



FORMER NAVAL AIR WARFARE CENTER WARMINSTER

Restoration Advisory Board (RAB) Meeting Minutes

FORMER NAVAL AIR WARFARE CENTER (NAWC) WARMINSTER MEETING MINUTES

RESTORATION ADVISORY BOARD (RAB) MEETING NO. 117

REFERENCE: CLEAN CTO NO. WE23

1. Meeting Date and Time: March 10, 2010, 9:35 AM to 10:45 AM
2. Location: Warminster Municipal Authority Board Room
3. Attendees: See Attachment 1 (attendance list)
4. Summary of Meeting Discussions: See below.

Administrative Update

Mr. Jeff Dale, the Navy's Remedial Project Manager (RPM) for the project working out of the Navy's Base Realignment and Closure Program Management Office (BRAC PMO) in Philadelphia, opened the meeting by welcoming the attendees and providing an agenda for the meeting (Attachment 2).

Comments were solicited on the December 9, 2009 RAB meeting minutes. No comments were offered by those in attendance and the meeting minutes were approved as-is.

Action items from the December 9, 2009 RAB meeting were reviewed. The action item review is summarized below:

1. **PADEP is to provide an update r.e status of the CRC Industries investigation.**

The update will be provided as one of the meeting agenda topics.

2. **Tetra Tech NUS is to submit the Hydrogeologic Conceptual Site Model (CSM) update for Navy, then TEG review.**



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A draft of the Conceptual Site Model has been provided to the Department of Justice (DOJ) – DOJ is currently in related discussions with Warminster Municipal Authority (WMA).

3. WMA/Earth Data is to provide an update of the treatment system upgrade status.

The update will be provided as one of the meeting agenda topics.

4. The Navy is to continue pursuing additional in-house support for completing lease agreements for monitoring well access.

The update will be provided as one of the meeting agenda topics.

5. The Navy is to update the RAB on the progress of property transfers for the remaining Navy properties along Jacksonville Road and the Shenandoah Woods housing area.

The update will be provided as one of the meeting agenda topics.

Off-Site Investigations

Tom Buterbaugh (PADEP hydrogeologist) provided an update on the status of the site investigation work being performed at CRC Industries (CRC). He met with CRC representatives after the last RAB meeting. Two CRC representatives present at the RAB summarized the recent work performed by CRC. Mr. Stewart Abrams (Langan, representing CRC) stated that a residential well sample had been collected from a residence along Mearns Road – the analytical results were all below water quality criteria. Ms. Michelle Rudnick (CRC) indicated that DNAPL monitoring was currently ongoing, with nothing showing up recently. The monitoring frequency had recently dropped from monthly to every other month. A risk assessment is also being done, as is other related work. Mr. Bob Lewandowski (BRAC PMO) asked where the DNAPL monitoring was being performed – Ms. Rudnick indicated that it was being done onsite, not offsite. Ms. Kathy Davies (USEPA hydrogeologist) asked whether DNAPL had been recovered – Ms. Rudnick stated that some DNAPL had been recovered initially, but only negligible amounts are currently present.



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Mr. Jeff Orient (Tetra Tech, Navy contractor) asked what DNAPL thickness is currently being observed – Ms. Rudnick indicated that 0.04 was measured most recently. Mr. Lewandowski asked what the maximum observed thickness was – Ms. Rudnick stated that up to 0.46 feet had been measured in the source area in the past. Mr. Dave Fennimore (Earth Data, representing WMA) asked when the most recent split sampling had been done – Ms. Jen Good (ECOR, Navy contractor) indicated that samples from well clusters HN-16 and HN-52 had been split with CRC in April 2009.

Mr. Buterbaugh also indicated that he has had discussions with WMA about keeping them informed on the remediation plans moving forward, and that PADEP, CRC, and WMA have a good working relationship at this point. Ms. Rudnick stated that no remedial decisions have been made yet but CRC will solicit WMA input into the decision-making process. Conceptually, CRC will be focusing on source area treatment options. Mr. Abrams indicated that a risk assessment report is due in about a month. Mr. Tim Hagy (WMA) reiterated WMA's concerns about impacts to WMA Well 26. Mr. Dennis Orenshaw (EPA RPM) asked if the risk assessment would focus only on the source or would also evaluate offsite impacts – Mr. Abrams indicated that all impacts related to CRC releases would be evaluated.

