

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

15 August 2012, 0930 Hours

Mr. Lonnie Duke, Travis Air Force Base (AFB), conducted the Remedial Program Manager's (RPM) meeting on 15 August 2012 at 0930 hours, at Travis AFB, California. Attendees included:

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|------------------------|--|
| • Glenn Anderson | Travis AFB |
| • Lonnie Duke | Travis AFB |
| • Merrie Schilter-Lowe | Travis AFB |
| • Gregory Parrott | Travis AFB |
| • Dezso Linbrunner | USACE-Omaha |
| • Alan Friedman | 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) |
| • Mary Snow | Techlaw, Inc |
| • Rachel Hess | ITSI Gilbane |
| • Mike Wray | CH2M HILL |
| • Loren Krook | CH2M HILL |
| • Tricia Carter | CH2M HILL |
| • Leslie Royer | CH2M HILL |

Handouts distributed at the meeting and presentations included:

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|----------------|---|
| • Attachment 1 | Meeting Agenda |
| • Attachment 2 | Master Meeting and Document Schedule |
| • Attachment 3 | SBBGWTP Monthly Data Sheet (July 2012) |
| • Attachment 4 | CGWTP Monthly Data Sheet (July 2012) |
| • Attachment 5 | NGWTP Monthly Data Sheet (July 2012) |
| • Attachment 6 | ST018GWTP Monthly Data Sheet (July 2012) |
| • Attachment 7 | Presentation: Vapor Intrusion Assessment Update |
| • Attachment 8 | Presentation: Site LF007D Revised Time to Cleanup |

- Attachment 9 Presentation: Nature of Site LF008 Pesticide Contamination
- Attachment 10 Presentation: Program Update: Activities Completed, In Progress and Upcoming
- Attachment 11 Presentation: Well Decommissioning 2012

1. ADMINISTRATIVE

A. Previous Meeting Minutes

The 19 July 2012 RPM meeting minutes were approved and finalized as written.

B. Action Item Review.

Action items from July were reviewed.

Action item one still open: Travis AFB to research beneficial reuse of treated water. Mr. Smith will contact the Project Manager at AFCEE to discuss, and give an update at next RPM meeting. Mr. Smith talked with AFCEE regarding beneficial reuse, AFCEE is looking into it. 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.

Action item two still open: EPA and DTSC to email Travis AFB the person’s name and title who will be signing the ROD. Update: Ms. Hollan Burke has this information from the EPA and will email it to Travis AFB and copy Mr. Wray.

Action item three still open: Give a Groundwater ROD presentation to EPA. Date was changed to TBD.

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 19 September 2012 at 0930 hours.

Travis AFB Master Document Schedule

— Proposed Plan (PP): The Response to Comments Meeting date changed to 15 August 2012 and the Public Meeting date changed to 18 October 2012. The rest of the dates were changed accordingly. Mr. Anderson commented that the October RAB meeting should be the cutoff date for the Public Meeting due to

the proximity of the holidays and the desire to have a receptive audience of a decent size at the meeting. Mr. Friedman said that the RWQCB has no further comments on the Proposed Plan.

- Groundwater Record of Decision (ROD): Predraft to AF/Service Center was changed to 17 August 2012. The rest of the dates remain unchanged.
- Potrero Hills Annex: (FS, PP, and ROD): No change to schedule.
- Technical Memorandum for Assessment of Aerobic Chlorinated Cometabolism Enzymes: The Response to Comments Meeting date changed to 15 August 2012. The rest of the dates were changed accordingly. Ms. Royer will email the response to comments table to Mr. Anderson to be distributed to the Agencies.
- Work Plan for Remedial Process Optimization of Sites SS016 and SS029: Moved to history.
- Site LF007C Data Gaps Investigation Technical Memorandum: The Final was submitted on 26 July 2012 and the rest of the dates were changed to reflect the actual dates. Moved to history.
- FT005 Remedial Action Completion Report: No change to the schedule.
- Vapor Intrusion Update Technical Memorandum: New document added to the schedule all new dates. A presentation on Vapor Intrusion will be given today.
- Quarterly Newsletter (August 2012): No change to schedule. The newsletter has been written to advertise the availability of the Groundwater Proposed Plan (PP), so the newsletter will be finalized and published as soon as the Proposed Plan public meeting schedule becomes firm.
- 2011 Groundwater Treatment RPO Annual Report: No change to the schedule.
- Old Skeet Range Engineering Evaluation/Cost Analysis: No change to the schedule.

2. CURRENT PROJECTS

Treatment Plant Operation and Maintenance Update

Mr. Duke reported on the treatment plant status.

South Base Boundary Groundwater Treatment Plant (see Attachment 3)

The South Base Boundary Groundwater Treatment Plant (SBBGWTP) performed at 100% uptime, and 5.2 million gallons of groundwater were extracted and treated during the month of July 2012. All of the treated water was discharged to Union Creek. The average flow rate for the SBBGWTP was 110.4 gallons per minute (gpm). Electrical power usage was 13,320 kWh which calculated to approximately 18,248

pounds of CO₂ being created (based on DOE calculation). Approximately 1.6 pounds of volatile organic compounds (VOCs) were removed in July. The total mass of VOCs removed since startup of the system is 426 pounds.

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

Central Groundwater Treatment Plant (see Attachment 4)

The Central Groundwater Treatment Plant (CGWTP) performed at 100% uptime with approximately 1.9 million gallons of groundwater extracted and treated during the month of July 2012. All treated water was diverted to the storm drain. The average flow rate for the CGWTP was 40.1 gpm. Electrical power usage was 2,796 kWh for all equipment connected to the Central plant, which calculated to approximately 3,831 pounds of CO₂ being generated. Approximately 5.0 pounds of VOCs were removed from groundwater in July. The total mass of VOCs removed since the startup of the system is 11,286 pounds.

The West Treatment and Transfer Plant was operated for approximately 5 hours on 11 July 2012 as part of the ongoing rebound study. Samples were collected at four (4) dual phase extraction wells (EW510x37, EW700x37, EW704x37, and EW707x37). Based on the results of the sampling event, significant rebound does not appear to be occurring in any of the extraction wells sampled. The upcoming annual treatment system report for 2012 will provide additional discussion about this rebound study.

Optimization Activities for CGWTP: No optimization activities to report for the month of July.

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 July.

North Groundwater Treatment Plant (see Attachment 5)

The North Groundwater Treatment Plant (NGWTP) was brought on-line on 9 July 2012 since the seasonal vernal pools have dissipated. The North Groundwater Treatment Plant (NGWTP) performed at 70% uptime with approximately 18,990 gallons of groundwater extracted and treated during the month of July 2012. The average flow rate at the NGWTP, while operating, was 1.8 gpm and electrical power use was 351 kWh for all the equipment connected to the North plant. Approximately 481 pounds of CO₂ were calculated to have been generated. Approximately 5.4×10^{-4} pounds of VOCs were removed from the groundwater in July. The total mass of VOCs removed since the startup of the system is 174.3 pounds.

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

The Site ST018 (MTBE) Treatment Plant (ST018 GWTP) performed at 100% uptime with approximately 238 thousand gallons of groundwater extracted and treated during the month of July 2012. All treated water was diverted to the storm drain. The average flow rate for the ST018 GWTP was 5.0 gpm. Electrical power usage for the month was 164 kWh for all equipment connected to the ST018 GWTP plant, which calculates to the creation of approximately 225 pounds of CO₂. Approximately 0.96 pounds of BTEX, MTBE and TPH were removed from groundwater in July. The total BTEX, MTBE and TPH mass removed since the startup of the system is 18.3 pounds.

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

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

3. Presentations

Vapor Intrusion Assessment Update (see Attachment 7)

Ms. Royer reported on the Vapor Intrusion Assessment Update. See attachment 7 for details. Highlights included:

Vapor Intrusion Assessment Background:

- The vapor intrusion (VI) assessment was performed at Travis AFB between 2008 and 2010. An evaluation was conducted at current and future VI risk at all Environmental Restoration Program (ERP) groundwater sites. Potential risk from VOCs in soil vapor that originate from underlying groundwater plumes was calculated.
- Site specific risk based concentrations (RBCs) were developed for groundwater, shallow soil gas, subslab soil gas, and indoor air. The data collected were screened against relevant RBCs to determine whether VI posed a significant current future risk at each site. The VI sites are listed in attachment 7, and a map with VI sites is included.
- The assessment update was conducted because toxicity values for several chemicals, including TCE and PCE, have changed since the 2008-2010 assessment. Results from the updated assessment are used to develop residential and industrial groundwater-to-indoor air land use control (LUC) boundaries; which will be incorporated into the Travis AFB Groundwater Record of Decision (ROD).

Vapor Intrusion Risk-based Concentrations Update Methodology and Results:

- The updated risk-based concentrations (RBCs) were calculated using the same methodology from the 2008-2010 assessment.
- The updated RBCs were calculated using the updated toxicity values, site-specific data, and the Department of Toxic Substances Control (DTSC) (2005) version of the EPA's (2004) Screening-level Johnson and Ettinger (J&E) (1991) model for

groundwater. The RBCs were updated to the current industrial and residential air screening levels from the EPA's Regional Screening Level (RSL) table (2010).

- The results of the VI assessment determined no immediate action is required based on the VI pathway. Attachment 7 lists the sites of potential future concern under residential standards, those under industrial standards, and sites that do not pose a potential future concern for residential or industrial.

Mr. Anderson clarified that the Vapor Intrusion Update Technical Memorandum will be the source of this information, to avoid adding extra material to the ROD.

Site LF007D Revised Time to Cleanup (see Attachment 8)

Ms. Royer reported on the Site LF007D Revised Time to Cleanup calculations. See attachment 8 for details. Highlights included:

The goal of the revision to the LF007D time-to-cleanup was to verify cleanup assumptions and validate the time-to-cleanup estimate that exceeded 100 years.

Revised Cleanup Time Assumptions:

- 1,4-DCB at Site LF007D will continue to attenuate under anaerobic conditions until concentrations have declined below the MCL.
- Conditions surrounding MW261x07 will become aerobic consistent with conditions across the rest of the site after the 1,4-DCB concentrations have declined. Benzene present at the site will degrade under aerobic conditions at a rate similar to that calculated at aerobic site ST032.

LF007D Cleanup Time Calculations:

- Using historical data, attenuation rate constants were determined for 1,4-DCB and benzene, which are taken as the slopes of the lines associated with the measured reduction in contaminant concentrations over time, as seen in the figures provided in Attachment 8.
- The resulting time to cleanup for LF007D was determined to be 23 years or 19 years (1,4-DCB) + 4 years (benzene).

Mr. Friedman asked for clarification on why the time to cleanup for 1,4-DCB and benzene were added together, rather than just using the 1,4-DCB cleanup time. Ms. Royer responded that because 1,4-DCB degrades under anaerobic conditions and benzene under aerobic conditions, the benzene degradation process will not begin until the 1,4-DCB has degraded, and the site changes to an aerobic state.

Nature of Site LF008 Pesticide Contamination (see Attachment 9)

Ms. Royer reported on the Nature of Site LF008 Pesticide Contamination. See Attachment 9 for details. Highlights included:

Site LF008 GET System Background:

- The GET system operated for 7.5 years before being shutdown in 4Q08 for a rebound study. Previously, during pumping, there was no noticeable impact on pesticide distribution (i.e., the plume was not shrinking). During the 3.5 years of rebound study, no rebound activity has been observed and the pesticide plume decreased in size.

Ms. Royer included a figure showing the decrease in plume size over the course of the rebound study (see Attachment 9). It is hypothesized that the pesticides present at site LF008 are not dissolved in groundwater, but rather sorbed to fine clay particles captured in the groundwater samples.

Testing at LF008 and Results:

- Filtered and non-filtered groundwater samples were analyzed in 2Q12 from site LF008.
- Alpha-chlordane was the only LF008 COC detected in any of the samples.
- Comparison of the filtered and non-filtered sample concentrations showed an order of magnitude difference with the non-filtered samples having higher concentrations than the filtered samples. Based on these results, pesticide contaminants appear bound to the fine grained sediments at site LF008, and not dissolved into groundwater.
- As a result, GET cannot be an effective remedy and appears to be counterproductive. A revised remedial approach will involve imposing land use controls to prevent the consumption of unfiltered groundwater.

Mr. Anderson added that land use controls are a reasonable option at site LF008 because it is a high security area. The Travis AFB Munitions Storage Area encompasses the LF008 site. And further, this high security area is completely fenced in and highly unlikely to ever be changed during the life of the base.

Ms. Hollan Burke asked what reference will be available with this information in support of the ROD. Travis AFB will provide a suitable source to publish this information prior to finalization of the ROD.

Program Update: Activities Completed, In Progress and Upcoming (see Attachment 10)

Mr. Wray reported on the status of field work and documents which are completed, in progress, and upcoming. Highlights included:

Newly Completed Documents: Work Plan for RPO of Sites SS016 and SS029 and the Site LF007C Data Gaps Investigation Technical Memorandum.

In-Progress Documents and Field Work: FT005 Remedial Action Completion Report.

Field Work In Progress: SS029/SS016 System Optimization Analysis

Upcoming Documents: Vapor Intrusion Update Technical Memorandum.

