

**Travis Air Force Base
Environmental Restoration Program
Restoration Program Manager's
Meeting Minutes
18 July 2018, 0930 Hours**

Mr. Lonnie Duke of the Air Force Civil Engineer Center (AFCEC) Restoration Installation Support Section (ISS) conducted the Restoration Program Manager's (RPM) teleconference on 18 July 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
Monika O'Sullivan	AFCEC/CZOW
Merrie Schilter-Lowe	Travis AFB/PA
Ben Fries	DTSC
(via telephone)	
Nadia Hollan Burke	USEPA
(via phone)	
Adriana Constantinescu	RWQCB
(via telephone)	
Mike Wray	CH2M/JACOBS
Jeannette Cumberland	CH2M/JACOBS

Handouts distributed prior to or at the meeting, discussions, and presentations included:

Attachment 1	Meeting Agenda
Attachment 2	Master Meeting and Document Schedule
Attachment 3	SBBGWTP Monthly Data Sheet (June 2018)
Attachment 4	CGWTP Monthly Data Sheet (June 2018)
Attachment 5	LF007C Monthly Data Sheet (June 2018)
Attachment 6	ST018 Monthly Data Sheet (June 2018)
Attachment 7	Presentation: Program Update

1. ADMINISTRATIVE

A. Previous Meeting Minutes

Ms. Burke requested that the June Minutes be updated per the following:

Page 5, 2017 Annual CAMU Monitoring Report: add “and DTSC” to read USEPA deferred comment to the Water Board “and DTSC”.

Action item 3: Ms. Burke requested EPA receive a copy of the TPH-LF007C technical memorandum when it is written.

These changes will be incorporated as requested into the Final June 2018 RPM minutes.

B. Action Item Review

Action items from June 2018 were reviewed.

Action item 1 is ongoing: Ms. O’Sullivan to provide updates on perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA). July 2018 update: Ms. O’Sullivan said that a second CD for the Site Inspection (SI) Final report, which includes the metadata (missing from the first CD), was mailed to the regulatory agencies in early July. Ms. O’Sullivan said to send any comments or questions, but that they will not be addressed in the SI Final report. The comments will be taken into consideration during the Remedial Investigation (RI) phase. Ms. O’Sullivan noted that a new hazard quotient was used for the soils.

Action Item 2 is ongoing: Mr. Duke will continue to provide design and construction information for the new KC-46 Hangar construction project for agency input ahead of the Air Force/Civil Engineering awarding the construction contract. July 2018 update: The Contractor is working on finishing their design package to submit to potential bidders. The design will include parameters for the new extraction well. The design contractor is currently collecting geological data from soil borings using a Geoprobe rig, and that data will be included in the design package. Mr. Chakurian was present when the soil sampling work was being conducted to help with the observations and boring logs.

Ms. Burke indicated that EPA may have more comments on the hangar design related to the permeability of the geomembrane.

Action item 3: Mr. Gamlin will prepare a technical memorandum to the Water Board regarding the TPH chromatogram study for Site LF007C. July 2018 update: new due date, 15 August 2018. Ms. Burke requested EPA receive a copy of the technical memorandum, but indicated that EPA will most likely defer to the Water Board.

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 held on Wednesday 15 August 2018, at 0930 hours.

Reminder: The annual RAB tour (which historically has been held in October) will not be formally scheduled and will instead be individual tours given when an interested party would like to see field work this summer. As a result, since there will not be a formal RAB meeting, all agencies agreed to move the October RPM meeting from Thursday, 18 October, to Wednesday, 17 October, at 0930.

Travis AFB Master Document Schedule

- Community Relations Plan Update (CRP): There was no change to the schedule.
- Amendment to the WABOU Soil ROD for Travis AFB ERP Sites DP039, SD043, and SS046: There was no change to the schedule. Travis AFB received EPA comments; two partials and fourteen additional comments on 6 July. Mr. Anderson asked that when EPA receives the RTCs to review as soon as possible, as this will be the last set of issues before going draft-final. Ms. Burke cautioned that a couple of ARARs comments regarding the Remedial Action (RA) may potentially influence the SD043 and SS046 RD/RA work plans. Mr. Anderson said that is the very reason the work plans have not been finalized. **This is a super critical document.**
- Amendment to the NEWIOU Soil ROD for the Travis AFB ERP Sites SS016 and SD033: There was no change to the schedule. Currently under regulatory review. Mr. Anderson emphasized the importance to submit comments by the 7 August date. **This is a super critical document** due to site work supporting planned KC-46 hangar construction. The field work at Site SS016 must be completed by December 2018.
- Site TS060 No Further Action Record of Decision for Old Skeet Range: Draft to Agencies was changed to 25 June 2018 to reflect actual submittal date. The remainder of the schedule has been changed accordingly. **This is an important but not critical document.**
- Site SD043 Remedial Design/Remedial Action Work Plan: The Final Due date was changed to TBD to ensure the work plan supports any changes in the WABOU ROD amendment.
- Site SS046 Remedial Design/Remedial Action Work Plan: The Response to Comments, Draft Final Due, and Final Due dates have been changed to TBD to ensure the work plan supports any changes in the WABOU ROD amendment.
- Site SS016 Remedial Design/Remedial Action Work Plan: The Draft to Agencies was changed to 26 July, the rest of the dates were changed accordingly. The Response to Comments Due, Draft Final Due and Final Due dates were changed to TBD to ensure the work plan supports any changes in the NEWIOU ROD

amendment. This excavation project is located within the footprint of the future new KC-46 hangar, so **this document is critical**.

- Site SD031 Soil Remedial Investigation/Feasibility Study: No change was made to the schedule. Any follow-on work will come under the next contract. **This document is important but not critical.**
- Fourth Five-Year Review Report for Multiple Groundwater, Soil, and Sediment Sites: No change was made to the schedule. Ms. Burke said she would not meet the Agency Comments due date of 20 July, she needs EPAs technical and legal review. She has some technical comments which can be submitted by 20 July. Mr. Anderson agreed to receive comments when they are available. **This document is very important but not critical.**
- Potrero Hills Annex (FS, PP, and ROD): No change was made to the schedule. The responsible parties are working on RTCs on the Data Gaps Investigation report.
- Site SS015 Soil Sampling Plan: The Response to Comments Due and Final Due date were changed to 13 July 2018 to reflect the actual submittal date.
- Site LF006 Technology Demonstration Work Plan: The Predraft to AF/Services Center date has been changed to 3 July 2018 to reflect the actual submittal date. The remainder of the schedule has been changed accordingly.
- Quarterly Newsletters (June 2018): The Draft to Agencies date was changed to 5 July 2018 to reflect the actual submittal date. The remainder of the schedule has been changed accordingly. Mr. Anderson said this is a community outreach document and not meant to a technical source of information. Mr. Fries said that if Mr. Forrester of DTSC doesn't have any comments, then he won't either.
- 2017 Annual GRISR: The Draft to Agencies date was changed to 19 July 2018. Response to Comments and Final Due date changed to 20 January 2019. This document is not as critical as some others, and comments are not expected until November 2018. Mr. Anderson add that, if the agencies have comments on the 4Q2018 sampling plan, to please let Ms. Royer know by 8 October if possible.
- Monitoring Well Installation Technical Memorandum for Site DP039, Addendum to the Site DP039 Remedial Action Construction Completion Report: No change was made to the schedule. Travis AFB sent the EPA RTC table on 27 June. Ms. Burke has not received the technical review from Techlaw yet. The DTSC approved their RTCs. The Water Board does not plan on providing comments.
- Site FT005 Extraction System Optimization Report: The Response to Comments Due and Final Due date were changed to 23 July. Travis AFB submitted RTCs to DTSC (Mr. Forrester) and EPA on 3 July. Ms. Burke will review RTCs next week.
- Site LF044 Sediment Sampling Report: The Response to Comments Due and Final Due dates were changed to 31 July 2018. Travis AFB is reviewing comments from EPA submitted on 13 June and Water Board submitted on 21 June 2018.

- 2017 Annual CAMU Monitoring Report: The Response to Comments Due and Final Due dates were changed to 8 August 2018. DTSC and Water Board comments have been received; USEPA deferred comments to the Water Board and DTSC.
- Emulsified Vegetable Oil Sites FT004, SS015, SD031, and SD036 Optimization Injections Report: The Draft to Agencies date was changed to 13 August 2018. The remainder of the dates were changed accordingly.
- Sites LF006, SS030, SD031 Aquifer Test Activities Technical Memorandum: Moved to History.
- Data Gap Investigation Results Technical Memorandum for Soil Site SS016: Moved to History.

2. CURRENT PROJECTS

Treatment Plant Operation and Maintenance Update

South Base Boundary Groundwater Treatment Plant, June 2018 (see Attachment 3)

The South Base Boundary Groundwater Treatment Plant (SBBGWTP) performed at 100% uptime, and 5.9 million gallons of groundwater were extracted and treated in June 2018. All treated water was discharged to Union Creek. The average flow rate for the SBBGWTP was 163.1 gallons per minute (gpm). Electrical power usage was 14,924 kWh, and approximately 11,844 pounds of CO₂ were created (based on DOE calculation). Approximately 0.89 pound of volatile organic compounds (VOCs) was removed in June. The total mass of VOCs removed since startup of the system is 501.8 pounds.

No optimization activities are reported for the month of June 2018.

In accordance with sampling schedule established in the current NPDES permit, annual sampling with additional analytes/samples were collected. 1,2-DCA was detected in the effluent sampling location at the estimated concentration of 0.22 J µg/L, which is below the effluent limit of 0.5 µg/L.

Ms. Burke asked about the 1,2-DCA and the concentrations creeping up and what the plan is if it continues to rise. Mr. Wray said the 1,2-DCA spiked when the new extractions wells were installed, which is what we expected. 1,2-DCA is a small molecule and doesn't stick to carbon very well. The plant was designed for 1,2-DCA using the air stripper. The air stripper is still on site and can be turned back on if needed.

Central Groundwater Treatment Plant, June 2018 (see Attachment 4)

The Central Groundwater Treatment Plant (CGWTP) performed at 100% uptime with approximately 1,142,630 gallons of groundwater extracted and treated in June 2018.

All treated water was discharged to the storm sewer system which discharges to Union Creek. The average flow rate for the CGWTP was 29.4 gpm. Electrical power usage was 2,020 kWh for all equipment connected to the Central Plant, and approximately 2,383 pounds of CO₂ were generated. Approximately 2.39 pounds of VOCs were removed from groundwater by the treatment plant in June. The total mass of VOCs removed since the startup of the system is 11,495 pounds.

Optimization Activities for CGWTP: The DP039 bioreactor continues to operate in a four-week “pulsed mode.” No other optimization activities are reported for the month of June 2018.

LF007C Groundwater Treatment Plant, June 2018 (See Attachment 5)

The Subarea LF007C Groundwater Treatment Plant (LF007C GWTP) performed at 100% uptime with approximately 200,748 gallons of groundwater extracted and treated in June 2018. All treated water was discharged to the Duck Pond for beneficial reuse. The average flow rate was 5.1 gpm. Approximately 1.19×10^{-3} pound of VOCs was removed from groundwater by the treatment plant in June. The total mass of VOCs removed since the startup of the system is 174.39 pounds. There was no electrical power usage statistics, because this plant operates on solar power only.

No optimization activities are reported for the month of June 2018.

ST018 Groundwater (MTBE) Treatment Plant, June 2018 (see Attachment 6)

Site ST018 (MTBE) Treatment Plant (ST018 GWTP) performed at 52.3% uptime with approximately 120,440 gallons of groundwater extracted and treated in June 2018. All treated water was discharged to the Fairfield – Suisun Sewer District. The average flow rate for the ST018 GWTP was 5.9 gpm. Electrical power usage for the month was 73 kWh for all equipment connected to the ST018 GWTP. The total CO₂ equivalent, including an estimate for the carbon change-out, equates to approximately 54 pounds. Approximately 0.05 pound of MTBE, BTEX, VOCs, and TPH was removed in June by the treatment plant, and approximately 0.03 pound of MTBE was removed from groundwater. The total BTEX, MTBE and TPH mass removed since the startup of the system is 45.5 pounds, and the total MTBE mass removed since startup of the system is 11.1 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 four groundwater extraction pumps in the system are all solar powered.

No optimization activities are reported for the month of June 2018.

Travis AFB received permission from Fairfield-Suisun Sewer District (FSSD) to bypass carbon treatment and discharge direct to FSSD as of 01 August 2018. FSSD

currently does not have a local limit for MTBE, but a limit of 6,4000 µg/L is advised based on worker health and safety.

