analyses determine that off-site disposal is necessary. A 1-liter plastic or glass bottle shall be used for the combined gamma, strontium and tritium sample. Minimum detectable activity for both cesium-137 and strontium-90 shall be $\leq$ 0.05 pCi/g. Minimum detectable activity for tritium shall be $\leq$ 1 pCi/g. The laboratory gamma spectroscopy library shall also include the following contaminants-of-concern as a minimum: Na-22, K-40, Mn-54, Co-60, Cs-134, Cs-137, Eu-152, Eu-154, Th-228, Th-232, U-235, U-238 and Am-241. Any detection of any gamma emitting radionuclides in the library shall also be reported.

Statistical evaluation of sample analytical results to determine whether or not the sampled waste contains Cs-137 or Sr-90 activity elevated above local background shall be conducted using the Wilcoxon Rank Sum Test using protocols described in NUREG-1505[1] and Department of Toxic Substances Control (DTSC) guidance[2]. Local background identified in Table 20 of the 1995 McLaren/Hart report[3] will be used in the statistical comparison. The Department of Public Health (DPH) and the DTSC will be notified if wastes are determined to contain radionuclides above background. The need for further waste evaluation or alternate disposition shall be determined. The waste shall be subjected to a dose analysis to determine if the material can be shipped off-site in compliance with the California Health & Safety Code[4].

Field surveys, including gamma exposure, total beta contamination and alpha/beta wipe tests will be taken of any discrete objects which may be found that would be difficult to sample and analyze in a laboratory. Any solid debris surveyed that exceeds instrument minimum detectable activity, using commonly used survey instrumentation, will be held for further evaluation.

Waste generated shall be shown to meet the requirements of the relevant waste disposal facility permit before being shipped offsite.

Based on site knowledge, previous monitoring of the area, and/or previous sampling analysis, there is no evidence to suggest that any radiological contamination exists in the ISRA areas. The ISRA is not a radiological remediation project. Therefore the radiological controls normally associated with radiological remediation projects including, radiation worker training, personnel dosimetry, baseline and post-project bioassays, workplace air monitoring for radionuclides, continuous routine radiation and contamination

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[1] NUREG-1505, Nuclear Regulatory Commission, "A Non-parametric Statistical Methodology for the Design and Analysis of Final Status Decommissioning Surveys." January 1998. http://www.philrutherford.com/Radiation_Cleanup_Standards/NUREG-1505.pdf

[2] DTSC, "Selecting Inorganic Constituents as Chemicals of Concern at Risk Assessments at Hazardous Waste Sites and Permitted Facilities." February 1997.

[3] McLaren/Hart, "Additional Soil and Water Sampling at the Brandeis-Bardin Institute and Santa Monica Mountains Conservancy." Jan 19, 1995. http://www.etec.energy.gov/Health-and-Safety/Documents/BrandeisBardin/AddSoilandWaterSamp.pdf

[4] California Health & Safety Code, Division 104, Part 9, Chapter 5, Sections 114705-114780 of the Radiation Control Law. http://www.leginfo.ca.gov/cgi-bin/displaycode?section=hsc&group=114001-115000&file=114705-114780

surveys, personnel and area contamination controls, tenting and HEPA ventilation, etc., are not planned for the ISRA project. However, as part of Boeing's commitment to a safe working environment, site conditions will be reviewed throughout the duration of the project, and adjustment to work plan monitoring will be made, as necessary.

