

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

13 December 2006, 0930 Hours

Mr. Mark Smith, Travis Air Force Base (AFB), conducted the Remedial Program Managers (RPM) meeting held on 13 December 2006 at 0930 in the Base Civil Engineering Conference Room, Building 570, Travis AFB, California. Attendees included:

- Mark Smith Travis AFB
- Gregory Parrott Travis AFB
- Wilford Day Travis AFB
- Lonnie Duke Travis AFB
- Jose Salcedo Department of Toxic Substances Control (DTSC)
- John Lucey U.S. Environmental Protection Agency (U.S.EPA)
- Alan Friedman California Regional Water Quality Control Board (CRWQCB)
- Mike Wray CH2M Hill
- Carol Kontonickas URS
- Bob Hulet Shaw Engineering and Infrastructure (Shaw E&I)
- Tom Barry Shaw E&I

Handouts distributed throughout the meeting included:

- Attachment 1 Meeting Agenda
- Attachment 2 Master Meeting, Teleconference, and Document Schedules
- Attachment 3 SBBGWTP Monthly Data Sheet (November 2006)
- Attachment 4 CGWTP Monthly Data Sheet (November 2006)
- Attachment 5 NGWTP Monthly Data Sheet (November 2006)

1. ADMINISTRATIVE

A. Previous Meeting Minutes

The October 2006 RPM meeting minutes were approved and finalized.

B. Master Meeting and Document Schedule

The revised Travis AFB Master Meeting, Teleconference, and Document Schedules were distributed (see Attachment 2).

Travis AFB Annual Meeting and Teleconference Schedule

- Page 2, Mr. Salcedo requested that the July's RPM Meeting be changed to 18 July 2007. This would change the Supplier's Teleconference to 17 July 2007. No objections were voiced and the change will be made.

Travis AFB Master Document Schedule

- Page 3, the Remedial Design (RD) schedule for FT005 is to be changed to reflect the actual submittal date of the draft to the agencies and Restoration Advisory Board, which is 13 November 2006 and the agency comments due date is to be changed to 22 December 2006. Mr. Lucey stated that he has no comments on the FT005 RD.
- Page 4, Mr. Smith stated that the scoping meeting for the Basewide Groundwater Record of Decision (ROD) could be delayed if the agencies are swamped by the remedial designs. Mr. Smith stated that prior to the scoping meeting, he wanted to get the contract awarded for a technical evaluation of the groundwater sites. Mr. Lucey suggested that the scoping meeting take place prior to awarding the contract to allow the agencies to express their concerns on the groundwater sites. Mr. Smith will discuss the scoping meeting due date with Mr. Anderson.
- Page 5, 2006 GSAP Annual Report agency comments due date is to be changed to 19 January 2007 since the 15th is a holiday.
- Page 7, Groundwater Treatment Plant Operations and Maintenance (O&M) Reports schedule has been updated for 2007.

2. OPERABLE UNIT UPDATE

A. North, East, West Industrial Operable Unit (NEWIOU)

1. FT005 Soil Remedial Design (RD) Package Review

Mr. Lucey stated that he has reviewed the FT005 Soil RD Package and has no comments. Mr. Friedman stated that if he has comments, he will submit his comments by 22 December 2006.

3. CURRENT PROJECTS

A. South Base Boundary Groundwater Treatment Plant

Mr. Smith reported that the South Base Boundary Groundwater Treatment Plant (SBBGWTP) performed at 99.6 % uptime, and 3.1 million gallons of groundwater were extracted and treated during the month of November 2006. The average flow rate for the SBBGWTP was 71.5 gallons per minute (gpm). Approximately 2.0 pounds of volatile organic compounds (VOCs) was removed during November 2006. The total mass of VOCs removed since the startup of the system is 293 pounds (see Attachment 3).

B. Central Groundwater Treatment Plant

Mr. Smith reported that the Central Groundwater Treatment Plant (CGWTP) performed at 92% uptime with approximately 2.4 million gallons of groundwater extracted and treated during the month of November 2006. The average flow rate for the CGWTP was 60.8 gpm. Approximately 8.1 pounds of VOCs were removed during November 2006. The total mass of VOCs removed since the startup of the system is 10,442 pounds. (see Attachment 4).

The thermal oxidation (Th/Ox) system continued to treat vapor from the 2-phase well as part of the SS016 focused vapor extraction activities. The focused extractions will continue at this well.

The West Treatment and Transfer Plant (WTTP) experienced a couple of shut downs during the maintenance of the soil vapor extraction (SVE) system and servicing the bag filter.

All treated water from this plant is being diverted to the storm drain.

On 28 November 2006, the CGWTP was shutdown due to the UV-Ox system failure. The CGWTP remained off line for the remainder of the month, and the ThOx and WTTP were also shutdown.

No optimization activities were planned or performed during November 2006.

C. North Groundwater Treatment Plant

Mr. Smith reported that the North Groundwater Treatment Plant (NGWTP) performed at 98.9% uptime with approximately 750,000 gallons of groundwater extracted and treated during the month of November 2006. The average flow for the NGWTP was 18.0 gpm. Less than a pound of VOCs was removed during November 2006, which was from groundwater. The total mass of VOCs removed since the startup of the system is 5,413 pounds (see Attachment 5).

