RESTORATION ADVISORY BOARD MEETING
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT (NWIRP), BETHPAGE
TOWN OF OYSTER BAY, BETHPAGE COMMUNITY CENTER
103 GRUMMAN ROAD WEST, BETHPAGE, NEW YORK
THURSDAY, OCTOBER 29, 2015

The thirty-seventh (37th) meeting of the Restoration Advisory Board (RAB) was held at the Bethpage Community Center in Bethpage, New York. Meeting attendees included representatives from the Navy (Lora Fly, and Melissa Forrest), the Management Edge (Gayle Waldron), New York State Department of Environmental Conservation (NYSDEC) (Steven Scharf, Jim Harrington, Henry Wilkie, Dan Evans, John Swartwout, and Walter Parish), New York State Department of Health (NYSDOH) (Steve Karpinski, Kiran Mall, Harolyn Hood), Nassau County Department of Health (NCDOH) (Joseph DeFranco), Town of Oyster Bay (John Ellsworth), Town of Hempstead (John Reinhardt), H&S Environmental (Greg Pearman and Jennifer Good), Bethpage Water District (BWD)(Michael Boufis, Sal Greco and John Sullivan), Massapequa Water District (MWD) (Stan Carey, Thomas Hand and Joseph Tricarco), H2M (Rich Humann-BWD, and Paul Grainger-MWD), Tetra Tech (David Brayack), and Resolution Consultants (Farrell Bell, Brian Caldwell, Allan Jenkins, Gordon Hicks, Shreyas Mantri, Valerie Thayer, Vincent Varrichio, Eleanor Vivaudou, and Michael Zobel). RAB members in attendance were Tim Cook, Sandra D'Arcangelo, Ethan Irwin, Edward Olmstead, and David Sobolow. There were 8 residents from Bethpage and neighboring towns in attendance. The meeting sign-in sheet is provided as Appendix A.

OPEN HOUSE SESSION

Prior to the start of presentations, an open house session was held. There were two groups of informational poster displays and an area for residents to speak with regulators. The public was invited to peruse the information provided and ask questions to the Navy representatives and regulators.

WELCOME AND AGENDA REVIEW

The Navy representative, Ms. Lora Fly, welcomed everyone to the RAB meeting and presented the meeting agenda. Ms. Fly also introduced Gayle Waldron (The Management Edge, serving the role of facilitator in support of the RAB), who then went over the Rules of Conduct to ensure that everyone is allowed the opportunity to comment. The Rules of Conduct are provided in Appendix A. Ms. Fly informed the attendees about navigation of the public website for NWIRP Bethpage (http://go.usa.gov/DyXF). Ms. Waldron introduced David Sobolow the RAB co-chair. Mr. Sobolow introduced the four RAB members present and explained that they are to be the interface between

the community, the Navy and the regulators. Ms. Waldron then invited the water districts and the regulators who were present to introduce themselves. A quorum of RAB members was not present; therefore, the last meeting minutes were not finalized.

OU 2 OFFSITE GROUNDWATER INVESTIGATION-
INSTALLLATION of VERTICAL PROFILE BORINGS (VPBs)

Mr. Brian Caldwell, Resolution Consultants, presented the offsite program objectives. Mr. Caldwell reviewed the local groundwater geology and applicability to the plume and presented the VPBs and wells that have been installed and sampled since 2009. He also described work performed since the last RAB meeting, future work to be implemented and recent reports with their respective results. The presentation is included in Appendix C.

As described in the presentation, the objectives of the offsite groundwater investigation are threefold. The first objective is to protect the public water supply wells by installing outpost wells. The second is to delineate the RE108 hotspot, and the third is to address the hotspot by evaluating the existing wells or installation of new wells in a treatment system. Protection of the public water supply wells is fulfilled by installation of outpost monitoring wells; delineation of the RE108 hotspot is fulfilled by installing vertical profile borings, permanent monitoring wells, and monitoring of water levels using water level dataloggers; addressing the hotspot is being fulfilled by scientific and engineering evaluations of the VPB, well and datalogger data. Of note, the water level data ensures successful monitoring of outpost wells, and supports the Navy and United States Geological Survey groundwater modeling efforts which are designed to determine capture zone analysis for wells as needed for groundwater cleanup.