Upcoming Fieldwork: LF007C GET System Optimization and Monitoring Well Decommissioning.

Well Decommissioning 2012 (see Attachment 11)

Mr. Duke reported on upcoming well decommissioning activity for 2012. Highlights included:

- There are 14 wells which will be decommissioned because they are no longer required for monitoring at the base as identified in the Travis AFB 2010-2011 Annual GSAP Report. These wells include: PZ559x33, PZ560x33, MW5304x35, PZ556x33, PZ557x33, PZ558x33, PZ549Ax36, PZ549Bx36, PZ549Cx36, PZ551Ax36, PZ551Bx36, PZ551Cx36, PZ23x36, and PZ24x36. Many of these wells are subject to controls on the flight line and have become increasingly difficult to access.
- Wells PZ559x33, PZ560x33, and MW5304x35 are located in the grassy area near Hangar 818.
- Wells PZ556x33, PZ557x33, and PZ558x33 are located near the 900 ramp in the grassy area across the road from the small Fire Station.

Wells PZ549Bx36, PZ549Cx36, PZ551Ax36, PZ551Bx36, PZ551Cx36, PZ23x36, and PZ24x36 are located well away from the flight line.

4. New Action Item Review

None.

5. PROGRAM/ISSUES/UPDATE

No new issues/updates.

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.	TBD	Open

		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.		
2.	EPA & DTSC	Email Travis AFB the person's name and title who will be signing the ROD.	TBD	Open
3.	Travis AFB	Give a Groundwater ROD presentation to EPA.	TBD	Open

TRAVIS AIR FORCE BASE
ENVIRONMENTAL RESTORATION PROGRAM
REMEDIAL PROGRAM MANAGER'S MEETING
BLDG 570, Main Conference Room
15 August 2012, 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 (LONNIE)

3. PRESENTATIONS

- A. VAPOR INTRUSION ASSESSMENT UPDATE
- B. LF007D TIME-TO-CLEANUP CALCULATIONS
- C. LF008 GROUNDWATER FILTRATION ANALYSES
- D. PROGRAM UPDATE: ACTIVITIES COMPLETED, IN PROGRESS AND UPCOMING
- E. WELL DECOMMISSIONING 2012

4. NEW ACTION ITEM REVIEW

5. PROGRAM/ISSUES/UPDATE

NOTE: WE HAVE SET ASIDE THE 1:00 PM TO 4:30 PM TIMEFRAME AFTER THE RPM MEETING TO DISCUSS ANY REMAINING REGULATORY ISSUES ON THE LATEST VERSION OF THE GROUNDWATER PROPOSED PLAN AS WELL AS THE COMETABOLISM ENZYME ASSESSMENT TECHNICAL MEMORANDUM.

Travis AFB Master Meeting and Document Schedule

(2012)

Annual Meeting and Teleconference Schedule

Monthly RPM Meeting (Begins at 9:30 a.m.)	RPM Teleconference (Begins at 9:30 a.m.)	Restoration Advisory Board Meeting (Begins at 7:00 p.m.) (Poster Session at 6:30 p.m.)
01-18-12	—	—
02-22-12	—	—
03-21-12	—	—
04-19-12 (2:00 PM)	—	04-19-12
05-16-12	—	—
06-13-12	—	—
07-18-12	—	—
08-15-12	—	—
09-19-12	—	—
10-18-12 (1:00 PM)	—	10-18-12
11-14-12	—	—
—	—	—

Travis AFB Master Meeting and Document Schedule

PRIMARY DOCUMENTS			
Life Cycle	Basewide Groundwater		
	Proposed Plan Travis, Glenn Anderson CH2M HILL, Tricia Carter	Record of Decision Travis, Glenn Anderson CH2M HILL, Leah Waller	Old Skeet Range Engineering Evaluation/Cost Analysis Travis AFB, Glenn Anderson Baywest, Steve Thornton
Scoping Meeting	NA	01-24-07 (11-30-11)	NA
Predraft to AF/Service Center	10-06-11	08-17-12	07-18-11
AF/Service Center Comments Due	11-05-11	10-04-12	08-03-11
Draft to Agencies	05-09-12	10-12-12	09-29-11
Draft to RAB	05-09-12	10-12-12	09-29-11
Agency Comments Due	06-15-12	12-12-12	10-31-11
Response to Comments Meeting	8-15-12	01-09-13	TBD (Teleconference)
Public Comment Period	10-01-12 to 10-30-12	NA	NA
Public Meeting	10-18-12	NA	NA
Response to Comments Due	08-24-12	01-16-13	TBD
Draft Final Due	08-24-12	01-16-13	TBD
Final Due	09-25-12	02-18-13	TBD

Travis AFB Master Meeting and Document Schedule

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

Travis AFB Master Meeting and Document Schedule

SECONDARY DOCUMENTS		
Life Cycle	Technical Memorandum for Assessment of Aerobic Chlorinated Cometabolism Enzymes at Travis AFB Travis AFB, Glenn Anderson CH2M HILL, Leslie Royer	Work Plan for Remedial Process Optimization of Sites SS016 and SS029 at Travis AFB Travis AFB, Lonnie Duke Tri-Hydro, Glenn Leong
Scoping Meeting	NA	NA
Predraft to AF/Service Center	05-18-12	01-06-12
AF/Service Center Comments Due	06-01-12	01-20-12
Draft to Agencies	06-15-12	02-22-12
Draft to RAB	06-15-12	02-22-12
Agency Comments Due	07-16-12	04-02-12
Response to Comments Meeting	08-15-12	07-18-12
Response to Comments Due	08-07-12	07-20-12
Draft Final Due	NA	NA
Final Due	08-17-12	07-20-12
Public Comment Period	NA	NA
Public Meeting	NA	NA

Travis AFB Master Meeting and Document Schedule

SECONDARY DOCUMENTS			
Life Cycle	Site LF007C Data Gaps Investigation Technical Memorandum Travis AFB, Lonnie Duke CH2M HILL, Tony Chakurian	FT005 Remedial Action Completion Report Travis AFB, Lonnie Duke ITSI, Rachel Hess	Vapor Intrusion Update Technical Memorandum Travis AFB, Glenn Anderson CH2M HILL, Leslie Royer
Scoping Meeting	NA	NA	NA
Predraft to AF/Service Center	05-03-12	06-04-12	08-14-12
AF/Service Center Comments Due	05-17-12	06-22-12	08-28-12
Draft to Agencies	05-31-12	07-20-12	09-11-12
Draft to RAB	05-31-12	07-20-12	09-11-12
Agency Comments Due	07-02-12	08-24-12	10-11-12
Response to Comments Meeting	07-18-12	09-19-12	10-18-12
Response to Comments Due	08-01-12 (07-26-12)	09-28-12	11-01-12
Draft Final Due	NA	NA	NA
Final Due	08-01-12 (07-26-12)	09-28-12	11-01-12
Public Comment Period	NA	NA	NA
Public Meeting	NA	NA	NA

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL DOCUMENTS		
Life Cycle	Quarterly Newsletters (July 2012) Travis, Glenn Anderson	2011 Groundwater Treatment RPO Annual Report Travis AFB, Lonnie Duke CH2M HILL, Doug Berwick
Scoping Meeting	NA	NA
Predraft to AF/Service Center	NA	02-22-12
AF/Service Center Comments Due	NA	03-05-12
Draft to Agencies	07-03-12	04-19-12
Draft to RAB	NA	04-19-12
Agency Comments Due	07-17-12	05-21-12
Response to Comments Meeting	TBD	06-13-12
Response to Comments Due	07-24-12	06-27-12
Draft Final Due	NA	NA
Final Due	TBD	TBD
Public Comment Period	NA	NA
Public Meeting	NA	NA

South Base Boundary Groundwater Treatment Plant

Monthly Data Sheet

Report Number: 143

Reporting Period: 30 June 2012 – 31 July 2012

Date Submitted: 8 August 2012

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 July 2012 reporting period.

Table 1 – Operations Summary – July 2012		
Operating Time:	Percent Uptime:	Electrical Power Usage:
SBBGWTP: 795 hours	SBBGWTP: 100 %	SBBGWTP: 13,320 kWh (18,248 lbs CO ₂ generated ^a)
Gallons Treated: 5.2 million gallons	Gallons Treated Since July 1998: 798 million gallons	
Volume Discharged to Union Creek: 5.2 million gallons		
VOC Mass Removed: 1.6 lbs^b	VOC Mass Removed Since July 1998: 426 lbs	
Rolling 12-Month Cost per Pound of Mass Removed: \$5,964 ^c		
Monthly Cost per Pound of Mass Removed: \$3,386		
lbs = pounds		
^a Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.		
^b Calculated using July 2012 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							
FT005 ^b				SS029		SS030	
EW01x05	6.3	EW736x05	Offline	EW01x29	4.1	EW01x30	6.1
EW02x05	1.7	EW737x05	Offline	EW02x29	5.4	EW02x30	2.3
EW03x05	Offline	EW742x05	Offline	EW03x29	2.4	EW03x30	1.7
EW731x05	Offline	EW743x05	Offline	EW04x29	9.4	EW04x30	Offline
EW732x05	Offline	EW744x05	Offline	EW05x29	8.7	EW05x30	12.1
EW733x05	Offline	EW745x05	Offline	EW06x29	18.2	EW06x30	Dry
EW734x05	Offline	EW746x05	Offline	EW07x29	2.9	EW711x30	16.7
EW735x05	12.4						
FT005 Total: 20.4				SS029 Total: 51.1		SS030 Total: 38.9	
SBBGWTP Average Monthly Flow ^c : 110.4 gpm							
^a Extraction well flow rates are based on end-of-month readings.							
^b Most extraction wells at FT005 were taken offline in accordance with the 2008 Annual Remedial Process Optimization Report for the Central Groundwater Treatment Plant, North Groundwater Treatment Plant, and South Base Boundary Groundwater Treatment Plant.							
^c The average groundwater flow rate was calculated using the Union Creek Discharge Totalizer and dividing it by the operating time of the plant. Flow rates listed for each well are instantaneous flow rates and may differ from the average monthly flow due to well recharge.							
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		NA
SBBGWTP = South Base Boundary Groundwater Treatment Plant					

Summary of O&M Activities

Monthly groundwater samples at the SBBGWTP were collected on 9 July 2012. Sample results are presented in Table 4. The total VOC concentration (37.1 µg/L) in the influent sample has decreased since the June 2012 sample (60.9 µg/L) was collected. Figure 1 presents a plot of influent concentrations at the SBBGWTP over the past twelve (12) months.

Concentrations of TCE, cis-1,2-DCE, and 1,2-Dichloroethane were detected at all the sample locations in July 2012. At the influent sample location, TCE, cis-1,2-DCE, and 1,2-Dichloroethane were measured at concentrations of 34.3, 2.4, and 3.9 J µg/L. At the GAC midpoint sample location, TCE, cis-1,2-DCE, and 1,2-Dichloroethane were measured at concentrations of 4.4, 3.4, and 0.45 J µg/L. At the system effluent sample location TCE, cis 1,2-DCE, and 1,2-Dichloroethane were measured at concentrations of 0.36 J, 0.42 J, and 0.27 J µg/L, which are all below their respective discharge limitations. Based on the continued detection of breakthrough at the midpoint sampling location, and the recent detection of contaminant concentrations at the effluent sampling location, a carbon change out of both carbon vessels is being scheduled to take place in August 2012.

On 19 July 2012 during routine maintenance at extraction well EW734x05, some white foam was seen bubbling out of the well casing in the extraction well vault. The foam began to emerge from the well casing after the groundwater pump within the extraction well had been taken off line for maintenance. Groundwater samples were collected from this well and analyzed for VOCs, total phosphate, total organic carbon, and surfactants. EW734x05 was kept off line while waiting for analytical results to be returned.

Trace amounts of VOCs (1.1 µg/L of 1,2-DCA, 0.3 J µg/L of 2-butanone, and 0.2 J µg/L of chloromethane) were detected in the samples collected from the well along with a low (when compared to EVO injection sites) concentration of TOC (1.17 mg/L), a low concentration of phosphorus (0.18 mg/L), and 1.5 mg/L of surfactants. The surfactants are the most likely cause of the foaming seen at this well, though it has never been observed in the past, and no detergent or agricultural processes are known to be occurring in the vicinity of this extraction well.

The extraction well EW734x05 will be brought back on line in August 2012 and left to run for approximately four (4) hours before collecting an influent process sample at the SBBGWTP. This influent sample will be analyzed for surfactants. Surfactants can foul carbon and reduce efficiency of the treatment system. EW734x05 will remain on line following sample collection. The results of the influent treatment plant sample will be reported in the August monthly data sheet.

Optimization Activities

No optimization activities were performed in July 2012.

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 18,248 pounds of GHG during July 2012. GHG production has increased (from 16,111 pounds) since June 2012 as a result of increased SBBGWTP operating time. The overall energy consumption levels remain consistent with the general decrease in energy demand since the air stripper was bypassed, and the GAC system was brought online.

