The Boeing Company
Santa Susana Field Laboratory
5800 Woolsey Canyon Road
Canoga Park, CA 91304-1148

CERTIFIED MAIL

September 18, 2009
In reply refer to SHEA-109102

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

Department of Toxic Substances Control
8800 Cal Center Drive
Sacramento, CA 95826

Attention: Tracy Egoscue, James Pappas

Subject: HVS-2A Soil Collapse Feature and Pipeline Removal Summary and Plan, Letter Amendment to the Final Interim Source Removal Action (ISRA) Work Plan, California Water Code Section 13304 Order (NPDES NO. CA0001309, CI NO. 6027, SCP NO. 1111, SITE ID NO. 2040109)

Dear Ms. Egoscue and Mr. Pappas:

The Boeing Company (Boeing) provides the following letter amendment to the Final Interim Source Removal Action (ISRA) Work Plan prepared by MWH in response to the identification of a soil collapse area and metal pipeline within Outfall 008 in the vicinity of ISRA Area HVS-2A. This letter amendment summarizes historical information and characterization results of the pipeline and collapse feature soils, in addition to the management, disposal, and confirmation plan for these features.

We understand the handling and disposal procedures of the soil in the vicinity of the soil collapse feature and the pipeline are of interest to both the RWQCB and DTSC; if you have any questions or require anything further, please contact me at 818-466-8795. Boeing will consider this approach acceptable for project implementation if no further questions or requirements are indicated by the RWQCB or DTSC staff. Thank you for your attention to this information.

Sincerely,

Art Lenox
Environmental Remediation

cc: Cassandra Owens, RWQCB (with attachments)

Peter Raftery, RWQCB (with attachments)
Buck King, DTSC (with attachments)
Jim O'Tousa, Ventura County (with attachments)
Dixie Hambrick, MWH (without attachments)

BOEING

Attachments:

MWH, 2009. Letter Amendment for ISRA HVS-2A Soil Collapse Feature and Pipeline Removal Summary and Plan. September 18. Including:

Figure 1: Location of HVS-2A Soil Collapse Feature and Pipeline
Figure 2: Detail of HVS-2A Soil Collapse feature and Pipeline
Table 1: HVS-2A Soil Collapse Feature Data Gap Sampling Results

MWH

BUILDING A BETTER WORLD

Hand Delivered

September 18, 2009

Mr. Art Lenox
Ms. Lori Blair
The Boeing Company
Santa Susana Field Laboratory
5800 Woolsey Canyon Road
Canoga Park, CA 91304

Subject: HVS-2A Soil Collapse Feature and Pipeline Removal Summary and Plan, Letter Amendment to the Final Interim Source Removal Action (ISRA) Work Plan, California Water Code Section 13304 Order (NPDES NO. CA0001309, CI NO. 6027, SCP NO. 1111, SITE ID NO. 2040109)

Dear Mr. Lenox and Ms. Blair:

MWH provides the following letter amendment to the Final Interim Source Removal Action (ISRA) Work Plan in response to the identification of a soil collapse area and metal pipeline within Outfall 008 in the vicinity of ISRA Area HVS-2A. This letter summarizes historical information and characterization results of the pipeline and collapse feature soils, in addition to the management, disposal, and confirmation plan for these features.

Background

A soil collapse feature and a metal pipeline were identified in the western portion of ISRA Area HVS-2A following vegetation clearance performed between August 18 and 19, 2009. The location of the soil collapse feature and metal pipeline are shown in Figure 1. The soil collapse feature is approximately 18 feet wide in the northwest-southeast direction, 10 feet wide in the northeast-southwest direction at the widest portion, with a maximum depth of 3 to 4 feet below the surrounding grade in the southeast portion. The exposed portion of the metal pipeline is approximately 2 inches in diameter and is covered with a hard, non friable asbestos coal tar pipe wrap. The majority of the pipeline is buried under 1 to 2 feet of soil with exception of an approximate 5-foot segment that enters the soil collapse feature from the northwest and terminates. A geophysical survey performed on September 2, 2009 traced the buried pipeline approximately 100 feet to the northeast before losing the signal. A trench investigation performed on September 9, 2009 confirmed that the pipe terminates to the south within the soil collapse feature, and a test

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pit investigation on September 11, 2009 confirmed that the northern terminus of the pipeline is approximately 100 feet north-northeast of the collapse feature as shown in Figure 1.

A review of historical records suggests that this pipeline may have been a natural gas pipeline that was installed at Happy Valley to service Building 1749. Building 1749 had a curing oven and was located approximately 50 feet west of the western edge of HVS-2A. A 1961 design diagram shows plans for converting the Building 1749 heat source from an oil burner to a gas burner. A map titled "Santa Susana Facility Master Plan Gas Distribution" shows a natural gas pipeline heading east from Building 1749 and then turning north, going over the hill along a dirt road and ending approximately 100 feet southeast of Building 1408. Building 1749 has been demolished. This information has been previously reported in the Group 1A RCRA Facility Investigation (RFI) Report submitted to DTSC in February 2009.

The northern continuation of the pipeline was removed in October 2008. As shown on Figure 1, this removal action extended from near Building 1408 to approximately 200 feet north of the currently exposed pipe within the soil collapse feature. No staining or elevated Photo Ionization Detector readings were observed along the length of the trench used to expose and remove the pipeline. The pipeline was cut into approximately 10-foot segments, and disposed of at the Class I Waste Management's Kettleman Hills Landfill. The pipe removal work was performed by a licensed asbestos abatement contractor, Zenco Engineering, Inc. The segment of pipeline between the existing pipeline that terminates 100 feet north of the collapse feature and the end of the pipeline removed in October 2008 is believed to have been installed above grade due to extensive bedrock in this area, and removed at an earlier time. However, as described below, additional test pits are planned in this segment to confirm prior removal of the pipeline.

Characterization Information

Investigatory trenching of the collapse feature indicated poorly compacted soils, a buried layer of vegetation, and minor metal debris. An additional disconnected 2-foot segment of the pipeline was also identified during the trenching. Based on the observed conditions in the trenches, it appears this collapse feature formed due to poorly compacted soils during site construction. The depth to bedrock in the deepest part of the feature is about 6 feet below ground surface (bgs), or about 10 feet below the surrounding grade.

Five soil samples have been collected from three borings within the soil collapse feature, including HZBS0135, HZBS0173, and HZBS0174. Figure 2 shows the locations of samples and features within the soil collapse feature. A surface soil sample (0.5 feet bgs) was collected from boring HZBS0135 on July 14, 2009 within dense brush, prior to identification of the soil collapse feature. The sample was collected to further delineate HVS-2A and analyzed for lead, the ISRA constituents of concern (COCs) for HVS-2A. A surface soil sample and a subsurface soil sample were collected from borings HZBS0173 and HZBS0174 on August 20, 2009 following identification of the soil collapse feature. HZBS0173 was advanced in the deepest portion of the feature and HZBS0174 was advanced near the terminus of the exposed pipeline. The samples were collected to

characterize soils within the collapse feature and analyzed for metals, energetics, perchlorate, total petroleum hydrocarbons (TPH), polychlorinated biphenyls (PCBs), semi-volatile organic compounds (SVOCs), volatile organic compounds (VOCs), and asbestos. Bedrock was encountered at 4 feet bgs in the southeast portion of the soil collapse feature, and was about 6 feet deep near the exposed pipeline. In addition, three samples of the coal tar pipe wrap were collected and analyzed for asbestos and one for PCBs. The soil sampling, laboratory analysis, and quality control samples were conducted according to Department of Toxic Substances Control (DTSC)-approved RFI field Standard Operating Procedures and Quality Assurance Project Plan (QAPP) requirements.

Sampling results are presented in Table 1, along with a comparison of detected results to the DTSC-approved 2005 background comparison concentrations and current characterization risk-based screening levels (RBSLs) submitted to DTSC in March 2009. For detected constituents where both Human Health and Ecological RBSLs exist, the lower RBSL is shown. Soil sample results are either non-detect or if detected, below background concentrations (in the case of metals), or less than RBSLs, except for PCBs in the subsurface sample collected from HZBS0174, located near the pipeline terminus. Aroclor-1248, Aroclor-1254, and Aroclor-1260 were detected in the sample at concentrations of 274, 222, and 91.5 micrograms per kilogram (µg/kg), respectively, exceeding characterization RBSLs. The coal tar pipe wrap contained Aroclor 1254 at a concentration of 13,800 µg/kg, and chrysotile asbestos and non fibrous materials at 20 and 80 percent, respectively. Based on these sample results, the coal tar pipe wrap is believed to be the source of the PCBs in the subsurface sample from HZBS0174.

Planned Removal Activities, Soil and Waste Management, and Confirmation Sampling

Excavation of HVS-2A in the vicinity of the soil collapse feature will include removal of the collapsed soils to a depth of approximately 5 to 6 feet bgs or to bedrock if encountered at shallower depths. Excavated soils from the collapse feature will be managed as described in the ISRA Soil Management Plan (SMP), and disposed of along with other non-hazardous soils from Outfall 008 ISRA areas. Confirmation samples in this portion of the HVS-2A ISRA Area will include lead, PCB, and asbestos analysis, and be collected as shown on Figure 2.

The buried pipeline will also be removed, both within the soil collapse feature and extending to the pipeline's northern terminus. Based on the prior removal action, the buried pipeline is expected to be about 3 feet bgs, requiring a trench about 5 feet wide for removal.

All work for the pipeline removal will be performed by a California licensed asbestos abatement contractor (Zenco Engineering, Inc.), assisted by onsite project geologists for soil sampling. The pipeline excavation will proceed as follows since *in situ* waste characterization of soils adjacent to the pipeline has not been performed.

- Soils covering the buried pipeline are considered not impacted by the pipeline and will be placed on plastic sheeting adjacent to the pipeline trench and used for backfill following pipeline removal.
- Soils surrounding and immediately beneath the pipeline are considered non hazardous based on previous sampling results of the coal tar pipe wrap and of soils in the collapse feature. The surrounding soils will be excavated, placed on plastic sheeting segregated from the cover material, and sampled *ex situ* for PCBs and asbestos since these soils may be impacted by the wrapping covering the buried pipeline. Approximately 40 to 60 cy of surrounding soils are expected to be excavated, and eight random samples will be collected to characterize the soil. If soil sampling results are less than characterization RBSLs, then these soils will be used for backfill following pipeline removal, otherwise soils will be disposed offsite. If offsite soil disposal is planned, the collected samples will also be run for radionuclides and metals for waste characterization requirements per the ISRA SMP. If disposed offsite, the disposal facility will be one of those specified in the ISRA SMP.
- Once exposed, the pipeline will be cut into approximately 10-foot segments, and each segment double sleeved in 6 millimeter plastic prior to shipment to a Class I disposal facility (anticipated to be Waste Management's Kettleman Hills Facility). The pipeline segments will be placed into lined containers and transported to the stockpile staging area prior to shipment offsite. Based on the analytical results and type of materials, this waste will be classified as non-friable, non hazardous Class 2 asbestos containing materials (ACM).
- *In situ* soils in the bottom of the pipeline trench will be sampled and analyzed for PCBs and asbestos at approximately 50-foot spacing to characterize conditions for the ongoing RCRA Facility Investigation (RFI) at the SSFL.
- Two to three additional investigation test pits will be performed where soils exist in the segment of former pipeline between the current removal action and that performed in October 2008 to confirm that the pipeline has been removed. If segments are identified, then the procedures described above will be applied for removal and characterization purposes.

All field activities and sample analysis will be conducted according to protocols specified in the Final ISRA Work Plan and addenda approved by the RWQCB, which follow DTSC-approved procedures for the ongoing RFI. Additionally, sample analysis for PCBs will be performed using EPA Method 8082, and for asbestos using EPA Method 600/R-93/116, again following DTSC-approved protocols for the RFI. Since the ISRA project is an interim cleanup action under RWQCB oversight solely to address potential soil sources within the Outfall 008 and 009 areas for NPDES exceedances and PCBs and asbestos are not ISRA COCs, additional ISRA excavation will not necessarily be performed if these constituents exceed their RBSLs. However, all results will be reviewed and discussed with the RWQCB and DTSC prior to trench backfill and completion of the ISRA excavation activities. Final remedial requirements for the SSFL, including the

Outfall 008 and 009 areas, will be addressed as part of RCRA Corrective Action project under oversight of DTSC.

Closing

MWH understands this letter amendment is being submitted under Boeing cover letter to the RWQCB and DTSC for review. The work described in this letter amendment will not proceed until authorized by Boeing following agency review and acceptance of the proposed procedures.

Sincerely,

MWH

Dixie Hambrick, P.G. 5487
Surficial Media Program Director

PROFESSIONAL GEOLOGIST
DIXIE A. HAMBRICK
No. 5487
EXP. 7/11
STATE OF CALIFORNIA

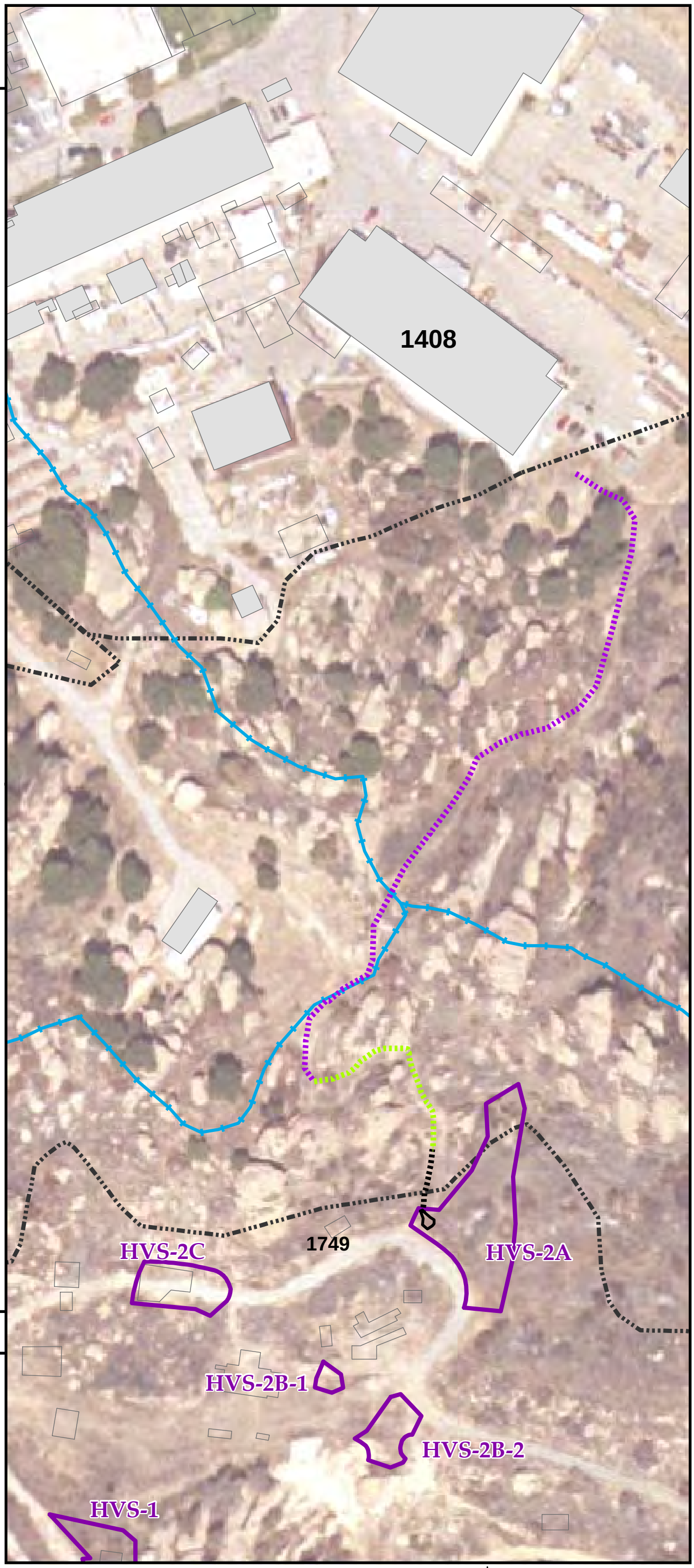
Alex Fischl, PMP
ISRA Project Manager

Attachments: Figure 1: Location of HVS-2A Soil Collapse Feature and Pipeline
Figure 2: Detail of HVS-2A Soil Collapse feature and Pipeline
Table 1: HVS-2A Soil Collapse Feature Data Gap Sampling Results

Location of Soil Collapse Feature and Pipeline

Legend

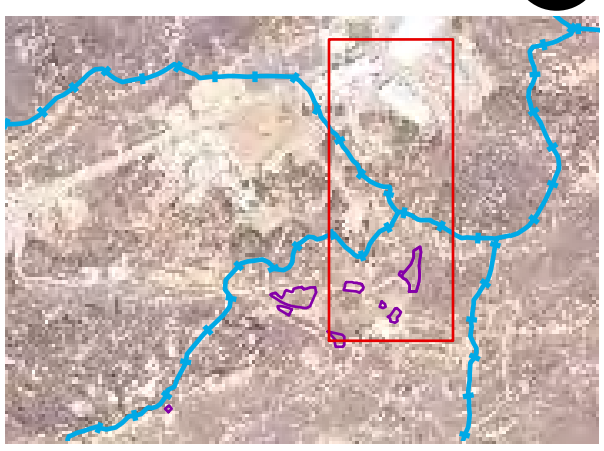
- RFI Site Boundary
- Existing Building or Structure
- Removed Building or Structure
- Surface Water Divide
- Former buried and above ground pipeline, removed prior to 2008
- Existing buried pipeline, to be removed in 2009
- Former buried and above ground pipeline, removed in October 2008
- Preliminary ISRA Evaluation Boundary
- Soil Collapse Feature



Note:
1. Aerial imagery from Sage, 2005
2. Pipeline is approximately 2 inches in diameter and is covered with a hard, non friable asbestos coal tar pipe wrap. A review of historical records suggests that the pipeline may have been a natural gas pipeline that was installed at Happy Valley to service Building 1749.

Date: September 17, 2009

0 50 100 200 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

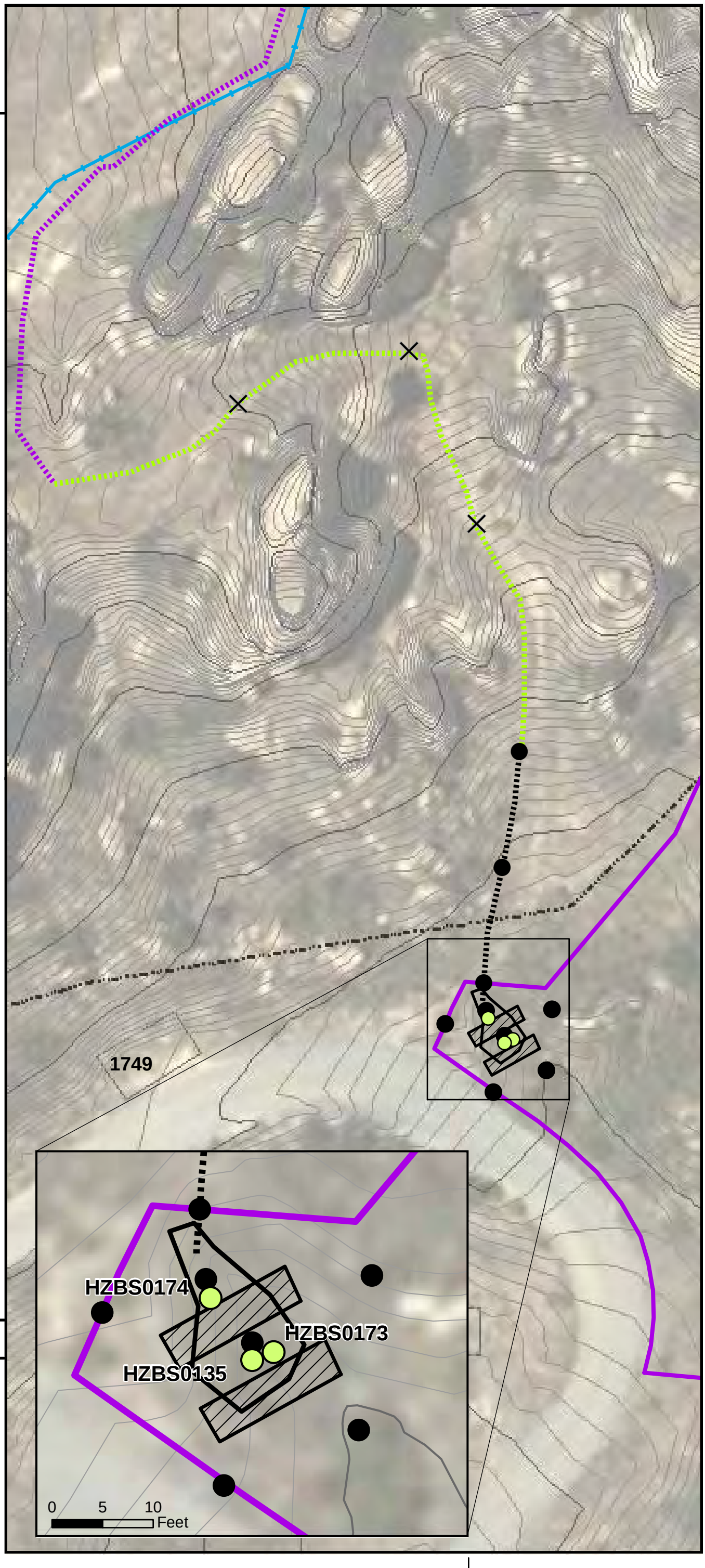
FIGURE 1

Printing Date: September 17, 2009 File: \\Uspas1netapp1\dei\rocketdyne gis\MasterGISFiles\ISRA_Projects\Surface Water Driver Maps\ISRA-Sept2009\SinkHoleWkpln\HVS2ASoilCollapseFig1Portrait.mxd

Confirmation Sampling Plan for the Soil Collapse Feature and Pipeline

Legend

- RFI Site Boundary
- Elevation Contour
- Surface Water Divide
- Removed Building or Structure
- Planned Test Pit
- Planned Confirmation Samples
- Data Gap Sample
- Former buried and above ground pipeline, removed prior to 2008
- Existing buried pipeline, to be removed in 2009
- Former buried and above ground pipeline, removed in October 2008
- Preliminary ISRA Evaluation Boundary
- Soil Collapse Feature
- Investigative Trench

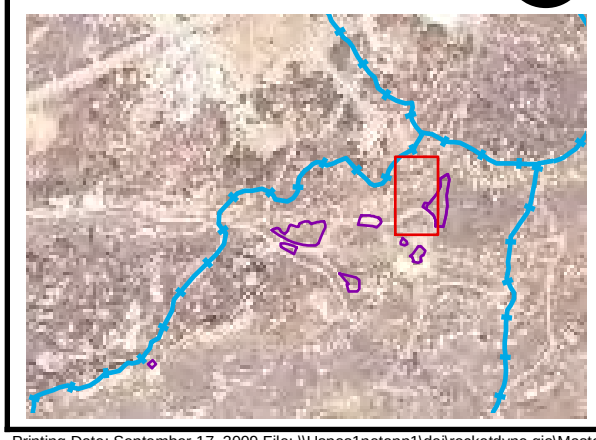


Note:

1. Aerial imagery from Google Earth, 2007
2. Topographic contours from Sage, July 2009
3. Pipeline is approximately 2 inches in diameter and is covered with a hand, non friable asbestos coal tar pipe wrap. A review of historical records suggests that the pipeline may have been a natural gas pipeline that was intalled at Happy Valley to service Building 1749.
4. Sample IDs shown represent ISRA data gap samples collected within the soil collapse feature.
5. Excavation of HVS-2A in the vicinity of the soil collapse feature will include removal of the collapsed soils to a depth of approximately 5 to 6 feet bgs or to bedrock if encountered at shallower depths.