WMA Update

Mr. Hagy provided an update to the RAB regarding recent activities related to WMA water supply wells 13 and 26. The treatment system upgrade for WMA 26 has been completed and the well is currently pumping to waste, discharging to the sanitary sewer. WMA is waiting on final test results and PADEP approval, and hopes to have the approval and the well online by the end of the month. Nothing has been done recently regarding treatment for WMA 13.

Navy Housing Transfer Update

Mr. Lewandowski updated the RAB regarding property transfers from the Navy. NAS Willow Grove must be closed by September 2011, and all associated Shenandoah Woods/Jacksonville Road housing units will be available for transfer. A Land Reuse Authority (LRA) has been formed to support the transfer process. The LRA had a public meeting the previous Monday to present various proposed land reuse



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options for public input. Mr. Lewandowski also stated that a Finding of Suitability to Transfer (FOST) has been prepared by Tetra Tech and is in Navy hands for review. The FOST will be supplemented with asbestos and lead-based paint information, but the Navy will wait until the timing is within 6 months of property transfer to do so. A NEPA assessment will also be completed once the future land use is decided. Mr. Toby Kessler (Gilmore and Associates, representing Warminster Township) asked if a draft FOST would be available for review ahead of time. Mr. Lewandowski pointed out that the FOST is somewhat dependent on the selected land use, but the Navy may be able to provide a preliminary version to the RAB. Mr. Kessler stated that using the land for a park is also under consideration along with residential use, and he'd like to see how the FOST fits in with this possible use. Mr. Lewandowski stated that the current goal is to get the FOST out sometime this summer, based on a residential land use. Mr. Orenshaw pointed out that as long as a FOST addresses a more stringent land use, i.e. residential, then less stringent land uses (park land) are also acceptable.

Treatment Plant Operation/LTM

Mr. Dale initiated the update on this topic by bringing up the potential for changes to the treatment system operation due to the shutdown of the Area D extraction wells. The shutdown will decrease the overall flow into the treatment plant significantly, which may result in some changes in operation to optimize the system. It is also expected that the decrease in flow rate will result in a net increase in chromium concentration, and implementing changes to the treatment system to more efficiently remove chromium will require a modification of the discharge permit.

Ms. Good and Mr. Matt Lapp (ECOR) then provided an update of various activities ECOR is implementing on behalf of the Navy. Topics covered included:

- Groundwater treatment plant status.
- LTM and reports update.
- Offsite well surveys and legal descriptions.
- NIRIS data conversion.



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The ECOR update is provided as Attachment 3 to the minutes. During and following the presentation, there was a general discussion of various related topics. For the treatment plant mass removal evaluations, Mr. Fennimore requested that 1,1,1-TCA mass recovery be calculated in addition to the current calculations of PCE, TCE, and carbon tetrachloride mass recoveries.

Mr. Dale indicated that 1,1,1-TCA could be added going forward, but historic totals have not been calculated. Mr. Fennimore also suggested calculating the rates of mass recovery over time, which may be more useful than just tracking cumulative mass recovery totals. Mr. Dale agreed with the suggestion.

For Area C, the changeover from a hard-wired control system for the extraction wells to a radio-controlled system is in the prove-out period and is going well. Some electrical problems are still being encountered at well EW-18. Despite the prior decision to shut down the Area D extraction system, several of the Area D extraction wells are still running and will continue to run until EW-18 is back online.

For the removal of hexavalent chromium, flows in wells with higher Cr^{+6} levels have been reduced temporarily while changes are being made to the treatment system (pH adjustment) to extend the life of the resin used to remove Cr^{+6} . Mr. Orient asked what the current discharge standard is for Cr^{+6} ; Mr. Lapp indicated that it is 14 ug/l. Mr. Lewandowski asked Mr. Orenshaw whether the changes to the treatment system would require a change to the ROD. Mr. Orenshaw indicated that there is adequate flexibility in the ROD language to allow for the modifications without needing any sort of ROD change.

For the well surveys and legal descriptions, Mr. Lewandowski indicated that he has been pushing the Navy real estate staff to act on acquiring the long term easements for key monitoring wells; however other bases have been a higher priority with the real estate staff to this point. Mr. Lewandowski also stated that the associated property assessments may need to be redone at this point.