TABLE 4

Summary of Groundwater Analytical Data for July 2012 – South Base Boundary Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	9 July 2012 (µg/L)		
				Influent	Midpoint	Effluent
Halogenated Volatile Organics						
Bromodichloromethane	5.0	0.15	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
1,1-Dichloroethane	5.0	0.50	0	ND	ND	ND
1,2-Dichloroethane	0.5	0.15	0	0.39 J	0.45 J	0.27 J
1,1-Dichloroethene	5.0	0.19	0	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.19	0	2.4	3.4	0.42 J
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	34.3	4.4	0.36 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	50	NM	NM

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

Notes:

J = analyte concentration is considered an estimated value

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 - Twelve Month History
Travis Air Force Base, California

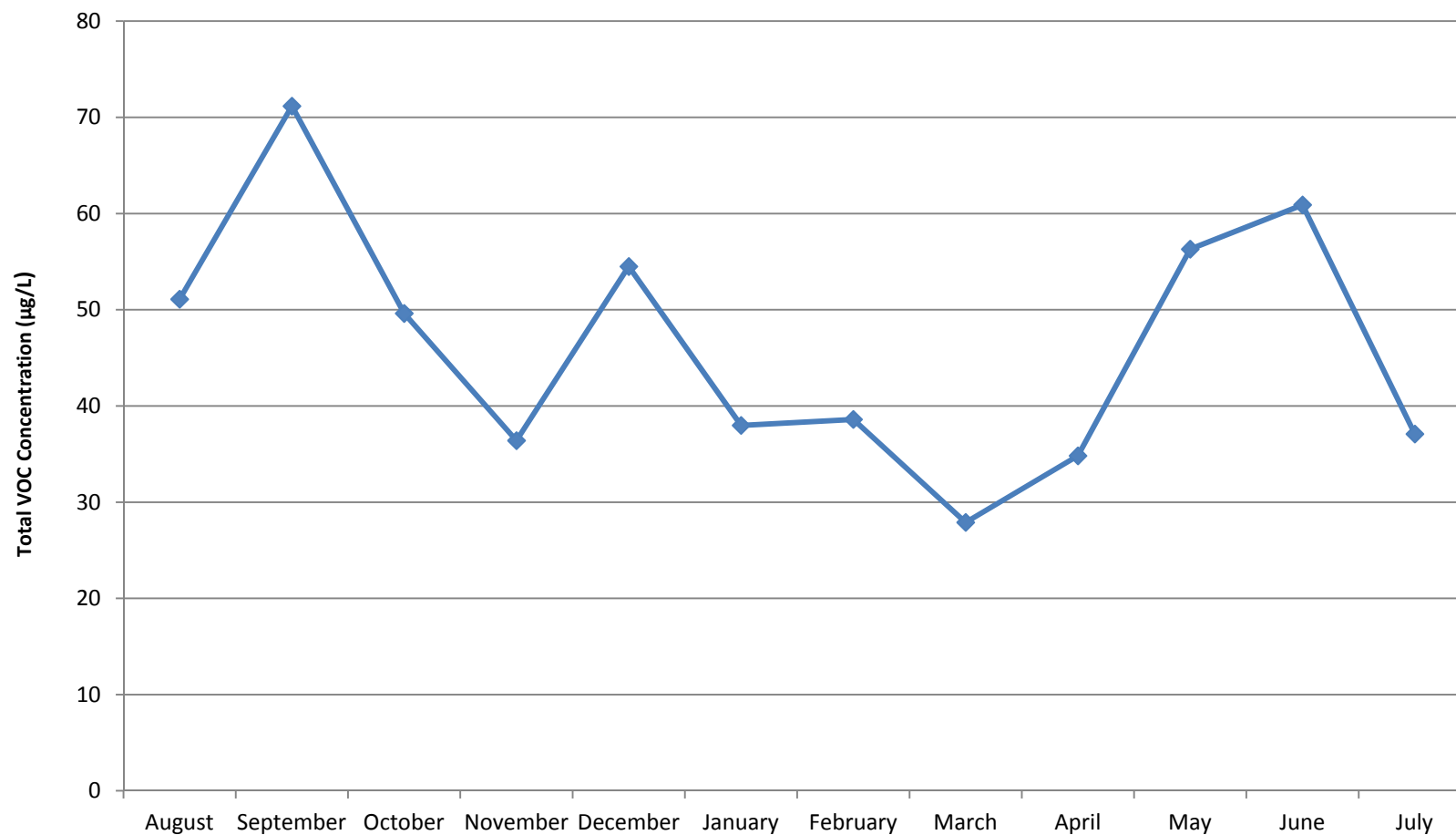
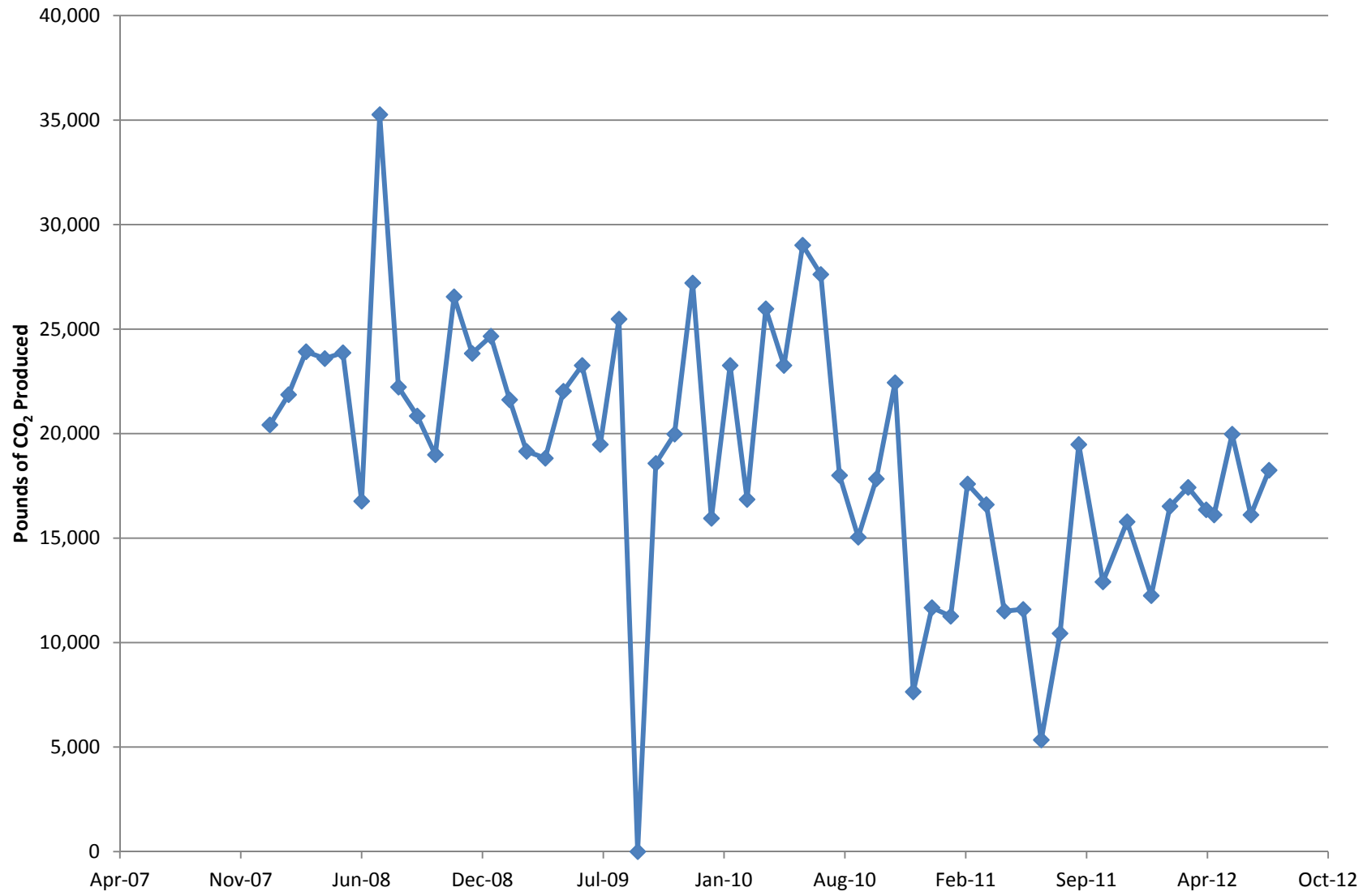


Figure 2

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



Central Groundwater Treatment Plant Monthly Data Sheet

Report Number: 156

Reporting Period: 30 June 2012 – 31 July 2012

Date Submitted: 8 August 2012

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. In addition, the West Treatment and Transfer Plant (WTTP), which contributes effluent to the CGWTP when operated, was brought online briefly in July 2012 for rebound vapor sample collection.

System Metrics

Table 1 presents operational data from the July 2012 reporting period.

Table 1 – Operations Summary – July 2012					
Operating Time:		Percent Uptime:		Electrical Power Usage:	
CGWTP:	790 hours	CGWTP:	100%	CGWTP:	2,796 kWh (3,831 lbs CO ₂ generated ^a)
WTTP:	Water: 5 hours Vapor: 5 hours	WTTP:	Water: 0.7% Vapor: 0.7%	WTTP:	0 kWh ^b
Gallons Treated: 1.9 million gallons		Gallons Treated Since January 1996: 466 million gallons			
VOC Mass Removed:		VOC Mass Removed Since January 1996:			
5.0 lbs^c (groundwater only)		2,605 lbs from groundwater			
0 lbs (vapor only)		8,686 lbs from vapor			
Rolling 12-Month Cost per Pound of Mass Removed: \$1,282 ^d					
Monthly Cost per Pound of Mass Removed: \$1,621					
^a Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.					
^b Energy and mass removal resulting from operation of the WTTP not measured due to the brevity of operation for annual sampling.					
^c Calculated using July 2012 EPA Method SW8260B analytical results.					
^d Costs include operations and maintenance, reporting, analytical laboratory, project management, and utility costs related to operation of the CGWTP.					

Table 2 presents individual extraction well flow rates during the monthly reporting period. All WIOU extraction wells continue to remain off line for the WIOU rebound study.

Table 2 – CGWTP Average Flow Rates ^a		
Location	Average Flow Rate	
	Groundwater (gpm)	Soil Vapor (scfm) ^b
EW01x16	21.5	Offline
EW02x16	7.2	Offline
EW03x16	0.2 ^c	Offline
EW605x16	7.0 ^d	Offline
EW610x16	4.1	Offline
CGWTP	40.1	--
WTTP	-- ^b	Offline

^a Flow rates calculated by dividing total gallons processed by system operating time for the month.
^b No significant volume of vapor or groundwater was treated in July 2012.
^c Water discharged to Site SS016 bioreactor – flow rate taken from wellhead Flow Totalizer divided by operating time during the month.
^d Extraction well flow rate based on end-of-month reading. Wellhead Flow Totalizer inoperable during the first half of the reporting period.
gpm = gallons per minute
-- = not applicable/not available
scfm = standard cubic feet per minute

Table 3 presents average 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	--	None	--	
WTTP					
	System down for rebound study	--	7/11/2012	13:00	System turned on for vapor sampling.
	7/11/2012	17:30	None	NA	System shutdown to continue rebound study.
CGWTP = Central Groundwater Treatment Plant WTTP = West Transfer Treatment Plant					

Summary of O&M Activities

Monthly groundwater samples at the CGWTP were collected on 9 July 2012. Sample results are presented in Table 4. The total VOC concentration (314 µg/L) in the influent sample has decreased slightly since the June 2012 sample (357 µg/L) was collected. Concentrations of 1,3-Dichlorobenzene (0.44 µg/L), 1,4-Dichlorobenzene (0.25 µg/L), cis-1,2-DCE (73 µg/L), trans-1,2-Dichloroethene (3.1 µg/L), Tetrachloroethene (0.79 µg/L), and TCE (236 µg/L) were detected at the influent sampling location. None of these contaminants were detected in the system effluent.

Vinyl chloride was detected at the influent sampling location, but was not detected at the system effluent sampling location. The vinyl chloride concentration increased slightly through the primary GAC vessel from 0.32 µg/L to 0.45 µg/L and was measured at 0.27 µg/L at the sampling location following the secondary GAC vessel. Vinyl chloride was not detected at the effluent sample location. Travis Air Force Base will continue to monitor vinyl chloride and other contaminant concentrations at CGWTP for breakthrough in the primary vessel, as this is the sixth consecutive month that the primary vessel has not significantly reduced the influent vinyl chloride concentration.

In addition to vinyl chloride, cis-1,2-DCE was detected in the sample collected after the primary carbon vessel. While cis-1,2-DCE was not detected in the sample collected at the system effluent, breakthrough may be beginning to occur at the primary carbon vessel. Since January 2012, cis-1,2-DCE has been detected in the sample collected after the primary carbon vessel in each month except February. Additionally, concentrations of cis-1,2-DCE in samples collected from this sample location may be increasing. Travis AFB is currently scheduling a carbon change out of the primary 20,000 pound carbon vessel. The change out is expected to be completed in September 2012.

Figure 1 presents a plot of influent concentrations (total VOCs) at the CGWTP versus time for the past twelve (12) months.