Date: September 17, 2009

0 12.5 25 50 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 2

Printing Date: September 17, 2009 File: \\Uspas1netapp1\dei\rocketdyne gis\MasterGISFiles\ISRA_Projects\Surface Water Driver Maps\ISRA-Sept2009\091509\HVS2ASoilCollapse.mxd

TABLE 1
INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 008

SOIL COLLAPSE FEATURE AND PIPELINE SAMPLING RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

			Object Name:		HZBS0135	HZBS0173	HZBS0173	HZBS0174	HZBS0174	HZSO0001	--	--	--
			Sample Name:		HZBS0135S001	HZBS0173S001	HZBS0173S002	HZBS0174S001	HZBS0174S002	HZSO0001S001	SSFL-HV-090209-1	SSFL-HV-090209-2	SSFL-HV-090209-3
			Collection Date:		7/14/2009	8/20/2009	8/20/2009	8/20/2009	8/20/2009	9/3/2009	9/2/2009	9/2/2009	9/2/2009
			Sample Depth (feet bgs):		0.0 - 0.5	0.5 - 1.0	3.5 - 4.0	0.5 - 1.0	4.5 - 5.0	--	--	--	--
ANALYTE	**UNITS**	**Background [a]**	**Lowest Characterization RBSL [b]**	**RBSL Type**	**RESULT**	**RESULT [c]**	**RESULT [c]**	**RESULT [c]**	**RESULT [c]**	**RESULT [c]**	**RESULT [c]**	**RESULT [c]**	**RESULT [c]**
METALS													
Aluminum	mg/kg	20,000	--	--	--	8,910	6,180	8,500	9,680	--	--	--	--
Antimony	mg/kg	8.7	--	--	--	0.501 J	<0.352	<0.342	<0.343	--	--	--	--
Arsenic	mg/kg	15	--	--	--	4.43	2.89	3.56	2.47	--	--	--	--
Barium	mg/kg	140	--	--	--	70.7	63.8	67.4	40.3	--	--	--	--
Beryllium	mg/kg	1.1	--	--	--	0.593	0.506	0.599	0.489	--	--	--	--
Boron	mg/kg	--	--	--	--	<1.02	<1.07	<1.04	<1.04	--	--	--	--
Cadmium	mg/kg	1	--	--	--	0.315	0.22	0.185 J	0.0962 J	--	--	--	--
Chromium	mg/kg	36.8	--	--	--	16	13.9	18.6	16	--	--	--	--
Cobalt	mg/kg	21	--	--	--	4.82	3.8	4.39	3.12	--	--	--	--
Copper	mg/kg	29	--	--	--	8.09 E	7.75 E	5.29 E	3.87 E	--	--	--	--
Lead	mg/kg	34	--	--	12.8	10.9	8.32	9.9	4.48	--	--	--	--
Mercury	mg/kg	0.09	--	--	--	0.0172	0.0135	0.0112	<0.00368	--	--	--	--
Molybdenum	mg/kg	5.3	--	--	--	0.453	0.313	0.378	0.174 J	--	--	--	--
Nickel	mg/kg	29	--	--	--	9.62	7.65	13.2	6.15	--	--	--	--
Selenium	mg/kg	--	--	--	--	<0.514	<0.516	<0.523	<0.525	--	--	--	--
Silver	mg/kg	0.79	--	--	--	0.0966 J	0.0801 J	0.0544 J	<0.042	--	--	--	--
Thallium	mg/kg	0.46	--	--	--	0.25	0.22	0.217	0.175 J	--	--	--	--
Vanadium	mg/kg	62	--	--	--	26.1	22.9	25.7	24.5	--	--	--	--
Zinc	mg/kg	110	--	--	--	54.3	43.3	44.7	34.5	--	--	--	--
ENERGETICS													
1,3,5-Trinitrobenzene	µg/kg	--	--	--	--	<150	<150	<150	<150	--	--	--	--
2,4,6-Trinitrotoluene	µg/kg	--	--	--	--	<150	<150	<150	<150	--	--	--	--
2,4-Diamino-6-nitrotoluene	µg/kg	--	--	--	--	<2,000	<2,000	<2,000	<2,000	--	--	--	--
2,4-Dinitrotoluene	µg/kg	--	--	--	--	<150	<150	<150	<150	--	--	--	--
2,6-Diamino-4-nitrotoluene	µg/kg	--	--	--	--	<2,000	<2,000	<2,000	<2,000	--	--	--	--
2,6-Dinitrotoluene	µg/kg	--	--	--	--	<150	<150	<150	<150	--	--	--	--
2-Amino-4,6-dinitrotoluene	µg/kg	--	--	--	--	<150	<150	<150	<150	--	--	--	--
4-Amino-2,6-dinitrotoluene	µg/kg	--	--	--	--	<150	<150	<150	<150	--	--	--	--
HMX	µg/kg	--	--	--	--	<150	<150	<150	<150	--	--	--	--
m-Dinitrobenzene	µg/kg	--	--	--	--	<150	<150	<150	<150	--	--	--	--
m-Nitrotoluene	µg/kg	--	--	--	--	<150	<150	<150	<150	--	--	--	--
Nitrobenzene	µg/kg	--	--	--	--	<150	<150	<150	<150	--	--	--	--
Nitroglycerin	µg/kg	--	--	--	--	<1,000	<1,000	<1,000	<1,000	--	--	--	--
o-Nitrotoluene	µg/kg	--	--	--	--	<150	<150	<150	<150	--	--	--	--
PETN	µg/kg	--	--	--	--	500	500	500	500	--	--	--	--
p-Nitrotoluene	µg/kg	--	--	--	--	<150	<150	<150	<150	--	--	--	--
RDX	µg/kg	--	--	--	--	<150	<150	<150	<150	--	--	--	--
Tetryl	µg/kg	--	--	--	--	<150	<150	<150	<150	--	--	--	--
TPH													
EFH (C8 - C11)	mg/kg	--	--	--	--	<3.43	<17.7	<3.49	<3.5	--	--	--	--
EFH (C12 - C14)	mg/kg	--	--	--	--	<3.43	<17.7	<3.49	<3.5	--	--	--	--
EFH (C15 - C20)	mg/kg	--	1,400 (C11-C30)	HH	--	1.87 J	<17.7	1.29 J	<3.5	--	--	--	--
EFH (C21 - C30)	mg/kg	--	1,400 (C11-C30)	HH	--	21.8	128	8.08	1.44 J	--	--	--	--
ASBESTOS													

TABLE 1
INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 008

SOIL COLLAPSE FEATURE AND PIPELINE SAMPLING RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

			Object Name:		HZBS0135	HZBS0173	HZBS0173	HZBS0174	HZBS0174	HZSO0001	--	--	--
			Sample Name:		HZBS0135S001	HZBS0173S001	HZBS0173S002	HZBS0174S001	HZBS0174S002	HZSO0001S001	SSFL-HV-090209-1	SSFL-HV-090209-2	SSFL-HV-090209-3
			Collection Date:		7/14/2009	8/20/2009	8/20/2009	8/20/2009	8/20/2009	9/3/2009	9/2/2009	9/2/2009	9/2/2009
			Sample Depth (feet bgs):		0.0 - 0.5	0.5 - 1.0	3.5 - 4.0	0.5 - 1.0	4.5 - 5.0	--	--	--	--
ANALYTE	**UNITS**	**Background [a]**	**Lowest Characterization RBSL [b]**	**RBSL Type**	**RESULT**	**RESULT [c]**	**RESULT [c]**	**RESULT [c]**	**RESULT [c]**	**RESULT [c]**	**RESULT [c]**	**RESULT [c]**	**RESULT [c]**
Chrysotile [d]	%	--	--	--	--	ND	ND	ND	ND	--	20	20	20
PERCHLORATE													
Perchlorate	µg/L	--	--	--	--	<4	<40	<4	<4	--	--	--	--
PCBs													
Aroclor-1016	µg/kg	--	--	--	--	<3.42	<3.54	<3.49	<34.9	<2,880	--	--	--
Aroclor-1221	µg/kg	--	--	--	--	<3.42	<3.54	<3.49	<34.9	<2,880	--	--	--
Aroclor-1232	µg/kg	--	--	--	--	<3.42	<3.54	<3.49	<34.9	<2,880	--	--	--
Aroclor-1242	µg/kg	--	--	--	--	<3.42	<3.54	<3.49	<34.9	<2,880	--	--	--
Aroclor-1248	µg/kg	--	11	Eco	--	<3.42	<3.54	<3.49	274 P	<2,880	--	--	--
Aroclor-1254	µg/kg	--	78	Eco	--	4.9	<3.54	1.7 J	222	13,800	--	--	--
Aroclor-1260	µg/kg	--	78	Eco	--	4.3	<3.54	1.7 J	91.5 P	<2,880	--	--	--
SVOCs													
1-Methylnaphthalene	µg/kg	--	--	--	--	<17.1	<70.9	<17.4	<17.5	--	--	--	--
2-Methylnaphthalene	µg/kg	--	--	--	--	<17.1	<70.9	<17.4	<17.5	--	--	--	--
Acenaphthene	µg/kg	--	--	--	--	<17.1	<70.9	<17.4	<17.5	--	--	--	--
Acenaphthylene	µg/kg	--	--	--	--	<17.1	<70.9	<17.4	<17.5	--	--	--	--
Anthracene	µg/kg	--	--	--	--	<17.1	<70.9	<17.4	<17.5	--	--	--	--
Benzo(a)anthracene	µg/kg	--	--	--	--	<17.1	<70.9	<17.4	<17.5	--	--	--	--
Benzo(a)pyrene	µg/kg	--	--	--	--	<17.1	<70.9	<17.4	<17.5	--	--	--	--
Benzo(b)fluoranthene	µg/kg	--	--	--	--	<17.1	<70.9	<17.4	<17.5	--	--	--	--
Benzo(ghi)perylene	µg/kg	--	--	--	--	<17.1	<70.9	<17.4	<17.5	--	--	--	--
Benzo(k)fluoranthene	µg/kg	--	--	--	--	<17.1	<70.9	<17.4	<17.5	--	--	--	--
bis(2-Ethylhexyl)phthalate	µg/kg	--	4,900	Eco	--	16.8 BJ	<70.9	12.2 BJ	12.2 BJ	--	--	--	--
Butyl benzyl phthalate	µg/kg	--	--	--	--	<17.1	<70.9	<17.4	<17.5	--	--	--	--
Chrysene	µg/kg	--	--	--	--	<17.1	<70.9	<17.4	<17.5	--	--	--	--
Dibenzo(a,h)anthracene	µg/kg	--	--	--	--	<17.1	<70.9	<17.4	<17.5	--	--	--	--
Diethylphthalate	µg/kg	--	--	--	--	<17.1	<70.9	<17.4	<17.5	--	--	--	--
Dimethylphthalate	µg/kg	--	--	--	--	<17.1	<70.9	<17.4	<17.5	--	--	--	--
Di-n-butylphthalate	µg/kg	--	--	--	--	<17.1	<70.9	<17.4	<17.5	--	--	--	--
Di-n-octyl-phthalate	µg/kg	--	--	--	--	<17.1	<70.9	<17.4	<17.5	--	--	--	--
Fluoranthene	µg/kg	--	--	--	--	<17.1	<70.9	<17.4	<17.5	--	--	--	--
Fluorene	µg/kg	--	--	--	--	<17.1	<70.9	<17.4	<17.5	--	--	--	--
Indeno(1,2,3-cd)pyrene	µg/kg	--	--	--	--	<17.1	<70.9	<17.4	<17.5	--	--	--	--
Naphthalene	µg/kg	--	--	--	--	<17.1	<70.9	<17.4	<17.5	--	--	--	--
n-Nitrosodimethylamine	µg/kg	--	--	--	--	<17.1	<70.9	<17.4	<17.5	--	--	--	--
Phenanthrene	µg/kg	--	--	--	--	<17.1	<70.9	<17.4	<17.5	--	--	--	--
Pyrene	µg/kg	--	--	--	--	<17.1	<70.9	<17.4	<17.5	--	--	--	--
VOCs													
1,1,1,2-Tetrachloroethane	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
1,1,1-Trichloroethane	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
1,1,2,2-Tetrachloroethane	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/kg	--	--	--	--	<9.9	<7.2	<5.96	<5.47	--	--	--	--
1,1,2-Trichloroethane	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
1,1-Dichloroethane	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
1,1-Dichloroethene	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--

TABLE 1
INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 008

SOIL COLLAPSE FEATURE AND PIPELINE SAMPLING RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

			Object Name:		HZBS0135	HZBS0173	HZBS0173	HZBS0174	HZBS0174	HZSO0001	--	--	--
			Sample Name:		HZBS0135S001	HZBS0173S001	HZBS0173S002	HZBS0174S001	HZBS0174S002	HZSO0001S001	SSFL-HV-090209-1	SSFL-HV-090209-2	SSFL-HV-090209-3
			Collection Date:		7/14/2009	8/20/2009	8/20/2009	8/20/2009	8/20/2009	9/3/2009	9/2/2009	9/2/2009	9/2/2009
			Sample Depth (feet bgs):		0.0 - 0.5	0.5 - 1.0	3.5 - 4.0	0.5 - 1.0	4.5 - 5.0	--	--	--	--
ANALYTE	**UNITS**	**Background [a]**	**Lowest Characterization RBSL [b]**	**RBSL Type**	**RESULT**	**RESULT [c]**	**RESULT [c]**	**RESULT [c]**	**RESULT [c]**	**RESULT [c]**	**RESULT [c]**	**RESULT [c]**	**RESULT [c]**
1,1-Dichloropropene	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
1,2,3-Trichlorobenzene	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
1,2,3-Trichloropropane	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
1,2,4-Trichlorobenzene	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
1,2,4-Trimethylbenzene	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
1,2-Dibromo-3-chloropropane	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
1,2-Dibromoethane (EDB)	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
1,2-Dichlorobenzene	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
1,2-Dichloroethane	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
1,2-Dichloropropane	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
1,3,5-Trimethylbenzene	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
1,3-Dichlorobenzene	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
1,3-Dichloropropane	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
1,4-Dichlorobenzene	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
2,2-Dichloropropane	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
2-Butanone (MEK)	µg/kg	--	--	--	--	<9.9	<7.2	<5.96	<5.47	--	--	--	--
2-Chloro-1,1,1-trifluoroethane	µg/kg	--	--	--	--	<19.8	<14.4	<11.9	<10.9	--	--	--	--
2-Chloroethyl vinyl ether	µg/kg	--	--	--	--	<9.9	<7.2	<5.96	<5.47	--	--	--	--
2-Chlorotoluene	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
2-Hexanone	µg/kg	--	--	--	--	<9.9	<7.2	<5.96	<5.47	--	--	--	--
4-Chlorotoluene	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
4-Methyl-2-pentanone (MIBK)	µg/kg	--	--	--	--	<9.9	<7.2	<5.96	<5.47	--	--	--	--
Acetone	µg/kg	--	43,000	Eco	--	<9.9	39.9	7.73	<5.47	--	--	--	--
Benzene	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
Bromobenzene	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
Bromochloromethane	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
Bromodichloromethane	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
Bromoform	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
Bromomethane	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
Carbon tetrachloride	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
Chlorobenzene	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
Chloroethane	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
Chloroform	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
Chloromethane	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
Chlorotrifluoroethylene	µg/kg	--	--	--	--	<19.8	<14.4	<11.9	<10.9	--	--	--	--
cis-1,2-Dichloroethene	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
cis-1,3-Dichloropropene	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
Dibromochloromethane	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
Dibromomethane	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
Dichlorodifluoromethane	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
Ethylbenzene	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
Hexachlorobutadiene	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
Isopropylbenzene	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
m,p-Xylenes	µg/kg	--	--	--	--	<3.96	<2.88	<2.38	<2.19	--	--	--	--
Methylene chloride	µg/kg	--	--	--	--	<9.9	<7.2	<5.96	<5.47	--	--	--	--
Methyl-tert-butyl Ether (MTBE)	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--

TABLE 1
INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 008

SOIL COLLAPSE FEATURE AND PIPELINE SAMPLING RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

			Object Name:		HZBS0135	HZBS0173	HZBS0173	HZBS0174	HZBS0174	HZSO0001	--	--	--
			Sample Name:		HZBS0135S001	HZBS0173S001	HZBS0173S002	HZBS0174S001	HZBS0174S002	HZSO0001S001	SSFL-HV-090209-1	SSFL-HV-090209-2	SSFL-HV-090209-3
			Collection Date:		7/14/2009	8/20/2009	8/20/2009	8/20/2009	8/20/2009	9/3/2009	9/2/2009	9/2/2009	9/2/2009
			Sample Depth (feet bgs):		0.0 - 0.5	0.5 - 1.0	3.5 - 4.0	0.5 - 1.0	4.5 - 5.0	--	--	--	--
ANALYTE	**UNITS**	**Background [a]**	**Lowest Characterization RBSL [b]**	**RBSL Type**	**RESULT**	**RESULT [c]**	**RESULT [c]**	**RESULT [c]**	**RESULT [c]**	**RESULT [c]**	**RESULT [c]**	**RESULT [c]**	**RESULT [c]**
n-Butylbenzene	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
n-Propylbenzene	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
o-Xylene	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
p-Isopropyltoluene	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
sec-Butylbenzene	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
Styrene	µg/kg	--	7,200	HH	--	0.858 J	0.724 J	0.471 J	0.371 J	--	--	--	--
tert-Butylbenzene	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
Tetrachloroethene	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
Toluene	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
trans-1,2-Dichloroethene	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
trans-1,3-Dichloropropene	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
Trichloroethene	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
Trichlorofluoromethane	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--
Vinyl chloride	µg/kg	--	--	--	--	<1.98	<1.44	<1.19	<1.09	--	--	--	--

NOTES

[a] Soil background values from MWH (September 2005) Soil Background Report, Santa Susana Field Laboratory, Ventura County, California.

[b] RBSL values provided to DTSC in March 2009, Interim Final Human Health and Ecological Risk-Based Screening Levels (RBSLs) for Use in RCRA Facility Investigations (RFIs) at the Santa Susana Field Laboratory (SSFL), California. RBSLs shown only for detected analytes.

[c] Results as reported by laboratory; data will not be excvated because soil is planned for excavation.

[d] Asbestos analysis by EPA Method 600/M4-82-020. The material was determined to be non-friable by Pacific Health and Safety.

E - the concentration exceeds the the instrument calibration range

J - the result is estimated (reported between the MDL and RL)

P - the concentrations between the the primary and confirmation columns/detectors differ by > 40%

Perchlorate was analyzed by the 314.0-DI WET method and is therefore reported in units of µg/L.

ACRONYMS

-- - not applicable, not analyzed
Eco - Ecological RBSL
EFH - extractable fuel hydrocarbons
feet bgs - feet below ground surface
HH - Human Health RBSL
MDL - method detection limit
mg/kg - milligrams per kilogram
ND - not detected
PCB - polychlorinated biphenyl
RBSL - risk-based screening level
RL - reporting limit
SVOC - semi-volatile organic compound
TPH - total petroleum hydrocarbons
VOC - volatile organic compound
µg/kg - micrograms per kilogram
µg/L - micrograms per liter

From: sslaten@nasa.gov
Sent: Friday, September 18, 2009 6:14 AM
To: tegoscue@waterboards.ca.gov
Cc: richard.s.lainhart@usace.army.mil; Beth.Vaughan@CH2M.com
Subject: additional removals
Attachments: Pages_from_Letter_Amendment-attachmentonly.pdf

Ms. Egoscue:

Implementation of ongoing remediation or site maintenance activities at SSFL will take our contractor in close proximity to two other future target ISRA areas, termed Preliminary Evaluation Areas (PEAs) in the Work Plan. These generalized PEAs are shown on Figure 1-7 (attached) of the Work Plan submittal, and are identified as PEA-A2LF-1, and PEA-A2LF-3. NASA would like to also include ISRA excavation activities in some of these areas before the rainy season begins.

Supplemental characterization of surface soil contamination in these two PEAs has continued since submittal of the Work Plan. Figures 1 and 2 (attached) show the sample results for these two PEAs, as well as the proposed delineation of the ISRA areas for excavation. The ISRA contaminants of concern that drove the delineations involved dioxins at ISRA A2LF-1 (Figure 1) and lead at ISRA A2LF-3 (Figure 2). Laboratory analytical data for these areas are summarized in attachments. Also attached is a supplemental Table 4-5 (similar tabulation to that included the Work Plan) that summarizes pertinent information about these two areas.

Regarding the ISRA AL2F-3 area (Figure 2), soils will be removed in the indicated areas to the south along the drainage feature, as part of culvert-related work that will be conducted at this location. Other portions of this ISRA area will be addressed by NASA at a future date, as part of remaining Outfall 009 ISRA activities within NASA properties at SSFL.

The additional work will be conducted in general accordance with the Health and Safety Plan, the Soil Management Plan, and the Transportation Plan that have been developed for implementation of the ISRA work. Two updated drawings to the Storm Water Pollution Prevention Plan (Figures SWPPP-1 and SWPPP-2) are also attached that show the approximate locations for BMP installations in the two additional areas.

NASA would appreciate the Regional Board's approval for including the A2LF-1 and a portion of the A2LF-3 ISRA areas into the upcoming ISRA activities that Boeing as contractor to NASA will soon be implementing. We understand that this expedient request may be inconvenient; however, NASA would greatly appreciate the Regional Board's cooperation in this regard.

We look forward to hearing from you soon.

