

**Travis Air Force Base
Environmental Management
Building 570, Travis AFB, California
Environmental Restoration Program
Remedial Program Manager's
Meeting Minutes**

20 May 2009, 0930 Hours

Mr. Mark Smith, Travis Air Force Base (AFB), conducted the Remedial Program Manager's (RPM) meeting on 20 May 2009 at 0930 in the Base Civil Engineer's Conference Room, Building 570, Travis AFB, California. Attendees included:

- Glenn Anderson Travis AFB
- Lonnie Duke Travis AFB
- Mark Smith Travis AFB
- James Chang U.S. Environmental Protection Agency (USEPA)
- Alan Friedman California Regional Water Quality Control Board (CRWQCB)
- Jose Salcedo Department of Toxic Substances Control (DTSC)
- Mike Wray CH2M HILL
- Rachel Hess ITSI

Handouts distributed at the meeting and presentations included:

- Attachment 1 Meeting Agenda
- Attachment 2 Master Meeting, Teleconference, and Document Schedules
- Attachment 3 SBBGWTP Monthly Data Sheet (April 2009)
- Attachment 4 CGWTP Monthly Data Sheet (April 2009)
- Attachment 5 Presentation: Field Sampling Plan
- Attachment 6 Presentation: Program Update

1. ADMINISTRATIVE

A. Previous Meeting Minutes

The 22 April 2009 RPM meeting minutes were approved and finalized with a few changes:

Page 5, define acronym TAT in first paragraph; add 'connected to Central GWTP' in third paragraph.

Page 6, Section F, change 'made' to 'started' and 'are for PAHs only' to 'will include PAHs'; Section 3A, change 'Unified' to 'Underground'.

Page 8, Section 6, add 'RTC' to title to define acronym.

B. Action Item Review

Action Items from April were reviewed.

Action items one and two are in progress; date due will be changed to June 2009.

Action item three is unchanged.

C. Master Meeting and Document Schedule Review

The Travis AFB Master Meeting, Teleconference, and Document Schedules were discussed during this meeting (see Attachment 2).

Travis AFB Annual Meeting and Teleconference Schedule

- The next RPM meeting will be 24 June 2009. Mr. Smith asked how the dates of the remaining meetings work for everyone. All dates look fine as scheduled; Mr. Smith also asked if having the RAB meeting the same week as the RPM meeting was a problem. Mr. Salcedo replied that it was when the RAB meeting fell on the same week as his PE exam, but otherwise, no.

Travis AFB Master Document Schedule

- Basewide GW ROD, Potrero Hills Annex ROD: No change.
- RD/RA QAPP Update: The actual dates of the predraft and draft have been updated. Document can be considered final if responses to comments are considered adequate. Mr. Chang has not heard from his reviewer yet. The comment regarding the choice of laboratory should be considered a separate issue.
- Comprehensive Site Evaluation Phase II Work Plan: This work is part of the Air Force's Military Munitions Response (MMR) program, and the

plan is like a detailed site inspection plan. Mr. Chang informed the group that EPA cannot complete their review until late summer; all MMRP reviews have to go to the EPA office in Arkansas. An email was received by Adam Little from USACE. There is a requirement that all field work has to be completed by FY10 by congressional mandate. Mr. Friedman stated that the WB will have comments by 29 May 2009. Mr. Salcedo stated that the UXO expert for DTSC, Jim Austreng, is reviewing the plan; Mr. Salcedo will let TAFB know when to expect comments.

- Focused Feasibility Study (FFS): No change.
- Action Plan: Move to historical.
- Phases 1 & 2 Vapor Intrusion Report: No change.
- Phytostabilization Tech Memo: Draft is out for review. TAFB has received WB comments; DTSC and EPA will have comments within the week.
- SS016 RPO Work Plan: Dates have been pushed back a bit. The site walk will occur tomorrow. Mr. Smith asked how the process of coordinating with base operations is going. Mr. Duke responded that there haven't been problems; most work will take place outside of restricted areas.
- 2008 Annual GWTP RPO Report: Mr. Duke thanked the agencies for their responses. The carbon vessel change out is scheduled for next week.
- Field Sampling Plan: Draft did not actually go out 19 May 2009; schedule will be revised to reflect actual date. Mr. Anderson asked the agencies if electronic copies are acceptable; electronic is fine with everyone for the draft, but all would like hard copies of the final (EPA requested three).
- SS014 Tier 1 POCO Evaluation Work Plan: Field work will start on Memorial Day weekend. An aircraft parking spot has to be closed to conduct this work safely.
- Natural Attenuation Assessment Report (NAAR): Dates have been pushed back.
- Passive Diffusion Bag (PDB) Tech Memo: Mr. Duke thanked the agencies for their quick response and acceptance of the PDB methodology.
- DP039 RPO Work Plan: Dates have been pushed back.
- SD036/SD037 RPO Work Plan: Dates have been updated for the final document. Tony Chakurian is the new POC for CH2M HILL.
- ST018 POCO Remedial Action (RA) Work Plan: POCO has been inserted in the title.

- Site ST032 POCO Evaluation Work Plan: Dates have been updated to reflect actual timeline. This site is located in the middle of the flight line.
- ST027B Site Characterization Report: Field work is scheduled to begin this week.
- Quarterly Newsletter (Guardian): Dates for July edition have been updated.

Mr. Smith asked if the state's requirements for electronic deliverables are being met. Mr. Wray added that if there is a requirement for electronic deliverables, such as the GSAP, CH2M HILL is uploading to the state's system.

Mr. Salcedo asked when the next round of sampling is. The sampling for GSAP started the end of April; installation of new wells may coincide with the GSAP sampling. USACE will be visiting the base to oversee the installation.