Annual vapor samples at the WTPP were collected on 11 July 2012 as part of the ongoing rebound study. The WTPP 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 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 July 2012 constitute the fourth sampling event since the rebound study began (baseline).

Not all of the DPE wells sampled in July 2009 and July 2010 were sampled in August 2011 and July 2012. Since July 2010, several Sites (Sites SD036, SD037, etc.) have undergone remedial process optimizations involving reductive dechlorination by means of emulsified vegetable oil injections in the source area of these sites. Since operating DPE wells in the vicinity of these injections might interfere with their effectiveness, four (4) DPE wells (EW593x36, EW594x36, EW595x36, and EW599x37) have not been sampled since these optimizations took place.

Of the four (4) vapor samples collected, none contained total VOCs in excess of 1,000 ppbv. EW700x37, EW704x37, and EW707x37 showed consistent VOC concentrations when compared to previous samples collected in 2010 and 2011. EW510x37 showed an increase in total VOCs to 977 ppbv from 446 ppbv in August 2011, but this concentration is still an order of magnitude below the historical high value of 4,386 ppbv in July 2010. Significant rebound does not appear to be occurring in any of the extraction wells sampled in July 2012. Additional discussion regarding the nature of this rebound study will also be provided in the upcoming annual treatment system report for 2012.

The Site DP039 bioreactor has transitioned to a “pulsed mode” operation in order to improve the rate of remediation and to preserve the small amounts of total organic carbon being produced within the bioreactor. The bioreactor was off line for four (4) weeks from 25 June 2012 through 20 July 2012. It will operate for two (2) weeks until 3 August 2012 when EW782x39 (the Site DP039 bioreactor recirculation well) will be taken off line. It will remain off line for four (4) weeks until 31 August 2012.

Optimization Activities

No optimization activities occurred at CGWTP in July 2012.

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 3,831 pounds of GHG during July 2012. This is an increase from the amount produced in June 2012 (approximately 2,291 pounds) and can be attributed to increased operation time.

TABLE 4

Summary of Groundwater Analytical Data for July 2012 – Central Groundwater Treatment Plant

				9 July 2012 (µg/L)			
Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	Influent	After Carbon 1 Effluent	After Carbon 2 Effluent	System Effluent
Halogenated Volatile Organics							
1,2-Dibromoethane	5.0	0.11	0	ND	ND	ND	ND
2-Hexanone	5.0	0.48	0	ND	ND	ND	ND
4-Methyl-2-Pentanone	5.0	1.0	0	ND	ND	ND	ND
Bromoform	5.0	0.19	0	ND	ND	ND	ND
MTBE	1.0	0.5	0	ND	ND	ND	ND
Bromobenzene	5.0	0.21	0	ND	ND	ND	ND
1,3-Dichlorobenzene	5.0	0.15	0	0.44 J	ND	ND	ND
1,4-Dichlorobenzene	5.0	0.15	0	0.25 J	ND	ND	ND
Chloroethane	5.0	0.72	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
cis-1,2-Dichloroethene	5.0	0.19	0	73	2.8	ND	ND
trans-1,2-Dichloroethene	5.0	0.33	0	3.1	ND	ND	ND
Bromomethane	5.0	0.43	0	ND	ND	ND	ND
Tetrachloroethene	5.0	0.21	0	0.79	ND	ND	ND
trans-1,3-Dichloropropene	5.0	0.3	0	ND	ND	ND	ND
1,1,2-Trichloroethane	5.0	0.2	0	ND	ND	ND	ND
Trichloroethene	5.0	0.19	0	236	ND	ND	ND
Vinyl Chloride	0.5	0.18	0	0.32 J	0.45 J	0.27 J	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
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* In accordance with Appendix G of the *Travis AFB Central Groundwater Treatment Plant Operations and Maintenance Manual* (URS Group, Inc., 2002).

Notes:

J = analyte concentration is considered an estimated value

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 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
EW782x39	20 December 2011	30 December 2011
	30 January 2012	20 February 2012
	20 March 2012	13 April 2012
	27 April 2012	11 May 2012
	11 June 2012	25 June 2012
	20 July 2012	
CGWTP = Central Groundwater Treatment Plant EW = Extraction Well		

TABLE 6
Summary of Soil Vapor Analytical Data for July 2009-2012 – West Treatment and Transfer Plant

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

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 - Twelve Month History
Travis Air Force Base, California

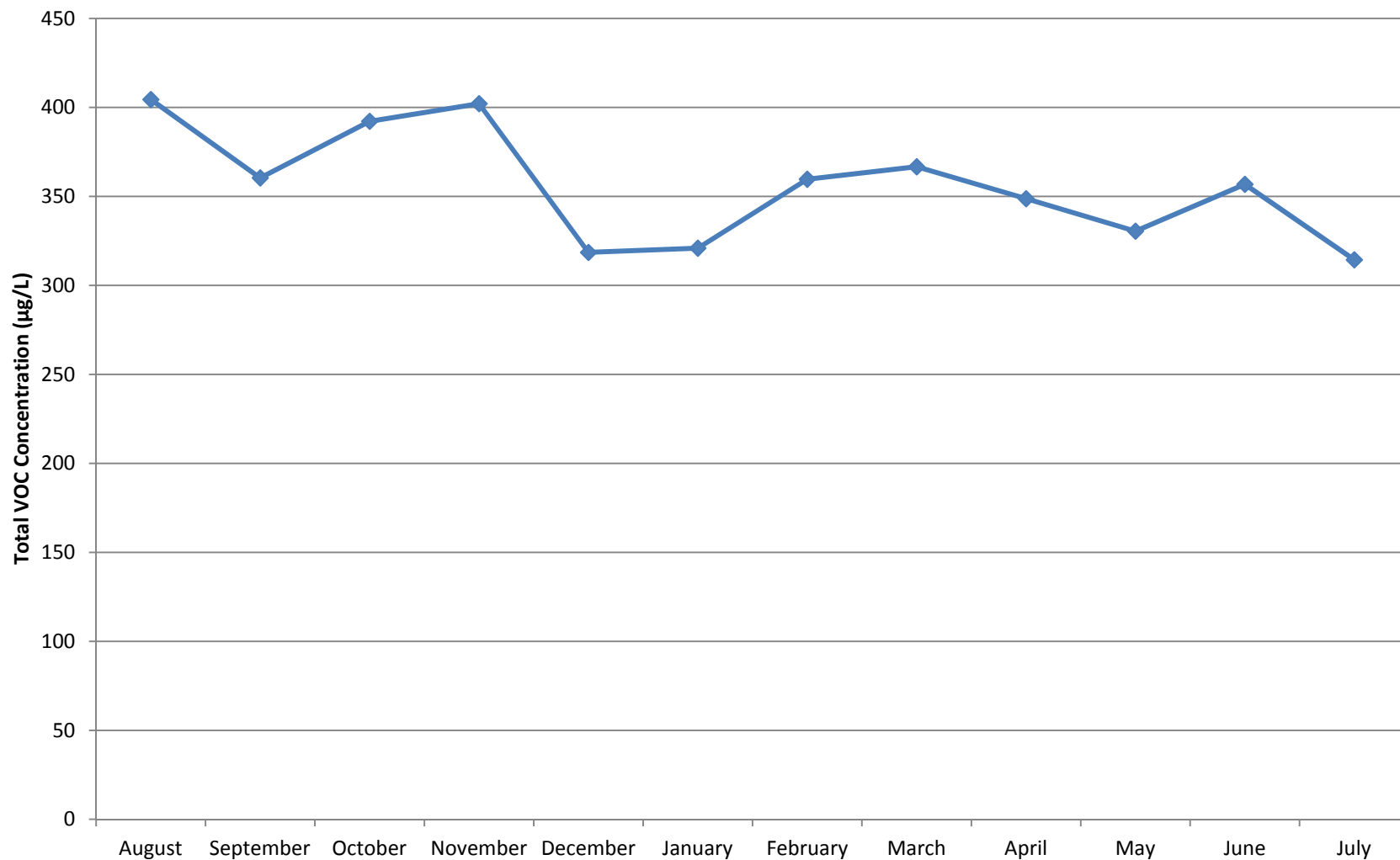
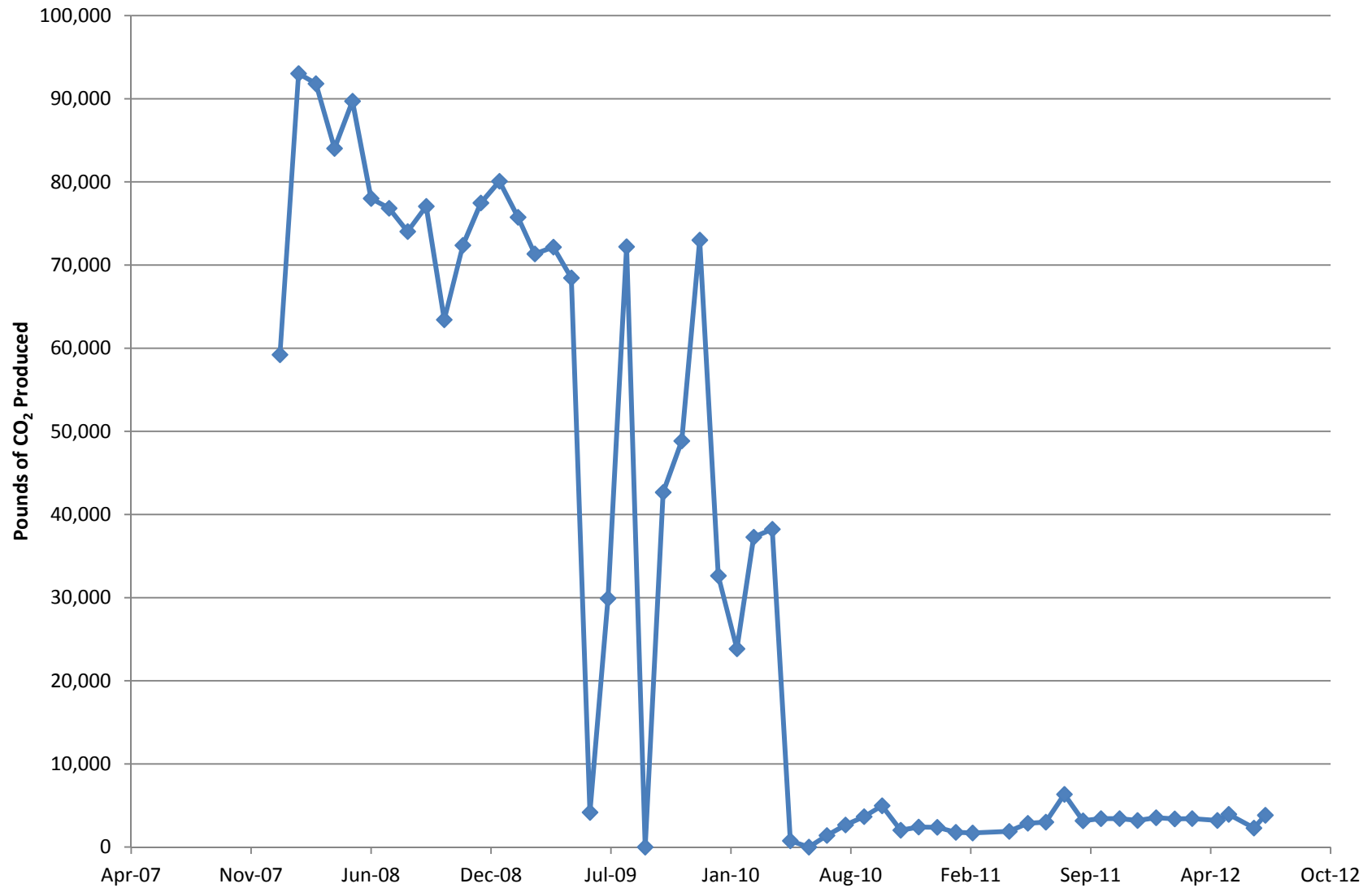


Figure 2

Equivalent Pounds of CO₂ Produced by the Central Groundwater Treatment Plant



North Groundwater Treatment Plant Monthly Data Sheet

Report Number: 126

Reporting Period: 30 June 2012 – 31 July 2012

Date Submitted: 8 August 2012

This monthly data sheet presents information regarding the North Groundwater Treatment Plant (NGWTP) and associated remedial process optimization (RPO) activities. On 9 July 2012, groundwater remediation operations were resumed since the seasonal vernal pools had dissipated, and system startup samples collected in June 2012 had indicated good treatment efficiency.

System Metrics

Table 1 presents operational data from the July 2012 reporting period:

Table 1 – Operations Summary – July 2012		
Operating Time: NGWTP: 535 hours ^a	Percent Uptime: NGWTP: 70.0%	Electrical Power Usage: NGWTP: 351 kWh (481 lbs CO ₂ generated ^b) ^c
Gallons Treated: 18,990 gallons	Gallons Treated Since March 2000: 82.7 million gallons	
Volume Discharged to Duck Pond: 18,990 gallons	Volume Discharge to Storm Drain: 0 gallons	
VOC Mass Removed: 5.4 x 10⁻⁴ pounds^d	VOC Mass Removed Since March 2000: 174.3 pounds (Groundwater)	
Rolling 12-Month Cost per Pound of Mass Removed: Not Measured^e		
Monthly Cost per Pound of Mass Removed: Not Measured^f		
^a Reduced operating hours, gallons treated, and VOC mass removed reflect system restart on 9 July 2012.		
^b Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.		
^c Electrical power usage based on the first monthly system readings on 13 July 2012 and the end of month readings.		
^d VOCs from July 2012 influent sample detected by EPA Method SW8260B.		
^e Value not calculated since measurement does not accurately represent the cost effectiveness of the system.		
^f Value not calculated since measurement does not accurately represent the potential effectiveness of the system. O&M costs are low, but very little contaminant mass is being treated.		