Steve Slaten

(818) 393-6683 (office) or (818) 235-4015 (cell)

NASA SSFL Site Manager

lori.n.blair@boeing.com bill.mcelroy@ch2m.com rbrausch@dtsc.ca.gov gabrams@dtsc.ca.gov bking@dtsc.ca.gov cowens@waterboards.ca.gov praferty@waterboards.ca.gov richard.s.lainhart@usace.army.mil

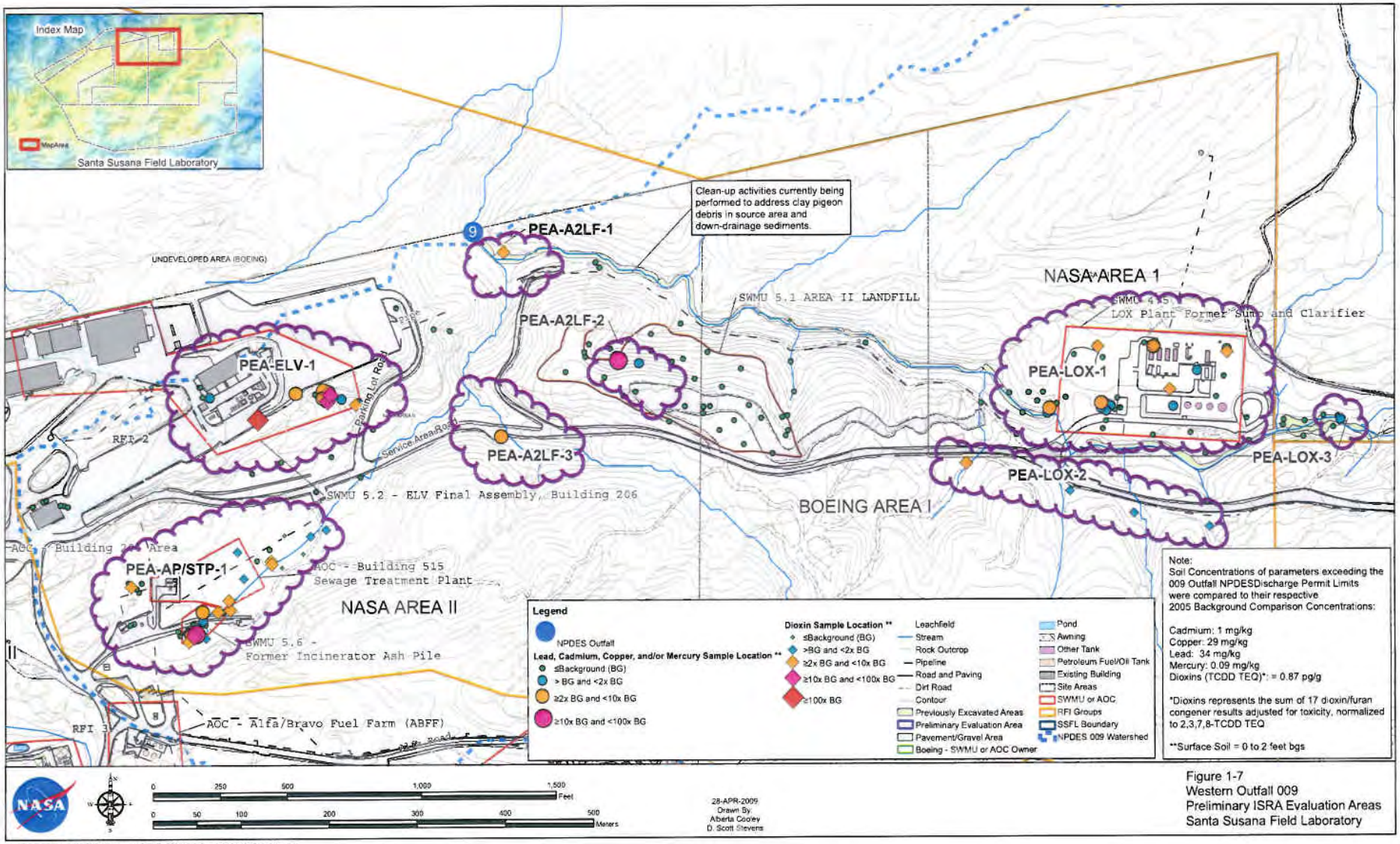
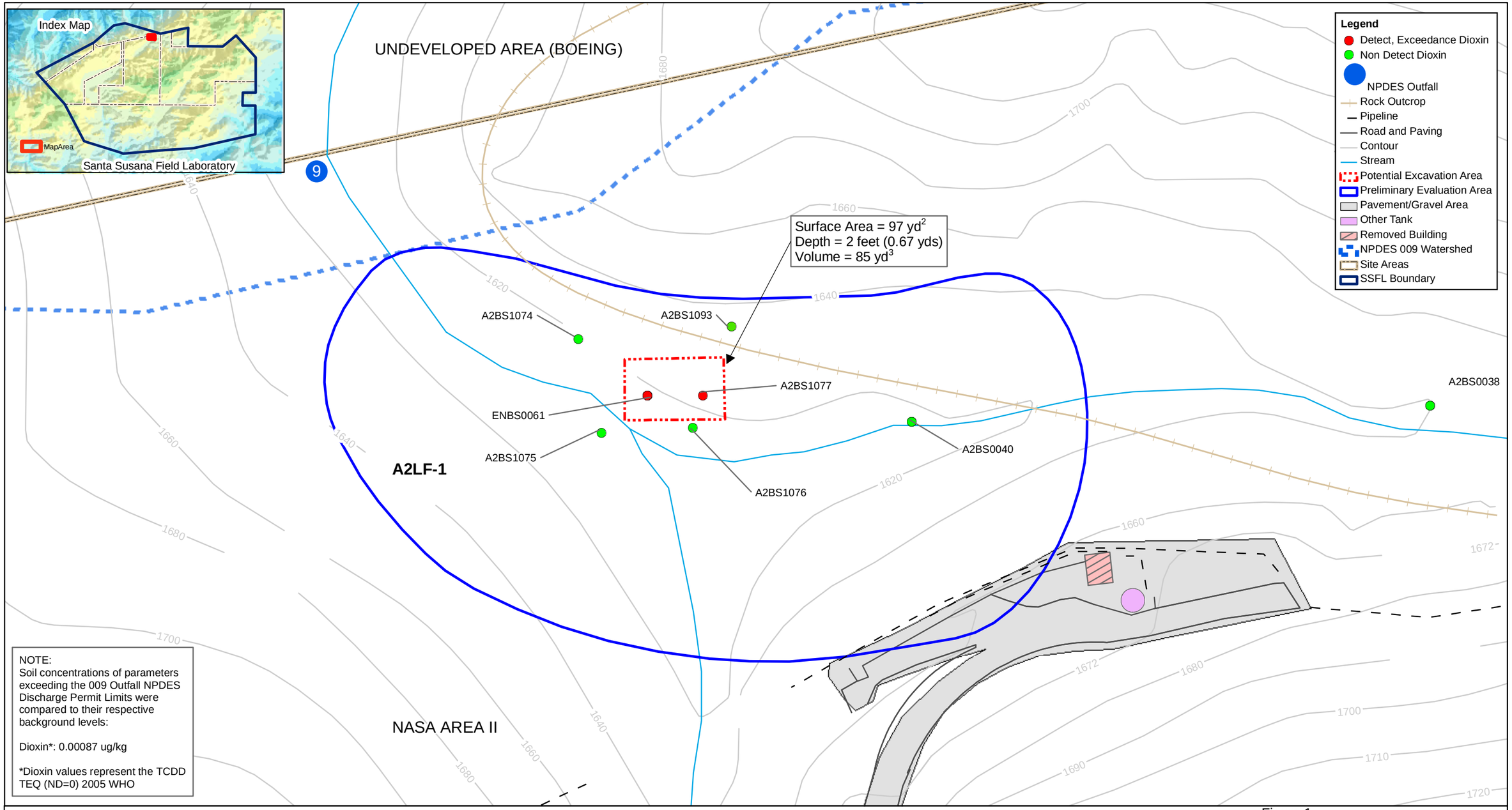


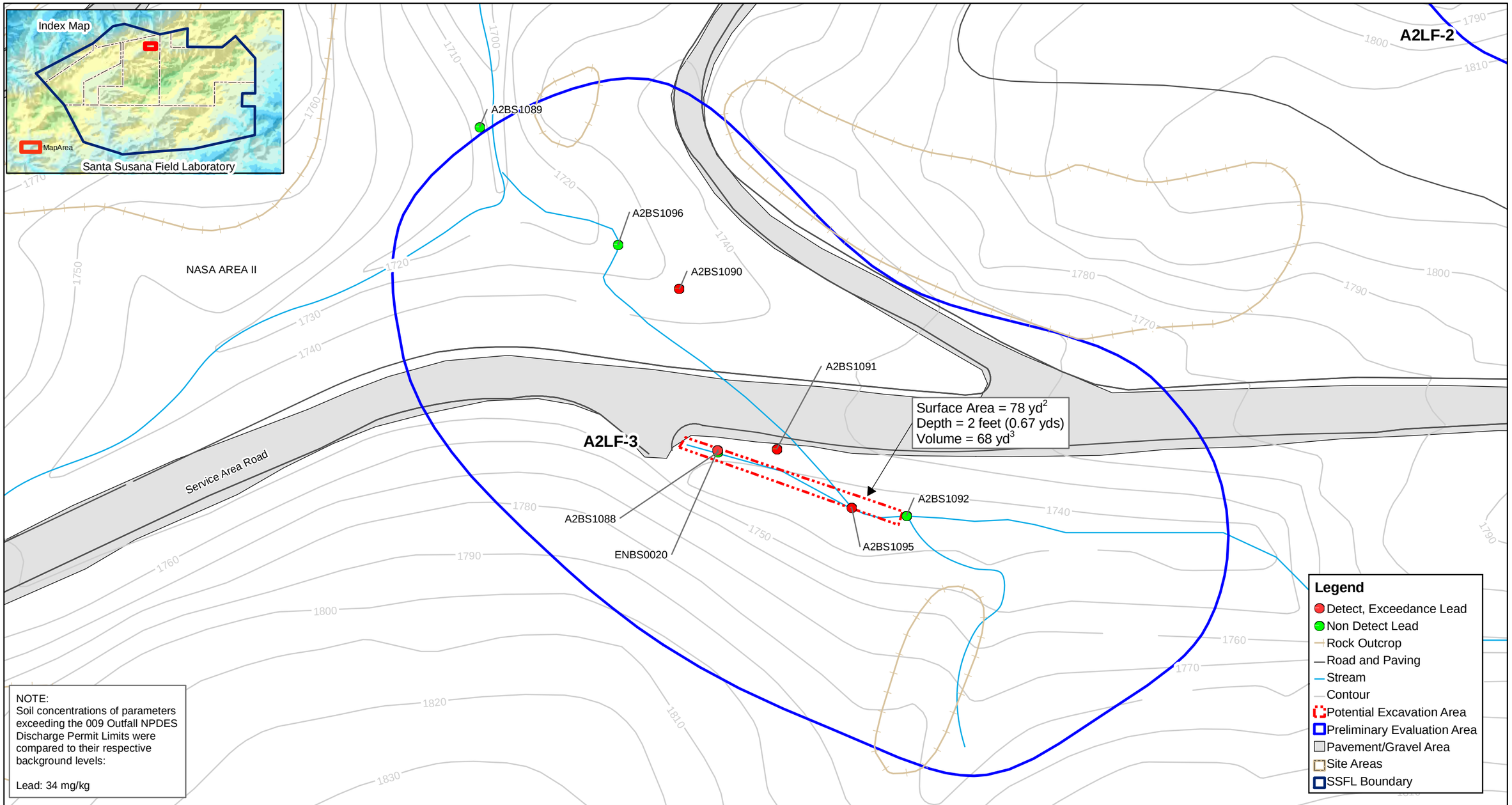
Figure 1-7
Western Outfall 009
Preliminary ISRA Evaluation Areas
Santa Susana Field Laboratory



28-AUG-2009
Drawn By:
Alberta Cooley
D. Scott Stevens

Figure 1
A2LF-1 Proposed Excavation Area
Interim Source Removal Action
Western Outfall 009
NASA, Santa Susana Field Laboratory

Map Document: (O:\NASA\SSFL\maps\NPDES_009\A2LF1_PEA.mxd)



1-SEPT-2009
Drawn By:
Alberta Cooley
D. Scott Stevens

Figure 2
A2LF- 3 Proposed Excavation Area
Interim Source Removal Action
Western Outfall 009
NASA, Santa Susana Field Laboratory

Map Document: (O:\NASA\SSFL\maps\NPDES_009\A2LF3_PEA.mxd)

Sample ID	Sample Date	Sample Depth	Refusal?	Soil Type	Results in µg/kg Dioxin*
A2BS0040S001	2-Jan-07	0.1 - 0.5'	Unknown	Unknown	0.00024
A2BS1074S001	2-Apr-09	0 - 0.5'	Yes - 1.5'. Target TD was 5'.	Silty Sand (SM)	0.00065
A2BS1075S001	2-Apr-09	0 - 0.5'	Yes - 0.5'. Target TD was 5'.	Silty Sand (SM)	0.00029
A2BS1076S001	2-Apr-09	0 - 0.5'	Yes - 1.3'. Target TD was 5'.	Poorly Graded Sand with Silt (SP-SM)	0.00053
A2BS1077S001	2-Apr-09	2 - 2.5'	Yes - 2.5'. Target TD was 6'.	Silty Sand (SM)	0.0080
A2BS1093S001	16-Jun-09	0 - 0.5'	No	Silty Sand (SM)	0.00032
ENBS0061S001	16-Sep-08	0.25 - 0.75'	Unknown	Unknown	0.0025
2005 Background Comparison Concentration					***0.00087***

Notes:

Sample exceeds the 2005 background comparison concentration (MWH, 2005)

* - dioxin values represent the TCDD toxicity equivalent (TEQ) (ND=0) 2005 World Health Organization (WHO)

A2LF-3 Analytial Results
(Page 1 of 1)

Sample ID	Sample Date	Sample Depth	Refusal?	Soil Type	Results in mg/kg			
					Cadmium	Copper	Lead	Mercury
A2BS1088S001	3-Apr-09	3 - 3.5'	Yes - 3.5'. Target TD was 5'.	Sand (SP)	--	--	10.2	--
A2BS1089S001	2-Apr-09	0 - 0.25'	Yes - 1'. Target TD was 5'.	Gravelly Sand (GP)	--	--	8.44	--
A2BS1090S001	2-Apr-09	0 - 0.25'	No	Silty Sand (SM)	--	--	67.6	--
A2BS1090S002	2-Apr-09	4.75 - 5'	No	Clayey Sand (SC)	--	--	12.1	--
A2BS1091S001	3-Apr-09	0 - 0.25'	No	Silty Sand (SM)	--	--	33.3	--
A2BS1091S002	3-Apr-09	4.75 - 5'	No	Silty Sand (SM)	--	--	241	--
A2BS1092S001	2-Apr-09	0 - 0.25'	No	Silty Sand (SM)	--	--	11.7	--
A2BS1092S002	2-Apr-09	4.75 - 5'	No	Sand (SP)	--	--	2.9	--
A2BS1095S001	16-Jun-09	0 - 0.5'	No	Sandy Silt (ML)	--	--	338	--
A2BS1095S002	16-Jun-09	4.5 - 5'	No	Poorly Graded Sand (SP)	--	--	25.6	--
A2BS1096S001	16-Jun-09	0 - 0.25'	No	Sandy Silt (ML)	--	--	16	--
ENBS0020S001	20-Aug-08	0.5 - 0.9'	Unknown	Unknown	0.25	8.7	44.8	0.013
ENBS0020S001SP	20-Aug-08	0.5 - 0.9'	Unknown	Unknown	0.27	11	140	0.023 J
2005 Background Comparison Concentration					***1***	***29***	***34***	***0.09***

Notes:

Sample Exceeds the 2005 Background Comparison Concentration (MWH, 2005)

J - Result is estimated

mg/kg - milligrams per kilogram

"--" - not analyzed

August 2009

Supplemental Table 4-5
Outfall 009 ISRA Area Summary
A2LF-1 and A2LF-3 ISRA Areas

Site Name	ISRA COCs Exceeding Background Comparison Concentrations[1]	Surface Area, Approximate Depth of Exceedance, and *Ex Situ* Volume Estimate[2]	Remedial Action	ISRA Soil Remediation Goals
A2LF-1	**Dioxins**	**SA = 97 yd^2** **Depth = 2 feet (0.67 yds)** **Volume = 85 cy**	**Excavation**	**Dioxins = 3 pg/g**
A2LF-3	**Lead**	**SA = 78 yd^2** **Depth = 2 feet (0.67 yds)** **Volume = 68 cy**	**Excavation**	**Lead = 34 mg/kg**

General Notes:

1 - Background comparison concentration (MWH, 2005):
Lead: 34 mg/kg
Dioxin: 0.87 pg/g

2 - Ex-Situ Volume Assumes 30% fluff of *ex situ* soils

"--" - not applicable
cy - cubic yards
mg/kg - milligrams per kilogram
pg/g - picograms per gram
SA - Surface Area
yds - yards
yd^2 - square yards

Legend

Proposed Excavation Area

Potential Excavation Area

Building

NPDES Outfall

Surface Water Drainage

Storm Water Flow Direction

0 FEET 120

SCALE

Outfall 009

A2LF-1

A2LF-3

ELV-1C

ELV-1D

Outfall 009 Stockpile Staging Area

Parking Lot #2 Rd

CTL II Rd.

Concrete Vault

Clarifier

Parking

202

203

206

231

232

932

207

MH

1850 1820 1740 1780 1640 1680 1720 1690 1710 1750 1730 1860 1880 1900 1830 1810 1800 1770 1760 1890

FILE: C:\DM\UEBKE\BOEING\SANTA SUSANA\SWPP\ELV EXCAVATION AREAS 9 11 09

MWH

SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

PROPOSED EXCAVATIONS AND STOCKPILE STAGING AREA FOR ELV AREA (OUTFALL 009)

FIGURE SWPPP-1

Legend

- Proposed Excavation Area
- Potential Excavation Area
- Building
- NPDES Outfall
- Surface Water Drainage
- SE-1 Silt Fence
- SE-9 Straw Bale Barrier
- Gravel Berm Bags
- TC-1 Stabilized Construction Entrance

Note:
If stockpiling occurs at or near excavation areas, place siltfence or gravel bags downgradient and upgradient of stockpile to minimize run-off and run-on respectively.

Compact soil at end of excavation activities.

Area ID	ISRA Constituents of Concern Exceeding Backgound Comparison Concentration in Soil
ELV-1C	Dioxins
ELV-1D	Cadmium, Copper, Lead, Mercury, Dioxins
A2LF-1	Dioxins
A2LF-3	Lead

0 FEET 120
SCALE

Outfall 009

A2LF-1

ELV-1C

ELV-1D

A2LF-3

Use NS-8, NS-9, NS-10, WM-3, WM-4, WM-5, WM-6, & WM-9 when working in or around excavation areas

Use WM-3 and WE-1 for Any Stockpiles

Outfall 009 Stockpile Staging Area

202 203 932 206 231 232 207

Clarifier

Parking

CTL II Rd.

Concrete Vault

Parking Lot #2 Rd

MH

MWH

SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

BMP PLAN
ELV-1 AREA
(OUTFALL 009)

FIGURE SWPPP-2

FILE: C:\DM\UEBKE\BOEING\SANTA SUSANA\SWPP\ELV EXCAVATION AREAS 9 11 09

Glenn Jaffe

From: Szijj, Antal J SPL [Antal.J.Szijj@usace.army.mil]
Sent: Friday, September 25, 2009 3:03 PM
To: Glenn Jaffe
Subject: RE: ISRA permit

This email and attachments should suffice. Based on what you've shown, the work proposed at site A2LF-1 is outside the Corps' geographic jurisdiction and no permit would be required. If you need a more formal letter from us I can provide it, but it may take a couple of weeks. I'm on jury duty at the moment and have scheduled leave (hopefully) for Oct 2-9.

Antal

Antal Szijj
U.S. Army Corps of Engineers, Los Angeles District Regulatory Division, Ventura Field Office
2151 Alessandro Dr., Suite 110
Ventura, CA 93001
(805) 585-2147, fax (805) 585-2154
antal.j.szijj@usace.army.mil
http://www.spl.usace.army.mil/regulatory/

-----Original Message-----
From: Glenn Jaffe [mailto:Glenn.R.Jaffe@us.mwhglobal.com]
Sent: Tuesday, September 22, 2009 10:42 AM
To: Szijj, Antal J SPL
Subject: RE: ISRA permit

Antal, hope all is well. If you recall, based on the email below and the attached letter from the ACOE, ACOE reviewed ISRA locations and work scope.
Due to additional sampling and analyses of sediment samples, Boeing has further refined work locations and one of the locations that was previously thought to be in ACOE geographic jurisdiction, is not. The location, A2LF-1, as shown on the attached figure, is not in the drainage, but rather outside the drainage. The proposed ISRA excavation will not be performed in the drainage, and fill material will not be placed in the drainage as a result of or subsequent to excavation activities.

Boeing would like to perform field work in this area before the rainy starts in a couple of months. Also, Boeing is speaking with the RWQCB and providing this same information to them,

Might there be some efficient means of acknowledging this and providing a very brief letter stating this area does not require ACOE involvement. Boeing can type this up more formally if needed for you to respond, but I was trying to keep it simple and efficient.

Let me know your thoughts and we can go from there.

-----Original Message-----

From: Szijj, Antal J SPL [mailto:Antal.J.Szijj@usace.army.mil]
Sent: Tuesday, August 25, 2009 9:10 AM
To: Glenn Jaffe
Subject: ISRA permit

Hi Glenn,
Here's the NWP for the water board-approved sites. Basically DRG-1. The others are called out as being outside our geographic jurisdiction. The remaining sites in waters will await further refinement to the scope of work.

Antal

Antal Szijj
U.S. Army Corps of Engineers, Los Angeles District Regulatory Division, Ventura Field Office
2151 Alessandro Dr., Suite 110
Ventura, CA 93001
(805) 585-2147, fax (805) 585-2154
antal.j.szijj@usace.army.mil
http://www.spl.usace.army.mil/regulatory/

-----Original Message-----
From: Antal.J.Szijj@usace.army.mil [mailto:Antal.J.Szijj@usace.army.mil]
Sent: Tuesday, August 25, 2009 9:05 AM
To: Szijj, Antal J SPL
Subject: Scanned Document

Please see the attached document.

DEPARTMENT OF THE ARMY
Corps of Engineers, Ventura Field Office
2151 Alessandro Drive, Suite 110
Ventura, CA 93001

August 25, 2009

REPLY TO
ATTENTION OF:
Office of the Chief
Regulatory Division

DEPARTMENT OF THE ARMY NATIONWIDE PERMIT AUTHORIZATION

Thomas Gallacher
The Boeing Company
5800 Woolsey Canyon Road, MC 055-T487
Canoga Park, CA 91304-1148

Dear Mr. Gallacher:

This is in reply to your application (File No. SPL-2009-00412-AJS) dated May 22, 2009 and subsequent submittals, for a Department of the Army Permit to discharge fill into waters of the U.S., in association with the Boeing SSFL Interim Source Removal Action (ISRA). The proposed includes removal of contaminated sediments within the "Outfall 008" and "Outfall 009" sub-watersheds at the Santa Susana Field Lab in Ventura County California.

The majority of the sites identified in your application are outside the geographic scope of the Corps' regulatory jurisdiction under Section 404 of the Clean Water Act. This includes the following locations: HVS-1, HVS-2A, HVS-2B, HVS-2C, HVS-3, CYN-1, PEA-A1LF-1, PEA-A1LF-2, PEA-IEL-1, PEA-ELV-1, PEA-A2LF-2, PEA-A2LF-3, and PEA-LOX-2. Activities pursuant to the ISRA at these locations do not require Corps authorization to proceed, provided the limits of surface disturbance as described in your application and accompanying drawings are adhered to. The remaining locations within the Outfall 009 sub-watershed (PEA-AP/STP-1, PEA-A2LF-1, PEA-LOX-1, PEA-LOX-3, and PEA-B1-1) are within the Corps' geographic jurisdiction and will require authorization for any ISRA activities involving a discharge of fill material. At this time we are unable to authorize ISRA work at these locations pending a refined scope of work. Within the Outfall 008 sub-watershed one location, DRG-1 is within the Corps geographic jurisdiction.

Based on the information you have provided, the Corps of Engineers has determined that your proposed activity at the DRG-1 location complies with the enclosed terms and conditions of Nationwide Permit No. 38, *Cleanup of Hazardous and Toxic Waste*, as described in enclosure 1.

Specifically, you are authorized to excavate contaminated soils and a stable channel configuration within a maximum of 0.1 acre of waters of the U.S. Temporary installation of hay bales or similar erosion control measures may also be installed upon removal of contaminated sediments.

This letter of verification is valid through August 24, 2011. All nationwide permits expire on March 18, 2012. It is incumbent upon you to remain informed of changes to the nationwide permits. If the Corps of Engineers modifies, reissues, or revokes any nationwide permit at an earlier date, we will issue a public notice announcing the changes.

A nationwide permit does not grant any property rights or exclusive privileges. Also, it does not authorize any injury to the property or rights of others or authorize interference with any existing or proposed Federal project. Furthermore, it does not obviate the need to obtain other Federal, state, or local authorizations required by law.

Thank you for participating in our regulatory program. If you have any questions, please contact me at 805-585-2147 or via e-mail at Antal.J.Szijj@usace.army.mil.

Sincerely,

Antal Szijj
Senior Project Manager
North Coast Branch

Enclosure

cf: Glenn Jaffe, MWH

Legend

- Proposed Excavation Area
- Potential Excavation Area
- Building
- NPDES Outfall
- Surface Water Drainage
- SE-1 Silt Fence
- SE-9 Straw Bale Barrier
- Gravel Berm Bags
- TC-1 Stabilized Construction Entrance

Note:
If stockpiling occurs at or near excavation areas, place siltfence or gravel bags downgradient and upgradient of stockpile to minimize run-off and run-on respectively.

