Final

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

25 October 2006, 0930 Hours

Mr. Mark Smith, Travis Air Force Base (AFB), conducted the Remedial Program Managers (RPM) meeting held on 25 October 2006 at 0930 in the Base Civil Engineering Conference Room, Building 570, Travis AFB, California. Attendees included:

• Mark Smith	Travis AFB
• Wayne Williams	Travis AFB
• Glenn Anderson	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
• Allen Mason	EQM
• Carol Kontonickas	URS
• Dale Malsberger	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 (September 2006)
• Attachment 4	CGWTP Monthly Data Sheet (September 2006)
• Attachment 5	NGWTP Monthly Data Sheet (September 2006)

1. ADMINISTRATIVE

A. Previous Meeting Minutes

The September 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 Master Document Schedule

— Page 3, the Remedial Design schedules for SD001, SD033, FT003, FT005, and LF007 have been updated.

— Page 4, Mr. Smith stated that the scoping meeting for the Groundwater Technical Evaluation project may take place in February 2007 rather than January 2007.

2. OPERABLE UNIT UPDATE

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

1. Remedial Design Schedule

Mr. Anderson stated that the FT004 Remedial Design package is out for review. He thanked the Water Board for their timely review. Mr. Lucey and Mr. Salcedo will provide their comments by 30 October 2006.

Mr. Anderson reiterated the importance of adhering to the remedial design schedules.

3. CURRENT PROJECTS

A. South Base Boundary Groundwater Treatment Plant

Mr. Smith reported that the South Base Boundary Groundwater Treatment Plant (SBBGWTP) performed at 99.2 % uptime, and 2.2 million gallons of groundwater were extracted and treated during the month of September 2006. The average flow rate for the SBBGWTP was 52.5 gallons per minute (gpm). Approximately 0.5 pound of volatile organic compounds (VOCs) was removed during September 2006. The total mass of VOCs removed since the startup of the system is 293 pounds (see Attachment 3).

There was one minor shutdown during the month of September due to a scheduled Base power outage.

No construction water was processed at this plant during September 2006.

No optimization activities were planned or performed during September 2006.

B. Central Groundwater Treatment Plant

Mr. Smith reported that the Central Groundwater Treatment Plant (CGWTP) performed at 100% uptime with approximately 2.5 million gallons of groundwater extracted and treated during the month of September 2006. The average flow rate

for the CGWTP was 58.5 gpm. Approximately 12 pounds of VOCs were removed during September 2006. The total mass of VOCs removed since the startup of the system is 10,432 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 shut down in September to replace an eductor supply pump.

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

No optimization activities were planned or performed during September 2006.

C. North Groundwater Treatment Plant

Mr. Smith reported that the North Groundwater Treatment Plant (NGWTP) performed at 93.4% uptime with approximately 520,000 gallons of groundwater extracted and treated during the month of September 2006. The average flow for the NGWTP was 12.2 gpm. Less than a pound of VOCs was removed during September 2006, which was from groundwater and vapor. The total mass of VOCs removed since the startup of the system is 5,413 pounds (see Attachment 5).

The plant experienced shutdowns to take care of the following:

- Adjustment of the sump level float that triggered the alarm.
- Plant soil vapor extraction (SVE) blower motor maintenance.
- Change out of the impellers of the eductor pump.

The SVE system was restarted by connecting EW565x31 well. The vapor extraction at the FT004 wells is limited by the presence of high water levels. It is being monitored continuously for restart.

All the treated groundwater from the plant was sent to the duck pond for beneficial use.

D. DP039 Field Work

Mr. Anderson stated that Travis AFB completed the installation of the dual phase extraction (DPE) well. The next steps will be to connect the DPE well to the existing piping system, install the pump, connect the underground electrical line, and conduct well surveys. Travis AFB is planning to complete all work by 16 November 2006.

Mr. Lucey had previously requested a map that indicated where the wells were installed at DP039. He stated that he was satisfied with the information that Mr. Smith supplied.