ATTACHMENT B

STOCKPILE STATISTICS WORKSHEET

ATTACHMENT B

Stockpile Statistics Worksheet

ISRA Soil Management Plan

(Page 1 of 2)

STOCKPILE STATISTICS WORKSHEET[1]

1	List sample results from laboratory Analytical Method: _____ Units (e.g., mg/kg): _____		1 | 2 | 3 4 | 5 | 6 7 | 8 | 9
2	Determine number of sample values	n	n=
3	Calculate sample mean with n = number of sample measurements	$\bar{x} = \frac{\sum_{i=1}^{n} x_i}{n}$	$\bar{x}$=
4	Calculate sample variance	$s^2 = \frac{\sum_{i=1}^{n} x_i^2 - \frac{(\sum_{i=1}^{n} x_i)^2}{n}}{n-1}$	s^2=
5	Calculate sample standard deviation	$s = \sqrt{s^2}$	s=
6	Calculate degrees of freedom	$df = n-1$	df=
7	Calculate standard error of the mean	$s_{\bar{x}} = \frac{s}{\sqrt{n}}$	$s_{\bar{x}}$=
8	Obtain *student's t value* corresponding to the degree of freedom value determined in #6 above	(See attached table of values on next page)	$t_{.20}$=
9	Calculate the confidence interval	$CI = \bar{x} \pm t_{.20}\, s_{\bar{x}}$	CI=
10	Obtain regulatory threshold for the contaminant of concern	RT	RT=
11	Calculate	$\Delta = RT - \bar{x}$	Δ=
12	Estimate minimum number of samples	$n_{min} = \frac{t_{.20}^2\, s^2}{\Delta^2}$	n_{min}=

[1] In accordance with the California Code of Regulations, Title 22, Section 66694, DEH follows the sampling guidelines set forth in *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, Third Edition,* US Environmental Protection Agency, 1986. This worksheet is based on information found in Volume II, Part III, Chapter 9 of *"SW-846"* and is provided as an aid for stockpile characterization. For circumstances requiring data manipulation beyond that indicated on the worksheet, refer to *"SW-846."*

ATTACHMENT B

Stockpile Statistics Worksheet
ISRA Soil Management Plan
(Page 2 of 2)

TABULATED VALUES OF STUDENT'S *'t'* FOR EVALUATING SOLID WASTES	
Degrees of Freedom[1] *df* (*n*-1)	Tabulated value[2] $t_{.20}$ (80% confidence interval)
1 2 3 4 5	3.078 1.886 1.638 1.533 1.476
6 7 8 9 10	1.440 1.415 1.397 1.393 1.372
11 12 13 14 15	1.363 1.356 1.350 1.345 1.341
16 17 18 19 20	1.337 1.333 1.330 1.328 1.325
21 22 23 24 25	1.323 1.321 1.319 1.318 1.316
26 27 28 29 30	1.315 1.314 1.313 1.311 1.310
40 60 120	1.303 1.296 1.289

[1] Degrees of freedom ***(df)*** are equal to the number of samples ***(n)*** collected less one.

[2]Tabulated ***'t'*** values are for a two-tailed confidence interval and a probability of 0.20 (80% confidence level). The same values are applicable to a one-tailed confidence interval and a probability of 0.10 (90% confidence level).

ATTACHMENT C

STOCKPILE STATISTICS WORKSHEET

Soil Disturbance or Aeration Containing Gasoline, Diesel, or Jet Fuel: RECORDKEEPING FORM for Rule 74.29 Compliance

Requirement:	Record your response below:
List the dates and quantity (in cubic yards) of soil disturbed for each date.	
List the reasons for excavating or grading.	
State the cause of VOC soil contamination and history of the site.	
Describe the tanks or piping associated with the soil contamination, size, and contents.	
Describe the mitigation measures employed for dust, odors, and ROC emissions.	
Detail treatment and/or disposal of ROC contaminated soil, including the ultimate receptor.	
Describe the type, model of monitoring equipment used and techniques (e.g. calibration gas, etc.)	
Record all ROC emission measurements using an OVA* on a continuous permanent strip-chart or in a format approved by VCAPCD. Attach strip chart print outs to this form.	
Attach a map showing the facility layout, property lines, and surrounding area up to 2500 feet away and including any schools, residential areas or other sensitive receptors such as hospitals or locations where children or elderly people live or work.	

Notes:
Use one form per job.
Operator should be familiar with using an Organic Vapor Analyzer* (OVA).
Return completed form to Jenna Latt M/S T486, EHS