Compact soil at end of excavation activities.

Area ID	ISRA Constituents of Concern Exceeding Backgound Comparison Concentration in Soil
ELV-1C	Dioxins
ELV-1D	Cadmium, Copper, Lead, Mercury, Dioxins
A2LF-1	Dioxins
A2LF-3	Lead

0 FEET 120
SCALE

Outfall 009

A2LF-1

ELV-1C

ELV-1D

A2LF-3

Use NS-8, NS-9, NS-10, WM-3, WM-4, WM-5, WM-6, & WM-9 when working in or around excavation areas

Use WM-3 and WE-1 for Any Stockpiles

Outfall 009 Stockpile Staging Area

202 203 932 206 231 232 207

Clarifier

Parking

CTL II Rd.

Concrete Vault

Parking Lot #2 Rd

MH

MWH

SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA

BMP PLAN
ELV-1 AREA
(OUTFALL 009)

FIGURE SWPPP-2

FILE: C:\DM\UEBKE\BOEING\SANTA SUSANA\SWPP\ELV EXCAVATION AREAS 9 11 09

California Regional Water Quality Control Board

Los Angeles Region

Recipient of the 2001 *Environmental Leadership Award* from Keep California Beautiful

Linda S. Adams
Agency Secretary

320 W. 4th Street, Suite 200, Los Angeles, California 90013
Phone (213) 576-6600 FAX (213) 576-6640 - Internet Address: http://www.waterboards.ca.gov/losangeles

Arnold Schwarzenegger
Governor

September 29, 2009

Mr. Arthur Lenox
Environmental Remediation
The Boeing Company
Santa Susana Field Laboratory
5800 Woolsey Canyon Road
Canoga Park, CA 91304-1148

Dear Mr. Lenox:

APPROVAL OF HVS-2A SOIL COLLAPSE FEATURE AND PIPELINE REMOVAL SUMMARY AND PLAN, LETTER AMENDMENT TO THE FINAL INTERIM SOURCE REMOVAL ACTION (ISRA) WORK PLAN, CALIFORNIA WATER CODE SECTION 13304 ORDER (NPDES NO. CA0001309, CI NO. 6027, SCP NO. 1111, SITE ID NO. 2040109)

Los Angeles Regional Water Quality Control Board (Regional Board) staff has reviewed the September 18, 2009 document submitted with the above referenced subject. The above referenced document, prepared by MWH, was received by the Regional Board on September 22, 2009.

Regional Board staff has reviewed the amendment and the Collapse Feature and Pipeline Removal Summary and Plan is hereby approved, subject to the September 28, 2009, approval from Department of Toxic Substances Control. During the execution of this work plan amendment, Regional Board staff will be onsite to observe the activities and to collect confirmation samples both within the feature area and along the footprint of the pipeline.

If you have any questions regarding this activity, please telephone Mr. Peter Raftery at (213) 576-6724 or Cassandra Owens at (213) 576-6750.

Sincerely,

Samuel Unger

Samuel Unger
Assistant Executive Officer

Enclosure: September 28, 2009 Letter from Paul Carpenter, at Department of Toxic Substance Control

Mailing List

Mr. Rick Brausch, California Department of Toxic Substances Control
Ms. Tracy Egoscue, Los Angeles Regional Water Quality Control Board
Mr. Jim Pappas, Department of Toxic Substances Control
Mr. Gerard Abrams, Department of Toxic Substances Control
Mr. Buck King, Department of Toxic Substances Control
Mr. Tom Skaug, Department of Toxic Substances Control
Mr. Peter Raftery, Los Angeles Regional Water Quality Control Board
Ms. Cassandra Owens, Los Angeles Regional Water Quality Control Board
Mr. Thomas Gallacher, Boeing Company
Mr. Arthur Lenox, Boeing Company
Ms. Lori Blair, Boeing Company

Linda S. Adams
Secretary for
Environmental Protection

Department of Toxic Substances Control

Maziar Movassaghi, Acting Director
8800 Cal Center Drive
Sacramento, California 95826-3200

Arnold Schwarzenegger
Governor

September 28, 2009

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

Interim Source Removal Action (ISRA), Soil Management Plan, Santa Susana Field Laboratory, Ventura County, California, dated July 2009

Ms. Owens:

Staff from the Santa Susana Field Laboratory (SSFL) team of the Department of Toxic Substances Control (DTSC) have reviewed the September 18, 2009 Boeing Corporation (Boeing) document *HVS-2A Soil Collapse Feature and Pipeline Removal Summary and Plan, Letter Amendment to the Final Interim Source Removal Action (ISRA) Work Plan* (ISRA Amendment). This ISRA Amendment letter summarizes historical information and characterization results for impacted soils and pipeline materials associated with the pipeline and collapse features discovered during excavations in Outfall 008 in the vicinity of ISRA Area HVS-2A. The ISRA Amendment also proposes management, disposal, and confirmation sampling plans for these features.

Our review was conducted in support of Los Angeles Regional Water Quality Control Board (RWQCB) oversight of the ISRA project, and to assure that contaminated soils are being characterized and documented consistent with DTSC oversight of the ongoing HVS Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI).

We are in concurrence with the pipeline removal and sampling activities proposed by Boeing in the ISRA Amendment, and recommend that the pipeline excavation and associated activities proceed. We plan to conduct a field visit prior to our final decision on the backfill of the pipeline excavation trenches, to assure that soil characterization and confirmation sampling have been conducted in accordance with the ISRA Amendment and the RFI requirements.

If you have any question regarding this letter, please contact Mr. Paul Carpenter at (916) 255-3691 or Mr. Gerard Abrams at (916) 255-3600.

Sincerely,

Paul Carpenter, CHG
Senior Engineering Geologist
Santa Susana Field Laboratory (SSFL) Project Team

cc:

Mr. Thomas D. Gallacher
Director - Safety Health and Environmental Affairs
The Boeing Company
5800 Woolsey Canyon Road
MC - T487
Canoga Park, California 91304-1148

Mr. Allen Elliott
National Aeronautics and Space Administration
George C. Marshall Space Flight Center
Mail Code: AS10
Marshall Space Flight Center, Alabama 35812

Ms. Merrilee Fellows
NASA Manager for Community Involvement
for Environmental Remediation
180-801
4800 Oak Grove Drive
Pasadena, California 91109

Mr. Arthur Lenox
The Boeing Company
Environmental Remediation
Santa Susana Field Laboratory
5800 Woolsey Canyon Road
Canoga Park, California 91304-1148

Mr. Adam Boettner, P.G.
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Project Director
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Santa Susana Field Laboratory Project Team
Department of Toxic Substances Control
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Senior Engineering Geologist
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Senior Engineering Geologist
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Department of Toxic Substances Control
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Sacramento, California 95812-0806

California Regional Water Quality Control Board
Los Angeles Region

320 W. 4th Street, Suite 200, Los Angeles, California 90013
Phone (213) 576-6600 FAX (213) 576-6640 - Internet Address: http://www.waterboards.ca.gov/losangeles

Linda S. Adams
Agency Secretary

Arnold Schwarzenegger
Governor

September 30, 2009

Mr. Steve Slaten, Site Manager
Santa Susana Field Laboratory
NASA JPL
180-801
4800 Oak Grove Drive
Pasadena, CA 91108

Dear Mr. Slaten:

COMMENTS ON THE EMAIL REQUESTING APPROVAL OF ADDITIONAL WORK IN THE OUTFALL 009 WATERSHED, EMAIL AMENDMENT TO THE FINAL INTERIM SOURCE REMOVAL ACTION (ISRA) WORK PLAN, CALIFORNIA WATER CODE SECTION 13304 ORDER (NPDES NO. CA0001309, CI NO. 6027, SCP NO. 1111, SITE ID NO. 2040109)

Los Angeles Regional Water Quality Control Board (Regional Board) staff has reviewed the September 18, 2009 email submitted to Ms. Tracy Egoscue, the Executive Officer. The email provided some general information regarding two additional target ISRA areas that were not originally included in the work plan submitted in May 2009.

Regional Board staff has reviewed the email, is aware of the two additional areas targeted, and concur that the inclusion of this work during this phase is appropriate. However, Regional Board and Department of Toxic Substances Control (DTSC) staffs have the following comments on the plan included in the email.

1. The organization of the submittal appears to be incomplete and missing some components that would be expected for a plan of this type.
2. Include a description of the background, a description of the samples collected and the associated results.
3. Provide any information available regarding the basis for the delineations that appear in the figures. Specifically, the target area for A2LF-3 does not include two of the sample locations that yielded exceedances of the lead background numbers used for evaluation. Did you sample for radionuclides?
4. Include estimates of the amount of soil to be removed and the depth of excavation.
5. Paragraph 4 of the email states that "The additional work will be conducted in "general" accordance with the Health and Safety Plan, the Soil Management Plan, and the Transportation Plan that have been developed for implementation of the ISRA work." All of the work that is associated with the ISRA activities must be completed in full compliance with the approved plans. All deviations from those approved plans must be submitted for Regional Board and DTSC approval prior to

completion of the associated activity and the work must proceed in accordance with the approved modification.

6. Include legends and preparation dates on all figures.
7. Include proposed regrading details and tables of existing waste characterization data.
8. Identify adjacent soil borrow areas to be used post-excavation.
9. Include a signature of a responsible party.

If you have any questions regarding this activity, please telephone Peter Raftery at (213) 576-6724 or Cassandra Owens at (213) 576-6750.

Sincerely,

Tracy J. Egoscue
Executive Officer

Enclosure: September 18, 2009 Email from Steve Slaten to Tracy Egoscue

cc: Mr. Rick Brausch, California Department of Toxic Substances Control
Mr. Jim Pappas, Department of Toxic Substances Control
Mr. Gerard Abrams, Department of Toxic Substances Control
Mr. Buck King, Department of Toxic Substances Control
Mr. Tom Skaug, Department of Toxic Substances Control
Mr. Thomas Gallacher, Boeing Company
Mr. Allen Elliot, NASA
Ms. Merrilee Fellows, NASA
Mr. Arthur Lenox, Boeing Company
Ms. Lori Blair, Boeing Company

From: Tracy Egoscue
To: sslaten@nasa.gov
CC: beth.vaughan@ch2m.com,richard.s.lainhart@usace.army.mil,Cassandra Owens,...
Date: 9/18/2009 2:57 PM
Subject: Re: additional removals

Thank you for your email. Today is a furlough for State workers. I have copied my staff on this reply and we will turn to your request first thing Monday morning.

Tracy J. Egoscue
Executive Officer
Los Angeles Regional Water Quality Control Board
320 West 4th Street, #200
Los Angeles, CA 90013
213.576.6605
tegoscue@waterboards.ca.gov
>>> "Slaten, Steven W. (HQ-RC000)" <sslaten@nasa.gov> 09/18/09 6:19 AM >>>
Ms. Egoscue:

Implementation of ongoing remediation or site maintenance activities at SSFL will take our contractor in close proximity to two other future target ISRA areas, termed Preliminary Evaluation Areas (PEAs) in the Work Plan. These generalized PEAs are shown on Figure 1-7 (attached) of the Work Plan submittal, and are identified as PEA-A2LF-1, and PEA-A2LF-3. NASA would like to also include ISRA excavation activities in some of these areas before the rainy season begins.

Supplemental characterization of surface soil contamination in these two PEAs has continued since submittal of the Work Plan. Figures 1 and 2 (attached) show the sample results for these two PEAs, as well as the proposed delineation of the ISRA areas for excavation. The ISRA contaminants of concern that drove the delineations involved dioxins at ISRA A2LF-1 (Figure 1) and lead at ISRA A2LF-3 (Figure 2). Laboratory analytical data for these areas are summarized in attachments. Also attached is a supplemental Table 4-5 (similar tabulation to that included the Work Plan) that summarizes pertinent information about these two areas.

Regarding the ISRA AL2F-3 area (Figure 2), soils will be removed in the indicated areas to the south along the drainage feature, as part of culvert-related work that will be conducted at this location. Other portions of this ISRA area will be addressed by NASA at a future date, as part of remaining Outfall 009 ISRA activities within NASA properties at SSFL.

The additional work will be conducted in general accordance with the Health and Safety Plan, the Soil Management Plan, and the Transportation Plan that have been developed for implementation of the ISRA work. Two updated drawings to the Storm Water Pollution Prevention Plan (Figures SWPPP-1 and SWPPP-2) are also attached that show the approximate locations for BMP installations in the two additional areas.

NASA would appreciate the Regional Board's approval for including the A2LF-1 and a portion of the A2LF-3 ISRA areas into the upcoming ISRA activities that Boeing as contractor to NASA will soon be implementing. We understand that this expedient request may be inconvenient; however, NASA would greatly appreciate the Regional Board's cooperation in this regard.

We look forward to hearing from you soon.

Steve Slaten

(818) 393-6683 (office) or (818) 235-4015 (cell)

NASA SSFL Site Manager

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richard.s.lainhart@usace.army.mil<mailto:richard.s.lainhart@usace.army.mil>

The Boeing Company
Santa Susana Field Laboratory
5800 Woolsey Canyon Road
Canoga Park, CA 91304-1148

Certified Mail

October 14, 2009
In reply refer to SHEA-109207

BOEING

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

Attention: Tracy Egoscue

Subject: Response to Comments regarding Email Requesting Approval of Additional Work in the Outfall 009 Watershed, Email Amendment to the Final Interim Source Removal Action (ISRA) Work Plan California Water Code Section 13304 Order (NPDES NO. CA0001309, CI NO. 6027, SCP NO. 1111, SITE ID NO. 2040109)

Dear Ms. Egoscue:

On behalf of the National Aeronautics and Space Administration (NASA), The Boeing Company (Boeing) hereby provides the following in response to Regional Water Quality Control Board (RWQCB) comments regarding the above-referenced email Amendment to the Final Interim Source Removal Action (ISRA) Work Plan. The amendment was provided to the RWQCB by NASA via email on September 18, 2009 and describes the inclusion of two additional ISRA Areas within the Outfall 009 watershed located on NASA property, A2LF-1 and A2LF-3. RWQCB comments were received in a letter dated September 30, 2009, and are reproduced in their entirety in the attached response prepared by NASA.

We understand the RWQCB concur that the inclusion of the two additional areas is appropriate, and believe that the attached information will meet the RWQCB staff's request for additional information. If you have any questions or require anything further, please contact me at 818-466-8795. Boeing and NASA will not proceed

with work at these two areas until approval is received by the RWQCB staff. Thank you for your attention to this information.

Very truly yours,

Art Lenox
Environmental Remediation

AJL:bjc
Attachments:

1. Response to RWQCB Comments (September 30, 2009) on Amendment Request (September 18, 2009) to the Approved May 2009 Final Interim Source Removal (ISRA) Work Plan
2. Figures:
   Interim Source Removal Actions, Outfall 009 Drainage Areas, Excavation Plan: A2LF-1
   Interim Source Removal Actions, Outfall 009 Drainage Areas, Excavation Plan: A2LF-3
   ISRA Excavation Area, Outfall 009, A2LF-1 (showing waste characterization sampling locations)
   ISRA Excavation Area, Outfall 009, A2LF-3 (showing waste characterization sampling locations)
3. Waste Characterization Reports

cc: Ms. Cassandra Owens, RWQCB (with attachments)
Mr. Peter Raftery, RWQCB (with attachments)
Mr. Buck King, DTSC (with attachments)
Mr. Steve Slaten, NASA (with attachments)
Mr. Allen Elliott, NASA (without attachments)
Ms. Dixie Hambrick, MWH (without attachments

Response to RWQCB Comments (September 30, 2009) on Amendment Request (September 18, 2009) to the Approved May 2009 Final Interim Source Removal Action (ISRA) Work Plan

1. The organization of the submittal appears to be incomplete and missing some components that would be expected for a plan of this type.

   Response: Comment acknowledged. NASA believes that the approved work plan provides the relevant background and details corresponding to the addendum request. If there are particular items that the RWQCB would like to see, please let NASA know.

2. Include a description of the background, a description of the samples collected and the associated results.

   Response: NASA believes that the approved work plan provides the relevant background surrounding the ISRA-related work at SSFL, and that the original email addendum request states why these 2 additional areas (A2LF-1 and A2LF-3) were requested for inclusion as part of the on-going ISRA implementation.

   The request also: a) stated that surface soil samples were collected to identify the ISRA boundaries for these 2 areas; b) included figures (identified in the request as Figures 1 and 2, respectively) showing the soil sampling locations; c) stated the main ISRA constituents (dioxins at A2LF-1 and lead at A2LF-3) driving the contaminant delineations; and d) included the tabulated laboratory analytical results for the samples. These figures portray the laboratory analytical results, in a manner consistent with other areas included in the approved work plan, and show the proposed excavation limits for inclusion as part of the current implementation phase.

   The proposed A2LF-3 excavation area is limited to a segment of the drainage way that lies south of the service road. As shown in the tabulated laboratory analytical results that were included, samples in the drainage way indicated lead exceedances.

   The results also showed lead exceedances for the 5-foot depth interval at sampling station A2BS1091 located immediately adjacent to the road, and in the upper 3 inches of surface soil at sampling station A2BS1090 located north of the road (see Figure 2 for locations). NASA decided to address ISRA actions related to these A2LF-3 areas at a future date, as the extent of contamination (both laterally and vertically) becomes better defined in the areas north and south of the road.

3. Provide any information available regarding the basis for the delineations that appear in the figures. Specifically, the target area for A2LF-3 does not include two of the sample locations that yielded exceedances of the lead background numbers used for evaluation. Did you sample for radionuclides?

   Response: The pre-action contaminant delineations for these areas were for ISRA COCs, consistent with other areas included in the approved work plan. (Radionuclides are not an ISRA COC.) The response to Comment No. 2 addresses the two sample exceedance locations (A2BS1090 and A2BS1091). The proposed A2LF-3 excavation area is limited to the indicated drainage way segment that also exceeded the lead-based criteria.

   The waste characterization results for A2LF-1 and A2LF-3 are provided as an attachment.

4. Include estimates of the amount of soil to be removed and the depth of excavation.

   Response: The requested information was included on the referenced Figures 1 and 2. Also, please see the response to Comment No. 6.

5. Paragraph 4 of the email states that "The additional work will be conducted in 'general' accordance with the Health and Safety Plan, the Soil Management Plan, and the Transportation Plan that have been developed for implementation of the ISRA work." All of the work that is associated with the ISRA activities must be completed in full compliance with the approved plans. All deviations from those approved plans must be submitted for Regional Board and DISC approval prior to completion of the associated activity and the work must proceed in accordance with the approved modification.

   Response: Comment acknowledged. Boeing will implement the actions in the 2 additional areas, in accordance with the referenced plans.

6. Include legends and preparation dates on all figures.

   Response: Refer to the revised attached Figure D-5 and Figure D-6, for the A2LF-1 and A2LF-3 areas, respectively. These drawings also include the information referenced in Comment No. 4 above.

7. Include proposed re-grading details and tables of existing waste characterization data.

   Response: NASA has not yet determined re-grading details for any of the ISRA excavation areas. Tabulations of the pre-excavation sample data for the ISRA COCs were referenced in, and included as an attachment with, the original NASA submittal.

   Boeing has also completed additional surface soil sampling (that includes cesium 137) in these areas, for waste handling and disposal purposes. Attached are figures showing the sampling locations and the results of the radiological analyses (in the Waste Certification). However, tabulations of the other laboratory analytical data for these samples are not yet available from Boeing and will be provided to the Board as soon as they are received.

8. Identify adjacent soil borrow areas to be used post-excavation.

   Response: As indicated above in Comment No.7, NASA has not yet decided on re-grading details for any of the ISRA excavation areas. If needed, areas of local borrow soil would be reviewed with the RWQCB prior to use.

9. Include a signature of a responsible party.

   Response: This has been included as part of the transmittal letter from Boeing.

Figures

EXCAVATION NOTE:
CONTRACTOR SHALL EXCAVATE AREAS INDICATED TO
2 FEET BGS OR BEDROCK WHICHEVER IS SHALLOWER.

SURFACE AREA = 97 SQ YDS
DEPTH = 2 FEET (0.67 YDS)
VOLUME = 85 CU YDS

N 269489.63
E 1790298.00

N 269490.33
E 1790332.03

N 269468.55
E 1790297.93

N 269468.86
E 1790332.52

A2LF-1

DENSE TREES

TANK

WELL

1616.1
1653.1
1669.0
1679.7
1697.2
1678.3
1665.3
1661.63
1725.5

NOT FOR CONSTRUCTION

LEGEND

PROPOSED EXCAVATION AREA

NOTE:
CONTOURS BASED ON TOPOGRAPHIC MAPS
CREATED BY GeoSyntec

N
W
E
S

0 20 40 60
1"=20'

NO.	DATE	DSGN	DR	CHK	APVD
			REVISION	BY	APVD

SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA
NASA
HUNTSVILLE, AL

CH2MHILL

INTERM SOURCE REMOVAL ACTIONS
OUTFALL 009
DRAINAGE AREAS
EXCAVATION PLAN: A2LF-1

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	07/02/09
PROJ	384727.01
DWG	D-5
SHEET	

PRELIMINARY

EXCAVATION NOTE:
CONTRACTOR SHALL EXCAVATE AREAS INDICATED TO
2 FEET BGS OR BEDROCK WICHEVER IS SHALLOWER.