Mr. Lucey also requested a technical memorandum of the work that have been and is being conducted at DP039. Mr. Smith stated that groundwater technical evaluations will be conducted for each site, which may provide the information that Mr. Lucey is requesting. It was agreed that Travis AFB will provide a document that will summarize the work effort conducted at DP039.

4. PROGRAM ISSUES UPDATE

A. Document Reviews

Mr. Smith stated that it is very important for the regulatory agencies to respond to the remedial designs and to submit their input as soon as possible. This will enable the Air Force to address their concerns in an expedited manner. All comments will be documented in the draft final version of these documents.

B. Meeting Schedule for 2007/Proposed

Mr. Smith reviewed the proposed meeting and document schedules for 2007. Most document reviews for the remedial designs will take place in January and February 2007. Also, two RPM meetings have been tentatively scheduled for the month of May 2007 to support document reviews, if needed.

Mr. Smith requested that the participants please inform him of any concerns and potential vacations that may impact the schedule.

C. 26 October Restoration Advisory Board

Mr. Smith reminded the regulators of the Restoration Advisory Board meeting, which will take place tomorrow, 26 October 2007.

ACTION ITEM LIST

ITEM	RESPONSIBLE	ACTION ITEM	DUE DATE	STATUS
1.	Water Board	To consult with Ms. Cassa and provide a date that the Water Board may rescind the Potrero Hills Order No. R2-2002-103.	Open	Mr. Lucey stated that he is satisfied with the answers from Ms. Cassa. **Completed. Item Closed.**
2.	Air Force	To provide a document that summarizes the work effort at DP039, per U.S. EPA's request.	13 Dec 06	New item.

ATTACHMENT 1

TRAVIS AIR FORCE BASE ERP
REMEDIAL PROGRAM MANAGER'S MEETING
25 October, 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 (GLENN)
      (1). RD SCHEDULE

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 (GLENN)

4. PROGRAM/ISSUES/UPDATE
   A. DOCUMENT REVIEWS
   B. MEETING SCHEDULE FOR 2007 PROPOSED
   C. 26 OCT RAB

5. NEW ACTION ITEM REVIEW

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

Please initial or print name if necessary **25 October, 2006**

Initial	Name	Organization	Email Address	Telephone #
MS	Mark Smith	Travis AFB	marksmith2@travis.af.mil	(707) 424-3062
GHQ	Glenn Anderson	Travis AFB	glenn.anderson@travis.af.mil	(707) 424-4359
WD	Wilford Day	Travis AFB	wilford.day@travis.af.mil	(707) 424-0452
	Tom Sreenivasan	Travis AFB	tom.sreenivasan@travis.af.mil	(707) 424-3172
	Gregory Parrott	Travis AFB	gregory.parrott@travis.af.mil	(707) 424-1506
LAD	Lonnie Duke	Travis AFB	lonnie.duke@travis.af.mil	(707) 424-7520
JCL	John Lucey	U.S. EPA	lucey.john@epa.gov	(415) 972-3145
	Jose Salcedo	DTSC	jsalcedo@dtsc.ca.gov	(916) 255-3791
ADF	Alan Friedman	CRWQCB	afriedman@waterboards.ca.gov	(510) 622-2347
BH	Bob Hulet	Shaw E&I	Bob.Hulet@shawgrp.com	(925) 288-2162
	Adam Harvey	URS	adam_harvey@urscorp.com	(916) 679-2002
MW	Mike Wray	CH2M Hill	mwray@ch2m.com	(916) 286-0243
	~~Steve Mitchell~~	~~EQM~~	~~smitchell@eqm.com~~	~~(530) 409-6218~~
CK	Carol Kontonickas	URS	Carol_Kontonickas@urscorp.com	(916) 679-2309
AM	Allen Mason	EQM	amason@eqm.com	(916) 203-2888
	Tom Barry	Shaw E&I	tom.barry@shawgrp.com	925-288-2018
	DALE MALSBERGER	URS	DALE_MALSBERGER@URSCORP.COM	(707)257-6258
	Wayne Williams	Travis AFB	wayne.williams@travis.AF.mil	

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.

