

**Travis Air Force Base  
Environmental Restoration Program  
Restoration Program Manager's  
Meeting Minutes**

**18 May 2016, 0930 Hours**

Mr. Lonnie Duke, of the Air Force Civil Engineer Center (AFCEC) Restoration Installation Support Team (IST) conducted the Restoration Program Manager's (RPM) teleconference meeting on 18 May 2016 at 0930 hours in Building 248 at Travis AFB, California. Attendees included:

Lonnie Duke	AFCEC/CZOW
Glenn Anderson	AFCEC/CZOW
Angel Santiago Jr.	AFCEC/CZOW
William Hall (via telephone)	AFCEC/CZRW
Adriana Constantinescu (via telephone)	California Regional Water Quality Control Board (RWQCB)
Ben Fries (via telephone)	California Department of Toxic Substances Control (DTSC)
Nadia Hollan Burke	USEPA
Indira Balkissoon (via telephone)	Techlaw, Inc
Meg Greenwald (via telephone)	CAPE Inc.
Doug Berwick	CH2M
Tony Chakurian	CH2M
Leslie Royer	CH2M

Handouts distributed at the meeting, discussions and presentations included:

- Attachment 1 Meeting Agenda
- Attachment 2 Master Meeting and Document Schedule
- Attachment 3 SBBGWTP Monthly Data Sheet (April 2016)
- Attachment 4 CGWTP Monthly Data Sheet (April 2016)
- Attachment 5 ST018 Monthly Data Sheet (April 2016)
- Attachment 6 Presentation: SS016 Soil Data Gap Investigation Work Plan
- Attachment 7 Presentation: TS060 Removal Action Work Plan

- Attachment 8 Presentation: Documents and Activities Completed, In Progress and Planned

## 1. ADMINISTRATIVE

### A. Previous Meeting Minutes

The 21 April 2016 RPM meeting minutes were approved and finalized as written, with the following exception. Ms. Burke sent an email stating that Ms. Balkissoon/Techlaw requested the following comments be added. Page 3, fifth paragraph; add last sentence: “Travis AFB is coordinating the installation of new wells at ST027 during a time frame when Runway 21R will be closed for repairs.” Page 6, paragraphs three and four were added: “Mr. Wray said a Biological Assessment to support field activities is being prepared for submittal to the USF&W.” and Ms. Balkissoon asked about the Annual Report on the Status of Land Use Controls on Restoration Sites in 2015. Mr. Anderson said it is not a reviewable document, however, they have received the regulators comments and will voluntarily incorporate improvements to the Annual Report in the following years.

### B. Action Item Review.

Action items from April 2016 were reviewed.

Action item 1 is ongoing: Mr. Duke to provide updates on PFOS and PFOA as he becomes aware of them. 18 May 2016 update: Mr. Duke said this will be a topic at the Battelle Conference that he and Mr. Anderson will be attending. Mr. Duke added that Travis AFB drinking water is not affected by this emerging class of contaminants as the water is sourced from the golf course which is located approximately six miles from Travis AFB.

### C. Master Meeting and Document Schedule Review (see Attachment 2)

The Travis AFB Master Meeting and Document Schedule (MMDS) was discussed during this meeting (see Attachment 2).

### Travis AFB Annual Meeting and Teleconference Schedule

The next RPM meeting will be a face-to-face meeting at Travis AFB, held on Wednesday, 15 June 2016, at 0930.

## Travis AFB Master Document Schedule

- Community Involvement Plan: Draft to Agencies date changed to 7 July 2016, the rest of the dates were changed accordingly. Mr. Anderson said he suspects the dates will not need to be pushed back again.
- Site SD031 Remedial Investigation Work Plan: Response to comments due date changed to 18 May 2016, the rest of the dates were changed accordingly. A response to comments (RTC) discussion will be held after the RPM meeting (today). The field work portion of the document was approved and the work began this week. Twelve-inch wattles are placed around the drill rig to prevent harm to the California Tiger Salamanders (CTS).
- Action Memorandum Non-Time Critical Removal Action at Site TS060 (Old Skeet Range): Draft to Agencies date was changed to 16 May 2016 to reflect the actual date, the rest of the dates were changed accordingly.
- Potrero Hills Annex (FS, PP, and ROD): No change to the schedule.
- Data Gap Investigation Work Plan Technical Memorandum for Soil Sites SD033, SD043, and SS046: No change to the schedule. Document went final on 6 May 2016.
- Corrective Action Plan for DERA-Funded Oil Water Separators (POCO): No change to the schedule. Ms. Constantinescu will email comments to Travis AFB later today.
- Site SD034 Technology Demonstration Work Plan: Draft to Agencies date was changed to 19 May 2016, the rest of the dates were changed accordingly.
- Site TS060 Removal Action Work Plan: Draft to Agencies date was changed to 27 May 2016, the rest of the dates were changed accordingly.
- Multi-Site Bioaugmentation Technology Demonstration Work Plan: Sites ST027B and SD036. Predraft to AF/Service Center was changed to 6 May 2016 to reflect the actual date, the rest of the dates were changed accordingly. Mr. Duke said that Travis AFB will be requesting a fairly quick review from the agencies to take advantage of a planned Runway 21R closure for repairs. Mr. Duke will be meeting with the Airfield Manager tomorrow, 19 May 2016, to confirm if the closure of Runway 21R is still planned for 11 July 2016 for repairs.
- Site SS016 Soil Data Gap Investigation Work Plan: Draft to Agencies date was changed to 11 May 2016 to reflect the actual date, the rest of the dates were changed accordingly.
- Site FT004 POCO Soil Data Gap Work Plan: New document, populated with all new dates. Mr. Anderson provided a brief background of Site FT004. In 2007 a soil remediation action was being conducted based on what was in the Record of Decision (ROD) for the NEWIOU. During the remedial action petroleum was discovered, which was a surprise because it had not been previously identified during the remedial investigation of this fire training area site. The remedial action contract did not include petroleum cleanup, so it was determined that Travis AFB would address the petroleum part of the remediation at a later date.

- Site LF044 Investigation Work Plan: New document, populated with all new dates. This site was listed as a land use control (LUC) site in the 2002 WABOU Soil ROD. In 2012 a new aboveground storage tank (AST) facility was constructed within the footprint of LF044. Vegetation, construction debris and contaminated soil were removed from the construction area, and clean soil was imported to build the secondary containment walls for the AST enclosures. Two small sections of the original footprint remained on the northern side of the AST facility. These northern portions are the subject of the site investigation.
- Quarterly Newsletter (July 2016): Draft to Agencies date was changed to 5 July 2016 to reflect the third quarter.
- 2015 Annual GRISR: Predraft to AF/Service Center date was changed to 3 May 2016 to reflect the actual date, the rest of the dates were changed accordingly.
- Site ST032 POCO Completion Report: No change to the schedule. Ms. Constantinescu said she will submit comments before the end of May.
- Site FT004 Groundwater Technology Demonstration Construction Completion Report: Response to Comments Due and Final Due date was changed to 3 June 2016.
- Site ST028 POCO Completion Report: No change made to the schedule. Ms. Constantinescu said that she did have time to review the document and it is not clear in the document if the goal is to remove LUC to industrial or residential restrictions. Ms. Greenwald said the goal is residential use, adding the document will be revised to make it clear.
- 2015 Annual CAMU Monitoring Report: No change made to the schedule.
- Site FT005 Technology Demonstration Construction Completion Report: Predraft to AF/Service Center date was changed to 10 June 2016, the rest of the dates changed accordingly. Schedule was revised due to EVO injection is still on-going.
- Site DP039 Remedial Action Construction Completion Report: Predraft to AF/Service Center date was changed to 30 June 2016, the rest of the dates were changed accordingly. Schedule was revised due to EVO injection is still on-going.
- Site CG508 Well Decommissioning Work Plan Technical Memorandum: Moved to History.

## **2. CURRENT PROJECTS**

### **Treatment Plant Operation and Maintenance Update**

#### **South Base Boundary Groundwater Treatment Plant, April 2016 (see Attachment 3)**

The South Base Boundary Groundwater Treatment Plant (SBBGWTP) performed at 100% uptime, and 5.03 million gallons of groundwater were extracted and treated

during the month of April 2016. All of the treated water was discharged to Union Creek. The average flow rate for the SBBGWTP was 100.5 gallons per minute (gpm). Electrical power usage was 26,340 kWh, and approximately 36,086 pounds of CO<sub>2</sub> were created (based on DOE calculation). Approximately 1.6 pounds of volatile organic compounds (VOCs) were removed in April. The total mass of VOCs removed since startup of the system is 476.4 pounds.

Optimization Activities for SBBGWTP: On 8 April 2016 the new Site FT005 extraction well EW2291x05 was brought on line. This groundwater extraction well is part of the ongoing Site FT005 Technology Demonstration project.

Ms. Burke asked about a carbon change-out because of the detections being reported in the effluent. Mr. Berwick said carbon change out is basically on an annual schedule, or when we see breakthrough. The carbon was recently changed and our procedure is to switch the carbon vessels; the lead becomes the lag vessel and the lag becomes the lead, so that the effluent has the newest carbon. The new carbon is then soaked in water for a few days.

Ms. Balkissoon asked where the procedure is described for the change-out for the carbon vessels and is there an electronic copy available. Mr. Duke said it is in the O&M manual and will look into seeing if electronic copies are available.

Ms. Balkissoon asked about the increase in CO<sub>2</sub> generated. Mr. Berwick said the increase in electricity is due to the pump used for the EVO injections at FT005.

#### **Central Groundwater Treatment Plant, April 2016 (see Attachment 4)**

The Central Groundwater Treatment Plant (CGWTP) performed at 100% uptime with approximately 1.55 million gallons of groundwater extracted and treated during the month of April 2016. All treated water was discharged to the storm drain. The average flow rate for the CGWTP was 30.7 gpm. Electrical power usage was 2,964 kWh for all equipment connected to the Central Plant, and approximately 4,061 pounds of CO<sub>2</sub> were generated. Approximately 3.24 pounds of VOCs were removed from groundwater by the treatment plant in April. The total mass of VOCs removed since the startup of the system is 11,432 pounds.

Optimization Activities for CGWTP: No optimization activities are reported for the month of April 2016.

Ms. Balkissoon asked about the TPH/MO detect in the effluent vessel and said she thought there was a detect last month as well. Mr. Duke said yes but a lesser value. Ms. Burke asked if it we could start sampling the influent for TPH/MO. Mr. Berwick said that TPH is not a COC for the wells that feed into this treatment plant. He mentioned the silica gel cleanup method, which helps to strip out the biological carbon chains that are not TPH but fall in the range of the spectrogram of the TPH signature. The gas chains are easier to detect but the TPH-D and MO are longer chains and harder to identify. There could be several reasons for a TPH detect like biological or head space and the moist hot environment can lead to false TPH-D detects. Ms. Royer said it's

fairly common to get hits of TPH due to biological interference and in her experience anything below 100 µg/L should not be a concern. Mr. Berwick said that action will be taken when the trigger values are exceeded.

### **LF007C Groundwater Treatment Plant**

*The LF007C Groundwater Treatment Plant was taken offline as of 24 December 2015, in accordance with the USFWS requirement; due to the presence of standing water in the vernal pools.*

### **ST018 Groundwater (MTBE) Treatment Plant, April 2016 (see Attachment 5)**

Site ST018 (MTBE) Treatment Plant (ST018 GWTP) performed at 82.3% uptime with approximately 319,660 gallons of groundwater extracted and treated during the month of April 2016. All treated water was diverted to the sanitary sewer. The average flow rate for the ST018 GWTP was 7.7 gpm. Electrical power usage for the month was 195 kWh for all equipment connected to the ST018 GWTP, which equates to approximately 267 pounds of CO<sub>2</sub>. Approximately 0.99 pounds of BTEX, MTBE and TPH were removed from groundwater in April by the treatment plant. Approximately 0.24 pound of MTBE was removed from groundwater. The total BTEX, MTBE and TPH mass removed since the startup of the system is 37.5 pounds, and the total MTBE mass removed since startup of the system is 8.9 pounds.

Note: Electrical power use at the ST018 GWTP is only for the alarm system and a pump that pushes water through the GAC vessels for treatment. The extraction pumps in the system are all solar powered.

Optimization Activities for ST018GWTP: No optimization activities to report for the month of April 2016.

### **Presentations:**

#### **Presentation: SS016 Soil Data Gap Investigation Work Plan (see Attachment 6)**

Ms. Greenwald gave a presentation on the SS016 Soil Data Gap Investigation Work Plan. For details, including maps and figures, see attachment 6.

Ms. Greenwald covered the following topics in the presentation: site background; purpose of the data gap investigation; nature and extent of soil contamination; conceptual design; soil sampling plan; data quality objectives, and reporting.

Site Background:

- Site SS016 is comprised of the oil spill area (OSA) and portions of the storm sewer system. This site is in an active area at Travis AFB with ongoing maintenance activities and an aircraft parking apron.
- Cleaning and degreasing operations historically occurred at facility 18, which included a wash rack, oil water separator (OWS), and a subsurface open top cement tank. All have since been removed. Most of the area is now paved, and a few areas of exposed soil still remain.
- Based on results of the Remedial Investigation (1995), LUCs for soil were implemented as part of the NEWIOU SSSW ROD (2006).

#### The Purpose for the Data Gap Investigation:

- Reassess the need to conduct additional remedial actions in order to remove the current land use controls (LUCs).
- Collect additional soil samples to evaluate the extent of the soil contamination, and support reevaluation of human health risks under a residential exposure scenario.

#### Nature and Extent of the Soil Contamination:

- Soil contamination is limited to the oil spill area near facility 18. PAHs and polychlorinated biphenyls (PCBs) were identified at depths ranging from 1 to 5 feet, mostly found in shallow depths, maybe one or two at 5 feet.
- The chemicals of concern (COCs) are: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and Aroclor1260.
- Total petroleum hydrocarbon (TPH) contamination was previously identified throughout this site, but no action was determined to be necessary for the soil TPH contamination because less than one percent of the samples exceeded the Water Board Environmental Screening Level (ESL). The Air Force and the regulatory agencies have agreed that TPH contaminated soil at this site will naturally attenuate. *The most recent data set is over twenty years old.*

Ms. Constantinescu asked if the levels of TPH found in the soil were evaluated at industrial levels. Ms. Constantinescu requested the TPH and residual soil data. Ms. Greenwald said that she did not have the data with her but that she would provide that data to the regulators. Mr. Duke asked that the regulators provide their comments when they receive the work plan.

#### Conceptual Design:

- The conceptual design is to collect soil samples to delineate the extent of the soil contamination, including in areas where COCs were previously non-detect but detection limits were above residential cleanup goals.

- Update the risk assessment calculations under a residential scenario to determine whether additional actions are needed for removal of the current LUCs.
- Utilize new data set to determine the limits of excavation, if any. The excavation would be conducted at a later date (estimated 2017).

#### Soil Sampling Plan:

- Collect soil samples from twenty locations, based on: previous exceedances and previous non-detects with detection limits that exceeded ESLs. Exposed soil south of facility 563 that is the known location of grading activities that may have spread contamination. Collect soil samples at three different depths at each boring. Analyze for site COCs; TPH will be added to the list based on regulator comments.

Data Quality Objectives: (see attachment 6, slide 11 for details)

#### Reporting:

- The Air Force will update the risk assessment calculations that supported the selected remedies.
- Determine whether excavation would support the removal of current LUCs.
- If the Air Force decides to conduct additional remedial actions beyond the ROD-selected remedy, then this site will be included in an amendment to the Soil ROD.

### **Presentation: Site TS060 Removal Action Work Plan (see Attachment 7)**

Ms. Greenwald gave a presentation on Site TS060 Removal Action Work Plan (old skeet range). For details, including maps and figures, see attachment 7.

Ms. Greenwald covered the following topics in the presentation: site background; extent of contamination; action memorandum objectives; removal action work plan objectives; post excavation confirmation sampling; data quality objectives; and reporting.

This presentation will cover two documents: The Action Memorandum and The Removal Action Work Plan.

#### Site Background:

- This was the site where the skeet range was located before it was moved in 1962 due to the prevailing wind direction.
- PAH and lead contamination was thought to be delineated as part of Phase II Comprehensive Site Evaluation in 2011. Soil excavation was planned for the PAH contaminated soil only. The Air Force and EPA agreed that lead contaminated soil would

remain in place until the active skeet range was closed and investigated; adjacent to the old skeet range. An Action Memorandum was submitted in 2013, which only covered the PAH contaminated soil. The new Action Memorandum will supersede the 2013 Memorandum and will include the lead contamination.

- During a pre-removal sampling event, PAH contamination was determined to be more widespread than anticipated. An additional site investigation was conducted to fully delineate PAHs in 2015.

#### Extent of Contamination:

- The soil contamination is limited to surface and shallow subsurface soils. The lead contaminated area was delineated with 114 sampling locations with a maximum depth of 6 inches. The PAHs were completely delineated in 2015, with a maximum depth of 2 to 3 feet.
- A map of the area of concern was presented in slide 6 (Attachment 7). Slide 6 presented the locations of the PAH, and lead detections that were above screening levels. It is notable that most of the higher detections of the COCs are not intermingled except for one small area where lead and PAHs are comingled.

