



FORMER NAVAL AIR WARFARE CENTER WARMINSTER

Restoration Advisory Board (RAB) Meeting Minutes

RESTORATION ADVISORY BOARD (RAB) MEETING NO. 114

REFERENCE: CLEAN CTO NO. 041

1. Meeting Date and Time: May 6, 2009, 9:35 AM to 11:20 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. Curt Frye, 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 February 11, 2009 RAB meeting minutes. No comments were offered by those in attendance and the meeting minutes were approved as-is.

Action items from the February 11, 2009 RAB meeting were reviewed. The action items from the February 2009 meeting are summarized below:

1. PADEP is to set up a conference call to discuss CRC issues.

The conference call was set up and was held on March 12, 2009. Minutes from the call were prepared by Tetra Tech NUS (TtNUS) and submitted to attendees.

2. The Navy is to send out copies of the PADEP comment letter regarding the CRC investigation/report.

Copies of the letter were sent out by the Navy as per the action item.

3. ECOR is to email out the Area A sampling results for the new wells and the Area C and Area D sampling data tables.

The data/tables were submitted as per the action item.

4. The Navy is to work with ECOR and TtNUS to draft a letter for Navy signature detailing the agreed upon changes to the LTM program.

This action item was not completed as a subsequent decision to prepare a new Long Term Performance Monitoring Plan eliminates the need for this letter.



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Off-Site Investigations

Mr. Tom Buterbaugh (PADEP hydrogeologist) provided an update of the status of the CRC investigation. The Consent Order and Agreement (COA) is moving along but has not yet been finalized and signed. CRC's consultant (ERM) drilled some additional soil borings and installed a new well near the water tower in the southwest corner of the property; however the associated sampling results are not yet available. ERM also performed another comprehensive round of groundwater sampling, including coordinating with the Navy to split some samples from Navy monitoring wells. An RI Report is due out in August, and the new data should be available within a month.

Ms. Kathy Davies (EPA hydrogeologist) asked if they had pumped any DNAPL in their recent field work – Mr. Buterbaugh indicated that he wasn't aware of any recent DNAPL-related activities at the site. Mr. Frye asked about the recommendation for CRC to develop a work plan as per the March conference call discussion held among the RAB members. Mr. Buterbaugh stated that since a work plan is not required per the COA CRC refused to prepare one. Mr. Frye asked if the search for private wells in the area had been performed yet. Mr. Buterbaugh indicated that CRC had not completed this task to date. Mr. Frye then asked if a schedule had been provided by CRC – Mr. Buterbaugh stated that only a draft has been submitted. Mr. Frye [and Mr. Dave Fennimore, Earth Data, representing Warminster Municipal Authority (WMA)] requested copies of the draft schedule. Mr. Bob Lewandowski (BRAC PMO) asked whether CRC had been invited to the RAB – Mr. Buterbaugh said that he had extended an invitation, and they may come to the next scheduled RAB meeting.

Mr. Fennimore expressed his concerns about the high PCE concentrations in municipal well WMA 26, and questioned why CRC has not sampled WMA 26 yet. Mr. Tim Hagy (WMA) also expressed his concerns about pumping the high concentrations in WMA-26 and stated that the municipal authority plans to send a letter to CRC this week concerning these issues. He also asked that PADEP prioritize the CRC work to the extent possible. Mr. Frye asked what the impacts would be of taking WMA 26 offline. Mr. Hagy replied that per the agreement between WMA and the Navy, the well must be pumped 24/7 – the well could be pumped to waste but WMA would then have to make that water up somewhere else (including possibly buying water). Mr. Charles Clark (PADEP project manager) explained that there are limits to how hard PADEP can press CRC on some of the issues under discussion – on both sides; work has to be performed in accordance with the Act 2 process. He also asked that WMA copy PADEP on the letter being sent to CRC. Mr. Frye asked what CRC has requested to date from WMA – Mr. Fennimore replied that they have requested pumping records and water levels, but not any sampling data. Mr. Dave Streetsmith (ECOR, Navy contractor) mentioned that ECOR has provided all their historic data to CRC. Mr. Fennimore questioned the usefulness of the COA relative to the ongoing work, and also questioned the usefulness of the groundwater modeling planned as part of the investigation. Mr. Toby Kessler (Gilmore and Associated, Warminster Township consultant) asked if there would be a public notification of CRC becoming involved in the Act 2 process. There was a general discussion of potential notification requirements with no conclusions reached (notification requirements vary within Act 2 depending on the remediation approach selected).



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Mr. Frye asked why it appears to be taking so long for the COA to be finalized – Mr. Buterbaugh indicated that the “agreement” part of the COA is under back-and-forth discussion. Mr. Walter Payne (PADEP) indicated that DEP has no enforcement authority under Act 2, however through the Clean Streams Law or other work groups an enforceable order could be obtained if appropriate. He suggested working through DEP’s water quality group if quicker action from CRC was desired. The CRC discussion was wrapped up with Mr. Frye requesting that DEP share any interim data made available as it is received.

WMA Update

Mr. Hagy began the discussion by reiterating that the recent spike in PCE levels was a major concern to WMA. He stated that the contract for upgrading the WMA 26 air stripping tower has been awarded (approximately \$790,000) and construction should begin within a month. Mr. Jeff Orient (TtNUS, Navy contractor) asked how long the upgrade will take – Mr. Hagy indicated that it was anticipated to be about a three month effort. Mr. Orient asked about WMA’s plans for pumping the well during that timeframe. Mr. Hagy stated that the contractor will try to minimize downtime and will give the Navy advance notice regarding shutdown time periods. Mr. Frye and Mr. Lewandowski asked for design and construction information for the stripper upgrade, as this would be useful in the cost reimbursement process. Mr. Hagy agreed to provide the information.