N 268805.70
E 1790279.97

N 268800.16
E 1790276.40

N 268764.34
E 1790401.40

N 268756.77
E 1790399.01

A2LF-3

SURFACE AREA = 78 SQ YDS
DEPTH = 2 FEET (0.67 YDS)
VOLUME = 68 CU YDS

LEGEND

PROPOSED EXCAVATION AREA

NOTE:
CONTOURS BASED ON TOPOGRAPHIC MAPS
CREATED BY GeoSyntec

NOT FOR CONSTRUCTION

0 30 60 90
1"=30'

NO.	DATE	DSGN	DR	REVISION	CHK	APVD	BY	APVD

SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CA
NASA
HUNTSVILLE, AL

CH2MHILL

INTERM SOURCE REMOVAL ACTIONS
OUTFALL 009
DRAINAGE AREAS
EXCAVATION PLAN: A2LF-3

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	07/02/09
PROJ	384727.01
DWG	D-6
SHEET	

PRELIMINARY

FILENAME: FigureD-6_384727.dgn PLOT DATE: 10/8/2009 PLOT TIME: 4:46:42 PM

ISRA Excavation Area
Outfall 009
A2LF-1

Base Map Legend

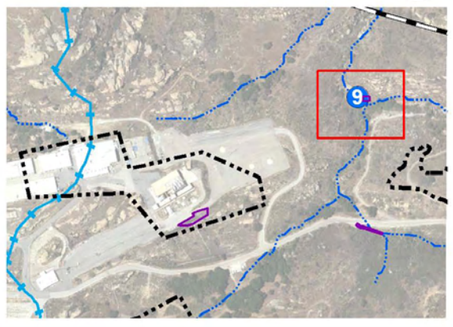
- Planned Excavation Area
- Surface Water Drainage
- NPDES Outfall
- Elevation Contour
- Waste Characterization Sample

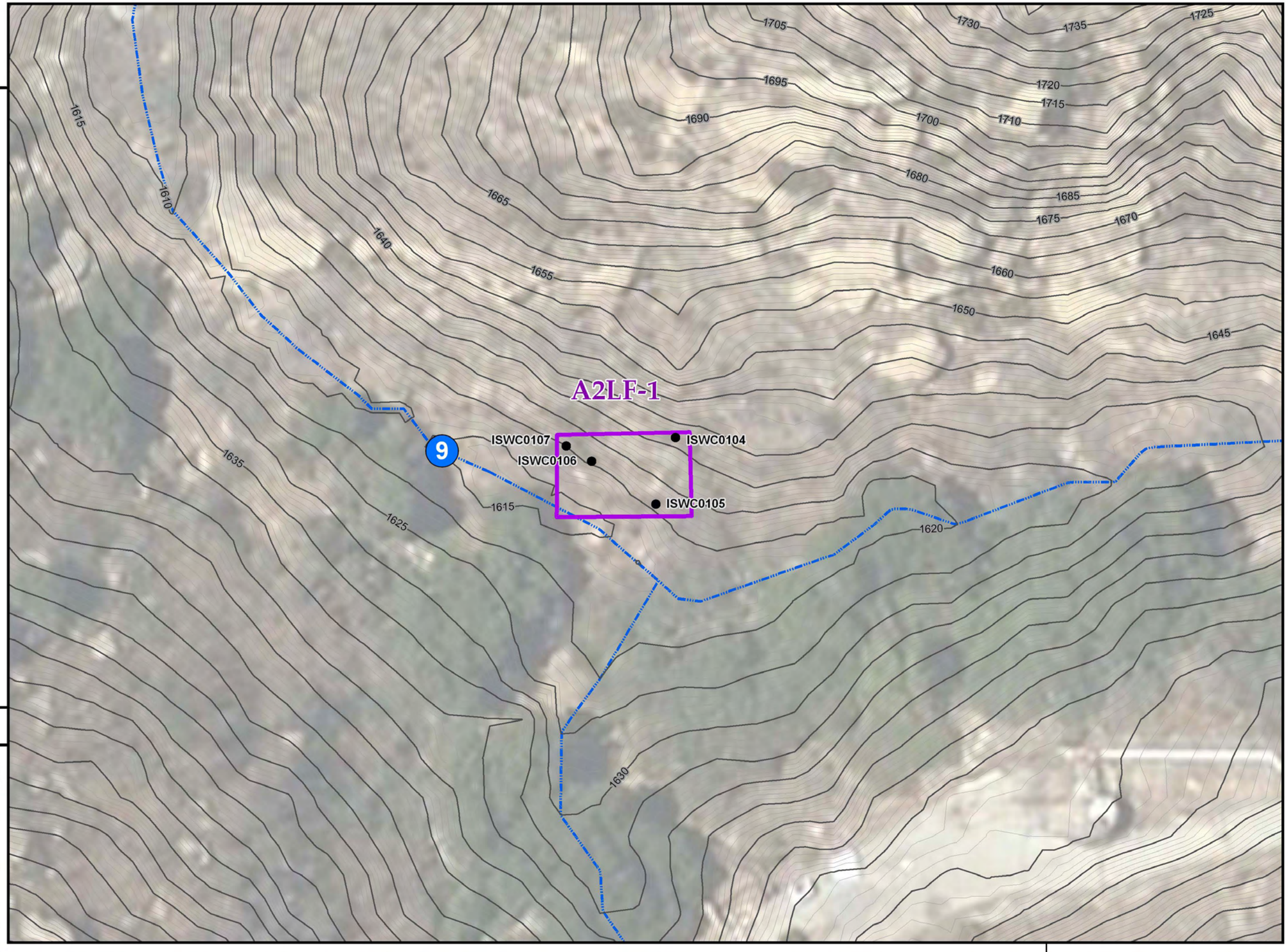
Note:
1. Topographic contours from LiDAR DEM, Airborne1 Corporation (2005).
2. Aerial imagery from Google Earth (2007).

DRAFT

Date: September 28, 2009

0 12.5 25 50 Feet





SANTA SUSANA FIELD LABORATORY

MWH FIGURE --

Printing Date: September 28, 2009 File: \\uspas1netapp1\DEI\rocketdyne gis\MasterGISFiles\ISRA_Projects\ISRA_MXD\A2LF-1WasteChar.mxd

ISRA Excavation Area
Outfall 009
A2LF-3

Base Map Legend

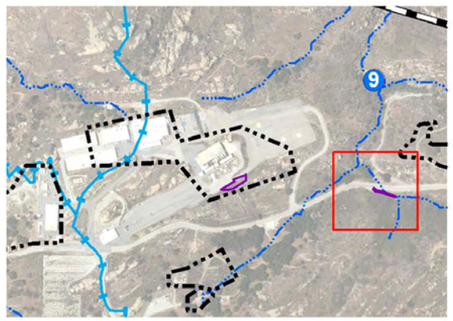
- RFI Site Boundary
- Planned Excavation Area
- Surface Water Drainage
- Underground Drainage
- Elevation Contour
- Culverts
- Waste Characterization Sample

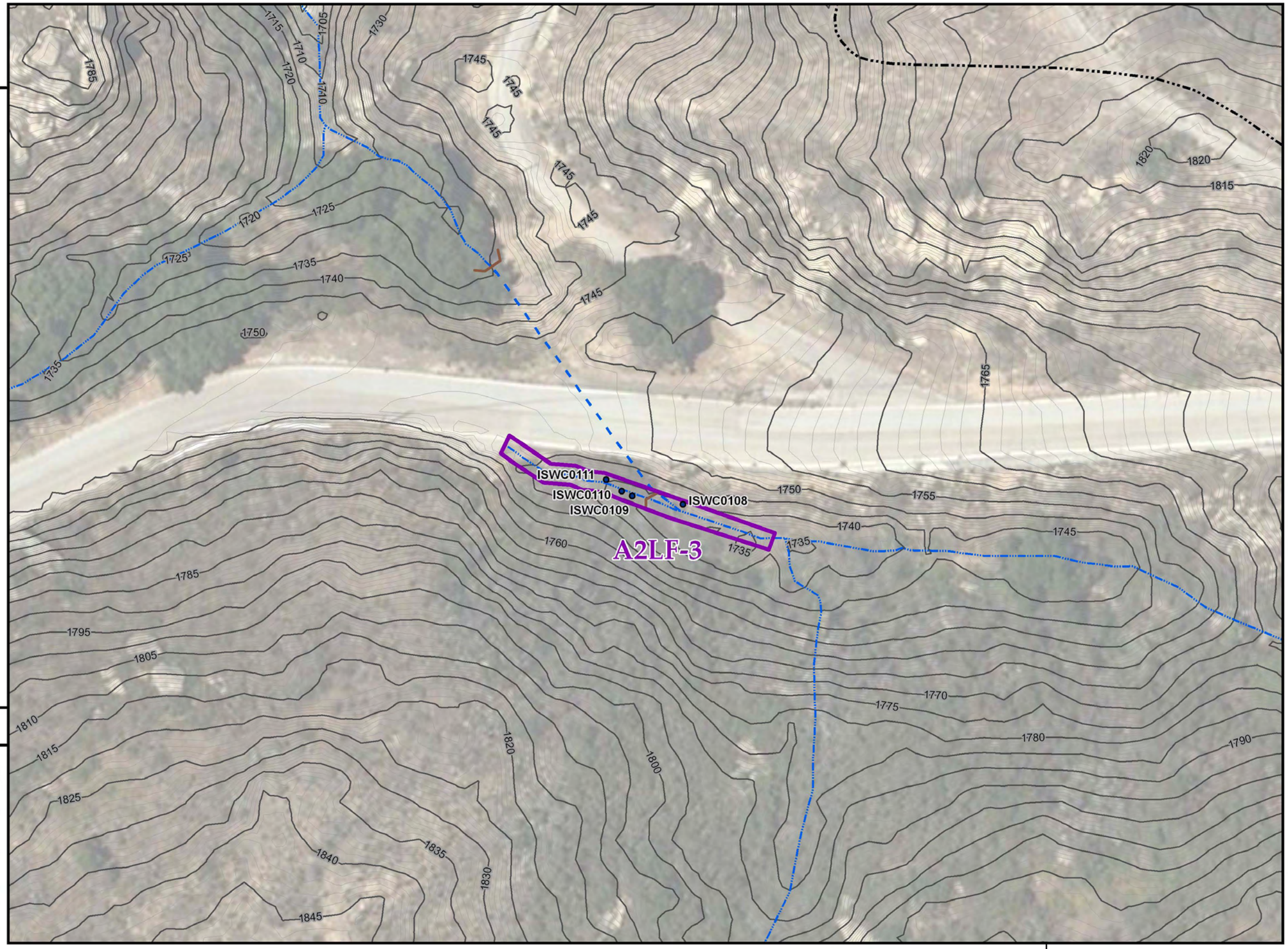
Note:
1. Topographic contours from LiDAR DEM, Airborne1 Corporation (2005).
2. Aerial imagery from Google Earth (2007).

DRAFT

Date: September 28, 2009

0 25 50 100 Feet





SANTA SUSANA FIELD LABORATORY

MWH FIGURE --

Printing Date: September 28, 2009 File: \\uspas1netapp1\DEI\rocketdyne gis\MasterGISFiles\ISRA_Projects\ISRA_MXD\A2LF-3WasteChar.mxd

Waste Certification Report

Area II Landfill Interim Source Removal Action (ISRA).
Soil Sampling for Radionuclides.
Results and Statistical Analysis.
Waste Certification.

This data package provides the laboratory results and statistical analysis of pre-excavation samples taken from the Area II Landfill Interim Source Removal Action (ISRA) area. This analysis and data interpretation complies with procedures approved by the California Department of Public Health[1].

Eight (8) samples taken for waste disposal characterization were analyzed for strontium-90, tritium and gamma emitting radionuclides by gamma spectroscopy, using an off-site laboratory. Minimum detectable activity (MDA) for cesium-137 and strontium-90 averaged ~0.044 pCi/g and ~0.040 pCi/g respectively. Minimum detectable activity for tritium averaged 0.82 pCi/g. The gamma spectroscopy library also included the following contaminants-of-concern: 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. Laboratory data packages are available on request.

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 was conducted using the Wilcoxon Rank Sum Test using protocols described in NUREG-1505[2] and DTSC guidance[3] (See Appendix 1). Appendix 2 shows the complete analytical results for all radionuclides. Complete laboratory data packages are available on request.

Local background data for cesium-137 and strontium-90 was taken from Table 20 of the 1995 McLaren/Hart report[4]. Background for tritium in soil is not well established, and is not reported in the 1995 McLaren/Hart report, therefore tritium background in soil is conservatively assumed to be zero. Tritium data is therefore compared to the MDA of the analysis and the EPA preliminary remediation goal (PRG)[5] for residential 10^{-6} risk.

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[1] Boeing, “Northern Drainage Waste Sampling for Radionuclides.” Revision 9, November 5, 2007. (Attachment 3 to Northern Drainage Work Plan) and “ISRA Waste Sampling for Radionuclides”, Attachment A to the ISRA Soil Management Plan.

[2] 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

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

[4] 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

[5] EPA preliminary remediation goals for radionuclides - http://epa-prgs.ornl.gov/radionuclides/.

Conclusions

Cesium-137 - Based on the results of the statistical analysis of Appendix 1, soil to be excavated from the Area II Landfill ISRA area does not exceed the local background for Cs-137. The incremental dose from Cs-137 above background is therefore zero mrem/y. The highest Cs-137 result is 0.178 pCi/g which is less than the highest background result. The highest non-background subtracted Cs-137 result is equivalent to an effective dose of 0.125 mrem/y[6].

Strontium-90 - Based on the results of the statistical analysis of Appendix 1, soil to be excavated from the Area II Landfill ISRA area does not exceed the local background for Sr-90. The incremental dose from Sr-90 above background is therefore zero mrem/y. The highest Sr-90 result is 0.029 pCi/g which is less than the highest background result. The highest non-background subtracted Sr-90 result is equivalent to an effective dose of 0.0089 mrem/y[6].

Tritium - All tritium results are non-detect, the average tritium result is -0.31 pCi/g and the highest non-detect tritium result is -0.136 pCi/g. The highest non-detect, non-background subtracted tritium result is equivalent to an effective dose of 0.0 mrem/y[6].

This waste is certified to be "radiologically" acceptable for shipment to, and disposal at, any Class 1, 2 or 3 disposal facility. There are no radiological controls or restrictions imposed on future disposition or use of this soil.

This waste meets the requirements of disposal facility permits[7,8] and complies with the California Health & Safety Code[9].

The Governor's Executive Order D-62-02 prohibits the *"disposal of decommissioned materials to Class III landfills or unclassified management units."* The soil from the Area II Landfill ISRA area

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[6] EPA dose compliance concentrations for radionuclides - http://epa-dccs.ornl.gov/.
Soil concentrations that meet the 10^{-6} residential risk PRG are < 0.1 mrem/y. The Cs-137 residential PRG of 0.0597 pCi/g is equivalent to 0.042 mrem/y. The Sr-90 residential PRG of 0.231 pCi/g is equivalent to 0.071 mrem/y. The tritium residential PRG of 2.28 pCi/g is equivalent to 0.032 mrem/y.

[7] This waste is exempt from regulation and licensing or is expressly authorized for disposal under the Radiation Control Law (Division 104, Part 9, Chapter 5 of the California Health & Safety Code).

[8] This waste is not prohibited from disposal by any government agency with jurisdictional authority over this waste.

[9] Division 104, Part 9, Chapter 5, Article 1, Section 114715, "No person shall bury, throw away, or in any manner dispose of radioactive wastes within the state except in a manner and at locations as will result in no significant radioactive contamination of the environment." For the purposes of this requirement, "significant" is defined in Section 114710 as amounts of radioactive materials that are likely to expose persons to ionizing radiation greater than the guide levels published by the Federal Radiation Council (FRC). The FRC no longer exists, but the applicable guide level last published by the FRC was 500 mrem per year to a member of the public. Because the regulatory dose limit to members of the public has since been lowered to 100 mrem per year, CDPH/RHB conservatively utilizes the lower dose for purposes of defining "significant" radioactive contamination in this Article of the California Health and Safety Code.
http://www.leginfo.ca.gov/cgi-bin/displaycode?section=hsc&group=114001-115000&file=114705-114780

is not decommissioned material, and does not originate from the proximity of any radiological facility. The sampling in this certification has therefore been conducted as a best management practice that also complies with the requirements of D-62-02. Verification sampling and/or approval by the California Department of Public Health (CDPH) Radiologic Health Branch (RHB) are not required for the off-site disposal of decommissioned material or of the subject material[10].

Phil Rutherford
Manager, Health, Safety & Radiation Services

[10] The California Department of Public Health (CDPH) Radiologic Health Branch (RHB) has stated in a November 9, 2007 email to Phil Rutherford (Boeing) … *"The Governor's Executive Order D-62-02, does not specifically require the Department of Health Services (now the Department of Public Health) to perform verification sampling of decommissioned material or to provide approval for disposal of specific decommissioned material shipped offsite (e.g., to Class I or II landfills). The California DPH has not imposed a requirement that Boeing or the Department of Energy (DOE) seek DPH verification sampling or approval of all decommissioned material destined for Class I or II landfills in compliance with the Governor's Executive Order."*

Appendix 1

Wilcoxon Rank Sum Statistical Test for Cesium-137 and Strontium-90

Wilcoxon Rank Sum Test -- (Cesium-137)

General Information:
The WRS tests whether or not measurements of samples from a survey area (S)
tend to be consistently larger than those from a background reference area (R) by more than the DCGL.

The null hypothesis, Ho, is: Survey sample concentrations exceed those in the background
The alternative hypothesis, Ha, is: Survey sample concentrations do not exceed those in the background

Instruction on how to use this template:
1) Enter analysis results in pCi/gram
2) Enter number of samples for background and survey data sets, m and n.
3) The WRS test is calculated using the method prescribed in
NUREG-1505, Nuclear Regulatory Commission, "A Non-parametric Statistical Methodology for the Design and Analysis of Final Status Decommissioning Surveys." January 1998.

DCGL (pCi/g)	0.12
Type I Error Rate, Alpha:	0.05
Type II Error Rate, Beta:	0.05
Number of Background Samples, m:	51
Number of Survey Samples, n:	8
Z-value for Alpha	1.645
Critical Value	1604
Sum of Reference Ranks	1714

If the sum of the reference ranks is larger than the critical value, there is enough evidence to reject the null hypothesis and accept the alterrnative hypothesis. Otherwise the null hypothesis is accepted.

Test Result:
Survey sample concentrations do not exceed those in the background by more than the DCGL

	Bkgd Ref (R)	Survey (S)
Mean	0.087	0.090
Max	0.213	0.178
Min	0.015	-0.018
σ	0.062	0.069
m-1.96*σ	-0.035	-0.046
m+1.96*σ	0.210	0.225

No.	Soil ID	Cs-137	Adjusted Cs-137	Area	Ranks	Reference Ranks
1		0.092	0.217	R	36	36
2		0.020	0.145	R	14	14
3		0.020	0.145	R	14	14
4		0.100	0.225	R	40.5	40.5
5		0.020	0.145	R	14	14
6		0.158	0.283	R	51.5	51.5
7		0.175	0.300	R	53	53
8		0.209	0.334	R	58	58
9		0.180	0.305	R	54	54
10		0.030	0.155	R	22	22
11		0.213	0.338	R	59	59
12		0.025	0.150	R	19	19
13		0.020	0.145	R	14	14
14		0.020	0.145	R	14	14
15		0.074	0.199	R	32	32
16		0.147	0.272	R	47	47
17		0.100	0.225	R	40.5	40.5
18		0.067	0.192	R	30.5	30.5
19		0.099	0.224	R	39	39

No.	Soil ID	Cs-137	Adjusted Cs-137	Area	Ranks	Reference Ranks
20		0.101	0.226	R	42	42
21		0.148	0.273	R	48	48
22		0.153	0.278	R	50	50
23		0.025	0.150	R	19	19
24		0.188	0.313	R	55	55
25		0.198	0.323	R	57	57
26		0.030	0.155	R	22	22
27		0.079	0.204	R	33	33
28		0.158	0.283	R	51.5	51.5
29		0.109	0.234	R	43	43
30		0.059	0.184	R	29	29
31		0.067	0.192	R	30.5	30.5
32		0.113	0.238	R	44	44
33		0.015	0.140	R	9	9
34		0.031	0.156	R	24	24
35		0.042	0.167	R	27	27
36		0.097	0.222	R	37.5	37.5
37		0.015	0.140	R	9	9
38		0.020	0.145	R	14	14
39		0.085	0.210	R	35	35
40		0.080	0.205	R	34	34
41		0.015	0.140	R	9	9
42		0.020	0.145	R	14	14
43		0.035	0.160	R	25.5	25.5
44		0.035	0.160	R	25.5	25.5
45		0.025	0.150	R	19	19
46		0.150	0.275	R	49	49
47		0.140	0.265	R	45.5	45.5
48		0.190	0.315	R	56	56
49		0.097	0.222	R	37.5	37.5
50		0.030	0.155	R	22	22
51		0.140	0.265	R	45.5	45.5
52	ISWC0104RadS001	0.122	0.122	S	4	0
53	ISWC0105RadS001	0.123	0.123	S	5	0
54	ISWC0106RadS001	-0.018	-0.018	S	1	0
55	ISWC0107RadS001	0.025	0.025	S	3	0
56	ISWC0108RadS001	0.134	0.134	S	7	0
57	ISWC0109RadS001	0.128	0.128	S	6	0
58	ISWC0110RadS001	0.178	0.178	S	28	0
59	ISWC0111RadS001	0.024	0.024	S	2	0
				Sum	1770	1714

Wilcoxon Rank Sum Test -- (Strontium-90)

General Information:
The WRS tests whether or not measurements of samples from a survey area (S)
tend to be consistently larger than those from a background reference area (R) by more than the DCGL.

The null hypothesis, Ho, is: Survey sample concentrations exceed those in the background
The alternative hypothesis, Ha, is: Survey sample concentrations do not exceed those in the background

Instruction on how to use this template:
1) Enter analysis results in pCi/gram
2) Enter number of samples for background and survey data sets, m and n.
3) The WRS test is calculated using the method prescribed in
NUREG-1505, Nuclear Regulatory Commission, "A Non-parametric Statistical Methodology for the Design and Analysis of Final Status Decommissioning Surveys." January 1998.

DCGL (pCi/g)	0.06
Type I Error Rate, Alpha:	0.05
Type II Error Rate, Beta:	0.05
Number of Background Samples, m:	51
Number of Survey Samples, n:	8
Z-value for Alpha	1.645
Critical Value	1604
Sum of Reference Ranks	1734

If the sum of the reference ranks is larger than the critical value, there is enough evidence to reject the null hypothesis and accept the alterrnative hypothesis. Otherwise the null hypothesis is accepted.