#### Action Memorandum Objectives:

- Formally document the selection of the remedy identified in the Engineering Evaluation/Cost Analysis (EE/CA).
- Document residential cleanup criteria; California Human Health Screening Level (CHHSL) for lead and EPA Residential Screening Levels (RSLs) for PAHs.

#### Removal Action Work Plan Objectives:

- Define the limits of excavation.
- Describe the management of the contaminated soil; Onsite thermal treatment for the PAH contaminated soil. Lead contaminated soil will be disposed of offsite.
- Establish data quality objective for; Waste characterization samples. Confirmation samples. Post thermal treatment samples.

Ms. Greenwald said that the PAHs and the lead exceedances are not comingled (except for one small area) (see slide 9, Attachment 7). The lead contamination will be excavated and the PAHs will go through a thermal treatment process.

The map also shows an access route to the location and vernal pools in and around the surrounding area. Ms. Greenwald said that the map has been updated since this presentation. However, she does believe that they will have to do some mitigation measures. Mr. Duke added that they are working with the Equestrian Center to put in a fence to keep the horses out to the construction zone.

### Contaminated Soil Management:

- The estimated quantity of lead contaminated soil is 1,260 cubic yards. The excavated soil will be transported to Hay Road Landfill in Vacaville, CA.
- The estimated quantity of PAH contaminated soil is 3,700 cubic yards. The contaminated soil will be treated using Endpoint Technology LLC's Vapor Energy Generator (VEG) soil remediation system or disposed of offsite along with lead contaminated soils. There might be scheduling issues with Endpoint VEG systems as all of their equipment is currently booked. The earliest start date for the work to begin is in early September and we can't go past November due to the biological conservation measures. So if the VEG equipment is not available by our September start date the PAH soil will be excavated and disposed of at the Vacaville Landfill.
- Discrete confirmation samples will be collected from the excavation floor based on a centrally aligned 50 x 50 foot grid. Sidewall samples will be collected at the midpoint of the excavation depth in approximate 50 foot intervals.

### Reporting:

A summary of the excavation activities and all analytical data will be presented in a removal action completion report (RACR).

### **Program Update: Activities Completed, In Progress, and Upcoming (see Attachment 8)**

Mr. Berwick reported on the status of field work and documents which are completed, in progress, and upcoming. Updates from the briefing this month included:

Newly Completed Documents: Data Gap Investigation Technical Memorandum for Soil Sites SD033, SD043 and SS046.

Newly Completed Field Work: FT005 EVO Injection, 2016 Q2 GRIP Sampling.

In-Progress Documents (CERCLA): Site SD031 Soil Remedial Investigation Work Plan; Site FT004 Technical Demonstration Completion Report; 2015 Annual CAMU Monitoring Report; Site TS060 Action Memorandum; Site SS016 Soil Data Gaps Investigation Work Plan.

In-Progress Documents (POCO): Corrective Action Plan for DERA-Funded Oil Water Separators; Site ST032 POCO Completion Report; Site ST028 POCO Completion Report.

In-Progress Field Work: DP039 EVO Injection; SD031 Soil Remedial Investigation.

Upcoming Documents (CERCLA): Site SD034 Technology Demonstration Work Plan (May); Site TS060 Action Memorandum (May); Community Involvement Plan (May); Site LF044 Investigation Work Plan (May); Multi-Site Bioaugmentation Technology Demonstration

Work Plan (June); 2015 Annual GRISR (June); Community Involvement Plan (July); Site FT005 Technology Demonstration Construction Completion Report (July); Site DP039 RD/RA Construction Completion Report (July); Site FT004 POCO Soil Data Gaps Investigation Work Plan (July).

Upcoming Documents (POCO): Site FT004 POCO Soil Data GAP Investigation Work Plan (July).

Field Work Planned (CERCLA): Data Gap Investigation for Soil Sites (SD033, SD043, and SS046) (June); Multi-site Bioaugmentation Technology Demonstration Work Plan (July); SD034 Technology Demonstration Well Installation (TBD); TS060 Removal Action (TBD); Site SD034 Technology Demonstration Bioreactor Installation (TBD); SS016 Soil Data Gaps Investigation (TBD).

Field Work Planned (POCO): Oil Water Separators Step Out Drilling (June); Oil Water Separators (12) Removal (July); FT004 POCO Soil Data Gaps Investigation (July); CG508 Well Decommissioning (August); Site SS014 Bioreactor Installation (August).

**4. New Action Item Review**

None.

**5. PROGRAM/ISSUES/UPDATE**

None.

**6. Action Items**

Item #	Responsible	Action Item Description	Due Date	Status
1.	Lonnie Duke	Mr. Duke to provide updates on PFOS and PFOA as he becomes aware of them.	Ongoing	Open

TRAVIS AIR FORCE BASE  
ENVIRONMENTAL RESTORATION PROGRAM  
RESTORATION PROGRAM MANAGER'S MEETING

The RPM teleconference is scheduled for 9:30 PST on 18 May 2016. **The call-in number is 1-866-203-7023. Enter the Participation code 5978-75-9736 then enter #.**

AGENDA

1. ADMINISTRATIVE

- A. INTRODUCTIONS
- B. PREVIOUS MEETING MINUTES
- C. ACTION ITEM REVIEW
- D. MASTER MEETING AND DOCUMENT SCHEDULE REVIEW

2. CURRENT PROJECTS

- A. TREATMENT PLANT OPERATION AND MAINTENANCE UPDATE

3. PRESENTATIONS

- A. SS016 SOIL DATA GAP INVESTIGATION WORK PLAN
- B. TS060 REMOVAL ACTION WORK PLAN
- C. PROGRAM UPDATE:  
DOCUMENTS & ACTIVITIES COMPLETED, IN PROGRESS AND PLANNED

4. NEW ACTION ITEM REVIEW

5. PROGRAM/ISSUES/UPDATE

- A. MEETING SCHEDULE

**NOTES:** AFTER THE RPM MEETING, BASED ON THE DISCUSSION DURING THE REVIEW OF THE MASTER MEETING AND DOCUMENT SCHEDULE, WE ALLOW TIME TO HOLD A SEPARATE SPLINTER MEETING TO DISCUSS RESPONSES TO AGENCY COMMENTS ON THOSE DOCUMENTS THAT ARE IN PROGRESS, OR OTHER ISSUES IF NEEDED. ALL PARTICIPANTS ARE WELCOME TO PARTICIPATE.

**(2016)**  
**Annual Meeting and Teleconference Schedule**

Monthly RPM Meeting <sup>1</sup> (Begins at time noted)	RPM Teleconference (Begins at time noted)	Restoration Advisory Board Meeting (Begins at 7:00 p.m.) (Poster Session at 6:30 p.m.)
—	01-20-16	—
02-17-16	—	—
—	03-16-16	—
04-21-16 (Thursday 2:00 PM)	—	04-21-16
—	05-18-16	—
06-15-16	—	—
—	07-20-16	—
08-17-16	—	—
—	09-21-16	—
10-20-16 (Thursday 2:00 PM)	—	10-20-16 <sup>2</sup>
—	11-16-16	—
—	—	—

<sup>1</sup> Note: Meetings and teleconferences will be held at 09:30 AM on the third Wednesday of each month unless otherwise noted.

<sup>2</sup> Note: Tentative RAB tour date in lieu of RAB meeting.

## Travis AFB Master Meeting and Document Schedule

<b>PRIMARY DOCUMENTS</b>			
<b>Life Cycle</b>	<b>Community Involvement Plan Travis AFB, Glenn Anderson CH2M HILL, Tricia Carter</b>	<b>Site SD031 Remedial Investigation Work Plan Travis AFB, Lonnie Duke CH2M HILL, Tony Chakurian</b>	<b>Action Memorandum for Non-Time Critical Removal Action at Site TS060 (Old Skeet Range) Travis AFB, Glenn Anderson CH2M HILL, Doug Berwick CAPE, Meg Greenwald</b>
<b>Scoping Meeting</b>	NA	NA	NA
Predraft to AF/Service Center	NA	01-13-16	03-30-16
AF/Service Center Comments Due	NA	01-28-16	04-13-16
Draft to Agencies	07-07-16	02-10-16	05-16-16
Draft to RAB	07-07-16	02-10-16	05-16-16
Agency Comments Due	08-08-16	03-14-16	06-16-16
<b>Response to Comments Meeting</b>	08-17-16	05-18-16	07-20-16
Agency Concurrence with Remedy	NA	NA	NA
Public Comment Period	NA	NA	NA
<b>Public Meeting</b>	NA	NA	NA
Response to Comments Due	09-02-16	06-09-16	08-05-16
Draft Final Due	09-02-16	06-09-16	08-05-16
Final Due	10-03-16	07-12-16	09-08-16

## Travis AFB Master Meeting and Document Schedule

<b>PRIMARY DOCUMENTS</b>			
<b>Life Cycle</b>	<b>Potrero Hills Annex Travis, Glenn Anderson</b>		
	<b>FS</b>	<b>Proposed Plan</b>	<b>ROD</b>
<b>Scoping Meeting</b>	<b>180 days after Water Board Order Rescinded</b>	<b>+470 days</b>	<b>+735 days</b>
Predraft to AF/Service Center	+ 270 days	+530 days	+ 915 days
AF/Service Center Comments Due	+ 300 days	+560 days	+ 975 days
Draft to Agencies	+330 days	+590 days	+ 1035 days
Draft to RAB	+ 330 days	+590 days	+ 1035 days
Agency Comments Due	+390 days	+650 days	+ 1095 days
<b>Response to Comments Meeting</b>	<b>+ 405 days</b>	<b>+665 days</b>	<b>+ 1110 days</b>
Agency Concurrence with Remedy	NA	NA	+ 1130 days
Public Comment Period	NA	+735 to 765 days	NA
<b>Public Meeting</b>	<b>NA</b>	<b>+745 days</b>	<b>NA</b>
Response to Comments Due	+430 days	+695days	+ 1190 days
Draft Final Due	+430 days	+695 days	+ 1190 days
Final Due	+460 days	+725 days	+ 1250 days

## Travis AFB Master Meeting and Document Schedule

<b>SECONDARY DOCUMENTS</b>			
<b>Life Cycle</b>	<b>Data Gap Investigation <b>Work Plan</b> Technical Memorandum for Soil Sites SD033, SD043, and SS046  Travis AFB, Glenn Anderson CH2M HILL, Leslie Royer</b>	<b>Corrective Action Plan for DERA- Funded Oil Water Separators  Travis AFB, Lonnie Duke CH2M HILL, Doug Berwick</b>	<b>Site SD034 Technology Demonstration Work Plan  Travis AFB, Glenn Anderson CH2M HILL, Levi Pratt</b>
<b>Scoping Meeting</b>	NA	NA	NA
Predraft to AF/Service Center	01-15-16	02-10-16	03-22-16
AF/Service Center Comments Due	02-01-16	02-25-16	04-05-16
Draft to Agencies	02-17-16	04-06-16	<b>05-19-16</b>
Draft to RAB	02-17-16	04-06-16	<b>05-19-16</b>
Agency Comments Due	03-18-16	05-06-16	<b>06-20-16</b>
<b>Response to Comments Meeting</b>	<b>04-21-16</b>	<b>05-18-16</b>	<b>07-20-16</b>
Response to Comments Due	05-06-16	06-01-16	<b>08-09-16</b>
Draft Final Due	NA	NA	NA
Final Due	05-06-16	06-01-16	<b>08-09-16</b>
Public Comment Period	NA	NA	NA
<b>Public Meeting</b>	NA	NA	NA

## Travis AFB Master Meeting and Document Schedule

<b>SECONDARY DOCUMENTS</b>			
<b>Life Cycle</b>	<b>Site TS060 Removal Action Work Plan Travis AFB, Glenn Anderson CH2M HILL, Doug Berwick CAPE, Meg Greenwald</b>	<b>Multi-Site Bioaugmentation Technology Demonstration Work Plan Travis AFB, Glenn Anderson CH2M HILL, Levi Pratt</b>	<b>Site SS016 Soil Data Gap Investigation Work Plan Travis AFB, Glenn Anderson CH2M HILL, Doug Berwick CAPE, Meg Greenwald</b>
<b>Scoping Meeting</b>	NA	NA	NA
Predraft to AF/Service Center	04-14-16	05-06-16	03-24-16
AF/Service Center Comments Due	04-28-16	05-20-16	04-07-16
Draft to Agencies	05-27-16	06-06-16	05-11-16
Draft to RAB	05-27-16	06-06-16	05-11-16
Agency Comments Due	06-27-16	07-07-16	06-13-16
<b>Response to Comments Meeting</b>	<b>07-20-16</b>	<b>07-20-16</b>	<b>06-15-16</b>
Response to Comments Due	08-03-16	08-04-16	07-01-16
Draft Final Due	NA	NA	NA
Final Due	08-03-16	08-04-16	07-01-16
Public Comment Period	NA	NA	NA
<b>Public Meeting</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>

## Travis AFB Master Meeting and Document Schedule

<b>SECONDARY DOCUMENTS</b>		
<b>Life Cycle</b>	Site FT004 POCO Soil Data Gap Investigation Work Plan Travis AFB, Glenn Anderson CH2M HILL, Doug Berwick CAPE, Meg Greenwald	Site LF044 Investigation Work Plan Travis AFB, Glenn Anderson CH2M HILL, Doug Berwick CAPE, Meg Greenwald
<b>Scoping Meeting</b>	NA	NA
Predraft to AF/Service Center	06-08-16	04-26-16
AF/Service Center Comments Due	06-22-16	05-10-16
Draft to Agencies	07-06-16	05-24-16
Draft to RAB	07-06-16	05-24-16
Agency Comments Due	08-05-16	06-24-16
<b>Response to Comments Meeting</b>	08-17-16	07-20-16
Response to Comments Due	09-07-16	08-08-16
Draft Final Due	NA	NA
Final Due	09-07-16	08-08-16
Public Comment Period	NA	NA
<b>Public Meeting</b>	NA	NA

## Travis AFB Master Meeting and Document Schedule

<b>INFORMATIONAL DOCUMENTS</b>			
<b>Life Cycle</b>	<b>Quarterly Newsletters (July 2016) Travis, Glenn Anderson</b>	<b>2015 Annual GRISR Travis AFB, Glenn Anderson CH2M HILL, Leslie Royer</b>	<b>Site ST032 POCO Completion Report Travis AFB, Lonnie Duke CH2M HILL, Doug Berwick CAPE, Meg Greenwald</b>
<b>Scoping Meeting</b>	NA	NA	NA
Predraft to AF/Service Center	NA	05-03-16	01-25-16
AF/Service Center Comments Due	NA	06-03-16	02-08-16
Draft to Agencies	07-05-16	06-23-16	04-05-16
Draft to RAB	NA	06-23-16	04-05-16
Agency Comments Due	07-18-16	07-25-16	05-05-16
<b>Response to Comments Meeting</b>	<b>TBD</b>	<b>08-17-16</b>	<b>05-18-16</b>
Response to Comments Due	07-20-16	08-31-16	06-02-16
Draft Final Due	NA	NA	NA
Final Due	07-27-16	08-31-16	06-02-16
Public Comment Period	NA	NA	NA
<b>Public Meeting</b>	NA	NA	NA

## Travis AFB Master Meeting and Document Schedule

<b>INFORMATIONAL DOCUMENTS</b>			
<b>Life Cycle</b>	<b>Site FT004 Groundwater Technology Demonstration Construction Completion Report Travis AFB, Glenn Anderson CH2M HILL, Levi Pratt</b>	<b>Site ST028 POCO Completion Report Travis AFB, Lonnie Duke CH2M HILL, Doug Berwick CAPE, Meg Greenwald</b>	<b>2015 Annual CAMU Monitoring Report Travis AFB, Lonnie Duke CH2M HILL, Levi Pratt</b>
<b>Scoping Meeting</b>	NA	NA	NA
Predraft to AF/Service Center	02-16-16	02-24-16	02-26-16
AF/Service Center Comments Due	03-01-16	03-09-16	03-11-16
Draft to Agencies	03-15-16	04-13-16	04-01-16
Draft to RAB	03-15-16	04-13-16	04-01-16
Agency Comments Due	04-14-16	05-13-16	05-02-16
<b>Response to Comments Meeting</b>	<b>04-21-16</b>	<b>05-18-16</b>	<b>05-18-16</b>
Response to Comments Due	06-03-16	06-07-16	06-01-16
Draft Final Due	NA	NA	NA
Final Due	06-03-16	06-07-16	06-01-16
Public Comment Period	NA	NA	NA
<b>Public Meeting</b>	NA	NA	NA

## Travis AFB Master Meeting and Document Schedule

<b>INFORMATIONAL DOCUMENTS</b>		
<b>Life Cycle</b>	<b>Site FT005 Technology Demonstration Construction Completion Report Travis AFB, Glenn Anderson CH2M HILL, Levi Pratt</b>	<b>Site DP039 Remedial Action Construction Completion Report Travis AFB, Glenn Anderson CH2M HILL, Levi Pratt</b>
<b>Scoping Meeting</b>	NA	NA
Predraft to AF/Service Center	06-10-16	06-30-16
AF/Service Center Comments Due	06-24-16	07-15-16
Draft to Agencies	07-11-16	07-29-16
Draft to RAB	07-11-16	07-29-16
Agency Comments Due	08-10-16	08-29-16
<b>Response to Comments Meeting</b>	<b>08-17-16</b>	<b>09-21-16</b>
Response to Comments Due	08-31-16	10-05-16
Draft Final Due	NA	NA
Final Due	08-31-16	10-05-16
Public Comment Period	NA	NA
<b>Public Meeting</b>	NA	NA

## Travis AFB Master Meeting and Document Schedule

<b>HISTORY</b>	
<b>Life Cycle</b>	<b>Site CG508 Well Decommissioning Work Plan Technical Memorandum Travis AFB, Lonnie Duke CH2M HILL, Levi Pratt</b>
<b>Scoping Meeting</b>	<b>NA</b>
Predraft to AF/Service Center	02-01-16
AF/Service Center Comments Due	02-16-16
Draft to Agencies	03-01-16
Draft to RAB	03-01-16
Agency Comments Due	03-31-16
<b>Response to Comments Meeting</b>	<b>04-21-16</b>
Response to Comments Due	05-09-16 (04-08-16)
Draft Final Due	NA
Final Due	05-09-16 (04-08-16)
Public Comment Period	NA
<b>Public Meeting</b>	<b>NA</b>

# South Base Boundary Groundwater Treatment Plant Monthly Data Sheet

Report Number: 188

Reporting Period: 30 March 2016 – 4 May 2016

Date Submitted: 13 May 2016

This monthly data sheet presents information regarding the South Base Boundary Groundwater Treatment Plant (SBBGWTP) and associated remedial process optimization (RPO) activities.