Ms. Good indicated that ECOR is currently focusing on the NIRIS data conversion for the former NAWC in West Trenton, NJ, then will tackle the conversion of the NAWC Warminster data. She estimated a timeframe of about a month or so to get the data conversion completed.



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Miscellaneous Topics and Issues – Action Items

The following topics were briefly discussed:

Mr. Dale reiterated the current status of the CSM – Tetra Tech prepared the draft report which is currently in the hands of the DOJ, and will be released for review when the DOJ gives the approval to do so. Mr. Fennimore asked who was involved in the preparation of the CSM – Mr. Dale indicated that the Navy, Tetra Tech, and Battelle worked on it; the USGS and EPA have not been involved in its development to this point. Mr. Dale also indicated that Tetra Tech submitted the internal draft Long Term Performance Monitoring Plan to the Navy today (March 10) for review.

Mr. Lewandowski and Mr. Dale indicated that Land Use Control (LUC) inspections would be completed by the end of the year. There was some general discussion regarding the optimum timing of the inspections.

Action Items identified through the course of the meeting include:

- The Navy is to update the treatment plant data evaluation to include 1,1,1-TCA and month-to-month changes in mass removal rates for key contaminants.
- PADEP is to provide an update r.e the status of the CRC Industries investigation.
- WMA/Earth Data is to provide an update of the municipal wells treatment systems upgrade status.
- The Navy is to release the CSM for RAB review upon approval by DOJ.
- The Navy is to update the RAB on the progress of property transfers for the remaining Navy properties along Jacksonville Road and the Shenandoah Woods housing area.

Next Meeting Date

The next RAB meeting date was set for June 9, 2010 at 9:30 AM in the WMA Board Room.

The meeting was adjourned at approximately 10:45 AM.



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ATTACHMENT 1 ATTENDANCE LIST

**NAWC WARMINSTER
TECHNICAL SUBCOMMITTEE/RAB MEETING**

DATE: March 10, 2010

NAME	AFFILIATION	PHONE	EMAIL
JEFF ORIENT	TETRA TECH NUS	412-921-8778	jeff.orient@tetratech.com
Bob Lewandowski	NAVY	215-897-4908	robert.f.lewandowski@navy.mil
Ren Soto	US Geological Survey	610-321-2434 x212	RASLOTO@USGS.GOV
Kathy Davies	US EPA	215-814-3315	davies.kathy@epa.gov
TOM BUTERBAUGH	PA DEP	484 250 5790	tbuterbaug@state.pa.us
Charles Clark	PA DEP	484-250-5731	chaclark@state.pa.us
Jan Good	ECOR	610-431-8731	jgood@ecor-solutions.com
Matt Lapp	ECOR	610-431-8731	lapp@ecor-solutions.com
DENNIS ORENSHAW	US EPA	215-814-3361	ORENSHAW.DENNIS@EPA.GOV
Toby Kessler	Gilmore & Assoc./warm.twp.	215-345-4330	tkessler@gilmore-assoc.com
Michelle Rudnick	CR Industries CR Industries	215-442-6224	mrudnick@rcindustries.com
Stewart Abrams	Langan	215-864-0640	sabrams@langan.com
NORM KELLY	CO-CHAIR - R-A-B	215-675-1157	- N/A -
Carolyn Scala	Battelle	215-524-5203	scalac@battelle.org
Dave Ferrimore	EDU	610-524-9466	dferrimore@earthdatainc.com
TIM HAGEY	WMA	215 675 3301 x 201	timh@warminsterauthority.com
JEFF DALE	Navy	215 897-4914	jeffrey.m.dale@navy.mil



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**ATTACHMENT 2
MEETING AGENDA**



