Final

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

30 November 2011, 0930 Hours

Mr. Mark Smith, Travis Air Force Base (AFB), conducted the Remedial Program Manager's (RPM) meeting on 30 November 2011 at 0930 in the Main Conference Room, Building 570, Travis AFB, California. Attendees included:

• Mark Smith	Travis AFB
• Glenn Anderson	Travis AFB
• Lonnie Duke	Travis AFB
• Gregory Parrott	Travis AFB
• Merrie Schilter-Lowe	Travis AFB
• Dezso Linbrunner	USACE-Omaha
• Alan Friedman	California Regional Water Quality Control Board (RWQCB)
• Jose Salcedo	California Department of Toxic Substances Control (DTSC)
• Nadia Hollan Burke	United States Environmental Protection Agency (USEPA)
• Mary Snow	Techlaw, Inc
• Rachel Hess	ITSI
• Mike Wray	CH2M HILL
• Loren Krook	CH2M HILL
• Tony Chakurian	CH2M HILL
• Tony Jaegel	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 (October 2011)
• Attachment 4	CGWTP Monthly Data Sheet (October 2011)
• Attachment 5	NGWTP Monthly Data Sheet (October 2011)
• Attachment 6	Site ST018 Monthly Data Sheet (October 2011)
• Attachment 7	Presentation: Management Overview Briefing

- Attachment 8 Presentation: 2011 Field Schedule
- No Attachment Presentation: FT005 Soil Remedial Action Update
- Attachment 9 Presentation: LF007C Investigation Update

1. ADMINISTRATIVE

A. Previous Meeting Minutes

The 20 October 2011 RPM meeting minutes were approved and finalized as written, with the following exceptions. Mr. Salcedo requested a correction be made on page three, paragraph five, first sentence, change "December" to "November". Mr. Friedman requested the following change be made on page fourteen, paragraph three, second sentence, change "Mr. Parrott said this is not a normal vernal pool" to "Mr. Parrot said that this pool may be hydraulically connected to the groundwater". Ms. Burke requested a change to the same paragraph, third sentence; change "Ms. Burke agreed" to "Ms. Burke understood". Ms. Burke also requested a correction be made on page fifteen, under Program/Issues/Updates, second paragraph, tenth sentence, change "EPA Headquarters" to "EPA Region 9 Headquarters".

B. Action Item Review.

Action items from October were reviewed.

Action item one still open. No change.

Action item two still open. No change.

Action item three still open. No change. A discussion with EPA is needed to substantiate the terminology for site closure completion reports. Need to schedule in an upcoming RPM meeting agenda, and possibly get AFCEE involved.

Action item four still open: No change, ongoing.

Master Meeting and Document Schedule Review (see Attachment 2)

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

Travis AFB Annual Meeting and Teleconference Schedule

— A teleconference is tentatively scheduled for 14 December 2011 at 0930.

Travis AFB Master Document Schedule

— Focused Feasibility Study (FFS): The Final document went out on 28 October 2011. Will move this document to history for the next RPM meeting.

— Proposed Plan (PP): No change.

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

— Potrero Hills Annex: (FS, PP, and ROD): No change. Camp Dresser and McKee (CDM) is the contractor doing the cleanup work for some of the responsible parties at Potrero Hills. On Monday, 28 November 2011, CDM was at Potrero Hills to mark locations for additional site characterization work. Mr. Anderson and Mr. Duke went to the site yesterday, 29 November 2011, to oversee the work being conducted. CDM was collecting discrete soil samples every five feet in borings at four locations until they hit groundwater, and then would collect a grab groundwater sample. Mr. Anderson said that groundwater sampling to date show that the perchlorate concentrations are not going down and in fact are increasing, suggesting a source area exists and has yet to be identified. After the analytical results come back from the laboratory, Mr. Anderson, Mr. Duke and Mr. Smith would like to have a meeting with the responsible parties to discuss their cleanup plan. Mr. Friedman requested to be notified when the meeting has been scheduled. Ms. Burke asked how long CDM was going to be on site collecting samples. Mr. Anderson said the sampling should be completed today, and we should expect to receive analytical results in a month or so.

— Site ST027-Area B Human Health Risk Assessment: Final Due date was changed to accommodate some corrections identified by EPA. Any additional corrections will be addressed in the body of a cover letter, similar to how the Focused Feasibility Study (FFS) was handled. Mr. Anderson asked the regulators if they wanted a paper copy or if a CD was okay. All the regulators agreed to receive a CD. Travis will receive one paper copy for the Administrative Record (AR). Mr. Friedman asked if everyone was in agreement with not revising the risk assessment based on new guidance that was published after the document was completed. Mr. Anderson answered yes, and Ms. Burke also said yes. Mr. Salcedo said all sites will come up in the five-year reviews and will evaluate any changes to MCLs.

— Site ST027-Area B Ecological Risk Assessment: Final Due date was changed to accommodate some corrections identified by EPA. Any additional corrections will be addressed in the body of a cover letter, similar to how the Focused Feasibility Study (FFS) was handled. Mr. Anderson asked the regulators if they wanted a paper copy or if a CD was okay. All the regulators agreed to receive a CD. Travis will receive one paper copy for the Administrative Record (AR). Mr. Friedman asked if everyone was in agreement with not revising the risk assessment based on new guidance that was published after the document was completed. Mr. Anderson answered yes, and Ms. Burke also said yes. Mr. Salcedo said all sites will come up in the five-year reviews and will evaluate any changes to MCLs.

— Work plan for Assessment of Aerobic Chlorinated Cometabolism Enzymes at Travis AFB: Response to Comments Meeting was changed to 30 November 2011.

— Technical Memorandum for Assessment of Aerobic Chlorinated Cometabolism Enzymes: New document, all new dates.

— FT005 Remedial Action Completion Report: No change. The work has been completed and the due dates will be populated in the MMDS for next RPM meeting. Ms. Burke said EPA Region 9 is interested in the Remedial Action (RA) completion and to keep EPA apprised of any date changes, adding the desired deadline for this document is 30 June 2012 for EPA to sign. This is the last soil action under the ROD and EPA wants to close out the whole Operable Unit (OU) at that time. Mr. Smith asked if Ms. Burke is asking for more than the thirty days to review. Ms. Burke said not at this time.

— RPO Baseline Implementation Report: The Agency Comments Due date was pushed back by two weeks as requested by the Agencies. The subsequent submittal due dates were changed accordingly.

— Technical and Economic Feasibility Analysis (TEFA): The Draft to Agencies has been pushed back two weeks to give Travis more time to prepare the document. The subsequent due dates were changed accordingly. Mr. Friedman asked for more than the thirty day review time due to the holidays. The Agency Comments due date will be changed to 30 January 2012. The subsequent due dates will be changed accordingly. Mr. Salcedo asked if Travis had to run this document through Mark Trost/AFCEE. Mr. Anderson said yes all feeder and decision document have to go through AFCEE before Regulatory review.

— Site LF007C Data Gaps Investigation Technical Memorandum: New Document added, submittal due dates TBD.

— Quarterly Newsletter (January 2012): New dates were added to reflect the first quarter 2012.

— 2010/2011 GSAP: The draft to Agencies date was pushed back due to a document scheduling delay. The Agency comment due date was changed to give the Agencies a sixty day review period as requested in the last RPM meeting. The subsequent due dates were changed accordingly.

— 2011 Groundwater Treatment RPO Annual Report: New document, all new dates. Mr. Krook reminded everyone that this document houses the performance monitoring data for EVO injections, the bioreactors, and the rebound studies. This report is a feeder document into the ROD. Ms. Burke asked if this is the report to look at for the monitoring rationale and results that were presented in last month's RPM presentation for the performance sampling data. Mr. Duke said some data will overlap with the GSAP report.

— Old Skeet Range Engineering Evaluation/Cost Analysis: Travis received comments back from EPA, we have not heard back from Baywest. Mr. Anderson asked Mr. Linbrunner to look into the response to comments schedule from Baywest. Mr. Smith said he would like to see the response to comments before the teleconference is scheduled. Ms. Burke asked about following the CERCLA process and if there are policies that needs to be

followed. Mr. Linbrunner said MMRP follows the CERCLA process, and it is basically the same for all Air Force bases.

2. CURRENT PROJECTS

Treatment Plant Operation and Maintenance Update

Mr. Duke reported on the treatment plant status.

South Base Boundary Groundwater Treatment Plant (see Attachment 3)

The South Base Boundary Groundwater Treatment Plant (SBBGWTP) performed at 100% uptime, and 4.2 million gallons of groundwater were extracted and treated during the month of October 2011. All of the treated water was discharged to Union Creek. The average flow rate for the SBBGWTP was 93.6 gallons per minute (gpm). Electrical power usage was 9,420 kWh and approximately 12,905 pounds of CO_2 were created (based on DOE calculation). Approximately 1.73 pounds of volatile organic compounds (VOCs) were removed in October. The total mass of VOCs removed since startup of the system is 410 pounds.

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

Central Groundwater Treatment Plant (see Attachment 4)

The Central Groundwater Treatment Plant (CGWTP) performed at 100% uptime with approximately 1.7 million gallons of groundwater extracted and treated during the month of October 2011. All treated water was diverted to the storm drain. The average flow rate for the CGWTP was 37.9 gpm, and electrical power usage was 2,500 kWh for all equipment connected to the Central plant; approximately 3,425 pounds of CO_2 were created. Approximately 5.52 pounds of VOCs were removed from groundwater in October. The total mass of VOCs removed since the startup of the system is 11,249 pounds.

Optimization Activities for WTTP: The WTTP remains off line since it was shut down in April 2010 for the ongoing rebound study. No additional optimization activities to report for the month of October.

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

Mr. Duke said that Mr. Salcedo had asked about the UvOx system and if it was operational. Mr. Duke said that the UvOx system was turned on recently to determine if it was operational, which it was. Travis will run it again and grab samples at the influent and effluent to determine if the system will treat vinyl chloride without using hydrogen peroxide. This will ensure we have a known backup plan if needed.

North Groundwater Treatment Plant (see Attachment 5)

The North Groundwater Treatment Plant (NGWTP) performed at 90.3% uptime with approximately 10,970 gallons of groundwater extracted and treated during the month of October 2011. The average flow rate of the NGWTP, while operating, was 0.27 gpm and electrical power use was 389 kWh for all the equipment connected to the North plant; approximately 533 pounds of CO_2 was created. Approximately 0 pounds of VOCs were removed from the groundwater in October. The total mass of VOCs removed since the startup of the system is 174.3 pounds.

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

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

The Site ST018 (MTBE) Treatment Plant (S18GWTP) performed at 100% uptime with approximately 122,000 gallons of groundwater extracted and treated during the month of October 2011. All treated water was diverted to the storm drain. The average flow rate for the ST018 GWTP was 3.27 gpm. Electrical power usage for the month was 84 kWh for all equipment connected to the ST018 GWTP plant, which equates to the creation of approximately 115 pounds of CO_2. Approximately 0.18 pounds of BTEX, MTBE and TPH were removed from groundwater in October. The total BTEX, MTBE and TPH mass removed since the startup of the system is 6.8 pounds.

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

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

3. Presentations

Program Update: Activities Completed, In Progress and Upcoming (see Attachment 7)

Mr. Wray reported on the status of field work and documents which are completed, in progress, and upcoming. See Attachment 7 for detail.

Highlights included:

Completed Documents: Focused Feasibility Study (FFS).

Completed Fieldwork: Quarterly RPO Performance Monitoring (Nov 2011), 2011 Semiannual GSAP sampling, LF007C Site Characterization (Wetlands).

New Documents added: Technical Memorandum for Assessment of Aerobic Chlorinated Cometabolism Enzymes, 2011 Groundwater Treatment RPO Annual Report, Site LF007C Data Gaps Investigation Technical Memorandum.

Field Work In Progress: None.

Upcoming Field Work: Sampling for Assessment of Aerobic Chlorinated Cometabolism Enzymes, SS029 System Optimization Analysis, 2012 Annual GSAP Sampling.

Field Schedule (see Attachment 8)

Mr. Wray reported on the 2011/2012 field schedule. See Attachment 8 for details.

Highlights included: Sampling for Assessment of Aerobic Chlorinated Cometabolism Enzymes, the Site SS029 System Optimization Analysis Investigation, and the 2012 Annual GSAP Sampling.

FT005 Soil Remedial Action Update (No attachment)

Ms. Hess gave a brief update on the FT005 Soil Remedial Action Update.

Ms. Hess said the soil remediation action has been completed at FT005, and that Mr. Duke did a final site inspection walk through on Monday, 28 November 2011. Approximately 14,000 cubic yards of soil has been removed and taken to the Potrero Hills Landfill for disposal. They attained the industrial cleanup levels identified in the ROD for PAHs and also attained the unrestricted cleanup levels for PAHs, TPHs and PCBs. They removed most of the land use controls issues for Dioxins except for a small location just east of Area A - approximately 420 cubic yards that will require some type of land use controls for the Dioxin. The area has been backfilled and graded by using approximately 7,000 cubic yards of clean backfill from Potrero Hills (analytical results for the backfill will be included in the final report). The area was graded, and hand sprinkled with seed. Mr. Duke said there were about 35 tires that were removed, and a huge amount of scrap steel that was taken off site and recycled. Ms. Burke asked if there was a measurement of the volume or weight of the materials that were removed. Ms. Hess said she did not have that data with her, it will be provided in the final report.

LF007C Investigation Update (see Attachment 9)

Mr. Chakurian reported on the LF007C Investigation Update. See Attachment 9 for details.

Optimization of the Existing Groundwater Interim Remedial Action (IRA) at Site LF007C. The approach was to conduct site characterization and groundwater modeling to evaluate the contaminant distribution to determine what to do for optimization.

- Site LF007C is one of the three off-base plumes. The site is on privately owned pasture land and is generally flat with expansive shallow depressions where the vernal pools develop. Most of the off-base LF007C plume is beneath a large vernal pool.

- There is 25 to 40 feet of fine grained alluvium that overlies Nortonville shale bedrock. The alluvium is very fine grained with few sand lenses. The regional groundwater flow is to the south/southeast. There is a bedrock high that influences the groundwater flow locally to the north/northwest as observed by the groundwater plume shape. The depth to groundwater is 10 to 20 feet bgs.

- The only Chemical of Concern (COC) that was detected above the Interim Remediation Goals (IRGs) is TCE. The TCE plume is migrating off base, and the extent of the plume was not defined off base. The GSAP reports have shown statistically decreasing trends in the TCE concentrations in two plume wells (MW617x07 and EW614x08).

- The data gaps investigation objective was defining the off-base portion of the TCE plume.This was conducted by in situ sampling (hydropunch), followed by installation of monitoring wells and extraction wells if needed. The plan was to delineate the plume in phases by hydropunch sampling first until defined. Samples collected were to be analyzed for VOCs on a 24 hour turnaround time (TAT). Travis consulted with United States Fish and Wildlife Services (USFWS) for a Biological Opinion (BO). The BO was received 11 August 2011. USFWS required a full time biologist to monitor the field work. The plan was to start drilling on 03 October and finish on 28 October 2011. During the investigation, drilled 13 soil borings and collected 17 hydropunch samples. Plywood sheets were used at all drill sites to protect the vernal pools from the drilling equipment. (analytical results are on the map; see attachment 9)

- Installed and developed 4 monitoring wells from 31 October through 04 November 2011. Conducted two groundwater gradient surveys, one with the extraction wells on and one with the extraction wells off. We also conducted four-hour pump tests on each of the newly installed monitoring wells. Mr. Wray said for each of the soil borings drilled we installed a temporary piezometer (PZs) and had casing elevations surveyed, so we have a good matrix of data. Mr. Chakurian said according to the USFWS permit we have up to a year from the time they were initially drilled before we have to remove the PZs. The plan is to keep the PZs in place to get another round of data during the annual GSAP in 2012. (A map is included with the groundwater surveys; see attachment 9)

- The bedrock is at about 25 to 38 feet bgs. Bedrock was observed to be predominantly dry during drilling and not carrying groundwater. Shallow groundwater samples collected ranged from about 11 to 22 feet bgs. (hydropunch screens over 4 feet sections to get a better distribution of where the groundwater samples were collected from). Deep groundwater samples collected ranged from about 21 to 42 feet bgs. (same screen length as above). The plume has been defined to either non-detect or below MCL on all sides. Installed 4 monitoring wells along the perimeter of the groundwater plume. Surveyed all boring locations and new monitoring wells. Sampled new monitoring wells on 18 November, expecting the analytical results on 15 December 2011. (a map is included that shows the bedrock surface; see attachment 9)

- Groundwater gradient surveys were conducted on 18 October and 02 November 2011. The 18 October survey was conducted with the existing extraction wells turned on, the 02 November survey was conducted with the existing extraction wells turned off for a few days. The groundwater gradient radiates away from the bedrock high with the gradient at

the off base portion of Site LF007C trending to the southwest. The 02 November survey shows a flat area in the groundwater gradient around HP2007x07, HP2165x07, HP2167x07, MW2169x07, and MW2171x07. It seems that this is where we found the highest concentrations of TCE, in wells HP2007x07 and HP2008x07. The higher TCE concentrations could be due to the bedrock low or it could caused by the seasonal variations in the vernal pool. Currently the DTW in the LF007C wells and piezometers is 10 to 20 feet bgs. When the vernal pools are full we have seen artesian affects that would suggest there is a possibility that the vernal pool is hydraulically connected to the groundwater. We will be researching to see if there is a connection during the winter.

