Final

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

20 November 2013, 0930 Hours

Mr. Mark Smith, Travis Air Force Base (AFB), conducted the Restoration Program Manager's (RPM) meeting in Building 248, on 20 November 2013 at 0930 hours, at Travis AFB, California. Attendees included:

• Mark Smith	Travis AFB
• Glenn Anderson	Travis AFB
• Lonnie Duke	Travis AFB
• Gregory Parrott	Travis AFB
• Erin Hernandez	Travis AFB
• Jim Spellman	Travis AFB
• William Hall	AFCEC/CSRW
• Dezso Linbrunner	USACE-Omaha
• Adriana Constantinescu	California Regional Water Quality Control Board (RWQCB)
• Jose Salcedo	California Department of Toxic Substances Control (DTSC)
• Nadia Hollan Burke	United States Environmental Protection Agency (USEPA)
• Loren Krook	CH2M HILL
• Mike Wray	CH2M HILL

Handouts distributed at the meeting, and presentations included:

• Attachment 1	Meeting Agenda
• Attachment 2	Master Meeting and Document Schedule
• Attachment 3	SBBGWTP Monthly Data Sheet (September/October 2013)
• Attachment 4	CGWTP Monthly Data Sheet (September/October 2013)
• Attachment 5	NGWTP Monthly Data Sheet (September/October 2013)
• Attachment 6	ST018 Monthly Data Sheet (September/October 2013)
• Attachment 7	Presentation: Program Update: Activities Completed, In Progress and Upcoming

1. ADMINISTRATIVE

A. Previous Meeting Minutes

The 18 September RPM meeting minutes were approved and finalized as written. Note: The October RPM meeting had been cancelled due to the government shutdown.

Mr. Smith welcomed everyone to the new Installation Support Team building and announced that the Restoration staff is no longer part of 60 CES. Restoration personnel are still in the process of transferring over to the Air Force Civil Engineer Center (AFCEC) where environmental quality and restoration work is being centrally managed. Mr. Smith also announced Mr. Gregory Parrott's retirement early next year and thanked him for his many years of excellent service. Mr. Smith introduced Mr. Parrott's replacement, Ms. Erin Hernandez.

B. Action Item Review.

Action items from September were reviewed.

Action item 1 still open: Travis AFB to research beneficial reuse of treated water. AFCEE is in agreement with treated water reuse using Defense Environmental Restoration Account (DERA) funds under the authority of a "net-zero policy" for the Air Force. Update, 16 January 2013: Mr. Duke said that an Air Force energy reduction contractor is looking into the cost of installing a pipe to convey treated water from the central plant to the duck pond. Update, 20 March 2013: Mr. Duke said Travis AFB is looking into energy management projects with respect to ways of reducing water usage. Due date changed to TBD. Update, 18 April 2013: Mr. Smith said that they have the attention of Civil Engineering Operations Flight regarding beneficial reuse. 20 November 2013: No update.

Master Meeting and Document Schedule Review (see Attachment 2)

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

Travis AFB Annual Meeting and Teleconference Schedule

The next RPM meeting will be held on 22 January 2014 at 0930 hours. Travis AFB proposed a new 2014 RPM schedule and asked the regulators that if there are any scheduling conflicts to let Travis AFB know as soon as possible. Mr. Smith mentioned in previous RPM meetings the possibility of a teleconference every other month in lieu of meeting face to face, after the ROD was signed, but this is dependent upon the workload we experience under the new FY 13 PBC.

Travis AFB Master Document Schedule

— Groundwater Record of Decision (ROD): No change to the schedule. This document will be discussed in the meeting that has been scheduled this afternoon.

— 3rd Five-Year Review: Document has been finalized and will be moved to history.

— Potrero Hills Annex: (FS, PP, and ROD): No change to the schedule. Mr. Anderson said as far as he knows the RWQCB is still reviewing the most recent documents. Mr. Smith reminded everyone that Travis AFB is administratively overseeing the project and that is why it remains on the agenda and monthly updates are provided. Ms. Constantinescu asked if Travis AFB is receiving documents from RWQCB. Mr. Anderson said yes and added that Travis AFB would like to be informed in advance of all meetings.

Ms. Burke said administratively this site was never taken out of the CERCLA process and is still considered part of EPAs headquarters (HQ) programming. Adding EPA does not have any legal documentation of this site being transferred out of the CERCLA program. Because this site is considered an operable unit (OU) in EPAs program, it can hold up all of our site targets for Travis AFB. Mr. Anderson said that Ms. Suzette Leith, an EPA attorney, and Ms. Bobbie Smith, EPA main lead, met with Travis AFB Restoration staff in a December 1997 meeting and proposed to temporarily transfer this site out of the CERCLA program (the Defense Environmental Restoration Program) and allow all Potrero Hills environmental cleanup activities to be managed under a RWQCB administrative order until the environmental issues at Potrero Hills had been resolved. Travis AFB agreed to EPA's proposal. Mr. Anderson mentioned that this agreement was made before the WABOU ROD was signed. Mr. Anderson said as soon as Potrero Hills has been cleaned up to RWQCB criteria, it will be added back into the CERCLA program and follow its schedule as shown in the Travis AFB Master Meeting and Document Schedule. Ms. Constantinescu explained it made sense when EPA recommended Potrero Hills transfer to RWQCB. The law had been written in California keeping in mind the business cycle for cleanup. The state has three steps to follow for cleanup while the CERCLA process has nine steps. Because EPA HQ has concerns about site closures, there are examples of other sites that followed this pathway.

— Old Skeet Range Action Memorandum: Moved to history.

— Subarea LF007C and Site SS030 Remedial Process Optimization Work Plan: The Response to Comments and Final Due dates were changed to reflect the actual dates. Document will be moved to history.

— Quarterly Newsletter (January 2014): All new dates to reflect the 1st quarter of 2014. Mr. Spellman suggested the Quarterly Newsletter to be posted to the

Travis AFB environmental website. Mr. Anderson replied the newsletters are already regularly posted to the website.

— The 2012 Groundwater Remediation Implementation Status Report (GRISR): Moved to history.

— Kinder Morgan LF044 Land Use Control Report: No change to the schedule. Travis AFB is working on the responses to comments received from EPA.

— Pre-Design Site Characterization of SS029 Report: Moved to history.

— Old Skeet Range Removal Action Work Plan: No change to schedule. This document will be discussed later this afternoon.

2. CURRENT PROJECTS

Treatment Plant Operation and Maintenance Update

South Base Boundary Groundwater Treatment Plant (see Attachment 3)

September: The South Base Boundary Groundwater Treatment Plant (SBBGWTP) performed at 100% uptime, and 3.6 million gallons of groundwater were extracted and treated during the month of September 2013. All of the treated water was discharged to Union Creek. The average flow rate for the SBBGWTP was 89.5 gallons per minute (gpm). Electrical power usage was 2,399 kWh (*electrical power usage maybe incorrect, readings inconsistent, suspect faulty meter, in process of procuring a new one*) and approximately 3,286 pounds of CO_2 were created (based on DOE calculation). Approximately 0.45 pounds of volatile organic compounds (VOCs) were removed in September. The total mass of VOCs removed since startup of the system is 440 pounds.

Optimization Activities: Site SS030 groundwater extraction and treatment system (GETS) optimization activities began in September 2013. The installation activities for the new extraction well, EW2174x30, began on 17 September 2013. Optimization activities at the site including installation of an extraction well vault, instrumentation, and a pipeline connecting it to the existing GETS will be postponed due to potential issues with the California Tiger Salamander habitat and with the oncoming winter weather. Mr. Wray said Travis AFB is trying to expedite the approval process with the US Fish and Wildlife Service.

October: The South Base Boundary Groundwater Treatment Plant (SBBGWTP) performed at 100% uptime, and 3.6 million gallons of groundwater were extracted and treated during the month of October 2013. All of the treated water was discharged to Union Creek. The average flow rate for the SBBGWTP was 75.8 gallons per minute (gpm). Electrical power usage was 14,520 kWh and approximately 19,892 pounds of CO_2 were created (based on DOE calculation). Approximately 0.72

pounds of volatile organic compounds (VOCs) were removed in October. The total mass of VOCs removed since startup of the system is 441 pounds.

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

Central Groundwater Treatment Plant (see Attachment 4)

September: The Central Groundwater Treatment Plant (CGWTP) performed at 100% uptime with approximately 975,000 gallons of groundwater extracted and treated during the month of September 2013. All treated water was discharged to the storm drain. The average flow rate for the CGWTP was 24.2 gpm. Electrical power usage was 1,231 kWh for all equipment connected to the Central plant, and approximately 1,686 pounds of CO_2 were generated. Approximately 2.68 pounds of VOCs were removed from groundwater by the treatment plant in September. The total mass of VOCs removed since the startup of the system is 11,343 pounds.

Optimization Activities for WTTP: The WTTP remains off line since it was shut down in April 2010 for the ongoing rebound study. No additional optimization activities to report for the month of September.

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

October: The Central Groundwater Treatment Plant (CGWTP) performed at 100% uptime with approximately 1.27 million gallons of groundwater extracted and treated during the month of October 2013. All treated water was discharged to the storm drain. The average flow rate for the CGWTP was 32.3 gpm. Electrical power usage was 1,827 kWh for all equipment connected to the Central plant, and approximately 2,503 pounds of CO_2 were generated. Approximately 2.62 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 11,346 pounds.

Optimization Activities for WTTP: The WTTP remains off line since it was shut down in April 2010 for the ongoing rebound study. No additional optimization activities to report for the month of October.

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

North Groundwater Treatment Plant (see Attachment 5)

September: The North Groundwater Treatment Plant (NGWTP) performed at 49.9% uptime with approximately 5,920 gallons of groundwater extracted and treated during the month of September 2013. The average flow rate at the NGWTP was 0.30 gpm and electrical power use was 372 kWh for all the equipment connected to the North plant; approximately 510 pounds of CO_2 was generated. Approximately $1.6x10^{-4}$

pounds of VOCs were removed from the groundwater in September. The total mass of VOCs removed since the startup of the system is 174.3 pounds.

Optimization Activities for NGWTP: No optimization activities to report for the month of September.

The NGWTP was turned off on 13 September 2013 at the request of the Air Force to facilitate maintenance at the Duck Pond.

North Groundwater Treatment Plant

October: The North Groundwater Treatment Plant (NGWTP) performed at 57.3% uptime with approximately 8,980 gallons of groundwater extracted and treated during the month of October 2013. The average flow rate at the NGWTP was 0.2 gpm and electrical power use was 594 kWh for all the equipment connected to the North plant; approximately 932 pounds of CO_2 was generated. Approximately $2.1x10^{-4}$ pounds of VOCs were removed from the groundwater in October. The total mass of VOCs removed since the startup of the system is 174.3 pounds.

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

Site ST018 Groundwater (MTBE) Treatment Plant (see Attachment 6)

September: The Site ST018 (MTBE) Treatment Plant (ST018 GWTP) performed at 68.7% uptime with approximately 67,600 gallons of groundwater extracted and treated during the month of September 2013. All treated water was diverted to the storm drain. The average flow rate for the ST018 GWTP was 2.44 gpm. Electrical power usage for the month was 75 kWh for all equipment connected to the ST018 GWTP plant, which equates to the creation of approximately 103 pounds of CO_2. Approximately 0.10 pounds of BTEX, MTBE and TPH were removed from groundwater in September from the treatment plant. The total BTEX, MTBE and TPH mass removed since the startup of the system is 25.0 pounds.

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

Optimization Activities for ST018: No optimization activities to report for the month of September.

October: The Site ST018 (MTBE) Treatment Plant (ST018 GWTP) performed at 100% uptime with approximately 194,800 gallons of groundwater extracted and treated during the month of October 2013. All treated water was diverted to the storm drain. The average flow rate for the ST018 GWTP was 4.21 gpm. Electrical power usage for the month was 123 kWh for all equipment connected to the ST018 GWTP plant, which equates to the creation of approximately 169 pounds of CO_2. Approximately 0.33 pounds of BTEX, MTBE and TPH were removed from groundwater in October from the treatment plant. The total BTEX, MTBE and TPH mass removed since the startup of the system is 25.3 pounds.

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

Optimization Activities for ST018: No optimization activities to report for the month of October.

Site LF007C Field Activities:

Mr. Duke gave an update of the field activities at Site LF007C. The new piping has been attached to the perimeter fence, where it crosses the vernal pool. The flow rate in extraction well EW615x07 has declined over the past couple of months due to a worn pump. In order to increase production from this well, the existing pump will be replaced with the pump currently installed in extraction well EW614x07 upon completion of the optimization activities at site LF007C. The existing pump in extraction well EW615x07 is the older of the two, and the flow rate is expected to increase as a result of this swap. Today, 20 November 2013, potholing is being conducted to find the discharge line to the Duck Pond. A sizeable upgrade is planned to the solar panels which will increase the flow rates.

Old Skeet Range Field Sampling Update:

Mr. Anderson gave an update on the Old Skeet Range Field Sampling. EPA gave conditional approval to Travis AFB to start field activities. Samples were collected according to a draft work plan, and some of the analyses came back with relatively high hits of PAHs. EPA received a copy of the results and the step out locations proposed. The extent of the contamination has not yet been identified. Excavation cannot begin until the scope of the contamination cleanup has been identified.

Presentations:

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: 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.

Newly Completed Field Work: 2014 GRIP Semiannual Sampling Event, Pump repairs to Site SS016 (well EW610x16).

In-Progress Documents: Groundwater Record of Decision, Old Skeet Range Removal Action Work Plan, Kinder Morgan LF044 Land Use Control Report.

In-Progress Field Work: LF007C optimization upgrades, Old Skeet Range Sample Collection.

Upcoming Documents: None.

Upcoming Field Work: None.

4. New Action Item Review

No new action items.

5. PROGRAM/ISSUES/UPDATE

Mr. Smith gave a brief overview on the new PBC contract. The PBC contract was awarded in FY13. It is an 8-year contract ending in September 2021. The contract will pick up where the current PBC contract leaves off, with remediation operations for groundwater. It also includes revisiting current land use controls (LUCs), as established by our past soil RODS, to evaluate if those LUC sites can be closed. Travis AFB inherited 12 former compliance cleanup areas of concern (oil/water separators) that will be conducted as RCRA cleanup actions if investigations determine contamination does exist at levels requiring an action. Mr. Salcedo asked if new ERP numbers for the oil/water separators were issued and when will they be an official part of the program. Mr. Smith said they already have numbers and are considered sites in our AFCEC database, but that technically, the oil/water separators are still AOCs. We are in the process of developing a management plan (internal document) that will identify the years we expect to start work on these oil/water separators, and we can extract a list and provide it to the regulators. Mr. Linbrunner said that the schedule for work in the new contract had to be aligned to fit the specific available annual funding profile of the Air Force.

Mr. Smith stated his gratitude to Mr. Parrott for his many years of service, and that he will greatly be missed. Adding that in the future it looks like AFCEC San Antonio will be providing legal support. Mr. Anderson said it will be difficult to transition to receiving legal advice from San Antonio, since their legal staff is not as familiar with Travis AFB as the local legal office. Mr. Duke added that the centralization has good aspects but having legal representation by someone who knows the base is very valuable. Ms. Burke asked if there is a new organizational chart. Mr. Smith said the organization is still taking shape but that he would provide an organizational chart to the regulatory agencies as soon as it is available.

6. Action Items

Item #	Responsible	Action Item Description	Due Date	Status
1.	Travis AFB	Research beneficial reuse of treated water and give update. Update (13 June 2012): AFCEE is in agreement with treated water reuse using Defense Environmental Restoration Account (DERA) funds under the authority of a "net-zero policy" for the Air Force. Update (15 August 2012): Mr. Duke reported that irrigation lines were destroyed by a communications contractor and not repaired because the system was inactive. Travis AFB will get the system design information to determine if the trunk line is still intact and repairs can be made to get the system running. Update, 16 January 2013: Mr. Duke said that an Air Force energy reduction contractor will look into the cost of installing a pipe to convey treated water from the central plant to the duck pond. Update, 20 March 2013: Mr. Duke said Travis AFB is looking into energy management projects with respect to ways of reducing water usage. Due date changed to TBD.	TBD	Open
2.	Air Force	Provide organizational structure and signature authority to the regulatory agencies.	22 January 2014	Open

TRAVIS AIR FORCE BASE
ENVIRONMENTAL RESTORATION PROGRAM
RESTORATION PROGRAM MANAGER'S MEETING
BLDG 248 Conference Room
20 November 2013, 9:30 A.M.
AGENDA

1. ADMINISTRATIVE

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

2. CURRENT PROJECTS

   A. TREATMENT PLANT OPERATION AND MAINTENANCE UPDATE
   B. SITE LF007C FIELD ACTIVITIES
   C. OLD SKEET RANGE FIELD SAMPLING

3. PRESENTATION

   A. PROGRAM UPDATE: ACTIVITIES COMPLETED, IN PROGRESS AND UPCOMING

4. NEW ACTION ITEM REVIEW

5. PROGRAM/ISSUES/UPDATE

NOTES: AFTER THE RPM MEETING WE WILL HOLD SEPARATE MEETINGS TO DISCUSS REGULATORY COMMENTS ON THE DRAFT GROUNDWATER ROD AND THE OLD SKEET RANGE REMOVAL ACTION WORK PLAN. ALL PARTICIPANTS ARE WELCOME TO ATTEND.

