

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

20 January 2016, 0930 Hours

Mr. Mark Smith, of the Air Force Civil Engineer Center (AFCEC) Restoration Installation Support Team (IST), conducted the Restoration Program Manager's (RPM) teleconference on 20 January 2016 at 0930 hours in Building 248 at Travis AFB, California. Attendees included:

- Mark Smith AFCEC/CZOW
- Glenn Anderson AFCEC/CZOW
- Lonnie Duke AFCEC/CZOW
- Angel Santiago Jr. AFCEC/CZOW
- Carol Gaudette AFCEC/CZOW
- Kurt Grunawalt Travis AFB 60 AMW/JA
- Merrie Schilter-Lowe Travis AFB 60 AMW/PA
- William Hall AFCEC/CZRW
(via telephone)
- Adriana Constantinescu California Regional Water Quality Control Board
(via telephone) (RWQCB)
- Ben Fries California Department of Toxic Substances Control
(via telephone) (DTSC)
- Nadia Hollan Burke United States Environmental Protection Agency
(via telephone) (USEPA)
- Indira Balkissoon Techlaw, Inc
(via telephone)
- Mike Wray 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 (October, November, December 2015)
- Attachment 4 CGWTP Monthly Data Sheet (October, November, December 2015)
- Attachment 5 Subarea LF007C Monthly Data Sheet (October, November, December 2015)
- Attachment 6 ST018 Monthly Data Sheet (October, November, December 2015)

- Attachment 7 Presentation: Program Update: Activities Completed, In Progress and Upcoming

1. ADMINISTRATIVE

A. Previous Meeting Minutes

The 05 November 2015 RPM meeting minutes were approved and finalized as written.

B. Action Item Review.

Action items from November 2015 were reviewed.

Action item 1 will remain open: AFCEC's Travis Restoration Support Team and Travis AFB will continue to pursue opportunities for the beneficial reuse of treated water. Due date will remain TBD to ensure this action item remains visible. 20 January 2016: No update. Mr. Duke said that we are set up to use treated water for the site FT005 Technology Demonstration EVO injections.

Action item 2 is ongoing: Mr. Smith to provide updates on PFOS and PFOA as he becomes aware of them. 20 January 2016: AFCEC has scheduled a perfluorinated compound site inspection kick-off teleconference meeting for later this week.

Action item 3 is open: Travis AFB to provide Ms. Constantinescu/RWQCB one week notification via email before construction begins at Site SS014 Bioreactor Installation. 20 January 2016: No update.

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, held on Wednesday, 17 February 2016, at 0930. Today's RPM meeting, 20 January 2016, was previously changed from face-to-face to a teleconference.

Travis AFB Master Document Schedule

- Community Involvement Plan: Draft to Agencies date was changed to 16 March 2016; the rest of the dates were changed accordingly.

- Site SD031 Remedial Investigation Work Plan: Dates changed from to be determined (TBD), populated with all new dates.
- Site SS016 Remedial Design/Remedial Action Soil Work Plan: New document, all dates are TBD.
- Site TS060 EE/CA: New document, all dates are TBD.
- Potrero Hills Annex (FS, PP, and ROD): No change to the schedule. Mr. Anderson said that Camp Dresser and McKee (CDM) issued a “report of findings” which summarized the environmental investigation data to date; vegetation, groundwater, and soil samples results, and an exposure assessment. The report did identify several data gaps that need to be filled, and where they perceive the data gaps are. Ms. Constantinescu said that the RWQCB project manager sent out comments to CDM with RWQCB recommendations.
- Data Gap Investigation Technical Memorandum for Soil Sites SD033, SD043, and SS046: New document, populated with all new dates.
- Corrective Action Plan for DERA-Funded Oil Water Separators (POCO): Predraft to AF/Service Center due date changed to 28 January 2016, the rest of the dates were changed accordingly.
- Site CG508 Well Abandonment Work Plan: Predraft to AF/Service Center date was changed to 09 February 2016, the rest of the dates were changed accordingly.
- Site SD034 Technology Demonstration Work Plan: All dates are TBD.
- Site TS060 Removal Action Work Plan: New document, all dates are TBD.
- Quarterly Newsletter (January 2016): Draft to Agencies date updated to 07 January 2016 to reflect the first quarter 2016 newsletter, the rest of the dates were changed accordingly.
- 2014 Annual GRISR: No change to the schedule. Travis AFB is responding to EPA comments.
- 2015 Annual GRISR: New document, populated with all new dates.
- Sites SD036 and SD037 Remedial Action Construction Completion Report: Response to comments and Final due dates were changed to 04 December 2015 to reflect the actual dates.
- Site SS016 Groundwater Remedial Action Construction Completion Report: Response to Comments Due Date and Final Due Date were changed to 14 December 2015 to reflect the actual dates.
- Site SS015 Remedial Action Construction Completion Report: No change to the schedule.
- Site SS030 Remedial Action Construction Completion Report: Response to Comments Due Date and Final Due Date were changed to 18 January 2016 to reflect the actual dates.
- Site ST032 POCO Completion Report: New document, all dates are TBD.

- Site FT004 Technology Demonstration Construction Completion Report: Predraft to AF/Service Center date changed to 16 February 2016, the rest of the dates were changed accordingly.
- Site ST028 POCO Completion Report: New document, all dates are TBD.
- 2015 Annual CAMU Monitoring Report: New document, populated with all new dates.
- Site FT005 Technology Demonstration Construction Completion Report: Dates are TBD.
- Site DP039 Remedial Action Construction Completion Report: New document, dates are TBD.
- Site ST018 POCO Construction Completion Report: Moved to History.

2. CURRENT PROJECTS

Treatment Plant Operation and Maintenance Update

South Base Boundary Groundwater Treatment Plant, October 2015 (see Attachment 3)

The South Base Boundary Groundwater Treatment Plant (SBBGWTP) performed at 99.4% uptime, and 2.99 million gallons of groundwater were extracted and treated during the month of October 2015. All of the treated water was discharged to Union Creek. The average flow rate for the SBBGWTP was 76.93 gallons per minute (gpm). Electrical power usage was 9,550 kWh, and approximately 13,083 pounds of CO₂ were created (based on DOE calculation). Approximately 1.53 pounds of volatile organic compounds (VOCs) were removed in October. The total mass of VOCs removed since startup of the system is 467.6 pounds.

Optimization Activities for SBBGWTP: No optimization activities reported for the month of October.

South Base Boundary Groundwater Treatment Plant, November 2015 (see Attachment 3)

The South Base Boundary Groundwater Treatment Plant (SBBGWTP) performed at 100% uptime, and 3.28 million gallons of groundwater were extracted and treated during the month of November 2015. All of the treated water was discharged to Union Creek. The average flow rate for the SBBGWTP was 84.97 gallons per minute (gpm). Electrical power usage was 10,510 kWh, and approximately 14,399 pounds of CO₂ were created (based on DOE calculation). Approximately 1.58 pounds of volatile organic compounds (VOCs) were removed in November. The total mass of VOCs removed since startup of the system is 469.2 pounds.

Optimization Activities for SBBGWTP: No optimization activities reported for the month of November.

South Base Boundary Groundwater Treatment Plant, December 2015 (see Attachment 3)

The South Base Boundary Groundwater Treatment Plant (SBBGWTP) performed at 100% uptime, and 5.38 million gallons of groundwater were extracted and treated during the month of December 2015. All of the treated water was discharged to Union Creek. The average flow rate for the SBBGWTP was 100.8 gallons per minute (gpm). Electrical power usage was 17,340 kWh, and approximately 23,756 pounds of CO₂ were created (based on DOE calculation). Approximately 2.07 pounds of volatile organic compounds (VOCs) were removed in December. The total mass of VOCs removed since startup of the system is 471.3 pounds.

Optimization Activities for SBBGWTP: No optimization activities reported for the month of December.

Central Groundwater Treatment Plant, October 2015 (see Attachment 4)

The Central Groundwater Treatment Plant (CGWTP) performed at 99.4% uptime with approximately 1.37 million gallons of groundwater extracted and treated during the month of October 2015. All treated water was discharged to the storm drain. The average flow rate for the CGWTP was 29.1 gpm. Electrical power usage was 1,350 kWh for all equipment connected to the Central Plant, and approximately 1,850 pounds of CO₂ were generated. Approximately 1.81 pounds of VOCs were removed from groundwater by the treatment plant in October. The total mass of VOCs removed since the startup of the system is 11,417 pounds.

Optimization Activities for CGWTP: No optimization activities are reported for the month of October 2015.

Central Groundwater Treatment Plant, November 2015 (see Attachment 4)

The Central Groundwater Treatment Plant (CGWTP) performed at 100% uptime with approximately 1.02 million gallons of groundwater extracted and treated during the month of November 2015. All treated water was discharged to the storm drain. The average flow rate for the CGWTP was 28.0 gpm. Electrical power usage was 1,816 kWh for all equipment connected to the Central Plant, and approximately 2,488 pounds of CO₂ were generated. Approximately 1.75 pounds of VOCs were removed from groundwater by the treatment plant in November. The total mass of VOCs removed since the startup of the system is 11,419 pounds.

Optimization Activities for CGWTP: No optimization activities are reported for the month of November 2015.

Central Groundwater Treatment Plant, December 2015 (see Attachment 4)

The Central Groundwater Treatment Plant (CGWTP) performed at 94.5% uptime with approximately 1.3 million gallons of groundwater extracted and treated during the month of December 2015. All treated water was discharged to the storm drain. The average flow rate for the CGWTP was 25.9 gpm. Electrical power usage was 2,983 kWh for all equipment connected to the Central Plant, and approximately 4,087

pounds of CO₂ were generated. Approximately 2.18 pounds of VOCs were removed from groundwater by the treatment plant in December. The total mass of VOCs removed since the startup of the system is 11,421 pounds.

Optimization Activities for CGWTP: No optimization activities are reported for the month of December 2015.

LF007C Groundwater Treatment Plant, October 2015 (see Attachment 5)

Subarea LF007C Treatment Plant (LF007CGWTP) performed at 100% uptime with approximately 143,500 gallons of groundwater extracted and treated during the month of October 2015. The average flow rate at the LF007CGWTP was 3.45 gpm, and electrical power use was 0 kWh for all the equipment connected to the plant; and 0 pounds of CO₂ was generated; this electrical system is 100 percent off of the power grid. Approximately 3.91×10^{-3} pounds of VOCs were removed from the groundwater in October. The total mass of VOCs removed by the North Groundwater Treatment Plant and LF007CGWTP combined is 174.35 pounds.

Optimization Activities for LF007CGWTP: No optimization activities to report for the month of October 2015.

LF007C Groundwater Treatment Plant, November 2015 (see Attachment 5)

Subarea LF007C Treatment Plant (LF007CGWTP) performed at 96% uptime with approximately 120,190 gallons of groundwater extracted and treated during the month of November 2015. The average flow rate at the LF007CGWTP was 3.46 gpm, and electrical power use was 0 kWh for all the equipment connected to the plant; and 0 pounds of CO₂ was generated; this electrical system is 100 percent off of the power grid. Approximately 3.69×10^{-3} pounds of VOCs were removed from the groundwater in November. The total mass of VOCs removed by the North Groundwater Treatment Plant and LF007CGWTP combined is 174.35 pounds.

Optimization Activities for LF007CGWTP: No optimization activities to report for the month of November 2015.

LF007C Groundwater Treatment Plant, December 2015 (see Attachment 5)

Subarea LF007C Treatment Plant (LF007CGWTP) performed at 64.4% uptime with approximately 43,644 gallons of groundwater extracted and treated during the month of December 2015. The average flow rate at the LF007CGWTP was 1.53 gpm, and electrical power use was 0 kWh for all the equipment connected to the plant; and 0 pounds of CO₂ was generated; this electrical system is 100 percent off of the power grid. Approximately 1.23×10^{-3} pounds of VOCs were removed from the groundwater in December. The total mass of VOCs removed by the North Groundwater Treatment Plant and LF007CGWTP combined is 174.36 pounds.

Optimization Activities for LF007CGWTP: No optimization activities to report for the month of December 2015.

The LF007C Groundwater Treatment Plant was taken offline as of 24 December 2015, in accordance with the US Fish and Wildlife Service, due to the presence of standing water in the vernal pools.

ST018 Groundwater (MTBE) Treatment Plant, October 2015 (see Attachment 6)

The Site ST018 (MTBE) Treatment Plant (ST018 GWTP) performed at 86.2% uptime with approximately 126,600 gallons of groundwater extracted and treated during the month of October 2015. All treated water was diverted to the sanitary sewer. The average flow rate for the ST018 GWTP was 3.5 gpm. Electrical power usage for the month was 76 kWh for all equipment connected to the ST018 GWTP, which equates to approximately 104 pounds of CO₂. Approximately 0.24 pound of BTEX, MTBE and TPH was removed from groundwater in October by the treatment plant. Approximately 0.10 pounds of MTBE was removed from groundwater. The total BTEX, MTBE and TPH mass removed since the startup of the system is 33.3 pounds, and the total MTBE mass removed since startup of the system is 8.1 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 extraction pumps in the system are all solar powered.

Optimization Activities for ST018GWTP: No optimization activities to report for the month of October 2015.

ST018 Groundwater (MTBE) Treatment Plant, November 2015 (see Attachment 6)

The Site ST018 (MTBE) Treatment Plant (ST018 GWTP) performed at 99.1% uptime with approximately 156,700 gallons of groundwater extracted and treated during the month of November 2015. All treated water was diverted to the sanitary sewer. The average flow rate for the ST018 GWTP was 4.4 gpm. Electrical power usage for the month was 91 kWh for all equipment connected to the ST018 GWTP, which equates to approximately 125 pounds of CO₂. Approximately 0.08 pound of BTEX, MTBE and TPH was removed from groundwater in November by the treatment plant. Approximately 0.04 pounds of MTBE was removed from groundwater. The total BTEX, MTBE and TPH mass removed since the startup of the system is 33.4 pounds, and the total MTBE mass removed since startup of the system is 8.1 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 extraction pumps in the system are all solar powered.

Optimization Activities for ST018GWTP: No optimization activities to report for the month of November 2015.

ST018 Groundwater (MTBE) Treatment Plant, December 2015 (see Attachment 6)

The Site ST018 (MTBE) Treatment Plant (ST018 GWTP) performed at 100% uptime with approximately 220,500 gallons of groundwater extracted and treated during the month of December 2015. All treated water was diverted to the sanitary sewer. The average flow rate for the ST018 GWTP was 4.2 gpm. Electrical power usage for the month was 132 kWh for all equipment connected to the ST018 GWTP, which equates to approximately 181 pounds of CO₂. Approximately 0.40 pounds of BTEX, MTBE and TPH was removed from groundwater in December by the treatment plant. Approximately 0.16 pounds of MTBE was removed from groundwater. The total BTEX, MTBE and TPH mass removed since the startup of the system is 33.8 pounds, and the total MTBE mass removed since startup of the system is 8.3 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 December 2015.

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

Mr. Wray 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: Sites SS030 Groundwater RACCR, Sites SD036 and SD037 Groundwater RACCR, Site SS016 Groundwater RACCR, Site SS015 Groundwater RACCR.

Newly Completed Field Work: FT004 EVO Injection, FT004 Trench/Conveyance/Power Installation, DP039 Infiltration Trench Installation.

In-Progress Documents (CERCLA): 2014 Annual GRISR.

In-Progress Documents (POCO): None.

In-Progress Field Work: FT005 EVO Injection, DP039 EVO Injection.

Upcoming Documents (CERCLA): Site SD031 Soil Remedial Investigation Work Plan (February), Data Gap Investigation Tech Memo for Soil Sites SD033, SD043, and SS046 (February), Site CG508 Well Abandonment Work Plan (March), Community Involvement Plan (March), Site FT004 Technology Demonstration Construction Completion Report (March), 2015 Annual CAMU Monitoring Report (March), 2015 Annual GRISR (June), Site

FT005 Technology Demonstration Construction Completion Report (TBD), Site SD034 Technology Demonstration Work Plan (TBD), Site SS016 RD/RA Soil Work Plan (TBD), Site TS060 EE/CA (TBD), Site TS060 Removal Action Work Plan (TBD), Site DP039 Technology Demonstration Construction Completion Report (TBD).

Upcoming Documents (POCO): Corrective Action Plan for DERA-Funded Oil Water Separators, Site ST032 POCO Completion Report (TBD), Site ST028 POCO Completion Report (TBD).

Field Work Planned (CERCLA): TA500 Groundwater Sampling (February), SD031 Soil Remedial Investigation (May), SD034 Technology Demonstration Installation (TBD), TS060 Removal Action (TBD).

Field Work Planned (POCO): Oil Water Separators (12) Removal (May), CG508 Well Abandonment (June), SS014 Bioreactor Installation (June).

4. New Action Item Review

None.

5. PROGRAM/ISSUES/UPDATE

None.

6. Action Items

Item #	Responsible	Action Item Description	Due Date	Status
1.	Travis AFB	AFCEC's Travis Restoration Team and Travis AFB will continue to pursue opportunities for the beneficial reuse of treated water. Current possibilities include: Rerouting treated water from the central plant to the duck pond or as irrigation as an energy reduction project with the intent of reducing on-base water usage. Due date will remain TBD to ensure this	TBD	Open

		action item remains visible. Update: Mr. Duke informed the group that Travis AFB is considering the use of treated water during EVO injection at Site FT005 as opposed to potable water. New Action Item 5 added as a follow-up.		
2.	Mark Smith	Mr. Smith to provide updates on PFOS and PFOA as he becomes aware of them. Update: Mr. Smith stated that a kickoff meeting for a follow on extended SI, was scheduled for the week of 25 January. EPA asked if the intent was to sample GWTP effluent. Mr. Smith agreed to ask that question and report back.	Ongoing	Open
3.	Travis AFB	Provide Ms. Constantinescu/RWQCB one week notification via email before construction begins at Site SS014 Bioreactor Installation	TBD	Open

TRAVIS AFB RPM TELECONFERENCE AGENDA
20 January 2016, 09:30 A.M. (PDT)

To: EPA	Nadia Burke
DTSC	Ben Fries
RWQCB	Adriana Constantinescu
CH2M Hill	Mike Wray
AFCEC	William Hall
USACE	Dezso Linbrunner

The RPM teleconference is scheduled for 9:30 PDT on 20 January 2016. **The call-in number is 1-866-203-7023. Enter the Participation code 5978-75-9736 then enter #.**

Topics for the teleconference include:

- ❖ Previous Meeting Minutes (All)
- ❖ Action Item Review (All)
- ❖ Master Meeting and Document Schedule Review (Glenn, Lonnie)
- ❖ Treatment Plant Operation and Maintenance Update (Lonnie)
- ❖ Program Update (Mike)
- ❖ New Action Item Review (All)

Participants:

TRAVIS	ERP Staff	(707) 424-3062
DTSC	Ben Fries	(916) 255-3667
RWQCB	Adriana Constantinescu	(510) 622-2353
EPA	Nadia Burke	(415) 972-3187
USACE	Dezso Linbrunner	(402) 238-8846
CH2M	Mike Wray	(916) 715-0949
AFCEC	William Hall	(210) 259-3252

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 TELECONFERENCE TO DISCUSS THE RESPONSES TO AGENCY COMMENTS ON THOSE DOCUMENTS THAT ARE IN PROGRESS (GRISR, SS016 RACCR), IF NEEDED. ALL PARTICIPANTS ARE WELCOME TO PARTICIPATE.

(2016)
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.)
—	01-20-16	—
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 ²
—	11-16-16	—
—	—	—

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 date in lieu of RAB meeting.