The process of determining VPB and well locations was then described. Locations are determined based on the spots designated critical for tracking the plume, to minimize inconvenience to nearby residents, and to meet the space requirements of drilling rig operations. All efforts are being made to use locations that minimize disruption to the residents.

For discussion purposes to describe investigative work, the areas of investigation have been divided into three geographic zones and are referred to as areas north of Hempstead Turnpike, north of Southern State Parkway, and south of Southern State Parkway. Work performed since August 2015 includes: mobilization of three drilling rigs, installation of one VPB (located north of Southern State Parkway), and installation of six monitoring wells (five north of Hempstead Turnpike and one north of Southern State Parkway) and one round of quarterly groundwater sampling. The results of the recently installed VPBs and the quarterly groundwater sampling results were also presented. Future work includes: continued mobilization of three drilling rigs, installation of additional VPBs

(four north of Hempstead Turnpike, five north of Southern State Parkway and one south of Southern State Parkway), and installation of 42 wells associated with both the completed and planned VPBs in the three geographic areas.

RE108 HOTSPOT UPDATE

Mr. David Brayack of Tetra Tech provided a presentation outlining the RE108 hotspot area Investigation. The presentation is included in Appendix C.

The hotspot was confirmed in 2011 by the presence of trichloroethene (TCE) in groundwater at concentrations greater than 1000 parts per billion (ppb). The RE108 hotspot was formerly known as the BWD hotspot because of TCE detections in the BWD plant 6 wells; additional borings and wells have since been installed and the core of the hotspot is near well RE108. Trend analysis graphs were presented and explained that they are being used to help design a remediation system to reduce the hotspot to concentrations more in line with surrounding groundwater. Mr. Brayack went over the elements of the remedial design and presented several options for the space needed to house the extraction wells and pumping/air stripping equipment. He also went over several excess water disposal options that are under evaluation. Mr. Brayack also provided a preliminary time line for system design and startup.

Discussion questions and answers were as follows:

1. How far have you delineated the plume to the south? The plume has been delineated north of Southern State Parkway (see slide 8 from the Hotspot presentation).
2. On the OU 2 presentation on slide 15, the bottom right corner (in reference to outpost wells near Massapequa Water District wells), what are the results of the MW and or VPBs? The groundwater results are non-detect.
3. (A question from the RAB to Mike Boufis with BWD): Would you provide a timeline on how long it takes once the hotspot is identified until you can install treatment on the wellhead so the water can be distributed to BWD customers? It will take two years to equip a well with wellhead treatment. The BWD has already been doing system upgrades for the BWD Plant 6 wells.
4. (A question to Mr. Boufis from the RAB): Can the BWD handle the increased concentrations? Yes, the BWD has redundant systems in place to remove contaminants to non-detect.

5. Mr. Carey (MWD) voiced his concerns that 1,000 ppb is too high to define a “hotspot”. He stated that the drinking water standard for TCE is 5 ppb, the plume is at concentrations over 500 ppb south of Hempstead turnpike, and that the schedule for hotspot remediation system startup (2022) is a long time to begin capture of the plume.
6. (A question from the RAB to Mr. Carey): Is MWD prepared to be proactive, should the plume reach MWD wells? Mr. Carey stated that currently the concentration of trichloroethene at the MWD wells is non-detect. He stated that without remediation it is only a matter of time until the front of the plume reaches them. MWD is worried that the front of the plume might not be caught in time to prepare their wells for treatment. They are being proactive in monitoring the outpost wells, which are designed to give them 5 years of warning.
7. (A question from Mr. Carey to Mr. Boufis): Are your (BWD) expenditures being reimbursed? Mr. Boufis stated that costs are sent to the Navy for reimbursement. The Navy funds the operation and maintenance of their wellhead treatments. When asked about previous costs to BWD, Mr. Boufis stated that they are in litigation with another responsible party for reimbursement.