Mr. Chang commented that EPA appreciates working together as we do during the RPM meetings, through the document schedule.

2. CURRENT PROJECTS

A. Treatment Plant Operation and Maintenance Update

Mr. Duke reported on the water treatment plant status.

South Base Boundary Groundwater Treatment Plant

The South Base Boundary Groundwater Treatment Plant (SBBGWTP) performed at 100% uptime, and 2.6 million gallons of groundwater were extracted and treated during the month of April 2009. All of the treated water was discharged to Union Creek. The average flow rate for the SBBGWTP was 64.9 gallons per minute (gpm) and electrical power usage was 13,740 kWh; 18,824 pounds of CO₂ was created (based on DOE calculation). Approximately 2.1 pounds of volatile organic compounds (VOCs) were removed in April. The total mass of VOCs removed since the startup of the system is 363 pounds (see Attachment 3).

No shutdowns or restarts occurred in April 2009. The total VOC concentrations were lower in April compared to March. The software communication issue between the PLC and the SCADA computer has been resolved

No optimization activities were conducted during April.

Central Groundwater Treatment Plant

The Central Groundwater Treatment Plant (CGWTP) performed at 96.8% uptime with approximately 2.5 million gallons of groundwater extracted and treated during the month of April 2009. All treated water was diverted to the storm drain. The average flow rate for the CGWTP was 66.2 gpm and electrical power usage was 31,780 kWh for all plants connected to Central; 43,539 pounds of CO₂ was created.

Natural gas usage for the ThOx was 2,502 therms. Approximately 9.6 pounds of VOCs were removed from groundwater, and 7.6 pounds from vapor, in April. The total mass of VOCs removed since the startup of the system is 11,058 pounds (see Attachment 4).

One shutdown occurred on 20 April due to an UV/Ox hydrogen peroxide low flow alarm. The WTPP experienced a significant amount of downtime due to frequent power surges and voltage spikes. The source of the power fluctuations remains unknown at this time.

The GAC is schedule to be changed next week. Work has been done for taking the UV/Ox offline, while leaving it available if needed. Reprogramming of computer had to be done to work around some alarms.

No optimization activities were conducted during April.

Mr. Smith commented on the low flows observed at some of the wells; EW03x16 was mentioned specifically. This particular well is a long horizontal well placed in a tight clay matrix; redevelopment of the well may improve flow. Higher flows are observed in a sandier lithology, overall Travis has a clay matrix throughout.

B. Field Work Effort

Mr. Duke gave an update on the field work at TAFB. Field work will be occurring at ST027 and SS014 this weekend. Samples will be collected and some wells installed. This is a busy summer for environmental work; it is also a busy construction season on base. Mr. Salcedo mentioned he has seen the activity on Terradex.

C. Vapor Intrusion Assessment Status

Mr. Anderson gave an update on the VI Assessment status, which is running out of time and funds. The plan is to meet the data requirements discussed at the 30 March 2009 meeting, and a proposal has been sent to the agencies. Budget constraints must also be considered. A few suggestions include using less expensive analytical methods and having EPA perform a portion of the sampling. Also, making assumptions between similar buildings is being considered. TAFB is waiting on EPA's subject matter experts concerning approval of the proposal, and what sampling and analyses EPA can perform.

Mr. Chang asked for an email stating which two buildings TAFB would like for EPA to sample. He will verify if EPA can support this field work, and also see what Mr. Nagle's availability is.

D. SD001 and SD033 Field Work

Ms. Hess reported on the status of sediment sites field work. Revisions have been made to the Final Work Plan (Shaw). The Coffey Dam design in Appendix H had to be updated. The Safety Plan is slated to be submitted in mid-June, and the Fire

Training Area Plan in August. A biologist is onsite at FT005 for a wetlands assessment; ITSI has been working with Mr. Duke for dig permits.

For the work at the creek, the groundwater treatment plants will be shut down while field work is in process. This will create less water to transfer and dam. As for the vegetation, the base is deciding to either burn or dredge. The vegetation is a problem as it becomes a habitat for birds, and bird strikes are a huge concern for the base. ITSI and TAFB are hoping a burn of the vegetation will happen before field work begins.

3. PRESENTATIONS

A. Field Sampling Plan

Mr. Wray gave a presentation on the Field Sampling Plan (see Attachment 5). The draft will be out early next week. Mr. Wray went through an introduction of the plan, which has general requirements. Details and data quality objectives (DQOs) will be addressed in site specific work plans. Standard operating procedures (SOPs) have been updated and new ones have been added in Appendix C. The groups of SOPs were presented. Appendix D is the Waste Management Plan.

B. Program Update, Management Overview Briefing

Mr. Wray gave an update on activities completed, in progress and upcoming (see Attachment 6). In keeping with the Triad approach to the project, this presentation is given to keep everyone informed on what's been done and what's upcoming. The 'Completed' page is getting longer! Thanks to the agencies for all their work on the document reviews.

Field work for the GSAP is ongoing through the end of June. Sampling at ST032 should be covered in the GSAP in existing wells. A biologist will be coming out to look at the vernal pools at LF007C and perform an assessment. Mr. Smith has contacted the landowner for SS030, and there should not be any problems with access to the site.

Mr. Smith asked that POCO be added to ST018 RA Work Plan on the Upcoming work slide.

4. NEW ACTION ITEM REVIEW

None.

5. PROGRAM/ISSUES/UPDATE

Mr. Smith spoke on current programs, issues and updates. The current work is fully funded. The RPM group will be informed of upcoming field work.

