



NOR-00566

January 5, 2010

Ms. Lora Fly
NAVFAC MIDLANT
Environmental Restoration
9742 Maryland Avenue
Norfolk, Virginia 23511-3095

Reference: CLEAN Contract No. N62470-08-D-1001
Contract Task Order WE06

Subject: September 17, 2009 Restoration Advisory Board (RAB) Meeting Minutes
NWIRP Bethpage, New York

Dear Ms Fly:

Please find enclosed two copies of the subject Meeting Minutes. The minutes are being submitted on behalf of the Navy to RAB members as indicated below. The Navy requests that RAB members review the meeting minutes and provide comments to Ms. Lora Fly at (757) 444-0781 or lora.fly@navy.mil or the RAB Community Co-Chair, Mr. Jim McBride. These minutes will be discussed and approved at the next RAB meeting, scheduled for April 21, 2010.

Sincerely

A handwritten signature in black ink, appearing to read 'David D. Brayack'.

David D. Brayack, P.E.
Project Manager

Enclosure: (1) Meeting Minutes from the 17 Sep 2009 RAB Meeting

NOR-00566
Ms Lora Fly
NAVFAC Mid-Atlantic
January 5, 2010 – Page 2

Distribution:

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USEPA Region II, Carla Struble
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Town of Oyster Bay DPW, Matt Russo
Tetra Tech NUS, Dave Brayack
ECOR Solutions, Al Taormina
Northrop Grumman, John Cofman
ARCADIS, David E. Stern
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Community RAB Member, Mike Grello
Community RAB Member, Hon. Ed Mangano
Community RAB Member, Linda Mangano
Community RAB Member, Ed Resch
Community RAB Member, Charles Bevilacqua
Community RAB Member, Roy Tringali
Community RAB Member, Rosemary Styne
Community RAB Member, Eugenia Mazzara

Non-RAB Member Mailing List
Residences in Attendance

**RESTORATION ADVISORY BOARD MEETING
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT (NWIRP), BETHPAGE
TOWN OF OYSTER BAY ICE SKATING CENTER COMMUNITY ROOM
1001 STEWART AVENUE, BETHPAGE, NEW YORK
THURSDAY, SEPTEMBER 17, 2009**

The twenty-fourth meeting of the Restoration Advisory Board (RAB) was held at the Town of Oyster Bay's Ice Skating Center Community Room in Bethpage, New York. Meeting attendees included representatives from the Navy (Jim Brantley and Lora Fly), New York State Department of Environmental Conservation (NYSDEC) (Steven Scharf), Nassau County Department of Health (Joseph DeFranco), Town of Oyster Bay (Rich Pfaender), Bethpage Water District (Anthony Sabino), RAB Community Members (Rosemary Styne and Roy Tringali), community member (Steven Dracker) Tetra Tech Inc. (David Brayack, Debbie Cohen, Stavros Patselas, Robert Sok, and Ed Urbanek), ECOR Solutions, Inc. (Al Taormina), and ARCADIS (David Stern). Five Bethpage residents also attended the meeting. The meeting sign-in sheet is provided as Attachment 1.

WELCOME AND AGENDA REVIEW

The Navy representative, Ms. Lora Fly, welcomed everyone to the RAB meeting and introduced the meeting agenda. The agenda for the meeting is included as Attachment 2. The presentations for the meeting are included as Attachment 3.

COMMUNITY UPDATE AND REVIEW AND APPROVAL OF MEETING MINUTES

Ms. Fly asked whether the RAB members received the March 2009 minutes, which were distributed in May 2009, and asked whether there were questions or comments on the minutes. There were no questions or comments. Because there were not enough RAB members present to approve the March 2009 meeting minutes, approval was tabled until the next RAB meeting.

SITE 1 SOIL VAPOR INVESTIGATION

Mr. Robert Sok (Tetra Tech Inc.) provided a presentation on the status of the Site 1 soil vapor investigation and indoor air testing since the March 2009 informational session and RAB meeting. The presentation is included in Attachment 3.

Mr. Sok began with a review of the site history. Treatment of volatile organic compound (VOC) contamination in soil and groundwater at Site 1 was conducted from 1998 to 2002. However,

based on 2006 New York State Department of Health (NYSDOH) vapor intrusion guidelines, the Navy began evaluating offsite migration of VOCs through the soil gas. In addition, the Navy is evaluating indoor air quality in offsite residential housing. As discussed at previous RAB meetings, soil gas sampling results from the soil gas investigation at the eastern fence line of Site 1 indicated elevated levels at the fence line. In September 2008, the Navy submitted a work plan for investigation of offsite soil gas and conducted the investigation in October 2008. The October 2008 investigation included soil gas sampling in the neighborhood adjacent to Site 1 along 10th and 11th Streets and Sycamore and Maple Avenues. Additional soil gas sampling, on 9th and 11th Streets, was conducted to determine the boundary of the offsite soil gas contamination. Elevated levels were found on 11th Street between Maple and Sycamore Streets. Based on the October 2008 soil gas sampling results, in January 2009 the Navy began indoor air and sub-slab sampling in homes along 11th street. Results for trichloroethene (TCE) were above NYSDOH guidelines in some indoor air and sub-slab samples. The Navy installed portable air purification units (APUs) as temporary mitigation measure and sealed utility access sumps in basements, as needed. In January 2009, the Navy also conducted a soil vapor extraction pilot test for soil gas containment along the property. The pilot test results were used to support the design of a full-scale treatment system.