3. Presentations:

A) Program Update: Activities Completed, In Progress, and Upcoming (see Attachment 7)

Mr. Wray reported on the status of fieldwork and documents which are completed, in progress, and upcoming. Please refer to Attachment 8 for the full briefing.

4. New Action Item Review

Mr. Gamlin will prepare a technological memorandum summarizing the TPH chromatogram review and conclusions, including a recommended sampling plan, to the Water Board.

5. PROGRAM/ISSUES/UPDATE

None

6. Action Items

Item #	Responsible	Action Item Description	Due Date	Status
1.	Monika O'Sullivan	Ms. O'Sullivan to provide updates on PFOS and PFOA as she becomes aware of them.	Ongoing	Open
2.	Lonnie Duke	Mr. Duke will continue to provide design and construction information for the KC-46 Hangar for agency input ahead of the Air Force/Civil Engineering awarding the construction contract.	Ongoing	Open
3.	Jeff Gamlin	Mr. Gamlin will prepare and submit a technical memorandum regarding TPH	19 July 2018	Open

		chromatogram reviews and conclusions at Site LF007C to the Water Board and EPA.		
--	--	---	--	--

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

The RPM Teleconference is scheduled for 9:30 AM PST on 18 July 2018. **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. 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 TELECONFERENCE, 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.

(2018)
Annual Meeting and Teleconference Schedule

Monthly RPM Meeting ¹ (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.)
—	01-17-18	—
02-21-18	—	—
—	03-21-18	—
04-19-18 (Thursday 2:00 PM)	—	04-19-18
—	05-16-18	—
06-20-18	—	—
—	07-18-18	—
08-15-18	—	—
—	09-19-18	—
10-17-18	—	May through October ²
—	11-21-18	—
—	—	—

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

² Note: Tentative RAB tour(s) during construction season.

Travis AFB Master Meeting and Document Schedule

PRIMARY DOCUMENTS				
Life Cycle	Community Relations Plan Update Travis AFB, Glenn Anderson CH2M, Jill Dunphy	Amendment to the WABOU Soil ROD for the Travis AFB ERP Sites DP039, SD043, and SS046 Travis AFB, Glenn Anderson CH2M, Latonya Coleman	Amendment to the NEWIOU Soil ROD for the Travis AFB ERP Sites SS016 and SD033 Travis AFB, Glenn Anderson CH2M, Latonya Coleman	No Further Action ROD for Old Skeet Range (TS060 MRA) Travis AFB, Glenn Anderson
Scoping Meeting	NA	NA	NA	NA
Predraft to AF/Service Center	08-23-16	10-09-17	02-28-18	05-18-18
AF/Service Center Comments Due	09-07-16	11-08-17	03-30-18	06-01-18
Draft to Agencies	09-28-16 (03-22-18)	11-30-17	06-22-18	6-25-18
Draft to RAB	09-28-16 (03-22-18)	11-30-17	06-22-18	6-25-18
Agency Comments Due	10-28-16 (04-27-18)	01-31-18	08-07-18	9-24-18
Response to Comments Meeting	TBD	02-21-18	08-21-18	10-17-18
Agency Concurrence with Remedy	NA	NA	NA	NA
Public Comment Period	NA	NA	NA	NA
Public Meeting	NA	NA	NA	NA
Response to Comments Due	TBD	TBD	09-06-18	10-24-18
Draft Final Due	TBD	TBD	09-06-18	10-24-18
Final Due	TBD	TBD	10-08-18	11-26-18

Travis AFB Master Meeting and Document Schedule

PRIMARY DOCUMENTS			
Life Cycle	Site SD043 Remedial Design/Remedial Action Work Plan Travis AFB, Glenn Anderson CH2M, Levi Pratt	Site SS046 Remedial Design/Remedial Action Work Plan Travis AFB, Glenn Anderson CH2M, Doug Berwick CAPE, Meg Greenwald	Site SS016 Remedial Design/Remedial Action Work Plan Travis AFB, Glenn Anderson CH2M, Doug Berwick CAPE, Meg Greenwald
Scoping Meeting	NA	NA	NA
Predraft to AF/Service Center	02-22-18	03-02-18	06-04-18
AF/Service Center Comments Due	03-08-18	03-16-18	06-18-18
Draft to Agencies	04-10-18	04-12-18	07-26-18
Draft to RAB	04-10-18	04-12-18	07-26-18
Agency Comments Due	05-10-18	05-14-18	09-25-18
Response to Comments Meeting	05-16-18	05-16-18	10-02-18
Agency Concurrence with Remedy	NA	NA	NA
Public Comment Period	NA	NA	NA
Public Meeting	NA	NA	NA
Response to Comments Due	06-06-18	TBD	TBD
Draft Final Due	06-06-18	TBD	TBD
Final Due	TBD	TBD	TBD

Travis AFB Master Meeting and Document Schedule

PRIMARY DOCUMENTS		
Life Cycle	Site SD031 Soil Remedial Investigation/Feasibility Study Travis AFB, Glenn Anderson CH2M, Nikki Carlton	Fourth Five-Year Review Report for Multiple Groundwater, Soil, and Sediment Sites Travis AFB, Glenn Anderson Tetra Tech, Joachim Eberharter
Scoping Meeting	NA	NA
Predraft to AF/Service Center	08-16-18	03-14-18
AF/Service Center Comments Due	09-17-18	05-22-18
Draft to Agencies	10-02-18	6-5-18
Draft to RAB	10-02-18	6-5-18
Agency Comments Due	12-11-18	7-20-18
Response to Comments Meeting	01-16-19	TBD
Agency Concurrence with Remedy	NA	NA
Public Comment Period	NA	NA
Public Meeting	NA	NA
Response to Comments Due	02-07-19	TBD
Draft Final Due	02-07-19	TBD
Final Due	03-12-19	TBD

Travis AFB Master Meeting and Document Schedule

PRIMARY DOCUMENTS			
Life Cycle	Potrero Hills Annex Travis, Glenn Anderson		
	FS	Proposed Plan	ROD
Scoping Meeting	180 days after Water Board Order Rescinded	+470 days	+735 days
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
Response to Comments Meeting	+ 405 days	+665 days	+ 1110 days
Agency Concurrence with Remedy	NA	NA	+ 1130 days
Public Comment Period	NA	+735 to 765 days	NA
Public Meeting	NA	+745 days	NA
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

SECONDARY DOCUMENTS		
Life Cycle	Site SS015 Soil Sampling Plan Travis AFB, Glenn Anderson CH2M, Levi Pratt	Site LF006 Technology Demonstration Work Plan Travis AFB, Glenn Anderson CH2M, Levi Pratt
Scoping Meeting	NA	NA
Predraft to AF/Service Center	03-13-18	07-03-18
AF/Service Center Comments Due	03-27-18	07-18-18
Draft to Agencies	04-30-18	08-02-18
Draft to RAB	04-30-18	08-02-18
Agency Comments Due	05-31-18	09-04-18
Response to Comments Meeting	06-20-18	09-05-18
Response to Comments Due	07-13-18	09-19-18
Draft Final Due	NA	NA
Final Due	07-13-18	09-19-18
Public Comment Period	NA	NA
Public Meeting	NA	NA

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL DOCUMENTS		
Life Cycle	Quarterly Newsletter (July 2018) Travis, Glenn Anderson	2017 Annual GRISR Travis AFB, Glenn Anderson CH2M, Leslie Royer
Scoping Meeting	NA	NA
Predraft to AF/Service Center	06-26-18	05-09-18
AF/Service Center Comments Due	NA	06-11-18
Draft to Agencies	07-05-18	07-19-18
Draft to RAB	NA	07-19-18
Agency Comments Due	07-19-18	11-19-18
Response to Comments Meeting	07-20-18	01-16-19
Response to Comments Due	07-25-18	01-30-19
Draft Final Due	NA	NA
Final Due	07-25-18	01-30-19
Public Comment Period	NA	NA
Public Meeting	NA	NA

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL DOCUMENTS			
Life Cycle	Monitoring Well Installation Technical Memorandum for Site DP039, Addendum to the Site DP039 Remedial Action Construction Completion Report Travis AFB, Glenn Anderson CH2M, Levi Pratt	Site FT005 Extraction System Optimization Technical Memorandum Travis AFB, Gene Clare CH2M, Levi Pratt	Site LF044 Sediment Sampling Technical Memorandum Travis AFB, Glenn Anderson CH2M, Doug Berwick CAPE, Meg Greenwald
Scoping Meeting	NA	NA	NA
Predraft to AF/Service Center	02-26-18	03-08-18	04-12-18
AF/Service Center Comments Due	03-14-18	03-22-18	04-26-08
Draft to Agencies	04-19-18	05-01-18	05-17-18
Draft to RAB	04-19-18	05-01-18	05-17-18
Agency Comments Due	05-21-18	06-01-18	06-18-18
Response to Comments Meeting	06-20-18	06-20-18	06-20-18
Response to Comments Due	07-27-18	07-23-18	07-31-18
Draft Final Due	NA	NA	NA
Final Due	07-27-18	07-23-18	07-31-18
Public Comment Period	NA	NA	NA
Public Meeting	NA	NA	NA

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL DOCUMENTS		
Life Cycle	2017 Annual CAMU Monitoring Report Travis AFB, Gene Clare CH2M HILL, Levi Pratt	Emulsified Vegetable Oil Sites FT004, SS015, SD031, and SD036 Injections Technical Memorandum Travis AFB, Glenn Anderson CH2M, Levi Pratt
Scoping Meeting	NA	NA
Predraft to AF/Service Center	04-19-18	06-12-18
AF/Service Center Comments Due	05-03-18	06-26-18
Draft to Agencies	05-15-18	08-13-18
Draft to RAB	05-15-18	08-13-18
Agency Comments Due	06-15-18	09-13-18
Response to Comments Meeting	06-20-18	09-19-18
Response to Comments Due	08-08-18	10-03-18
Draft Final Due	NA	NA
Final Due	08-08-18	10-03-18
Public Comment Period	NA	NA
Public Meeting	NA	NA

Travis AFB Master Meeting and Document Schedule

HISTORY		
Life Cycle	Sites LF006, SS030 and SD031 Aquifer Test Activities Technical Memorandum Travis AFB, Glenn Anderson CH2M, Renee Caird	Data Gap Investigation Results Technical Memorandum for Soil Site SS016 Travis AFB, Glenn Anderson CH2M, Doug Berwick CAPE, Meg Greenwald
Scoping Meeting	NA	NA
Predraft to AF/Service Center	02-15-18	10-04-17
AF/Service Center Comments Due	03-02-18	10-18-17
Draft to Agencies	03-21-18	11-30-17
Draft to RAB	03-21-18	11-30-17
Agency Comments Due	04-23-18	01-02-18
Response to Comments Meeting	05-16-18	01-17-18
Response to Comments Due	06-04-18 (05-23-18)	03-21-18 (06-05-18)
Draft Final Due	NA	NA
Final Due	06-04-18 (05-23-18)	03-21-18 (06-05-18)
Public Comment Period	NA	NA
Public Meeting	NA	NA

South Base Boundary Groundwater Treatment Plant

Monthly Data Sheet

Report Number: 212

Reporting Period: 3 June 2018 – 28 June 2018

Date Submitted: 17 July 2018

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 June 2018 reporting period.

Table 1 – Operations Summary – June 2018					
Initial Data Collection:		6/3/2018 11:30	Final Data Collection:	6/28/2018 10:30	
Operating Time:		Percent Uptime:	Electrical Power Usage:		
SBBGWTP:	599 hours	SBBGWTP:	100%	SBBGWTP:	14,924 kWh (11,844 lbs CO ₂ generated ^a)
Gallons Treated: 5.9 million gallons			Gallons Treated Since July 1998: 1,047 million gallons		
Volume Discharged to Union Creek: 5.9 million gallons			Gallons Treated From Other Sources: 0 gallons		
VOC Mass Removed: 0.89 lbs ^b			VOC Mass Removed Since July 1998: 501.8 lbs		
Rolling 12-Month Cost per Pound of Mass Removed: \$10,005 ^c					
Monthly Cost per Pound of Mass Removed: \$8,186 ^c					
lbs = pounds					
^a SiteWise™ estimate that 1 kilowatt hour generated produces 0.74 pounds of GHG. Value also includes approximately 800 pounds of GHG from GAC change out services averaged to a per month basis.					
^b Calculated using June 2018 EPA Method SW8260C analytical results.					
^c 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.