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

Table 2 – NGWTP Average and Total Flow Rates – July 2012		
Location	Average Flow Rate (gpm) ^a	Total Gallons Processed (gallons) ^b
EW614x07	0.8	9,580
EW615x07	1.2	6,930
NGWTP	1.8	18,990
^a Flow rate provided based on the average of the monthly readings for July 2012. ^b 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 is the result of final readings for the extraction wells taking place on 27 July 2012 due to the presence of wasps on 31 July 2012 (when last monthly reading at the treatment plant was taken). gpm = gallons per minute		

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

Table 3 – Summary of System Shutdowns					
Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
NGWTP	21 March 2012	14:30	9 July 2012	09:00	Seasonal vernal pools at Site LF007C are dry. System startup sampling in June 2012 indicated effective treatment. Standard operation resumed on 9 July 2012.
NGWTP = North Groundwater Treatment Plant					

Summary of O&M Activities

Analytical data from the 9 July 2012 sampling event are presented in Table 4. Concentrations of TCE (3.0 µg/L) and cis 1,2-DCE (0.62 J µg/L) were detected in the influent sample. Prior to the seasonal shutdown, TCE had been detected in the influent sample for seven (7) consecutive months and cis 1,2-DCE had been detected for three (3) consecutive months. Contaminant concentrations detected in the influent process stream in July 2012 were less than their respective effluent limits (5.0 µg/L for TCE and cis 1,2-DCE). Contaminant concentrations were not detected between the primary and secondary vessels or at the effluent sampling location.

Figure 1 presents a chart of influent concentrations (total VOCs) at the NGWTP versus time for the past twelve (12) months. As required by US Fish and Wildlife Service (USFWS), the NGWTP was taken off line (“System Shutdown”) on 21 March 2012 when vernal pools had formed at Site LF007C. Operation was resumed on 9 July 2012 after the vernal pools had dissipated, and startup sampling in June 2012 indicated effective treatment.

Analytical data (Table 4) continue to indicate effective treatment of the influent process stream with only two (2) operating GAC drums online. A spare GAC drum is currently being procured in the event that analytical data indicate a third GAC drum should be brought back on line.

Optimization Activities

No optimization activities occurred in July 2012.

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 off line (“System Shutdown”) when vernal pools are present at Site LF007C. The NGWTP used 351 kWh, which calculates to approximately 481 pounds of GHG generation, between the first monthly readings post-startup on 13 July 2012 and the end of the month. This is less than March 2012, the last month of operation for the purpose of treatment, when the NGWTP used 457 kWh of electricity. The decrease of electricity usage can be attributed to a shorter period of operation and fewer gallons treated as a result of mid-month system startup. 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 July 2012 – North Groundwater Treatment Plant

Summary of Groundwater Analytical Data for July 2012 - North Groundwater Treatment Plant						
Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	9 July 2012 (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	0.62 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	3.0	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:

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 - Twelve Month History
Travis Air Force Base, California

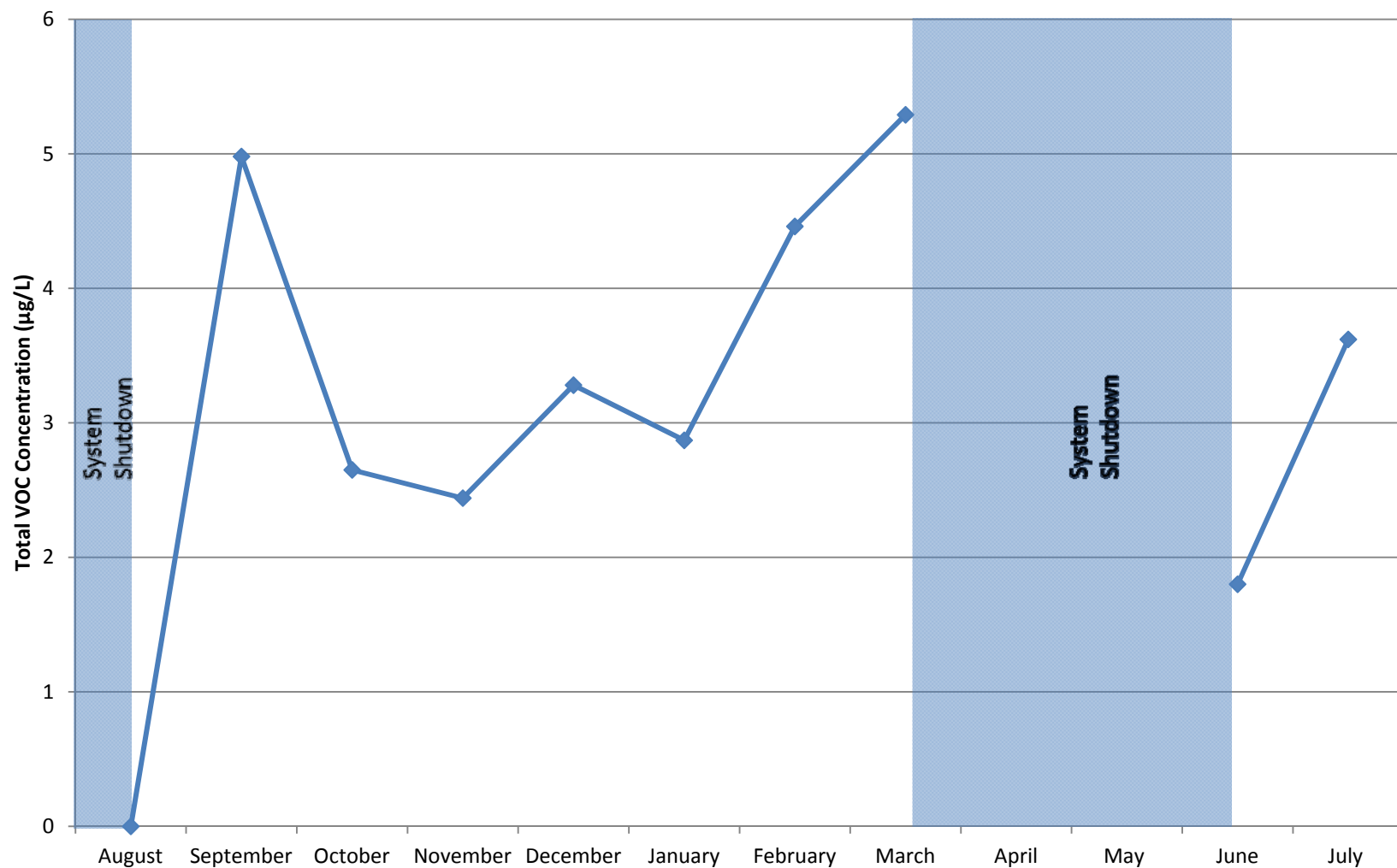
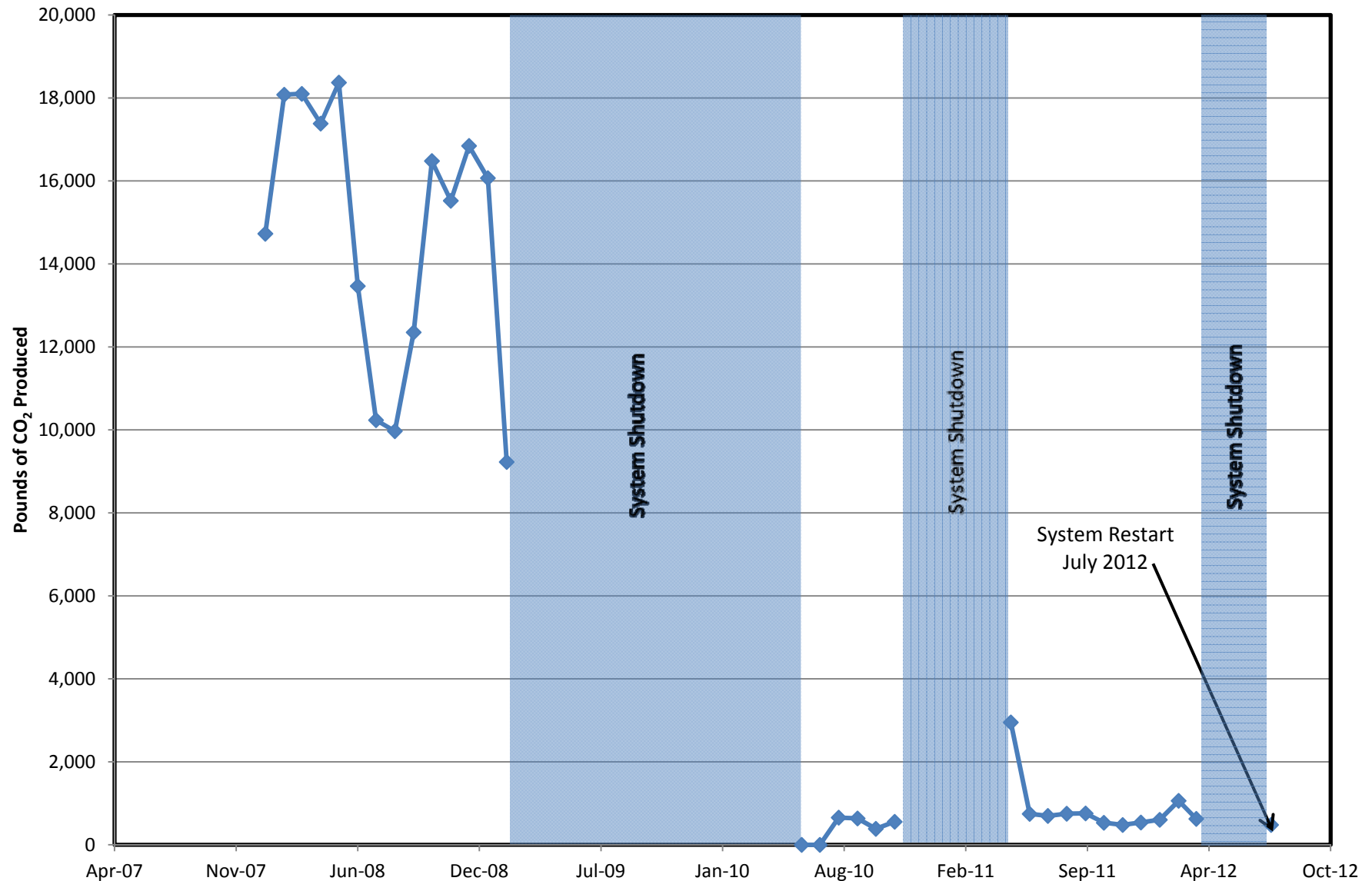


Figure 2
Equivalent Pounds of CO₂ Produced by the North Groundwater Treatment Plant



Site ST018 Groundwater Treatment Plant Monthly Data Sheet

Report Number: 017

Reporting Period: 30 June 2012 – 31 July 2012

Date Submitted: 8 August 2012

This monthly data sheet presents information regarding the Site ST018 Groundwater Treatment Plant (S18GWTP).

System Metrics

Table 1 presents operation data from the July 2012 reporting period.

Table 1 – Operations Summary – July 2012		
Operating Time:	Percent Uptime:	Electrical Power Usage:
S18GWTP: 792 hours	S18GWTP: 100%	S18GWTP: 164 kWh (225 lbs CO ₂ generated ^a)
Gallons Treated: 238 thousand gallons	Gallons Treated Since March 2011: 2.56 million gallons	
Volume Discharged to Union Creek: 238 thousand gallons		
BTEX, MTBE, TPH Mass Removed: 0.96 lbs^b	BTEX, MTBE, TPH Mass Removed Since March 2011: 18.3 lbs	
Rolling 12-Month Cost per Total Pounds of Mass Removed: \$6,836 ^c		
Monthly Cost per Pound of Mass Removed: \$5,851		
Lbs = pounds		
^a Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.		
^b Calculated using July 2012 (influent) and July 2012 (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.		

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

Table 2 – S18GWTP Average Flow Rates ^a	
Location	Average Flow Rate Groundwater (gpm)
EW2014x18	1.74
EW2016x18	1.81
EW2019x18	1.62
Site ST018 GWTP	5.00
^a All flow rates calculated by dividing total gallons processed, based on the totalizer at each location, by system operating time for the month. gpm = gallons per minute S18GWTP = Site ST018 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	None	NA	
S18GWTP = Site ST018 Groundwater Treatment Plant					

Summary of O&M Activities

Groundwater samples were collected at the S18GWTP on 10 July 2012. Sample results from the July sampling event are presented in Table 4. No contaminant concentrations were measured at the midpoint and effluent sampling locations in July 2012.