Based on the January 2009 results, additional homes within the boundary of contamination were identified for sampling, which began in February 2009. Indoor air sampling needs to be conducted during the heating season, which generally extends to the end of March. The Navy has continued indoor and outdoor air monitoring since March 2009. The Navy established a website specific to the Site 1 soil gas activities. The residents can check this website for results for the soil gas testing and the status of activities. Mr. Sok explained that indoor air sampling results can only be provided to the home owners; the Navy cannot provide this information to the general public.

Mr. Sok reviewed figures showing where elevated results were found and showed photographs of an APU and sealed access sump. Since the March 2009 RAB meeting, the Navy conducted indoor and outdoor air sampling and monitoring in March, April, June, and August 2009. The results from March and April showed that the APUs were working for most homes; however, some homes needed additional treatment systems. In May 2009, Sub-Slab Depressurization (SSD) Systems were installed in 6 homes where sub-slab vapor levels indicated the need for this type of mitigation (based on NYSDOH mitigation requirements). Mr. Sok explained that the

SSD system is similar to what a home would use to reduce radon levels. The SSD system consists of a fan unit to pull air out of the slab and vent it to the outside. Mr. Sok showed a photograph of an installed SSD system. Air sampling and monitoring in June and August 2009 included SSD stack sampling. The SSD systems will operate until the Navy is sure that contamination has been addressed. After the contamination is addressed and the Navy gets approval from the regulatory agencies, the systems will be removed. It was also explained that the Navy was subsidizing the cost of operating the SSD systems.

Future work the Navy will conduct includes:

- Continue air monitoring in homes to monitor vapor levels and effectiveness of APUs and SSD Systems.
- Conduct sampling in November 2009 before start of the Soil Vapor Extraction (SVE) system (see next presentation) and in March 2010.
- Complete construction of a full-scale SVE system (see next presentation).
- Conduct future soil gas and indoor air, outdoor air, and SSD stack sampling to monitor the effectiveness of short-term and long-term mitigation measures.

Questions and discussion regarding the Navy's presentation include the following:

- Several questions were asked regarding home testing. In answer to a question of whether every house on 11th Street was sampled, the Navy indicated that every home in the area of soil gas contamination (including 10th and 11th Streets between Sycamore and Maple) were offered to have indoor air sampling. Of the 20 homes offered to have sampling, 18 accepted. Ms. Fly also explained that after the SVE system is operating, the Navy will do additional indoor sampling to assess the performance of the system. The 20 homes will again be offered to have indoor air sampling. In answer to a question of what the air samples after installation of the APUs and SSD systems are showing, Mr. Sok explained that the final results are not available; however, initial results are showing that there was good reduction in VOC concentrations in most homes. The performance of the systems will be discussed at a future RAB meeting.
- In answer to a question of where the source area for the soil gas contamination is at Site 1, the Navy explained that the site was in operation since 1940s and the majority of activity occurred in the center of the site. Treatment of the source area was conducted

in the past; however, more recent soil gas investigation showed that there was some residual contamination near the eastern boundary. The previous treatment system does not appear to have been effective in this one area.

SITE 1 SOIL VAPOR CONTAINMENT SYSTEM AND DESIGN

Mr. David Brayack (Tetra Tech) described the soil vapor containment system design. The Navy will install the system to treat the soil vapor outside the homes so that soil vapor intrusion will no longer be a continued concern for homes. After Mr. Brayack's presentation, Mr. Stavros Patselas discussed the system construction status. The presentations are included in Attachment 3.

Mr. Brayack explained the history of Site 1 (Former Drum Marshalling Area) and indicated that TCE, tetrachloroethene (PCE), and 1,1,1-trichloroethane (TCA) were identified as primary solvents in soil and groundwater. In 1991, groundwater was found to be contaminated with these chemicals and a full-scale Air Sparging (AS)/Soil Vapor Extraction (SVE) remediation system was operated from 1998 to 2002. By 2002, the remediation system removed 4,500 pounds of chlorinated solvents, and the groundwater remediation goal [chlorinated solvent concentrations 20 micrograms per liter ($\mu\text{g/L}$) or less] was achieved. No rebound in contaminant concentrations was observed.

As Mr. Sok presented, soil gas contamination was found off site. Therefore, the Navy is designing an onsite soil vapor extraction system to prevent further offsite migration of contaminated soil gas and to capture contaminated soil gas that migrated off site to the extent practical. The goal is to reduce soil gas concentrations to meet indoor air standards to ensure that soil gas will not be a concern to any of the residences in the area. Mr. Brayack explained that the design considers the effects of precipitation infiltration, winter operation, sub-slab depressurization units, and groundwater level fluctuations on system operation and effectiveness. In January 2009, the Navy conducted a pilot-scale test to provide information to support the full-scale design. The pilot-scale test provided data to identify the appropriate extraction rates that would address the targeted capture zone for the treatment system. Mr. Brayack reviewed the preliminary treatment system design, showing figures with soil vapor extraction well locations, design contaminant capture zone, and a conceptual cross section of the capture zone. Mr. Brayack indicated that the piping for the system will be below ground and treatment equipment will be housed in a building that is already present at Site 1. Mr. Brayack

explained that the full-scale design information is slightly different than the final design plans because the construction contractor wanted to upscale the system to provide additional capacity for treatment, if needed.