- The groundwater pump tests were conducted at wells MW2163x07, MW2169x07, MW2170x07, and MW2171x07 from 01 November through 04 November 2011. (see pump test results in attachment 9)

- Installed transducers into MW125x07, MW620x07, and HP2165x07 to evaluate seasonal interaction of the vernal pool and the groundwater table during the winter. This is the period when the groundwater extraction system is turned off at Site LF007C.

- Over the winter, the data collected during the investigation will be evaluated for the need of more extraction to capture the VOC plume. Fieldwork will not resume until the vernal pool dries out in the spring.

4. New Action Item Review

None.

5. PROGRAM/ISSUES/UPDATE

Mr. Smith gave a quick update about his trip to San Antonio to participate in future planning for the Travis AFB restoration program. Mr. Smith said AFCEE had asked that the regulatory agencies be invited and apologized for the tardiness of that invitation. The Program Requirements Development (PRD) meetings began with a review of site status and what to include in the new PBC contract. The premise of the PRD is to capture all the liabilities for the restoration program and estimate all future costs. This year Travis will be developing a statement of objectives for a follow-on contract after the ROD is finalized. There will likely be new goals such as accelerating site closure, assessing the feasibility of remediating land use control sites to unlimited use and unlimited exposure and continue our groundwater treatment optimization efforts that increase treatment system efficiency and effectiveness. Mr. Smith said he will keep everyone informed as the PRD progresses.

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	Research beneficial reuse of treated water and give update.	TBD	Open
3.	Travis AFB and EPA	Review past site closure completion reports to determine if future site closure reports are necessary.	TBD	Open
4.	Travis AFB	Travis AFB is to advise Regulatory Agencies when remedial actions/fieldwork are scheduled at Travis AFB so a site visit can be planned.	TBD	Open

TRAVIS AIR FORCE BASE
ENVIRONMENTAL RESTORATION PROGRAM
REMEDIAL PROGRAM MANAGER'S MEETING
BLDG 570, Main Conference Room
30 Nov 2011, 09:30 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. PROGRAM UPDATE: ACTIVITIES COMPLETED, IN PROGRESS AND UPCOMING
   B. 2011 FIELD SCHEDULE
   C. FT005 SOIL REMEDIAL ACTION UPDATE
   D. LF007 INVESTIGATION UPDATE

4. NEW ACTION ITEM REVIEW

5. PROGRAM/ISSUES/UPDATE

   A. COST TO COMPLETE PLANNING

NOTE: THE CONFERENCE ROOM HAS BEEN RESERVED UNTIL 5PM FOLLOWING THE RPM MEETING TO HOLD A ROD SCOPING MEETING AND TO DISCUSS COMMENTS ON THE DRAFT RPO BIR AND THE DRAFT ENZYME ASSESSMENT WORK PLAN. THE COMMENT DISCUSSION MEETING WILL NOT PRECLUDE A TRADITIONAL RESPONSE TO COMMENTS MEETING SHOULD ONE BE NECESSARY, BUT RATHER ASSIST US IN DRAFTING COMMENT RESPONSES. EPA AND STATE REPRESENTATIVES ARE REQUESTED TO ATTEND.

Travis AFB Master Meeting and Document Schedule

(2011)
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.)
01-26-11	—	—
02-16-11	—	—
03-16-11	—	—
04-21-11 (1:00 PM)	—	04-21-11
05-26-11	—	—
06-15-11	—	—
07-20-11	—	—
08-17-11	—	—
09-21-11	—	—
10-20-11 (1:00 PM)	—	10-20-11
11-30-11	—	—
—	12-14-11*	—

*If required

Travis AFB Master Meeting and Document Schedule

(2012)
Annual Meeting and Teleconference Schedule

Monthly RPM Meeting (Begins at 9:30 a.m.)	RPM Teleconference (Begins at 9:30 a.m.)	Restoration Advisory Board Meeting (Begins at 7:00 p.m.) (Poster Session at 6:30 p.m.)
01-18-12	—	—
02-15-12	—	—
03-21-12	—	—
04-19-12 (1:00 PM)	—	04-19-12
05-16-12	—	—
06-20-12	—	—
07-18-12	—	—
08-15-12	—	—
09-19-12	—	—
10-18-12 (1:00 PM)	—	10-18-12
11-14-12	—	—
—	—	—

As of: 11-30-2011

Travis AFB Master Meeting and 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 (11-30-11)**
Predraft to AF/Service Center	12-30-10	10-06-11	03-14-12
AF/Service Center Comments Due	01-13-11	11-05-11	03-24-12
Draft to Agencies	01-27-11	01-09-12	04-06-12
Draft to RAB	01-27-11	01-09-12	04-06-12
Agency Comments Due	03-31-11	02-08-12	05-12-12
Response to Comments Meeting	**08-17-11**	**02-15-12**	**05-23-12**
Agency Concurrence with Remedy	NA	NA	06-12-12
Public Comment Period	NA	04-05-12 to 05-05-12	NA
Public Meeting	**NA**	**04-19-12**	**NA**
Response to Comments Due	09-13-11	02-28-12	07-02-12
Draft Final Due (CD)	09-13-11	02-28-12	07-02-12
Final Due	10-13-11(10-28-11)	04-05-12	08-01-12

Travis AFB Master Meeting and Document Schedule

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

Travis AFB Master Meeting and Document Schedule

SECONDARY DOCUMENTS		
	Site ST027-Area B Human Health Risk Assessment **Travis AFB, Glenn Anderson** **CH2M HILL, Gavan Heinrich** ***Formerly included as Appendix G in the draft FFS**	**Site ST027-Area B Ecological Risk Assessment** **Travis AFB, Glenn Anderson** **CH2M HILL, Gavan Heinrich** ***Formerly included as Appendix G in the draft FFS**
Life Cycle	**Report**	**Report**
Scoping Meeting	**03-30-10**	**03-30-10**
Predraft to AF/Service Center	12-30-10	12-30-10
AF/Service Center Comments Due	01-13-11	01-13-11
Draft to Agencies	01-27-11 *	01-27-11 *
Draft to RAB	01-27-11	01-27-11
Agency Comments Due	03-31-11	03-31-11
Response to Comments Meeting	**08-17-11**	**08-17-11**
Agency Concurrence with Remedy	NA	NA
Public Comment Period	NA	NA
Public Meeting	**NA**	**NA**
Response to Comments Due	10-04-11	10-04-11
Draft Final Due	10-04-11 (CD)	10-04-11 (CD)
Final Due	12-19-11	12-19-11

Travis AFB Master Meeting and Document Schedule

SECONDARY DOCUMENTS			
Life Cycle	**Work Plan for Assessment of Aerobic Chlorinated Cometabolism Enzymes at Travis AFB** **Travis AFB, Glenn Anderson** **CH2M HILL, Leslie Royer**	**Technical Memorandum for Assessment of Aerobic Chlorinated Cometabolism Enzymes at Travis AFB** **Travis AFB, Glenn Anderson** **CH2M HILL, Leslie Royer**	**FT005 Remedial Action Completion Report** **Travis AFB, Lonnie Duke** **ITSI, Rachel Hess**
Scoping Meeting	**NA**	**NA**	**NA**
Predraft to AF/Service Center	08-09-11	**01-30-12**	TBD
AF/Service Center Comments Due	08-19-11	**02-09-12**	TBD
Draft to Agencies	09-29-11	**02-23-12**	TBD
Draft to RAB	09-29-11	**02-23-12**	TBD
Agency Comments Due	11-14-11	**03-24-12**	TBD
Response to Comments Meeting	**11-30-11**	**04-19-12**	**TBD**
Response to Comments Due	11-17-11	**05-09-12**	TBD
Draft Final Due	NA	**NA**	TBD
Final Due	12-05-11	**05-09-12**	TBD
Public Comment Period	NA	**NA**	NA
Public Meeting	**NA**	**NA**	**NA**

Travis AFB Master Meeting and Document Schedule

SECONDARY DOCUMENTS			
Life Cycle	**RPO Baseline Implementation Report** **Travis AFB, Lonnie Duke** **CH2M HILL, Tony Chakurian**	**Technical and Economic Feasibility Analysis** **Travis AFB, Glenn Anderson** **CH2M HILL, Loren Krook**	**Site LF007c Data Gaps Investigation Technical Memorandum** **Travis AFB, Lonnie Duke** **CH2M HILL, Tony Chakurian**
Scoping Meeting	**NA**	**07-20-11**	**NA**
Predraft to AF/Service Center	08-02-11	10-13-11	**TBD**
AF/Service Center Comments Due	08-16-11	10-31-11	**TBD**
Draft to Agencies	09-16-11	12-15-11	**TBD**
Draft to RAB	09-16-11	12-15-11	**TBD**
Agency Comments Due	10-31-11	01-16-12	**TBD**
Response to Comments Meeting	**11-30-11**	**01-18-12 (Teleconference)**	**TBD**
Response to Comments Due	12-15-11	01-31-12	**TBD**
Draft Final Due	NA	NA	**NA**
Final Due	12-15-11	01-31-12	**TBD**
Public Comment Period	NA	NA	**NA**
Public Meeting	**NA**	**NA**	**NA**

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL DOCUMENTS			
Life Cycle	**Quarterly Newsletters (January 2012)** **Travis, Glenn Anderson**	**2010/2011 GSAP** **Travis AFB, Lonnie Duke** **CH2M HILL, Leslie Royer**	**2011 Groundwater Treatment RPO Annual Report** **Travis AFB, Lonnie Duke** **CH2M HILL, Doug Berwick**
Scoping Meeting	**NA**	**NA**	**NA**
Predraft to AF/Service Center	NA	10-20-11	01-25-12
AF/Service Center Comments Due	NA	10-30-11	02-04-12
Draft to Agencies	12-28-11	12-07-11	02-17-12
Draft to RAB	NA	12-07-11	02-17-12
Agency Comments Due	01-13-12	02-05-12	03-18-12
Response to Comments Meeting	**TBD**	**02-15-12**	**03-21-12**
Response to Comments Due	01-18-12	02-29-12	04-03-12
Draft Final Due	NA	NA	NA
Final Due	01-23-12	02-29-12	04-03-12
Public Comment Period	NA	NA	NA
Public Meeting	**NA**	**NA**	**NA**

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL DOCUMENTS	
	Old Skeet Range Engineering Evaluation/Cost Analysis **Travis AFB, Glenn Anderson** **Baywest, Steve Thornton**
Life Cycle	**Report**
Scoping Meeting	
Predraft to AF/Service Center	07-18-11
AF/Service Center Comments Due	08-03-11
Draft to Agencies	09-29-11
Draft to RAB	09-29-11
Agency Comments Due	10-31-11
Response to Comments Meeting	**TBD (Teleconference)**
Agency Concurrence with Remedy	NA
Public Comment Period	TBD to TBD
Public Meeting	**NA**
Response to Comments Due	TBD
Draft Final Due	TBD
Final Due	TBD

Travis AFB Master Meeting and Document Schedule

HISTORICAL	
Life Cycle	**2010 Groundwater Treatment RPO Annual Report** **Travis AFB, Lonnie Duke** **CH2M HILL, Doug Berwick**
Scoping Meeting	**NA**
Predraft to AF/Service Center	04-05-11
AF/Service Center Comments Due	04-19-11
Draft to Agencies	05-18-11
Draft to RAB	05-18-11
Agency Comments Due	06-18-11
Response to Comments Meeting	**07-20-11(08-17-11)**
Response to Comments Due	09-27-11
Draft Final Due	NA
Final Due	09-27-11
Public Comment Period	NA
Public Meeting	**NA**

South Base Boundary Groundwater Treatment Plant Monthly Data Sheet

Report Number: 134 **Reporting Period: 30 Sept – 31 Oct 2011** **Date Submitted: 18 November 2011**

This monthly data sheet presents information regarding the South Base Boundary Groundwater Treatment Plant (SBBGWTP) and associated remedial process optimization (RPO) activities.

System Metrics

Table 1 presents operation data from the October 2011 reporting period.

Table 1 – Operations Summary – October 2011

Operating Time:	Percent Uptime:	Electrical Power Usage:
SBBGWTP: 744 hours	**SBBGWTP:** 100%	**SBBGWTP:** 9,420 kWh (12,905 lbs CO_2 generated[a])

Gallons Treated: **4.2 million gallons**

Gallons Treated Since July 1998: **755 million gallons**

Volume Discharged to Union Creek: **4.2 million gallons**

VOC Mass Removed: **1.73 lbs**[b]

VOC Mass Removed Since July 1998: **410 lbs**

Rolling 12-Month Cost per Pound of Mass Removed: $4,974[c]

Monthly Cost per Pound of Mass Removed: $4,530

lbs = pounds

[a] Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.

[b] Calculated using October 2011 EPA Method SW8260B analytical results.

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

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

Table 2 – SBBGWTP Average Flow Rate (gpm)[a]

FT005[b]				SS029		SS030	
EW01x05	Offline	EW736x05	Offline	EW01x29	0.2	EW01x30	5.7
EW02x05	1.6	EW737x05	Offline	EW02x29	6.0	EW02x30	2.8
EW03x05	Offline	EW742x05	Offline	EW03x29	Offline[d]	EW03x30	2.5
EW731x05	Offline	EW743x05	Offline	EW04x29	7.3	EW04x30	25.3
EW732x05	Offline	EW744x05	Offline	EW05x29	10.5	EW05x30	7.6
EW733x05	Offline	EW745x05	Offline	EW06x29	10.9	EW06x30	Dry
EW734x05	Offline[c]	EW746x05	Offline	EW07x29	7.3	EW711x30	16.3
EW735x05	6.8						
FT005 Total:	**8.4**			**SS029 Total:**	**42.2**	**SS030 Total:**	**60.2**

SBBGWTP Average Monthly Flow[e]: 93.6 gpm

[a] Extraction well flow rates are based on the monthly readings.
[b] Most extraction wells at FT005 were taken offline in accordance with the *2008 Annual Remedial Process Optimization Report for the Central Groundwater Treatment Plant, North Groundwater Treatment Plant, and South Base Boundary Groundwater Treatment Plant.*
[c] Pump offline during July through October 2011 due to inoperable pump, and is expected to be back on line in November.
[d] EW03x29 is expected to be brought back online in November 2011.
[e] The average groundwater flow rate was calculated using the Union Creek Discharge Totalizer and dividing it by the operating time of the plant

gpm – gallons per minute
Recharge –not pumping while the well recharges.
SBBGWTP – South Base Boundary Groundwater Treatment Plant

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

Table 3 – Summary of System Shutdowns

Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
	None				

SBBGWTP = South Base Boundary Groundwater Treatment Plant

Summary of O&M Activities

Monthly groundwater samples at the SBBGWTP were collected on 19 October 2011. Sample results are presented in Table 4. The total VOC concentration (49.62 µg/L) in the influent sample has decreased since the September 2011 sample (71.2 µg /L) was collected. TCE was detected at a concentration of 3 µg/L between the primary and secondary carbon vessels; however, this concentration is less than the TCE effluent limitation (5 µg/L). Further, no contaminants were detected in the effluent process stream. TCE concentration between the primary and secondary carbon vessels has increased since the September 2011 groundwater sample (0.5 µg/L) was collected, likely indicating breakthrough in the primary carbon vessel. As a result, a carbon change out is currently being scheduled.

