

**RESTORATION ADVISORY BOARD MEETING
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT (NWIRP), BETHPAGE
BETHPAGE SENIOR COMMUNITY CENTER
103 GRUMMAN ROAD W, BETHPAGE, NEW YORK
WEDNESDAY, APRIL 4, 2012**

The twenty-ninth meeting of the Restoration Advisory Board (RAB) was held at the Bethpage Senior Community Center in Bethpage, New York. Meeting attendees included representatives from the Navy (Lora Fly and Tom Kreidel), New York State Department of Environmental Conservation (NYSDEC) (Steven Scharf, Walter Parish, Jim Harrington, and John Swartwout), New York State Department of Health (NYSDOH) (Steve Karpinski), Nassau County Department of Health (Joseph DeFranco), Bethpage Water District (Anthony Sabino, Michael Boufis, Denise Spinelli, and Peter Schimmel), Town of Oyster Bay (Richard Pfaender and John Ellsworth), RAB Community Members (Charles Bevilacqua and Roy Tringali), Tetra Tech (David Brayack, Debbie Cohen, and Robert Sok), H&S Environmental (Jen Good and Al Taormina), ARCADIS (David Stern), Massapequa Water District (Stan Carey), Steel Equities/Edgewater Environmental (Stephen Hix), and Resolution Consultants (Michael Spera and Eleanor Vivaudou). There were several guests at the meeting, including nine Bethpage residents and three residents from neighboring towns. 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 in Attachment 3.

COMMUNITY UPDATE AND REVIEW AND APPROVAL OF MEETING MINUTES

Ms. Fly asked whether the RAB members received the November 2011 minutes, which were distributed in March 2012, and asked whether there were questions or comments on the minutes. There were no questions or comments. Approval of the meeting minutes was tabled until the next RAB meeting because a quorum of RAB members was not present.

TECHNICAL PROGRESS – SITE 1 ACTIVITIES - ONSITE DRILLING ACTIVITIES

Mr. Robert Sok (Tetra Tech) presented the status of the Site 1 polychlorinated biphenyl (PCB) investigation. The presentation is included in Attachment 3.

The PCB investigation is being conducted at Site 1 to determine the depth of PCB contamination in soil and the presence/extent of PCB-impacted groundwater. In addition, the Navy is evaluating whether PCB-

impacted groundwater is migrating off site and whether solvents could have facilitated PCB migration into the groundwater. The findings of the investigation indicate that the vertical extent of PCBs in soil extends to approximately 70 feet below ground surface (bgs). The data do not indicate that solvents facilitated the transport of PCBs into the groundwater. Based on the December 2010 and March 2011 groundwater results, additional data were needed to delineate the extent of this groundwater contamination. Additional wells were installed from October to December 2011, including upgradient and downgradient wells, and sampling was conducted in late January 2012.

Mr. Sok reviewed the groundwater results, indicating that the site average PCB concentration in groundwater was approximately two times greater than the NYSDOH MCL. Chromium and TCE concentrations were elevated in one well each. The chromium concentration was elevated in monitoring well MW304I2, located east of Plant 17 South, and the TCE concentration was elevated in MW305I, located in the southwestern portion of the investigation area. The January 2012 results will be used to determine additional groundwater sampling activities, which are planned for summer and winter 2012. In addition, the Navy identified data gaps in delineation of the extent of PCB contamination in soil and additional investigation will be conducted around several old dry wells at Site 1. The investigation will support remedial alternative analysis for soil. In answer to a question of whether any PCBs were detected off site, Mr. Sok indicated that no off site investigation has been conducted at this site. There was discussion of how deep the monitoring wells extended and where the contamination was found. The deepest monitoring well is at 300 feet bgs. PCB contamination was detected at 70 feet bgs and TCE was detected at 200 feet bgs. In answer to a question from a resident living near 11th Street of whether the construction on property near her house was part of Navy environmental activities, the Navy indicated that the Navy no longer owns this property and is not doing construction. The property was sold to Steel Equities, who is refurbishing buildings on their property.

There was discussion of whether the water supply districts could get copies of the interim report and work plan for additional investigation. The documents will be available once they are finalized.

TECHNICAL PROGRESS - GM-38 AREA OPERATION AND SOIL VAPOR EXTRACTION CONTAINMENT SYSTEM PERFORMANCE AND MODIFICATIONS

Ms. Jen Good provided a presentation on the status of the GM-38 groundwater treatment plant (GWTP) operations and the Site 1 soil vapor extraction (SVE) containment system operation. The presentation is included in Attachment 3.

The GM-38 GWTP is being operated to remove volatile organic compounds (VOCs) from groundwater. Operation of the system began in October 2009 and will continue for approximately 5 years (until 2014).

The primary treatment process is air stripping followed by carbon polishing. The extracted water is being treated to meet NYSDEC treatment standards before discharge into either an injection well or into a county recharge basin. Vapor from the air stripping process is being treated with carbon prior to venting to the atmosphere. Ms. Good reviewed the results of VOC concentrations in groundwater, which show a decreasing concentration trend. It was noted that these graphs reflect groundwater concentrations in the extraction wells. The treated water meets the discharge requirements. Recent activities include quarterly groundwater sampling in November 2011 and March 2012 and routine change out of activated carbon in January 2012. The Navy will continue to monitor the performance of the system, including collection of monthly air and water compliance samples and quarterly groundwater samples. In answer to a question of whether the Navy will discontinue operation of the system if concentrations remain at current concentrations, the Navy will discuss the results with NYSDEC and compare the concentrations to surrounding area groundwater concentrations to determine whether the treatment goals have been met and operation of the system can be discontinued. In answer to a question of what percent of the actual contaminant mass was being removed by the system, it was explained that the system was originally intended as a hot spot treatment. The original estimate was that the hot spot contaminant mass was 3000 to 4000 pounds; however, the Navy has found some upgradient contaminant issues that need to be resolved to determine the amount of contaminant mass present.

Ms. Good reviewed the status of the Site 1 SVE containment system, and indicated that the purpose of the system is to prevent off site migration of Site 1 VOC-impacted soil gas and to cleanup off site soil gas. Operation of the system began in January 2010 and is anticipated to continue until 2015. Ms. Good indicated that optimization activities are ongoing to improve performance, evaluate capture zone, and reduce operating costs. Based on the evaluation of the system operation, five additional SVE wells were installed in October 2011 and brought on-line in November 2011. Ms. Good indicated that the system has been performing well and that there has been minimal downtime because of power outages. The Navy will continue to operate the system and collect the necessary monthly air compliance samples and quarterly air samples.

As provided at the November 2011 RAB meeting, since startup of the SVE containment system, all indoor air levels in the homes that have been monitored near Site 1 have been less than NYSDOH air guidelines. Mr. Brayack explained that the in-home treatment systems in these homes have been removed because concentrations were at acceptable levels established by the NYSDOH. The Navy will continue to sample in the neighborhood in right-of-ways to make sure the SVE containment system continues to operate effectively. Sampling results will continue to be provided to NYSDEC and NYSDOH. Mr. Brayack indicated that the Navy will be adding more monitoring locations in the neighborhood, so there may be some small drill rigs in the area in the near future. In answer to a question of whether new in-house treatment systems will be installed in homes if the Navy sees concentrations increase in the

neighborhood monitoring locations, Mr. Brayack indicated that the Navy would first modify operation of the SVE containment system to reduce concentrations in the neighborhood monitoring locations before considering in-house treatment systems.

TECHNICAL PROGRESS - OPERABLE UNIT (OU) 2 OFFSITE GROUNDWATER INVESTIGATION AND PUBLIC WATER SUPPLY DESIGN

Mr. Brayack discussed the progress of the offsite groundwater investigation (GM-75 area), which is part of OU2, and the public water supply design. The presentation is included in Attachment 3.