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Travis AFB Master Document Schedule
(Continued)

	PRIMARY DOCUMENTS					
	Remedial Design Travis, Glenn Anderson; URS, Adam Harvey	**Remedial Design Travis, Glenn Anderson; URS, Adam Harvey**	**Remedial Design Travis, Glenn Anderson; URS, Adam Harvey**	**Remedial Design Travis, Glenn Anderson; URS, Adam Harvey**	**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				
	Groundwater Treatment Plant O&M Reports **Travis, Tom Sreenivasan;** **CH2M Hill, Mike Wray**			
Life Cycle	**Groundwater Treatment Plants Annual Reports Fiscal Year 2005**	**Groundwater Treatment Plants First Quarter Report Fiscal Year 2006**	**Groundwater Treatment Plants Second Quarter Report Fiscal Year 2006**	**Groundwater Treatment Plants Third Quarter Report Fiscal Year 2006**
Scoping Meeting	**NA**	**NA**	**NA**	**NA**
Predraft to AF/Service Center	1-16-06	4-14-06	7-14-06	10-13-06
AF/Service Center Comments Due	1-20-06	4-21-06	7-21-06	10-20-06
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	1-27-06	4-28-06	7-28-06	10-27-06
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: 74 **Reporting Period: 1 – 30 September 2006** **Date Submitted: 9 October 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 – September 2006

Operating Time: **714.5 hours** Percent Uptime: **99.2%**

Gallons Treated: **2.2 million gallons** Gallons Treated Since July 1998: **529 million gallons**

Volume Discharged to Union Creek: **2.2 million gallons**

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

VOC Mass Removed: **0.51 pounds**[a] VOC Mass Removed Since July 1998: **291.1 pounds**

Rolling 12-Month Cost per Pound of Mass Removed: **$33,515**[b]

Monthly Cost per Pound of Mass Removed: **$16,392**[b]

[a] Calculated using September 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: **52.5**[a]

Average Flow Rate from SCADA (gpm)[b]							
FT005				**SS029**		**SS030**	
EW01x05	0.6	EW736x05	0.4	EW01x29	2.3	EW01x30	10.1
EW02x05	0.2	EW737x05	Off line[c]	EW02x29	1.3	EW02x30	0.2
EW03x05	0.5	EW742x05	4.7	EW03x29	Off line	EW03x30	Off line
EW731x05	0.7	EW743x05	1.3	EW04x29	1.5	EW04x30	Off line[c]
EW732x05	2.2	EW744x05	3.2	EW05x29	10.8	EW05x30	6.3
EW733x05	0.3[d]	EW745x05	1.4	EW06x29	0.7	EW06x30	0.3
EW734x05	0.0	EW746x05	0.5	EW07x29	Off line	EW711x30	3.0
EW735x05	0.0						
		FT005 Total:	16.0	SS029 Total:	16.6	SS030 Total:	19.9

[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] Individual flow rates were averaged from weekly readings
[c] Extraction well was off line during September 2006 due to pump failure.
[d] Extraction well was restarted in September 2006.

gpm—gallons per minute

Shutdown/Restart Summary

Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
SBBGWTP (water)	12 September 2006	8:00	12 September 2006	13:30	Scheduled Base power outage.

SBBGWTP = South Base Boundary Groundwater Treatment Plant

Summary of O&M Activities

Monthly groundwater sampling at the SBBGWTP was performed on 8 September 2006. Sample results are presented in Table 1. The total VOC concentration (27.4 µg/L) in the influent sample has slightly increased since the August 2006 sample (15.7 µg/L).

The FT005 off-base extraction wells were visited to compare the water levels on the SCADA to field measurements, and it was noted that at least two of the sensors needed to be calibrated or replaced. Two cracked PVC fittings on extraction well pump discharge piping were repaired.