The plant experienced shutdowns for eductor pump repairs and transfer pump maintenance operations during November 2006.

The NGWTP SVE system was shut down on 12 October 2006 due to the very low vapor VOC concentrations. In addition, the LF007 solar extraction wells (EW614x07 and EW615x07) were turned off for the wet season on 15 November 2006.

The majority of the treated groundwater from the plant was sent to the duck pond for beneficial use. Between 16 and 17 November 2006, the treated groundwater was discharged to the storm drain due to damage of the pipe that routes treated groundwater to the Duck Pond during other construction in the area,

D. DP039 Field Work

Mr. Duke stated that the DP039 field work is progressing well. The vault lid arrived on Monday and the concrete work is being conducted. The electrical and plumbing connections have been completed. The remaining work will be completed once the NGWTP is operating.

Mr. Lucey asked if there will be any startup procedures for this site. Mr. Wray answered that the standard startup procedures would take place. Then the system will transition into the regular operation, maintenance, and sampling program.

Mr. Lucey wanted to know if there will be documentation of the startup so that there will be something to compare in the future for evaluation. Mr. Wray stated that there is a rebound study scheduled as part of the startup procedures, and that a report will be prepared after all rebound and startup data have been collected.

Mr. Lucey asked if a round of soil gas sampling will take place shortly after startup. Mr. Wray stated that there will be startup testing, a shut down, and another rebound test prior to the system startup. After the system has been put into regular operation, it is recommended that periodic (e.g. annual) rebound testing be conducted.

Mr. Lucey will call Mr. Anderson to discuss what his plans are for reporting the various results.

E. Petroleum Only Contamination (POCO) Sites

Mr. Smith stated that he has started an aggressive effort to address Travis AFB's POCO sites. These are medium risk sites and the Air Force requires that the remedies be in place by fiscal year 2011. Mr. Smith will award a contract to investigate the sites to ensure that they are fully characterized and know where the contaminants are heading.

There are four sites: ST014, ST018, ST027, and ST028. Mr. Smith stated that ST014 is in a monitored natural attenuation state and will not be included in the contract. Sites ST018, ST027, and ST028 need additional work to determine if natural attenuation is taking place.

The draft work plan for the POCO sites will be given to Mr. Friedman after today's meeting.

4. PROGRAM ISSUES UPDATE

- Mr. Smith stated he has no news on the AFCEE reorganization; however, the reorganization most likely will not affect the base level.
- Mr. Salcedo asked if there was anything new on Mr. Marcus Johnson. Mr. Smith stated that he has not heard anything lately from him. (Mr. Johnson's concerns were

about how the runoff from our groundwater treatment plants are affecting the creek on his property.)

Mr. Parrot commented that many landowners are looking for opportunities to mitigate their land for critical habitat. Travis AFB is surrounded by critical habitat of endangered species, affording neighboring landowners' potential opportunities.

ACTION ITEM LIST

ITEM	RESPONSIBLE	ACTION ITEM	DUE DATE	STATUS
1.	Air Force	To provide a document (informational) that summarizes the work effort at DP039, per U.S. EPA's request.	7 Mar 2007	<p>Mr. Smith stated that this item will be deferred from 13 December 2006 until the Air Force completes the work at the site which is currently delayed due to rain. If U.S. EPA concurs, the new due date will be 7 March 2006.</p> <p>Mr. Lucey stated that a verbal update would be appropriate for him. He stated that he was curious about the groundwater results more than the SVE results and it would be okay to report this information at the next RPM meeting.</p> <p>Item Closed.</p>
2.	Air Force	To provide a verbal summary of the groundwater results from DP039.	10 Jan 2007	New Item.

ATTACHMENT 1

TRAVIS AIR FORCE BASE
ENVIRONMENTAL RESTORATION PROGRAM
REMEDIAL PROGRAM MANAGER'S MEETING
13 December, 9:30 A.M.
(Building 570, Main Conference Room)
AGENDA

1. ADMINISTRATIVE
 - A. PREVIOUS MEETING MINUTES
 - B. ACTION ITEM REVIEW (ALL)
 - C. MEETING DATES AND MASTER DOCUMENT SCHEDULE REVIEW

2. OPERABLE UNIT UPDATE
 - A. NEWIOU (MARK)
 - (1). FT005 SOIL RD PACKAGE REVIEW

3. CURRENT PROJECTS
 - A. SOUTH BASE BOUNDARY GROUNDWATER TREATMENT PLANT
 - (1). OPERATIONAL STATUS (MARK)
 - B. CENTRAL GROUNDWATER TREATMENT PLANT
 - (1). OPERATIONAL STATUS (MARK)
 - C. NORTH GROUNDWATER TREATMENT PLANT
 - (1). OPERATIONAL STATUS (MARK)
 - D. DP039 FIELD WORK (LONNIE)
 - E. PETROLEUM ONLY CONTAMINATION (POCO) SITES (MARK)

4. PROGRAM/ISSUES/UPDATE

5. NEW ACTION ITEM REVIEW

NOTE: A SEPARATE MEETING BETWEEN THE WATERBOARD AND COMPLIANCE PERSONNEL WILL IMMEDIATELY FOLLOW THIS RPM MEETING.