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 in April 2016. Ms. Fly thanked everyone for coming to the meeting and the meeting was adjourned.

APPENDIX A

29 OCTOBER 2015 RAB MEETING SIGN-IN SHEET

37th RAB Meeting for NWIRP Bethpage
October 29, 2015
Sign-in List

Name (Print)	Phone number and/or email if interested in being on mailing list	Affiliation	How did you hear about the meeting?
Mike Bufis			
Gordon Hicks			
Jen Good			
Gayle Waldra			
EDWARD OLMSTED			
Joseph Triparico			
Anne Carey Hartman			
Paul Pope			
Darlene Cannave			
Steve Karpinski			
John Swartwout			
Joseph DeFranco			
Walter Parrish			
Sal J. Greco	c		
Ethan Irwin			
SAUL ASH	S		

37th RAB Meeting for NWIRP Bethpage
October 29, 2015
Sign-in List

Name (Print)	Phone number and/or email if interested in being on mailing list	Affiliation	How did you hear about the meeting?
Mike Zobel			
Allan Jenkins			
[illegible]			
TIM Cook			
Stan Carey			
Bill Seevers			
Kiran Mall			
HENRY WILKIE			
JOHN SULLIVAN			
MARTIN HACKER			

37th RAB Meeting for NWIRP Bethpage
October 29, 2015
Sign-in List

Name (Print)	Phone number and/or email if interested in being on mailing list	Affiliation	How did you hear about the meeting?
SANDRA D'ARCANGELO			
Ahra Tatro			
Phil Sachs			
John Ellsworth			
DAVID SOBOLOW			
Ruth Kellmacher			
Harolyn Hood			
Don Fucs			
Valerie Thayer			

37th RAB Meeting for NWIRP Bethpage
October 29, 2015
Sign-in List

Name (Print)	Phone number and/or email if interested in being on mailing list	Affiliation	How did you hear about the meeting?
Karen Bell			
Dave Bragock			
Lora Fig			
Brian Caldwell			
Thomas Hand			
Laura Lorusso			
Joanne Delfreck			

APPENDIX B

RAB MEETING AGENDA AND DEFINITIONS

Resolution Consultants
A Joint Venture of AECOM & EnSafe
1500 Wells Fargo Building
440 Monticello Avenue
Norfolk, Virginia 23510

Agenda for Restoration Advisory Board

Naval Weapons Industrial Reserve Plant Bethpage

Date: October 29, 2015

Time: 6:30 PM

Location: Bethpage Community Center-103 Grumman Road West, Bethpage NY

Time: 6:30 PM to 7:00 PM

- Open house - general questions from the public

Time 7:00 PM to 8:00 PM

- Ground Rules – *The Management Edge*
- Introduction of RAB members and Regulators - *Navy*
- Distribution of minutes – *Navy*
- OU-2 Offsite Groundwater Investigation– *Resolution*
- RE108 Hot Spot update – *Tetra Tech*

Time 8:00 PM to 8:30 PM

- Questions – *RAB Members*
- Closing remarks – *Navy*

Copies of information can be found at the document repository located at the Bethpage Public Library, 47 Powell Avenue, Bethpage NY 11714 (516 931 9307) or online at http://go.usa.gov/DyXF.