The mobilization for the phyto work is scheduled for the week of the next RPM meeting (June). Visitors are welcome who would benefit from meeting Professor Doucette and his team, and observing their work. Mr. Anderson will find out the best day of the week to have a field trip. Mr. Smith added that TAFB has asked that in the premobilization, the team to look at the vegetation to see what, if anything should be done about it. The premobilization visit will occur in early June; the work is detailed in the tech memo. Parsons will be out for the premobilization and is doing the maintenance work and evaluating the condition of the trees.

6. POTENTIAL RESPONSE TO COMMENTS (RTC) MEETINGS

A. 2008 Annual GWTP RPO Report

Mr. Duke presented an update on the GWTP RPO report RTC. Comments from the WB have been received. TAFB is still waiting on comments from other agencies. One of the optimization activities is to pulse the Therm/Ox unit instead of running it constantly. By running it for one month and shutting it off for two, the same overall mass should be removed by allowing the vapors to build. This would reduce electricity and natural gas usage.

General Discussion

The TAFB team attended the Energy, Environment, and Sustainability Symposium (E2S2) in Denver. Mr. Smith encouraged everyone to attend a conference such as this. Many technologies and ideas were presented; it was very interesting. Travis was well represented in the AFCEE booth. It was great to be recognized for the green technologies being implemented at Travis.

Mr. Chang mentioned he has forwarded an email to TAFB from the EPA Technical Section which has been received by the Travis ERP Staff. Mr. Anderson stated that it is fine working with Karen Scheuermann on the EPA pilot study; just an issue of schedules. Mr. Chang said to let him know if funding is an issue.

5. Action Items

ITEM	RESPONSIBLE	ACTION ITEM	DUE DATE	STATUS
1.	Air Force	Update document schedule to include dates for Work Plan for Sediment Sites	June 2009	Open
2.	Air Force	Update document schedule to include dates for interim plans for FT005	June 2009	Open
3.	Air Force	Coordinate site visit of sediment excavations with RAB members	TBD	Open

TRAVIS AIR FORCE BASE
ENVIRONMENTAL RESTORATION PROGRAM
REMEDIAL PROGRAM MANAGER'S MEETING
20 May 2009, 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)
- B. FIELD WORK EFFORT (LONNIE)
- C. VAPOR INTRUSION ASSESSMENT STATUS (GLENN)
- D. SD001 AND SD033 FIELD WORK (ITSI)

3. PRESENTATIONS

- A. FIELD SAMPLING PLAN
- B. PROGRAM UPDATE: ACTIVITIES COMPLETED, IN PROGRESS AND UPCOMING

4. NEW ACTION ITEM REVIEW

5. PROGRAM/ISSUES/UPDATE

6. POTENTIAL RESPONSE TO COMMENTS MEETINGS

- A. 2008 ANNUAL GWTP RPO REPORT

Travis AFB Master Document Schedule

Annual Meeting and Teleconference Schedule

Suppliers Teleconference (8:30 a.m. - 10:00 a.m.)	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.)
01-27-09	01-28-09		—
02-24-09	02-25-09		—
03-24-09	03-25-09		—
04-21-09	04-22-09		04-23-09
05-19-09	05-20-09		—
06-23-09	06-24-09		—
07-21-09	07-22-09		—
08-25-09	08-26-09		—
09-22-09	09-23-09		—
10-20-09	10-21-09		10-22-09
—	—	11-16-09	—
12-08-09	12-09-09		—

Travis AFB Master Document Schedule

PRIMARY DOCUMENTS				
Life Cycle	Basewide Groundwater Travis, Glenn Anderson		Potrero Hills Annex Travis, Glenn Anderson	RD/RA QAPP Update Travis, Glenn Anderson CH2M Hill, Mark Fesler
	Proposed Plan	ROD	ROD	Plan
Scoping Meeting	NA	01-24-07	180 days after Water Board Order Rescinded	NA
Predraft to AF/Service Center	04-14-10	07-21-10	+ 360 days	12-30-08
AF/Service Center Comments Due	04-28-10	08-04-10	+ 420 days	01-16-09
Draft to Agencies	05-12-10	08-18-10	+ 480 days	02-03-09
Draft to RAB	05-12-10	08-18-10	+ 480 days	02-03-09
Agency Comments Due	07-07-10	10-13-10	+ 540 days	04-10-09
Response to Comments Meeting	TBD	TBD	+ 555 days	04-22-09
Agency Concurrence with Remedy	TBD	NA	+ 570 days	NA
Public Comment Period	TBD	NA	+ 615 to 645 days	NA
Public Meeting	TBD	NA	+ 625 days	NA
Response to Comments Due	TBD	TBD	+ 640 days	05-20-09
Draft Final Due	08-04-10	11-10-10	+ 640 days	NA
Final Due	09-01-10	12-08-10	+ 700 days	05-20-09

PRIMARY DOCUMENTS		
	Comprehensive Site Evaluation Phase II Travis, Glenn Anderson Sky Research, Ian Roberts	Focused Feasibility Study Travis, Glenn Anderson CH2M Hill, Loren Krook
Life Cycle	Work Plan	FFS
Scoping Meeting	NA	NA
Predraft to AF/Service Center	01-15-09	09-17-09
AF/Service Center Comments Due	02-12-09	10-01-09
Draft to Agencies	04-29-09	10-15-09
Draft to RAB	04-29-09	10-15-09
Agency Comments Due	05-29-09	12-17-09
Response to Comments Meeting	06-10-09	01-20-10
Agency Concurrence with Remedy	NA	NA
Public Comment Period	NA	NA
Public Meeting	NA	NA
Response to Comments Due	06-22-09	02-17-10
Draft Final Due	06-22-09	02-17-10
Final Due	07-22-09	03-17-10