Table 2 – SBBGWTP Average Flow Rate (gpm) ^a – June 2018							
FT005 ^b				SS029		SS030	
EW01x05	Offline	EW743x05	Offline	EW01x29	Offline ^c	EW01x30	16.6
EW02x05	Offline	EW744x05	3.7	EW02x29	Offline ^c	EW02x30	6.8
EW03x05	Offline	EW745x05	10.8	EW03x29	3.1	EW03x30	15.2
EW731x05	6.4	EW746x05	Offline	EW04x29	1.5	EW04x30	24.4
EW732x05	Offline	EW2291x05	5.1	EW05x29	7.1	EW05x30	1.8
EW733x05	Offline	EW2782x05	6.0	EW06x29	8.2	EW2174x30	8.8
EW734x05	Offline ^d	EW2783x05	8.8	EW07x29	12.8	EW711x30	8.8
EW735x05	11.0	EW2784x05	9.8			MW269x30	0.5
EW736x05	Offline	EW2785x05	6.1				
EW737x05	Offline	EW2786x05	13.8				
EW742x05	Offline						
FT005 Total: 85.7				SS029 Total: 32.7		SS030 Total: 82.9	
SBBGWTP Average Monthly Flow ^e : 163.1 gpm							
^a Flow rates presented are instantaneous measurements taken at the end of the reporting period.							
^b Most extraction wells at FT005 were taken offline in accordance with the 2008 Annual Remedial Process Optimization Report for the Central Groundwater Treatment Plant, North Groundwater Treatment Plant, and South Base Boundary Groundwater Treatment Plant.							
^c Extraction wells taken off line because of persistent fouling of the well pumps and associated discharge piping.							
^d Extraction well was off line for repair.							
^e The average SBBGWTP groundwater flow rate was calculated using the Union Creek Discharge Totalizer and dividing it by the total time the system was operational.							
gpm – gallons per minute							
SBBGWTP – South Base Boundary Groundwater Treatment Plant							

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

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

Summary of O&M Activities

Monthly groundwater treatment samples were collected at the SBBGWTP on 11 and 18 June 2018. Sample results are presented in Table 4. The total VOC concentration (18.20 µg/L) in the influent sample increased slightly from the May 2018 sample results (17.30 µg/L). TCE was the primary VOC detected in the influent sample at a concentration of 17 µg/L. Several VOCs were detected in the midpoint sampling location, including TCE, 1,2-DCA, cis-1,2-DCE, and chloroform. 1,2-DCA was detected in the effluent sampling location at a concentration of 0.22 µg/L, which is below the effluent limitation of 0.5 µg/L.

In accordance with the sampling schedule established in the current NPDES permit, annual samples for semi-volatile VOCs (SVOCs), polycyclic aromatic hydrocarbons (PAHs), metals, and sulfate were collected at the SBBGWTP. Table 5 presents sample results from these annual analyses, where detected. Analytes included in the laboratory analyses that were not detected are not presented in this data sheet. Analytical results are available upon request. The influent and effluent samples contained detectable amounts of sulfate, though there is no established effluent limitation for sulfate. Concentrations of chromium, selenium, and zinc were detected in the effluent sample, but at concentrations below their respective effluent limitations.

In June 2018, troubleshooting was performed on several extraction wells. The following list presents the maintenance activities and status of several extraction wells:

- EW03x30 – Replaced the flow meter paddlewheel. Well is currently operating.
- EW734x05 – Replaced the pump end and serviced/cleaned the totalizer. Well is currently operating.
- EW2784x05 – Adjusted flow meter settings. Well is currently operating.

Figure 1 presents the 1,2-DCA and TCE concentrations since January 2017. Figure 2 presents a plot of influent concentrations and average flow at the SBBGWTP over the past twelve (12) months. The VOC influent concentrations have generally been fluctuating over the past 12 months with an overall decreasing trend. However, an overall increasing flow rate trend was observed in the past 12 months with the addition of the new extraction wells at Site FT005 in November 2017.

Optimization Activities

No optimization activities occurred at the SBBGWTP in June 2018.

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 3 presents the historical GHG production from the SBBGWTP. In May 2018, the SBBGWTP produced approximately 11,844 pounds of GHG, which includes approximately 800 pounds of GHG generated from GAC change out services averaged to a per month basis.

TABLE 4

Summary of Groundwater Analytical Data for June 2018 – South Base Boundary Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	11 – 18 June 2018 (µg/L)		
				Influent	Midpoint	Effluent
Halogenated Volatile Organics						
Acetone	NA	1.9	0	ND	ND	ND
Bromodichloromethane	NA	0.17	0	ND	ND	ND
Carbon Tetrachloride	0.5	0.19	0	ND	ND	ND
Chloroform	5.0	0.16	0	ND	0.23 J-	ND
Chloromethane	NA	0.30	0	ND	ND	ND
1,1-Dichloroethane	5.0	0.16	0	ND	ND	ND
1,2-Dichloroethane	0.5	0.13	1	0.38 J	0.55 J-	0.22 J
1,1-Dichloroethene	5.0	0.14	0	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.15	0	0.82 J	1.6 J-	ND
trans-1,2-Dichloroethene	5.0	0.15	0	ND	ND	ND
Methylene Chloride	5.0	0.32	0	ND	ND	ND
Tetrachloroethene	5.0	0.20	0	ND	ND	ND
1,1,1-Trichloroethane	5.0	0.16	0	ND	ND	ND
1,1,2-Trichloroethane	5.0	0.32	0	ND	ND	ND
Trichloroethene	5.0	0.16	0	17	0.57 J-	ND
Vinyl Chloride	0.5	0.10	0	ND	ND	ND
Non-Halogenated Volatile Organics						
Benzene	1.0	0.16	0	ND	ND	ND
Ethylbenzene	5.0	0.16	0	ND	ND	ND
Toluene	5.0	0.17	0	ND	ND	ND
Xylenes	5.0	0.19 – 0.34	0	ND	ND	ND
Other						
Total Petroleum Hydrocarbons – Gasoline	50	10	0	NM	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	15	0	ND	NM	ND
Total Petroleum Hydrocarbons – Motor Oil	50	160	0	ND	NM	ND
1,4-Dioxane	NA	0.08	0	ND	NM	ND

* In accordance with current National Pollutant Discharge Elimination System permit – January 2018.

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

J- = analyte concentration is considered an estimated value, biased low

mg/L = milligrams per liter

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

TABLE 5

Summary of Groundwater Analytical Data for June 2018 – South Base Boundary Groundwater Treatment Plant

Summary of Groundwater Analytical Data for June 2018 - South East District - Groundwater Treatment Plant						
Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	11 – 18 June 2018 (µg/L)		
				Influent	After Carbon 1	Effluent
Metals						
Antimony	8600	5.2	0	ND	NM	ND
Arsenic	59	4.4	0	ND	NM	ND
Cadmium	1.8	0.45	0	ND	NM	ND
Chromium	16	0.66	0	4.6 J	NM	5.5 J
Copper	14	4.2	0	ND	NM	ND
Lead	5.2	2.7	0	ND	NM	ND
Nickel	50	2.6	0	ND	NM	ND
Selenium	8.2	6.3	0	ND	NM	7.7 J
Silver	2.2	0.93	0	ND	NM	ND
Thallium	13	4.9	0	ND	NM	ND
Zinc	95	4.5	0	12 J	NM	35 J
SVOCs and PAHs						
Naphthalene	NA	0.22	0	10 J	NM	ND
Other						
Sulfate	NA	230	0	140	NM	140

* In accordance with current National Pollutant Discharge Elimination System permit – January 2018.

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

J+ = analyte concentration is considered an estimated value, biased high

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

Figure 1

SBBGWTP Influent 1,2-DCA and TCE Concentrations Since January 2017

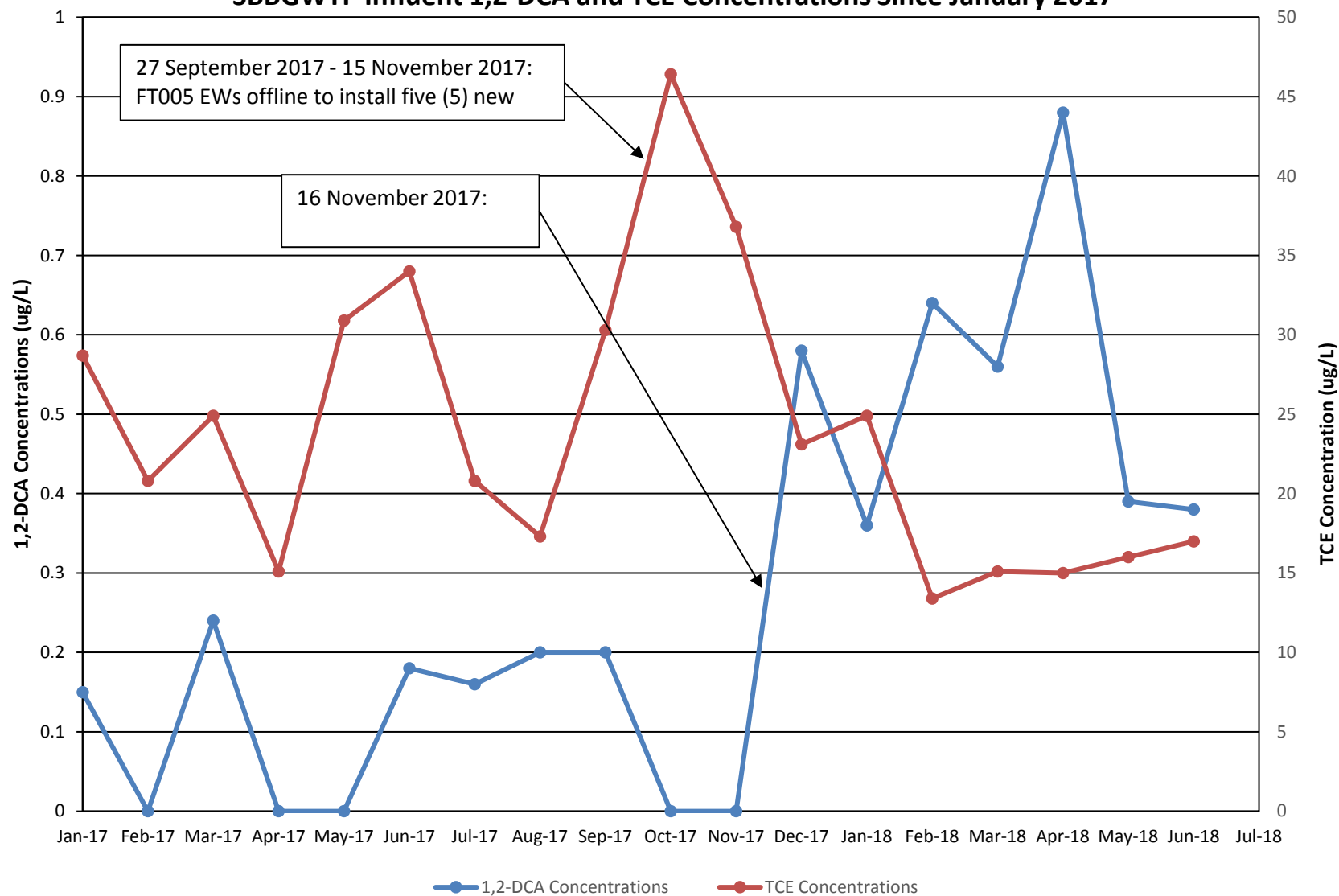


Figure 2
SBBGWTP Total VOC Influent Concentrations and Average Flowrate Twelve Month History