Travis AFB Master Meeting and Document Schedule

PRIMARY DOCUMENTS				
Life Cycle	Community Involvement Plan Travis AFB, Mark Smith CH2M HILL, Tricia Carter	Site SD031 Remedial Investigation Work Plan Travis AFB, Lonnie Duke CH2M HILL, Tony Chakurian	Site SS016 Remedial Design/Remedial Action Soil Work Plan Travis AFB, Glenn Anderson CH2M HILL, Doug Berwick CAPE, Meg Greenwald	Site TS060 EE/CA Travis AFB, Glenn Anderson CH2M HILL, Doug Berwick CAPE, Meg Greenwald
Scoping Meeting	NA	NA	NA	NA
Predraft to AF/Service Center	NA	01-13-16	TBD	TBD
AF/Service Center Comments Due	NA	01-28-16	TBD	TBD
Draft to Agencies	03-16-16	02-11-16	TBD	TBD
Draft to RAB	03-16-16	02-11-16	TBD	TBD
Agency Comments Due	04-15-16	03-14-16	TBD	TBD
Response to Comments Meeting	04-21-16	03-16-16	TBD	TBD
Agency Concurrence with Remedy	NA	NA	TBD	TBD
Public Comment Period	NA	NA	TBD	TBD
Public Meeting	NA	NA	TBD	TBD
Response to Comments Due	05-23-16	03-30-16	TBD	TBD
Draft Final Due	05-23-16	03-30-16	TBD	TBD
Final Due	06-23-16	04-29-16	TBD	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	Data Gap Investigation Technical Memorandum for Soil Sites SD033, SD043, and SS046 Travis AFB, Glenn Anderson CH2M HILL, Leslie Royer	Corrective Action Plan for DERA-Funded Oil Water Separators Travis AFB, Lonnie Duke CH2M HILL, Doug Berwick	Site CG508 Well Abandonment Work Plan Travis AFB, Lonnie Duke CH2M HILL, Levi Pratt
Scoping Meeting	NA	NA	NA
Predraft to AF/Service Center	01-15-16	01-28-16	02-09-16
AF/Service Center Comments Due	02-01-16	02-11-16	02-24-16
Draft to Agencies	02-17-16	02-25-16	03-09-16
Draft to RAB	02-17-16	02-25-16	03-09-16
Agency Comments Due	03-18-16	03-28-16	04-08-16
Response to Comments Meeting	04-21-16	04-21-16	04-21-16
Response to Comments Due	05-06-16	05-05-16	05-09-16
Draft Final Due	NA	NA	NA
Final Due	05-06-16	05-05-16	05-09-16
Public Comment Period	NA	NA	NA
Public Meeting	NA	NA	NA

Travis AFB Master Meeting and Document Schedule

SECONDARY DOCUMENTS		
Life Cycle	Site SD034 Technology Demonstration Work Plan Travis AFB, Lonnie Duke CH2M HILL, Levi Pratt	Site TS060 Removal Action Work Plan Travis AFB, Glenn Anderson CH2M HILL, Doug Berwick CAPE, Meg Greenwald
Scoping Meeting	NA	NA
Predraft to AF/Service Center	TBD	TBD
AF/Service Center Comments Due	TBD	TBD
Draft to Agencies	TBD	TBD
Draft to RAB	TBD	TBD
Agency Comments Due	TBD	TBD
Response to Comments Meeting	TBD	TBD
Response to Comments Due	TBD	TBD
Draft Final Due	NA	NA
Final Due	TBD	TBD
Public Comment Period	NA	NA
Public Meeting	NA	NA

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL DOCUMENTS				
Life Cycle	Quarterly Newsletters (January 2016) Travis, Glenn Anderson	2014 Annual GRISR Travis AFB, Lonnie Duke CH2M HILL, Leslie Royer	2015 Annual GRISR Travis AFB, Lonnie Duke CH2M HILL, Leslie Royer	Sites SD036 and SD037 Remedial Action Construction Completion Report Travis AFB, Glenn Anderson CH2M HILL, Leslie Royer
Scoping Meeting	NA	NA	NA	NA
Predraft to AF/Service Center	NA	04-24-15	04-26-16	06-24-15
AF/Service Center Comments Due	NA	05-22-15	05-26-16	07-08-15
Draft to Agencies	01-07-16	06-10-15	06-10-16	07-30-15
Draft to RAB	NA	06-10-15	06-10-16	07-30-15
Agency Comments Due	01-21-16	09-08-15	07-11-16	08-31-15
Response to Comments Meeting	TBD	09-16-15	07-20-16	09-16-15
Response to Comments Due	01-25-16	09-30-15	08-03-16	09-30-15 (12-04-15)
Draft Final Due	NA	NA	NA	NA
Final Due	01-25-16	09-30-15	08-03-16	09-30-15 (12-04-15)
Public Comment Period	NA	NA	NA	NA
Public Meeting	NA	NA	NA	NA

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL DOCUMENTS			
Life Cycle	Site SS016 Groundwater Remedial Action Construction Completion Report Travis AFB, Glenn Anderson CH2M HILL, Leslie Royer	Site SS015 Remedial Action Construction Completion Report Travis AFB, Glenn Anderson CH2M HILL, Leslie Royer	Site SS030 Remedial Action Construction Completion Report Travis AFB, Lonnie Duke CH2M HILL, Leslie Royer
Scoping Meeting	NA	NA	NA
Predraft to AF/Service Center	07-24-15	09-02-15	10-09-15
AF/Service Center Comments Due	08-07-15	09-17-15	10-23-15
Draft to Agencies	08-21-15	09-25-15	11-06-15
Draft to RAB	08-21-15	09-25-15	11-06-15
Agency Comments Due	09-21-15	10-28-15	12-07-15
Response to Comments Meeting	10-22-15	11-05-15	01-20-16
Response to Comments Due	11-20-15 (12-14-15)	11-19-15	02-04-16 (01-18-16)
Draft Final Due	NA	NA	NA
Final Due	11-20-15 (12-14-15)	11-19-15	02-04-16 (01-18-16)
Public Comment Period	NA	NA	NA
Public Meeting	NA	NA	NA

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL DOCUMENTS			
Life Cycle	Site ST032 POCO Completion Report Travis AFB, Lonnie Duke CH2M HILL, Doug Berwick CAPE, Meg Greenwald	Site FT004 Technology Demonstration Construction Completion Report Travis AFB, Lonnie Duke CH2M HILL, Levi Pratt	Site ST028 POCO Completion Report Travis AFB, Lonnie Duke CH2M HILL, Doug Berwick CAPE, Meg Greenwald
Scoping Meeting	NA	NA	NA
Predraft to AF/Service Center	TBD	02-16-16	TBD
AF/Service Center Comments Due	TBD	03-01-16	TBD
Draft to Agencies	TBD	03-15-16	TBD
Draft to RAB	TBD	03-15-16	TBD
Agency Comments Due	TBD	04-14-16	TBD
Response to Comments Meeting	TBD	04-21-16	TBD
Response to Comments Due	TBD	05-10-16	TBD
Draft Final Due	NA	NA	NA
Final Due	TBD	05-10-16	TBD
Public Comment Period	NA	NA	NA
Public Meeting	NA	NA	NA

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL DOCUMENTS			
Life Cycle	2015 Annual CAMU Monitoring Report Travis AFB, Lonnie Duke CH2M HILL, Levi Pratt	Site FT005 Technology Demonstration Construction Completion Report Travis AFB, Lonnie Duke CH2M HILL, Levi Pratt	Site DP039 Remedial Action Construction Completion Report Travis AFB, Lonnie Duke CH2M HILL, Levi Pratt
Scoping Meeting	NA	NA	NA
Predraft to AF/Service Center	02-26-16	TBD	TBD
AF/Service Center Comments Due	03-11-16	TBD	TBD
Draft to Agencies	03-29-16	TBD	TBD
Draft to RAB	03-29-16	TBD	TBD
Agency Comments Due	04-28-16	TBD	TBD
Response to Comments Meeting	05-18-16	TBD	TBD
Response to Comments Due	06-01-16	TBD	TBD
Draft Final Due	NA	NA	NA
Final Due	06-01-16	TBD	TBD
Public Comment Period	NA	NA	NA
Public Meeting	NA	NA	NA

Travis AFB Master Meeting and Document Schedule

HISTORY	
Life Cycle	Site ST018 POCO Construction Completion Report Travis AFB, Lonnie Duke CH2M HILL, Leslie Royer
Scoping Meeting	NA
Predraft to AF/Service Center	07-10-15
AF/Service Center Comments Due	07-24-15
Draft to Agencies	08-05-15
Draft to RAB	08-05-15
Agency Comments Due	09-04-15
Response to Comments Meeting	09-16-15
Response to Comments Due	09-23-15
Draft Final Due	NA
Final Due	09-23-15
Public Comment Period	NA
Public Meeting	NA

South Base Boundary Groundwater Treatment Plant Monthly Data Sheet

Report Number: 182

Reporting Period: 30 September 2015 – 27 October 2015

Date Submitted: 2 December 2015

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 October 2015 reporting period.

Table 1 – Operations Summary – October 2015			
Initial Data Collection:	09/30/2015 12:00	Final Data Collection:	10/27/2015 15:30
Operating Time:	Percent Uptime:	Electrical Power Usage:	
SBBGWTP: 648 hours	SBBGWTP: 99.4%	SBBGWTP: 9,550 kWh (13,083 lbs CO₂ generated^a)	
Gallons Treated: 2.99 million gallons		Gallons Treated Since July 1998: 909 million gallons	
Volume Discharged to Union Creek: 2.77 million gallons		Gallons Treat From Other Sources: 0 gallons^b	
VOC Mass Removed: 1.53 lbs^c		VOC Mass Removed Since July 1998: 467.6 lbs	
Rolling 12-Month Cost per Pound of Mass Removed: \$2,832 ^d			
Monthly Cost per Pound of Mass Removed: \$4,073 ^d			
lbs = pounds			
^a Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.			
^b Decontamination water from investigation activities, processed through the SBBGWTP from the external settling tank			
^c Calculated using October 2015 EPA Method SW8260C analytical results.			
^d 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,b} – October 2015							
FT005^b				SS029		SS030	
EW01x05	3.7	EW736x05	Offline	EW01x29	3.4	EW01x30	Offline ^c
EW02x05	0.3	EW737x05	Offline	EW02x29	2.6	EW02x30	4.0
EW03x05	Offline	EW742x05	Offline	EW03x29	1.2	EW03x30	1.9
EW731x05	Offline	EW743x05	Offline	EW04x29	8.2	EW04x30	37
EW732x05	Offline	EW744x05	Offline	EW05x29	12.9	EW05x30	0.7
EW733x05	Offline	EW745x05	Offline	EW06x29	4.3	EW2174x30 ^d	1.5
EW734x05	Offline ^c	EW746x05	Offline	EW07x29	13.2	EW711x30	3.8
EW735x05	Offline ^c						
FT005 Total:		4.0		SS029 Total:		45.8	
				SS030 Total:		48.9	
SBBGWTP Average Monthly Flow^e: 76.93 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 <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> . ^c These extraction wells are offline due to pump or other malfunction. ^d Extraction well EW2174x30 was installed and brought online on September 10, 2015. Extraction well EW06x30 remains off line. ^e 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.

Table 3 – Summary of System Shutdowns					
Location	Shutdown^a		Restart^a		Cause
	Date	Time	Date	Time	
SBBGWTP	2 October 2015	10:00	2 October 2015	14:00	Troubleshooting the sump at the SBBGWTP and extraction wells EW05x30 and EW735x05.
-- = Time not recorded ^a Shutdown and restart times estimated based on field notes. NA = not applicable SBBGWTP = South Base Boundary Groundwater Treatment Plant					

Summary of O&M Activities

Analytical data from the 7 October 2015 sampling event are presented in Table 4. The total VOC concentration (61.48 µg/L) in the influent sample increased from the September 2015 sample results (50.82 µg/L). TCE (57.2 µg/L), cis-1,2-DCE (3.92 µg/L), trans-1,2-DCE (0.17 µg/L) and 1,2-DCA (0.19 µg/L) were detected at the influent sampling location. In addition, the total suspended solids in the influent sample were 5.04 mg/L. TCE (0.25 µg/L), cis-1,2-DCE (1.51 µg/L), 1,2-DCA (0.79 µg/L), and chloroform (0.28 µg/L) were detected at the midpoint location. No contaminants were detected at the effluent sampling location.

Figure 1 presents a plot of influent concentrations and average flow at the SBBGWTP over the past twelve (12) months. The average flow rate at the SBBGWTP decreased in October 2015 to 76.9 gpm from the September 2015 flow rate of 83.7 gpm.

On 2 October 2015, the SBBGWTP was shut down for approximately 4 hours to troubleshoot EW05x30 and EW735x05. At EW05x30, the pressure transducer was found to have been out of position within the well. The transducer was lowered back into the well, and the pump was restarted and operated normally. At EW735x05, two fuses were replaced, and the pump was restarted. On 22 October 2015, the pumps from EW01x29 and EW735x05 were replaced. The wells were restarted and were operating normally.

EW01x30 was experiencing continuous shorts due to a faulty motor starter and overload. A new motor starter and overload was ordered and installed on 30 October 2015.

Optimization Activities

No optimization activities occurred at the SBBGWTP in October 2015.

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 13,083 pounds of GHG during October 2015. This amount is lower than the September 2015 amount of 15,782 pounds of GHG, which is due to the lower runtime.

TABLE 4

Summary of Groundwater Analytical Data For October 2015 – South Base Boundary Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	7 October 2015 (µg/L)		
				Influent	Midpoint	Effluent
Halogenated Volatile Organics						
Carbon Tetrachloride	0.5	0.15	0	ND	ND	ND
Chloroform	5.0	0.15	0	ND	0.28 J	ND
1,1-Dichloroethane	5.0	0.15	0	ND	ND	ND
1,2-Dichloroethane	0.5	0.15	0	0.19 J	0.79	ND
1,1-Dichloroethene	5.0	0.15	0	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.15	0	3.92	1.51	ND
trans-1,2-Dichloroethene	5.0	0.15	0	0.17 J	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	57.2	0.25 J	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	30	0	NM	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	29.3	0	NM	NM	ND
Total Suspended Solids (mg/L)	NE	0.619	0	5.04	NM	NM

* 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

NE = not established

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

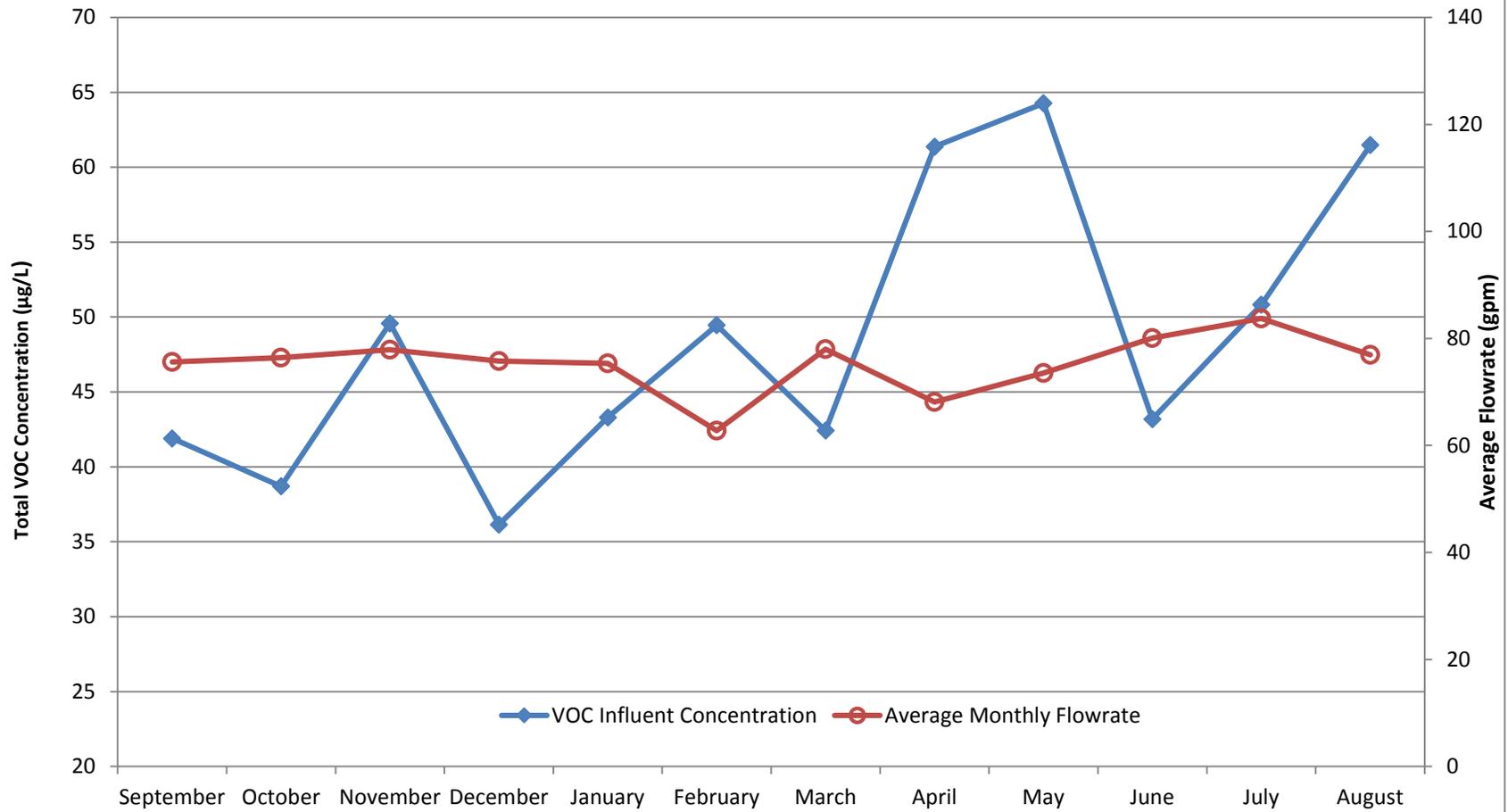
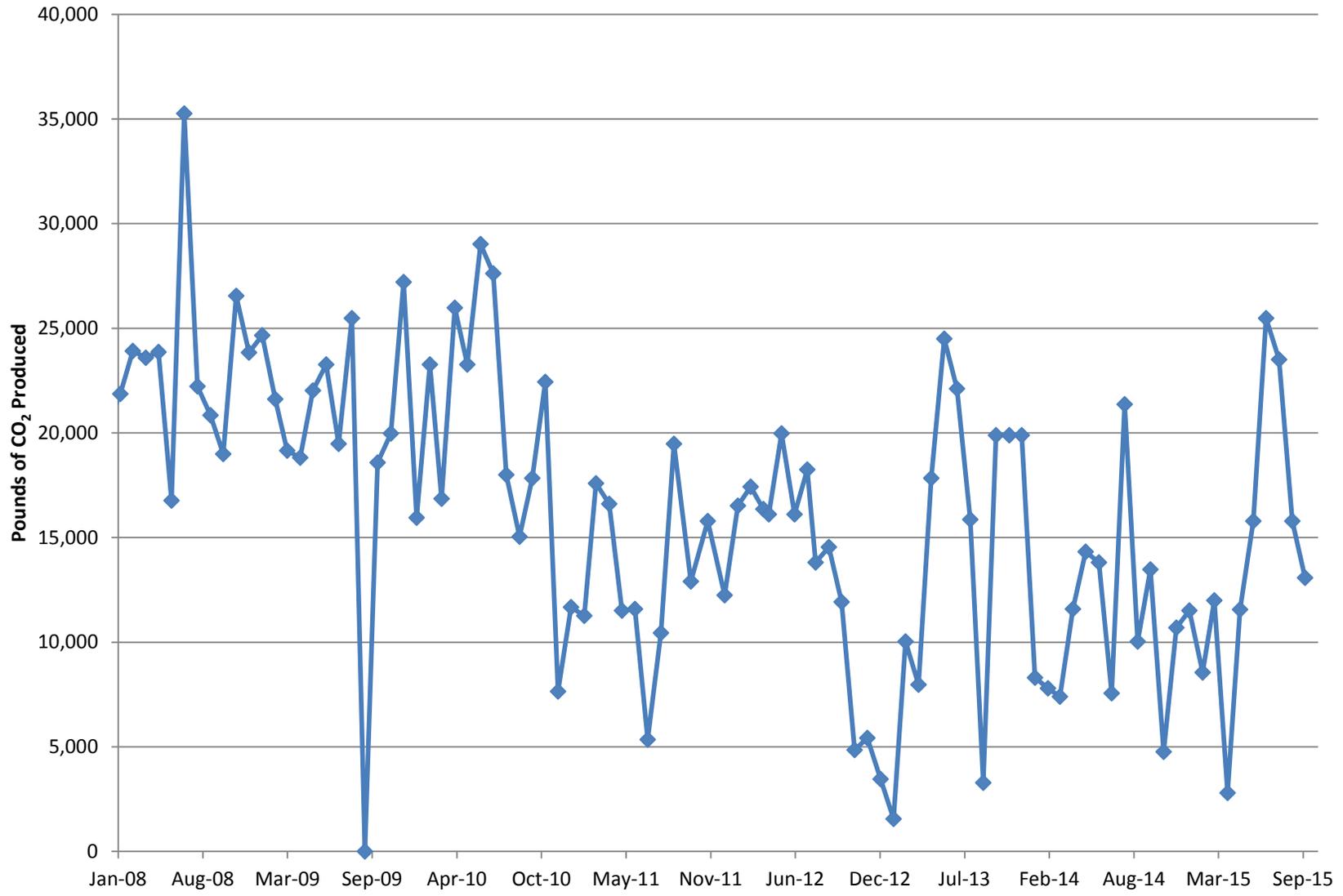


Figure 2

Equivalent Pounds of CO₂ Produced by the South Base Boundary Groundwater Treatment Plant



South Base Boundary Groundwater Treatment Plant Monthly Data Sheet

Report Number: 183

Reporting Period: 27 October 2015 – 23 November 2015

Date Submitted: 20 December 2015

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 November 2015 reporting period.

Table 1 – Operations Summary – November 2015			
Initial Data Collection:	10/27/2015 15:30	Final Data Collection:	11/23/2015 11:30
Operating Time:	Percent Uptime:	Electrical Power Usage:	
SBBGWTP: 644 hours	SBBGWTP: 100%	SBBGWTP: 10,510 kWh (14,399 lbs CO₂ generated^a)	
Gallons Treated: 3.28 million gallons		Gallons Treated Since July 1998: 912 million gallons	
Volume Discharged to Union Creek: 3.28 million gallons		Gallons Treat From Other Sources: 0 gallons^b	
VOC Mass Removed: 1.58 lbs^c		VOC Mass Removed Since July 1998: 469.2 lbs	
Rolling 12-Month Cost per Pound of Mass Removed: \$2,777 ^d			
Monthly Cost per Pound of Mass Removed: \$2,416 ^d			
lbs = pounds			
^a Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.			
^b Decontamination water from investigation activities, processed through the SBBGWTP from the external settling tank			
^c Calculated using November 2015 EPA Method SW8260C analytical results.			
^d 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,b} – November 2015							
FT005^b				SS029		SS030	
EW01x05	1.6	EW736x05	Offline	EW01x29	3.4	EW01x30	10.6
EW02x05	0.4	EW737x05	Offline	EW02x29	2.4	EW02x30	0.2
EW03x05	Offline	EW742x05	Offline	EW03x29	1.9	EW03x30	0.8
EW731x05	Offline	EW743x05	Offline	EW04x29	8.7	EW04x30	36.8
EW732x05	Offline	EW744x05	Offline	EW05x29	13.0	EW05x30	0.6
EW733x05	Offline	EW745x05	Offline	EW06x29	4.7	EW2174x30	0.9
EW734x05	1.5 ^c	EW746x05	Offline	EW07x29	13.5	EW711x30	3.8
EW735x05	1.9 ^c						
FT005 Total:	2.0			SS029 Total:	47.6	SS030 Total:	53.7
SBBGWTP Average Monthly Flow^d: 84.97 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 <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> . ^c These extraction wells were brought back on line on 24 November 2015 after resetting the logic controller. ^d 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.

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

Summary of O&M Activities

Analytical data from the 4 November 2015 sampling event are presented in Table 4. The total VOC concentration (57.92 µg/L) in the influent sample decreased from the October 2015 sample results (61.48 µg/L). TCE (54.4 µg/L), cis-1,2-DCE (3.12 µg/L), 1,2-DCA (0.23 J µg/L) and chloroform (0.17 J µg/L) were detected at the influent sampling location. TCE (0.59 µg/L), cis-1,2-DCE (2.19 µg/L), 1,2-DCA (0.66 µg/L), and chloroform (0.30 J µg/L) were detected at the midpoint location. No contaminants were detected at the effluent sampling location.

Figure 1 presents a plot of influent concentrations and average flow at the SBBGWTP over the past twelve (12) months. An overall slight increase in the flow rate has been observed in the past twelve months. The average flow rate at the SBBGWTP increase in November 2015 to 85.0 gpm from the October 2015 flow rate of 76.9 gpm.