Treatment Plant Operation/LTM

Mr. Streetsmith provided an update of various activities assigned to ECOR by the Navy. Topics covered included:

- Groundwater treatment plant status and upgrades.
- LTM and reports update.
- Area A extraction well update – EW-A19.
- Area A monitoring wells – HN-106S/D.
- Land Use Control Implementation Plan (LUCIP) and inspections.
- Well decommissioning work.
- Offsite well surveys and preparation of legal descriptions.
- NIRIS data conversion.
- Well pump and resin filter evaluation.
- Battelle 2008 Optimization Report recommendations.

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. Mr. Hagy asked why a new stripper was installed for the groundwater treatment system. Mr. Streetsmith and Mr. Pat Schauble (ECOR) stated that the new stripper is more efficient and eliminates the need for GAC polishing.



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There was a general discussion of the sampling results for the new extraction well A-19 and the two new monitoring wells (HN-106S/D). Mr. Streetsmith pointed out the higher TCE concentrations detected in PDB samplers from monitoring well HN-106D (3.1, 540, and 790 ug/l) in comparison to the results in a sample collected by pumping (92 ug/l) and suggested it may reflect volatilization during pumping. Mr. Orient pointed out that it could also be a dilution effect. After some discussion, it was decided to use a PDB sampler for this well, set at the deepest (and most contaminated) depth interval tested. There was also a discussion regarding the lower than expected TCE concentration (290 ug/l) in extraction well A-19. Ms. Davies suggested that the unexpectedly low concentration could be a reflection of dilution because of the well pulling in less-contaminated water from side areas and vertically. After some discussion, a consensus was reached that the pumping rate should be reduced from the current 10 gpm to 5 gpm for two weeks, then the well sampled again.

Mr. Frye asked how many wells CRC split with the Navy during the recent sampling round. Mr. Streetsmith wasn't sure but indicated that it was only a few wells. Mr. Clark agreed as he was present at the time, and asked that the Navy provide a map of the wells that were split-sampled.

There was a general discussion of the timing of switching from quarterly to semi-annual sampling for some wells that were previously targeted for this change-over. In light of the recent change in pumping conditions in Area A, it was decided to make a decision based on the information provided in the next quarterly report. A conference call will be set up by ECOR to discuss this issue.

Miscellaneous Topics and Issues – Action Items

Shenandoah Woods Discussion – Mr. Lewandowski provided an introduction and background for the recent investigation work performed in the Shenandoah Woods housing area. The Navy is looking to transfer this property and is in the process of preparing a Finding of Suitability to Transfer (FOST) document for release of the property for residential use. A Navy employee mentioned that some “drums” had been found along the curbing in one area during some past construction-related activities. The Navy had ECOR perform a metal detection survey and hand-excavate the area of the alleged drum disposal to determine what was actually present. Several pieces of scrap metal were found (see Attachment 3 for photos), however nothing of obvious environmental concern was identified.

Long Term Performance Monitoring Plan (LTPMP) Update – Mr. Frye indicated that TtNUS has been tasked with preparing an LTPMP with ECOR's help. A Data Quality Objectives meeting will be held immediately following the next RAB as part of the plan development. Mr. Orient briefly described the DQO process, where project objectives are identified and used to develop the scope of work. The plan will be prepared in accordance with the Uniform Federal Policy for QA Plans. Mr. Frye mentioned that the Navy and EPA have agreed to use this format as the default template for work plans.

Operation and Maintenance (O&M) Manual Update - Mr. Orient briefly described the ongoing update to the O&M manual for the OU-1A treatment plant. The update will include both older and more recent treatment plant modifications and will reflect current operating procedures.



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Conceptual Site Model (CSM) Update – Mr. Frye stated that TtNUS has been tasked to prepare a conceptual site model update for the OU-1A area. The CSM will incorporate CRC data and will estimate relative contaminant contributions to WMA 26 from both Navy and non-Navy sources. Battelle will assist in the CSM development through preparation of 3-D block diagrams and contaminant mass estimates.

Other Topics – Mr. Fennimore asked if the Navy had gotten the Vertical Screen information that he sent relative to a closed-loop recirculation system installation (sixty 500 ft deep wells) being considered for a property in the northeast corner of the intersection of Street and Jacksonville Roads. Mr. Lewandowski indicated that he has been in communication about it through Mr. Chris Candela (ATC Associates). He indicated that he directed the request to EPA, PADEP, and WMA for approvals in addition to Navy.

Mr. Lewandowski also mentioned that the Navy has directed that new headers be used as standard formats for RAB notifications and meeting minutes. He will forward the new template to the Navy contractors for use.

Action Items identified through the course of the meeting include:

- PADEP is to send out any new CRC data ASAP.
- PADEP is to invite CRC to the next RAB meeting.
- WMA is to copy PADEP and the Navy on the letter they are planning to send to CRC.
- WMA is to provide WMA 26 stripper upgrade design and cost information to the Navy.
- ECOR is to reduce the pumping rate for extraction well A-19 and resample it.
- ECOR is to provide a map showing all wells sampled during the most recent sampling round along with a listing of the wells that were split with CRC.
- ECOR is to schedule a conference call to discuss sampling schedule changes.
- ECOR is to provide a letter report detailing the Shenandoah Woods investigation work recently performed.
- The Navy and TtNUS are to pull together a DQO session agenda.

Next Meeting Date

The next RAB meeting date was set for September 9, 2009 at 9:30 AM in the WMA Board Room.

The meeting was adjourned at approximately 11:20 AM.