AGENDA

FORMER NAWC WARMINSTER

Technical Subcommittee/Restoration Advisory Board (RAB) Meeting

Date: 10 MAR 2010

Time: 9:30 AM

Location: WMA Board Room, 415 Gibson Ave., Warminster, PA

- **Administrative Update**
 - Minutes of the Last Meeting
 - Review Action Items (see below)
- **Off-Site Investigations**
 - PADEP update on CRC Chemicals
- **WMA Update**
 - Status of Wells #13 and #26 treatment upgrades.
- **Navy Housing Transfer Update**
 - Status of property transfer activities along Jacksonville Road and Shenandoah Woods.
- **Treatment Plant Operation/LTM**
 - Plant operating status
 - Remote communication configuration – Area C
 - Reduction in flow from Area D
 - Chromium removal
 - VOC removal evaluation, air stripper versus liquid-phase carbon
 - LTM update
 - Status of quarterly monitoring reports
- **Other Activities**
 - ECOR presentation on current/upcoming work activities:
 - Offsite well surveys and preparation of legal descriptions.
 - Conversion of monitoring data for uploading into the Navy's NIRIS database, and maintenance of the NIRIS electronic database for the site.
- **Miscellaneous Topics and Issues – Action Items**
 - Conceptual Site Model Update
 - Long Term Performance Monitoring Plan Update

Time and Location of Next Meeting: - Date to be determined

▪ **Action Items**

The following action items were identified as a result of the December 2010 meeting:

- PADEP is to provide an update r.e status of the CRC Industries investigation.
- Tetra Tech NUS is to submit the CSM update for Navy, then TEG review.
- WMA/Earth Data is to provide an update of the treatment system upgrade status.
- The Navy is to continue pursuing additional in-house support for completing lease agreements for monitoring well access.
- The Navy is to update the RAB on the progress of property transfers for the remaining Navy properties along Jacksonville Road and the Shenandoah Woods housing area.

Directions to the WMA Board Room:

From the former NAWC - Proceed to the intersection of Street and Jacksonville Rd. Turn west (right) onto Street Rd. Continue west to York Rd. Turn south (left) onto York Rd. Continue to Henry Ave. Turn west (right) onto Henry Ave. Follow directions as above to the WMA building.

From County Line Rd - Instead of turning north (right) onto Jacksonville, continue west on County Line to York Rd. Turn north (right) onto York Rd. Continue to Henry Ave. Turn west (left) onto Henry Ave. Continue to Gibson Ave. Turn right into the parking lot shared by the Warminster Township and WMA. The WMA building is located towards the rear.



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ATTACHMENT 3 ECOR PRESENTATION



Restoration Advisory Board Meeting

NAWC WARMINSTER

10 MARCH 2010

Presented by



Presentation Agenda

- GWTP Status
 - Plant Operation
 - Mass Removal
 - Area C Wireless Communication
 - Changes to Pumping in Area D
 - Hexavalent Chromium (Cr^{+6})

Presentation Agenda (Con't)



- LTM and Reports Update
- Offsite Well Surveys and Legal Descriptions
- NIRIS Data Conversion

