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

Via E-Mail to steven.becker@dtsc.ca.gov

August 18, 2023
In reply, refer to SHEA - 116580

Mr. Steven Becker, P.G.
SSFL Project Coordinator
Department of Toxic Substances Control
8800 Cal Center Drive
Sacramento, CA 95826-3200

Re: Submittal of FINAL *Santa Susana Field Laboratory Ventura County, California Removal Action Work Plan Area I Burn Pit* pursuant to Imminent and Substantial Endangerment Determination and Consent Order (ISE CO), Docket No. HSA-FY21/22-148

Dear Mr. Becker:

Per the above-referenced ISE CO dated May 9, 2022, The Boeing Company (Boeing) is pleased to submit for review the enclosed *FINAL Santa Susana Field Laboratory Ventura County, California Removal Action Work Plan Area I Burn Pit*. Per Section 6.5 of the ISE CO, all submittals and notifications shall be sent simultaneously by hard copy and electronic copy to Mr. Steven Becker and Ms. Mindy Mathias.

If you have any questions regarding this submittal, please contact me at (818) 466-8776.

Sincerely,

Michael O. Bower, P.E.
Project Coordinator
The Boeing Company

Cc: Ms. Mindy Mathias, DTSC (hard and electronic copies)
Julie Lincoln, DTSC (electronic copy)

Jacobs

Santa Susana Field Laboratory
Ventura County, California

Removal Action Work Plan
Area I Burn Pit

Final

August 2023

The Boeing Company

Gene Ng, P.E., 63222
Project Engineer

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Acronyms and Abbreviations

Acronym	Definition
2007 Consent Order	*Consent Order for Corrective Action, In the Matter of: Santa Susana Field Laboratory, Simi Hills, Ventura County, California, The Boeing Company, National Aeronautics and Space Administration, and The U.S. Department of Energy.*
2022 ISE Order	*Imminent and Substantial Endangerment Determination and Consent Order, Santa Susana Field Laboratory, Area I Burn Pit Area*
AIBP	Area I Burn Pit
bgs	below ground surface
BMP	best management practice
Boeing	The Boeing Company
CARB	California Air Resources Board
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CMS	corrective measures study
COEC	chemical of ecological concern
DSFR	Data Summary and Findings Report
DTSC	California Environmental Protection Agency, Department of Toxic Substances Control
EAA	Early Action Area
EcoRBSL	ecological risk-based screening level
EPA	U.S. Environmental Protection Agency
ESA	environmentally sensitive area
FRTR	Federal Remediation Technologies Roundtable
HASP	Health and Safety Plan
LUTV	Lookup Table Value
NAHC	Native American Heritage Commission
NPPA	Native Plant Protection Act

Acronym	Definition
PCB	polychlorinated biphenyl
PEP	Project Execution Plan
PERP	Portable Equipment Registration Program
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
QAPP	Quality Assurance Project Plan
RAO	removal action objective
RAW	Removal Action Work Plan
RAWIP	Removal Action Work Implementation Plan
RCRA	Resource Conservation and Recovery Act
RFA	RCRA facility assessment
RFI	RCRA facility investigation
Rocketdyne	Rocketdyne Propulsion and Power Division
RWQCB	Regional Water Quality Control Board
SAIC	Science Applications International Corporation
SAP	sampling and analysis plan
SCL	soil characterization levels
SCM	site conceptual model
Settlement Agreement	*Settlement Agreement between the California Department of Toxic Substances Control and The Boeing Company*
SMP	soil management plan
SOP	standard operating procedure
SRG	soil remedial goal
SSFL	Santa Susana Field Laboratory
SWMU	solid waste management unit
SWPPP	stormwater pollution prevention plan
TCDD TEQ	dioxin toxicity equivalence
TCE	trichloroethene

Acronym	Definition
TTF	thermal treatment facility
UCL	Upper Confidence Limit
VCAPCD	Ventura County Air Pollution Control District
VOC	volatile organic compound

1. Introduction

This Removal Action Work Plan (RAW) and Removal Action Work Implementation Plan (RAWIP) presents the remediation strategy and proposed removal action activities for a specific area within the Area I Burn Pit (AIBP) Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) site within The Boeing Company (Boeing) RFI Subarea 1B Southwest at the Santa Susana Field Laboratory (SSFL) in Ventura County, California (Figure 1). This RAW has been prepared for Boeing pursuant to the Imminent and Substantial Endangerment Determination and Consent Order, Santa Susana Field Laboratory, Area I Burn Pit Area (2022 ISE Order) (Department of Toxic Substances Control (DTSC) 2022a). The 2022 ISE Order applies to the specific areas of the AIBP RFI site (that is, the Early Action Areas EAAs]) shown on Figure 2. Additional remedial activities are planned in the future at the AIBP RFI site as part of the RCRA Corrective Action Program for the SSFL under oversight by DTSC and in compliance with the Settlement Agreement between the DTSC and Boeing (Settlement Agreement) (DTSC-Boeing 2022). The RCRA Corrective Action Program for cleanup of the Boeing Areas of Responsibility at the SSFL is currently being conducted under the 2007 Consent Order for Corrective Action (2007 Consent Order; DTSC 2007) and the Settlement Agreement (DTSC and Boeing 2022). This RAW describes the objectives, design and implementation activities, confirmation sampling and analytical procedures, data evaluation methods, and site restoration actions to complete the removal action required by the 2022 ISE Order.

DTSC has determined that the site's unique and special circumstances require a timely response action to prevent clear and imminent threats to ecological receptors. These circumstances include the toxicity of certain metals (such as cadmium, mercury, molybdenum, nickel, and zinc), polychlorinated biphenyls (PCBs), dioxins, and pentachlorophenol, and trichloroethene (TCE) to ecological health, as well as the levels of radionuclides in certain soil samples in excess of the January 30, 2013, Draft Provisional Radiological Lookup Table Values (LUTVs) (DTSC 2013). DTSC determined that the work needed to implement the 2022 ISE Order, including this RAW, is exempt from the California Environmental Quality Act (CEQA) as an emergency pursuant to Sections 21060.3 and 21080(b)(4) of the Public Resources Code.

This RAW incorporates overall remediation strategies discussed with DTSC during development of this work plan, including definition of the EAA, applicable soil excavation and handling methods, approaches for environmental protection measures, and restoration activities. The proposed removal action strategy, design, and implementation methods were developed in consideration of current conditions and knowledge of contamination sources, exposure pathways, and receptors within the AIBP

RFI site. Additional details on the how the work will be implemented can be found in the Project Execution Plan (PEP) (ICS 2023).

1.1 Scope of Work

The proposed scope of work for this removal action includes the following:

- Excavating soil that has radionuclide concentrations in excess of LUTVs to a depth of 1 foot greater than each exceedance, to a maximum depth of 10 feet below ground surface (bgs)
- Excavating soil within corrective measures study (CMS) areas to a maximum depth of 6 feet bgs as necessary to address chemicals of ecological concern (COECs) that present potential risk to ecological receptors as identified in the *RCRA Facility Investigation Ecological Risk Assessment Report, Area I Burn Pit, Boeing RFI Subarea 1B Southwest, Santa Susana Field Laboratory, Ventura County, California* (2022 AIBP ERA) (Jacobs 2022a) that was approved by DTSC on August 2, 2022 (DTSC 2022b) as shown on Figure 3
- Excavating soil between 6 inches and 2 feet underneath all areas covered by the geotextile fabric as shown on Figure 3, as necessary to stabilize the site until the final cleanup is completed pursuant to the 2007 Consent Order (DTSC 2007) and the Settlement Agreement (DTSC-Boeing 2022)
- Conducting confirmation sampling and laboratory analysis during implementation to confirm achievement of the performance objectives of the RAW
- Ensuring any existing fencing and signage are maintained to prevent public access to the AIBP RFI site, including expanding if a larger area is needed, to complete the work, for staging or stockpiling
- Completing best management practices (BMPs) for drainage, erosion, and sediment control during all proposed work in accordance with the Los Angeles Regional Water Quality Control Board (RWQCB) requirements and all other applicable laws and permitting and regulatory requirements such that contaminated soil and sediment is not transported downslope of the AIBP RFI site via surface water runoff
- Working cooperatively with DTSC in providing public notice of these response actions

The technical and operational plans to implement the scope of work are detailed in the RAWIP included in this RAW and in the separate PEP. The RAWIP includes the following:

- Identification of necessary permits and agreements to proceed with the removal action
- Identification of the need for pre- and post-project field surveys to identify, delineate, and protect biologically and culturally sensitive areas within the EAA or in areas used for transport or storage of excavated soils

- Identification of health and safety measures for the safety of workers and the public during implementation activities
- Identification of erosion control measures to be used during construction activities and associated reporting requirements
- Procedures for vegetation management and protection of natural resources prior to, during, and after construction activities
- Design criteria and final plans/specifications for excavating soil in removal areas
- Description of equipment and methods to excavate, handle, and transport contaminated soil
- A transportation plan identifying routes of travel and potential destination of waste generated and disposed
- A plan for the management and handling of waste soil to be excavated
- A field sampling and laboratory analysis plan addressing sampling during the implementation and to confirm achievement of the performance standards for the removal action
- Restoration methods to minimize erosion until the future remedial action is implemented at the AIBP RFI site under the 2007 Consent Order (DTSC 2007) and the Settlement Agreement (DTSC-Boeing 2022)
- A project schedule

1.2 Document Organization

Information included in this RAW is organized as follows:

- **Section 1 – Introduction**. This section presents the basis and scope of proposed removal action activities and information contained in the RAW
- **Section 2 – Site Description and History**. This section presents the site description, describes the current site conditions, land ownership and operational history, previous characterization activities, regulatory framework, and previous response actions taken
- **Section 3 – Site Conceptual Model**. This section includes a site conceptual model (SCM) that identifies the nature and extent of contamination, contaminant sources, and impacted media at the AIBP RFI site
- **Section 4 – Removal Action Objectives**. This section describes the removal action objectives (RAOs); that is, what will be achieved by the removal action
- **Section 5 – EAA and Soil Remedial Goals**. This section presents a limited evaluation of removal action alternatives considered in response to the 2022 ISE Order, selects

the proposed alternative to complete the removal action, and identifies the EAA and soil remedial goals (SRGs)

- **Section 6 – Removal Action Work Implementation Plan**. This section describes the health and safety plan, permitting requirements, protection of natural and cultural resources, field preparation activities, details of the removal action implementation, air monitoring, confirmation sampling, and site restoration. Excavation methods and equipment are described, including where different types of excavation methods will be used. Soil management information, including waste characterization, onsite waste handling, and disposal information, and the transportation plan, including trucking routes to receiving landfills, is provided. Methods for air monitoring, confirmation soil sampling, data quality requirements, and restoration activities are also included in this section
- **Section 7 – Reporting**. This section describes the Removal Action Implementation Report that will be submitted after the removal action and restoration activities are completed
- **Section 8 – Schedule of Activities**. This section provides and describes key elements of the removal action schedule, including pre-excavation activities, construction, confirmation sampling, restoration, and reporting. Additionally, coordination with DTSC during project implementation is described
- **Section 9 – Administrative Record**. This section includes documents relied on or considered during the removal action selection process
- **Section 10 – References**. This section lists the documents referenced in this RAW
- **Appendix A – Health and Safety Plan**. This health and safety plan (HASP) document provides the health and safety requirements to protect site workers and the public during implementation of the field work described in this RAW
- **Appendix B – Topographic Survey and EAA Excavation Plans**. This document provides results of the topographic survey conducted for preparation of the grading permit and presents the final EAA excavation plans
- **Appendix C – Natural Resource Management Plan**. This document describes the natural resources management plan, including vegetation management procedures and the protection of biological resources for removal action activities
- **Appendix D – Images of Environmentally Sensitive Species**. This document provides details regarding the location of environmentally sensitive species used to identify environmentally sensitive areas (ESAs)
- **Appendix E – Stormwater Pollution Prevention Plan**. The stormwater pollution prevention plan (SWPPP) describes the BMPs in place and those planned to prevent soil and sediment from entering drainages and flowing offsite

- **Appendix F – Transportation Plan**. This plan outlines proposed onsite and offsite removal action transportation routes and associated activities for the removal action proposed in this RAW
- **Appendix G – Soil Management Plan**. The soil management plan (SMP) describes the methods of generation and characterization, handling procedures, and stockpile management for waste soil to be excavated during the removal action
- **Appendix H – Confirmation Sampling and Analysis Plan**. The sampling and analysis plan (SAP) includes details of the confirmation sampling approach and laboratory analytical requirements. Data quality requirements are specified in the sitewide quality assurance project plan (QAPP) as referenced in the SAP. An attachment to the plan includes standard operating procedures (SOPs) that provide the approved methods and procedures for collecting and analyzing environmental samples in support of the removal action

2. Site Description and History

This section provides descriptions of the location and current conditions of the AIBP RFI site, as well as a history of ownership, operational history, previous characterization activities, regulatory framework, and previous response activities.

2.1 Site Description

The AIBP RFI site reporting area comprises approximately 27 acres in the southwestern portion of Administrative Area I, adjacent to the border with Administrative Area II, in the east-central portion of the SSFL (Figure 1). The AIBP RFI site was established for the destruction of chemicals by combustion and detonation. The AIBP RFI site is currently inactive and all structures have been demolished.

The following sections summarize the AIBP RFI site history and existing conditions. Additional detailed information on the historical use and site conditions at the AIBP RFI site is presented in the following documents:

- *Draft AIBP RFI Site Report* (Appendix D of the Draft Group 1B RFI Report [CH2M 2009])
- *Addendum to Master RCRA Facility Investigation Data Gap Work Plan, Boeing RFI Subarea 1B Southwest, Area I Burn Pit RFI Site, Santa Susana Field Laboratory, Ventura County, California* (AIBP Work Plan Addendum) (CH2M 2013)
- *RCRA Facility Investigation, Data Summary and Findings Report, Area I Burn Pit RFI Site, Boeing RFI Subarea 1B Southwest, Santa Susana Field Laboratory, Ventura County, California* (DSFR) (CH2M 2021)

2.2 Current Site Conditions

The AIBP RFI site is a partially vegetated, gently sloping area bounded by bedrock outcrops to the northwest and southeast. Topography of the site slopes to the southeast. Current surface elevations at the AIBP RFI site reporting area range from a low of less than 1,718 feet above mean sea level (amsl) in the southeastern portion of the site to a high of approximately 1,820 feet amsl in the northwestern portions of the site. No buildings or other structures currently exist within the AIBP RFI site. Portions of the site are covered with a geotextile fabric. The area covered by geotextile fabric is 1.71 acres.

Surface water runoff at the AIBP RFI site is regularly monitored as part of the National Pollutant Discharge Elimination System monitoring program under the oversight of the RWQCB. Surface water exists intermittently in ephemeral drainage channels as the result of seasonal precipitation events. Surface water runoff generally flows south/southeast in the central and eastern portions of the AIBP RFI site reporting area and to the west in the

western portion of the AIBP RFI site reporting area (west of the north-south trending road). The drainage channel in the eastern portion of the RFI site drains to Perimeter Pond, which is immediately east of the AIBP RFI site. Water that collects in Perimeter Pond is pumped to a stormwater treatment system installed adjacent to R-1 Pond for treatment and then released through Outfall 011, which is at the discharge of Perimeter Pond. From Outfall 011, surface water flows southwest along a drainage channel toward Outfall 001, which is at the southern end of Boeing RFI Subarea 10. Outfall 001 also receives surface water runoff that drains from the drainage channels in the central and western portions of the AIBP RFI site reporting area. The AIBP RFI site was heavily graded numerous times after the site ceased operations. The grading leveled the site and filled in the middle drainages.

2.3 Ownership and Operational History

The AIBP RFI site is located in Administrative Area I of the SSFL on land is owned by Boeing. AIBP was established in 1958 for the destruction of chemicals by combustion and detonation and operated until 1971. Part of the AIBP RFI site was granted interim status as a waste pile under RCRA Part A in 1980. A request to revise the RCRA Hazardous Waste Part A permit application from a waste pile to the Thermal Treatment Facility (TTF) was submitted in 1985. The U.S. Environmental Protection Agency (EPA) concurred with that request in 1988. The TTF, which consisted of two bermed areas within a small portion of the AIBP RFI site, was used for evacuation of pressurized cylinders and destruction of energetic wastes (nitroglycerin and ammonium perchlorate), plasticizers, and binders (EMCON 1990). The TTF was used for small-scale destruction of explosive waste by open burning. The wastes were generated during research and development of solid and gun propellants and hypergolic igniter operations at other locations within the SSFL. Operations at the TTF ceased in 1990.

During the RCRA facility assessment (RFA) between 1989 and 1994, various solid waste management units (SWMUs) and areas of concern within the SSFL were identified, including the SWMU 4.8 “Area I Burn Pit” (SAIC 1994). Operational features of SWMU 4.8 consisted of Burn Pit 1, Burn Pit 2, three earthen ponds, three concrete-lined ponds including an acid pit, the former Fire Department Demonstration Area 4, an entrance shack and related storage area, a control center, and two explosives storage sheds. Burn Pits 1 and 2 contained burn cages. Burn Pit 2 and a concrete pad (Concrete Pad 2) were within the bermed areas that comprised the TTF. The six ponds ranged from 200 to 10,000 gallons in capacity. No other SWMUs or areas of concern were identified in the RFA within the boundary of the AIBP RFI site reporting area.

Two hummocky areas (the Western and Eastern Hummocky areas) were identified within the AIBP RFI site boundary. Aerial photographs dated from approximately 1959 to 1967 contain a graded area at the Western Hummocky Area and several operational features

(pits and roads) in the southern portion of the Eastern Hummocky Area. Historical photographs show a drum storage area, an aboveground tank, and several temporary structures in the Eastern Hummocky Area.

2.4 Site Characterization Activities

Numerous field investigations to characterize the nature and extent of contamination in surficial media at the AIBP RFI site were performed between 1981 and 2015. The number of soil samples collected within the site reporting area to date is 1,215 at 619 locations, and the number of soil vapor samples collected to date is 118 at 70 locations. These data were used to determine the level of ecological risk and included metals, other inorganics, volatile organic compound (VOCs), energetics, pesticides, polynuclear aromatic hydrocarbons, other semivolatile organic compounds, hydrocarbons, PCBs, dioxin/furans, terphenyls, polychlorinated terphenyl, herbicides, and radionuclides. Section 3 presents a summary of the nature and extent of contamination as part of the conceptual site model for the site.

2.5 Regulatory Framework and Previous Response Actions

Cleanup of contamination in the EAA shown on Figure 2 within the AIBP RFI site will be conducted pursuant to the 2022 ISE Order. Cleanup elsewhere at the AIBP RFI site will be conducted pursuant to the 2007 Consent Order (DTSC 2007) and the Settlement Agreement (DTSC-Boeing 2022).

Two removal actions have been performed at the AIBP RFI site. In 1981 and 1982, approximately 1,600 cubic yards of debris (including empty cylinders and drums, concrete, rebar, ash, and steel fragments/pipes) and soil were excavated from six locations in the central portion of the AIBP RFI site where wastes and materials had been previously buried or disposed of. The work was completed with supervision from the RWQCB and California Department of Health Services. The California Department of Health Services confirmed the hazardous waste had been removed under its supervision in accordance with the California Health and Safety Code (DHS 1982).

The Draft Closure Plan for the TTF (Rockwell International 1992, 1993) was partially implemented in 1993. TTF structures (a burn cage and cylinder treatment area) were mostly removed at this time. Following the 2005 Topanga Fire, DTSC requested that Boeing implement an interim measure across the AIBP RFI site, including the TTF (DTSC 2006a), and the *Revised Interim Measures Work Plan for the Area I Burn Pit, Solid Waste Management Unit (SWMU) 4.8, Santa Susana Field Laboratory, Ventura County, California* (Interim Measures Work Plan) was submitted to DTSC (Haley & Aldrich, Inc. 2006a). However, DTSC suspended its review of the Interim Measures Work Plan and requested that erosion and sediment control measures be implemented (DTSC 2006b). BMPs were implemented in 2006 in lieu of the proposed interim measures to prevent

contaminant migration. Nonwoven polypropylene geotextile fabric was placed over five areas (1.71 acres) of the AIBP RFI site, including the TTF, and anchored in trenches approximately 12 inches deep. Silt fencing, straw wattles, sandbag barriers, and hydromulch BMPs were also implemented to further control erosion (Haley & Aldrich, Inc. 2006b). Following additional data collection activities in 2008 and 2009, geotextile fabric was applied in additional portions of the AIBP RFI site to further prevent contaminant migration, as recommended in the *Draft AIBP RFI Site Report* (CH2M 2009).

3. Site Conceptual Model

This section provides the SCM for the AIBP RFI site, including contaminant sources, nature and extent of contamination and impacted media.

As stated in the AIBP DSFR (CH2M 2021), the primary source areas at the AIBP RFI site include the following, listed from west to east:

- Earth Ponds 1 and 2
- The former Fire Department Demonstration Area 4
- Burn Pits 1 and 2
- Concrete Pad 2
- Concrete Ponds 1, 2, and 3
- Earth Pond 3

Chemicals in soil at concentrations above their respective soil characterization levels (SCLs) used in the DSFR were also found in the Western and Eastern Hummocky areas.