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ATTACHMENT 1 ATTENDANCE LIST

NAWC WARMINSTER
 TECHNICAL SUBCOMMITTEE/RAB MEETING
 DATE: May 6, 2009

NAME	AFFILIATION	PHONE	EMAIL
JEFF ORIENT	TETRA TECH NUS	412/921-8778	jeff.orient@tetratech.com
Ron Sloto	U.S. Geological Survey	610-321-2434 x212	RASLOTO@USGS.GOV
Curt Frye	U.S. Navy	215-897-4914	curtis.frye@navy.mil
Matt Lapp	ECOR	610-840-9200	tlapp@ecor-solutions.com
David Streetsmith	ECOR	610-840-9200	streetsmith@ecor-solutions.com
Kathy Davies	EPA	215-814-3315	davies.kathy@epa.gov
DENNIS DRENSHAW	EPA	215-814-3361	DRENSHAWDENNIS@EPA.GOV
Bob Lewandowski	Navy	215-897-4908	Robert.f.lewandowski@navy.mil
Tim Hagey	WMA	215-675-3301 x202	timh@warminsterauthority.com
Toby Kessler	Warminster Twp/Gilmore & Assoc.	215-345-4330	tkessler@gilmore-assoc.com
WALTER FAYNE	PA-DEP	484-250-5792	WTFAYNE@STATE.PA.US
DAVE FENNIMORE	WTMA	610 524-9466	dfennimore@earthdataone.com
Carolyn Scala	Battelle	215 584 5003	scalac@battelle.org
Patrick Schaubie	ECOR	610-431-8731	Schaubie@ecor-solutions.com
NORM KELLY	RAB - (CO-CHAIR)	(215) 675-1157	N. A.
TOM BUTERBAUGH	PA-DEP	484-250-5790	tbuterbaug@state.pa.us
Charles Clark	PADEP	484-250-5731	chaclark@state.pa.us



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ATTACHMENT 2 MEETING AGENDA



AGENDA

FORMER NAWC WARMINSTER

Technical Subcommittee/Restoration Advisory Board (RAB) Meeting

Date: 6 May 2009

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.

- **Treatment Plant Operation/LTM**
 - Plant operating status
 - LTM/LTMP update
 - Status of Quarterly Monitoring Reports
 - Treatment plant upgrades status

- **Other Activities**
 - ECOR presentation on current/upcoming work activities:
 - Evaluation of select groundwater treatment plant operations
 - Long-term monitoring reports update
 - New extraction well EW-A19
 - Land Use Control Plan and inspections
 - Well decommissioning work
 - Offsite well surveys and preparation of legal descriptions.
 - Conversion of monitoring data to suitable electronic formats for uploading into the Navy's NIRIS database, and maintenance of the NIRIS electronic database for the site.
 - Extraction well pump evaluation
 - Ion exchange resin evaluation
 - Battelle optimization report recommendations

- **Miscellaneous Topics and Issues – Action Items**
 - Shenandoah Woods Soil Sampling near Site 05 and Bldg 403
 - Long Term Performance Monitoring Sampling and Analysis Plan update
 - Operable Unit 1A Treatment System Operation and Maintenance Manual update
 - Conceptual Site Model Update

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

- **Action Items**

The following action items were identified at the wrap-up of the February 2009 meeting:

- PADEP is to set up a conference call to discuss CRC issues.
- The Navy is to send out copies of the PADEP comment letter regarding the CRC investigation/report.
- ECOR is to email out the Area A sampling results for the new wells and the Area C and Area D sampling data tables.
- Navy to work with ECOR and Tetra Tech and draft a letter for Navy signature detailing the agreed upon changes to the LTM program.

Directions to the WMA Board Room:

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.

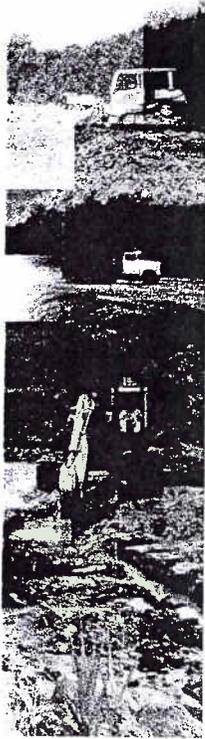
From the former NAWC - proceed to the intersection of Street and Jacksonville Rd. Turn west (right) onto Street Rd. Continue west to York Rd. Turn south (left) onto York Rd. Continue to Henry Ave. Turn west (right) onto Henry Ave. Follow directions as above to the WMA building.



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ATTACHMENT 3 ECOR PRESENTATION



ECOR Solutions, Inc.

Restoration Advisory Board Meeting for NAWC Warminster

6 May 2009

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Presentation Agenda

- GWTP Status and Upgrades
- LTM and Reports Update
- Area A Extraction Well – EW-A19
- Area A Monitoring Wells - HN-106S/D
- Land Use Control Plan and Inspections

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Presentation Agenda (Continued)

- Well Decommissioning Work
- Offsite Well Surveys and Legal Descriptions
- NIRIS Data Conversion
- Well Pump and Resin Filter Evaluation
- Battelle 2008 Optimization Report Recommendations

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Groundwater Treatment Plant Operating Status