The EW01x29 pump was replaced on 19 September 2006. The old pump had scale build up restricting the flow. The new pump flow rate was initially 4.5 gpm, and the depth to groundwater was approximately 27.0 feet bgs.

EW04x30 was off line due to pump failure. A new pump was ordered, and will be installed in October 2006.

Optimization Activities

There were no optimization activities associated with SBBGWTP during September 2006. System optimization recommendations will be included in the next quarterly report (Third Quarter 2006, in progress).

Table 1.
Summary of Groundwater Analytical Data for September 2006 – South Base Boundary Groundwater Treatment Plant

Constituent	Instantaneous Maximum[a] (µg/L)	Detection Limit (µg/L)	N/C	8 September 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	1.4	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	26	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	5.2	0	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	32	0	NM	ND
Total Suspended Solids (mg/L)	NE	1.1	0	45	NM

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

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: 87 **Reporting Period: 1 – 30 September 2006** **Date Submitted: 9 October 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 – September 2006

Operating Time:

- **CGWTP:** 710 hours
- **WTTP:** Water: 686.5 hours Vapor: 686.5 hours
- **ThOx:** 720 hours

Percent Uptime:

- **CGWTP:** 98.6%
- **WTTP:** Water: 95.3% Vapor: 95.3%
- **ThOx:** 100%

Gallons Treated: 2.5 million gallons

Gallons Treated Since January 1996: 328.2 million gallons

VOC Mass Removed:

- **9.6 lbs (groundwater only)[a]**
- **1.6 lbs (vapor only)[b]**

VOC Mass Removed Since January 1996:

- **2,115 lbs from groundwater**
- **8,304 lbs from vapor**

UV/Ox DRE: 100%

ThOx DRE: 95.7%

Rolling 12-Month Cost per Pound of Mass Removed: $463[c]

Monthly Cost per Pound of Mass Removed: $1,493[c]

[a] Calculated using September 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. 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: **58.5 gpm[a]**

Location	Average Flow Rate	
	Groundwater (gpm)	Soil Vapor (scfm)
EW01x16	26.3[b]	NA
EW02x16	Off line[c]	NA
EW03x16	Off line[d]	NA
EW605x16	9.3	NA
EW610x16	0.0[e]	NA
WTTP	19.7[f]	63
ThOx	NA	36.6[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	
CGWTP (water)	6 September 2006	21:45	7 September 2006	7:45	UV-Ox lamp #3 reactor failed.
WTTP	13 September 2006	11:30	14 September 2006	13:00	Replaced eductor supply pump (P-ES-101).

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

Summary of O&M Activities

Monthly groundwater sampling at the CGWTP was performed on 5 September 2006. In addition, quarterly groundwater sampling was performed at the WTTP and the ThOx unit also on 5 September 2006. Groundwater sample results are summarized in Table 1. Vapor samples were collected at the ThOx unit and the WTTP SVE system on 6 September 2006. Vapor results are shown in Tables 2 and 3.

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.

At the WTTP, the flow meter for EW719x08 was replaced on 8 September 2006. The eductor supply pump (P-ES-101) was replaced on 13 September 2006. Initially, the flow rate increased approximately 30 to 50%. The air eliminator for EW704x37 was replaced on 26 September 2006.

The WTTP SVE system continues to treat soil vapor from the EW563x39. Quarterly vapor samples collected in September 2006 indicated a decrease in total VOC concentrations from 2,143 ppbv in June 2006 to 634 ppbv in September 2006. Vapor results are shown in Table 2.

The ThOx system continues to treat soil vapor from the 2-Phase® well (TPE-W) as part of SS016 focused vapor extraction activities. Quarterly vapor samples collected in September 2006 indicated a decrease in TCE concentrations from 2,600 ppbv in June 2006 to 2,000 ppbv in September 2006. Vapor results are shown in Table 3.

