

## Santa Susana Field Laboratory Monthly Status Report October 2017

This monthly update is to inform the community about Santa Susana Field Laboratory (SSFL) investigation and cleanup activities that occurred in October 2017 as well as those that are planned for November 2017 under the California Department of Toxic Substances Control's (DTSC) oversight. A project overview for The Boeing Company (Boeing), United States Department of Energy (DOE) and National Aeronautics and Space Administration (NASA) SSFL areas is included at the end of this report. Documents referenced in this monthly status report that have been reviewed and commented on by DTSC are hyperlinked for easy access. Documents that are currently under DTSC's review will be made available once DTSC's review comments have been issued.

### 1 SSFL ACTIVITIES COMPLETED DURING OCTOBER 2017

#### DTSC

##### CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

DTSC's draft Program Environmental Impact Report ([draft PEIR](#)) for the SSFL project was issued for public review on September 7, 2017. The 90-day public comment period will end on December 7, 2017.

##### PROGRAM MANAGEMENT PLAN

DTSC's draft Program Management Plan ([draft PMP](#)) for the SSFL project was issued for public review on September 7, 2017. The 90-day public comment period will end on December 7, 2017.

##### SITE WIDE AIR MONITORING PLAN

On September 28, 2017, Boeing, DOE and NASA submitted a joint, revised final [Baseline Air Monitoring Work Plan](#). [On October 2, 2017 Boeing, DOE, and NASA submitted responses to DTSC comments on the Work Plan](#). The Work Plan activities will allow for an evaluation of baseline concentrations of dust, volatile organic compounds, and radionuclides near SSFL prior to commencing cleanup activities. This data will be used to evaluate what, if any, impacts to air quality are caused by cleanup activities.

## NASA

### **SOILS:**

NASA submitted a revised *Soil Data Summary Report* to DTSC on February 22, 2017. This document is a revision to an [earlier draft document](#) (dated May 2015) reviewed and [commented](#) on by DTSC in March 2016. The report summarizes the results of soil samples collected to define the extent of chemical contamination at NASA-administered sites at SSFL. DTSC is reviewing the document.

### **GROUNDWATER:**

On May 9, NASA submitted a [draft RCRA Facility Investigation \(RFI\) report](#) summarizing the results of NASA's 2013-2016 groundwater source investigations conducted at four sites (the Former Liquid Oxygen (LOX) Plant Area, the Expended Launch Vehicle (ELV)-Building 204 Area, and the former Alfa-Bravo and Coca-Delta Test Stand Areas). DTSC is reviewing the report.

On July 5, 2017, NASA submitted the [Human Health and Ecological Risk Assessments for NASA Areas of Impacted Groundwater \(AIGs\)](#), dated June 22, 2017. This document is a section of the May 2017 NASA Groundwater RI report referenced above. DTSC is reviewing the document.

On September 11, 2017, NASA submitted a [Work Plan addendum](#) to further explain their approach for conducting Corrective Measures Studies on groundwater and vadose zone bedrock. DTSC is reviewing the document.

### **DEMOLITION:**

Removal of inactive infrastructure and support equipment outside the former NASA engine test stands continued at the former Delta, Bravo and Alfa areas. Removal of ancillary infrastructure and support buildings at the Coca area should commence during the coming months. NASA demolition activities at SSFL are conducted under Ventura County authority.

### **PERMITTING:**

In June 2016, NASA submitted a draft post-closure permit renewal application for the [Area II Surface Impoundments](#). DTSC is currently reviewing the Area II Surface Impoundment post-closure permit application for technical completeness. The effect of recent legislative changes to post-closure permit requirements under California Code of Regulations Title 22, Article 6 are also being evaluated as part of the review.

The post-closure requirements for the Area II Surface Impoundments are regulated by DTSC under RCRA laws and regulations because these impoundments are former hazardous waste facilities. The required cleanup levels for the impacted soil will continue to be dictated by the [2010 Administrative Order on Consent for Remedial Action \(AOC\)](#).

On June 20, 2017, DTSC completed a [Compliance Evaluation Inspection](#) for Post-Closure at Area II. The report summarizing the findings of the inspection, dated August 22, 2017, indicates that no violations were reported.

## DOE

### SOILS:

On December 29, 2016, DOE submitted a Draft Chemical Data Summary Report. The report summarizes the results of soil samples collected to define the extent of chemical contamination in soil in Area IV and the Northern Buffer Zone at SSFL. This document is currently being reviewed by DTSC, and can be viewed at DOE's [Chemical Data Summary Report](#) website.

In February 2017, DOE issued a [Draft Environmental Impact Statement for Remediation of Area IV and the Northern Buffer Zone](#). DOE is currently developing response to comments received during the public comment period.

In 2012, US Environmental Protection Agency (US EPA), in coordination with DTSC and DOE, [completed sampling efforts](#) to define the nature and extent of Area IV radiologic contamination.

DOE conducted soil treatability studies to evaluate onsite soil treatment technologies that could potentially reduce the volume of contaminated soil to be excavated and transported from Area IV. The treatability studies addressed soil partitioning, mercury valence state in soil, bioremediation, phytoremediation, and natural attenuation, as well as residual fuel hydrocarbon characterization methods. The soil treatability studies study plans, evaluation reports and Summary Report have been uploaded to the [DTSC-SSFL DOE Soil Treatability Studies web page](#).

### GROUNDWATER:

DOE has completed its field investigation of groundwater contamination at DOE sites at SSFL. The findings from the RFI groundwater investigation are presented in "[Preliminary Draft RCRA Facility Groundwater Investigation Report \(GW RFI\) Area IV, Santa Susana Field Laboratory, Ventura County, California](#)", dated June 16, 2017. The draft document is currently in review by DTSC.