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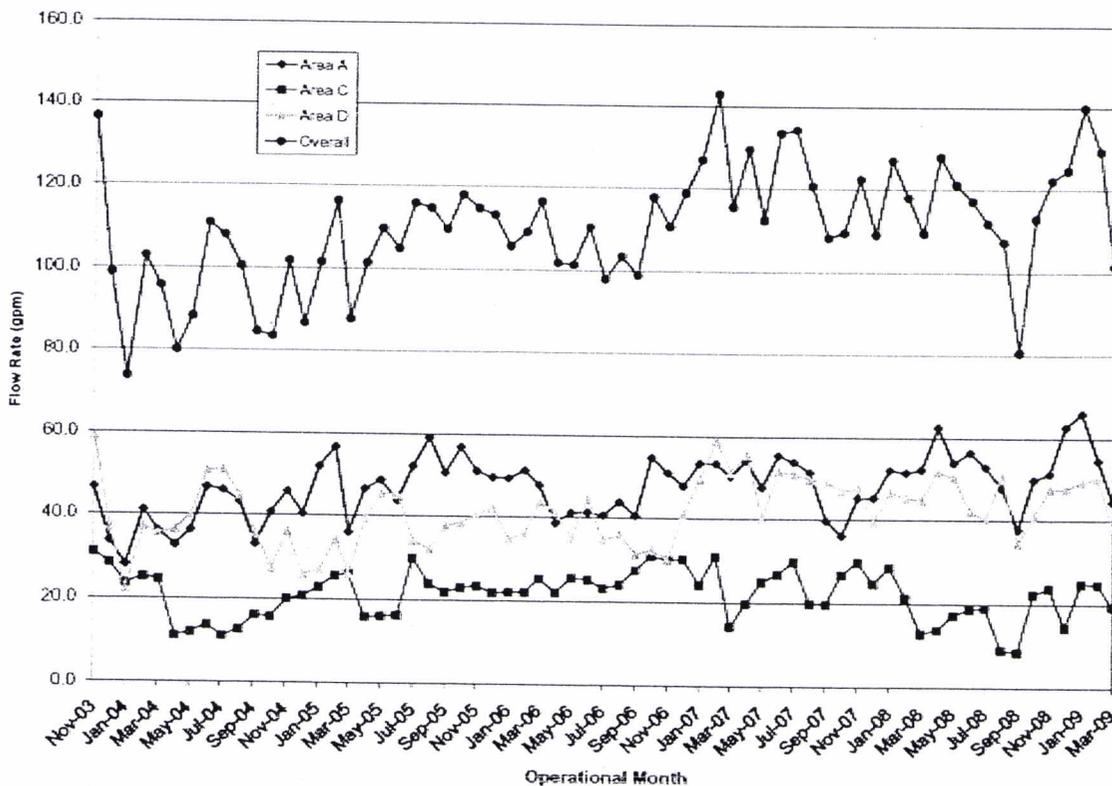
- Average Flow rates in 2009:
 - 55 gpm from Area A
 - 22 gpm from Area C
 - 35 gpm from Area D
 - 115 gpm overall
- 608,407,890 gallons recovered and treated (1999 start up through March 2009)
- System up-time >95%

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Groundwater Treatment Plant Recovery Flow Rates



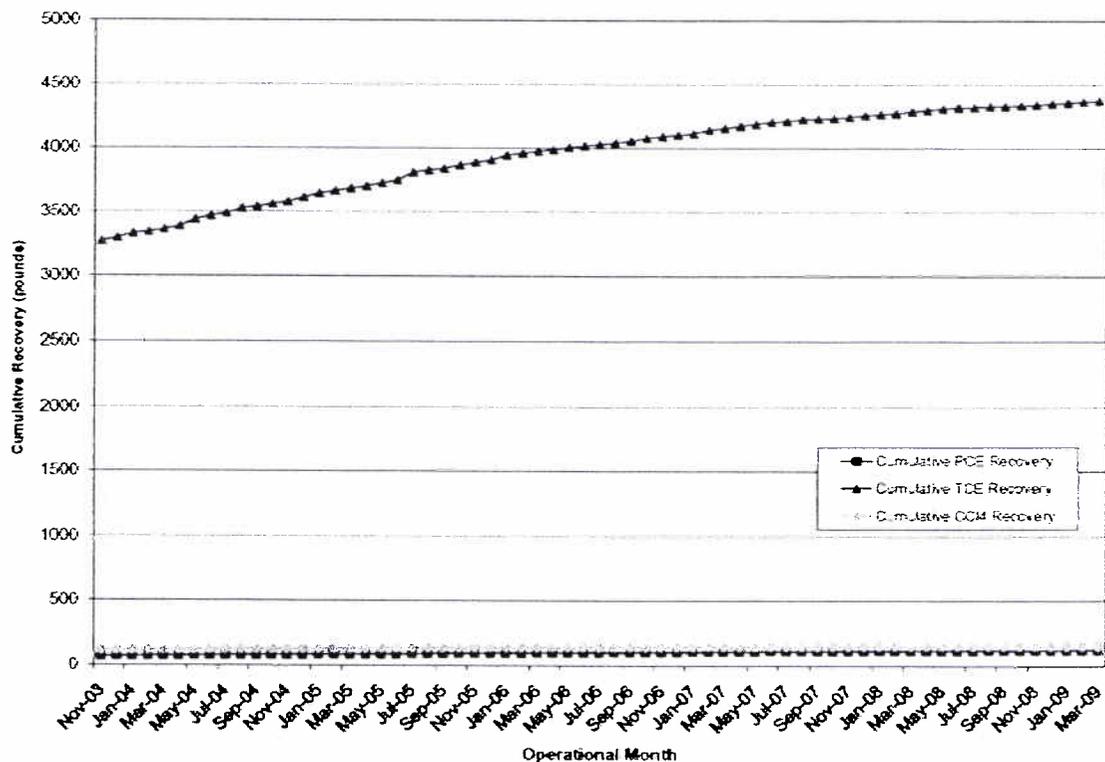
- Cumulative dissolved-phase VOC recovery through March 2009 reporting period:
 - Tetrachloroethene (PCE) – 121 pounds
 - Trichloroethene (TCE) – 4,368 pounds
 - Carbon Tetrachloride (CCl₄) – 151 pounds
- Currently most of TCE recovered is from Area A with the remainder from Area D