Optimization Activities

There were no optimization activities associated with CGWTP during September 2006. System optimization recommendations will be included in the next quarterly report (Third Quarter 2006, in progress).

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

Constituent	Instantaneous Maximum[a] (µg/L)	Detection Limit (µg/L)	N/C	5 September 2006 (µg/L) WTTP Effluent	TPE Effluent	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	ND	ND
Carbon Tetrachloride	0.5	0.17	0	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	5.0	0.16	0	0.43 J	ND	0.18 J	ND	0.19 J	0.25 J	0.30 J	0.21 J
Dibromochloromethane	5.0	0.19	0	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	5.0	0.13	0	ND	1.2	0.40 J	ND	ND	ND	ND	ND
1.3-Dichlorobenzene	5.0	0.16	0	ND	0.24 J	0.45 J	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	5.0	0.16	0	ND	0.48 J	0.19 J	ND	ND	ND	ND	ND
1,1-Dichloroethane	5.0	0.12	0	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	0.5	0.17	0	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	5.0	0.14	0	4.6	ND	2.1	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.15 – 1.5[b]	0	14	15	93	ND	0.20 J	0.34 J	0.40 J	0.26 J
trans-1,2-Dichloroethene	5.0	0.15	0	1.2	ND	2.8	ND	ND	ND	ND	ND
Methylene Chloride	5.0	0.12	0	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5.0	0.20	0	1.1	ND	0.77	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	5.0	0.13	0	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	5.0	0.23	0	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	5.0	0.16 – 1.6[c]	0	240	54	360	ND	0.39 J	0.22 J	ND	ND
Vinyl Chloride	0.5	0.17	0	ND	ND	1.1	ND	ND	ND	ND	ND
Non-Halogenated Volatile Organics											
Benzene	1.0	0.18	0	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	5.0	0.11	0	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	5.0	0.12	0	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	5.0	0.36	0	ND	ND	ND	ND	ND	ND	ND	ND
Other											
Total Dissolved Solids (mg/L)	NE	4.7	0	NM	NM	NM	NM	NM	NM	830	NM

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

Table 2.
Soil Vapor Analytical Data for September 2006 – West Transfer and Treatment Plant

Constituent	6 September 2006 (ppbv)		
	SVE Influent	SVE Mid-Treatment	SVE Effluent
Volatile Organics			
Benzene	1.1 J	0.74	0.056 J
Chloromethane	ND (1.7)	0.41 J	0.51
cis-1,2-Dichloroethene	17	1.5	ND (0.11)
1,1-Dichloroethane	1.4 J	0.11 J	ND (0.056)
1,1-Dichloroethene	22	3.2	0.83
Ethylbenzene	2.3	2.2	ND (0.059)
Freon 11	0.37 J	0.19 J	0.27
Freon 12	0.51 J	0.4	0.59
Methylene Chloride	ND (0.3)	ND (0.03)	ND (0.03)
Tetrachloroethene	ND (0.32)	0.035 J	ND (0.032)
Toluene	9	7.7	0.12 J
1,1,1-Trichloroethane	13	0.98	ND (0.038)
1,1,2-Trichloroethane	0.49 J	ND (0.049)	ND (0.049)
Trichloroethene	340	25	ND (0.033)
Vinyl Chloride	ND (0.51)	ND (0.051)	ND (0.051)
Xylenes, m,p-	9.4	9.3	0.11 J
Xylene, o-	3.4	3.4	0.08 J

J = analyte concentration is considered an estimated value
ND = not detected
ppbv = parts per billion by volume
SVE = soil vapor extraction
( ) = detection limit

TABLE 3.
Soil Vapor Analytical Data for September 2006 – Central Groundwater Treatment Plant