The total influent concentration (benzene, toluene, ethylbenzene, total xylenes, MTBE, TPH-gas, TPH-diesel, and TPH-motor oil) in the quarterly (3Q12) influent sample was 487 µg/L, which is a significant decrease from the previous (2Q12) influent concentration of 1,658 µg/L. This concentration more closely reflects the first quarter (1Q12) influent concentration of 455 µg/L. Figure 1 presents a plot of influent quarterly total VOC (TPHg, TPHd, MTBE, and BTEX) and MTBE concentrations at the S18GWTP versus time.

A trigger study began in June 2012 in response to the trigger exceedance of TPH-mo in the system effluent during the May 2012 sampling event. The results are presented in Table 5. Results from the second trigger study sampling event in July 2012 indicated that TPH-mo was not detected in the system influent or effluent. The TPH-mo trigger study sampling will continue for one (1) more month until August 2012.

The sump pump at the ST018 treatment compound was replaced in July due to a malfunction of the existing unit. In addition, the primary carbon vessel was back-flushed, and minor leaks were repaired (top seal of the primary GAC vessel and a pinhole leak on the flex hose between the primary and secondary GAC vessels).

Optimization Activities

No optimization activities were performed in July 2012.

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.

As a result of the solar arrays at S18GWTP, the system produced approximately 225 pounds of GHG during July 2012. This is a decrease from June 2012 (244 pounds). Figure 2 presents the historical GHG production from the S18GWTP. 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 July 2012 – Site ST018 Groundwater Treatment Plant

Constituent	Instantaneous Maximum ^a (µg/L)	Detection Limit (µg/L)	N/C	10 July 2012 (µg/L)		
				Influent ^b	After Carbon 2	System Effluent
Fuel Related Constituents						
MTBE	5	0.5	0	124	ND	ND
Benzene	5	0.17	0	5.3	ND	ND
Ethylbenzene	5	0.22	0	2.4	ND	ND
Toluene	5	0.14	0	0.44 J	ND	ND
Total Xylenes	5	0.23 – 0.5	0	4.38	ND	ND
Total Petroleum Hydrocarbons – Gasoline	50	8.5	0	230	ND	ND
Total Petroleum Hydrocarbons – Diesel	50	50	0	120	ND	ND
Total Petroleum Hydrocarbons – Motor Oil	--	160	--	ND	ND	ND

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

^b Values taken from July 2012 (3Q12) sample data. Influent sampling is conducted on a quarterly basis.

Notes:

µg/L = micrograms per liter

ND = not detected above method detection limit

NM = not measured this month

Table 5
Summary of Quarterly Trigger Study Analytical Data From June and July 2012 – Site ST018 Groundwater Treatment Plant

Constituent	Trigger Limit ^a (µg/L)	7 June 2012 (µg/L)		10 July 2012 (µg/L)	
		Influent	Effluent	Influent	Effluent
Total Petroleum Hydrocarbons – Motor Oil	50	ND	ND	ND	ND

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

Notes:

µg/L = micrograms per liter

ND = not detected above method detection limit

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

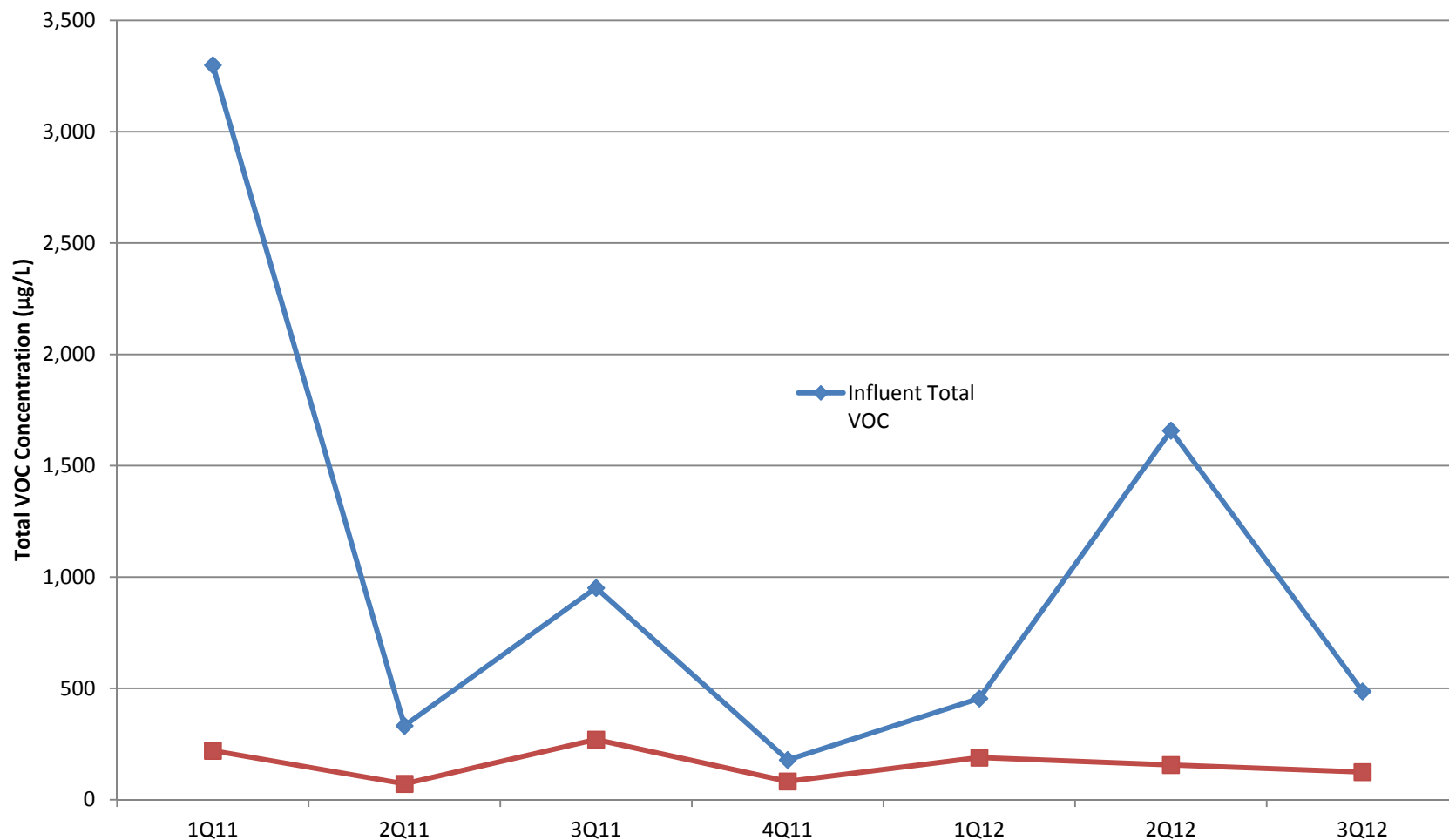
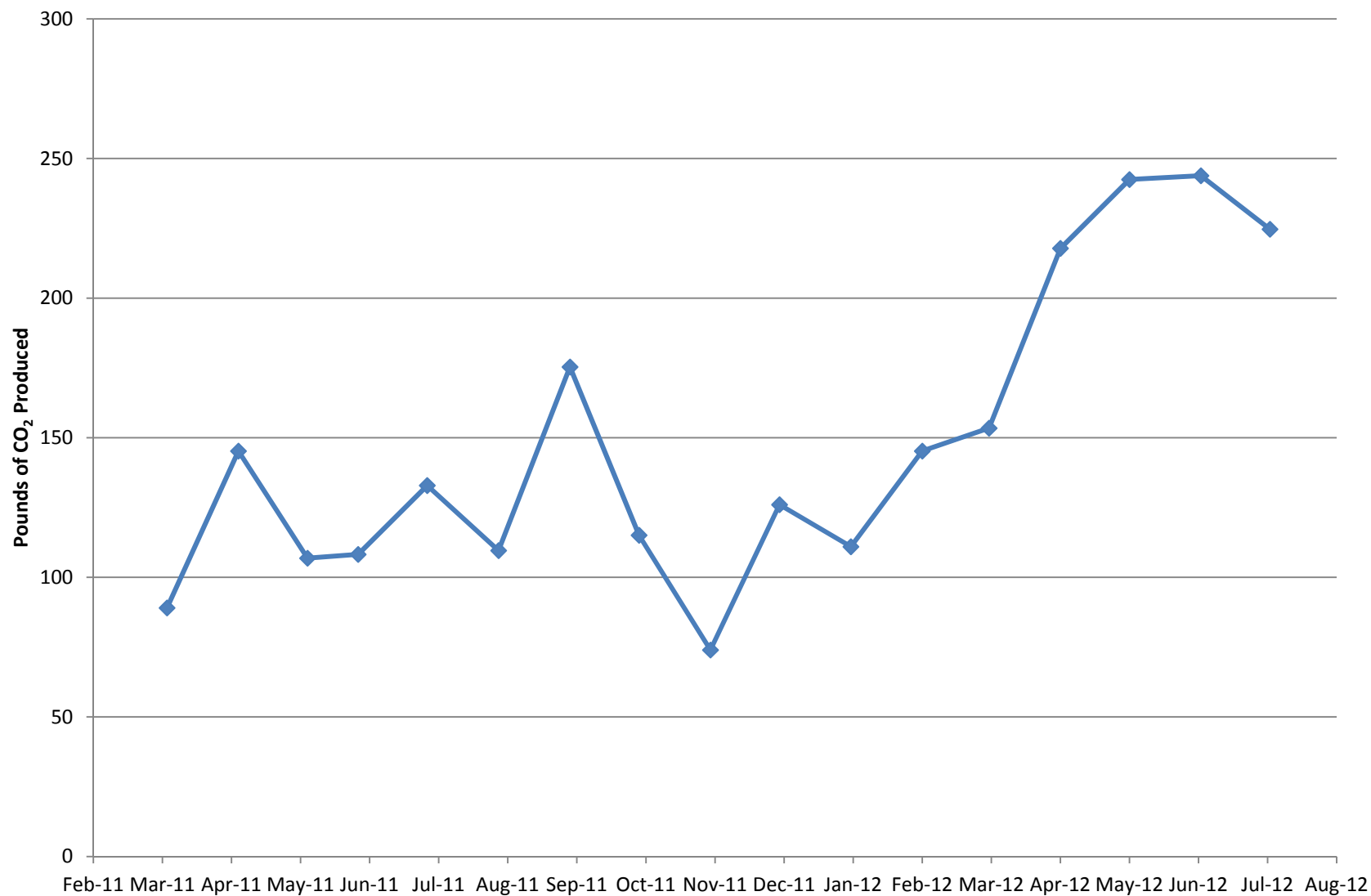


Figure 2
Equivalent Pounds of CO₂ Produced by the Site ST018 Groundwater Treatment Plant



Vapor Intrusion Assessment Update

Travis AFB
RPM Meeting
August 15, 2012

Background

- Basewide vapor intrusion (VI) assessment was performed at Travis AFB between 2008 and 2010
 - Evaluated current and future VI risk at all ERP groundwater sites (risk from VOCs in soil vapor due to underlying groundwater plumes)
 - Soil gas, subslab soil vapor, indoor air, and outdoor air samples were collected in 2008-2009 during the assessment
 - Site specific risk-based concentrations (RBCs) were developed for groundwater, shallow soil gas, subslab soil gas, and indoor air
 - Groundwater, shallow soil gas, subslab soil gas, and indoor air data were screened against relevant RBCs to determine whether VI posed a significant current or future risk at each site

Background, Cont.