SECONDARY DOCUMENTS					
Life Cycle	Action Plan Travis, Glenn Anderson CH2M HILL, Chuck Elliott	Phases 1 and 2 Vapor Intrusion Report Travis, Glenn Anderson CH2M HILL, Leslie Royer	Phytostabilization Tech Memo Travis, Glenn Anderson Parsons, Bill Plaehn	SS016 RPO Work Plan Travis AFB, Lonnie Duke CH2M HILL, Doug Berwick	2008 Annual GWTP RPO Report Travis AFB, Lonnie Duke CH2M HILL, Daniel Chern
Scoping Meeting	NA	NA	10-09-08	NA	NA
Predraft to AF/Service Center	11-21-08	12-08-08	02-09-09	05-21-09	03-27-09
AF/Service Center Comments Due	01-09-09	12-15-08	02-16-09	06-05-09	04-02-09
Draft to Agencies	01-28-09	01-12-09	04-29-09	06-12-09	04-13-09
Draft to RAB	01-28-09	01-12-09	04-29-09	06-12-09	04-13-09
Agency Comments Due	03-26-09	02-17-09	05-29-09	07-10-09	05-13-09
Response to Comments Meeting	04-09-09	02-25-09	06-10-09	07-22-09	05-20-09
Response to Comments Due	05-04-09	TBD*	06-22-09	07-29-09	05-27-09
Draft Final Due	NA	NA	NA	NA	NA
Final Due	05-04-09	TBD*	06-22-09	07-29-09	05-27-09
Public Comment Period	NA	NA	NA	NA	NA
Public Meeting	NA	NA	NA	NA	NA

*The Vapor Intrusion report will be rescheduled to incorporate the Phase 3 data and evaluation per discussion with EPA on 30 March.

SECONDARY DOCUMENTS

Life Cycle	Field Sampling Plan Travis AFB, Glenn Anderson CH2M HILL, Loren Krook	SS014 Tier 1 POCO Evaluation Work Plan Travis AFB, Lonnie Duke CH2M HILL, Gavan Heinrich	Natural Attenuation Assessment Report Travis AFB, Glenn Anderson CH2M HILL, Leslie Royer	Passive Diffusion Bag (PDB) Tech Memo Travis AFB, Lonnie Duke CH2M HILL, Leslie Royer	DP039 RPO Work Plan Travis AFB, Glenn Anderson CH2M HILL, Doug Berwick
Scoping Meeting	NA	NA	NA	NA	NA
Predraft to AF/Service Center	04-28-09	03-18-09	07-07-09	04-01-09	07-14-09
AF/Service Center Comments Due	05-12-09	03-25-09	07-21-09	04-03-09	07-28-09
Draft to Agencies	05-19-09	04-01-09	08-07-09	04-07-09	08-05-09
Draft to RAB	05-19-09	04-01-09	08-07-09	04-07-09	08-05-09
Agency Comments Due	06-17-09	04-29-09	09-08-09	05-05-09	09-03-09
Response to Comments Meeting	06-24-09	05-04-09	09-23-09	05-20-09	09-23-09
Response to Comments Due	07-10-09	05-12-09	10-06-09	06-19-09	10-08-09
Draft Final Due	NA	NA	NA	NA	NA
Final Due	07-10-09	05-12-09	10-06-09	06-19-09	10-08-09
Public Comment Period	NA	NA	NA	NA	NA
Public Meeting	NA	NA	NA	NA	NA

SECONDARY DOCUMENTS

Life Cycle	SD036/SD037 RPO Work Plan Travis AFB, Lonnie Duke CH2M HILL, Tony Chakurian	ST018 POCO Remedial Action Work Plan Travis AFB, Lonnie Duke CH2M HILL, Gavan Heinrich	SITE ST032 POCO Evaluation Work Plan Travis AFB, Lonnie Duke CH2M HILL, Gavan Heinrich	ST027B Site Characterization Report Travis AFB, Lonnie Duke CH2M HILL, Gavan Heinrich
Scoping Meeting	NA	NA	NA	NA
Predraft to AF/Service Center	05-22-09	06-12-09	05-12-09	08-14-09
AF/Service Center Comments Due	06-05-09	06-26-09	05-26-09	08-28-09
Draft to Agencies	06-19-09	07-10-09	06-09-09	09-14-09
Draft to RAB	06-19-09	07-10-09	06-09-09	09-14-09
Agency Comments Due	07-20-09	08-07-09	07-07-09	10-16-09
Response to Comments Meeting	07-22-09	08-26-09	07-14-09	10-21-09
Response to Comments Due	08-12-09	09-11-09	07-21-09	11-04-09
Draft Final Due	NA	NA	NA	NA
Final Due	08-12-09	09-11-09	07-21-09	11-04-09
Public Comment Period	NA	NA	NA	NA
Public Meeting	NA	NA	NA	NA

INFORMATIONAL DOCUMENTS	
Life Cycle	Quarterly Newsletters (Jul 2009) Travis, Glenn Anderson
Scoping Meeting	NA
Predraft to AF/Service Center	NA
AF/Service Center Comments Due	NA
Draft to Agencies	06-19-2009
Draft to RAB	NA
Agency Comments Due	07-02-2009
Response to Comments Meeting	TBD
Response to Comments Due	07-06-2009
Draft Final Due	NA
Final Due	07-13-2009
Public Comment Period	NA
Public Meeting	NA