DOE recently submitted a revised "[Draft White Paper on Thermal Remediation Technologies for Treatment of Chlorinated Solvents](#)". This paper was revised to address DTSC's previous comments dated October 12, 2016, and was accompanied with [DOE's Response to DTSC's Comments](#), dated September 8, 2017. This document was submitted because in-situ thermal remediation has been identified as a potentially applicable remedy to address mass removal of chlorinated solvents and other contaminants of concern in groundwater. The document is currently in review by DTSC.

DOE is planning to implement a Groundwater Interim Measure (GWIM) at the Area IV Former Sodium Disposal Facility (FSDF). This location was selected in response to DTSC's comments on the 2009 Site-Wide Groundwater RI Report, that the Responsible Parties implement an interim measure to control the contamination at locations where trichloroethylene (TCE) in groundwater exceeded 1,000 micrograms per liter ( $\mu\text{g/L}$ ). For DOE in Area IV, TCE exceeds 1,000  $\mu\text{g/L}$  in groundwater only at the FSDF, in perched well RS-54. The initial site-wide Interim Measures Work Plan included groundwater pumping from well RS-54, with the extracted water to be piped via surface conveyance piping that would cross contaminated soil and after treatment at a central groundwater treatment system, would discharge treated water into a different watershed from where it was extracted. An FSDF GWIM Work Plan was subsequently developed in an effort to avoid conveying water in piping through contaminated soils and maintain the treated water within the same watershed it was extracted from. That work plan proposes on-site groundwater extraction and use of an on-site treatment system that would recirculate the extracted and

treated groundwater. The proposal assumes that groundwater extraction could sustain continuous pumping; however, well RS-54 has typically been dry since 2009, and based on sampling efforts, would not sustain a 150 ml/minute pump rate without going dry. Although RS-54 did contain water in March of 2017, it could not sustain the desired pumping rate. As a result, the GWIM focus was then changed to dewatering the RS-54 location, pumping the extracted water to a storage tank, and transporting the extracted water off-site for treatment and disposal. This change in approach is intended to support the GWIM objective of removal of VOC contaminant mass, and was discussed with DOE and DTSC in June 2017. DOE intends to conduct field work in November 2017 to better understand the distribution of VOC mass in the upper bedrock at FSDF. Results from the work are to be used to support the Corrective Measures Study that will be developed for Area IV.

**PERMITTING:**

On October 3, 2017, DTSC conducted a Compliance Evaluation Inspection at the Radioactive Materials Handling Facility (RMHF). No violations were noted during the inspection. A report summarizing the findings of the inspection will be prepared and uploaded to the [RMHF Envirostor website](#).

**BOEING**

Boeing is finishing soils investigation work in Area I, Area III, and the southern buffer zone. Boeing's surficial media characterization work is divided into units identified as Boeing RFI Subareas:

- 1A North, 1A Central, 1A South
- 1B North, 1B Southwest, 1B Southeast
- 5/9 North, 5/9 South, and
- Group 10

**SURFICIAL MEDIA INVESTIGATION:**

Boeing is using the Data Quality Objectives (DQOs) process and standard operating procedures for planning and conducting sampling work to complete the characterization of surficial media. The purpose of the current phase of surficial media investigation work is to collect sufficient data to fill data gaps that were identified in the 2007 and 2008 Group RFI Reports. All Boeing sites are in the data evaluation and reporting work phases.

- ***Subarea 5/9 South*** - Systems Testing Lab (STL-IV), Compound A, Sewage Treatment Plant (STP)-3, and Environmental Effects Laboratory (EEL), and areas not associated with RFI sites in Subarea 5/9 South
  - Boeing submitted [responses to comments](#) and [revised RFI Data Summary Reports](#) for Subarea 5/9 South on April 27, 2017.
  - DTSC is reviewing the Report.
- ***Subarea 1A Central*** - Building 359, Advanced Propulsion Test Facility (APTF), and Happy Valley North and areas not associated with RFI sites in Subarea 1A Central
  - Boeing submitted [responses to comments](#) and [revised RFI Data Summary Reports](#) for Subarea 1A Central on May 24, 2017.
  - DTSC is reviewing the Report.
- ***Subarea 10*** (Southern Buffer Zone)
  - Boeing submitted the [RFI Data Summary Report](#) for Subarea 10 on June 19, 2017.
  - DTSC is reviewing the report.
- ***Subarea 5/9 North*** - Silvernale, Engineering Chemistry Laboratory (ECL), and areas not associated with RFI sites in Subarea 5/9 North
  - Boeing submitted the [RFI Data Summary Report](#) for 5/9 North on July 26, 2017.