Mr. Stavros discussed the design and construction status, indicating that the work for taking the conceptual design to actual design was awarded in July 2009. The design includes 12 extraction wells that will be installed between 35 to 60 feet below ground surface. Extracted vapors from the wells will be treated with carbon media before discharge outside via a stack. There will be 12 monitoring points for the system. These points will be used to check the vacuum in the system to ensure that the system is treating the capture zone. The Navy expects the system is sufficiently sized to treat soil gas in the capture zone; however, if the monitoring points show that additional treatment is needed, the system can be modified. An existing building on Site 1 will be used to house the treatment system. The building is well insulated and is located away from 11th Street so that the noise from operation of the treatment system should not disturb people on 11th Street. Construction of the system is anticipated to begin in September 2009 and be complete by November 2009. System start-up and testing are scheduled for December 2009. Tetra Tech EC will conduct the first 6 months of operation and maintenance (O&M) (until June 2010) and subsequently will transition O&M to another Navy contractor.

OFFSITE GROUNDWATER INVESTIGATION – GM-75 WORK PLAN

Mr. Brayack discussed the progress of the offsite groundwater investigation in the GM-75 area. The presentation is included in Attachment 3.

Mr. Brayack reviewed some of the history of the project, explaining that the GM-75 program is being conducted to delineate an area of VOC contamination in groundwater beyond the capture zone of the onsite groundwater containment system. Contamination in this area is deep. The results of the investigation in the GM-75 area will be used to delineate the area with TCE concentrations greater than 1,000 µg/L in groundwater. Investigation of lower concentrations of VOC contamination in groundwater that may impact public water supplies is also being conducted as part of the program. Vertical profile borings are being installed as part of the investigation to quickly screen areas for the presence, depth, and concentration of contamination. The borings are approximately 12 inch diameter holes drilled into the ground. Drilling of each boring takes 4 to 6 weeks to complete. Samples of groundwater are collected

during drilling at various depths and the borings will extend to the Raritan Clay layer at a depth of up to 840 feet bgs. Approximately 36 groundwater samples per boring will be collected and analyzed for VOCs. Based on the results of the analysis, permanent monitoring wells may be installed.

The Navy selected six initial locations for vertical profile borings. The work started in January 2009 and was completed in July 2009. The Navy is preparing an interim report of the results. Based on the results, no additional field work is being planned at this time. The next step is to analyze the data and install outpost monitoring wells (2 or 3 are planned).

Questions and discussion regarding the Navy's presentation include the following:

- Have the data been provided to the regulators or Grumman? No, the data are being validated. Ms. Fly indicated that the data can be provided to the regulators and Grumman when the data validation is complete. The Navy will also provide the boring logs to Grumman. It was also noted that the documents that will provide the results will be available at the Bethpage Library and an update on the results will be provided at the next RAB meeting.

- Are any of the borings near the water district extraction plants? Some of the borings are located near water district plants. Mr. Brayack explained that the figure showing the vertical profile borings only shows the locations identified to fill a data gap and does not show the water district's monitoring wells or other monitoring wells that the Navy has sampled. Mr. Steve Scharf (NYSDEC) mentioned that Grumman also has several monitoring wells that are not shown on the figure. Grumman and the Navy will work together to make sure that information is transferred and that there is not an overlap of effort between the groundwater monitoring and investigation.

GM-38 CONSTRUCTION STATUS

Mr. Stavros Patselas (Tetra Tech Inc.) provided an update on the status of construction of the GM-38 Area Groundwater Remediation Project since the March 2009 RAB presentation. The presentation is included in Attachment 3.

Mr. Patselas reviewed the treatment system design explaining the purpose of the treatment system is to remove VOCs from groundwater. The primary treatment process will be air stripping followed by carbon polishing. The current flow rate is 800 gallons per minute (gpm) until the third extraction well is installed and tied into the system, at which time the flow rate will be increased to 1,100 gpm. The extracted water is being treated to meet NYSDEC treatment standards before discharge into one injection well and into a county recharge basin. Vapor from the air stripping process will be treated with carbon prior to venting to the atmosphere.

Mr. Patselas explained that the majority of the construction phase is complete and the final punch list items are being completed. The construction trailer and temporary security fence will be removed in October 2009. The plant is currently operating and the Navy is conducting systems testing and calibration, minor trouble shooting, and equipment maintenance. Other upcoming work includes site restoration and installation of six additional monitoring wells. The Navy is anticipating transition of O&M from Tetra Tech EC to another Navy contractor by February/March 2010.