- No sites determined to currently require action based on the vapor intrusion pathway
- VI pathway found to be a potential future concern under residential use at Sites FT004, SS015, SS016, SS029, ST032, SD033, SD034, SS035, SD036, SD037, and DP039
- VI pathway found to be a potential future concern under industrial use at Sites SS015, SS016, ST032, SD034, and DP039

Purpose of VI Assessment Update

- Update necessary because toxicity values for several chemicals, including TCE and PCE, have changed since the 2008-2010 assessment
- Results of updated assessment used to develop residential and industrial groundwater-to-indoor-air land use control (LUC) boundaries (incorporated into the Basewide Groundwater ROD)

Affected Chemicals

- **1,1-dichloroethene**
- o-xylene
- **chloromethane**
- 1,3,5-trimethylbenzene
- **Toluene**
- dichlorodifluoromethane
- 1,3-dichlorobenzene
- styrene
- n-Propylbenzene
- **carbon tetrachloride**
- **1,1,2-trichloroethane**
- TCE
- **Chlorobenzene**
- 1,2,4-trichlorobenzene
- tert-Butyl Alcohol
- **chloroform**
- 1,2-dibromomethane
- PCE
- m,p-xylene
- **1,2-dichloroethane**

Note: bolded chemicals are groundwater COCs

RBC Update Methodology

- The same methods used to develop RBCs in the 2008-2010 assessment were used to calculate updated RBCs
- Updated groundwater RBCs were calculated using the updated toxicity values, site-specific data, and the DTSC's (2005) version of EPA's (2004) Screening-level J&E (1991) Model for groundwater
- Indoor air RBCs were updated to the current industrial and residential air screening levels from the EPA's Regional Screening Level (RSL) table (2012)
- Updated subslab and shallow soil gas RBCs were calculated by applying site specific attenuation factors

Updated Evaluation Results

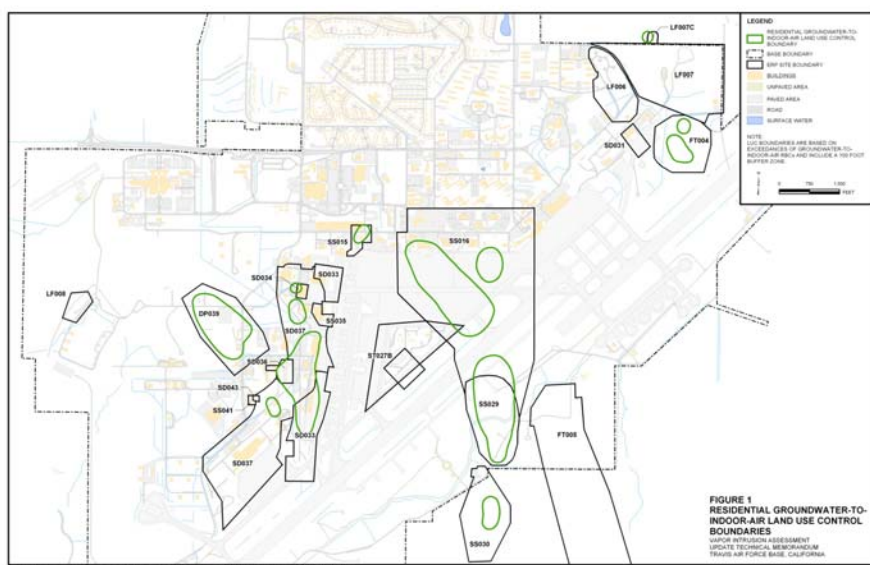
- No sites determined to currently require action based on the VI pathway
- VI pathway is a potential future concern under residential use at Sites FT004, LF007, SS015, SS016, SS029, SS030, SD033, SD034, SS035, SD036, SD037, and DP039.
- VI pathway is a potential future concern under industrial use at Sites FT004, SS015, SS016, SS029, SD034, and DP039.
- VI pathway is not a potential future concern under either residential or industrial usage at sites FT005, LF006, LF008, ST027B, SD031, and SD043.

Key Differences in Results

- Site ST032 (no longer an ERP site): groundwater concentrations now below updated RBCs and VI no longer a potential future concern
- Sites LF007 and SS030: groundwater concentrations exceed residential groundwater RBCs, VI is a potential future concern under residential scenario
- Sites FT004, SS029, DP039: hazard index estimate for industrial scenario exceeded 1 at one or more shallow soil gas sampling locations. VI is a potential future concern under industrial as well as residential scenarios.

Groundwater-to-Indoor-Air LUC Boundaries

- LUC boundaries are based on the site-specific groundwater-to-indoor-air RBCs and the current (2010-2011) distribution of groundwater contamination
- 100 foot buffer zone (beyond area of RBC exceedance) added to LUC boundaries
- At all sites except SS015 and SD034, LUC boundaries are based on the updated TCE groundwater RBCs (57 µg/L for industrial use and 26 µg/L for residential use)
- Site SS015: LUC boundaries based on a combination of the TCE and vinyl chloride concentrations. The vinyl chloride groundwater RBCs are 14 µg/L (industrial use) and 4.1 µg/L (residential use).
- Site SD034: LUC boundaries for Site SD034 based on the extent of the floating product at the site



- LUC boundaries should change over time as groundwater contamination is addressed
- LUC boundaries will be evaluated and changed as appropriate during the 5-Year Groundwater Reviews

Schedule

- Vapor Intrusion Update Technical Memorandum will be out for regulatory review on September 11

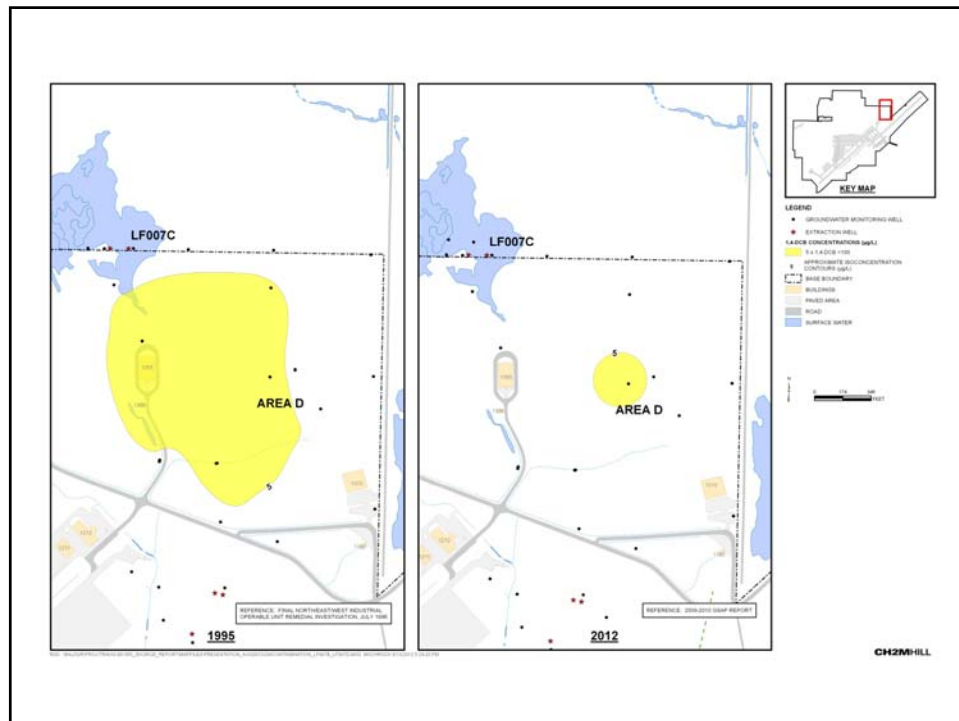
Questions/Comments?

Site LF007D Revised Time To Cleanup

Travis AFB
RPM Meeting
August 15, 2012

Background

- Site LF007D is located within the footprint of the CAMU
- Groundwater COCs [1,4-dichlorobenzene (DCB) and benzene] concentrations exceed MCLs at one monitoring well MW261x07
- 1,4-DCB concentrations have been declining
- Benzene concentrations have remained stable at 2-3 µg/L (MCL is 1 µg/L)
- Stable benzene concentrations resulted in conservative time to cleanup estimate of >100 years in Groundwater FFS



Updated Time to Cleanup Estimate

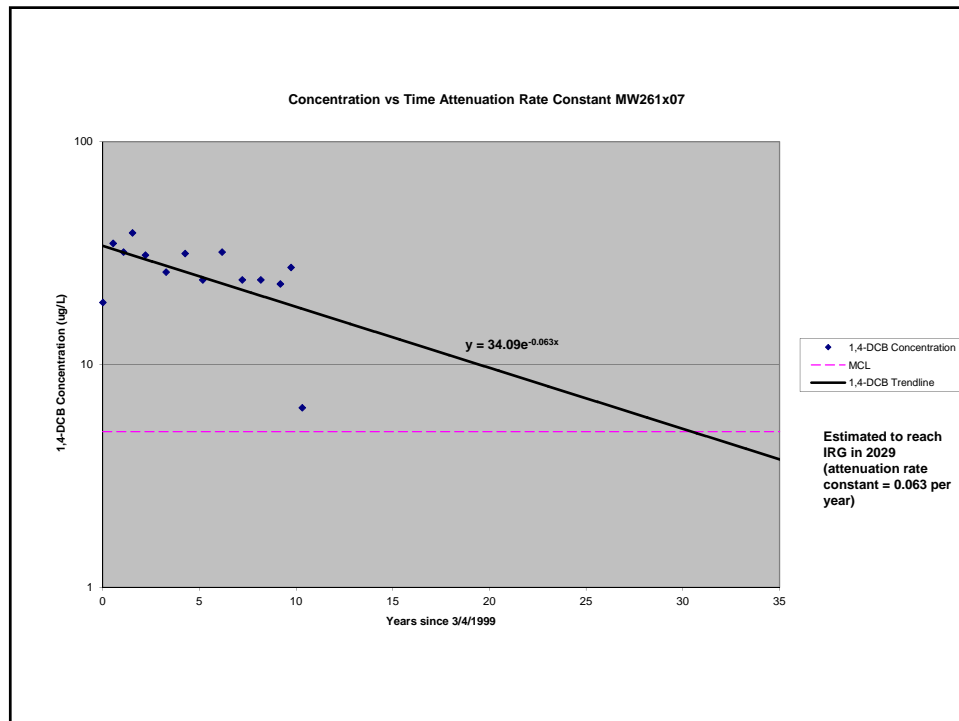
- Update performed to verify cleanup assumptions and validate time-to-cleanup estimates that exceeded 100 years

Assumptions

- 1,4-DCB will continue to attenuate under anaerobic conditions until concentrations have declined below MCL (5 µg/L)
- Conditions surrounding MW261x07 will become aerobic, consistent with conditions across the rest of the site
- Benzene will readily degrade under aerobic conditions
- Benzene attenuation rates will be similar to those calculated at aerobic site ST032

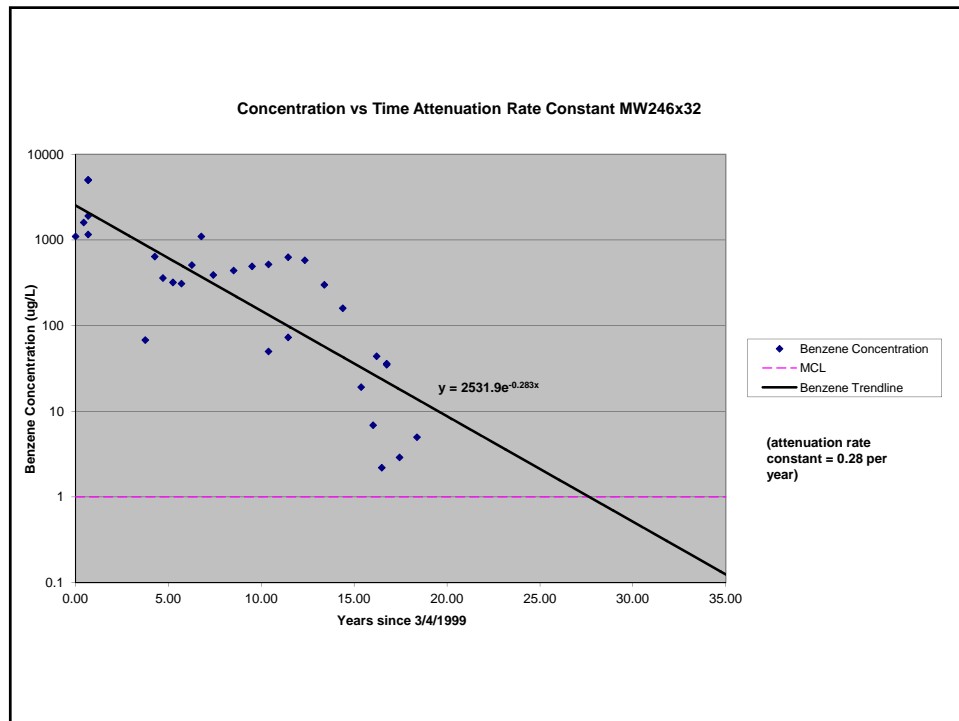
Calculations

- Attenuation rate constant for 1,4-DCB (0.063 per year) calculated from decreasing concentration trend at well (calculation had been performed in NAAR)
- 1,4-DCB concentrations expected to reach MCL (5 µg/L) in 2029
- Assuming a start date of 2010 (to be consistent with rest of FFS), 1,4-DCB will reach MCL in 19 years



Calculations, Cont.

- Data from 3 Site ST032 wells were used to calculate benzene attenuation rate constants (MW1026x32, MW246x32, and MW1028x32)
- Selected because had long history of benzene detections (rather than sporadic detections or very rapid decline)
- Calculated benzene attenuation rates ranged from 0.28 to 0.45 per year
- Most conservative attenuation rate (0.28 per year) was used to estimate time to reach MCL (1 $\mu\text{g/L}$)



Calculations, Cont.