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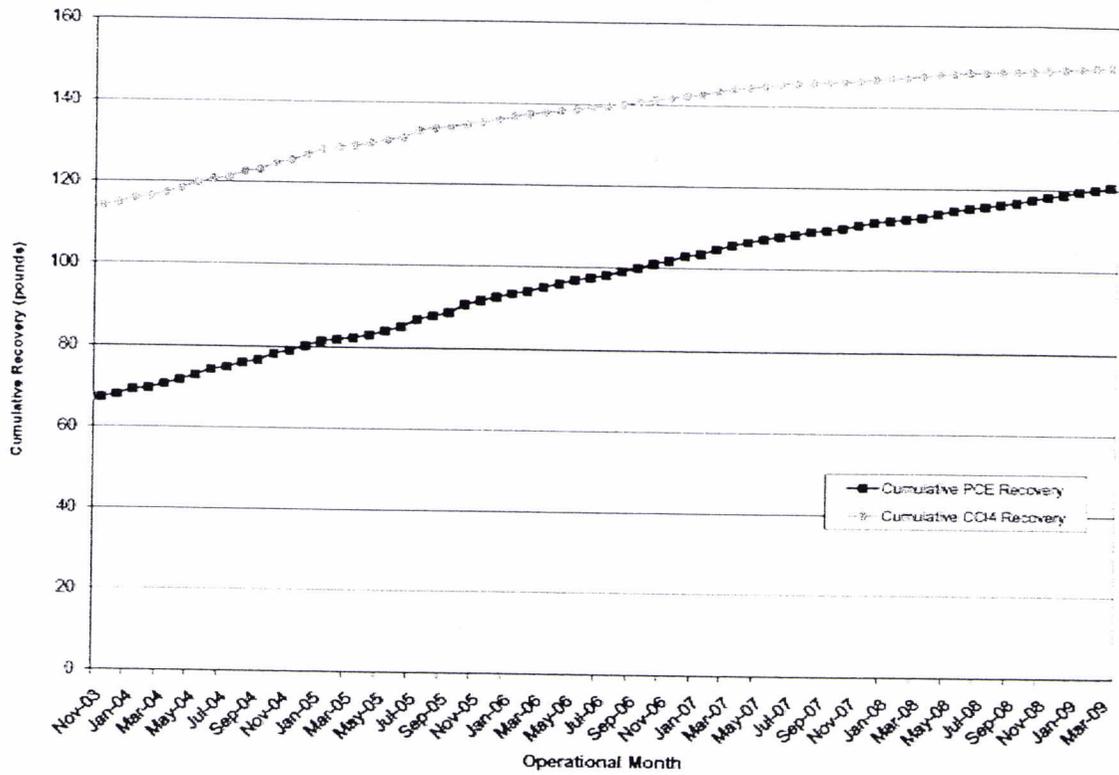
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Dissolved-phase Cumulative Mass Recovery



Dissolved-phase Cumulative Mass Recovery



GWTP Upgrades

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- Installed new air stripper (March 2009)
 - Meeting NPDES Discharge Requirements
- Liquid-phase GAC still on-line
 - Eliminate liquid-phase GAC and dispose of carbon after optimization of air stripper

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Long-Term Monitoring Status

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- **Sampling events completed by ECOR:**

- 3rd Quarter FY 2009 (Annual) – April 2009

- **Recent reports submitted:**

- 1st Quarter FY 2009 (Semi-Annual) – Final – March 2009
- 2nd Quarter FY 2009 (Quarterly) – Draft – April 2009

- **Reports in progress:**

- 3rd Quarter FY 2009 (Annual)

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Area A Extraction Well - EW-A19

- Current pumping rate ~ 10 gpm
- Sampled in April 2009
- TCE – 290 ppb
- PCE – 1.2 ppb
- Cis 1,2 DCE – 1.5 ppb
- CCl₄ - ND

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Area A Monitoring HN-106D

- Sampled in April 2009
- PDB and Pumping
- TCE – PDB -72 ft – 3.1 ppb
- TCE – PDB -82 ft – 540 ppb
- TCE – PDB -92 ft – 790 ppb
- TCE – Hybrid pumping – 92 ppb



Area A Monitoring HN-106S

- Sampled in April 2009
- PDB and Pumping
- TCE – PDB -32 ft – 2.6 ppb
- TCE – PDB -37 ft – 2.9 ppb
- TCE – PDB -42 ft – 3.5 ppb
- TCE – Hybrid pumping – 2.8 ppb



Land Use Control Plan and Inspections

- Draft LUCIP submitted – preparing parcel map
- Performed LUCIP Inspections 30 Dec 2008
- Repaired minor areas in Area B
- Preparing LUC Report for 2008

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Well Decommissioning

- Permanently close up to 58 wells in accordance with PADEP guidelines
- Have access to all well locations
- Will provide letter report

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Well Surveys and Legal Descriptions

- Provide Surveys
- Provide Legal Descriptions
- 13 wells on non-Navy property
 - HN-5, HN-16, HN-19, HN-52, HN-53, HN-54, HN-66, HN-100, OB-13, R4, R6, R7, R9

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
- Maintain NIRIS through March 2010 (Includes uploading new data on a quarterly basis)

Battelle Recommendations for Long Term Monitoring and Operations & Maintenance

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- 2007 Optimization Report
- 2008 Resin Filter evaluation
- 2008 Well Pump evaluation

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Battelle Recommendations In Progress

- Replacing pressure gauges at well heads
- Assessing ion exchange unit – flow rates, pH, resin
- Adding heat-dissipating flow sleeves to all pumps – to be completed during routine pump replacement
- Have electrician evaluate phase-converter

Battelle Recommendations In Progress (con't)