HISTORICAL			
Life Cycle	Site ST027B Plume Delineation Work Plan Travis, Lonnie Duke CH2M HILL, Gavin Heinrich	ST032 Tech Memo Travis AFB, Lonnie Duke CH2M HILL, Gavan Heinrich	SS030 RPO Work Plan Travis, Lonnie Duke CH2M HILL, Loren Krook
Scoping Meeting	NA	NA	NA
Predraft to AF/Service Center	11-21-08	01-23-09	01-08-09
AF/Service Center Comments Due	11-28-08	02-06-09	01-15-09
Draft to Agencies	12-09-08	02-19-09	02-09-09
Draft to RAB	12-09-08	02-19-09	02-09-09
Agency Comments Due	02-11-09	03-23-09	03-11-09
Response to Comments Meeting	01-25-09	03-25-09	03-25-09
Response to Comments Due	04-08-09	04-02-09	04-08-09
Draft Final Due	NA	NA	NA
Final Due	04-08-09	04-02-09	04-08-09
Public Comment Period	NA	NA	NA
Public Meeting	NA	NA	NA

South Base Boundary Groundwater Treatment Plant Monthly Data Sheet

Report Number: 105

Reporting Period: 1 – 30 April 2009

Date Submitted: 13 May 2009

This data sheet includes the following: results for the operation of the South Base Boundary Groundwater Treatment Plant (SBBGWTP), a summary of flow rates for the individual extraction wells, a brief description of any shutdowns or significant events related to the system, and a summary of analytical results for selected samples collected.

Operations Summary – April 2009

Operating Time: **671 hours**

Percent Uptime: 100%

Electrical Power Usage: 13,740 kWh

Gallons Treated: **2.6 million gallons**

Gallons Treated Since July 1998: **646 million gallons**

Volume Discharged to Union Creek: **2.6 million gallons**

VOC Mass Removed: **2.1 pounds^a**

VOC Mass Removed Since July 1998: **363 pounds**

Rolling 12-Month Cost per Pound of Mass Removed: \$3,559^b

Monthly Cost per Pound of Mass Removed: \$5,082^{bc}

^a Calculated using April 2009 EPA Method SW8260B analytical results.

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

^c Monthly cost per pound of mass removed has decreased due to a decrease in reporting costs.

Flow Rates

Average Groundwater Total Flow Rate: 64.9 gpm^a

Average Flow Rate (gpm) ^b							
FT005				SS029		SS030	
EW01x05	1.2	EW736x05	Off line ^e	EW01x29	1.3	EW01x30	10.9
EW02x05	2.1	EW737x05	Off line ^c	EW02x29	5.4	EW02x30	4.6
EW03x05	4.7	EW742x05	Off line ^c	EW03x29	Off line ^d	EW03x30	Off line ^d
EW731x05	Off line ^c	EW743x05	Off line ^d	EW04x29	9.6	EW04x30	Off line ^e
EW732x05	Off line ^c	EW744x05	Off line ^c	EW05x29	1.2	EW05x30	11.7
EW733x05	Off line ^c	EW745x05	Off line ^c	EW06x29	13.9	EW06x30	Dry ^f
EW734x05	Off line ^e	EW746x05	Off line ^c	EW07x29	15.2	EW711x30	Off line ^e
EW735x05	Off line ^e						
FT005 Total: 8.0				SS029 Total: 46.6		SS030 Total: 27.2	

^a The average groundwater flow rate was calculated using the Union Creek Discharge Totalizer and dividing it by the operating time of the plant.

^b Extraction well flow rates are based on the average of the weekly readings.

^c Extraction well was shut down for a rebound study in December 2007 based on the *Work Plan for RPO Actions at Sites SD031, FT004, and FT005* (CH2M HILL, 2007).

^d Extraction well is off line due to low VOC concentrations.

^e Extraction well was not operational during April 2009 due to malfunctioning equipment.

^f Extraction well was not operational at time of measurement due to recharging well.

gpm—gallons per minute

Shutdown/Restart Summary

No shutdowns or restarts occurred in April 2009.

Summary of O&M Activities

Monthly groundwater samples at the SBBGWTP were collected on 1 April 2009. Sample results are presented in Table 1. The total VOC concentration (95.7 µg/L) in the influent sample has decreased since the March 2009 sample (118.2 µg/L). TCE and cis-1,2-DCE were the only VOCs detected in the influent sample. 1,2-Dichloroethane, the indicator chemical for Site FT005, was not detected in the influent sample. VOCs were not detected in the effluent sample, indicating good treatment efficiency.

In March 2009, the SBBGWTP PLC for Site FT005 was indicating a fault, and the FT005 extraction wells were not functioning, except for EW01x05, EW02x05, and EW03x05. The FT005 PLC was repaired on 29 April, 2009 and returned to service. The SBBGWTP SCADA system was also serviced on 29 April, 2009. Communication between the PLC and the SCADA computer had been interrupted, so this connection was restored, and the program was reloaded onto the PLC. The SBBGWTP SCADA is functioning correctly and is currently on line.

EW07x30 and EW04x30 were off line in April 2009 due to malfunctioning equipment. Both pumps exhibit symptoms typical of stripped splines (pumps have power but do not pump water). Solutions to get both pumps back online are currently being investigated. The pumps are expected to be back online in May 2009.

Analytical data from the SBBGWTP effluent sample collected in March 2009 had initially identified a TPH-g concentration of 52 J µg/L, which is in excess of the effluent limit for TPH-g at the SBBGWTP. Further investigation into this anomalous detection included examination of the chromatograph generated during analysis of that sample. The chromatogram identified a split peak near the retention time starting period that was included in the analysis. This split peak was requantified by Empirical Laboratories and correctly identified as a laboratory artifact. Empirical reissued the original laboratory analytical report and corrected the previous listing of 52 J µg/L as Not Detected. The reissued analytical data from March 2009 is presented in Table 2.