- DTSC is reviewing the report.
  - **Subarea 1A South** - Canyon, Happy Valley South, Laser Engineering Testing Facility (LETF)/CTL-I, and areas not associated with RFI sites in Subarea 1A South
    - Boeing submitted the [RFI Data Summary Report](#) for 1A South on August 22, 2017.
    - DTSC is reviewing the report.
  - **Subarea 1B Southeast** – Chemical Test Lab (CTL)-III, Perimeter Pond, and areas not associated with RFI sites in Subarea 1B Southeast.
    - Boeing submitted the [RFI Data Summary Report](#) for 1B Southeast on September 29, 2017.
    - DTSC is reviewing the report.
  - **Subarea 1B North** - Bowl, R-1 Pond, and areas not associated with RFI sites in Subarea 1B North
    - Data gap sampling is complete and preparation of the summary report is ongoing.
    - DTSC anticipates receiving the report in November 2017.
  - **Subarea 1A North** - B-1, Instrument & Equipment Laboratory (IEL), Area 1 Landfill, and areas not associated with RFI sites in Subarea 1A North
    - Data gap sampling is complete and preparation of the summary report is ongoing.
    - DTSC anticipates receiving the report in December 2017.
    - Former Shooting Range
      - The Former Shooting Range is not part of Subarea 1A North but the site information is included here as the Former Shooting Range is located on the Mountains Recreation Conservancy Authority, Sage Ranch property which is adjacent to Subarea 1A North and some soil data overlap between the Former Shooting Range area and Subarea 1A North.
      - The work is being conducted under an [approved work plan and addendum](#).
      - Field work to investigate soils to define the extent of lead shot and clay pigeons as well as characterize the soil for lead, arsenic, antimony, and polynuclear aromatic hydrocarbon concentrations began in late September 2016 and was completed on January 18, 2017.
      - Laboratory analysis for soil sampling is complete.
      - Boeing constructed a fence to prevent access to a 1,200-foot section of the Sage Ranch Loop Trail where sampling results indicate remediation is necessary to address lead concentrations in soil.
      - Boeing released a statement to community members regarding the status of the sampling results, the need for remediation, and the closure and re-routing of a portion of the trail.
      - The [Draft Former Rocketdyne-Atomics International Rifle and Pistol Club Shooting Range Investigation Area Data Summary Report and Findings Report](#) was submitted to DTSC on April 11, 2017. DTSC provided [comments on the report to Boeing](#) on May 5, 2017. DTSC received responses to DTSC comments on July 11, 2017. DTSC is reviewing the responses to comments.
- On September 12, 2017 DTSC and the Los Angeles Regional Water Quality Control Board conducted a site inspection of recently installed storm water best management practices (BMPs) used to control storm water runoff from the Former Shooting Range into the Northern Drainage. Based on the site inspection DTSC and the LARWQCB expect the BMPs to be evaluated by the Expert Panel and upgraded if appropriate.
- **Subarea 1B Southwest** - Area I Burn Pit, CTL-V, and areas not associated with RFI sites in Subarea 1B Southwest
    - Data gap sampling is complete and preparation of the summary report is ongoing.
    - DTSC anticipates receiving the report in December 2017.

- **Risk Assessment**
  - Risk Assessments were included in the two draft RFI Data Summary and Findings Reports submitted to date (Subareas 5/9 South and 1A Central).
  - Based on DTSC review comments and changes in risk assessment input parameters by the USEPA, the risk assessment process will need to undergo some changes.
    - Boeing submitted a [draft risk assessment work plan](#) on May 18, 2017.
    - DTSC is reviewing the draft work plan.

**GROUNDWATER:**

- Faults
  - DTSC is currently reviewing a draft technical memorandum evaluating faults.
- Groundwater Flow Model
  - Boeing continues to work to update the 3D Groundwater Flow Model.
- Boeing groundwater characterization work in Area IV
  - Seven wells were installed by Boeing in Area IV; evaluation of the hydrologic data is ongoing.
- On June 8 Boeing submitted a draft [Remedial Investigation \(RI\) report](#) summarizing the results of groundwater characterization work for Area I, Area III and the Southern Buffer Zone. DTSC is reviewing the document.
- On August 24, Boeing submitted a Work Plan addendum to further explain their approach for conducting Corrective Measures Studies on groundwater and vadose zone bedrock. DTSC is reviewing the document.

**BUILDING DEMOLITION:**

The Superior Court of California, County of Sacramento, continues to evaluate the ongoing litigation over the demolition of Boeing buildings in SSFL Area IV. Per the December 11, 2013, temporary injunction, DTSC will not issue correspondence regarding the matter until the court issues a decision. A court hearing on the matter is tentatively scheduled for mid-2018.

**PERMITTING:**

In October 2015, Boeing submitted a draft post-closure permit renewal application for the [Areas I and III Surface Impoundments](#) and a separate Closure Plan for the Thermal Treatment Facility. DTSC is currently reviewing the Areas I and III Surface Impoundment post-closure permit application for technical adequacy. DTSC has temporarily suspended review of the Closure Plan for the Thermal Treatment Facility pending ongoing discussion of risk assessment requirements.

The post-closure requirements for the Area I and III Surface Impoundments and closure requirements for the Thermal Treatment Facility are regulated by DTSC under RCRA laws and regulations because both are former hazardous waste facilities. The required cleanup levels for the impacted soil and groundwater will continue to be dictated by the 2007 Consent Order.

**SITEWIDE GROUNDWATER CHARACTERIZATION AND CLEANUP**

The SSFL groundwater characterization and cleanup program is being conducted by the three responsible parties; Boeing, DOE and NASA. The groundwater characterization and cleanup program consists of:

- Investigation and characterization of groundwater contamination;
- Groundwater monitoring;
- Groundwater interim measures; and
- Treatment of contaminated groundwater with permitted discharge from the Groundwater Extraction and Treatment System.

### **GROUNDWATER REMEDIAL INVESTIGATION (GWRI)**

Data gaps were identified in the [2009 GWRI Report](#) by the RPs. DTSC also identified additional data gaps that were presented in the GWRI comments. The data gap work has been divided into six categories:

- Data gaps identified in the Remedial Investigation (RI) Report;
- Source Zone Characterization;
- Characterization of seeps and springs;
- Characterization of faults;
- Groundwater flow model; and Contaminant transport modeling.