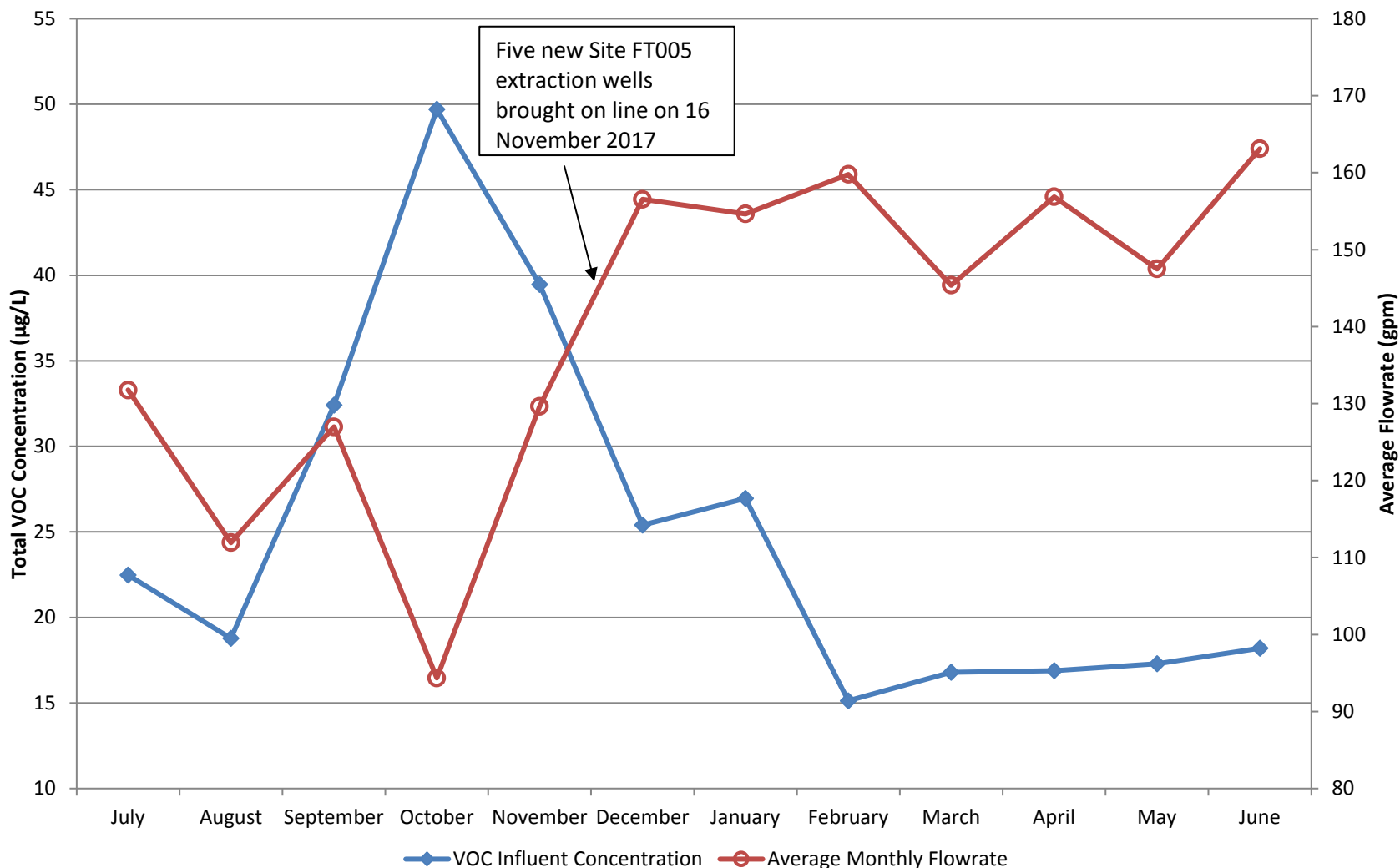
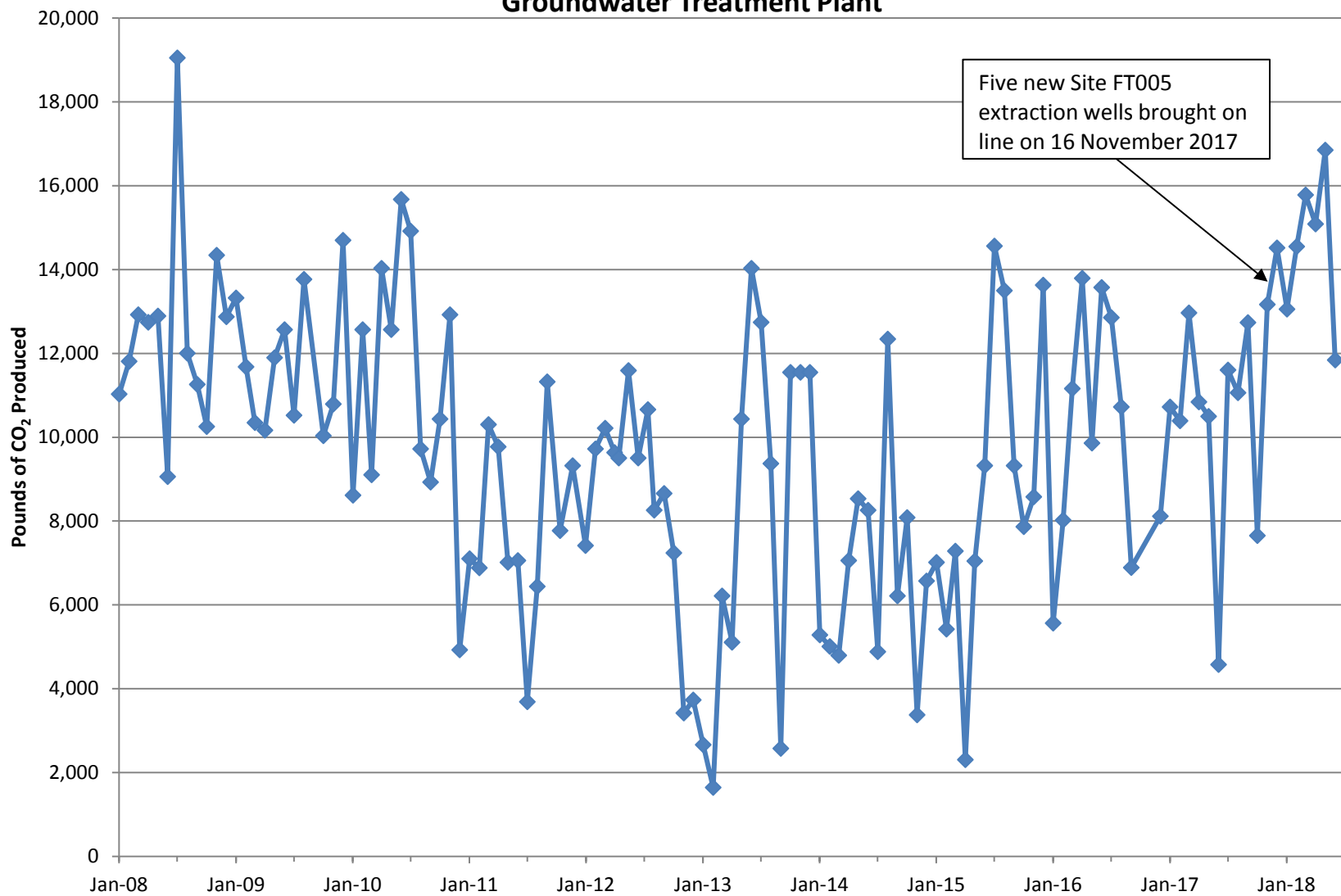


Figure 3

**Equivalent Pounds of Carbon Dioxide Produced by the South Base Boundary
Groundwater Treatment Plant**



Central Groundwater Treatment Plant Monthly Data Sheet

Report Number: 227

Reporting Period: 1 June 2018 – 28 June 2018

Date Submitted: 17 July 2018

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 June 2018 reporting period.

Table 1 – Operations Summary – June 2018			
Initial Data Collection:		6/1/2018 13:20	
Final Data Collection:		6/28/2018 14:00	
Operating Time:		Percent Uptime:	
CGWTP: 649 hours		CGWTP: 100%	
		Electrical Power Usage:	
		CGWTP: 2,020 kWh (2,383 lbs CO ₂ generated ^a)	
Gallons Treated (discharge to storm sewer): 1,142,630 gallons		Gallons Treated Since January 1996: 556.7 million gallons	
VOC Mass Removed from groundwater: 2.39 lbs ^b		VOC Mass Removed Since January 1996: 2,809 lbs from groundwater 8,686 lbs from vapor	
Rolling 12-Month Cost per Pound of Mass Removed: \$2,038 ^c			
Monthly Cost per Pound of Mass Removed: \$1,362 ^c			
^a SiteWise™ estimate that 1 kilowatt hour generated produces 0.74 pounds of GHG. Value also includes approximately 888 pounds of GHG from GAC change out services averaged to a per month basis.			
^b Calculated using June 2018 EPA Method SW8260C analytical results.			
^c 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.

Table 2 – CGWTP Average Flow Rates ^a – June 2018	
Location	Average Flow Rate Groundwater (gpm)
EW001x16	13.1
EW002x16	7.5
EW003x16	0.1
EW605x16	6.0
EW610x16	2.6
CGWTP	29.4
^a 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.

Table 3 – Summary of System Shutdowns					
Location	Shutdown^a		Restart		Cause
	Date	Time	Date	Time	
CGWTP	None.	--		--	
-- = Date/Time not recorded ^a Shutdown and restart times estimated based on field notes CGWTP = Central Groundwater Treatment Plant					

Table 4 presents a twelve-month summary of the Site DP039 bioreactor recirculation well pulsing dates.

Table 4 – Summary of DP039 Bioreactor “Pulsed Mode” Operations		
Location	Pulse-on Date	Pulse-off Date
MW750x39	5 April 2017	7 August 2017
	7 September 2017	2 October 2017
	6 November 2017	27 November 2017
	26 December 2017	22 January 2018
	19 February 2018	21 March 2018
	16 April 2018	14 May 2018
	12 June 2018	
MW = Monitoring Well		

Summary of O&M Activities

Monthly groundwater treatment samples were collected at the CGWTP on 11 and 18 June 2018. Sample results are presented in Table 5. The total VOC concentration (251.24 µg/L) in the June 2018 influent sample has decreased slightly from the May 2018 sample (253.21 µg/L). TCE was the primary VOC detected in the influent sample at a concentration of 200 µg/L. Cis-1,2-DCE (38 µg/L) and vinyl chloride (0.23 J µg/L) were detected in the sample collected after the first carbon vessel, and vinyl chloride (0.18 J µg/L) was detected in the sample collected after the second carbon vessel. No VOC constituents were detected in the effluent sample. Travis AFB will continue to monitor influent, midpoint, and effluent concentrations at the CGWTP for carbon breakthrough, though the carbon treatment remained effective in June 2018. A carbon change out on the lead GAC vessel is scheduled in July 2018.

In accordance with the sampling schedule established in the current NPDES permit, annual samples for semi-volatile VOCs (SVOCs), polycyclic aromatic hydrocarbons (PAHs), metals, and sulfate were collected at the CGWTP. Table 6 presents sample results from the metals and sulfate analyses. SVOCs (not already reported in Table 5) and PAHs were not detected in any of the samples collected in June 2018 and are therefore not presented in this data sheet in a table. Analytical results are available upon request. The effluent sample did not contain detectable amounts of sulfate or metals.

In June, the OSA wells (EW605x16 and EW610x16) were briefly shut down several times to service the sump pump in their combined well vault (OSA vault). The sump pump and its inlet filter were cleaned, and both wells were brought back on line.

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 concentrations show an increasing trend over the past 12 months along with an overall decreasing trend for the flow rate through the treatment plant.

The Site DP039 subgrade biogeochemical reactor (SBGR), also known as a bioreactor, continued to operate in a four-week “pulsed mode” to optimize distribution of total organic carbon (TOC). The bioreactor was brought back on line on 12 June 2018 as planned.

Optimization Activities

No optimization activities occurred at the CGWTP in June 2018.

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 2,383 pounds of GHG during June 2018.

TABLE 5

Summary of Groundwater Analytical Data for June 2018 – Central Groundwater Treatment Plant

				11 – 18 June 2018 (µg/L)			
Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	Influent	After Carbon 1 Effluent	After Carbon 2 Effluent	System Effluent
Halogenated Volatile Organics							
Carbon Tetrachloride	0.5	0.19	0	ND	ND	ND	ND
Chloroform	5.0	0.16	0	ND	ND	ND	ND
Chloromethane	NA	0.30	0	ND	ND	ND	ND
1,2-Dichlorobenzene	5.0	0.13	0	0.30 J	ND	ND	ND
1,3-Dichlorobenzene	5.0	0.16	0	0.31 J	ND	ND	ND
1,4-Dichlorobenzene	5.0	0.16	0	0.21 J	ND	ND	ND
1,1-Dichloroethane	5.0	0.16	0	ND	ND	ND	ND
1,2-Dichloroethane	0.5	0.13	0	ND	0.14 J	ND	ND
1,1-Dichloroethene	5.0	0.14	0	0.47 J	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.15	0	47	38	ND	ND
trans-1,2-Dichloroethene	5.0	0.15	0	2.2	ND	ND	ND
Methylene Chloride	5.0	0.32	0	ND	ND	ND	ND
Tetrachloroethene	5.0	0.20	0	0.44 J	ND	ND	ND
1,1,1-Trichloroethane	5.0	0.16	0	ND	ND	ND	ND
1,1,2-Trichloroethane	5.0	0.32	0	ND	ND	ND	ND
Trichloroethene	5.0	0.16 – 1.6	0	200	ND	ND	ND
Vinyl Chloride	0.5	0.10	0	0.31 J	0.23 J	0.18 J	ND
Non-Halogenated Volatile Organics							
Benzene	1.0	0.16	0	ND	ND	ND	ND
Ethylbenzene	5.0	0.16	0	ND	ND	ND	ND
Toluene	5.0	0.17	0	ND	ND	ND	ND
Total Xylenes	5.0	0.19 – 0.34	0	ND	ND	ND	ND
Other							
Total Petroleum Hydrocarbons – Gasoline (C6 – C10)	50	10	0	31 J+	NM	NM	ND
Total Petroleum Hydrocarbons – Diesel (C10 – C28)	50	15	0	ND	NM	NM	ND
Total Petroleum Hydrocarbons – Motor Oil (C28 – C40)	50 (trigger)	160	0	ND	NM	NM	ND
1,4-Dioxane	NA	0.08	0	ND	NM	NM	ND

* In accordance with current National Pollutant Discharge Elimination System permit – January 2018.

