

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

23 June 2010, 0930 Hours

Mr. Mark Smith, Travis Air Force Base (AFB), conducted the Remedial Program Manager's (RPM) meeting on 23 June 2010 at 0930 in the Main Conference Room, Building 571, Travis AFB, California. Attendees included:

- Glenn Anderson Travis AFB
- Lonnie Duke Travis AFB
- Mark Smith Travis AFB
- Merrie Schilter-Lowe Travis AFB
- Dezso Linbrunner United States Army Corp of Engineers (USACE), Omaha District
- Jennifer Musilek United States Army Corp of Engineers (USACE), Omaha District
- Kali Frey United States Army Corp of Engineers (USACE), Omaha District
- James Chang United States Environmental Protection Agency (USEPA)
- Alan Friedman California Regional Water Quality Control Board (RWQCB)
- Jose Salcedo California Department of Toxic Substances Control (DTSC)
- Mary Snow Tech Law, Inc.
- Rachel Hess ITSI
- Loren Krook CH2M HILL
- Leslie Royer CH2M HILL
- Doug Berwick CH2M HILL

Handouts distributed at the meeting and presentations included:

- Attachment 1 Meeting Agenda
- Attachment 2 Master Meeting and Document Schedule
- Attachment 3 SBBGWTP Monthly Data Sheet (May 2010)
- Attachment 4 CGWTP Monthly Data Sheet (May 2010)
- Attachment 5 NAAR Update (taken off agenda – no attachment)
- Attachment 6 Presentation: 2010 Field Installations Update
- Attachment 7 Presentation: Activities During FFS Delay
- Attachment 8 Presentation: EVO Injection Process

- Attachment 9 Presentation: Program Activities Completed, In Progress and Upcoming

1. ADMINISTRATIVE

A. Previous Meeting Minutes

The 19 May 2010 RPM meeting minutes were approved and finalized as written.

B. Action Item Review

Action items from May were reviewed.

Action item one still open. Travis to petition to have lysimeter removed.

Action item two still open. CH2M HILL in middle of bid process for the second bioreactor construction project. We are looking tentatively at end of July to start construction.

Master Meeting and Document Schedule Review (attachment 2)

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

Travis AFB Annual Meeting and Teleconference Schedule

— The next RPM meeting will be held on 21 July 2010.

Travis AFB Master Document Schedule

— Focused Feasibility Study (FFS): No change.

— Proposed Plan (PP): No change.

— Groundwater Record of Decision (ROD): No change.

— Comprehensive Site Evaluation Phase II: No change.

— Potrero Hills Annex: (FFS, PP, and ROD): No change.

— Union Creek Sites SD001 and SD033 Remedial Action Report: No Change.

— Natural Attenuation Assessment Report (NAAR): Dates have been updated based on response to comments. Mr. Chang said that EPA has no further comments. Mr. Chang did add that EPA would like to see the final document to make sure the changes have been incorporated before it goes final. Ms. Royer said she would provide a draft-final of the NAAR and put it on the FTP site for EPA to review before going final. Mr. Chang asked when the draft-final document will be ready. Ms. Royer said the end of next week. Note: as a result of this agreement the NAAR presentation was taken off the agenda.

— DP039 RPO Work Plan: Move to historical.

- SD036/SD037 RPO Work Plan: No changes. Regulators have no additional comments.
- ST027B Site Characterization Report: No changes. Regulators have no additional comments.
- Phytostabilization Study Report: Dates were changed because the draft document was mailed priority mail and delivered late. The revised dates are to reflect the full thirty-day review process.
- Quarterly Newsletter (July 2010): No change.
- 2009 GWTP RPO Annual Report: No change. Mr. Friedman and Mr. Salcedo said if they had any comments they would submit them before the end of this week.
- 2008-2009 CAMU Monitoring Annual Report: No change. Mr. Salcedo is working on comments.

2. CURRENT PROJECTS

Treatment Plant Operation and Maintenance Update

Mr. Duke reported on the water treatment plant status.

South Base Boundary Groundwater Treatment Plant (see Attachment 3)

The South Base Boundary Groundwater Treatment Plant (SBBGWTP) performed at 99.5% uptime, and 4.0 million gallons of groundwater were extracted and treated during the month of May 2010. All of the treated water was discharged to Union Creek. The average flow rate for the SBBGWTP was 100 gallons per minute (gpm) and electrical power usage was 16,980 kWh; 23,263 pounds of CO₂ was created (based on DOE calculation). Approximately 1.5 pounds of volatile organic compounds (VOCs) were removed in May. The total mass of VOCs removed since the startup of the system is 381 pounds (see Attachment 3).

The carbon vessels are being inspected for usability to determine if the base can take the energy intensive Air Stripper off line. The Air Stripper will stay in place if needed in the future.

Central Groundwater Treatment Plant (see Attachment 4)

The Central Groundwater Treatment Plant (CGWTP) was off line in May 2010 for the fire station construction. The expected timeline for system restart of the CGWTP is early June when pipes near the new Fire Station are relocated.

North Groundwater Treatment Plant

No report for May. On 7 June 2010 two solar wells were turned back on. The vernal pool at LF007 was dry enough that the U.S. Fish and Wildlife Service (USFWS) gave us their approval to turn the extraction wells back on.

3. Presentations

2010 Field Installations Update (see Attachment 6)

Mr. Krook reported on the 2010 Field Installations Update.

The key points made in the presentation include:

Site DP039

- Installed all thirteen of the injection wells, and three monitoring wells to complement the existing well pairs.
- Baseline sampling of the wells has been completed.
- 25,000 lbs of EVO injection started 15 June 2010 to form the biobarrier.
- Evaluate ongoing progress in GSAP reports.

Mr. Krook explained the monitoring well pairs, (A&B) have a shallow and deep component to collect data above and below the aquifer. Mr. Salcedo asked if the monitoring wells are nested. Mr. Berwick said they are side by side about 2 ft. apart. Mr. Friedman asked how long it will take to inject the EVO in the injection wells. Mr. Berwick said a couple of weeks to complete the injections.