**Travis Air Force Base
Remedial Program Managers Meeting
Sign-In Sheet**

Please initial or print name if necessary

13 December, 2006

Initial	Name	Organization	Email Address	Telephone #
<i>ms</i>	Mark Smith	Travis AFB	marksmith2@travis.af.mil	(707) 424-3062
	Glenn Anderson	Travis AFB	glenn.anderson@travis.af.mil	(707) 424-4359
<i>WD</i>	Wilford Day	Travis AFB	wilford.day@travis.af.mil	(707) 424-0452
	Tom Sreenivasan	Travis AFB	tom.sreenivasan@travis.af.mil	(707) 424-3172
<i>GP</i>	Gregory Parrott	Travis AFB	gregory.parrott@travis.af.mil	(707) 424-1506
<i>LAD</i>	Lonnie Duke	Travis AFB	lonnie.duke@travis.af.mil	(707) 424-7520
<i>JCL</i>	John Lucey	U.S. EPA	lucey.john@epa.gov	(415) 972-3145
<i>J</i>	Jose Salcedo	DTSC	jsalcedo@dtsc.ca.gov	(916) 255-3791
<i>ADF</i>	Alan Friedman	CRWQCB	afriedman@waterboards.ca.gov	(510) 622-2347
<i>BH</i>	Bob Hulet	Shaw E&I	Bob.Hulet@shawgrp.com	(925) 288-2162
<i>TB</i>	Tom Barry	Shaw E&I	Tom.Barry@shawgrp.com	(925) 288-2018
	Adam Harvey	URS	adam_harvey@urscorp.com	(916) 679-2002
<i>MW</i>	Mike Wray	CH2M Hill	mwwray@ch2m.com	(916) 286-0243
<i>CK</i>	Carol Kontonickas	URS	Carol_Kontonickas@urscorp.com	(916) 679-2309
	Allen Mason	EQM	amason@eqm.com	(916) 203-2888

ATTACHMENT 2

Travis AFB Annual Meeting and Teleconference Schedule

Suppliers Teleconference (8:30 a.m. - 10:00 a.m.)	Monthly RPM Meeting (Begins at 9:30 a.m.)	Monthly RPM Teleconference (Begins at 9:30 a.m.)	Restoration Advisory Board Meeting (Begins at 6:30 p.m.)
1-10-06	1-11-06	1-25-06	*01-26-06
2-7-06	2-8-06	2-22-06	—
3-7-06	**3-15-06	3-22-06	—
4-18-06	4-19-06	4-26-06	4-27-06
5-9-06	5-10-06	5-24-06	—
6-27-06	6-28-06	NA	—
7-25-06	7-26-06	NA	—
***8-15-06	***8-16-06	***8-30-06	—
***9-26-06	***9-27-06	***9-13-06	—
***10-24-06	***10-25-06	***10-11-06 (1:30 pm)	10-26-06
—	—	11-15-06	—
12-12-06	12-13-06	—	—

* Public Meeting for the NEWIOU Soil Record of Decision

** NEWIOU ROD Response to Comments Meeting (Actual date held was 3/22/06 with follow on comments from EPA on 3/27/06 and 3/30/06)

*** These dates were established during the 28 June 2006 RPM meeting.

2007

Travis AFB Annual Meeting and Teleconference Schedule

Suppliers Teleconference (8:30 a.m. - 10:00 a.m.)	Monthly RPM Meeting (Begins at 9:30 a.m.)	Monthly RPM Teleconference (Begins at 9:30 a.m.)	Restoration Advisory Board Meeting (Begins at 6:30 p.m.)
1-09-07	1-10-07	1-24-07	—
2-6-07	2-7-07	2-21-07	—
3-6-07	3-7-07	3-21-07	—
4-3-07	4-4-07	4-18-07	4-19-07
5-1-07	5-2-07 & 5-30-07 ¹	5-16-07	—
6-12-07	6-13-07	6-27-07	—
7-10-07	7-11-07	7-25-07	Base Tour
8-7-07	8-8-07	8-22-07	—
9-11-07	9-12-07	9-26-07	—
10-16-07	10-17-07	—	10-25-07
—	—	11-7-07	—
12-11-07	12-12-07	—	—