Test Result:
Survey sample concentrations do not exceed those in the background by more than the DCGL

	Bkgd Ref (R)	Survey (S)
Mean	0.051	0.013
Max	0.130	0.029
Min	0.005	0.004
σ	0.030	0.010
m-1.96*σ	-0.008	-0.007
m+1.96*σ	0.109	0.033

No.	Soil ID	Sr-90	Adjusted Sr-90	Area	Ranks	Reference Ranks
1		0.030	0.090	R	20	20
2		0.010	0.070	R	10.5	10.5
3		0.045	0.105	R	34.5	34.5
4		0.045	0.105	R	34.5	34.5
5		0.050	0.110	R	44	44
6		0.040	0.100	R	26	26
7		0.035	0.095	R	22.5	22.5
8		0.050	0.110	R	44	44
9		0.050	0.110	R	44	44
10		0.130	0.190	R	58.5	58.5
11		0.120	0.180	R	57	57
12		0.040	0.100	R	26	26
13		0.045	0.105	R	34.5	34.5
14		0.130	0.190	R	58.5	58.5
15		0.050	0.110	R	44	44
16		0.088	0.148	R	52	52
17		0.080	0.140	R	49	49
18		0.100	0.160	R	56	56
19		0.069	0.129	R	48	48
20		0.097	0.157	R	54	54
21		0.084	0.144	R	51	51

No.	Soil ID	Sr-90	Adjusted Sr-90	Area	Ranks	Reference Ranks
22		0.098	0.158	R	55	55
23		0.045	0.105	R	34.5	34.5
24		0.045	0.105	R	34.5	34.5
25		0.020	0.080	R	14	14
26		0.045	0.105	R	34.5	34.5
27		0.089	0.149	R	53	53
28		0.050	0.110	R	44	44
29		0.045	0.105	R	34.5	34.5
30		0.050	0.110	R	44	44
31		0.045	0.105	R	34.5	34.5
32		0.040	0.100	R	26	26
33		0.045	0.105	R	34.5	34.5
34		0.045	0.105	R	34.5	34.5
35		0.045	0.105	R	34.5	34.5
36		0.025	0.085	R	17.5	17.5
37		0.082	0.142	R	50	50
38		0.045	0.105	R	34.5	34.5
39		0.040	0.100	R	26	26
40		0.035	0.095	R	22.5	22.5
41		0.025	0.085	R	17.5	17.5
42		0.005	0.065	R	9	9
43		0.020	0.080	R	14	14
44		0.010	0.070	R	10.5	10.5
45		0.020	0.080	R	14	14
46		0.020	0.080	R	14	14
47		0.050	0.110	R	44	44
48		0.030	0.090	R	20	20
49		0.030	0.090	R	20	20
50		0.020	0.080	R	14	14
51		0.040	0.100	R	26	26
52	ISWC0104RadS001	0.008	0.008	S	5	0
53	ISWC0105RadS001	0.029	0.029	S	8	0
54	ISWC0106RadS001	0.027	0.027	S	7	0
55	ISWC0107RadS001	0.005	0.005	S	2	0
56	ISWC0108RadS001	0.017	0.017	S	6	0
57	ISWC0109RadS001	0.004	0.004	S	1	0
58	ISWC0110RadS001	0.007	0.007	S	4	0
59	ISWC0111RadS001	0.007	0.007	S	3	0
				Sum	1770	1734

Soil Data from Area II Landfill ISRA

No.	Sample ID	Stockpile ID	Sampling Date	Laboratory Batch	Cesium-137 (pCi/g)				Strontium-90 (pCi/g)				Tritium (pCi/g)			
					Activity	+/- 2σ Error	MDA	Non-detect?	Activity	+/- 2σ Error	MDA	Non-detect?	Activity	+/- 2σ Error	MDA	Non-detect?
1	ISWC0104RadS001	N/A	9/3/2009	236678	0.122	0.0529	0.0437		0.00767	0.0224	0.0415	NDA	-0.136	0.51	0.915	NDA
2	ISWC0105RadS001	N/A	9/3/2009	236678	0.123	0.0418	0.0459		0.0287	0.0245	0.0393	NDA	-0.486	0.486	0.909	NDA
3	ISWC0106RadS001	N/A	9/3/2009	236678	-0.0176	0.0223	0.0368	NDA	0.0273	0.0272	0.0443	NDA	-0.365	0.493	0.908	NDA
4	ISWC0107RadS001	N/A	9/3/2009	236678	0.0254	0.0233	0.042	NDA	0.00488	0.0207	0.0398	NDA	-0.368	0.498	0.917	NDA
5	ISWC0108RadS001	N/A	9/3/2009	236678	0.134	0.0496	0.0536		0.0172	0.0223	0.0381	NDA	-0.222	0.517	0.934	NDA
6	ISWC0109RadS001	N/A	9/3/2009	236678	0.128	0.0389	0.0373		0.00413	0.021	0.0405	NDA	-0.411	0.499	0.922	NDA
7	ISWC0110RadS001	N/A	9/3/2009	236678	0.178	0.0445	0.0465		0.00741	0.0162	0.0295	NDA	-0.325	0.497	0.91	NDA
8	ISWC0111RadS001	N/A	9/3/2009	236678	0.0244	0.0243	0.0449	NDA	0.00713	0.0234	0.0443	NDA	-0.165	0.516	0.927	NDA

	Cesium-137 (pCi/g)				Strontium-90 (pCi/g)				Tritium (pCi/g)			
	Activity		MDA	Non-detect?	Activity		MDA	Non-detect?	Activity		MDA	Non-detect?
Average	0.090		0.044		0.013		0.040		-0.310		0.918	
Maximum	0.178		0.054		0.029		0.044		-0.136		0.934	
Minimum	-0.018		0.037		0.004		0.030		-0.486		0.908	
Count				8				8				8
Number of Non-Detects				3				8				8
% Non-Detects				38%				100%				100%

Appendix 2

Analytical Radionuclide Results

ISRA Soil Sample Results for Area II Landfill

Project Name	Sampling Organization	Sampling Date	Sampling Location (General)	Sampling Location (Specific)	Sample Serial Number	Media Type	Isotope	Value	Error (+/-)	MDA	Non-Detect?	Units	Error Type	Analysis Protocol	Analysis Organization	Document	Status
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Americium-241	-0.0227	0.182	0.336	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Americium-241	0.0143	0.118	0.203	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Americium-241	-0.00775	0.128	0.239	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0107	ISWC0107RadS001	Soil	Americium-241	-0.0246	0.0843	0.144	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0108	ISWC0108RadS001	Soil	Americium-241	0.048	0.0399	0.0699	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Americium-241	0.137	0.11	0.183	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0110	ISWC0110RadS001	Soil	Americium-241	0.0921	0.106	0.173	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Americium-241	0.0779	0.112	0.187	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Cesium-134	0	0.0483	0.0636	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Cesium-134	0	0.0425	0.061	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Cesium-134	0	0.0311	0.0556	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0107	ISWC0107RadS001	Soil	Cesium-134	0	0.0451	0.0531	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0108	ISWC0108RadS001	Soil	Cesium-134	0.0442	0.0366	0.0673	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Cesium-134	0.0383	0.0374	0.0531	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0110	ISWC0110RadS001	Soil	Cesium-134	0	0.0413	0.0616	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Cesium-134	0	0.0296	0.0572	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Cesium-137	0.122	0.0529	0.0437		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Cesium-137	0.123	0.0418	0.0459		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Cesium-137	-0.0176	0.0223	0.0368	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0107	ISWC0107RadS001	Soil	Cesium-137	0.0254	0.0233	0.042	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0108	ISWC0108RadS001	Soil	Cesium-137	0.134	0.0496	0.0536		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Cesium-137	0.128	0.0389	0.0373		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0110	ISWC0110RadS001	Soil	Cesium-137	0.178	0.0445	0.0465		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Cesium-137	0.0244	0.0243	0.0449	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Cobalt-60	-0.0118	0.0242	0.0384	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Cobalt-60	0.00764	0.0259	0.0448	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Cobalt-60	0.0118	0.0242	0.043	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0107	ISWC0107RadS001	Soil	Cobalt-60	0.000442	0.0236	0.0401	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0108	ISWC0108RadS001	Soil	Cobalt-60	0.00422	0.0301	0.0519	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Cobalt-60	-0.0123	0.0248	0.0397	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0110	ISWC0110RadS001	Soil	Cobalt-60	0.0181	0.0226	0.0411	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Cobalt-60	-0.00352	0.0241	0.041	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Europium-152	0.024	0.0994	0.123	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Europium-152	-0.0542	0.0719	0.0981	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Europium-152	-0.0644	0.061	0.0886	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0107	ISWC0107RadS001	Soil	Europium-152	-0.0671	0.0547	0.0882	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0108	ISWC0108RadS001	Soil	Europium-152	0.0286	0.0795	0.123	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Europium-152	-0.0016	0.0634	0.0971	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0110	ISWC0110RadS001	Soil	Europium-152	-0.0339	0.0836	0.11	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Europium-152	-0.0347	0.0682	0.102	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Europium-154	-0.0829	0.0862	0.133	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Europium-154	-0.0272	0.0794	0.132	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Europium-154	-0.0598	0.0695	0.112	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0107	ISWC0107RadS001	Soil	Europium-154	-0.0816	0.0776	0.12	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0108	ISWC0108RadS001	Soil	Europium-154	0.0163	0.0975	0.169	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Europium-154	0.0131	0.0697	0.119	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0110	ISWC0110RadS001	Soil	Europium-154	-0.0692	0.0695	0.109	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Europium-154	-0.0589	0.0734	0.119	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Lead-214	1.07	0.136	0.0868		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Lead-214	1.13	0.144	0.0748		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Lead-214	0.916	0.113	0.0695		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Lead-214	0.918	0.106	0.0721		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Lead-214	0.981	0.12	0.0708		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Manganese-54	-0.00929	0.0253	0.043	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Manganese-54	-0.00354	0.0239	0.0403	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Manganese-54	-0.00153	0.0208	0.0357	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0107	ISWC0107RadS001	Soil	Manganese-54	-0.0271	0.0231	0.0366	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0108	ISWC0108RadS001	Soil	Manganese-54	0.0429	0.0292	0.054	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Manganese-54	0.00149	0.0228	0.0396	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0110	ISWC0110RadS001	Soil	Manganese-54	0.00378	0.0235	0.04	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Manganese-54	0.00084	0.0234	0.0405	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Potassium-40	22.4	1.99	0.376		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Potassium-40	22.3	1.94	0.368		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Potassium-40	23.4	2.23	0.294		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0107	ISWC0107RadS001	Soil	Potassium-40	21.8	1.82	0.267		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial

ISRA Soil Sample Results for Area II Landfill

Project Name	Sampling Organization	Sampling Date	Sampling Location (General)	Sampling Location (Specific)	Sample Serial Number	Media Type	Isotope	Value	Error (+/-)	MDA	Non-Detect?	Units	Error Type	Analysis Protocol	Analysis Organization	Document	Status
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0108	ISWC0108RadS001	Soil	Potassium-40	21.6	1.68	0.388		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Potassium-40	22	2.07	0.315		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0110	ISWC0110RadS001	Soil	Potassium-40	22	1.91	0.328		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Potassium-40	21	1.8	0.345		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Sodium-22	-0.03	0.0307	0.0474	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Sodium-22	-0.0099	0.0283	0.0468	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Sodium-22	-0.0291	0.0253	0.0397	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0107	ISWC0107RadS001	Soil	Sodium-22	-0.0294	0.0276	0.0428	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0108	ISWC0108RadS001	Soil	Sodium-22	0.00484	0.0347	0.0601	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Sodium-22	0.0045	0.0248	0.0422	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0110	ISWC0110RadS001	Soil	Sodium-22	-0.0266	0.0249	0.0388	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Sodium-22	-0.0202	0.0262	0.0426	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Strontium-90	0.00767	0.0224	0.0415	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Strontium-90	0.0287	0.0245	0.0393	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Strontium-90	0.0273	0.0272	0.0443	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0107	ISWC0107RadS001	Soil	Strontium-90	0.00488	0.0207	0.0398	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0108	ISWC0108RadS001	Soil	Strontium-90	0.0172	0.0223	0.0381	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Strontium-90	0.00413	0.021	0.0405	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0110	ISWC0110RadS001	Soil	Strontium-90	0.00741	0.0162	0.0295	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Strontium-90	0.00713	0.0234	0.0443	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Thorium-228	1.53	0.147	0.0692		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Thorium-228	1.53	0.16	0.0599		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Thorium-228	1.47	0.127	0.0527		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0107	ISWC0107RadS001	Soil	Thorium-228	1.4	0.117	0.0516		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0108	ISWC0108RadS001	Soil	Thorium-228	1.45	0.151	0.0628		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Thorium-228	1.38	0.114	0.0548		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0110	ISWC0110RadS001	Soil	Thorium-228	1.41	0.124	0.0638		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Thorium-228	1.37	0.121	0.0598		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Thorium-232	1.55	0.259	0.147		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Thorium-232	1.6	0.27	0.138		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Thorium-232	1.58	0.277	0.12		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0107	ISWC0107RadS001	Soil	Thorium-232	1.35	0.234	0.125		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0108	ISWC0108RadS001	Soil	Thorium-232	1.37	0.248	0.168		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Thorium-232	1.29	0.226	0.135		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0110	ISWC0110RadS001	Soil	Thorium-232	1.64	0.268	0.143		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Thorium-232	1.41	0.232	0.115		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Tritium	-0.136	0.51	0.915	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Tritium	-0.486	0.486	0.909	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Tritium	-0.365	0.493	0.908	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0107	ISWC0107RadS001	Soil	Tritium	-0.368	0.498	0.917	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0108	ISWC0108RadS001	Soil	Tritium	-0.222	0.517	0.934	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Tritium	-0.411	0.499	0.922	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0110	ISWC0110RadS001	Soil	Tritium	-0.325	0.497	0.91	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Tritium	-0.165	0.516	0.927	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Uranium-235	0.103	0.153	0.275	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Uranium-235	-0.106	0.141	0.233	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Uranium-235	0.0594	0.126	0.217	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0107	ISWC0107RadS001	Soil	Uranium-235	0.0255	0.12	0.206	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0108	ISWC0108RadS001	Soil	Uranium-235	0.252	0.195	0.229		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Uranium-235	0.0801	0.142	0.241	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0110	ISWC0110RadS001	Soil	Uranium-235	0.126	0.165	0.244	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Uranium-235	0.0967	0.175	0.227	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0104	ISWC0104RadS001	Soil	Uranium-238	-1.17	1.44	2.51	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0105	ISWC0105RadS001	Soil	Uranium-238	1.52	1.58	1.6	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0106	ISWC0106RadS001	Soil	Uranium-238	0.215	1.04	1.88	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0107	ISWC0107RadS001	Soil	Uranium-238	1.34	1.17	1.28		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0108	ISWC0108RadS001	Soil	Uranium-238	0.777	0.727	0.685		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0109	ISWC0109RadS001	Soil	Uranium-238	1.06	0.885	1.48	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0110	ISWC0110RadS001	Soil	Uranium-238	2.96	1.61	1.43		pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial
ISRA Waste Characterization	MWH	9/3/2009	A2LF	ISWC0111	ISWC0111RadS001	Soil	Uranium-238	1.24	1.29	1.52	NDA	pCi/g	2 sigma	EML HASL 300, 4.5.2.3	GEL	236678	Pre-remedial

Waste Characterization Reports

A2LF-1

A2LF-3

WASTE CHARACTERIZATION: IN-SITU SOIL LOCATED AT
ISRA AREA II PLANNED EXCAVATION A2LF-1

Introduction

This report presents supporting detailed information for the September 3, 2009 in-situ characterization of prospective soil wastes from planned ISRA excavations in SSFL Area II.

Background

In-situ characterization of soil destined to be excavated from designated locations in SSFL Area II in accordance with the ISRA Workplan was performed. A step-by-step approach was followed to accomplish characterization of the soil prior to excavation. The first step was to review available information regarding historical area usage and existing analytical data from past soil sampling in the applicable SSFL Area II locations. The objective was to identify all substances that could have an impact on the determination of whether soil in each planned excavation footprint was hazardous or not.

The next step was to develop a random sampling plan for each of the planned excavation footprints to determine whether any of the identified substances are present at concentrations that require further investigation. An evaluation of the results of the initial random sampling was performed to determine whether the data was adequate for waste characterization based on the exhibited variance of any detected analytes and the relative difference between detected concentrations and regulatory thresholds. The soil was characterized non-hazardous when analyte concentrations among the samples exhibited a reasonably small variance and there was satisfactory margin between the mean of the samples and applicable regulatory thresholds. Otherwise, additional samples were collected and subjected to analysis or the soil was characterized as hazardous.

The review of historical information and existing analytical data relevant to planned excavation A2LF-1 was based largely on the Group 2 RFI results. Evaluation of these data and other sources of relevant information suggested that Petroleum Hydrocarbons (TPH), Volatile Organic Compounds (VOC), Regulated metals, Polychlorinated Biphenyls (PCB), and Semi-Volatile Organic Compounds (SVOC) should be addressed in the A2LF-1 excavation footprint. A random sampling plan was developed for collection of Four (4) samples from the planned excavation footprint, taking into account the relatively small area to be excavated. The samples were analyzed for TPH, VOC, CAM 17 metals, PCBs, and SVOCs. All samples were collected, contained, and handled according to field practice requirements in SW-846.

Results

Analytical results for the A2LF-1 planned excavation area are presented in TestAmerica report ISI0508 issued on 9/25/09. TPH in the C10 - C40 range was detected in all of the samples. Concentrations were low, with a maximum of 54 mg/kg. No Petroleum Hydrocarbons in the C6 - C12 range (gasoline) were detected. A trace concentration of Acetone was detected at 0.015 mg/kg, possibly a lab artifact. No other VOCs were detected. No SVOCs were detected, and no PCBs were detected.

Low concentrations of some regulated metals were detected. Chromium was detected at concentrations ranging from 17 mg/kg to 23 mg/kg. Lead was detected at concentrations

ranging from 2.6 mg/kg to 13 mg/kg. These and all other detected regulated metals were well below regulatory thresholds.

Determination

According to analytical results and generator knowledge, the soil in the planned excavation footprint of SSFL Area II A2LF-1:

Is Not a Listed Waste (generator knowledge)
Is Not ignitable (generator knowledge)
Is Not corrosive (generator knowledge)
Is Not reactive (generator knowledge)
Is Not toxic (analytical results and generator knowledge)
- Is Not Extremely or Acutely Hazardous Waste
- Does not exceed any RCRA or Title 22 thresholds
- Is Not subject to the Prop. 65 listing
- Is Not subject to Title 22 Appendix X list
- Is Not known by experience or testing to pose a hazard to human health or environment because of its carcinogenicity, acute toxicity, chronic toxicity, bio-accumulative properties, or persistence in the environment.

The soil in A2LF-1 is NON-HAZARDOUS.

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 009

A2LF-1 WASTE CHARACTERIZATION RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

			Object Name:		**ISWC0104**	**ISWC0105**	**ISWC0106**	**ISWC0107**
			Sample Name:		ISWC0104S001	ISWC0105S001	ISWC0106S001	ISWC0107S001
			Collection Date:		9/3/2009	9/3/2009	9/3/2009	9/3/2009
			Sample Depth (feet):		0.1 - 0.6	0.4 - 0.9	1.5 - 2.0	0.1 - 0.6
ANALYTE	**UNITS**	**TTLC**	**WET Leachate Testing Trigger[a]**	**TCLP Leachate Testing Trigger[b]**	**RESULT**	**RESULT**	**RESULT**	**RESULT**
METALS								
Antimony	mg/kg	500	150	--	<10	<10	<10	<10
Arsenic	mg/kg	500	50	100	4.2	4.8	4.2	4.4
Barium	mg/kg	10,000	1,000	2,000	88	84	61	70
Beryllium	mg/kg	75	7.5	--	0.64	0.64	0.58	0.57
Cadmium	mg/kg	100	10	20	<0.50	<0.50	<0.50	<0.50
Chromium	mg/kg	500	50	100	23	23	18	18
Cobalt	mg/kg	8,000	800	--	5.8	5.9	4.8	5.1
Copper	mg/kg	2,500	250	--	9.5	8.8	6.9	9.2
Lead	mg/kg	1,000	50	100	13	4.5	2.6	5.9
Mercury	mg/kg	20	2	4	0.015 J	0.012 J	0.0067 J	0.013 J
Molybdenum	mg/kg	3,500	3,500	--	<2.0	<2.0	<2.0	<2.0
Nickel	mg/kg	2,000	200	--	18	17	14	14
Selenium	mg/kg	100	10	20	<2.0	<2.0	<2.0	<2.0
Silver	mg/kg	500	50	100	<1.0	<1.0	<1.0	<1.0
Thallium	mg/kg	700	70	--	<10	<10	<10	<10
Vanadium	mg/kg	2,400	240	--	38	38	30	32
Zinc	mg/kg	5,000	2,500	--	62	54	43	50
TPH								
Volatile Fuel Hydrocarbons (C6-C12)	mg/kg	--	--	--	0.014	0.011	0.010	0.015
TPH DRO (C10-C24)	mg/kg	--	--	--	15	<5.0	<5.0	10
TPH EFH (C10-C40)	mg/kg	--	--	--	54	22	14	48
TPH ORO (C25-C40)	mg/kg	--	--	--	39	18	9.7	38
PCBs								
Aroclor 1016	ug/kg	50,000	50,000	--	<50	<50	<50	<50
Aroclor 1221	ug/kg	50,000	50,000	--	<50	<50	<50	<50
Aroclor 1232	ug/kg	50,000	50,000	--	<50	<50	<50	<50
Aroclor 1242	ug/kg	50,000	50,000	--	<50	<50	<50	<50
Aroclor 1248	ug/kg	50,000	50,000	--	<50	<50	<50	<50
Aroclor 1254	ug/kg	50,000	50,000	--	<50	<50	<50	<50
Aroclor 1260	ug/kg	50,000	50,000	--	<50	<50	<50	<50
VOCs								
1,1,1,2-Tetrachloroethane	ug/kg	--	--	--	<2.0	<2.0	<2.0 I	<1.9
1,1,1-Trichloroethane	ug/kg	--	--	--	<0.99	<0.98	<0.99	<0.97
1,1,2,2-Tetrachloroethane	ug/kg	--	--	--	<2.0 I	<2.0 I	<2.0 I	<1.9 I
1,1,2-Trichloroethane	ug/kg	--	--	--	<0.99	<0.98	<0.99	<0.97

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 009

A2LF-1 WASTE CHARACTERIZATION RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

			Object Name:		**ISWC0104**	**ISWC0105**	**ISWC0106**	**ISWC0107**
			Sample Name:		ISWC0104S001	ISWC0105S001	ISWC0106S001	ISWC0107S001
			Collection Date:		9/3/2009	9/3/2009	9/3/2009	9/3/2009
			Sample Depth (feet):		0.1 - 0.6	0.4 - 0.9	1.5 - 2.0	0.1 - 0.6
ANALYTE	**UNITS**	**TTLC**	**WET Leachate Testing Trigger[a]**	**TCLP Leachate Testing Trigger[b]**	**RESULT**	**RESULT**	**RESULT**	**RESULT**
1,1-Dichloroethane	ug/kg	--	--	--	<0.99	<0.98	<0.99	<0.97
1,1-Dichloroethene	ug/kg	--	--	14,000	<2.0	<2.0	<2.0	<1.9
1,1-Dichloropropene	ug/kg	--	--	--	<0.99	<0.98	<0.99	<0.97
1,2,3-Trichlorobenzene	ug/kg	--	--	--	<2.0 C, I, M2, R-3	<2.0 I	<2.0 I	<1.9 I
1,2,3-Trichloropropane	ug/kg	--	--	--	<2.0 I, M1	<2.0 I	<2.0 I	<1.9 I
1,2,4-Trichlorobenzene	ug/kg	--	--	--	<2.0 I, M2	<2.0 I	<2.0 I	<1.9 I
1,2,4-Trimethylbenzene	ug/kg	--	--	--	<0.99 I, M1, R-3	<0.98 I	<0.99 I	<0.97 I
1,2-Dibromo-3-chloropropane	ug/kg	--	--	--	<9.9 I	<9.8 I	<9.9 I	<9.7 I
1,2-Dibromoethane (EDB)	ug/kg	--	--	--	<0.99	<0.98	<0.99 I	<0.97
1,2-Dichlorobenzene	ug/kg	--	--	--	<0.99 I	<0.98 I	<0.99 I	<0.97 I
1,2-Dichloroethane	ug/kg	--	--	10,000	<0.99	<0.98	<0.99	<0.97
1,2-Dichloropropane	ug/kg	--	--	--	<0.99	<0.98	<0.99	<0.97
1,3,5-Trimethylbenzene	ug/kg	--	--	--	<0.99 I, M1	<0.98 I	<0.99 I	<0.97 I
1,3-Dichlorobenzene	ug/kg	--	--	--	<0.99 C, I	<0.98 I	<0.99 I	<0.97 I
1,3-Dichloropropane	ug/kg	--	--	--	<0.99	<0.98	<0.99 I	<0.97
1,4-Dichlorobenzene	ug/kg	--	--	--	<0.99 I	<0.98 I	<0.99 I	<0.97 I
2,2-Dichloropropane	ug/kg	--	--	--	<0.99	<0.98	<0.99	<0.97
2-Butanone (MEK)	ug/kg	--	--	4,000,000	<9.9	<9.8	<9.9	<9.7
2-Chlorotoluene	ug/kg	--	--	--	<2.0 I	<2.0 I	<2.0 I	<1.9 I
2-Hexanone	ug/kg	--	--	--	<9.9	<9.8	<9.9 I	<9.7
4-Chlorotoluene	ug/kg	--	--	--	<2.0 I, M1	<2.0 I	<2.0 I	<1.9 I
4-Methyl-2-pentanone (MIBK)	ug/kg	--	--	--	<5.0	<4.9	<4.9	<4.9
Acetone	ug/kg	--	--	--	<9.9	<9.8	<9.9	15
Benzene	ug/kg	--	--	10,000	<0.99	<0.98	<0.99	<0.97
Bromobenzene	ug/kg	--	--	--	<2.0 I, M1, R-3	<2.0 I	<2.0 I	<1.9 I
Bromochloromethane	ug/kg	--	--	--	<2.0	<2.0	<2.0	<1.9
Bromodichloromethane	ug/kg	--	--	--	<0.99	<0.98	<0.99	<0.97
Bromoform	ug/kg	--	--	--	<2.0	<2.0	<2.0 I	<1.9
Bromomethane	ug/kg	--	--	--	<2.0	<2.0	<2.0	<1.9
Carbon Disulfide	ug/kg	--	--	--	<5.0	<4.9	<4.9	<4.9
Carbon tetrachloride	ug/kg	--	--	10,000	<2.0	<2.0	<2.0	<1.9
Chlorobenzene	ug/kg	--	--	2,000,000	<0.99	<0.98	<0.99 I	<0.97
Chloroethane	ug/kg	--	--	--	<2.0	<2.0	<2.0	<1.9
Chloroform	ug/kg	--	--	120,000	<0.99	<0.98	<0.99	<0.97
Chloromethane	ug/kg	--	--	--	<2.0	<2.0	<2.0	<1.9
cis-1,2-Dichloroethene	ug/kg	--	--	--	<0.99	<0.98	<0.99	<0.97