Figure 1 presents a plot of influent concentrations at the SBBGWTP over the past twelve (12) months.

On 28 October 2011, a new pump was installed at EW734x05. The previous pump had been inoperable since July 2011. Following replacement, the pump was brought back on line.

Troubleshooting with communication programming from extraction well EW03x29 into the Site SS029 SCADA continued in October 2011. EW03x29 is expected to be brought back online in November 2011.

Optimization Activities

No optimization activities occurred at the SBBGWTP in October 2011.

Sustainability

Travis AFB is committed to decreasing the amount of GHG produced directly (waste streams discharging GHG) or indirectly (GHG produced as related to electrical energy consumption) from all systems across Travis AFB. Travis AFB continues to optimize each treatment plant to reduce the amount of electrical energy consumed, and to implement sustainable treatment plant optimization programs, such as bioreactors and EVO injection well networks.

Figure 2 presents the historical GHG production from the SBBGWTP. The SBBGWTP produced approximately 12,905 pounds of GHG during October 2011. The overall energy consumption levels remain consistent with the general decrease in energy demand since the air stripper was bypassed, and the granular activated carbon (GAC) system was brought online.

TABLE 4
Summary of Groundwater Analytical Data for October 2011 – South Base Boundary Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	19 October 2011 (µg/L)		
				Influent	Midpoint	Effluent
Halogenated Volatile Organics						
Bromodichloromethane	5.0	0.15	0	ND	ND	ND
Carbon Tetrachloride	0.5	0.14	0	ND	ND	ND
Chloroform	5.0	0.16	0	0.20 J	0.17 J	ND
Dibromochloromethane	5.0	0.13	0	ND	ND	ND
1,1-Dichloroethane	5.0	0.15	0	ND	ND	ND
1,2-Dichloroethane	0.5	0.15	0	0.42 J	ND	ND
1,1-Dichloroethene	5.0	0.19	0	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.19	0	2.8	3.4	ND
trans-1,2-Dichloroethene	5.0	0.33	0	ND	ND	ND
Methylene Chloride	5.0	0.66	0	ND	ND	ND
Tetrachloroethene	5.0	0.21	0	ND	ND	ND
1,1,1-Trichloroethane	5.0	0.14	0	ND	ND	ND
1,1,2-Trichloroethane	5.0	0.20	0	ND	ND	ND
Trichloroethene	5.0	0.19	0	46.2	3.0	ND
Vinyl Chloride	0.5	0.18	0	ND	ND	ND
Non-Halogenated Volatile Organics						
Benzene	1.0	0.17	0	ND	ND	ND
Ethylbenzene	5.0	0.22	0	ND	ND	ND
Toluene	5.0	0.14	0	ND	ND	ND
Xylenes	5.0	0.23 – 0.5	0	ND	ND	ND
Other						
Total Petroleum Hydrocarbons – Gasoline	50	8.5	0	NM	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	50	0	NM	NM	ND
Total Suspended Solids (mg/L)	NE	1.0	0	7 J	NM	NM

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

Notes:

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

Figure 1
SBBGWTP Total VOC Influent Concentrations - Twelve Month History
Travis Air Force Base, California

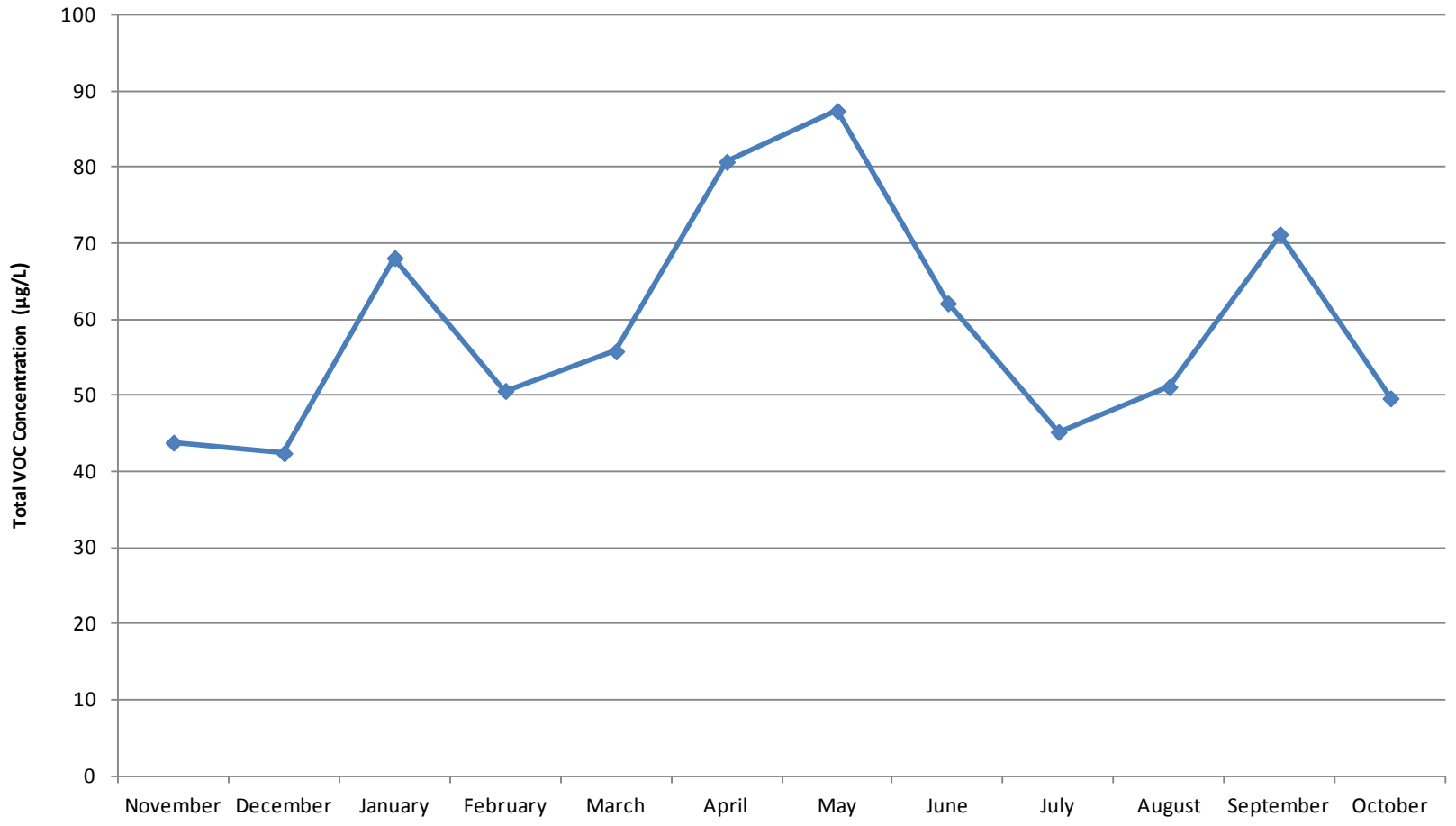
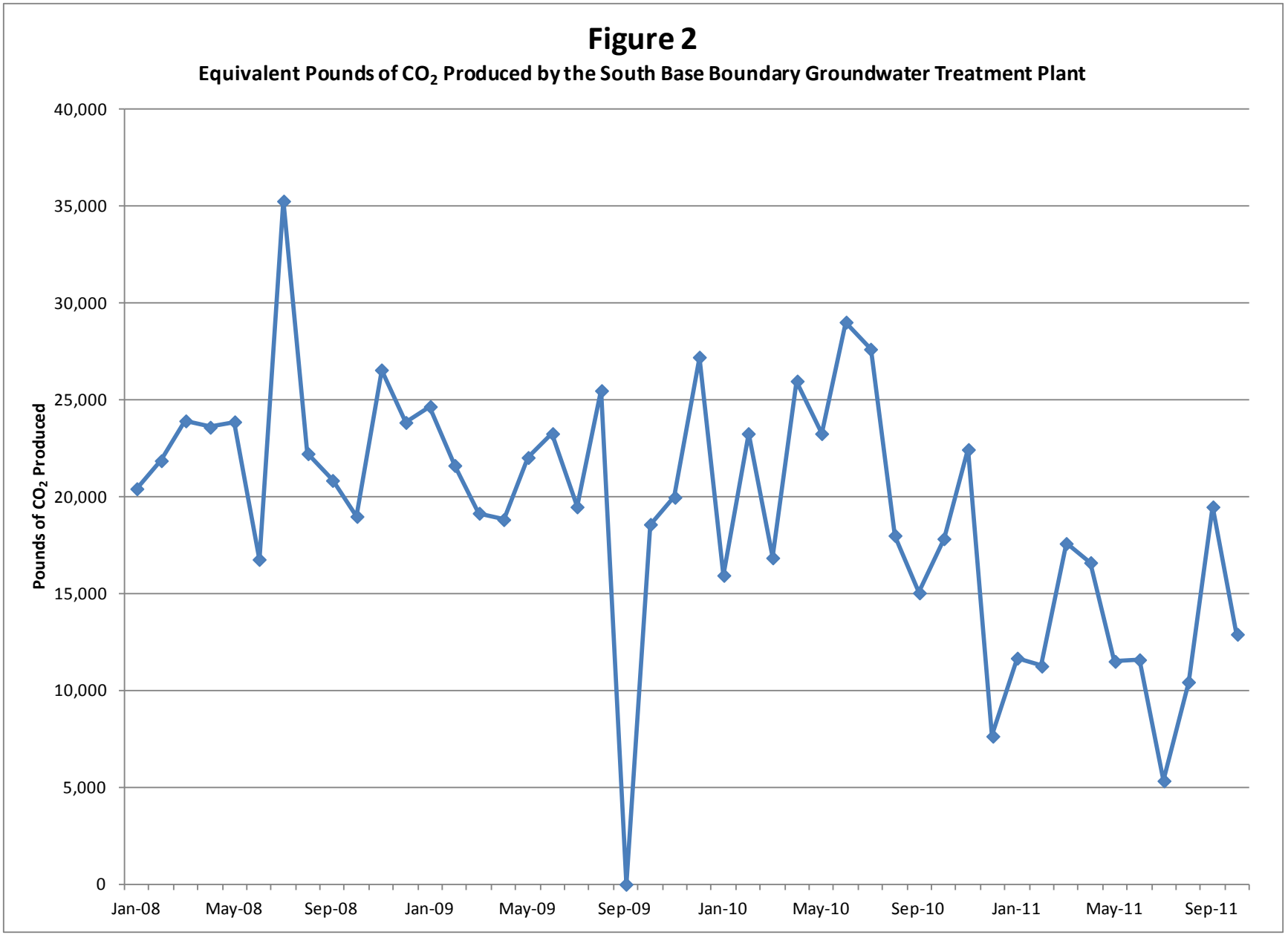


Figure 2

Equivalent Pounds of CO_2 Produced by the South Base Boundary Groundwater Treatment Plant



Central Groundwater Treatment Plant Monthly Data Sheet

Report Number: 147 **Reporting Period: 30 Sept – 31 Oct 2011** **Date Submitted: 18 November 2011**

This monthly data sheet presents information regarding all systems and associated remedial process optimization (RPO) activities to the Central Groundwater Treatment Plant (CGWTP). The systems associated with the CGWTP include the CGWTP and the West Treatment and Transfer Plant (WTTP). The RPOs related to the CGWTP network of treatment systems include various emulsified vegetable oil (EVO) injection sites, two (2) bioreactors, and various rebound studies.

System Metrics

Table 1 presents operational data from the October 2011 reporting period.

Table 1 – Operations Summary – October 2011

Operating Time:		Percent Uptime:		Electrical Power Usage:	
CGWTP:	743 hours	**CGWTP:**	100%	**CGWTP:**	2,500 kWh (3,425 lbs CO_2 generated[a])
WTTP:	Water: 0 hours Vapor: 0 hours	**WTTP[b]:**	Water: 0% Vapor: 0%	**WTTP:**	0 kWh

Gallons Treated: **1.7 million gallons**

Gallons Treated Since January 1996: **451 million gallons**

VOC Mass Removed:

5.52 lbs[b] (groundwater only)

0 lbs (vapor only)

VOC Mass Removed Since January 1996:

2,563 lbs from groundwater

8,686 lbs from vapor

Rolling 12-Month Cost per Pound of Mass Removed: $1,763[c]

Monthly Cost per Pound of Mass Removed: $356

[a] Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.

[b] Calculated using October 2011 EPA Method SW8260B analytical results.

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

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

Table 2 – CGWTP Average Flow Rates[a]

Location	Average Flow Rate	
	Groundwater (gpm)	Soil Vapor (scfm) [b]
EW01x16	19.6	Offline
EW02x16	7.3	Offline
EW03x16	2.5[c]	Offline
EW605x16	5.6	Offline
EW610x16	4.4	Offline
CGWTP	37.9	--
WTTP	Offline[b]	Offline

[a] Measured by the effluent discharge to the storm drain divided by the operating time during the month
[b] No vapor or groundwater was treated in October 2011.
[c] Water discharged to Site SS016 bioreactor – flow rate taken from wellhead Flow Totalizer divided by operating time during the month.
gpm = gallons per minute
-- = not applicable/not available
scfm = standard cubic feet per minute

Table 3 presents average flow rate values from the West Industrial Operable Unit (WIOU) extraction wells.

Table 3 – Average Flow Rate from the WIOU Extraction Wells[a] (gpm)

SD037/ SD043				SD033/SD034		SD036	
EW599x37	Offline	EW705x37	Offline	EW501x33	Offline	EW593x36	Offline
EW700x37[b]	Offline	EW706x37	Offline	EW503x33	Offline	EW594x36	Offline
EW701x37	Offline	EW707x37	Offline	EW01x34	Offline	EW595x36	Offline
EW702x37	Offline	EW510x37	Offline	EW03x34	Offline		
EW703x37	Offline	EW511x37	Offline				
EW704x37[b]	Offline	EW555x43	Offline				

[a] Extraction wells are offline due to the ongoing rebound study in the WIOU.
gpm—gallons per minute

Table 4 presents average a summary of shutdowns during the monthly reporting period.

Table 4 – Summary of System Shutdowns

Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
CGWTP (Groundwater)					
WTTP					

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

Summary of O&M Activities

Monthly groundwater samples at the CGWTP were collected on 19 October 2011. Sample results are presented in Table 5. The total VOC concentration (392 µg/L) in the influent sample has increased slightly since the September 2011 sample (360 µg/L) was collected. No contaminants were detected in the effluent process stream. Figure 1 presents a plot of influent concentrations at the CGWTP versus time for the past twelve (12) months.

In recent months (August through October 2011), the concentration of vinyl chloride at the midpoint of the granular activated carbon (GAC) vessels has been similar to the vinyl chloride concentration at the influent sampling location (before treatment). However, vinyl chloride concentrations have not been detected following the second (final) GAC vessel, or at the system effluent sampling location. Travis Air Force Base will continue to monitor VOC concentrations for breakthrough in the primary vessel.

Optimization Activities

For approximately three days during the week of 17 October 2011, the UV/Ox system was brought online to test system operation after having been taken off line in May 2009. During operation, three (3) UV lamps were brought on line, but the process stream was not dosed with hydrogen peroxide. In November 2011, the three (3) UV bulbs will be brought back on line, and samples will be collected (influent and after the UV bulbs) to determine the effectiveness of operating the UV/Ox system for destruction of vinyl chloride without the use of hydrogen peroxide.

No additional optimization activities occurred at the CGWTP in October 2011.