Groundwater Treatment
Plant Operating Status

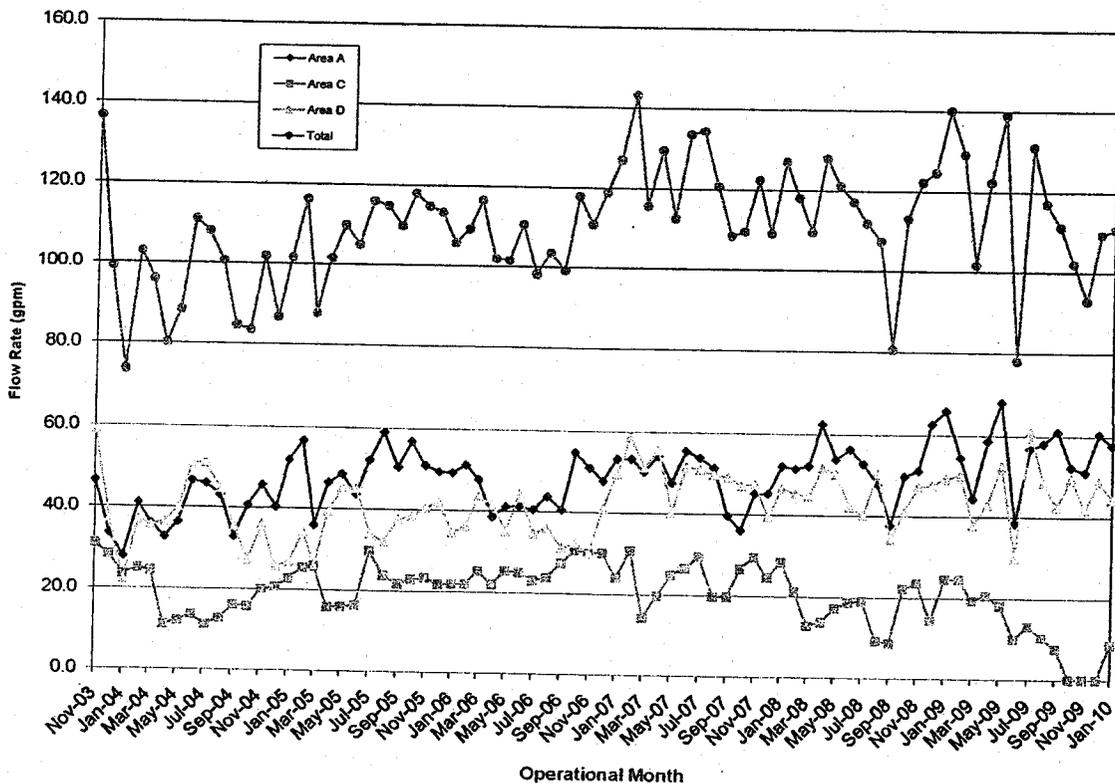
Plant Operation



Average flowrates since Jan 2009:

- 56 gpm from Area A
- 12 gpm from Area C
- 42 gpm from Area D
- 114 gpm overall
- 657,858,657 gallons treated through 2/2010
- Area C repaired and restarted on 1/22/2010
- Extraction well EW-C21 to remain off