The purpose of the OU2 groundwater investigation is to delineate the area of groundwater contamination south of NWIRP Bethpage. Contamination in this area is deep. The investigation includes the installation of vertical profile borings to quickly screen areas for the presence, depth, and concentration of contamination. Permanent monitoring wells are then installed to confirm the presence or absence of contamination and to develop contamination concentration trends. The vertical profile 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 extend to the Raritan Clay layer at a depth of up to 860 to 1,000 feet bgs. Approximately 36 groundwater samples per boring are collected and analyzed for VOCs. Mr. Brayack reviewed figures showing NWIRP and Northrop Grumman properties, groundwater flow direction, and locations of completed wells and borings and planned wells and borings. The Navy is currently installing three new monitoring wells in the southernmost area. The Navy is planning to install five borings and eight monitoring wells in 2012/2013. These new locations will be in the northern portion of the plume.

Mr. Brayack provided an update on the public water supply treatment system design. Specifically, the Navy is designing and installing a granular activated carbon treatment system for an offsite public supply well as a precaution to treat groundwater if VOC concentrations continue to increase. The Navy is working with the Town of Hempstead and Nassau County DOH and anticipates construction to begin in mid-2012. In March 2012, the Navy started construction of an interim treatment system, which is anticipated to start up by May 1, 2012. Once the full-scale treatment system is in place, operation of the interim system will be discontinued. Mr. Brayack reviewed a conceptual rendition of the full-scale treatment system and showed the schematic of the interim treatment system. The interim system will be located off of Seaman's Road.

There was discussion about where the OU2 groundwater data from the Navy's investigation are available. The Navy will work with the water district to ensure that they have the groundwater data that are being collected at OU2. Ms. Fly explained that the data are available in the NWIRP Bethpage public repository

at Bethpage Library. The Navy holds RAB meetings to explain the results to interested parties. The Navy is working on setting up a web site to provide information on the OU2 groundwater investigation. The web site will have the data the Navy has collected. [Note: the Navy's web site became available for public use in June 2012.] Mr. Carey from Massapequa Water District indicated that they have a web site available that has groundwater for the area available.

Questions regarding the presentation include the following:

- Are the results for the well that is being drilled at Wadsworth Avenue available yet? The sampling as part of well installation has been completed and VOCs were found at depth.
- Does the Navy have information about other non-Navy contaminated properties in the vicinity of the OU2 investigation? The Navy will talk with USEPA and NYSDEC to see what information is available.
- Was the public notified about the Navy's plans for construction and operation of the water treatment systems? The Navy provided a public notice, held a public meeting, and talked with local residents about the planned treatment systems. In addition, the Town of Hempstead was notified and a letter was sent to local residents about the planned activities.

CLOSING REMARKS

Ms. Fly asked whether there were any other questions or comments. There were no other questions or comments. Ms. Fly indicated that the next RAB meeting would be held on November 7, 2012. Ms. Fly thanked everyone for coming to the meeting and the meeting was adjourned.

ATTACHMENT 1

APRIL 4, 2012 RAB MEETING SIGN-IN SHEET

**29th RAB Meeting for NWIRP Bethpage
 April 4, 2012
 Sign-In List**

Name	Address (if interested in being on mailing list)	Organization	How Did You Hear of Meeting?
Eleanor Vivacqua	Resolution Consultants	Navy	
Michael L. Spera	Resolution/AECOM fburfein@optimum.net	Navy	
Frank Burfeind	202 MAPLE AVE.	NOTICE	
MARY BURFEIND	202 MAPLE AVE	NOTICE MAIL BOX	
DANIEL LAGAN	22 WADSWORTH AVE	met 1969 @ OPTONLINE lisa.lagan@optonline.net	
MICHAEL GNEOLI	408 WHITTIER AVE PLAINES NJ	SLICE105@optonline.net 5catalano@optonline.net	
RICH CATALANO	518 KELL PLACE SEAFORD		
Michael Boufis	Bethpage Water District Denspin40@yahoo.com	E-mail	
Denise Spinelli	Bethpage Water District	E-mail	
Kathryn Stewart	258 11th St. MYSDEC	Notice in mailbox	
Walter Parish	SUNY Stony Brook	email	
Daniel Grindstaff	230 11th St	email	

→ list with email

**29th RAB Meeting for NWIRP Bethpage
 April 4, 2012
 Sign-In List**

Name	Address (if interested in being on mailing list)	Organization	How Did You Hear of Meeting?
Tom Kreidel	NAUFAC		
Steven Scharf	NYSDEC		From NAVY
Jim Harrington	NYSDEC		From Steve
John Swartwout	NYSDEC		From Steve
Steve Karpinski	NYS DOH		From Navy
Jim Good	H + S		Navy
AL TAJMINA	H & S		NAVY
Maureen O'Brien (no email)	resident	190 Maple Ave. Bethpage	Bethpage Tribune
DAVID STERN	ACCESSIS		NGC
Stan Carey	Massapequa Water Dist		Invite NAVY
Peter Schimmel	PetebwD@yahoo.com Bethpage Water		Navy
Stephen Hix	Edgewater Env. SoSteel Regatives		Navy

**29th RAB Meeting for NWIRP Bethpage
 April 4, 2012
 Sign-In List**

Name	Address (if interested in being on mailing list)	Organization	How Did You Hear of Meeting?
Joanne Peneo	248-11th St.	Homeowner	
Joyce Marnaccio			
CHARLESA BEVILACQUA		RAB	CABEVIL@AOL.COM
Roy TRINGAL		RAB	CHIEF NR@AOL.COM Member
Robert Sok		TetraTech	
Debbie Cohen		Tetra Tech	
Lara Fly		Navfac Midlant	
Added by Debbie Cohen:			
Joseph DeFranco	Nassau County Department of Health		

ATTACHMENT 2

APRIL 4, 2012 RAB MEETING AGENDA

Agenda

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

**April 4, 2012, 2011
Bethpage Senior Community Center,
103 Grumman Road W, Bethpage, NY. 7:00 p.m.**

Welcome and Agenda Review
Lora Fly, NAVFAC Mid-Atlantic

Meeting Minutes
All Members

Technical Progress

Site 1 Activities – Onsite Drilling Activities
Rob Sok, Tetra Tech

GM-38 Operation
Jen Good, H&S

Soil Vapor Extraction Containment System Performance and Modifications
Jen Good, H&S

**OU 2 - Offsite Groundwater Investigation, Public Water Supply Design,
and Interim System Construction**
David Brayack, Tetra Tech

Closing Remarks
Lora Fly

Presenters will be available after the program for questions.