## System Metrics

Table 1 presents operational data from the April 2016 reporting period.

<b>Table 1 – Operations Summary – April 2016</b>			
<b>Initial Data Collection:</b>	3/30/2016 14:55	<b>Final Data Collection:</b>	5/4/2016 9:50
Operating Time:	Percent Uptime:	Electrical Power Usage:	
<b>SBBGWTP: 835 hours</b>	<b>SBBGWTP: 100%</b>	<b>SBBGWTP: 26,340 kWh (36,086 lbs CO<sub>2</sub> generated<sup>a</sup>)</b>	
Gallons Treated: <b>5.03 million gallons</b>		Gallons Treated Since July 1998: <b>934 million gallons</b>	
Volume Discharged to Union Creek: <b>5.03 million gallons</b>		Gallons Treat From Other Sources: <b>0 gallons</b>	
VOC Mass Removed: <b>1.6 lbs<sup>b</sup></b>		VOC Mass Removed Since July 1998: <b>476.4 lbs</b>	
Rolling 12-Month Cost per Pound of Mass Removed: \$3,974 <sup>c</sup>			
Monthly Cost per Pound of Mass Removed: \$7,333 <sup>c</sup>			
lbs = pounds			
<sup>a</sup> Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.			
<sup>b</sup> Calculated using April 2016 EPA Method SW8260C analytical results.			
<sup>c</sup> Costs include operations and maintenance, reporting, analytical laboratory, project management, and utility costs related to operation of the system.			

Table 2 presents individual extraction well flow rates along with the average system flow during the monthly reporting period.

<b>Table 2 – SBBGWTP Average Flow Rate (gpm)<sup>a</sup> – April 2016</b>							
<b>FT005<sup>b</sup></b>				<b>SS029</b>		<b>SS030</b>	
EW01x05	Offline	EW736x05	Offline	EW01x29	2.1	EW01x30	8.1
EW02x05	0.2	EW737x05	Offline	EW02x29	2.0	EW02x30	0.1
EW03x05	Offline	EW742x05	Offline	EW03x29	0.1	EW03x30	2.3
EW731x05	Offline	EW743x05	Offline	EW04x29	Offline	EW04x30	0.3
EW2291x05	5.0	EW744x05	Offline	EW05x29	13.2	EW05x30	4.7
EW733x05	Offline	EW745x05	Offline	EW06x29	5.0	EW2174x30	10.3
EW734x05	1.1	EW746x05	Offline	EW07x29	13.3	EW711x30	3.8
EW735x05	1.3						
<b>FT005 Total:</b>		<b>7.6</b>		<b>SS029 Total:</b>		<b>35.7</b>	
				<b>SS030 Total:</b>		<b>29.6</b>	
<b>SBBGWTP Average Monthly Flow<sup>c</sup>: 100.5 gpm</b>							
<sup>a</sup> Flow rates presented are instantaneous measurements taken at the end of the reporting period. <sup>b</sup> Most extraction wells at FT005 were taken offline in accordance with the <i>2008 Annual Remedial Process Optimization Report for the Central Groundwater Treatment Plant, North Groundwater Treatment Plant, and South Base Boundary Groundwater Treatment Plant.</i> <sup>c</sup> The average SBBGWTP groundwater flow rate was calculated using the Union Creek Discharge Totalizer and dividing it by the total time in the reporting period.							
gpm – gallons per minute SBBGWTP – South Base Boundary Groundwater Treatment Plant							

Table 3 presents a summary of system shutdowns during the monthly reporting period.

<b>Table 3 – Summary of System Shutdowns</b>					
<b>Location</b>	<b>Shutdown<sup>a</sup></b>		<b>Restart<sup>a</sup></b>		<b>Cause</b>
	<b>Date</b>	<b>Time</b>	<b>Date</b>	<b>Time</b>	
SBBGWTP	None.	--		--	None.
-- = Time not recorded					
<sup>a</sup> Shutdown and restart times estimated based on field notes					
SBBGWTP = South Base Boundary Groundwater Treatment Plant					

## Summary of O&M Activities

Analytical data from the 5 April 2016 sampling event are presented in Table 4. The total VOC concentration (39.09 µg/L) in the influent sample has increased slightly from the March 2016 sample results (38.87 µg/L). TCE (36.3 µg/L), cis-1,2-DCE (2.35 µg/L), 1,2-DCA (0.29 J µg/L), and chloroform (0.15 J µg/L) were detected at the influent sampling location. 1,2-DCA (0.27 J µg/L) was detected at the midpoint location. TCE (0.43 J µg/L) and cis-1,2-DCE (0.33 J µg/L) were detected at the effluent sampling location. The contaminants detected in the effluent sample were both below their respective effluent limitations of 5 µg/L.

Several extraction wells were off line during a portion of the reporting period. In early April, EW734x05 was shut down because the discharge piping at the pump effluent had come off, which caused pumped water to recirculate in the well rather than be pumped to the SBBGWTP. After the pipe was reconnected, the well operated normally. Also in early April, EW735x05 was shut down to clean out its check valve and replace its flow meter. In late April, EW01x05 experienced operational errors which faulted its variable frequency drive. Troubleshooting activities will be conducted in May 2016 to determine and address the problem. On 29 April, EW04x29 was taken off line due to a faulty flow meter and a blown fuse. Troubleshooting efforts will be conducted in May 2016 in order to get this well back on line.

Figure 1 presents a plot of influent concentrations and average flow at the SBBGWTP over the past twelve (12) months. An overall decrease in the VOC influent concentration has been observed in the past twelve months. Conversely, an overall increase in the flow rate has been observed in the past twelve months. The average flow rate at the SBBGWTP increased in April 2016 to 100.5 gpm from the March 2016 flow rate of 95.5 gpm.

## Optimization Activities

On 8 April, the new Site FT005 extraction well EW2291x05 was brought on line. This groundwater extraction well is part of the ongoing Site FT005 Technology Demonstration project.

## Sustainability

Travis AFB is committed to decreasing the amount of GHG produced directly (waste streams discharging GHG) or indirectly (GHG produced as related to electrical energy consumption) from all systems across Travis AFB. Travis AFB continues to optimize each treatment plant to reduce the amount of electrical energy consumed, and to implement sustainable treatment plant optimization programs, such as taking extraction pumps off line that are no longer necessary for contaminant plume capture.

Figure 2 presents the historical GHG production from the SBBGWTP. The SBBGWTP produced approximately 36,086 pounds of GHG during April 2016.

TABLE 4

Summary of Groundwater Analytical Data For April 2016 – South Base Boundary Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	5 April 2016 (µg/L)		
				Influent	Midpoint	Effluent
<b>Halogenated Volatile Organics</b>						
Carbon Tetrachloride	0.5	0.15	0	ND	ND	ND
Chloroform	5.0	0.15	0	0.15 J	ND	ND
Chloromethane	5.0	0.15	0	ND	ND	ND
1,1-Dichloroethane	5.0	0.15	0	ND	ND	ND
1,2-Dichloroethane	0.5	0.15	0	0.29 J	0.27 J	ND
1,1-Dichloroethene	5.0	0.15	0	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.15	0	2.35	ND	0.33 J
trans-1,2-Dichloroethene	5.0	0.15	0	ND	ND	ND
Methylene Chloride	5.0	0.15	0	ND	ND	ND
Tetrachloroethene	5.0	0.15	0	ND	ND	ND
1,1,1-Trichloroethane	5.0	0.15	0	ND	ND	ND
1,1,2-Trichloroethane	5.0	0.15	0	ND	ND	ND
Trichloroethene	5.0	0.15	0	36.3	ND	0.43 J
Vinyl Chloride	0.5	0.15	0	ND	ND	ND
<b>Non-Halogenated Volatile Organics</b>						
Benzene	1.0	0.15	0	ND	ND	ND
Ethylbenzene	5.0	0.15	0	ND	ND	ND
Toluene	5.0	0.15	0	ND	ND	ND
Xylenes	5.0	0.15 – 0.30	0	ND	ND	ND
<b>Other</b>						
Total Suspended Solids (mg/L)	NE	0.6	0	ND	NM	NM
Total Petroleum	50	30	0	NM	NM	ND
Hydrocarbons – Gasoline						
Total Petroleum	50	29	0	NM	NM	ND
Hydrocarbons – Diesel						

\* In accordance with Appendix B of the Travis AFB South Base Boundary Groundwater Treatment Plant Operations and Maintenance Manual (CH2M HILL, 2004).

## Notes:

J = analyte concentration is considered an estimated value due to a detected concentration value between the reporting limit and method detection limit for the contaminant

mg/L = milligrams per liter

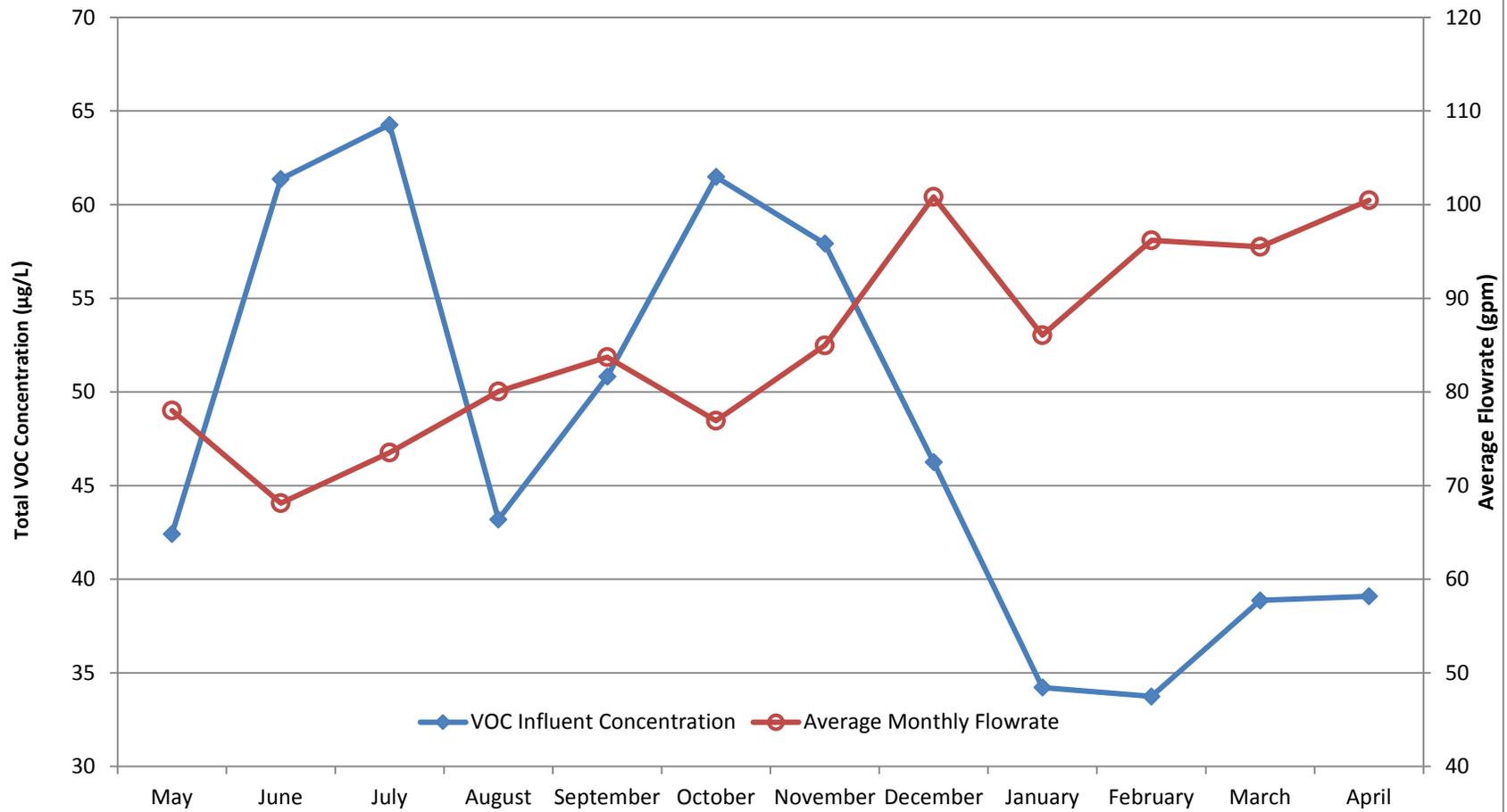
N/C = number of samples out of compliance with discharge limits

ND = not detected

NM = not measured

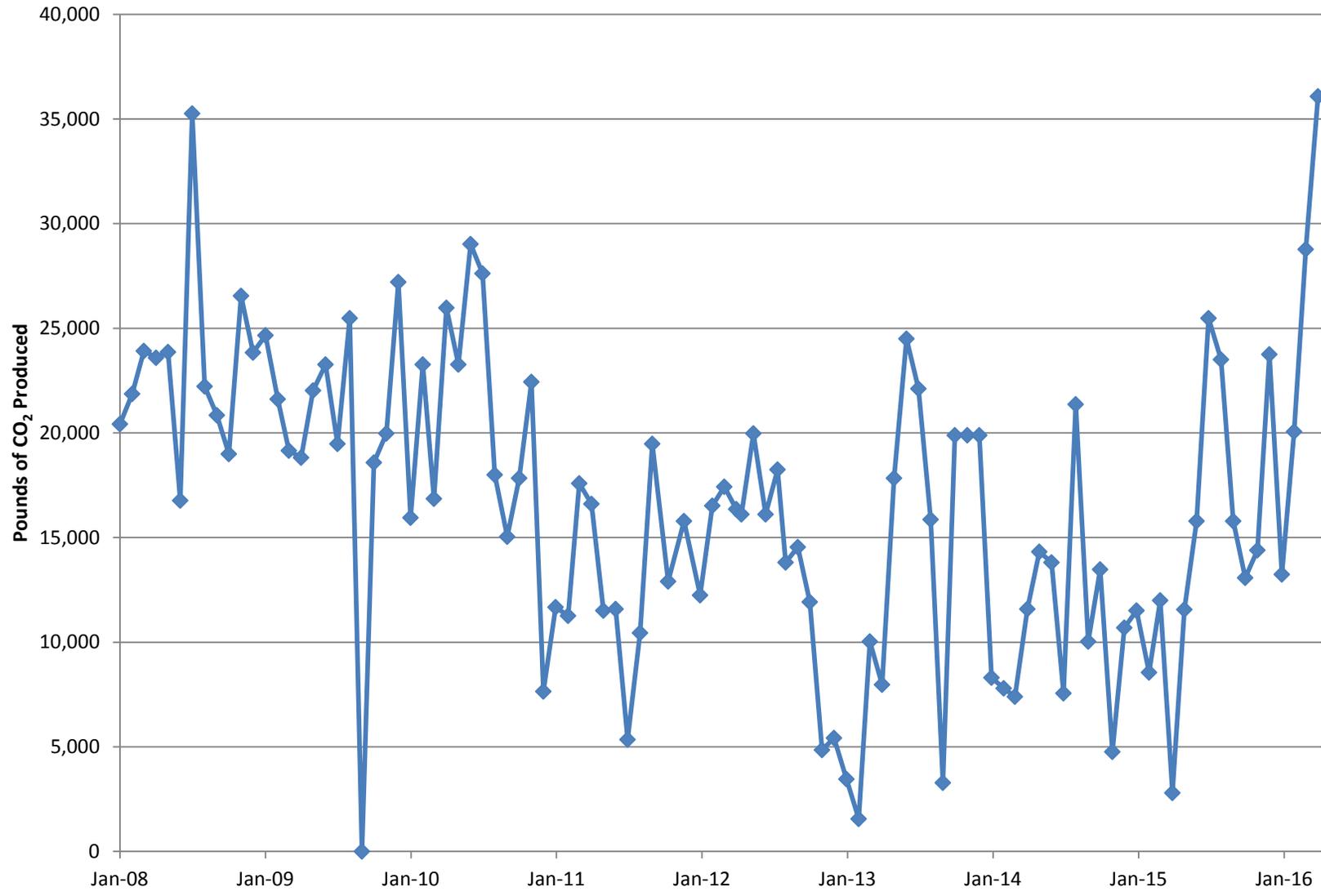
µg/L = micrograms per liter

**Figure 1**  
**SBBGWTP Total VOC Influent Concentrations and Average Flowrate**  
**Twelve Month History**  
**Travis Air Force Base, California**



**Figure 2**

**Equivalent Pounds of CO<sub>2</sub> Produced by the South Base Boundary Groundwater Treatment Plant**



# Central Groundwater Treatment Plant Monthly Data Sheet

Report Number: 201

Reporting Period: 30 March 2016 – 4 May 2016

Date Submitted: 13 May 2016

This monthly data sheet presents information regarding the Central Groundwater Treatment Plant (CGWTP) and its associated technology demonstrations. The ongoing technology demonstrations related to the CGWTP include various emulsified vegetable oil (EVO) injections and two (2) bioreactor treatability studies.