¹ – Second RPM meeting scheduled to support RD/RA document reviews

**Travis AFB Master Document Schedule
(Continued)**

	PRIMARY DOCUMENTS					
	Remedial Design Travis, Glenn Anderson; URS, Adam Harvey	Remedial Design Travis, Glenn Anderson; CH2M Hill, Mike Wray				
Life Cycle	SD001	SD033	FT003	FT004	FT005	LF007
Scoping Meeting	8-23-06	8-23-06	5-07-04	5-10-06	6-01-06	9-28-06
Predraft to AF/Service Center	11-15-06	11-15-06	5-28-04	5-31-06	7-03-06	10-30-06
AF/Service Center Comments Due	12-08-06	12-08-06	6-25-04	6-20-06	7-31-06	11-27-06
Draft to Agencies	12-22-06	12-22-06	7-16-04	9-29-06	11-24-06	1-02-07
Draft to RAB	12-22-06	12-22-06	7-16-04	9-29-06	11-24-06	1-02-07
Agency Comments Due	2-02-07	2-02-07	8-16-04	10-30-06	12-29-06	2-01-07
Response to Comments Meeting	2-14-07	2-14-07	8-23-04	11-08-06	1-10-07	2-7-07
Response to Comments Due	2-28-07	2-28-07	9-29-04	11-22-06	1-19-07	2-23-07
Draft Final Due	2-28-07	2-28-07	9-29-04	11-22-06	1-19-07	2-23-07
Final Due	3-30-07	3-30-07	9-21-06*	12-20-06	2-21-07	3-23-07
Public Comment Period	NA	NA	NA	NA	NA	NA
Public Meeting	NA	NA	NA	NA	NA	NA

* The FT003 Soil Remedial Design Package was produced in 2004 and finalized after the NEWIOU Soil, Sediment and Surface Water ROD was signed.

**Travis AFB Master Document Schedule
(Continued)**

	PRIMARY DOCUMENTS	
	Basewide Travis, Glenn Anderson	Potrero Hills Annex Travis, Glenn Anderson
Life Cycle	Groundwater ROD	Potrero Hills ROD
Scoping Meeting	1-30-07	180 days after Order Rescinded
Predraft to AF/Service Center	2-01-09	+ 360 days
AF/Service Center Comments Due	4-01-09	+ 420 days
Draft to Agencies	6-15-09	+ 480 days
Draft to RAB	6-15-09	+ 480 days
Agency Comments Due	8-15-09	+ 540 days
Response to Comments Meeting	9-01-09	+ 555 days
Agency Concurrence with Remedy	9-15-09	+ 570 days
Draft Proposed Plan to Agencies	12-01-09	+ 600 days
Issue Proposed Plan	1-15-10	+ 615 days
Public Comment Period	1-15-10 to 2-15-10	+ 615 to 645 days
Public Meeting	1-28-10	+ 625 days
Response to Comments Due	3-01-10	+ 640 days
Draft Final Due	3-01-10	+ 640 days
Final Due	5-01-10	+ 700 days

Travis AFB Master Document Schedule
(Continued)

SECONDARY DOCUMENTS	
Life Cycle	2006 GSAP Annual Report Travis, Tom Sreenivasan; CH2M Hill, Mike Wray
Scoping Meeting	NA
Predraft to AF/Service Center	10-13-06
AF/Service Center Comments Due	10-30-06
Draft to Agencies	11-13-06
Draft to RAB	11-13-06
Agency Comments Due	01-15-07
Response to Comments Meeting	02-14-07
Response to Comments Due	02-28-07
Draft Final Due	02-28-07
Final Due	03-30-07
Public Comment Period	NA
Public Meeting	NA

**Travis AFB Master Document Schedule
(Continued)**

INFORMATIONAL DOCUMENTS	
Life Cycle	Quarterly Newsletters (for the 26 October 2006 RAB) Travis, Mark Smith
Scoping Meeting	NA
Predraft to AF/Service Center	NA
AF/Service Center Comments Due	NA
Draft to Agencies	9-14-06
Draft to RAB	NA
Agency Comments Due	9-28-06
Response to Comments Meeting	TBD
Response to Comments Due	10-12-06
Draft Final Due	TBD
Final Due	10-12-06
Public Meeting	NA

**Travis AFB Master Document Schedule
(Continued)**

INFORMATIONAL DOCUMENTS				
Life Cycle	Groundwater Treatment Plant O&M Reports Travis, Tom Sreenivasan; CH2M Hill, Mike Wray			
	Groundwater Treatment Plants Annual Reports Fiscal Year 2006	Groundwater Treatment Plants First Quarter Report Fiscal Year 2007	Groundwater Treatment Plants Second Quarter Report Fiscal Year 2007	Groundwater Treatment Plants Third Quarter Report Fiscal Year 2007
Scoping Meeting	NA	NA	NA	NA
Predraft to AF/Service Center	1-22-07	4-13-07	7-13-07	10-12-07
AF/Service Center Comments Due	1-26-07	4-20-07	7-20-07	10-19-07
Draft to Agencies	NA	NA	NA	NA
Draft to RAB	NA	NA	NA	NA
Agency Comments Due	NA	NA	NA	NA
Response to Comments Meeting	NA	NA	NA	NA
Response to Comments Due	NA	NA	NA	NA
Draft Final Due	NA	NA	NA	NA
Final Due	1-31-07	4-27-07	7-27-07	10-26-07
Public Comment Period	NA	NA	NA	NA
Public Meeting	NA	NA	NA	NA

ATTACHMENT 3

South Base Boundary Groundwater Treatment Plant

Monthly Data Sheet

Report Number: 76

Reporting Period: 1 – 30 November 2006

Date Submitted: 8 December 2006

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 – November 2006

Operating Time: **717 hours**

Percent Uptime: **99.6%**

Gallons Treated: **3.1 million gallons**

Gallons Treated Since July 1998: **535 million gallons**

Volume Discharged to Union Creek: **3.1 million gallons**

Percentage of Treated Water to Beneficial Use: **0%**

VOC Mass Removed: **2.0 pounds^a**

VOC Mass Removed Since July 1998: **293.8 pounds**

Rolling 12-Month Cost per Pound of Mass Removed: \$18,683^b

Monthly Cost per Pound of Mass Removed: \$3,552^b

^a Calculated using November 2006 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. High costs are due to low influent concentrations and low flow rate.