A summary of the characterization of the nature and extent of contamination at the AIBP RFI site is presented in the AIBP DSFR (CH2M 2021), which includes analytical results for soil, soil vapor, surface water, groundwater, and porewater samples collected during previous field investigations. As presented in the AIBP DSFR, the following analyte groups have been detected in soil samples at concentrations exceeding SCLs at the AIBP RFI site:

- Metals and other inorganics
- VOCs
- Semivolatile organic compounds (including polynuclear aromatic hydrocarbons)
- PCBs
- Dioxins and furans
- Pesticides
- Perchlorate
- Radionuclides

In addition, VOCs have been detected in soil vapor at concentrations exceeding soil vapor characterization levels. Metals and other inorganics, VOCs, semivolatile organic compounds, and hydrocarbons have been detected in groundwater at concentrations exceeding groundwater characterization levels at the AIBP RFI site.

Sampling and analytical data indicate that soil within the EAA shown on Figure 2 contains certain metals, PCBs, VOCs, and dioxins that pose a threat to ecological health, as well as containing radionuclides in soil at concentrations above LUTVs. Figure 2 shows the full extent of the excavation, while Figure 3 shows the individual EAAs that will be

excavated. Table 1 lists the EAAs with their purpose, primary source areas, and depth of excavation.

4. Removal Action Objectives

This section presents RAOs to mitigate the release and/or threatened release of hazardous substances at, or potentially emanating from, the EAA (Figure 2) at the AIBP RFI site.

4.1 Excavation of Radionuclides Concentrations in Soil in Excess of LUTVs

The first objective of the removal action is to remove soil that has radionuclide concentrations in excess of the LUTVs (DTSC 2013) to a depth of 1 foot greater than each exceedance, to a maximum depth of 10 feet bgs. Confirmation sampling will include radionuclide constituents in soil to confirm all LUTVs have been achieved. The soil confirmation sampling approach and procedures are provided in the SAP (Appendix H).

4.2 Protection of Ecological Receptors

The second objective of the removal action is to remove soil within CMS areas as necessary to address COECs that present potential risk to ecological receptors, as identified in the 2022 AIBP ERA (Jacobs 2022a). Specifically, the removal action will bring COECs of cadmium, mercury, molybdenum, nickel, zinc, PCBs, dioxins, and pentachlorophenol in soil to a concentration below High ecological risk-based screening level (EcoRBSLs) (DTSC-Boeing, 2022b). The 2022 AIBP ERA states that the maximum depth of exposure of any ecological receptors considered is 6 feet bgs for the burrowing exposure of mammals (deer mouse); therefore, the removal action will have a maximum depth of 6 feet bgs.

The 2022 AIBP ERA identified two CMS areas where TCE and 1,1-dichloroethene are COECs in soil vapor. Consequently, the second objective of the removal action includes excavation of soil within these two soil vapor CMS areas for TCE and 1,1-dichloroethene in soil.

Confirmation sampling will include these constituents in soil to confirm all SRGs have been achieved. The soil confirmation sampling approach and procedures are provided in the SAP (Appendix H).

4.3 Stabilize the Site

The final objective of the removal action is to remove soil between 6 inches and 2 feet underneath all areas covered by the geotextile fabric as shown on Figure 2, as necessary

to stabilize the site until the final cleanup is completed pursuant to the 2007 Consent Order (DTSC 2007) and the Settlement Agreement (DTSC-Boeing 2022).

5. Early Action Area and Soil Remedial Goals

This section provides an evaluation of removal action alternatives considered, identifies the proposed removal action to be implemented, and defines the proposed EAA and SRGs for the RAW.

5.1 Alternatives Evaluation

An engineering evaluation and cost analysis is typically a required component of the RAW; however, the 2022 ISE Order specifies a 'removal action' for soil at the AIBP RFI site given the nature of the contaminants. As a result, a complete engineering evaluation and cost analysis was not conducted. A limited evaluation of alternative removal action methods was performed to evaluate if less invasive methodologies could remove exposure of contaminants to meet the RAOs presented in Section 4.0. The alternatives are presented in Table 2.

Based on that evaluation, excavation and offsite disposal is the proposed alternative to implement the removal action specified in the 2022 ISE Order.

5.2 Early Action Area

To meet the RAOs specified in Section 4, the proposed EAA includes the areas shown on Figure 2. This figure shows the full extent of the excavation needed to achieve the combination of the three RAOs. Figure 3 breaks down that full extent into individual EAAs that will be excavated to achieve the individual RAOs. As noted in the 2022 ISE Order, future response actions to address impacts outside of the area shown on Figure 2 will be conducted as part of the RCRA Corrective Action Program for the SSFL under oversight by DTSC and in accordance with the 2007 Consent Order (DTSC 2007) and the Settlement Agreement (DTSC-Boeing 2022). Table 1 provides the purpose, depth, and other information for each of the EAAs. The individual EAAs were created using, in order, the methodology in Sections 5.2.1 through 5.2.3.

5.2.1 EAA for RAO to Stabilize the Site

The EAAs for stabilizing the site (Section 4.3) were created by outlining the seven areas covered in geotextile fabric, also referred to as the tarped areas, shown in a 2015 aerial photo. Each outline or EAA was then labeled one through seven, using the naming convention EAA-TS01, EAA-TS02, and similar, where "T" stands for "Tarp" and "S" for "Soil."

5.2.2 EAA for RAO to Protect Ecological Receptors

The EAAs for protecting ecological receptors (Section 4.2) were created by overlaying the ecological CMS areas from the 2022 AIBP ERA on the tarped areas shown in the 2015 aerial photo. The overlaying of these CMS areas split EAA-TS01 into three separate areas (EAA-TS01a, EAA-TS01b, and EAA-TS01c). Each CMS area was given an EAA name reflective of the origin of that EAA. For example, EAA for the ecological CMS area AIBP-CMS-S1 from 2022 AIBP ERA is called EAA-ES01, which represents EAA-Ecological Soil 1.

5.2.3 EAA for RAO to Excavate Radionuclides Concentrations in Soil in Excess of LUTVs

The EAAs created to achieve the first RAO, removing soil with radionuclide concentrations in excess of the LUTVs (Section 4.1), surround individual volumes of soil that have radionuclides concentrations in soil in excess of LUTVs but that are not already in the EAAs created to achieve the second and third RAOs. There are 12 locations with exceedances of the LUTVs that are not already within an EAA defined to meet the second and third RAOs. These 12 locations were placed within an EAA and labeled EAA-LS01, EAA-LS02, and similar, where “L” stands for “LUTV” and “S” stands for “Soil.”

There are individual volumes of soil that have radionuclides concentrations in soil in excess of LUTVs within EAAs initially created to achieve the second and third RAOs. Table 1 shows those dual purpose EAAs in the Purpose column and further describes the radionuclides in the Notes column.

Table 3 lists the radionuclides from the LUTV table that have detections in soil representative of current conditions within the AIBP RFI site above their respective LUTV (for example, data that have not been replaced by more recent data and are not rejected analytical results). The LUTV for uranium-235 of 0.152 picocuries per gram was also applied to the uranium-235/236 data.

5.3 Soil Remedial Goals

The SRGs for the removal are presented in Table 3. SRGs were determined for the COECs identified from the 2022 AIBP ERA and for radionuclides with detections above their respective LUTVs for the AIBP RFI site in the areas shown on Figure 2.

The SRGs for some COECs, including 2,3,7,8-TCDD_TEQ_Bird, 2,3,7,8-TCDD_TEQ_Mammal, cadmium, mercury, and pentachlorophenol, are based on the lowest of the applicable soil High EcoRBSLs for small-home-range ecological receptors presented in Attachment 3 of Exhibit 5 to the 2022 Settlement Agreement between

DTSC and Boeing (DTSC-Boeing, 2022b). The SRGs for radionuclides are based on the January 30, 2013, LUTVs (DTSC 2013).

Based on the 2022 AIBP ERA, molybdenum, nickel, zinc, Aroclor-1248, and Aroclor-1254 in soil were only identified as COECs due to the potential for soil hot spots. Consequently, the SRG in Table 3 for these analytes are the hot spot threshold of ten times the most conservative High EcoRBSLs.

The 2022 AIBP ERA states that TCE in soil was only identified as a COEC due to the potential for soil hot spots, but the 2022 AIBP ERA also states that TCE in soil vapor poses an ecological risk. The VOC 1,1-dichloroethene is also a COEC in soil vapor in certain areas of the AIBP RFI site. Consequently, the SRGs in Table 3 for both of these analytes are the lowest of the applicable soil High EcoRBSLs for small-home-range ecological receptors.

6. Removal Action Work Implementation Plan

This section provides the RAWIP, which describes the methods and procedures for preparation for excavation, implementation of removal activities, and restoration activities.

6.1 Health and Safety Plan

Health and safety procedures related to the removal action activities are provided in the HASP (Appendix A). This appendix provides a site-specific health and safety plan for the oversight of field tasks described in this RAW and for confirmation sampling. Additionally, a Radiation Protection Plan is attached to the HASP.

6.2 Permitting Requirements

Because the volume of soil to be disturbed exceeds 50 cubic yards, a grading permit is required from the Ventura County Public Works Agency prior to removal activities. A general construction permit may also be required. A topographic survey was completed as part of the permit application and provided in Appendix B.

In addition, the Santa Susana tarplant (*Deinandra minthornii*), a rare species under the California Native Plant Protection Act (NPPA), is found at three locations within the AIBP RFI site and several areas near CTL-V and LETF/CTL-I, which are potential staging areas (Padre 2022) (Figures 4a and 4b). DTSC has determined that conditions at the AIBP EAA constitute an imminent and substantial endangerment to ecological receptors and requires immediate response. While a similar removal action was considered exempt from the NPPA pursuant to Fish and Game Code Section 1912, this exception is not expected to be used for the AIBP Early Action project. Instead, Boeing has incorporated specific avoidance and minimization measures into the RAW and natural resources management plan (Appendix C) to protect Santa Susana tarplant that will eliminate or minimize unavoidable direct or indirect impacts while successfully implementing the removal action to comply with the 2022 ISE Order. The Santa Susana tarplant is locally abundant at the SSFL (conservatively estimated at 20,000 or more live individuals) and this effort will not put the species in peril of becoming threatened or endangered of extinction. Anticipated impacts are discussed in further detail in Section 3.2.1 of the natural resources management plan (Appendix C).

The County of Ventura Tree Protection Ordinance (County Zoning Ordinance no. 8107-25) considers oak trees (including coast live oak) at least 9.5 inches (single trunk) or 6.25 inches (multi-trunk) in girth (circumference) measured at a height of 4.5 feet, halfway between the uphill and downhill sides of the root crown as County-protected trees. Seven coast live oak trees that meet the County-protected designation are located

immediately adjacent to the EAA or proposed staging areas, but these trees are not proposed for removal or other impacts. To comply with the Tree Protection Ordinance, ESAs will be established at the tree protection zone of each oak tree. The oak tree ESAs will be delineated with traffic delineators, snow fencing, and/or caution tape. No vehicles or heavy equipment will be allowed within the oak tree ESAs. Figure 4a depicts ESA locations for coast live oak trees near the AIBP project area based on initial field surveys. The ESAs include areas within the top of bank of drainage channel (dark blue line) and within the sensitive plant species buffer (dark green line) on Figure 4a. ESA buffers will be finalized during pre-activity biological surveys. No pruning of branches or major roots or soil removal beneath the oak trees will be required for the project, hence a county permit is not required. Additional details on compliance with the Tree Protection Regulations are provided in Appendix C.

The EAA has been defined outside the top of bank of the drainages in the AIBP RFI site (Figure 4a). Boeing consulted with the RWQCB to determine if the project would trigger the need for a Clean Water Act Section 401 Water Quality Certification. The RWQCB determined that it would not be required for the project (RWQCB 2022). As such, a California Department of Fish and Wildlife (CDFW) Streambed Alteration Agreement is not required.

The California Air Resources Board (CARB) requires owners or operators of portable engines greater than 50 brake horsepower to register the equipment under the Portable Equipment Registration Program (PERP) to operate their equipment throughout California without having to obtain an individual permit from local air districts, such as the Ventura County Air Pollution Control District (VCAPCD). If required to support removal action activities, portable engines brought onsite will have active statewide CARB PERP registration and VCAPCD will be notified. Section 6.6 addresses construction air monitoring.

6.3 Protection Of Natural and Cultural Resources

The following describes the removal action measures to be implemented to protect biological and cultural resources.

6.3.1 Pre-Disturbance Surveys

6.3.1.1 Biological Surveys

No vegetation clearance or soil disturbance will commence prior to completing pre-disturbance surveys and to approval of this RAW.

Initial biological surveys have been performed and have identified sensitive biological resources onsite (Appendix C). By definition, sensitive biological resources include

special-status (for example, Santa Susana tarplant, state rare) or otherwise protected (such as coast live oak, County Tree Protection Ordinance) plant and wildlife species according to state, federal, or local resource protection laws, and may extend to certain habitats that have the potential to support these species. Follow-up biological surveys to identify the presence of special-status plants and wildlife will be performed by a qualified specialist approximately 1 week prior to removal activities for the EAA and areas potentially impacted by removal action activities. The potential presence of nesting birds, reptiles, and mammals will be determined and documented, particularly during the typical bird breeding season between March and August. Sensitive plants (such as Santa Susana tarplant [present onsite, but remaining plants are not within the EAAs], Braunton's milk-vetch [not observed or expected], and mariposa lily [present in the southern region of the AIBP RFI site, but not within the EAAs]) will be flagged to alert workers of their presence and to facilitate their protection and avoidance during sampling and removal activities (Section 6.4.1). Sensitive species will be protected during field work, and a biologist will be contacted during sampling activities if necessary to revise a field excavation or sampling location or move a special-status species (for example, legless lizard). Methods for protecting sensitive species are summarized in Section 6.4.1 and detailed in Appendix C. Images of environmentally sensitive species are provided in Appendix D.

6.3.1.2 Archaeological and Cultural Surveys

Prior to sampling activities, a cultural resource survey will be performed for the EAA and areas potentially impacted by removal action activities. Registered archaeological sites are present within the excavation boundaries. Identified cultural resources will be avoided and protected-in-place prior to work activities. To protect archaeological resources, their location will only be known to the project archaeologist.

One or more Native American monitors or cultural resource specialists will be present during implementation of field sampling and removal activities to screen excavated material for culturally significant artifacts. Methods for protecting culturally sensitive areas are provided in Section 6.4.2.

6.3.2 Post-Project Surveys

Biological and archaeological/cultural post-project surveys will be conducted by qualified specialists to document any changes to the EAA, including areas potentially impacted by removal action activities, from pre-project conditions. The results of the pre- and post-project surveys will be documented in reports meeting current professional standards and submitted to information repositories to contribute to future research and planning. These include (for the archaeological survey report) the California State University Fullerton Information Center of the California Historic

Resources Inventory System and the Ventura County Cultural Heritage Board and (for the biological survey report) the California Native Plant Society and the California Natural Diversity Database.

6.3.3 Stormwater Best Management Practices

Stormwater BMPs (such as tarps covering the most highly contaminated areas) are currently in place within the AIBP RFI site to prevent contaminated soil and sediment from entering drainages and flowing offsite. The existing BMPs will be adjusted, augmented, and monitored by the Qualified Stormwater Practitioner with support from Boeing's Stormwater Expert Panel and BMP maintenance contractor. Prior to Early Action activities, additional BMPs as described in the site-specific stormwater pollution prevention plan (SWPPP) (Appendix E), will be installed and maintained during excavation activities. The SWPPP will be revised as needed in accordance with the Construction General Permit if erosion controls are inadequate. A site visit will be conducted by the Stormwater Expert Panel prior to removal activities to confirm the SWPPP. More information on stormwater BMPs is provided in the SWPPP (Appendix E).

Multiple sources of information are presented in the SWPPP. If there is a conflict between these sources, the order of precedence will conform to the following:

1) Site map site-specific details
2) Site map standard details
3) Narrative in the body of the SWPPP
4) Guidance in the BMPs fact sheet

6.3.4 Streambed Alteration Agreement

It was determined that the removal actions at the AIBP RFI site are not within the area subject to Streambed Alteration Agreement 1600-2003-5052-RS with CDFW. The boundaries for removal activities on Figure 4a are outside the top of the banks of the drainages and, in most cases, have over 10 feet of set-back to avoid affecting the banks and therefore, will not require a CDFW Streambed Alteration Agreement notification. If, during implementation of this RAW, a set-back is not possible, work will be limited to outside the banks and will not be conducted in the drainage, nor will removal spoils be discharged into the drainage.

6.4 Site Preparation

6.4.1 Environmentally Sensitive Areas

ESA designations are based on the following:

- Presence of plants or animal types listed under the NPPA that are protected by California Fish and Game Code Sections 3503 (nesting birds) and 3503.5 (birds-of-prey)
- Potential occupation by animals listed under the federal Endangered Species Act of 1973 or protected under the 1992 Ventura County Oak Tree Protection Ordinance

Specific locations of sensitive species were identified within the AIBP RFI reporting area during biological surveys completed on the following dates:

- October 23 and 24, 2008
- January 5, 2012
- December 1, 2013
- July 21, 2014
- October 17, 2014
- January 16, 2015
- April 1, 2015
- June 29, 2022
- August 29, 2022
- September 14, 2022

Additional field surveys have been performed by Padre biologists since 1999 that provide further background for the preparation of the subject biological survey activities. ESAs were identified based upon these surveys.

These survey findings will be confirmed during pre-project biological and cultural surveys prior to construction activities. ESAs include locations and areas of sensitive plant species (for example, Santa Susana tarplant, including seedbank locations, and oak trees), sensitive wildlife habitats (for example, vernal pools on sandstone potentially supporting fairy shrimp, San Diego desert woodrat nests typically in rock crevices, and any active bird nests), and/or areas of cultural significance.

Each ESA will have an appropriate buffer established by the project biologist or project archaeologist so that these sensitive species or cultural areas can be avoided. These areas will be delineated with stakes, traffic cones, snow fencing, and/or caution tape to alert workers of the presence of a biologically or culturally sensitive location. No vehicles will be allowed within any ESA, and routine foot traffic and the introduction of materials or equipment (such as dragging of hoses) will be directed away from ESAs during the

removal action. Each ESA buffer shape will be established on a case-by-case basis in the field prior to excavation activities.

6.4.2 Culturally Sensitive Areas

A qualified archaeological/cultural monitor will be onsite during excavation and sampling activities. The location of previously identified culturally significant sites are not shown on Figure 4a (or other figures in this RAW) for confidentiality reasons and to protect them from vandalism. In the event archaeological materials or features are exposed outside the designated ESAs during project-related activities, work will halt in the immediate vicinity of the find and remain halted until a qualified archaeologist has evaluated the find and implemented or directed appropriate treatment or avoidance measures.

In the event of the accidental discovery or recognition of any human remains in any location other than a dedicated cemetery, there will be no further excavation or disturbance within the EAA or any nearby area reasonably suspected to overlie adjacent human remains until the following steps have been taken:

- The Ventura County Coroner will be contacted to determine that no investigation of the cause of death is required.
- If the coroner determines the remains to be Native American, the coroner will contact the Native American Heritage Commission (NAHC) within 24 hours. The NAHC will identify the person or persons it believes to be the most likely descended from the deceased Native American. The landowner will consult with the most likely descendent(s), who may make recommendations for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code section 5097.98.

6.4.3 Site Access

Access to the SSFL property is control by security at the SSFL Front Gate as shown on Figure F-3 (Appendix F). All visitors and contractors are cleared for access at that location, where they may obtain visitor badges as needed.

The primary site access points to the EAA are shown on Figure 5. Access points and perimeter fence, if needed, will be inspected daily for vandalism or evidence of tampering. Allowances for surface water or groundwater sampling crews that might need to access outfalls or monitoring wells during the construction activities will be accommodated. Signage that informs workers of health and safety personal protective protection requirements will be posted at access points. Fencing and signage will be placed around staging and storage areas.

6.4.4 Utility Clearance

Underground Services Alert of Southern California (a.k.a., DigAlert) and a third-party utility locator will be contacted a minimum of 2 weeks prior to soil disturbance. A case-by-case determination will be made on adjustments to the EAA plan near utilities once the utility is located.

The underground Ventura County potable water line at the AIBP has not been located. Multiple investigations over numerous years including, but not limited to, non-intrusive geophysical methods and site visits with Ventura County Water Works personnel have not been able to locate the line. Ventura County was not able to confirm that the line is within the water line easement. Figure 5 shows the area where excavation will not occur due to the unknown location of this water line in this area.

No soil disturbance is permitted within 5 feet of the utility poles and guy line anchors as required by Southern California Edison (SCE 2023). Figure 5 shows the areas where excavation will not take place around the utility pole and the two supporting guy wire anchors for that utility pole in the western excavation area.

6.4.5 Environmental Awareness Training

Work crews will be provided an environmental sensitivity training session describing the known or potential presence of special-status or otherwise protected plant and wildlife species and their identification characteristics. If questions arise during implementation, a qualified biologist will be consulted to direct appropriate action(s). Images of sensitive species for education of site workers or site visitors are provided in Appendix D.

6.4.6 Protection of Existing Monitoring Wells

Groundwater monitoring wells RD-100 and RD-03 within the area of construction traffic and will be protected. High visibility temporary fencing will be placed around each well location.