At EW01x30, the new motor starter that was installed on 30 October 2015 was faulty, and a second new motor starter was ordered and installed on 19 November 2015. EW01x30 has been operational since the installation of the second new motor starter.

Extraction wells EW734x05 and EW735x05 were both brought back on line on 24 November 2015 after resetting the PLC within the SBBGWTP control room. These wells were off line in October 2015 due to power outages at the SBBGWTP.

Optimization Activities

No optimization activities occurred at the SBBGWTP in November 2015.

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 14,399 pounds of GHG during November 2015. The electric meter is not functioning properly; therefore, the amount of GHG production in November is based on the average amount of GHG generated and the number of gallons treated during the previous twelve months. Troubleshooting efforts on the electric meter will continue in December 2015.

TABLE 4

Summary of Groundwater Analytical Data For November 2015 – South Base Boundary Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	4 November 2015 (µg/L)		
				Influent	Midpoint	Effluent
Halogenated Volatile Organics						
Carbon Tetrachloride	0.5	0.15	0	ND	ND	ND
Chloroform	5.0	0.15	0	0.17 J	0.30 J	ND
1,1-Dichloroethane	5.0	0.15	0	ND	ND	ND
1,2-Dichloroethane	0.5	0.15	0	0.23 J	0.66	ND
1,1-Dichloroethene	5.0	0.15	0	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.15	0	3.12	2.19	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	54.4	0.59	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 Suspended Solids (mg/L)	NE	1.07	0	ND	NM	NM
Total Petroleum	50	30	0	NM	NM	ND
Hydrocarbons – Gasoline						
Total Petroleum	50	29.8	0	NM	NM	ND
Hydrocarbons – Diesel						
1,4-Dioxane	NA	0.082	0	NM	NM	ND

* 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

NE = not established

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

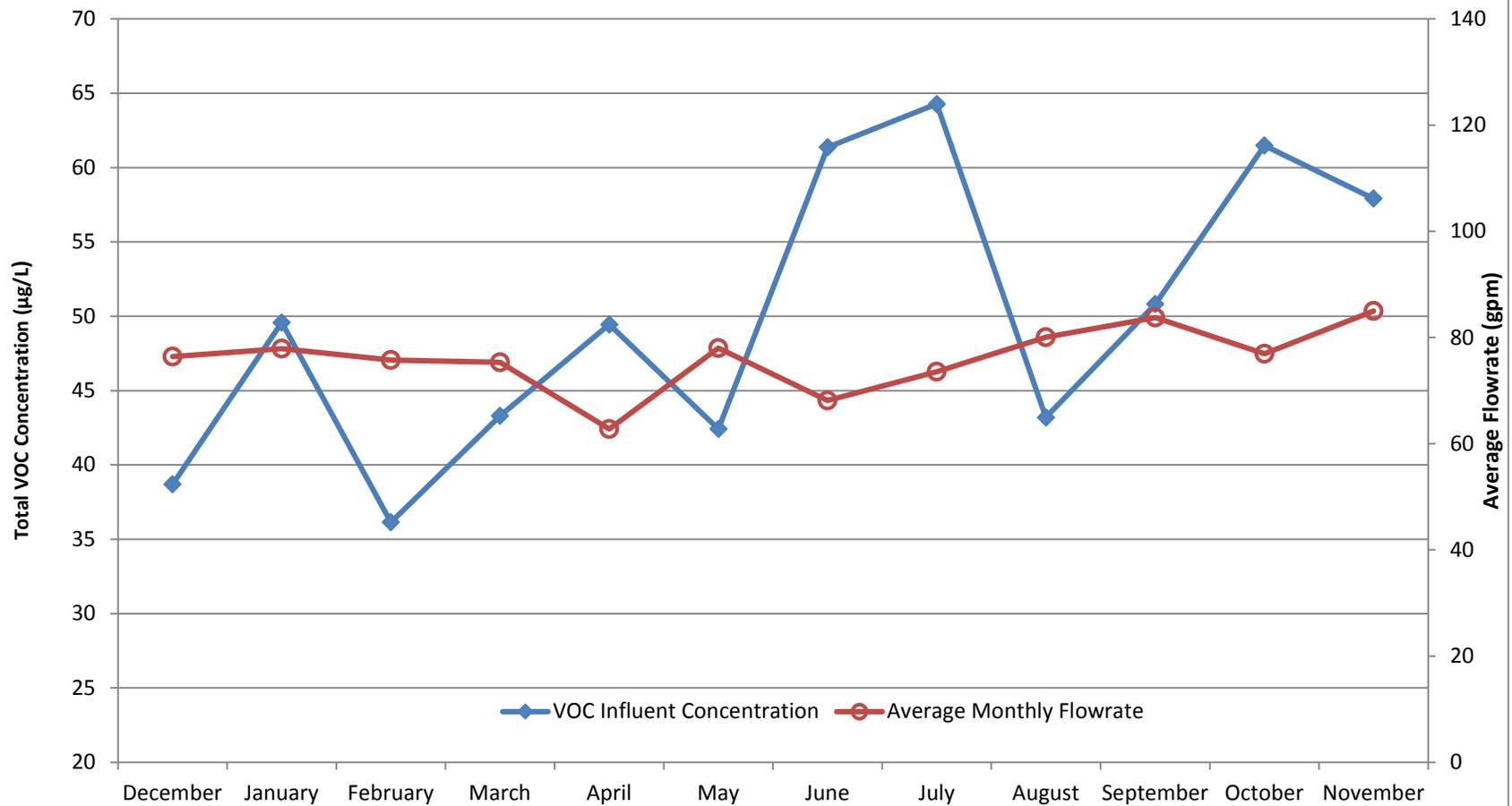
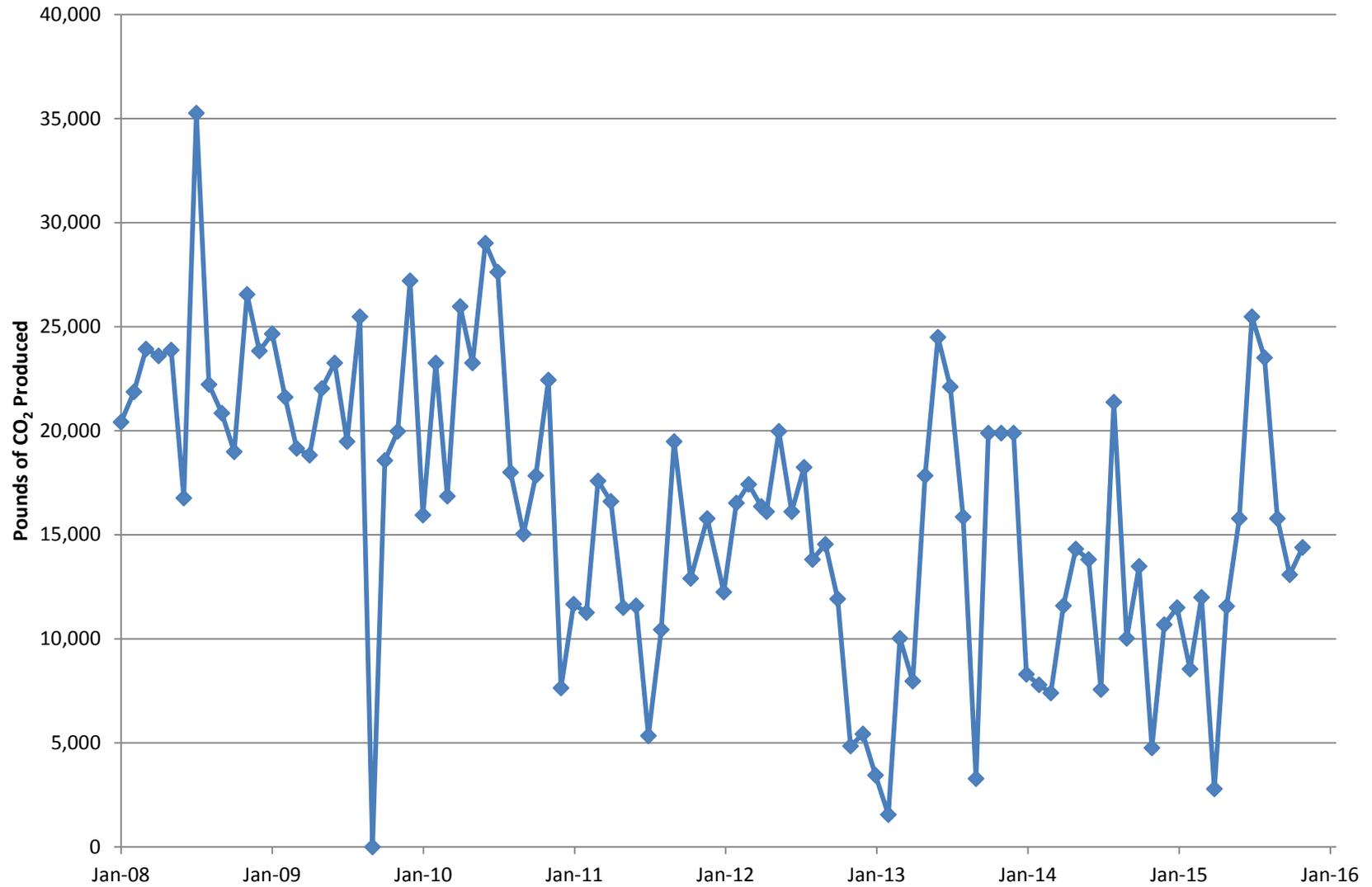


Figure 2

Equivalent Pounds of CO₂ Produced by the South Base Boundary Groundwater Treatment Plant



South Base Boundary Groundwater Treatment Plant Monthly Data Sheet

Report Number: 184

Reporting Period: 23 November 2015 – 30 December 2015

Date Submitted: 20 January 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 December 2015 reporting period.

Table 1 – Operations Summary – December 2015			
Initial Data Collection:	11/23/2015 11:30	Final Data Collection:	12/30/2015 12:15
Operating Time:	Percent Uptime:	Electrical Power Usage:	
SBBGWTP: 889 hours	SBBGWTP: 100%	SBBGWTP: 17.340 kWh (23,756 lbs CO₂ generated^a)	
Gallons Treated: 5.38 million gallons		Gallons Treated Since July 1998: 917 million gallons	
Volume Discharged to Union Creek: 5.38 million gallons		Gallons Treat From Other Sources: 0 gallons^b	
VOC Mass Removed: 2.07 lbs^c		VOC Mass Removed Since July 1998: 471.3 lbs	
Rolling 12-Month Cost per Pound of Mass Removed: \$2,755 ^d			
Monthly Cost per Pound of Mass Removed: \$2,515 ^d			
lbs = pounds			
^a Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.			
^b Decontamination water from investigation activities, processed through the SBBGWTP from the external settling tank			
^c Calculated using December 2015 EPA Method SW8260C analytical results.			
^d 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,b} – December 2015							
FT005^b				SS029		SS030	
EW01x05	1.5	EW736x05	Offline	EW01x29	2.9	EW01x30	8.1
EW02x05	0.3	EW737x05	Offline	EW02x29	1.9	EW02x30	0.2
EW03x05	Offline	EW742x05	Offline	EW03x29	1.9	EW03x30	1.5
EW731x05	Offline	EW743x05	Offline	EW04x29	7.5	EW04x30	35.0
EW732x05	Offline	EW744x05	Offline	EW05x29	12.5	EW05x30	0.8
EW733x05	Offline	EW745x05	Offline	EW06x29	4.1	EW2174x30	0.8
EW734x05	0.0 ^c	EW746x05	Offline	EW07x29	12.7	EW711x30	2.2
EW735x05	1.3						
FT005 Total:	3.1			SS029 Total:	43.5	SS030 Total:	48.6
SBBGWTP Average Monthly Flow^d: 100.8 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 <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> ^c The extraction well is operational but the flow rate is not registering on the SCADA. ^d 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.

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

Summary of O&M Activities

Analytical data from the 15 December 2015 sampling event are presented in Table 4. The total VOC concentration (46.25 µg/L) in the influent sample decreased from the November 2015 sample results (57.92 µg/L). TCE (43.3 µg/L), cis-1,2-DCE (2.69 µg/L), and 1,2-DCA (0.26 µg/L) were detected at the influent sampling location. TCE (2.90 µg/L), cis-1,2-DCE (2.93 µg/L), 1,2-DCA (0.51 µg/L), and chloroform (0.22 µg/L) were detected at the midpoint location. No contaminants were detected at the effluent sampling location.

The lead granular activated carbon (GAC) vessel is nearly spent, and a change-out of the carbon is being arranged.

Figure 1 presents a plot of influent concentrations and average flow at the SBBGWTP over the past twelve (12) months. An overall slight increase in the flow rate has been observed in the past twelve months. The average flow rate at the SBBGWTP increase in December 2015 to 100.8 gpm from the November 2015 flow rate of 85.0 gpm.

Optimization Activities

No optimization activities occurred at the SBBGWTP in December 2015.

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 23,756 pounds of GHG during December 2015. The electric meter is not functioning properly; therefore, the amount of GHG production in December is based on the average amount of GHG generated and the number of gallons treated during the previous twelve months. Troubleshooting efforts on the electric meter will continue in 2016.

TABLE 4

Summary of Groundwater Analytical Data For December 2015 – South Base Boundary Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	15 December 2015 (µg/L)		
				Influent	Midpoint	Effluent
Halogenated Volatile Organics						
Carbon Tetrachloride	0.5	0.15	0	ND	ND	ND
Chloroform	5.0	0.15	0	ND	0.22 J	ND
1,1-Dichloroethane	5.0	0.15	0	ND	ND	ND
1,2-Dichloroethane	0.5	0.15	0	0.26 J	0.51	ND
1,1-Dichloroethene	5.0	0.15	0	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.15	0	2.69	2.93	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	43.3	2.90	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 Suspended Solids (mg/L)	NE	0.6	0	ND	NM	NM
Total Dissolved Solids (mg/L)	NE	4.2	0	NM	NM	1,300
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

NE = not established

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

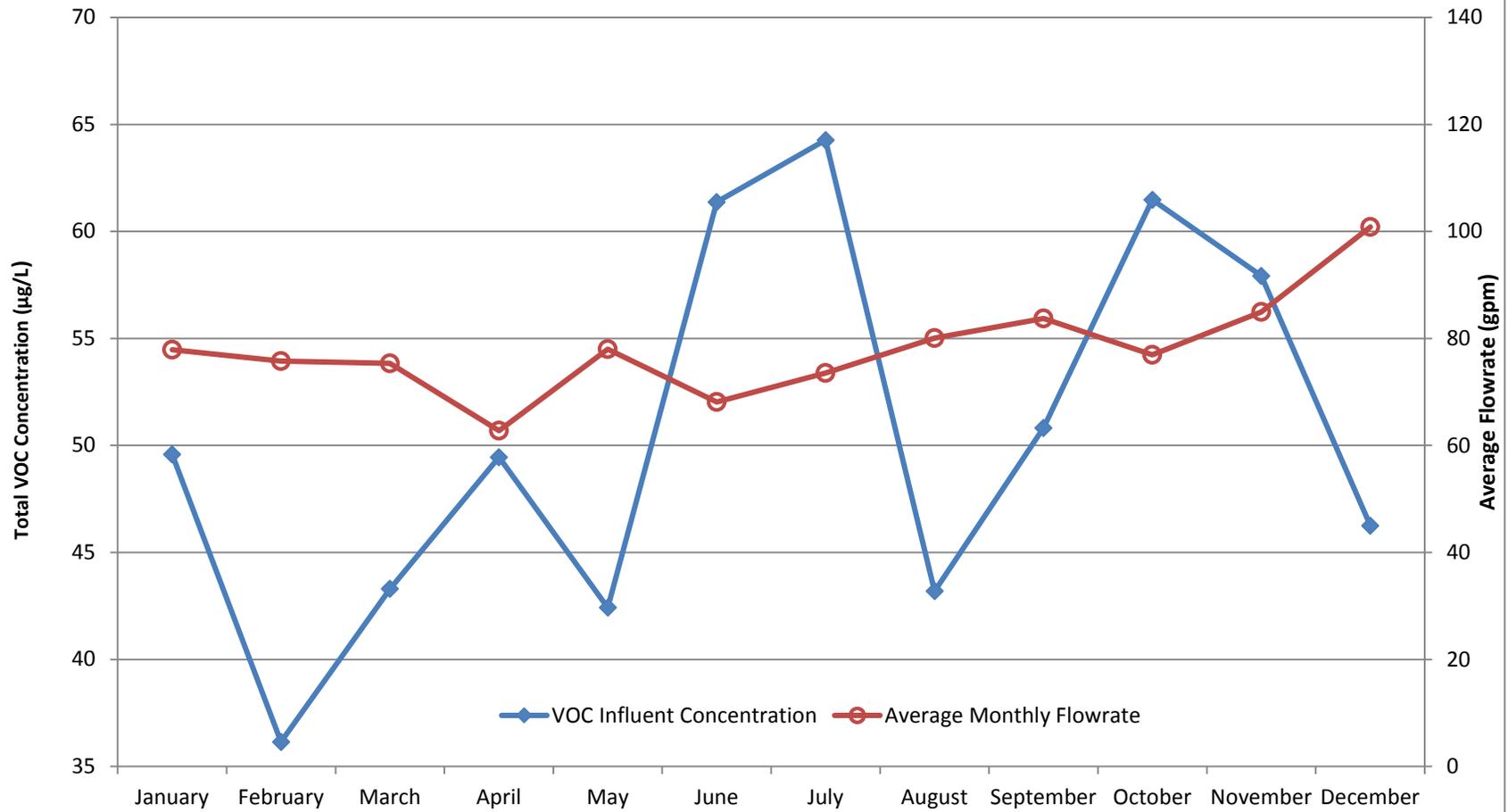
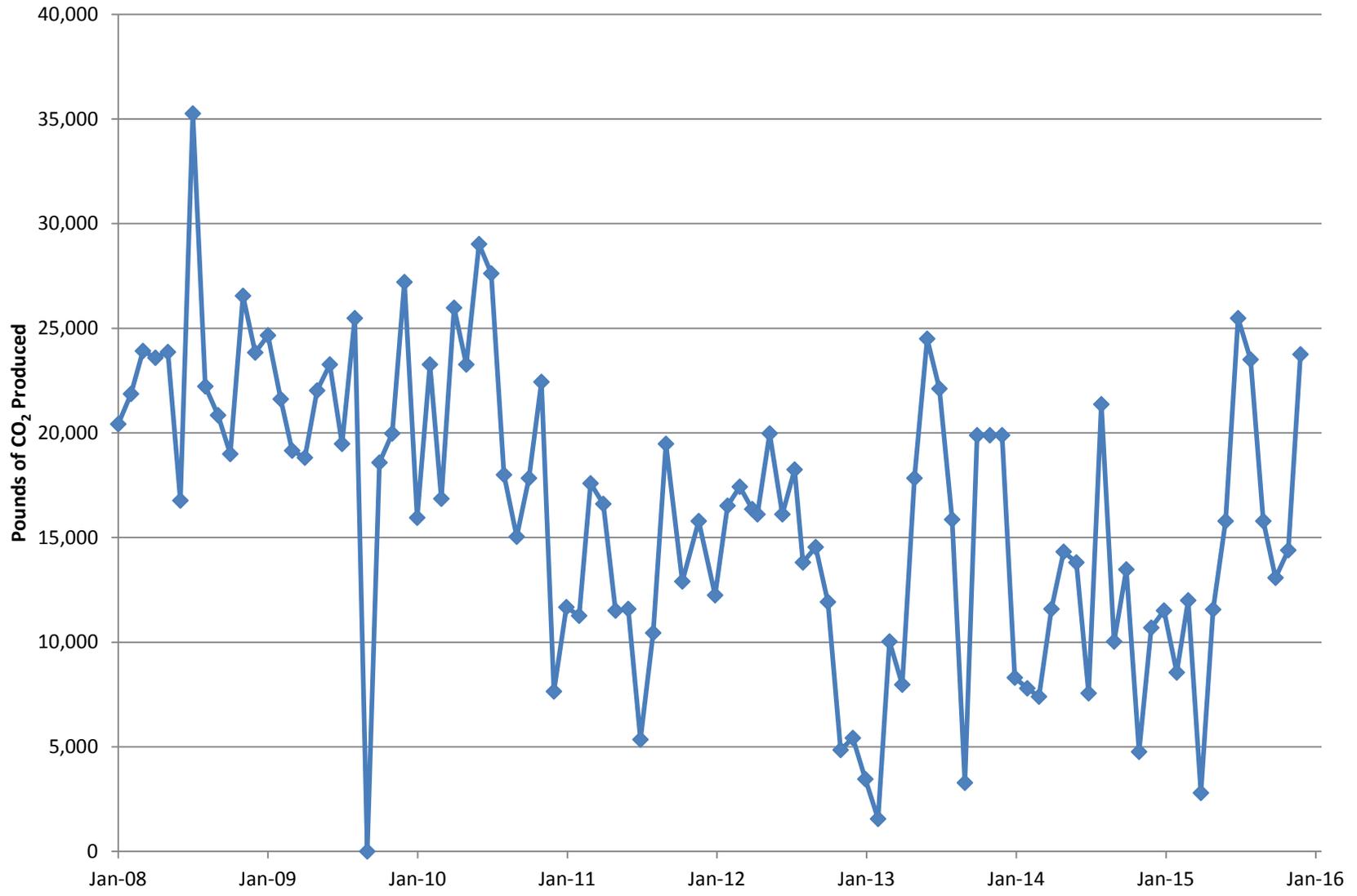


Figure 2

Equivalent Pounds of CO₂ Produced by the South Base Boundary Groundwater Treatment Plant



Central Groundwater Treatment Plant Monthly Data Sheet

Report Number: 195

Reporting Period: 30 September 2015 – 29 October 2015

Date Submitted: 2 December 2015

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 October 2015 reporting period.