Flow Rates

Average Groundwater Total Flow Rate: **71.5^a**

Average Flow Rate from SCADA (gpm) ^b							
FT005				SS029		SS030	
EW01x05	Off line ^c	EW736x05	Off line ^c	EW01x29	3.7	EW01x30	10.1
EW02x05	Off line ^c	EW737x05	Off line ^c	EW02x29	7.8	EW02x30	2.4
EW03x05	Off line ^c	EW742x05	7.8	EW03x29	Off line	EW03x30	Off line
EW731x05	3.3	EW743x05	Off line ^c	EW04x29	8.3	EW04x30	Off line ^c
EW732x05	2.3	EW744x05	6.0	EW05x29	10.7	EW05x30	7.9
EW733x05	0.5	EW745x05	4.1	EW06x29	6.0	EW06x30	0.7
EW734x05	Off line ^c	EW746x05	5.6	EW07x29	Off line	EW711x30	1.3
EW735x05	4.5						
FT005 Total:			34.1	SS029 Total:		36.5	SS030 Total: 22.4

^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 Average extraction well flow rates measured by extraction well totalizer divided by the operating time.
^c Extraction well was off line during November 2006 due to pump failure, VFD fault, or no flow.
gpm—gallons per minute

Shutdown/Restart Summary

Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
SBBGWTP (water)	13 November 2006	11:30	13 November 2006	14:40	Acid washed the air stripper.
SBBGWTP = South Base Boundary Groundwater Treatment Plant					

Summary of O&M Activities

Monthly groundwater sampling at the SBBGWTP was performed on 1 November 2006. Sample results are presented in Table 1. The total VOC concentration (79.5 µg/L) in the influent sample has increased since the October 2006 sample (28.7 µg/L).

In November 2006, several maintenance items on some equipment associated with the SBBGWTP were identified. Several repairs were conducted at SBBGWTP.

- On 13 November 2006, the air stripper and effluent piping were acid washed to remove a calcium carbonate buildup.

FT005

- EW01x05, EW02x05, and EW03x05 were off line due to problems with the variable frequency drive (VFD) tripping.
- The pumps for EW734x05 and EW737x05 were not operating normally, and their check valves were allowing backflow into the well. The level transmitter was inspected and found covered with a thick layer of soot. It is suspected the pump and screen may be in the same condition. A new replacement pump is on hand.
- The flow meter was replaced for EW735x05.
- The SCADA indicated that EW743x05 has a pump failure.

SS029

- The corroded steel fitting was replaced with PVC for EW01x29.
- The flow meter was repaired for EW02x29.
- A new pump was replaced for EW04x29.
- The SCADA water level was incorrect for EW06x29. This may be due to corroded electrical connections inside the vault. In addition, the transmitter may need to be checked/calibrated.

SS030

- The pump discharge pipe for EW06x30 was repaired.

Optimization Activities

There were no optimization activities conducted at the SBBGWTP during November 2006. System optimization recommendations were included in the Third Quarter 2006 report.

Table 1.

Summary of Groundwater Analytical Data for November 2006 – South Base Boundary Groundwater Treatment Plant

Constituent	Instantaneous Maximum ^a (µg/L)	Detection Limit (µg/L)	N/C	1 November 2006 (µg/L)	
				Influent	Effluent
Halogenated Volatile Organics					
Bromodichloromethane	0.5	0.17	0	ND	ND
Carbon Tetrachloride	0.5	0.19	0	ND	ND
Chloroform	5	0.16	0	ND	ND
Dibromochloromethane	0.5	0.17	0	ND	ND
1,1-Dichloroethane	5	0.16	0	ND	ND
1,2-Dichloroethane	0.5	0.13	0	ND	ND
1,1-Dichloroethene	5	0.14	0	ND	ND
cis-1,2-Dichloroethene	5	0.15	0	4.5	ND
trans-1,2-Dichloroethene	5	0.15	0	ND	ND
Methylene Chloride	5	0.32	0	ND	ND
Tetrachloroethene	5	0.2	0	ND	ND
1,1,1-Trichloroethane	5	0.16	0	ND	ND
1,1,2-Trichloroethane	5	0.32	0	ND	ND
Trichloroethene	5	0.16 – 0.32	0	75 J	ND
Vinyl Chloride	0.5	0.38	0	ND	ND
Non-Halogenated Volatile Organics					
Benzene	1.0	0.16	0	ND	ND
Ethylbenzene	5.0	0.16	0	ND	ND
Toluene	5.0	0.17	0	ND	ND
Xylenes	5.0	0.34	0	ND	ND
Other					
Total Petroleum Hydrocarbons – Gasoline	50	4.9	0	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	32	0	NM	ND
Total Suspended Solids (mg/L)	NE	1.1	0	70	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/kg	=	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			

ATTACHMENT 4

Central Groundwater Treatment Plant Monthly Data Sheet

Report Number: 89

Reporting Period: 1 – 30 November 2006

Date Submitted: 8 December 2006

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.