Constituent	6 September 2006 (ppbv)	
	ThOx Influent	ThOx Effluent
Volatile Organics		
Benzene	ND (2.6)	0.27
1,3-Butadiene	ND (5.3)	ND (0.1)
cis-1,2-Dichloroethene	420	ND (0.11)
1,2-Dichlorobenzene	10 J	ND (0.063)
1,3-Dichlorobenzene	3.8 J	0.11 J
1,4-Dichlorobenzene	5.9 J	ND (0.054)
1,2-Dichloroethane	ND (3.0)	ND (0.057)
Ethylbenzene	ND (3.1)	0.78
Methylene Chloride	ND (1.6)	ND (0.03)
Tetrachloroethene	4.8 J	ND (0.032)
Toluene	ND (2.7)	2.7
trans-1,2-Dichloroethene	ND (7.4)	ND (0.14)
1,2,4-Trichlorobenzene	ND (3.6)	ND (0.068)
1,3,5-Trimethylbenzene	ND (3.0)	0.43
Trichloroethene	2,000	0.11 J
Vinyl Chloride	30	ND (0.051)
Xylenes, m,p-	ND (2.8)	3.4
Xylene, o-	ND (2.5)	1.3

J = analyte concentration is considered an estimated value
ND = not detected
ppbv = parts per billion by volume
ThOx = thermal oxidation system
( ) = detection limit

ATTACHMENT 5

North Groundwater Treatment Plant Monthly Data Sheet

Report Number: 76 **Reporting Period: 1 – 30 September 2006** **Date Submitted: 9 October 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 – September 2006

Operating Time: **Water:** 713 hours
Vapor: 712[a]

Percent Uptime: **Water:** 99.0%
Vapor: 98.9%[a]

Gallons Treated: 0.52 million gallons

Gallons Treated Since March 2000: 68.2 million gallons

Volume Discharged to Storm Drain: 0.31 million gallons

Volume Discharged to Duck Pond: 0.21 million gallons

Percentage of Treated Water to Beneficial Use: 39.6%

VOC Mass Removed:
0.08 lbs (groundwater only)[b]
0.001 lbs (vapor only)[c]

VOC Mass Removed Since March 2000:
170.7 lbs from groundwater
5,240 lbs from vapor[c]

VGAC Removal Efficiency: **NA**

Rolling 12-Month Cost per Pound of Mass Removed[d]: $80,618

Monthly Cost per Pound of Mass Removed[d]: $88,139

[a] The SVE system was restarted on 14 August 2006; however, only vapor from EW565x31 is being extracted. The vapor extraction wells from FT004 are still closed due to high water table.
[b] Calculated using September 2006 EPA Method SW8260B analytical results.
[c] Calculated using September 2006 EPA Method TO-14 analytical results. 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 and vapor concentrations and low flow rates.

Flow Rates

Average Groundwater Total Flow Rate: **12.2 gpm**[a]

Location	Flow Rate on 29 September 2006	
	Groundwater (gpm)	Soil Vapor (scfm)
EW565x31	2.8	45.0[b]
EW566x31	2.5	Off line[b]
EW567x31	2.4	NA
EW576x04	1.5	Off line[b]
EW577x04	0.9	Off line[b]
EW578x04	1.8	Off line[b]
EW579x04	0.9	NA
EW580x04	2.9	NA
EW621x04	2.1	NA
EW622x04	0.7	NA
EW623x04	2.1	NA
EW614x07	1.4[c]	NA
EW615x07	1.4[c]	NA
SVE System	NA	45.0[b]

[a] The flow rate was calculated using the effluent discharge totalizer divided by the operating time of the plant.
[b] The SVE system was restarted on 14 August 2006; however, only vapor from EW565x31 is being extracted. The vapor extraction wells from FT004 are still closed due to high water table.
[c] LF007 wells were turned on for the season on May 12, 2006. These submersible pumps are solar powered, and therefore, 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	5 September 2006	19:30	6 September 2006	1:15	Air stripper trouble alarm. Sump level float was out of adjustment.
NGWTP (vapor)	12 September 2006	9:00	12 September 2006	10:00	Performed maintenance on NGWTP SVE blower motor.
NGWTP	19 September 2006	14:15	19 September 2006	15:30	Changed out eductor pump internal stack (impellers).