Table 1 – Operations Summary – October 2015			
Initial Data Collection:	09/30/2015 12:00	Final Data Collection:	10/29/2015 9:15
Operating Time:		Percent Uptime:	Electrical Power Usage:
CGWTP:	689 hours	CGWTP:	99.4%
		CGWTP:	1,350 kWh (1,850 lbs CO ₂ generated ^a)
Gallons Treated: 1,367,280 gallons		Gallons Treated Since January 1996: 517.6 million gallons	
VOC Mass Removed from groundwater:		VOC Mass Removed Since January 1996:	
1.81 lbs^b		2,731 lbs from groundwater	
		8,686 lbs from vapor	
Rolling 12-Month Cost per Pound of Mass Removed: \$1,026 ^c			
Monthly Cost per Pound of Mass Removed: \$3,123 ^c			
^a Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.			
^b Calculated using October 2015 EPA Method SW8260C analytical results.			
^c Costs include operations and maintenance, reporting, analytical laboratory, project management, and utility costs related to operation of the CGWTP and are reported based on the calendar month.			

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

Table 2 – CGWTP Average Flow Rates^a – October 2015	
Location	Average Flow Rate Groundwater (gpm)
EW01x16	15.8
EW02x16	6.8
EW03x16	0.1
EW605x16	6.4
EW610x16	0.01 ^b
CGWTP	29.1

^a Flow rates calculated by dividing total gallons processed by system operating time for the month or the average of the instantaneous readings.
^b Low flow at EW610x16 due to low water level shut off alarms within that well.
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	
CGTWP	27 October 2015	10:30	27 October 2015	15:00	Installed flow totalizer

-- = Time not recorded
^a 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 October 2015. Sample results are presented in Table 4. The total VOC concentration (181.19 µg/L) in the October 2015 influent sample has slightly decreased from the September 2015 sample (189.42 µg/L). Vinyl chloride was detected at a concentration of 0.17 J µg/L in the influent sample, at a concentration of 0.26 J µg/L after the first carbon vessel, and at a concentration of 0.37 J µg/L after the second carbon vessel, but not 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 October 2015. Total petroleum hydrocarbon in the gasoline range (TPH-g) was detected in the effluent sample at a concentration of 62.5 J µg/L, which exceeded the instantaneous maximum discharge limit. This TPH-g exceedance is anomalous, as we have not seen TPH-G in the plant effluent previously. Upon receipt of the validated October results, the non-validated November results had been received, and TPH-g was 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 flow rate through the treatment plant has increased slightly over the past few months to 29 gpm. The overall decrease in flow rate through the CGWTP over the past 12 months can be directly attributed to the low level alarms in EW610x16 that caused the pump to go off line. A decreased water table due to long periods of dry conditions may have contributed to these alarms.

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 October 2015. The bioreactor was brought on line on 1 October 2015, taken off line on 9 October, and restarted on 23 October. The bioreactor is scheduled to continue the 2-week operating schedule.

Optimization Activities

No optimization activities occurred at the CGWTP in October 2015.

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 1,850 pounds of GHG during October 2015. This is a decrease from the September 2015 amount of 3,781 pounds, which is consistent with a shorter uptime this month.

TABLE 4

Summary of Groundwater Analytical Data for October 2015 – Central Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	5 October 2015 (µg/L)			
				Influent	After Carbon 1 Effluent	After Carbon 2 Effluent	System Effluent
Halogenated Volatile Organics							
Carbon Tetrachloride	0.5	0.15	0	ND	ND	ND	ND
Chloroform	5.0	0.15	0	ND	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.15	0	52.6	ND	ND	ND
1,2-Dichlorobenzene	5.0	0.15	0	0.39 J	ND	ND	ND
1,3-Dichlorobenzene	5.0	0.15	0	0.39 J	ND	ND	ND
1,4-Dichlorobenzene	5.0	0.15	0	0.20 J	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	0.48 J	ND	ND	ND
Methylene Chloride	5.0	0.15	0	ND	ND	ND	ND
MTBE	1.0	0.15	0	ND	ND	ND	ND
Tetrachloroethene	5.0	0.15	0	0.45 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	124	ND	ND	ND
trans-1,2-Dichloroethene	5.0	0.15	0	2.51	ND	ND	ND
Vinyl Chloride	0.5	0.15	0	0.17 J	0.26 J	0.37 J	ND
Non-Halogenated Volatile Organics							
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
Other							
Total Dissolved Solids (mg/L)	NA	0.627	0	ND	NM	NM	NM
Total Petroleum Hydrocarbons – Gasoline	50	30	1	NM	NM	NM	62.5 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.

Table 5 – Summary of DP039 Bioreactor “Pulsed Mode” Operations		
Location	Pulse On Start Date	Pulse Off Start Date
MW750x39	3 July 2014	24 July 2014
	01 August 2014	15 August 2014
	01 September 2014	12 September 2014
	26 September 2014	30 September 2014 ^a
	24 October 2014	7 November 2014
	21 November 2014	4 December 2014
	19 December 2014	January 2, 2015
	16 January 2015	29 January 2015
	13 February 2015	27 March 2015
	10 April 2015	24 April 2015
	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		

^a = DP039 Bioreactor turned off on 30 September 2014 to replace hose.
 -- = Start/Off Date to be determined
 CGWTP = Central Groundwater Treatment Plant
 MW = Monitoring Well

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

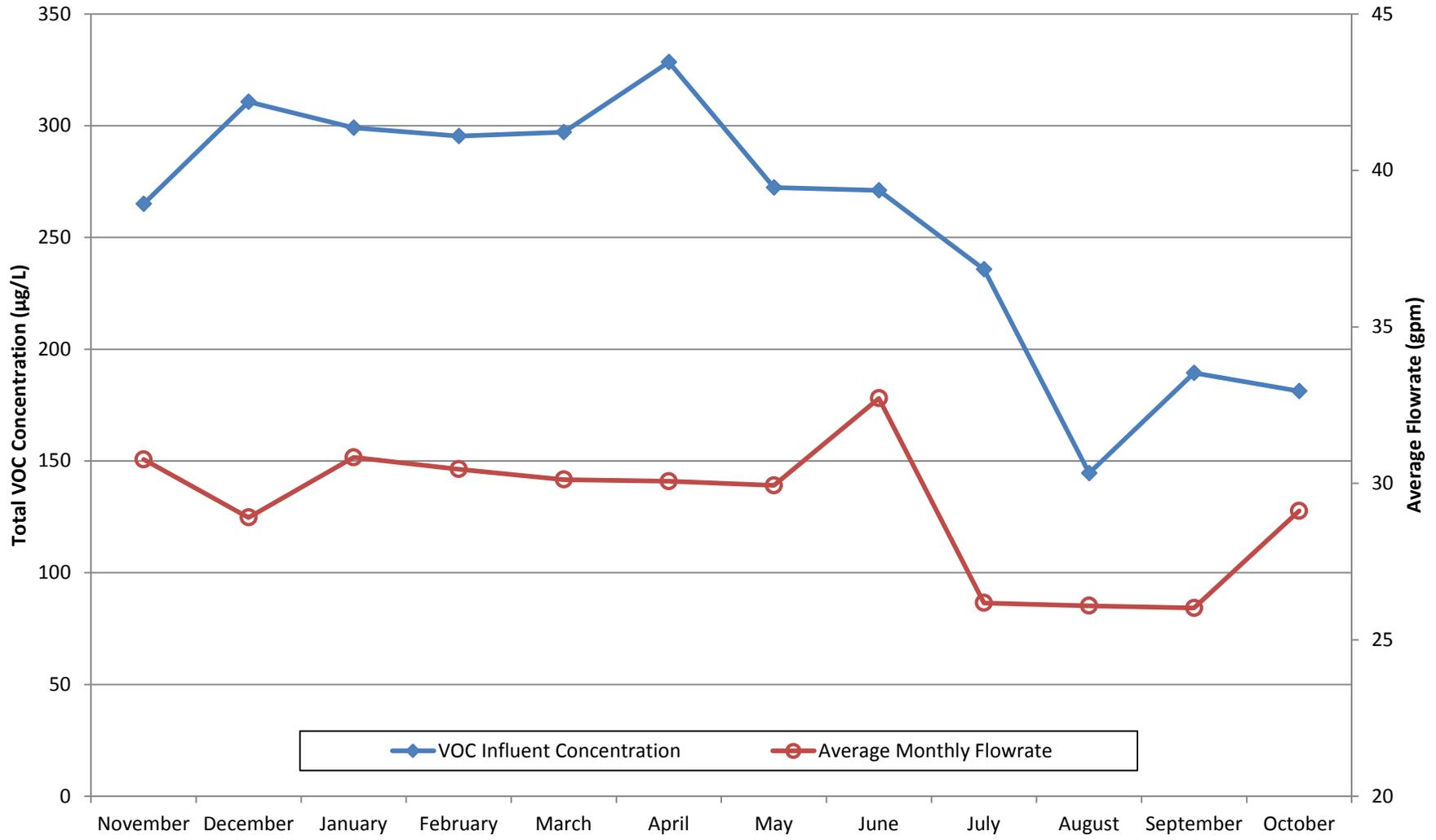
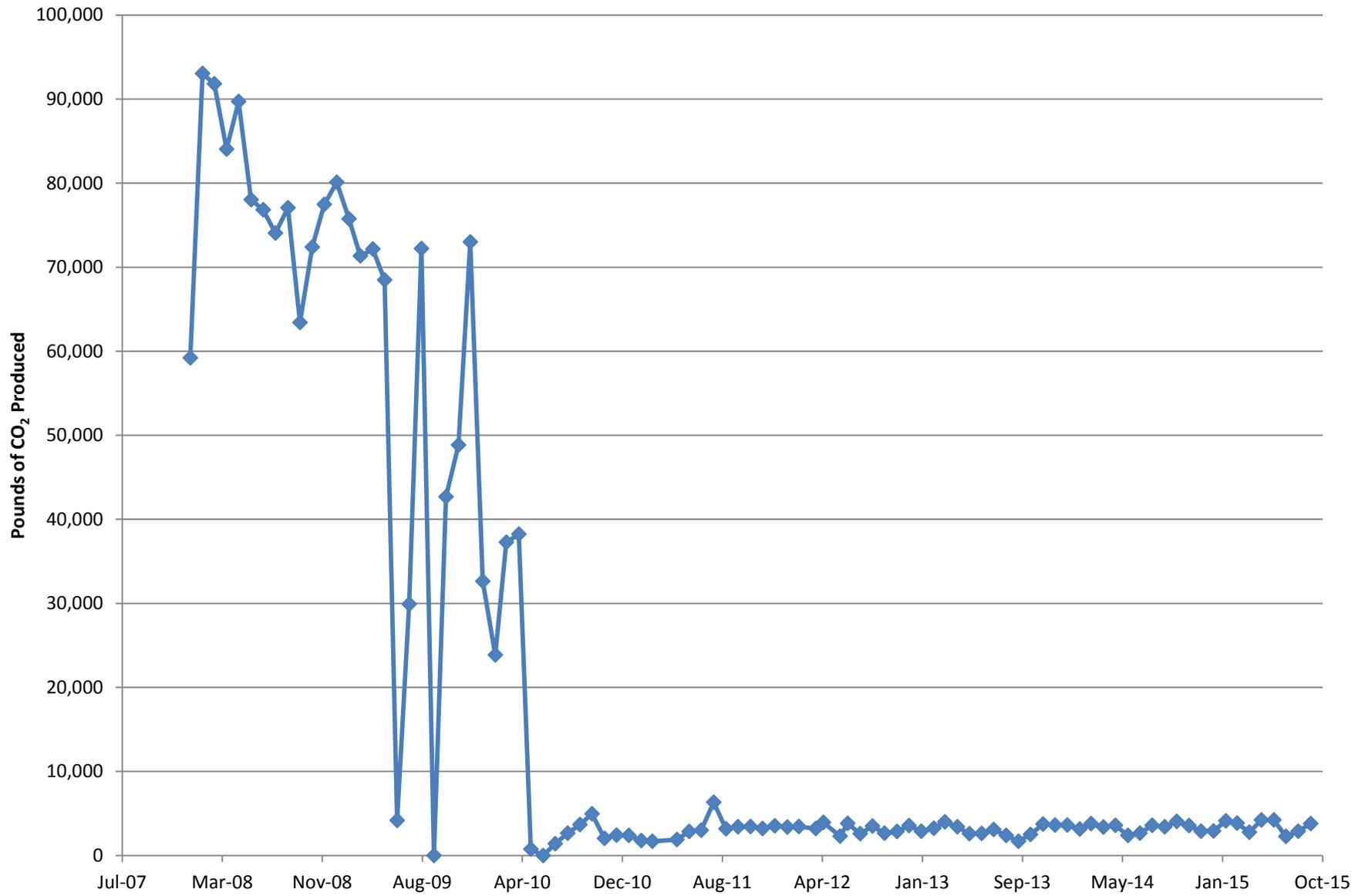


Figure 2

Equivalent Pounds of CO2 Produced by the Central Groundwater Treatment Plant



Central Groundwater Treatment Plant Monthly Data Sheet

Report Number: 196

Reporting Period: 29 October 2015 – 23 November 2015

Date Submitted: 20 December 2015

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 November 2015 reporting period.

Table 1 – Operations Summary – November 2015			
Initial Data Collection:	10/29/2015 9:15	Final Data Collection:	11/23/2015 15:00
Operating Time:		Percent Uptime:	Electrical Power Usage:
CGWTP: 606 hours		CGWTP: 100%	CGWTP: 1,816 kWh (2,488 lbs CO ₂ generated ^a)
Gallons Treated: 1,017,400 gallons		Gallons Treated Since January 1996: 518.6 million gallons	
VOC Mass Removed from groundwater:		VOC Mass Removed Since January 1996:	
1.75 lbs^b		2,733 lbs from groundwater	
		8,686 lbs from vapor	
Rolling 12-Month Cost per Pound of Mass Removed: \$1,099 ^c			
Monthly Cost per Pound of Mass Removed: \$1,844 ^c			
^a Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG. ^b Calculated using November 2015 EPA Method SW8260C analytical results. ^c Costs include operations and maintenance, reporting, analytical laboratory, project management, and utility costs related to operation of the CGWTP and are reported based on the calendar month.			

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

Table 2 – CGWTP Average Flow Rates^a – November 2015	
Location	Average Flow Rate Groundwater (gpm)
EW001x16	15.0
EW002x16	6.7
EW003x16	0.1
EW605x16	6.4
EW610x16	0.8
CGWTP	28.0

^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	
CGTWP	None.	--		--	None.

-- = Time not recorded
^a 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 4 November 2015. Sample results are presented in Table 4. The total VOC concentration (205.95 µg/L) in the November 2015 influent sample has slightly increased from the October 2015 sample (181.19 µg/L). Vinyl chloride was not detected in the influent and effluent samples; however, it was reported at 0.25 J µg/L after the first carbon vessel, and at 0.28 J µg/L after the second carbon vessel. Travis AFB will continue to monitor influent, midpoint, and effluent concentrations at the CGWTP for carbon breakthrough, though the carbon treatment remained effective in November 2015. Total petroleum hydrocarbons 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 overall flow rate through the treatment plant has decreased slightly over the past 12 months, which can be directly attributed to the low level alarms in EW610x16 that caused the pump to go off line. A decreased water table due to long periods of dry conditions may have contributed to these alarms. In addition, a slow and steady decrease in the EW001x16 flow rate has been observed.

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 November 2015. The bioreactor was taken off line on 6 November 2015 and was brought back on line on 20 November 2015. The bioreactor is scheduled to continue the 2-week operating schedule.

Optimization Activities

No optimization activities occurred at the CGWTP in November 2015.

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 2,488 pounds of GHG during November 2015. This is an increase from the October 2015 amount of 1,850 pounds.

TABLE 4

Summary of Groundwater Analytical Data for November 2015 – Central Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	4 November 2015 (µg/L)			
				Influent	After Carbon 1 Effluent	After Carbon 2 Effluent	System Effluent
Halogenated Volatile Organics							
Carbon Tetrachloride	0.5	0.15	0	ND	ND	ND	ND
Chloroform	5.0	0.15	0	ND	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.15	0	53.4	ND	ND	ND
1,2-Dichlorobenzene	5.0	0.15	0	0.39 J	ND	ND	ND
1,3-Dichlorobenzene	5.0	0.15	0	0.41 J	ND	ND	ND
1,4-Dichlorobenzene	5.0	0.15	0	0.20 J	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	0.54	ND	ND	ND
Methylene Chloride	5.0	0.15	0	ND	ND	ND	ND
MTBE	1.0	0.15	0	ND	ND	ND	ND
Tetrachloroethene	5.0	0.15	0	0.45 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	148	ND	ND	ND
trans-1,2-Dichloroethene	5.0	0.15	0	2.56	ND	ND	ND
Vinyl Chloride	0.5	0.15	0	ND	0.25 J	0.28 J	ND
Non-Halogenated Volatile Organics							
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
Other							
Total Suspended Solids (mg/L)	NA	1.09	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
1,4-Dioxane	NA	0.083	0	NM	NM	NM	ND

* 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.

Table 5 – Summary of DP039 Bioreactor “Pulsed Mode” Operations		
Location	Pulse On Start Date	Pulse Off Start Date
MW750x39	24 October 2014	7 November 2014
	21 November 2014	4 December 2014
	19 December 2014	January 2, 2015
	16 January 2015	29 January 2015
	13 February 2015	27 March 2015
	10 April 2015	24 April 2015
	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		

MW = Monitoring Well

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

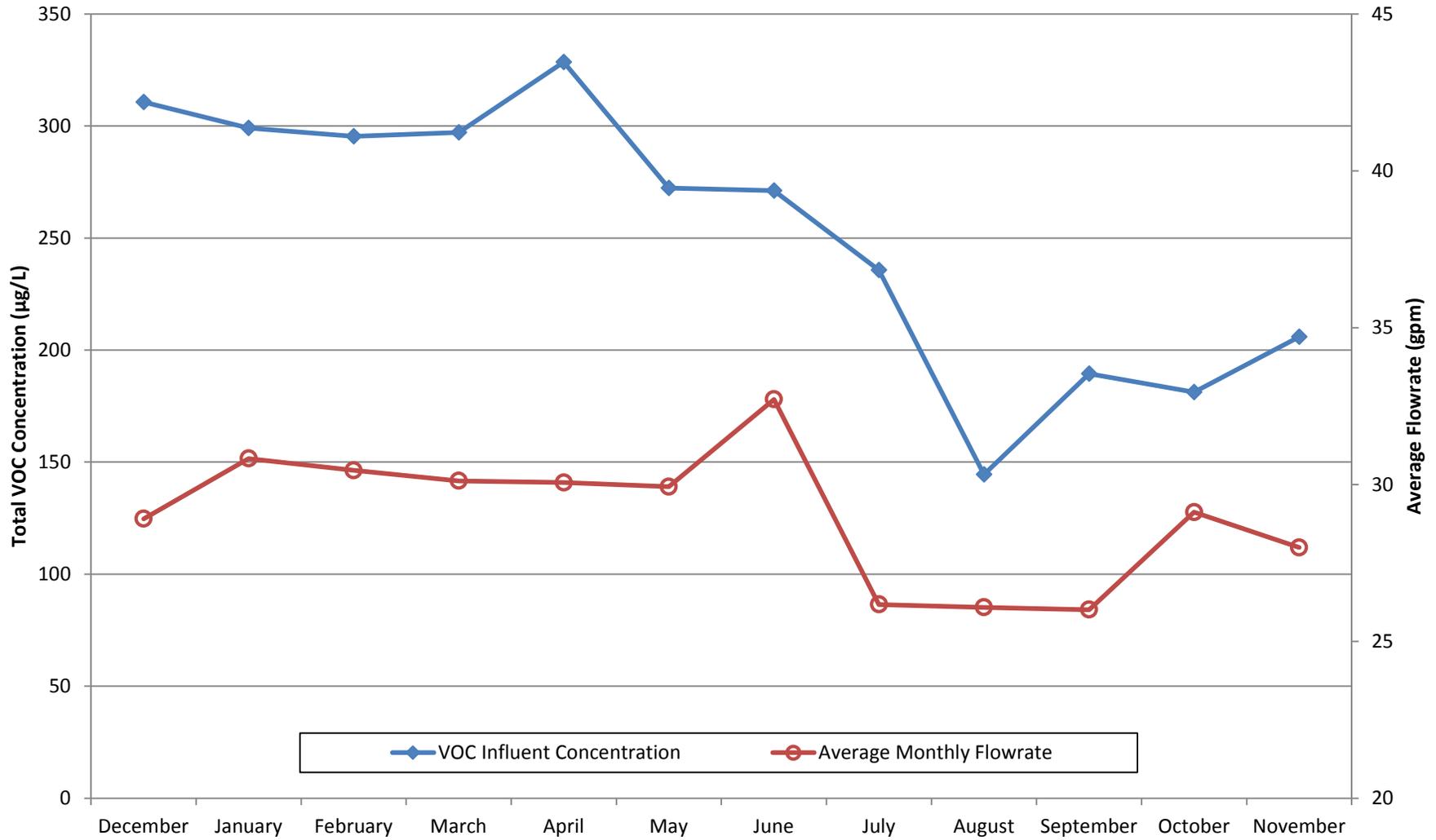
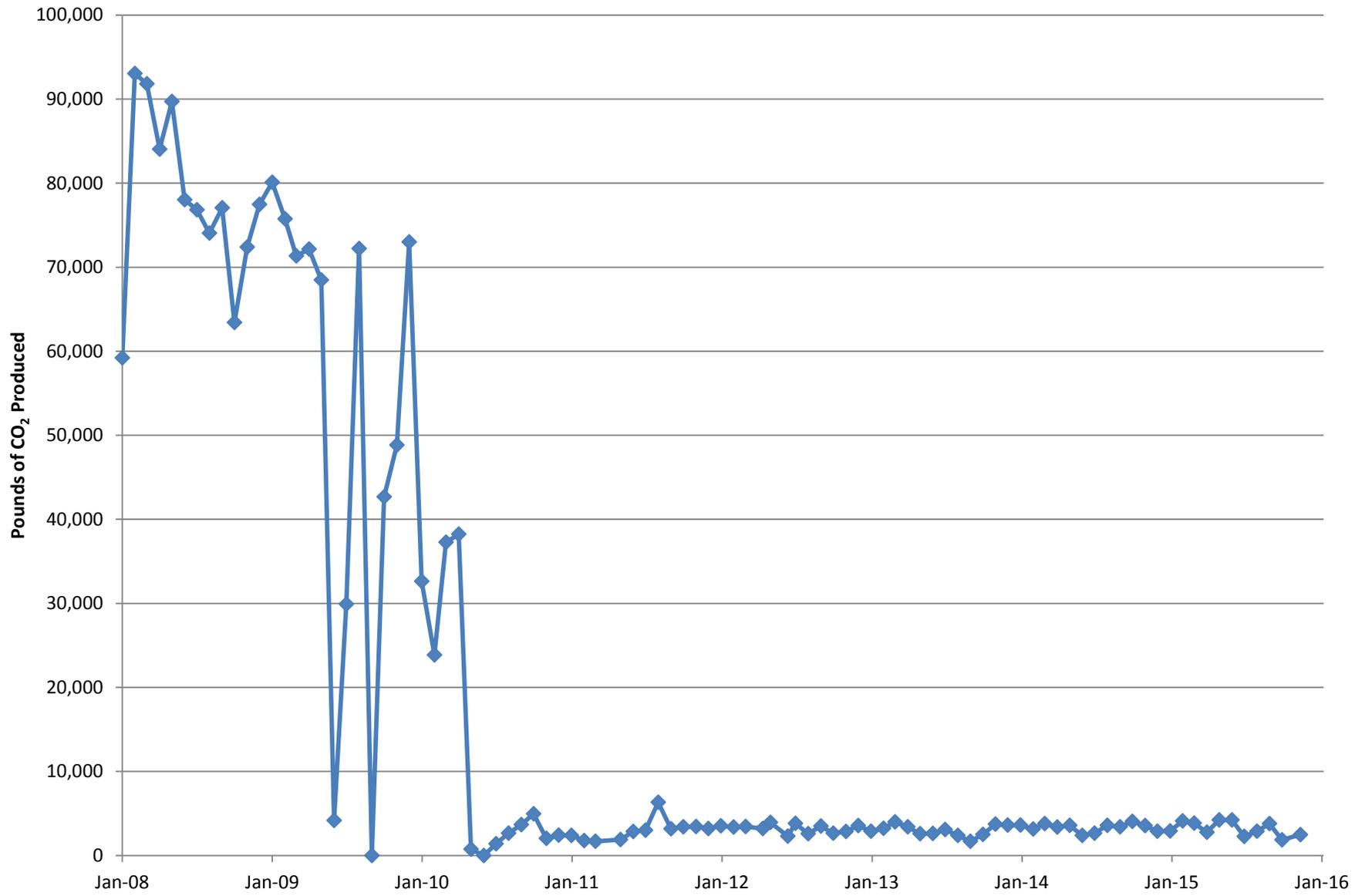


Figure 2

Equivalent Pounds of CO2 Produced by the Central Groundwater Treatment Plant



Central Groundwater Treatment Plant Monthly Data Sheet

Report Number: 197

Reporting Period: 23 November 2015 – 23 December 2015

Date Submitted: 20 January 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 December 2015 reporting period.