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 009

A2LF-1 WASTE CHARACTERIZATION RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

			Object Name:		**ISWC0104**	**ISWC0105**	**ISWC0106**	**ISWC0107**
			Sample Name:		ISWC0104S001	ISWC0105S001	ISWC0106S001	ISWC0107S001
			Collection Date:		9/3/2009	9/3/2009	9/3/2009	9/3/2009
			Sample Depth (feet):		0.1 - 0.6	0.4 - 0.9	1.5 - 2.0	0.1 - 0.6
ANALYTE	**UNITS**	**TTLC**	**WET Leachate Testing Trigger[a]**	**TCLP Leachate Testing Trigger[b]**	**RESULT**	**RESULT**	**RESULT**	**RESULT**
cis-1,3-Dichloropropene	ug/kg	--	--	--	<0.99	<0.98 L	<0.99 L	<0.97 L
Dibromochloromethane	ug/kg	--	--	--	<0.99	<0.98	<0.99 I	<0.97
Dibromomethane	ug/kg	--	--	--	<0.99	<0.98	<0.99	<0.97
Dichlorodifluoromethane	ug/kg	--	--	--	<5.0	<4.9	<4.9	<4.9
Ethylbenzene	ug/kg	--	--	--	<0.99	<0.98	<0.99 I	<0.97
Hexachlorobutadiene	ug/kg	--	--	--	<2.0 C, I	<2.0 I	<2.0 I	<1.9 I
Isopropylbenzene	ug/kg	--	--	--	<0.99 I, M1	<0.98 I	<0.99 I	<0.97 I
m,p-Xylenes	ug/kg	--	--	--	<2.0	<2.0	<2.0 I	<1.9
Methylene chloride	ug/kg	--	--	--	<9.9	<9.8	<9.9	<9.7
Methyl-tert-butyl Ether (MTBE)	ug/kg	--	--	--	<2.0	<2.0	<2.0	<1.9
Naphthalene	ug/kg	--	--	--	<2.0 I	<2.0 I	<2.0 I	<1.9 I
n-Butylbenzene	ug/kg	--	--	--	<2.0 I	<2.0 I	<2.0 I	<1.9 I
n-Propylbenzene	ug/kg	--	--	--	<0.99 I, M1	<0.98 I	<0.99 I	<0.97 I
o-Xylene	ug/kg	--	--	--	<0.99	<0.98	<0.99 I	<0.97
p-Isopropyltoluene	ug/kg	--	--	--	<0.99 C, I	<0.98 I	<0.99 I	<0.97 I
sec-Butylbenzene	ug/kg	--	--	--	<2.0 I	<2.0 I	<2.0 I	<1.9 I
Styrene	ug/kg	--	--	--	<0.99	<0.98	<0.99 I	<0.97
tert-Butylbenzene	ug/kg	--	--	--	<2.0 C, I, M1, R-3	<2.0 I	<2.0 I	<1.9 I
Tetrachloroethene	ug/kg	--	--	14,000	<0.99	<0.98	<0.99 I	<0.97
Toluene	ug/kg	--	--	--	<0.99	<0.98	<0.99	<0.97
trans-1,2-Dichloroethene	ug/kg	--	--	--	<0.99	<0.98	<0.99	<0.97
trans-1,3-Dichloropropene	ug/kg	--	--	--	<0.99	<0.98	<0.99	<0.97
Trichloroethene	ug/kg	2,040,000	2,040,000	10,000	<0.99	<0.98	<0.99	<0.97
Trichlorofluoromethane	ug/kg	--	--	--	<2.0	<2.0	<2.0	<1.9
Vinyl acetate	ug/kg	--	--	--	<5.0 M2	<4.9	<4.9	<4.9
Vinyl chloride	ug/kg	--	--	4,000	<2.0	<2.0	<2.0	<1.9
SVOCs								
1,2,4-Trichlorobenzene	ug/kg	--	--	--	<330	<330	<330	<330
1,2-Dichlorobenzene	ug/kg	--	--	--	<330	<330	<330	<330
1,2-Diphenylhydrazine/Azobenzene	ug/kg	--	--	--	<330	<330	<330	<330
1,3-Dichlorobenzene	ug/kg	--	--	--	<330	<330	<330	<330
1,4-Dichlorobenzene	ug/kg	--	--	150,000	<330	<330	<330	<330
2,4,5-Trichlorophenol	ug/kg	--	--	8,000,000	<330	<330	<330	<330
2,4,6-Trichlorophenol	ug/kg	--	--	40,000	<330	<330	<330	<330
2,4-Dichlorophenol	ug/kg	--	--	--	<330	<330	<330	<330
2,4-Dimethylphenol	ug/kg	--	--	--	<330	<330	<330	<330

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 009

A2LF-1 WASTE CHARACTERIZATION RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

			Object Name:		**ISWC0104**	**ISWC0105**	**ISWC0106**	**ISWC0107**
			Sample Name:		ISWC0104S001	ISWC0105S001	ISWC0106S001	ISWC0107S001
			Collection Date:		9/3/2009	9/3/2009	9/3/2009	9/3/2009
			Sample Depth (feet):		0.1 - 0.6	0.4 - 0.9	1.5 - 2.0	0.1 - 0.6
ANALYTE	**UNITS**	**TTLC**	**WET Leachate Testing Trigger[a]**	**TCLP Leachate Testing Trigger[b]**	**RESULT**	**RESULT**	**RESULT**	**RESULT**
2,4-Dinitrophenol	ug/kg	--	--	--	<660	<660	<660	<660
2,4-Dinitrotoluene	ug/kg	--	--	2,600	<330	<330	<330	<330
2,6-Dinitrotoluene	ug/kg	--	--	--	<330	<330	<330	<330
2-Chloronaphthalene	ug/kg	--	--	--	<330	<330	<330	<330
2-Chlorophenol	ug/kg	--	--	--	<330	<330	<330	<330
2-Methylnaphthalene	ug/kg	--	--	--	<330	<330	<330	<330
2-Methylphenol	ug/kg	--	--	--	<330	<330	<330	<330
2-Nitroaniline	ug/kg	--	--	--	<330	<330	<330	<330
2-Nitrophenol	ug/kg	--	--	--	<330	<330	<330	<330
3,3'-Dichlorobenzidine	ug/kg	--	--	--	<830	<830	<830	<830
3-Nitroaniline	ug/kg	--	--	--	<330	<330	<330	<330
4,6-Dinitro-2-methylphenol	ug/kg	--	--	--	<420	<420	<420	<420
4-Bromophenyl phenyl ether	ug/kg	--	--	--	<330	<330	<330	<330
4-Chloro-3-methylphenol	ug/kg	--	--	--	<330	<330	<330	<330
4-Chloroaniline	ug/kg	--	--	--	<330	<330	<330	<330
4-Chlorophenyl phenyl ether	ug/kg	--	--	--	<330	<330	<330	<330
4-Methylphenol	ug/kg	--	--	--	<330 L	<330 L	<330 L	<330 L
4-Nitroaniline	ug/kg	--	--	--	<830	<830	<830	<830
4-Nitrophenol	ug/kg	--	--	--	<830	<830	<830	<830
Acenaphthene	ug/kg	--	--	--	<330	<330	<330	<330
Acenaphthylene	ug/kg	--	--	--	<330	<330	<330	<330
Aniline	ug/kg	--	--	--	<420	<420	<420	<420
Anthracene	ug/kg	--	--	--	<330	<330	<330	<330
Benzidine	ug/kg	--	--	--	<660	<660	<660	<660
Benzo(a)anthracene	ug/kg	--	--	--	<330	<330	<330	<330
Benzo(a)pyrene	ug/kg	--	--	--	<330	<330	<330	<330
Benzo(b)fluoranthene	ug/kg	--	--	--	<330	<330	<330	<330
Benzo(g,h,i)perylene	ug/kg	--	--	--	<330	<330	<330	<330
Benzo(k)fluoranthene	ug/kg	--	--	--	<330	<330	<330	<330
Benzoic acid	ug/kg	--	--	--	<830	<830	<830	<830
Benzyl alcohol	ug/kg	--	--	--	<330	<330	<330	<330
Bis(2-chloroethoxy)methane	ug/kg	--	--	--	<330	<330	<330	<330
Bis(2-chloroethyl)ether	ug/kg	--	--	--	<170	<170	<170	<170
Bis(2-chloroisopropyl)ether	ug/kg	--	--	--	<330	<330	<330	<330
Bis(2-ethylhexyl)phthalate	ug/kg	--	--	--	<330	<330	<330	<330
Butyl benzyl phthalate	ug/kg	--	--	--	<330	<330	<330	<330

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 009

A2LF-1 WASTE CHARACTERIZATION RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

			Object Name:		**ISWC0104**	**ISWC0105**	**ISWC0106**	**ISWC0107**
			Sample Name:		ISWC0104S001	ISWC0105S001	ISWC0106S001	ISWC0107S001
			Collection Date:		9/3/2009	9/3/2009	9/3/2009	9/3/2009
			Sample Depth (feet):		0.1 - 0.6	0.4 - 0.9	1.5 - 2.0	0.1 - 0.6
ANALYTE	**UNITS**	**TTLC**	**WET Leachate Testing Trigger[a]**	**TCLP Leachate Testing Trigger[b]**	**RESULT**	**RESULT**	**RESULT**	**RESULT**
Chrysene	ug/kg	--	--	--	<330	<330	<330	<330
Dibenz(a,h)anthracene	ug/kg	--	--	--	<420	<420	<420	<420
Dibenzofuran	ug/kg	--	--	--	<330	<330	<330	<330
Diethyl phthalate	ug/kg	--	--	--	<330	<330	<330	<330
Dimethyl phthalate	ug/kg	--	--	--	<330	<330	<330	<330
Di-n-butyl phthalate	ug/kg	--	--	--	<330	<330	<330	<330
Di-n-octyl phthalate	ug/kg	--	--	--	<330	<330	<330	<330
Fluoranthene	ug/kg	--	--	--	<330	<330	<330	<330
Fluorene	ug/kg	--	--	--	<330	<330	<330	<330
Hexachlorobenzene	ug/kg	--	--	2,600	<330	<330	<330	<330
Hexachlorobutadiene	ug/kg	--	--	10,000	<330	<330	<330	<330
Hexachlorocyclopentadiene	ug/kg	--	--	--	<830	<830	<830	<830
Hexachloroethane	ug/kg	--	--	60,000	<330	<330	<330	<330
Indeno(1,2,3-cd)pyrene	ug/kg	--	--	--	<330	<330	<330	<330
Isophorone	ug/kg	--	--	--	<330	<330	<330	<330
Naphthalene	ug/kg	--	--	--	<330	<330	<330	<330
Nitrobenzene	ug/kg	--	--	40,000	<330	<330	<330	<330
N-Nitrosodimethylamine	ug/kg	--	--	--	<330	<330	<330	<330
N-Nitroso-di-n-propylamine	ug/kg	--	--	--	<250	<250	<250	<250
N-Nitrosodiphenylamine	ug/kg	--	--	--	<330	<330	<330	<330
Pentachlorophenol	ug/kg	17,000	17,000	2,000,000	<830	<830	<830	<830
Phenanthrene	ug/kg	--	--	--	<330	<330	<330	<330
Phenol	ug/kg	--	--	--	<330	<330	<330	<330
Pyrene	ug/kg	--	--	--	<330	<330	<330	<330
RADIONUCLIDES	--	--	--	--	R	R	R	R

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 009

A2LF-1 WASTE CHARACTERIZATION RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

Notes:

"--" - not analyzed / not applicable

[1] - WET Leachate Testing Trigger = STLC limit * 10

[2] - TCLP Leachate Testing Trigger = TCLP limit * 20

I - Internal Standard recovery was outside of method limits. Matrix interference was confirmed.

J - Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.

L - Laboratory Control Sample and/or Laboratory Control Sample Duplicate recovery was above the acceptance limits. Analyte not detected, data not impacted.

M1 - The MS and/or MSD were above the acceptance limits due to sample matrix interference. See Blank Spike (LCS).

M2 - The MS and/or MSD were below the acceptance limits due to sample matrix interference. See Blank Spike (LCS).

M7 - The MS and/or MSD were above the acceptance limits. See Blank Spike (LCS).

µg/kg - micrograms per kilogram

mg/kg - milligrams per kilogram

R - Radiological analysis includes gamma spectroscopy (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), strontium-90, and tritium. Boeing has prepared a document dated September 21, 2009 that provides the radiological results and statistical analysis of the Outfall 009 A2LF waste characterization samples. Based on the results, the document certifies the soil represented by these waste characterization samples to be "radiologically" acceptable for shipment to Class 1, 2, and/or 3 disposal facilities. The analysis and data interpretation complies with procedures approved by the California Department of Public Health.

R-3 - The RPD exceeded the acceptance limit due to sample matrix effects

RL1 - Reporting limit raised due to sample matrix effects.

WASTE CHARACTERIZATION: IN-SITU SOIL LOCATED AT
ISRA AREA II PLANNED EXCAVATION A2LF-3

Introduction

This report presents supporting detailed information for the September 3, 2009 in-situ characterization of prospective soil wastes from planned ISRA excavations in SSFL Area II.

Background

In-situ characterization of soil destined to be excavated from designated locations in SSFL Area II in accordance with the ISRA Workplan was performed. A step-by-step approach was followed to accomplish characterization of the soil prior to excavation. The first step was to review available information regarding historical area usage and existing analytical data from past soil sampling in the applicable SSFL Area II locations. The objective was to identify all substances that could have an impact on the determination of whether soil in each planned excavation footprint was hazardous or not.

The next step was to develop a random sampling plan for each of the planned excavation footprints to determine whether any of the identified substances are present at concentrations that require further investigation. An evaluation of the results of the initial random sampling was performed to determine whether the data was adequate for waste characterization based on the exhibited variance of any detected analytes and the relative difference between detected concentrations and regulatory thresholds. The soil was characterized non-hazardous when analyte concentrations among the samples exhibited a reasonably small variance and there was satisfactory margin between the mean of the samples and applicable regulatory thresholds. Otherwise, additional samples were collected and subjected to analysis or the soil was characterized as hazardous.

The review of historical information and existing analytical data relevant to planned excavation A2LF-3 was based largely on the Group 2 RFI results. Evaluation of these data and other sources of relevant information suggested that Petroleum Hydrocarbons (TPH), Volatile Organic Compounds (VOC), Regulated metals, Polychlorinated Biphenyls (PCB), and Semi-Volatile Organic Compounds (SVOC) should be addressed in the A2LF-3 excavation footprint. A random sampling plan was developed for collection of Four (4) samples from the planned excavation footprint, taking into account the relatively small area to be excavated. The samples were analyzed for TPH, VOC, CAM 17 metals, PCBs, and SVOCs. All samples were collected, contained, and handled according to field practice requirements in SW-846.

Results

Analytical results for the A2LF-3 planned excavation area are presented in TestAmerica report ISI0508 issued on 9/25/09. TPH in the C10 - C40 range was detected in all of the samples. Concentrations were low, with a maximum of 150 mg/kg. No Petroleum Hydrocarbons in the C6 - C12 range (gasoline) were detected. A trace concentration of Acetone was detected at 0.009 mg/kg, as well as Toluene at a concentration of 0.0008 mg/kg. No other VOCs were detected. SVOCs were detected, but all were below an individual and collective concentration of 1 mg/kg in any given sample. No PCBs were detected.

Regulated metals were detected, and in one case exceeded the California STLC 10 X rule requiring the performance of the WET leachate test. Chromium was detected at concentrations

ranging from 17 mg/kg to 27 mg/kg. Lead was detected at concentrations ranging from 27 mg/kg to 74 mg/kg. The required California WET for Lead was conducted on the sample that exceeded the total Lead 50 ppm threshold and resulted in a leachate concentration of 3.7 mg/L. Although this is below the California STLC hazardous waste threshold, other factors were also of importance in characterizing this soil. The Lead detections were not tightly grouped. Consequently, a large variance, and the proximity of the mean concentration to the regulatory threshold, indicated that additional sampling was needed before analytical results could be considered representative of the average soil characteristics.

All other detected regulated metals were well below regulatory thresholds.

Determination

According to analytical results and generator knowledge, the soil in the planned excavation footprint of SSFL Area II A2LF-3:

Is Not a Listed Waste (generator knowledge)
Is Not ignitable (generator knowledge)
Is Not corrosive (generator knowledge)
Is Not reactive (generator knowledge)
Is potentially toxic (analytical results and generator knowledge)
- Is Not Extremely or Acutely Hazardous Waste
- **May exceed the Title 22 threshold for Lead**
- Is Not subject to the Prop. 65 listing
- Is Not subject to Title 22 Appendix X list
- Is Not known by experience or testing to pose a hazard to human health or environment because of its carcinogenicity, acute toxicity, chronic toxicity, bio-accumulative properties, or persistence in the environment.

The soil in A2LF-3 will be managed as HAZARDOUS in lieu of additional sampling.

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 009

A2LF-3 WASTE CHARACTERIZATION RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

			Object Name:			**ISWC0108**	**ISWC0109**	**ISWC0110**	**ISWC0111**
			Sample Name:			ISWC0108S001	ISWC0109S001	ISWC0110S001	ISWC0111S001
			Collection Date:			9/3/2009	9/3/2009	9/3/2009	9/3/2009
			Sample Depth (feet):			0.5 - 1.0	0.0 - 0.2	0.0 - 0.2	1.0 - 1.5
ANALYTE	**UNITS**	**TTLC**	**WET Leachate Testing Trigger[a]**	**TCLP Leachate Testing Trigger[b]**	**STLC**	**RESULT**	**RESULT**	**RESULT**	**RESULT**
METALS									
Antimony	mg/kg	500	150	--	--	<10	<10	<10	<10
Arsenic	mg/kg	500	50	100	--	7.0	5.4	5.7	4.7
Barium	mg/kg	10,000	1,000	2,000	--	91	78	90	68
Beryllium	mg/kg	75	7.5	--	--	0.74	0.69	0.61	0.56
Cadmium	mg/kg	100	10	20	--	<0.50	<0.50	<0.50	<0.50
Chromium	mg/kg	500	50	100	--	27	20	19	17
Cobalt	mg/kg	8,000	800	--	--	6.4	5.4	5.2	4.6
Copper	mg/kg	2,500	250	--	--	12	10	10	8.1
Lead	mg/kg	1,000	50	100	--	44	27	30	74
Lead, WET	mg/L	--	--	--	5	--	--	--	3.7
Mercury	mg/kg	20	2	4	--	0.020 J	0.034	0.028 J	0.015 J
Molybdenum	mg/kg	3,500	3,500	--	--	<2.0	<2.0	<2.0	<2.0
Nickel	mg/kg	2,000	200	--	--	18	14	14	12
Selenium	mg/kg	100	10	20	--	<2.0	<2.0	<2.0	<2.0
Silver	mg/kg	500	50	100	--	<1.0	<1.0	<1.0	<1.0
Thallium	mg/kg	700	70	--	--	<10	<10	<10	<10
Vanadium	mg/kg	2,400	240	--	--	41	36	34	32
Zinc	mg/kg	5,000	2,500	--	--	70	58	61	53
TPH									
Volatile Fuel Hydrocarbons (C6-C12)	mg/kg	--	--	--	--	0.012	0.013	0.014	0.053
TPH DRO (C10-C24)	mg/kg	--	--	--	--	9.3	34	22	27
TPH EFH (C10-C40)	mg/kg	--	--	--	--	46	150	120	120 M1
TPH ORO (C25-C40)	mg/kg	--	--	--	--	36	120	100	93
PCBs									
Aroclor 1016	ug/kg	50,000	50,000	--	--	<50	<50	<50	<50
Aroclor 1221	ug/kg	50,000	50,000	--	--	<50	<50	<50	<50
Aroclor 1232	ug/kg	50,000	50,000	--	--	<50	<50	<50	<50
Aroclor 1242	ug/kg	50,000	50,000	--	--	<50	<50	<50	<50
Aroclor 1248	ug/kg	50,000	50,000	--	--	<50	<50	<50	<50
Aroclor 1254	ug/kg	50,000	50,000	--	--	<50	<50	<50	<50
Aroclor 1260	ug/kg	50,000	50,000	--	--	<50	<50	<50	<50
VOCs									
1,1,1,2-Tetrachloroethane	ug/kg	--	--	--	--	<1.9	<2.0 I	<4.0 RL1	<2.0
1,1,1-Trichloroethane	ug/kg	--	--	--	--	<0.97	<1.0	<2.0 RL1	<0.99
1,1,2,2-Tetrachloroethane	ug/kg	--	--	--	--	<1.9 I	<2.0 I	<4.0 RL1, I	<2.0

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 009

A2LF-3 WASTE CHARACTERIZATION RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

			Object Name:			**ISWC0108**	**ISWC0109**	**ISWC0110**	**ISWC0111**
			Sample Name:			ISWC0108S001	ISWC0109S001	ISWC0110S001	ISWC0111S001
			Collection Date:			9/3/2009	9/3/2009	9/3/2009	9/3/2009
			Sample Depth (feet):			0.5 - 1.0	0.0 - 0.2	0.0 - 0.2	1.0 - 1.5
ANALYTE	**UNITS**	**TTLC**	**WET Leachate Testing Trigger[a]**	**TCLP Leachate Testing Trigger[b]**	**STLC**	**RESULT**	**RESULT**	**RESULT**	**RESULT**
1,1,2-Trichloroethane	ug/kg	--	--	--	--	<0.97	<1.0	<2.0 RL1	<0.99
1,1-Dichloroethane	ug/kg	--	--	--	--	<0.97	<1.0	<2.0 RL1	<0.99
1,1-Dichloroethene	ug/kg	--	--	14,000	--	<1.9	<2.0	<4.0 RL1	<2.0
1,1-Dichloropropene	ug/kg	--	--	--	--	<0.97	<1.0	<2.0 RL1	<0.99
1,2,3-Trichlorobenzene	ug/kg	--	--	--	--	<1.9 I	<2.0 I	<4.0 RL1, I	<2.0
1,2,3-Trichloropropane	ug/kg	--	--	--	--	<1.9 I	<2.0 I	<4.0 RL1, I	<2.0 M1
1,2,4-Trichlorobenzene	ug/kg	--	--	--	--	<1.9 I	<2.0 I	<4.0 RL1, I	<2.0
1,2,4-Trimethylbenzene	ug/kg	--	--	--	--	<0.97 I	<1.0 I	<2.0 RL1, I	<0.99
1,2-Dibromo-3-chloropropane	ug/kg	--	--	--	--	<9.7 I	<10 I	<20 RL1, I	<9.9
1,2-Dibromoethane (EDB)	ug/kg	--	--	--	--	<0.97	<1.0 I	<2.0 RL1	<0.99
1,2-Dichlorobenzene	ug/kg	--	--	--	--	<0.97 I	<1.0 I	<2.0 RL1, I	<0.99
1,2-Dichloroethane	ug/kg	--	--	10,000	--	<0.97	<1.0	<2.0 RL1	<0.99
1,2-Dichloropropane	ug/kg	--	--	--	--	<0.97	<1.0	<2.0 RL1	<0.99
1,3,5-Trimethylbenzene	ug/kg	--	--	--	--	<0.97 I	<1.0 I	<2.0 RL1, I	<0.99
1,3-Dichlorobenzene	ug/kg	--	--	--	--	<0.97 I	<1.0 I	<2.0 RL1, I	<0.99
1,3-Dichloropropane	ug/kg	--	--	--	--	<0.97	<1.0 I	<2.0 RL1	<0.99
1,4-Dichlorobenzene	ug/kg	--	--	--	--	<0.97 I	<1.0 I	<2.0 RL1, I	<0.99
2,2-Dichloropropane	ug/kg	--	--	--	--	<0.97	<1.0	<2.0 RL1	<0.99
2-Butanone (MEK)	ug/kg	--	--	4,000,000	--	<9.7	<10	<20 RL1	<9.9
2-Chlorotoluene	ug/kg	--	--	--	--	<1.9 I	<2.0 I	<4.0 RL1, I	<2.0
2-Hexanone	ug/kg	--	--	--	--	<9.7	<10 I	<20 RL1	<9.9
4-Chlorotoluene	ug/kg	--	--	--	--	<1.9 I	<2.0 I	<4.0 RL1, I	<2.0
4-Methyl-2-pentanone (MIBK)	ug/kg	--	--	--	--	<4.8	<5.0	<10 RL1	<4.9
Acetone	ug/kg	--	--	--	--	<9.7	<10	<20 RL1	<9.9 M1, R-3
Benzene	ug/kg	--	--	10,000	--	<0.97	<1.0	<2.0 RL1	<0.99
Bromobenzene	ug/kg	--	--	--	--	<1.9 I	<2.0 I	<4.0 RL1, I	<2.0
Bromochloromethane	ug/kg	--	--	--	--	<1.9	<2.0	<4.0 RL1	<2.0
Bromodichloromethane	ug/kg	--	--	--	--	<0.97	<1.0	<2.0 RL1	<0.99
Bromoform	ug/kg	--	--	--	--	<1.9	<2.0 I	<4.0 RL1	<2.0
Bromomethane	ug/kg	--	--	--	--	<1.9	<2.0	<4.0 RL1	<2.0
Carbon Disulfide	ug/kg	--	--	--	--	<4.8	<5.0	<10 RL1	<4.9
Carbon tetrachloride	ug/kg	--	--	10,000	--	<1.9	<2.0	<4.0 RL1	<2.0
Chlorobenzene	ug/kg	--	--	2,000,000	--	<0.97	<1.0 I	<2.0 RL1	<0.99
Chloroethane	ug/kg	--	--	--	--	<1.9	<2.0	<4.0 RL1	<2.0
Chloroform	ug/kg	--	--	120,000	--	<0.97	<1.0	<2.0 RL1	<0.99
Chloromethane	ug/kg	--	--	--	--	<1.9	<2.0	<4.0 RL1	<2.0