Questions and discussion regarding the Navy's presentation include the following:

- Will the system eventually just use the injection system? No, the system was designed to use both the injection system and the recharge basin for discharge of treated water. There are no concerns for using the recharge basin along with the injection system. Mr. Brayack explained that contamination is deep so that reintroduction of treated water into the shallow recharge basin or shallow injection wells is the same and would not affect contaminant migration because the contaminated zone is much deeper than the recharge/injection zone.
- How long will the treatment system be in operation? Based on groundwater modeling predictions, the system will need to operate 10 years. Data will be collected during operation of the system and inputted into the model to update the predicted time until site clean up. However, the system will need to be operated until groundwater concentrations are at or less than acceptable levels.
- What is the projected cost of the project and who pays for the project? The work is Navy funded and the projected cost is 12 million dollars.

CLOSING REMARKS

Ms. Fly asked whether there were any other questions or comments. With no questions or comments, Ms. Fly proposed the next RAB meeting be held on April 21, 2010. Ms. Fly thanked everyone for coming to the meeting and the meeting was adjourned.

ATTACHMENT 1

SEPTEMBER 17, 2009 RAB MEETING SIGN-IN SHEET

**24rd RAB Meeting for NWIRP Bethpage
September 17, 2009
Sign-In List**

Name	Address (if interested in being on mailing list)	Organization	How Did You Hear of Meeting?
Mr + Mrs Julio Gonzalez	North Side Civic		
1178 STEWART AVE Bethpage NY 11714			
Tommy Enright	1230 Stewart Ave. Bethpage		
Stavros Patselas		TEEC	
Robert Sok		TENUS	
Rosemary Steyne		RAB	
Steven Drucker		RAB	
Steven Scharf		NYSDEC	
Joseph DeFranco		Nass Co. Dept of Health	
DAVID STERN		ARCADIS	
AL TAORMINA		ECOR	
Ed URBANEK		Tetra Tech EC	

**24rd RAB Meeting for NWIRP Bethpage
September 17, 2009
Sign-In List**

Name	Address (if interested in being on mailing list)	Organization	How Did You Hear of Meeting?
Anthony Sabino	BWD	Tribune	
Susan Bestany	195 Sycamore Ave Bethp.		
Sam Scanton	247 Tenth St. Bethpage		
ROY TRINGALI	48 WALTER AVE HICKSVILLE NY 11801		
Rich Pfander	TOP		
Jim Brantley	NAVFAC LANT		
Debbie Cohen	TENUS		
David Brayock	TENUS		
Lora Fly	NAVFAC Midlant		

ATTACHMENT 2

SEPTEMBER 17, 2009 RAB MEETING AGENDA

Agenda

**Restoration Advisory Board
Naval Weapons Industrial Reserve Plant Bethpage**

**September 17, 2009
NWIRP Bethpage, NY
7:00 p.m.**

Welcome and Agenda Review
Lora Fly, NAVFAC Mid-Atlantic

Meeting Minutes
All Members

Technical Progress

Site 1 Soil Vapor Investigation
Rob Sok, Tetra Tech

Site 1 Soil Vapor Containment System Design
David Brayack, Tetra Tech

Offsite Groundwater Investigation – GM-75 Work Plan
David Brayack, Tetra Tech

GM-38 Construction Status
Stavros Patselas, Tetra Tech

Closing Remarks
Lora Fly

Presenters will be available after the program for questions.

ATTACHMENT 3

NAVY AND TETRA TECH PRESENTATIONS

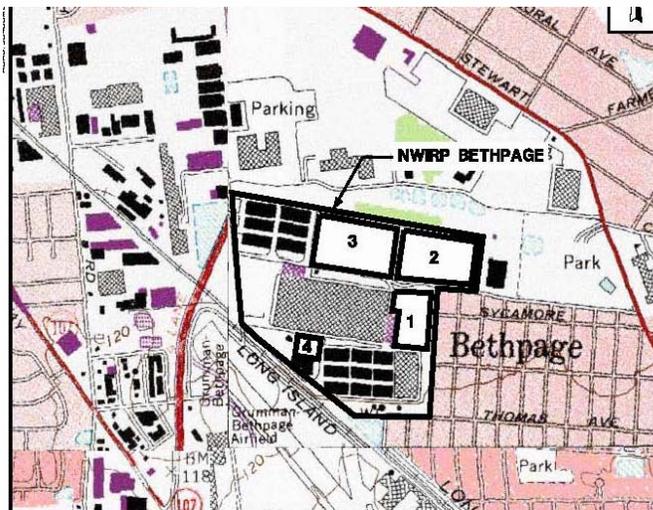


Restoration Advisory Board
(RAB) Meeting

Site 1 – Soil Gas Testing and Indoor Air
Sampling Update

Naval Weapons Industrial Reserve
Plant (NWIRP) Bethpage
September 17, 2009

SITE MAP



SITE 1 HISTORY – SOIL GAS



- October 2006 New York State Department of Health issued soil vapor intrusion guidelines – identifies soil vapor migration and potential intrusion into buildings as a potential concern.
- January 2008, Navy conducted a soil gas investigation at the eastern fence line of Site 1.
- Soil gas sampling results indicated elevated levels at the fence line.
- October 2008 soil gas testing conducted in the adjacent neighborhood along 10th and 11th Streets, and Sycamore/Maple Avenue.