Table 1 – Operations Summary – December 2015			
Initial Data Collection:	11/23/2015 15:00	Final Data Collection:	12/30/2015 09:45
Operating Time:		Percent Uptime:	Electrical Power Usage:
CGWTP: 834 hours		CGWTP: 94.5%	CGWTP: 2,983 kWh (4,087 lbs CO ₂ generated ^a)
Gallons Treated: 1,298,300 gallons		Gallons Treated Since January 1996: 519.9 million gallons	
VOC Mass Removed from groundwater:		VOC Mass Removed Since January 1996:	
2.18 lbs^b		2,735 lbs from groundwater	
		8,686 lbs from vapor	
Rolling 12-Month Cost per Pound of Mass Removed: \$1,199 ^c			
Monthly Cost per Pound of Mass Removed: \$1,934 ^c			
^a Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.			
^b Calculated using December 2015 EPA Method SW8260C analytical results.			
^c Costs include operations and maintenance, reporting, analytical laboratory, project management, and utility costs related to operation of the CGWTP and are reported based on the calendar month.			

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

Table 2 – CGWTP Average Flow Rates ^a – December 2015	
Location	Average Flow Rate Groundwater (gpm)
EW001x16	14.6
EW002x16	6.7
EW003x16	0.1
EW605x16	6.2
EW610x16	3.3
CGWTP	25.9

^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	
CGTWP	7 December 2015	--	9 December 2015	12:00	High high alarm in the sump.

-- = Time not recorded
^a 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 15 December 2015. Sample results are presented in Table 4. The total VOC concentration (201.13 µg/L) in the December 2015 influent sample has slightly decreased from the November 2015 sample (205.95 µg/L). Vinyl chloride was not detected in the influent and effluent samples; however, it was reported at 0.19 J µg/L after the first carbon vessel, and at 0.24 J µg/L after the second carbon vessel. Travis AFB will continue to monitor influent, midpoint, and effluent concentrations at the CGWTP for carbon breakthrough, though the carbon treatment remained effective in December 2015. Total petroleum hydrocarbons 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 overall flow rate through the treatment plant has decreased slightly over the past 12 months. A slow and steady decrease in the EW001x16 flow rate has been observed.

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 December 2015. The bioreactor was taken off line on 8 December 2015 and was brought back on line on 21 December 2015. The bioreactor is scheduled to continue the 2-week operating schedule.

Optimization Activities

No optimization activities occurred at the CGWTP in December 2015.

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 4,087 pounds of GHG during December 2015. This is an increase from the November 2015 amount of 2,488 pounds.

TABLE 4

Summary of Groundwater Analytical Data for December 2015 – Central Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	15 December 2015 (µg/L)			
				Influent	After Carbon 1 Effluent	After Carbon 2 Effluent	System Effluent
Halogenated Volatile Organics							
Carbon Tetrachloride	0.5	0.15	0	ND	ND	ND	ND
Chloroform	5.0	0.15	0	ND	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.15	0	40.2	ND	ND	ND
1,2-Dichlorobenzene	5.0	0.15	0	0.33 J	ND	ND	ND
1,3-Dichlorobenzene	5.0	0.15	0	0.44 J	ND	ND	ND
1,4-Dichlorobenzene	5.0	0.15	0	0.18 J	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	0.44 J	ND	ND	ND
Methylene Chloride	5.0	0.15	0	ND	ND	ND	ND
MTBE	1.0	0.15	0	ND	ND	ND	ND
Tetrachloroethene	5.0	0.15	0	0.52	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	157	ND	ND	ND
trans-1,2-Dichloroethene	5.0	0.15	0	2.02	ND	ND	ND
Vinyl Chloride	0.5	0.15	0	ND	0.19 J	0.24 J	ND
Non-Halogenated Volatile Organics							
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
Other							
Total Suspended Solids (mg/L)	NA	0.6	0	ND	NM	NM	NM
Total Dissolved Solids (mg/L)	NA	4.2	0	NM	NM	NM	812
Total Petroleum Hydrocarbons – Gasoline	50	30	0	69.8 J	NM	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	29	0	32.7 J	NM	NM	ND

* 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.

Table 5 – Summary of DP039 Bioreactor “Pulsed Mode” Operations		
Location	Pulse On Start Date	Pulse Off Start Date
MW750x39	21 November 2014	4 December 2014
	19 December 2014	January 2, 2015
	16 January 2015	29 January 2015
	13 February 2015	27 March 2015
	10 April 2015	24 April 2015
	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		

MW = Monitoring Well

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

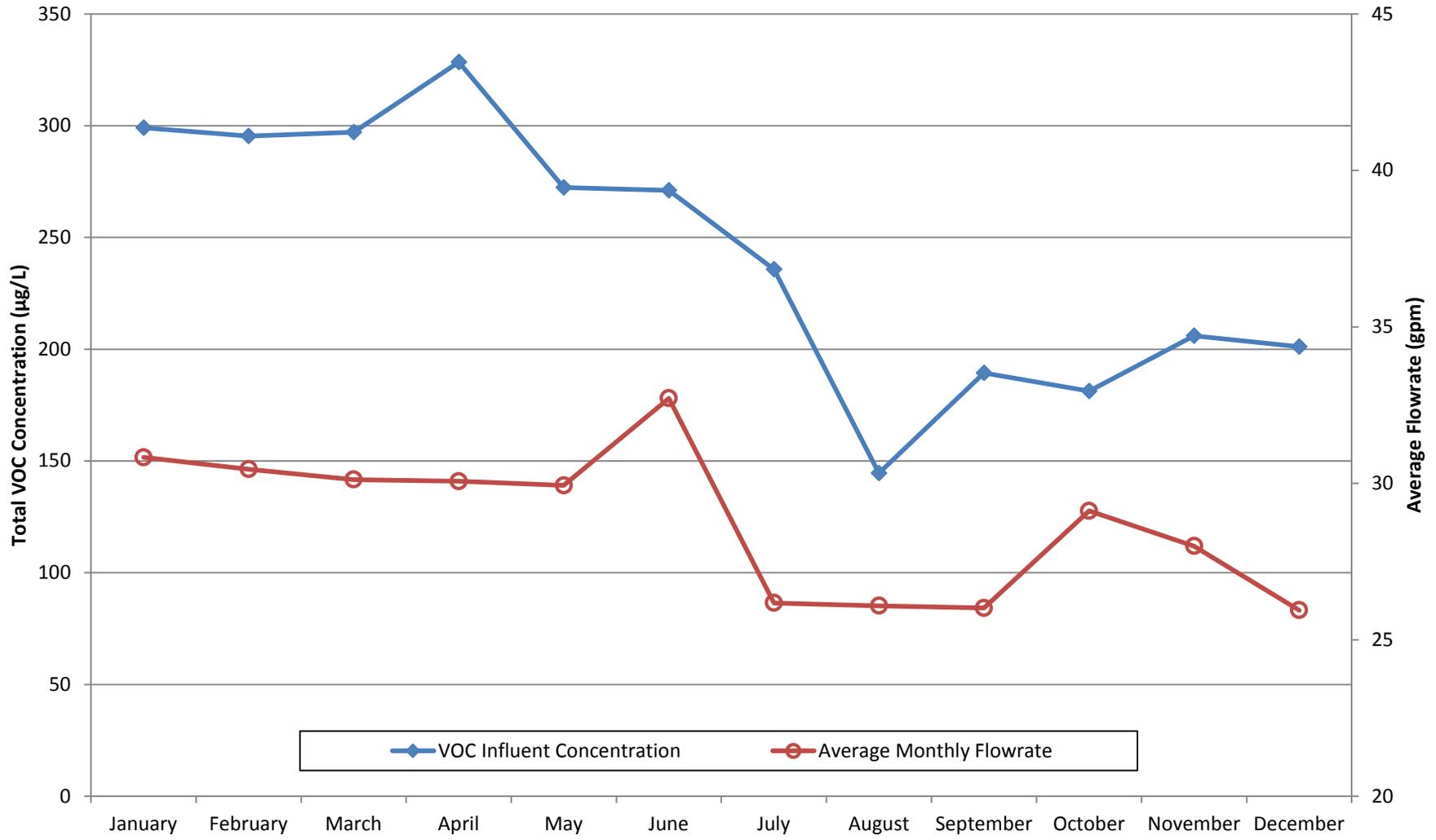
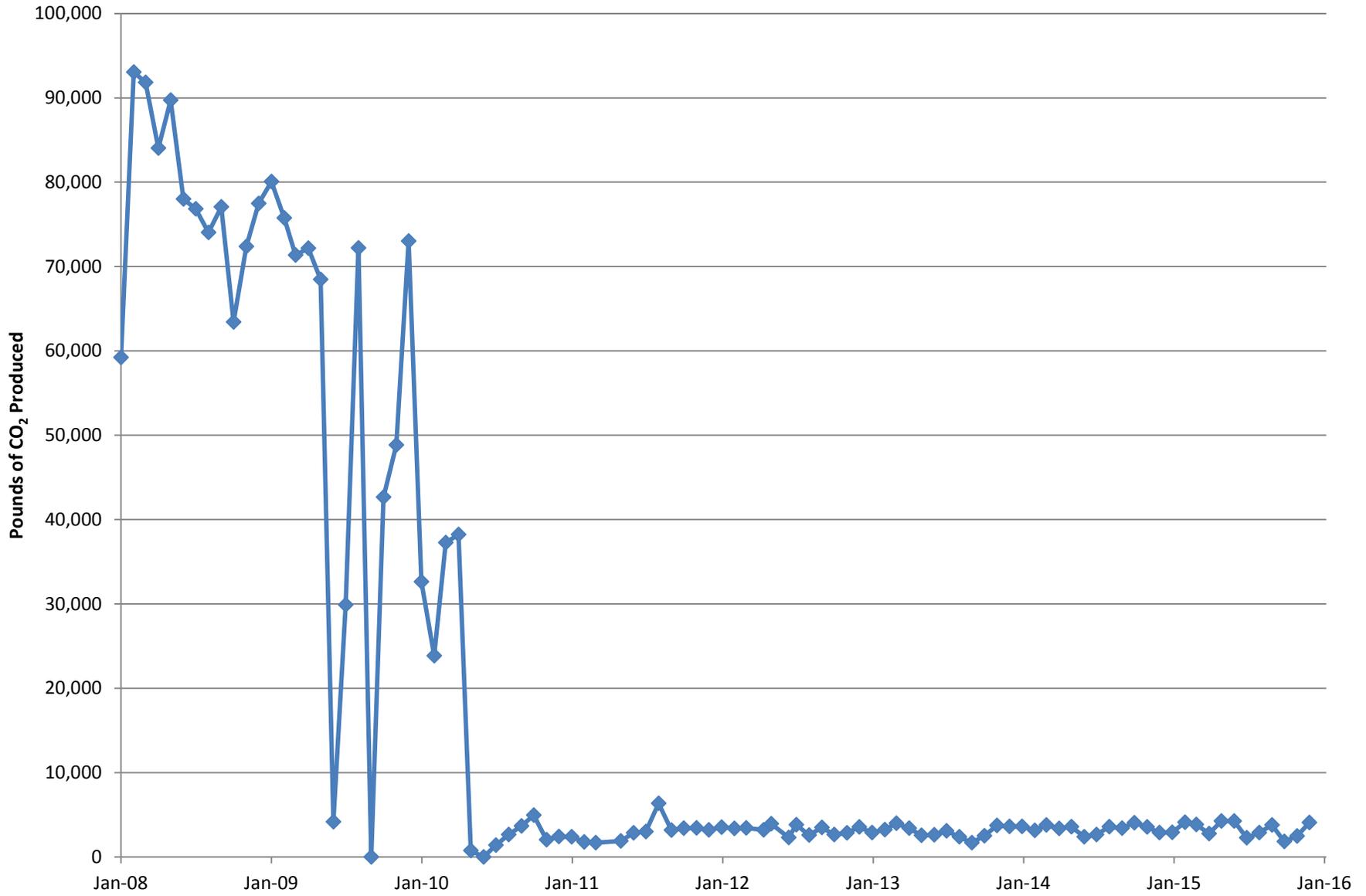


Figure 2

Equivalent Pounds of CO₂ Produced by the Central Groundwater Treatment Plant



Subarea LF007C Groundwater Treatment Plant Monthly Data Sheet

Report Number: 149

Reporting Period: 30 September 2015 – 29 October 2015

Date Submitted: 2 December 2015

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 October 2015 reporting period:

Table 1 – Operations Summary – October 2015			
Initial Data Collection:	09/30/2015 12:00	Final Data Collection:	10/29/2015 10:00
Operating Time:	Percent Uptime:	Electrical Power Usage ^a :	
LF007C GWTP: 694 hours	LF007C GWTP 100%	LF007C GWTP: 0 kWh	
Gallons Treated: 143,500 gallons		Gallons Treated Since March 2000: 84.7 million gallons	
Volume Discharged to Duck Pond: 143,500 gallons		Volume Discharge to Storm Drain: 0 gallons	
VOC Mass Removed: 3.91 x 10⁻³ pounds^b		VOC Mass Removed Since March 2000: 174.35 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 October 2015 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 – October 2015		
Location	Average Flow Rate (gpm) ^a	Total Gallons Processed (gallons)
EW614x07	3.42	142,170
EW615x07 ^b	0	0
LF007C GWTP	3.45	143,500
^a Average flow rate calculated by dividing the total gallons processed collected from wellhead totalizers by the hours recorded by the system hour meter. ^b Extraction well currently offline due to insufficient battery power. 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

Analytical data from the 7 October 2015 sampling event are presented in Table 4. Cis-1,2-DCE (0.27 J µg/L) and TCE (3.0 µg/L) were detected at the influent sample location. No contaminants were detected at the midpoint or effluent sampling locations.

Figure 1 presents a chart of influent concentrations (total VOCs) at the LF007C GWTP versus time for the past twelve months. Analytical data (Table 4) continue to indicate effective treatment of the influent process stream.

The LF007C GWTP (formerly referred to as the North Groundwater Treatment Plant [NGWTP]) was brought back on line on 2 June 2015 after having been taken off line in December 2014 when vernal pools formed at Subarea LF007C.

The average flow rate through the LF007C GWTP in October 2015 (3.45 gpm) was slightly lower than the flow rate measured in September 2015 (3.67 gpm). Continued dry conditions may be affecting the amount of groundwater available for extraction at EW614x07.

Optimization Activities

No optimization activities were performed during October 2015.

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.

TABLE 4

Summary of Groundwater Analytical Data For October 2015 – Subarea LF007C Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	7 October 2015 (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
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	0.27 J	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	3.0	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	30	0	NM	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	29.7	0	NM	NM	ND
Total Dissolved Solids (mg/L)	NA	0.653	0	2.13 J	NM	NM

* In accordance with Appendix G of the *Travis AFB North Groundwater Treatment Plant Operations and Maintenance Manual*, Sites FT004, SD031, and LF007 Area C (URS Group, Inc., 2005).

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

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

Figure 1
LF007C GWTP Total VOC Influent Concentrations and Average Flowrate
Twelve Month History
Travis Air Force Base, California

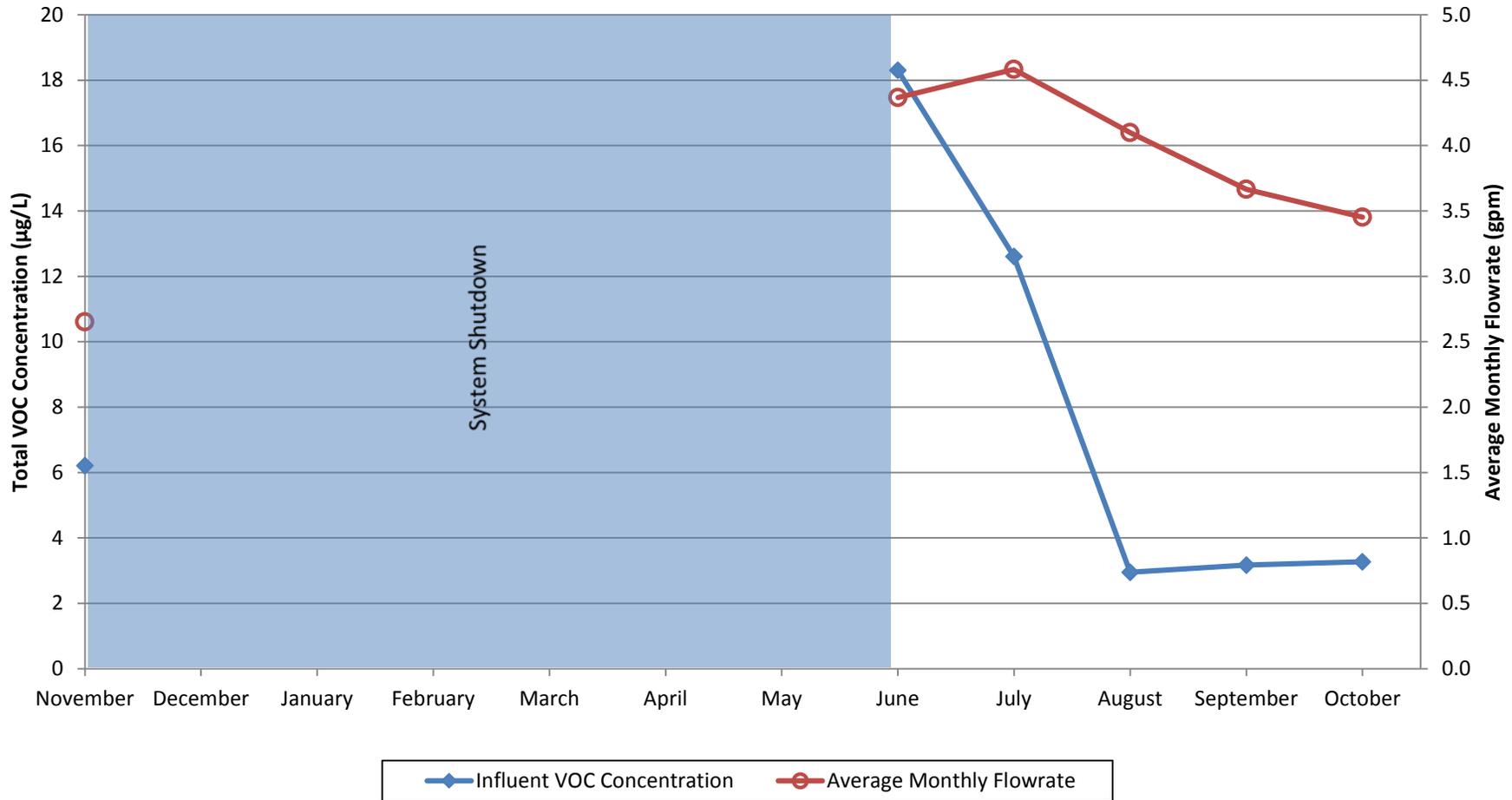
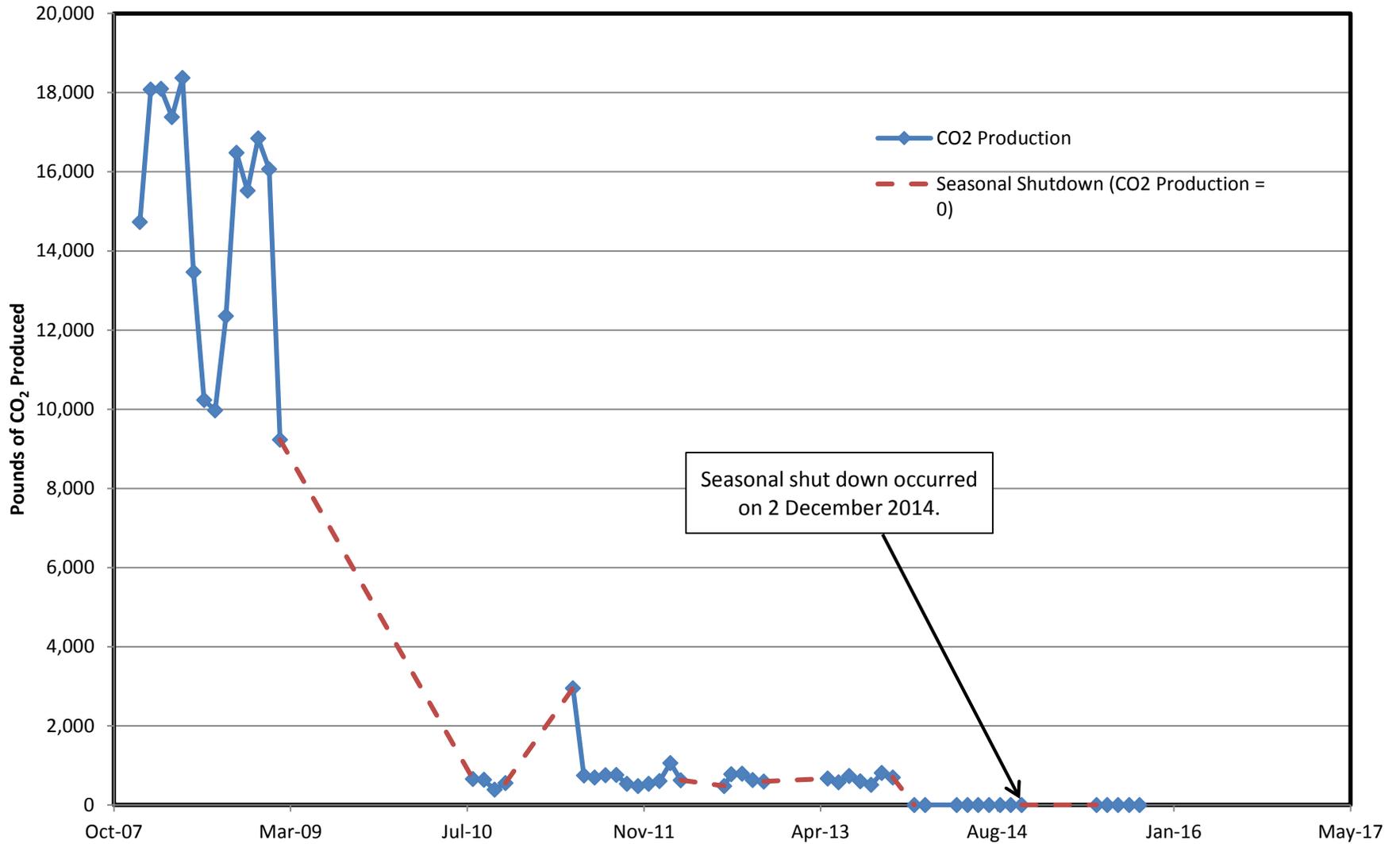


Figure 2

Equivalent Pounds of CO₂ Produced by the LF007C Groundwater Treatment Plant



Note: Dashed line represents seasonal shutdowns due to the presence of vernal pools at Site LF007C during which no CO₂ production occurred.