Sustainability

Travis AFB is committed to decreasing the amount of GHG produced directly (waste streams discharging GHG) or indirectly (GHG produced as related to electrical energy consumption) from all systems across Travis AFB. Travis AFB continues to optimize each treatment plant to reduce the amount of electrical energy consumed, and to implement sustainable treatment plant optimization programs, such as bioreactors and EVO injection well networks.

Figure 2 presents the historical GHG production from the systems associated with the CGWTP. The CGWTP produced approximately 3,425 pounds of GHG during October 2011. This is a slight increase from the amount produced in September 2011 (approximately 3,166 pounds). The increase in GHG is likely attributed to the increase in CGWTP monthly operating time.

TABLE 5
Summary of Groundwater Analytical Data for October 2011 – Central Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	19 October 2011 (µg/L) Influent	After Carbon 1 Effluent	After Carbon 2 Effluent	System Effluent
Halogenated Volatile Organics							
Bromodichloromethane	5.0	0.15	0	ND	ND	ND	ND
Carbon Disulfide	1.0	0.19	0	ND	ND	ND	ND
Carbon Tetrachloride	0.5	0.14	0	ND	ND	ND	ND
Chloroform	5.0	0.16	0	ND	ND	ND	ND
MTBE	1.0	0.5	0	0.65 J	ND	ND	ND
1,2-Dichlorobenzene	5.0	0.25	0	0.51	ND	ND	ND
1.3-Dichlorobenzene	5.0	0.15	0	0.68	ND	ND	ND
1,4-Dichlorobenzene	5.0	0.15	0	0.37 J	ND	ND	ND
1,1-Dichloroethane	5.0	0.15	0	ND	ND	ND	ND
1,2-Dichloroethane	0.5	0.15	0	ND	ND	ND	ND
1,1-Dichloroethene	5.0	0.19	0	0.65	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.19	0	92.2	0.52 J	ND	ND
trans-1,2-Dichloroethene	5.0	0.33	0	3.1	ND	ND	ND
Methylene Chloride	5.0	0.66	0	ND	ND	ND	ND
Tetrachloroethene	5.0	0.21	0	0.68	ND	ND	ND
1,1,1-Trichloroethane	5.0	0.14	0	ND	ND	ND	ND
1,1,2-Trichloroethane	5.0	0.2	0	ND	ND	ND	ND
Trichloroethene	5.0	0.19	0	293	ND	ND	ND
Vinyl Chloride	0.5	0.18	0	0.33 J	0.36 J	ND	ND
Non-Halogenated Volatile Organics							
Benzene	1.0	0.17	0	ND	ND	ND	ND
Ethylbenzene	5.0	0.22	0	ND	ND	ND	ND
Toluene	5.0	0.14	0	ND	ND	ND	ND
Total Xylenes	5.0	0.5 – 0.23	0	ND	ND	ND	ND

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

Notes:

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

Figure 1
CGWTP Total VOC Influent Concentrations - Twelve Month History
Travis Air Force Base, California

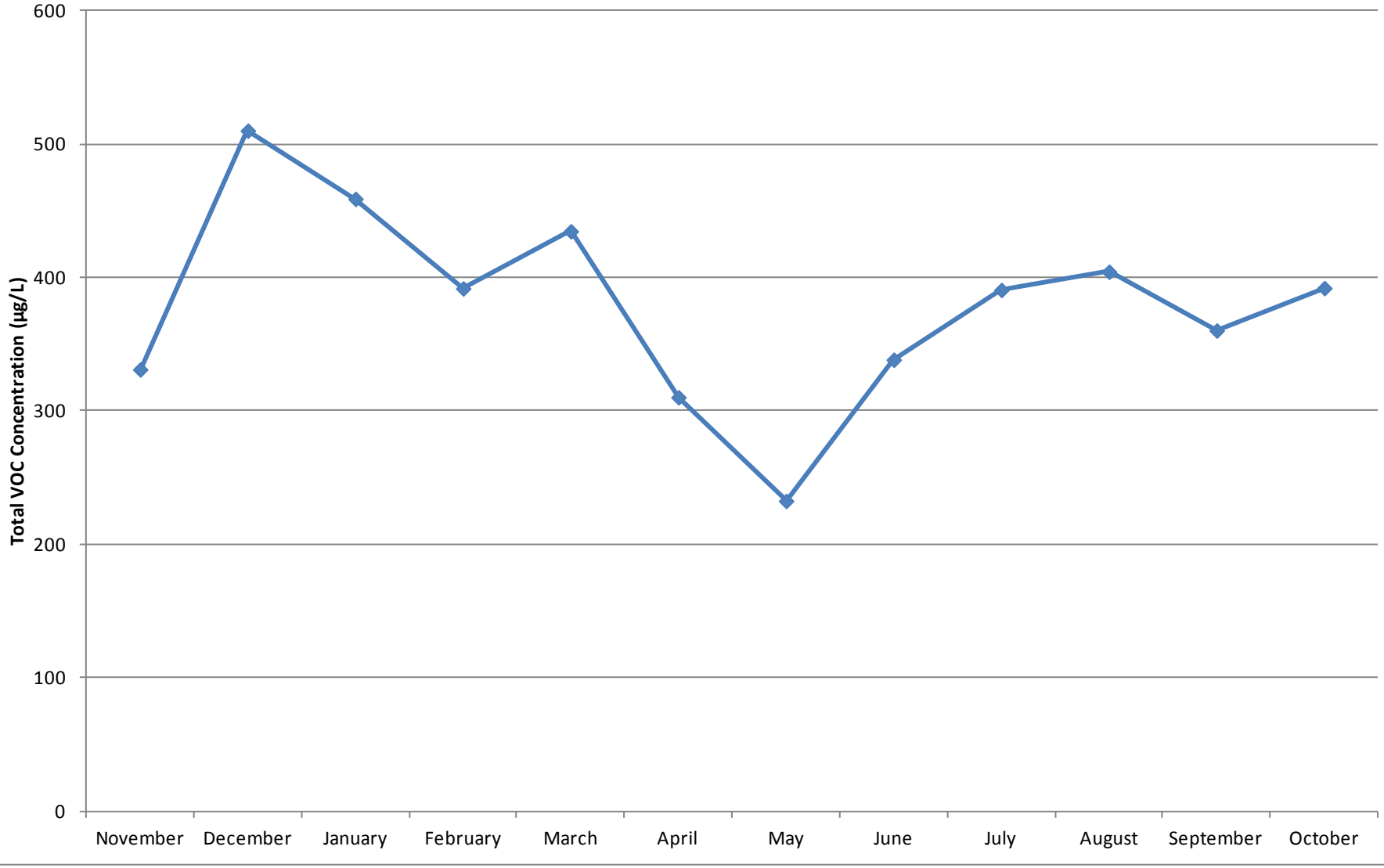
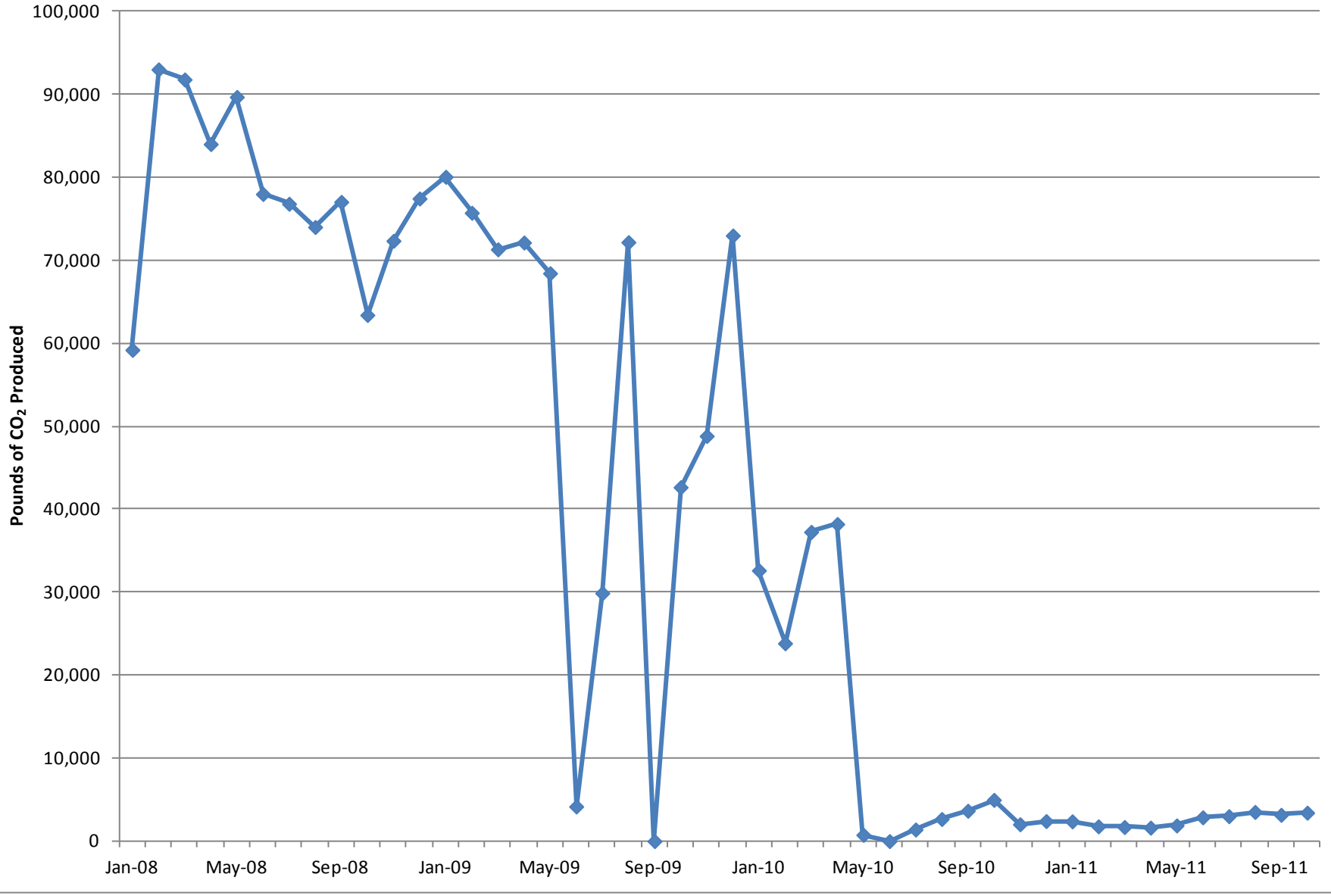


Figure 2

Equivalent Pounds of CO_2 Produced by the Central Groundwater Treatment Plant



North Groundwater Treatment Plant Monthly Data Sheet

Report Number: 119 **Reporting Period: 30 Sept – 31 Oct 2011** **Date Submitted: 18 November 2011**

This monthly data sheet presents information regarding the North Groundwater Treatment Plant (NGWTP) and associated remedial process optimization (RPO) activities. The NGWTP was shut down for the last three days of October to accommodate pumping tests throughout Site LF007C.

System Metrics

Table 1 presents operational data from the October 2011 reporting period:

Table 1 – Operations Summary – October 2011

Operating Time:	Percent Uptime:	Electrical Power Usage:
NGWTP: 671 hours	**NGWTP:** 90.3%	**NGWTP:** 389 kWh (533 lbs CO_2 generated[a])
Gallons Treated: **10,970 gallons**	Gallons Treated Since March 2000: **82.6 million gallons**	
Volume Discharged to Duck Pond: **10,970 gallons**	Volume Discharge to Storm Drain: **0 gallons**	
VOC Mass Removed: **2.4×10^{-4} pounds**[b]	VOC Mass Removed Since March 2000: **174.3 pounds (Groundwater)**	
Rolling 12-Month Cost per Pound of Mass Removed: **Not Measured**[c]		
Monthly Cost per Pound of Mass Removed: **Not Measured**[d]		

[a] Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.
[b] VOCs from October 2011 influent sample detected by EPA Method SW8260B.
[c] Value not calculated since measurement does not accurately represent the cost effectiveness of the system. The system was removing minimal mass from December 2010 to May 2011, but operating costs were incurred.
[d] Value not calculated since measurement does not accurately represent the potential effectiveness of the system. O&M costs are low, but very little contaminant mass is being treated.

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

Table 2 – NGWTP Average Flow Rates

Location	Average Flow Rate (gpm)
EW614x07	0.13[a]
EW615x07	0.14[a]
NGWTP	0.27[b]

[a] Estimated to be 50 percent of total NGWTP flow rate.
[b] Average flow rate calculated by dividing the total NGWTP gallons treated by the reporting period operating time.

gpm = gallons per minute

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

Table 3 – Summary of System Shutdowns

Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
NGWTP	October 28, 2011	1600	November 7, 2011	1430	Collected water level measurement at Site LF007C

NGWTP = North Groundwater Treatment Plant

Summary of O&M Activities

Analytical data from the 19 October 2011 sampling event are presented in Table 4. Concentrations of TCE (2.4 µg/L) and cis-1, 2 DCE (0.25 µg/L) were detected in the influent sample for the second consecutive month. In both cases, the contaminants detected in the influent process stream are less than their respective effluent limits (5.0 µg/L for each of these contaminants). Contaminant concentrations were not detected in the effluent process stream. Figure 1 presents a plot of influent concentrations at the NGWTP versus time for the past year. As required by US Fish and Wildlife Service (USFWS), the NGWTP is off line ("System Shutdown") when vernal pools are present at Site LF007C.

On 28 October 2011 the NGWTP was shutdown and remained off line into November 2011. The purpose of this shutdown was to allow for groundwater stabilization prior to initiation of pumping tests conducted at various wells throughout Site LF007C. Both Site LF007C extraction wells will be brought back on line in November 2011 following completion of the pumping tests.

In October 2011, one of the three granular activated carbon (GAC) vessels was taken off-line due to a leak caused by corrosion on the lower half of the vessel (55-gallon drum). The system is currently operating with two GAC vessels in series. Analytical data (Table 4) continue to indicate effective treatment of the influent process stream with only two (2) operating GAC vessels on line.

Influent VOC concentrations continue to remain low at the NGWTP. Total VOC influent concentration for October 2011 was 0.00024 pounds. Since January 2010, the highest total VOC influent concentration was 0.00118 pounds, which was reported in August 2010. Due to the small amount of mass removed at the NGWTP, cost assessments per unit mass removed are not a useful measurement in gauging the success of the system.

Optimization Activities

During October 2011, eleven (11) temporary piezometers (HP2005x07, HP2006x07, HP2007x07, HP2008x07, HP2163x07, HP2164x07, HP2165x07, HP2166x07, HP2167x07, HP2168x07 and HP2169x07) and four permanent monitoring wells (MW2163x07, MW2169x07, MW2170x07 and MW2171x07) were installed in the off-base portion of Site LF007C in an effort to characterize the off-base portion of the Site LF007C groundwater plume. Figure 2 presents the locations of each piezometer and monitoring well installed during characterization activities.

During installation of the temporary piezometers, nineteen (19) in situ groundwater samples were collected and analyzed for VOCs. Following installation, pump tests were conducted at MW2163x07, MW2169x07, MW2170x07 and MW2171x07.

Further details regarding Site characterization activities, groundwater surveys, and subsequent pumping tests will be provided in an upcoming Site LF007C characterization report.

Sustainability

Travis AFB is committed to decreasing the amount of GHG produced directly (waste streams discharging GHG) or indirectly (GHG produced as related to electrical energy consumption) from all systems across Travis AFB. Travis AFB continues to optimize each treatment plant to reduce the amount of electrical energy consumed, and to implement sustainable treatment plant optimization programs, such as the solar arrays employed to power the system.

Figure 3 presents the historical GHG production from the systems associated with the NGWTP. The NGWTP is off line ("System Shutdown") when vernal pools are present at Site LF007C. The NGWTP used 389 kWh which calculates to approximately 533 pounds of GHG generation during October 2011. This is a decrease from September 2011 when the NGWTP used 553 kWh of electricity. The decrease of electricity usage can be attributed to a decrease in monthly operational hours and gallons treated. The overall GHG generation remains considerably lower than traditional GWTPs since the system is predominantly powered by solar arrays.