## System Metrics

Table 1 presents operational data from the April 2016 reporting period.

<b>Table 1 – Operations Summary – April 2016</b>			
<b>Initial Data Collection:</b>	3/30/2016 13:30	<b>Final Data Collection:</b>	5/4/2016 14:35
Operating Time:		Percent Uptime:	Electrical Power Usage:
<b>CGWTP:</b> 841 hours		<b>CGWTP:</b> 100%	<b>CGWTP:</b> 2,964 kWh (4,061 lbs CO <sub>2</sub> generated <sup>a</sup> )
Gallons Treated: <b>1,550,100 gallons</b>		Gallons Treated Since January 1996: <b>525.1 million gallons</b>	
VOC Mass Removed from groundwater:		VOC Mass Removed Since January 1996:	
<b>3.24 lbs<sup>b</sup></b>		<b>2,746 lbs from groundwater</b>	
		<b>8,686 lbs from vapor</b>	
Rolling 12-Month Cost per Pound of Mass Removed: \$1,964 <sup>c</sup>			
Monthly Cost per Pound of Mass Removed: \$3,207 <sup>c</sup>			
<sup>a</sup> Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.			
<sup>b</sup> Calculated using April 2016 EPA Method SW8260C analytical results.			
<sup>c</sup> Costs include operations and maintenance, reporting, analytical laboratory, project management, and utility costs related to operation of the system.			

Table 2 presents individual extraction well flow rates during the monthly reporting period.

<b>Table 2 – CGWTP Average Flow Rates<sup>a</sup> – April 2016</b>	
<b>Location</b>	<b>Average Flow Rate Groundwater (gpm)</b>
EW001x16	14.4
EW002x16	4.7
EW003x16	0.2
EW605x16	6.9
EW610x16	3.4
CGWTP	30.7

<sup>a</sup> Flow rates calculated by dividing total gallons processed by system operating time for the month or the average of the instantaneous readings.  
gpm = gallons per minute

Table 3 presents a summary of shutdowns during the monthly reporting period.

<b>Table 3 – Summary of System Shutdowns</b>					
<b>Location</b>	<b>Shutdown<sup>a</sup></b>		<b>Restart<sup>a</sup></b>		<b>Cause</b>
	<b>Date</b>	<b>Time</b>	<b>Date</b>	<b>Time</b>	
CGWTP	None.	--		--	None.

-- = Time not recorded  
<sup>a</sup> Shutdown and restart times estimated based on field notes  
CGWTP = Central Groundwater Treatment Plant

## Summary of O&M Activities

Monthly groundwater samples were collected at the CGWTP on 5 April 2016. Sample results are presented in Table 4. The total VOC concentration (251.0 µg/L) in the April 2016 influent sample has decreased slightly from the March 2016 sample (259.4 µg/L). TCE was detected in the influent sample at a concentration of 210 µg/L. Cis-1,2-DCE and vinyl chloride were detected at trace concentrations in the after carbon 1 effluent sample. Vinyl chloride was also detected at a trace concentration in the after carbon 2 effluent sample. Chloromethane was detected in the effluent sample at a trace concentration, but it was not detected in the influent sample. Chloromethane is not typically detected at the CGWTP, and it does not have an associated effluent limit or trigger value. Travis AFB will continue to monitor influent, midpoint, and effluent concentrations at the CGWTP for carbon breakthrough, though the carbon treatment remained effective in April 2016.

TPH-mo was detected in the effluent sample at a concentration of 48.3 J µg/L, which is below the trigger value of 50 µg/L. TPH-mo is not typically detected in the influent or effluent sampling location. TPH-g and TPH-d were not detected in the effluent sample.

Figure 1 presents a plot of influent concentrations (total VOCs) and the influent flow rate at the CGWTP versus time for the past twelve (12) months. The influent concentration has been gradually increasing since August 2015. The overall flow rate through the treatment plant has increased slightly over the past 12 months.

The annual 2016 Groundwater Remediation Implementation Program (GRIP) sampling event began in April 2016. During this sampling event, purge water collected from the various groundwater wells being sampled are treated through the CGWTP. During the April 2016 reporting period, approximately 100 gallons of purge

water was processed through the CGWTP. This amount of purge water is included in the 1.5 million gallons of treated water reported in Table 1.

There were no shutdowns in April 2016.

The Site DP039 bioreactor continues to operate in a “pulsed mode” in order to improve the rate of remediation and to preserve the amount of total organic carbon being produced within the bioreactor. The “pulsed mode” operation continued on a two (2) week transition schedule in April 2016. The bioreactor was brought on line on 8 April, taken off line on 22 April, and brought back on line on 4 May. The bioreactor is scheduled to continue the 2-week operating schedule.

## Optimization Activities

No optimization activities occurred at the CGWTP in April 2016.

## Sustainability

Travis AFB is committed to decreasing the amount of GHG produced directly (waste streams discharging GHG) or indirectly (GHG produced as related to electrical energy consumption) from all systems across Travis AFB. Travis AFB continues to optimize each treatment plant to reduce the amount of electrical energy consumed, and to implement sustainable treatment plant optimization programs, such as bioreactors and EVO injection well networks.

Figure 2 presents the historical GHG production from the systems associated with the CGWTP. The CGWTP produced approximately 4,061 pounds of GHG during April 2016. This is an increase from the March 2016 amount of 3,892 pounds.

TABLE 4

Summary of Groundwater Analytical Data for April 2016 – Central Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	5 April 2016 (µg/L)			
				Influent	After Carbon 1 Effluent	After Carbon 2 Effluent	System Effluent
<b>Halogenated Volatile Organics</b>							
Carbon Tetrachloride	0.5	0.15	0	ND	ND	ND	ND
Chloroform	5.0	0.15	0	ND	ND	ND	ND
Chloromethane	NA	0.15	0	ND	ND	ND	0.30 J
cis-1,2-Dichloroethene	5.0	0.15	0	37.6	0.19 J	ND	ND
1,2-Dichlorobenzene	5.0	0.15	0	0.32 J	ND	ND	ND
1,3-Dichlorobenzene	5.0	0.15	0	0.27 J	ND	ND	ND
1,4-Dichlorobenzene	5.0	0.15	0	ND	ND	ND	ND
1,1-Dichloroethane	5.0	0.15	0	ND	ND	ND	ND
1,2-Dichloroethane	0.5	0.15	0	ND	ND	ND	ND
1,1-Dichloroethene	5.0	0.15	0	ND	ND	ND	ND
Methylene Chloride	5.0	0.15	0	ND	ND	ND	ND
Methyl tert-Butyl Ether	1.0	0.15	0	ND	ND	ND	ND
Tetrachloroethene	5.0	0.15	0	0.47 J	ND	ND	ND
1,1,1-Trichloroethane	5.0	0.15	0	ND	ND	ND	ND
1,1,2-Trichloroethane	5.0	0.15	0	ND	ND	ND	ND
Trichloroethene	5.0	0.15 – 1.5	0	210	ND	ND	ND
trans-1,2-Dichloroethene	5.0	0.15	0	2.08	ND	ND	ND
Vinyl Chloride	0.5	0.15	0	0.22 J	0.21 J	0.31 J	ND
<b>Non-Halogenated Volatile Organics</b>							
Benzene	1.0	0.15	0	ND	ND	ND	ND
Ethylbenzene	5.0	0.15	0	ND	ND	ND	ND
Toluene	5.0	0.15	0	ND	ND	ND	ND
Total Xylenes	5.0	0.15 – 0.30	0	ND	ND	ND	ND
<b>Other</b>							
Total Suspended Solids (mg/L)	NA	0.6	0	ND	NM	NM	NM
Total Petroleum Hydrocarbons – Gasoline	50	30	0	NM	NM	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	29	0	NM	NM	NM	ND
Total Petroleum Hydrocarbons – Motor Oil	50 (trigger)	25	0	NM	NM	NM	48.3 J

\* In accordance with Appendix G of the Travis AFB Central Groundwater Treatment Plant Operations and Maintenance Manual (URS Group, Inc., 2002).

Notes:

J = analyte concentration is considered an estimated value due to a detected concentration value between the reporting limit and method detection limit for the contaminant

NA = not applicable

N/C = number of samples out of compliance with discharge limits

ND = not detected

NM = not measured

µg/L = micrograms per liter

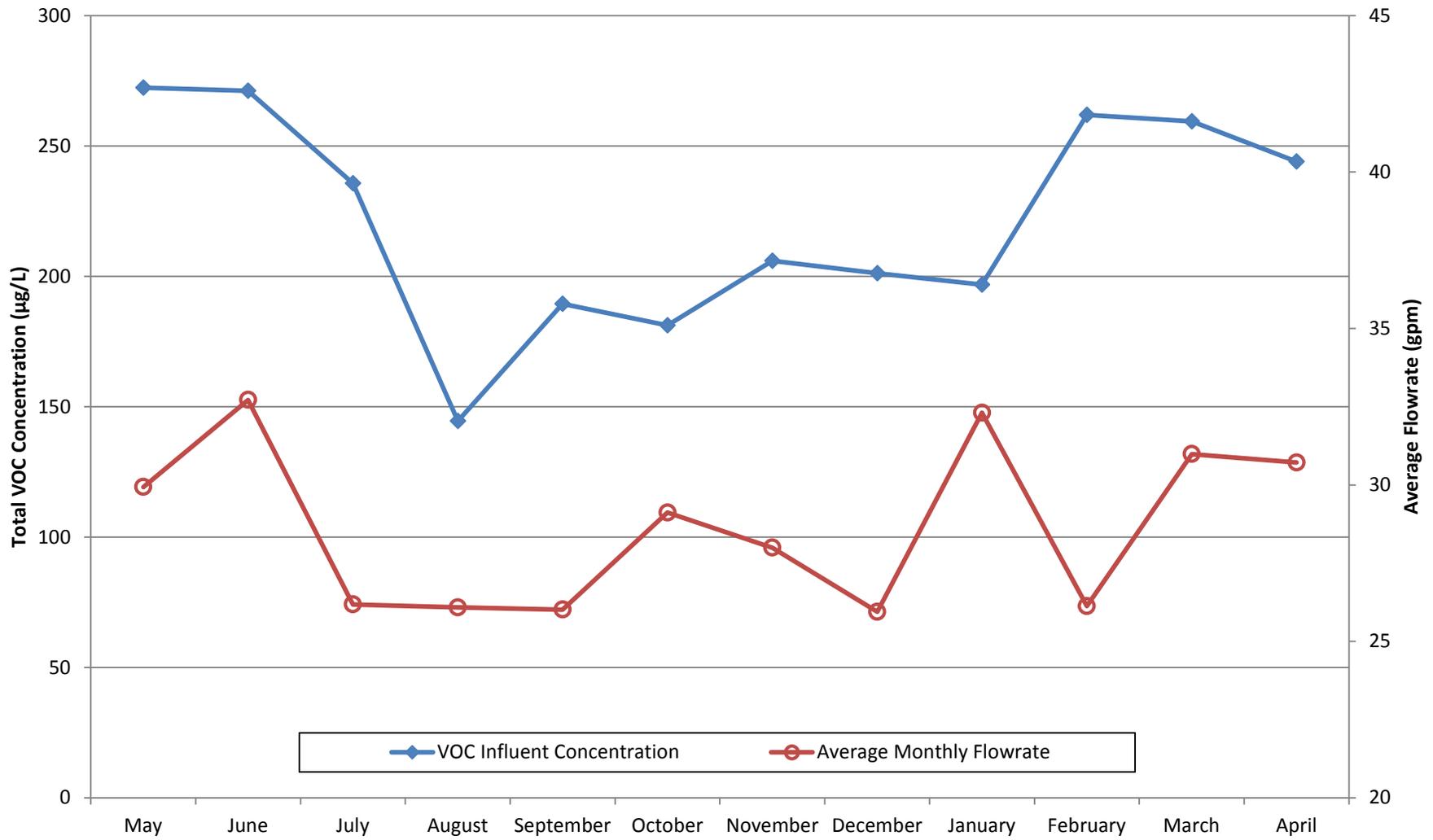
mg/L = milligrams per liter

Table 5 presents a twelve month summary of the Site DP039 bioreactor recirculation well pulsing dates.

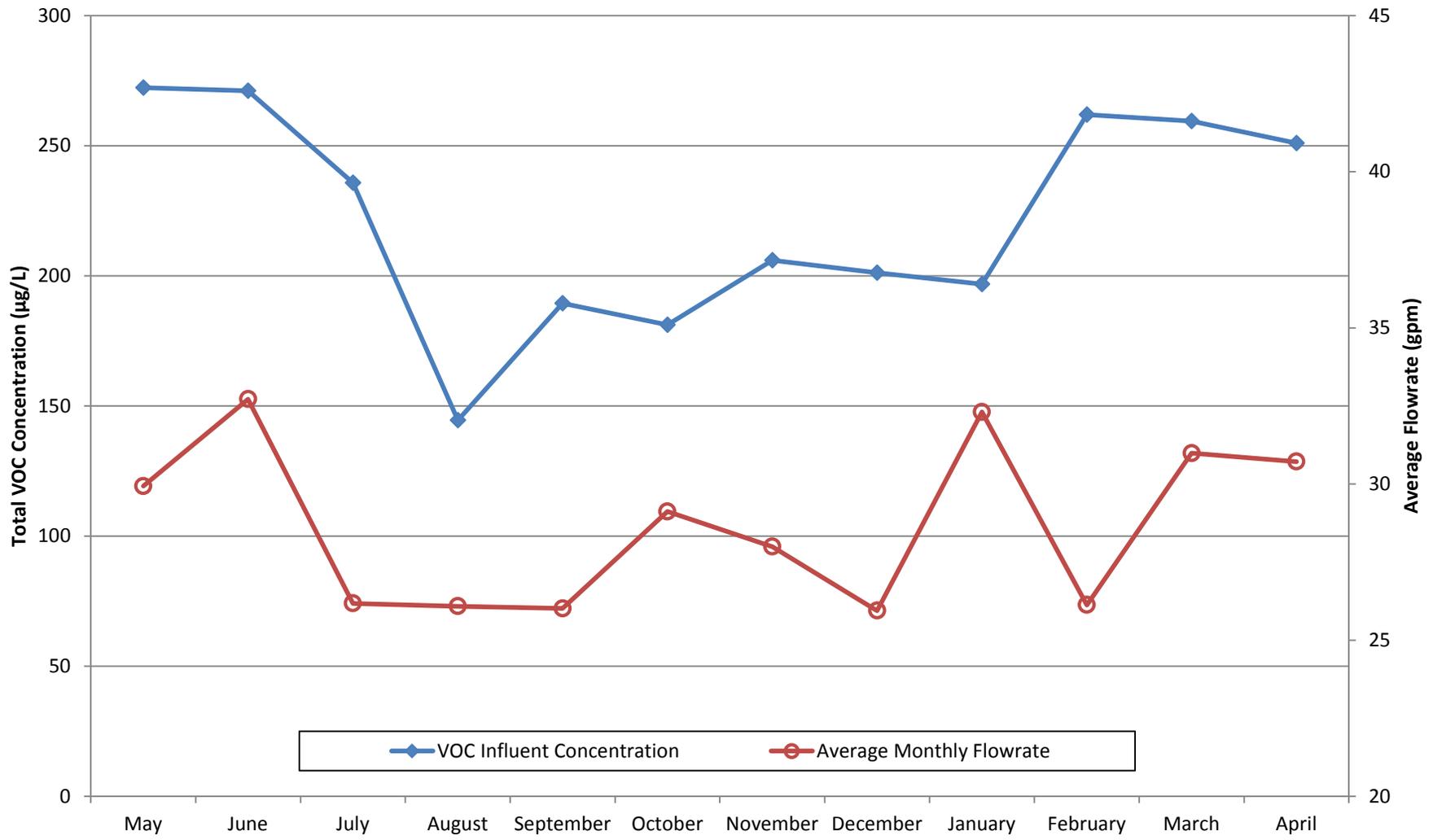
<b>Table 5 – Summary of DP039 Bioreactor “Pulsed Mode” Operations</b>		
<b>Location</b>	<b>Pulse On Start Date</b>	<b>Pulse Off Start Date</b>
MW750x39	8 May 2015	22 May 2015
	5 June 2015	19 June 2015
	3 July 2015	17 July 2015
	31 July 2015	14 August 2015
	28 August 2015	11 September 2015
	1 October 2015	9 October 2015
	23 October 2015	6 November 2015
	20 November 2015	8 December 2015
	21 December 2015	31 December 2015
	15 January 2016	1 February 2016
	12 February 2016	26 February 2016
	11 March 2016	28 March 2016
	8 April 2016	22 April 2016
	4 May 2016	