6.5 Excavation

The section describes activities to remove contaminated soil from the EAA. After this RAW has been approved, necessary permits are obtained, pre-excavation surveys are completed, additional stormwater BMPs are installed for this work, site access has been improved, and vegetation has been cleared, soil removal will begin as described in the PEP.

6.5.1 Site Layout and Staging Area

The SSFL Lower Lot, or a similar area if the Lower Lot is in use, will be used as a staging area for equipment used for the removal action. A description of onsite haul routes is provided in Section 6.5.5 and Appendix F. The designated stockpiling area for non-hazardous material will be lined with 30-mil (minimum) high density polyethylene sheeting with berms on each side to prevent runoff if water is introduced to contaminated materials. The excavated soil will be placed in stockpiles, watertight supersacks, roll-offs, or similar in temporary storage area. The site plan for layout areas including access points and staging areas is provided on Figure 5.

6.5.2 Fire Prevention

Workers will be educated in wildfire prevention. The AIBP RFI site was burned by both the 2018 Woolsey Fire and the 2005 Topanga Fire. Most of the EAA is unmaintained, with dry brush that could ignite if a spark is inadvertently introduced while working. The AIBP RFI site is isolated and fire department response time may be considerable. The following actions will be taken to prevent wildfire:

- Smoking or any substance, including e-cigarettes, is prohibited.
- Devices that create open flames are prohibited.
- All ridable equipment must carry fire extinguishers.
- No motorized vehicles are allowed in areas with vegetation higher than 6 inches off the ground other than during vegetation clearance.
- A water source and portable fire extinguishers must be available within 20 feet of hand crews working with motorized equipment that may cause sparks (for example, string trimmers/weed whackers and chain saws).
- Spark arresters are required for gasoline powered equipment.
- Fuel tanks should not be topped off.
- A hot work permit is required for cutting with a torch, welding, or grinding.
- A fire extinguisher, shovel, and 35-foot radius vegetation reduction or wet down, consistent with OSHA Hot Work standards, is required for hot work.
- No hot work or mowing is allowed on days when Red Flag Warnings are issued by the National Weather Service.
- Vegetation reduction tasks will be limited if conditions are hot, dry, and windy.
- When towing, chains must be secured to prevent them from throwing sparks.

6.5.3 Vegetation Clearance

Vegetation clearance will commence in accordance with the natural resources management plan (Appendix C) after a pre-activity biological survey is completed, Santa Susana tarplant or other sensitive plant species are protected from damage, and this RAW is approved. A combination of hydraulic mowers attached to skid-steer loaders, chainsaws, string trimmers/weed whackers, and hand tools including, but not limited to, double-bladed weeders, scythes, and rakes are proposed to expedite vegetation clearance. As described in Section 6.4.1, ESAs will be delineated with stakes, traffic cones, fencing, and/or caution tape to alert workers of the presence of a biologically or culturally sensitive location prior to soil disturbance. No vehicles will be allowed within any ESA, and routine foot traffic and the introduction of materials or equipment will be directed away from ESAs during the removal action.

To limit their spread, invasive species will be collected in covered containers and transported to the Vegetation Biomass Staging Area (Figure 5) where the containers will be temporarily stored for offsite disposal. The containers must be reasonably resistant to damage from wildlife (for example, rodents) and clearly labeled as "GREEN WASTE." Disposal of green waste will be coordinated with an offsite recycling facility that is able to accept the type of vegetation removed from the EAA. Soil will be removed from the green waste roots. Boeing or its green waste transportation subcontractor will confirm the bins do not contain any materials prohibited by the facility before departing the SSFL.

6.5.4 Gamma Scanning

As described in the PEP, all excavated soil from the AIBP will be placed into an ISO Pacific S3 Sorter and Segregation Technology system that will segregate the soil based upon its radioactivity. This will allow for scanning soil from all areas of the EAA within the AIBP, not just in the areas where radionuclides have been identified historically. After the excavation has reached its total depth and volume, a radiological controls technician will scan the ground surface to measure and record ambient gamma radiation levels. This survey will be conducted using a 2 inch by 2 inch sodium iodide gamma scintillation detector linked to a Trimble GPS system or equivalent. The surveyor will use equipment to systematically scan accessible areas of the property with the detector held at 10 cm from the ground surface with the meter's audio function active. In general, the equipment will move at a rate of 0.5-m/s or less along transect lines that are separated by no more than 1-m and using a serpentine motion. Any sustained increase in the audible count rate will be investigated.

Radiation measurements and their associated spatial coordinates will be recorded once each second by the gamma scanning system. This data will be used to generate an

electronic map/record of the gamma radiation levels encountered during the surface scan. Survey results will be color coded and superimposed on an aerial photo of the property and provided in the final report. The gamma scan color coded map will be evaluated for patterns and trends; anomalous results will be investigated.

In addition to generating a gamma radiation map of the area, the survey has a secondary objective of searching for more incinerated igniters (containing discrete 1 uCi quantities of radium-226). Any igniters found by the survey or during the screening process of the ISO Pacific S3 Sorter and Segregation Technology system will be segregated as a unique waste stream and disposed as of in compliance with state and federal regulations. A final gamma walkover survey will be conducted following excavation. The gamma walkover survey map will be provided in the Implementation Report.

6.5.5 Excavation Methods and Equipment

Excavation will commence only after the AIBP RFI site has been surveyed for biological and archaeological resources. Depending on site accessibility due to the terrain and/or the presence of ESAs, soil removal will be accomplished using multiple methodologies including excavators, backhoes, track mounted skid-steer loader and haul truck, a vacuum truck, and hand tools. An estimated volume of contaminated soil of up to 10,504 cubic yards in situ and 15,756 cubic yards once excavated is assumed to be removed. This volume estimate assumes that no additional excavation will be conducted laterally from that shown on Figure 2. Remaining contamination in soil surrounding the areas shown on Figure 2 will be over excavated until the LUTV RAO is achieved. Excavation is expected to continue vertically until all RAOs are achieved, bedrock is encountered, 6 feet bgs if the purpose of the EAA is to remove ecological risk, or 10 feet, whichever is the minimum depth. The PEP details the sequencing of the excavation described in this RAW.

6.5.6 Transportation Plan

The transportation plan in Appendix F provides the details for the transportation of waste soil and recycled materials (that is, biomass) from the EAA to temporary onsite storage areas, and to offsite disposal and reuse facilities. No soil will be included with the biomass transport to the extent practicable. The transportation plan identifies and minimizes potential health, safety, and environmental risks that may result during loading; describes the SSFL entry and egress; and includes the requirements for transportation of materials on public roads. The transportation plan will be used as a standalone document by personnel involved in the transportation of the excavated soil.

6.5.7 Soil Management Plan

An SMP was prepared to describe the methods of generation, characterization, handling procedures, and stockpile management for waste soil to be excavated during the removal action. Wastes generated during the removal action will be handled and disposed in accordance with state and federal laws and regulations. Key elements of the SMP are summarized here and provided in further detail in Appendix G. The PEP provides additional details on soil management.

6.5.7.1 Waste Characterization

Removed soil will be managed as either RCRA hazardous waste, non-RCRA hazardous waste (commonly referred to as California-regulated hazardous waste), or non-hazardous waste as described in Appendix G. With the soils impacted by radionuclides greater than the LUTVs, the soils will be managed as radioactive material until final characterization results are received. After receipt of the radiological characterization results, the soils will be disposed as hazardous, non-hazardous, NORM/TENORM, unimportant quantities of source material (defined in 10 CFR 40.13), or licensed exempt material (defined in 10 CFR 30 Exemptions) if the radionuclide concentrations meet the disposal facility's waste acceptance criteria.

The guidelines presented in EPA publication SW-846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (EPA 2019) will be followed to develop a waste profile for soil removed from the excavations. Sampling of supersacks or roll-off bins will be collected and analyzed to meet waste characterization requirements specified for the AIBP RFI site-related constituents. Sample analysis will use laboratory methods and reporting limits specified in the QAPP (MEC^X 2013).

Waste profiles will incorporate documented historical information and confirmation sampling data whenever possible. Details on waste characterization and toxicity characteristics are provided in Appendix G.

6.5.7.2 Onsite Waste Management

Wastes will be stored at the CTL-V, CTL-III, LETF/CTL-I, and other areas pending collection, analysis, review, and classification of representative samples. Waste suspected of containing radionuclides based upon historical in situ and gamma walk over surveys and from gamma scanning by the ISO Pacific S3 system during this Early Action will be segregated from waste not suspected of containing radionuclides. Hazardous wastes will be shipped for disposal within 90 days of being containerized. Surface water runoff from the waste storage area will be contained and stormwater BMPs will be installed at all downgradient drain inlets to prevent discharge into the nearby outfalls. Waste containers will be lined or otherwise secured per Boeing SOPs.

Hazardous waste contained in 55-gallon drums may be stored separately from roll-off bins. Stockpiles of soil will be managed within the area of contamination or in accordance with California Health and Safety Code Section 25123.3(b)(4)(B).

If needed, storage areas will be established on paved or compacted surfaces that can support the weight of stockpiles or fully loaded roll-offs or containers. If necessary, plywood boards will be placed beneath the wheels to prevent damage to the surface. Dumpster shoes or wheel chocks will be installed to prevent the bin from rolling away on sloped surfaces. Non-hazardous soil may be containerized in drums, sacks or roll-offs or stockpiled at CTL-V, CTL-III, LETF/CTL-I, or other accumulation areas until shipment offsite begins. Non-hazardous stockpiles will be no larger than 500 cy. Surface water runoff from stockpile areas will be contained and stormwater BMPs will be installed at all downgradient drain inlets to prevent discharge into the nearby outfalls.

6.5.7.3 Offsite Waste Disposal

Removed waste soil will be transported for disposal in accordance with applicable state and federal laws as specified in the project transportation plan provided in Appendix F. Based on waste characterization determinations, the soil in temporary storage areas will be shipped to appropriately permitted offsite disposal facilities.

6.5.7.4 Approved Landfills

Waste characterization analytical results will be submitted to the appropriate disposal facilities for approval and disposal of waste. Once approval from the disposal facility is obtained, waste containers or stockpiled materials will be loaded and transported to the appropriate disposal facility. Wastes will be managed onsite in accordance with California Health and Safety Code, Section 25123.3.

- Possible disposal facilities may include but are not limited to:
- Clean Harbors Buttonwillow Landfill – 2500 Lokern Road Buttonwillow CA 93206
- US Ecology, Beatty Nevada – Hwy 95, 11 Miles S of, Beatty, NV 89003
- Waste Control Specialists – 9998 West, TX-176, Andrews, TX 79714
- Energy Solutions Clive – Interstate 80 Exit 49, Grantsville, UT 84029
- Clean Harbors, Deer Trail – 108555 E U.S, Colorado 36, Deer Trail, CO 80105
- US Ecology, Idaho – 20400 Lemley Rd, Grand View, ID 83624
- US Ecology, Richland Washington – Hanford Reservation, Richland, WA 99354

The final disposal facility will be identified following review of waste characterization results in conjunction with radiological screening. In the event waste characterization results indicate alternate facilities are needed, they will be identified and confirmed as acceptable.

6.6 Construction Air Monitoring

6.6.1 Personal Air Monitoring

Daily personal air monitoring will take place during earthwork operations according to the methods outlined in Section 13.3 in the HASP (Appendix A).

6.6.2 Perimeter Monitoring

During soil-disturbing activities, particulate matter less than 10 microns in diameter (PM_{10}) and VOCs will be monitored at least hourly at four locations outside the perimeter. Wind direction and wind speed will be measured during all remediation activities using the existing meteorological station located onsite.

Excavation will be placed on hold temporarily if the difference between the upwind and downwind PM10 readings exceed 50 micrograms per cubic meter. Work may resume after dust control measures (such as spraying of water) are adjusted to reduce emissions. Additional caution will be exercised when spraying water for dust control within 100 feet of Santa Susana tarplants to avoid ponding and infestation of Argentine ants (*Linepithema humile*). Watering routes will be inspected daily by the project biologist to look for ponded water or erosional rills and inform project personnel to help ensure dust control restrictions are followed. Dust control measures will be implemented for all stockpiles pursuant to VCAPCD Rule 55 for Fugitive Dust, including observations for opacity, installation of rumble plates and street sweeping to control tracking out of sediment, and tarp cover for inactive stockpiles.

Perimeter PM10 air monitoring limits stated above will also limit radionuclide emissions to non-detectable concentrations based on the radionuclide characterization results. PM10 air filters may be sent to a radioanalytical laboratory for confirmation.

If the difference between the upwind and downwind VOC concentration exceeds 1 part per million by volume for more than 2 hours, additional dust, vapor, and/or odor control mitigation measures will be implemented.

Visible dust will be controlled by spraying water on the soil during bulk handling and excavation activities. Trucks exporting soil from the SSFL will remain on gravel or paved roads to prevent soil buildup on tires and reduce track out of sediment. Soil-disturbing operations will cease if high winds above 25 miles per hour are sustained for 5 minutes in an hour.

6.6.3 Sitewide Air Monitoring Program

Sitewide air monitoring is ongoing at the SSFL. The monitoring results for particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), PM_{10}, radionuclides, and VOCs in ambient air are presented in quarterly reports submitted to DTSC. The Boeing-4 and Boeing-5 air monitoring stations are located southeast and south of the AIBP RFI site, respectively. Based on windrose diagrams provided in quarterly reports, prevailing winds at the SSFL originate from the northwest or southeast (Jacobs 2022b). These monitoring stations are located in a favorable position to measure upwind background conditions or downwind mitigation of particulates from the removal action. Gross alpha/beta air sample results are reported on a bi-weekly frequency. Air monitoring results from Boeing-4 and Boeing-5 collected during excavation activities will be included in the RAW implementation report.

6.7 Confirmation Sampling

Following excavation of EAA soils, soil sampling will be conducted to determine if RAOs have been achieved. This section describes the confirmation sampling approach.

The soil confirmation sampling approach and procedures are provided in the SAP (Appendix H). Data quality requirements are specified in the sitewide QAPP as referenced in the SAP. Excavation will continue vertically until all RAOs are achieved, bedrock is encountered, 6 feet bgs if the purpose of the EAA is to remove ecological risk, or 10 feet, whichever is the minimum depth. Excavations will continue laterally until the LUTV RAO is achieved.

6.8 Site Restoration

The overall removal action restoration goals are as follows:

- To minimize the need to re-excavate clean backfill when the future remedial action occurs for the rest of the AIBP RFI site
- To not leave an environment for fauna and flora to develop that would make future remedial actions at the site more difficult

After completion of the removal action, restoration activities will be performed to minimize erosion and sediment transport and minimize ponding in the excavations. The land surface around the excavations will be graded so that surface water flow moves away from the excavations. The excavations will not be backfilled, but they will be surrounded by fencing. The fencing will be designed to prevent human and discourage animal entrances into the excavation voids. The excavations will be graded, or other accommodation made, such that any animals that might enter the fencing and into the excavation will not be trapped in the excavation.

The surrounding area will not be enhanced to promote establishment of native vegetation because that vegetation would need to be cleared for the future remedial actions. The site will not be regraded because the design of future remedial actions will rely on the current nature and extent of contamination at the site, not on one where the surface soil has been moved around through regrading.

7. Reporting

Implementation of this RAW will be documented in an implementation report submitted to DTSC within 60 days of completion of field activities and receipt of all validated analytical data. The implementation report will provide, at a minimum, a summary of the field activities completed, volumes of excavated materials sent offsite to landfills, the results of confirmation sampling, and field forms that document the removal action.

8. Schedule of Activities

This section discusses the removal action schedule, including finalization of this RAW, implementation activities, and reporting.

8.1 Schedule

The AIBP RFI site removal action schedule is provided on Figure 6. The schedule has been developed with the goal of starting the field work at the beginning of 2024. However, work may not begin until DTSC approves the final RAW, necessary permits are obtained, and DTSC has been notified that work is scheduled to begin. The schedule assumes the final RAW will be approved by DTSC by September 18, 2023, and that excavation activities will begin January 2024.

Potential delays in RAW implementation may occur if the grading permit is not approved by October 6, 2023. Weather related events such as late season rain events, birds nesting, or wildfires may also cause delays in the field implementation.

8.2 Coordination with DTSC

Boeing has consulted with DTSC during development of this RAW and will continue to do so during the implementation of the removal action as described in this plan and the 2022 ISE Order. As needed, Boeing will provide support for DTSC community outreach during the removal action.

As specified in the 2022 ISE Order, monthly reports describing completed and upcoming activities for the following month will be submitted to DTSC. DTSC will be notified 7 days in advance before field activities or sampling are conducted. If substantive field implementation changes are required after the final RAW is approved, they will be discussed with DTSC and documented in addenda that will be submitted to DTSC for approval.

9. Administrative Record

The following documents were relied on or considered during the removal action selection process:

- *Imminent and Substantial Endangerment Determination and Consent Order, Santa Susana Field Laboratory, Area I Burn Pit Area, Simi Valley, Ventura County, California, The Boeing Company (Respondent)*. Docket No. HSA-FY21/22-148. (DTSC 2022a)
- *RCRA Facility Investigation, Data Summary and Findings Report, Area I Burn Pit RFI Site, Boeing RFI Subarea 1B Southwest, Santa Susana Field Laboratory, Ventura County, California* (AIBP DSFR). Final. March. (CH2M 2021)
- Federal Remediation Technologies Roundtable (FRTR). Excavation and Off-Site Disposal. https://frtr.gov/matrix/Excavation-and-Off-Site-Disposal/. (FRTR 2022a)
- Landfill and Soil Capping. https://frtr.gov/matrix/Landfill-and-Soil- Capping/. (FRTR 2022b)
- Solidification and Stabilization. https://frtr.gov/matrix/Solidification- and-Stabilization/. (FRTR 2022c)

10. References

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Tables

Table 1. Early Action Areas Details

EAA Name	Purpose	AIBP Primary Source Area	Depth (feet)	Area (square feet)	Volume (cy)	Notes
EAA-TS01a	Tarp 1 and radionuclides	Burn Pits 1 and 2, Concrete Pads 1 and 2, Concrete Pond 1.	2	16,976	1,258	The volume of the excavation for EAA-TS01a includes locations TTBS1079 (europium-152 above corresponding LUTV), TTBS1148 (uranium-235/236 above corresponding LUTVs), and TTBS1232 (thorium-232 above corresponding LUTVs).
EAA-TS01b	Tarp 1	Concrete Pond 2.	2	12,368	916	
EAA-TS01c	Tarp 1	Concrete Ponds 2 and 3.	2	466	34	
EAA-TS02	Tarp 2	Concrete Pad 2.	2	13,192	977	
EAA-TS03	Tarp 3	Former Fire Department Demonstration Area.	2	3,115	231	
EAA-TS04	Tarp 4	No known source in the area nearby.	2	770	57	
EAA-TS05	Tarp 5	No known source in the area nearby.	2	1,703	126	
EAA-TS06	Tarp 6	No known source in the area nearby.	2	1,380	102	
EAA-TS07	Tarp 7	No known source in the area nearby.	2	739	55	
EAA-ES01	Ecological risk: AIBP-CMS-S1	Earth Ponds 1 and 2.	1.5	162	9	See 2022 AIBP ERA for more details.
EAA-ES02	Ecological risk: AIBP-CMS-S2	Former Fire Department Demonstration Area.	4	1,526	226	See 2022 AIBP ERA for more details.
EAA-ES03	Ecological risk: AIBP-CMS-S3 and radionuclides	Former Fire Department Demonstration Area.	1.5	2,321	129	See 2022 AIBP ERA for more details. AIBP-CMS-S3 volume includes location TTBS1027 (plutonium-239/240 above corresponding LUTVs).
EAA-ES06	Ecological risk: AIBP-CMS-S6	No known source in the area nearby.	1.5	185	10	See 2022 AIBP ERA for more details.
EAA-ES07	Ecological risk: AIBP-CMS-S7	No known source in the area nearby.	1.5	805	45	See 2022 AIBP ERA for more details.
EAA-ES08	Ecological risk: AIBP-CMS-S8	No known source in the area nearby.	1.5	1,405	78	See 2022 AIBP ERA for more details.
EAA-ES09	Ecological risk: AIBP-CMS-S9	Concrete Pond 2 and Earth Pond 3.	1.5	157	9	See 2022 AIBP ERA for more details.
EAA-ES10	Ecological risk: AIBP-CMS-S10 and radionuclides	Concrete Pond 2 and Earth Pond 3.	4	847	126	See 2022 AIBP ERA for more details. AIBP-CMS-S10 volume includes location TTBS1149 (thorium-230 above corresponding LUTVs).
EAA-ES11	Ecological risk: AIBP-CMS-S11	Concrete Pond 2 and Earth Pond 3.	5.5	393	80	See 2022 AIBP ERA for more details.
EAA-ES12	Ecological risk: AIBP-CMS-S12	No known source in the area nearby.	1.5	1,544	86	See 2022 AIBP ERA for more details.
EAA-ES13	Ecological risk: AIBP-CMS-S13	Concrete Pad 1, Concrete Pond 1.	3.5	1,378	179	See 2022 AIBP ERA for more details.
EAA-ES14	Ecological risk: AIBP-CMS-S14	Thermal Treatment Facility	1.5	381	21	See 2022 AIBP ERA for more details.
EAA-ES15	Ecological risk: AIBP-CMS-S15	Thermal Treatment Facility	1.5	526	29	See 2022 AIBP ERA for more details.
EAA-ES19	Ecological risk: AIBP-CMS-S19	Concrete Pad 2.	3.5	501	65	See 2022 AIBP ERA for more details.
EAA-ES20	Ecological risk: AIBP-CMS-S20	Concrete Pad 2.	1.5	845	47	See 2022 AIBP ERA for more details.
EAA-ES22	Ecological risk: AIBP-CMS-S22	Concrete Pond 2.	1.5	367	20	See 2022 AIBP ERA for more details.
EAA-ES23	Ecological risk: AIBP-CMS-S23	Concrete Pond 3.	1.5	174	10	See 2022 AIBP ERA for more details.
EAA-ES24	Ecological risk: AIBP-CMS-S24	Concrete Pond 3.	1.5	296	16	See 2022 AIBP ERA for more details.
EAA-ES25	Ecological risk: AIBP-CMS-S25	Former Fire Department Demonstration Area.	1.5	106	6	See 2022 AIBP ERA for more details.
EAA-ES26a	Ecological risk: AIBP-CMS-S26	Earth Ponds 1 and 2.	1.5	1,384	77	See 2022 AIBP ERA for more details. EAA-ES26a is the portion of AIBP-CMS-S26 without radionuclides exceedances under it. The other part of AIBP-CMS-S26 is named EAA-ELS26b (below).
EAA-ES27	Ecological risk: AIBP-CMS-S27	Earth Ponds 1 and 2.	6	258	57	See 2022 AIBP ERA for more details.
EAA-ES28	Ecological risk: AIBP-CMS-S28	Earth Ponds 1 and 2.	4	74	11	See 2022 AIBP ERA for more details.
EAA-ES29	Ecological risk: AIBP-CMS-S29	Earth Ponds 1 and 2.	3.5	951	123	See 2022 AIBP ERA for more details.
EAA-ES31a	Ecological risk: AIBP-CMS-S31	Concrete Pond 2.	1.5	1,886	105	See 2022 AIBP ERA for more details. AIBP-CMS-S31 is split by EAA-ESV2. EAA-ES31a is the part of AIBP-CMS-31 west of EAA-ESV2 and include sample locations targeted for CMS. AIBP-CMS-S31 addresses COECs, 2,3,7,8_TCDD_TEQ_Mammal, 2,3,7,8_TCDD_TEQ_Bird, and cadmium.