- Assuming a starting benzene concentration of 3 µg/L; it would take 4 years for the benzene to attenuate to the MCL (1 µg/L)

$$\text{time} = \frac{-\ln(C_{\text{goal}}/C_{\text{start}})}{\text{rate constant}}$$

- Time to cleanup 1,4-DCB (19 years) + time to cleanup benzene (4 years) = 23 years

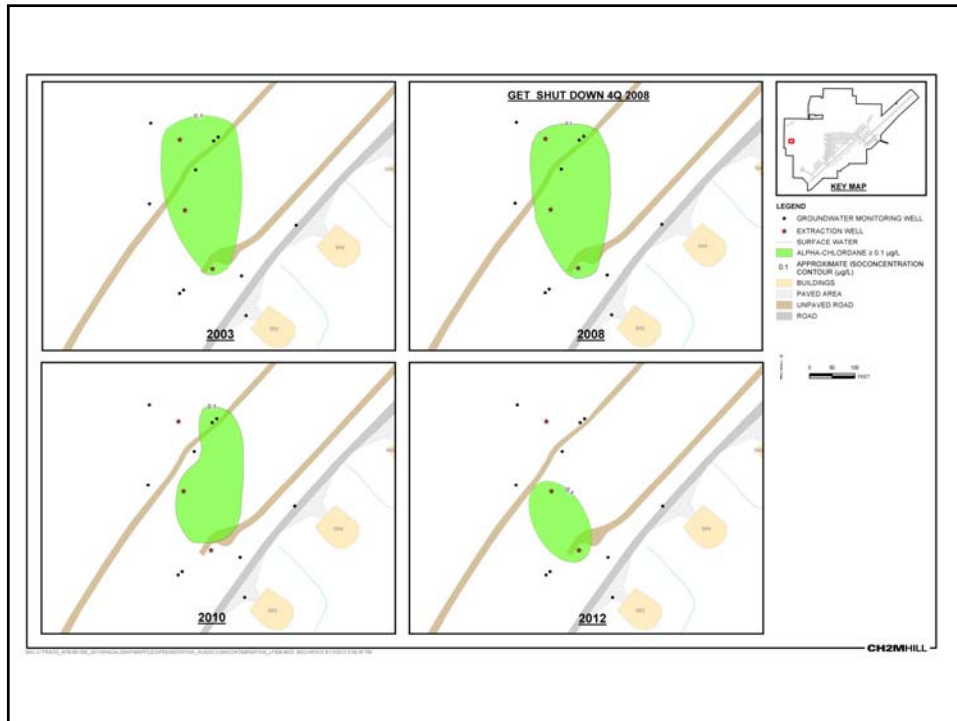
Questions/Comments?

Nature of Site LF008 Pesticide Contamination

Travis AFB
RPM Meeting
August 15, 2012

Background

- GET operated for 7.5 years, without significantly impacting pesticide distribution
- GET system shut down in 4Q08 for rebound study
- No rebound observed over 3.5 years of study, in fact pesticide plume decreased in size
- Pesticides recalcitrant due to strong sorption to the fine grained site sediments



Hypothesis

Pesticides are not dissolved in groundwater at Site LF008, but rather sorbed to fine clay particles captured in groundwater samples.

Testing Hypothesis

- In 2Q12 GSAP event both filtered and non-filtered samples collected from Site LF008 wells were analyzed for pesticides
- Compared filtered and non-filtered analytical results

Results

- Alpha-chlordane was the only LF008 COC detected in any of the samples
- Alpha-chlordane was detected in several non-filtered samples, but was detected in only one filtered sample
- The detection in the filtered sample (MW717x08) was an order of magnitude below the non-filtered sample detection and both were below the IRG (0.1 µg/L)
- In the non-filtered samples, there were only two detections of alpha chlordane above the IRG (same two wells as 2Q11, EW720x08 and EW721x08)

Results, Cont.

Well	Alpha Chlordane			
	Non-Filtered Result (µg/L)	Non-Filtered Flag	Filtered Result (µg/L)	Filtered Flag
EW719x08	0.01	U	0.01	U
EW720x08	0.28		0.01	U
EW721x08	0.2		0.01	U
MW114x08	0.049		0.01	U
MW115x08	0.058/0.053 (field dup)		0.01/0.01 (field dup)	U
MW311x08	0.01	U	0.01	U
MW712x08	0.01	U	0.01	U
MW714x08	0.01	U	0.01	U
MW717x08	0.057		0.0041	J

Notes:
 Bolded numbers exceed IRG (0.1 µg/L)
 U flag is non-detect; reporting limit (0.01 µg/L) is provided for non-detect values
 J flag is estimate

Conclusions

- Pesticides are bound to fine grained sediments at Site LF008 rather than dissolved in the groundwater
- Pesticide contamination is not migrating
- GET cannot be an effective remedy and appears to be counterproductive

Remedial Approach

- TI Waiver not applicable because saturated sediment rather than the groundwater is the contaminated media
- Only route of exposure to pesticides is consuming unfiltered groundwater
- Potential for exposure can be eliminated by imposing LUCs requiring extracted groundwater be filtered prior to use
- LUCs will not be difficult to maintain at this site because
 - Site is fenced in and escort is required for access
 - Hydraulic conductivity at this site is so low that, even were the site accessible, it is highly unlikely to be used as a drinking water source

Questions/Comments?

Travis AFB Restoration Program

Program Overview

*RPM Meeting
August 15, 2012*

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

Completed Documents (cont'd)

- CAMU 2008-2009 Monitoring Annual Report
- 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**

3

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

4

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 (4th Quarterly event)
- Sampling for Assessment of Aerobic Chlorinated Cometabolism Enzymes (Feb 21-22)
- 2012 Annual GSAP Sampling
- CAMU Lysimeter Removal

5

In-Progress Documents & Field Work

Documents

- Technical Memorandum for Assessment of Aerobic Chlorinated Cometabolism Enzymes
- Old Skeet Range Engineering Evaluation/Cost Analysis
- 2011 Groundwater Treatment RPO Annual Report
- Proposed Plan (PP)
- ***FT005 Remedial Action Completion Report***

Field Work

- SS029/SS016 System Optimization Analysis

6

Upcoming Documents

- ***Vapor Intrusion Update Tech Memo*** **Sep**
- Basewide Groundwater Record of Decision (ROD) **Oct**

7

Upcoming Field Work

- LF007C GET System Optimization 20 Aug 2012
- Monitoring Well Decommissioning 20 Aug 2012

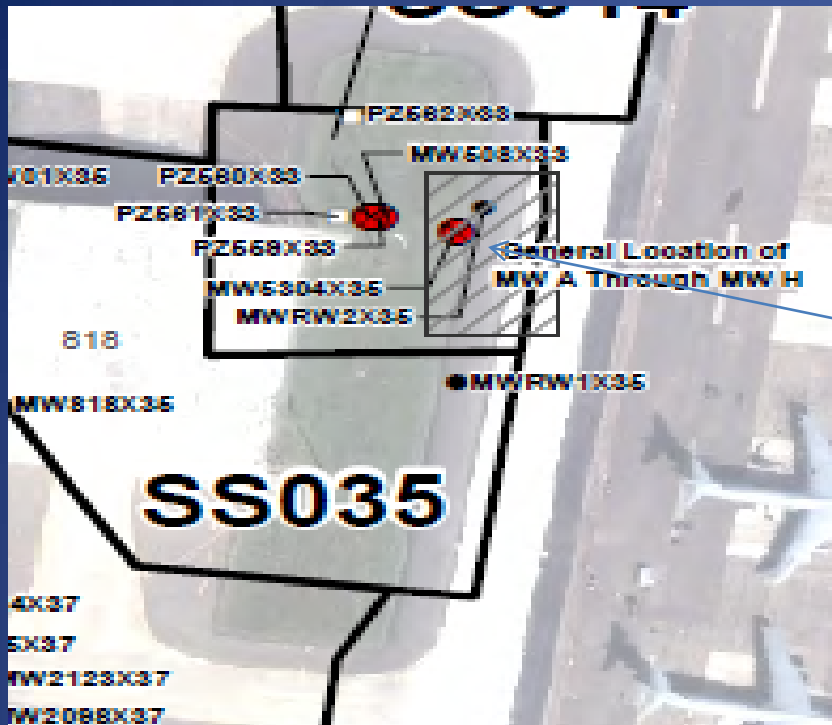
Note: Travis will try to notify regulatory agencies via email approximately one week in advance of planned field work

8

Well Decommissioning 2012

TABLE ES-4
Monitoring Wells Identified for Potential Decommissioning
Travis AFB 2010-2011 Annual GSAP Report

Site	Well	Position in Relation to Plume	Rationale	Most Recent Sampling Date	Priority
SD033	PZ556x33	Crossgradient	This piezometer was installed to collect groundwater elevation data rather than water quality data. This piezometer is redundant and is not sampled by the GSAP. MW530x33 can be used as a replacement.	Not Sampled	2
	PZ557x33	Crossgradient	This piezometer was installed to collect groundwater elevation data rather than water quality data. This piezometer is redundant and is not sampled by the GSAP. MW530x33 can be used as a replacement.	Not Sampled	2
	PZ558x33	Crossgradient	This piezometer is redundant and no longer routinely sampled by the GSAP. MW530x33 can be used as a replacement.	12/22/1998	2
	PZ559x33	Crossgradient	This piezometer was installed to collect groundwater elevation data rather than water quality data. This piezometer is redundant and is not sampled by the GSAP. MW508x33 can be used as a replacement.	Not Sampled	2
	PZ560x33	Crossgradient	This piezometer was installed to collect groundwater elevation data rather than water quality data. This piezometer is redundant and is not sampled by the GSAP. MW508x33 can be used as a replacement.	Not Sampled	2
SS035	MW5304x35	Crossgradient	This well is redundant and no longer routinely sampled by the GSAP. No well construction information is available for this well. MWRW2x35 can be used as a replacement.	4/3/2009	2
SD036	PZ23x36	Crossgradient	This piezometer was installed to collect groundwater elevation data rather than water quality data. This piezometer is redundant and is not sampled by the GSAP. PZ15x36 can be used as a replacement.	Not Sampled	2
	PZ24x36	Upgradient	This piezometer is redundant and no longer routinely sampled by the GSAP. MW872x37 can be used as a replacement.	9/29/2000	2
	PZ549A/B/Cx36	Plume	This piezometer was installed to collect groundwater elevation data rather than water quality data. This piezometer cluster is redundant and is not sampled by the GSAP. Cluster PZ550A/B/C/x36, which is adjacent and has identical well screens, can be used as a replacement.	Not Sampled	2
	PZ551A/B/Cx36	Plume	This piezometer was installed to collect groundwater elevation data rather than water quality data. This piezometer cluster is redundant and is not sampled by the GSAP. Cluster PZ550A/B/C/x36, which is adjacent and has identical well screens, can be used as a replacement.	Not Sampled	2



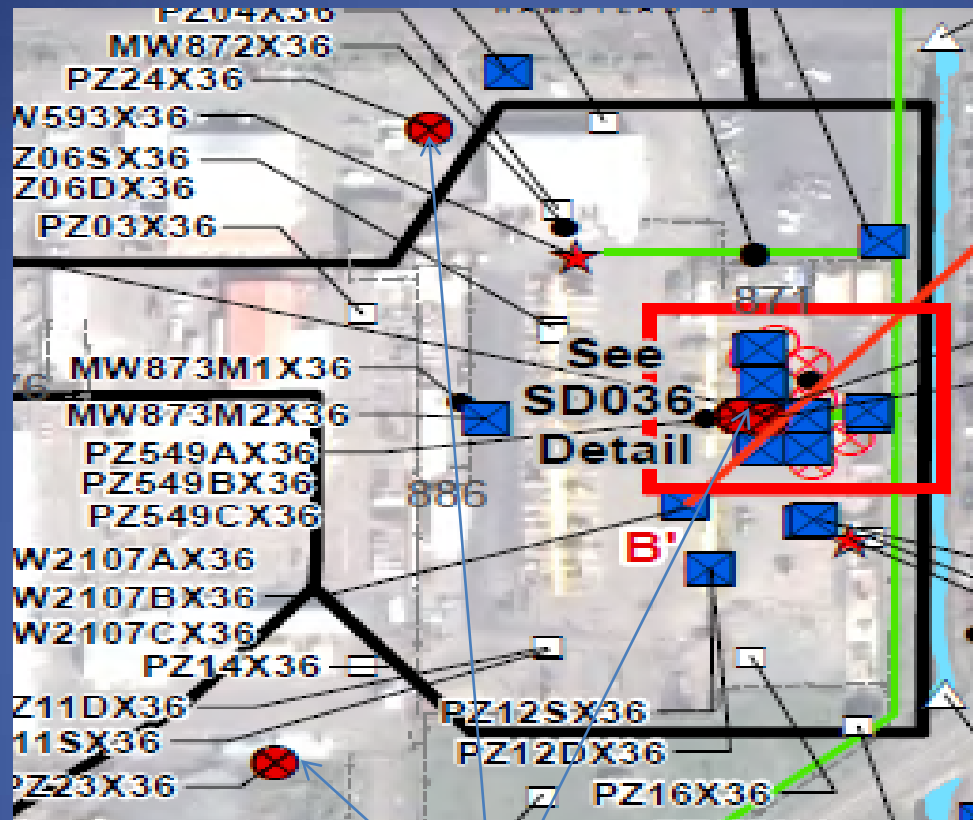
The wells marked by the red circles with an X need to be decommissioned and are located in the grassy area near Hangar 818.

PZ559x33
PZ560x33
MW5304x35

These wells are in the grassy area across the access road from the small Fire Station near the 900 ramp.

PZ556x33, PZ557x33, PZ558x33





These wells will also be decommissioned but are well away from the flight line.

PZ549Ax36, PZ549Bx36, PZ549Cx36
PZ551Ax36, PZ551Bx36, PZ551Cx36
PZ23x36, PZ24x36