### **STATUS OF GWRI DATA GAP WORK**

Boeing, DOE and NASA have submitted Draft RFI Reports report summarizing the results groundwater investigations conducted at their respective sites. DTSC is reviewing the documents. Additionally, Boeing, DOE and NASA are working on a single, overarching site summary document for groundwater characterization at the SSFL site.

Groundwater modeling efforts are proceeding:

- Groundwater flow model
  - The conditionally approved, groundwater flow model work plan presents an approach for a mountain scale groundwater flow model.
  - Work from the fault studies and data from monitoring wells installed since 2009 will be used to supplement the groundwater flow model. DTSC, Boeing, DOE and NASA are considering applying the revised model at the remedy design stage of the project.
- Contaminant transport modeling
  - Boeing, DOE and NASA continue to develop the approach for contaminant transport modeling.

### **SITEWIDE GROUNDWATER TREATABILITY STUDIES**

Treatability studies are being conducted on several technologies to be evaluated in the feasibility study. The treatability studies address both soil/bedrock and groundwater contamination. Treatability studies can be either field studies or laboratory studies.

- Four groundwater laboratory studies are being conducted:
  - Chemical oxidation using potassium permanganate;
  - Thermal heating of rock core;
    - DOE developed a white paper study of thermal heating of fractured bedrock and submitted it to DTSC in April 2016. DTSC has reviewed and commented on this paper. DOE provided responses to DTSC comments on September 14, 2017. DTSC is currently reviewing the responses.
  - Microbial characterization and Bio-Stimulation of rock core, pore water;

- Boeing submitted the report called [Laboratory Evaluation of Biostimulation to Treat Chlorinated Ethenes in the Chatsworth Formation](#) and submitted it to DTSC on July 10, 2017.
- DTSC is reviewing the report.
- Two field studies are being conducted:
  - In-situ chemical oxidation (ISCO) using potassium permanganate;
    - Boeing developed a [summary report](#) for ISCO and submitted it to DTSC on June 14, 2016.
    - DTSC issued [comments](#) to Boeing on June 16, 2017. Boeing provided responses to DTSC comments on August 28, 2017. DTSC is currently reviewing the responses.
  - Bedrock vapor extraction (BVE);
    - Conducted at NASA's former Bravo test area in late 2014.
    - NASA has submitted the Technical Memorandum: [Results from Bravo Bedrock Vapor Extraction Treatability Study](#) dated November 2015 to DTSC.
    - DTSC has reviewed and [commented](#) on the report.

### **GROUNDWATER MONITORING**

[Groundwater monitoring reports](#) are submitted quarterly, with the fourth submittal being an annual report. DTSC reviews the quarterly reports for completeness and compliance but may not issue written comments on the specific quarterly report if significant issues are not present. If compliance issues arise during review of the quarterly groundwater monitoring reports, DTSC directs the Responsible Parties to take action to comply, and follows up to ensure compliance is achieved and maintained.

The annual reports present the results of the previous year's monitoring and undergo a more thorough review. Annual Reports for [DOE](#), [NASA](#) and [Boeing](#) groundwater monitoring activities were submitted to DTSC on April 25, March 9, and February 27, 2017 respectively. On July 19, 2017, DTSC issued [comments](#) regarding review of these reports.

### **GROUNDWATER INTERIM MEASURES (GWIM)**

The GWIM project includes the operation of fourteen groundwater extraction wells. The water will be pumped to the existing Groundwater Extraction Treatment System (GETS) for treatment. GETS effluent is regulated by the Los Angeles Regional Water Quality Control Board (LARWQCB).

- On October 2, 2017, the LARWQCB enrolled Boeing under [General Waste Discharge Requirements to regulate injection of GETS effluent to WS-5. Surface discharge of GETS effluent regulated under an NPDES permit](#) can proceed after securing a Streambed Alteration Agreement with the California Department of Fish and Wildlife.
- GWIM and GETS infrastructure is complete, and permits are in place. Operations will begin after baseline groundwater sampling and system commissioning have are complete.
- As mentioned above, DTSC and DOE are evaluating a revised approach to GWIM implementation at RS-54A in Area IV.

### **OPERATION OF WS-9A**

WS-9A did not pump in November 2016. WS-9A, located in the southwest corner of Area II, north of the southern buffer zone, is on a pumping program to lower the groundwater elevation near seep SP-890 with a goal of reducing the amount of Trichloroethene (TCE) contamination in groundwater in the immediate area. When operating, groundwater extracted from WS-9A is pumped to the GETS.



- Except for intermittent testing in December 2012 and January 2013, WS-9A has not been pumping since November 2012.
  - The water levels in the seep areas downstream of WS-9A are being monitored. If seepage occurs, it is mechanically collected.
  - Pumping at WS-9A will resume when the GWIM is restarted. The extraction of water at the well will be optimized to perform the intended function at as low a rate as practical.

### **GROUNDWATER RFI REPORT**

Working toward a report [format approved by DTSC](#) in January, 2017, Boeing, DOE, and NASA prepared and submitted individual report sections for their specific groundwater characterization activities. The individual report sections were submitted by Boeing on June 2, 2017, DOE on June 15, 2017, and NASA on May 8, 2017. DTSC is reviewing the reports. The individual sections will be part of single sitewide report deliverable.

### **FEASIBILITY STUDY / CORRECTIVE MEASURES STUDY**

DTSC has [conditionally approved](#) the Feasibility Study work plan. Cleanup of sitewide groundwater and surficial media in Boeing areas will be regulated under Chapter 6.5 of Division 20 of the Health and Safety Code (California Hazardous Waste Control Law and the Resource Conservation and Recovery Act authorizations). Soils in DOE and NASA areas will be cleaned up under the respective AOCs, and Soils Remedial Action Implementation Plans (SRAIPs) will be prepared to describe their respective cleanup activities. DTSC has received, and is reviewing Boeing's and NASA's Corrective Measures Studies Work Plan addenda for groundwater and vadose zone bedrock. DOE will similarly submit a CMS addendum for DTSC review and approval.