Table 1. Early Action Areas Details

EAA Name	Purpose	AIBP Primary Source Area	Depth (feet)	Area (square feet)	Volume (cy)	Notes
EAA-ES31b	Ecological risk: AIBP-CMS-S31	Concrete Pond 2.	1.5	207	11	See 2022 AIBP ERA for more details. AIBP-CMS-S31 is split by EAA-ESV2. EAA-ES31b is the part of AIBP-CMS-31 east of EAA-ESV2 and does not specifically include sample locations targeted for CMS. AIBP-CMS-S31 addresses COECs, 2,3,7,8_TCDD_TEQ_Mammal, 2,3,7,8_TCDD_TEQ_Bird, and cadmium.
EAA-ES32	Ecological risk: AIBP-CMS-S32	Concrete Pond 2.	1.5	809	45	See 2022 AIBP ERA for more details. AIBP-CMS-S32 addresses COECs aroclor-1254, 2,3,7,8_TCDD_TEQ_Mammal, cadmium, and nickel. Locations that define extent of AIBP-CMS-S32 are wholly within EEA-ESV2. EAA-ES32 is the remainder of AIBP-CMS-S32 outside of EEA-ESV2 and contains no sample locations targeted for CMS.
EAA-ES34	Ecological risk: AIBP-CMS-S34	Burn Pits 1 and 2.	3.5	54	7	See 2022 AIBP ERA for more details.
EAA-ES35	Ecological risk: AIBP-CMS-S35	Burn Pits 1 and 2.	1.5	510	28	See 2022 AIBP ERA for more details.
EAA-ESV1	Ecological risk: AIBP-CMS-SV1 and radionuclides	No known source in the area nearby.	6	4,313	959	The soil vapor sample TTSV1030S001 collected from 5 to 6 feet below ground surface at location TTSV1030 had a trichloroethane concentration of 290 ug/L, which poses ecological risk to borrowing mammals. See 2022 AIBP ERA for more details. Includes location TTBS1146 (uranium-235/236 above corresponding LUTVs).
EAA-ESV2	Ecological risk: AIBP-CMS-SV2, S21, S33, part of S31 and S32	Concrete Pond 2.	6	7,731	1,718	See 2022 AIBP ERA for more details. EAA-ESV2 includes CMS areas that addresses COECs, cadmium, TCE, aroclor-1254, 2,3,7,8_TCDD_TEQ_Mammal, 2,3,7,8_TCDD_TEQ_Bird, and nickel.
EAA-LS01	Radionuclide exceedances above LUTVs at location TTBS1139	Earth Ponds 1 and 2.	1.5	2,396	133	Includes location TTBS1139 (uranium-235/236 above corresponding LUTVs).
EAA-LS02	Radionuclide exceedances above LUTVs at location TTBS1030	No known source in the area nearby.	4.5	904	151	Includes location TTBS1130 (uranium-235/236 above corresponding LUTVs).
EAA-LS03	Radionuclide exceedances above LUTVs at location TTBS1033	No known source in the area nearby.	4.5	372	62	Includes location TTBS1133 (thorium-230 and uranium-238 above corresponding LUTVs).
EAA-LS05	Radionuclide exceedances above LUTVs at location TTBS1061	Concrete Pond 1.	3	1,577	175	Includes location TTBS1061 (uranium-235/236 above corresponding LUTVs).
EAA-LS06	Radionuclide exceedances above LUTVs at location TTBS1123	No known source in the area nearby.	2.5	1,691	157	Includes locations TTBS1123 (europium-152, plutonium-238, plutonium-239/240 above corresponding LUTVs).
EAA-LS07	Radionuclide exceedances above LUTVs at locations TTBS2303, TTBS2304, and TTBS2011	No known source in the area nearby.	2	9,485	703	Includes locations TTBS2303, TTBS2304, and TTBS2011 (thorium-230, uranium-233/234, and uranium-238 above corresponding LUTVs).
EAA-LS08	Radionuclide exceedances above LUTVs at location TTBS1010	Earth Ponds 1 and 2.	3.5	2,346	304	Includes location TTBS1010 (europium-152 and uranium-235/236 above corresponding LUTVs).
EAA-LS09	Radionuclide exceedances above LUTVs at location TTBS1053	No known source in the area nearby.	6	673	150	Includes location TTBS1053 (uranium-235/236 above corresponding LUTVs).
EAA-ELS04	Radionuclide exceedances above LUTVs at location TTBS1184	No known source in the area nearby.	5	1,026	190	Top 1.5 feet of EAA-ELS04 has ecological criteria (part of Ecological CMS Area AIBP-CMS-04). Below 1.5 feet includes location TTBS1184 (uranium-235/236 above corresponding LUTVs).
EAA-ELS26b	Radionuclide exceedances above LUTVs at location TTBS1016	Earth Ponds 1 and 2.	5.5	1,924	392	Top 1.5 feet of EAA-ELS26b has ecological criteria (part of Ecological CMS Area AIBP-CMS-26). Below 1.5 feet includes location TTBS1016 (europium-152 above corresponding LUTVs).

AIBP = Area I Burn Pit
CMS = corrective measures study
cy = cubic yard(s)
EAA = Early Action Area
ERA = ecological risk assessment
LUTV = Look Up Table Value
TCDD = tetrachlorodibenzo-p-dioxin
TEQ = toxicity equivalent

Table 2. Alternative Removal Action Methods

Alternative Number	Description	Findings
1	No Action	This alternative leaves the AIBP RFI site in its current state and will not meet the RAOs specified in this RAW because the 2022 ISE Order states that the soil is to be removed.
2	Excavation and Offsite Disposal (FRTR 2022a)	This alternative meets the RAOs specified in this RAW by forever removing contaminated soil from the AIBP RFI site and is consistent with the remediation strategy as discussed with DTSC for the removal action.
3	Capping (FRTR 2022b)	Installation of an impermeable cap across the area of the AIBP RFI site shown on Figure 2 will not meet the RAOs because the 2022 ISE Order states that the soil is to be removed. Capping will require complete clearing and grubbing of vegetation and require long-term monitoring/maintenance. Costs associated with installation, and long-term monitoring and maintenance of the cap may exceed the cost to excavate and dispose of the contaminated material.
4	Excavator Mixing (Solidification) (FRTR 2022c)	Solidification involves the injection of materials such as cement into in situ soil to immobilize contaminants. Solidification will not meet the RAOs because the 2022 ISE Order states that the soil is to be removed. Excavator mixing is typically performed using excavators, often with special buckets attached to mix cement into the soil. Complete clearing and grubbing of vegetation is required for solidification. Surface water runoff over solidified areas may increase and promote erosion outside of the cleanup area. This technology also requires long-term monitoring/maintenance to confirm effectiveness over time. Also surface water passing over the solidified areas may increase in pH after being exposed to lime in the cement. Restoration of the natural habitat may be impossible after cement is introduced to the soil.

2022 ISE Order = *Imminent and Substantial Endangerment Determination and Consent Order, Santa Susana Field Laboratory, Area I Burn Pit Area*
AIBP = Area I Burn Pit
DTSC = California Environmental Protection Agency, Department of Toxic Substances Control
FRTR = Federal Remediation Technologies Roundtable
RAO = removal action objective
RAW = Removal Action Work Plan
RCRA = Resource Conservation and Recovery Act
RFI = RCRA facility investigation

Table 3. Soil Remedial Goals

Analytical Group	Analyte	CAS	Remedial Goal	Units	Source
Dioxin	2,3,7,8-TCDD_TEQ_Bird	1746016-TEQ_Bird	0.000057	mg/kg	High EcoRBSL (hermit thrush)
Dioxin	2,3,7,8-TCDD_TEQ_Mammal	1746016-TEQ_Mammal	0.000005	mg/kg	High EcoRBSL (deer mouse)
Metal	Cadmium	7440439	0.56	mg/kg	High EcoRBSL (deer mouse)
Metal	Mercury	7439976	0.29	mg/kg	High EcoRBSL (hermit thrush)
Metal	Molybdenum	7439987	39	mg/kg	10X High EcoRBSL (deer mouse)
Metal	Nickel	7440020	840	mg/kg	10X High EcoRBSL (deer mouse)
Metal	Zinc	7440666	930	mg/kg	10X High EcoRBSL (hermit thrush)
PCB	Aroclor-1248	12672296	0.64	mg/kg	10X High EcoRBSL (deer mouse)
PCB	Aroclor-1254	11097691	3.9	mg/kg	10X High EcoRBSL (deer mouse)
VOC	Pentachlorophenol	87865	10	mg/kg	High EcoRBSL (deer mouse)
VOC	Trichloroethene	79016	18	mg/kg	High EcoRBSL (deer mouse)
VOC	1,1-Dichloroethene	75354	18	mg/kg	High EcoRBSL (deer mouse)
Radiological	Europium-152	14683239	0.0739	pCi/g	LUTV
Radiological	Plutonium-238	13981163	0.0254	pCi/g	LUTV
Radiological	Plutonium-239/240	E-13207	0.023	pCi/g	LUTV
Radiological	Thorium-230	14269637	2.38	pCi/g	LUTV
Radiological	Thorium-232	7440291-R	3.44	pCi/g	LUTV
Radiological	Uranium-233/234	E-13230	2.18	pCi/g	LUTV
Radiological	Uranium-235/236	E-16045	0.152	pCi/g	LUTV for Uranium-235
Radiological	Uranium-238	7440611-R	1.96	pCi/g	LUTV

LUTVs are January 20, 2013 Provisional Look-Up Table Values from EPA Lab B.

EcoRBSLs are Ecological Risk Based Screening Levels of March 18, 2022, Attachment 3 of Exhibit 5 to the Settlement Agreement (DTSC-Boeing 2022)

CAS = Chemical Abstracts Service
EcoRBSL = ecological risk-based screening level
LUTV = Lookup Table Value
mg/kg = milligram(s) per kilogram
PCB = polychlorinated biphenyl
pCi/g = picoCurie(s) per gram
TCDD = tetrachlorodibenzo-p-dioxin
TEQ = toxicity equivalent
VOC = volatile organic compound

Figures

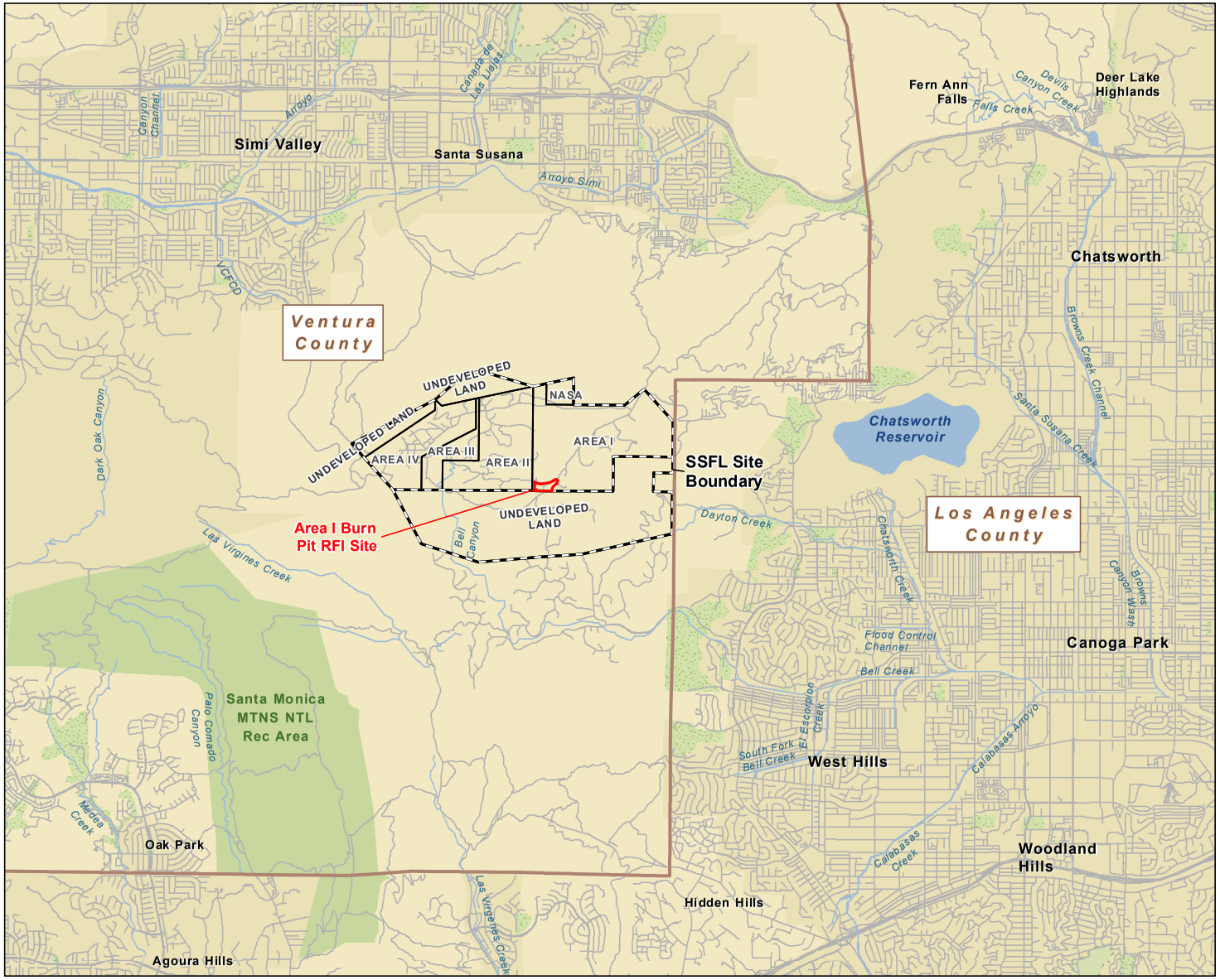
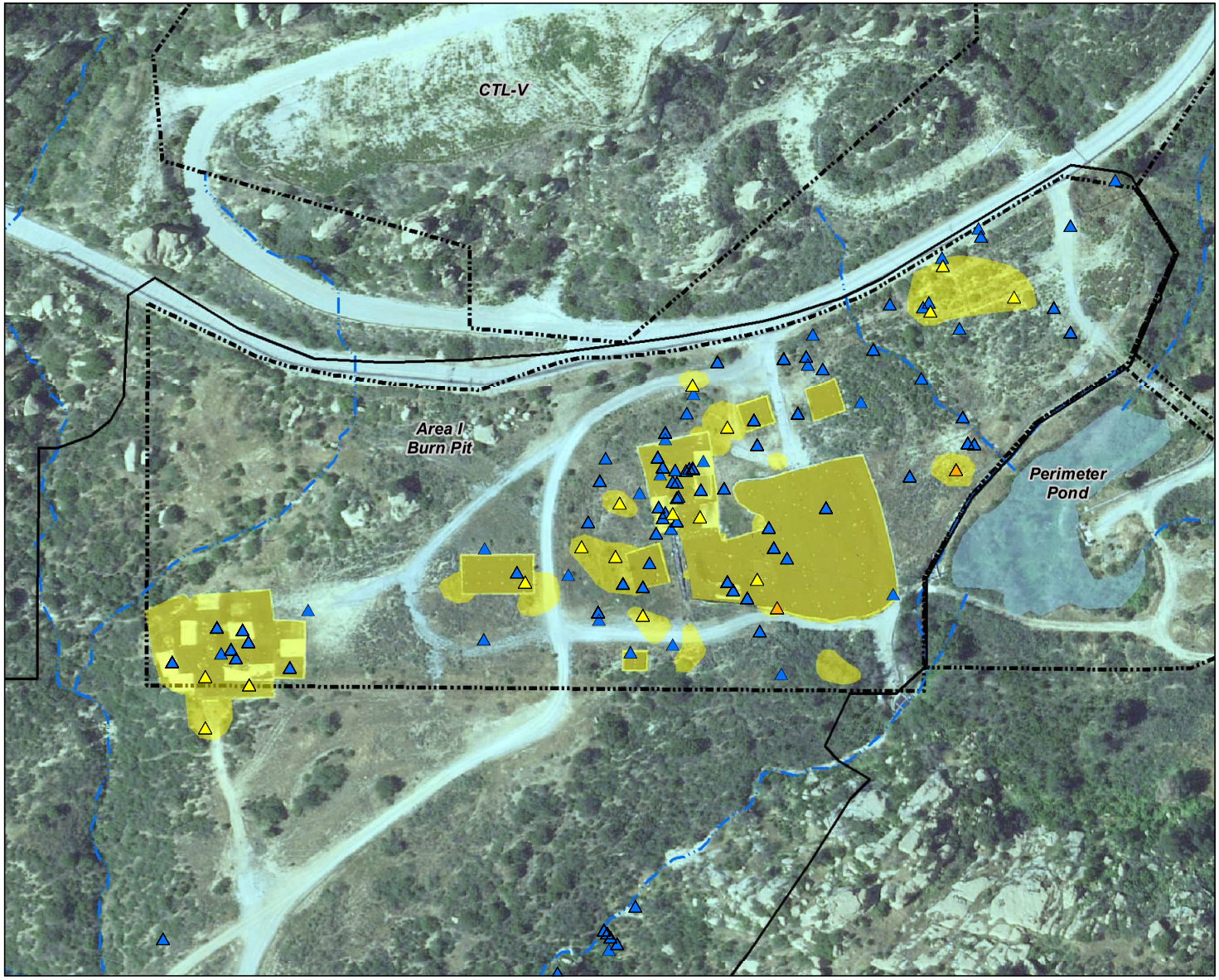
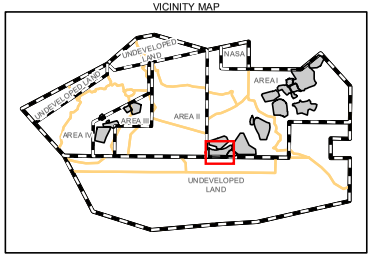


FIGURE 1
Regional Map
Early Action Work Plan
Area I Burn Pit RFI Site
Boeing RFI Subarea 1B Southwest
Santa Susana Field Laboratory, Ventura County, California



VICINITY MAP



BASEMAP LEGEND

- Boeing RFI Site
- Area I Burn Pit RFI Site Reporting Area
- Drainage Channel
- Pond
- Early Action Area

Radionuclide Soil Detects Compared to January 30, 2013 Draft Provisional Radiological Look-Up Table Values (LUTV)

- Detected <= LUTV
- Detected > LUTV to <=2x LUTV
- Detected >2xLUTV to <=10xLUTV

Note:
Only detects are presented.