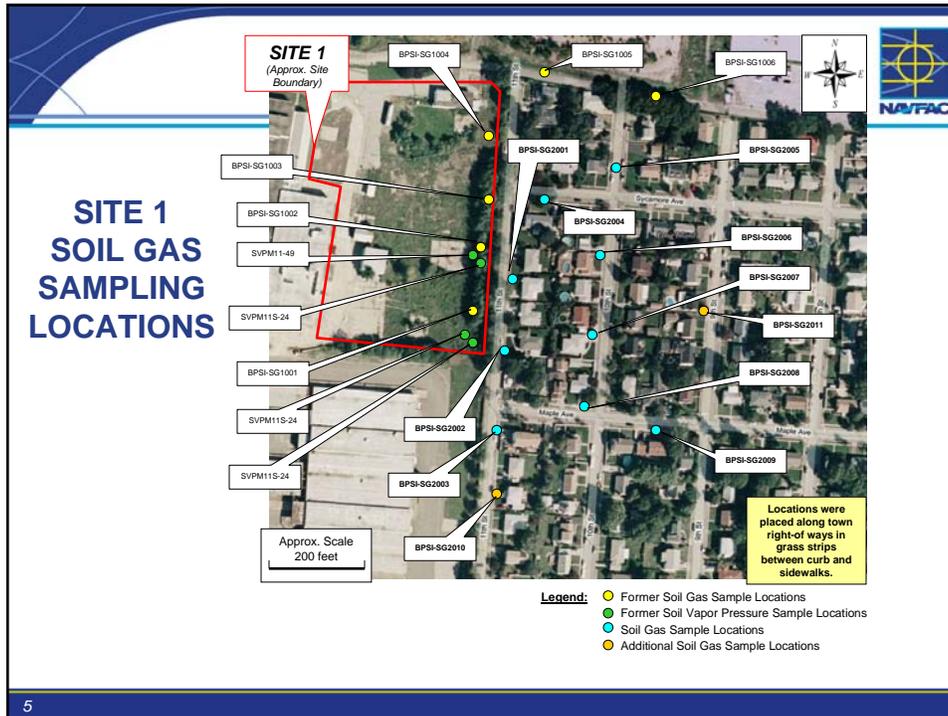
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SITE 1 HISTORY – SOIL GAS



- Additional soil gas sampling was conducted at two locations, on 9th Street and further south on 11th Street in early January 2009.
- Soil Vapor Extraction Pilot Test conducted in early January to obtain site specific data for full scale soil vapor containment system design.

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SOIL VAPOR INTRUSION/INDOOR AIR SAMPLING

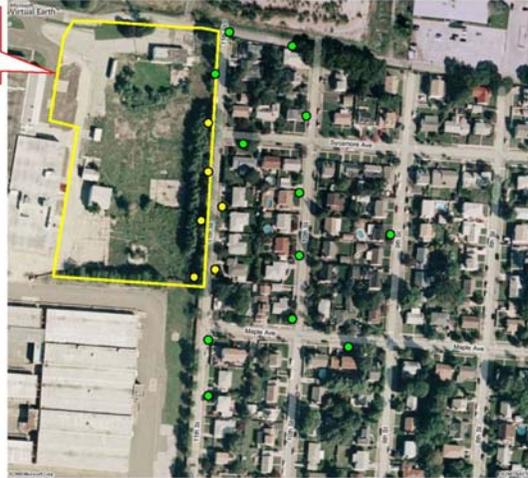
- January 2009, Navy conducted initial indoor air and sub-slab sampling in homes targeted along 11th Street.
- Sampling results indicated TCE levels above NYSDOH guidelines in some indoor air and sub-slab samples.
- Initial indoor air and sub-slab sampling conducted in additional homes.
- Portable carbon air filtration units (APUs) installed as temporary mitigation measure and utility access sumps sealed (as needed) in basements.
- March 3, 2009 – Public Informational Meeting regarding the soil vapor investigation, indoor air sampling, future monitoring and mitigation measures.
- Ongoing indoor and outdoor air monitoring (March – present).

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SOIL GAS SAMPLE LOCATIONS AND NYSDOH SUB-SLAB GUIDELINES



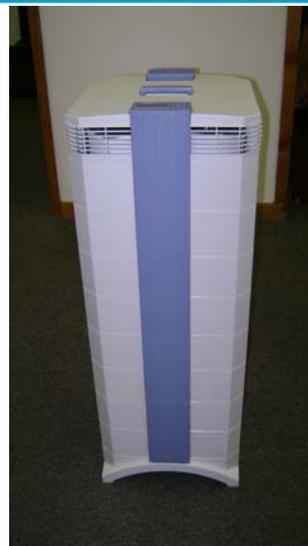
SITE 1
(Approximate
Site
Boundary)



Approx. Scale
200 feet

- Legend:**
- Soil Vapor Sampling – Shallow TCE conc. greater than 250 ug/m³.
 - Soil Vapor Sampling – Shallow TCE conc. less than 250 ug/m³.