RESOLUTION CONSULTANTS

RAB Members
David Sobolov – Community Co-Chair
Charles Bevilacqua
Tim Cook
Sandra D'Arcangelo
Robert Horan
Ethan Irwin
Jeanne O'Conner
Eugenia Mazzara
Rosemary Styne
Roy Tringali
Rose Walker

NYSDEC
Jim Harrington
Steve Scharf
Henry Wilkie

NYSDOH
Steve Karpinski

NCDOH
Joe DeFranco

Definitions and Clarification of Terms, Acronyms and Abbreviations

For the Bethpage Restoration Advisory Board (RAB)

- Basic:
  - VOC--Volatile Organic Compounds:
    - Chlorinated solvents (typically used as degreasers in manufacturing)
  - Effluent
    - Is an outflow of water from a treatment source
  - Free Product
    - Substance (usually oil or gasoline) that exists in its own state-it is not dissolved in water.
  - Soil Vapors
    - Gases contained in the pore spaces of soil
  - Capture Zone
    - Area of water whose flow direction is influenced by pumping
  - Ground Water
    - Water flows through open pore spaces of soil
  - Down gradient
    - The direction of groundwater flow
  - Plume
    - An area that impacts from chemicals are detected in
  - Raritan Clay Layer
    - A geologic horizon - Clay that is approximately 800-100 feet below ground surface – accepted to be the bottom of the Magothy aquifer
  - Aquifer
    - an underground layer of water-bearing permeable rock or unconsolidated materials
  - Trichloroethylene-
    - Volatile organic compound of concern (used as a degreaser in manufacturing)
  - OU- Operable Unit
  - BGS - Below Ground Surface
  - PCB- Polychlorinated Biphenols (used as transformer cooling fluid)
  - NG- Northrop Grumman
  - NWIRP-Naval Weapons Industrial Reserve Plant
  - No. 6 Fuel Oil- tar
  - Hot spot
    - Area where trichloroethylene is at a concentration greater than 1000 parts per billion
  - BWD Plants- Bethpage Water District Plants

- Data Gathering:
    - Gauging- measurement of ground water levels from top of ground surface
    - In-situ – in place
    - Delineate- define boundaries
    - VPB- Vertical Profile Boring
    - Monitoring Well- (typically 2-6 inches in diameter) a well used to provide a "snapshot" of water quality when sampled

- Treatment Technologies:
    - Biosparging
        - Removal of chemicals by breaking them down with bacteria
    - Steam Injection/Free Product Recovery
        - Heating of oil that has a tar like consistency with steam to make it flowable (syrup like consistency) so that it may be removed
    - Air Stripping
        - Removal of dissolved volatile organic compounds from water by transferring it into air
    - Land Use Controls
        - Action that restricts what land can be used for
    - Vapor Phase treatment-
        - Removal of a chemical from gas; used to remove trichloroethylene from air vapor
    - Biodegradation
        - Reduce a chemical by changing conditions so that bacteria can break down the chemical
    - On-site Containment Treatment System (ONCT)
        - Series of wells that remove and treat groundwater at the southern edge of the former Northrop Grumman property
    - SVECS—Soil Vapor Extraction Containment System
        - Vacuum for volatile chemicals trapped in the air between soil particles; used to remove trichloroethylene
    - Equalization Tank
        - Tank for mixing
    - Liquid Phase Granular Activated Carbon Polishing
        - Removal of remnants of a volatile chemical by passing liquid through carbon; used to remove trichloroethylene

- Recharge basin
    - Sandy basin that receives storm water and allows water to filter down into the ground
- Recovery Well
    - (Typically larger diameter 12 to 36 inches) a well used to recover oil or water containing chemicals

- Regulatory:
    - Proposed Plan- Plan of action that is sent to the state for approval prior to the Final Record of Decision
    - Feasibility Study- collection of data used to determine if a remedy will work
    - ROD –Record of Decision
    - Compliance sampling- collection of samples to demonstrate that chemicals are below regulatory levels
    - CERCLA- Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) – the legal mechanism for cleaning up inactive hazardous waste sites at DOD (Depart of Defense) facilities, this is the defining regulation for the Navy's Environmental Restoration (ER) Program at NWIRP Bethpage under NYSDEC authority.
    - RCRA- Resource Conservation and Recovery Act (RCRA) Corrective Action – a statutorily required cleanup program, similar to CERCLA, that addresses active solid waste management units and contaminated media as a condition of RCRA permits - NWIRP Bethpage has a RCRA Permit with NYSDEC
    - NYSDEC- New York State Department of Environmental Conservation (NYSDEC) provides regulatory review and approval of Navy actions at NWIRP Bethpage
    - NYSDOH- New York State Department of Health (NYSDOH) assists NYSDEC.
    - USEPA- United States Environmental Protection Agency (USEPA) Provides federal review of the Navy actions.