MW = Monitoring Well

**Figure 1**  
**CGWTP Total VOC Influent Concentrations and Average Flowrate**  
**Twelve Month History**  
**Travis Air Force Base, California**

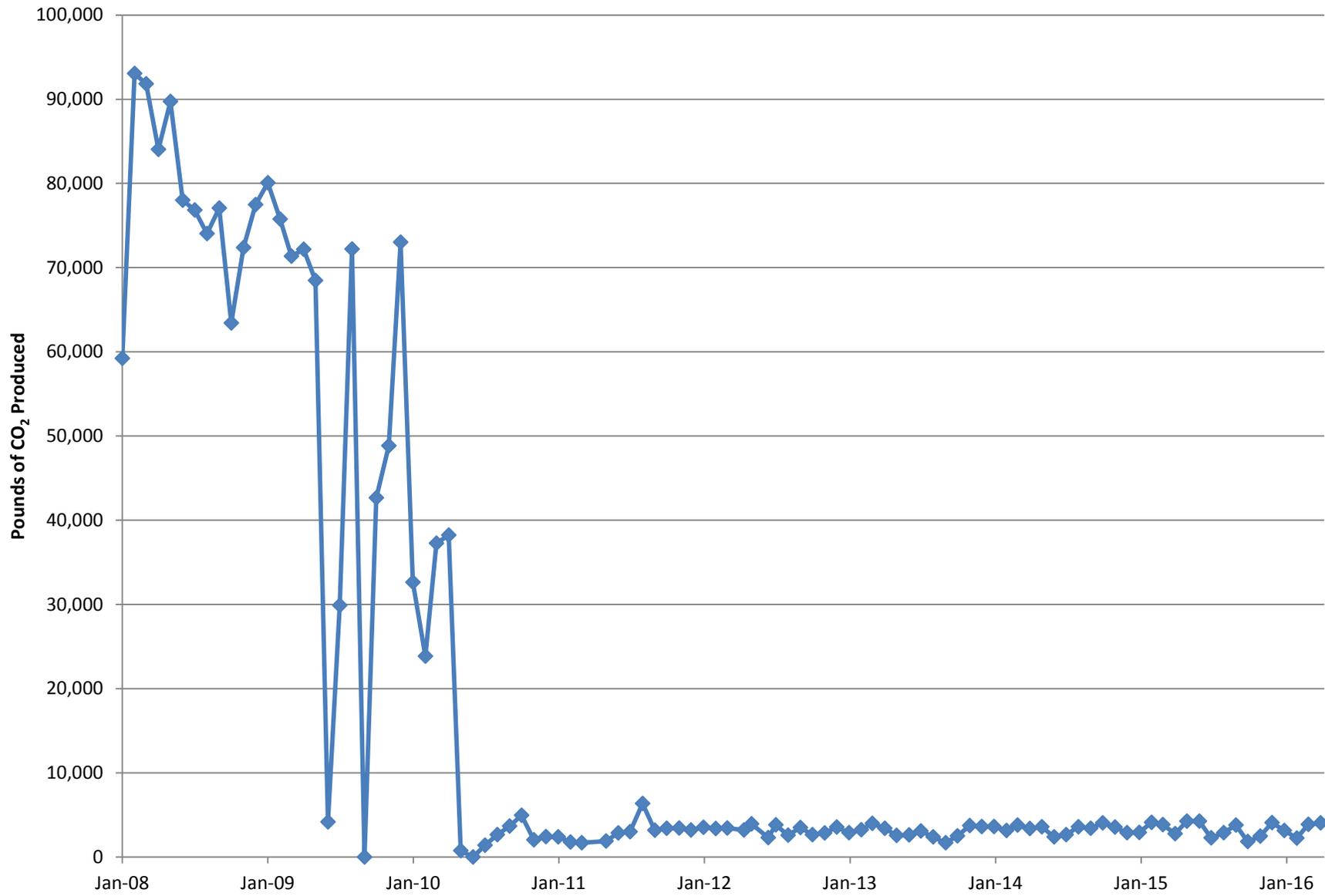


**Figure 1**  
**CGWTP Total VOC Influent Concentrations and Average Flowrate**  
**Twelve Month History**  
**Travis Air Force Base, California**



### Figure 2

### Equivalent Pounds of CO2 Produced by the Central Groundwater Treatment Plant



# Site ST018 Groundwater Treatment Plant Monthly Data Sheet

Report Number: 062

Reporting Period: 1 April 2016 – 6 May 2016

Date Submitted: 13 May 2016

This monthly data sheet presents information regarding the Site ST018 Groundwater Treatment Plant (ST018GWTP).

## System Metrics

Table 1 presents operation data from the April 2016 reporting period.

<b>Table 1 – Operations Summary – April 2016</b>			
<b>Initial Data Collection:</b>	4/1/2016 12:20	<b>Final Data Collection:</b>	5/6/2016 12:30
Operating Time:		Percent Uptime:	Electrical Power Usage:
<b>ST018GWTP:</b> 691 hours		<b>ST018GWTP:</b> 82.3%	<b>ST018GWTP:</b> 195 kWh (267 lbs CO <sub>2</sub> generated <sup>a</sup> )
Gallons Treated: <b>319,660 gallons</b>		Gallons Treated Since March 2011: <b>9.77 million gallons</b>	
Volume Discharged to Sanitary Sewer: <b>319,660 gallons</b>		Final Totalizer Reading: <b>9,771,749 gallons</b>	
Cumulative Volume Discharged to Sanitary Sewer since 1 November 2014: <b>3,275,575 gallons</b>			
MTBE, BTEX, VOC, TPH Mass Removed: <b>0.99 lbs<sup>b</sup></b>		MTBE, BTEX, VOC, TPH Mass Removed Since March 2011: <b>37.5 lbs</b>	
MTBE (Only) Removed: <b>0.24 lbs<sup>b</sup></b>		MTBE (Only) Mass Removed Since March 2011: <b>8.9 lbs</b>	
Rolling 12-Month Cost per Total Pounds of Mass Removed: \$8,989 <sup>bc</sup>			
Monthly Cost per Pound of Mass Removed: \$10,258 <sup>bc</sup>			
<sup>a</sup> Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.			
<sup>b</sup> Calculated using April 2016 EPA Method SW8260C and SW8015B analytical results.			
<sup>c</sup> Costs include operations and maintenance, reporting, analytical laboratory, project management, and utility costs related to operation of the system.			
kWh = kilowatt hour			
lbs = pounds			

Table 2 presents individual extraction well flow rates along with the average system flow during the monthly reporting period.

<b>Table 2 – ST018GWTP Average Flow Rates – April 2016</b>		
<b>Location</b>	<b>Average Flow Rate Groundwater (gpm)<sup>a</sup></b>	<b>Hours of Operation</b>
EW2014x18	1.6	691
EW2016x18	1.5	691
EW2019x18	1.6	691
EW2333x18	2.0	691
Site ST018 GWTP	7.7	691

<sup>a</sup> Flow rates calculated by dividing total gallons processed by amount of operating time of the pump/system.  
gpm = gallons per minute  
ST018GWTP = Site ST018 Groundwater Treatment Plant

Table 3 presents a summary of shutdowns during the monthly reporting period.

<b>Table 3 – Summary of System Shutdowns</b>					
<b>Location</b>	<b>Shutdown<sup>a</sup></b>		<b>Restart<sup>a</sup></b>		<b>Cause</b>
	<b>Date</b>	<b>Time</b>	<b>Date</b>	<b>Time</b>	
ST018GWTP	31 March 2016	15:30	7 April 2016	09:40	Cycling transfer pump.
ST018GWTP	12 April 2016	09:15	12 April 2016	17:45	Hi tank alarm from transfer pump when circuit protection tripped.

-- = Time not recorded  
<sup>a</sup> Shutdown and restart times estimated based on field notes  
ST018GWTP = Site ST018 Groundwater Treatment Plant

## Summary of O&M Activities

Monthly groundwater treatment samples were collected at the ST018GWTP on 5 April 2016. Results are presented in Table 4. The complete April 2016 laboratory data report is available upon request.

The influent concentration for MTBE during the April 2016 sampling event was 91.6 µg/L, which is a decrease from the March 2016 sample result of 105 µg/L. TPH-g (139 µg/L), TPH-d (78.2 J µg/L), TPH-mo (52.7 J µg/L) and benzene (2.23 µg/L) were also detected in the influent sample. TPH-d (27.0 J µg/L) and TPH-mo (27.6 J µg/L) were detected after the first carbon vessel. No contaminant concentrations were detected at the system effluent sampling location. All detected concentrations of TPH are well below the Fairfield-Suisun Sewer District effluent limitation for TPH of 50,000 µg/L. Travis AFB will continue to monitor effluent contaminant concentrations and evaluate the condition of the carbon filter beds.

Figure 1 presents plots of the flow rate and influent total contaminant (TPH-g, TPH-d, MTBE, BTEX, and VOCs) and MTBE concentrations at the ST018GWTP over the past twelve (12) months. As shown on Figure 1, the total influent concentrations have varied considerably throughout the past twelve months, which is primarily because of the TPH-g concentration; however, overall concentrations have increased slightly. The MTBE concentration has remained relatively steady with concentrations near 100 µg/L. The average flow rate

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through the ST018GWTP has been seasonally variable with a recent increasing trend. The April 2016 flow rate of 7.7 gpm has increased slightly since the March 2016 flow rate of 6.2 gpm.

In March 2016, the nipple at the base of the middle GAC vessel broke, and the middle vessel was isolated. Throughout this reporting period, the ST018GWTP operated with only two GAC vessels. A new fitting has been ordered and will be replaced in May 2016. Once replaced, all three (3) GAC vessels will be operational.

On 31 March, the ST018GWTP was shut down because the transfer pump was rapidly cycling. On 7 April, a new relay was installed and the system was restarted without issue. On 12 April, a tank Hi alarm shut the system down because the transfer pump circuit protection tripped. During the shutdown, the motor starter was replaced and other maintenance were performed. The system was restarted on 12 April and remained operational throughout the rest of the reporting period.

## Optimization Activities

No optimization activities occurred at the ST018GWTP in April 2016.

## Sustainability

Travis AFB is committed to decreasing the amount of GHG produced directly (waste streams discharging GHG) or indirectly (GHG produced as related to electrical energy consumption) from all systems across Travis AFB. Travis AFB continues to optimize each treatment plant to reduce the amount of electrical energy consumed, and to implement sustainable treatment plant optimization programs, such as the solar arrays employed to power the ST018GWTP system.

The ST018GWTP produced 267 pounds of GHG during April 2016 and treated 319,660 gallons of water, which was an increase from March 2016 (197 pounds, treating 209,600 gallons). Figure 2 presents the historical GHG production from the ST018GWTP. The GHG generation has reached a new peak but remains considerably lower than traditional GWTPs since the system is predominantly powered by solar arrays.

TABLE 4

Summary Of Groundwater Analytical Data for April 2016 – Site ST018 Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	5 April 2016 (µg/L)			System Effluent
				Influent	After Carbon 1	After Carbon 2**	
<b>Fuel Related Constituents</b>							
Methyl tert-Butyl Ether	6,400	0.15	0	91.6	NM	NA	ND
Benzene	25,000 <sup>a</sup>	0.15	0	2.23	NM	NA	ND
Ethylbenzene	25,000 <sup>a</sup>	0.15	0	2.74	NM	NA	ND
Toluene	25,000 <sup>a</sup>	0.15	0	0.32 J	NM	NA	ND
Total Xylenes	25,000 <sup>a</sup>	0.15 – 0.30	0	6.17	NM	NA	ND
Total Petroleum Hydrocarbons – Gasoline	50,000 <sup>b</sup>	30	0	139	ND	NA	ND
Total Petroleum Hydrocarbons – Diesel	50,000 <sup>b</sup>	28.3	0	78.2 J	27.0 J	NA	ND
Total Petroleum Hydrocarbons – Motor Oil	100,000	29	0	52.7 J	27.6 J	NA	ND
<b>Other</b>							
1,2-Dichloroethane	0.5	0.15	0	0.89	NM	NA	ND

\* In accordance with the Fairfield-Suisun Sewer District Effluent Limitations

\*\* The middle GAC vessel remains isolated, and the system operates with only two GAC vessels.

Laboratory data available on request.

a – The limit of 25,000 µg/L is a combined limit for BTEX.

b – The limit of 50,000 µg/L is a combined limit for TPH-g and TPH-d

µg/L = micrograms per liter

J = analyte concentration is considered an estimated value due to a detected concentration value between the reporting limit and method detection limit for the contaminant