N

0 60 120
Feet
1 in = 120 ft

FIGURE 2
Area I Burn Pit Early Action Area
Early Action Work Plan
Area I Burn Pit RFI Site
Boeing RFI Subarea 1B Southwest
Santa Susana Field Laboratory, Ventura County, California

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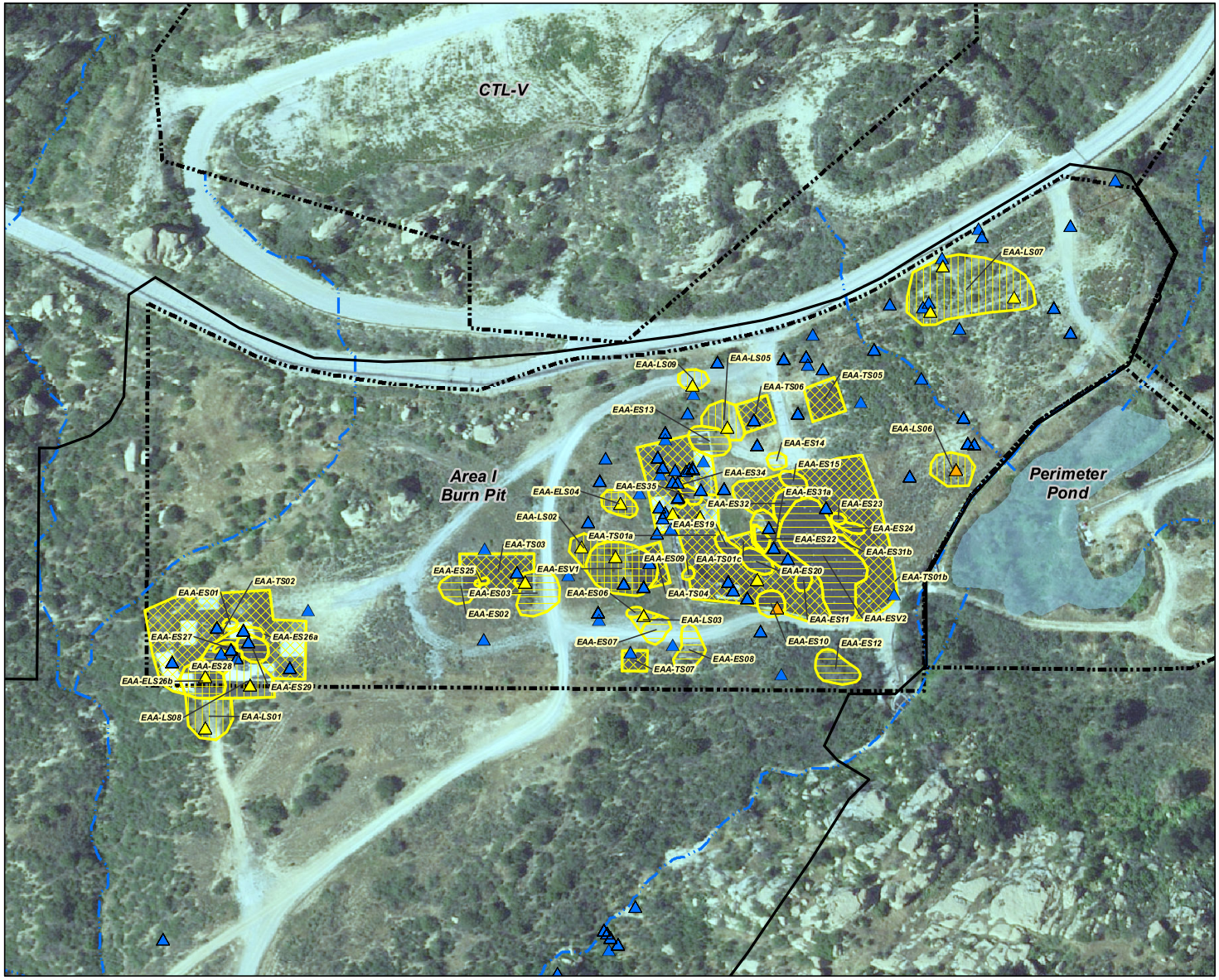
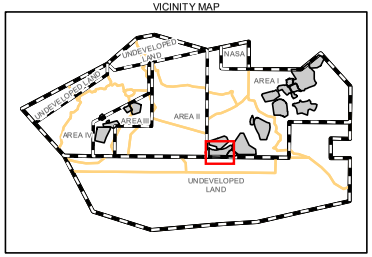


VICINITY MAP



BASEMAP LEGEND

- Boeing RFI Site
- Area I Burn Pit RFI Site Reporting Area
- Drainage Channel
- Pond

Radionuclide Soil Data Compared to January 30, 2013 Draft Provisional Radiological Look-Up Table Values (LUTV)

- Detected <= LUTV
- Detected > LUTV to <=2x LUTV
- Detected >2xLUTV to <=10xLUTV

Early Action Areas

- Tarp Criterion
- Ecological Criterion
- Radionuclide LUTV Criterion
- Ecological and Radionuclide LUTV Criteria

Note:
Only detects are presented.

N

0 60 120
Feet
1 in = 120 ft

FIGURE 3
Individual Areas of the Area I Burn Pit Early Action
Early Action Work Plan
Area I Burn Pit RFI Site
Boeing RFI Subarea 1B Southwest
Santa Susana Field Laboratory, Ventura County, California

\\DC1VS01\GISPROJ\B\BOEING\SSFL\MAPS\REPORT\REMOVALACTIONWORKPLAN\AIBP\AREAIBURNPIT_FIGURE3_EARLYACTION.MXD RANHORN 10/6/2022 11:08:43 AM

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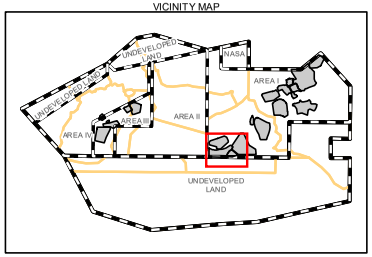
VICINITY MAP



BASEMAP LEGEND

- Boeing RFI Site
- Area I Burn Pit RFI Site Reporting Area
- Drainage Channel
- Top of Bank of Drainage Channel
- Pond
- Early Action Area

Sensitive Plant Species Plant

- Coast Live Oak
- Santa Susana Tarplant
- Santa Susana Tarplant
- Sensitive Plant Species Buffer
- Biological Survey Area
- Utility Pole

Notes:
1) Sensitive species mapped on June 29, 2022 and September 14, 2022.
2) Environmentally Sensitive Area (ESA) include areas within the top of bank of drainage channel (dark blue line) and within the sensitive plant species buffer (dark green line)
3) Sensitive plant species located outside of the biological survey area area are not shown on this figure.

N

0 87.5 175
Feet
1 in = 175 ft

FIGURE 4a
Environmentally Sensitive Areas

Early Action Work Plan
Area I Burn Pit RFI Site
Boeing RFI Subarea 1B Southwest
Santa Susana Field Laboratory, Ventura County, California

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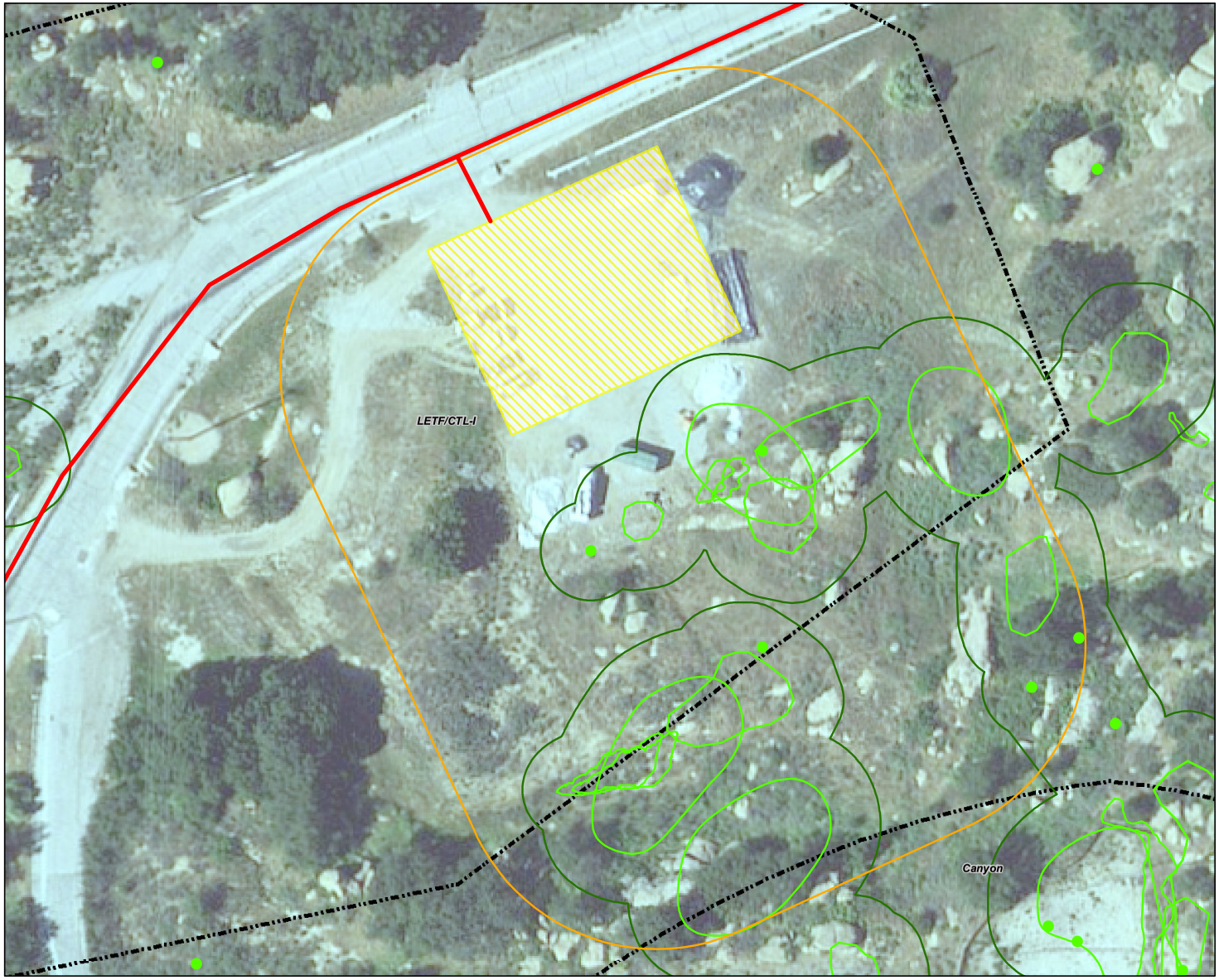

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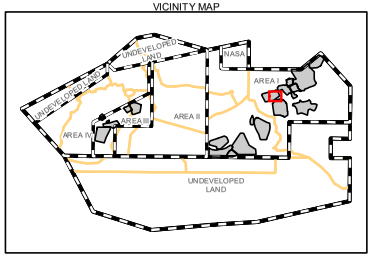

BASEMAP LEGEND

- Boeing RFI Site
- Onsite Truck Route
- Temporary Storage Area
- Santa Susana Tarplant
- Santa Susana Tarplant
- Sensitive Plant Species Buffer
- Biological Survey Area

Notes:
1) Sensitive species mapped on June 29, 2022,September 14, 2022, and June 28, 2023.
2) Environmentally Sensitive Area (ESA) include areas within the sensitive plant species buffer (dark green line)

0 25 50
Feet
1 in = 50 ft

N

FIGURE 4b
Environmentally Sensitive Areas in LETF/CTL-I
Early Action Work Plan
Area I Burn Pit RFI Site
Boeing RFI Subarea 1B Southwest
Santa Susana Field Laboratory, Ventura County, California

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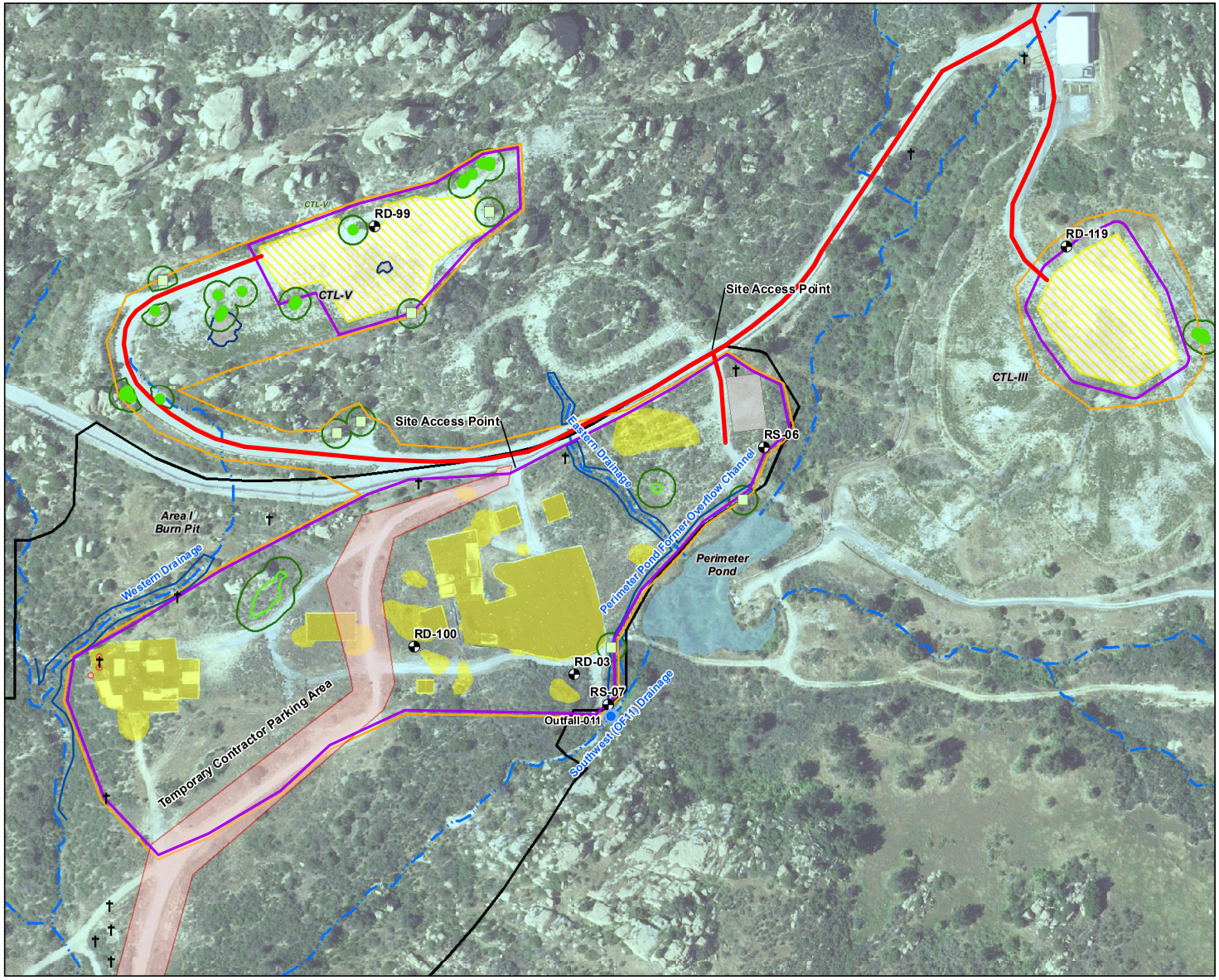

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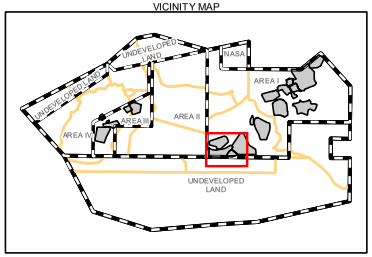

BASEMAP LEGEND

- Area I Burn Pit RFI Site Reporting Area
- Drainage Channel
- Top of Bank of Drainage Channel
- Pond
- Early Action Area
- Groundwater Monitoring Well
- NPDES Outfalls
- Onsite Truck Route
- Perimeter Fencing Around Project Boundary
- Temporary Storage Area
- Vegetation Biomass Staging Area

Sensitive Plant Species Plant

- Coast Live Oak
- Santa Susana Tarplant
- Santa Susana Tarplant
- Sensitive Plant Species Buffer
- Biological Survey Area
- Vernal Depression
- Area with no excavation due to proximity to site infrastructure
- Utility Pole

Note:
1) Sensitive species mapped on June 29, 2022 and September 14, 2022.

N

0 87.5 175
Feet
1 in = 175 ft

FIGURE 5
Early Action Area Generalized Construction Plan
Early Action Work Plan
Area I Burn Pit RFI Site
Boeing RFI Subarea 1B Southwest
Santa Susana Field Laboratory, Ventura County, California

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Jacobs

Figure 6. Area I Burn Pit Removal Action Schedule

Task Name	Start	Finish	2022 Q4	2023 Q1	2023 Q2	2023 Q3	2023 Q4	2024 Q1	2024 Q2	2024 Q3	2024 Q4
Removal Action Work Plan /Removal Action Implementation Plan	**10/14/22**	**9/18/23**									
Submit Draft RAW/RAWIP	10/14/22	10/14/22									
DTSC Review and Comment	10/17/22	4/4/23									
Address DTSC comments on Draft RAW/RAWIP	4/4/23	8/18/23									
Submit Final RAW/RAWIP to DTSC	8/18/23	8/18/23									
DTSC review of Final RAW/RAWIP	8/18/23	9/19/23									
DTSC conditional approve of Final RAW/RAWIP	9/19/23	9/19/23									
DTSC Starts Public Input Period	10/10/23	10/10/23									
DTSC Holds Public Input Meeting	11/9/23	11/9/23									
DTSC Ends Public Input Period	11/15/23	11/15/23									
DTSC approves of Final RAW/RAWIP, if no changes are warranted	11/20/23	11/20/23									
Permitting	**8/18/23**	**10/6/23**									
Grading and Construction Permit Review/Approval	8/18/23	10/6/23									
Excavation Activities	**8/18/23**	**8/8/24**									
Pre-Excavation Field Activities	**8/18/23**	**2/2/24**									
Procurement Activities	8/18/23	1/8/24									
Expert Panel Site Vist to Confirm the SWPPP	12/1/23	1/15/24									
Pre-excavation Biological Survey	12/1/23	1/15/24									
Pre-excavation Cultural Resource Survey	12/1/23	1/15/24									
Vegetation Clearance	12/1/23	1/19/24									
Field Preparation	1/19/24	2/2/24									
Excavation	2/5/24	6/10/24									
Profiling	2/19/24	7/1/24									
Offsite Disposal	4/4/24	8/8/24									
Confirmation Sampling and Data Validation	2/19/24	6/24/24									
Site Restoration	6/10/24	6/20/24									
Post-excavation Cultural and Biological Survey	6/20/24	6/27/24									
Removal Action Implementation Report	**6/27/24**	**12/23/24**									
Prepare Draft Removal Action Implementation Report	6/27/24	8/23/24									
Submit Draft RA Implementation Report	8/23/24	8/23/24									
DTSC Review and Comment	8/23/24	10/24/24									
Address Comments on Draft Implementation Report	10/24/24	11/21/24									
Submit Final Removal Action Implementation Report	11/22/24	11/22/24									
DTSC review of Final Implementation Report	11/22/24	12/23/24									
DTSC approval of Final Implementation Report	12/23/24	12/23/24									

Appendix A
Health and Safety Plan

Jacobs

Project Health, Safety and Environment Plan

Boeing Santa Susana Field Laboratory (SSFL) Project, Ventura County, California

Prepared for:
The Boeing Company
Canoga Park, California

October 2022

Contents

Attachments

Approval

This site-specific PHSEP Project Health, Safety, and Environment Plan (PHSEP) for the Boeing Santa Susana Field Laboratory (SSFL) project has been written for use by Jacobs only. Jacobs claims no responsibility for its use by others unless that use has been specified and defined in project or contract documents. The plan is written for the specific site conditions and identified scope(s) of work and must be amended if those conditions or scope(s) of work change.

By approving this PHSEP, the Project Health, Safety Lead, and the Jacobs Radiation Safety Officer (RSO) (for radiological requirements only), or Project Health and Safety Manager (HSM) certifies that the personal protective equipment has been selected based on the task hazard/impact identification and risk assessment (HIIRA).

Original Plan

Revisions Made By Steven Sanchez **Date: 9/8/2022**

Description of Revisions to Plan: Revised to include Project Task Area I Burn Pit Removal Action third-party contractor excavation oversight, site monitoring, IDW stockpile sampling, and discrete confirmation soil sampling tasks, and CTL-3 BVE/IEL SVE Pilot Study Activities. Radiological controls and requirements revised commensurate with the risks.

Revisions Approved By (HSM): **Date: 9/12/2022**

Revisions Approved By (Jacobs RSO): **Date: 9/25/2022**

1. Introduction

1.1 Jacobs Safe Work Policy

It is the policy of Jacobs Engineering Group, Inc. (Jacobs), to perform work in the safest manner possible. Safety must never be compromised. To fulfill the requirements of this policy, an organized and effective safety program must be carried out at each location where work is performed.

Jacobs believes that all injuries are preventable, and we are dedicated to the goal of a safe work environment. To achieve this goal, every employee on the project must assume responsibility for safety.

Every employee is empowered to:

- Conduct their work in a safe manner;
- Stop work immediately to correct any unsafe condition that is encountered; and
- Take corrective actions so that work may proceed in a safe manner.