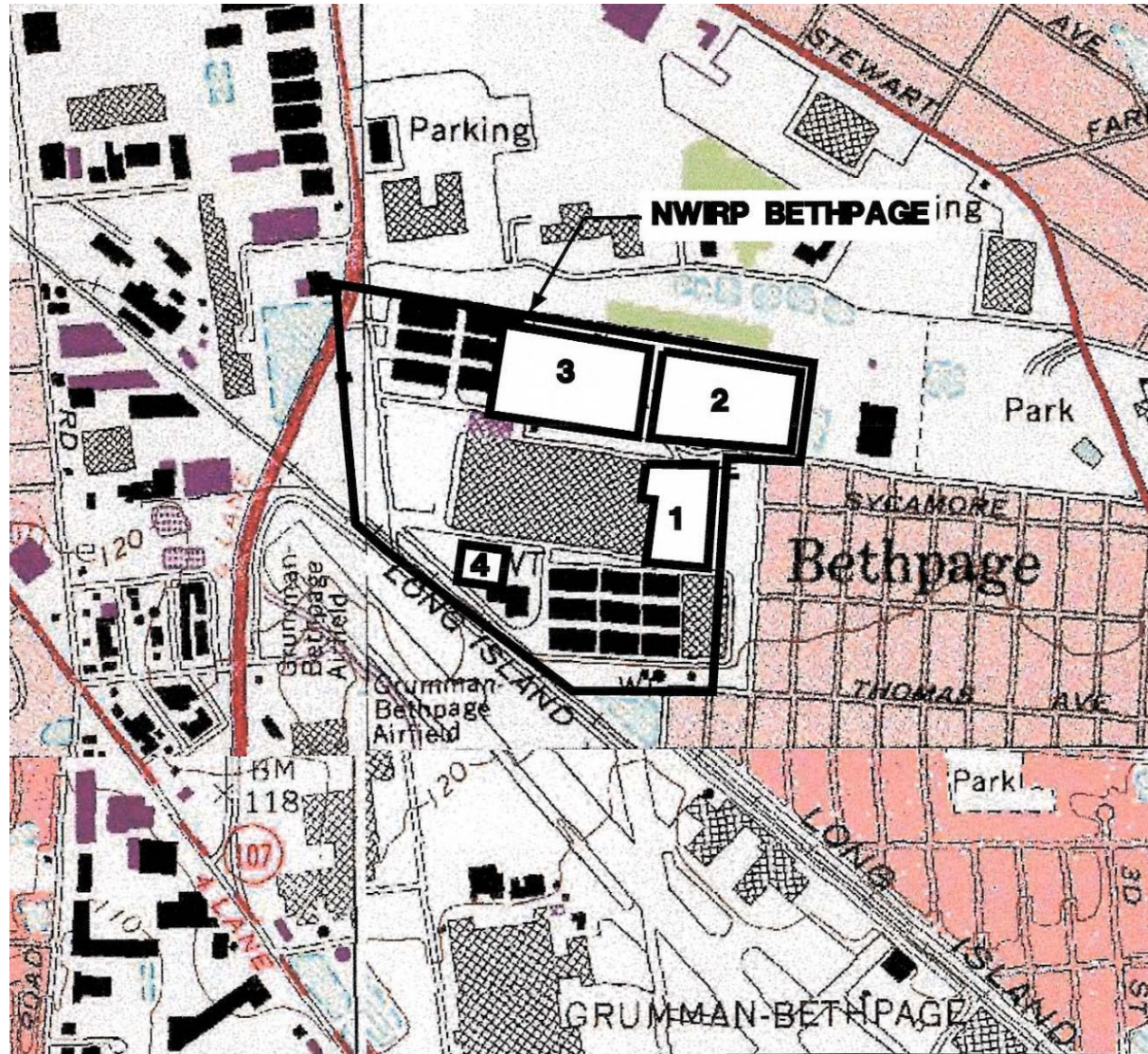
ATTACHMENT 3
PRESENTATIONS

Restoration Advisory Board
(RAB) Meeting

Site 1 PCB Investigation - Update

Naval Weapons Industrial Reserve
Plant (NWIRP) Bethpage
April 4, 2012

FACILITY MAP



PCB INVESTIGATION UPDATE



- SAP/Work Plan for PCB Investigation finalized May 2010
- Primary Objectives:
 - Delineate vertical extent of PCBs in soil
 - Determine whether PCB-contaminated groundwater has migrated beyond the site boundary
 - Determine whether organics could have acted as a carrier fluid promoting PCB migration
- 6 soil borings and 15 monitoring wells installed in 2010 via roto-sonic drilling methods
- Groundwater sampling events conducted in early December 2010 and March 2011

PCB INVESTIGATION UPDATE



- Vertical extent of PCB contaminated soils determined at approximately 70 feet bgs in source area soil borings
- Fuel and solvent-related VOCs detected at low concentrations, not likely to affect PCB migration
- Groundwater sampling events conducted in early December 2010 and March 2011
- Based on Groundwater results, Interim Report and SAP Addendum submitted in July 2011
- 15 additional monitoring wells installed October – December 2011 (upgradient and downgradient)
- Groundwater sampling event conducted in late January 2012

GROUNDWATER RESULTS



- Groundwater detections of PCBs (aroclor 1242 and 1248) in 30 of the 34 monitoring wells.
- Average concentration of PCBs in groundwater at 1.14 $\mu\text{g/L}$ (NYSDOH MCL is 0.5 $\mu\text{g/L}$)
- Total chromium detected above MCL of 100 $\mu\text{g/L}$ in one monitoring well (MW304I2 at 200 $\mu\text{g/L}$).
- Chromate detected at a maximum concentration of 181 $\mu\text{g/L}$
- Elevated detection of TCE at 3,900 $\mu\text{g/L}$ in MW305I, southwestern most monitoring well cluster.

PCB INVESTIGATION UPDATE



- Well Location Map



Shallow Potentiometric Surface Map



Intermediate Potentiometric Surface Map



PCB INVESTIGATION UPDATE



- Based on the groundwater sampling results, additional investigation of groundwater is needed.
- Data gaps in soil delineation of PCBs at Site 1 have been identified after review of historical and recent soil sampling results
- Interim Report and SAP Addendum for Site 1 soils will be submitted in April - May 2012
- Objectives: Address data gaps observed in Site 1 soils, further delineate extent of PCB-contaminated soil, and support remedial alternative analysis

Proposed soil Borings for Soil Delineation



Proposed Soil Borings for Soil Delineation



Legend

- SB-P
- ◆ 2010 SOIL BORING
- MONITORING WELL

0 5 10
Feet

TETRA TECH

**DRY WELL DW-34
PROPOSE SOIL BORING LOCATIONS
NWIRP BETHPAGE
BETHPAGE, NEW YORK**

FILE	112G02230	SCALE	AS NOTED
FIGURE NO.	REV	DATE	4/2/13

PCB INVESTIGATION – FUTURE WORK



- Soil investigation planned for Spring/Summer 2012 to address data gaps and complete soil delineation.
- Submit Data Summary Report to present new groundwater results and recommendations for further groundwater investigation.
- Two additional rounds of groundwater sampling planned for 2012 (summer and winter events)
- Remedial Investigation Report and Feasibility Study planned for 2013

QUESTIONS ?



Restoration Advisory Board (RAB) Meeting

GM-38 Area Groundwater Treatment Plant and Site 1 Soil Vapor Extraction Containment System Operation