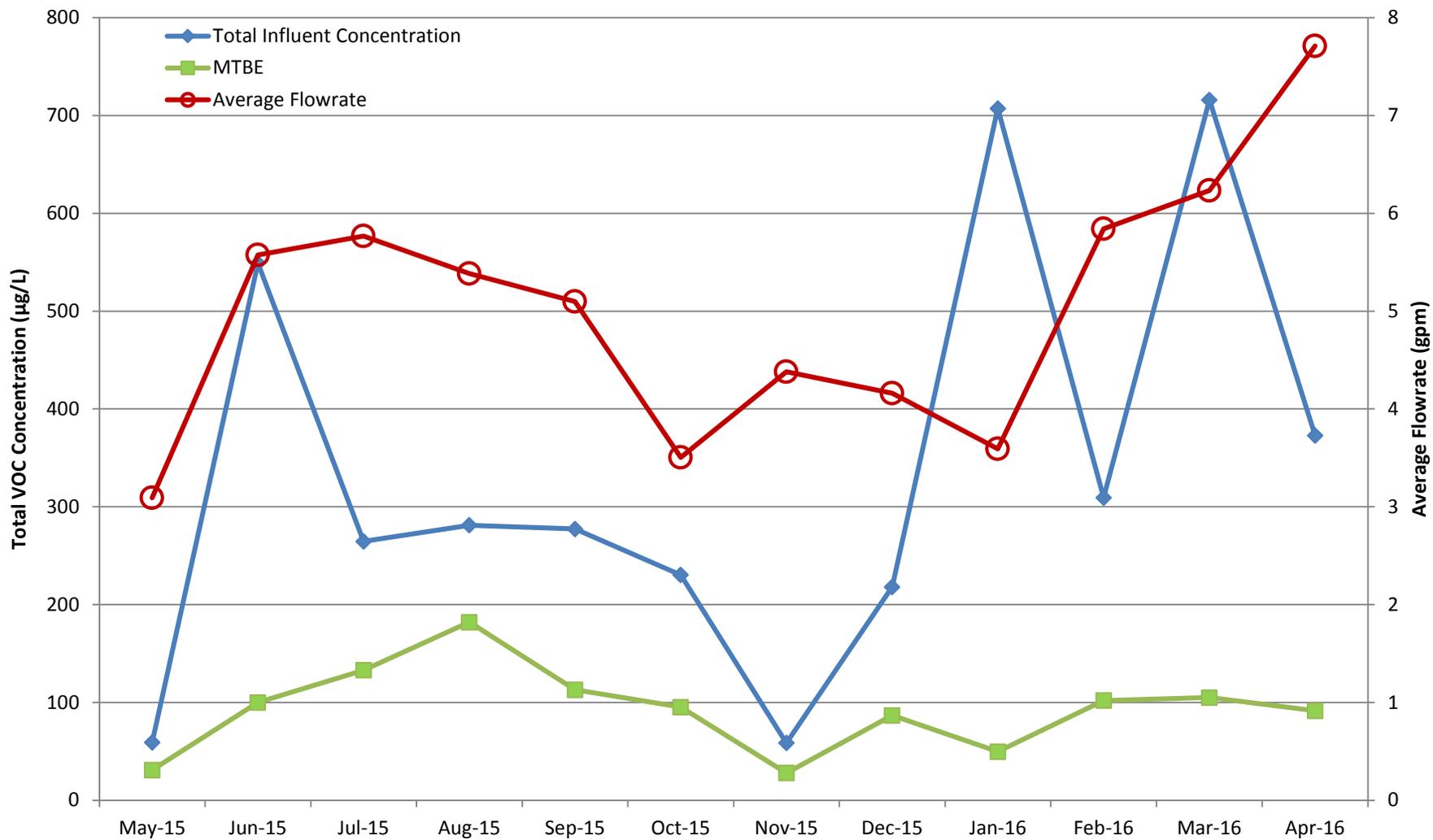
NA = not applicable

N/C = number of samples out of compliance with discharge limits

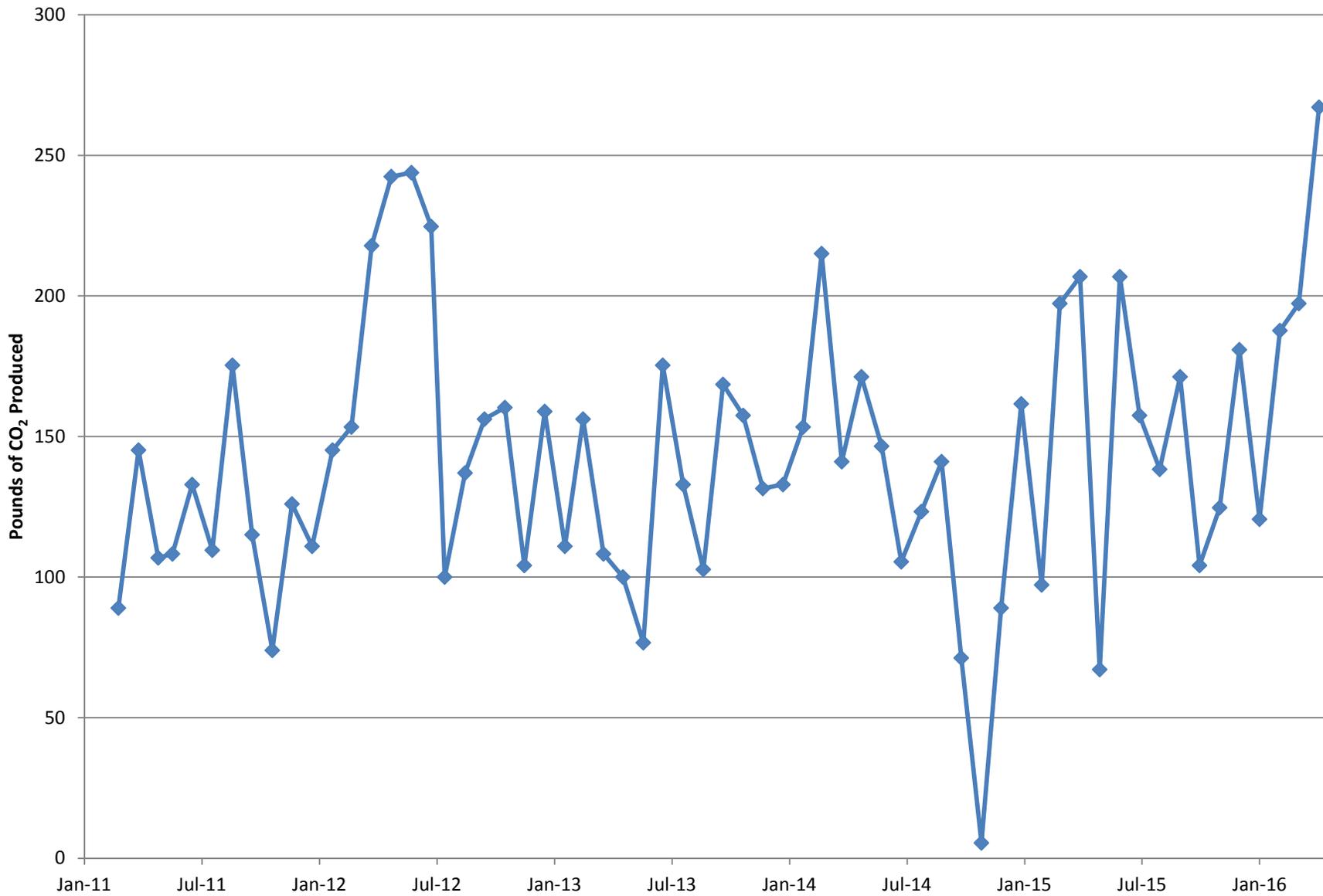
ND = not detected above method detection limit

NM = not measured this month

**Figure 1**  
**ST018GWTP Total VOC and MTBE Influent Concentrations**  
**and Average Flowrate Twelve Month History**  
**Travis Air Force Base, California**



**Figure 2**  
**Equivalent Pounds of CO<sub>2</sub> Produced by the Site ST018 Groundwater Treatment Plant**



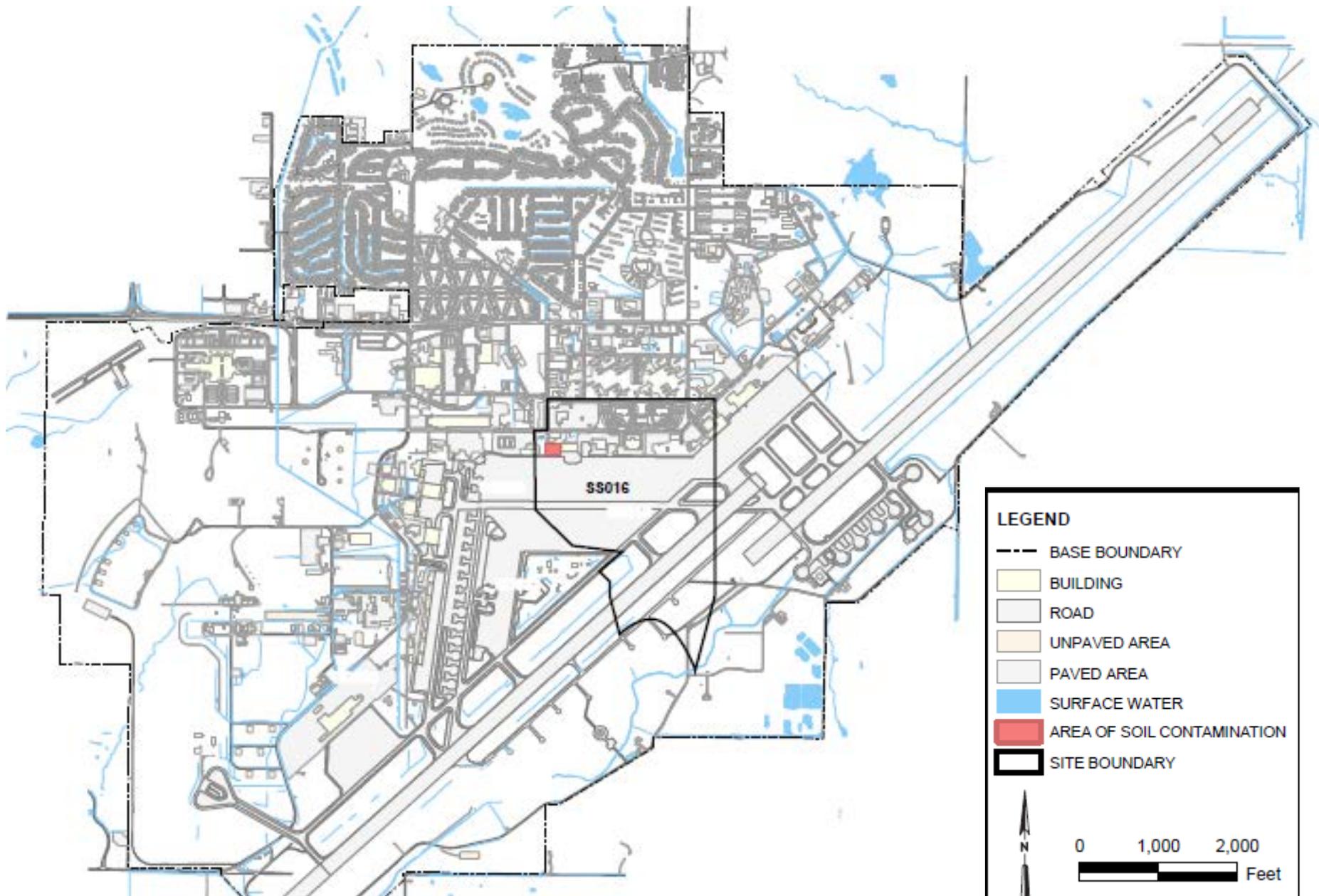
# SS016 Soil Data Gap Investigation Work Plan

RPM Meeting

May 18, 2016

# Agenda

- Site Background
- Purpose of Data Gap Investigation
- Nature and Extent of Soil Contamination
- Conceptual Design
- Soil Sampling Plan
- Data Quality Objectives
- Reporting



**LEGEND**

- BASE BOUNDARY
- BUILDING
- ROAD
- UNPAVED AREA
- PAVED AREA
- SURFACE WATER
- AREA OF SOIL CONTAMINATION
- SITE BOUNDARY

N

0 1,000 2,000 Feet

# Site Background

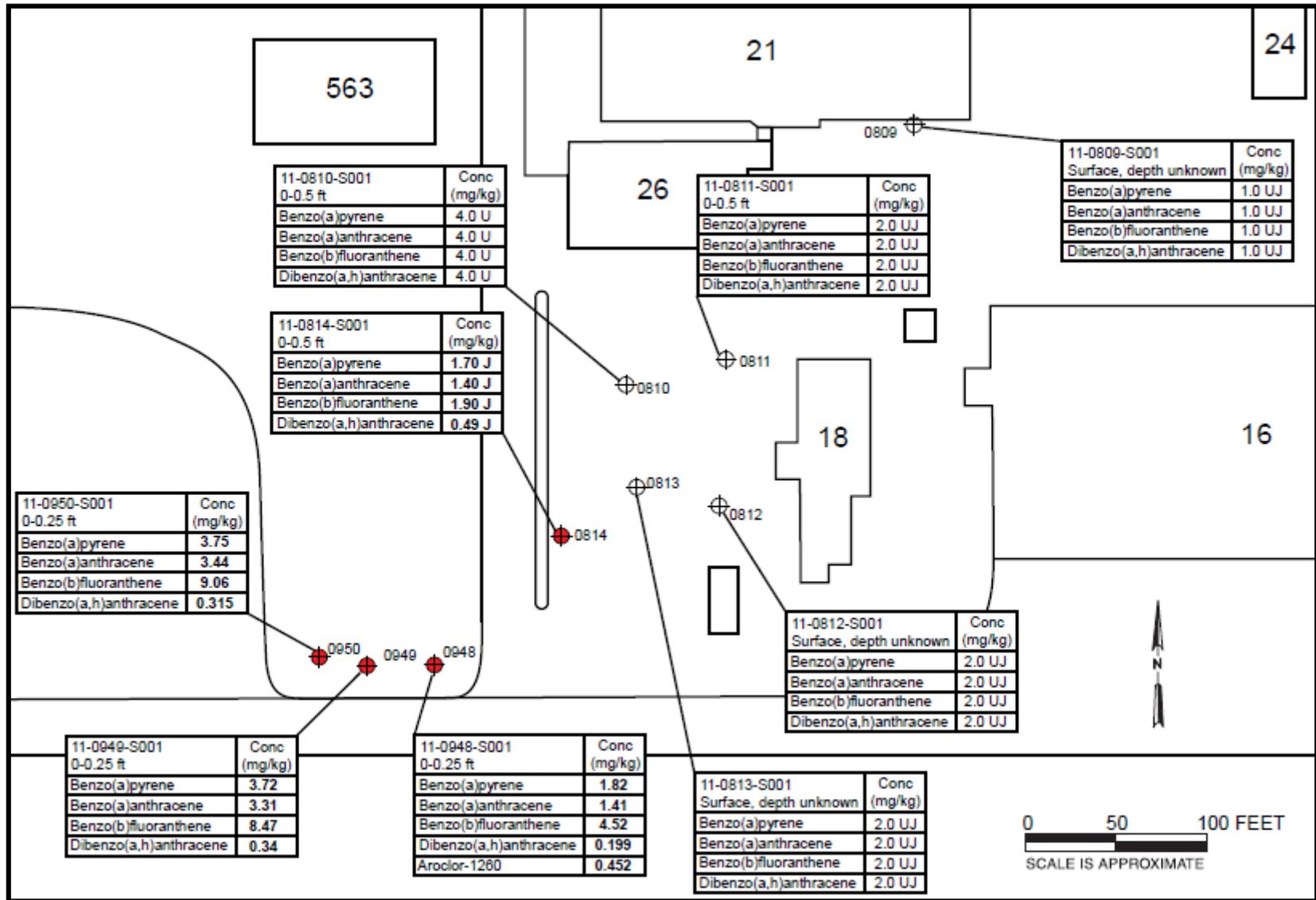
- Site SS016 is comprised of the Oil Spill Area (OSA); Facilities 11, 13/14, 18, 20, and 42/1941; and portions of the Storm Sewer System
- Within an active area of Travis AFB with ongoing maintenance activities and an aircraft parking apron
- Cleaning and degreasing operations historically occurred at Facility 18, which included a wash rack, an oil-water separator (OWS), and a subsurface open-top cement tank.
- Most of the area is now paved, some areas of exposed soil still remain.
- Similar historical practices likely resulted in the contamination of surface soil in an exposed soil area and adjacent paved area located to the west of Facility 18 (south of Facility 563).
- Based on results of the Remedial Investigation (1995), LUCs for soil were implemented as part of the NEWIOU SSSW ROD (2006).

## Purpose of Data Gap Investigation

- Reassess the need to conduct additional remedial actions at Site SS016, in order to remove current land use controls (LUCs).
- Collect additional soil samples to evaluate the extent of soil contamination, and support reevaluation of human health risks under a residential exposure scenario.

# Nature and Extent of Soil Contamination

- Soil contamination is limited to the Oil Spill Area near Facility 18.
- PAHs and polychlorinated biphenyls (PCBs) were identified at depths ranging from 1 to 5 feet below ground surface.
- Soil COCs: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, Aroclor-1260
- Total petroleum hydrocarbon (TPH) contamination was previously identified throughout Site SS016, but No Action was determined to be necessary for soil TPH contamination because less than 1 percent of the samples exceed the Water Board Environmental Screening Level (ESL), and the Air Force and regulatory agencies have agreed that TPH-contaminated soil at Site SS016 will naturally attenuate.
- Most recent data set is over 20 years old.
- TCE contaminated groundwater is being addressed under a separate ROD (2014).



## LEGEND



PREVIOUS SOIL SAMPLE LOCATION

PREVIOUS SOIL SAMPLE WITH PAHs ABOVE RESIDENTIAL CLEANUP GOALS

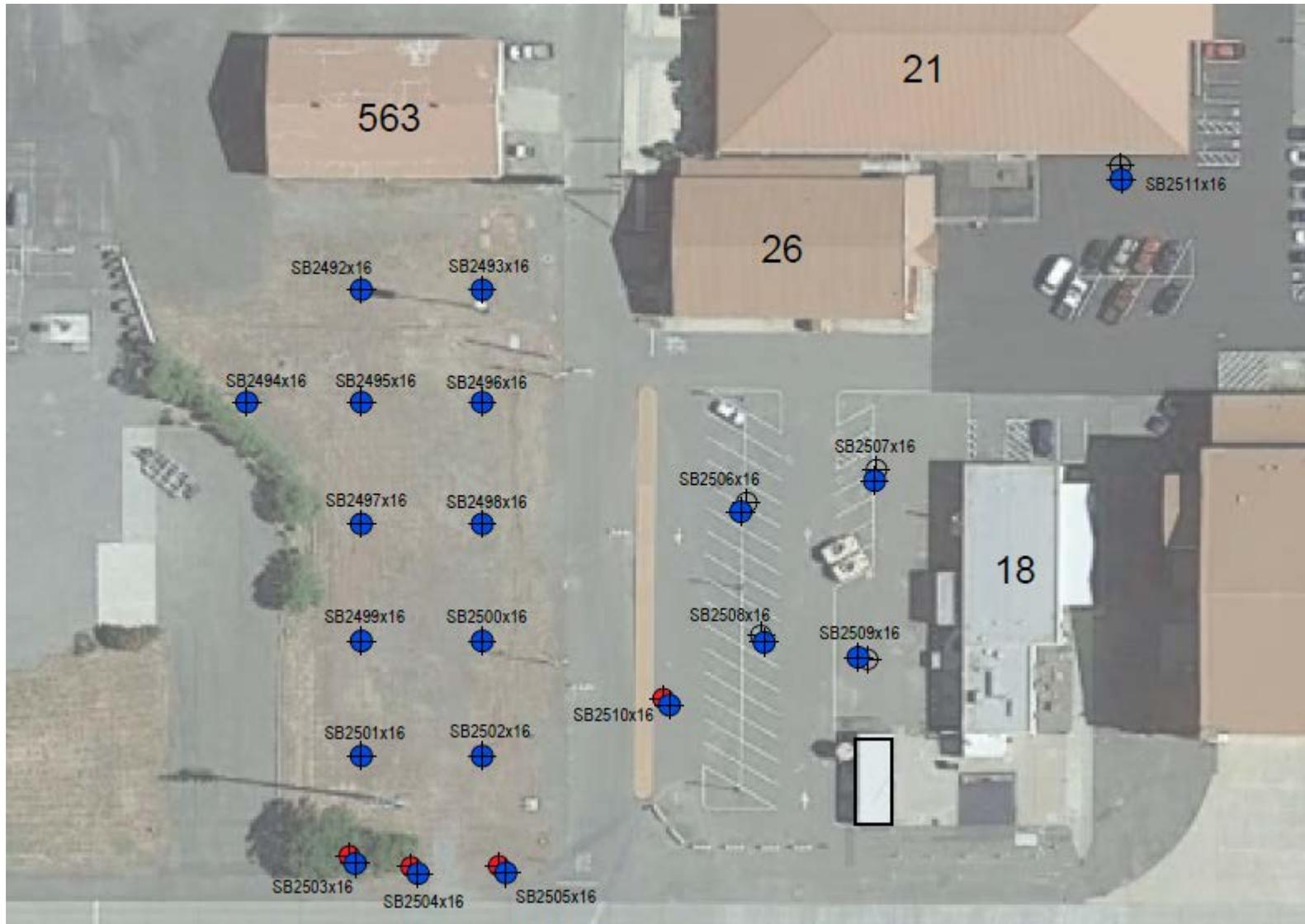
J = ESTIMATED CONCENTRATION

SOURCE: ADAPTED FROM EIOU REMEDIAL INVESTIGATION (WESTON, 1995)

# Conceptual Design

- The conceptual design is to collect soil samples to delineate the extent of soil contamination, including in areas where contaminants of concern were previously nondetect but detection limits were above residential cleanup goals.
- Update the risk assessment calculations under a residential scenario to determine whether additional actions at the site would support the removal of current LUCs.
- Utilize new data set to determine the limits of excavation, if any. Excavation will be conducted at a later date (estimated 2017).