Site SS016

- Discontinue the 2-phase extraction due to limited effectiveness and to promote anaerobic conditions to enhance the dechlorination process.
- Removed ThermOx unit, completed in April. Installed monitoring wells (A&B) close to the former site of the ThermOx unit.
- A bioreactor will be installed in the Wash Rack area to remove a large mass of VOCs down to below the bedrock surface – the excavation will be 20ft by 20ft by 25ft.
- The existing horizontal extraction well (EW03x16) will be tied into the bioreactor for recirculation. The existing horizontal extraction well pumps about 1 ½ gallons per minute, which is ideal for these conditions.
- Install five new monitoring wells to complement the existing monitoring of the effectiveness of the bioreactor.
- Canopy removal and bioreactor installation is scheduled for June/July.

Mr. Salcedo asked if there are any constraints from excavating a bigger area if needed. Mr. Krook said yes to a practical extent, the excavation site is near the red line (restricted area boundary) of the flight line.

Site SS030

- Maximize groundwater extraction. Restart EW03x30 (in progress).
- Monitor groundwater levels and TCE concentrations across the site during annual GSAP event in June 2010. Currently waiting on data from the annual GSAP event, in progress.
- Determine if additional monitoring and/or extraction wells are needed to capture TCE plume. The annual GSAP event is currently in progress. Once the data has been received, a decision on optimization of the SS030 GET system will be made.

Site SD036

- The hot spot has been defined; need to optimize the EVO injection design.
- Conduct remedy optimization, followed by implementation of performance monitoring.
- Optimization is on hold pending EVO injection at sites DP039 and SD037.

Site SD037

- Conducted baseline sampling in May. The TCE concentration in some wells was higher than expected. Installing additional monitoring wells based on the higher TCE concentrations. Attached map shows monitoring, extraction, and injection wells and the TCE concentration levels associated with each well.
- Inject 36,000 lbs of EVO into the seven injection wells. Start of EVO injection is planned for 28 June 2010.

Site SS015

- Contaminant plume of TCE originated from three former facilities in the vicinity of building 554.
- Conducting Data Gaps investigation (in progress).
- Round one: installed alluvium-screened shallow well (MW2103x15 adjacent to the existing MW624x15). Installed a monitoring well west of the source area (MW2104x15).
- Round two: installed monitoring wells based on the results of first round.
- Round three: plan to install monitoring wells based on the results of the second round. Installation is scheduled for mid-July. Mr. Krook presented a map (attached) that shows monitoring wells and TCE concentrations levels associated with each well.
- Prepare work plan for remedy optimization.

Activities During FFS Delay (see attachment 7)

Mr. Krook reported on the planned activities to take place during the FFS delay.

Mr. Anderson gave a brief explanation why this presentation was included in the agenda. Mr. Anderson said the dates on MMDS schedule for the FFS has not yet changed. If the FFS is pushed back six months, the Base could be doing a lot of work that would be incorporated into the FFS, including collecting more data from the EVO injection sites. Mr. Duke added he has been to other EVO project presentations, and six months seems to be the time frame where you will see changes or trends. Mr. Chang questioned whether the baseline and two quarters of sampling data would incorporate any seasonal changes. Mr. Anderson said the weather does not change appreciably where it would be a significant factor. Mr. Chang said he would consider the change but would not make any decisions right now.

Mr. Krook gave the following presentation.

Data Gaps Investigations: Complete the data gaps investigations at Sites LF007C (in progress), SS015 (currently installing new well), SD036 (complete), and now need to design the plan forward for optimization, SD037 (in progress), and DP039 (site characterization complete). Refine the conceptual site models using the newly available data.

Inject EVO at Sites: SS015 (pending), SD036 (pending), SD037 (pending), and DP039 (in progress). Will begin collection of performance monitoring data after injections are completed.

Bioreactor Installation: Install Site SS016 bioreactor in the Oil Spill Area (OSA) source area. Collect performance monitoring data following bioreactor installation. Continue performance monitoring of the existing Site DP039 Bioreactor.

Rebound Studies: Continue rebound study data collection at Sites FT004, FT005, LF008, and SD031. Conduct WIOU sites rebound study which is fortuitous right now because the CGWTP is temporarily shut down, while the new fire station is being built. We will continue to collect data in the portion of the WIOU plume where groundwater extraction and treatment took place. Mr. Anderson asked how long the CGWTP has been off line. Mr. Duke said about six weeks. Mr. Anderson added that it's already been off for six weeks so it makes sense to leave it off for a couple more months to collect rebound data.

Groundwater Extraction Treatment (GET) Systems: Continue evaluation of more aggressive pumping at Site SS030. Optimize Site LF007C extraction system by adding more solar-powered extraction wells as needed. Continue current Site SS016 GET systems (OSA vertical extraction wells and TARA horizontal extraction wells).

Mr. Chang said his concern is still the cleanup time, because that has to be addressed in the FFS. It appears the Base's primary concern is containment and control of the plume, and has decided that EVO injection is pretty much the best way to go for most of the sites based on the FFS straw man discussion. Mr. Chang said he has technology experts in their research laboratory that seriously promotes the in-situ chemical oxidation (ISCO) remedy. The base needs to conduct a small pilot study to prove that ISCO will not work or consult an expert in ISCO such as Vironex to address this debate. That would give EPA the confidence to agree to the FFS. Mr. Duke said it has

been addressed through a chemical oxygen demand soil sample laboratory study, and the data proved that ISCO will not work due to the high oxygen demand in the soil. Mr. Anderson said we need to provide EPA with the analytical results of soil evaluation along with a description of the study, perhaps in a tech memo. Mr. Chang said that would be something he can give to his technology experts.

Emulsified Vegetable Oil (EVO) Current Status and Overview (see attachment 8)

Mr. Berwick gave a presentation on Emulsified Vegetable Oil injection. The key points made in the presentation included:

- Thirteen injection wells were installed in barrier formation at DP039.
- Seven injection wells installed in area pattern at Site SD037.
- Spill prevention, control and countermeasures plan was written and finalized prior to receiving EVO shipments.
- Prepared staging areas designated and prepared to receive EVO shipment in secondary containment.
- Began injection work at Site SD039 recently. Typically, the EVO is injected into three wells at a time using an injection manifold. The design mixture is 10% EVO to 90% water. After the EVO/water injection phase, just chase water is injected to flush out the well screens and to further distribute EVO in the subsurface.

Mr. Berwick showed pictures, see attachment, of the EVO process. Mr. Berwick extended an invitation after the RPM meeting to visit the EVO injection site.

Progress with Plume Remediation

Mr. Krook gave a presentation on the progress of plume remediation across the Base. Mr. Krook showed map posters of “before and after” plumes. Mr. Anderson said that the next RAB meeting is scheduled in October and it would be good idea to bring the “before and after” posters to show the RAB members that the plumes are shrinking.