Groundwater Treatment Plant Recovery Flow Rates

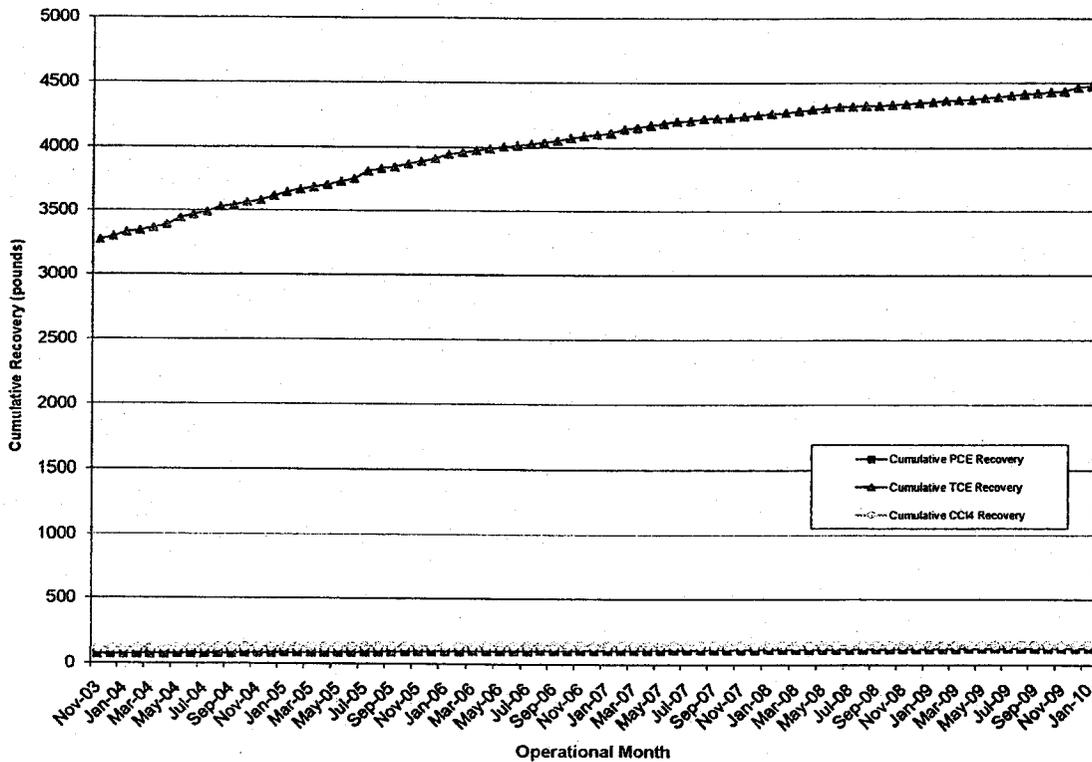


Mass Removal

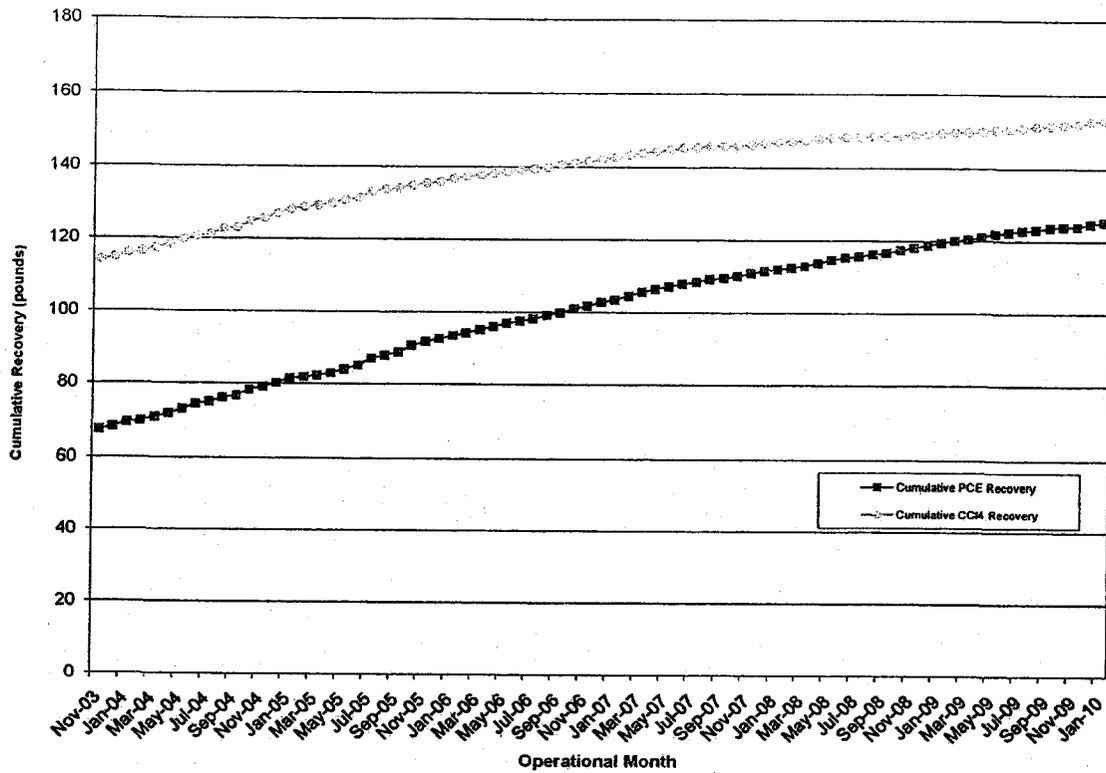


- Cumulative dissolved-phase VOC recovery through January 2010 reporting period:
 - Tetrachloroethene (PCE) – 125 pounds (0.41 lbs in Jan)
 - Trichloroethene (TCE) – 4,474 pounds (9.9 lbs in Jan)
 - Carbon Tetrachloride (CCl₄) – 153 pounds (0.27 lbs in Jan)
- Currently most of TCE recovered is from Area A
- Most of PCE recovered is from Area A with the remainder from Area C

Dissolved-phase Cumulative Mass Recovery



Dissolved-phase Cummulative Mass Recovery



Activities



Repaired Area C communication

Repair of existing subsurface wiring not practical

Installed a two-way radio system

System started on 1/22/2010

Vendor returned to replace antennas to increase signal strength on 2/4/2010

Began a one month evaluation/prove-out period.

Activities (con't)