# Soil Sampling Plan



-  SOIL SAMPLE LOCATION (3 DEPTH INTERVALS PER SAMPLE, REFER TO WORKSHEET #18)
-  PREVIOUS SOIL SAMPLE LOCATION, PAHs NOT DETECTED
-  PREVIOUS SOIL SAMPLE WITH PAHs ABOVE RESIDENTIAL CLEANUP GOALS

# Soil Sampling Plan

- Collect soil samples from 20 locations based on:
  - Locations of previous exceedances
  - Locations of previous NDs with detection limits that exceeded ESLs
  - Exposed soil south of Facility 563 that is the known location of grading activities that may have spread contamination
- Three depths per sample:
  - 0 to 0.5 feet bgs
  - 2.5 feet bgs
  - 5.0 feet bgs
- Analyze samples for PAHs, PCBs

# Data Quality Objectives

**TABLE 15-1**

Comparison of Laboratory MDLs, LODs, and LOQs for TestAmerica, Denver  
*Site SS016 Soil Data Gap Investigation Work Plan, Travis Air Force Base, California*

Method	Analyte	CAS No.	Units	MDL	LOD	LOQ	Site SS016 Cleanup Level <sup>(1)</sup>	MDL Exceeds Cleanup Level?	LOD Exceeds Cleanup Level?	LOQ Exceeds Cleanup Level?
SW8270C/D DSIM	Benzo(a)anthracene	56-55-3	µg/kg	0.160	2.500	5	620	No	No	No
	Benzo(a)pyrene	50-32-8	µg/kg	0.170	2.500	5	62	No	No	No
	Benzo(b)fluoranthene	205-99-2	µg/kg	0.720	2.500	5	620	No	No	No
	Dibenzo(a,h)anthracene	53-70-3	µg/kg	1.100	2.500	5	62	No	No	No
SW8082/8082A	Aroclor-1260	11096-82-5	µg/kg	2.65	10.0	33.0	240 <sup>(2)</sup>	No	No	No

<sup>1</sup> Unless otherwise noted, source is the NEWIOU SSSW ROD (Travis AFB, 2006)

<sup>2</sup> Source: EPA Residential Regional Screening Level, updated November 2015

Notes:

CAS = Chemical Abstracts Service

LOD = limit of detection

MDL = method detection limit

# Reporting

- The Air Force will update the risk assessment calculations that supported the selected remedies.
- Determine whether additional action (excavation) would support the removal of current LUCs.
- Results of the data gap investigation and the updated human health risk assessment (HHRA) will be reported in a technical memorandum.
- If the Air Force decides to conduct additional remedial actions beyond the ROD-selected remedy, then the site will be included in an amendment to the ROD.

Questions?

# Site TS060

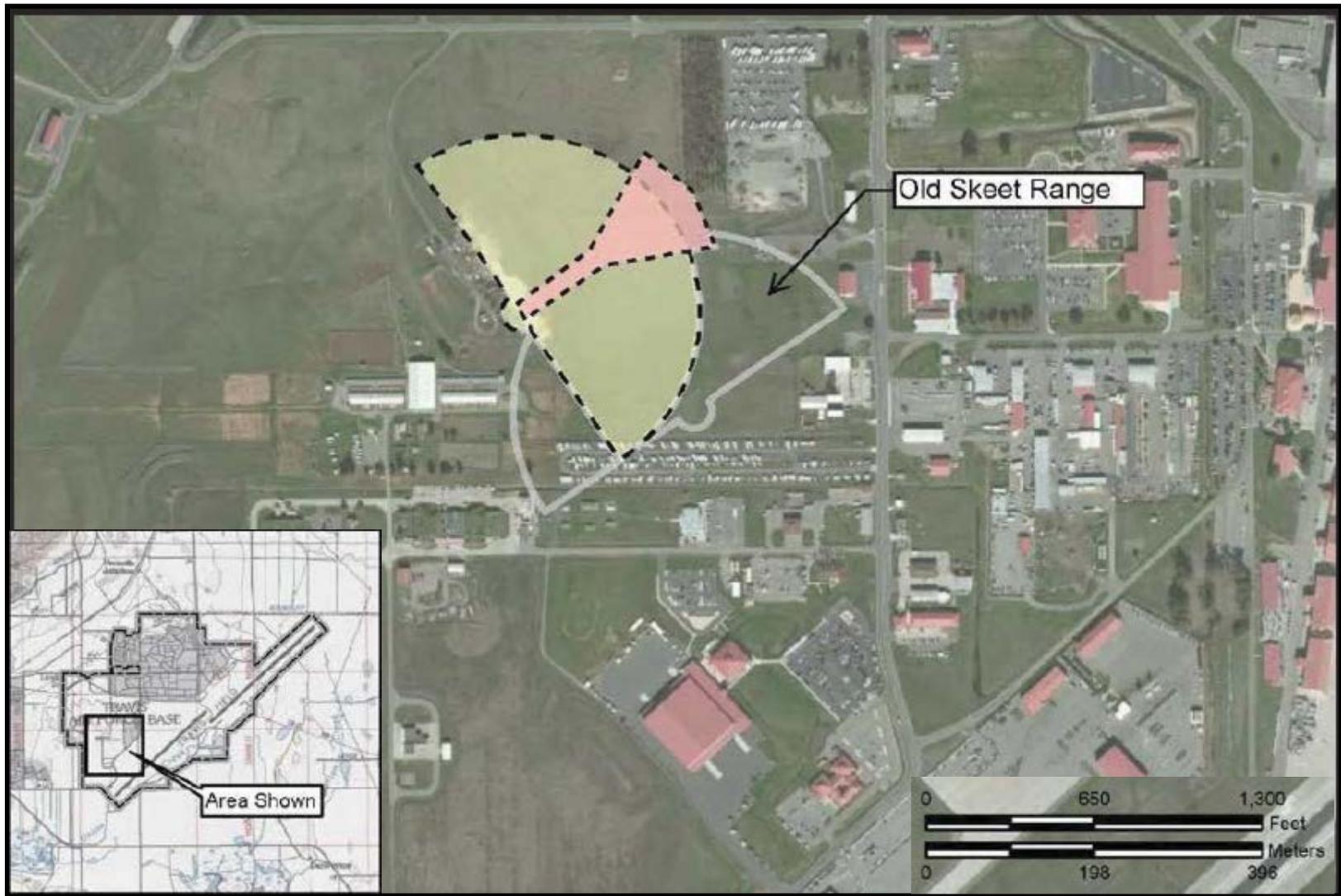
## Removal Action Work Plan

RPM Meeting

May 18, 2016

# Agenda

- Background
- Extent of Contamination
- Action Memorandum Objectives
- Removal Action Work Plan Objectives
- Contaminated Soil Management
- Post-Excavation Confirmation Sampling
- Data Quality Objectives
- Reporting



# Background

- Former skeet range that was moved in 1962 due to prevailing wind direction.
- PAH and lead contamination was thought to be delineated as part of Phase II Comprehensive Site Evaluation (2011)
- Removal action was planned for PAH contaminated soil, and an EE/CA was prepared (2012). The Air Force and EPA Region 9 agreed that lead contaminated soil would remain in place until the active skeet range was closed and investigated. An Action Memorandum was submitted in 2013.
- During pre-removal sampling, PAH contamination was determined to be more widespread than expected. An additional site investigation was conducted to fully delineate PAHs (2015).
- The Air Force now intends to address both PAH and lead contaminated soils under the Performance-Based Contract.

# Extent of Contamination

- Soil contamination limited to surface and shallow subsurface soils
- Lead
  - Contamination delineated in 2011 (Phase II CSE) with 114 XRF samples, verified with analytical data.
  - Maximum depth = 6 inches
  - Residential cleanup goal: CHHSL = 80 mg/kg
- PAHs
  - Sampled in 2011 (5 samples), and completely delineated in 2015.
  - Maximum depth interval: 2 to 3 feet bgs
  - Residential cleanup goal: EPA RSLs for seven PAHs

# Delineation Samples, 2011 and 2015



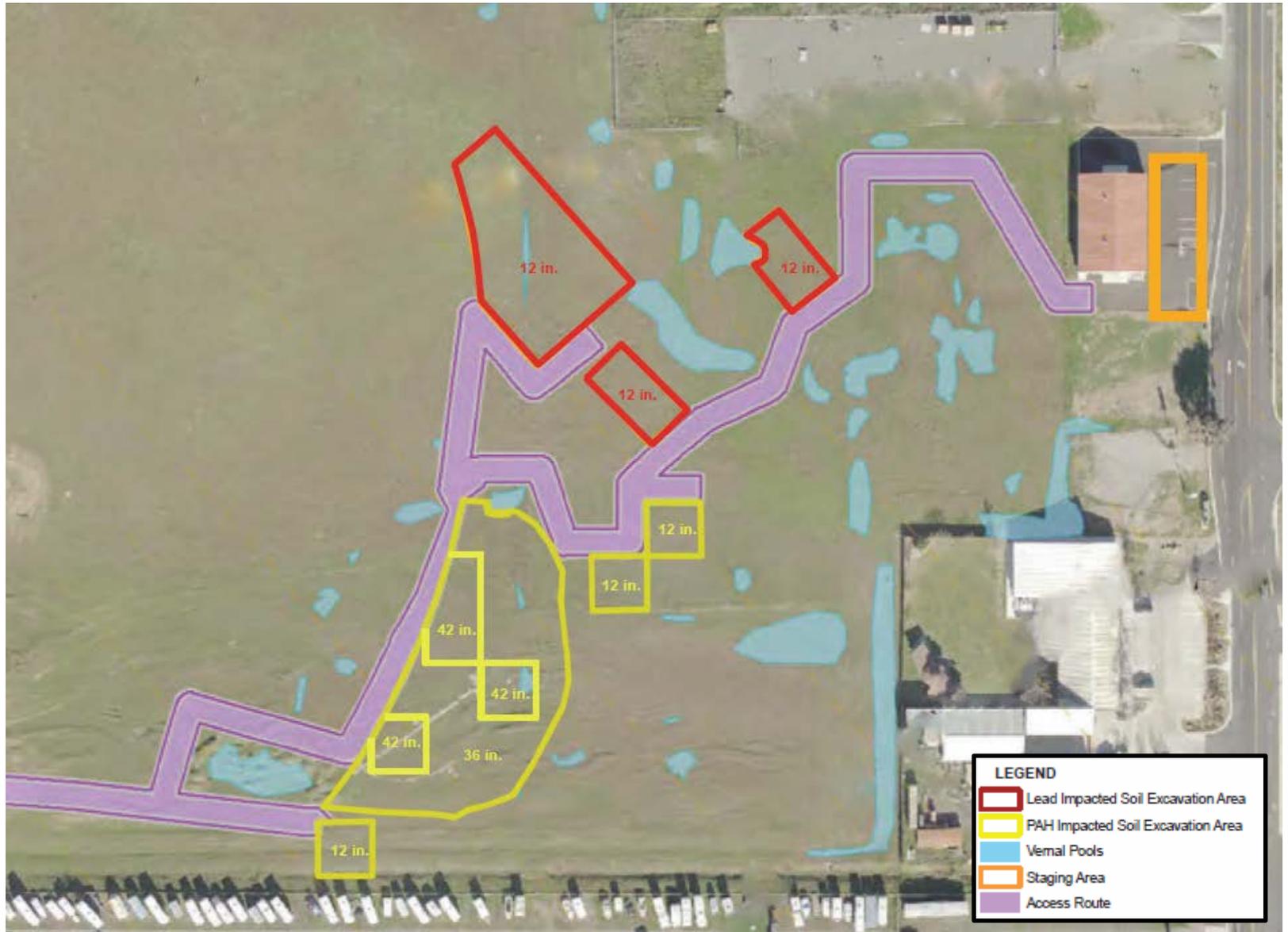
# Action Memorandum Objectives

- Formally document the selection of the remedy identified in the EE/CA.
- Supersedes the 2013 Action Memorandum, which only included PAH-contaminated soils
- Document residential cleanup criteria
  - CHHSL for lead
  - EPA RSLs for PAHs

# Removal Action Work Plan Objectives

- Define the limits of excavation
- Describe management of contaminated soil
  - Onsite thermal treatment of PAH-contaminated soil
  - Offsite disposal of lead-contaminated soil
- Establish Data Quality Objectives for:
  - Waste characterization samples
  - Confirmation samples
  - Post-thermal treatment samples
- Describe confirmation sampling rationale and methodology

# Limits of Excavation



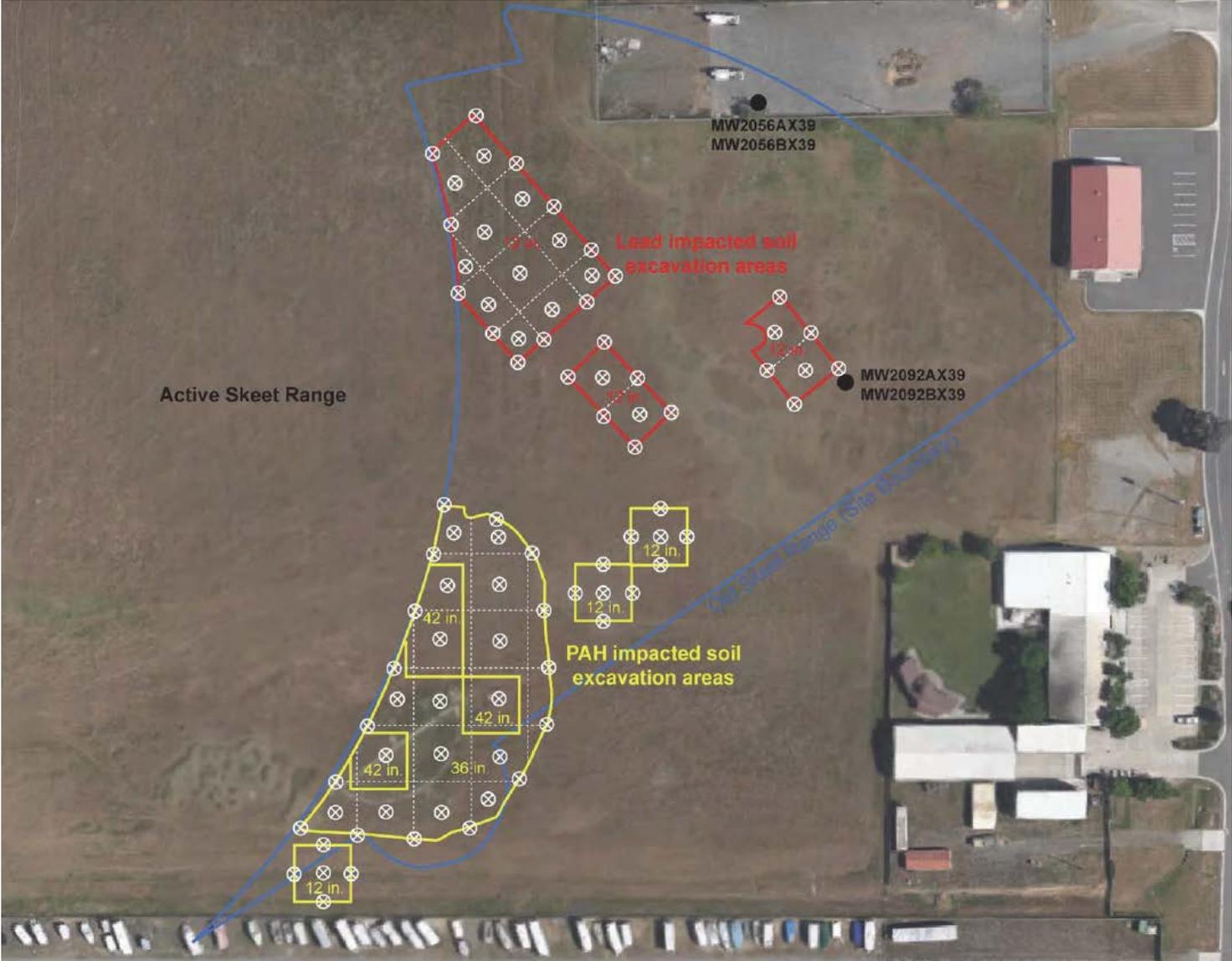
# Contaminated Soil Management

- Lead contaminated soils
  - Estimated quantity = 1,260 cubic yards
  - Characterized to ensure waste is non-hazardous prior to excavation
  - Excavated and transported to Hay Road Landfill in Vacaville
- PAH contaminated soils
  - Estimated quantity = 3,700 cubic yards
  - *Either* thermally treated using Endpoint Technology LLC's patented Vapor Energy Generator (VEG) soil remediation system
  - *Or* disposed offsite with lead contaminated soils

# Post-Excavation Confirmation Sampling

- Discrete confirmation samples will be collected from excavation floors based on a centrally-aligned 50 x 50 foot grid.
- Sidewall samples will be collected at the mid-point of the excavation depth in approximate 50-foot intervals
- Samples in the lead areas will be analyzed for lead only, samples in the PAH areas will be analyzed for PAHs only.
- If results exceed cleanup criteria, additional excavation will be conducted and additional confirmation samples collected.