Operations Summary – November 2006

Operating Time:

CGWTP: 662.5 hours
WTTP: Water: 617.5 hours Vapor: 587.5 hours
ThOx: 520 hours

Percent Uptime:

CGWTP: 92.0%
WTTP: Water: 85.8% Vapor: 81.6%
ThOx: 72.2%

Gallons Treated: 2.4 million gallons

Gallons Treated Since January 1996: 333.1 million gallons

VOC Mass Removed:

8.1 lbs (groundwater only)^a
1.8 lbs (vapor only)^b

VOC Mass Removed Since January 1996:

2,134 lbs from groundwater
8,308 lbs from vapor

UV/Ox DRE: 100%

ThOx DRE: 95.7%

Rolling 12-Month Cost per Pound of Mass Removed: \$201^c

Monthly Cost per Pound of Mass Removed: \$1,404^d

^a Calculated using November 2006 EPA Method SW8260B analytical results.

^b Total VOC vapor mass removed was calculated using September 2006 EPA Method TO-14 analytical results for the DP039 extraction well and the ThOx.

^c Costs include operations and maintenance, reporting, analytical laboratory, project management, and utility costs related to operation of the system. The rolling 12-month cost per pound of mass removed is calculated by the sum of the monthly cost over the past 12 months divided by the sum of pounds removed during the same period.

^d Costs include operations and maintenance, reporting, analytical laboratory, project management, and utility costs related to operation of the system. High monthly cost per pound of mass removed are due to low influent vapor concentration and low flow rates.

DRE = destruction removal efficiency

UV/Ox = ultraviolet oxidation

Flow Rates

Average Groundwater Flow Rate: **60.8 gpm^a**

Location	Average Flow Rate	
	Groundwater (gpm)	Soil Vapor (scfm)
EW01x16	25.3 ^b	NA
EW02x16	Off line ^c	NA
EW03x16	Off line ^d	NA
EW605x16	9.9 ^b	NA
EW610x16	0.0 ^e	NA
WTTP	25.3 ^f	75.0
ThOx	NA	58.3 ^g

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

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

^c EW02x16 (water) was taken off line due to pump failure.

^d EW03x16 (water) was taken off line in September 2002 due to a significant decrease in flow rates.

^e pump is operational; however, there is no flow.

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

^g flow rate measured using pitot tube

gpm = gallons per minute

scfm = standard cubic feet per minute

Shutdown/Restart Summary

Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
WTTP	2 November 2006	3:45	3 November 2006	14:15	The plant PLC communication failed.
CGWTP (water)	3 November 2006	7:45	3 November 2006	14:15	UV-Ox Lamp 4 required maintenance. The reactor, quartz tube, and wiper assembly were replaced.
ThOx (vapor)	3 November 2006	7:45	3 November 2006	12:15	CGWTP was shutdown.
ThOx (vapor)	3 November 2006	12:15	8 November 2006	11:30	The 24V DC power supply failed.
WTTP	7 November 2006	17:20	8 November 2006	9:30	The plant PLC communication failed.
WTTP (vapor)	13 November 2006	9:15	14 November 2006	15:10	System was shutdown to tie-in new wells to existing conveyance lines at DP039 area.
WTTP	22 November 2006	14:40	22 November 2006	15:30	The plant PLC communication failed.
ThOx (vapor)	24 November 2006	2:20	24 November 2006	8:15	The burner flame was out.
CGWTP (water)	27 November 2006	21:00			UV-Ox system failure (high temperature alarm).
ThOx (vapor)	27 November 2006	21:00			CGWTP is shutdown.
WTTP	27 November 2006	21:00			CGWTP is shutdown.
CGWTP = Central Groundwater Treatment Plant ThOx = Thermal Oxidation System WTTP = West Treatment and Transfer Plant					

Summary of O&M Activities

Monthly groundwater sampling at the CGWTP was performed on 1 November 2006. Groundwater sample results are summarized in Table 1.

Analytical results for treated groundwater samples continue to indicate that cis-1,2-dichloroethene (DCE) was present at low levels (less than 10% of the instantaneous discharge limits indicated in the *Central Groundwater Treatment Plant Operations and Maintenance Manual*) in groundwater samples downstream of the UV-Ox treatment. The detection in these samples is likely attributed to desorption of cis-1,2-DCE into the water stream from the granular activated carbon as the influent concentrations vary slightly and as contaminants with higher adsorption affinity are adsorbed over time. Cis-1,2-DCE has been historically detected in the "After Carbon 1 Effluent" samples since March 2004 at concentrations near the levels detected this month. It should also be noted that the cis-1,2-DCE detections in samples downstream of the UV-Ox treatment are estimated values (J-flag detections), as they are detected at concentrations less than the reporting limit of 0.5 µg/L. Cis-1,2-DCE concentrations and system performance will continue to be monitored.

Chloroform continues to be present at estimated (J-flagged) concentrations in groundwater samples downstream of the carbon 1 vessel at levels less than 10% of the instantaneous discharge limits indicated in the *Central Groundwater Treatment Plant Operations and Maintenance Manual*. The chloroform concentrations and system performance will continue to be monitored in the upcoming months.