(2013)

Annual Meeting and Teleconference Schedule

Monthly RPM Meeting[1] (Begins at 9:30 a.m.)	RPM Teleconference (Begins at 10:00 a.m.)	Restoration Advisory Board Meeting (Begins at 7:00 p.m.) (Poster Session at 6:30 p.m.)
01-16-13	—	—
02-20-13	—	—
03-20-13	—	—
04-18-13 (Thur 2:00 PM)	—	04-18-13
05-22-13	—	—
Cancelled	—	—
07-17-13	—	—
08-21-13	—	—
09-18-13[2]	—	—
~~10-17-13 (Thur 2:00 PM)~~[3]	—	~~10-17-13~~[3]
11-20-13	—	—
—	—	—

[1] Note: Meetings will be held the third Wednesday of each month unless otherwise noted.

[2] Note: Meetings will alternate between face to face and teleconferences after the GW ROD is final.

[3] Note: The RPM meeting and the RAB meeting were cancelled due to federal government shutdown.

(2014)

Annual Meeting and Teleconference Schedule

Monthly RPM Meeting[1] (Begins at 9:30 a.m.)	RPM Teleconference (Begins at 10:00 a.m.)	Restoration Advisory Board Meeting (Begins at 7:00 p.m.) (Poster Session at 6:30 p.m.)
01-22-14	—	—
02-19-14	—	—
03-19-14	—	—
04-17-14 (Thur 2:00 PM)	—	04-17-14
05-21-14	—	—
06-18-14	—	—
07-23-14	—	—
08-20-14	—	—
09-17-14	—	—
10-23-14 (Thur 2:00 PM)	—	10-23-14
11-19-14	—	—
—	—	—

[1] Note: Meetings will be held the third Wednesday of each month unless otherwise noted.

PRIMARY DOCUMENTS		
Life Cycle	**Groundwater Record of Decision Travis, Glenn Anderson CH2M HILL, Leah Waller**	**3rd Five-Year Review Travis AFB, Glenn Anderson J.C. Palomar, Chris Bason**
Scoping Meeting	**01-24-07 (11-30-11)**	**10-31-12**
Predraft to AF/Service Center	11-28-12	03-08-13
AF/Service Center Comments Due	12-12-12	03-27-13
Draft to Agencies	01-02-13[1]	05-21-13
Draft to RAB	01-02-13[1]	05-21-13
Agency Comments Due	03-03-13 (04-05-13)	07-23-13
Response to Comments Meeting	**TBD[2]**	**08-06-13**
Public Comment Period	NA	NA
Public Meeting	**NA**	**NA**
Response to Comments Due	TBD	08-20-13
Draft Final Due	TBD	08-26-13
Final Due	TBD	09-25-13

[1]Sent Appendix A to agencies for review on 07-31-13
[2] Pending Air Force legal review of responses to agency comments

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	**Subarea LF007C and Site SS030 Remedial Process Optimization Work Plan** **Travis AFB, Lonnie Duke** **CH2M HILL, Tony Chakurian**
Scoping Meeting	NA
Predraft to AF/Service Center	07-19-13
AF/Service Center Comments Due	08-02-13
Draft to Agencies	08-09-13 (08-07-13)
Draft to RAB	08-09-13 (08-07-13)
Agency Comments Due	09-09-13
Response to Comments Meeting	**09-18-09**
Response to Comments Due	11-20-13
Draft Final Due	NA
Final Due	11-20-13
Public Comment Period	NA
Public Meeting	**NA**

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL DOCUMENTS			
Life Cycle	**Quarterly Newsletters (January 2014) Travis, Glenn Anderson**	**Groundwater Remediation Implementation Status Report Travis AFB, Lonnie Duke CH2M HILL, Royer/Berwick**	**Kinder Morgan Site LF044 Land Use Control Report Travis AFB, Glenn Anderson AMEC, Nick Ricono**
Scoping Meeting	**NA**	**NA**	**NA**
Predraft to AF/Service Center	NA	03-28-13	NA
AF/Service Center Comments Due	NA	04-11-13 (04-18-13)	NA
Draft to Agencies	01-07-14	05-14-13	09-18-13
Draft to RAB	NA	05-14-13	09-18-13
Agency Comments Due	01-21-14	06-13-13 (07-03-13 & 09-06-13)	10-18-13
Response to Comments Meeting	**TBD**	**09-18-13**	**11-20-13**
Response to Comments Due	01-22-14	10-14-13	12-11-13
Draft Final Due	NA	NA	NA
Final Due	01-22-14	10-14-13	12-11-13
Public Comment Period	NA	NA	NA
Public Meeting	**NA**	**NA**	**NA**

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL DOCUMENTS		
Life Cycle	**Pre-Design Site Characterization of Site SS029** **Travis AFB, Lonnie Duke** **Tri-Hydro, Glenn Leong**	**Old Skeet Range Removal Action Work Plan** **Travis AFB, Glenn Anderson** **Baywest, Steve Thornton**
Scoping Meeting	**NA**	**NA**
Predraft to AF/Service Center	06-27-13	05-21-13
AF/Service Center Comments Due	07-29-13	06-05-13
Draft to Agencies	08-21-13	08-30-13
Draft to RAB	08-21-13	08-30-13
Agency Comments Due	09-20-13	09-30-13
Response to Comments Meeting	**09-25-13**	**TBD**
Response to Comments Due	10-16-13	**TBD**
Draft Final Due	NA	NA
Final Due	10-16-13	**TBD**
Public Comment Period	NA	NA
Public Meeting	**NA**	**NA**

South Base Boundary Groundwater Treatment Plant Monthly Data Sheet

Report Number: 157 **Reporting Period: 30 August 2013 – 27 September 2013** **Date Submitted: 28 October 2013**

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 operation data from the September 2013 reporting period.

Table 1 – Operations Summary – September 2013

Initial Data Collection:	08/30/2013 9:15	**Final Data Collection:**	09/27/2013 12:45
Operating Time:		Percent Uptime:	
SBBGWTP:	676 hours	**SBBGWTP:**	100 %
Electrical Power Usage:			
SBBGWTP:	2,399 kWh[a] (3,286 lbs CO_2 generated[b])		
Gallons Treated: **3.6 million gallons**		Gallons Treated Since July 1998: **837 million gallons**	
Volume Discharged to Union Creek: **3.6 million gallons**			
VOC Mass Removed: **0.45 lbs**[c]		VOC Mass Removed Since July 1998: **440 lbs**	
Rolling 12-Month Cost per Pound of Mass Removed: $11,703[d]			
Monthly Cost per Pound of Mass Removed: $10,980			

lbs = pounds

[a] Electrical usage for September 2013 is estimated based on the rate of usage measured from 11 September to 27 September applied to the entirety of the reporting period.

[b] Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.

[c] Calculated using September 2013 EPA Method SW8260B 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]

FT005[c]				SS029		SS030	
EW01x05	4.5	EW736x05	Offline	EW01x29	3.4	EW01x30	5.1
EW02x05	2.2	EW737x05	Offline	EW02x29	Offline	EW02x30	2.3
EW03x05	Offline	EW742x05	Offline	EW03x29	4.1	EW03x30	1.5
EW731x05	Offline	EW743x05	Offline	EW04x29	8.6	EW04x30	23.5
EW732x05	Offline	EW744x05	Offline	EW05x29	8.2	EW05x30	19.1
EW733x05	Offline	EW745x05	Offline	EW06x29	Dry	EW06x30	Dry
EW734x05	4.5	EW746x05	Offline	EW07x29	Dry	EW711x30	16.1
EW735x05	11.0						
FT005 Total:	**22.2**			**SS029 Total:**	**24.3**	**SS030 Total:**	**67.6**

SBBGWTP Average Monthly Flow[c]: 89.5 gpm

[a] Extraction well flow rates are based on instantaneous weekly readings collected at the end of the month.
[b] The average groundwater flow rate was calculated using the Union Creek Discharge Totalizer and dividing it by the total time in the reporting period.
[c] Most extraction wells at FT005 were taken offline in accordance with the *2008 Annual Remedial Process Optimization Report for the Central Groundwater Treatment Plant, North Groundwater Treatment Plant, and South Base Boundary Groundwater Treatment Plant.*

gpm – gallons per minute
Recharge –not pumping while the well recharges.
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		Restart		Cause
	Date	Time	Date	Time	
	None	NA			

SBBGWTP = South Base Boundary Groundwater Treatment Plant

Summary of O&M Activities

Monthly groundwater samples were collected at the SBBGWTP on 11 September 2013. Sample results are presented in Table 4. The total VOC concentration (14.9 µg/L) in the influent sample has decreased since the July 2013 sample (22.0 µg /L) was collected. During August 2013, monthly groundwater samples were not collected due to access restrictions on Perimeter Road for repair work. 1,2-DCA (0.77 µg/L), chloroform (0.22 J µg/L), cis-1,2-DCE (0.52 J µg/L), and TCE (13.4 µg/L) were detected at the influent sampling location in September 2013. Chloroform (0.17 J µg/L) and cis-1,2-DCE (0.87 J µg/L) were also detected at the midpoint sampling 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 twelve (12) months. The average flow rate at the SBBGWTP has increased since wiring repairs were completed at Sites SS029 and SS030. The average flow rate measured for this reporting period (89.5 gpm) has exceeded the average flow rate seen at the SBBGWTP during the month of September in 2011 (92.5 gpm) and 2012 (75.4 gpm). It is expected that the average flow rate will continue to increase with consistent operation of the Site SS029 and SS030 extraction wells.

Extraction wells EW01x29 and EW02x29 continued to malfunction in September 2013. At EW01x29 the variable frequency drive indicated a "motor overload" fault. The pump was removed and cleaned on 27 September 2013 and is now online. A new pump has been ordered for installation at EW02x29 and will be installed in October 2013. In addition, the pump at EW04x29 was replaced on 24 September 2013 and the extraction well is running. Extraction wells EW06x29 and EW07x29 remain offline due to low water levels.

Optimization Activities

The Site SS030 groundwater extraction and treatment system (GETS) optimization activities began in September 2013. Installation activities for new extraction well, EW2174x30, began on 17 September 2013. Optimization activities at the site including installation of an extraction well vault, instrumentation, and a pipeline connecting it to the existing GETS will be postponed due to potential issues with California Tiger Salamander habitat and with the oncoming winter weather.

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 SBBGWTP. The SBBGWTP produced approximately 3,286 pounds of GHG during September 2013. GHG production has decreased (from 15,865 pounds) since July 2013. This decrease is the result of a shorter reporting period, fewer gallons treated, and reduced operation of the Site SS029 extraction wells, discussed above, in September 2013.

TABLE 4
Summary of Groundwater Analytical Data for September 2013 – South Base Boundary Groundwater Treatment Plant

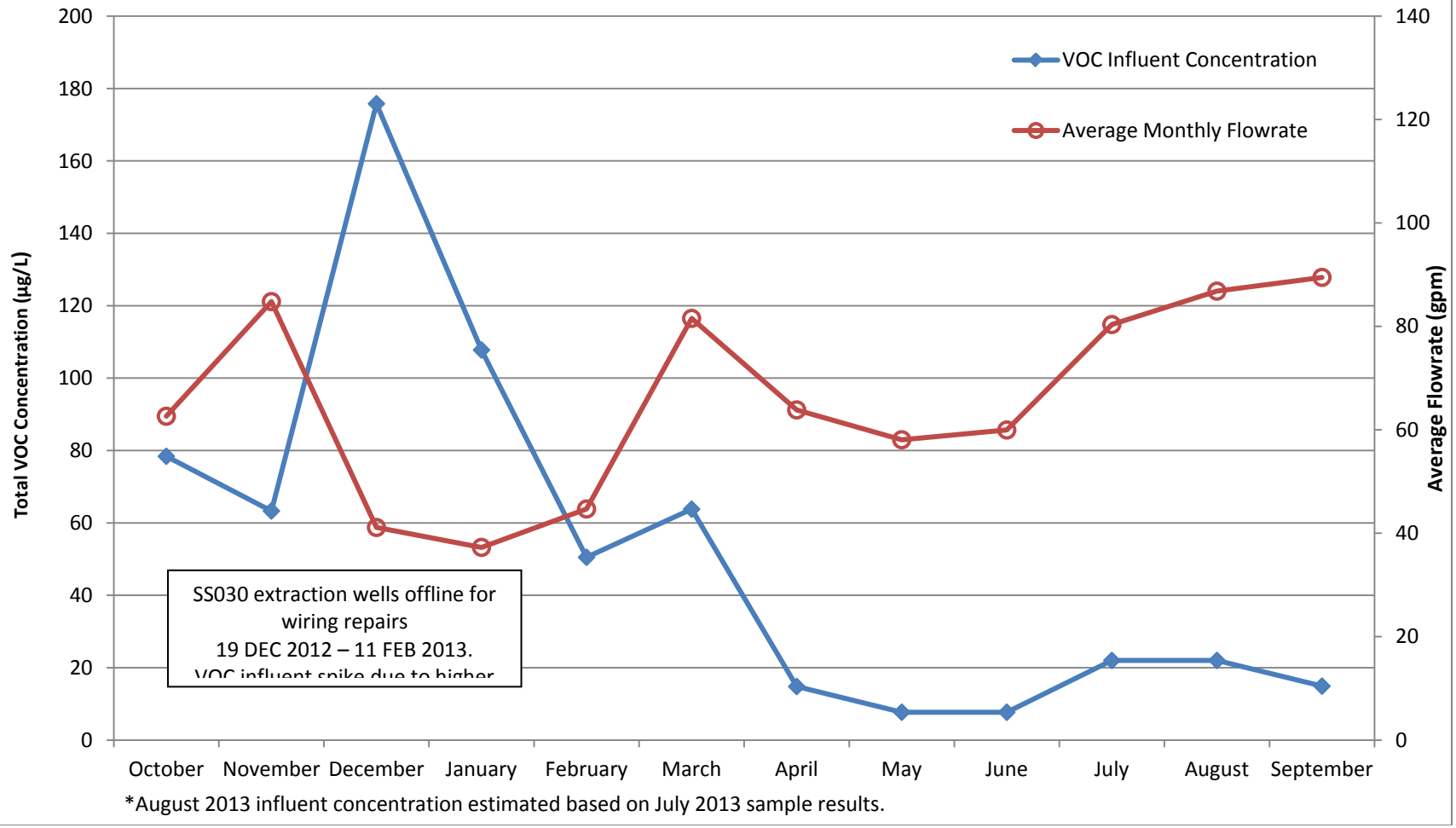
Constituent	Instantaneous Maximum[a] (µg/L)	Detection Limit (µg/L)	N/C	11 September 2013 (µg/L)		
				Influent	Midpoint	Effluent
Halogenated Volatile Organics						
Carbon Tetrachloride	0.5	0.14	0	ND	ND	ND
Chloroform	5.0	0.16	0	0.22 J	0.17 J	ND
1,1-Dichloroethane	5.0	0.50	0	ND	ND	ND
1,2-Dichloroethane	0.5	0.15	0	0.77	ND	ND
1,1-Dichloroethene	5.0	0.19	0	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.19	0	0.52 J	0.87 J	ND
trans-1,2-Dichloroethene	5.0	0.33	0	ND	ND	ND
Methylene Chloride	5.0	0.66	0	ND	ND	ND
Tetrachloroethene	5.0	0.21	0	ND	ND	ND
1,1,1-Trichloroethane	5.0	0.14	0	ND	ND	ND
1,1,2-Trichloroethane	5.0	0.20	0	ND	ND	ND
Trichloroethene	5.0	0.19	0	13.4	ND	ND
Vinyl Chloride	0.5	0.18	0	ND	ND	ND
Non-Halogenated Volatile Organics						
Benzene	1.0	0.17	0	ND	ND	ND
Ethylbenzene	5.0	0.22	0	ND	ND	ND
Toluene	5.0	0.14	0	ND	ND	ND
Xylenes	5.0	0.23 – 0.5	0	ND	ND	ND
Other						
Total Petroleum Hydrocarbons – Gasoline	50	8.5	0	NM	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	50	0	NM	NM	ND
Total Suspended Solids (mg/L)	NE	1.0	0	8 J	NM	NM