TABLE 4
Summary of Groundwater Analytical Data for October 2011 – North Groundwater Treatment Plant

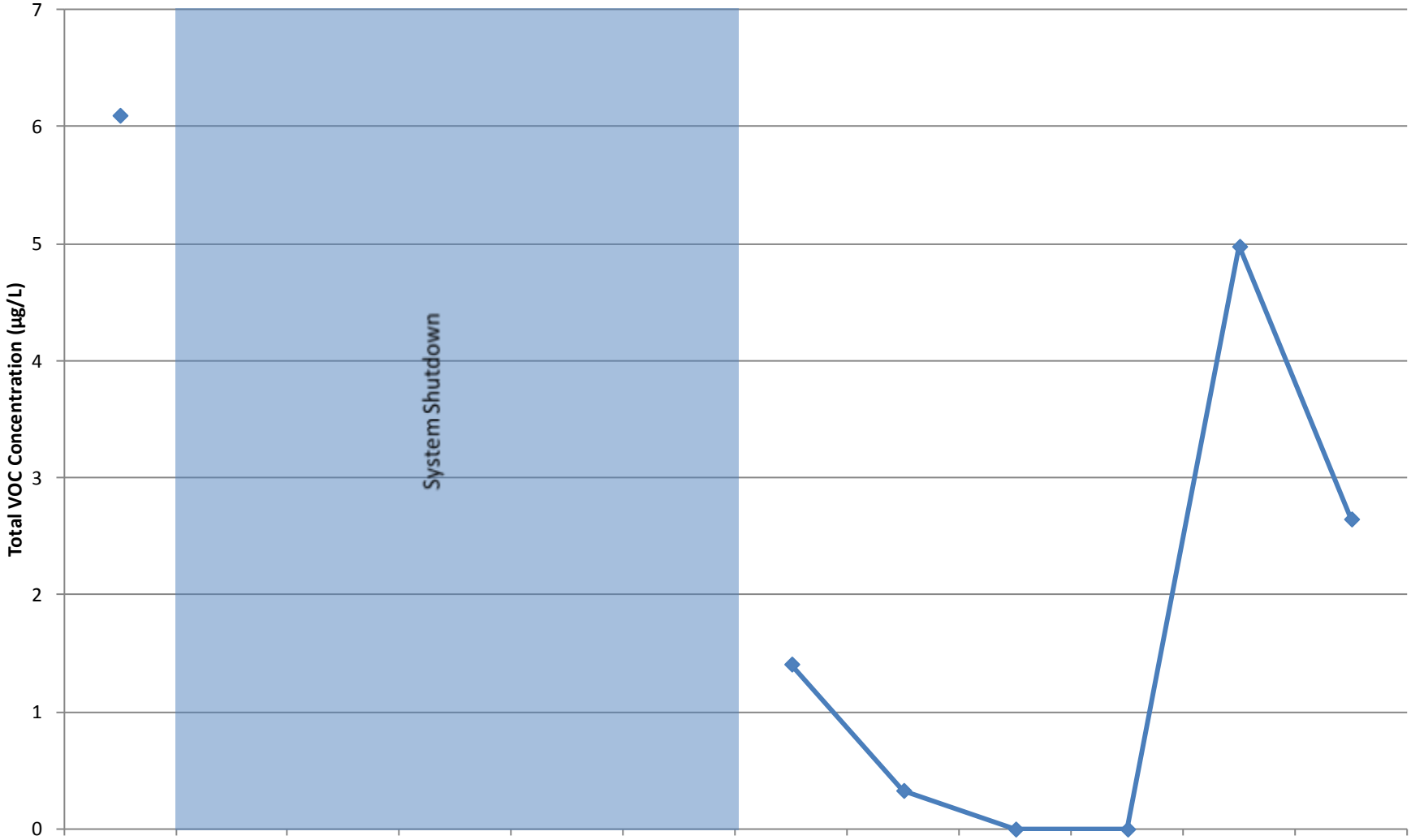
Constituent	Instantaneous Maximum* (μg/L)	Detection Limit (μg/L)	N/C	19 October 2011 (μg/L)		
				Influent	After Carbon 1	Effluent
Halogenated Volatile Organics						
Bromodichloromethane	5.0	0.15	0	ND	ND	ND
Bromoform	5.0	0.19	0	ND	ND	ND
Carbon Tetrachloride	0.5	0.14	0	ND	ND	ND
Chloroform	5.0	0.16	0	ND	ND	ND
Dibromochloromethane	5.0	0.13	0	ND	ND	ND
1,3-Dichlorobenzene	5.0	0.15	0	ND	ND	ND
1,4-Dichlorobenzene	5.0	0.15	0	ND	ND	ND
1,1-Dichloroethane	5.0	0.15	0	ND	ND	ND
1,2-Dichloroethane	0.5	0.15	0	ND	ND	ND
1,1-Dichloroethene	5.0	0.19	0	ND	ND	ND
cis-1,2-Dichloroethene	5.0	0.19	0	0.25 J	ND	ND
trans-1,2-Dichloroethene	5.0	0.33	0	ND	ND	ND
Methylene Chloride	5.0	0.66	0	ND	ND	ND
Tetrachloroethene	5.0	0.21	0	ND	ND	ND
1,1,1-Trichloroethane	5.0	0.14	0	ND	ND	ND
1,1,2-Trichloroethane	5.0	0.2	0	ND	ND	ND
Trichloroethene	5.0	0.19	0	2.4	ND	ND
Vinyl Chloride	0.5	0.18	0	ND	ND	ND
Non-Halogenated Volatile Organics						
Benzene	1.0	0.17	0	ND	ND	ND
Ethylbenzene	5.0	0.22	0	ND	ND	ND
Toluene	5.0	0.14	0	ND	ND	ND
Xylenes	5.0	0.23 – 0.5	0	ND	ND	ND
Other						
Total Petroleum Hydrocarbons – Gasoline	50	8.5	0	NM	NM	ND
Total Petroleum Hydrocarbons – Diesel	50	50	0	NM	NM	ND

* In accordance with Appendix G of the *Travis AFB North Groundwater Treatment Plant Operations and Maintenance Manual*, Sites FT004, SD031, and LF007 Area C (URS Group, Inc., 2005).

Notes:

N/C = number of samples out of compliance with discharge limits
ND = not detected
NM = not measured
μg/L = micrograms per liter

Figure 1
NGWTP Total VOC Influent Concentrations - Twelve Month History
Travis Air Force Base, California

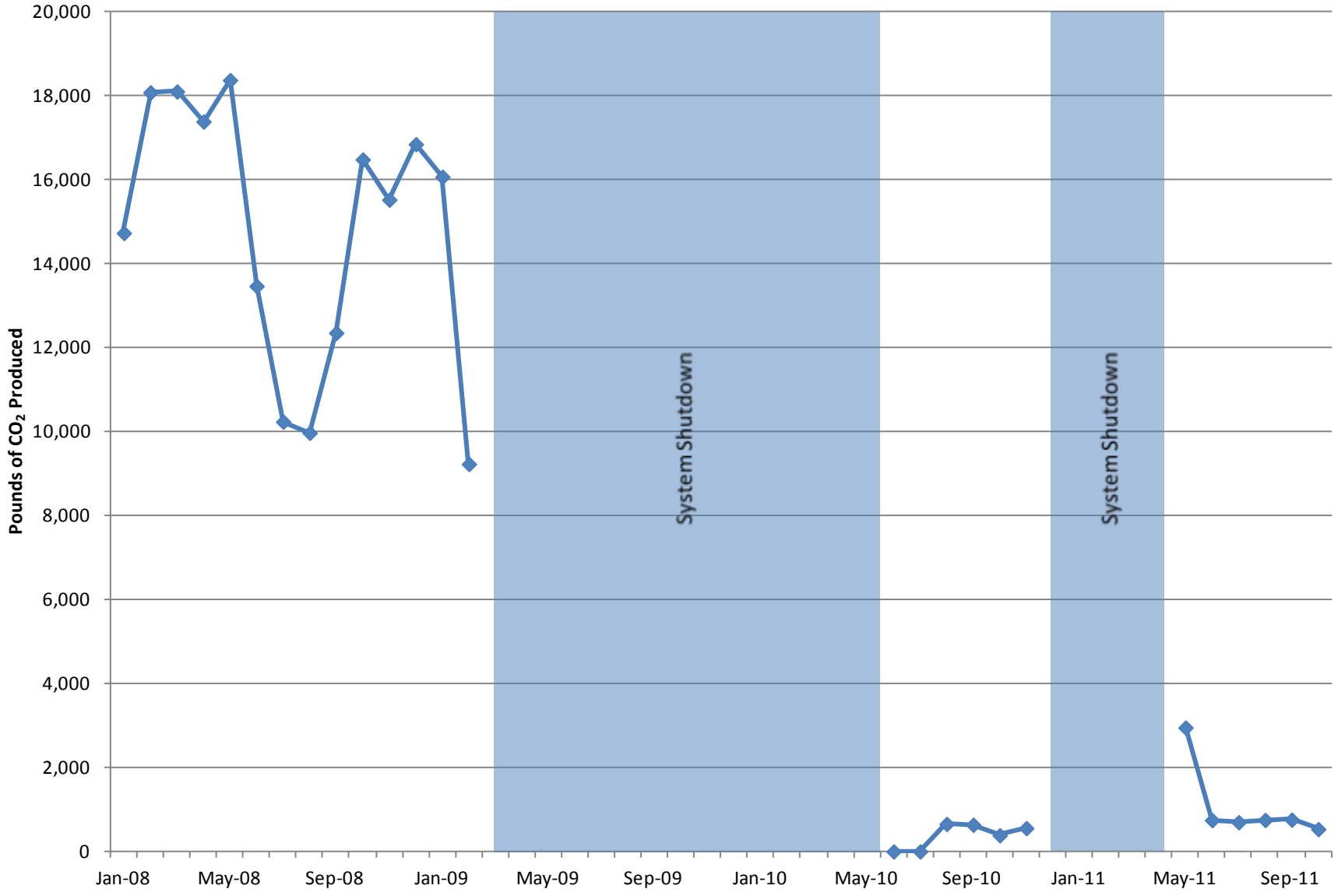


INSERT FIGURE 2

(LF007C PZ FIGURE)

Figure 3

Equivalent Pounds of CO_2 Produced by the North Groundwater Treatment Plant



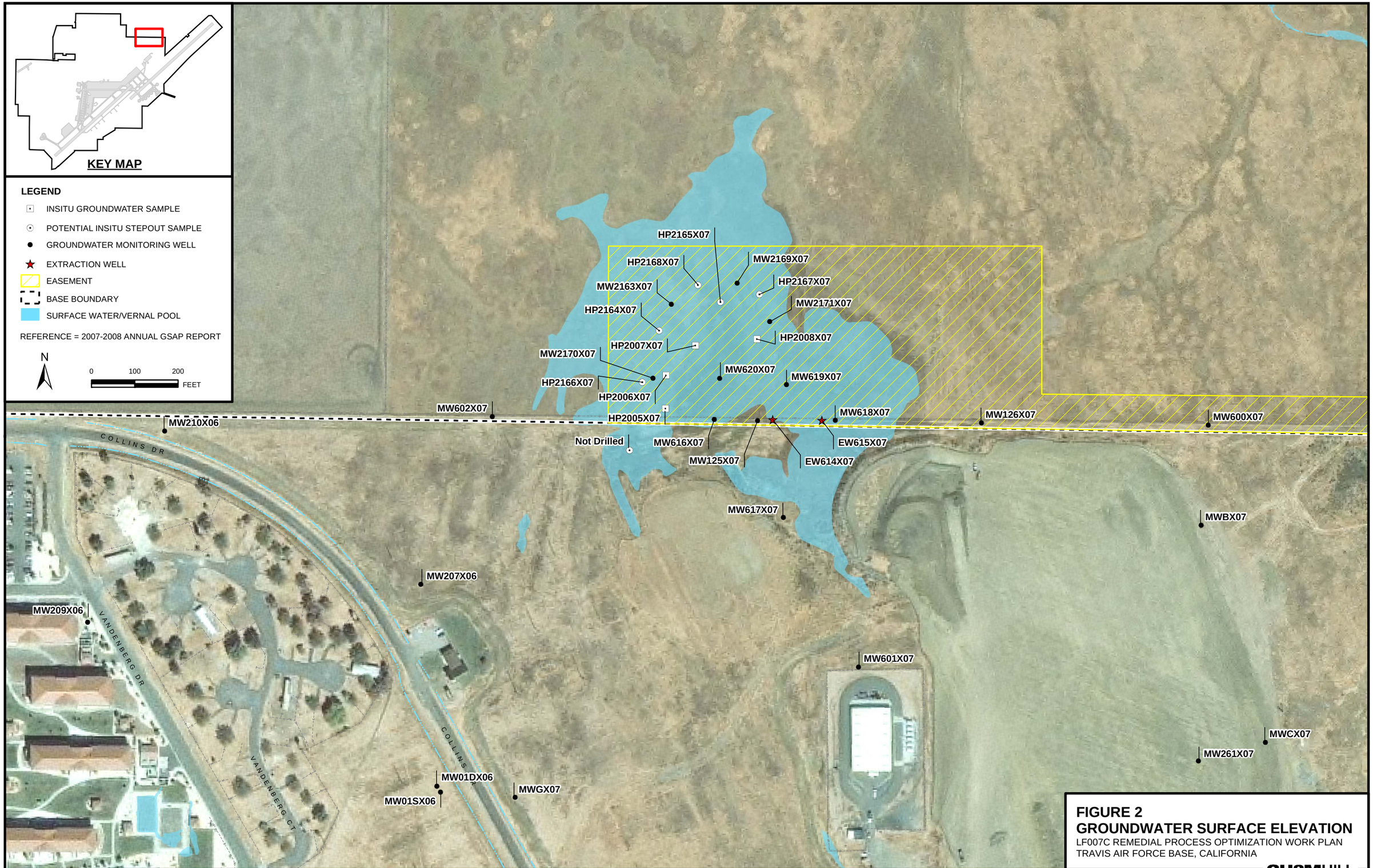


FIGURE 2
GROUNDWATER SURFACE ELEVATION
LF007C REMEDIAL PROCESS OPTIMIZATION WORK PLAN
TRAVIS AIR FORCE BASE, CALIFORNIA

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Site ST018 Groundwater Treatment Plant Monthly Data Sheet

Report Number: 008 **Reporting Period: 30 Sept – 31 Oct 2011** **Date Submitted: 18 November 2011**

This monthly data sheet presents information regarding the Site ST018 Groundwater Treatment Plant (S18GWTP). In addition to monthly ST018 groundwater sample collection, quarterly influent samples were also collected in October. The total influent VOC concentration (179 µg/L) was considerably lower than the previous quarter (951 µg/L).

System Metrics

Table 1 presents operation data from the October 2011 reporting period.

Table 1 – Operations Summary – October 2011

Operating Time:	Percent Uptime:	Electrical Power Usage:
S18GWTP: 624 hours	**S18GWTP:** 100%	**S18GWTP:** 84 kWh (115 lbs CO_2 generated[a])

Gallons Treated: **122 thousand gallons**

Gallons Treated Since March 2011: **1.03 million gallons**

Volume Discharged to Union Creek: **122 thousand gallons**

BTEX, MTBE, TPH Mass Removed: **0.18 lbs**[b]

BTEX, MTBE, TPH Mass Removed Since March 2011: **6.8 lbs**

Rolling 12-Month Cost per Total Pounds of Mass Removed[c]: $5,644

Monthly Cost per Pound of Mass Removed: $39,509

Lbs = pounds

[a] Based on Department of Energy estimate that 1 kilowatt hour generated produces 1.37 pounds of GHG.

[b] Calculated using October 2011 EPA Method SW8260B analytical results. Influent samples are collected on a quarterly basis.

[c] Costs include operations and maintenance, reporting, analytical laboratory, project management, and utility costs related to operation of the system; however the system is only in its sixth month of operation.