In November 2006, the pump was replaced for EW721x08, and the eductor discharge flow meter was replaced for EW705x37.

The WTP SVE system treated soil vapor from the EW563x39. A new extraction well was connected to the existing conveyance line in the DP039 area on 13 November 2006. The ThOx system treated soil vapor extracted from the 2-Phase® well (TPE-W) as part of SS016 focused vapor extraction activities. On 28 November 2006, the CGWTP was shutdown due to the UV-Ox system failure. The CGWTP remained off line for the remainder of the month, and the ThOx and WTP were also shutdown.

Optimization Activities

There were no optimization activities initiated at the CGWTP during November 2006. System optimization recommendations were listed in the Third Quarter 2006 report.

Table 1.
Summary of Groundwater Analytical Data for November 2006 – Central Groundwater Treatment Plant

Constituent	Instantaneous Maximum ^a (µg/L)	Detection Limit (µg/L)	N/C	1 November 2006 (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	0.15	0	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	0.5	0.17	0	ND	ND	ND	ND	ND	ND
Chloroform	5.0	0.16	0	ND	ND	ND	0.26 J	0.24 J	0.19 J
Dibromochloromethane	5.0	0.19	0	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	5.0	0.13	0	0.39 J	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	5.0	0.16	0	0.40 J	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	5.0	0.16	0	0.20 J	ND	ND	ND	ND	ND
1,1-Dichloroethane	5.0	0.12	0	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	0.5	0.17	0	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	5.0	0.14	0	1.6	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.15 – 1.5 ^b	0	74	ND	0.17 J	0.39 J	0.35 J	0.20 J
trans-1,2-Dichloroethene	5.0	0.15	0	2.7	ND	ND	ND	ND	ND
Methylene Chloride	5.0	0.12	0	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5.0	0.20	0	0.64	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	5.0	0.13	0	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	5.0	0.23	0	ND	ND	ND	ND	ND	ND
Trichloroethene	5.0	0.16 – 1.6 ^c	0	320	ND	0.34 J	0.39 J	ND	ND
Vinyl Chloride	0.5	0.17	0	0.64	ND	ND	ND	ND	ND
Non-Halogenated Volatile Organics									
Benzene	1.0	0.18	0	ND	ND	ND	ND	ND	ND
Ethylbenzene	5.0	0.11	0	ND	ND	ND	ND	ND	ND
Toluene	5.0	0.12	0	ND	ND	ND	ND	ND	ND
Total Xylenes	5.0	0.36	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).

^b The detection limit for cis-1,2-DCE in the influent sample was elevated to 1.5 µg/L due to sample dilution to bring cis-1,2-DCE concentration within linear range. The detection limit for cis-1,2-DCE in all other samples was 0.15 µg/L.

^c The detection limit for TCE in the influent sample was elevated to 1.6 µg/L due to sample dilution to bring the TCE concentration within linear range. The detection limit for TCE in all other samples was 0.16 µg/L.

DCE = dichloroethene

J = analyte concentration is considered an estimated value

ND = not detected

N/C = number of samples out of compliance with discharge limits

TCE = trichloroethene

µG/L = micrograms per liter

ATTACHMENT 5

North Groundwater Treatment Plant Monthly Data Sheet

Report Number: 78

Reporting Period: 1 – 30 November 2006

Date Submitted: 8 December 2006

This data sheet includes the following: results for the operation of the groundwater extraction and soil vapor extraction (SVE) systems; a summary of flow rates for the individual extraction wells; a brief description of any shutdowns or significant events related to the systems; and a summary of analytical results for selected samples collected.

Operations Summary – November 2006

Operating Time: **Water:** 712 hours

Percent Uptime: **Water:** 98.9%

Vapor: 0^a

Vapor: 0%^a

Gallons Treated: 0.75 million gallons

Gallons Treated Since March 2000: 69.8 million gallons

Volume Discharged to Storm Drain: 0.02 million gallons

Volume Discharged to Duck Pond: 0.73 million gallons

Percentage of Treated Water to Beneficial Use: 97%

VOC Mass Removed:

VOC Mass Removed Since March 2000:

0.31 lbs (groundwater only)^b

171.2 lbs from groundwater

0 lbs (vapor only)^a

5,240 lbs from vapor^c

VGAC Removal Efficiency: **NA**

Rolling 12-Month Cost per Pound of Mass Removed: \$45,281^{de}

Monthly Cost per Pound of Mass Removed: \$19,363^d

^a The SVE system was shut down on 12 October 2006 due to low vapor VOC concentrations.

^b Calculated using November 2006 EPA Method SW8260B analytical results.

^c Cumulative total VOC vapor mass removed includes 4,860 pounds of petroleum hydrocarbon VOC mass removed and treated by a portable catalytic oxidizer system between 15 July and 17 September 2003.

^d Costs include operations and maintenance, reporting, analytical laboratory, project management, and utility costs related to operation of the system. High costs are due to low influent groundwater concentrations and low flow rates.

^e The rolling 12-month cost per pound of mass removed is calculated by the sum of the monthly cost over the past 12 months divided by the sum of pounds removed during the same period.