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  - Hot spot
    - Area where trichloroethylene is at a concentration greater than 1000 parts per billion (as defined in the 2003 ROD)
  - BWD Plants- Bethpage Water District Plants

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APPENDIX C

PRESENTATIONS

GROUND RULES
OCTOBER 2015 RESTORATION ADVISORY BOARD (RAB)

NAVAL WEAPONS INDUSTRIAL RESERVE PLANT BETHPAGE LONG ISLAND, NEW YORK

10/29/2015

Naval Weapons Industrial Reserve Plant Bethpage RAB Ground Rules

- **Respect others:**
  - **One Speaker at a time**
  - **No interruptions**
  - **No side conversations**
  - **Listen and stay open to all points of view**
- **Ask questions or make statements after all the presentations are given: (approximately 8:30)**
  - **During the presentations, write any questions on the cards on your table and pass them forward, or raise them and they will be picked up and taken to the RAB Community Co-Chair.**
  - **They will be answered after presentations are completed.**
- **Stay focused on the topics; avoid digressions.**
- **Turn cell phones and /or pagers off, or on vibrate, and respond outside or during breaks, except for emergencies.**

The Management | Edge

OPERABLE UNIT 2 - OFFSITE GROUNDWATER INVESTIGATION

OCTOBER 2015 RESTORATION ADVISORY BOARD

NAVAL WEAPONS INDUSTRIAL RESERVE PLANT BETHPAGE
LONG ISLAND, NEW YORK

10/29/2015

PRESENTATION LAYOUT

1 - Program Objectives

2 - Local Groundwater Geology and Applicability to Bethpage Plume

3 - 2009 – 2015 Vertical Profile Borings and Wells

4 - Recent Work (Performed since last Restoration Advisory Board)

5 - Future Work

6 - Assessing Results and Recent Reports and Findings

OBJECTIVES

1. Protection of public water supply wells –
   All currently planned outpost wells are in place and being monitored quarterly
2. Assessment of RE108 Hotspot –
   Installation of Monitoring Wells and Vertical Profile Borings to Delineate the Hotspot
3. Address Hotspot –
   Pilot Study in cooperation with Bethpage Water District to use one of their wells
   Area to the southwest of Bethpage Water District Plant 6 for a separate treatment system

GROUNDWATER INVESTIGATION

Purpose: Delineate groundwater contamination in areas south of Naval Weapons Industrial Reserve Plant Bethpage

Program Components:

- **Vertical Profile Borings (VPB)** - used to quickly screen areas for the presence, depth, and concentration of contamination; drilling can take 4-8 weeks to complete
- **Permanent Monitoring Wells** - to confirm presence/absence of contamination and develop trends; drilling can take 2-6 weeks to complete
- **Data logging of water levels** - to support modeling and capture zone analysis for wells

VERTICAL PROFILE BORINGS (VPB)