**Naval Weapons Industrial Reserve
Plant (NWIRP) Bethpage
April 4, 2012**

Presentation Agenda



■ GM-38 GWTP

- Overview
- Operational Activities
- GWTP performance and future activities

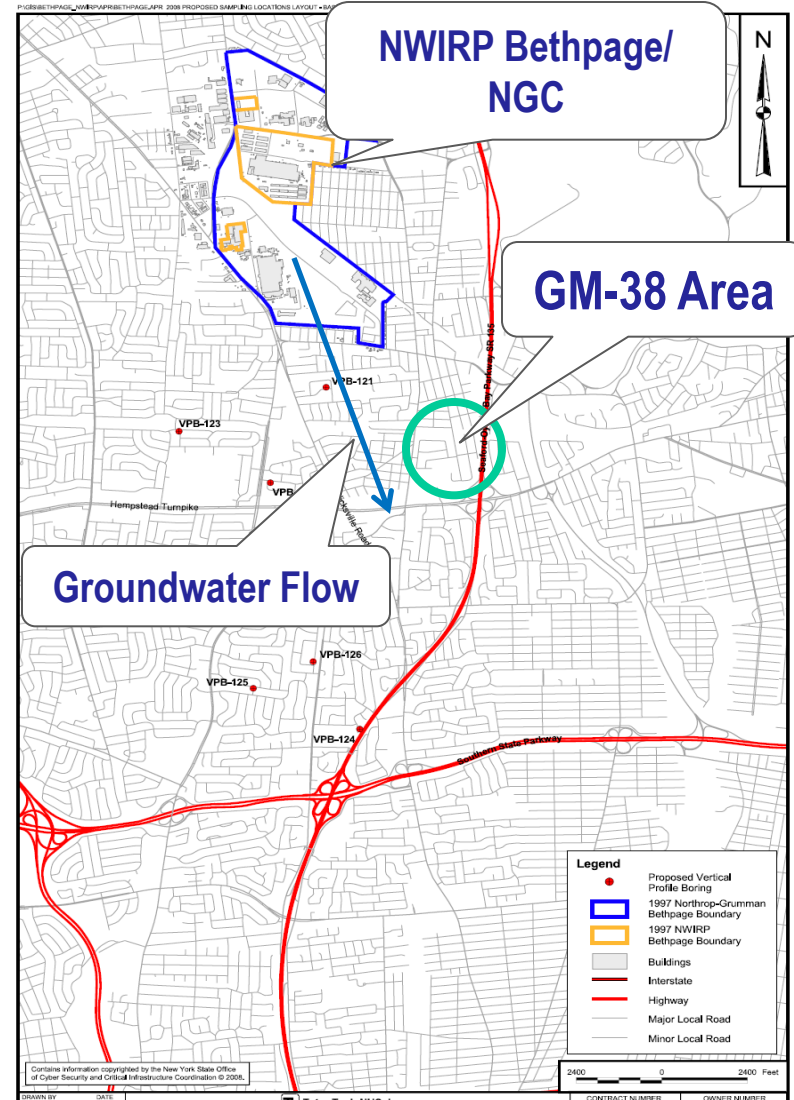
■ Site 1 SVECS

- Overview
- Operational Activities
- System performance and future activities

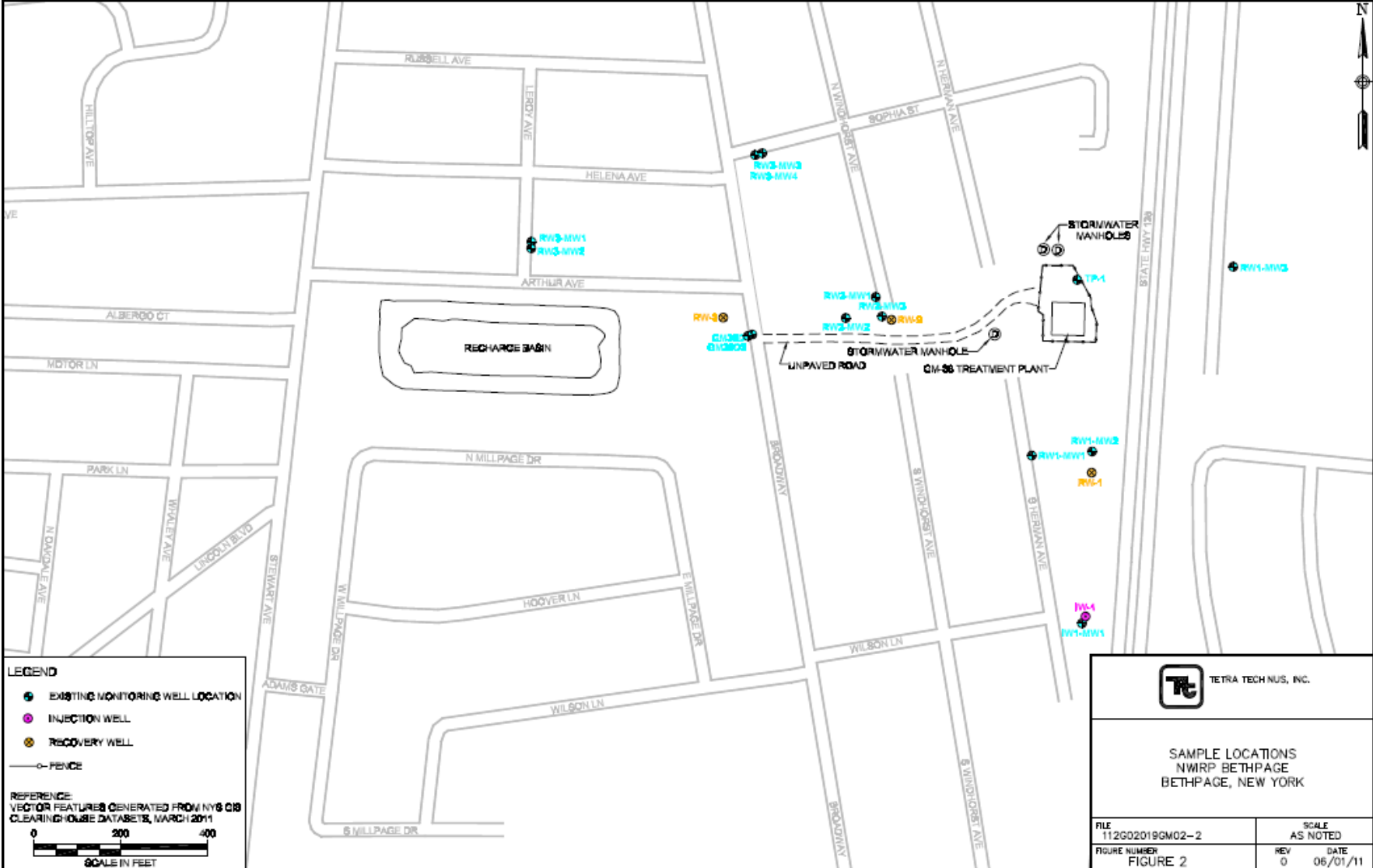
GM-38 Project Overview



- Purpose: Treat an area of higher concentration volatile organic compound (VOC)-impacted groundwater.
- System started operation in October 2009.
- Extracts 45 million gallons of water and 200 pounds of VOCs per month.