Subarea LF007C Groundwater Treatment Plant Monthly Data Sheet

Report Number: 150

Reporting Period: 29 October 2015 – 23 November 2015

Date Submitted: 20 December 2015

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 November 2015 reporting period:

Table 1 – Operations Summary – November 2015			
Initial Data Collection:	10/29/2015 10:00	Final Data Collection:	11/23/2015 12:50
Operating Time:	Percent Uptime:	Electrical Power Usage ^a :	
LF007C GWTP: 579 hours	LF007C GWTP 96%	LF007C GWTP: 0 kWh	
Gallons Treated: 120,190 gallons		Gallons Treated Since March 2000: 84.9 million gallons	
Volume Discharged to Duck Pond: 120,190 gallons		Volume Discharge to Storm Drain: 0 gallons	
VOC Mass Removed: 3.69 x 10⁻³ pounds^b		VOC Mass Removed Since March 2000: 174.35 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 November 2015 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 – November 2015		
Location	Average Flow Rate (gpm) ^a	Total Gallons Processed (gallons)
EW614x07	3.43	119,120
EW615x07 ^b	0	0
LF007C GWTP	3.46	120,190
^a Average flow rate calculated by dividing the total gallons processed collected from wellhead totalizers by the hours recorded by the system hour meter. ^b Extraction well currently offline due to insufficient battery power. 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	1 November 2015	--	2 November 2015	--	Rain water flooded the sump. The rainwater was pumped out and the system restarted.
LF007C GWTP	10 November 2015	--	11 November 2015	--	The load controller disengaged pump operation, but did not reengage when the batteries were recharged. Disconnect and reconnect settings were adjusted and the load controller was reset to bring the pump back on line.

-- = 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

Analytical data from the 4 November 2015 sampling event are presented in Table 4. Cis-1,2-DCE (0.29 J µg/L) and TCE (3.39 µg/L) were detected at the influent sample location. No contaminants were detected at the midpoint sampling location. However, total petroleum hydrocarbon in the diesel range (TPH-D) and motor oil range (TPH-MO) were detected in the final effluent at concentrations of 40.9 J µg/L and 35.0 J µg/L, respectively. The detection of TPH-d was below the effluent limitation of 50 µg/L, and the detection of TPH-MO was below the trigger value of 50 µg/L. Detections of TPH at the LF007C GWTP are inconsistent and are typically not detected during monthly sampling events. Travis AFB will continue to monitor TPH concentrations at the LF007C GWTP.

Figure 1 presents a chart of influent concentrations (total VOCs) at the LF007C GWTP versus time for the past twelve months. Analytical data (Table 4) continue to indicate effective treatment of the influent process stream.

The LF007C GWTP (formerly referred to as the North Groundwater Treatment Plant [NGWTP]) was brought back on line on 2 June 2015 after having been taken off line in December 2014 when vernal pools formed at Subarea LF007C.

The average flow rate through the LF007C GWTP in November 2015 (3.46 gpm) was slightly greater than the flow rate measured in October 2015 (3.45 gpm). Continued dry conditions may be affecting the amount of groundwater available for extraction at EW614x07.

Optimization Activities

No optimization activities were performed during November 2015.

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.

TABLE 4

Summary of Groundwater Analytical Data For November 2015 – Subarea LF007C Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	4 November 2015 (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
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	0.29 J	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	3.39	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 Suspended Solids (mg/L)	NA	1.1	0	ND	NM	NM
Total Petroleum Hydrocarbons – Gasoline	50	30	0	NM	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	29	0	NM	NM	40.9 J
Total Petroleum Hydrocarbons – Motor Oil	100	29	0	NM	NM	35.0 J
1,4-Dioxane	NA	0.082	0	NM	NM	ND

* In accordance with Appendix G of the *Travis AFB North Groundwater Treatment Plant Operations and Maintenance Manual*, Sites FT004, SD031, and LF007 Area C (URS Group, Inc., 2005).

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

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

Figure 1
LF007CGWTP Total VOC Influent Concentrations and Average Flowrate
Twelve Month History
Travis Air Force Base, California

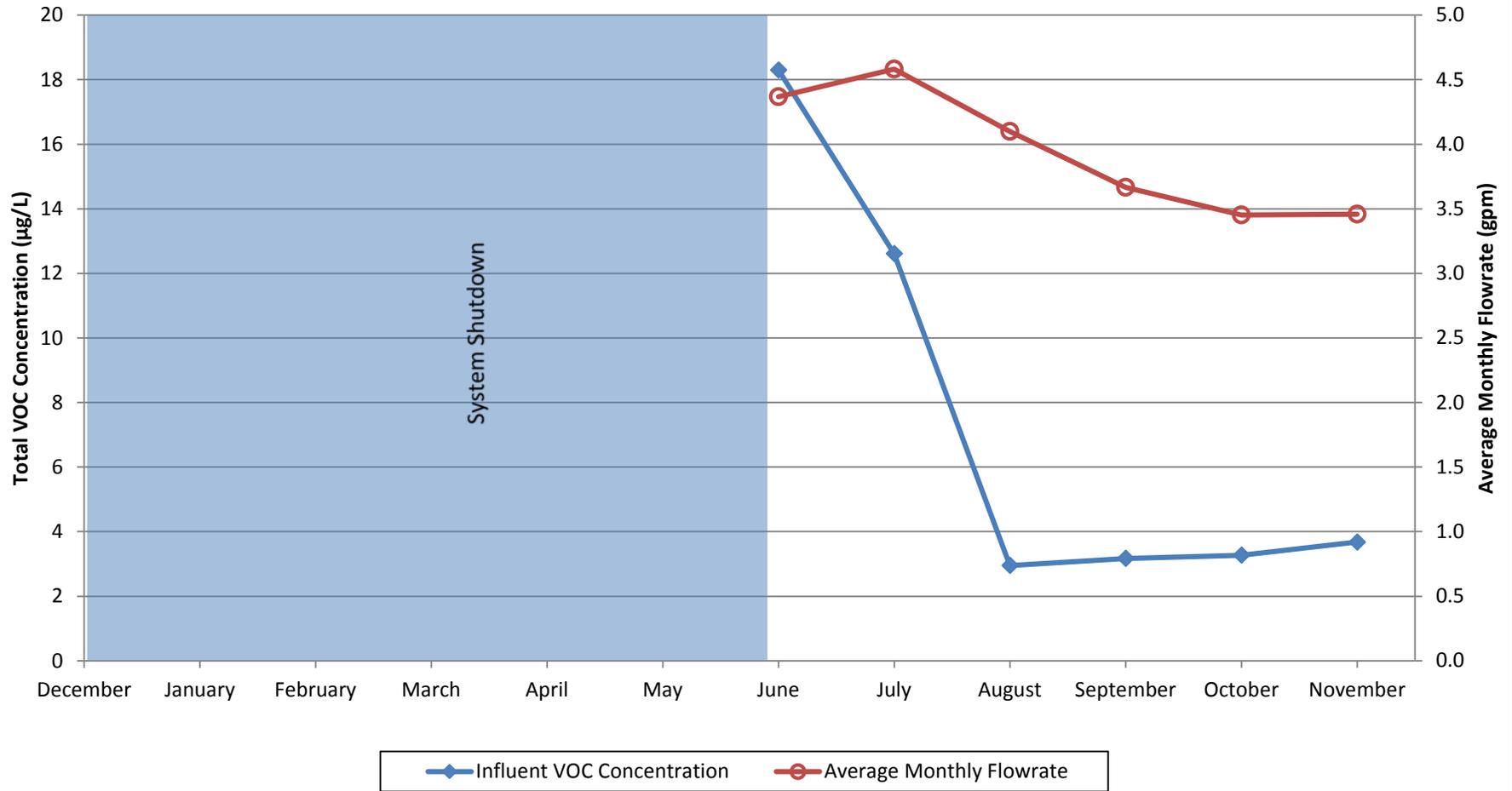
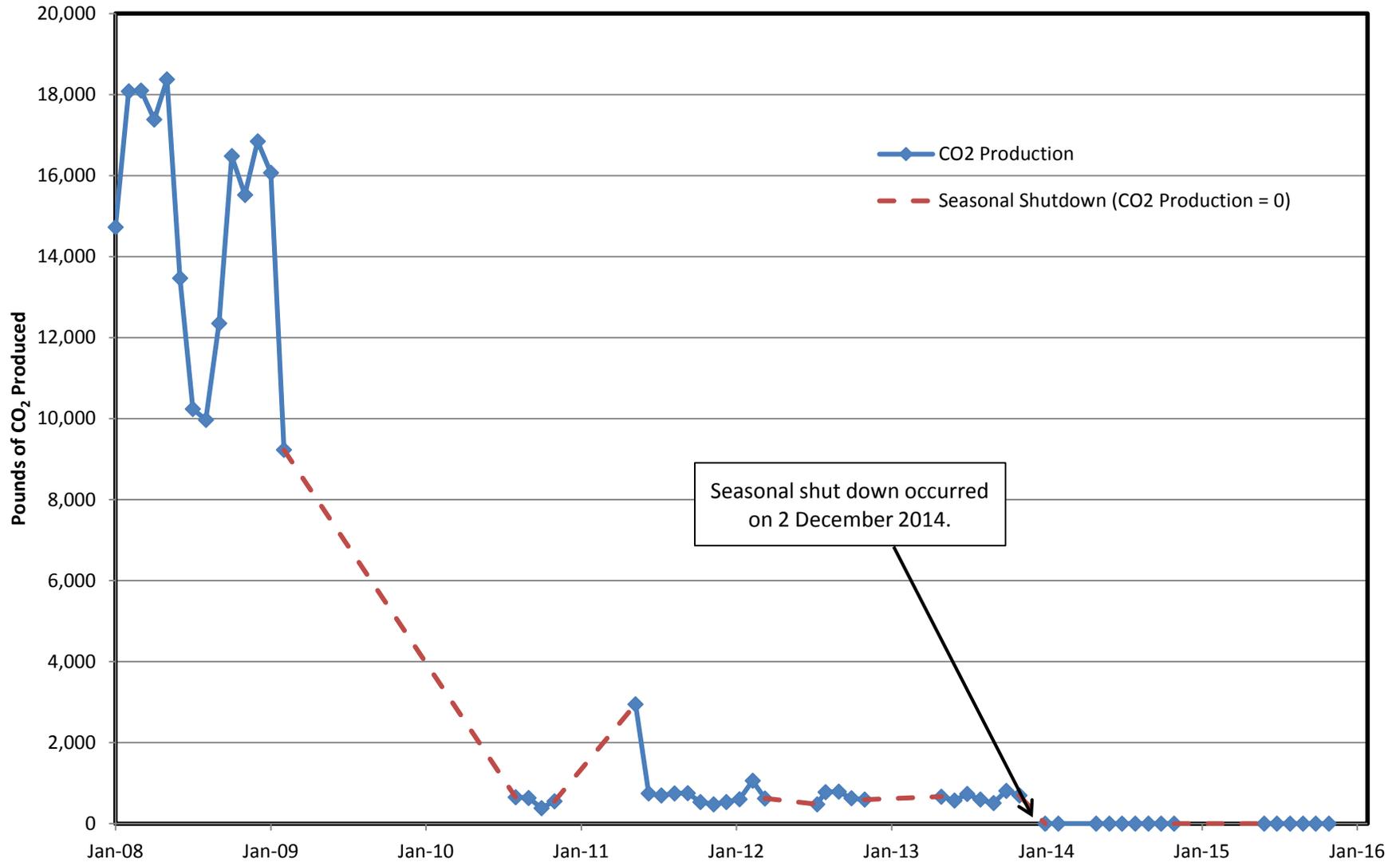


Figure 2
Equivalent Pounds of CO₂ Produced by the LF007C Groundwater Treatment Plant



Note: Dashed line represents seasonal shutdowns due to the presence of vernal pools at Site LF007C during which no CO₂ production occurred.

Subarea LF007C Groundwater Treatment Plant Monthly Data Sheet

Report Number: 151 Reporting Period: 23 November 2015 – 24 December 2015 Date Submitted: 20 January 2016

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 December 2015 reporting period:

Table 1 – Operations Summary – December 2015			
Initial Data Collection:	11/23/2015 12:50	Final Data Collection:	12/24/2015 09:00
Operating Time:	Percent Uptime:	Electrical Power Usage ^a :	
LF007C GWTP: 477 hours	LF007C GWTP 64.4%	LF007C GWTP: 0 kWh	
Gallons Treated: 43,644 gallons		Gallons Treated Since March 2000: 84.9 million gallons	
Volume Discharged to Duck Pond: 43,644 gallons		Volume Discharge to Storm Drain: 0 gallons	
VOC Mass Removed: 1.23 x 10⁻³ pounds^b		VOC Mass Removed Since March 2000: 174.36 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 December 2015 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 – December 2015		
Location	Average Flow Rate (gpm) ^a	Total Gallons Processed (gallons)
EW614x07	1.52	43,348
EW615x07 ^b	0	0
LF007C GWTP	1.53	43,644

^a Average flow rate calculated by dividing the total gallons processed collected from wellhead totalizers by the hours recorded by the system hour meter.
^b Extraction well currently offline due to insufficient battery power.
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	Unknown		7 December 2015	11:10	Rain water flooded the sump. The rainwater was pumped out and the system restarted.
LF007C GWTP	Unknown		14 December 2015	12:00	Rain water flooded the sump. The load controller disengaged pump operation, but did not reengage when the batteries were recharged. Disconnect and reconnect settings were adjusted and the load controller was reset to bring the pump back on line.
LF007C GWTP	24 December 2015				Rain water flooded the sump. The system remained off line because vernal pools formed at Subarea LF007C.
-- = 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

Analytical data from the 15 December 2015 sampling event are presented in Table 4. Cis-1,2-DCE (0.27 J µg/L) and TCE (3.11 µg/L) were detected at the influent sample location. In addition, total petroleum hydrocarbon in the diesel range (TPH-d) and motor oil range (TPH-mo) were detected in the influent sample at concentrations of 85.8 J µg/L and 60.0 J µg/L, respectively. No contaminants were detected at the midpoint sampling location. No VOCs were detected in the final effluent sample; however, TPH-d and TPH-mo were detected at concentrations of 62.8 J µg/L and 53.5 J µg/L, respectively. The detection of TPH-d exceeded the effluent limitation of 50 µg/L, while the detection of TPH-mo was less than the trigger value of 100 µg/L. The LF007C GWTP (formerly referred to as the North Groundwater Treatment Plant [NGWTP]) was taken off line on 24 December 2015 when the report showing TPH in the effluent was received. The Water Board was alerted about this issue on 5 January 2016. The system was also shut down for the winter on 24 December because it was determined that vernal pools had formed from the December rains at Subarea LF007C. Therefore, the treatment system will be re-sampled what then system is restarted in spring/summer 2016.

Figure 1 presents a chart of influent concentrations (total VOCs) at the LF007C GWTP versus time for the past twelve months. Analytical data (Table 4) continue to indicate effective treatment of the influent process stream.

The average flow rate through the LF007C GWTP in December 2015 (1.53 gpm) was less than the flow rate measured in November 2015 (3.46 gpm). The cloudy and wet conditions may be affecting the extraction performance at EW614x07.

Optimization Activities

No optimization activities were performed during December 2015.

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.

TABLE 4

Summary of Groundwater Analytical Data For December 2015 – Subarea LF007C Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	15 December 2015 (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
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	0.27 J	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	3.11	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 Suspended Solids (mg/L)	NA	0.6	0	ND	NM	NM
Total Dissolved Solids (mg/L)	NA	4.2	0	NM	NM	2,320
Total Petroleum Hydrocarbons – Gasoline	50	30	0	ND	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	29	1	85.8 J	NM	62.8 J
Total Petroleum Hydrocarbons – Motor Oil	100	29	0	60.0 J	NM	53.5 J

* In accordance with Appendix G of the *Travis AFB North Groundwater Treatment Plant Operations and Maintenance Manual*, Sites FT004, SD031, and LF007 Area C (URS Group, Inc., 2005).