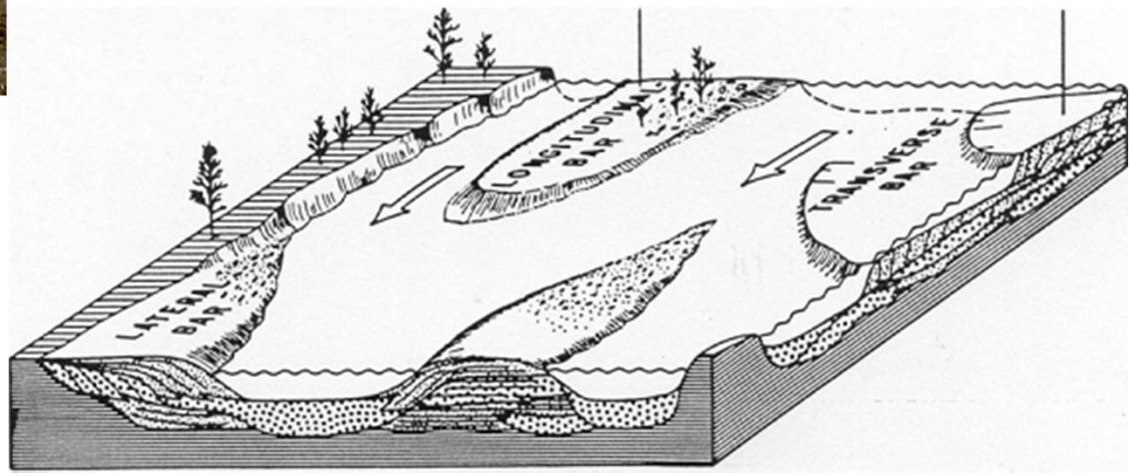
- **12-inch** diameter hole drilled into the ground
- Final boring is **860 to 1,000 feet deep** (extending to the Raritan Clay Layer)
- Drilling is stopped at selected depths and a device is lowered to sample the groundwater
- **44 groundwater samples** are collected per boring and analyzed for Volatile Organic Compounds
- **4 to 8 weeks** to complete a boring/well

VPB AND WELL INSTALLATION PROCESS

- Process:
  - –Ideal map location selected by Navy and State;
  - –Location is then ground-proofed (visual check onsite) by the Navy;
  - –Drilling rig requires minimum of 100 feet with no overhead obstructions;
  - –Generally on township right-of-ways;
  - –Considerations to minimize inconvenience to residents nearby:
    - Health and Safety Concerns
    - Ingress and egress
    - Noise
  - –Advanced notification to nearest residence