[a] 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

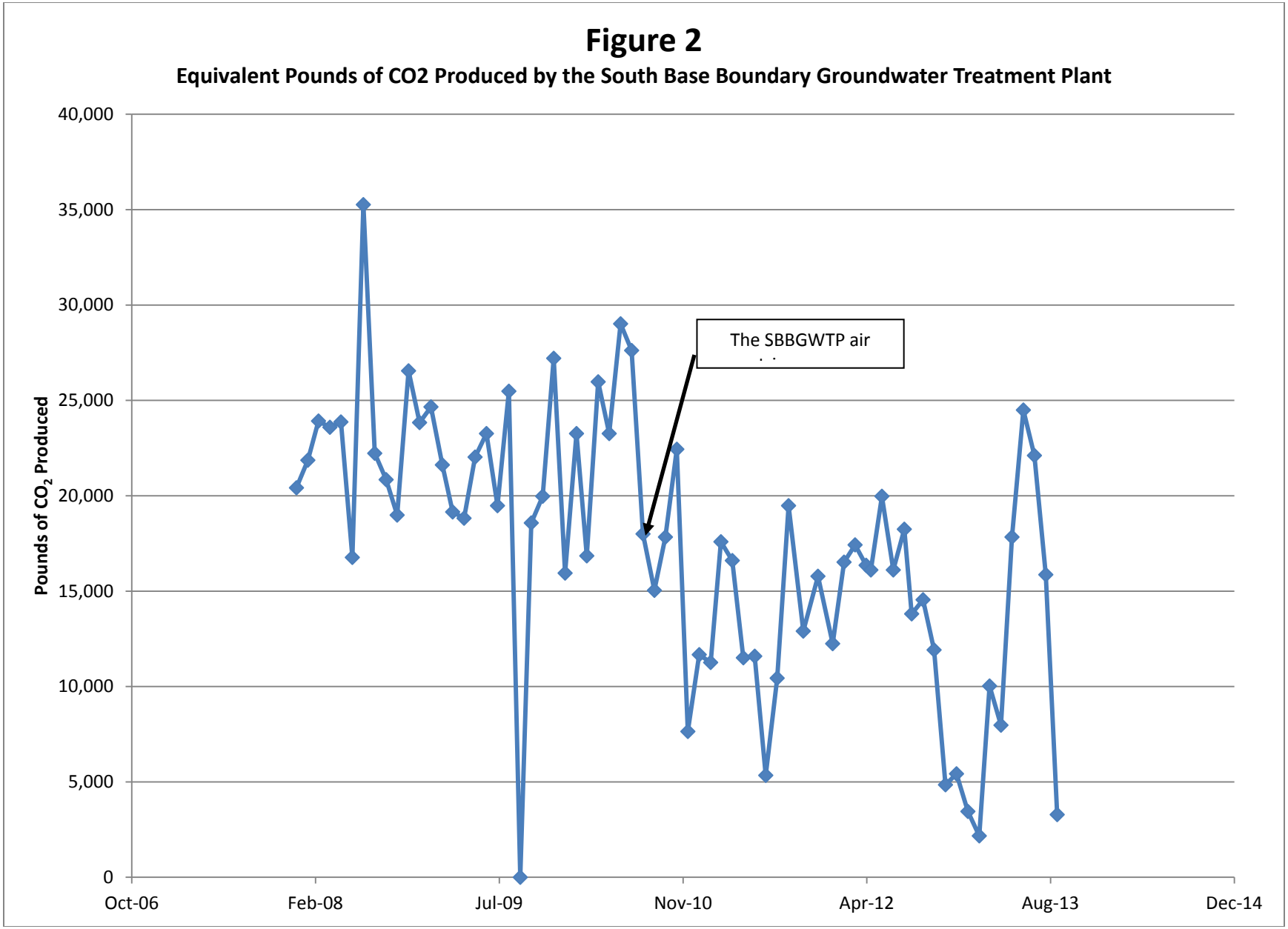
Figure 1
SBBGWTP Total VOC Influent Concentrations and Average Flowrate
Twelve Month History
Travis Air Force Base, California



*August 2013 influent concentration estimated based on July 2013 sample results.

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: 158 **Reporting Period: 27 September 2013 – 30 October 2013** **Date Submitted: 13 November 2013**

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 2013 reporting period.

Table 1 – Operations Summary – October 2013

Initial Data Collection: 09/27/2013 12:45	**Final Data Collection:** 10/30/2013 14:00
Operating Time: **SBBGWTP:** 793 hours	Percent Uptime: **SBBGWTP:** 100 %
Electrical Power Usage: **SBBGWTP:** 14,520 kWh (19,892 lbs CO_2 generated[a])	
Gallons Treated: **3.6 million gallons**	Gallons Treated Since July 1998: **841 million gallons**
Volume Discharged to Union Creek: **3.6 million gallons**	
VOC Mass Removed: **0.72 lbs**[b]	VOC Mass Removed Since July 1998: **441 lbs**
Rolling 12-Month Cost per Pound of Mass Removed: $12,782[c]	
Monthly Cost per Pound of Mass Removed: $8,759	

lbs = pounds

[a] Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.

[b] Calculated using October 2013 EPA Method SW8260B analytical results.

[c] Costs include operations and maintenance, reporting, analytical laboratory, project management, and utility costs related to operation of the system.

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

Table 2 – SBBGWTP Average Flow Rate (gpm)[a,b]

FT005[c]				SS029		SS030	
EW01x05	5.3	EW736x05	Offline	EW01x29	3.1	EW01x30	4.3
EW02x05	1.8	EW737x05	Offline	EW02x29	8.0	EW02x30	1.8
EW03x05	Offline	EW742x05	Offline	EW03x29	3.5	EW03x30	3.5
EW731x05	Offline	EW743x05	Offline	EW04x29	6.8	EW04x30	23.3
EW732x05	Offline	EW744x05	Offline	EW05x29	6.1	EW05x30	19.1
EW733x05	Offline	EW745x05	Offline	EW06x29	Dry	EW06x30	Dry
EW734x05	3.7	EW746x05	Offline	EW07x29	2.6	EW711x30	17.2
EW735x05	11.0						
FT005 Total:	**21.8**			**SS029 Total:**	**30.1**	**SS030 Total:**	**69.2**
SBBGWTP Average Monthly Flow[c]: 75.8 gpm							

[a] Extraction well flow rates are based on instantaneous weekly readings collected at the end of the month.
[b] 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.
[c] Most extraction wells at FT005 were taken offline in accordance with the *2008 Annual Remedial Process Optimization Report for the Central Groundwater Treatment Plant, North Groundwater Treatment Plant, and South Base Boundary Groundwater Treatment Plant.*

gpm – gallons per minute
Recharge –not pumping while the well recharges.
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		Restart		Cause
	Date	Time	Date	Time	
	None	NA			

SBBGWTP = South Base Boundary Groundwater Treatment Plant

Summary of O&M Activities

Monthly groundwater samples were collected at the SBBGWTP on 7 October 2013. Sample results are presented in Table 4. The total VOC concentration (23.8 µg/L) in the influent sample has increased since the September 2013 sample (14.9 µg /L) was collected. Cis-1,2-DCE (1.3 J µg/L) and TCE (22.5 µg/L) were detected at the influent sampling location in October 2013. TCE (0.35 J µg/L and 0.28 J µg/L) was also detected at the midpoint and effluent sampling locations below the 5 µg/L instantaneous maximum concentration limitation for TCE at the CGWTP.

Figure 1 presents a plot of influent concentrations and average flow at the SBBGWTP over the twelve (12) months. The average flow rate at the SBBGWTP has decreased in October 2013 from the previous month. However, the average flow rate measured for this reporting period (75.8 gpm) has exceeded the average flow rate seen at the SBBGWTP during the month of October in 2012 (62.6 gpm), which is likely the result of wiring repairs completed at Sites SS029 and SS030 at the beginning of 2013.

Extraction wells EW01x29, EW06x29, and EW734x05 experienced some down time in October 2013 due to faulty signal wiring. In the case of EW01x29 and EW06x29, the faulty wiring was related to flow rates, which caused low-flow alarms. These alarms automatically reset, but it leads to inconsistent operation. In the case of EW734x05, the water level wiring is not accurately reporting the water level, which leads to continued pump operation. These wiring issues will continue to be investigated in November and December 2013.

Optimization Activities

No optimization activities were performed in October 2013.

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 SBBGWTP. The SBBGWTP produced approximately 19,892 pounds of GHG during October 2013. GHG production has increased (from 3,286 pounds) since September 2013. Travis AFB will investigate the erratic nature of electricity usage at the SBBGWTP in November and December 2013.

TABLE 4
Summary of Groundwater Analytical Data for October 2013 – South Base Boundary Groundwater Treatment Plant

Constituent	Instantaneous Maximum[a] (µg/L)	Detection Limit (µg/L)	N/C	7 October 2013 (µg/L)		
				Influent	Midpoint	Effluent
Halogenated Volatile Organics						
Carbon Tetrachloride	0.5	0.14	0	ND	ND	ND
Chloroform	5.0	0.16	0	ND	ND	ND
1,1-Dichloroethane	5.0	0.50	0	ND	ND	ND
1,2-Dichloroethane	0.5	0.15	0	ND	ND	ND
1,1-Dichloroethene	5.0	0.19	0	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.19	0	1.3	ND	ND
trans-1,2-Dichloroethene	5.0	0.33	0	ND	ND	ND
Methylene Chloride	5.0	0.66	0	ND	ND	ND
Tetrachloroethene	5.0	0.21	0	ND	ND	ND
1,1,1-Trichloroethane	5.0	0.14	0	ND	ND	ND
1,1,2-Trichloroethane	5.0	0.20	0	ND	ND	ND
Trichloroethene	5.0	0.19	0	22.5	0.35 J	0.28 J
Vinyl Chloride	0.5	0.18	0	ND	ND	ND
Non-Halogenated Volatile Organics						
Benzene	1.0	0.17	0	ND	ND	ND
Ethylbenzene	5.0	0.22	0	ND	ND	ND
Toluene	5.0	0.14	0	ND	ND	ND
Xylenes	5.0	0.23 – 0.5	0	ND	ND	ND
Other						
Total Petroleum Hydrocarbons – Gasoline	50	8.5	0	NM	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	50	0	NM	NM	ND
Total Suspended Solids (mg/L)	NE	1.0	0	85	NM	NM

[a] 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

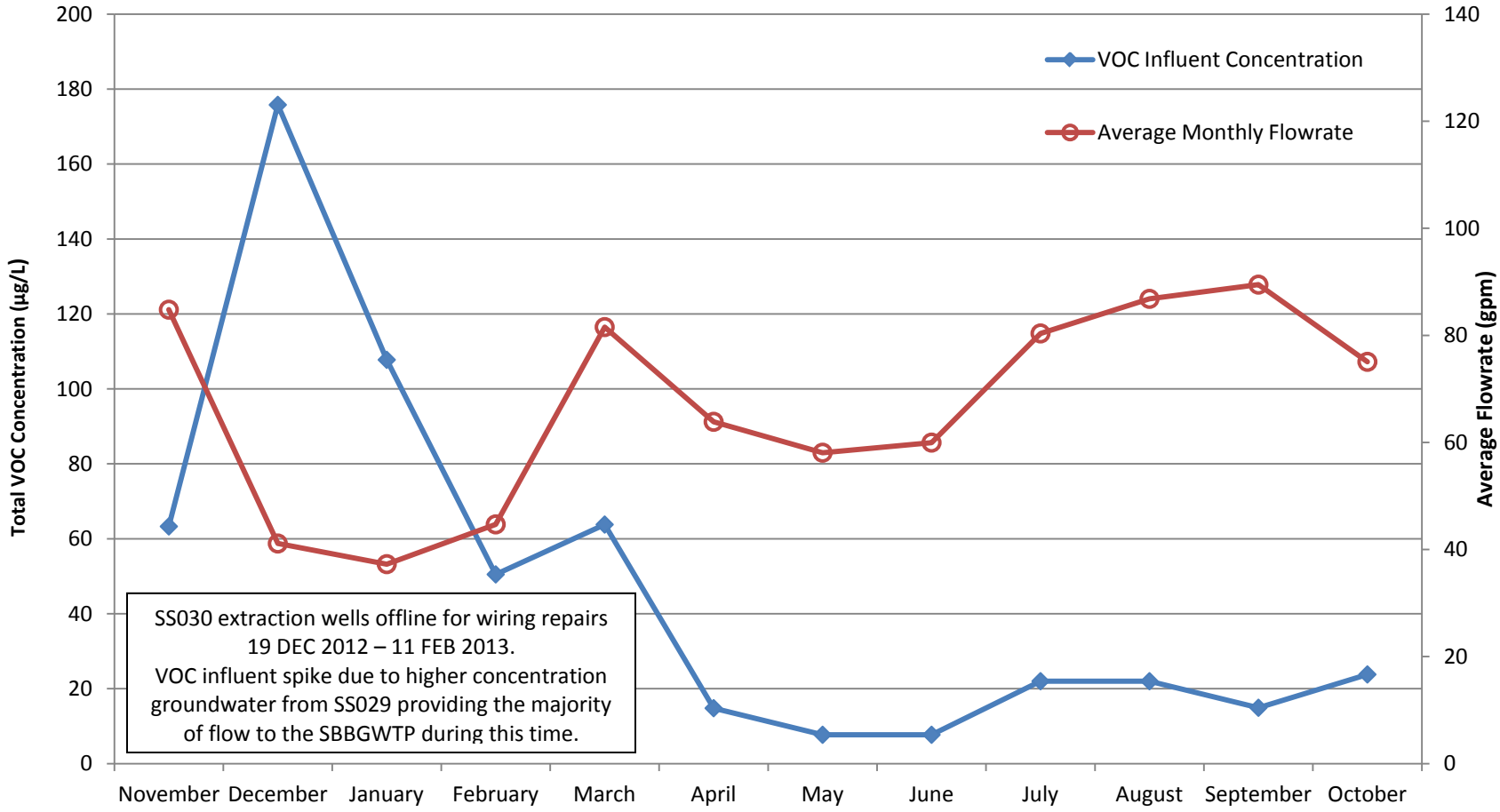
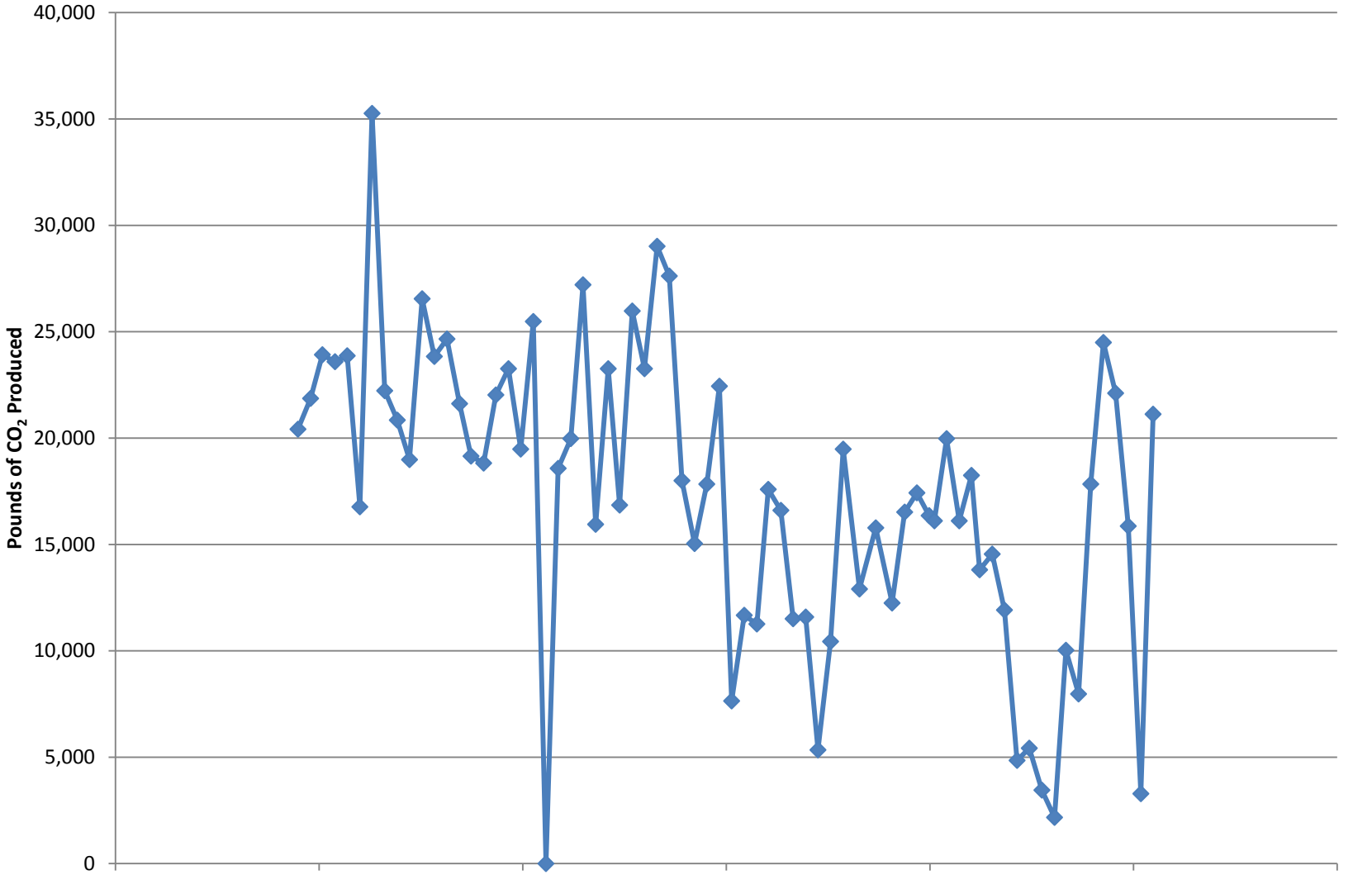


Figure 2

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



Central Groundwater Treatment Plant Monthly Data Sheet

Report Number: 170 **Reporting Period: 30 August 2013 – 27 September 2013** **Date Submitted: 28 October 2013**

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, two (2) bioreactor treatability studies, and various rebound studies.

System Metrics

Table 1 presents operational data from the September 2013 reporting period.

Table 1 – Operations Summary – September 2013

Initial Data Collection: 08/30/2013 11:00 **Final Data Collection:** 09/27/2013 11:00

Operating Time:		Percent Uptime:		Electrical Power Usage:	
CGWTP:	672 hours	**CGWTP:**	100%	**CGWTP:**	1,231 kWh (1,686 lbs CO_2 generated[a])
WTTP:	Water: 0 hours Vapor: 0 hours	**WTTP:**	Water: 0% Vapor: 0%	**WTTP:**	0 kWh

Gallons Treated: **975 thousand gallons**

Gallons Treated Since January 1996: **485 million gallons**

VOC Mass Removed:

2.68 lbs[b] (groundwater only)

0 lbs (vapor only)

VOC Mass Removed Since January 1996:

2,657 lbs from groundwater

8,686 lbs from vapor

Rolling 12-Month Cost per Pound of Mass Removed: $3,241[c]

Monthly Cost per Pound of Mass Removed: $1,518

[a] Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.