Shutdown Area D wells and monitor concentrations

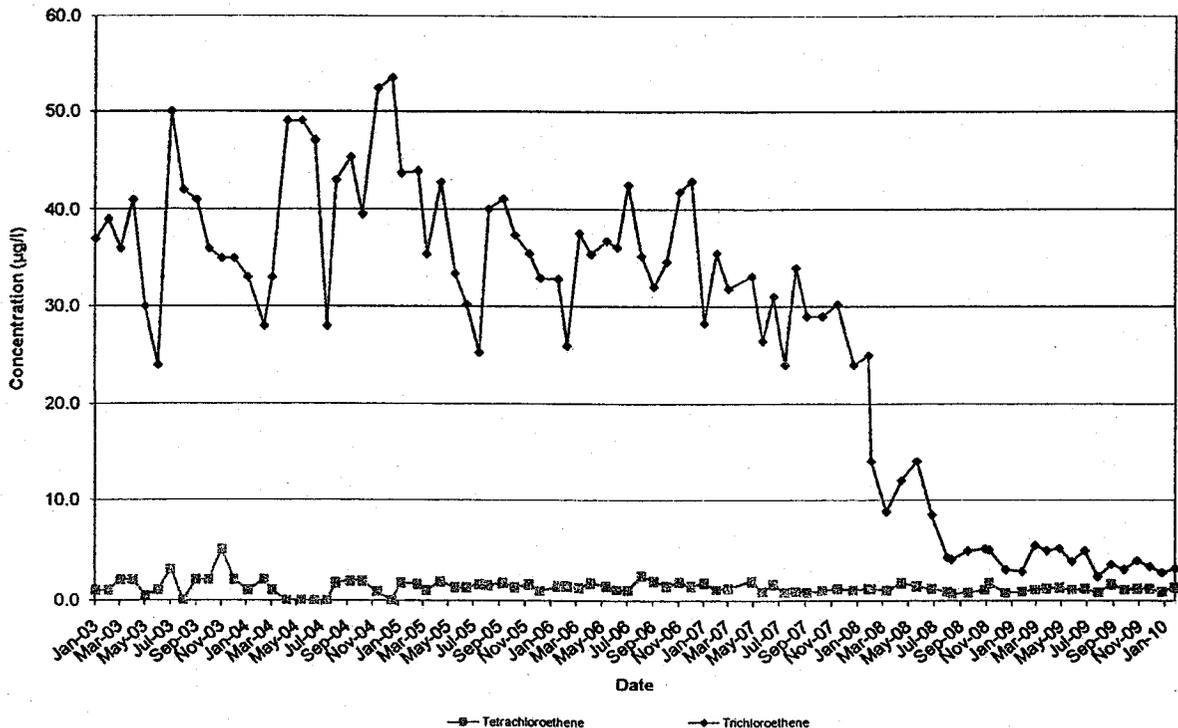
Analytical data shows all extraction wells in Area D remain below MCLs as of January 2010

TEG decided GW extraction could cease

Future GW monitoring used to determine if rebound occurs

Delay in turning off all of Area D wells until EW-C18 is repaired. EW-D1, EW-D2 and EW-D3 still running.

NAWC, Warminster - Groundwater Treatment Plant
Area D
Concentration of Tetrachloroethene and Trichloroethene vs. Time



Activities (con't)



- **Hexavalent Chromium (Cr⁺⁶) Removal**

- Sampled individual Area A wells for Cr⁺⁶

- EW-A1 (28 μg/L), EW-A2 (35 μg/L), and EW-A19 (53 μg/L), found to have elevated Cr⁺⁶ concentrations.

- Well flows in these wells reduced by 20%

- Design/install pH adjustment system for improved Cr⁺⁶ removal and increased resin life

Future Activities



- **Evaluate removing air stripper and using liquid phase carbon**

- With the reduction in flow and decrease in concentrations at the site, carbon may be a more efficient and cost effective remediation technology

- **Modify NPDES permit as necessary to accommodate any changes to GWTP**

Long-Term Monitoring Status

Report Status



- **Recent reports submitted:**

- 1st Quarter FY 2010 (Semi-Annual) – Final – Jan. 2010

- Amendment to Well Decommissioning Report – Jan. 2010

- **Reports in progress:**

- None

- **Upcoming LTM:**

- Annual sampling event (3rd Quarter FY 2010) in April 2010

Well Surveys and Legal Descriptions

Provide Surveys

Provide Legal Descriptions

9 wells on non-Navy property

HN-16, HN-19, HN-52, HN-53, HN-54, HN-100, OB-13,
R4, R9

- Status unchanged since last RAB meeting – still with Navy real estate department

NIRIS Monitoring Data

Convert and migrate Warminster groundwater data in electronic format to NEDD

Working with TtNUS to create database forms

Convert geospatial data to the ESRI format

Coordinate data will be in State Plane Coordinate System NAD 83

Upload data to NIRIS through March 2010

Currently in process of sending NIRIS formatted pdf deliverables and NEDDs to TtNUS