Flow Rates

Average Groundwater Total Flow Rate: **18.0 gpm^a**

Location	Flow Rate on 30 November 2006	
	Groundwater (gpm)	Soil Vapor (scfm) ^b
EW565x31	1.5	Off line
EW566x31	2.0	Off line
EW567x31	1.6	NA
EW576x04	1.9	Off line
EW577x04	0.7	Off line
EW578x04	1.5	Off line
EW579x04	1.9	NA
EW580x04	2.8	NA
EW621x04	2.0	NA
EW622x04	1.8	NA
EW623x04	1.5	NA
EW614x07	Off line ^c	NA
EW615x07	Off line ^c	NA
SVE System	NA	Off line

^a The flow rate was calculated using the effluent discharge totalizer divided by the operating time of the plant.

^b The SVE system was shut down on 12 October 2006 due to low vapor VOC concentrations.

^c LF007 wells were turned off for the wet season on 15 November 2006. During the dry season, these submersible pumps are solar powered, and only operate during day light hours.

gpm = gallons per minute

scfm = standard cubic feet per minute

Shutdown/Restart Summary

Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
NGWTP (water)	16 November 2006	14:00	16 November 2006	14:15	Damage to the conveyance line that routes treated water to the duck pond during construction.
NGWTP (water)	22 November 2006	4:30	22 November 2006	8:40	High water level in the wet well.
NGWTP (water)	26 November 2006	5:00	26 November 2006	8:30	(Same Problem)
NGWTP (water)	27 November 2006	6:30	27 November 2006	9:15	(Same Problem)
NGWTP = North Groundwater Treatment Plant					

Summary of O&M Activities

Monthly groundwater sampling at the NGWTP was performed on 1 November 2006. Sample results are presented in Table 1. The total VOC concentration (48.7 µg/L) in the influent sample has increased since the October 2006 sample (33.7 µg/L). VOC results were non-detect for effluent samples.

The SVE system was restarted on 14 August 2006 when sufficient screen area was available in the DPE wells for vapor extraction; however, only vapor from EW565x31 was being extracted. The vapor extraction wells from FT004 were closed due to high water table. However, the NGWTP SVE system was shut down on 12 October 2006 due to the very low vapor VOC concentrations.

The LF007 solar extraction wells (EW614x07 and EW615x07) were turned off for the wet season on 15 November 2006. On 27 November 2006, the air eliminator was replaced for EW577x04. In addition, the NGWTP was shut down several times in November 2006 due to high water level in the wet well. Therefore, the transfer pump timer was increased to 10 minutes. In addition, the seals for the transfer pump case were replaced and the shaft bearings were lubed. The NGWTP will continue to be monitored.

On 16 November 2006, the NGWTP was shutdown due to damage of the pipe that routes treated groundwater to the Duck Pond during construction. The treated groundwater was discharged to the storm drain until the pipe was repaired. On 17 November 2006, the pipe was repaired and checked for leaks, and the plant discharge was routed back to the Duck Pond.

Optimization Activities

There were no optimization activities conducted at the NGWTP during November 2006. System optimization recommendations were included in the Third Quarter 2006 Long-Term Optimization (LTO) report.

Table 1.

Summary of Groundwater Analytical Data for November 2006 – North Groundwater Treatment Plant

Constituent	Instantaneous Maximum ^a (µg/L)	Detection Limit (µg/L)	N/C	1 November 2006 (µg/L)	
				Influent	Effluent
Halogenated Volatile Organics					
Bromodichloromethane	0.5	0.17	0	ND	ND
Carbon Tetrachloride	0.5	0.19	0	ND	ND
Chloroform	5.0	0.16	0	ND	ND
Dibromochloromethane	0.5	0.17	0	ND	ND
1,1-Dichloroethane	5.0	0.16	0	ND	ND
1,2-Dichloroethane	0.5	0.13	0	ND	ND
1,1-Dichloroethene	5.0	0.14	0	2.7	ND
cis-1,2-Dichloroethene	5.0	0.15	0	0.49 J	ND
trans-1,2-Dichloroethene	5.0	0.15	0	ND	ND
Methylene Chloride	5.0	0.32	0	ND	ND
Tetrachloroethene	5.0	0.20	0	ND	ND
1,1,1-Trichloroethane	5.0	0.16	0	7.5	ND
1,1,2-Trichloroethane	5.0	0.32	0	ND	ND
Trichloroethene	5.0	0.16	0	38	ND
Vinyl Chloride	0.5	0.38	0	ND	ND
Non-Halogenated Volatile Organics					
Benzene	1.0	0.16	0	ND	ND
Ethylbenzene	5.0	0.16	0	ND	ND
Toluene	5.0	0.17	0	ND	ND
Xylenes	5.0	0.34	0	ND	ND
Other					
Total Petroleum Hydrocarbons – Gasoline	50	4.9	0	NM	4.9 J
Total Petroleum Hydrocarbons – Diesel	50	32	0	NM	ND

^a 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).

J = analyte concentration is considered an estimated value
N/C = number of samples out of compliance with discharge limits
ND = not detected
NM = not measured
µg/L = micrograms per liter