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

J+ = analyte concentration is considered an estimated value, biased high

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 6
Summary of Groundwater Analytical Data for June 2018 – Central Groundwater Treatment Plant

11 – 18 June 2018 (µg/L)							
Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	Influent	After Carbon 1 Effluent	After Carbon 2 Effluent	System Effluent
Metals							
Antimony	8600	5.2	0	ND	NM	NM	ND
Arsenic	59	4.4	0	ND	NM	NM	ND
Cadmium	1.8	0.45	0	ND	NM	NM	ND
Chromium	16	0.66	0	1.5 J	NM	NM	ND
Copper	14	4.2	0	ND	NM	NM	ND
Lead	5.2	2.7	0	ND	NM	NM	ND
Nickel	50	2.6	0	ND	NM	NM	ND
Selenium	8.2	6.3	0	ND	NM	NM	ND
Silver	2.2	0.93	0	ND	NM	NM	ND
Thallium	13	4.9	0	ND	NM	NM	ND
Zinc	95	4.5	0	ND	NM	NM	ND
Other							
Sulfate	NA	230	0	ND	NM	NM	ND

* In accordance with current National Pollutant Discharge Elimination System permit – January 2018.

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

Figure 1
CGWTP Total VOC Influent Concentrations and Average Flowrate Twelve Month History

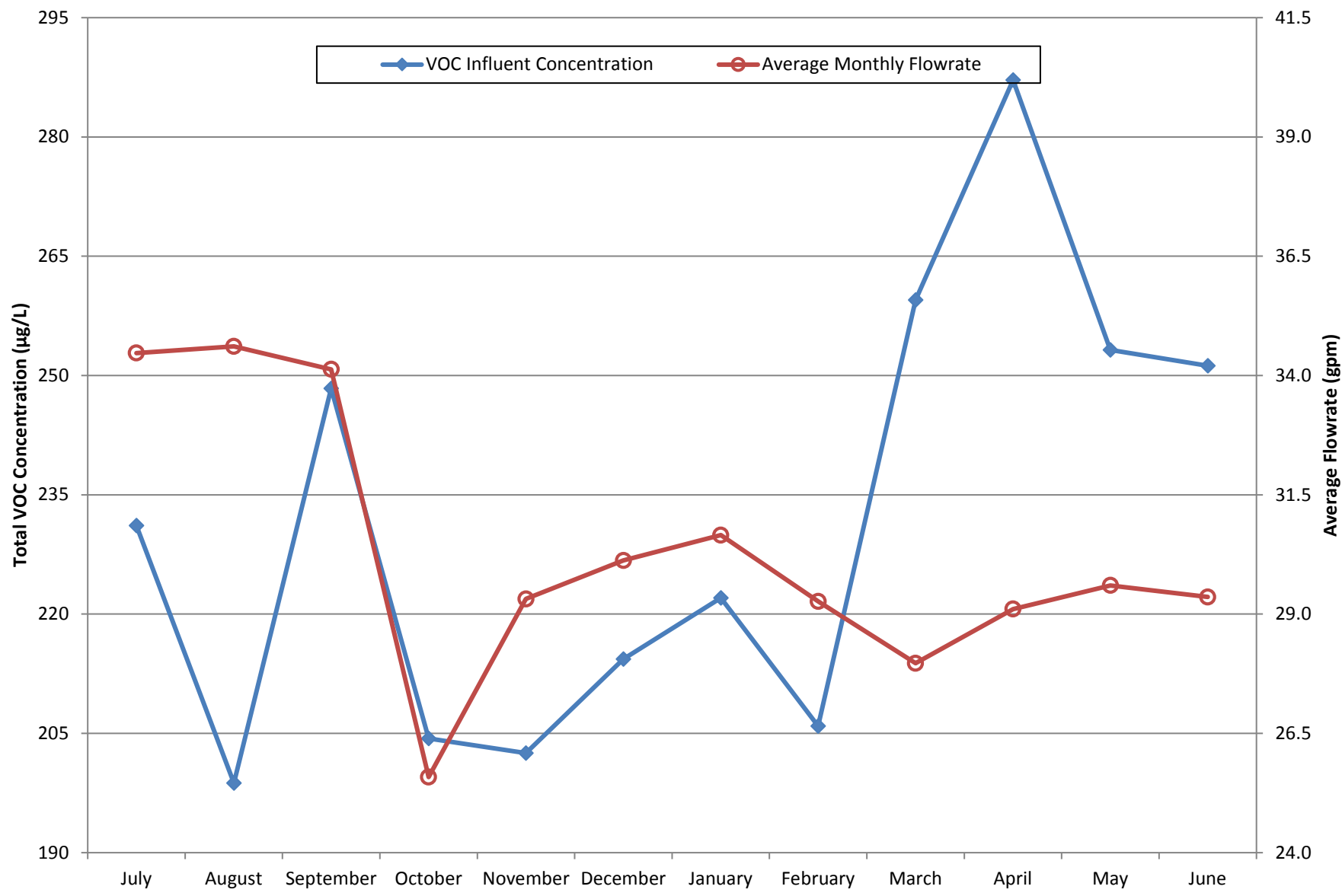
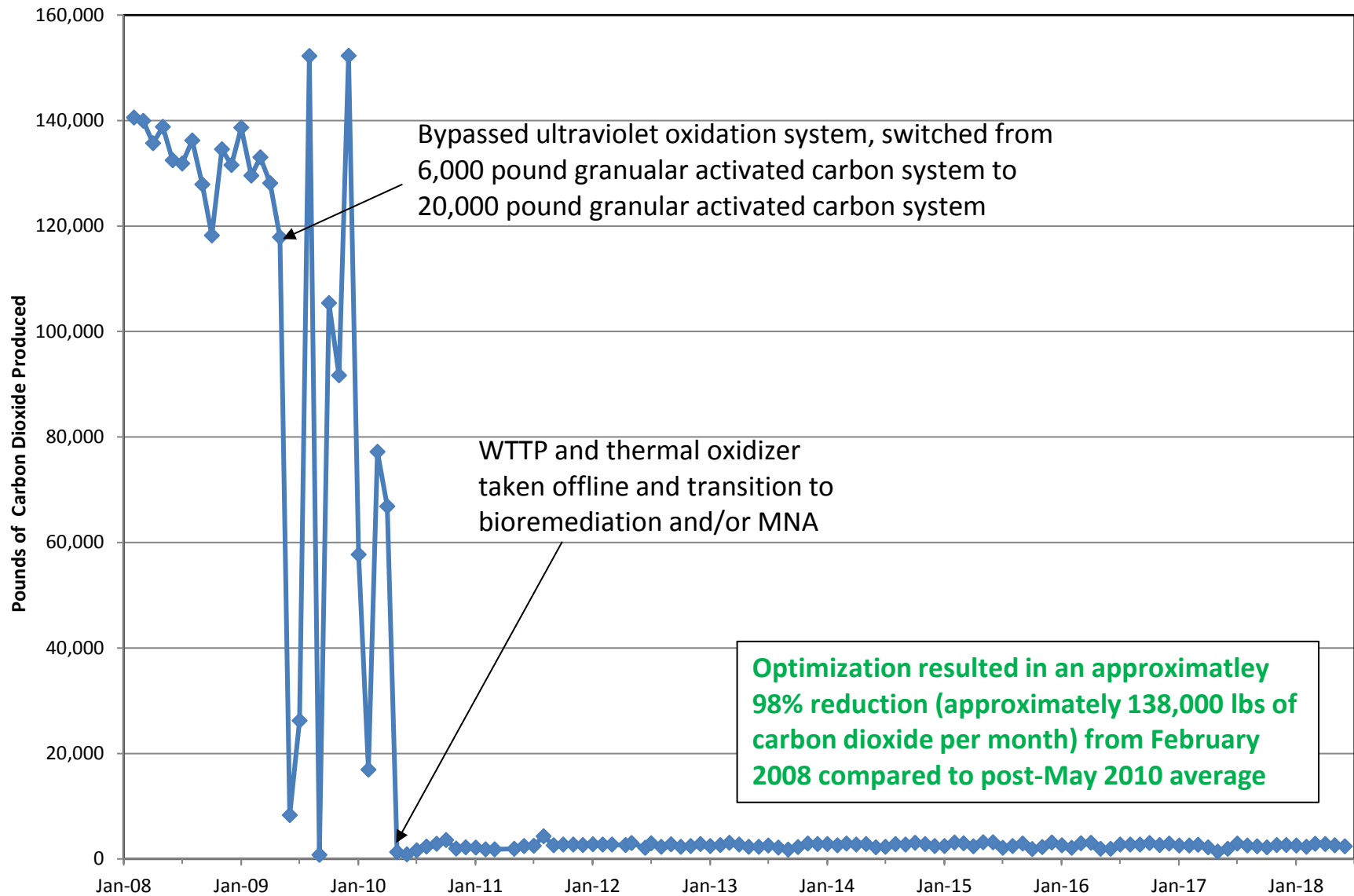


Figure 2

Equivalent Pounds of Carbon Dioxide Produced by the Central Groundwater Treatment Plant



Subarea LF007C Groundwater Treatment Plant

Monthly Data Sheet

Report Number: 170

Reporting Period: 1 June 2018 – 28 June 2018

Date Submitted: 17 July 2018

This monthly data sheet presents information regarding the Subarea LF007C Groundwater Treatment Plant (LF007C GWTP) and associated remedial process optimization (RPO) activities.

System Metrics

Table 1 presents operational data from the June 2018 reporting period:

Table 1 – Operations Summary – June 2018			
Initial Data Collection:	6/1/2018 8:20	Final Data Collection:	6/28/2018 16:30
Operating Time:	Percent Uptime:	Electrical Power Usage ^a :	
LF007C GWTP: 656 hours	LF007C GWTP 100%	LF007C GWTP: 0 kWh	
Gallons Treated: 200,748 gallons		Gallons Treated Since March 2000: 87.6 million gallons	
Volume Discharged to Duck Pond: 200,748 gallons			
VOC Mass Removed: 1.19 x 10⁻³ pounds^b		VOC Mass Removed Since March 2000: 174.39 pounds (Groundwater)	
Rolling 12-Month Cost per Pound of Mass Removed: Not Measured^c			
Monthly Cost per Pound of Mass Removed: Not Measured^c			
^a The LF007C GWTP operates on solar power only.			
^b VOCs from June 2018 influent sample detected by EPA Method SW8260C.			
^c Value not calculated since measurement does not accurately represent the cost effectiveness of the system.			

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

Table 2 – LF007C GWTP Average and Total Flow Rates – June 2018		
Location	Average Flow Rate (gpm) ^a	Total Gallons Processed (gallons)
EW614x07	4.3	168,460
EW615x07	0.8	30,410
LF007C GWTP	5.1	200,748
^a 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.

Table 3 – Summary of System Shutdowns					
Location	Shutdown ^a		Restart ^a		Cause
	Date	Time	Date	Time	
LF007C GWTP	None.	--		--	
-- = Time not recorded ^a Shutdown and restart times estimated based on field notes LF007C GWTP = Subarea LF007C Groundwater Treatment Plant					

Summary of O&M Activities

Monthly groundwater samples were collected at the LF007C GWTP on 11 and 18 June 2018. Sample results are presented in Table 4. TCE (0.71 J µg/L) was detected at the influent sample location. Total petroleum hydrocarbons (gasoline, diesel, and motor oil) were not detected at either the influent or effluent sampling locations in June 2018. 1,4-dioxane was detected in the effluent sample at a concentration of 0.94 J- µg/L. There are no established effluent limits for 1,4-dioxane when discharging to non-drinking water receiving waters according to the current VOC and fuel general NPDES permit.