**PUBLIC OUTREACH**

The Public Comment Period for the Santa Susana Field Laboratory (SSFL) Draft Program Environmental Impact Report (EIR) and Draft Program Management Plan (PMP) began on Thursday, September 7, 2017. Given the complexity of the SSFL cleanup activities and community interest in the project, DTSC extended the public comment period for 45 days. The public comment period will close on Thursday, December 7, 2017.

The public meetings and hearings for the Draft PEIR and Draft PMP were held in October. The public meetings provided an opportunity to learn more about the project and provide comments on both documents. The dates, locations, and times of the public meetings and hearings are shown below.

**Thursday, October 5, 2017**

Valley Ballroom, Grand Vista Hotel  
999 Enchanted Way, Simi Valley, CA 93065  
Public Meeting Open House: 6:00 pm - 7:00 pm  
Public Hearing: 7:00 pm - 9:00 pm

**Saturday, October 7, 2017**

Social Hall, St. John Eudes Church  
9901 Mason Avenue, Chatsworth, CA 91311  
Public Meeting Open House: 2:00 pm - 3:00 pm  
Public Hearing: 3:00 pm - 5:00 pm

Hard copies of the SSFL Draft PEIR, Draft PMP (Appendix A), and the Appendices are available for review at the four (4) Information Repositories listed below.

<b>INFORMATION REPOSITORIES</b>	
<b>California State University, Northridge Oviatt Library</b> 1811 Nordhoff Street 2nd Floor, Room 265 Northridge, CA 91330	<b>Department of Toxic Substances Control Chatsworth Office</b> 9211 Oakdale Avenue Chatsworth, CA 91311
<b>Platt Library</b> 23600 Victory Boulevard Woodland Hills, CA 91367	<b>Simi Valley Library</b> 2969 Tapo Canyon Road Simi Valley, CA 93063

In October 2017, Public Participation also:

- Responded to public inquiries,
- Met with community members regarding public outreach strategies, and
- Uploaded forty-one (41) documents regarding the Resource Conservation and Recovery Act (RCRA) Facility Investigations to the Document Library on DTSC's website:  
**Published April 2017**
  1. RCRA Facility Investigation Data Summary and Findings Report –Cover Letter
  2. RCRA Facility Investigation Data Summary and Findings Report – Subarea 5 9 South
  3. RCRA Facility Investigation Data Summary and Findings Report – Compound A Facility RFI Site
  4. RCRA Facility Investigation Data Summary and Findings Report – Environmental Effects Laboratory RFI Site

5. RCRA Facility Investigation Data Summary and Findings Report – Systems Test Laboratory IV RFI Site
6. RCRA Facility Investigation Data Summary and Findings Report – Subarea 5 9 South – Area III Sewage Treatment Plant RFI Site
7. RCRA Facility Investigation Data Summary and Findings Report – Subarea 5 9 South – Unaffiliated Areas of 5/9 South
8. Responses to DTSC Comments on the Draft 5/9 South RFI Reports  
**Published May 2017**
9. Draft Standardized Risk Assessment Methodology Work Plan, Revision 3
10. RCRA Facility Investigation Data Summary and Findings Report – Systems Test Laboratory IVRFI Site Replacement File for Appendix E
11. RCRA Facility Investigation Data Summary and Findings Report – Cover Letter
12. RCRA Facility Investigation Data Summary and Findings Report – Subarea 1A Central
13. RCRA Facility Investigation Data Summary and Findings Report – Advanced Propulsion Test Facility RFI Site
14. RCRA Facility Investigation Data Summary and Findings Report – Building 359RFI Site
15. RCRA Facility Investigation Data Summary and Findings Report – Happy Valley North RFI Site
16. RCRA Facility Investigation Data Summary and Findings Report – Unaffiliated Areas of 1A Central
17. Responses to DTSC Comments on the Draft 1A Central RFI Report
18. NASA Groundwater RFI Report – Text, Tables, and Figures  
**Published June 2017**
19. DOE Preliminary Draft RCRA Facility Groundwater Remedial Investigation Report - Area IV
20. Human Health and Ecological Risk Assessment for NASA AIGs
21. RCRA Facility Investigation Data Summary and Findings Report – Systems Test Laboratory IV RFI Site Replacement File for Appendix A2
22. RCRA Facility Investigation Data Summary and Findings Report – Cover Letter
23. RCRA Facility Investigation Data Summary and Findings Report – Subarea 10
24. Boeing Site-wide Groundwater RCRA Facility Investigation Report – Appendices
25. Boeing Site-wide Groundwater RCRA Facility Investigation Report – Text, Tables, and Figures  
**Published July 2017**
26. RCRA Facility Investigation Data Summary and Findings Report – Cover Letter
27. RCRA Facility Investigation Data Summary and Findings Report – Subarea 5/9 North
28. RCRA Facility Investigation Data Summary and Findings Report – Environmental Chemistry Laboratory RFI Site  
**Published August 2017**
29. RCRA Facility Investigation Data Summary and Findings Report –Cover Letter
30. RCRA Facility Investigation Data Summary and Findings Report – Subarea 1A South
31. RCRA Facility Investigation Data Summary and Findings Report – Laser Engineering Test Facility
32. RCRA Facility Investigation Data Summary and Findings Report – Canyon Site
33. RCRA Facility Investigation Data Summary and Findings Report – Happy Valley South
34. RCRA Facility Investigation Data Summary and Findings Report - Unaffiliated Areas of Subarea 1A South  
**Published September 2017**
35. Revised Final Baseline Air Monitoring Work Plan
36. RCRA Facility Investigation Data Summary and Findings Report Cover Letter
37. RCRA Facility Investigation Data Summary and Findings Report -Subarea 1B Southeast