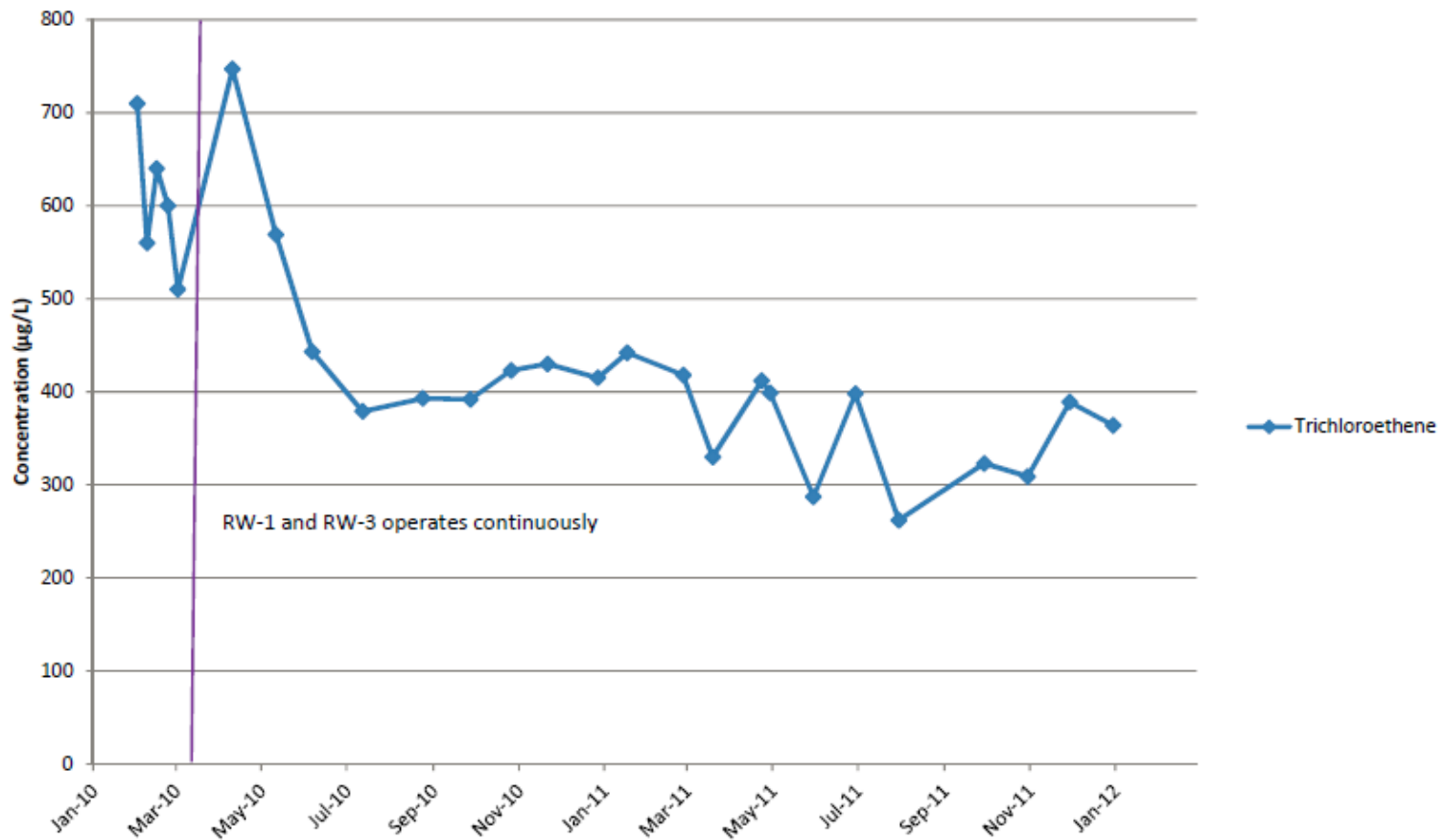
GM-38 REMEDIAL ACTION



GM-38 REMEDIAL ACTION



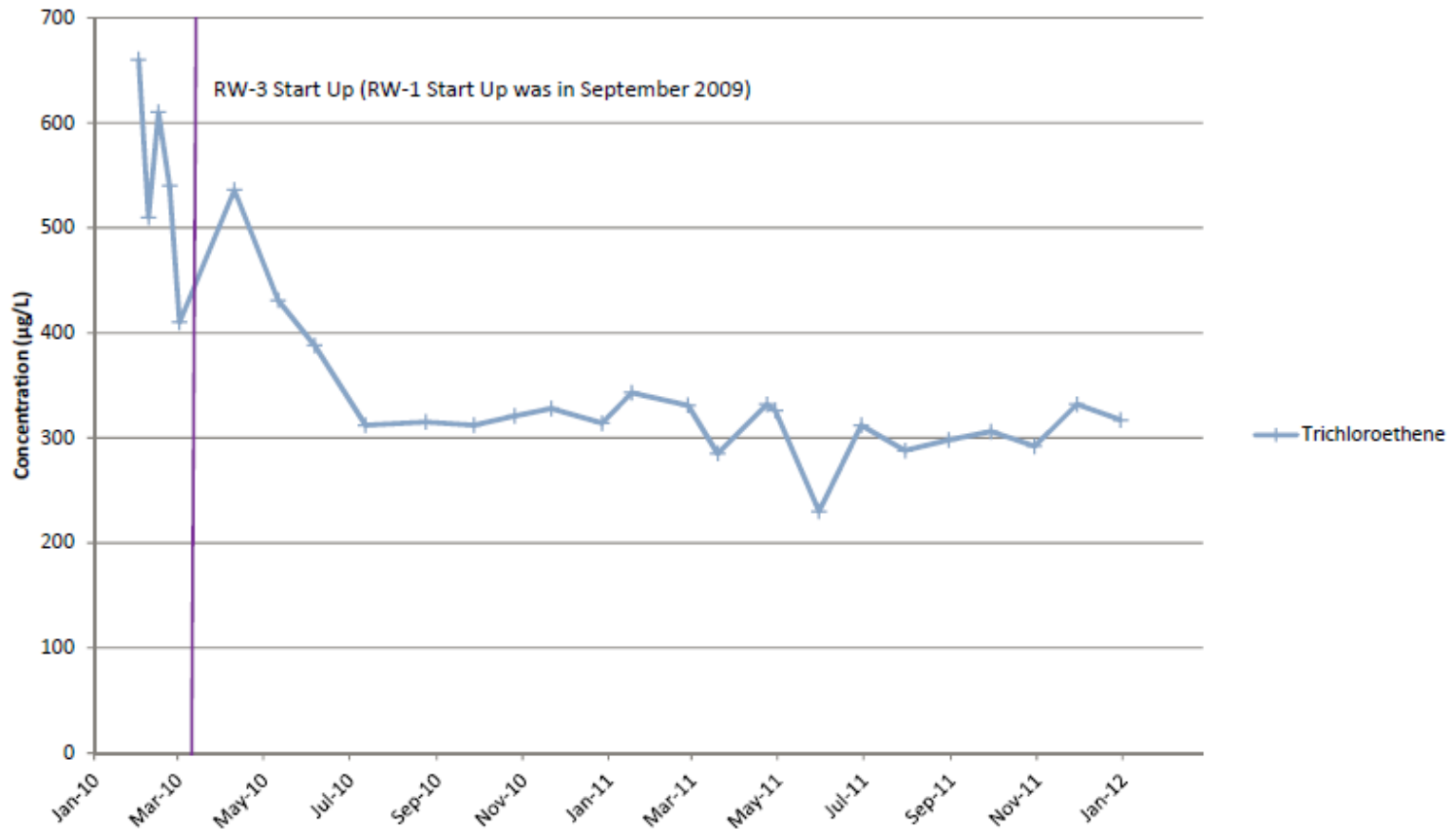
Recovery Well RW-1 (335-395 and 410-435 ft bgs)
TCE Concentrations
GM-38 Groundwater Treatment Plant
NWIRP Bethpage, NY



GM-38 REMEDIAL ACTION



Recovery Well RW-3 (392-412 and 442-504 ft bgs)
TCE Concentrations
GM-38 Groundwater Treatment Plant
NWIRP Bethpage, NY



GM-38 GWTP Operational Activities



- Quarterly groundwater samples collected from eight monitoring wells (29-30 November 2011 and 7-8 March 2012).
- Performed routine change out of vapor phase granular activated carbon (VGAC) (3-5 January 2012).

GM-38 GWTP Performance and Future Activities



- Plant operates in compliance with air and SPDES permit guidelines.
- Runtime is above 95% with minimal downtime due to power outages and scheduled maintenance.
- Approximately 1,225 million gallons of water treated through March 2012.
- Collect monthly air and water compliance samples.
 - Submit monthly O&M compliance reports.
- Collect quarterly groundwater samples of surrounding monitoring wells.
 - Submit quarterly operations reports.