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 009

A2LF-3 WASTE CHARACTERIZATION RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

			Object Name:			**ISWC0108**	**ISWC0109**	**ISWC0110**	**ISWC0111**
			Sample Name:			ISWC0108S001	ISWC0109S001	ISWC0110S001	ISWC0111S001
			Collection Date:			9/3/2009	9/3/2009	9/3/2009	9/3/2009
			Sample Depth (feet):			0.5 - 1.0	0.0 - 0.2	0.0 - 0.2	1.0 - 1.5
ANALYTE	**UNITS**	**TTLC**	**WET Leachate Testing Trigger[a]**	**TCLP Leachate Testing Trigger[b]**	**STLC**	**RESULT**	**RESULT**	**RESULT**	**RESULT**
cis-1,2-Dichloroethene	ug/kg	--	--	--	--	<0.97	<1.0	<2.0 RL1	<0.99
cis-1,3-Dichloropropene	ug/kg	--	--	--	--	<0.97 L	<1.0 L	<2.0 RL1, L	<0.99 L, M7
Dibromochloromethane	ug/kg	--	--	--	--	<0.97	<1.0 I	<2.0 RL1	<0.99
Dibromomethane	ug/kg	--	--	--	--	<0.97	<1.0	<2.0 RL1	<0.99
Dichlorodifluoromethane	ug/kg	--	--	--	--	<4.8	<5.0	<10 RL1	<4.9
Ethylbenzene	ug/kg	--	--	--	--	<0.97	<1.0 I	<2.0 RL1	<0.99
Hexachlorobutadiene	ug/kg	--	--	--	--	<1.9 I	<2.0 I	<4.0 RL1, I	<2.0
Isopropylbenzene	ug/kg	--	--	--	--	<0.97 I	<1.0 I	<2.0 RL1, I	<0.99
m,p-Xylenes	ug/kg	--	--	--	--	<1.9	<2.0 I	<4.0 RL1	<2.0
Methylene chloride	ug/kg	--	--	--	--	<9.7	<10	<20 RL1	<9.9
Methyl-tert-butyl Ether (MTBE)	ug/kg	--	--	--	--	<1.9	<2.0	<4.0 RL1	<2.0
Naphthalene	ug/kg	--	--	--	--	<1.9 I	<2.0 I	<4.9 I	<2.0
n-Butylbenzene	ug/kg	--	--	--	--	<1.9 I	<2.0 I	<4.0 RL1, I	<2.0
n-Propylbenzene	ug/kg	--	--	--	--	<0.97 I	<1.0 I	<2.0 RL1, I	<0.99
o-Xylene	ug/kg	--	--	--	--	<0.97	<1.0 I	<2.0 RL1	<0.99
p-Isopropyltoluene	ug/kg	--	--	--	--	<0.97 I	<1.0 I	<2.0 RL1, I	<0.99
sec-Butylbenzene	ug/kg	--	--	--	--	<1.9 I	<2.0 I	<4.0 RL1, I	<2.0
Styrene	ug/kg	--	--	--	--	<0.97	<1.0 I	<2.0 RL1	<0.99
tert-Butylbenzene	ug/kg	--	--	--	--	<1.9 I	<2.0 I	<4.0 RL1, I	<2.0
Tetrachloroethene	ug/kg	--	--	14,000	--	<0.97	<1.0 I	<2.0 RL1	<0.99
Toluene	ug/kg	--	--	--	--	<0.97	<1.0	<2.0 RL1	<0.99
trans-1,2-Dichloroethene	ug/kg	--	--	--	--	<0.97	<1.0	<2.0 RL1	<0.99
trans-1,3-Dichloropropene	ug/kg	--	--	--	--	<0.97	<1.0	<2.0 RL1	<0.99
Trichloroethene	ug/kg	2,040,000	2,040,000	10,000	--	<0.97	<1.0	<2.0 RL1	<0.99
Trichlorofluoromethane	ug/kg	--	--	--	--	<1.9	<2.0	<4.0 RL1	<2.0
Vinyl acetate	ug/kg	--	--	--	--	<4.8	<5.0	<10 RL1	<4.9 M2
Vinyl chloride	ug/kg	--	--	4,000	--	<1.9	<2.0	<4.0 RL1	<2.0
SVOCs									
1,2,4-Trichlorobenzene	ug/kg	--	--	--	--	<330	<330	<330	<330
1,2-Dichlorobenzene	ug/kg	--	--	--	--	<330	<330	<330	<330
1,2-Diphenylhydrazine/Azobenzene	ug/kg	--	--	--	--	<330	<330	<330	<330
1,3-Dichlorobenzene	ug/kg	--	--	--	--	<330	<330	<330	<330
1,4-Dichlorobenzene	ug/kg	--	--	150,000	--	<330	<330	<330	<330
2,4,5-Trichlorophenol	ug/kg	--	--	8,000,000	--	<330	<330	<330	<330
2,4,6-Trichlorophenol	ug/kg	--	--	40,000	--	<330	<330	<330	<330
2,4-Dichlorophenol	ug/kg	--	--	--	--	<330	<330	<330	<330

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 009

A2LF-3 WASTE CHARACTERIZATION RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

			Object Name:			**ISWC0108**	**ISWC0109**	**ISWC0110**	**ISWC0111**
			Sample Name:			ISWC0108S001	ISWC0109S001	ISWC0110S001	ISWC0111S001
			Collection Date:			9/3/2009	9/3/2009	9/3/2009	9/3/2009
			Sample Depth (feet):			0.5 - 1.0	0.0 - 0.2	0.0 - 0.2	1.0 - 1.5
ANALYTE	**UNITS**	**TTLC**	**WET Leachate Testing Trigger[a]**	**TCLP Leachate Testing Trigger[b]**	**STLC**	**RESULT**	**RESULT**	**RESULT**	**RESULT**
2,4-Dimethylphenol	ug/kg	--	--	--	--	<330	<330	<330	<330
2,4-Dinitrophenol	ug/kg	--	--	--	--	<660	<660	<660	<660
2,4-Dinitrotoluene	ug/kg	--	--	2,600	--	<330	<330	<330	<330
2,6-Dinitrotoluene	ug/kg	--	--	--	--	<330	<330	<330	<330
2-Chloronaphthalene	ug/kg	--	--	--	--	<330	<330	<330	<330
2-Chlorophenol	ug/kg	--	--	--	--	<330	<330	<330	<330
2-Methylnaphthalene	ug/kg	--	--	--	--	<330	<330	<330	<330
2-Methylphenol	ug/kg	--	--	--	--	<330	<330	<330	<330
2-Nitroaniline	ug/kg	--	--	--	--	<330	<330	<330	<330
2-Nitrophenol	ug/kg	--	--	--	--	<330	<330	<330	<330
3,3'-Dichlorobenzidine	ug/kg	--	--	--	--	<830	<830	<830	<830
3-Nitroaniline	ug/kg	--	--	--	--	<330	<330	<330	<330
4,6-Dinitro-2-methylphenol	ug/kg	--	--	--	--	<420	<420	<420	<420
4-Bromophenyl phenyl ether	ug/kg	--	--	--	--	<330	<330	<330	<330
4-Chloro-3-methylphenol	ug/kg	--	--	--	--	<330	<330	<330	<330
4-Chloroaniline	ug/kg	--	--	--	--	<330	<330	<330	<330
4-Chlorophenyl phenyl ether	ug/kg	--	--	--	--	<330	<330	<330	<330
4-Methylphenol	ug/kg	--	--	--	--	<330 L	<330	<330 L	<330 L
4-Nitroaniline	ug/kg	--	--	--	--	<830	<830	<830	<830
4-Nitrophenol	ug/kg	--	--	--	--	<830	<830	<830	<830
Acenaphthene	ug/kg	--	--	--	--	<330	<330	<330	<330
Acenaphthylene	ug/kg	--	--	--	--	<330	<330	<330	<330
Aniline	ug/kg	--	--	--	--	<420	<420	<420	<420
Anthracene	ug/kg	--	--	--	--	<330	<330	<330	<330
Benzidine	ug/kg	--	--	--	--	<660	<660	<660	<660
Benzo(a)anthracene	ug/kg	--	--	--	--	<330	<330	<330	<330
Benzo(a)pyrene	ug/kg	--	--	--	--	<330	<330	<330	<330
Benzo(b)fluoranthene	ug/kg	--	--	--	--	<330	<330	<330	<330
Benzo(g,h,i)perylene	ug/kg	--	--	--	--	<330	<330	<330	<330
Benzo(k)fluoranthene	ug/kg	--	--	--	--	<330	<330	<330	<330
Benzoic acid	ug/kg	--	--	--	--	<830	<830	<830	<830
Benzyl alcohol	ug/kg	--	--	--	--	<330	<330	<330	<330
Bis(2-chloroethoxy)methane	ug/kg	--	--	--	--	<330	<330	<330	<330
Bis(2-chloroethyl)ether	ug/kg	--	--	--	--	<170	<170	<170	<170
Bis(2-chloroisopropyl)ether	ug/kg	--	--	--	--	<330	<330	<330	<330
Bis(2-ethylhexyl)phthalate	ug/kg	--	--	--	--	430	<330	<330	<330

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 009

A2LF-3 WASTE CHARACTERIZATION RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

			Object Name:			**ISWC0108**	**ISWC0109**	**ISWC0110**	**ISWC0111**
			Sample Name:			ISWC0108S001	ISWC0109S001	ISWC0110S001	ISWC0111S001
			Collection Date:			9/3/2009	9/3/2009	9/3/2009	9/3/2009
			Sample Depth (feet):			0.5 - 1.0	0.0 - 0.2	0.0 - 0.2	1.0 - 1.5
ANALYTE	**UNITS**	**TTLC**	**WET Leachate Testing Trigger[a]**	**TCLP Leachate Testing Trigger[b]**	**STLC**	**RESULT**	**RESULT**	**RESULT**	**RESULT**
Butyl benzyl phthalate	ug/kg	--	--	--	--	<330	<330	<330	<330
Chrysene	ug/kg	--	--	--	--	<330	<330	<330	<330
Dibenz(a,h)anthracene	ug/kg	--	--	--	--	<420	<420	<420	<420
Dibenzofuran	ug/kg	--	--	--	--	<330	<330	<330	<330
Diethyl phthalate	ug/kg	--	--	--	--	<330	<330	<330	<330
Dimethyl phthalate	ug/kg	--	--	--	--	<330	<330	<330	<330
Di-n-butyl phthalate	ug/kg	--	--	--	--	<330	<330	<330	<330
Di-n-octyl phthalate	ug/kg	--	--	--	--	<330	<330	<330	<330
Fluoranthene	ug/kg	--	--	--	--	<330	<330	<330	<330
Fluorene	ug/kg	--	--	--	--	<330	<330	<330	<330
Hexachlorobenzene	ug/kg	--	--	2,600	--	<330	<330	<330	<330
Hexachlorobutadiene	ug/kg	--	--	10,000	--	<330	<330	<330	<330
Hexachlorocyclopentadiene	ug/kg	--	--	--	--	<830	<830	<830	<830
Hexachloroethane	ug/kg	--	--	60,000	--	<330	<330	<330	<330
Indeno(1,2,3-cd)pyrene	ug/kg	--	--	--	--	<330	<330	<330	<330
Isophorone	ug/kg	--	--	--	--	<330	<330	<330	<330
Naphthalene	ug/kg	--	--	--	--	<330	<330	<330	<330
Nitrobenzene	ug/kg	--	--	40,000	--	<330	<330	<330	<330
N-Nitrosodimethylamine	ug/kg	--	--	--	--	<330	<330	<330	<330
N-Nitroso-di-n-propylamine	ug/kg	--	--	--	--	<250	<250	<250	<250
N-Nitrosodiphenylamine	ug/kg	--	--	--	--	<330	<330	<330	<330
Pentachlorophenol	ug/kg	17,000	17,000	2,000,000	--	<830	<830	<830	<830
Phenanthrene	ug/kg	--	--	--	--	<330	<330	<330	<330
Phenol	ug/kg	--	--	--	--	<330	<330	<330	<330
Pyrene	ug/kg	--	--	--	--	<330	<330	<330	<330
RADIONUCLIDES	--	--	--	--	--	R	R	R	R

INTERIM SOURCE REMOVAL ACTION (ISRA) - OUTFALL 009

A2LF-3 WASTE CHARACTERIZATION RESULTS
THE BOEING COMPANY
SANTA SUSANA FIELD LABORATORY

Notes:

"--" - not analyzed / not applicable

[1] - WET Leachate Testing Trigger = STLC limit * 10

[2] - TCLP Leachate Testing Trigger = TCLP limit * 20

I - Internal Standard recovery was outside of method limits. Matrix interference was confirmed.

J - Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.

L - Laboratory Control Sample and/or Laboratory Control Sample Duplicate recovery was above the acceptance limits. Analyte not detected, data not impacted.

M1 - The MS and/or MSD were above the acceptance limits due to sample matrix interference. See Blank Spike (LCS).

M2 - The MS and/or MSD were below the acceptance limits due to sample matrix interference. See Blank Spike (LCS).

M7 - The MS and/or MSD were above the acceptance limits. See Blank Spike (LCS).

µg/kg - micrograms per kilogram

mg/kg - milligrams per kilogram

mg/L - milligrams per liter

R - Radiological analysis includes gamma spectroscopy (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), strontium-90, and tritium. Boeing has prepared a document dated September 21, 2009 that provides the radiological results and statistical analysis of the Outfall 009 A2LF waste characterization samples. Based on the results, the document certifies the soil represented by these waste characterization samples to be "radiologically" acceptable for shipment to Class 1, 2, and/or 3 disposal facilities. The analysis and data interpretation complies with procedures approved by the California Department of Public Health.

R-3 - The RPD exceeded the acceptance limit due to sample matrix effects

RL1 - Reporting limit raised due to sample matrix effects.

From: "Paul Carpenter" <PCarpent@dtsc.ca.gov>
To: <lori.n.blair@boeing.com>, "Cassandra Owens" <Cowens@waterboards.ca.gov>...
CC: "Buck King" <BKing@dtsc.ca.gov>, "Gerard Abrams" <GAbrams@dtsc.ca.gov>, ...
Date: 11/4/2009 10:26 AM
Subject: DTSC Concurrence with Proposal for Additional Outfall 009 SoilRemovals

4 November 2009

Cassandra,

Per your request and in support of the RWQCB lead oversight role in the ongoing ISRA work at the SSFL, DTSC Group 2 reviewer Tom Skaug and I have reviewed the October 14, 2009 Boeing document Response to Comments regarding Email Requesting Approval of Additional Work in the Outfall 009 Watershed, Email Amendment to the Final Interim Source Removal Action (ISRA) Workplan.

As we discussed in our 10:00 AM phone call on October 28, DTSC has no technical issues with including the dioxin- and lead-impacted areas designated A2LF-1 and A2LF-3 to the Outfall 009 ISRA soil removal work, and we are in concurrence with the plans to remove impacted soil from these areas.

If you have any questions or comments, please contact me at the numbers below.

Sincerely,

Paul Carpenter, CHG
Senior Engineering Geologist
Dept. of Toxic Substances Control
phone: (916) 255-3691
fax: (916) 255-3696
pcarpent@dtsc.ca.gov

California Regional Water Quality Control Board

Los Angeles Region

Recipient of the 2001 *Environmental Leadership Award* from Keep California Beautiful

Linda S. Adams
Agency Secretary

320 W. 4th Street, Suite 200, Los Angeles, California 90013
Phone (213) 576-6600 FAX (213) 576-6640 - Internet Address: http://www.waterboards.ca.gov/losangeles

Arnold Schwarzenegger
Governor

November 4, 2009

Mr. Arthur Lenox
Environmental Remediation
The Boeing Company
Santa Susana Field Laboratory
5800 Woolsey Canyon Road
Canoga Park, CA 91304-1148

Dear Mr. Lenox:

APPROVAL OF AMENDMENT TO THE FINAL INTERIM SOURCE REMOVAL ACTION (ISRA) WORK PLAN INCLUSION OF A2LF-1 AND A2LF-3 AREAS WITH IN THE WATERSHED OF OUTFALL 009, CALIFORNIA WATER CODE SECTION 13304 ORDER (NPDES NO. CA0001309, CI NO. 6027, SCP NO. 1111, SITE ID NO. 2040109)

Los Angeles Regional Water Quality Control Board (Regional Board) staff has reviewed the October 14, 2009, document submitted to respond to comments to the Email amendment to the Final Interim Source Removal Action (ISRA) Work Plan. As stated previously Regional Board staff concur that the inclusion of A2LF-1 and A2LF-3 in the current ISRA action is appropriate.

Regional Board and Department of Toxic Substances Control staffs have reviewed the response to comments and the Work Plan amendment. The ISRA activity at A2LF-1 is targeting the removal of dioxins in the vicinity of Outfall 009. Work at A2LF-3 is targeting elevated concentrations of lead in the surface soils. The ISRA activity in these areas will result in an estimated volume of 153 cubic yards of soil removed and the depth of excavation at both areas is approximately 2 feet. The plans to proceed with the activities stipulated in the amendment to the Final ISRA Work Plan at A2LF-1 and A2LF-3 are approved based on the amendment to the work plan and the response to comments.

If you have any questions regarding this activity, please telephone Mr. Peter Raftery at (213) 576-6724 or Cassandra Owens at (213) 576-6750.

Sincerely,

Tracy J. Egoscue
Executive Officer

Enclosures: (1) October 14, 2009, Response to Comments regarding Email Requesting approval of Additional Work in the Outfall 009 Watershed, Email amendment to the Final Interim Source Removal Action (ISRA) Work Plan

(2) September 18, 2009, Email from Steve Slaten of NASA, Re: Additional Removals

(3) Email from Paul Carpenter at DTSC dated November 4, 2009; Subject: DTSC Concurrence with Proposal for Additional Outfall 009 Soil Removals.

Mailing List

Mr. Rick Brausch, California Department of Toxic Substances Control
Mr. Jim Pappas, Department of Toxic Substances Control
Mr. Gerard Abrams, Department of Toxic Substances Control
Mr. Buck King, Department of Toxic Substances Control
Mr. Paul Carpenter, Department of Toxic Substances Control
Mr. Tom Skaug, Department of Toxic Substances Control
Mr. Thomas Gallacher, Boeing Company
Mr. Allen Elliot, National Aeronautics and Space Administration
Mr. Steve Slaten, National Aeronautics and Space Administration
Ms. Lori Blair, Boeing Company

California Regional Water Quality Control Board

Los Angeles Region

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Arnold Schwarzenegger
Governor

February 3, 2010

Mr. Tom Gallacher
The Boeing Company
Santa Susana Field Laboratory
5800 Woolsey Canyon Road
Canoga Park, CA 91304-1148

Dear Mr. Gallacher:

APPROVAL OF PERFORMANCE MONITORING SAMPLING AND ANALYSIS PLAN 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)

Los Angeles Regional Water Quality Control Board (Regional Board) staff and Department of Toxic Substances Control staff have reviewed the Performance Monitoring Sampling and Analysis Plan (SAP) submitted on January 7, 2010. The SAP as submitted is approved pending your implementation of the two items included in the comments summarized below.

The sampling and analysis enumerated in the plan appropriately targets the contaminants identified in the ISRA Work Plan. This targeted sampling coupled with the NPDES sampling required in the permit will provide an understanding of both the contaminants discharged from the individual ISRA areas and the contaminants present at the downstream outfall location.

Regional Board staff will randomly evaluate splits of the ISRA samples collected during storm events which occur during the stipulated monitoring periods.

The SAP indicates that performance monitoring will be conducted through two rainy seasons following ISRA soil removal actions and that the results will be published in quarterly ISRA monitoring reports when the data become available. We agree that quarterly reporting is needed for real time evaluation of the data. However, we recommend that all the data for a particular ISRA season of activity be organized into a single final report following the two years of seasonal monitoring. This final report will facilitate evaluating effectiveness of ISRA actions and assuming data supports conclusion that remedy is complete and effective, will act as single confirmation and completion report.

If you have any questions, please telephone Mr. Peter Raftery at (213) 576-6724 or Cassandra Owens at (213) 576-6750.

Sincerely,

Tracy J. Egoscue
Executive Officer

Mailing List

Honorable Alex Padilla, Senator 20th District
Honorable Fran Pavley, Senator, 23rd District
Honorable Tony Strickland, Senator 19th District
Assemblymember Bob Blumenfield, Assemblymember 40't` District Assembly
Assemblymember Pedro Nava, Assemblymember 35th District
Assemblymember Audra Strickland, Assemblymember 37th District
Mr. Jarrod Degonia, c/o Assemblymember Cameron Smyth
Ms. Rondi Guthrie, c/o Assemblywoman Audra Strickland
Ms. Samantha Stevens, c/o Assemblymember Bob Blumenfield
Mr. Aron Miller, c/o Senator Fran Pavley
Ms. Linda Parks, Ventura County Board of Supervisors
Mr. Damon Wing, c/o Ms. Linda Parks, Ventura County Board of Supervisors
Mr. Rick Brausch, California Department of Toxic Substances Control
Mr. Gerard Abrams, Department of Toxic Substances Control, Sacramento
Mr. David Beckman, National Resources Defense Council
Ms. Lori Blair, Boeing
Mr. William Bowling
Mr. Michael Bubman, c/o Bell Creek Homeowners Association
Mr. Paul Carpenter, Department of Toxic Substances Control
Ms. Jeannie Chari
Mr. Paul Costa, Boeing
Mr. Craig Cooper, Environmental Protection Agency, Region 9
Mr. Daniel Cooper, Lawyers for Clean Water
Mr. David Cooper, Environmental Protection Agency, Region 9
Ms. Elizabeth Crawford
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