38. RCRA Facility Investigation Data Summary and Findings Report – Component Test Laboratory III
39. RCRA Facility Investigation Data Summary and Findings Report – Perimeter Pond
40. RCRA Facility Investigation Data Summary and Findings Report - Unaffiliated Areas of Subarea 1B Southeast  
**Published October 2017**
41. Responses to DTSC Comments on the Final Baseline Air Monitoring Work Plan

The documents listed above are drafts only. They are RCRA Facility Investigations required by the [2007 Consent Order](#) or 2010 Administrative Orders on Consent (AOC). The publication date refers to the completion date by the responsible party and not the submission or receive date by DTSC. Each submission is currently under review by DTSC and includes the following language on the cover page:

### Text In This Box Was Inserted by DTSC

The attached document related to the Santa Susana Field Laboratory (SSFL) project is a DRAFT, submitted to the Department of Toxic Substances Control (DTSC) for review and comment.

DTSC's review of the document is currently in progress. DTSC has not approved the document and revisions may be required.

Currently, DTSC does not approve or endorse the content, conclusions, or proposals in this draft document, nor do we stand by the accuracy of any statements made in the document.

After review, DTSC will release our comments or recommendations in the form of an official letter, which will be posted to the DTSC SSFL website at: [http://www.dtsc.ca.gov/SiteCleanup/Santa\\_Susana\\_Field\\_Lab/](http://www.dtsc.ca.gov/SiteCleanup/Santa_Susana_Field_Lab/)

If you have any questions related to this draft document, please contact DTSC's SSFL Public Participation Specialist Michelle Banks-Ordone at (818) 717-6573, or [michelle.banks-ordone@dtsc.ca.gov](mailto:michelle.banks-ordone@dtsc.ca.gov).

## SSFL ACTIVITIES ANTICIPATED DURING NOVEMBER 2017

### DTSC

DTSC is continuing to receive and compile comments received on the Draft PEIR and Draft PMP, and will generate responses to those comments.

### NASA

- DTSC will review NASA's February 2017 revision of the Soil Data Summary Report. It is anticipated that our review will conclude in late 2017 or early 2018.
- NASA will continue demolition and removal of ancillary structures and buildings at the Delta, Alfa, and Bravo sites, to be followed by similar removals at the Coca area and other NASA areas. NASA does not plan to demolish any historic test stand structures as part of their current program. NASA demolition activities are conducted under Ventura County authority.
- DTSC will continue to review NASA's May 2017 Remedial Investigation (RI) Report and June 2017 Human Ecological Risk Assessment for groundwater, summarizing and evaluating the results of the groundwater investigations conducted at NASA sites in 2013-2016.

## **DOE**

- DOE will conduct the FSDF source area investigation to obtain data to better understand the extent of elevated VOCs and associated mass distribution in near-surface bedrock for purposes of remediation planning. DTSC will periodically observe the investigation activities.
- DTSC will review DOE's June 2017 RCRA Facility Investigation (RFI) Report summarizing groundwater investigations conducted at DOE sites. DTSC will continue to review the draft Chemical Data Summary Report.  
DTSC will continue to participate in the consultation process to determine the best available source of backfill for DOE's use at Area IV of SSFL.

## **BOEING**

### **SURFICIAL MEDIA INVESTIGATION**

- Preparation of the RFI summary reports and Risk Assessment is ongoing for all Boeing sites and subareas. RFI summary reports and risk assessments will now be submitted separately. DTSC anticipates receiving the RFI DSFR for 1B North in November 2017.
- DTSC is reviewing the 5/9 South and 1A Central RFI DSFRs and responses to comments.
- DTSC is reviewing the Subarea 10, 5/9 North, 1A South, and 1B Southeast RFI DSFRs.
- DTSC is reviewing the Boeing responses to DTSC comments on the Draft Former Rocketdyne-Atomics International Rifle and Pistol Club Shooting Range Investigation Area DSFR.
- DTSC is review the Boeing responses to DTSC comments on the summary report for the ISCO Field Experiment.

### **GROUNDWATER**

- Faults
  - DTSC is reviewing Boeing's revised, draft fault technical memorandum that includes the work conducted since the submittal of the 2009 RI Groundwater report.
- Boeing groundwater characterization work in Area IV
  - Evaluation of the hydrologic data for source zones is ongoing.
- Groundwater flow model.
  - Boeing will continue to develop the groundwater flow model.
- Groundwater Report.  
DTSC is reviewing the Boeing section of the site-wide Groundwater RFI Report submitted in June 2017.

### **RISK ASSESSMENT**

- DTSC is reviewing Boeing's [Draft SRAM-3](#).

### **STORMWATER MONITORING AND SAMPLING**

- To comply with Los Angeles Regional Water Quality Control Board requirements, Boeing will monitor flow and collect samples as needed during rain events.

### **AIR MONITORING**

- DTSC anticipates reviewing and, if appropriate, approving the revised final Work Plan in October.

### **FEASIBILITY STUDY / CORRECTIVE MEASURES STUDY (CMS)**

- DTSC is reviewing the Boeing CMS Work Plan Addendum for the CFOU.
- DTSC is reviewing the NASA CMS Work Plan Addendum for the CFOU.