Optimization Activities

On 4 December 2007, nine extraction wells (EW731x05, EW732x05, EW733x05, EW737x05, and EW742x05 through EW746x05) were shut down for rebound testing in accordance with the *Work Plan for Remedial Process Optimization (RPO) Actions at Sites SD031, FT004, and FT005* (CH2M HILL, 2007). These wells continue to remain off line.

No other optimization activities were conducted in April 2009.

Table 1

Summary of Groundwater Analytical Data for April 2009 – South Base Boundary Groundwater Treatment Plant

Constituent	Instantaneous Maximum ^a (µg/L)	Detection Limit (µg/L)	N/C	1 April 2009 (µg/L)	
				Influent	Effluent
Halogenated Volatile Organics					
Bromodichloromethane	5.0	0.17	0	ND	ND
Carbon Tetrachloride	0.5	0.18	0	ND	ND
Chloroform	5.0	0.17	0	ND	ND
Dibromochloromethane	5.0	0.17	0	ND	ND
1,1-Dichloroethane	5.0	0.24	0	ND	ND
1,2-Dichloroethane	0.5	0.22	0	ND	ND
1,1-Dichloroethene	5.0	0.24	0	ND	ND
cis-1,2-Dichloroethene	5.0	0.23	0	5.4	ND
trans-1,2-Dichloroethene	5.0	0.54	0	ND	ND
Methylene Chloride	5.0	0.61	0	ND	ND
Tetrachloroethene	5.0	0.2	0	ND	ND
1,1,1-Trichloroethane	5.0	0.16	0	ND	ND
1,1,2-Trichloroethane	5.0	0.2	0	ND	ND
Trichloroethene	5.0	1	0	90.3	ND
Vinyl Chloride	0.5	0.24	0	ND	ND
Non-Halogenated Volatile Organics					
Benzene	1.0	0.091	0	ND	ND
Ethylbenzene	5.0	0.15	0	ND	ND
Toluene	5.0	0.098	0	ND	ND
Xylenes	5.0	0.093 - 024	0	ND	ND
Other					
Total Petroleum Hydrocarbons – Gasoline	50	32	0	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	47.6	0	NM	ND
Total Suspended Solids (mg/L)	NE	2.5	0	10.5	NM
^a In accordance with Appendix B of the <i>Travis AFB South Base Boundary Groundwater Treatment Plant Operations and Maintenance Manual</i> (CH2M HILL, 2004).					
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			

Table 2

Summary of Groundwater Analytical Data for March 2009 – South Base Boundary Groundwater Treatment Plant

Constituent	Instantaneous Maximum ^a (µg/L)	Detection Limit (µg/L)	N/C	2 March 2009 (µg/L)	
				Influent	Effluent
Halogenated Volatile Organics					
Bromodichloromethane	5.0	0.18	0	ND	ND
Carbon Tetrachloride	0.5	0.22	0	ND	ND
Chloroform	5.0	0.17	0	ND	ND
Dibromochloromethane	5.0	0.10	0	ND	ND
1,1-Dichloroethane	5.0	0.19	0	ND	ND
1,2-Dichloroethane	0.5	0.22	0	0.55 J	ND
1,1-Dichloroethene	5.0	0.24	0	ND	ND
cis-1,2-Dichloroethene	5.0	0.16	0	7.6	ND
trans-1,2-Dichloroethene	5.0	0.21	0	ND	ND
Methylene Chloride	5.0	0.27	0	ND	ND
Tetrachloroethene	5.0	0.16	0	ND	ND
1,1,1-Trichloroethane	5.0	0.20	0	ND	ND
1,1,2-Trichloroethane	5.0	0.14	0	ND	ND
Trichloroethene	5.0	0.50	0	110	ND
Vinyl Chloride	0.5	0.19	0	ND	ND
Non-Halogenated Volatile Organics					
Benzene	1.0	0.12	0	ND	ND
Ethylbenzene	5.0	0.10	0	ND	ND
Toluene	5.0	0.14	0	ND	ND
Xylenes	5.0	0.10 - 021	0	ND	ND
Other					
Total Petroleum Hydrocarbons – Gasoline	50	50	1	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	100	0	NM	ND
Total Suspended Solids (mg/L)	NE	4.0	0	6.8	NM

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

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

Central Groundwater Treatment Plant Monthly Data Sheet

Report Number: 117

Reporting Period: 1 – 30 April 2009

Date Submitted: 13 May 2009

This data sheet includes the following: results for the operation of the Central Groundwater Treatment Plant (CGWTP), West Treatment and Transfer Plant (WTTP), and thermal oxidation (ThOx) system (previously referred to as the two-phase extraction [TPE] system). A summary of flow rates for the CGWTP, WTTP, ThOx, and extraction wells EW01x16, EW02x16, EW03x16, EW605x16, and EW610x16; a brief description of any shutdowns or significant events related to the systems, and a summary of analytical results for selected samples collected are also included on this data sheet.

Operations Summary – April 2009

Operating Time:	Percent Uptime:	Electrical Power Usage:
CGWTP: 647 hours	CGWTP: 96.8%	CGWTP: 6,800 kWh
WTTP: Water: 646 hours Vapor: 524 hours	WTTP: Water: 96.5% Vapor: 78.2%	WTTP: 16,757 kWh
ThOx: 601 hours	ThOx: 90.0%	ThOx: 8,223 kWh
ThOx: Natural Gas Usage: 2,502 therms		

Gallons Treated: **2.5 million gallons** Gallons Treated Since January 1996: **411 million gallons**

VOC Mass Removed: VOC Mass Removed Since January 1996:

9.6 lbs (groundwater only)^a **2,433 lbs from groundwater**
7.6 lbs (vapor only)^b **8,625 lbs from vapor**

UV/Ox DRE: 98.4% ThOx DRE: 99.7%

Rolling 12-Month Cost per Pound of Mass Removed: \$690^c

Monthly Cost per Pound of Mass Removed: \$1,127^{cd}

^a Calculated using February 2009 EPA Method SW8260B analytical results.