APU and Access Sump Photos



SOIL VAPOR INTRUSION/INDOOR AIR SAMPLING



- Indoor and Outdoor Air Sampling/Monitoring – Sampling events conducted in March, April, June and August 2009
- Sub-Slab Depressurization (SSD) Systems (May 2009) – Installed in 6 homes where sub-slab vapor levels indicated the need for this type of mitigation (NYSDOH - Mitigation Matrix).
- Air sampling and monitoring consists of indoor, outdoor, and SSD stack samples

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Sub-Slab Depressurization Systems



10

FUTURE ACTIONS



- Ongoing air monitoring in homes to monitor vapor levels and effectiveness of portable carbon air filtration units (APUs) and SSD Systems.
- Future sampling planned for November 2009 (prior to SVE system startup) and March 2010.
- Full scale SVE System - (construction completion anticipated in December 2009).
- Anticipated future soil gas, indoor air, outdoor air, and SSD stack sampling to monitor effectiveness of these short-term and long-term mitigation measures.

QUESTIONS ?





**Restoration Advisory Board
(RAB) Meeting**

**SITE 1 SOIL VAPOR CONTAINMENT
SYSTEM**

**Naval Weapons Industrial Reserve
Plant (NWIRP) Bethpage
September 17, 2009**

Site 1 – Former Drum Marshalling Area



Historical Information

- Trichloroethene (TCE), Tetrachloroethene (PCE), and 1,1,1-Trichloroethane (TCA) were identified as primary solvents in soil and groundwater.

Former AS/SVE Remediation System:

- Full Scale System operated from 1998 to 2002.
- System removed 4,500 pounds of chlorinated solvents
- By 2002, groundwater concentrations in downgradient monitoring wells were 20 µg/L or less – achieved groundwater goal.
- No rebound observed in groundwater through 2008.

Site 1 – Former Drum Marshalling Area (Continued)



3

Long-Term Soil Vapor Containment System



Design Criteria and Goals:

- Use an onsite soil vapor extraction system to prevent further offsite migration of contaminated soil gas, and
- To the extent practical, capture contaminated soil gas that has migrated offsite:
 - Primary goal is to capture soil gas with TCE at concentrations greater than $250 \mu\text{g}/\text{m}^3$; required soil gas capture zone is a maximum of :
 - 270 feet to the east and southeast near groundwater, and
 - 170 feet to the east and southeast at an intermediate-depth
 - Secondary goal is to capture soil gas with TCE at a concentration greater than $5 \mu\text{g}/\text{m}^3$, required soil gas capture zone is a maximum of 410 feet to the east and southeast.
- Long-term operation required to address residual TCE in fine grained soils (clay) in southeast corner of site (below water table; water table variability)

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Long-Term Soil Vapor Containment System (Continued)

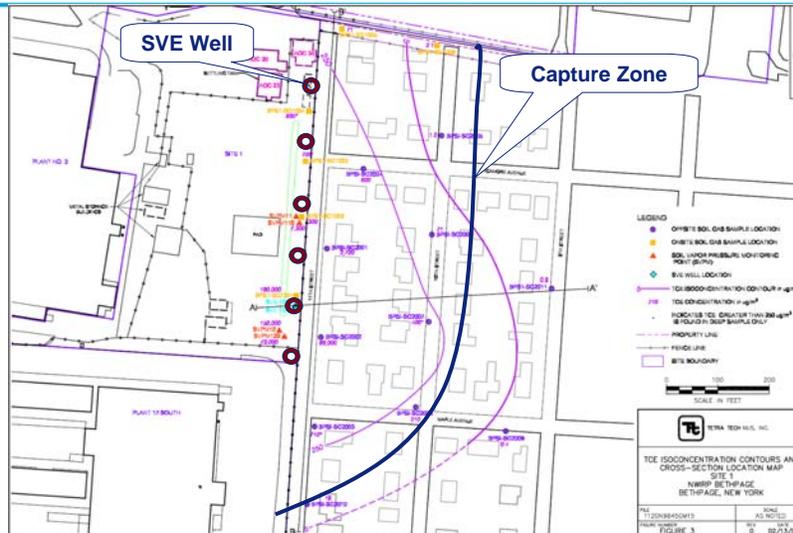


Full Scale Design:

- Six clusters of intermediate and deep soil vapor extraction wells (12 wells total)
- Clusters will be approximately 100 feet apart along the fence line
- Design flow rate of 50 cfm per well, and a total system flow rate of 600 cfm
- Two 600 cfm blowers, at a rated vacuum of 40 inches water column
- Condensate tank – 600 gallons
- Vapor phase carbon units - 1800 pound units
- Buried piping and units housed in a building for year round operation

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Long-Term Soil Vapor Containment System (Continued)

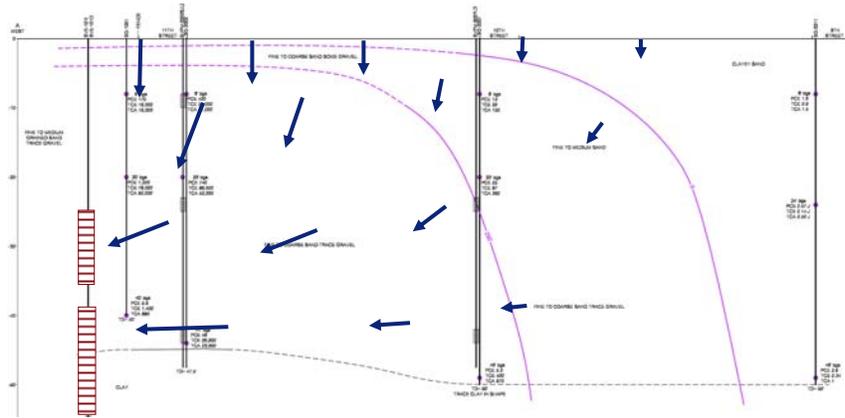


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Long-Term Soil Vapor Containment System (Continued)



Cross Section A – A'



Questions ?