## **SITEWIDE GROUNDWATER**

DTSC's [comments](#) regarding the 2016 Annual Groundwater Monitoring Reports from Boeing, NASA, and DOE were issued on July 19, 2017.

DTSC is reviewing the individual report sections for Boeing's, DOE's and NASA's specific groundwater characterization activities. The individual sections are intended to be part of single sitewide report deliverable that DTSC anticipates receiving in late 2017.

## **PUBLIC OUTREACH**

The following Public Participation activities are anticipated in the next 30 days:

- The DTSC SSFL Monthly Update Report for November will be posted online and added to the "What's New" page;
- Periodic email reminders that the Public Comment period is open and will close on Thursday, December 7, 2017 will be sent;
- SSFL Document Upload Notification: regarding RCRA Facility Investigations will continue to be provided; and
- The Public Participation Plan to include the Draft PEIR and Draft PMP outreach process, next steps, and the outreach strategy moving forward will be updated.

## **GENERAL PROJECT SCHEDULE**

The current schedule goal is to finalize the PEIR in 2018 and for all three responsible parties to have draft cleanup decision documents to DTSC in late 2018 to early 2019. Cleanup activities are currently anticipated to begin in 2019.

The departure from the 2017 schedule presented in the Consent Order and referred to in the AOCs is due to the recognized complexity of the project, including the rugged physical nature of the site, multiple responsible parties, and the need to complete several phases of investigation to define the nature and extent of impacted soils. In addition, as described in Section 4.3 (of the Program Management Plan), during the investigation phases, several cleanup actions were taken.

Project cleanup schedules will be further defined in the remediation planning documents and associated designs, however if soil cleanup begins in early 2019, remediation of all chemically and radiologically impacted soils is anticipated to be completed by the end 2034.

## **2 PROJECT OVERVIEW**

The SSFL is located 30 miles northwest of downtown Los Angeles in southeastern Ventura County, near the crest of the Simi Hills at the western border of the San Fernando Valley. A former rocket engine test and nuclear research facility, the 2,849-acre field laboratory is currently the focus of a comprehensive environmental investigation and cleanup program, conducted by Boeing, DOE and NASA, and overseen by DTSC.

Boeing owns and operates Area I, except for the approximately 41-acre former Liquid Oxygen (LOX) Plant area, and all of Areas III and IV. Areas I and III are operated by Boeing. Boeing also owns the approximately 1,143-acre southern buffer zone and 182-acre NBZ. NASA is responsible for cleanup and

administration of Area II and the former LOX Plant, but it is owned by the federal government. Boeing owns and operates Area IV but DOE is responsible for cleanup of soils in Area IV and the NBZ.