^b Total VOC vapor mass removed was calculated using December 2008 EPA Method TO-14 analytical results for the ThOx system and January 2009 EPA Method TO-14 analytical results for the WTTP SVE system.

^c Costs include operations and maintenance, reporting, analytical laboratory, project management, and electric and natural gas costs related to operation of the system.

^d Lower monthly cost per pound of mass removed is due to a decrease in reporting labor.

DRE = destruction removal efficiency

UV/Ox = ultraviolet oxidation

Flow Rates

Average Groundwater Flow Rate: **66.2 gpm^a**

Location	Average Flow Rate	
	Groundwater (gpm) ^b	Soil Vapor (scfm)
EW01x16	23.6	NA
EW02x16	6.7	NA
EW03x16	0.9	NA ^c
EW605x16	13.3	NA ^c
EW610x16	2.5	NA ^c
TPE-W	NA	NA ^c
WTTP	21.4 ^d	125
ThOx	0.5 ^d	60.2

^a as measured by the effluent discharge to the storm drain divided by the operating time during the month.

^b as measured by extraction well totalizer divided by the operating time.

^c soil vapor was extracted from this well; however, the flow rates are not measured at individual wells at SS016.

^d as measured by the effluent groundwater pumped to the CGWTP divided by the operating time.

gpm = gallons per minute

NA = not applicable/not available

scfm = standard cubic feet per minute

Flow Rates

Average Flow Rate from the WIOU, DP039, and LF008 Extraction Wells (gpm) ^a							
SD037/ SD043				SD033/SD034/ DP039		LF008/SD036	
EW599x37	4.3	EW705x37	1.0	EW501x33	0.7	EW719x08	Off line ^c
EW700x37	4.3	EW706x37	0.8	EW503x33	1.5	EW720x08	Off line ^c
EW701x37	1.4	EW707x37	0.8	EW01x34	0.3	EW721x08	Off line ^c
EW702x37	0.5	EW510x37	4.1	EW03x34	1.0	EW593x36	2.3
EW703x37	0.6	EW511x37	1.2	EW563x39	Off line ^b	EW594x36	0.6
EW704x37	2.0	EW555x43	0.3	EW782x39	Off line ^b	EW595x36	0.4

gpm—gallons per minute

^a Extraction well flow rates are based on the average of the weekly readings.

^b Extraction wells were shut off to facilitate the Bioreactor Sustainability Study at Site DP039.

^c Extraction wells were shut off to support a rebound study at Site LF008.

Shutdown/Restart Summary

Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
CGWTP (Groundwater):					
CGWTP	20 April 2009	12:15	21 April 2009	10:15	H ₂ O ₂ pump – Low Flow
WTTP (Groundwater):					
WTTP	20 April 2009	12:15	21 April 2009	10:15	CGWTP Shutdown (see above)
WTTP (Vapor):					
WTTP	16 April 2009	21:00	17 April 2009	09:30	Power Surge/Voltage Spike
WTTP	20 April 2009	07:00	20 April 2009	09:00	Power Surge/Voltage Spike
WTTP	20 April 2009	12:15	21 April 2009	10:15	CGWTP Shutdown (see above)
WTTP	22 April 2009	16:00	23 April 2009	10:00	Power Surge/Voltage Spike
WTTP	25 April 2009	11:45	27 April 2009	12:15	Power Surge/Voltage Spike
WTTP	27 April 2009	15:30	28 April 2009	10:30	Power Surge/Voltage Spike
ThOx (Vapor):					
ThOx	20 April 2009	12:15	21 April 2009	10:15	CGWTP Shutdown (see above)
ThOx	25 April 2009	11:45	27 April 2009	11:45	Power Loss/Voltage Spike
CGWTP = Central Groundwater Treatment Plant WTTP = West Treatment and Transfer Plant ThOx = Thermal Oxidation System					

Summary of O&M Activities

Monthly groundwater sampling at the CGWTP was performed on 1 April 2009. Groundwater sample results are summarized in Table 1. The total VOC concentration (458.8 µg/L) in the April 2009 CGWTP influent groundwater sample has increased nearly two fold since the March 2009 sampling (230 µg/L). TCE, cis-1,2-DCE, trans-1,2-DCE, PCE, 1,1-DCE, 1,2-dichlorobenzene, chlorobenzene (J-flagged), and chloroform (J-flagged) were detected in the system influent. There were no detections of these contaminants after treatment by UV-Ox. Cis-1,2-dichloroethene and trichloroethene were detected in the system effluent groundwater samples following treatment by granular activated carbon (GAC) at concentrations less than their respective effluent limits. The detections in these samples may be attributed to desorption from the GAC.

The WTPP experienced a significant amount of downtime during April 2009. While frequent power surges or temporary power losses appeared to cause this downtime, the source of these power fluctuations remains unknown. Each instance of downtime caused by a power surge or voltage spike resulted in a shutdown of the SVE blower and a reboot of the SCADA computer at the WTPP. The SVE system was restarted upon discovery of downtime without any problems. These power outages or surges did not affect the groundwater portion of the WTPP. Overall system stability and run time appeared to be improving toward the end of April 2009. Troubleshooting activities during May 2009 will determine the cause of and solution to this problem.