GM-38 GWTP Performance and Future Activities

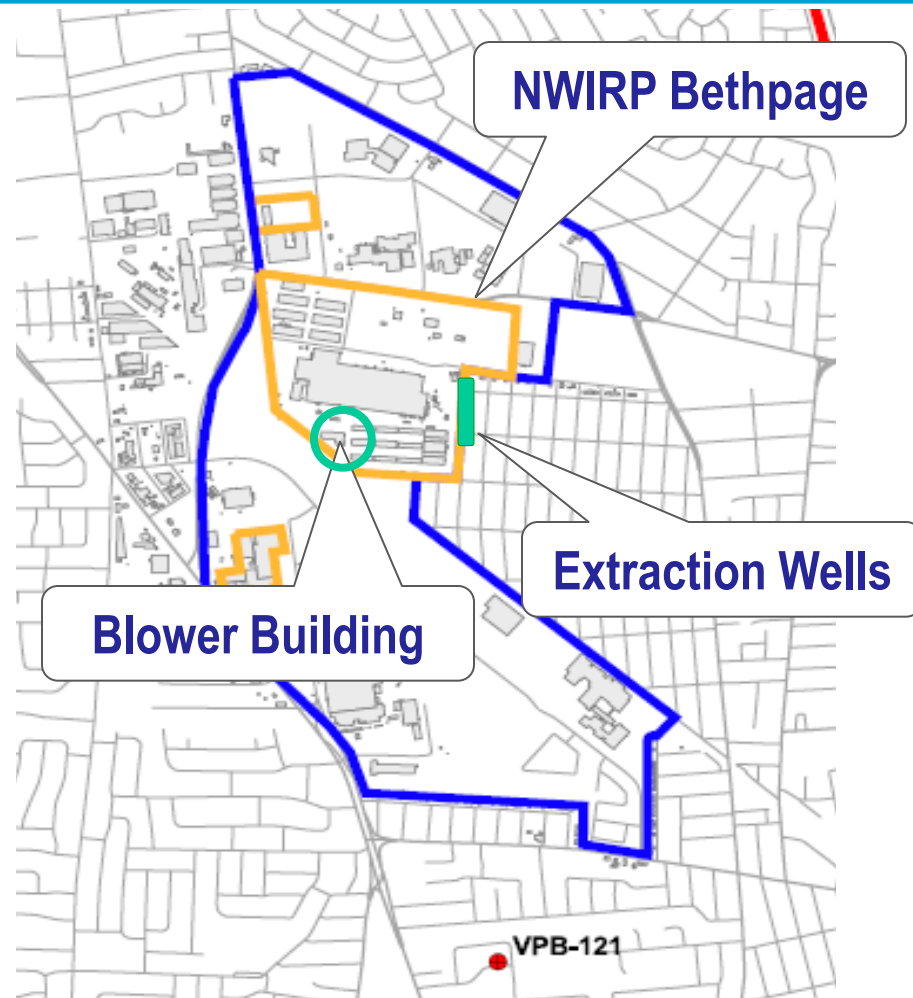


- System is expected to operate until approximately 2014.
- Optimization activities are ongoing
 - Improve performance
 - Evaluate capture zone
 - Reduce operating cost

SITE 1 SVECS Project Overview



- Purpose: Prevent offsite migration of Site 1 VOC-impacted soil gas and cleanup offsite soil gas.
- System started operation in January 2010 and continues to operate.
- Extracts approximately 500 cubic feet per minute of soil gas from 12 wells located along Site 1 fence line. Five additional extraction wells added in October 2011 to address potential VOCs under Plant No. 3 and South Warehouse.



SITE 1 SVECS Offsite Soil Gas Monitoring



DRAWN BY	DATE
MMC	12/8/11
CHECKED BY	DATE
RMS	12/8/11
REVISED BY	DATE
SCALE AS NOTED	



SVE AND SVPM LOCATION MAP
 SITE 1 - FORMER DRUM MARSHALLING AREA
 NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
 BETHPAGE, NEW YORK

CONTRACT NUMBER	CTO NUMBER
112G02019	WE06
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO.	REV
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SITE 1 SVECS Operational Activities



- Five additional SVE wells installed (16-22 October 2011). Brought on-line in mid-November 2011.
- Routine change out of vapor phase granular activated carbon (VGAC) performed (4 January 2012).
- Quarterly vapor samples collected from 12 SVE wells (10 February 2012).

SITE 1 SVECS Performance and Future Activities



- Plant operates in compliance with air permit guidelines.
- Runtime is above 95% with minimal downtime due to power outages and scheduled maintenance.
- Collect monthly air compliance samples.
- Collect quarterly air samples of SVE wells.
 - Submit quarterly operations reports.

SITE 1 SVECS Performance and Future Activities



- System is expected to operate until approximately 2015.
- Optimization activities are ongoing
 - Improve performance
 - Evaluate capture zone
 - Reduce operating cost

Restoration Advisory Board (RAB) Meeting

**OU2 - Offsite Groundwater Investigation and
Public Water Supply Design**

**Naval Weapons Industrial Reserve
Plant (NWIRP) Bethpage
April 4, 2012**

OU2 GROUNDWATER INVESTIGATION - PURPOSE



- Delineate groundwater contamination in areas south of NWIRP Bethpage
- Program consists of:
 - Vertical profile borings - used to quickly screen areas for the presence, depth, and concentration of contamination
 - Permanent monitoring wells - to confirm presence/absence of contamination and develop trends

OU2 INVESTIGATION - VERTICAL PROFILE BORING PROGRAM



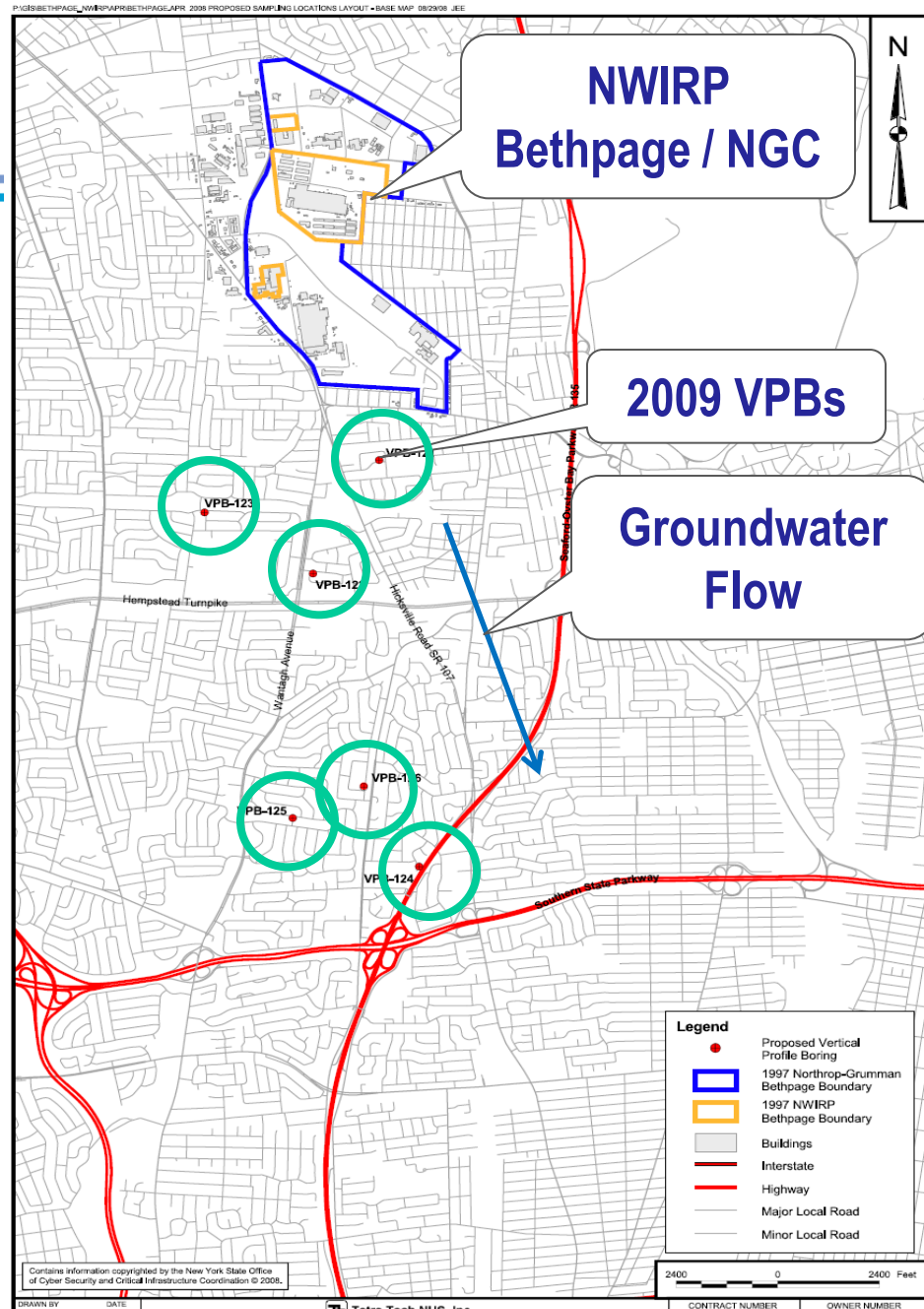
- A vertical profile boring is a 12-inch diameter hole drilled into the ground. At select depths, the drilling is stopped, a device is lowered to depth, and a sample of the water is collected
- The borings will extend to the Raritan Clay Layer at a depth up to 860 to 1000 feet below ground surface
- 36 groundwater samples are collected per boring and analyzed for VOCs