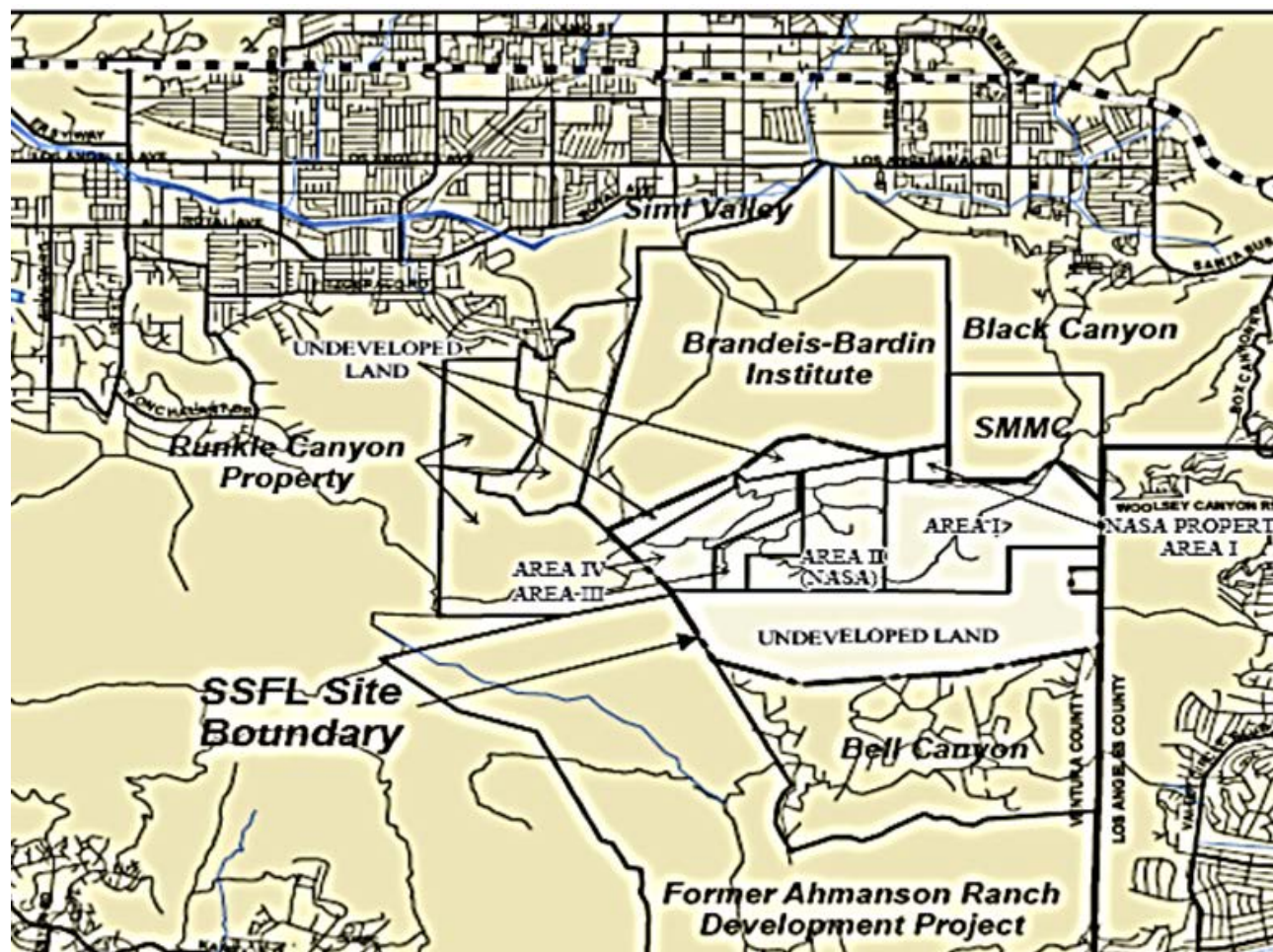


Figure 1 – SSFL and Surrounding Area

## DOE

DTSC and DOE participated in chemical soil sampling efforts in Area IV of the SSFL property where former DOE activities occurred on the Site. Area IV is a 290-acre area located in the northwestern section of the site. DOE owns facilities on a 90-acre site within Area IV. Area IV includes the Energy Technology Engineering Center (ETEC) facility where nuclear research, development, and testing began in the 1950's.

The Area IV radiological soil sampling effort, conducted by the US EPA, was completed in 2012. The US EPA approached the investigation by splitting the Area IV and NBZ investigation into historical site assessment (HSA) subareas. The chemical soil sampling efforts followed the same HSA subarea designations. DOE and DTSC participated in Area IV and NBZ co-located soil sampling for chemical contaminants.

DOE completed the chemical soil characterization sampling in 2014. The sampling included three phases, as specified in the December 2010 AOC, signed by DTSC and DOE:

- Phase 1 - co-located sampling for chemical analysis at US EPA's first phase of radiological sampling locations in Area IV and the NBZ.
- Phase 2 - sampling at randomly selected sampling locations, and
- Phase 3 - identify the locations at the Site where insufficient chemical data exists (chemical data gaps) and sample as appropriate.

In 2012, the US EPA, in coordination with DTSC and DOE, completed its second round of sampling efforts to define the nature and extent of radiologic contamination in Area IV.

US EPA's round two sampling locations were based upon the validated sampling results they received from their Round 1 sampling.

Not all of US EPA's Round 2 sample locations were sampled for chemical contaminants in 2012 and chemical data gap investigation locations may have been required where no radiological sampling was needed. In 2013-2014, the rationale and selection of chemical data gap investigation sampling locations for Area IV were provided, discussed with the community, and implemented. The Area IV chemical data gap sampling is now complete. The radionuclide and chemical results from these investigations are being used for remediation planning. A Draft Chemical Data Summary Report was submitted to DTSC on December 29, 2016. DOE Draft Environmental Impact Statement was issued to the public on January 6, 2017.

DOE has completed investigations of groundwater source areas at DOE sites in Area IV, with the goal of characterizing the nature and extent of contaminant releases at these areas for groundwater remedial planning. DOE's findings will be presented in a site-wide RCRA Facility Investigation Report, which is anticipated to be submitted in 2018.

## **NASA**

NASA has concluded chemical data gap investigations of soil and surficial media characterization at the 41.7-acre NASA administered portion of Area I (the former LOX Plant), and 404-acre Area II. NASA Area II was used primarily for rocket engine testing and includes the Alfa, Bravo, Coca, former Delta Test Stands and support structures. Under the terms of the December 2010 AOC, NASA implemented six Field Sampling Plans (FSPs) to complete the AOC soil investigations.

The five NASA surficial media FSPs include:

- FSP-1 - Alfa-Bravo Fuel Farm, Coca-Delta Fuel Farm, Propellant Load Facility
- FSP-2 - Incinerator/Ash Pile/STP, Building 204, Storable Propellant Area (SPA), and Skyline Road
- FSP-3 - Alfa Test Stand, Bravo Test Stand
- FSP-4 - LOX Plant, Area II Landfill, ELV
- FSP-5 - Coca Test Stand, former Delta Stand, R2 Ponds

The sampling proposed in the FSPs is complete, and DTSC is reviewing NASA's draft Data Summary Report for soils characterization work in the NASA areas of the site.



NASA is conducting extensive investigations of five major groundwater source areas at Area I LOX Plant and Area II, with the goal of characterizing the nature and extent of contaminant releases at these areas for groundwater remedial planning.

### **BOEING**

Boeing owns most of Area I and all of Areas III and IV. Areas I and III total 792 acres and are operated by Boeing. Boeing also owns the 1,143-acre southern buffer zone and 182 acre NBZ. Soils in Area IV and the NBZ are being characterized in the DOE portion of the project.

Boeing sites are in Reporting Groups 1A, 1B, 5, 9 and 10. Boeing has reorganized the sites in subgroups identified as Boeing RFI Groups:

- 1A North, 1A Central, 1A South
- 1B North, 1B Southwest, 1B Southeast
- 5/9 North, 5/9 South, and
- Group 10

The proposed sampling is substantially complete, and Boeing has begun submitting data summary reports for DTSC review.

Boeing is conducting investigations of groundwater source areas at Boeing sites in Area I and Area III, with the goal of characterizing the nature and extent of contaminant releases at these areas for groundwater remedial planning.

Additional Information can be found on DTSC's website at:  
[www.dtsc.ca.gov/SiteCleanup/Santa\\_Susana\\_Field\\_Lab](http://www.dtsc.ca.gov/SiteCleanup/Santa_Susana_Field_Lab)