- Reducing monitoring frequency of upgradient monitoring wells in Area C (BG-05A, HN-23A, HN-27S, and HN-28S) from quarterly to semiannually
- Reduce sampling frequency to semiannually in Area C extraction wells
- Implement quarterly monitoring in Areas A and D transect wells for two quarters following pump rate modifications then switch to semiannual monitoring
- Streamline monitoring reports

Battelle Recommendations Not Done

- Bypass LGACs and remove carbon
- Adjusting the current extraction well flow rates in Area A
- Adjust water level set points in Area A
- Turning on EW-A5 and EW-A9

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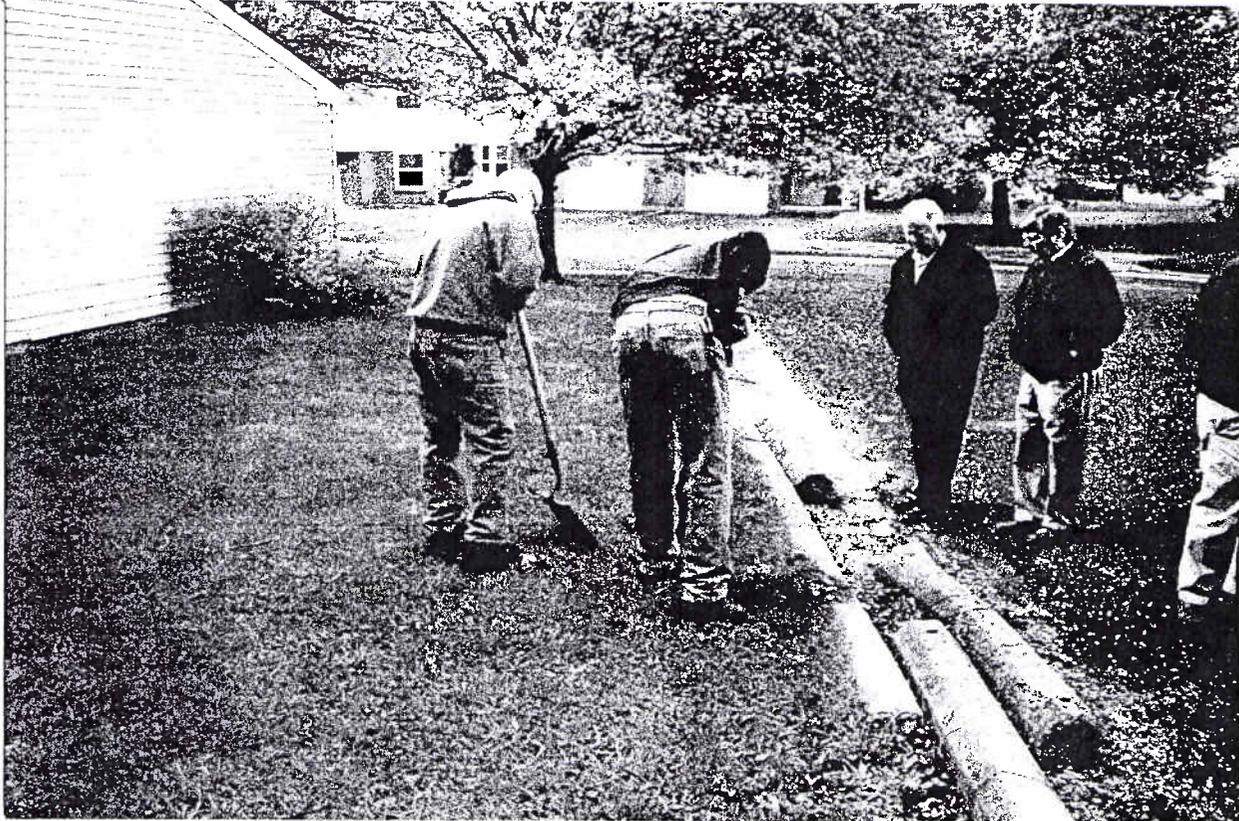
Shenandoah Woods

- Alleged buried drums
- Used magnetic locator
- Hand dug areas of concern
- Found mainly scrap metals
- Collected soil samples for analysis