LOCAL GROUNDWATER GEOLOGY

MAGOTHY AQUIFER

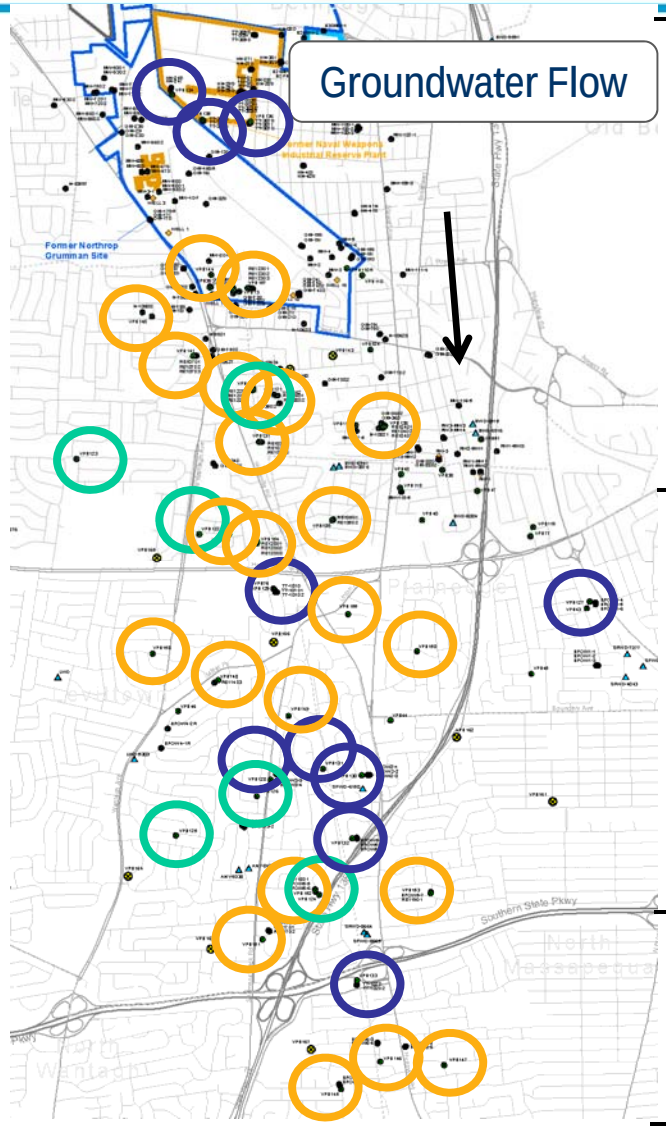


2009 – 2015
VERTICAL PROFILE BORINGS AND WELLS

2009
Completed (green)

2010 to 2012
Completed (blue)

2012 to 2015
Completed (orange)