# Post-Excavation Confirmation Sampling



# Data Quality Objectives

**TABLE 15-1**  
Comparison of Laboratory MDLs, LODs, and LOQs for TestAmerica, Denver  
Site TS060 Removal Action Work Plan, Travis Air Force Base, California

Method	Analyte	CAS No.	Units	MDL	LOD	LOQ	Cleanup Level	Cleanup Level Source*	MDL Exceeds Cleanup Level?	LOD Exceeds Cleanup Level?	LOQ Exceeds Cleanup Level?
SW8270C/D-SIM	Benzo(a)anthracene	56-55-3	µg/kg	0.16	2.5	5	160	a	No	No	No
	Benzo(a)pyrene	50-32-8	µg/kg	0.17	2.5	5	16	a	No	No	No
	Benzo(b)fluoranthene	205-99-2	µg/kg	0.72	2.5	5	160	a	No	No	No
	Chrysene	218-01-9	µg/kg	1.0	2.5	5	16,000	a	No	No	No
	Dibenzo(a,h)anthracene	53-70-3	µg/kg	1.1	2.5	5	16	a	No	No	No
	Indeno(1,2,3-cd)pyrene	193-39-5	µg/kg	1.3	2.5	5	160	a	No	No	No
	Naphthalene	91-20-3	µg/kg	0.326	0.667	5	3,800	a	No	No	No
SW6010C	Lead	7439-92-1	mg/kg	0.270	0.80	0.90	80	b	No	No	No
TTLIC Metals	TTLIC cadmium	7440-43-9	mg/kg	0.410	0.100	0.5	100	c	No	No	No
	TTLIC chromium	7440-47-3	mg/kg	0.058	0.150	3.5	2,500	c	No	No	No
	TTLIC lead	7439-92-1	mg/kg	0.270	0.80	0.90	1,000	c	No	No	No
	TTLIC nickel	7782-49-2	mg/kg	0.123	0.200	4	2,000	c	No	No	No
	TTLIC zinc	7440-22-4	mg/kg	0.398	0.800	6	5,000	c	No	No	No
WET (STLC) Metals	STLC cadmium	7440-43-9	mg/L	0.002	0.007	0.100	1	d	No	No	No
	STLC chromium	7440-47-3	mg/L	0.003	0.0045	0.500	5	d	No	No	No
	STLC lead	7439-92-1	mg/L	0.013	0.035	0.500	5	d	No	No	No
	STLC nickel	7782-49-2	mg/L	TBD	TBD	TBD	20	d	No	No	No
	STLC zinc	7440-22-4	mg/L	TBD	TBD	TBD	250	d	No	No	No

\*Sources:

- a. EPA residential RSLs. Updated November 2015.
- b. Cal/EPA CHHSLs Table 1. Residential land use. Updated September 2010.
- c. Disposal facility metals acceptance criteria.
- d. California STLC Limit.

Notes:

µg/kg = microgram(s) per kilogram  
 CAS = Chemical Abstracts Service  
 LOD = limit of detection  
 LOQ = limit of quantitation  
 MDL = method detection limit

mg/L = milligram(s) per liter  
 STLC = soluble threshold limit concentration  
 TTLIC = total threshold limit concentration  
 WET = waste extraction test

# Reporting

- A summary of excavation activities and all analytical data will be presented in a Removal Action Completion Report (RACR)

Questions?

# Travis AFB Restoration Program

## Program Update

*RPM Meeting*

*May 18, 2016*

# Completed Documents

- Vapor Intrusion Assessment Update Technical Memorandum
- 2012 CAMU Annual Report
- Old Skeet Range Action Memorandum
- 3<sup>rd</sup> Five-Year Review
- 2012 Annual Groundwater Remediation Implementation Status Report (GRISR)
- Subarea LF007C and Site SS030 Remedial Process Optimization Work Plan
- Pre-Design Site Characterization of SS029 Report
- Old Skeet Range Removal Action Work Plan
- 2013 CAMU Inspection Annual Report
- Groundwater Record of Decision (ROD)
- CG508 POCO Work Plan
- 2013 Annual GRISR
- FT004 Technology Demonstration Work Plan
- Kinder Morgan LF044 Land Use Control Report
- SD031 Technology Demonstration Work Plan
- TA500 Data Gap Investigation Work Plan
- ST018 POCO Work Plan Addendum
- SD037 GW RD/RA Work Plan
- Travis AFB UFP-QAPP
- DP039 Lead Excavation Technical Memo

# Completed Documents (cont'd)

- Proposed Plan for ROD Amendment to WABOU Soil ROD
- Proposed Plan for ROD Amendment to NEWIOU Soil, Sediment, & Surface Water ROD
- SD034 Data Gap Investigation Work Plan
- POCO Investigation Work Plan for Oil-Water Separators
- ST032 POCO Soil Excavation Work Plan
- SD036 GW RD/RA Work Plan
- SS016 GW RD/RA Work Plan
- SS015 GW RD/RA Work Plan
- FT005 Technology Demonstration Work Plan
- 2014 Annual CAMU Monitoring Report
- Old Skeet Range PAH Delineation Report
- ST028 POCO Work Plan
- SS014 POCO TD Work Plan
- CG508 Site Investigation/Site Closure Request Report
- 2014 Annual CAMU Monitoring Report
- DP039 GW RD/RA Work Plan
- SD031 TDCCR
- ST018 POCO CCR
- Site SS030 Groundwater RA CCR
- Sites SD036 and SD037 Groundwater RACCR
- Site SS016 Groundwater RACCR
- Site SS015 Groundwater RACCR
- 2014 Annual GRISR
- Site CG508 Well Decommissioning Work Plan

# Completed Documents (cont'd)

- *Data Gap Investigation TM for Soil Sites SD033, SD043, & SS046*

# Completed Field Work

- Replace battery banks at ST018 Groundwater Treatment Plant
- Annual Groundwater Remediation Implementation Program (GRIP) Sampling event
- Well Decommissioning (9 Wells)
- Electrical repairs to FT005 extraction system (well EW01x05)
- Electrical repairs to Site SS029 extraction system
- Site ST018 carbon vessels upgrade
- 2014 GRIP Semiannual Sampling Event
- Pump repairs to Site SS016 well (EW610x16)
- Subsite LF007C optimization upgrades
- 2014 Annual GRIP Sampling Event
- Biological Resource Assessment
- Site CG508 Site Investigation
- Old Skeet Range Characterization Sampling
- 4Q Semiannual GRIP Sampling Event
- SD031 Technology Demonstration Well Installation
- SD037 Well Installation
- SD031 Trench/Conveyance/Power Installation
- SD031 EVO Injection
- ST018 Well Installation
- SS015 Well Installation
- SS016 Well Installation
- Well Development (SD036, SD037)
- ST018 Trench/Conveyance/Power Installation
- SD036 EVO Injection
- Well Development (SS015, SS016)
- Baseline Sampling (SS015, SS016)
- SS014 Data Gap Investigation
- SS016 EVO Injection
- TA500 Data Gaps Investigation

# Completed Field Work

- 2015 Annual GRIP Sampling
- SD037 EVO Injection
- SD034 Data Gaps Investigation
- SS015 EVO Injection
- FT005 Injection Well Installation
- OWS 47, 48, 49 Site Investigations
- SS030 Trench/Conveyance/Power Installation
- FT005 Trench Installation
- FT005 Well Development
- FT004 Well Installation, Well Development, Baseline Sampling
- FT005 Baseline Sampling
- DP039 Well Installation, Well Development, Baseline Sampling
- FT004 EVO Injection
- FT004 Trench/Conveyance/Power Installation
- DP039 Infiltration Trench Installation
- TA500 Groundwater Sampling
- ***FT005 EVO Injection***
- ***2016 Q2 GRIP Sampling***

# Documents In-Progress

## CERCLA

- Site SD031 Soil Remedial Investigation Work Plan
- Site FT004 Technology Demonstration Construction Completion Report
- 2015 Annual CAMU Monitoring Report
- **Site TS060 Action Memorandum**
- **Site SS016 Soil Data Gaps Investigation Work Plan**

# Documents In-Progress

## POCO

- Corrective Action Plan for DERA-Funded Oil Water Separators
- ***Site ST032 POCO Completion Report***
- ***Site ST028 POCO Completion Report***

# Field Work In-Progress

- DP039 EVO Injection
- ***SD031 Soil Remedial Investigation***

# Documents Planned

## CERCLA

- Site SD034 Technology Demonstration Work Plan May
- Site TS060 Removal Action Work Plan May
- **Site LF044 Investigation Work Plan** **May**
- Multi-Site Bioaugmentation Technology Demonstration Work Plan Jun
- 2015 Annual GRISR Jun
- Community Involvement Plan Jul
- Site FT005 Technology Demonstration Construction Completion Report Jul
- Site DP039 RD/RA Construction Completion Report Jul
- Site FT004 POCO Soil Data Gaps Investigation Work Plan Jul

# Documents Planned

POCO

- ***Site FT004 POCO Soil Data Gap Investigation Work Plan Jul***

# Field Work Planned

## CERCLA

- Data Gap Inv. for Soil Sites (SD033, SD043, SS046) Jun
- Multi-site Bioaugmentation Technology Demonstration  
Work Plan Jul
- SD034 Technology Demonstration Well Installation TBD
- TS060 Removal Action TBD
- SD034 Technology Demonstration Bioreactor Installation TBD
- SS016 Soil Data Gaps Investigation TBD

Note: Contact Lonnie Duke if you  
would like to observe planned field  
work events

# Field Work Planned

## POCO

- Oil Water Separators Step-out Drilling Jun
- Oil Water Separators (12) Removal Jul
- FT004 POCO Soil Data Gaps Investigation Jul
- CG508 Well Decommissioning Aug
- SS014 Bioreactor Installation Aug

Note: Contact Lonnie Duke if you would like to observe planned field work events

# Completed Documents (Historical1)

- Basewide Health & Safety Plan (HSP)
- Action Plan
- 2007/2008 GSAP Annual Report
- LF007C RPO Work Plan
- LF008 Rebound Study Work Plan
- SS014 Tier 1 POCO Evaluation Work Plan
- ST027B Site Characterization Work Plan
- SS030 RPO Work Plan
- ST032 POCO Technical Memo
- DP039 Bioreactor Work Plan
- 2008 Annual GWTP RPO Report
- Passive Diffusion Bag (PDB) Technical Memo
- RD/RA QAPP Update
- ST032 Tier 1 POCO Evaluation Work Plan
- Phytostabilization Demonstration Technical Memo
- Model QAPP
- LF008 Rebound Test Technical Memo
- Comprehensive Site Evaluation Phase II Work Plan
- Field Sampling Plan (FSP)
- SS016 RPO Work Plan
- ST018 POCO RA Work Plan
- Vapor Intrusion Assessment Report
- GSAP 2008/2009 Annual Report
- FT005 Data Gap Work Plan
- First, Second, & Third Site DP039 Sustainable Bioreactor Demonstration Progress Reports
- DP039 RPO Work Plan
- SD036/SD037 RPO Work Plan
- ST027B Site Characterization Report
- 2009 GWTP RPO Annual Report Natural Attenuation Assessment Report (NAAR)
- Union Creek Sites SD001 & SD033 Remedial Action Report
- CAMU 2008-2009 Monitoring Annual Report

# Completed Documents (Historical 2)

- Phytostabilization Study Report
- 2009/2010 Annual GSAP Report
- SS015 Remedy Optimization Field Implementation Plan
- Sites SS014 and ST032 Tier 1 POCO Evaluation Report
- SD036 Remedy Optimization Field Implementation Plan
- 2010 Annual CAMU Inspection Report
- Site ST018 POCO Baseline Implementation Report
- FT005 Data Gaps Investigation Report
- Comprehensive Site Evaluation Phase II Report
- 2010 Groundwater RPO Annual Report
- Focused Feasibility Study (FFS)
- Site ST027-Area B Human Health Risk Assessment
- Site ST027-Area B Ecological Risk Assessment
- Work Plan for Assessment of Aerobic Chlorinated Cometabolism Enzymes
- 2010/2011 Annual GSAP Report
- Baseline Implementation Report (Sites SS015, SS016, SD036, SD037, and DP039)
- 2011 CAMU Annual Report
- Technical and Economic Feasibility Analysis (TEFA)
- Work Plan for RPO of Sites SS016 and SS029
- Site LF007C Data Gaps Investigation Technical Memorandum
- Technical Memorandum for Assessment of Aerobic Chlorinated Cometabolism Enzymes
- Old Skeet Range Engineering Evaluation/Cost Analysis
- 2011 Groundwater Treatment RPO Annual Report
- Groundwater Proposed Plan (PP)
- FT005 Remedial Action Completion Report
- 2012 GSAP Technical Memorandum<sup>15</sup>

# Completed Field Work (Historical1)

- ST027B Gore Sorber Survey–Phase 1
- ST027B Field Sampling – Phase 2
- GSAP 2008 Semi-annual Event
- ST027B Installation of Wells – Phase 3
- SS014 Site Characterization
- LF008 Rebound Study
- GSAP Annual Sampling Event - 2009
- SS030 Site Characterization–Phase 1
- ST027 Site Characterization -Phase 3
- ST014 Monitor Well Install - Subsite 3
- SD001/SD033 Sediment RA
- SS016 Site Characterization (OSA source area)
- ST018 Site Characterization
- SS030 Site Characterization (Off-base VOC Plume)
- DP039 Site Characterization (for Biobarrier Placement)
- SS014 & ST032 Q1 2010 MNA Sampling (2<sup>nd</sup> of 4 quarterly events)
- SD036 Additional Site Characterization (north & east)
- Therm/Ox System Removal
- SS016 Monitoring Well Installation
- SD037 EVO Injection Well Installation
- DP039 Monitoring Well & Injection Well Installation
- DP039 EVO Injection
- SD037 Monitoring Well Installation
- GSAP 2010 Annual Sampling Event
- SD037 EVO Injection
- SS015 Site Characterization
- South Plant GAC Change-out
- FT005 Data Gap Investigation
- SS016 Position Survey of EW03
- SS016 Bioreactor Installation
- SS016 Bioreactor Baseline Sampling
- DP039 Biobarrier Quarterly Performance Sampling

# Completed Field Work (Historical 2)

- DP039 Bioreactor Quarterly Performance Sampling
- SD037 EVO Quarterly Performance Sampling
- SS015 EVO Baseline Sampling
- SD036 EVO Baseline Sampling
- SS016 Bioreactor Startup
- SD036 Injection Wells Installation
- SS015 Injection Wells Installation
- ST018 GETS Installation
- SD036 EVO Injection
- 2010 Semiannual GSAP
- SS015 EVO Injection
- Quarterly RPO Performance Monitoring (Feb 2011)
- ST018 GETS Startup
- Quarterly RPO Performance Monitoring (May 2011)
- 2011 Annual GSAP Sampling
- SS029 GET Shutdown Test (System Optimization analysis)
- Quarterly RPO Performance Monitoring (Aug 2011)
- Quarterly RPO Performance Monitoring (Nov 2011)
- 2011 Semiannual GSAP Sampling
- LF007C Site Characterization (Wetlands)
- FT005 Soil Remedial Action
- Performance Monitoring SS015 (4<sup>th</sup> Quarterly event)
- Sampling for Assessment of Aerobic Chlorinated Cometabolism Enzymes (Feb 21-22)
- 2012 Annual GSAP Sampling
- CAMU Lysimeter Removal
- LF007C GET System Optimization
- SS029/SS016 System Optimization Analysis
- GSAP Semiannual Sampling Event
- Replace electrical wiring for well field at Site SS030