In accordance with the sampling schedule established in the current NPDES permit, annual samples for semi-volatile VOCs (SVOCs), polycyclic aromatic hydrocarbons (PAHs), metals, and sulfate were collected at the LF007C GWTP. Table 5 presents sample results from these annual analyses, where detected. Analytes included in the laboratory analyses that were not detected are not presented in this data sheet. Analytical results are available upon request. The influent and effluent samples contained detectable amounts of sulfate, though there is no established effluent limitation for sulfate. Concentrations of chromium and zinc were detected in the effluent sample, but both at concentrations below their respective effluent limitations.

Figure 1 presents a chart of influent concentrations (total VOCs) at the LF007C GWTP versus time for the past twelve (12) months. VOC concentrations, primarily TCE, have been seasonally variable; however, over the last 12 months the trend has been slightly decreasing. The average flow rate through the LF007C GWTP has also slightly decreased over the last 12 months.

Optimization Activities

No optimization activities occurred at the LF007C GWTP in June 2018.

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 system.

Figure 2 presents the historical GHG production from the systems associated with the NGWTP and LF007C GWTP. The LF007C GWTP is now a solar-only operated treatment system and no longer generates GHG, with exception of a small amount of GHG generated from changing out the GAC averaged to a per month basis.

TABLE 4

Summary of Groundwater Analytical Data for June 2018 – Subarea LF007C Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	11 – 18 June 2018 (µg/L)		
				Influent	After Carbon 1	Effluent
Halogenated Volatile Organics						
Bromodichloromethane	5.0	0.15	0	ND	ND	ND
Bromoform	5.0	0.15	0	ND	ND	ND
2-Butanone	5.0	2.0	0	ND	ND	ND
Carbon Tetrachloride	0.5	0.15	0	ND	ND	ND
Chloroform	5.0	0.15	0	ND	ND	ND
Dibromochloromethane	5.0	0.15	0	ND	ND	ND
1,3-Dichlorobenzene	5.0	0.15	0	ND	ND	ND
1,4-Dichlorobenzene	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	ND	ND	ND
1,1-Dichloroethene	5.0	0.15	0	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.15	0	ND	ND	ND
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	0.71 J	ND	ND
Vinyl Chloride	0.5	0.15	0	ND	ND	ND
Non-Halogenated Volatile Organics						
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
Other						
Total Petroleum Hydrocarbons – Gasoline	50	35	0	ND	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	24	0	ND	NM	ND
Total Petroleum Hydrocarbons – Motor Oil	50	24	0	ND	NM	ND
1,4-Dioxane	NA	0.19	0	0.95 J-	NM	0.94 J-

* In accordance with current National Pollutant Discharge Elimination System permit – January 2018.

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

J- = analyte concentration is considered an estimated value, biased low

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

TABLE 5

Summary of Groundwater Analytical Data for June 2018 – Subarea LF007C Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	11 – 18 June 2018 (µg/L)		
				Influent	After Carbon 1	Effluent
Metals						
Antimony	8600	5.2	0	ND	NM	ND
Arsenic	59	4.4	0	ND	NM	ND
Cadmium	1.8	0.45	0	ND	NM	ND
Chromium	16	0.66	0	4.2 J	NM	3.8 J
Copper	14	4.2	0	ND	NM	ND
Lead	5.2	2.7	0	ND	NM	ND
Nickel	50	2.6	0	ND	NM	ND
Selenium	8.2	6.3	0	ND	NM	ND
Silver	2.2	0.93	0	ND	NM	ND
Thallium	13	4.9	0	ND	NM	ND
Zinc	95	4.5	0	8.2 J	NM	9.3 J
SVOCs and PAHs						
Benzoic Acid	NA	9.7	0	ND	NM	10 J
Benzyl Alcohol	NA	0.22	0	ND	NM	2.9 J
Diethyl phthalate	NA	0.37	0	ND	NM	0.78 J+
Benzo(a)anthracene	0.098	0.003	0	0.0037 J	NM	0.0033 J
Naphthalene	NA	0.22	0	ND	NM	0.42 J
Other						
Sulfate	NA	230	0	920	NM	820

* In accordance with current National Pollutant Discharge Elimination System permit – January 2018.

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

J- = analyte concentration is considered an estimated value, biased low

J+ = analyte concentration is considered an estimated value, biased high

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

Figure 1

LF007CGWTP Total VOC Influent Concentrations and Average Flowrate Twelve Month History

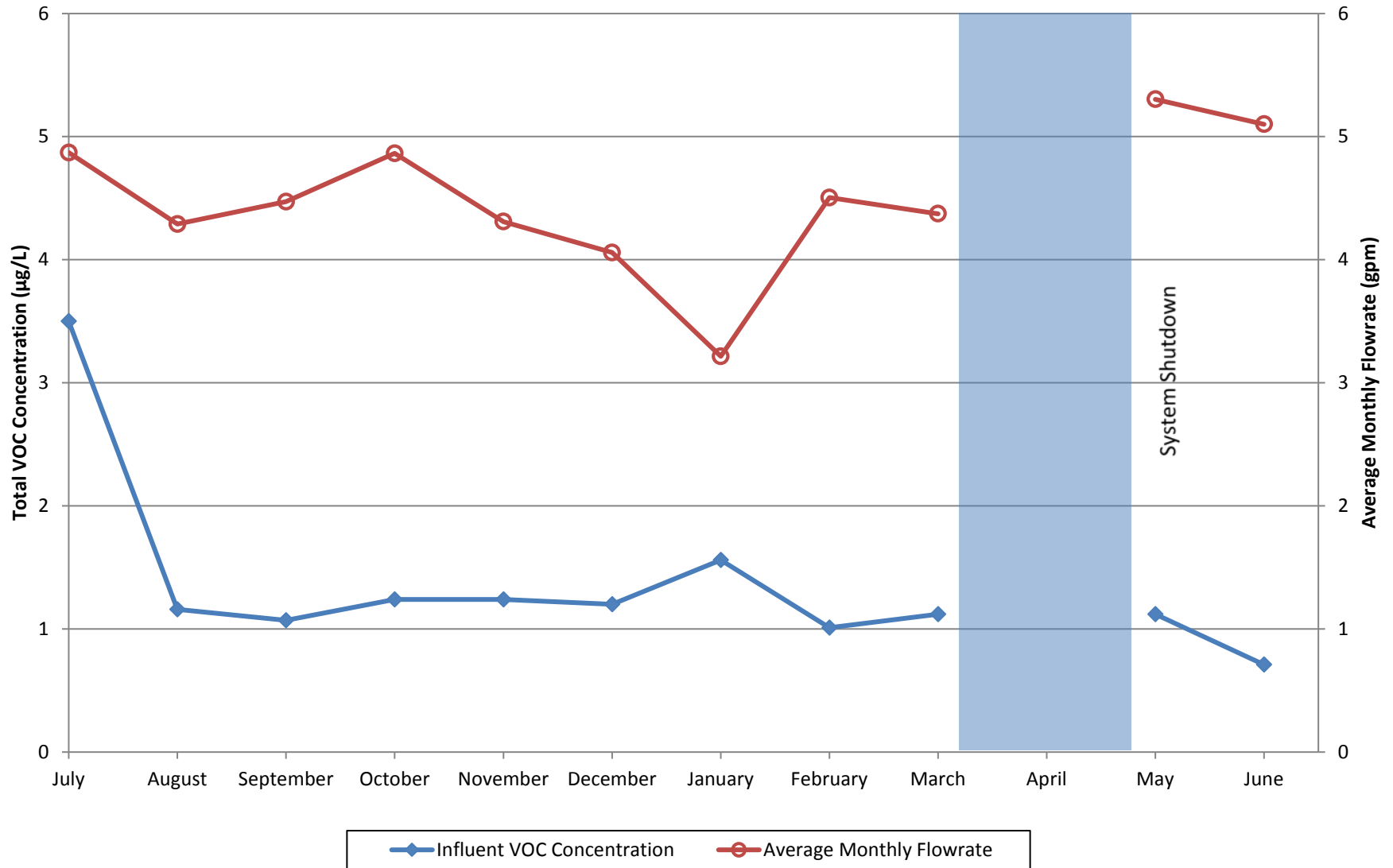
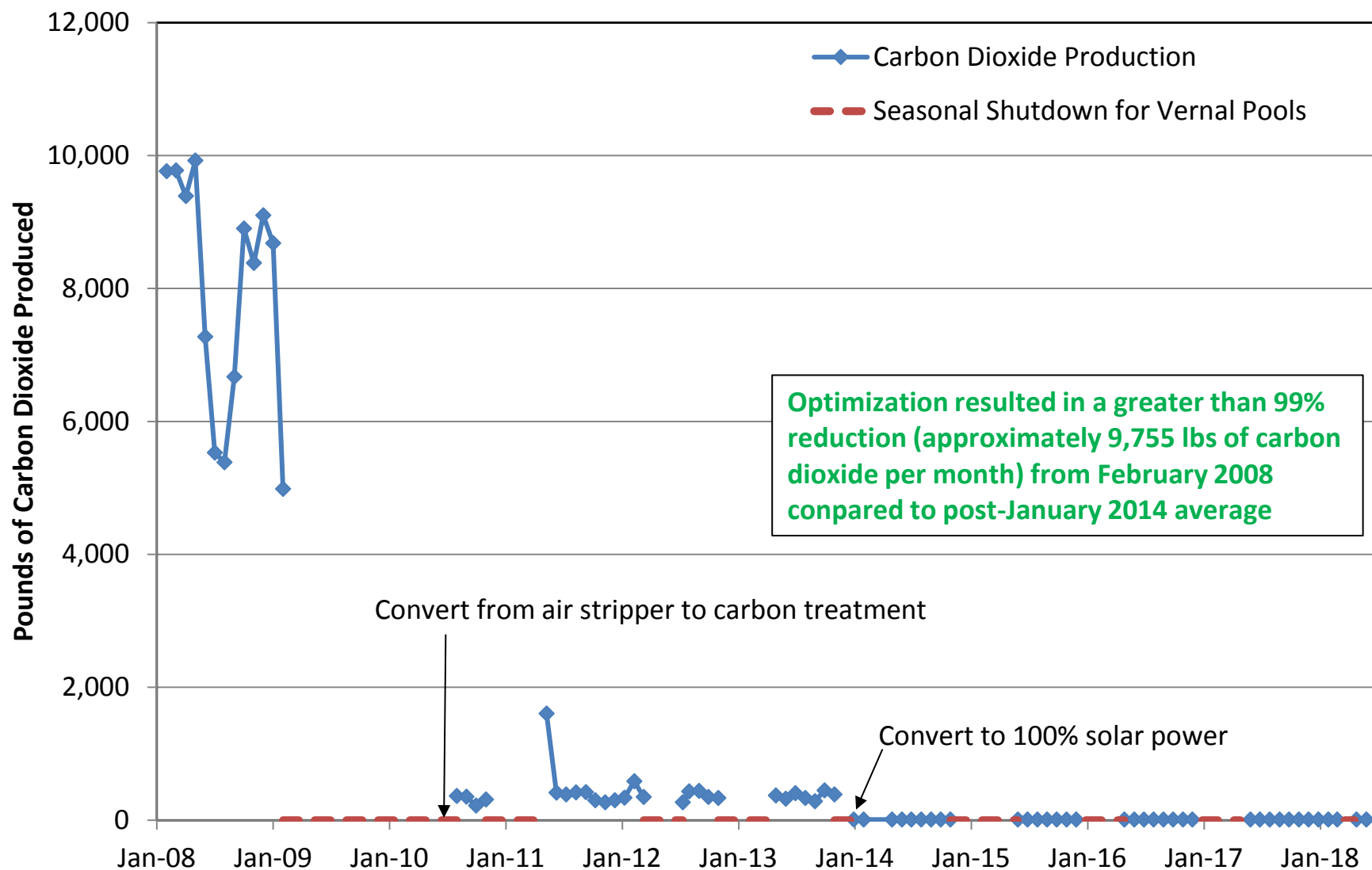


Figure 2
Equivalent Pounds of Carbon Dioxide Produced by the NGWTP/LF007C GWTP



Note: Dashed line represents seasonal shutdowns due to the presence of vernal pools at Site LF007C during which no carbon dioxide production occurred.