Other maintenance activities performed in April 2009 included changing the bag filters at the WTPP and CGWTP, verifying the historical logging data on the CGWTP SCADA computer, and determining how the CGWTP will continue to operate in the event that the UV/Ox is taken off line.

Optimization Activities

No optimization activities were conducted in April 2009.

Table 1

Summary of Groundwater Analytical Data for April 2009 – Central Groundwater Treatment Plant

Constituent	Instantaneous Maximum ^a (µg/L)	Detection Limit (µg/L)	N/C	1 April 2009 (µg/L)					
				Influent	After UV/OX	After Carbon 1 Effluent	After Carbon 2 Effluent	After Carbon 3 Effluent	System Effluent
Halogenated Volatile Organics									
Bromodichloromethane	5.0	0.18 – 0.36	0	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	0.5	0.22 – 0.44	0	ND	ND	ND	ND	ND	ND
Chloroform	5.0	0.17 – 0.34	0	0.21 J	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	5.0	0.16 – 0.32	0	0.72	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	5.0	0.13 – 0.26	0	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	5.0	0.10 – 0.20	0	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5.0	0.19 – 0.38	0	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	0.5	0.22 – 0.44	0	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	5.0	0.24 – 0.48	0	0.69	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.16 – 0.32	0	77	ND	0.32 J	0.4 J	0.41 J	0.34 J
trans-1,2-Dichloroethene	5.0	0.21 – 0.42	0	3.5	ND	ND	ND	ND	ND
Methylene Chloride	5.0	0.27 – 0.54	0	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5.0	0.16 – 0.32	0	0.97	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	5.0	0.20 – 0.40	0	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	5.0	0.14 – 0.28	0	ND	ND	ND	ND	ND	ND
Trichloroethene	5.0	0.50 – 1.0	0	376	ND	2.1	2.1	1.8	1.3
Vinyl Chloride	0.5	0.19 – 0.38	0	ND	ND	ND	ND	ND	ND
Non-Halogenated Volatile Organics									
Benzene	1.0	0.12 – 0.24	0	ND	ND	ND	ND	ND	ND
Ethylbenzene	5.0	0.10 – 0.20	0	ND	ND	ND	ND	ND	ND
Toluene	5.0	0.14 – 0.28	0	ND	ND	ND	ND	ND	ND
Total Xylenes	5.0	0.10 - 0.42	0	ND	ND	ND	ND	ND	ND

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

- 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

Field Sampling Plan (FSP) Travis Air Force Base

RPM Meeting

May 20, 2009

FSP – Introduction

- Provides general requirements and procedures for conducting field operations & investigations at Travis AFB
- Field operations & investigation details specific to a particular area or task will be addressed in site-specific work plans
- Data quality objectives (DQOs) will be addressed in site-specific work plans

FSP – Introduction

- Many of the Standard Operating Procedures (SOPs) were originally presented in the WABOU Sampling and Analysis Plan (CH2M HILL, 1995)
- All SOPs presented in this FSP have been updated and modified where appropriate

FSP

- The FSP text addresses four major areas:
 - 1) Field Operations
 - 2) Environmental Sampling
 - 3) Field Measurements
 - 4) Record Keeping
- 55 SOPs are in Appendix C of the FSP

SOPs Divided into 10 Groups

10. Record Keeping (4)

20. Surveying & Staking (3)

30. Geophysical Surveying (3)

40. Decontamination (3)

50. In Situ Groundwater
Sampling, Soil Gas
Surveys, & Vapor Intrusion
Monitoring (6)

60. Soil, Sediment, & Surface
Water Sampling (7)

70. Drilling, Well Construction,
& Testing (8)

80. Groundwater Sampling (7)

90. Waste Management (1)

100. Standard Forms (13)

Waste Management Plan (Appendix D)

- Regulatory Program
- Waste Classification Procedures
- Waste Streams
- Management of Waste by Type
- Waste Container Labeling, Accumulation, & Inspection Procedures
- General Waste Management
- Shipping Documentation
- Transportation
- Offsite Disposal Procedures

Travis AFB Groundwater Program

Management Overview Briefing

RPM Meeting

May 20, 2009

Completed Documents & Field Work

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 WP
- ST027B Site Characterization WP
- SS030 RPO Work Plan
- ST032 POCO Technical Memo
- DP039 Bioreactor Work Plan

Field Work

- GSAP 2008 Semi-annual Event
- ST027B Gore Sorber Survey
- ST027B Field Sampling – Phase 2

In-Progress Documents & Field Work

Documents

- RD/RA QAPP Update (Draft)
- 2008 Annual GWTP RPO Report (Draft)
- Passive Diffusion Bag (PDB) Technical Memo (Draft)
- Phytostabilization Demonstration Technical Memo (draft)
- Comprehensive Site Evaluation Phase II (Draft)
- Field Sampling Plan (FSP) (Pre-Draft)
- ST032 POCO Evaluation Work Plan (Pre-Draft)

Field Work

- GSAP Annual Sampling Event

Upcoming Documents & Field Work

Documents

- SS016 RPO Work Plan June
- SD036/SD037 RPO Work Plan June
- ST018 RA Work Plan July
- Natural Attenuation Assessment Report (NAAR) August
- DP039 RPO Work Plan August
- Focused Feasibility Study Oct
- Phases 1, 2 and 3 Vapor Intrusion Report TBD

Field Work

- SS014 Site Characterization May
- ST027B Installation of Wells – Phase 3 May
- ST032 POCO Sampling May
- SS030 Site Characterization June
- SS016 Site Characterization July
- LF007C Site Characterization TBD
- SD036/SD037 Site Characterization August