[b] Calculated using September 2013 EPA Method SW8260B 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]

Location	Average Flow Rate	
	Groundwater (gpm)	Soil Vapor (scfm) [b]
EW01x16	19.6	Offline
EW02x16	7.1	Offline
EW03x16	0.2[c]	Offline
EW605x16	Offline	Offline
EW610x16	Offline	Offline
CGWTP	24.2	--
WTTP	--[b]	Offline

[a] Flow rates calculated by dividing total gallons processed by system operating time for the month.
[b] No soil vapor was treated in September 2013.
[c] Water discharged to Site SS016 bioreactor – flow rate taken from wellhead Flow Totalizer divided by operating time during the month.
gpm = gallons per minute
-- = not applicable/not available
scfm = standard cubic feet per minute

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

Table 3 – Summary of System Shutdowns

Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
CGWTP (Groundwater)					
	None	NA			
WTTP					
	None	NA			

CGWTP = Central Groundwater Treatment Plant
WTTP = West Transfer Treatment Plant

Summary of O&M Activities

Monthly groundwater samples were collected at the CGWTP on 11 September 2013. Sample results are presented in Table 4. The total VOC concentration (329.89 µg/L) in the influent sample has increased slightly since the August 2013 sample (325.82 µg/L) was collected. Concentrations of 1,1-Dichloroethene (0.75 µg/L), 1,2-Dichlorobenzene (DBC) (0.53 µg/L), 1,3-DCB (0.6 µg/L), 1,4-DCB (0.3 J µg/L), cis-1,2-DCE (94.2 µg/L), tetrachloroethene (0.85 µg/L), trans-1,2-Dichloroethene (4.4 µg/L), TCE (228 µg/L), and vinyl chloride (0.26 J µg/L) were detected at the influent sampling location.

Vinyl chloride (0.44 J µg/L) was also detected at the midpoint sampling location. No other contaminants were detected at the midpoint or effluent sampling locations. Travis Air Force Base will continue to monitor contaminant concentrations at the CGWTP for breakthrough in the primary vessel.

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 average flow rate through the treatment plant continued to decrease in September 2013. Extraction wells EW605x16 and EW610x16 were offline in September 2013. Troubleshooting activities are ongoing and the extraction wells are expected to be brought back on line in October.

Annual vapor samples at the WTTP were collected on 12 August 2013 as part of the ongoing rebound study. The WTTP ran for five (5) hours while samples were collected at four (4) dual phase extraction wells (EW510x37, EW700x37, EW704x37, and EW707x37). These vapor sample results are presented in Table 6.

This annual vapor sampling event is part of an ongoing soil vapor extraction rebound study in the WIOU. Vapor samples from individual DPE wells in the WIOU are collected on an annual basis, with the first samples having been collected at the beginning of the rebound study in July 2009. The samples collected during August 2013 constitute the fifth sampling event since the rebound study began (baseline).

Of the four (4) DPE well samples collected in August 2013, only extraction well EW510x37 contained total VOC concentrations in excess of 1,000 parts per billion by volume (ppbv). The total VOC concentration measured at extraction well EW510x37 was 7,219 ppbv, which included TCE with a concentration of 5,330 J+ ppbv. The concentration of TCE in EW510x37 has increased significantly (from 569 ppbv) since the July 2012 vapor sampling event took place. At the other three (3) sample locations, higher total VOC concentrations were measured than from samples collected from the same locations in August 2012, however, concentrations remain well below the historical maximums for each extraction well.

Due to the unexpectedly high concentration of TCE detected in EW510x37, which was flagged as an approximate concentration with a high bias based on positive identification, the extraction well will be resampled in October 2013 for verification of the results. Travis will continue to monitor the remaining DPE wells on an annual basis, and the WTTP SVE system will remain off line, pending the results of resampling, for at least another year.

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 September 2013.

Optimization Activities

No optimization activities occurred at CGWTP in September 2013.

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 1,686 pounds of GHG during September 2013. This is a decrease from the amount produced in August 2013 (approximately 2,391 pounds) and can be attributed to a decrease in the number of gallons treated due to extraction wells EW605x16 and EW610x16 being offline.

TABLE 4
Summary of Groundwater Analytical Data for September 2013 – Central Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	11 September 2013 (µg/L)			
				Influent	After Carbon 1 Effluent	After Carbon 2 Effluent	System Effluent
Halogenated Volatile Organics							
Carbon Tetrachloride	0.5	0.14	0	ND	ND	ND	ND
Chloroform	5.0	0.16	0	ND	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.19	0	94.2	ND	ND	ND
1,1-Dichloroethane	5.0	0.5	0	ND	ND	ND	ND
1,2-Dichloroethane	0.5	0.15	0	ND	ND	ND	ND
1,1-Dichloroethene	5.0	0.19	0	0.75	ND	ND	ND
Methylene Chloride	5.0	0.66	0	ND	ND	ND	ND
MTBE	1.0	0.5	0	ND	ND	ND	ND
Tetrachloroethene	5.0	0.21	0	0.85	ND	ND	ND
1,1,1-Trichloroethane	5.0	0.14	0	ND	ND	ND	ND
1,1,2-Trichloroethane	5.0	0.2	0	ND	ND	ND	ND
Trichloroethene	5.0	0.19	0	228	ND	ND	ND
trans-1,2-Dichloroethene	5.0	0.33	0	4.4	ND	ND	ND
Vinyl Chloride	0.5	0.18	0	0.26 J	0.44 J	ND	ND
Non-Halogenated Volatile Organics							
Benzene	1.0	0.17	0	ND	ND	ND	ND
Ethylbenzene	5.0	0.22	0	ND	ND	ND	ND
Toluene	5.0	0.14	0	ND	ND	ND	ND
Total Xylenes	5.0	0.23 – 0.5	0	ND	ND	ND	ND
Other							
Total Dissolved Solids (mg/L)	NA	10	0	NM	NM	NM	892

* In accordance with Appendix G of the T*ravis 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
N/C = number of samples out of compliance with discharge limits
ND = not detected
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	5 September 2012	16 September 2012
	28 September 2012	13 October 2012
	29 October 2012	9 November 2012
	21 November 2012	7 December 2012
	21 December 2012	4 January 2013
	18 January 2013	4 February 2013
	15 February 2013	1 March 2013
	15 March 2013	29 March 2013
	12 April 2013	26 April 2013*
	10 May 2013	24 May 2013
	7 June 2013	21 June 2013
	15 July 2013	26 July 2013
	8 August 2013	16 August 2013
	30 August 2013	13 September 2013
	27 September 2013	--

* Damage to the above ground discharge pipe feeding the bioreactor was observed at shutdown. The piping was repaired prior to the 10 May 2013 restart.

CGWTP = Central Groundwater Treatment Plant

EW = Extraction Well

TABLE 6
Summary of Soil Vapor Analytical Data for July 2009 – August 2013 – West Treatment and Transfer Plant

Constituent (PPBV)	EW510x37					EW700x37					EW704x37					EW707x37				
	Jul-09	Jul-10	Aug-11	Jul-12	Aug-13	Jul-09	Jul-10	Aug-11	Jul-12	Aug-13	Jul-09	Jul-10	Aug-11	Jul-12	Aug-13	Jul-09	Jul-10	Aug-11	Jul-12	Aug-13
Acetone	2.8	245	6	12.2	ND (15)	65.2	4.61	7.97	9.66	8.78	1.36	ND (0.59)	8.4	11.7	30.6	ND (2.99)	4	7.27	3.09	12.6
Chloroform	1.7	ND (11.8)	ND (2.0)	ND (5.0)	ND (15)	ND (0.151)	ND (0.151)	ND (0.5)	ND (0.5)	ND (0.5)	1.76	9.6 J	3.68 J	3.4 J	3.9 J	8.9	27.4	1.26	0.72	5.7
Chloromethane	ND (1.43)	ND (22.3)	ND (2.0)	ND (5.0)	ND (15)	0.37 J	0.54	0.47 J	0.88 J+	0.71	ND (0.573)	ND (5.73)	ND (4.0)	ND (5.0)	ND (5)	ND (2.86)	ND (2.86)	ND (0.5)	ND (0.5)	ND (1)
cis-1,2-Dichloroethene	10.2	85	171	286	1290	1.23	5.4	0.19 J	4.39	0.77	3.28	1,020	7.92	19.4	13.8	ND (1.35)	42	0.33 J	0.81	4.3
1,1-Dichloroethene	ND (0.956)	ND (15.4)	ND (2.0)	ND (5.0)	28.2	ND (0.198)	ND (0.198)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.396)	ND (3.96)	ND (4.0)	ND (5.0)	ND (5)	ND (1.98)	ND (1.98)	ND (0.5)	ND (0.5)	ND (1)
Ethylbenzene	ND (0.955)	ND (14.9)	ND (2.0)	ND (5.0)	ND (15)	ND (0.191)	ND (0.191)	ND (0.5)	0.21 J	ND (0.5)	ND (0.382)	ND (3.82)	ND (4.0)	ND (5.0)	ND (5)	ND (1.91)	ND (1.91)	ND (0.5)	ND (0.5)	ND (1)
Hexane	ND (0.657)	20.3 J	0.6 J	3.6 J	ND (15)	ND (0.131)	2.86	0.87	2.25	ND (0.5)	ND (0.263)	ND (2.63)	ND (4.0)	4.1 J	ND (5)	ND (1.31)	ND (1.31)	0.4 J	ND (0.5)	6.72
Methyl ethyl ketone (2-butanone)	ND (2.03)	ND (31.6)	ND (2.0)	14.2	ND (15)	2.68	0.6	0.18 J	1.83	0.81	ND (0.811)	ND (8.11)	ND (4.0)	ND (5.0)	ND (5)	ND (4.06)	ND (4.06)	0.47 J	0.57	ND (1)
Tetrachloroethene	3	35.9 J	0.64 J	3.4 J	18.3	0.22 J	ND (0.191)	ND (0.5)	0.32 J	ND (0.5)	0.7 J	22.4	4.4	2.1 J	5.8	3.1 J	2.6 J	1.01	2.19	2.18
trans-1,2-Dichloroethene	1.6 J	ND (14.9)	1.64 J	5.7	32.1	ND (0.191)	0.5	ND (0.5)	0.37 J	ND (0.5)	0.42 J	10	ND (4.0)	ND (5.0)	ND (5)	ND (1.91)	ND (1.91)	ND (0.5)	ND (0.5)	ND (1)
Trichloroethene	397	4,000	214	569	5330 J+	6.49	11.3	3.65	8.12	6.29	181	3,240	444	437	652	706	916	41.7	37.3	247
Toluene	ND (0.778)	ND (12.1)	ND (2.0)	ND (5.0)	ND (15)	ND (0.156)	0.27 J	0.17 J	0.53	2.42	ND (0.311)	ND (3.11)	ND (4.0)	ND (5.0)	ND (5)	ND (1.56)	ND (1.56)	0.56	ND (0.5)	2.28
Xylenes, m,p-	ND (2.44)	ND (2.44)	ND (2.0)	ND (10.0)	ND (30)	ND (0.489)	ND (0.266)	ND (0.5)	0.93 J	ND (1)	ND (0.978)	ND (9.78)	ND (4.0)	ND (10.0)	ND (10)	ND (4.89)	ND (4.89)	ND (0.5)	ND (1.0)	3.48
Vinyl chloride	ND (1.16)	ND (18.2)	52.5	82.9	520	ND (0.233)	ND (0.233)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.465)	ND (10)	ND (4.0)	ND (5.0)	ND (5)	ND (2.33)	ND (2.33)	ND (0.5)	ND (0.5)	1.06
Total VOCs	**416**	**4,386**	**446**	**977**	**7,219**	**76.2**	**26.1**	**13.5**	**29.5**	**24.3**	**189**	**4,302**	**468**	**478**	**756**	**718**	**992**	**53**	**44.7**	**290**

Notes:
( ) = data within parentheses indicate the detection limit for that analyte
J = analyte concentration is considered an estimated value
ND = not detected
PPBV = Parts per billion volume

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

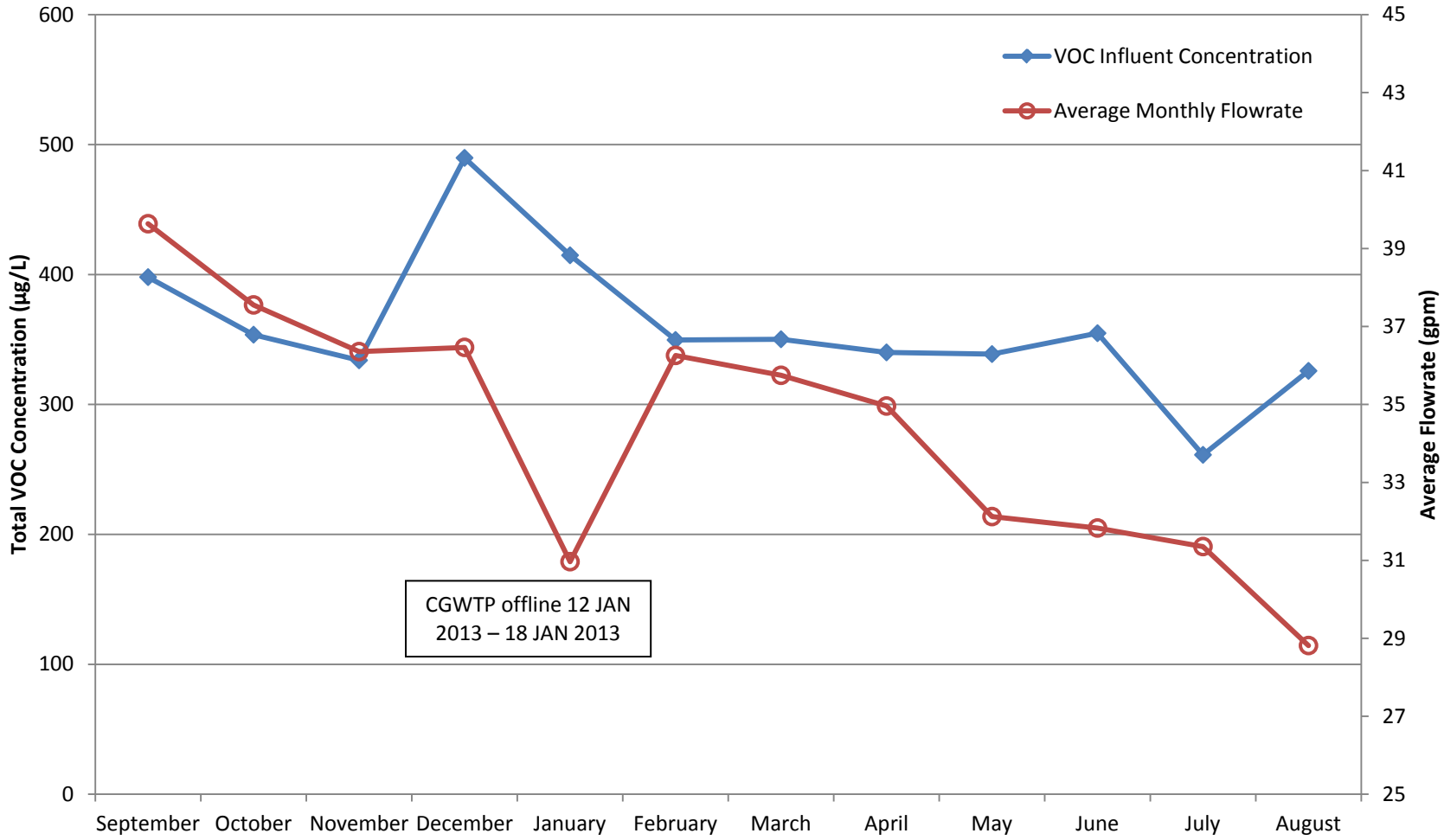
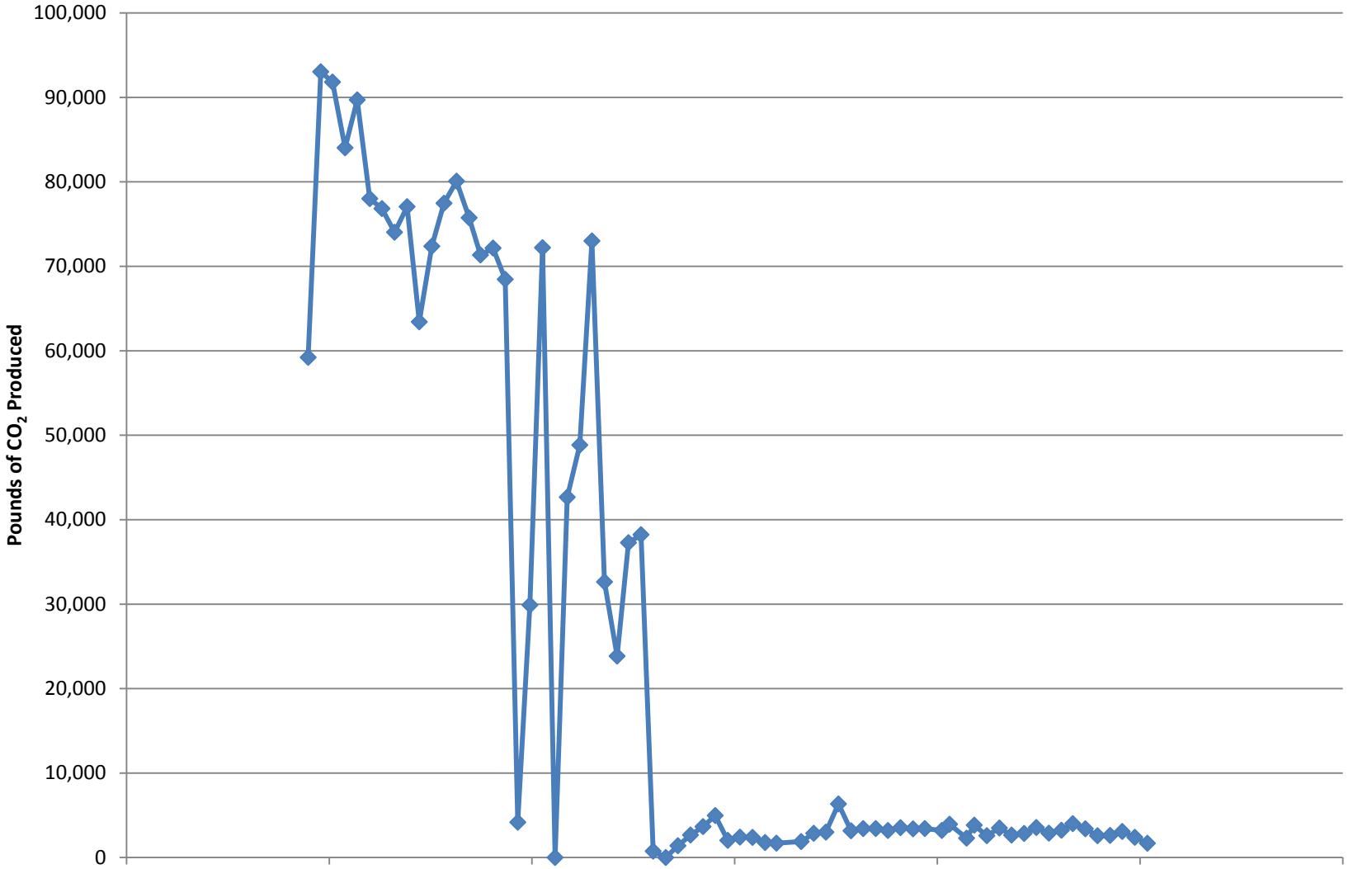