Program Update: Activities Completed, In Progress and Upcoming (see attachment 9)

Five-Year Review Schedule (no attachment)

Mr. Smith wanted to confirm the specific requirements and date for the next 5-year review. Mr. Chang said the next review should be one all inclusive report submitted to EPA as directed by EPA’s recent IG. All regulatory representatives agreed that the next 5-year review for Travis AFB will take place in 2013.

4. New Action Item Review

- 1) Bring “before and after” posters of the plume reduction to next RAB meeting.
- 2) Provide a technical memorandum that compares ERD and ISCO for Travis AFB, and which includes the chemical oxidant demand results for soil.

5. PROGRAM/ISSUES/UPDATE

Mr. Smith said that the State requires information from the Base as to how much unrestricted land is available. Mr. Smith asked Mr. Chang if, other than the harmonious goals of RIP by 2012, are there any other tasks that EPA requires. Mr. Salcedo clarified that the information the State requires is in regards to closed bases (BRAC bases); how many acres of available land is available for public use. Mr. Chang said he doesn't have anything to add, other than that the EPA will try to support the 2012 RIP goal, and the 5-year review mandate in 2013.

6. Potential Response to Comments Meetings

None.

General Discussion

None.

7. Action Items

Item #	Responsible	Action Item Description	Due Date	Status
1.	Travis AFB	Petition to have the Lysimeter removed.	TBD	Open
2.	Travis AFB	Schedule a RAB tour at site SS016 for when the bioreactor is being installed.	TBD	Provide 30 days notice to RAB members for tour.
3.	Travis AFB	Bring ‘before and after’ poster of plume reduction to next RAB meeting.	21 October 2010	Open
4.	Travis AFB	Document chemical oxidant demand soil testing results to agencies.	TBD	Open

TRAVIS AIR FORCE BASE
ENVIRONMENTAL RESTORATION PROGRAM
REMEDIAL PROGRAM MANAGER'S MEETING
BLDG 570, Main Conference Room
23 June 2010, 9:30 P.M.
AGENDA

1. ADMINISTRATIVE

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

2. CURRENT PROJECTS

- A. TREATMENT PLANT OPERATION AND MAINTENANCE UPDATE (LONNIE)

3. PRESENTATIONS

- A. NAAR UPDATE
- B. 2010 FIELD WORK UPDATE
- C. ACTIVITIES DURING FFS DELAY
- D. EVO INJECTION PROCESS
- E. PROGRESS WITH PLUME REMEDIATION
- F. PROGRAM UPDATE: ACTIVITIES COMPLETED, IN PROGRESS AND UPCOMING
- G. FIVE-YEAR REVIEW SCHEDULE (JAMES)

4. NEW ACTION ITEM REVIEW

5. PROGRAM/ISSUES/UPDATE

6. POTENTIAL RESPONSE TO COMMENTS MEETINGS

Travis AFB Master Document Schedule

Annual Meeting and Teleconference Schedule

Monthly RPM Meeting (Begins at 9:30 a.m.)	RPM Teleconference (Begins at 9:30 a.m.)	Restoration Advisory Board Meeting (Begins at 7:00 p.m.) (Poster Session at 6:30 p.m.)
01-27-10	—	—
—	—	—
03-30-10	—	—
04-22-10 *(1:00 PM)	—	04-22-10
05-19-10	—	—
06-23-10	—	—
07-21-10	—	—
08-25-10	—	—
09-22-10	—	—
10-21-10 *(1:00 PM)	—	10-21-10
—	11-17-10	—
12-08-10	—	—

* RPM meeting moved to coincide with the RAB meeting.

Travis AFB Master Document Schedule

PRIMARY DOCUMENTS			
Life Cycle	Basewide Groundwater		
	Focused Feasibility Study Travis, Glenn Anderson CH2M Hill, Loren Krook	Proposed Plan Travis, Glenn Anderson CH2M HILL, Loren Krook	Record of Decision Travis, Glenn Anderson CH2M HILL, Tony Jaegel
Scoping Meeting	03-30-10	NA	01-24-07
Predraft to AF/Service Center	06-30-10	12-08-10	06-08-11
AF/Service Center Comments Due	07-14-10	01-03-11	06-22-11
Draft to Agencies	07-28-10	01-10-11	07-06-11
Draft to RAB	07-28-10	01-10-11	07-06-11
Agency Comments Due	09-27-10	03-09-11	08-31-11
Response to Comments Meeting	10-21-10	03-23-11	09-22-11
Agency Concurrence with Remedy	NA	NA	09-29-11
Public Comment Period	NA	03-31-11 to 04-27-11	NA
Public Meeting	NA	*04-21-11	NA
Response to Comments Due	11-18-10	06-14-11	10-27-11
Draft Final Due	11-18-10	06-14-11	10-27-11
Final Due	12-20-10	07-14-11	11-24-11

*Public meeting to coincide with RAB meeting.

PRIMARY DOCUMENTS	
Life Cycle	Comprehensive Site Evaluation Phase II Travis AFB, Glenn Anderson Sky Research, Ian Roberts
	Report
Scoping Meeting	NA
Predraft to AF/Service Center	04-23-10
AF/Service Center Comments Due	05-04-10
Draft to Agencies	07-05-10
Draft to RAB	07-05-10
Agency Comments Due	08-06-10
Response to Comments Meeting	08-11-10
Agency Concurrence with Remedy	NA
Public Comment Period	NA
Public Meeting	NA
Response to Comments Due	08-20-10
Draft Final Due	08-20-10
Final Due	09-23-10

PRIMARY DOCUMENTS				
Life Cycle	Potrero Hills Annex Travis, Glenn Anderson			Union Creek Sites SD001 &SD033 Remedial Action Travis, Lonnie Duke ITSI, Rachel Hess
	FFS	Proposed Plan	ROD	Completion Report
Scoping Meeting	180 days after Water Board Order Rescinded	+470 days	+735 days	NA
Predraft to AF/Service Center	+ 270 days	+530 days	+ 915 days	01/06/10
AF/Service Center Comments Due	+ 300 days	+560 days	+ 975 days	02/05/10
Draft to Agencies	+330 days	+590 days	+ 1035 days	03/30/10
Draft to RAB	+ 330 days	+590 days	+ 1035 days	03/30/10
Agency Comments Due	+390 days	+650 days	+ 1095 days	06/01/10
Response to Comments Meeting	+ 405 days	+665 days	+ 1110 days	06/23/10
Agency Concurrence with Remedy	NA	NA	+ 1130 days	NA
Public Comment Period	NA	+735 to 765 days	NA	NA
Public Meeting	NA	+745 days	NA	NA
Response to Comments Due	+430 days	+695days	+ 1190 days	07/21/10
Draft Final Due	+430 days	+695 days	+ 1190 days	07/21/10
Final Due	+460 days	+725 days	+ 1250 days	08/20/10