Site ST018 Groundwater Treatment Plant

Monthly Data Sheet

Report Number: 088

Reporting Period: 1 June 2018 – 28 June 2018

Date Submitted: 13 July 2018

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

System Metrics

Table 1 presents operation data from the June 2018 reporting period.

Table 1 – Operations Summary – June 2018			
Initial Data Collection: 6/1/2018 9:20		Final Data Collection: 6/28/2018 16:00	
Operating Time:		Percent Uptime:	
ST018GWTP: 343 hours		ST018GWTP: 52.3%	
		Electrical Power Usage: ST018GWTP: 73 kWh (54 lbs CO ₂ generated ^a)	
Gallons Treated: 120,440 gallons		Gallons Treated Since March 2011: 15.2 million gallons	
Volume Discharged to Sanitary Sewer: 120,440 gallons		Final Totalizer Reading: 15,203,149 gallons	
Cumulative Volume Discharged to Sanitary Sewer since 1 November 2014: 8,706,975 gallons			
MTBE, BTEX, VOC, TPH Mass Removed: 0.05 lbs ^b		MTBE, BTEX, VOC, TPH Mass Removed Since March 2011: 45.5 lbs	
MTBE (Only) Removed: 0.03 lbs ^b		MTBE (Only) Mass Removed Since March 2011: 11.1 lbs	
Rolling 12-Month Cost per Total Pounds of Mass Removed: \$9,857 ^{bc}			
Monthly Cost per Pound of Mass Removed: \$51,468 ^{bc}			
^a SiteWise™ estimate that 1 kilowatt hour generated produces 0.74 pounds of GHG.			
^b Calculated using June 2018 EPA Method SW8260C and SW8015B analytical results.			
^c 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.

Table 2 – ST018GWTP Average Flow Rates – June 2018		
Location	Average Flow Rate Groundwater (gpm)^a	Hours of Operation
EW2014x18	1.5	343
EW2016x18	0.9	343
EW2019x18	1.5	343
EW2333x18	1.3	343
ST018GWTP	5.9	343
^a 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.

Table 3 – Summary of System Shutdowns					
Location	Shutdown^a		Restart^a		Cause
	Date	Time	Date	Time	
ST018GWTP	2 June 2018	14:15	5 June 2018	12:30	High pressure alarm from clogged bag filters
ST018GWTP	11 June 2018	12:20	12 June 2018	14:00	High pressure alarm from clogged bag filters
ST018GWTP	16 June 2018	09:30	16 June 2018	12:30	Leak from cracked fitting near air relief valve
ST018GWTP	19 June 2018	18:45	28 June 2018	16:00	High tank level alarm
-- = Time not recorded ^a 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 11 June 2018. Results are presented in Table 4. The complete June 2018 laboratory data report is available upon request. The influent concentration for MTBE during the June 2018 sampling event was 29 J- µg/L, which is a decrease from the May 2018 sample result of 35 µg/L. TPH-g and benzene were also detected in the influent sample. MTBE and TPH-g were detected in the system effluent sampling location at concentrations less than the effluent limitations.

All concentrations of TPH are well below the Fairfield-Suisun Sewer District effluent limitation of 50,000 µg/L for TPH-g and TPH-d, or 100,000 µg/L for TPH-mo. Additionally, the Fairfield-Suisun Sewer District does not currently have a local limit for MTBE, but a limit of 6,400 µg/L is advised based on worker health and safety. Travis AFB will continue to monitor influent and effluent contaminant concentrations to maintain compliance with the Fairfield-Suisun Sewer District discharge permit.

The ST018GWTP was shut down several times throughout June for various reasons. On 2 June and 11 June, the system was shut down because of high pressure alarms from clogged bag filters. The bag filters were replaced,

and the system was restarted without issue. On 16 June, a leak was observed by a Firestone employee. The system was turned off for approximately 3 hours to repair a leak discovered on one (1) of the three (3) carbon filter vessels. All water that had leaked from the vessel was contained within the secondary containment pad. On 19 June, the system was shut down because of a high influent tank level alarm. The switch for the pump was inadvertently turned off when changing out bag filters. On 28 June, the system was reset and restarted.

Other maintenance activities conducted in June which did not require a system shut down included cleaning the solar panels and replacing the pressure release valves on the GAC vessels.

Figure 1 presents plots of the average flow rate and influent total contaminant (MTBE, TPH-g, TPH-d, TPH-mo, BTEX, and VOCs) and MTBE concentrations at the ST018GWTP over the past twelve (12) months. The average flow rate through the ST018GWTP has been cyclical with flow rates decreasing during the dry season (summer and fall) and increasing during the rainy season (winter and spring). The overall average flow rates in the past 12 months show a slightly increasing trend. The MTBE concentrations and total influent concentrations have generally been fluctuating over the past 12 months with a flat trend and an increasing trend, respectively.

Optimization Activities

No optimization activities occurred at the ST018GWTP in June 2018.

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.

Figure 2 presents the historical GHG production from the ST018GWTP. The ST018GWTP produced 54 pounds of GHG during June 2018 and treated 120,440 gallons of water. The amount of GHG produced is directly attributed to the amount of water treated through the system because the only line-power electrical use is for a transfer pump through the GAC system.

TABLE 4

Summary of Groundwater Analytical Data for June 2018– Site ST018 Groundwater Treatment Plant

Summary of Groundwater Monitoring Data for June 2018 - Site C1616 Groundwater Treatment Plant					
Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	11 June 2018 (µg/L)	
				Influent	System Effluent
Fuel Related Constituents					
Methyl tert-Butyl Ether	6,400	0.25	0	29 J-	3.1 J-
Benzene	25,000 ^a	0.16	0	0.35 J-	ND
Ethylbenzene	25,000 ^a	0.16	0	ND	ND
Toluene	25,000 ^a	0.17	0	ND	ND
Total Xylenes	25,000 ^a	0.19 – 0.34	0	ND	ND
Total Petroleum Hydrocarbons – Gasoline	50,000 ^b	10	0	16 J-	12 J
Total Petroleum Hydrocarbons – Diesel	50,000 ^b	16	0	ND	ND
Total Petroleum Hydrocarbons – Motor Oil	100,000	160 – 170	0	ND	ND

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

Figure 1
ST018GWTP Total VOC and MTBE Influent Concentrations
and Average Flowrate Twelve Month History

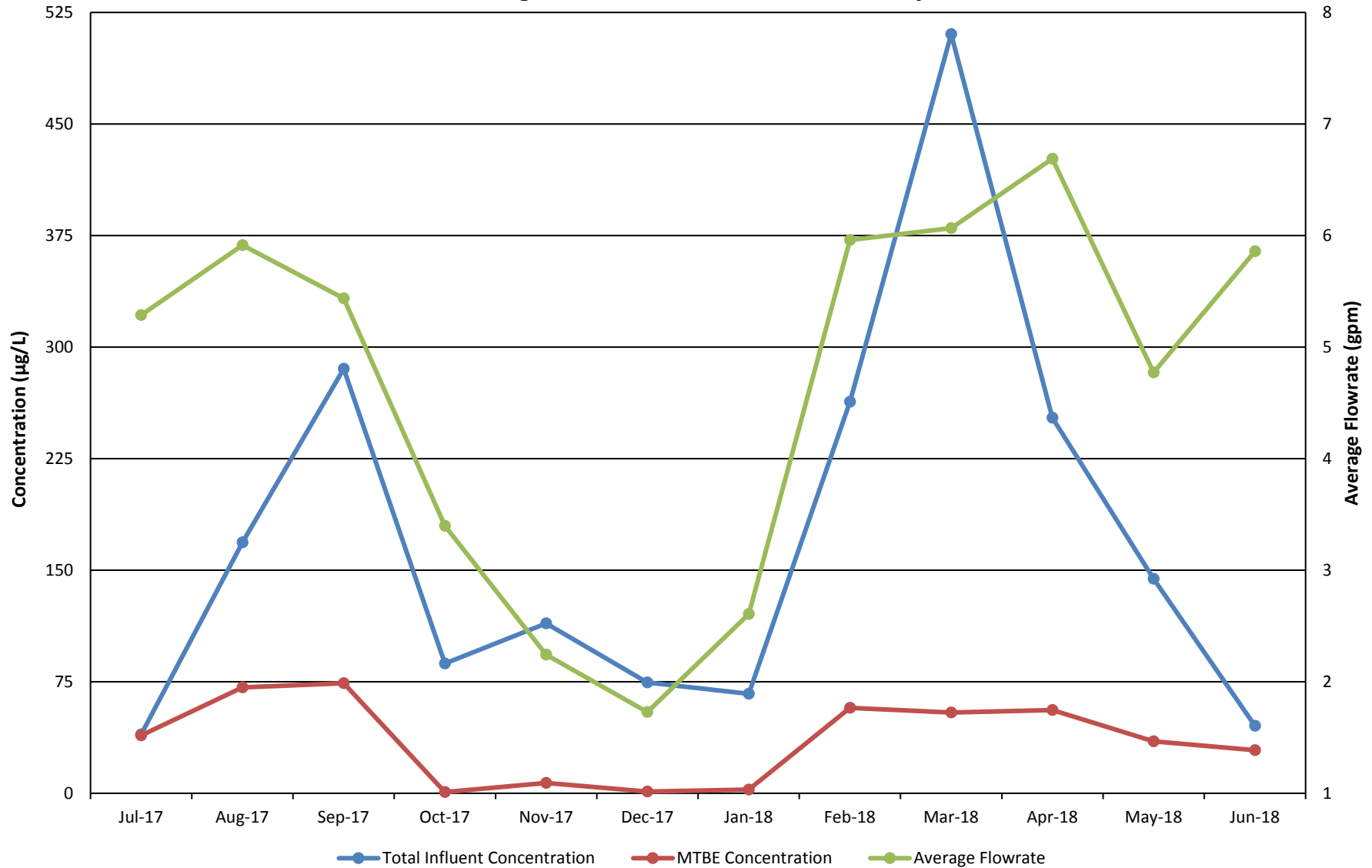
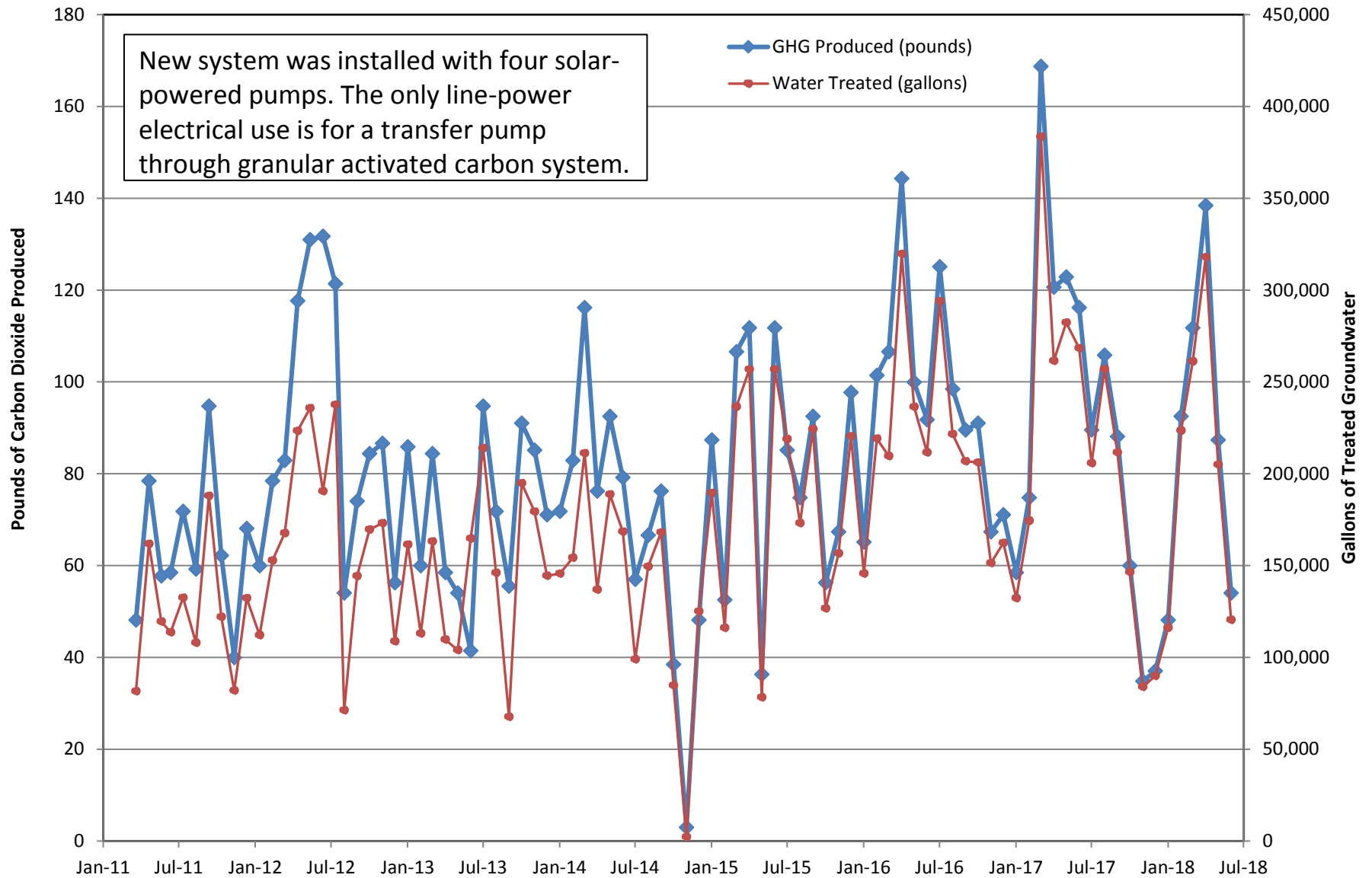