Figure 2

Equivalent Pounds of CO2 Produced by the Central Groundwater Treatment Plant



Central Groundwater Treatment Plant Monthly Data Sheet

Report Number: 171 **Reporting Period: 27 September 2013 – 30 October 2013** **Date Submitted: 13 November 2013**

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, two (2) bioreactor treatability studies, and various rebound studies.

System Metrics

Table 1 presents operational data from the October 2013 reporting period.

Table 1 – Operations Summary – October 2013

Initial Data Collection: 09/27/2013 11:00 **Final Data Collection:** 10/30/2013 15:00

Operating Time:		Percent Uptime:		Electrical Power Usage:	
CGWTP:	795 hours	**CGWTP:**	100%	**CGWTP:**	1,827 kWh (2,503 lbs CO_2 generated[a])
WTTP:	Water: 0 hours Vapor: 0 hours	**WTTP:**	Water: 0% Vapor: 0%	**WTTP:**	0 kWh

Gallons Treated: **1.27 million gallons** Gallons Treated Since January 1996: **486 million gallons**

VOC Mass Removed: VOC Mass Removed Since January 1996:

2.62 lbs[b] (groundwater only) **2,660 lbs from groundwater**

0 lbs (vapor only) **8,686 lbs from vapor**

Rolling 12-Month Cost per Pound of Mass Removed: $3,304[c]

Monthly Cost per Pound of Mass Removed: $2,455

[a] Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.

[b] Calculated using October 2013 EPA Method SW8260B 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]

Location	Average Flow Rate	
	Groundwater (gpm)	Soil Vapor (scfm) [b]
EW01x16	18.8	Offline
EW02x16	6.0	Offline
EW03x16	0.1[c]	Offline
EW605x16	2.9	Offline
EW610x16	6.9	Offline
CGWTP	32.3	--
WTTP	--[b]	Offline

[a] Flow rates calculated by dividing total gallons processed by system operating time for the month.
[b] No soil vapor was treated in October 2013.
[c] Water discharged to Site SS016 bioreactor – flow rate taken from wellhead Flow Totalizer divided by operating time during the month.
gpm = gallons per minute
-- = not applicable/not available
scfm = standard cubic feet per minute

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

Table 3 – Summary of System Shutdowns

Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
CGWTP (Groundwater)					
	None	NA			
WTTP					
	None	NA			

CGWTP = Central Groundwater Treatment Plant
WTTP = West Transfer Treatment Plant

Summary of O&M Activities

Monthly groundwater samples were collected at the CGWTP on 7 October 2013. Sample results are presented in Table 4. The total VOC concentration (247.73 µg/L) in the influent sample has decreased since the September 2013 sample (329.89 µg/L) was collected. Concentrations of 1,2-Dichlorobenzene (DBC) (0.62 µg/L), cis-1,2-DCE (30 µg/L), tetrachloroethene (0.61 µg/L), trans-1,2-Dichloroethene (2.5 µg/L), and TCE (214 µg/L) were detected at the influent sampling location.

Vinyl chloride (0.49 J µg/L) was detected at the midpoint sampling location. No other contaminants were detected at the midpoint or effluent sampling locations. Travis Air Force Base will continue to monitor contaminant concentrations at the CGWTP for breakthrough in the primary vessel.

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 average flow rate through the treatment plant increased in October 2013. This increase is likely the result of extraction wells EW605x16 and EW610x16 being brought back on line on 25 October 2013 after wiring replacement activities were completed.

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 2013.

Optimization Activities

No optimization activities occurred at CGWTP in October 2013.

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 2,503 pounds of GHG during October 2013. This is an increase from the amount produced in September 2013 (approximately 1,686 pounds) and can be attributed to an increased number of gallons treated.

TABLE 4
Summary of Groundwater Analytical Data for October 2013 – Central Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	7 October 2013 (µg/L)			
				Influent	After Carbon 1 Effluent	After Carbon 2 Effluent	System Effluent
Halogenated Volatile Organics							
Carbon Tetrachloride	0.5	0.14	0	ND	ND	ND	ND
Chloroform	5.0	0.16	0	ND	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.19	0	30	ND	ND	ND
1,1-Dichloroethane	5.0	0.5	0	ND	ND	ND	ND
1,2-Dichloroethane	0.5	0.15	0	ND	ND	ND	ND
1,1-Dichloroethene	5.0	0.19	0	ND	ND	ND	ND
Methylene Chloride	5.0	0.66	0	ND	ND	ND	ND
MTBE	1.0	0.5	0	ND	ND	ND	ND
Tetrachloroethene	5.0	0.21	0	0.61	ND	ND	ND
1,1,1-Trichloroethane	5.0	0.14	0	ND	ND	ND	ND
1,1,2-Trichloroethane	5.0	0.2	0	ND	ND	ND	ND
Trichloroethene	5.0	0.19	0	214	ND	ND	ND
trans-1,2-Dichloroethene	5.0	0.33	0	2.5	ND	ND	ND
Vinyl Chloride	0.5	0.18	0	ND	0.49 J	ND	ND
Non-Halogenated Volatile Organics							
Benzene	1.0	0.17	0	ND	ND	ND	ND
Ethylbenzene	5.0	0.22	0	ND	ND	ND	ND
Toluene	5.0	0.14	0	ND	ND	ND	ND
Total Xylenes	5.0	0.23 – 0.5	0	ND	ND	ND	ND
Other							
Total Dissolved Solids (mg/L)	NA	10	0	NM	NM	NM	NM

* In accordance with Appendix G of the T*ravis 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
N/C = number of samples out of compliance with discharge limits
ND = not detected
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	29 October 2012	9 November 2012
	21 November 2012	7 December 2012
	21 December 2012	4 January 2013
	18 January 2013	4 February 2013
	15 February 2013	1 March 2013
	15 March 2013	29 March 2013
	12 April 2013	26 April 2013*
	10 May 2013	24 May 2013
	7 June 2013	21 June 2013
	15 July 2013	26 July 2013
	8 August 2013	16 August 2013
	30 August 2013	13 September 2013
	27 September 2013	11 October 2013
	25 October 2013	--

* Damage to the above ground discharge pipe feeding the bioreactor was observed at shutdown. The piping was repaired prior to the 10 May 2013 restart.

CGWTP = Central Groundwater Treatment Plant

EW = Extraction Well

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

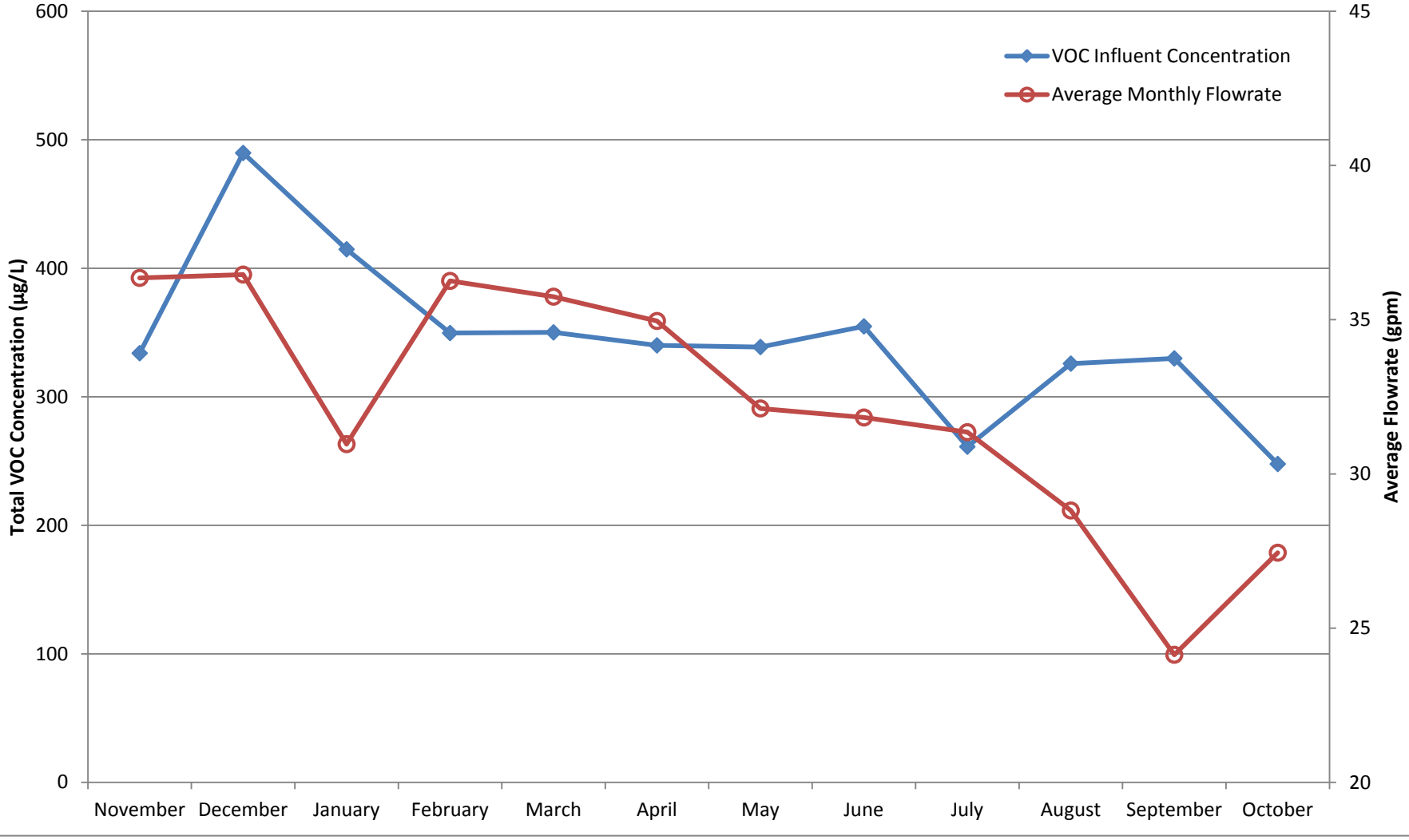
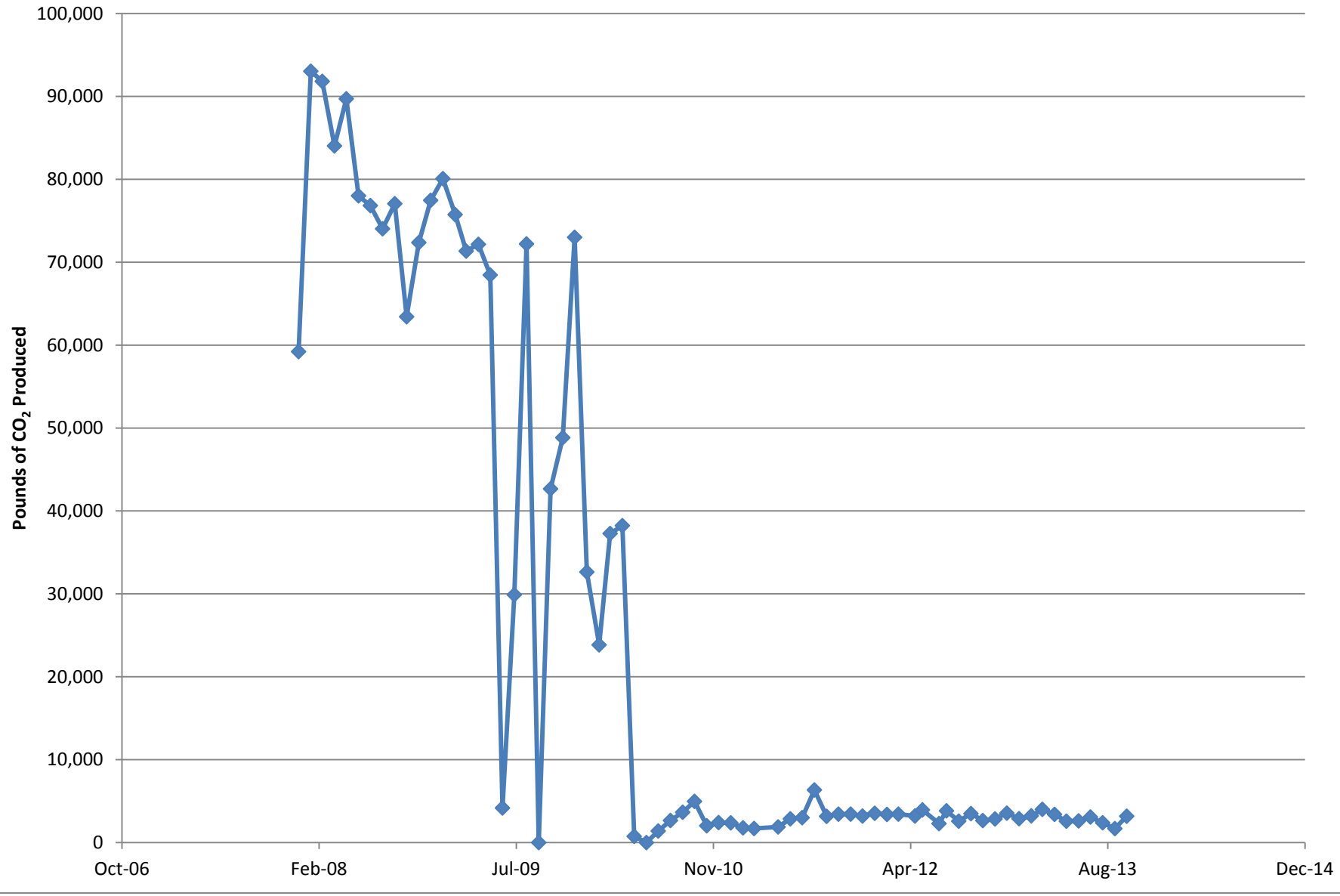


Figure 2

Equivalent Pounds of CO2 Produced by the Central Groundwater Treatment Plant



North Groundwater Treatment Plant Monthly Data Sheet

Report Number: 135 **Reporting Period: 30 August 2013 – 27 September 2013** **Date Submitted: 28 October 2013**

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

System Metrics

Table 1 presents operational data from the September 2013 reporting period:

Table 1 – Operations Summary – September 2013

Initial Data Collection:	08/30/2013 10:30	**Final Data Collection:**	09/27/2013 12:00

Operating Time:		Percent Uptime:		Electrical Power Usage:	
NGWTP:	336 hours	**NGWTP:**	49.9%	**NGWTP:**	372 kWh (510 lbs CO_2 generated[a])

Gallons Treated: **5,920 gallons**

Gallons Treated Since March 2000: **82.8 million gallons**

Volume Discharged to Duck Pond: **5,920 gallons**

Volume Discharge to Storm Drain: **0 gallons**

VOC Mass Removed: **1.6×10^{-4} pounds**[b]

VOC Mass Removed Since March 2000: **174.3 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] Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.
[b] VOCs from September 2013 influent sample detected by EPA Method SW8260B.
[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 – NGWTP Average and Total Flow Rates – September 2013

Location	Average Flow Rate (gpm)[a]	Total Gallons Processed (gallons)
EW614x07	0.30	5,990
EW615x07	0.0	0
NGWTP	**0.30**	**5,920**

[a] Average flow rate calculated by dividing the total gallons processed collected from wellhead totalizers by the reporting period operating time. The total gallons processed are determined by readings collected at wellhead and system influent totalizers. The discrepancy between the sum of both wells and the NGWTP influent can be attributed to the piping between the wells and the NGWTP, which has to be filled before flow registers at the NGWTP.

gpm = gallons per minute

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

Table 3 – Summary of System Shutdowns

	Shutdown		Restart		
Location	Date	Time	Date	Time	Cause
NGWTP	13 September 2013	10:30	NA		The NGWTP was shut down to facilitate maintenance at the Duck Pond.