SECONDARY DOCUMENTS		
Life Cycle	Natural Attenuation Assessment Report Travis AFB, Glenn Anderson CH2M HILL, Leslie Royer	DP039 RPO Work Plan Travis AFB, Glenn Anderson CH2M HILL, Loren Krook
Scoping Meeting	NA	NA
Predraft to AF/Service Center	07-07-09	09-17-09
AF/Service Center Comments Due	07-21-09	10-01-09
Draft to Agencies	08-26-09	10-11-09
Draft to RAB	08-26-09	10-11-09
Agency Comments Due	10-15-09	11-13-09 (01-27-10)
Response to Comments Meeting	05-13-10 (Teleconference w/EPA)	04-22-10
Response to Comments Due	02-02-10 (06-23-10)	06-03-10
Draft Final Due	NA	NA
Final Due	07-07-10	06-09-10
Public Comment Period	NA	NA
Public Meeting	NA	NA

SECONDARY DOCUMENTS			
Life Cycle	SD036/SD037 RPO Work Plan Travis AFB, Lonnie Duke CH2M HILL, Loren Krook	ST027B Site Characterization Report Travis AFB, Lonnie Duke CH2M HILL, Gavan Heinrich	Phytostabilization Study Report Travis AFB, Glenn Anderson Parsons, Bill Plaehn
Scoping Meeting	NA	NA	10-09-08
Predraft to AF/Service Center	08-13-09	02-23-10	04-12-10
AF/Service Center Comments Due	08-27-09	03-08-10	06-07-10
Draft to Agencies	10-01-09	03-29-10	06-16-10
Draft to RAB	10-01-09	03-29-10	06-16-10
Agency Comments Due	11-02-09 (01-27-10)	(04-28-10) 06-08-10	07-19-10
Response to Comments Meeting	06-23-10	06-23-10	07-21-10
Response to Comments Due	07-02-10	06-25-10	08-04-10
Draft Final Due	NA	NA	NA
Final Due	07-02-10	06-25-10	08-18-10
Public Comment Period	NA	NA	NA
Public Meeting	NA	NA	NA

INFORMATIONAL DOCUMENTS			
Life Cycle	Quarterly Newsletters (July 2010) Travis, Glenn Anderson	2009 GWTP RPO Annual Report Travis AFB, Lonnie Duke CH2M HILL, Doug Berwick	2008-2009 CAMU Monitoring Annual Report Travis AFB, Lonnie Duke ITSI Rachel Hess
Scoping Meeting	NA	NA	NA
Predraft to AF/Service Center	NA	03-09-10	11-24-09
AF/Service Center Comments Due	NA	03-30-10	12-24-09
Draft to Agencies	07-05-10	04-28-10	01-27-10
Draft to RAB	NA	04-28-10	03-08-10
Agency Comments Due	07-19-10	05-28-10	03-08-10
Response to Comments Meeting	TBD	06-23-10	TBD
Response to Comments Due	07-21-10	07-14-10	05-19-10
Draft Final Due	NA	NA	NA
Final Due	07-26-10	07-14-10	05-19-10
Public Comment Period	NA	NA	NA
Public Meeting	NA	NA	NA

South Base Boundary Groundwater Treatment Plant Monthly Data Sheet

Report Number: 118

Reporting Period: 1 May 2010 – 27 May 2010

Date Submitted: 11 June 2010

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 – May 2010

Operating Time: **645 hours**

Percent Uptime: **99.5%**

Electrical Power Usage: **16,980 kWh**

Gallons Treated: **4.0 million gallons**

Gallons Treated Since July 1998: **690 million gallons**

Volume Discharged to Union Creek: **4.0 million gallons^a**

VOC Mass Removed: **1.5 pounds^a**

VOC Mass Removed Since July 1998: **381 pounds**

Rolling 12-Month Cost per Pound of Mass Removed^c: \$4,674

Monthly Cost per Pound of Mass Removed^c: \$2,517

^a Includes an additional 4,500 gallons of investigative derived waste water

^b Calculated using May 2010 EPA Method SW8260B analytical results.

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

^d Increased costs are due to annual reporting expenses

Flow Rates

Average Groundwater Total Flow Rate: 117 gpm^a

Average Flow Rate (gpm) ^b							
FT005 ^c				SS029		SS030	
EW01x05	Off line	EW736x05	Off line	EW01x29	0.7	EW01x30	8.8
EW02x05	Off line	EW737x05	Off line	EW02x29	5.4	EW02x30	1.9
EW03x05	Off line	EW742x05	Off line	EW03x29	Off line ^d	EW03x30	1.8
EW731x05	Off line	EW743x05	Off line	EW04x29	5.0	EW04x30	22.4
EW732x05	Off line	EW744x05	Off line	EW05x29	14.3	EW05x30	10.8
EW733x05	Off line	EW745x05	Off line	EW06x29	19.0	EW06x30	Dry
EW734x05	Off line	EW746x05	Off line	EW07x29	16.6	EW711x30	10.0 ^e
EW735x05	Off line						
FT005 Total:		Off line		SS029 Total:		SS030 Total:	
				61.0		55.7	

^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 wells at FT005 were taken off line in accordance with the 2008 Annual Remedial Process Optimization Report for the Central Groundwater Treatment Plant, North Groundwater Treatment Plant, and South Base Boundary Groundwater Treatment Plant.

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

^e Extraction well online, but has a faulty flow meter. Average flow rate is from previous month's readings.

gpm—gallons per minute

Shutdown/Restart Summary

Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
SBBGWTP	No Shutdowns				
SBBGWTP = South Base Boundary Groundwater Treatment Plant					

Summary of O&M Activities

Monthly groundwater samples at the SBBGWTP were collected on 4 May 2010. Sample results are presented in Table 1. The total VOC concentration (45.6µg/L) in the influent sample has increased since the April 2010 sample (33.5 µg/L) was collected. VOCs were not detected in the effluent sample, indicating good treatment efficiency.