Safety, occupational health, and environmental protection will not be sacrificed for production. These elements are integrated into quality control, cost reduction, and job performance, and are crucial to our success.

1.2 Jacobs Health and Safety Commitment

Jacobs has embraced a philosophy for health and safety excellence. The primary driving force behind this commitment to health and safety is simple: employees are Jacobs' most significant asset and Jacobs management values their safety, health, and welfare. Also, top management believes that all injuries are preventable. Jacobs' safety culture empowers employees at all levels to accept ownership for safety and take whatever actions are necessary to eliminate injury. Our company is committed to world-class performance in health and safety and also understands that world-class performance in health and safety is a critical element in overall business success.

Jacobs is committed to the prevention of personal injuries, occupational illnesses, and damage to equipment and property in all of its operations; to the protection of the general public whenever it comes in contact with the Company's work; and to the prevention of pollution and environmental degradation.

Company management, field supervisors, and employees plan safety into each work task in order to prevent occupational injuries and illnesses. The ultimate success of Jacobs' safety program depends on the full cooperation and participation of each employee.

Jacobs management extends its full commitment to health and safety excellence.

1.3 Jacobs Project-Specific Health, Safety, and the Environment Goals

All management and employees are to strive to meet the project-specific Health, Safety, and the Environment (HSE) goals outlined below. The team will be successful only if everyone makes a concerted effort to accomplish these goals. The goals allow the project to stay focused on optimizing the health and safety of all project personnel and, therefore, making the project a great success.

The Project has established twelve specific goals and objectives:

- Create an injury-free environment;

- Have zero injuries or incidents;
- Provide management leadership for HSE by communicating performance expectations, reviewing and tracking performance, and leading by example;
- Ensure effective implementation of the PHSEP through education, delegation, and team work;
- Ensure 100 percent participation in HSE compliance;
- Continuously improve our safety performance;
- Maintain free and open lines of communication;
- Make a personal commitment to safety as a value;
- Focus safety improvements on high-risk groups;
- Keep all exposure to ionizing radiation As Low As Reasonably Achievable (ALARA);
- Continue strong employee involvement initiatives; and
- Achieve health and safety excellence.

2. Applicability

Note: CH2M is a subsidiary of Jacobs.

This PHSEP applies to:

- All Jacobs staff, including subcontractors and tiered subcontractors of Jacobs working on the site; and
- All visitors to the construction site in the custody of Jacobs (including visitors from the Client, the Government, the public, and other staff of any Jacobs company).
- In addition, subcontractors and tiered subcontractors shall also follow any of their company HSE programs, and site-specific PHSEPs and task hazard/impact identification and risk assessment (HIIRA) (e.g., activity or job hazard analyses). Even though this plan applies to non-Jacobs personnel as stated above, each employer is ultimately responsible for the health, safety, and well-being of their employees.

This PHSEP does not apply to the third-party contractors, their workers, their subcontractors, their visitors, or any other persons not under the direct control or custody of Jacobs.

The objective of this PHSEP is to ensure that project hazards and environmental impacts are eliminated or mitigated through the identification of hazards, environmental impacts assessment of risk and the application of effective control measures and to achieve a safe and healthy workplace for ourselves and subcontractor to whom we have a legal and moral duty of care. Further, there is a requirement to ensure that our activities are conducted in an environmentally friendly and responsible manner.

Jacobs has undertaken a structured HIIRA process and shall implement a Safe System of Work (SSoW) for delivery of our services on this project. As part of the SSoW, this PHSEP defines the procedures and requirements for the health and safety of staff and visitors when they are physically on the work site. The work site includes the project area (as defined by the contract documents) and the project offices, trailers, and facilities thereon.

This PHSEP will be kept onsite during field activities and will be reviewed as necessary. The PHSEP will be amended or revised as project activities or conditions change or when supplemental information becomes available. The PHSEP adopts, by reference, the Jacobs Business Management System Global HSE and People and Places Solutions (P&PS) HSE Procedures and Work Instructions, as appropriate. In addition, the PHSEP may adopt procedures from the project Work Plan and any governing regulations. If there is a contradiction between this PHSEP and any governing regulation, the more stringent and protective requirement shall apply.

This PHSEP incorporates the regulatory requirements described in the State of California Occupational Safety and Health Administration (OSHA) agency – Cal/OSHA Title 8 CCR, Section 3203, Injury and Illness Prevention Program (IIPP), and section 1509, Construction Injury and Illness Prevention Program.

All Jacobs staff and subcontractors must sign the employee sign-off form included in this document as Attachment 1 to acknowledge review of this document. Copies of the signature page will be maintained onsite by the Safety Liaison (SL).

3. General Project Information

3.1 Project Information and Background

Project Number: 706331CH

Client: The Boeing Company (Boeing)

Project/Site Name: Boeing Santa Susana Field Laboratory (SSFL)

Site Address: 5800 Woolsey Canyon Road, Canoga Park, California 91304

Jacobs Project Manager: Liz Bryant

Jacobs Offices: SDO (San Diego, CA)

DATE PHSEP Prepared: July 26, 2007, revised 02-26-2008, revised 09-05-2008, revised to new format April 2010, revised 2/15/11, revised 1/3/12, revised 2/8/12, revised 5/6/12, revised 9/6/12, revised 10/25/12. revised 12/20/12, revised 1/29/13, revised 8/7/13, revised 8/26/13, revised 10/24/13, revised 2/6/14, revised 12/19/14, revised 8/18/15, revised 1/8/16, revised 12/19/17, revised 1/8/19, revised 12/12/19, revised 12/9/20, revised 12/16/21, revised 9/8/22

Date(s) of Site Work: August 1, 2007 through September 29, 2023

3.2 Site Background and Setting

SITE ACCESS and CONTROLS:

Restricted Access Areas: In order to ensure the safety of Boeing and non-Boeing personnel at SSFL, certain inactive areas are designated as "Restricted Access Areas" with signage and physical guards where appropriate. Personnel may not enter those areas without first having the SSFL Orientation from site Health and Safety (H&S). After the SSFL Orientation, personnel are permitted to enter posted "Restricted Access Areas" and must be cognizant and cautious of residual hazards.

Travel on and around the Site: All pedestrian and vehicular traffic on all paved and unpaved portions of the Site is subject to authorization and restriction. The Contractor is responsible for ensuring that all personnel, including subcontractors, are at all times in compliance with all pedestrian and vehicular traffic control and safety requirements, including posted speed limits, controlled intersections, parking, seat belts, and all other basic and Site-specific best safety practices.

On-Site Communications: The remote location and rugged hilly terrain limits the effectiveness of radio and/or cellular telephone communications in many areas and precludes it in some areas. Boeing will provide 2-way radios to designated field personnel who are conducting work outside of the office area.

Cameras: Unless formally authorized in advance, the use of any cameras, including cameras on cellular telephones, is strictly prohibited.

On-Site Facilities: Contractor will be afforded access to potable water, sanitary facilities, electricity, telephone, limited office area space and equipment, and parking at a localized area of the Site. Contractor shall not assume that any of these facilities are available at any of the fieldwork areas. With the exception of vending machine drinks and snacks, all other services, including food, clothing, sundries, supplies, ice, hardware, gasoline, and automobile services are located off-Site, beyond the downhill terminus of the primary access road.

SITE SIZE: The Santa Susana Field Laboratory (SSFL) is located in the Simi Hills approximately 30 miles northwest of downtown Los Angeles, California, and occupies approximately 2,850 acres.

SITE TOPOGRAPHY: Hilly terrain with approximately 1,100 feet of topographic relief, ranging from about 1,175 feet above mean sea level (msl) to about 2,245 feet above msl.

SITE DESCRIPTION AND HISTORY: SSFL operations began by Boeing's predecessors in the 1940s. These operations were conducted in and around hundreds of buildings, structures, and open areas extending across approximately 1,485 contiguous acres of the Site that was divided into four administrative areas based on ownership and operations (Areas I, II, III, and IV). From east to west across the Site, Area I included Boeing operations on 671 acres owned by Boeing and on 42 acres formerly owned by the U.S. Air Force that are now owned by the National Aeronautics and Space Administration (NASA). Area II included Boeing operations on 410 acres owned by NASA. Area III included Boeing operations on 114 acres owned by Boeing. Area IV included Boeing operations on 290 acres owned by Boeing, and operations for the U.S. Department of Energy (DOE) on a subset of 90 of these acres that were leased by DOE beginning in the 1950s in an area now known as the Energy Technology Engineering Center (ETEC).

Operations: Principal operations in Areas I, II, and III included research, development, and testing of rocket engines and propulsion systems by Boeing and NASA. Principal operations in Area IV included energy technology research for DOE. Undeveloped land north and south of these areas was not used for industrial activities.

Chemical Use: Rocket propellants (including a wide range of fuels, oxidizers, and exotic compounds), petroleum products (including fuels, oils, lubricants, and transformer oils), solvents (including chlorinated solvents), coolants, cleaners, refrigerants, energetic compounds, pyrophoric compounds, metals (including liquid metals [e.g. sodium, potassium, mercury, cesium]), caustic solutions, acidic solutions, asbestos, and a variety of other products including products containing a wide range of potentially flammable, ignitable, explosive, corrosive, reactive, and/or other potentially hazardous chemical compounds and constituents were used, handled, stored, treated, and/or disposed at the Site.

Chemical Use Areas and Facilities: Various known or potential chemical use, handling, storage, treatment, and/or disposal areas included laboratories, process and assembly/disassembly areas, small and large engine testing facilities and test stands, above-ground storage tanks (ASTs), underground storage tanks (USTs), clarifiers, sumps, trenches, a Coal Gasification Process Development Unit, maintenance facilities, treatment facilities, equipment yards, salvage areas, container and drum storage areas, flow-through ponds, retention ponds, impoundments, pits, landfills, burn pits, leach fields, storage pads, and storage and staging areas for both hazardous and non-hazardous products, waste, and debris.

DOE Areas: Nuclear energy research and energy development projects at the ETEC area leased by DOE in Area IV included large-scale heat transfer and fluid mechanics experiments and development, fabrication, assembly, testing, disassembly, and examination of nuclear reactors, reactor fuel, and other radioactive materials (Figure 2). The potential occurrence and/or potential impacts from residual radioactive material and/or radionuclides that may have resulted from these operations are specifically not a part of the Resource Conservation and Recovery Act (RCRA) response and have been or are being addressed separately under the direction and jurisdiction of DOE and the California Department of Health Services Radiological Health Branch (DHS-RHB).

Specific site background and history for project sites (e.g. ECL, SWMU, A1BP, etc.) are listed in the CH2M RCRA Facility Investigation (RFI) Work Plans. Access to well locations are available in the Areas I and III Groundwater Quality Sampling and Analysis Plan and the Regulated Units Groundwater Quality Sampling and Analysis Plan.

3.3 Description of Tasks

During conduct of field work the Contractor and subcontractors must conduct daily health and safety meetings to be held on-Site prior to the start of each day's activities; and provide for daily and weekly status update and coordination meetings with Boeing and/or daily or weekly reports to summarize accomplishments and discuss, coordinate, and plan activities to be conducted during the next daily and/or weekly reporting period.

3.3.1 RFI Project

Based on the history of investigations and chemical and physical data sets to date, it is currently anticipated that the bulk of additional RFI fieldwork will comprise additional soil gas and soil matrix sampling and analysis, and depth-to-bedrock surveys using hand-auger, trenching, direct-push, and hollow-stem auger methods. In addition to health and safety, fieldwork considerations include labor-intensive factors such as extensive hand-augering over broad areas; sample management factors such as multiple matrix and/or extensive analytical schedules at many locations that may require substantial sample volume and multiple sample containers; laboratory coordination issues such as contingent analysis for samples analyzed for different compound groups; logistical factors such as step-out/step-down protocol, and administrative considerations such as Boeing's requirement for professional registration/ certification of at least one field team member during conduct of field events. If groundwater samples are determined to be necessary in order to fulfill the data quality objectives of the RFI and the needs of risk assessment and the CMS, requests shall be made to the Jacobs Site groundwater monitoring team. Such requests must be made within the deadlines set forth by the groundwater monitoring team to ensure all necessary preparations can be made prior to the subsequent quarterly groundwater monitoring event.

3.3.2 Baseline Air Monitoring

The Baseline Air Monitoring (BAM) fieldwork will initially consist of constructing concrete pads for the monitoring equipment to rest on and setting up the monitoring equipment. The construction of the concrete pads will include clearing vegetation, pouring concrete pads, and installing a chain-link fence. After the concrete pads have been constructed, the air monitoring equipment will be installed on the concrete pads. After the air monitoring equipment has been installed, air monitoring will begin and will be monitored for 1 year. It is anticipated VOCs, radionuclides and particulate matter will be analyzed for the BAM fieldwork.

The contractor will be responsible for the management and performance of all subcontractors, including laboratories, required to complete the scope of work and must conduct all activities using SOPs and other methods and procedures established for the Site as a minimum performance standard for executing and completing the work. Prior to conducting invasive work, all sampling locations must be staked, surveyed, and screened for utilities per Site specific methods and procedures as previously described. SOPs for health and safety, field work activities, survey, field data documentation, QA/QC, waste management, document preparation, and a range of other Boeing and/or Site-specific guidelines and requirements were provided as Exhibits to the RFP and/or the DTSC hard drive deliverable. The SOPs were updated in the May 2012 DTSC hard drive deliverable. Additional SOPs were provided in the Implementation Plan for the In Situ Chemical Oxidation Field Experiment (CH2M, November 2013).

3.3.3 RFI Project Scope of Work September 2008 and continuing through October 2023:

Proposed characterization activities at the Area I Burn Pit (AIBP) and other areas such as RFI Subareas 5/9 North, 5/9 South, 10, 1B North, 1B Southeast, and 1B Southwest include soil sampling and exploratory trenching as described below.

Proposed soil sampling and trenching activities are intended to:

- Characterize source areas;
- Evaluate the chemical impact in disturbed areas, areas of operational uncertainty, and address other data gaps; and
- Evaluate potential migration pathways of contaminants in operational areas and down-drainage locations.

Soil sampling activities (Task 1) will include:

- Drilling soil borings; borings will be advanced by direct push probe or hand auger.
- Installing soil vapor probes;
- Collecting surface soil and sediment samples;
- Collecting soil samples from soil borings; and
- Collecting soil vapor samples from soil vapor probes.
- Radiological monitoring for exposure control

Exploratory trenching activities (Task 2) will include:

- Digging soil trenches; depth varied from 3-10 feet or deeper;
- Collecting soil samples from trench soils;
- Dust suppression; and
- Management of excavated soil.
- Radiological monitoring for exposure control

3.3.4 RFI Project Scope of Work 2010 through October 2023:

The scope of work during 2010 through October 2023 may include oversight of building demolition, trenching, and debris removal operations. All demolition and debris removal activities will be conducted by Boeing contractors. Jacobs will provide oversight only.

The scope of work also may include soil and soil vapor sampling. Soil and soil vapor sampling activities will include:

- Staking and conducting utility clearance;
- Drilling soil borings; borings will be advanced by direct push probe;
- Installing soil vapor probes;
- Collecting surface soil and sediment samples;
- Collecting soil samples from soil borings;
- Collecting soil vapor samples from soil vapor probes;
- Analysis of soil vapor samples onsite using a mobile lab; and
- Surveying soil and soil vapor probe locations using a handheld GPS unit.
- Radiological monitoring for exposure control

Additional scope of work may include surface geophysics and potential site characterization activities, rotary/sonic/rock coring drilling, borehole geophysics, and remediation services (exact scope TBD). This may result in a stand-alone PHSEPPHSEP for this specific contract.

Also refer to project documents (i.e., *Master Data Gap Work Plan for the Santa Susana Field Laboratory*, CH2M, September 2012, and relevant Work Plan addenda) for detailed task information. Tasks other than those listed below require an approved amendment or revision to this plan before tasks begin. Refer to the "Site Control" section of this PHSEP for procedures related to "clean" tasks that do not involve hazardous waste operations and emergency response (HAZWOPER).

3.3.5 Air Monitoring Project Scope of Work 2020 through October 2023

- General Site Oversight and Site Recon (Jacobs HIIRA)
- Air Monitoring Sampling (Subcontractor HIIRA)
- Radiological Air Monitoring Sampling (Jacobs HIIRA)
- UTV Operations (Jacobs and Subcontractor HIIRA)

3.3.6 Groundwater Extraction and Treatment (GET) System Scope of Work 2020 through October 2023

Boeing has constructed and is now operating the GET System to address Groundwater Interim Measure (GWIM) requirements by the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC). The GET System treats groundwater from six wells in Boeing Areas I & III (RD-84, RD-72, C-1, RD-1, RD-46A and HAR-18) and six wells in National Aeronautics and Space Administration (NASA) Area II (wells HAR-7, RD-41B, WS-9, RD-4, ND-138A [replacement for WS-09A], and ND-136). The primary compounds of concern (COCs) are volatile organic compounds (VOCs), mainly trichloroethylene (TCE).

Extracted groundwater is conveyed through above- and below-grade double-contained high-density polyethylene (DCHDPE) pipelines to the GET System treatment facility, located in Area I. The maximum design flow rate is about 60 gpm. The facility was initially constructed in 2009 and operated intermittently from 2011-2013 with extraction from a limited number of wells and discharge to Outfall 19 under an NPDES permit. The GET System facility was modified in 2016 to address groundwater extraction from a greater number of wells.

In 2016, Boeing decided to pursue a General Waste Discharge Requirements (WDR) permit from the Los Angeles Regional Water Quality Control Board (Regional Board), to allow discharge of treated effluent to injection well WS-5, located in Area I. In October 2017, the Regional Board issued the General WDR permit including the Monitoring and Reporting Program (MRP) requirements.

Boeing requested support from CH2M to work with the GET System project design and operations team and prepare for startup and operations of the GET System. A design basis review identified the need for several changes to the GET System, based on review of expected influent concentrations against WDR Permit limits, and discussion with equipment vendors on process unit performance. The changes included: 1) an oxidation-filtration system and backwash tank for iron and manganese removal; 2) liquid-phase granular activated carbon for chlorine removal (to protect the IX resin), and; 3) IX resin for perchlorate removal. In addition, final effluent bag filtration and potential dosing with sodium hypochlorite and/or hydrogen peroxide (for disinfection to limit injection well fouling) were added. These modifications included the addition of new tankage, pumps, instrumentation, change of media within existing tanks, and updates to the programmable logic control (PLC) scheme.

Jacob and Hefner Associates (JHA) constructed the system modifications and initially operated the GET System in batch mode with limited extraction, under contract to Boeing. CH2M prepared 60%-level design drawings and serves as the engineer-of-record. CH2M will periodically make site visits to address questions from JHA and support the continuous operations. In late-December 2020, CH2M provided additional programming and operations support which allowed for transition to continuous operations. The overall objective of the ongoing scope of work is to provide support during the operations, maintenance and monitoring period, including refinement of continuous operations.

Tasks requiring an HIIRA:

- Treatment System Construction, Operations and Maintenance (Jacobs Third Party Oversight HIIRA)
- I&C Controls Tasks including LOTO for Inspection Testing (Jacobs)

3.3.7 Quarterly Groundwater Monitoring Scope of Work 2020 through October 31, 2023

The scope of work will include quarterly oversight of groundwater monitoring involving groundwater well gauging and sampling, as well as GET System effluent sampling. All well gauging and sampling activities will be conducted by Jacobs subcontractors (Blaine Tech or JHA). Jacobs will provide technical support and subcontractor oversight only. The following groundwater monitoring events are planned to occur:

- The Quarter 1 groundwater monitoring event to begin in January will consist of the gauging 207 groundwater wells and sampling of approximately 180 groundwater wells.
- The Quarter 2 groundwater monitoring event to begin in April will consist of gauging approximately 180 wells and sampling of 10 wells.
- The Quarter 3 groundwater monitoring event to begin in July will consist of gauging approximately 180 wells and the sampling of approximately 130 wells.
- The Quarter 4 groundwater monitoring event to begin in October will consist of gauging approximately 180 wells and sampling of 10 wells.

In addition to the quarterly groundwater monitoring events, GETS System effluent sampling is expected to occur weekly January through October 2023, and gauging/sampling of 10 monitoring wells near the injection well will occur quarterly during 2023.

Jacobs is responsible for the management and performance of all subcontractors, including laboratories, required to complete the scope of work (except for JHA, which collects the GETS-related samples and transfers them to Jacobs and/or the laboratory, and is directly contracted to Boeing). All activities will be conducted using workplans, SOPs and other methods and procedures established for the Site as a minimum performance standard for executing the work.

Tasks requiring an HIIRA:

- Groundwater Gauging and Sampling Oversight (Jacobs HIIRA)

3.3.8 CTL-3 BVE and IEL SVE Pilot Study Scope of Work 2022 through September 29, 2023

The scope of work during 2022 through September 2023 may include drilling and groundwater monitoring well installation, soil vapor well installation, and bedrock/soil vapor extraction system construction and operations. The activities associated with this scope will be performed by Jacobs subcontractors. Jacobs will oversee all subcontractor activities.

Drilling and well installation activities will include:

- Land surveying and utility location;
- Mobilizing to/from the job site;
- Site reconnaissance and marking/staking the drilling locations;
- Overseeing drilling subcontractors;
- Collecting bedrock/soil vapor samples and groundwater samples.