Restoration Advisory Board (RAB) Meeting

**GM-75 Groundwater Investigation
Naval Weapons Industrial Reserve
Plant (NWIRP) Bethpage
September 17, 2009**

GM-75 PROGRAM PURPOSE



- **Purpose:** The GM-75 Program is being conducted to delineate an area of groundwater contamination that has TCE at a concentration greater than 1000 ug/l and is beyond the capture zone of the On-Site Groundwater Containment System.
- Program is also being used to investigate lower concentrations in groundwater that may impact water supplies.
- Vertical profile borings are used to quickly screen areas for the presence, depth, and concentration of contamination.

GM-75 VERTICAL PROFILE BORING PROGRAM



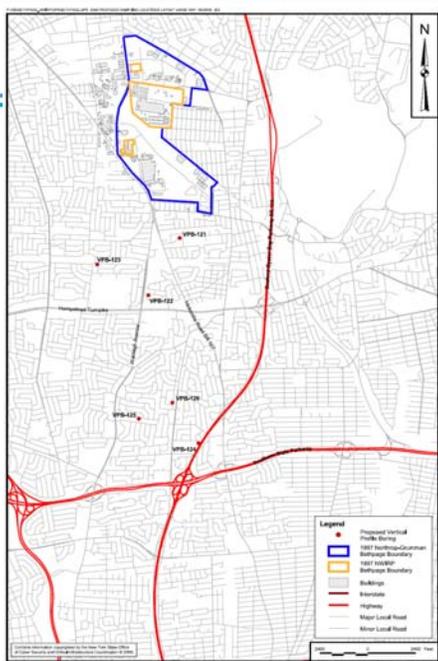
- A vertical profile boring is a 12-inch diameter hole drilled into the ground. At select depths, the drilling is stopped and a sampling device is lowered to the depth, and a sample of the water encountered is collected.
- The borings will extend to the Raritan Clay Layer at a depth up to 840 feet below ground surface.
- At 840 feet, the sampler is exposed to a pressure of 340 pounds per square inch (PSI).
- 36 groundwater samples will be collected per boring and analyzed for VOCs.

GM-75 VERTICAL PROFILE BORING PROGRAM (CONTINUED)



- Each boring requires 4 to 6 weeks to complete and costs \$150,000 to \$200,000.
- Six locations were selected.
- Work started in January 2009 and was completed in July 2009.
- Currently completing interim report of results. Based on data, no additional borings are planned.
- Next step is to analyze data and install outpost monitoring wells (2 or 3 planned).

GM-75 VERTICAL PROFILE BORING PROGRAM (CONTINUED)



GM-75 VERTICAL PROFILE BORING PROGRAM (CONTINUED)



GM-75 VERTICAL PROFILE BORING PROGRAM (CONTINUED)



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September 17, 2009

GM-75 VERTICAL PROFILE BORING PROGRAM (CONTINUED)