NGWTP = North Groundwater Treatment Plant

Summary of O&M Activities

Analytical data from the 11 September 2013 sampling event are presented in Table 4. Cis-1,2-DCE (0.35 J µg/L) and TCE (2.8 µg/L) were detected at the influent sample location. No contaminant concentrations were measured at the midpoint or effluent sample locations.

Figure 1 presents a chart of influent concentrations (total VOCs) at the NGWTP versus time for the past twelve (12) months. Analytical data (Table 4) continue to indicate effective treatment of the influent process stream with only two (2) operating GAC drums online. The NGWTP was shut down on 13 September 2013 to facilitate maintenance at the Duck Pond discharge location. It is expected that the system will remain offline until construction activities for system optimization are completed at Site LF007C in October and November.

The flow rate produced by extraction well EW615x07 has declined each month since the system was brought on line on 1 May 2013. In order to increase production from this well, the existing pump will be replaced with the pump currently installed in extraction well EW614x07 upon the completion of optimization activities at Site LF007C. The existing pump in extraction well EW615x07 is the older of the two and the flow rate is expected to increase as a result of this swap.

Optimization Activities

No optimization activities were performed during September 2013.

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. The NGWTP is taken off line when vernal pools are present at Site LF007C. The NGWTP used 372 kWh, which calculates to approximately 510 pounds of GHG generation, in September 2013. This is less than August 2013 when the NGWTP produced approximately 597 pounds of GHG. This decrease can be attributed to maintenance at the Duck Pond requiring the NGWTP to be shut down for much of September 2013. The overall GHG generation remains considerably lower than traditional GWTPs since the system is predominantly powered by solar arrays.

TABLE 4
Summary of Groundwater Analytical Data for September 2013 – North Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	11 September 2013 (µg/L)		
				Influent	After Carbon 1	Effluent
Halogenated Volatile Organics						
Bromodichloromethane	5.0	0.15	0	ND	ND	ND
Bromoform	5.0	0.19	0	ND	ND	ND
Carbon Tetrachloride	0.5	0.14	0	ND	ND	ND
Chloroform	5.0	0.16	0	ND	ND	ND
Dibromochloromethane	5.0	0.13	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	0.19	0	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.19	0	0.35 J	ND	ND
trans-1,2-Dichloroethene	5.0	0.33	0	ND	ND	ND
Methylene Chloride	5.0	0.66	0	ND	ND	ND
Tetrachloroethene	5.0	0.21	0	ND	ND	ND
1,1,1-Trichloroethane	5.0	0.14	0	ND	ND	ND
1,1,2-Trichloroethane	5.0	0.2	0	ND	ND	ND
Trichloroethene	5.0	0.19	0	2.8	ND	ND
Vinyl Chloride	0.5	0.18	0	ND	ND	ND
Non-Halogenated Volatile Organics						
Benzene	1.0	0.17	0	ND	ND	ND
Ethylbenzene	5.0	0.22	0	ND	ND	ND
Toluene	5.0	0.14	0	ND	ND	ND
Xylenes	5.0	0.23 – 0.5	0	ND	ND	ND
Other						
Total Petroleum Hydrocarbons – Gasoline	50	8.5	0	NM	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	50	0	NM	NM	ND
Total Dissolved Solids (mg/L)	NA	10	0	NM	NM	2620

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

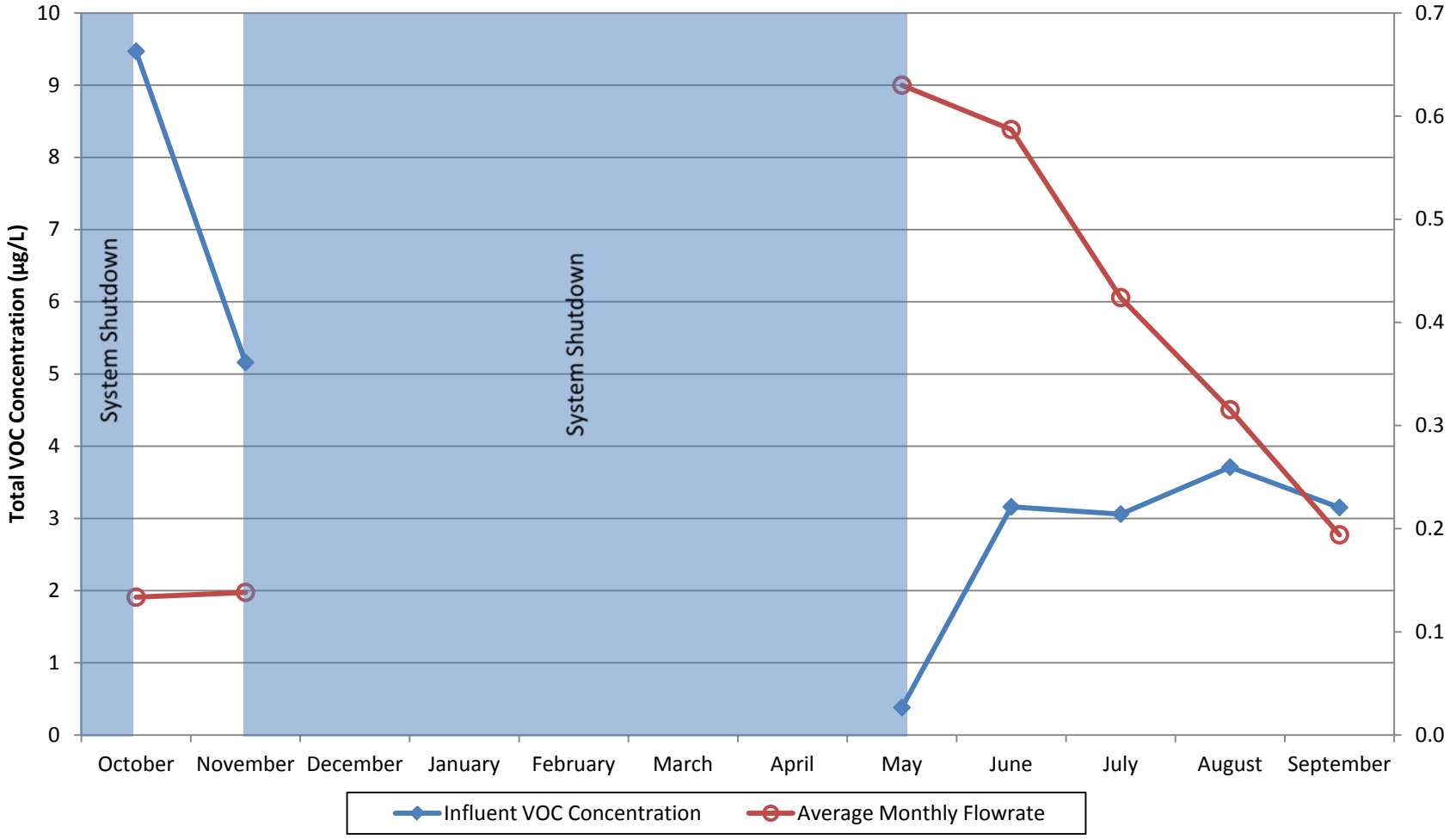
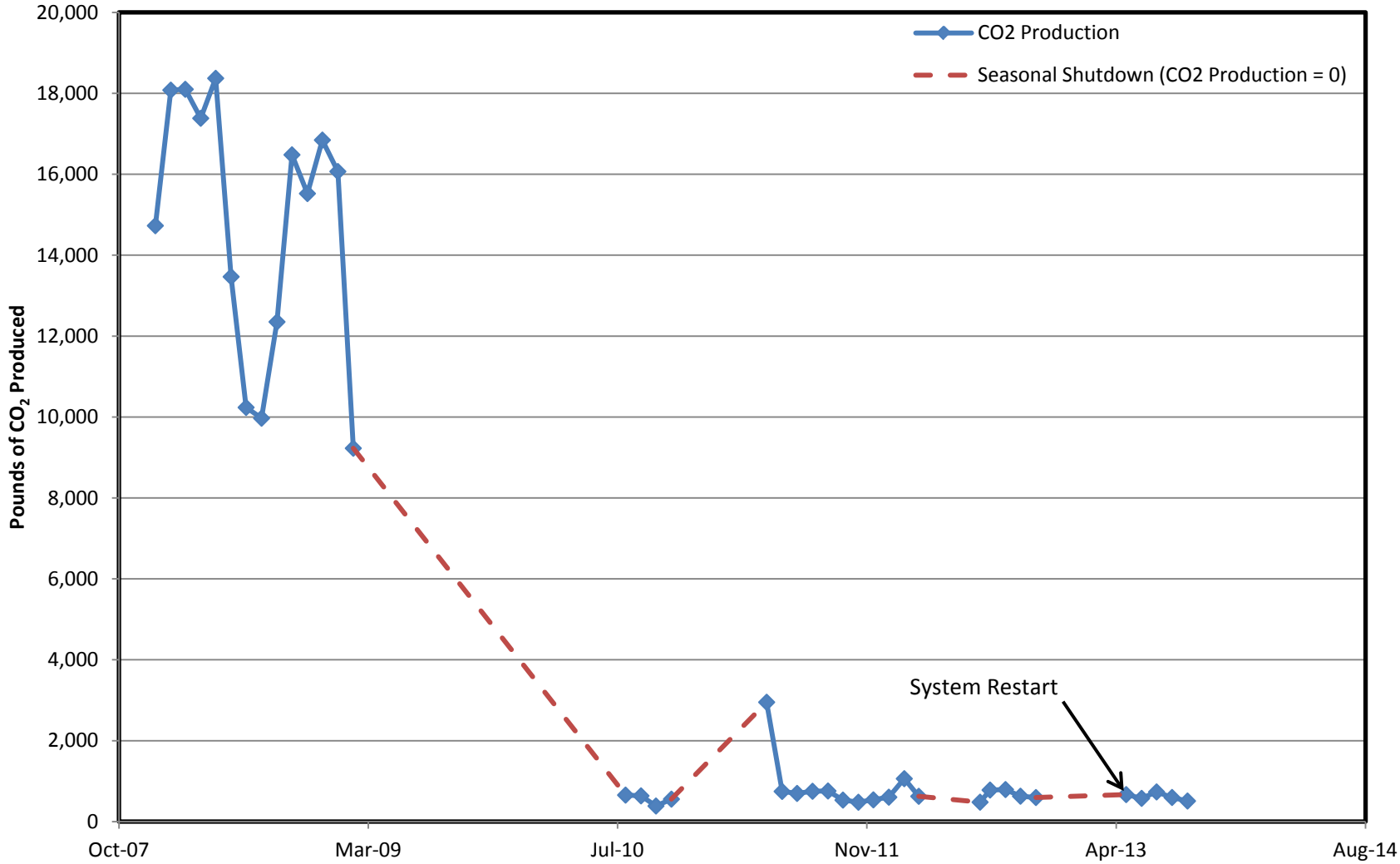


Figure 2

Equivalent Pounds of CO2 Produced by the North 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.

North Groundwater Treatment Plant Monthly Data Sheet

Report Number: 136 **Reporting Period: 27 September 2013 – 30 October 2013** **Date Submitted: 13 November 2013**

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

System Metrics

Table 1 presents operational data from the October 2013 reporting period:

Table 1 – Operations Summary – October 2013

Initial Data Collection:	09/27/2013 12:00	**Final Data Collection:**	10/30/2013 15:45

Operating Time:		Percent Uptime:		Electrical Power Usage:	
NGWTP:	780 hours	**NGWTP:**	57.3%	**NGWTP:**	594 kWh (932 lbs CO_2 generated[a])

Gallons Treated: **8,980 gallons**

Gallons Treated Since March 2000: **82.8 million gallons**

Volume Discharged to Duck Pond: **8,980 gallons**

Volume Discharge to Storm Drain: **0 gallons**

VOC Mass Removed: **2.1×10^{-4} pounds**[b]

VOC Mass Removed Since March 2000: **174.3 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] Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.
[b] VOCs from October 2013 influent sample detected by EPA Method SW8260B.
[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 – NGWTP Average and Total Flow Rates – October 2013

Location	Average Flow Rate (gpm)[a]	Total Gallons Processed (gallons)
EW614x07	0.2	8,980
EW615x07	0.0	0
NGWTP	**0.2**	**8,980**

[a] Average flow rate calculated by dividing the total gallons processed collected from wellhead totalizers by the reporting period operating time. The total gallons processed are determined by readings collected at wellhead and system influent totalizers. The discrepancy between the sum of both wells and the NGWTP influent can be attributed to the piping between the wells and the NGWTP, which has to be filled before flow registers at the NGWTP.

gpm = gallons per minute

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

Table 3 – Summary of System Shutdowns

	Shutdown		Restart		
Location	Date	Time	Date	Time	Cause
NGWTP	13 September 2013	10:30	11 October 2013	09:00	The NGWTP was shut down, at the request of the Air Force, to facilitate maintenance at the Duck Pond.

NGWTP = North Groundwater Treatment Plant

Summary of O&M Activities

Analytical data from the 14 October 2013 sampling event are presented in Table 4. TCE (2.8 µg/L) was detected at the influent sample location. No contaminant concentrations were measured at the midpoint or effluent sample locations.

Figure 1 presents a chart of influent concentrations (total VOCs) at the NGWTP versus time for the past twelve (12) months. Analytical data (Table 4) continue to indicate effective treatment of the influent process stream with only two (2) operating GAC drums online. The NGWTP was shut down on 13 September 2013 to facilitate maintenance at the Duck Pond discharge location. Operation of the NGWTP was resumed on 11 October 2013.

The flow rate produced by extraction well EW615x07 has declined each month since the system was brought on line on 1 May 2013. In order to increase production from this well, the existing pump will be replaced with the pump currently installed in extraction well EW614x07 upon the completion of optimization activities at Site LF007C. The existing pump in extraction well EW615x07 is the older of the two and the flow rate is expected to increase as a result of this swap.

Optimization Activities

No optimization activities were performed during October 2013.

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. The NGWTP is taken off line when vernal pools are present at Site LF007C. The NGWTP used 594 kWh, which calculates to approximately 814 pounds of GHG generation, in October 2013. This is greater than September 2013 when the NGWTP produced approximately 510 pounds of GHG. This increase can be attributed to greater gallons treated over an extended reporting period in October 2013. The overall GHG generation remains considerably lower than traditional GWTPs since the system is predominantly powered by solar arrays.