OU2 INVESTIGATION - VERTICAL PROFILE BORING PROGRAM (Cont.)



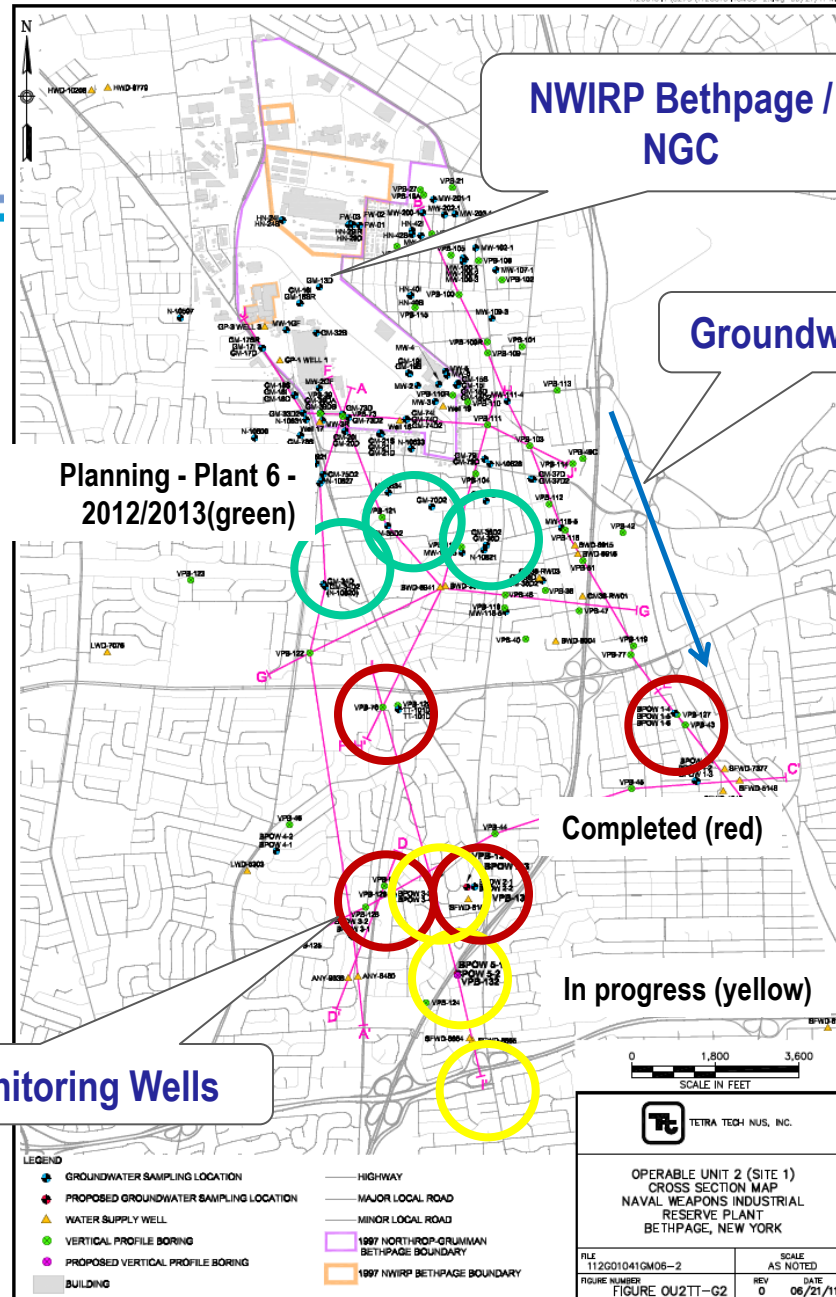
- Each boring requires 4 to 6 weeks to complete
- Six locations were completed in 2009
- Addition borings and monitoring wells are currently being installed through 2012
 - Since Oct 2010, six borings and nine wells completed and one boring and three wells in progress
 - Five borings and two wells are planned for 2012/2013

2009 Vertical Profile Borings



NWIRP Bethpage / NGC

Groundwater Flow



2010 to 2013 Vertical Profile Borings and Monitoring Wells

OU2 INVESTIGATION - VERTICAL PROFILE BORING PROGRAM



OU 2 PUBLIC WATER SUPPLY DESIGN



- Navy is currently designing a full-scale Granular Activated Carbon treatment system for an offsite Public Water Supply
 - Design started in 2009 and will be completed in 2012
 - Working with TOH and DOH
 - Construction is anticipated to start in mid-2012
- Navy also design and is currently constructing an interim treatment
 - Construction started in March 2012 (Tank foundation)
 - The GAC equipment is scheduled for delivery on April 4th
 - Installation, tie-in, disinfection, backwash, and startup and testing to last through April, with an anticipated final startup date of April 27th (pending final approvals by DOH)