On 24 May 2010 an additional 4,500 gallons of investigative derived waste water was treated at the SBBGWTP. The water was from decontaminating augers and equipment used during the ongoing Travis AFB Site characterization studies and remediation activities.

Optimization Activities

No optimization activities were performed in May 2010. In June 2010 the SBBGWTP will be modified to evaluate the feasibility of using two (2) 6,000-pound carbon vessels to treat the contaminated groundwater in order to ensure optimum energy savings.

Table 1

Summary of Groundwater Analytical Data for May 2010 – South Base Boundary Groundwater Treatment Plant

Summary of Groundwater Analytical Data for May 2010 - South Base Boundary Groundwater Treatment Plant					
Constituent	Instantaneous Maximum ^a (µg/L)	Detection Limit (µg/L)	N/C	4 May 2010 (µg/L)	
				Influent	Effluent
Halogenated Volatile Organics					
Bromodichloromethane	5.0	0.15	0	ND	ND
Carbon Tetrachloride	0.5	0.14	0	ND	ND
Chloroform	5.0	0.16	0	ND	ND
Dibromochloromethane	5.0	0.13	0	.59	ND
1,1-Dichloroethane	5.0	0.19	0	ND	ND
1,2-Dichloroethane	0.5	0.15	0	ND	ND
1,1-Dichloroethene	5.0	0.19	0	ND	ND
cis-1,2-Dichloroethene	5.0	0.19	0	2.5	ND
trans-1,2-Dichloroethene	5.0	0.33	0	ND	ND
Methylene Chloride	5.0	0.66	0	ND	ND
Tetrachloroethene	5.0	0.21	0	ND	ND
1,1,1-Trichloroethane	5.0	0.14	0	ND	ND
1,1,2-Trichloroethane	5.0	0.20	0	ND	ND
Trichloroethene	5.0	0.19	0	40.9	ND
Vinyl Chloride	0.5	0.18	0	ND	ND
Non-Halogenated Volatile Organics					
Benzene	1.0	0.17	0	ND	ND
Ethylbenzene	5.0	0.22	0	ND	ND
Toluene	5.0	0.14	0	ND	ND
Xylenes	5.0	0.23 – 0.5	0	ND	ND
Other					
Total Petroleum Hydrocarbons – Gasoline	50	8.5	0	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	50	0	ND	ND
Total Suspended Solids (mg/L)	NE	1.0	0	4 J	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			

Central Groundwater Treatment Plant Monthly Data Sheet

Report Number: 130

Reporting Period: 1 May 2010 – 27 May 2010

Date Submitted: 11 June 2010

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 – May 2010^a

Operating Time:

CGWTP: 3 hours

WTTP: Water: 0 hours
Vapor: 0 hours

Percent Uptime:

CGWTP: .12%

WTTP: Water: 0%
Vapor: 0%

Electrical Power Usage:

CGWTP: 3 kWh

WTTP: 489 kWh

Gallons Treated: **2,090 gallons**

Gallons Treated Since January 1996: **429 million gallons**

VOC Mass Removed:

0 lbs (groundwater only)

0 lbs (vapor only)

VOC Mass Removed Since January 1996:

2,492 lbs from groundwater

8,686 lbs from vapor

Rolling 12-Month Cost per Pound of Mass Removed: \$1,695^b

Monthly Cost per Pound of Mass Removed: \$7,077^{b,c}

^a CGWTP off line in May 2010 for fire station construction

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

^c Costs are abnormally high due to system shutdown in May 2010 for fire station construction

DRE = destruction removal efficiency

Flow Rates

Average Groundwater Flow Rate: **0.0 gpm^a**

Location	Average Flow Rate	
	Groundwater (gpm) ^b	Soil Vapor (scfm)
EW01x16	Off line	NA
EW02x16	Off line	NA
EW03x16	Off line	NA
EW605x16	Off line	NA
EW610x16	Off line	NA
WTTP	Off line	Off line
ThOx ^b	NA	NA

^a CGWTP off line in May 2010 for fire station construction.

^b ThOx was disassembled and removed 22 April 2010

gpm = gallons per minute

NA = not applicable/not available

scfm = standard cubic feet per minute

Flow Rates from Wells Sites that Feed into the WTTP

Average Flow Rate from the WIOU, DP039, and LF008 Extraction Wells (gpm)							
SD037/ SD043				SD033/SD034/ DP039		LF008/SD036	
EW599x37	NA	EW705x37	Off line ^a	EW501x33	Off line ^a	EW719x08	Off line ^d
EW700x37	Off line ^a	EW706x37	Off line ^a	EW503x33	Off line ^a	EW720x08	Off line ^d
EW701x37	NA	EW707x37	Off line ^a	EW01x34	Off line ^a	EW721x08	Off line ^d
EW702x37	NA	EW510x37	Off line ^a	EW03x34	Off line ^a	EW593x36	Off line ^a
EW703x37	NA	EW511x37	Off line ^a	EW563x39	Off line ^c	EW594x36	Off line ^a
EW704x37	Off line ^a	EW555x43	Off line ^a	EW782x39	Off line ^c	EW595x36	Off line ^a
gpm—gallons per minute NA – not available / not recorded ^a Extraction wells are off line due to CGWTP shutdown during May 2010 ^d Extraction wells were shut off to facilitate the Bioreactor Sustainability Study at Site DP039. ^c Extraction wells shut off to support a rebound study at Site LF008.							

Shutdown/Restart Summary

Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
CGWTP (Groundwater):					
CGWTP	28 April 2010	11:15			Unscheduled due to Fire Station construction activities – continued through May 2010
WTTP (Groundwater):					
WTTP	28 April 2010	11:15			Unscheduled due to Fire Station construction activities – continued through May 2010
WTTP (Vapor):					
WTTP	28 April 2010	11:15			Unscheduled due to Fire Station construction activities – continued through May 2010
CGWTP = Central Groundwater Treatment Plant WTTP = West Treatment and Transfer Plant					

Summary of O&M Activities

Monthly groundwater and vapor sampling at the CGWTP was not performed in May 2010 due to the system being off line for the duration of the month for Fire Station construction activities.

The 2,090 gallons of treated water was backflow water that had already been treated in April 2010

Leaks remain in the well vaults for EW599x37, EW701x37, EW702x37, and EW703x37. Details on the status of these repairs will be presented in the July 2010 monthly report.