TABLE 4
Summary of Groundwater Analytical Data for October 2013 – North Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (μg/L)	Detection Limit (μg/L)	N/C	14 October 2013 (μg/L)		
				Influent	After Carbon 1	Effluent
Halogenated Volatile Organics						
Bromodichloromethane	5.0	0.15	0	ND	ND	ND
Bromoform	5.0	0.19	0	ND	ND	ND
Carbon Tetrachloride	0.5	0.14	0	ND	ND	ND
Chloroform	5.0	0.16	0	ND	ND	ND
Dibromochloromethane	5.0	0.13	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	0.19	0	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.19	0	ND	ND	ND
trans-1,2-Dichloroethene	5.0	0.33	0	ND	ND	ND
Methylene Chloride	5.0	0.66	0	ND	ND	ND
Tetrachloroethene	5.0	0.21	0	ND	ND	ND
1,1,1-Trichloroethane	5.0	0.14	0	ND	ND	ND
1,1,2-Trichloroethane	5.0	0.2	0	ND	ND	ND
Trichloroethene	5.0	0.19	0	2.8	ND	ND
Vinyl Chloride	0.5	0.18	0	ND	ND	ND
Non-Halogenated Volatile Organics						
Benzene	1.0	0.17	0	ND	ND	ND
Ethylbenzene	5.0	0.22	0	ND	ND	ND
Toluene	5.0	0.14	0	ND	ND	ND
Xylenes	5.0	0.23 – 0.5	0	ND	ND	ND
Other						
Total Petroleum Hydrocarbons – Gasoline	50	8.5	0	NM	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	50	0	NM	NM	ND
Total Dissolved Solids (mg/L)	NA	10	0	NM	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
NGWTP Total VOC Influent Concentrations and Average Flowrate
Twelve Month History
Travis Air Force Base, California

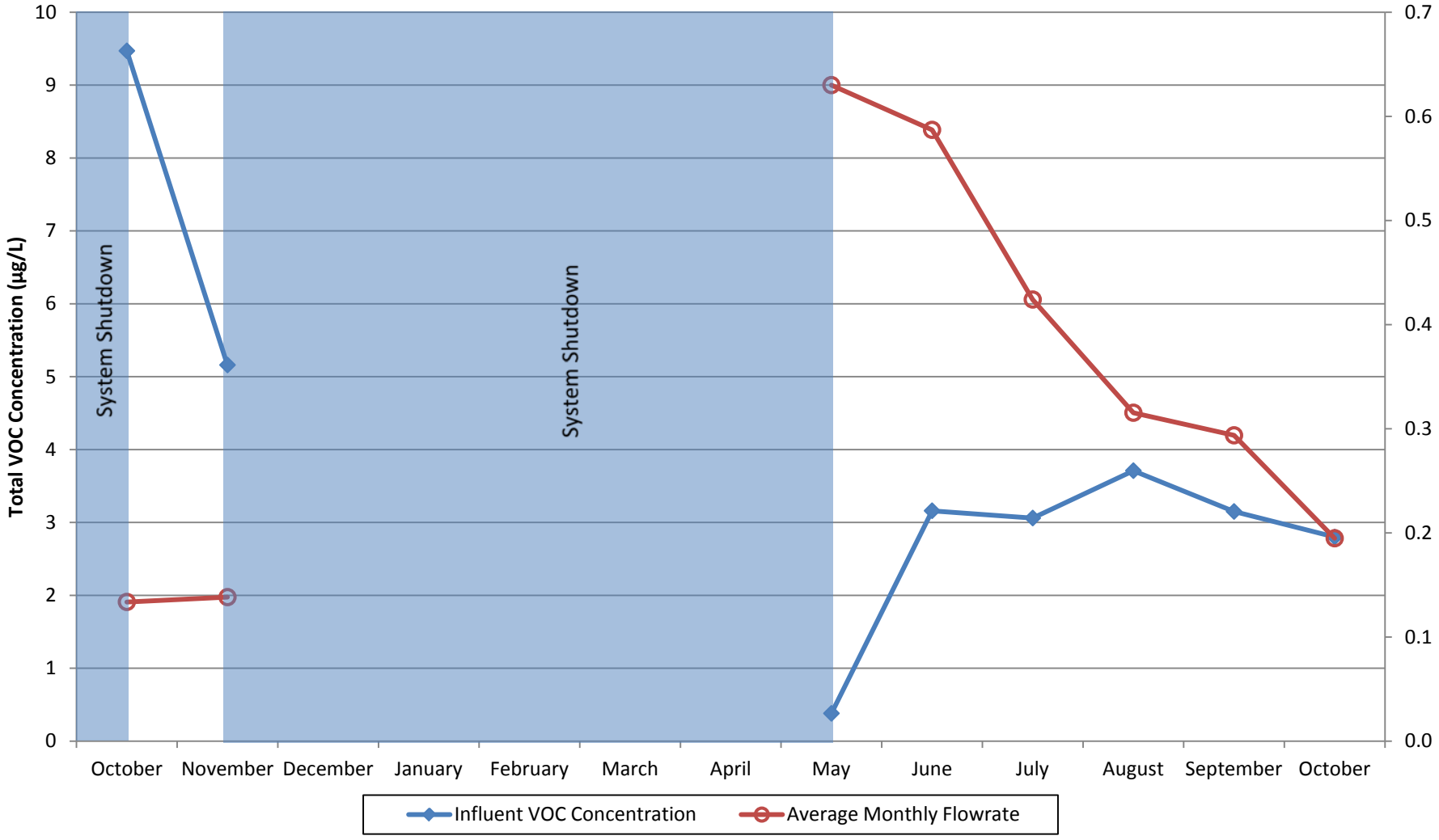
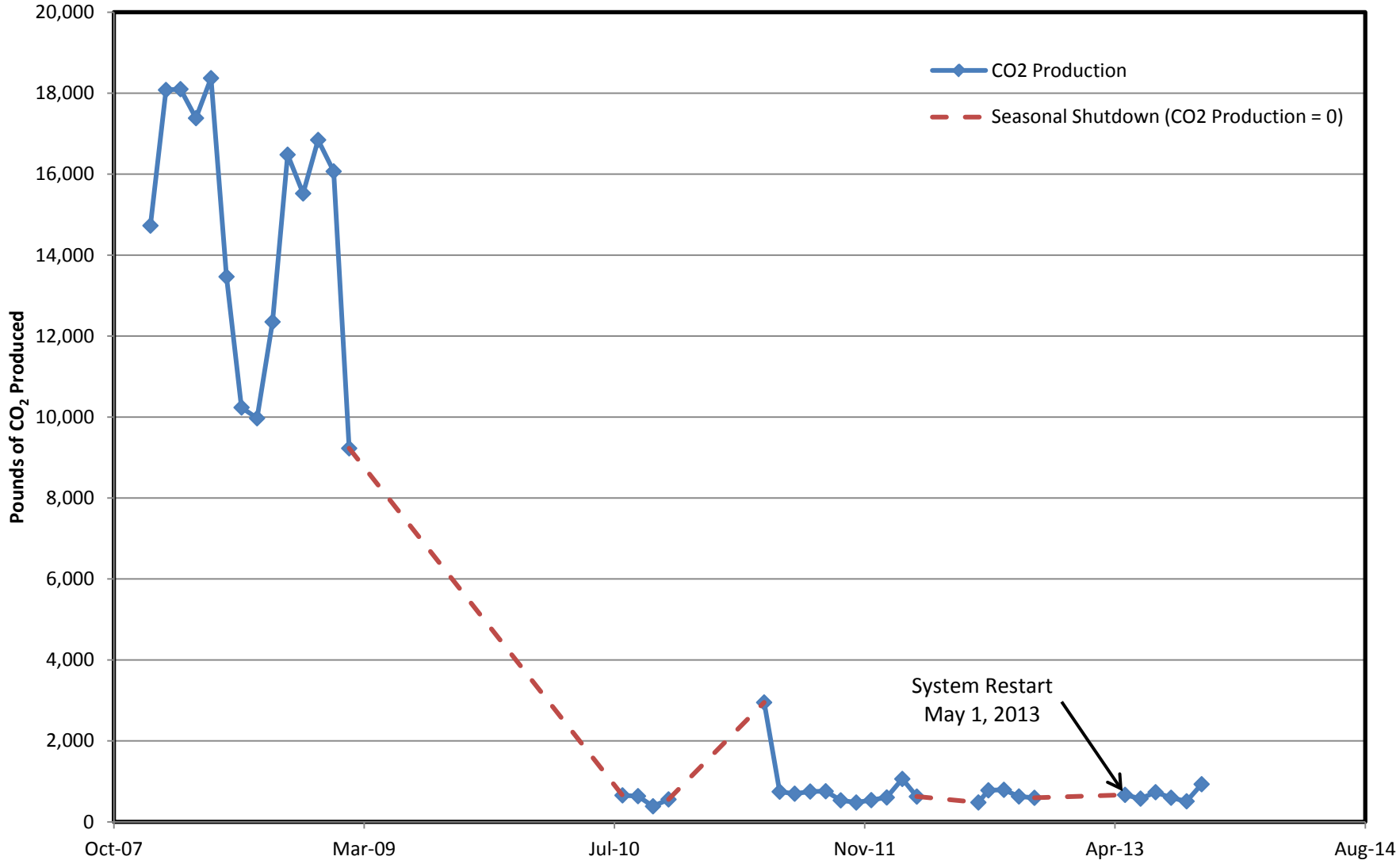


Figure 2

Equivalent Pounds of CO2 Produced by the North 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: 031 **Reporting Period: 30 August 2013 – 27 September 2013** **Date Submitted: 28 October 2013**

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

System Metrics

Table 1 presents operation data from the September 2013 reporting period.

Table 1 – Operations Summary – September 2013

Initial Data Collection:	08/30/2013 12:00	**Final Data Collection:**	09/27/2013 10:45
Operating Time:	Percent Uptime:	Electrical Power Usage:	
ST018GWTP: 461 hours	**ST018GWTP:** 68.7%	**ST018GWTP:** 75 kWh (103 lbs CO_2 generated[a])	
Gallons Treated: **67.6 thousand gallons**		Gallons Treated Since March 2011: **4.47 million gallons**	
Volume Discharged to Union Creek: **67.6 thousand gallons**			
BTEX, MTBE, TPH Mass Removed: **0.10 lbs**[b]		BTEX, MTBE, TPH Mass Removed Since March 2011: **25.0 lbs**	
Rolling 12-Month Cost per Total Pounds of Mass Removed: $22,023 [c]			
Monthly Cost per Pound of Mass Removed: $39,099 [d]			

[a] Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.
[b] Calculated using July 2013 influent and September 2013 effluent EPA Method SW8260B analytical results. Influent samples are collected on a quarterly basis.
[c] Costs include operations and maintenance, reporting, analytical laboratory, project management, and utility costs related to operation of the system.
[d] Cost per pound elevated this month due to system shut down, which resulted in reduced gallons treated and mass removed for September.
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

Location	Average Flow Rate Groundwater (gpm)[a]	Hours of Operation
EW2014x18	2.12	247
EW2016x18	1.66	247
EW2019x18	1.67	235
Site ST018 GWTP	2.44	461

[a] Flow rates calculated by dividing total gallons processed by the hours of operation, from the totalizer and hour meter at each location.
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		Restart		Cause
	Date	Time	Date	Time	
ST018GWTP	23 August 2013	11:50	12 September 2013	11:30	Shut down for confirmation sampling and GAC vessel replacement.

ST018GWTP = Site ST018 Groundwater Treatment Plant

Summary of O&M Activities

Groundwater samples were collected at the ST018GWTP on 11 September 2013. Quarterly influent sample results and monthly midpoint and effluent sample results from the September sampling event are presented in Table 4. No contaminants were detected at the midpoint and effluent sampling locations in September 2013.

The total influent concentration (benzene, toluene, ethylbenzene, total xylenes, MTBE, TPH-gas, TPH-diesel, and TPH-motor oil) in the quarterly (3Q13) influent sample was 181 µg/L, which is a decrease from the previous (2Q13) influent concentration of 340 µg/L. This decrease is largely due to TPH-motor oil not being detected in the influent sample this quarter. During 2Q13, the influent concentration of TPH-motor oil was 180 J µg/L. The influent concentration for MTBE during 3Q13 was 131 µg/L. This is a slight decrease from the 2Q13 influent concentration for MTBE of 155 µg/L. Figure 1 presents plots of flow rate and influent quarterly total VOC (TPHg, TPHd, MTBE, and BTEX) and MTBE concentrations at the ST018GWTP versus time.

During early September 2013, the ST018GWTP was offline for carbon replacement and confirmation sampling following detections of TPH – Diesel and TPH – Motor Oil in the effluent sample. During this time water extracted at Site ST018 was stored in temporary tanks at the ST018GWTP until sample results were received confirming that the new granular activated carbon was effectively treating the system influent stream. Prior to restarting the extraction wells, the system was operated to process and transfer groundwater that had been stored in the tanks during this time, which resulted in greater hours of operation for the treatment system than was measured at the individual extraction wells for September 2013.

As shown on Figure 1, the average quarterly flow rate through the ST018GWTP continues to increase since optimization activities, which included battery upgrades at each of the three ST018 extraction wells, were completed in April 2013. The new batteries installed at ST018 have allowed the extraction wells operate with less down time, even during periods of low to no sun (overnight), increasing the overall efficiency of the ST018GWTP.

Optimization Activities

No optimization activities were performed in September 2013.

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.

The ST018GWTP produced approximately 103 pounds of GHG during September 2013. This is a decrease from August 2013 (133 pounds) resulting from decreased operating time and fewer gallons treated during the reporting period. Figure 2 presents the historical GHG production from the ST018GWTP. The overall GHG generation remains considerably lower than traditional GWTPs since the system is predominantly powered by solar arrays.

TABLE 4
Summary of Groundwater Analytical Data for September 2013 – Site ST018 Groundwater Treatment Plant

Constituent	Instantaneous Maximum[a] (µg/L)	Detection Limit (µg/L)	N/C	11 September 2013 (µg/L)			
				Influent[b]	After Carbon 1	After Carbon 2	System Effluent
Fuel Related Constituents							
MTBE	5	0.5	0	131	NM	ND	ND
Benzene	5	0.17	0	1.1	NM	ND	ND
Ethylbenzene	5	0.22	0	0.55	NM	ND	ND
Toluene	5	0.14	0	ND	NM	ND	ND
Total Xylenes	5	0.23 – 0.5	0	0.43 J	NM	ND	ND
Total Petroleum Hydrocarbons – Gasoline	50	8.5	0	48 J	ND	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	50	0	ND	840	NM	ND
Total Petroleum Hydrocarbons – Motor Oil	--	160	--	ND	250	NM	ND

[a] In accordance with the National Pollutant Discharge Elimination System (NPDES) Effluent Limitations

[b] Values taken from July 2013 (3Q13) sample data. Influent sampling is conducted on a quarterly basis.

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
ND = not detected above method detection limit
NM = not measured this month

Figure 1
S18GWTP Total VOC and MTBE Influent Concentrations (Benzene, Toluene, Ethylbenzene, Xylenes, MTBE, TPH) Travis Air Force Base, California

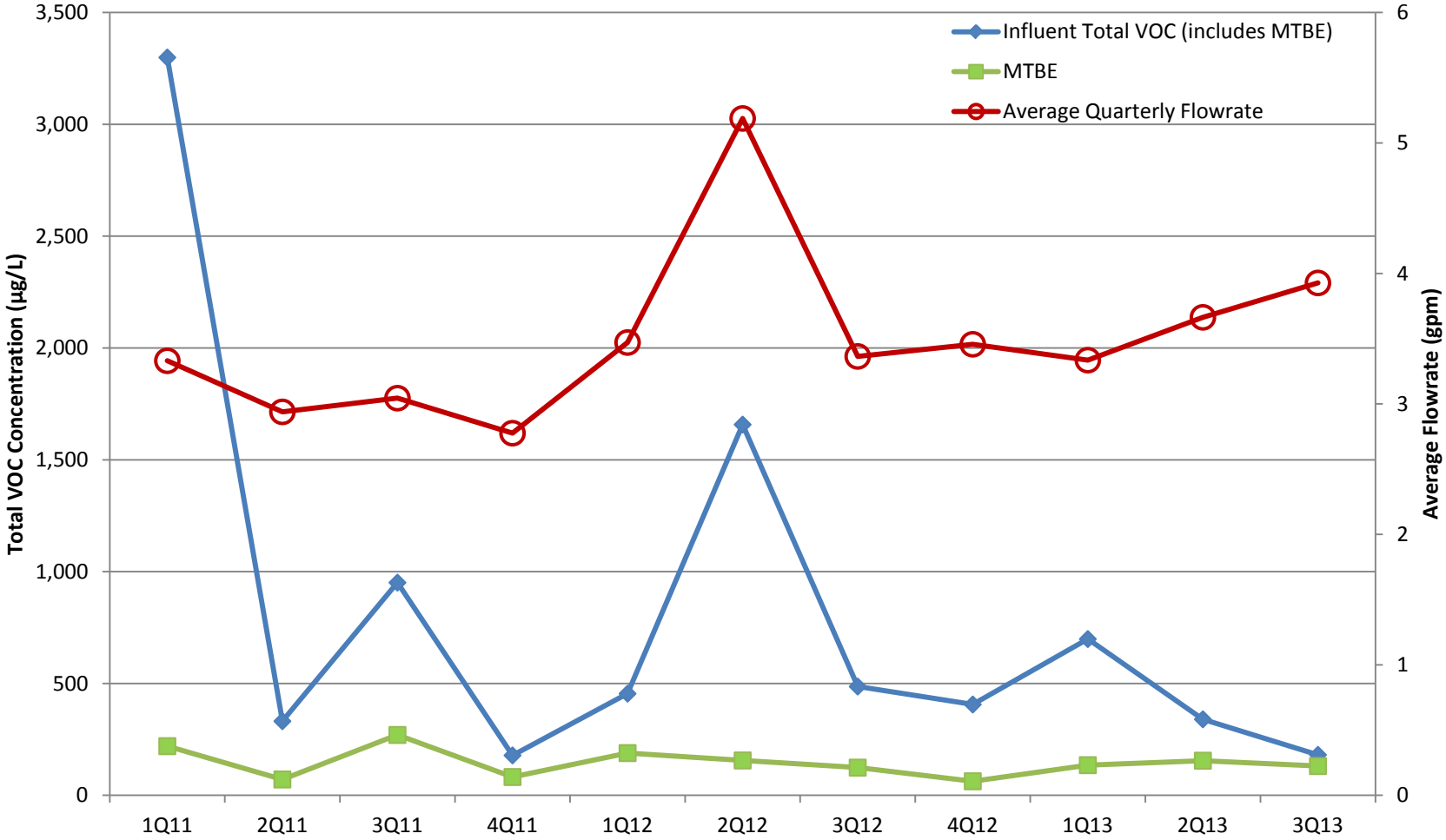
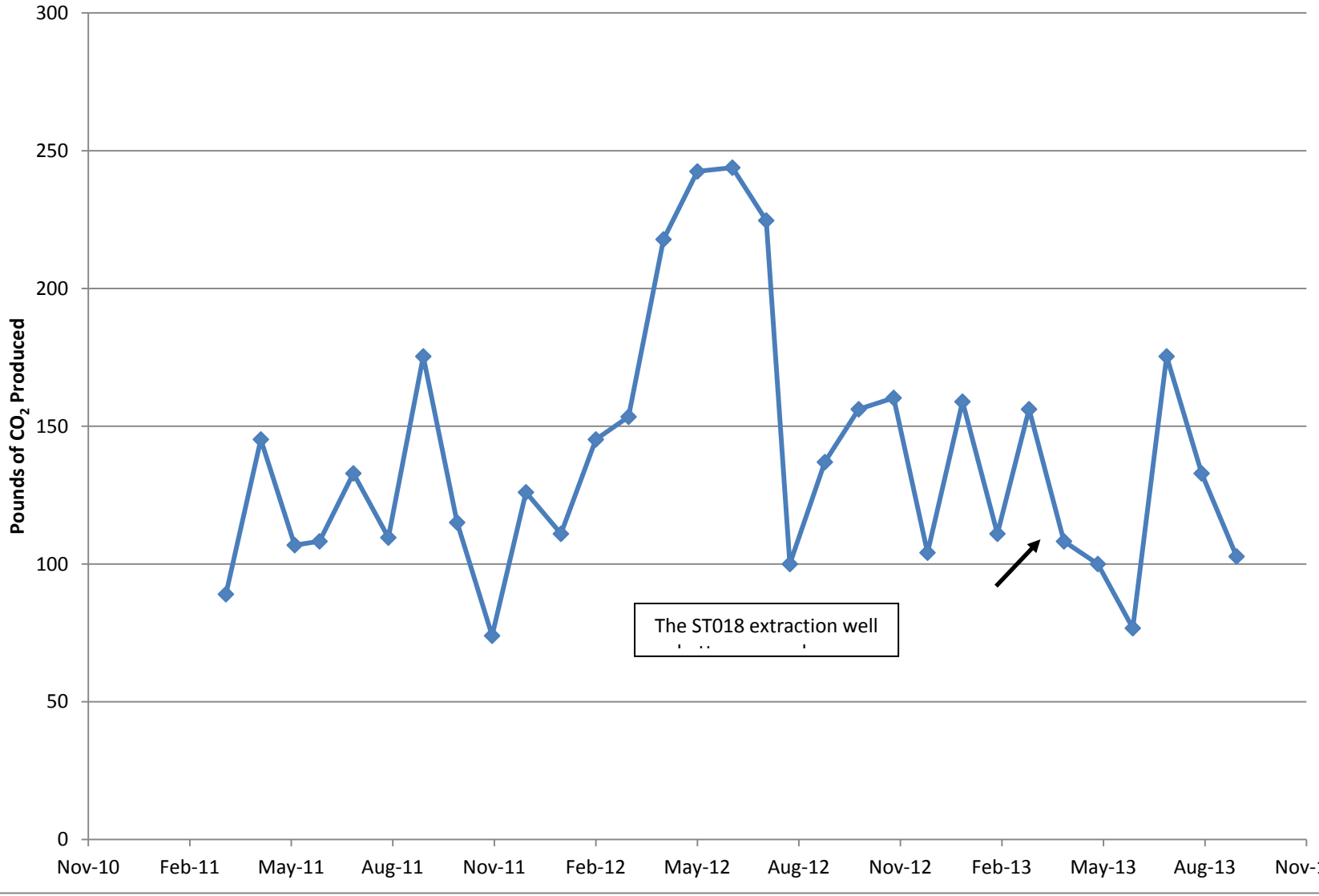