OU 2 PUBLIC WATER SUPPLY DESIGN



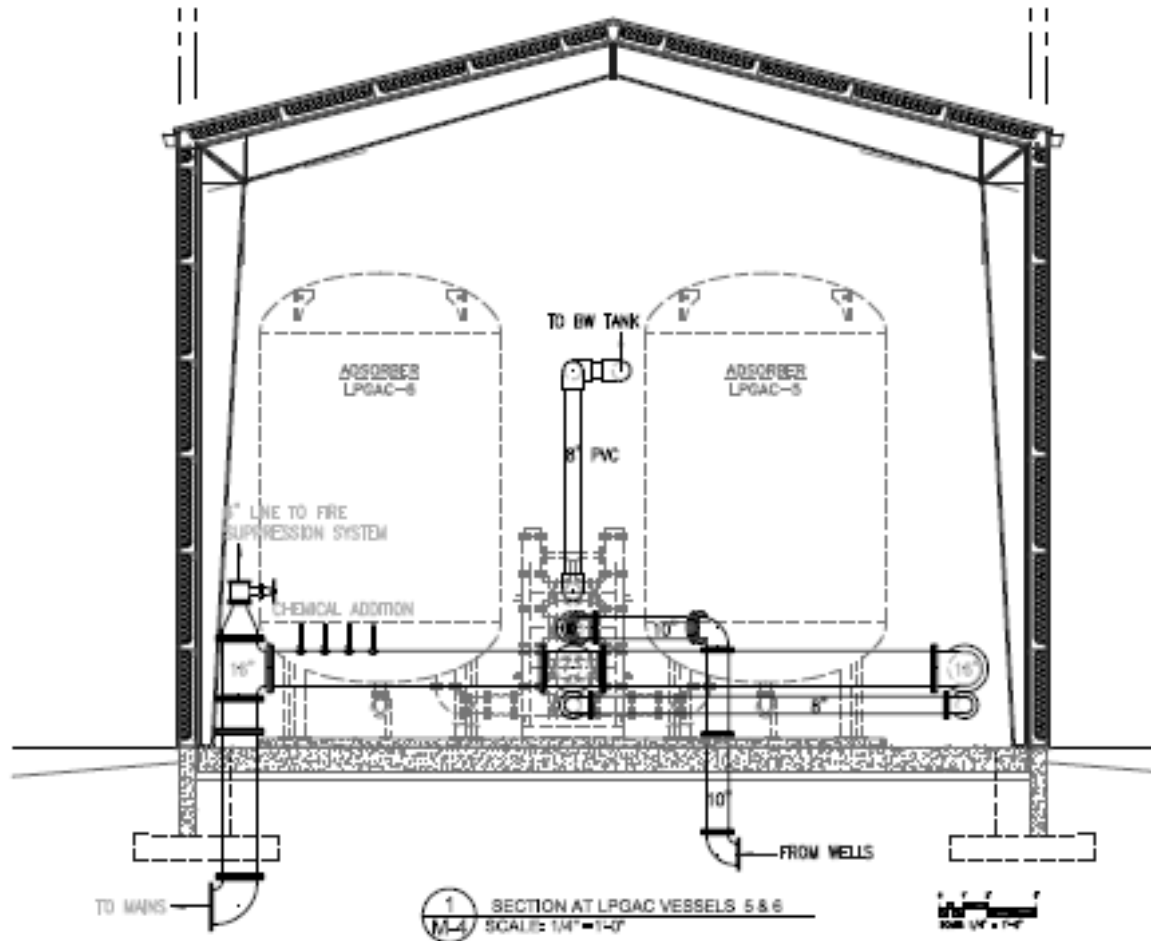
Full Scale Liquid Phase Granular Activated Carbon System



OU 2 PUBLIC WATER SUPPLY DESIGN



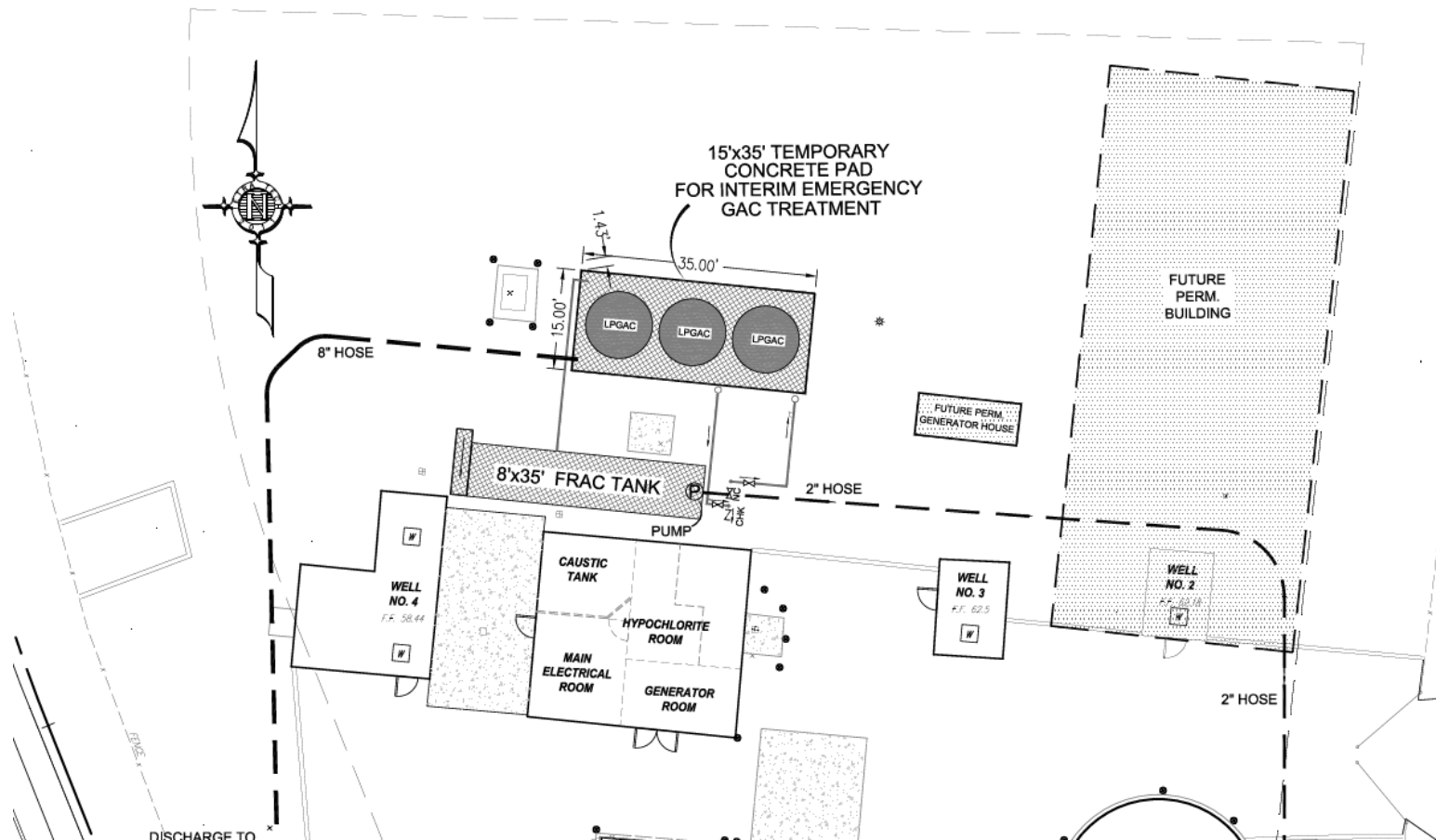
Full Scale Liquid Phase Granular Activated Carbon System



OU 2 PUBLIC WATER SUPPLY DESIGN

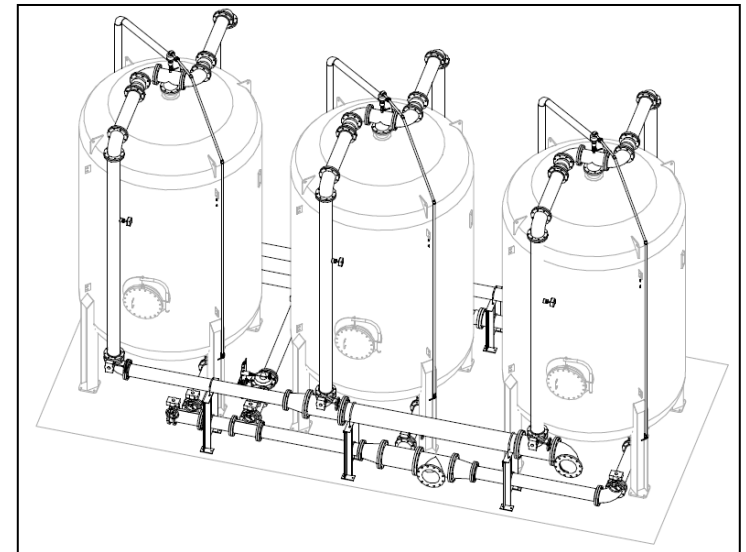


Interim Liquid Phase Granular Activated Carbon System



Interim Liquid Phase Granular Activated Carbon System

Concrete Pad Pour



GAC Unit Schematic

OU2 ACTIVITIES



Questions