Vapor extraction system construction and operations activities will include:

- Mobilizing to/from the job site;
- Construction of bedrock and soil vapor extraction systems;
- Operation and maintenance of bedrock and soil vapor extraction systems;
- Collecting influent and effluent vapor samples.

Tasks requiring an HIIRA:

- General Oversight and Site Recon (Jacobs HIIRA)
- Air Monitoring (Jacobs HIIRA)

3.3.9 Area I Burn Pit Removal Action Scope of Work 2022 through September 29, 2023:

The scope of work during 2022 through September 2023 may include excavation activities in the Area I Burn Pit Removal Action areas. All debris and soil removal activities will be performed by Boeing contractors. Jacobs will provide construction management oversight, waste profile sampling and analysis, and discrete confirmation soil sampling and analysis of the excavated areas.

Construction Management oversight activities may include:

- Land surveying and utility location;
- Mobilizing to/from the job site;
- Site reconnaissance and marking/staking the excavation limits;
- Overseeing third-party excavation contractors;
- Overseeing offsite transport of excavated soil.

Site monitoring activities as needed may include:

- Monitoring fugitive VOC vapors around the excavation areas;
- Monitoring fugitive dust particulate around the excavation areas;
- Monitoring radiological fugitive dust emissions in and around the excavation areas;
- Monitoring radiological levels in excavated soil and waste containers.

Waste profile sampling and analysis may include:

- Collecting composite soil samples from excavated soil stockpiles or bins;
- Processing the waste profile sample and shipping the samples to a laboratory for analysis.

Discrete confirmation soil sampling may include:

- Site reconnaissance and marking/staking the proposed sample locations;
- Collecting soil samples from the sidewalls and bottoms of the excavated areas from excavator bucket;
- Processing the soil samples and shipping the samples to a laboratory for analysis.

Tasks requiring an HIIRA:

- General Oversight and Site Recon (Jacobs HIIRA)
- Investigation Derived Waste Management (Jacobs HIIRA)
  - Note: IDW transport and disposal managed by Boeing.
- Third-party Excavation Oversight (Jacobs HIIRA)
- Confirmation Soil Sampling (Jacobs HIIRA)
- Perimeter Air Monitoring (Jacobs HIIRA)
- Radiological Monitoring Support (Jacobs HIIRA)

4. Project Organization and Responsibilities

4.1 Client

- Boeing Contract Coordinator Name: Mark Spenard
  - Office Phone: (818) 466-8713
  - Cell Phone (day): (805) 501-9234
  - Cell Phone (after hours): (805) 368-7410
- Boeing PM and backup contract coordinator: Mike Bower
  - Office Phone: (818) 466-8776
- Boeing EHS Manager: Mark Spenard
  - Office Phone: (818) 466-8713
  - Cell Phone: (805) 501-9234
- Boeing Waste Management: Tom Armenoff
  - Office Phone: (818) 858-8718
- Boeing Radiation Safety Officer: Earl Sorrels
  - Office Phone: (818) 466-8864
  - Cell Phone: (303) 949-6022

4.2 Jacobs

4.2.1 Project Managers

RFI, Demolition Oversight, Air Monitoring, and Groundwater Monitoring Project Manager Name: Elizabeth Bryant/SDO
Job Title: Project Manager
Jacobs Office: SDO (San Diego, CA)
Cellular Number: (714) 697-9028

GET System Task Manager Name: Kevin Murdock/LAC
Job Title: Task Manager
Jacobs Office: COS (Colorado Springs, CO)
Cellular Number: (805) 358-5260

Groundwater Monitoring Task Manager Name: Abe Northup/DET
Job Title: Task Manager
Jacobs Office: DET (Detroit, MI)
Cellular Number: (269) 358-2165

Air Monitoring Task Manager Name: Ben Dykstra/RDD
Job Title: Task Manager
Jacobs Office: RDD (Redding, CA)
Cellular Number: (530) 276-3128

Area I Burn Pit Removal Action Task Manager: Tom Wallis
Job Title: Task Manager
Jacobs Office: RDD (Redding, CA)
Cellular Number: (510) 501-0551

The project managers (PMs) are responsible for providing adequate resources (budget and staff) for project-specific implementation of the HSE management process. For their respective project, the PM has overall management responsibility for the tasks listed below. The PM may explicitly delegate specific tasks to other staff, as described in sections that follow, but retains ultimate responsibility for completion of the following in accordance with this document:

- Incorporate standard terms and conditions, and contract-specific HSE roles and responsibilities in contract and subcontract agreements (including flow-down requirements to lower-tier subcontractors).
- Select safe and competent subcontractors by:
  - Choosing potential subcontractors based on technical ability and HSE performance;
  - Implementing the subcontractor prequalification process;
  - Ensuring that acceptable certificates of insurance, including Jacobs as named additional insured, are secured as a condition of subcontract award; and
  - Ensuring HSE submittals, subcontract agreements, and appropriate site-specific safety procedures are in place and accepted prior field mobilization.
- Ensure copies of training and medical monitoring records, and site-specific safety procedures are being maintained in the project file accessible to site personnel.
- Provide oversight of subcontractor HSE practices per the site-specific safety plans and/or procedures.
- Manage the site and interfacing with 3rd parties in a manner consistent with the contract and subcontract agreements and the applicable standard of reasonable care.
- Ensure that the overall, job-specific, HSE goals are fully and continuously implemented.
- Support and implement use of stop-work orders when subcontractor safety performance is not adequate.
- Review and approve schedules involving more than 2 consecutive 12 hour days and/or working through weekends. This includes any hours worked toward the project, regardless of location. This must also be reviewed by the Project Health and Safety Manager (HSM) for approval.

4.2.2 Jacobs Project Health and Safety Manager (HSM)

HSM Name: Loren Kaehn
Job Title: Safety Manager
Jacobs Office: BOI (Boise, ID)
Cellular Number: (208) 871-5787

The HSM is responsible for the following:

- Review and evaluate subcontractor HSE performance using the pre-qualification process;
- Approve PHSEP and its revisions as well as task hazard/impact identification and risk assessment (HIIRA);

- Review and evaluate subcontractor site-specific safety procedures for adequacy prior to start of subcontractor's field operations;
- Support the oversight (or SL's direct oversight) of subcontractor and tiered subcontractor HSE practices;
- Permit upgrades/downgrades in respiratory protection after reviewing analytical data;
- Conduct audits as determined by project schedule and coordination with PM;
- Participate in incident investigations, lessons learned, loss/near loss reporting; and
- Review and approve schedules involving more than 2 consecutive 12 hour days and/or working through weekends. This includes any hours worked toward the project, regardless of location. This must also be reviewed by the PM for approval.

4.2.3 Jacobs Safety Liaison

SL Name: See below, and other SL's TBD dependent on tasks.

SL Name: Caroline Carter (also serves in Field Quality Manager [FQM] role)
Job Title: BAM SL
Jacobs Office: LAC (Los Angeles, CA)
Cellular Number: (310) 930-2187

SL Name: Josephine Lee
Job Title: Baseline Air Monitoring SL
Jacobs Office: PDX (Portland, OR)
Cellular Number: (408) 475-7568

SL Name: Roger Lucich
Job Title: BAM SL
Jacobs Office: BAO (Oakland, CA)
Cellular Number: (925) 250-4441

SL Name: Charlie Royko

Job Title: Groundwater Monitoring SL
Jacobs Office: SDO (San Diego, CA)
Cellular Number: (773) 793-5941

SL Name: Steven Sanchez
Job Title: Groundwater Monitoring SL
Jacobs Office: SCO (Irvine, CA)
Cellular Number: (323) 717-7087

SL Name: Sam Sundahl
Job Title: GETS Support SL
Jacobs Office: RDD (Redding, CA)
Cellular Number: (530) 693-2269

SL Name: Bobby Horan (for Area I Burn Pit Removal Action Oversight)
Job Title: Construction Manager SL
Jacobs Office: SCO (Irvine, CA)
Cellular Number: (714) 801-5778

The SL is responsible for verifying that the project is conducted in a safe manner including the following specific obligations:

- Verify this PHSEP is current and amended when project activities or conditions change;
- Verify Jacobs site personnel and subcontractor personnel read the PHSEP and sign the Employee Sign-Off Form, prior to commencing field activities;
- Verify Jacobs site personnel have completed any required specialty training (for example, fall protection, confined space entry, among others) and medical surveillance as identified in this PHSEP;
- Verify that project files available to site personnel include copies of executed subcontracts and subcontractor certificates of insurance (including Jacobs as named additional insured), bond, contractor's license, training and medical monitoring records, and accepted site-specific safety procedures prior to start of subcontractor's field operations;
- Act as the project "Hazard Communication Coordinator" and perform the responsibilities outlined in the PHSEP;
- Act as the project "Emergency Response Coordinator" and perform the responsibilities outlined in the PHSEP;
- Post the Occupational Safety and Health Administration (OSHA) job-site poster; the poster is required at sites where project field offices, trailers, or equipment-storage boxes are established;
- Hold and/or verify that safety meetings are conducted and documented in the project file initially and as needed throughout the course of the project (as tasks or hazards change);
- Verify that project health and safety forms and permits are being used as outlined this PHSEP;
- Perform oversight and assessments of subcontractor HSE practices per the site-specific safety plan and verify that project activity self-assessment checklists are being used as outlined this PHSEP;
- Coordinate with the HSM regarding Jacobs and subcontractor operational performance, and 3rd party interfaces;
- Verify appropriate personal protective equipment (PPE) use, availability, and training;
- Ensure that the overall, job-specific, HSE goals are fully and continuously implemented;
- Conduct accident investigations including root cause analysis;
- Calibrate and conduct environmental/air monitoring in accordance with the PHSEP; maintain all environmental/air monitoring records in project file;
- Maintain HSE records and documentation;
- Facilitate OSHA or other government agency inspections including accompanying inspector and providing all necessary documentation and follow-up;
- Deliver field HSE training as needed based on project-specific hazards and activities;
- Contact the HSM and PM in the event of an incident; and when schedules require working consecutive 12 hours days and/or weekends. Schedules such as this require approval in advance;

- When an apparent imminent danger exists, immediately remove all affected Jacobs employees and subcontractors, notify subcontractor safety representative, stop affected work until adequate corrective measures are implemented, and notify the PM and HSM as appropriate; and
- Document all oral health and safety-related communications in project field logbook, daily reports, or other records.

4.3 Jacobs Subcontractors

(Reference Jacobs HSE Handbook and BMS Work Instructions, *Contracts and Subcontracts)*

The types of subcontractors that will be hired for fieldwork aspects of this project will consist of:

- Surveyors
- Surface geophysical subcontractor for utility clearance and potential site characterization activities
- Field work and air/groundwater sampling services, JHA and Blaine Tech
- Drilling subcontractor, varies
- CPT/Direct-push drilling subcontractor for groundwater, soil gas, and soil sampling
- Mobile laboratory, EST
- IDW transport and disposal (minimal – Boeing is generally responsible for IDW management)

The specific subcontractors may be TBD upon award of work and contracting.

Subcontractors must comply with the following activities, and are responsible to:

- Comply with all local, state, and federal safety standards;
- Comply with project and owner safety requirements;
- Actively participate in the project safety program and either hold or attend and participate in all required safety meetings;
- Provide a qualified safety representative to interface with Jacobs;
- Maintain safety equipment and PPE for their employees;
- Maintain and replace safety protection systems damaged or removed by the subcontractor's operations;
- Notify the SL of any accident, injury, or incident immediately and submit reports to Jacobs within 24 hours;
- Install contractually required general conditions for safety (for example, handrail, fencing, fall protection systems, floor opening covers);
- Conduct and document weekly safety inspections of project-specific tasks and associated work areas;
- Conduct site-specific and job-specific training for all subcontractor employees, including review of the Jacobs PHSEP, subcontractor PHSEP, and subcontractor HIIRAs and sign appropriate sign-off forms; and
- Determine and implement necessary controls and corrective actions to correct unsafe conditions.

The subcontractors may be required to submit their own site-specific PHSEP and other plans such as lead or asbestos abatement compliance plans. Subcontractors are responsible for the health and safety procedures specific to their work, and are required to submit their plans to Jacobs for review and acceptance before the start of field work.

Subcontractors are also required to prepare HIIRAs before beginning each activity posing hazards to their personnel. The HIIRA shall identify the principle steps of the activity, potential health and safety hazards for each step and recommended control measures for each identified hazard. In addition, a listing of the equipment to be used to perform the activity, inspection requirements, and training requirements for the safe operation of the equipment listed must be identified.

4.4 Management of Subcontractors to Jacobs

4.4.1 Procurement and pre-start

The Project Manager subcontracting any field or site-based work activity will take reasonably practicable steps to ensure that our subcontractor is competent and able to carry out work safely before they start work. Specifically, they will:

- Ensure subcontractors are pre-qualified for health and safety and environmental activities
- Carry out competency checks i.e., view safety policy, risk assessments, ascertain experience, technical knowledge & competence
- Provide the subcontractor with information on foreseeable hazards and the controls required by Jacobs
- Communicate Jacobs HSE expectations in our subcontract and at start-up
- Discuss job/safety requirements and coordinate work activities
- Request and review the subcontractor's task/location specific safe systems of work and risk assessments
- Ensure that the subcontractors' personnel are briefed on their own risk assessments and safe systems of work
- Coordinate work activities which may require an emergency response with the Client Representative
- In coordination with the HSM, determine level of supervision to be provided by subcontractor and Jacobs. A level of Jacobs oversight of subcontractors for all field tasks is expected. If oversight has not been coordinated, work must pause until a risk mitigation plan is in place prior to commencing with the work. The plan is developed by the HSM in coordination with the PM.
- Provide a Jacobs induction
- Ensure a Client induction is given where required

4.4.2 During work

The Project Manager will:

- Ensure that our subcontractor attends a pre shift briefing and has completed a point of work risk assessment immediately before commencement of work
- Monitor our subcontractor when they are working (in proportion to the risk)
- Hold our subcontractor accountable for any substandard HSE performance.

4.4.3 After work

The Project Manager will review and document the subcontractor's performance and consider:

- Was subcontractor satisfactory?
- Was our risk assessment valid?
- Any changes for future use with this subcontractor?

4.5 Subcontractor HSE Chartering Meeting

(Reference P&PS Work Instruction, IB-HS-WI-0520, Health, Safety, and Environmental Requirements for Subcontractors)

A subcontractor HSE chartering meeting shall be held with subcontractors performing field work on the project. The purpose of the meeting is to discuss and agree on key HSE requirements on a project, and to emphasize and reinforce expectations for subcontractor HSE performance. The target audience includes key project staff with HSE responsibilities (e.g., PM, HSM, SL, EM, FTL) and key subcontractor staff (e.g., project manager, supervisors, designated field HSE contact, drill team leads, foreman). The subcontractor crew members should attend if available. The meeting should be held prior to mobilization with enough time to ensure that HSE issues identified can be addressed prior to the start of work. The meeting can be held over the phone or in person depending on project needs. An example agenda can be found attached to this PHSEP, titled "Site Work HSE Pre-Start Meeting Agenda".

4.6 Employee Responsibilities

All personnel are assigned responsibility for safe and healthy operations. This concept is the foundation for involving all employees in identifying hazards and providing solutions. For any operation, individuals have full authority to stop work and initiate immediate corrective action or control. In addition, each worker has a right and responsibility to report unsafe conditions or practices. This right represents a significant facet of worker empowerment and program ownership. Through shared values and a belief that all accidents are preventable, our employees accept personal responsibility for working safely.

Each employee is responsible for the following performance objectives:

- Perform work in a safe manner and produce quality results;
- Perform work in accordance with company policies, and report injuries, illnesses, and unsafe conditions;
- Complete work without injury, illness, or property damage;
- Report all incidents immediately to supervisor, and file proper forms with a human resources representative;
- Report all hazardous conditions and/or hazardous activities immediately to supervisor for corrective action; and
- Complete an HSE orientation prior to being authorized to enter the project work areas.
- Keep all exposure to ionizing radiation As Low As Reasonably Achievable (ALARA);

4.6.1 Employee Authority

Each employee on the project has the obligation and authority to shut down any perceived unsafe work and during employee orientation, each employee will be informed of their authority to do so.

4.7 Client Contractors

(Reference Jacobs HSE Handbook - Contracts, Subcontracts and HSE Management Practices)

Contractor: Clean Harbors
Contractor Contact Name: Kellie Kraft
Telephone: (818) 466-8291
Contractor Task(s): IDW Management

Subcontractor: BL Hall
Subcontractor Contact Name: Dan Hall
Telephone: (626) 256-3220
Subcontractor Task(s): Excavation, concrete pad installation, vegetation reduction

Subcontractor: MPe Environmental Services
Subcontractor Contact Name: David Wilmer
Telephone: (818) 466-8121 (onsite trailer)/(661) 633-4235 (cell)
Subcontractor Task(s): Excavation, concrete pad installation, vegetation reduction

Subcontractor: Jacob and Hefner Associates (JHA)
Subcontractor Contact Name: Daniel Ear
Telephone: (714) 604-5781 (cell)
Subcontractor Task(s): GETS operations and maintenance

Subcontractor: Padre & Associates
Subcontractor Contact Name: Chris Dunn
Telephone: (805) 644-2220
Subcontractor Task(s): Boeing SSFL Biologists

Contractor: TBD
Contractor Contact Name: TBD
Telephone: TBD
Contractor Task(s): Area I Burn Pit Removal Action excavation and restoration.

This PHSEP does not cover contractors or universities that are contracted directly to the client or the owner. Jacobs is not responsible for the health and safety or means and methods of the contractor's work or the university's work, and we must never assume such responsibility through our actions (such as advising on health and safety issues). In addition to these instructions, Jacobs team members should review contractor and university safety plans so that we remain aware of appropriate precautions that apply to us (e.g., for a visit to the GETS treatment building). Self-assessment checklists are to be used by the SL and Jacobs team members to review the contractor's and university's performance only as it pertains to evaluating Jacobs exposure and safety. The HSM is the only person who is authorized to comment on or approve contractor or university safety procedures.

Health and safety-related communications with contractor and university staff should be conducted as follows:

- Request the contractor and university to brief Jacobs team members on the precautions related to the contractor's or university's work; and

- When an apparent contractor or university non-compliance or unsafe condition or practice poses a risk to Jacobs team members:
  - Notify the contractor or university safety representative;
  - Request that the contractor or university determine and implement corrective actions;
  - If necessary, stop affected Jacobs work until contractor or university corrects the condition or practice; and
  - Notify the client, PM, and HSM as appropriate.

If apparent contractor or university non-compliance or unsafe conditions or practices are observed, inform the contractor or university safety representative (Jacobs' obligation is limited strictly to informing the contractor or university of the observation; the contractor or university is solely responsible for determining and implementing necessary controls and corrective actions).

If an apparent imminent danger is observed, immediately warn the contractor or university employee(s) in danger and notify the contractor or university safety representative (Jacobs' obligation is limited strictly to immediately warning the affected individual(s) and informing the contractor or university of the observation; the contractor or university is solely responsible for determining and implementing necessary controls and corrective actions).

All verbal health and safety-related communications will be documented in project field logbook, daily reports, or other records.

5. Standards of Conduct

All individuals associated with this project must work injury-free and drug-free and must comply with the following standards of conduct, the PHSEP, and the safety requirements of Jacobs. Commonly accepted standards of conduct help maintain good relationships between people. They promote responsibility and self-development. Misunderstandings, frictions, and disciplinary action can be avoided by refraining from thoughtless or wrongful acts.

5.1 Standards of Conduct Violations

All individuals associated with this project are expected to behave in a professional manner. Violations of the standards of conduct would include, but not be limited to:

- Failure to perform work;
- Inefficient performance, incompetence, or neglect of work;
- Willful refusal to perform work as directed (insubordination);
- Negligence in observing safety regulations, poor housekeeping, or failure to report on-the-job injuries or unsafe conditions;
- Unexcused or excessive absence or tardiness;
- Unwillingness or inability to work in harmony with others;
- Discourtesy, irritation, friction, or other conduct that creates disharmony;
- Harassment or discrimination against another individual;
- Failure to be prepared for work by wearing the appropriate construction clothing or bringing the necessary tools; or
- Violation of any other commonly accepted reasonable rule of responsible personal conduct.

5.2 Disciplinary Actions

The Jacobs employees and subcontractor employees are subject to disciplinary action for not following HSE rules and requirements. Potential disciplinary action is equally applicable to all employees including management and supervision. Disciplinary action may include denial of access to the worksite, warnings, reprimands, and other actions up to and including termination depending on the specific circumstances.

5.3 Subcontractor Safety Performance

Jacobs should continuously endeavor to observe subcontractors' safety performance and adherence to their plans and HIIRAs. This endeavor should be reasonable, and include observing for hazards or unsafe practices that are both readily observable and occur in common work areas. Jacobs is not responsible for exhaustive observation for hazards and unsafe practices. Jacobs oversight does not relieve subcontractors of their responsibility for effective implementation and compliance with the established plan(s).

5.3.1 Observed Hazard Form

When apparent non-compliance or unsafe conditions or practices are observed, notify the subcontractor's supervisor or safety representative verbally, and document using the Observed Hazard Form, included as an attachment to this PHSEP, and require corrective action.