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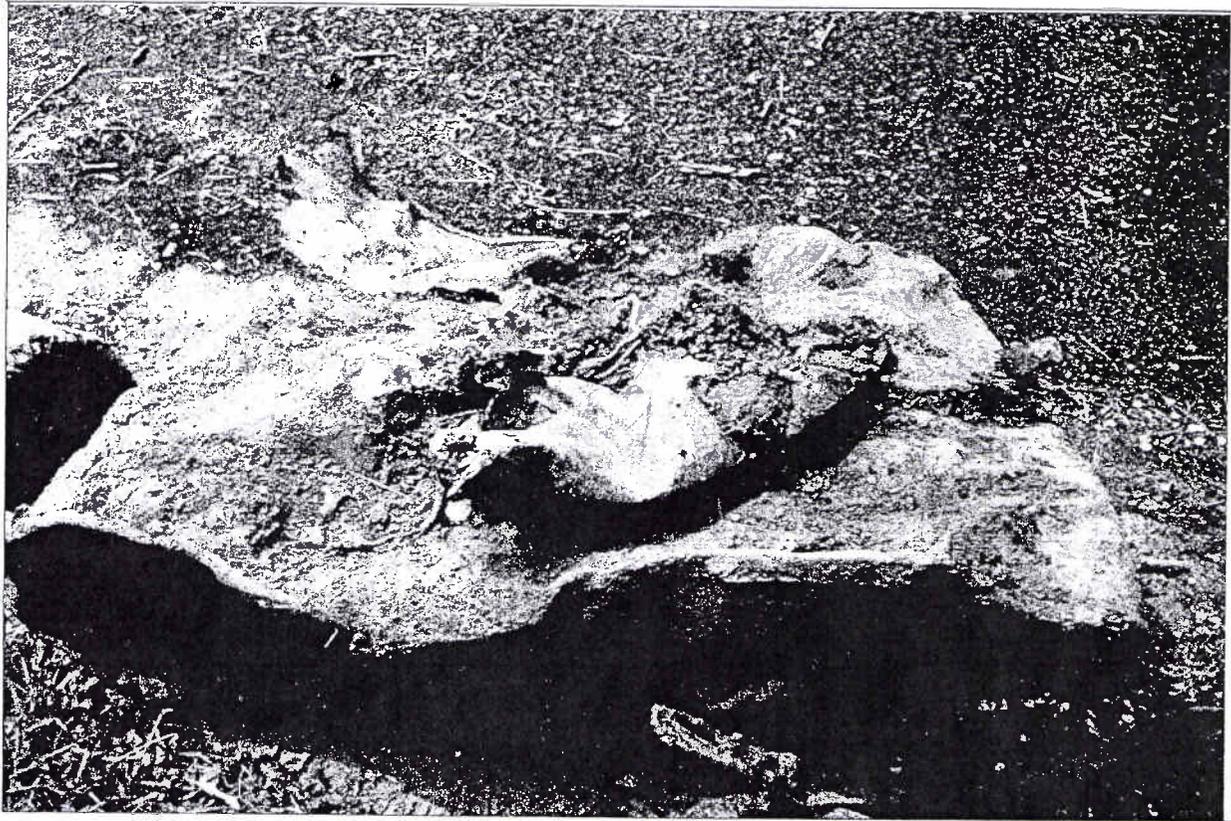
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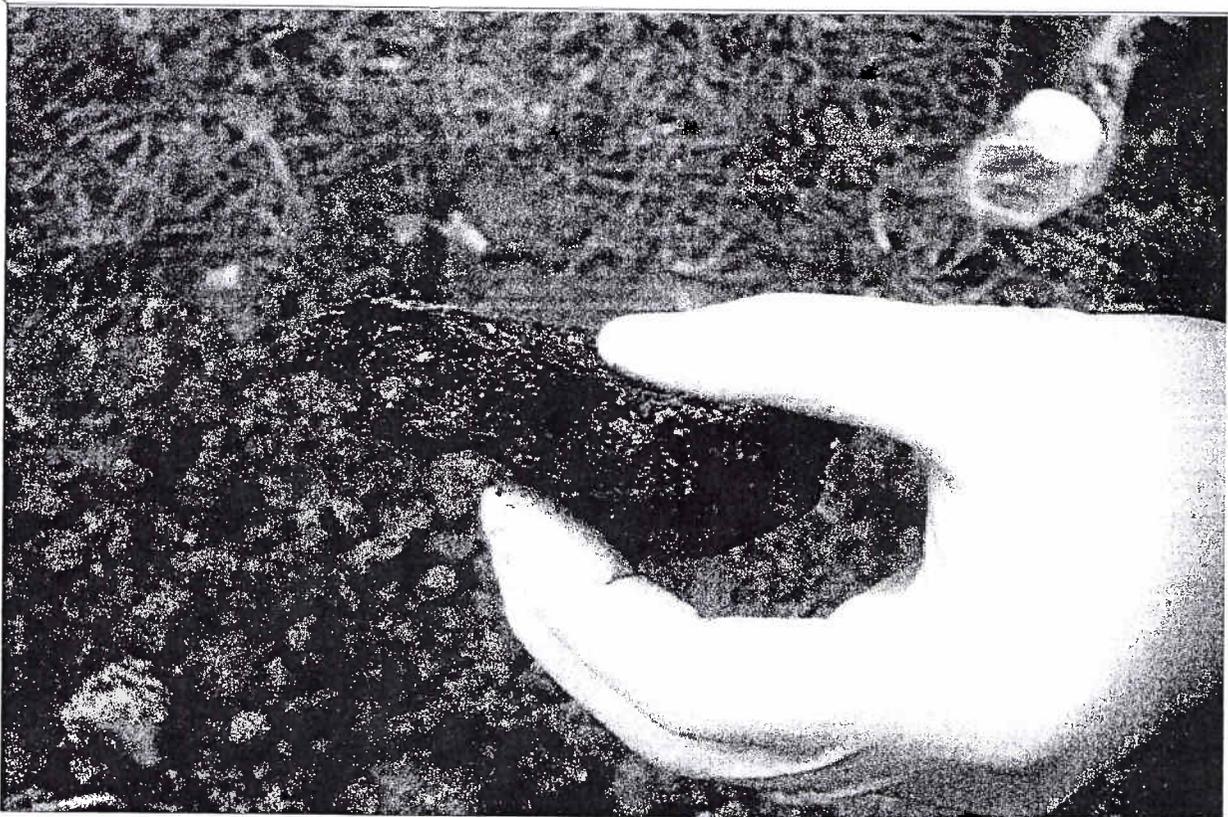