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

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

Figure 1
LF007CGWTP Total VOC Influent Concentrations and Average Flowrate
Twelve Month History
Travis Air Force Base, California

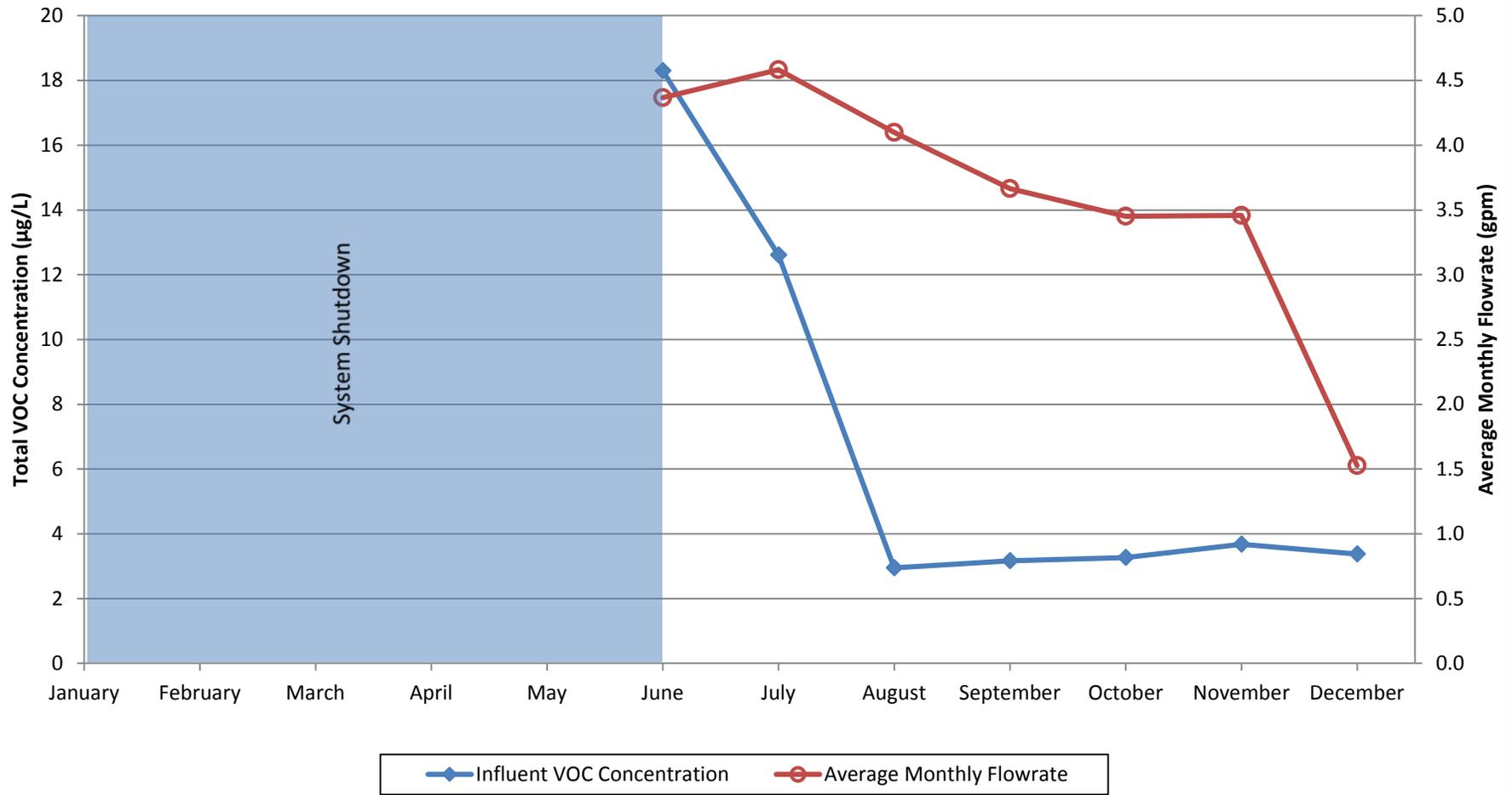
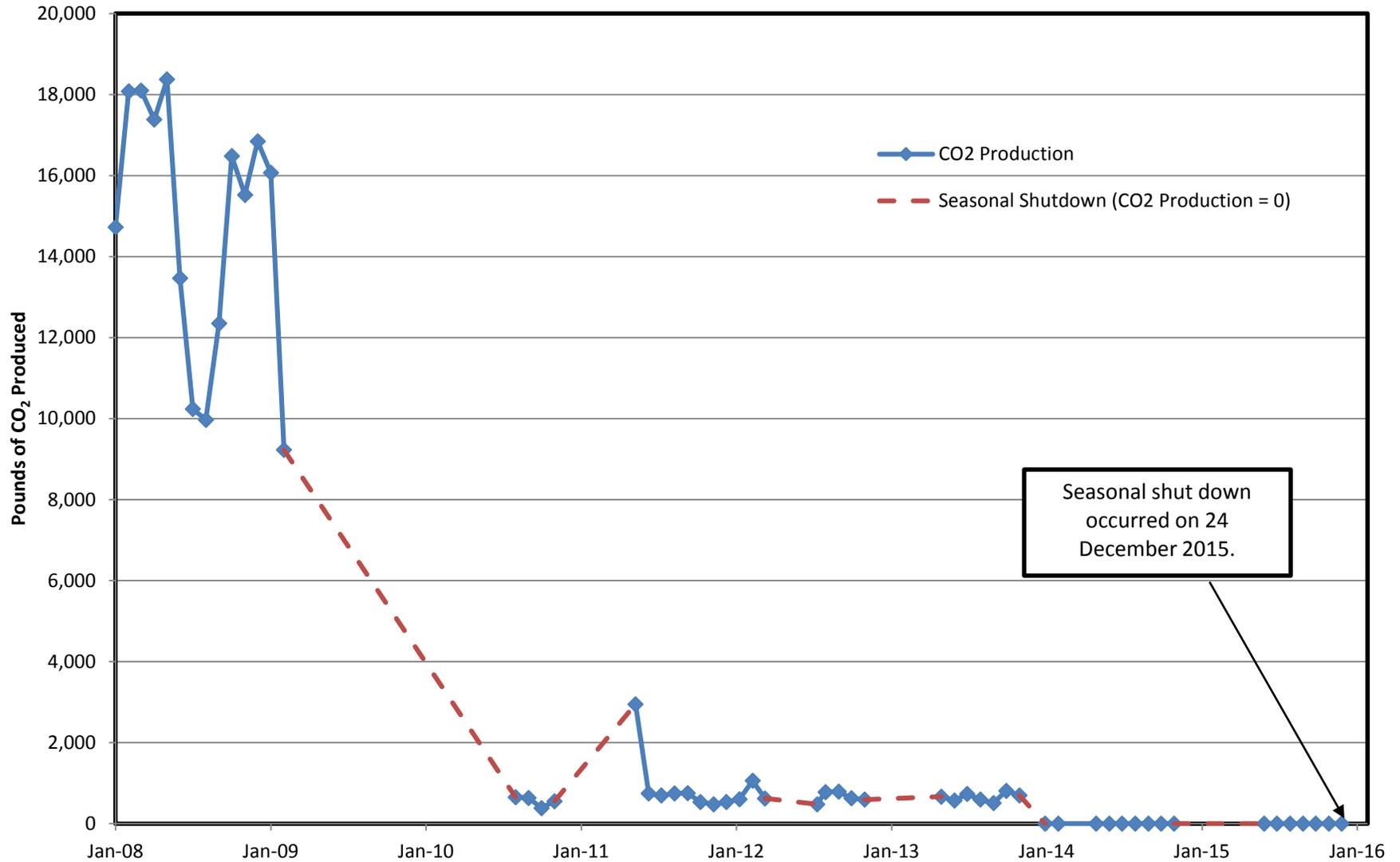


Figure 2

Equivalent Pounds of CO₂ Produced by the LF007C Groundwater Treatment Plant



Note: Dashed line represents seasonal shutdowns due to the presence of vernal pools at Site LF007C during which no CO₂ production occurred.

Site ST018 Groundwater Treatment Plant Monthly Data Sheet

Report Number: 056

Reporting Period: 30 September 2015 – 29 October 2015

Date Submitted: 2 December 2015

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

System Metrics

Table 1 presents operation data from the October 2015 reporting period.

Table 1 – Operations Summary – October 2015			
Initial Data Collection:	09/30/2015 12:00	Final Data Collection:	10/29/2015 14:00
Operating Time:		Percent Uptime:	Electrical Power Usage:
ST018GWTP: 602 hours		ST018GWTP: 86.2%	ST018GWTP: 76 kWh (104 lbs CO₂ generated^a)
Gallons Treated: 126,600 gallons		Gallons Treated Since March 2011: 8.50 million gallons	
Volume Discharged to Sanitary Sewer: 126,600 gallons		Final Totalizer Reading: 8,387,400 gallons	
Cumulative Volume Discharged to Sanitary Sewer since 1 November 2014: 2,004,315 gallons			
MTBE, BTEX, VOC, TPH Mass Removed: 0.24 lbs^b		MTBE, BTEX, VOC, TPH Mass Removed Since March 2011: 33.3 lbs	
MTBE (Only) Removed: 0.10 lbs^b		MTBE (Only) Mass Removed Since March 2011: 8.1 lbs	
Rolling 12-Month Cost per Total Pounds of Mass Removed: \$13,002 ^c			
Monthly Cost per Pound of Mass Removed: \$22,928			
^a Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.			
^b Calculated using October 2015 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 – October 2015		
Location	Average Flow Rate Groundwater (gpm)^a	Hours of Operation
EW2014x18	1.9	511
EW2016x18	0.9	580
EW2019x18	1.0	578
EW2333x18	1.3	433
Site ST018 GWTP	3.5	601.9

^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	October 12, 2015	11:30	October 16, 2015	12:15	ST018GWTP was shut down because of a faulty actuator valve. The valve was replaced and the system was restarted without issue.

^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 7 October 2015. Results are presented in Table 4. The complete October 2015 laboratory data report is available upon request.

The influent concentration for MTBE during the October 2015 sampling event was 95.2 µg/L, which is a decrease from the September 2015 sample (113 µg/L). TPH-d (66.6 J µg/L), TPH-g (65.6 J µg/L), 1,2-dichloroethane (1.80 µg/L), and acetone (1.22 J µg/L) were also detected in the influent sample. MTBE was detected after the second carbon vessel at a concentration of 0.95 µg/L. No contaminant concentrations were detected at the 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 flow rate and influent total contaminant (TPH-g, TPH-d, MTBE, and BTEX) and MTBE concentrations at the ST018GWTP versus time. As shown on Figure 1, the average flow rate through the ST018GWTP has been seasonally variable with a slight increasing trend. October 2015 represents a decreased amount of groundwater treated and discharged by the ST018GWTP from the September 2015 amount, and may be a result of continued drought conditions or the periodic drawdown of individual extraction wells.

On October 9, the system was shut down the system prior to a planned base-wide power outage. The system transfer pump was off line; however, the wells did not shut down and continued pumping. On October 12,

groundwater from the ST018GWTP influent tank was observed spilling off the pad, and the system was immediately shut down. Based on average flow rates from each extraction well, and assuming all wells continued to pump at their average flow rates between October 9 and October 12, up to 16,000 gallons of untreated water may have overtopped the containment pad. After troubleshooting the system, the cause of the spill was traced to a faulty actuated valve. On October 16, a new replacement valve was installed, and the ST018GWTP was restarted. A second, redundant actuated valve was installed along with the replacement valve in order to reduce the possibility of a valve failure resulting in additional releases.

Optimization Activities

No optimization activities occurred at the ST018GWTP in October 2015.

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 104 pounds of GHG during October 2015 and treated 126,600 gallons of water, which was a decrease from the amount of GHG produced during September 2015 (171 pounds, treating 224,319 gallons). Figure 2 presents the historical GHG production from the ST018GWTP. The overall GHG generation has been decreasing since a 2014 peak in March, and remains considerably lower than traditional GWTPs since the system is predominantly powered by solar arrays. The previous increasing GHG production reflected an inverse relationship between solar exposure in the fall and winter relative to GHG production.

TABLE 4

Summary Of Groundwater Analytical Data for October 2015 – Site ST018 Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	7 October 2015 (µg/L)			System Effluent
				Influent	After Carbon 1	After Carbon 2	
Fuel Related Constituents							
MTBE	6,400	0.15	0	95.2	NM	0.95	ND
Benzene	25,000 ^a	0.15	0	ND	NM	NM	ND
Ethylbenzene	25,000 ^a	0.15	0	ND	NM	NM	ND
Toluene	25,000 ^a	0.15	0	ND	NM	NM	ND
Total Xylenes	25,000 ^a	0.15 – 0.30	0	ND	NM	NM	ND
Total Petroleum Hydrocarbons – Gasoline	50,000 ^b	30	0	65.6 J	ND	NM	ND
Total Petroleum Hydrocarbons – Diesel	50,000 ^b	29.3	0	66.6	ND	NM	ND
Total Petroleum Hydrocarbons – Motor Oil	100,000	14.7	0	ND	ND	NM	ND

^a 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

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
Travis Air Force Base, California

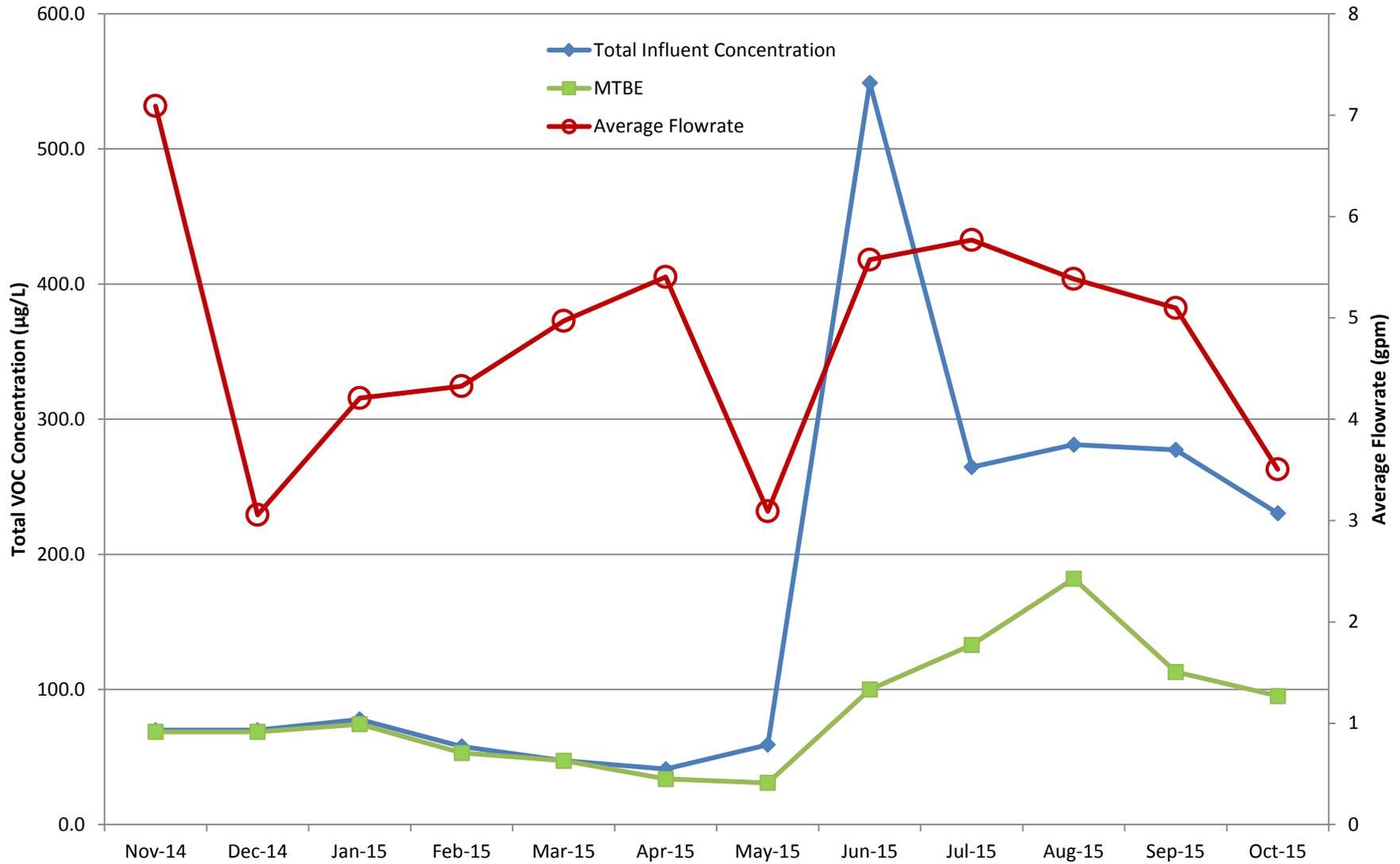
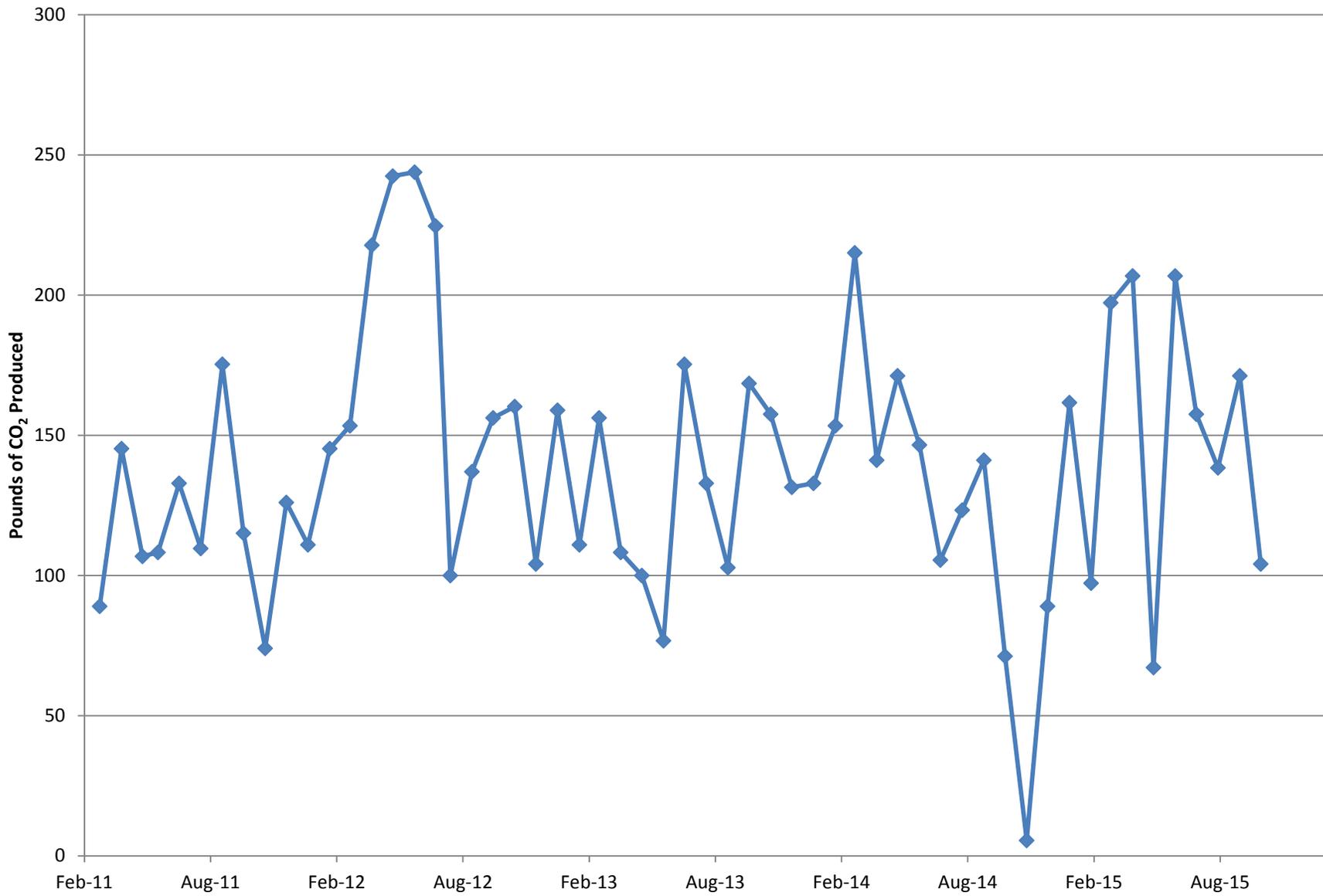


Figure 2
Equivalent Pounds of CO₂ Produced by the Site ST018 Groundwater Treatment Plant



Site ST018 Groundwater Treatment Plant Monthly Data Sheet

Report Number: 057

Reporting Period: 29 October 2015 – 23 November 2015

Date Submitted: 20 December 2015

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

System Metrics

Table 1 presents operation data from the November 2015 reporting period.

Table 1 – Operations Summary – November 2015			
Initial Data Collection:	10/29/2015 14:00	Final Data Collection:	11/23/2015 15:30
Operating Time:		Percent Uptime:	Electrical Power Usage:
ST018GWTP: 602 hours		ST018GWTP: 99.1%	ST018GWTP: 91 kWh (125 lbs CO₂ generated^a)
Gallons Treated: 156,700 gallons		Gallons Treated Since March 2011: 8.66 million gallons	
Volume Discharged to Sanitary Sewer: 156,700 gallons		Final Totalizer Reading: 8,544,100 gallons	
Cumulative Volume Discharged to Sanitary Sewer since 1 November 2014: 2,161,000 gallons			
MTBE, BTEX, VOC, TPH Mass Removed: 0.08 lbs^b		MTBE, BTEX, VOC, TPH Mass Removed Since March 2011: 33.4 lbs	
MTBE (Only) Removed: 0.04 lbs^b		MTBE (Only) Mass Removed Since March 2011: 8.1 lbs	
Rolling 12-Month Cost per Total Pounds of Mass Removed: \$13,085 ^c			
Monthly Cost per Pound of Mass Removed: \$40,511 ^c			
^a Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.			
^b Calculated using November 2015 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 – November 2015		
Location	Average Flow Rate Groundwater (gpm) ^a	Hours of Operation
EW2014x18	2.0 ^b	595
EW2016x18	1.1	595
EW2019x18	1.0	595
EW2333x18	1.5 ^b	407 ^b
Site ST018 GWTP	4.4	596

^a Flow rates calculated by dividing total gallons processed by amount of operating time of the pump/system.
^b EW2333x18 were off line during the first week of November 2015 to install new actuated valves on the influent process line. A second actuated valve was installed on 11 November 2015.

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	11 November 2015	--	11 November 2015	--	ST018GWTP was shut down for approximately 5 hours to replace the shut off valve/actuator.

-- = 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 4 November 2015. Results are presented in Table 4. The complete November 2015 laboratory data report is available upon request.

The influent concentration for MTBE during the November 2015 sampling event was 27.9 µg/L, which is a decrease from the October 2015 sample result of 95.2 µg/L. The decrease in MTBE concentration was a result of EW2014x18 and EW2333x18 being offline during the sample collection. TPH-d (30.2 J µg/L) and 1,2-dichloroethane (0.48 J µg/L) were also detected in the influent sample. TPH-motor oil was detected after the first carbon vessel at a concentration of 36.6 J µg/L. MTBE was detected after the second carbon vessel at a concentration of 0.59 µg/L. No contaminant concentrations were detected at the 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 flow rate and influent total contaminant (TPH-g, TPH-d, MTBE, BTEX, and VOCs) and MTBE concentrations at the ST018GWTP versus time. As shown on Figure 1, the influent concentrations have decreased since the peak in June 2015. The average flow rate through the ST018GWTP has been

seasonally variable with a slight increasing trend. The November 2015 flow rate of 4.4 gpm has increased since the October flow rate of 3.5 gpm.

On November 11, the system was shut down for approximately 5 hours to install a secondary, redundant shut off valve/actuator.

Optimization Activities

No optimization activities occurred at the ST018GWTP in November 2015.

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 125 pounds of GHG during November 2015 and treated 156,700 gallons of water, which was an increase from the amount of GHG produced during October 2015 (104 pounds, treating 126,600 gallons). Figure 2 presents the historical GHG production from the ST018GWTP. The overall GHG generation has been decreasing since a 2014 peak in March, and remains considerably lower than traditional GWTPs since the system is predominantly powered by solar arrays. The previous increasing GHG production reflected an inverse relationship between solar exposure in the fall and winter relative to GHG production.