8

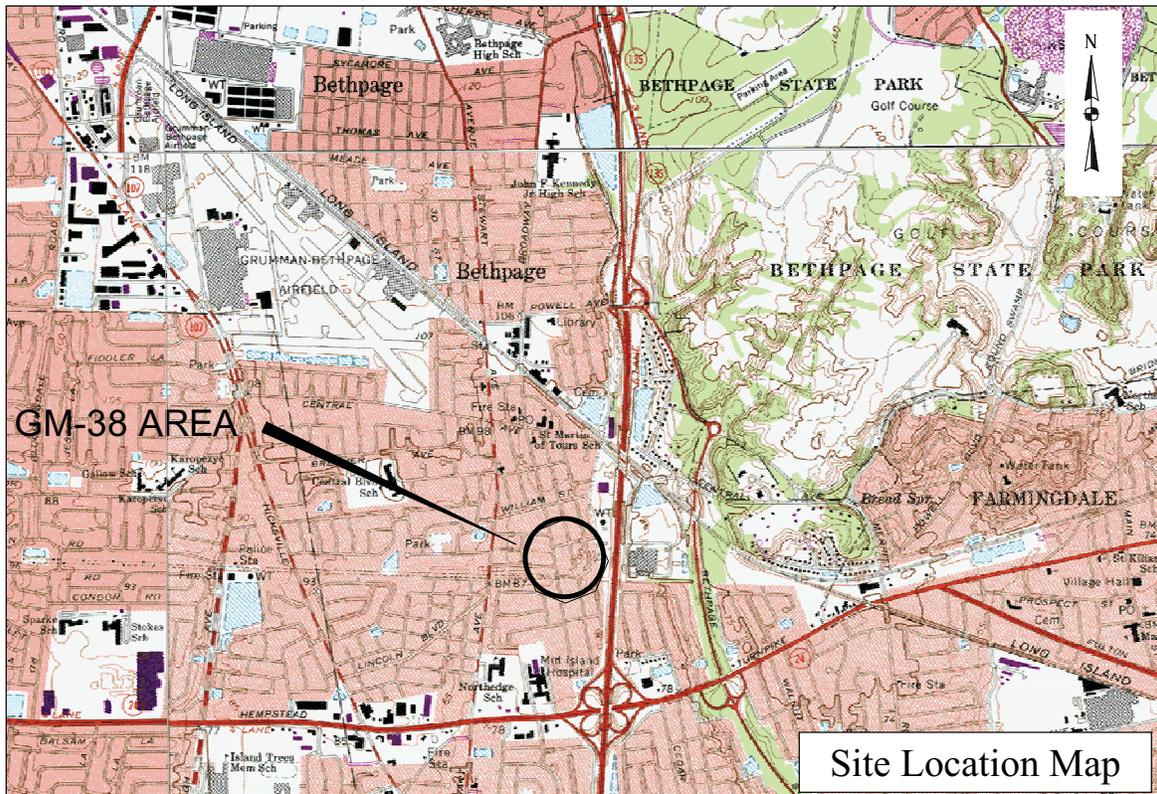
September 17, 2009



Groundwater Remediation Project

Naval Weapons Industrial Reserve Plant
Bethpage, NY
GM-38 Area

Restoration Advisory Board Meeting
September 17, 2009



Treatment System Design

- Mass Removal of Volatile Organic Compounds (VOC's) from groundwater
- Process Flow Rate = 1,100 gallons per minute (gpm) but currently 800 gpm
- Max. Design Flow Rate = 1,375 gpm
- Pumping from two recovery wells (one located on Route 135 western right of way and other to be located on west side of Broadway near Arthur)

Treatment System Design (cont'd)

- Primary treatment is Air Stripping
- Secondary treatment (polish) is Carbon Media
- Vapors from Air Stripping Treated w/ Carbon Media
- Split the discharge of treated water into one injection well and into a county recharge basin located west of Broadway

Construction Status

- Plant Entrance is located at 100 Broadway between residences at 96 and 106 Broadway
- The majority of the construction phase is complete.
- Subcontractors are working on final punch list items.
- Plant is currently continuously operating.
- Shutdowns occur for further calibration, minor troubleshooting, and equipment maintenance.
- The construction trailer will be removed by October 2009
- The temporary security fence will be removed by end of October 2009



Upcoming

- Complete construction phase punch-lists
- Complete site restoration including hydro-seeding
- Demobilize trailer and remove temporary construction fence
- Install RW-3 on western side of Broadway near Arthur Ave
- Set the pump in RW-3 and make the connection
- Complete operational adjustments for additional flow rate and begin pumping from RW-3
- Complete installation of additional monitoring wells
- Continue operation, maintenance, and monitoring



Esthetic Considerations

- Maintain as many existing trees as possible
- 100 new trees were planted
- Excavated soil to be used to construct berm
- Building exterior is a natural color, bronze
- 10' high chain link fence with privacy screening
- No audible exterior alarms
- Silencers installed on some treatment equipment to minimize noise heard outside



Community

- A project goal is to minimize disturbance to the surrounding neighborhood to best extent possible during the construction.
- NYSDEC Citizen Participation Office
631-444-0350
- Project Hotline cell phone number is
516-732-3393
- Periodic project updates are delivered to the surrounding residences (approx. 200)



Current Schedule

Milestones	Date
Treatment System Construction Complete	August 2009
Begin Operation and Maintenance Phase	September 2009
Complete RW-3 and begin pumping	November 2009
Complete install of 6 additional monitoring wells	December 2009
Begin transition of O&M phase to other Navy contractor	February 2010
TtEC completes transition of O&M phase	March 2010















Wrap-up

Questions?



Soil Vapor Extraction Containment System at Site 1

Naval Weapons Industrial Reserve Plant
Bethpage, NY

Restoration Advisory Board Meeting
September 17, 2009



TETRA TECH EC, INC.



Treatment System Design

- Mass Removal of Volatile Organic Compounds (VOC's) from soil gas
- Process Flow Rate = 600 to 1000 cubic feet per minute (cfm)
- Extraction from 12 wells of depths between 35 – 60 feet below ground surface
- Piping from each well into flow station and connected together w/in manifold
- SCH 40 PVC pipe in trench

Treatment System Design (cont'd)

- 1000 gallon moisture separator to remove free water from well and in the piping
- Two SVE blowers of 7.5 HP each
- Extracted vapors from wells will be treated w/ carbon media in a 5,000 lb vessel
- Treated vapors discharged outside via stack



Current Schedule

Milestones	Date
Drilling (3 weeks)	Start Sept 21, 2009
System Construction (2 months)	Oct – Nov 2009
Treatment Equipment Delivery	By end of Oct 2009
System Start-up and Testing (2 weeks)	December 2009
TtEC begins 6 month O&M	Dec 2009 - June 2010
TtEC completes transition of O&M phase to other Navy contractor	June 2010