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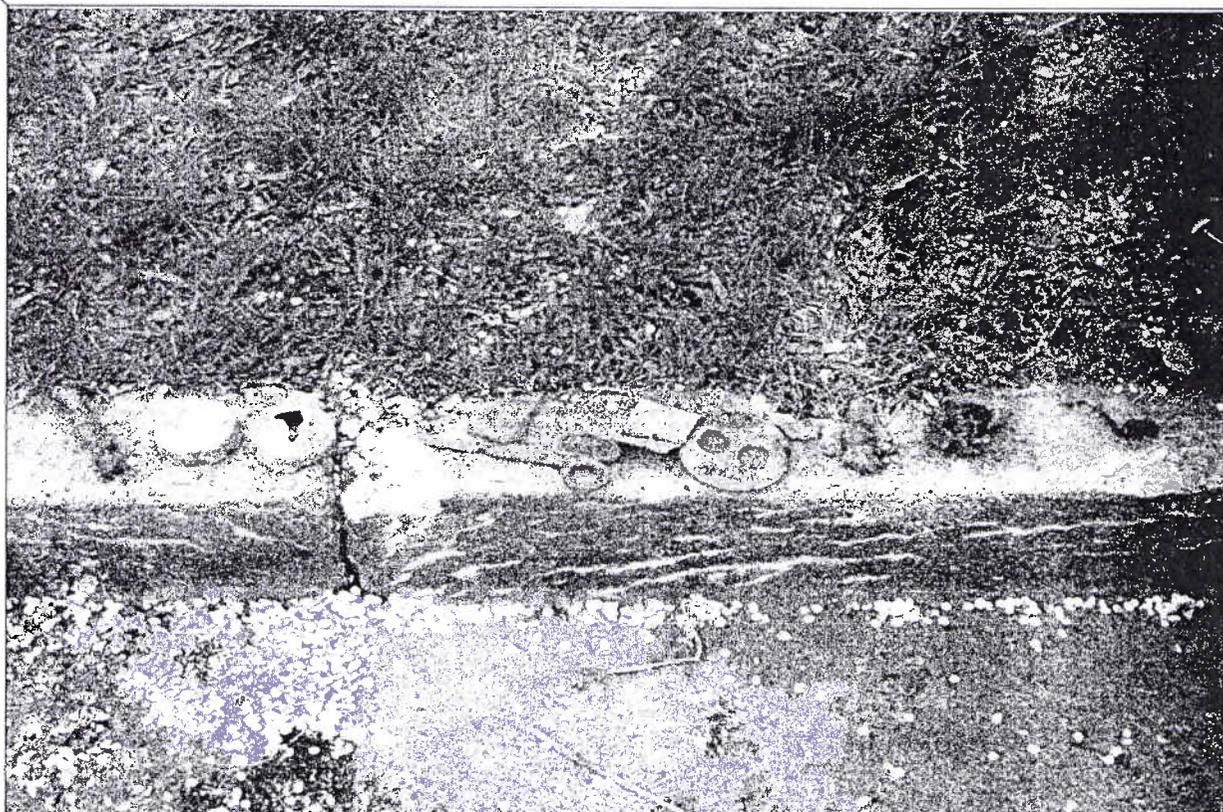
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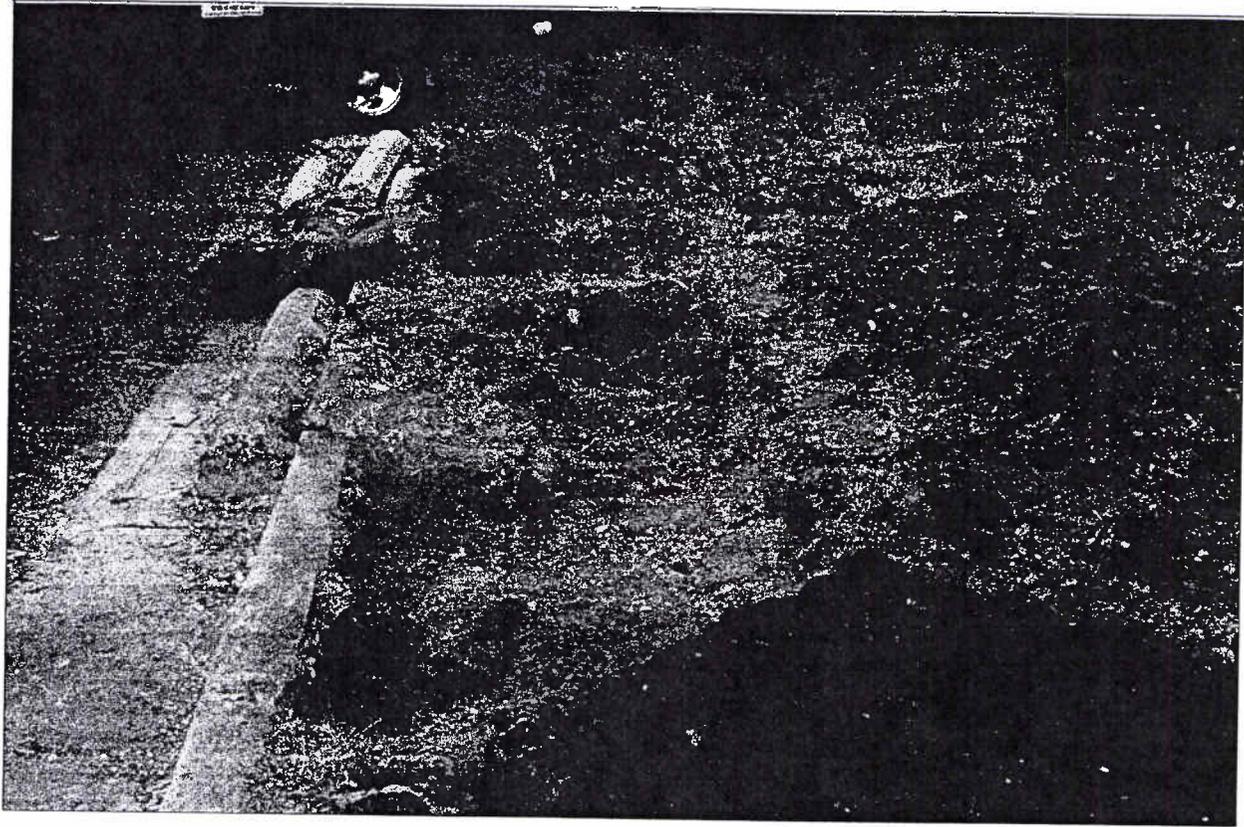
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