Figure 2

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



Site ST018 Groundwater Treatment Plant Monthly Data Sheet

Report Number: 032 **Reporting Period: 27 September 2013 – 29 October 2013** **Date Submitted: 8 November 2013**

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

System Metrics

Table 1 presents operation data from the October 2013 reporting period.

Table 1 – Operations Summary – October 2013

Initial Data Collection:	09/27/2013 10:45	**Final Data Collection:**	10/29/2013 12:45
Operating Time:	Percent Uptime:	Electrical Power Usage:	
ST018GWTP: 770 hours	**ST018GWTP:** 100%	**ST018GWTP:** 123 kWh (169 lbs CO_2 generated[a])	
Gallons Treated: **194.8 thousand gallons**		Gallons Treated Since March 2011: **4.67 million gallons**	
Volume Discharged to Union Creek: **194.8 thousand gallons**			
BTEX, MTBE, TPH Mass Removed: **0.33 lbs**[b]		BTEX, MTBE, TPH Mass Removed Since March 2011: **25.3 lbs**	
Rolling 12-Month Cost per Total Pounds of Mass Removed: $22,107[c]			
Monthly Cost per Pound of Mass Removed: $15,868			

[a] Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.
[b] Calculated using October 2013 EPA Method SW8260B analytical results. Influent samples are collected on a quarterly basis.
[c] Costs include operations and maintenance, reporting, analytical laboratory, project management, and utility costs related to operation of the system.
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

Location	Average Flow Rate Groundwater (gpm)[a]	Hours of Operation
EW2014x18	1.68	770
EW2016x18	1.43	770
EW2019x18	1.43	770
Site ST018 GWTP	4.21	770

[a] Flow rates calculated by dividing total gallons processed by the hours of operation, from the totalizer and hour meter at each location.
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		Restart		Cause
	Date	Time	Date	Time	
	None				

ST018GWTP = Site ST018 Groundwater Treatment Plant

Summary of O&M Activities

Groundwater samples were collected at the ST018GWTP on 10 October 2013. Sample results from the October sampling event are presented in Table 4. No contaminants were detected at the midpoint and effluent sampling locations in October 2013.

The total influent concentration (benzene, toluene, ethylbenzene, total xylenes, MTBE, TPH-gas, TPH-diesel, and TPH-motor oil) in the quarterly (4Q13) influent sample was 204 µg/L, which is an increase from the previous (3Q13) influent concentration of 181 µg/L. The influent concentration for MTBE during 4Q13 was 138 µg/L. This is a slight increase from the 3Q13 influent concentration for MTBE of 131 µg/L. Figure 1 presents plots of flow rate and influent quarterly total VOC (TPHg, TPHd, MTBE, and BTEX) and MTBE concentrations at the ST018GWTP versus time.

As shown on Figure 1, the average quarterly flow rate through the ST018GWTP has been maintained in excess of historical flow rates since optimization activities, which included battery upgrades at each of the three ST018 extraction wells, were completed in April 2013. The flow rate decreased in October 2013 from the previous 3Q13 average flow rate. The 4Q13 average flow rate is expected to be consistent with the flow rate measured during 3Q13 for system operations over the remainder of 4Q13. The new batteries installed at ST018 have allowed the extraction wells operate with less down time, even during periods of low to no sun (overnight), increasing the overall efficiency of the ST018GWTP.

Optimization Activities

No optimization activities were performed in October 2013.

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.

The ST018GWTP produced approximately 169 pounds of GHG during October 2013. This is an increase from September 2013 (103 pounds) resulting from increased operating time and gallons treated during the reporting period. Figure 2 presents the historical GHG production from the ST018GWTP. The overall GHG generation remains considerably lower than traditional GWTPs since the system is predominantly powered by solar arrays.

TABLE 4
Summary of Groundwater Analytical Data for October 2013 – Site ST018 Groundwater Treatment Plant

Constituent	Instantaneous Maximum[a] (µg/L)	Detection Limit (µg/L)	N/C	10 October 2013 (µg/L)			
				Influent[b]	After Carbon 1	After Carbon 2	System Effluent
Fuel Related Constituents							
MTBE	5	0.5	0	138	NM	ND	ND
Benzene	5	0.17	0	0.72	NM	ND	ND
Ethylbenzene	5	0.22	0	0.36 J	NM	ND	ND
Toluene	5	0.14	0	ND	NM	ND	ND
Total Xylenes	5	0.23 – 0.5	0	ND	NM	ND	ND
Total Petroleum Hydrocarbons – Gasoline	50	8.5	0	11 J	ND	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	50	0	54 J	ND	NM	ND
Total Petroleum Hydrocarbons – Motor Oil	--	160	--	ND	ND	NM	ND

[a] In accordance with the National Pollutant Discharge Elimination System (NPDES) Effluent Limitations

[b] Values taken from October 2013 (4Q13) sample data. Influent sampling is conducted on a quarterly basis.

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
ND = not detected above method detection limit
NM = not measured this month

Figure 1
S18GWTP Total VOC and MTBE Influent Concentrations (Benzene, Toluene, Ethylbenzene, Xylenes, MTBE, TPH)
Travis Air Force Base, California

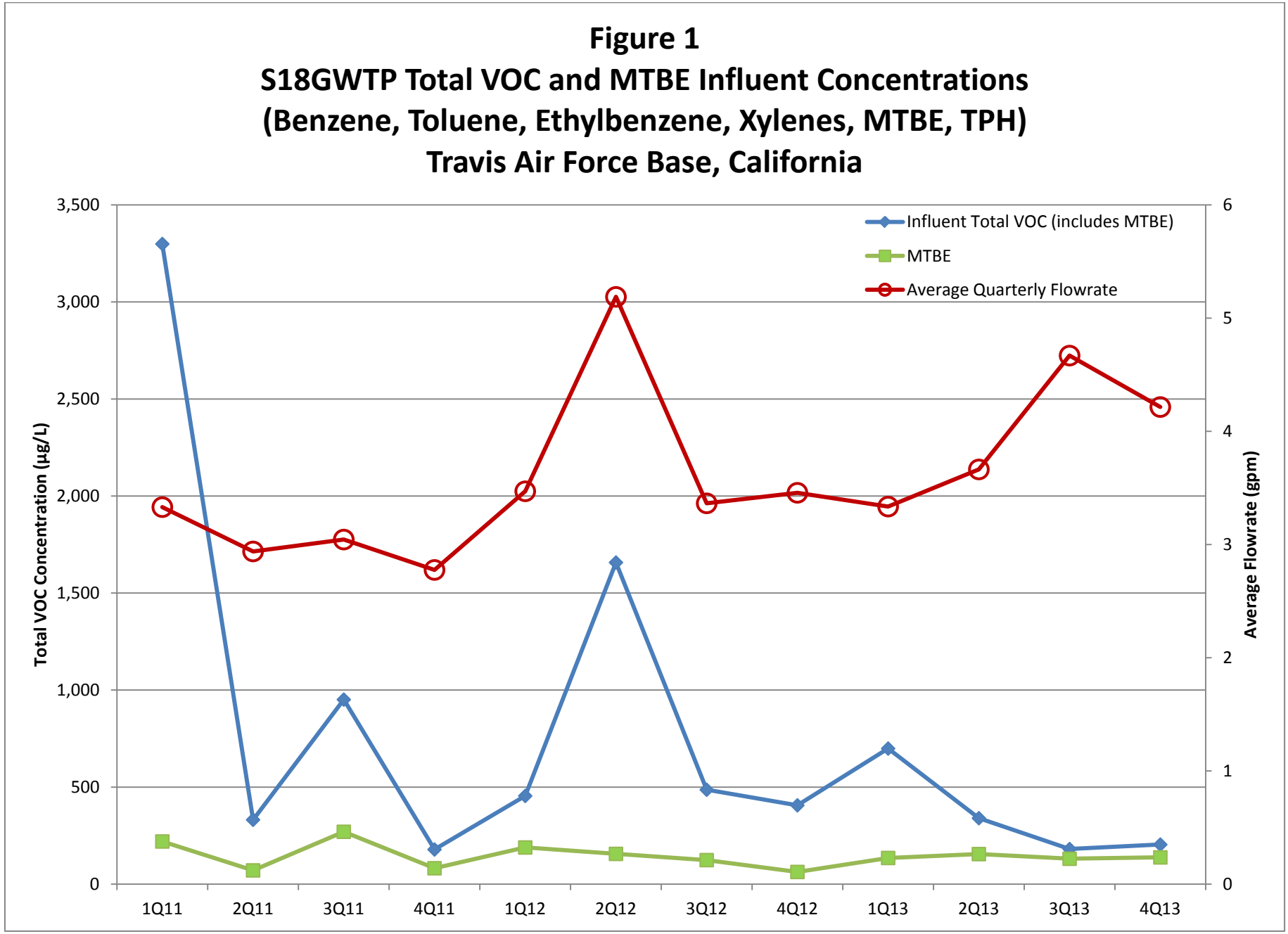
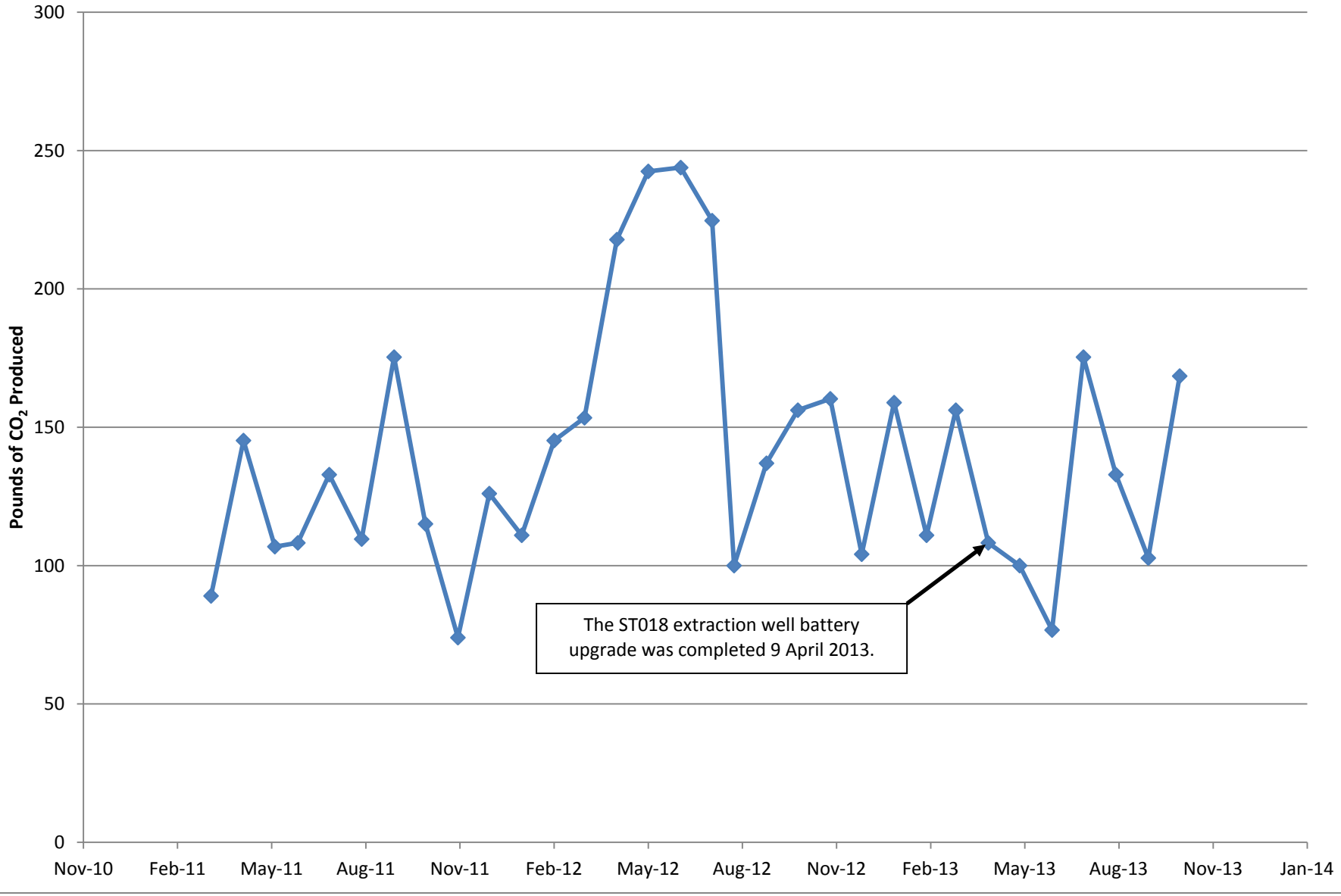


Figure 2

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



Travis AFB
Restoration Program

Program Overview

RPM Meeting

November 20, 2013

Completed Documents

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

Completed Documents (cont'd)

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

Completed Documents (cont'd)

- 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***

Completed Field Work

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

Completed Field Work (cont'd)

- DP039 Bioreactor Quarterly Performance Sampling
- SD037 EVO Quarterly Performance Sampling
- SS015 EVO Baseline Sampling
- SD036 EVO Baseline Sampling
- SS016 Bioreactor Startup
- SD036 Injection Wells Installation
- SS015 Injection Wells Installation
- ST018 GETS Installation
- SD036 EVO Injection
- 2010 Semiannual GSAP
- SS015 EVO Injection
- Quarterly RPO Performance Monitoring (Feb 2011)
- ST018 GETS Startup
- Quarterly RPO Performance Monitoring (May 2011)
- 2011 Annual GSAP Sampling
- SS029 GET Shutdown Test (System Optimization analysis)
- Quarterly RPO Performance Monitoring (Aug 2011)
- Quarterly RPO Performance Monitoring (Nov 2011)
- 2011 Semiannual GSAP Sampling
- LF007C Site Characterization (Wetlands)
- FT005 Soil Remedial Action
- Performance Monitoring SS015 (4^{th} 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

Completed Field Work (cont'd)

- 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)***

In-Progress Documents & Field Work

Documents

- Groundwater Record of Decision (ROD)
- Old Skeet Range Removal Action Work Plan
- Kinder Morgan LF044 Land Use Control Report

Field Work

- ***Subsite LF007C optimization upgrades***

Upcoming
Documents & Field Work

Documents

- No new documents upcoming at this time

Field Work

- No new field work upcoming at this time

Note: Travis will try to notify regulatory agencies via email approximately one week in advance of planned field work