If necessary, stop subcontractor's work using the Stop Work Order Form until corrective actions is implemented for observed serious hazards or conditions. Update the Observed Hazard Form to document corrective actions have been taken. The subcontractor is responsible for determining and implementing necessary controls and corrective actions.

5.3.2 Stop Work Order

Jacobs has the authority, as specified in the contract, and the responsibility to stop work in the event any Jacobs employee observes unsafe conditions or failure of the subcontractor to adhere to its safe-work practices. This authority and action does not in any way relieve the subcontractor of its responsibilities for the means and methods of the work or, therefore, of any corrective actions. Failure to comply with safe work practices can be the basis for restriction or removal of the subcontractor staff from the job site, termination of the subcontract, restriction from future work, or all three.

When an apparent imminent danger is observed, immediately stop work and alert all affected individuals. Remove all affected Jacobs employees and subcontractor staff from the danger, notify the subcontractor's supervisor or safety representative, and do not allow work to resume until adequate corrective measures are implemented. Notify the PM, Contract Administrator (KA) and HSM.

When repeated non-compliance or unsafe conditions are observed, notify the subcontractor's supervisor or safety representative and stop affected work by completing and delivering the Stop Work Order Form (attached to this PHSEP) until adequate corrective measures are implemented. Consult the KA to determine what the contract dictates for actions to pursue in event of subcontractor non-compliance including work stoppage, back charges, progress payments, removal of subcontractor manager, monetary penalties, or termination of subcontractor for cause.

5.4 Incentive Program

Each project is encouraged to implement a safety incentive program that rewards workers for exhibiting exemplary safety behaviors. Actions that qualify are those that go above and beyond what is expected. Actions that will be rewarded include spotting and correcting a hazard, bringing a hazard to the attention of your foreman, telling your foreman about an incident, coming up with a safer way to get the work done, or stopping a crew member from doing something unsafe. The program will operate throughout the project, covering all workers. The incentive program will be communicated to all employees during the project employee orientation and project safety meetings.

5.5 Reporting Unsafe Conditions/Practices

Responsibility for effective health and safety management extends to all levels of the project and requires good communication between employees, supervisors, and management. Accident prevention requires a pro-active policy on near misses, close calls, unsafe conditions, and unsafe practices. All personnel must report any situation, practice, or condition which might jeopardize the safety of our projects. All unsafe conditions or unsafe practices will be corrected immediately. Jacobs has zero tolerance of unsafe conditions or unsafe practices.

No employee or supervisor will be disciplined for reporting unsafe conditions or practices. Individuals involved in reporting the unsafe conditions or practices will remain anonymous.

The following reporting procedures will be followed by all project employees:

- Upon detection of any unsafe condition or practice, the responsible employee will attempt to safely correct the condition;

- The unsafe condition or practice will be brought to the attention of the worker's direct supervisor, unless the unsafe condition or practice involves the employee's direct supervisor. If so, the SL needs to be notified at once by the responsible employee;
- Either the responsible employee or responsible employee's direct supervisor is responsible for immediately reporting the unsafe condition or practice to the SL;
- The SL will act promptly to correct the unsafe condition or practice; and
- Details of the incident or situation will be recorded by the SL in the field logbook or use the Observed Hazard Form if subcontractor was involved.

6. Safety Planning and Change Management

6.1 Daily Safety Meetings and Point of Work Risk Assessments

Daily safety meetings are a means to coordinate project HSE activities and review HSE performance on a regular basis. Daily safety meetings are to be held with all project personnel in attendance, including subcontractors, to review the hazards, controls, and task HIIRAs that apply for each day's activities, as well as any environmental impacts, requirements and/or best management practices. Site supervisors/Field Team Leads (FTL) shall lead the daily safety meeting. Everyone involved in the day's work needs to participate and sign a sign-in form to show they've attended the meeting.

Point of Work Risk Assessments (POWRAs) (previously known as Safe Plan of Action or Pre-Task Safety Plans) shall be completed by individual crews to focus on those hazards and environmental impacts posed by their specific work, taking into account field conditions and/or hazards at the point of work. If a POWRA shows an unacceptable level of risk, field crew shall contact the PM and HSM.

A copy of the POWRA, form is included as an Attachment to this PHSEP.

6.2 Readiness Review

The PM shall complete a HSE readiness review (also referred to as Operational Readiness Review [ORR]) with the project site supervisor, SL, HSM, and EM prior to field work. The readiness review shall discuss work scope, schedule, equipment, safety plan, training, hazards and controls.

6.3 Change Management

Changes to this PHSEP shall be documented and approved by the Jacobs Responsible Health and Safety Manager for the project. The following are examples of changes that may require a revision to the plan:

- Change in Jacobs staff;
- New subcontractor to perform work;
- New chemicals brought to site for use;
- Change in scope or addition of new tasks;
- Change in contaminants of concern (COCs) or change in concentrations of COCs; and
- New hazards or hazards not previously identified that are not addressed in this PHSEPPHSEP.
- New environmental impacts or environmental impacts not previously identified that are not addressed in this PHSEP.

6.4 Changes to Project Health, Safety and Environment Plan

Changes to the PHSEP shall be documented and accepted by using the Health and Safety Field Change Request (FCR) form (included in Attachments) or by resubmitting a revised PHSEP for acceptance. A revised PHSEP should be produced when a large number of changes (e.g., 15 or more not including HIIRAs) using FCRs has been employed. The Jacobs Project Manager (PM), HSM, and the Jacobs RSO (for radiological only) shall be responsible for the review and acceptance of the FCR, and the HSM will maintain an FCR log of approved changes. Field Change Requests are not required for safety-related changes that a Safety Liaison (SL) or HSM would normally make in the field, such as upgrade or downgrade to PPE within pre-established action levels, expansion or reduction of work control zones based on air monitoring results, and similar changes made within the operating parameters of the PHSEP. The field copy of the PHSEP shall be kept up to date by annotating the appropriate section (i.e., update to

HIIRA) to indicate that an FCR is in effect; copies of FCRs should be kept with the PHSEP. The FCR number must be referenced in the PHSEP and available for review.

7. Project Hazard Analysis

A health and safety risk analysis (Table 1) has been performed for each task. In the order listed below, the HSM and the Jacobs RSO (for radiological only) considers the various methods for mitigating the hazards. Employees are trained on this hierarchy of controls during their hazardous waste training and reminded of them throughout the execution of projects:

- Elimination of the hazards (use remote sampling methodology to avoid going into a confined space);
- Substitution (reduce exposure to vapors by using of a geoprobe instead of test pitting);
- Engineering controls (ventilate a confined space to improve air quality);
- Warnings (establish exclusion zones to keep untrained people away from hazardous waste work);
- Administrative controls (implement a work-rest schedule to reduce chance of heat stress); or
- Use of PPE (use of respirators when action levels are exceeded).

The hazard controls and safe work practices are summarized in the following sections of this PHSEP:

- General hazards and controls;
- Project-specific hazards and controls;
- Physical hazards and controls;
- Biological hazards and controls; and
- Contaminants of concern.

7.1 Hazard/Impact Identification Risk Assessment (formerly Activity Hazard Analysis)

An HIIRA defines the activity being performed, the hazards posed and control measures required to perform the work safely. Workers are briefed on the HIIRA before doing the work and their input is solicited prior, during, and after the performance of work to further identify the hazards posed and control measures required. The HIIRA shall identify the work tasks required to perform each activity, along with potential HSE hazards and recommended control measures for each hazard. In addition, a listing of the equipment to be used to perform the activity, inspection requirements and training requirements for the safe operation of the equipment listed must be identified. The following hazard controls and applicable Jacobs core standards and SOPs should be used as a basis for preparing HIIRAs.

HIIRAs must be prepared for Jacobs activities and included as an attachment to this PHSEP.

7.2 Subcontractor Activity Hazard Analysis

Jacobs subcontractors are required to provide AHA/HIIRAs specific to their scope of work on the project for acceptance by Jacobs. Each subcontractor shall submit HIIRAs for their field activities, as defined in their scope of work, along with their project-specific safety plan and/or procedures. Additions or changes in field activities, equipment, tools, or material used to perform work or hazards not addressed in existing HIIRAs requires either a new HIIRA to be prepared or an existing HIIRA to be revised.

7.3 Task Hazard/Impact Identification and Risk Assessment

(See P&PS Work Instruction IB-HS-WI-0101-IB, P&PS Risk Assessment and Safety System of Work)

As part of the Jacobs Safety System of Work (SSoW), a hazard identification and environmental impact risk assessment (HIIRA) must be undertaken for all tasks performed by Jacobs and their subcontractors. A task hazard/impact identification (Table 1) has been completed for this project. Specific project tasks

are listed in Table 1 with a designation of who could be affected by the hazards associated with the task; Jacobs, subcontractor, or both. The environmental impacts are also included in the table and visitors and members of the public, when on or near the site, will be assumed to be affected by the same hazards and impacts as Jacobs or subcontractor personnel. Initial risk and residual risk associated with the hazards identified below shall be documented in the task HIIRA form (see attachments for form). Visitors that are trained and qualified to enter the work area must be escorted and briefed on the hazards they may be exposed to by reviewing applicable portions of the PHSEP and task HIIRAs.

The SSoW to mitigate these hazards includes:

- The hazard control sections listed in this plan (or referred to in the Handbook)
- The task HIIRA for each project task listed in Table 1; and
- The POWRA performed by the workers prior to performing the task.

Jacobs' task HIIRAs for the tasks below are attached to this plan. Jacobs' subcontractors are required to submit a similar SSoW (e.g., job or activity hazard analyses, HSE plan) specific to their scope of work for acceptance by Jacobs prior to the start of work. Additions or changes in field activities, equipment, tools, or material used to perform work or hazards not addressed requires an updated to be prepared and reviewed by Jacobs.

Table 1 – Project Task and Associated Hazard and Environmental Impacts

(Refer to General Hazards and Controls in the F&ES HSE Field Handbook, Section 7 and Jacobs BMS HSE Procedures and Work Instructions)

Potential Hazards	Tasks								
	Drilling, Coring, Geoprobe,	Groundwater Monitoring	Vegetation Clearance, Concrete Pad Installation	Surface and Shallow Soil Sampling	Waste Profile Sampling	Excavation and Trenching	Soil Gas Probe Installation and Sampling	Surface Geophysics, Surveying, and BAM Sampling	Debris Removal and Demolition/GET System Oversight, BVE/SVE System Oversight I&C Controls
Biological, plants, animals and insects	X	X	X	X	X	X	X	X	X
Chemical, COC exposure*	X	X	X	X	X	X	X		X
Flying debris/objects	X	X	X	X	X	X	X		X
Heat Stress	X	X	X	X	X	X	X	X	X
Noise > 85dBA	X	X	X			X	X		X
Electrical, LOTO, Energized Electrical*	X	X	X			X	X		X
Suspended loads	X		X			X			
Buried utilities, drums, tanks	X		X	X		X	X		
Slip, trip, fall	X	X	X	X	X	X	X	X	X
Back injury	X	X	X	X	X	X	X	X	X
Confined space entry*		Not expected/authorized							
Visible lighting	X	X	X	X	X	X	X	X	X
Night work	X								
Vehicle traffic*	X	X	X	X		X	X	X	X
Fires	X	X	X			X	X		X
Entanglement	X	X	X						
Excavation						X			
Drilling*	X								
Forklifts*	X		X			X			X

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Heavy equipment*	X		X		X	X			X
Ionizing Radiation	X		X	X	X	X	X		X
IDW Management	X	X	X	X	X	X	X		X
COVID-19 exposure	X	X	X	X	X	X	X	X	X

* For activities above identified as Critical Risks, refer to Jacobs Global Work Instruction JJ-HS-WI-0303-JJ, Critical Risk Management, the Critical Risk Awareness Booklet, and the Critical Risk Awareness Guide for Managers and Supervisors. For Environmental Aspects, refer to P&PS Work Instruction IB-HS-WI-0101-IB, Risk Assessment and Safe System of Work, Table 9.4. See attached Critical Risk Fact Sheet.

8. General Hazards and Controls

(See P&PS Work Instruction IB-HS-WI-0101-IB, P&PS Risk Assessment and Safety System of Work)

Safe work practices and hazard control measures to reduce or eliminate potential hazards as identified in Table 1 are stated in the Handbook, Sections 7-10, the associated Jacobs Procedure, Work Instruction, or Guideline, and/or are addressed in task HIIRAs. Any additional project-specific control measures, or those hazards requiring additional emphasis, are identified in the following sections.

Always consult the appropriate Procedures or Work Instruction referenced in the hazard sections to ensure all requirements are implemented. All employees and subcontractors must remain aware of the hazards affecting them regardless of who is responsible for controlling the hazards. Jacobs employees and subcontractors who do not understand any of these provisions should contact the HSM for clarification prior to commencing with work.

A POWRA shall be performed at the start of each shift or when conditions significantly change. Implement the StepBack process throughout the duration of the task.

8.1 General Practices and Housekeeping

The following are general requirements applicable to all portions of the work:

- Site work should be performed during daylight hours whenever possible;
- Good housekeeping must be maintained at all times in all project work areas;
- Common paths of travel should be established and kept free from the accumulation of materials;
- Keep access to aisles, exits, ladders, stairways, scaffolding, and emergency equipment free from obstructions;
- Provide slip-resistant surfaces, ropes, or other devices to be used;
- Specific areas should be designated for the proper storage of materials;
- Tools, equipment, materials, and supplies shall be stored in an orderly manner;
- As work progresses, scrap and unessential materials must be neatly stored or removed from the work area;
- Containers should be provided for collecting trash and other debris, and shall be removed at regular intervals;
- All spills shall be quickly cleaned up (and reported as required); oil and grease shall be cleaned from walking and working surfaces;
- Review the safety requirements of each job you are assigned to with your supervisor. You are not expected to perform a job that may result in injury or illness to yourself or to others;
- Familiarize yourself with, understand, and follow jobsite emergency procedures;
- Do not fight or horseplay while conducting the firm's business;
- Do not use or possess firearms or other weapons while conducting the firm's business;
- Report unsafe conditions or unsafe acts to your supervisor immediately;
- Report emergencies, occupational illnesses, injuries, vehicle accidents, and near misses immediately;

- Do not remove or make ineffective safeguards or safety devices attached to any piece of equipment;
- Report unsafe equipment, defective or frayed electrical cords, and unguarded machinery to your supervisor;
- Shut down and lock out machinery and equipment before cleaning, adjustment, or repair. Do not lubricate or repair moving parts of machinery while the parts are in motion;
- Do not run in the workplace;
- When ascending or descending stairways, use the handrail and take one step at a time;
- Do not apply compressed air to any person or clothing;
- Do not wear steel taps or shoes with metal exposed to the sole at any Jacobs project location;
- Do not wear finger rings, loose clothing, wristwatches, and other loose accessories when within arm's reach of moving machinery;
- Remove waste and debris from the workplace and dispose of in accordance with federal, state, and local regulations;
- Note the correct way to lift heavy objects (secure footing, firm grip, straight back, lift with legs), and get help if needed. Use mechanical lifting devices whenever possible;
- Check the work area to determine what problems or hazards may exist; and
- Per Boeing safety standards issued in April 2014, electronic devices are allowed to meet work requirements; however, while using the electronic device, an individual must first ensure safe surroundings, and then stop movement or use a hands-free device if driving (note Jacobs policy below on hands free distracted driving), biking, or walking.

8.2 Driving Safety

Follow the guidelines below when operating a vehicle:

- DO NOT USE a cellular phone while driving on site. Pull off the road, put the vehicle in park and turn on flashers before talking on a cellular phone;
- Never operate a personal digital assistant (PDA), or other device with e-mail, internet, or text messaging function while driving a vehicle;
- Obey speed limits; be aware of blind spots or other hazards associated with low visibility. Practice defensive driving techniques, such as leaving plenty of room between your vehicle and the one ahead of you;
- Do not drive while drowsy. Drowsiness can occur at any time, but is most likely after 18 hours or more without sleep;
- Maintain focus on driving. Eating, drinking, smoking, adjusting controls can divert attention from the road. Take the time to park and perform these tasks when parked rather than while driving;
- Ensure vehicle drivers are familiar with the safe operation of vehicles of the type and size to be operated. Large vehicles such as full size vans and pick-ups have different vision challenges and handling characteristics than smaller vehicles;
- Do not drive on slopes or drive in areas with poor ground conditions.
- Four-wheel drive vehicles are required for off-road or poor road conditions.

- Consider the weather forecast and make plans accordingly to minimize driving in weather conditions (i.e., heavy rains) that may present increased safety risk; and
- Per Boeing requirements, all employee or contractor vehicles used on the site are to be kept in good repair, including the lights, brakes, horn, mirrors, windshields, turn signals, and other equipment affecting the safety of personnel.
- When parking vehicles, prior to exiting, set vehicles in Park, engage the parking brake, and shut off the ignition. Vehicles shall not be left idling. Use chocks on slopes.
- Jacobs employees require ADT driver safety evaluation and training (which replaces Smith System).

8.3 Personal Hygiene

Good hygiene is essential for personal health and to reduce the potential of cross-contamination when working on a hazardous waste site. Implement the following:

- Keep hands away from nose, mouth, and eyes during work;
- Keep areas of broken skin (chapped, burned, etc.) covered; and
- Wash hands with soap and water prior to eating, smoking, or applying cosmetics.

8.4 Bloodborne Pathogens

(Reference Jacobs SOP HSE-202, *Bloodborne Pathogens*)

Exposure to bloodborne pathogens may occur when rendering first aid or cardiopulmonary resuscitation (CPR), or when coming into contact with landfill waste or waste streams containing potentially infectious material (PIM).

Employees trained in first-aid/CPR or those exposed to PIM must complete Jacobs' 1-hour bloodborne pathogens computer-based training module annually. When performing first-aid/CPR the following shall apply:

- Observe universal precautions to prevent contact with blood or other PIMs. Where differentiation between body fluid types is difficult or impossible, consider all body fluids to be potentially infectious materials;
- Always wash your hands and face with soap and running water after contacting PIMs. If washing facilities are unavailable, use an antiseptic cleanser with clean paper towels or moist towelettes; and
- If necessary, decontaminate all potentially contaminated equipment and surfaces with chlorine bleach as soon as possible. Use one part chlorine bleach (5.25 percent sodium hypochlorite solution) diluted with 10 parts water for decontaminating equipment or surfaces after initially removing blood or other PIMs. Remove contaminated PPE as soon as possible before leaving a work area.

Jacobs will provide exposed employees with a confidential medical examination should an exposure to PIM occur. This examination includes the following procedures:

- Documenting the exposure;
- Testing the exposed employee's and the source individual's blood (with consent); and
- Administering post-exposure prophylaxis.

8.5 Hazard Communication

(See P&PS Work Instruction IB-HS-WI-0202-IB, Chemical Hazard Communication)

As indicated in Section 7 of the Handbook, under "Hazard Communication," the hazard communication (HazCom) coordinator (the SL or qualified designee) must perform the following (additional HazCom duties are outlined in the Handbook):

- Complete an inventory of chemicals brought on site by Jacobs using the chemical inventory form included as an attachment to this PHSEP;
- Confirm that an inventory of chemicals brought on site by Jacobs subcontractors is available;
- Request or confirm locations of Globally Harmonized System (GHS) compliant (i.e., consisting of 16 sections that appear in the same order and contain uniform information regarding the chemical) safety data sheets (SDSs) from the client, contractors, and subcontractors for chemicals to which Jacobs employees potentially are exposed;
- For chemicals used by Jacobs workers, before or as the chemicals arrive on site, obtain an SDS for each hazardous chemical and include on the chemical inventory sheet (attached to this PHSEP) and add the SDS to the SDS attachment section of this PHSEP. The SL will provide the SDS to Boeing;
- The six required elements of the Globally Harmonized System (GHS) SDS label must include the product identifier, pictograms, signal word, hazard statements, precautionary statements, and the name, address, and telephone number of the chemical manufacturer, importer or other responsible party;
- The manufacturer's original label on any incoming regulated product must not be removed or defaced. The manufacturer's label and markings must be retained on the package or container until it is sufficiently cleaned of residue and purged of vapors to remove any potential hazards;
- Ensure all secondary containers are labeled in compliance with GHS labeling requirements. If GHS compliant information has not yet been provided by the manufacturer or chemical distributor, the HCC must contact the manufacturer or chemical distributor and document in the chemical inventory when the GHS labeling information will be available, until the labeling requirement is fulfilled;
- In the United States, the container label shall be in English, although labels in other languages may be kept as well. Container labels in other languages for non-speaking English-speaking workers will be made available when specified by the client for their project site or facility;
- Give employees required chemical-specific HazCom training using the chemical-specific training form included as an attachment to this PHSEP and ensure that the GHS supplemental Learning Management Software (LMS)-required training has been completed.
- Ensure that chemical use is included in the task HIIRA.

The following are general guidelines for storing chemicals and other hazardous materials:

- Keep acids away from bases;
- Keep oxidizers (nitric acid, nitrates, peroxides, and chlorates) and organics away from inorganic reducing agents (metals);
- Keep flammables and corrosives in appropriate storage cabinets;
- Do not store paper or other combustibles near flammables;
- Use secondary containment and lipped shelving that is secured; and
- Have a fire suppression system available.