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

Table 2 – S18GWTP Average Flow Rates[a]

Location	Average Flow Rate Groundwater (gpm)
EW2014x18	0.53
EW2016x18	1.22
EW2019x18	1.64
Site ST018 GWTP	3.27

[a] All flow rates calculated by dividing total gallons processed by system operating time for the month.

gpm = gallons per minute
S18GWTP = Site ST018 Groundwater Treatment Plant

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

Table 3 – Summary of System Shutdowns

Location	Shutdown		Restart		Cause
	Date	Time	Date	Time	
S18GWTP	None				

S18GWTP = Site ST018 Groundwater Treatment Plant

Summary of O&M Activities

Both monthly groundwater samples (ST018GWTPWBC2 and ST018GWTPWEFF) and quarterly groundwater samples (ST018GWTPWINF) at the S18GWTP were collected on 17 October 2011. Sample results are presented in Table 4. No contaminant concentrations were detected in the effluent sample. The total influent concentration (benzene, toluene, ethylbenzene, total xylenes, MTBE, TPH-gas, TPH-diesel, and TPH-motor oil) in the quarterly (4Q11) influent sample was 179 µg/L. This is a decrease from the influent sample collected in July 2011 (951 µg/L). Decreases in MTBE (270 µg/L to 82 µg/L) and TPH-diesel (170 µg/L to 96 µg/L) along with TPH-gasoline (non detect, down from 430 µg/L) in the 3Q11 influent sample all contributed to the total VOC concentration reductions. This decrease is also reflected in the high monthly cost per pound of mass removed ($39,509).

The decrease in total influent VOC concentrations is likely attributed to a decrease in monthly groundwater extracted (52 thousand gallons in July 2011 to 20 thousand gallons in October 2011) from the extraction well (EW2014x18) near the contaminant source. In July 2011, when the 3Q11 influent samples were collected, the ST018GWTP processed 132 thousand gallons, which is similar to the October process volume of 122 thousand gallons. Figure 1 presents a plot of influent quarterly concentrations at the S18GWTP versus time.

Due to the amount of heavier (TPH-diesel) hydrocarbons in the influent process stream, the primary GAC vessel will be changed out from coconut-based carbon, which is primarily used to extract smaller compounds, such as MTBE, to coal-based carbon. The final two GAC vessels in series will remain coconut-based for lighter VOC and BTEX contaminants, including MTBE.

The Site ST018 GWTP was primarily installed to address MTBE contamination at Site ST018. The influent system sample collected in October 2011 represents the fourth influent sample collected since March 2011 when the GWTP was initially brought on line. Concentrations of MTBE over this time period have varied from a maximum concentration of 270 µg/L in July 2011 to a minimum concentration of 71 J+ µg/L in April 2011.

Optimization Activities

No optimization activities occurred at the S18GWTP in October 2011.

Sustainability

Travis AFB is committed to decreasing the amount of GHG produced directly (waste streams discharging GHG) or indirectly (GHG produced as related to electrical energy consumption) from all systems across Travis AFB. Travis AFB continues to optimize each treatment plant to reduce the amount of electrical energy consumed, and to implement sustainable treatment plant optimization programs, such as the solar arrays employed to power the system.

As a result of the solar arrays at S18GWTP, the system produced approximately 115 pounds of GHG during October 2011. This is a slight decrease from September 2011 (175 pounds) and is likely due to the decrease in operation hours and gallons treated. The overall GHG generation remains considerably lower than traditional GWTPs since the system is predominantly powered by solar arrays.

TABLE 4
Summary of Groundwater Analytical Data for October 2011 – Site ST018 Groundwater Treatment Plant

Constituent	Instantaneous Maximum[a] (µg/L)	Detection Limit (µg/L)	N/C	17 October 2011 (µg/L)		
				Influent[b]	After Carbon 2	System Effluent
Fuel Related Constituents						
MTBE	5	0.1[c]	0	82	ND	ND
Benzene	5	0.1	0	0.2 J	ND	ND
Ethylbenzene	5	0.1	0	0.2 J	ND	ND
Toluene	5	0.1	0	ND	ND	ND
Total Xylenes	5	0.1	0	0.2 J	ND	ND
Total Petroleum Hydrocarbons – Gasoline	50	6.0	0	ND	ND	ND
Total Petroleum Hydrocarbons – Diesel	50	7.5	0	96	ND	ND
Total Petroleum Hydrocarbons – Motor Oil	--	56	0	ND	ND	ND

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

[b] Values taken from October 2011 sample data. Influent sampling is conducted on a quarterly basis.

Notes:

µg/L = micrograms per liter
ND = not detected above method detection limit
NM = not measured this month

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

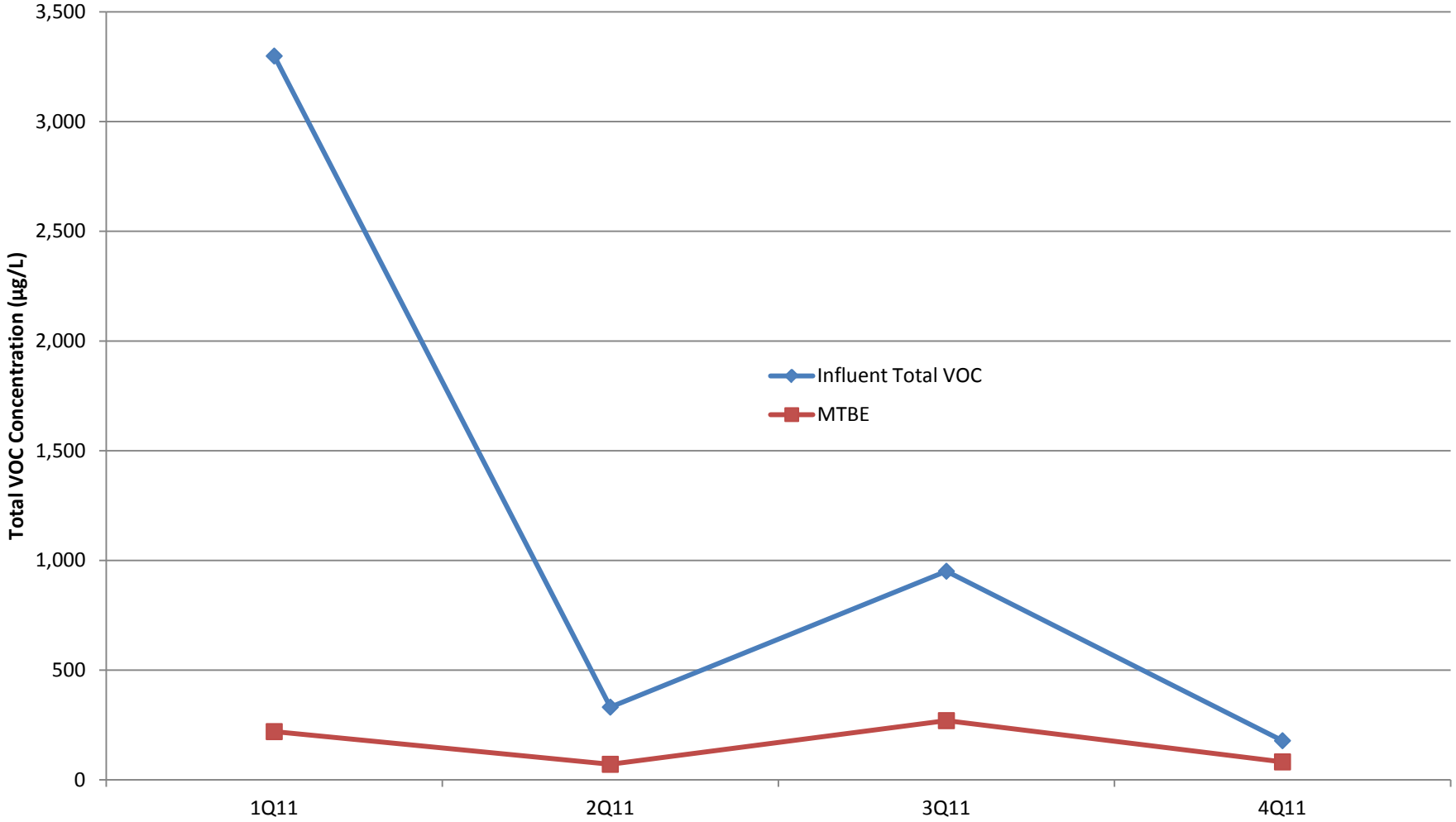
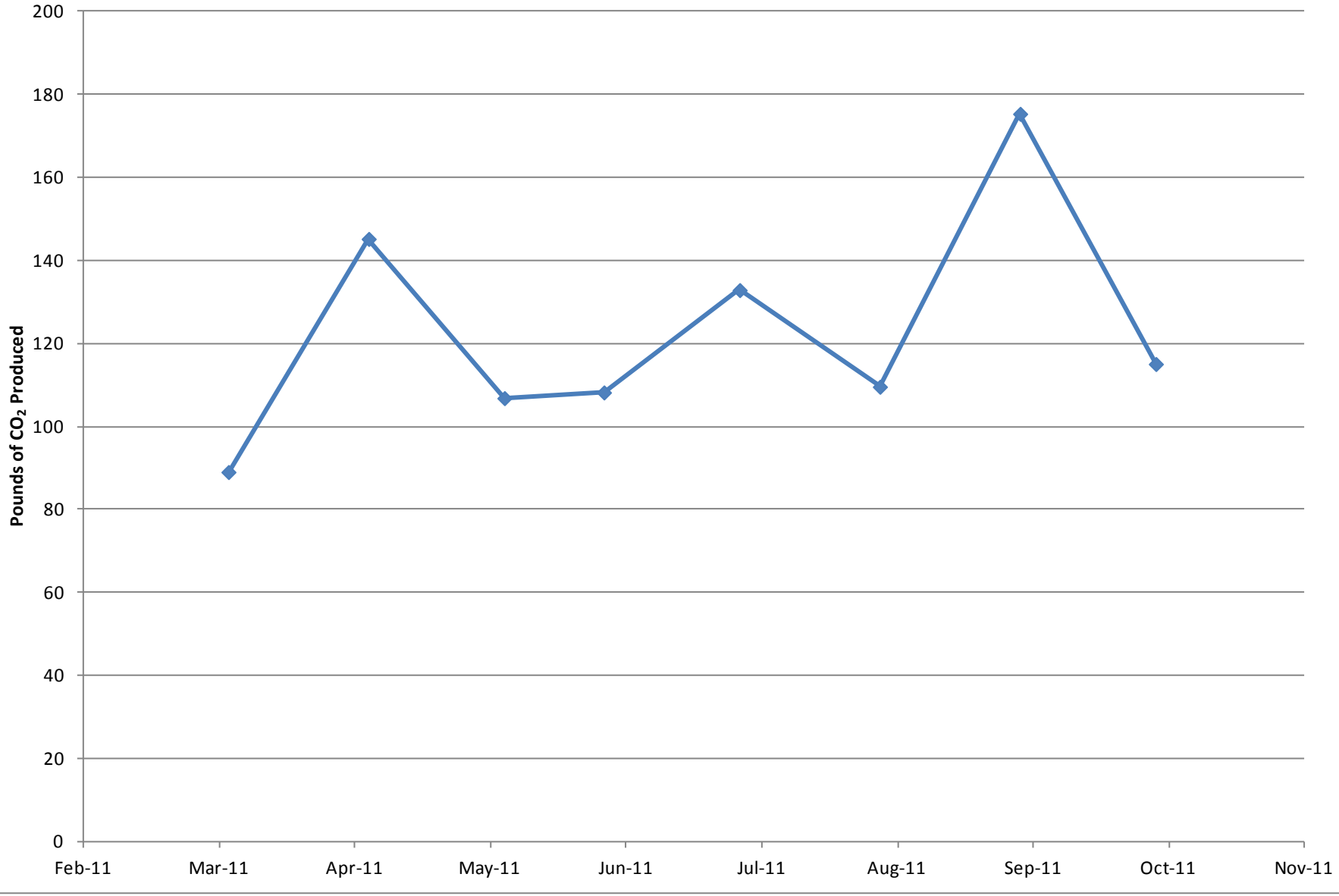


Figure 2

Equivalent Pounds of CO_2 Produced by the Site ST018 Groundwater Treatment Plant



Travis AFB
Restoration Program

Management Overview Briefing

RPM Meeting

November 30, 2011

Completed Documents

- Basewide Health & Safety Plan (HSP)
- Action Plan
- 2007/2008 GSAP Annual Report
- LF007C RPO Work Plan
- LF008 Rebound Study Work Plan
- SS014 Tier 1 POCO Evaluation Work Plan
- ST027B Site Characterization Work Plan
- SS030 RPO Work Plan
- ST032 POCO Technical Memo
- DP039 Bioreactor Work Plan
- 2008 Annual GWTP RPO Report
- Passive Diffusion Bag (PDB) Technical Memo
- RD/RA QAPP Update
- ST032 Tier 1 POCO Evaluation Work Plan
- Phytostabilization Demonstration Technical Memo
- Model QAPP
- LF008 Rebound Test Technical Memo
- Comprehensive Site Evaluation Phase II Work Plan
- Field Sampling Plan (FSP)
- SS016 RPO Work Plan
- ST018 POCO RA Work Plan
- Vapor Intrusion Assessment Report
- GSAP 2008/2009 Annual Report
- FT005 Data Gap Work Plan
- First, Second , & Third Site DP039 Sustainable Bioreactor Demonstration Progress Reports
- DP039 RPO Work Plan
- SD036/SD037 RPO Work Plan

Completed Documents (cont'd)

- ST027B Site Characterization Report
- 2009 GWTP RPO Annual Report Natural Attenuation Assessment Report (NAAR)
- Union Creek Sites SD001 & SD033 Remedial Action Report
- CAMU 2008-2009 Monitoring Annual Report
- Phytostabilization Study Report
- 2009/2010 Annual GSAP Report
- SS015 Remedy Optimization Field Implementation Plan
- Sites SS014 and ST032 Tier 1 POCO Evaluation Report
- SD036 Remedy Optimization Field Implementation Plan
- 2010 Annual CAMU Inspection Report
- Site ST018 POCO Baseline Implementation Report
- FT005 Data Gaps Investigation Report
- Comprehensive Site Evaluation Phase II Report
- 2010 Groundwater RPO Annual Report
- ***Focused Feasibility Study (FFS)***

Completed Field Work

- ST027B Gore Sorber Survey – Phase 1
- ST027B Field Sampling – Phase 2
- GSAP 2008 Semi-annual Event
- ST027B Installation of Wells – Phase 3
- SS014 Site Characterization
- LF008 Rebound Study
- GSAP Annual Sampling Event - 2009
- SS030 Site Characterization – Phase 1
- ST027 Site Characterization - Phase 3
- ST014 Monitor Well Install - Subsite 3
- SD001/SD033 Sediment RA
- SS016 Site Characterization (OSA source area)
- ST018 Site Characterization
- SS030 Site Characterization (Off-base VOC Plume)
- DP039 Site Characterization (for Biobarrier Placement)
- SS014 & ST032 Q1 2010 MNA Sampling (2nd of 4 quarterly events)
- SD036 Additional Site Characterization (north & east)
- Therm/Ox System Removal
- SS016 Monitoring Well Installation
- SD037 EVO Injection Well Installation
- DP039 Monitoring Well & Injection Well Installation
- DP039 EVO Injection
- SD037 Monitoring Well Installation
- GSAP 2010 Annual Sampling Event
- SD037 EVO Injection

Completed Field Work (cont'd)

- SS015 Site Characterization
- South Plant GAC Change-out
- FT005 Data Gap Investigation
- SS016 Position Survey of EW03
- SS016 Bioreactor Installation
- SS016 Bioreactor Baseline Sampling
- DP039 Biobarrier Quarterly Performance Sampling
- DP039 Bioreactor Quarterly Performance Sampling
- SD037 EVO Quarterly Performance Sampling
- SS015 EVO Baseline Sampling
- SD036 EVO Baseline Sampling
- SS016 Bioreactor Startup
- SD036 Injection Well Installation (8)
- SS015 Injection Well Installation (5)
- ST018 GETS Installation
- SD036 EVO Injection
- 2010 Semiannual GSAP
- SS015 EVO Injection
- Quarterly RPO Performance Monitoring (Feb 2011)
- ST018 GETS Startup
- Quarterly RPO Performance Monitoring (May 2011)
- 2011 Annual GSAP Sampling
- SS029 GET Shutdown Test (System Optimization analysis)
- Quarterly RPO Performance Monitoring (Aug 2011)
- ***Quarterly RPO Performance Monitoring (Nov 2011)***
- ***2011 Semiannual GSAP Sampling***
- ***LF007C Site Characterization (Wetlands)***