The expected timeline for system restart of the CGWTP is early June when pipes near the new Fire Station are relocated.

The detection of estimated amounts of benzene in the influent, carbon midpoint, and system effluent sample collected at the CGWTP in April 2010 were found to be legitimate. Benzene was not detected at any point in the CGWTP process stream for prior to April 2010 and will continue to be monitored during June 2010. Results from these samples will be recorded and discussed in the June 2010 monthly report.

Optimization Activities

No additional optimization activities occurred in May 2010.

2010 Field Installations Update

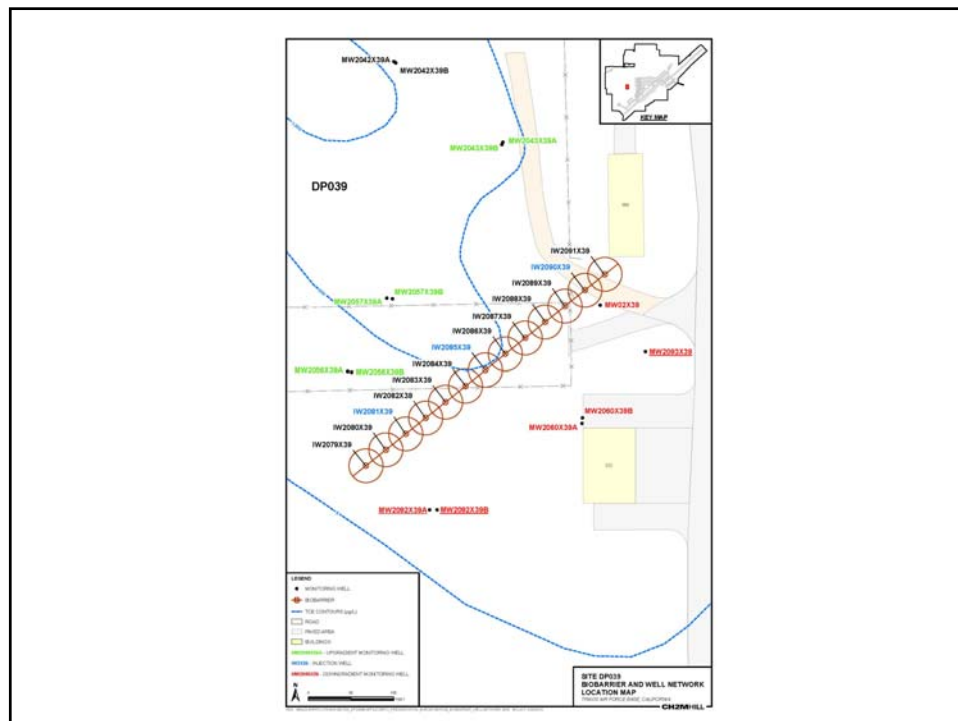
Travis Air Force Base, California
June 23, 2010

Installations in Progress

- Site DP039 Mid-Plume
- Site SS016 OSA Source Area
- Site SS030 Eastern Edge of Plume
- Site SD036 Hot Spot
- Site SD037 Hot Spot
- Site SS015 Plume
- Site LF007C Down-gradient Investigation

Site DP039 — Plan

- Install 3 new monitoring wells to complement the existing well pairs (for total of 15 wells in the EVO performance monitoring network)
- Install 13 EVO injection wells across the plume, downgradient of the 500 µg/L contour
- Inject about 25,000 lbs of EVO to form the biobarrier
- Initiate performance monitoring of the remedy optimization



Site DP039 – Field Work Status

- Installed 9 injection wells (IW2083x39 through IW2091x39)
- Installed 1 monitoring well (MW2093x39)
- Installation of 4 remaining injection wells and 2 remaining monitoring wells is scheduled for mid June
- Baseline sampling for existing wells is complete
- EVO injection started June 15th

Site SS016 — Plan

- Discontinue 2-Phase extraction due to limited effectiveness and to promote anaerobic conditions in source area
- Remove the Therm/Ox unit (Completed)
- Remove the wash rack & canopy
- Excavate the highly contaminated soil in wash rack area (20'x20'x25')

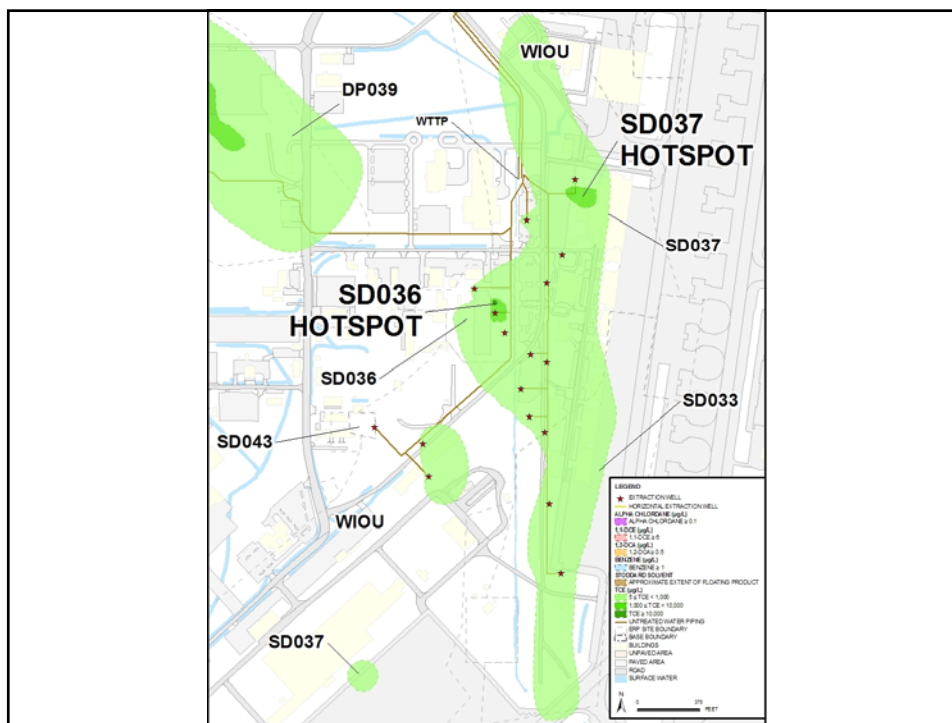
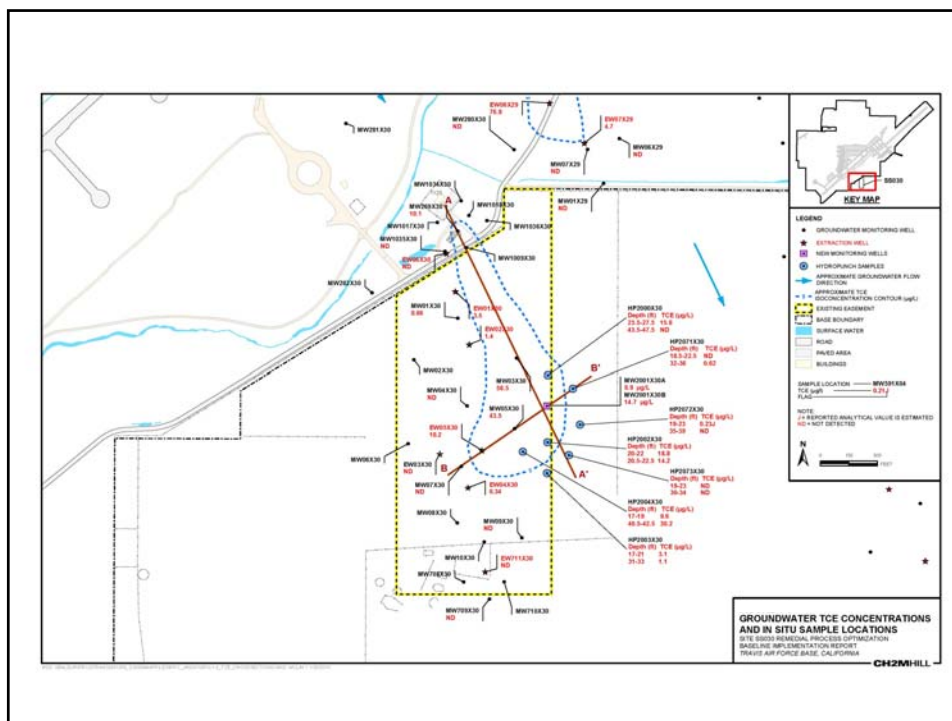