TABLE 4

Summary Of Groundwater Analytical Data for November 2015 – Site ST018 Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	4 November 2015 (µg/L)			
				Influent	After Carbon 1	After Carbon 2	System Effluent
Fuel Related Constituents							
MTBE	6,400	0.15	0	27.9	NM	0.59	ND
Benzene	25,000 ^a	0.15	0	ND	NM	NM	ND
Ethylbenzene	25,000 ^a	0.15	0	ND	NM	NM	ND
Toluene	25,000 ^a	0.15	0	ND	NM	NM	ND
Total Xylenes	25,000 ^a	0.15 – 0.30	0	ND	NM	NM	ND
Total Petroleum Hydrocarbons – Gasoline	50,000 ^b	30	0	ND	ND	NM	ND
Total Petroleum Hydrocarbons – Diesel	50,000 ^b	29.3	0	30.2 J	ND	NM	ND
Total Petroleum Hydrocarbons – Motor Oil	100,000	29	0	ND	36.6 J	NM	ND
Other							
1,2-Dichloroethane	0.5	0.15	0	0.48 J	NM	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

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
Travis Air Force Base, California

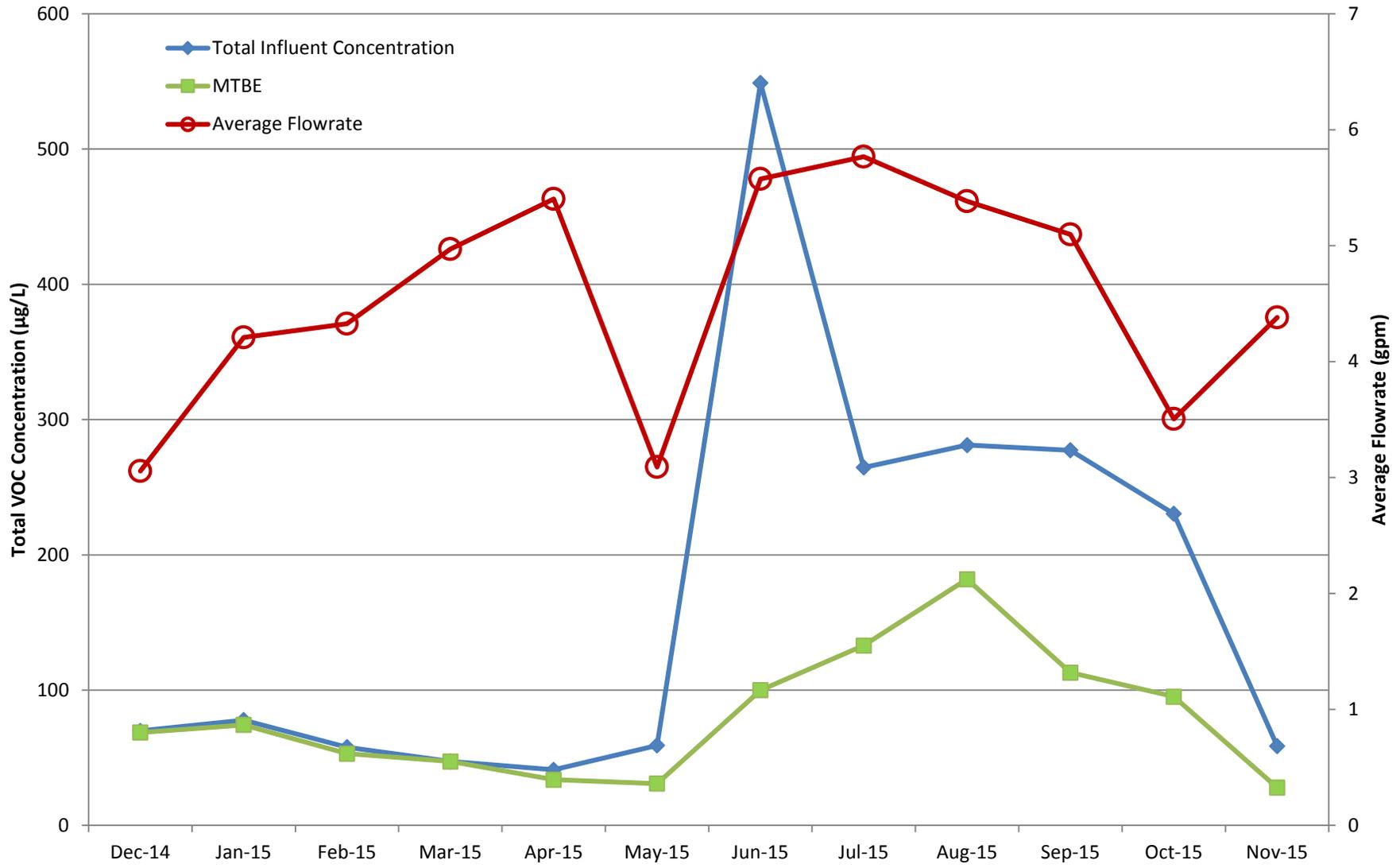
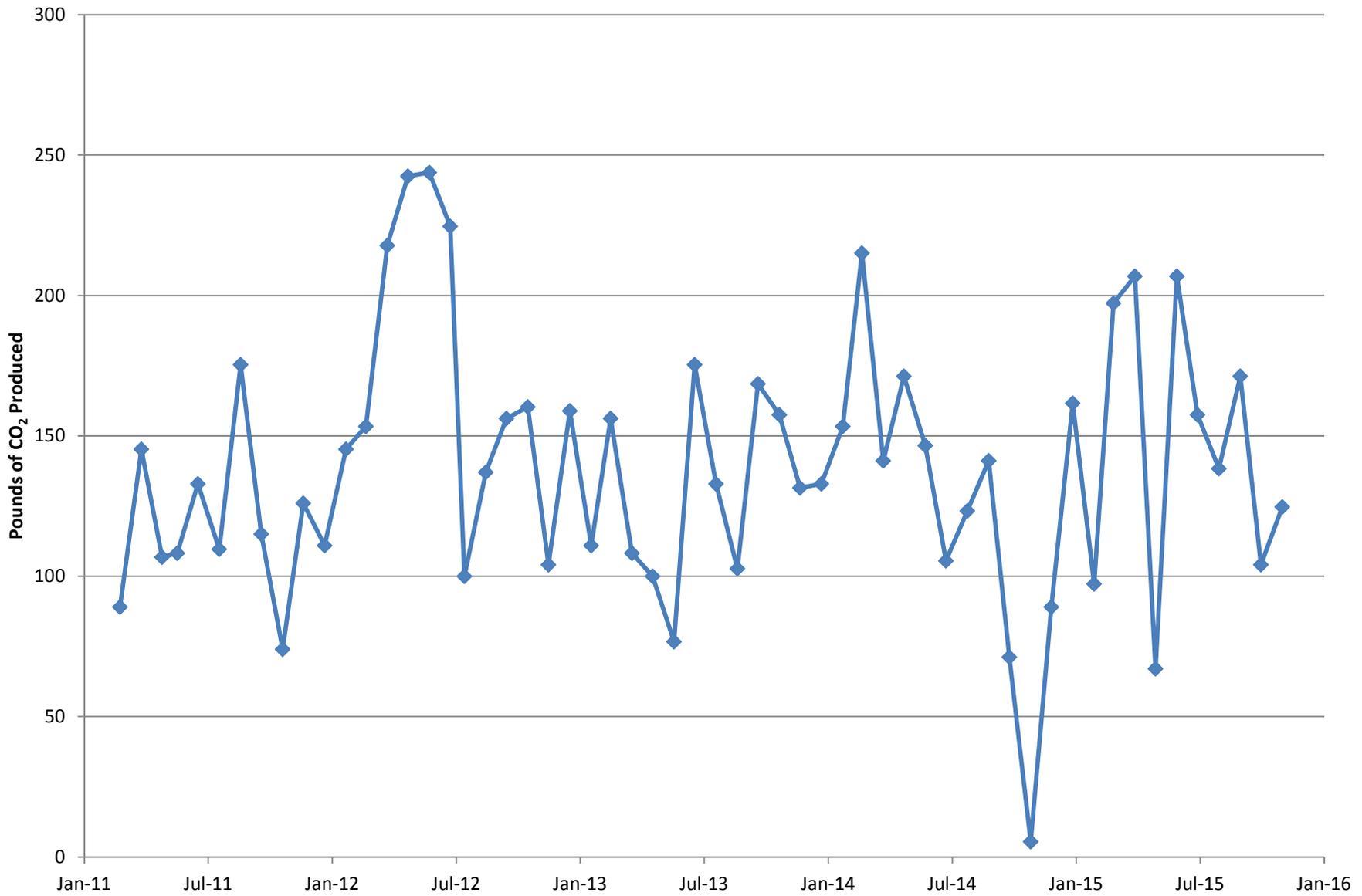


Figure 2
Equivalent Pounds of CO₂ Produced by the Site ST018 Groundwater Treatment Plant



Site ST018 Groundwater Treatment Plant Monthly Data Sheet

Report Number: 058

Reporting Period: 23 November 2015 – 30 December 2015

Date Submitted: 20 January 2016

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

System Metrics

Table 1 presents operation data from the December 2015 reporting period.

Table 1 – Operations Summary – December 2015			
Initial Data Collection:	11/23/2015 15:30	Final Data Collection:	12/30/2015 10:30
Operating Time:		Percent Uptime:	Electrical Power Usage:
ST018GWTP: 883 hours		ST018GWTP: 100%	ST018GWTP: 132 kWh (181 lbs CO₂ generated^a)
Gallons Treated: 220,500 gallons		Gallons Treated Since March 2011: 8.88 million gallons	
Volume Discharged to Sanitary Sewer: 220,500 gallons		Final Totalizer Reading: 8,877,700 gallons	
Cumulative Volume Discharged to Sanitary Sewer since 1 November 2014: 2,381,500 gallons			
MTBE, BTEX, VOC, TPH Mass Removed: 0.40 lbs^b		MTBE, BTEX, VOC, TPH Mass Removed Since March 2011: 33.8 lbs	
MTBE (Only) Removed: 0.16 lbs^b		MTBE (Only) Mass Removed Since March 2011: 8.3 lbs	
Rolling 12-Month Cost per Total Pounds of Mass Removed: \$12,383 ^c			
Monthly Cost per Pound of Mass Removed: \$10,008 ^c			
^a Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.			
^b Calculated using December 2015 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 – December 2015		
Location	Average Flow Rate Groundwater (gpm)^a	Hours of Operation
EW2014x18	1.1	883
EW2016x18	0.9	883
EW2019x18	1.0	883
EW2333x18	1.3	883
Site ST018 GWTP	4.2	883

^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	None.	--		--	None.

-- = 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 15 December 2015. Results are presented in Table 4. The complete December 2015 laboratory data report is available upon request.

The influent concentration for MTBE during the December 2015 sampling event was 86.8 µg/L, which is an increase from the November 2015 sample result of 27.9 µg/L. The increase in MTBE concentration was a result of EW2014x18 and EW2333x18 resuming normal pumping operations. TPH-d (33.4 J µg/L), TPH-g (95 J µg/L), benzene (1.16 µg/L), and 1,2-dichloroethane (1.66 µg/L) were also detected in the influent sample. No contaminant concentrations were detected after the first carbon vessel. MTBE was detected after the second carbon vessel at a concentration of 2.88 µg/L. No contaminant concentrations were detected at the effluent sampling location, including MTBE and TPH. 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 flow rate and influent total contaminant (TPH-g, TPH-d, MTBE, BTEX, and VOCs) and MTBE concentrations at the ST018GWTP time for the past twelve (12) months. As shown on Figure 1, the influent concentrations have decreased since the peak in June 2015. The average flow rate through the ST018GWTP has been seasonally variable with a slight decreasing trend. The December 2015 flow rate of 4.2 gpm has slightly decreased since the November flow rate of 4.4 gpm.

On 30 December 2015, the tertiary carbon vessel was taken off line because of a corroded pipe on the outlet of the vessel. A new connection will be built and installed in January 2016. The system remains operating with two (2) carbon vessels.

Optimization Activities

No optimization activities occurred at the ST018GWTP in December 2015.

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 181 pounds of GHG during December 2015 and treated 220,500 gallons of water, which was an increase from the amount of GHG produced during November 2015 (125 pounds, treating 156,700 gallons). Figure 2 presents the historical GHG production from the ST018GWTP. The overall GHG generation has been decreasing since a 2014 peak in March, and remains considerably lower than traditional GWTPs since the system is predominantly powered by solar arrays. The previous increasing GHG production reflected an inverse relationship between solar exposure in the fall and winter relative to GHG production.

TABLE 4

Summary Of Groundwater Analytical Data for December 2015 – Site ST018 Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	15 December 2015 (µg/L)			
				Influent	After Carbon 1	After Carbon 2	System Effluent
Fuel Related Constituents							
MTBE	6,400	0.15	0	86.8	NM	2.88	ND
Benzene	25,000 ^a	0.15	0	1.16	NM	NM	ND
Ethylbenzene	25,000 ^a	0.15	0	ND	NM	NM	ND
Toluene	25,000 ^a	0.15	0	ND	NM	NM	ND
Total Xylenes	25,000 ^a	0.15 – 0.30	0	ND	NM	NM	ND
Total Petroleum Hydrocarbons – Gasoline	50,000 ^b	30	0	95.0 J	ND	NM	ND
Total Petroleum Hydrocarbons – Diesel	50,000 ^b	28.3	0	33.4 J	ND	NM	ND
Total Petroleum Hydrocarbons – Motor Oil	100,000	29	0	ND	ND	NM	ND
Other							
1,2-Dichloroethane	0.5	0.15	0	1.66	NM	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

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

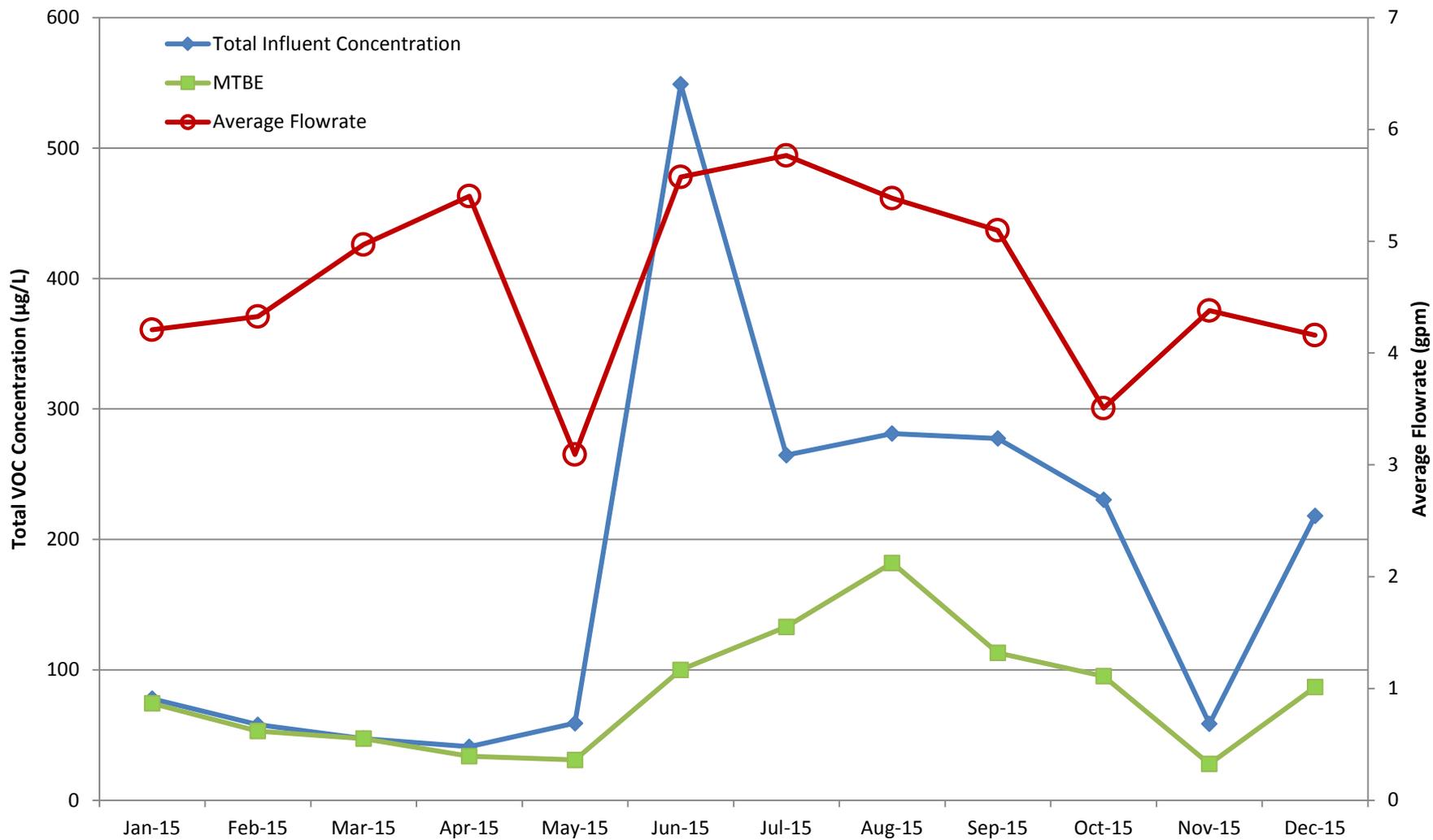
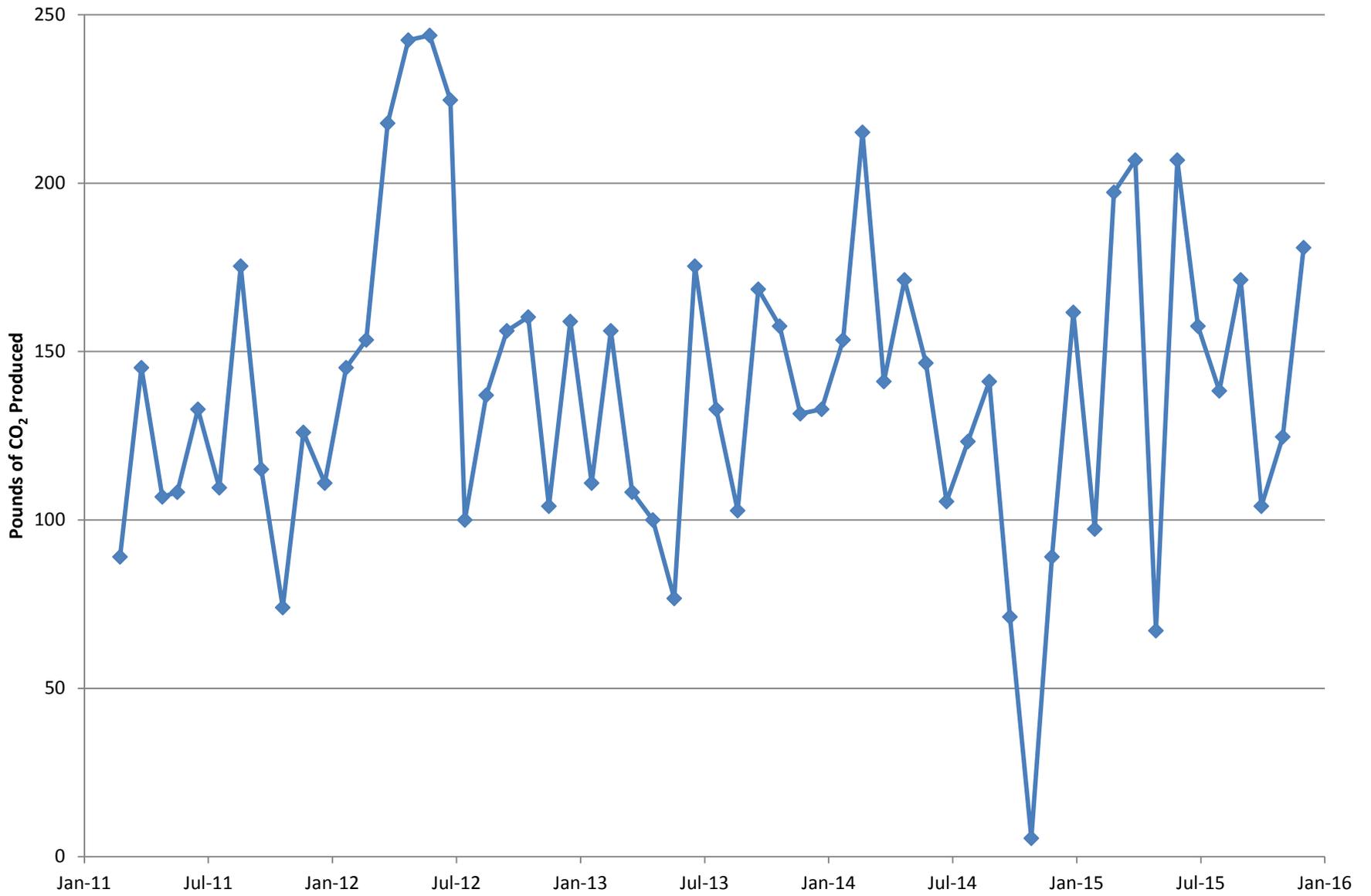


Figure 2
Equivalent Pounds of CO₂ Produced by the Site ST018 Groundwater Treatment Plant



Travis AFB Restoration Program

Program Overview

*RPM Meeting
January 20, 2016*

Completed Documents

- 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 (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**

3

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

4

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**

5

Documents In-Progress

CERCLA

- 2014 Annual GRISR

6

Documents In-Progress

POCO

- None

7

Field Work In-Progress

- *FT005 EVO Injection*
- *DP039 EVO Injection*

8

Documents Planned

CERCLA

- | | |
|---|------------|
| • Site SD031 Soil Remedial Investigation Work Plan | Feb |
| • Data Gap Investigation TM for Soil Sites SD033, SD043, & SS046 | Feb |
| • Site CG508 Well Abandonment Work Plan | Mar |
| • Community Involvement Plan | Mar |
| • Site FT004 TD Construction Completion Report | Mar |
| • 2015 Annual CAMU Monitoring Report | Mar |
| • 2015 Annual GRISR | Jun |
| • Site FT005 TD Construction Completion Report | TBD |
| • Site SD034 Technology Demonstration Work Plan | TBD |
| • Site SS016 RD/RA Soil Work Plan | TBD |
| • Site TS060 EE/CA | TBD |
| • Site TS060 Removal Action Work Plan | TBD |
| • Site DP039 TD Construction Completion Report | TBD |

Documents Planned

POCO

- | | |
|---|------------|
| • Corrective Action Plan for DERA-Funded Oil Water Separators | Feb |
| • Site ST032 POCO Completion Report | TBD |
| • Site ST028 POCO Completion Report | TBD |

Field Work Planned

CERCLA

- TA500 Groundwater Sampling Feb
- SD031 Soil Remedial Investigation May
- SD034 Technology Demonstration Installation TBD
- TS060 Removal Action TBD

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

11

Field Work Planned

POCO

- Oil Water Separators (12) Removal May
- CG508 Well Abandonment Jun
- **SS014 Bioreactor Installation Jun**

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

12

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

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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 Memorandum14

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

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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

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