Figure 2

Equivalent Pounds of Carbon Dioxide Produced by the Site ST018 Groundwater Treatment Plant



Travis AFB Restoration Program

Program Update

RPM Teleconference

July 18, 2018

Completed Documents (1)

- Vapor Intrusion Assessment Update Technical Memorandum
- 2012 CAMU Annual Report
- Old Skeet Range Action Memorandum
- 3rd 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 (2)

- 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 (3)

- Data Gap Investigation TM for Soil Sites SD033, SD043, & SS046
- Site FT004 Technology Demonstration Construction Completion Report
- Site SD031 Soil Remedial Investigation Work Plan
- Corrective Action Plan for DERA-Funded Oil Water Separators
- Site ST032 POCO Completion Report
- Site ST028 POCO Completion Report
- 2015 Annual CAMU Monitoring Report
- Site SD031 Remedial Investigation Work Plan
- Site SD034 Technology Demonstration Work Plan
- Site SS016 Soil Data Gaps Investigation Work Plan
- Multi-Site Bioaugmentation Technology Demonstration Work Plan
- Sites ST028 and ST032 POCO Well Decommissioning Work Plan
- Site TS060 Action Memorandum
- 2015 Annual GRISR
- FT005 Technology Demonstration Construction Completion Report
- Site CG508 POCO Well Decommissioning and Site Closeout Technical Memorandum
- Site DP039 Remedial Action Construction Completion Report
- ST028 POCO Well Decommissioning/Site Closeout Technical Memorandum
- Site TS060 Removal Action Work Plan

Completed Documents (4)

- Multisite Technology Demonstration Construction Completion Report
- SS014 POCO Technology Demonstration Construction Completion Report
- Site LF044 Investigation Work Plan
- Site FT004 POCO Soil Data Gap Investigation Work Plan
- SD034 Technology Demonstration Construction Completion Report
- POCO Evaluation/Closeout Report for DERA-funded oil/water separators OW051, OW053, and OW054
- ST032 POCO Well Decommissioning and Site Closeout Technical Memorandum
- 2016 Annual CAMU Monitoring Report
- Work Plan for Fourth Five-year Review
- 2016 Annual GRISR
- Data Gap Investigation Results, Technical Memorandum for Soil, Sites SD033, SD043, SS046
- TS060 Removal Action Completion Report
- SS035 Site Closure Report
- AOC TA500 Data Gaps Investigation and Closure Report
- Site TS060 No Further Action Proposed Plan
- POCO Evaluation/Closure Report for DERA-funded Oil/Water Separators OW040, OW047, OW048, OW049, OW050, OW052, OW055, OW056, and OW057

Completed Documents (5)

- Data Gap Investigation Results,
Technical Memorandum for Soil Site
SS016
- LF006, SS030, SD031 Aquifer Test
Activities Technical Memorandum
- ***SS015 Soil Sampling Plan***

Completed Field Work (1)

- 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 (2)

- 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
- Data Gap Inv. for Soil Sites (SD043, SS046)
- SD031 Remedial Investigation Step-out Sampling (2nd round)
- DP039 EVO Injection
- CG508 Well Decommissioning
- SD033 Soil Sampling
- Multi-site Bioaugmentation Well Installation
- SD034 Technology Demonstration Well Installation
- SS014 Bioreactor Installation
- ST028 & ST032 Well Decommissioning

Completed Field Work (3)

- SS016 Soil Data Gaps Investigation
- SD031 Remedial Investigation Soil Sampling (3rd round)
- Oil Water Separators Step-out Drilling
- OW055 Close-in-place
- Q4 2016 GRIP Sampling
- OW040 Soil Excavation/Surface Restoration
- OW057 Soil Excavation/Surface Restoration
- Multi-site Bioaugmentation & EVO Injection
- SD034 Technology Demonstration Bioreactor Installation
- OW050 Soil Sampling at Former Location of OWS
- OW055 Sidewalk Repairs
- SD031 Finish Soil Delineation (NE portion of site)
- Q2 2017 GRIP Sampling Event
- SS015 Optimization: Injection Well Installation
- DP039 Down-gradient Monitoring Well Installation (1st round)
- SD036 Optimization: Injection Well Installation
- SD031 Optimization: Injection Well Installation
- OW056 Site Excavation/Closure
- Well Re-development
- TS060 Removal Action

Completed Field Work (4)

- FT004 POCO Soil Data Gaps Investigation
- LF044 Sediment Sampling
- FT004 EVO Optimization
- DP039 Install downgradient monitoring wells (2nd round)
- FT005 – Install Extraction Wells
- DP039 Repair SBGR distribution headers
- Q4 2017 GRIP Sampling
- SD036 EVO Optimization
- SS015 EVO Optimization
- SD031 EVO Optimization
- FT005 Installation of Pumps and Controls in 5 New Extraction Wells
- Q1 2018 GRIP Sampling
- SD037 EVO reinjection
- Q2 2018 GRIP Sampling
- ***SS015 Soil sampling***

Documents In-Progress

CERCLA

- Amendment to the WABOU Soil ROD for sites DP039, SD043, and SS046
- Amendment to the NEWIOU Soil ROD for Sites SS016 and SD033
- SD043 RD/RA Work Plan
- SS046 RD/RA Work Plan
- Monitoring Well Installation Tech Memo for Site DP039, Addendum to the RACCR
- FT005 Extraction System Optimization Tech Memo
- 2017 Annual CAMU Monitoring Report
- LF044 Sediment Sampling Report
- Community Relations Plan Update (revised draft)
- 4th Five Year Review Report for Multiple Groundwater, Soil, and Sediment Sites

Documents In-Progress

MMRP

- ***NFA ROD for Old Skeet Range (TS060 MRA)***

POCO

- None

Field Work In-Progress

CERCLA

- FT005 EVO injection

POCO

- ***FT004 POCO Soil Investigation***

Documents Planned

CERCLA

- SS016 RD/RA Work Plan Jul
- 2017 Annual GRISR Jul
- EVO Sites FT004, SS015, SD031, & SD036 Optimization
Injections Tech Memo Aug
- LF006 Technology Demonstration Work Plan Aug
- SD031 Soil RI/FS Oct

MMRP

- None

Documents Planned

POCO

- None

Field Work Planned

CERCLA

- SD043 Soil excavation TBD
- SS046 Soil excavation TBD
- SS016 Soil excavation TBD

POCO

- TA500 Well Decommissioning Jul

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

Petroleum Technology Demonstration Projects (1)

- SS014: Recycled Drywall SBGR
 - Evaluate the effectiveness of sulfate (gypsum from crushed drywall) to enhance anaerobic biodegradation of petroleum in groundwater
 - Installation was completed November 2016
 - Results through first 9 months
 - TPH-G: 99% reduction in source area (1,900 to 15 J $\mu\text{g/L}$), 34% for remaining 6 site wells (was 18% after 3 months)
 - TPH-D: 98% reduction in source area (5,500 to 130 J $\mu\text{g/L}$), 61% for remaining 6 site wells (was 33% after 3 months)
 - Benzene: 98% reduction (22 to 0.24 J $\mu\text{g/L}$), 61% for remaining 6 site wells (was 49% after 3 months)
- SD034: Washboard SBGR
 - Evaluate the effectiveness of an oxygen-enhanced aerobic SBGR on reducing TPH as diesel (TPH-D) in groundwater
 - Installed six (6) SBGR trenches in November 2016
 - Below SBGR trench (MW811x34/PZSSAx34) through first 9 months
 - TPH-DRO baseline 9,600 $\mu\text{g/L}$ reduced to 160 $\mu\text{g/L}$ (98% reduction)
 - TPH-MRO baseline 2,300 $\mu\text{g/L}$ reduced to 210 $\mu\text{g/L}$ (91% reduction)
 - Plume hot spot monitoring well (MW02x34) through first 9 months
 - TPH-DRO baseline 8,300 $\mu\text{g/L}$ reduced to 1,100 $\mu\text{g/L}$ (87% reduction)
 - TPH-MRO baseline 1,500 $\mu\text{g/L}$ reduced to 420 $\mu\text{g/L}$ (72% reduction)

* SBGR = Subgrade Biogeochemical Reactor

Updates in Green Font

CVOC Technology Demonstration Projects (2)

- Multisite Bioaugmentation: EVO and KB-1 Plus
 - Evaluate if addition of bioaugmentation substrate to an EVO injection will increase the rate of CVOC degradation
 - Initial injections were completed (Nov 2016)
 - Limited TOC dispersal at SD036, so installed additional injection wells and reinjected with nanoEVO in 2017
 - Too early to evaluate degradation rates; however:
 - ~50-70% TCE reduction at ST027B bioaugmentation area and low/fluctuating reductions at EVO only area
 - TCE fluctuations at SD036 bioaugmentation area (but 62% DCE decrease) and 99% decrease at EVO only area
- FT005: Distribution of EVO and KB-1 Plus
 - Evaluate total organic carbon (TOC) dispersion distances and rates for optimizing the remediation of 1,2-dichloroethane (DCA) in groundwater
 - Installation completed May 2016
 - Slightly elevated TOC and reduced COC concentrations in the north, TOC increase has not yet been observed in the central test area yet (distance may be too far for TOC dispersal using EVO)
 - Optimized the GETs in southern portion of site in 2017, which may help accelerate TOC dispersal to support this TD

Updates in Green Font

CVOC Technology Demonstration Projects (3)

- FT004: Distribution of EVO via SBGR and/or Groundwater Extraction
 - Determine effectiveness of TOC distribution through two different enhanced reductive dechlorination (ERD) approaches: (1) groundwater TOC recirculation using a combination EVO injection, infiltration SBGR trenches, and groundwater extraction; and (2) EVO injection with groundwater extraction
 - Installation completed April 2016
 - COC concentrations declined through year 1
 - ~50% total molar reduction plume-wide through first year
 - Max monitoring well TCE concentration reduced from 560 to 140 µg/L
 - Limited TOC dispersal, additional EVO injection conducted with nanoEVO in 2017 to determine if this can enhance TOC dispersal (too early to evaluate results of reinjection)
 - Concentrations rebounded in 4Q17, but 2017 reinjection should support further reductions

Updates in Green Font

CVOC Technology Demonstration Projects (4)

- SD031: EVO distribution via Gravel Chimneys
 - Determine if EVO injection and recirculation of groundwater through gravel chimneys can effectively distribute TOC horizontally in the subsurface to support ERD of 1,1-dichloroethene (DCE)
 - Installation completed in April 2015
 - Early indications:
 - Reducing conditions have initiated as expected throughout the TD area and are supporting anaerobic degradation
 - TOC concentrations are increasing at several wells
 - Recirculation through chimneys has been successful relative to our design assumptions
 - 1,1-DCE (primary COC) concentrations have reduced by 96% (was 93%) (sum of key wells within TD area, excluding 2 wells to SW that increased)
 - Total Molar concentration (sum of CVOCs) has reduced by 93% (was 84%) (sum of key wells within TD area, excluding 2 wells to SW that increased)
 - Four (4) new EVO wells installed to SW to enhance TOC in problem areas (plume being pulled back towards extraction well causing increasing concentrations in this area), conducted reinjection of EVO in 2017
 - Too early to evaluate effect of reinjection on cross-gradient area

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 Memorandum²²

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 (2nd 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 (4th 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