Site SS016 – Field Work Status

- Therm/Ox system was dismantled in April
- Wells MW2112x16A and B have been installed near the former Therm/Ox system
- Wash rack canopy removal and bioreactor installation is scheduled for June/July

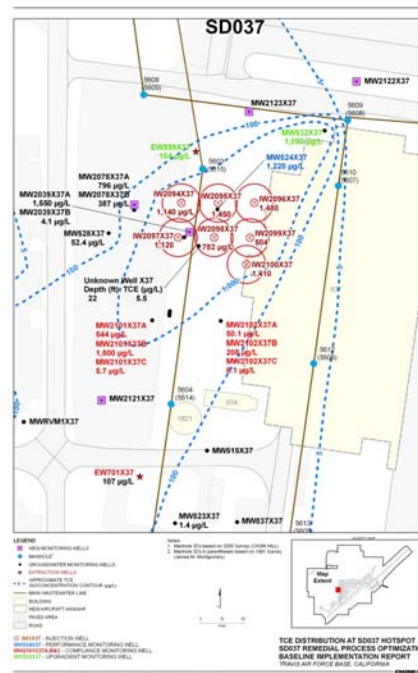
Site SS030 - Plan

- Maximize groundwater extraction at the site – restart EW03x30 (in progress)
- Monitor groundwater levels and TCE concentrations across the site during annual GSAP event in June 2010
- Determine if additional monitoring wells and extraction wells are needed to obtain capture of the SS030 TCE plume following the GSAP event
- Currently...waiting on data from annual GSAP event (in progress)



Site SD037 — Plan

- Inject 36,000 lbs of EVO into 7 injection wells
- Initiate performance monitoring of the remedy optimization

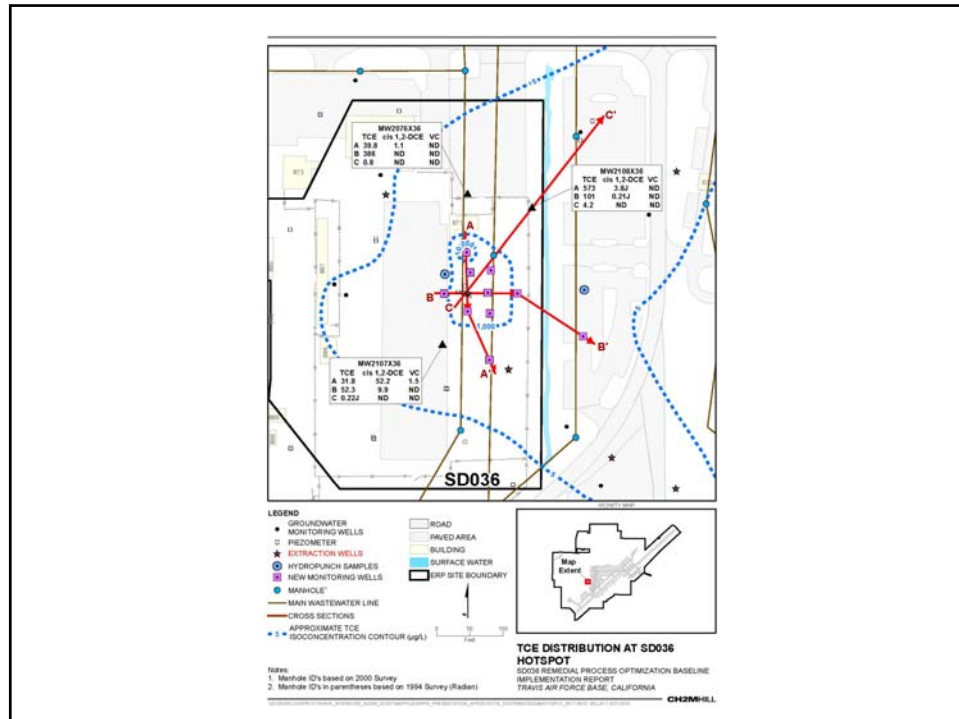


Site SD037 – Field Work Status

- Conducted the Baseline sampling in May
- MW2101x37B has a TCE concentration of 1,800 µg/L – MW 532x37 has a TCE concentration of 1,090 µg/L
- Installing additional monitoring wells based the high TCE concentration in MW2101x37B and MW532x37 (in progress)
- Start EVO injection planned for June 28th

Site SD036 — Plan

- Now that the hot spot is defined, need to optimize the EVO injection design
- Conduct remedy optimization followed by implementation of performance monitoring
- Optimization is on hold pending EVO injection at sites DP039 and SD037



Site SS015 - Plan

- Investigate extent of VOCs in the source area and downgradient
- Round 1 Data Gaps Investigation
 - Install alluvium-screened shallow well MW2103x15 adjacent to MW624x15 (complete)
 - Install monitoring well west of source-area well MW216x15 (complete)

Site SS015 – Plan (cont.)