In-Progress Documents & Field Work

Documents

- Site ST027-Area B Human Health Risk Assessment
- Site ST027-Area B Ecological Risk Assessment
- Baseline Implementation Report (Sites SS015, SS016, SD036, SD037, and DP039)
- Work Plan for Assessment of Aerobic Chlorinated Cometabolism Enzymes
- Old Skeet Range Engineering Evaluation/Cost Analysis

Field Work

- FT005 Soil Remedial Action

Upcoming Documents

• Technical and Economic Feasibility Analysis (TEFA)	Dec
• 2010/2011 Annual GSAP Report	Dec
• Proposed Plan (PP)	Jan
• ***Technical Memorandum for Assessment of Aerobic Chlorinated Cometabolism Enzymes***	***Feb***
• ***2011 Groundwater Treatment RPO Annual Report***	***Feb***
• ***Site LF007C Data Gaps Investigation Technical Memorandum***	***TBD***
• Work Plan for Site SS029 System Optimization Analysis	TBD
• FT005 Remedial Action Completion Report	TBD

Upcoming Field Work

- Sampling for Assessment of Aerobic Chlorinated Cometabolism Enzymes — TBD
- SS029 System Optimization Analysis — TBD
- ***2012 Annual GSAP Sampling*** — ***April***

Travis AFB
Field Schedule – 2011/2012

RPM Meeting

November 30, 2011

2011/2012 Field Schedule

- FT005 Soil Remedial Action — Aug
- Sampling for Assessment of Aerobic Chlorinated Cometabolism Enzymes — TBD
- Site SS029 System Optimization Analysis Investigation — TBD
- 2012 Annual GSAP Sampling — Apr

Travis AFB - Site LF007C
Off-Base TCE Plume Delineation Investigation
Data Presentation

RPM Meeting

November 30, 2011

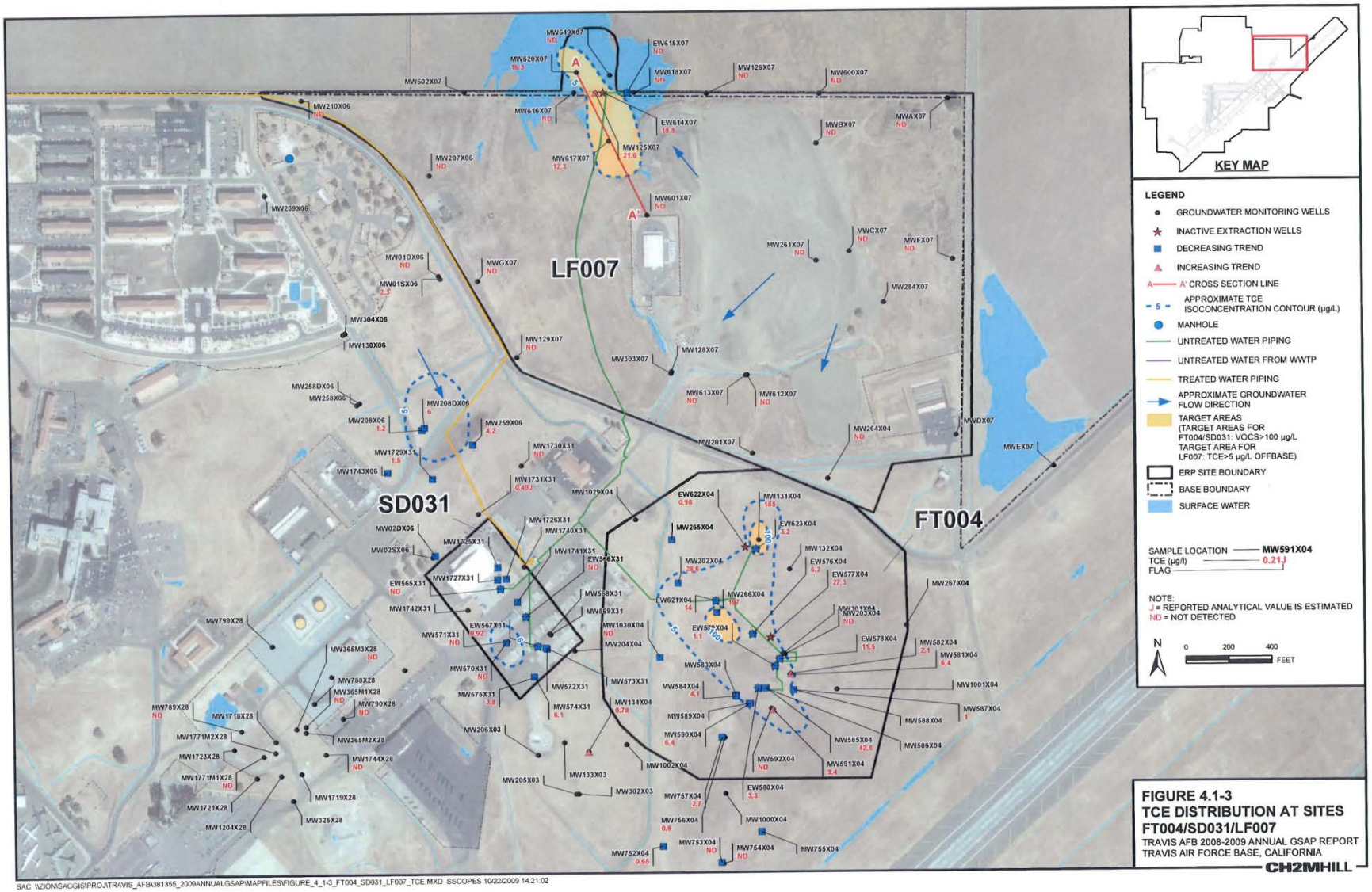


FIGURE 4.1-3
TCE DISTRIBUTION AT SITES FT004/SD031/LF007
TRAVIS AFB 2008-2009 ANNUAL GSAP REPORT
TRAVIS AIR FORCE BASE, CALIFORNIA

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SAC \\ZION\SACGIS\PROJ\TRAVIS_AFB\381355_2009ANNUALGSAP\MAPFILES\FIGURE_4_1-3_FT004_SD031_LF007_TCE.MXD SSCOPES 10/22/2009 14:21:02

Optimization of Existing Groundwater Interim Remedial Action at Site LF007C

- Approach:
  - Data Gaps Investigation
    - Site characterization
  - Groundwater Modeling
    - Evaluate contaminant distribution
    - Conduct numerical modeling for capture zone analysis
  - IRA Optimization
    - Install new monitoring wells and extraction wells (if needed)
    - Install pumps and conveyance
    - Modify treatment system
- Work Plan submitted March 2009
- USFWS approved work in August 2011

Background

- Site LF007C is one of three off-base plumes
- The site is on privately owned pasture land
- The site is generally flat with expansive shallow depressions where vernal pools develop
- Most (all) of the off-base LF007C plume is beneath a large vernal pool
- The Air Force has an easement to allow remediation work

Hydrogeology

- 25 to 40 feet of fine grained alluvium overlies shale bedrock (Nortonville Shale)
- The alluvium is very fine grained, with few sand lenses
- Regional groundwater flow is to the south and southeast
- Bedrock “high” influences groundwater flow - locally to north-northwest as observed by the groundwater plume shape
- Depth to water is 10 to 20 feet below ground surface

Nature & Extent of Groundwater Contamination

- TCE is the only Contaminant Of Concern (COC) detected above Interim Remediation Goals (IRGs)
- The TCE plume is migrating off base
- The TCE plume extent is not defined off base
- The GSAP reports statistically decreasing trends in the TCE concentrations in two plume wells (MW617x07 and EW614x07)

Data Gaps Investigation

- Objective of defining the off-base portion of the TCE plume
- Conduct in situ sampling, followed by installation of monitoring wells and extraction wells (if needed)
- Delineate plume in phases – in situ sampling until defined
- Samples to be analyzed for VOCs using EPA 8260B, on 24-hour turn-around.

Data Gaps Investigation (cont'd)

- The plume lies beneath a very large vernal pool, which is governed by USFWS
- Consulted with USFWS for Biological Opinion
- Received BO on August 11, 2011 (late in dry season)
- Initial in situ sampling scheduled for October 2011

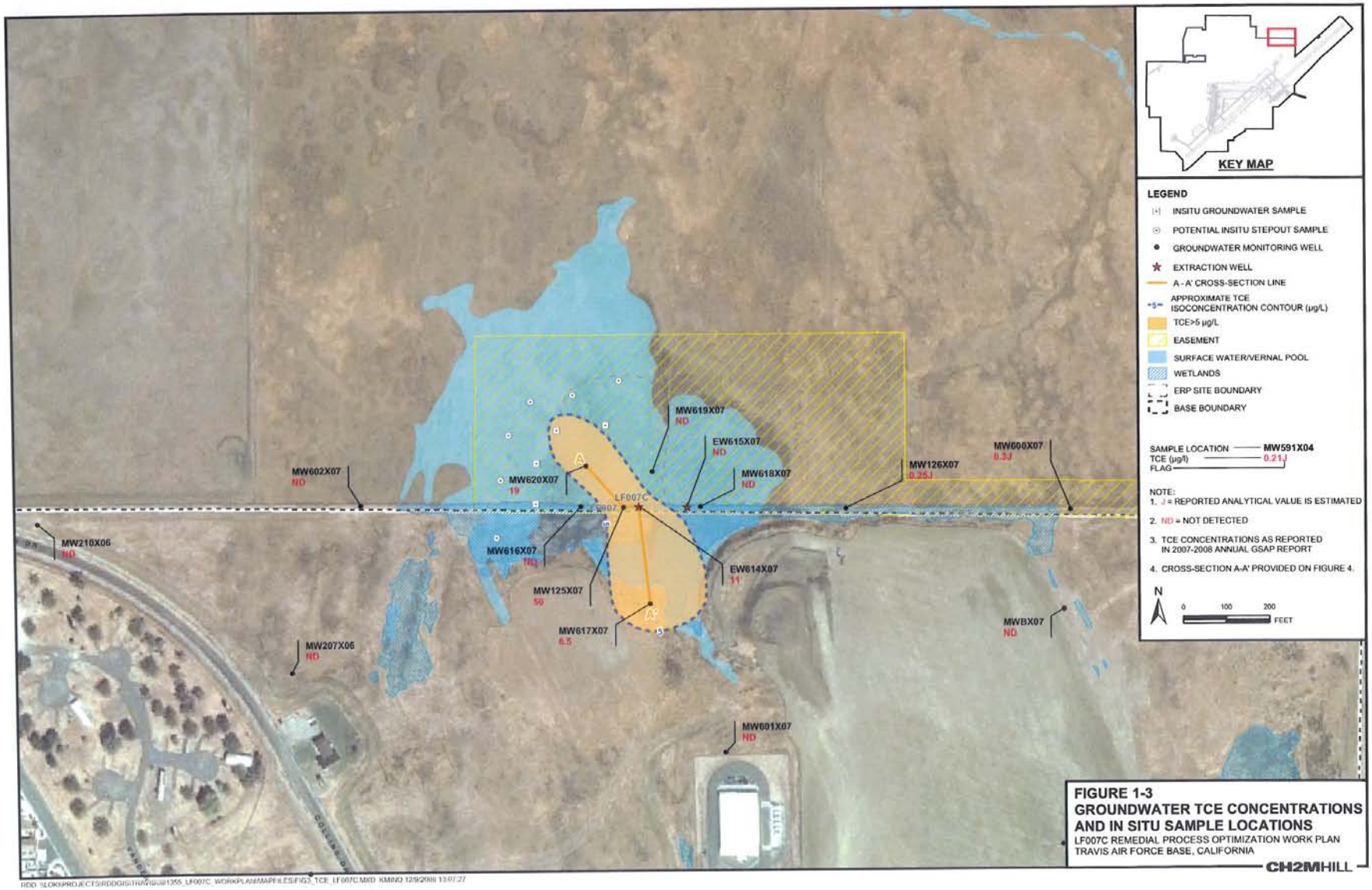

FIGURE 1-3
GROUNDWATER TCE CONCENTRATIONS AND IN SITU SAMPLE LOCATIONS
LF007C REMEDIAL PROCESS OPTIMIZATION WORK PLAN
TRAVIS AIR FORCE BASE, CALIFORNIA

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Data Gaps Investigation (cont'd)

- Started drilling on 03 October & drilled through 28 October
- Placed planking out to all drill sites
- Full time Biological Monitor
- Drilled 13 soil borings
- Collected 17 hydropunch samples

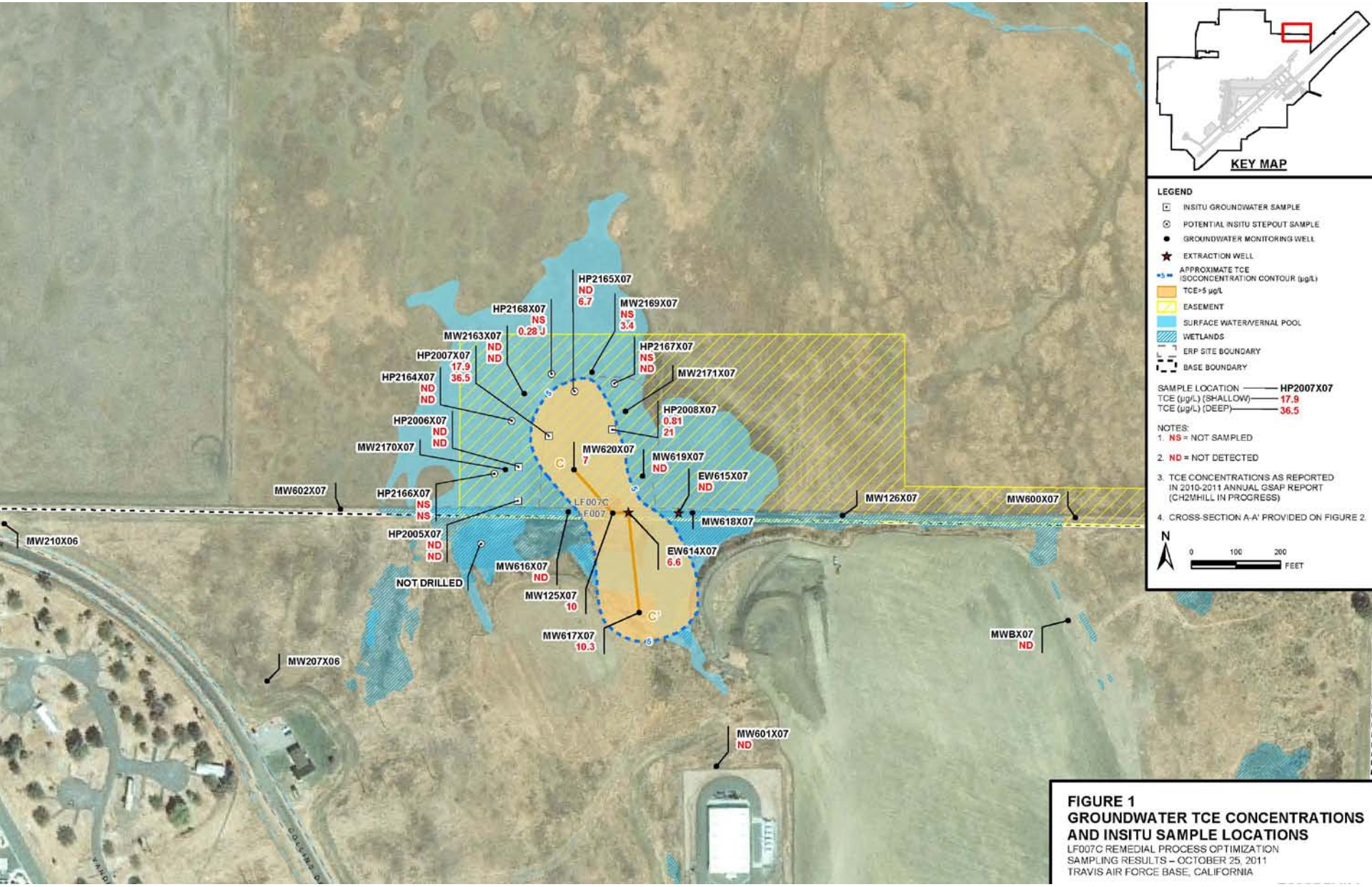

FIGURE 1
GROUNDWATER TCE CONCENTRATIONS AND INSITU SAMPLE LOCATIONS
LF007C REMEDIAL PROCESS OPTIMIZATION
SAMPLING RESULTS – OCTOBER 25, 2011
TRAVIS AIR FORCE BASE, CALIFORNIA