NGWTP = North Groundwater Treatment Plant
SVE = Soil Vapor Extraction

Summary of O&M Activities

Monthly groundwater sampling at the NGWTP was performed on 8 September 2006. Sample results are presented in Table 1. The total VOC concentration (19 µg/L) in the influent sample has decreased since the August 2006 sample (89.7 µg/L). VOC results were non-detect for effluent samples.

The SVE system was shut down on 30 September 2005 due to SVE blower failure. The SVE blower was replaced on 8-9 March 2006 and was restarted on 14 August 2006 when sufficient screen area was available in the DPE wells for vapor extraction; however, only vapor from EW565x31 is being extracted. The vapor extraction wells from FT004 are still closed due to high water table. Vapor samples were collected at the NGWTP SVE system on 6 September 2006. The influent vapor VOC concentrations were low with a detection of methylene chloride (3.2 J ppbv) only. It should be noted that the detection limits for the effluent sample are much lower than those for the influent sample; therefore, several additional VOCs were detected in the effluent sample and not in the influent sample. However, the effluent concentrations are less than the compliance limits. Vapor results are shown in Tables 2.

On 19 September 2006, the eductor pump internal stack (impellers) was changed out at the NGWTP. The outlet pressure increased from 100 psi to 150 psi, in addition, the flow rate through the plant increased.

Optimization Activities

There were no optimization activities associated with NGWTP during September 2006. System optimization recommendations will be included in the next quarterly report (Third Quarter 2006, in progress).

Table 1.
Summary of Groundwater Analytical Data for September 2006 – North Groundwater Treatment Plant

Constituent	Instantaneous Maximum[a] (µg/L)	Detection Limit (µg/L)	N/C	8 September 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	3.5	ND
cis-1,2-Dichloroethene	5.0	0.15	0	0.31 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	6.7	ND
1,1,2-Trichloroethane	5.0	0.32	0	ND	ND
Trichloroethene	5.0	0.16	0	8.5	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 Dissolved Solids (mg/L)	NE	1.1	0	NM	1,500

[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
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.
Soil Vapor Analytical Data for September 2006 – North Groundwater Treatment Plant

Constituent	6 September 2006 (ppbv) SVE Influent	SVE Mid-Treatment	SVE Effluent
Volatile Organics			
Benzene	ND (2.3)	ND (0.8)	ND (0.08)
Carbon Tetrachloride	ND (1.4)	ND (0.5)	0.12 J
Chloromethane	ND (2.9)	ND (1.0)	0.78
cis-1,2-Dichloroethene	ND (2.3)	ND (0.8)	0.53
1,1-Dichloroethane	ND (1.4)	ND (0.5)	0.26
1,1-Dichloroethene	ND (1.4)	7.0	1.7
Ethylbenzene	ND (2.9)	ND (1.0)	ND (0.07)
Freon 11	ND (1.4)	ND (0.5)	0.52
Freon 12	ND (1.4)	ND (0.5)	0.89
Freon 113	ND (1.4)	9.9	4.7
Methylene Chloride	3.2 J	ND (0.8)	0.18
Tetrachloroethene	ND (1.7)	ND (0.6)	ND (0.09)
Toluene	ND (1.4)	ND (0.5)	ND (0.09)
1,1,1-Trichloroethane	ND (1.4)	5.9	2.4
1,1,2-Trichloroethane	ND (1.7)	ND (0.6)	ND (0.08)
Trichloroethene	ND (1.4)	6.6	ND (0.2)
Vinyl Chloride	ND (2.3)	ND (0.8)	ND (0.1)
Xylenes, m,p-	ND (2.9)	ND (1.0)	ND (0.2)
Xylene, o-	ND (1.7)	ND (0.6)	ND (0.06)

J = analyte concentration is considered an estimated value
ND = not detected
ppbv = parts per billion by volume
SVE = soil vapor extraction
( ) = detection limit