- Round 2 - Install monitoring wells based on results of 1st round wells (MW2105x15, 2106x15, and 2118x15) - (complete)
- Round 3 - Install monitoring wells based on results of 2nd round wells (MW2119x15, 2120x15, and 2124x15) - (in progress)
- Prepare Work Plan for remedy optimization

Site SS015 – Field Work Status

- Sample results from well MW2106x15 indicate ND for TCE and daughter products
- Sample results from new downgradient wells MW2105x15 and MW2118x15 indicated elevated TCE, cis1,2-DCE, and VC
- Groundwater plume trends to the northeast
- Groundwater gradient appears to have strong component to the northeast
- 3rd round monitoring wells planned for installation in mid-June



Questions/Comments?

Activities During FFS Delay

June 2010 RPM Meeting
Travis AFB, California

Data Gaps Investigations

- Complete data gaps investigations at Sites LF007C, SS015, SD036, SD037, and DP039.
- Refine conceptual site models using all available data.

EVO Injections

- Inject EVO at Sites SS015, SD036, SD037, and DP039
- Begin collection of performance monitoring data

Bioreactor Installation

- Install Site SS016 bioreactor within OSA source area
- Collect performance monitoring data following bioreactor installation
- Continue performance monitoring of the existing Site DP039 bioreactor

Rebound Studies

- Continue rebound study data collection at Sites FT004, FT005, LF008, and SD031
- Conduct WIOU sites rebound study
 - Turn off all WIOU extraction wells (currently off because of construction activities adjacent to CGWTP)
 - Collect rebound data

GET Systems

- Continue evaluation of more aggressive pumping at Site SS030.
- Optimize Site LF007C extraction system.
- Continue current Site SS016 GET systems
 - OSA vertical extraction wells
 - TARA horizontal extraction wells

Documentation

- Finalize NAAR
- Finalize Work Plan for Sites SD036/SD037
- Finalize Site DP039 phytoremediation report (by others)
- Develop Work Plan for Site SS015 IRA Optimization (EVO injection)
- Begin parallel development of Proposed Plan and ROD to compensate for FFS schedule delay

Emulsified Vegetable Oil (EVO) Current Status and Overview

Preparation for Injection

- Thirteen (13) injection wells installed in barrier formation at Site DP039
- Seven (7) injection wells installed in area pattern at Site SD037
- Spill Prevention, Control, and Countermeasures (SPCC) Plan written, stamped, and finalized prior to receiving EVO shipments
- Staging areas designated and prepared to receive EVO shipment



Injection Activities

- Begin injection work at Site DP039
- Inject into three (3) wells at one time using injection manifold
- EVO is injected into each well at a 10% EVO-to-90% water mixture
- Following EVO injection, chase with water to flush out well screens and further distribute EVO





Current Status

- Three injection wells have been injected with EVO at Site DP039
- Nearly 800 gallons of EVO have been injected amongst three (3) wells
- Currently injecting chase water into those three wells

Travis AFB Groundwater Program

Management Overview Briefing

RPM Meeting
June 23, 2010

Completed Documents

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
- 2008 Annual GWTP RPO Report
- Passive Diffusion Bag (PDB) Technical Memo
- RD/RA QAPP Update
- ST032 Tier 1 POCO Evaluation WP
- Phytostabilization Demonstration Tech Memo
- Model QAPP
- LF008 Rebound Test Tech Memo

Documents

- Comprehensive Site Evaluation Phase II Work Plan
- Field Sampling Plan (FSP)
- SS016 RPO Work Plan
- ST018 POCO RA Work Plan
- Vapor Intrusion Assessment Report
- 2008/2009 GSAP Annual Report
- FT005 Data Gap Work Plan
- First and Second Site DP039 Sustainable Bioreactor Demonstration Progress Reports
- ***DP039 RPO Work Plan***

Completed Field Work

Field Work

- ST027B Gore Sorber Survey – Ph 1
- ST027B Field Sampling – Phase 2
- GSAP 2008 Semi-annual Event
- ST027B Installation of Wells – Phase 3
- SS014 Site Characterization
- LF008 Rebound Study
- GSAP Annual Sampling Event - 2009
- SS030 Site Characterization – Ph 1
- ST027 Site Characterization -Ph 3
- ST014 Monitor Well Install - Subsite 3
- SD001/SD033 Sediment RA
- SS016 Site Characterization (OSA source area)

Field Work

- ST018 Site Characterization
- SS030 Site Characterization (Off-base VOC Plume)
- DP039 Site Characterization (for Biobarrier Placement)
- SS014 & ST032 Q1 2010 MNA Sampling (2nd of 4 quarterly events)
- SD036 Additional Site Characterization (north & east)
- Therm/Ox System Removal
- **SS016 Monitoring Well Installation**
- **SD037 EVO Injection Well Installation**

In-Progress Documents & Field Work

Documents

- Natural Attenuation Assessment Report (NAAR) (Draft)
- SD036/SD037 RPO Work Plan (Draft)
- Union Creek Sites SD001 & SD033 Remedial Action Report (Draft)
- ST027B Site Characterization Report (Draft)
- 2009 GWTP RPO Annual Report (Draft)
- CAMU 2008-2009 Monitoring Annual Report (Draft)
- **Phytostabilization Study Report (Draft)**

Field Work

- DP039 Monitoring Well & Biobarrier Injection Well Installation
- SD037 Monitoring Well Installation
- SS015 Site Characterization (Round 3)
- 2010 GSAP Annual Sampling Event - 2010

Upcoming Documents & Field Work

Documents

- Focused Feasibility Study (FFS) **TBD**
- ***SS015 Remedy Optimization Work Plan*** **TBD**

Field Work

- FT005 Sample Collection May
- EVO Injection – Sites SD037 & DP039 June/***July***
- SS016 Bioreactor Installation ***July***
- SD036 Injection Well Installation TBD
- LF007C Site Characterization (Wetlands) TBD
- ST018 GETS Installation TBD