Data Gaps Investigation (cont'd)

- Installed 4 monitoring wells
- Developed monitoring wells from 31 October through 04 November
- Conducted 2 groundwater gradient surveys (one with extraction wells on and one with extraction wells off)
- Conducted 4-hour pump tests on new monitoring wells

Results of Investigation - Drilling

- Bedrock at about 25 to 38 feet below ground surface
- Bedrock was observed to be predominantly dry during drilling and not carrying groundwater
- Shallow groundwater samples collected ranged from about 11 to 22 feet (4-ft screen sections varied between borings)
- Deep groundwater samples collected ranged from about 21 to 42 feet (same as above)

Results of Investigation – Drilling (cont'd)

- Defined plume to either non-detect or below MCL on all sides
- Installed 4 monitoring wells along perimeter of groundwater plume
- Surveyed all boring locations and new monitoring wells
- Sampled new monitoring wells on 18 November. Analytical results due on 15 December

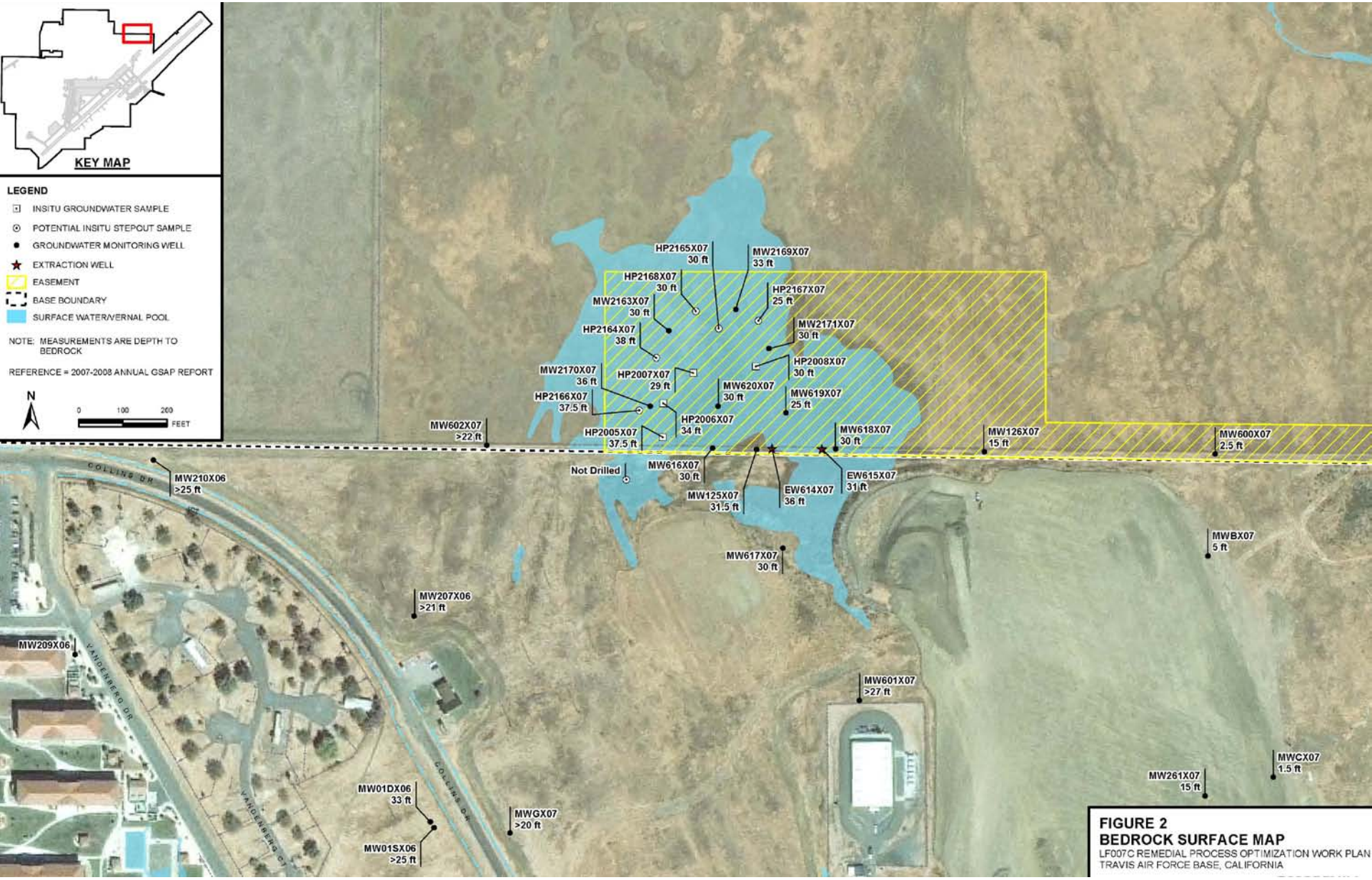

FIGURE 2
BEDROCK SURFACE MAP
LF007C REMEDIAL PROCESS OPTIMIZATION WORK PLAN
TRAVIS AIR FORCE BASE, CALIFORNIA

Results of Investigation – Groundwater Gradient Survey

- Conducted groundwater gradient surveys on 18 October and 02 November
- 18 October survey conducted with existing extraction wells turned on
- 02 November survey conducted with existing extraction wells turned off
- Groundwater gradient radiates away from bedrock high with the gradient at the off-base portion of Site LF007C to the southwest

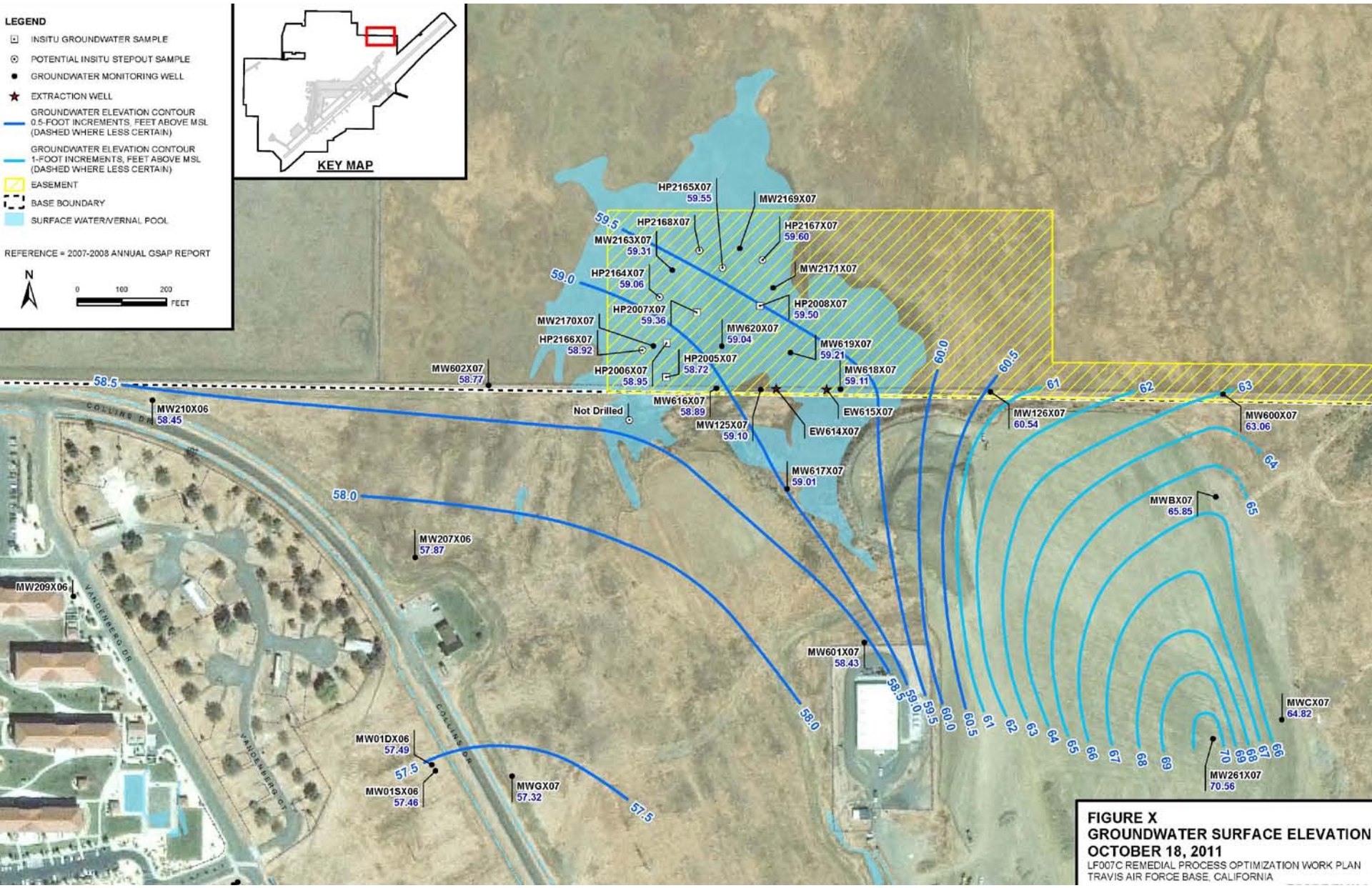

FIGURE X
GROUNDWATER SURFACE ELEVATION
OCTOBER 18, 2011
LF007C REMEDIAL PROCESS OPTIMIZATION WORK PLAN
TRAVIS AIR FORCE BASE, CALIFORNIA

Results of Investigation – Groundwater Gradient Survey (cont'd)

- 02 November survey shows a flat area in the groundwater gradient around HP2007x07, HP2165x07, HP2167x07, MW2169x07, and MW2171x07

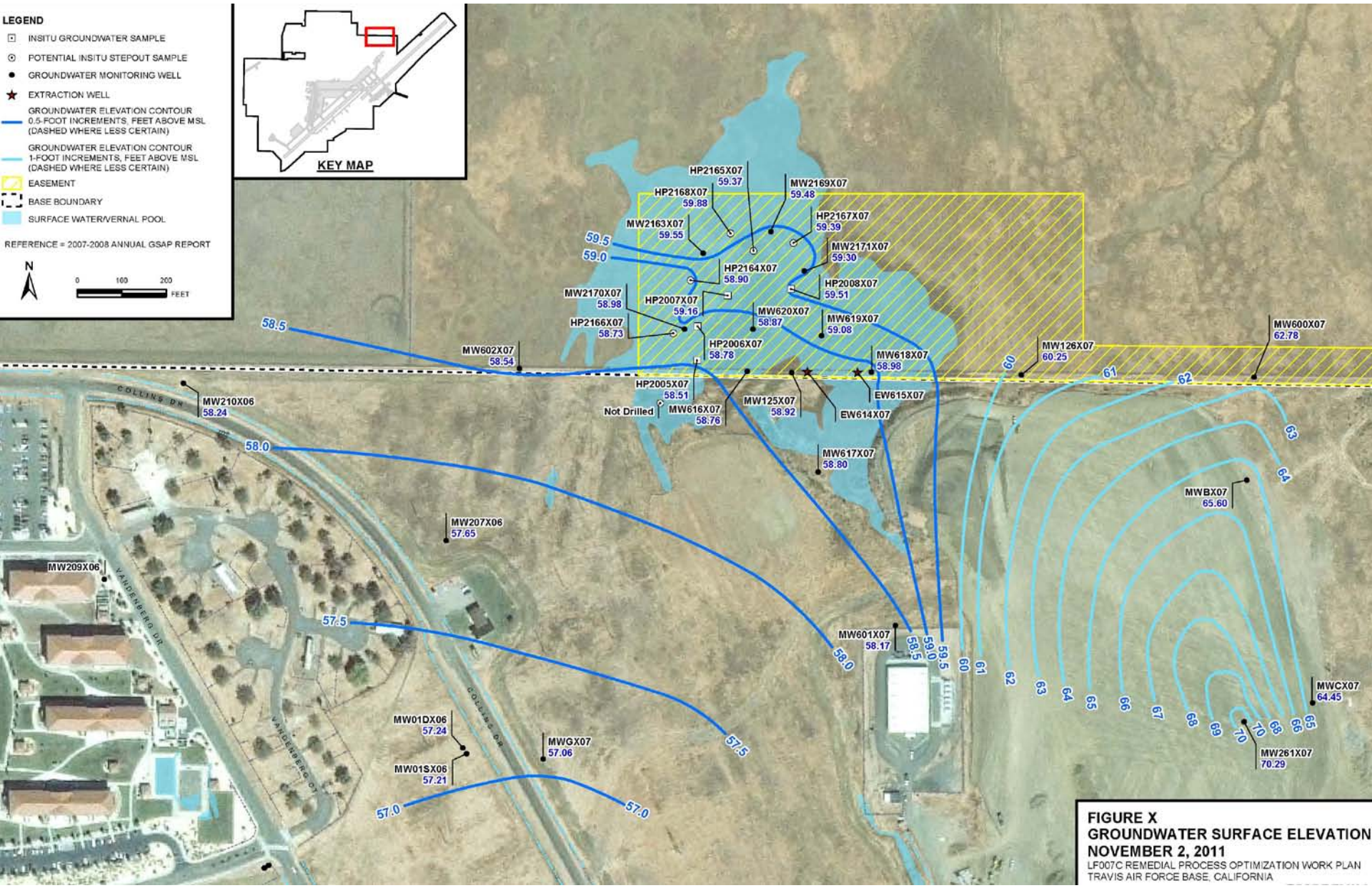

FIGURE X
GROUNDWATER SURFACE ELEVATION
NOVEMBER 2, 2011
LF007C REMEDIAL PROCESS OPTIMIZATION WORK PLAN
TRAVIS AIR FORCE BASE, CALIFORNIA

Results of Investigation – Groundwater Pump Tests

- Conducted groundwater pump tests at wells MW2163x07, MW2169x07, MW2170x07, and MW2171x07 from 01 November through 04 November
- Groundwater pump rates ranged from 0.25 to 3.0 gpm
- Very low pumping rates in the north-central portion of the groundwater plume at MW2163x07 (0.25 gpm) and MW2169x07 (0.5 gpm)

Results of Investigation – Groundwater Pump Tests (cont'd)

- Higher pumping rates along the western and eastern portion of the groundwater plume at MW2170x07 (2.0 gpm) and MW2171x07 (3.0 gpm)
- Pump rates at MW2170x07 and MW2171x07 consistent with historical pump test rates at EW614x07 (3.86 gpm) and EW615x07 (2.59 gpm)
- Cone of depression observed in adjacent temporary piezometers to the wells being pump tested during each of the 4-hour pump tests

Future Tasks

- Install transducers into MW125x07, MW620x07, and HP2165x07 to evaluate seasonal interaction of the vernal pool and the groundwater table during winter (period of no groundwater extraction at Site LF007C)
- Evaluate pumping and possibly upgrade capacity of existing extraction wells. 17 November pumping rates at EW614x07 and EW615x07 are 0.7 gpm and 1.4 gpm
- Groundwater modeling to evaluate capture zone
- Evaluate placement of extraction & monitoring wells, and pumps (if needed),

Future Tasks (cont'd)

- Installation of pumps and conveyance
- Connect to (and possibly upgrade) the treatment system
- Conduct performance monitoring
- Future field work will not be able to commence until the vernal pool dries out in the Spring