North of Hempstead Turnpike Area

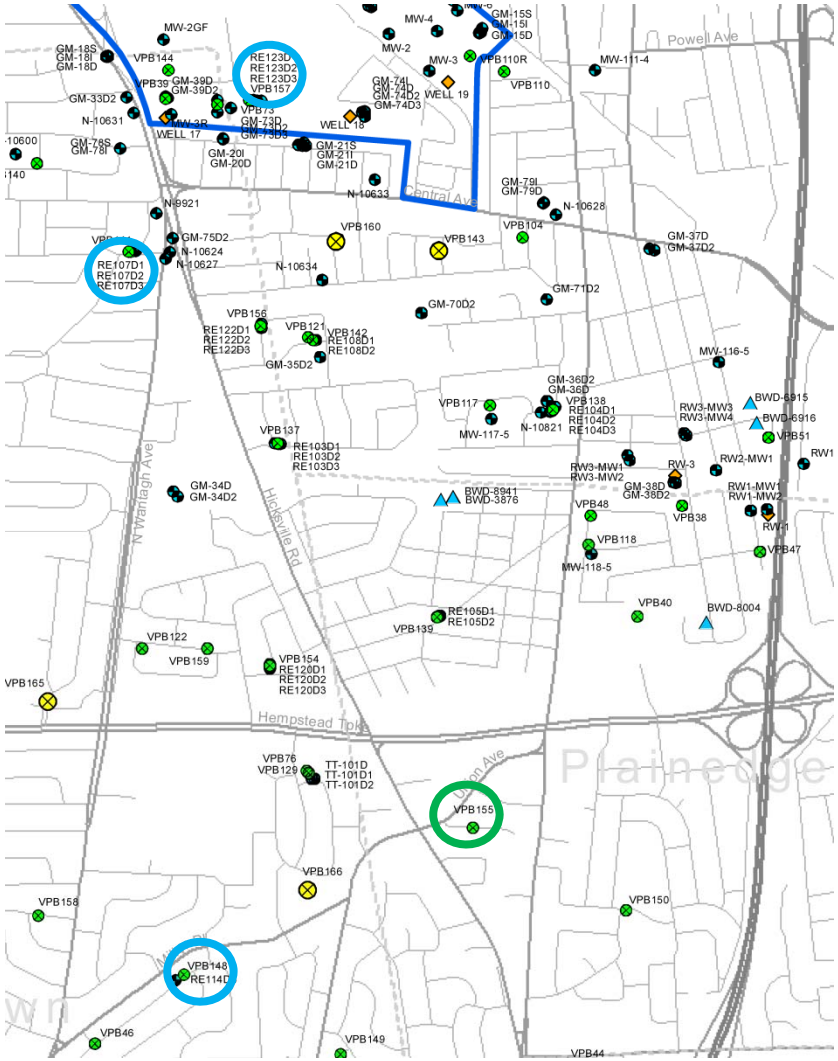
North of Southern State Parkway Area

South of Southern State Parkway Area

RECENT WORK
VERTICAL PROFILE BORINGS AND MONITORING WELLS

From August 2015 to present

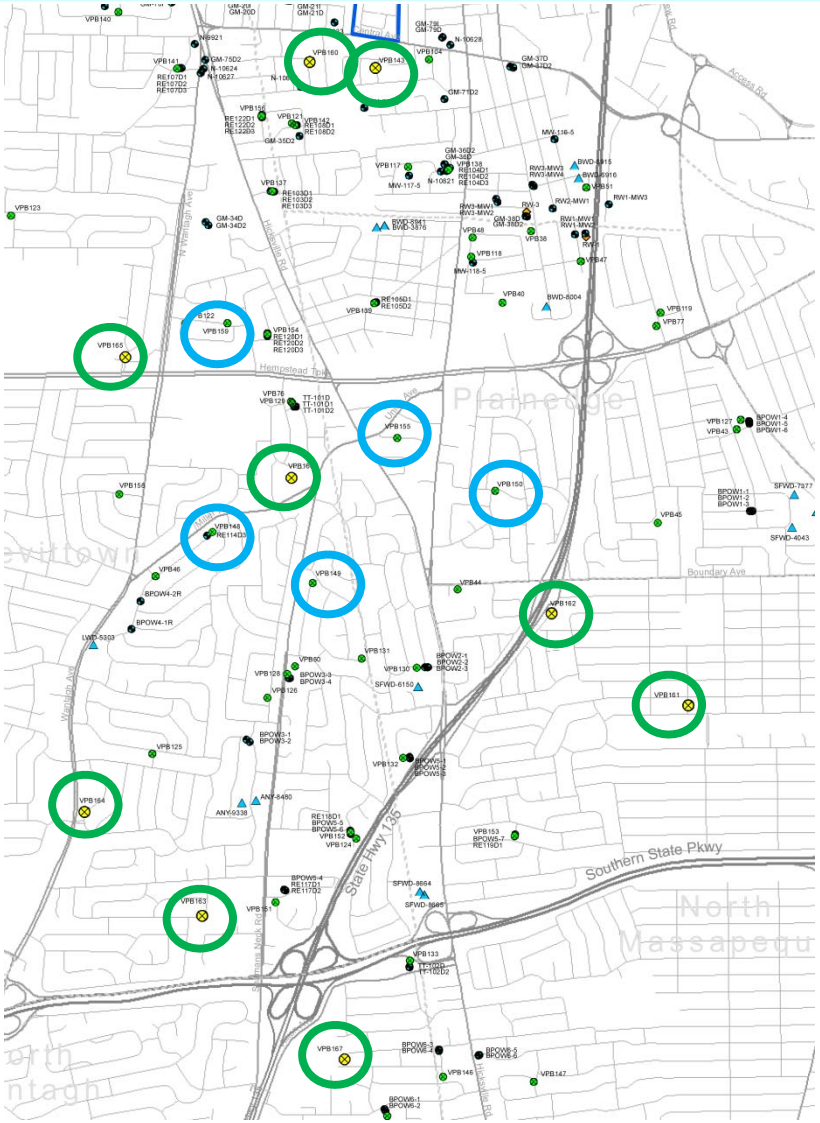
- –Operation of 3 drilling rigs
- –Installation of VPB 155 located North of Southern State Parkway Area
- –Installation of 6 Monitoring Wells associated with VPBs 141, 148, and 157
- –Completion of 1 round of quarterly groundwater sampling



FUTURE WORK
VERTICAL PROFILE BORINGS AND MONITORING WELLS

Planned work through April 2017:

- Operation of 3 drilling rigs
- Installation of Vertical Profile Borings
  - 4 north of Hempstead Turnpike Area
  - 5 north of Southern State Parkway Area
  - 1 south of Southern State Parkway Area
- Installation of Monitoring Wells
  - 14 north of Hempstead Turnpike Area
  - 26 north of Southern State Parkway Area
  - 2 South of Southern State Parkway Area
- Continue quarterly groundwater sampling



ASSESSING GROUNDWATER RESULTS

Laboratory analysis is performed for multiple volatile organic compounds.

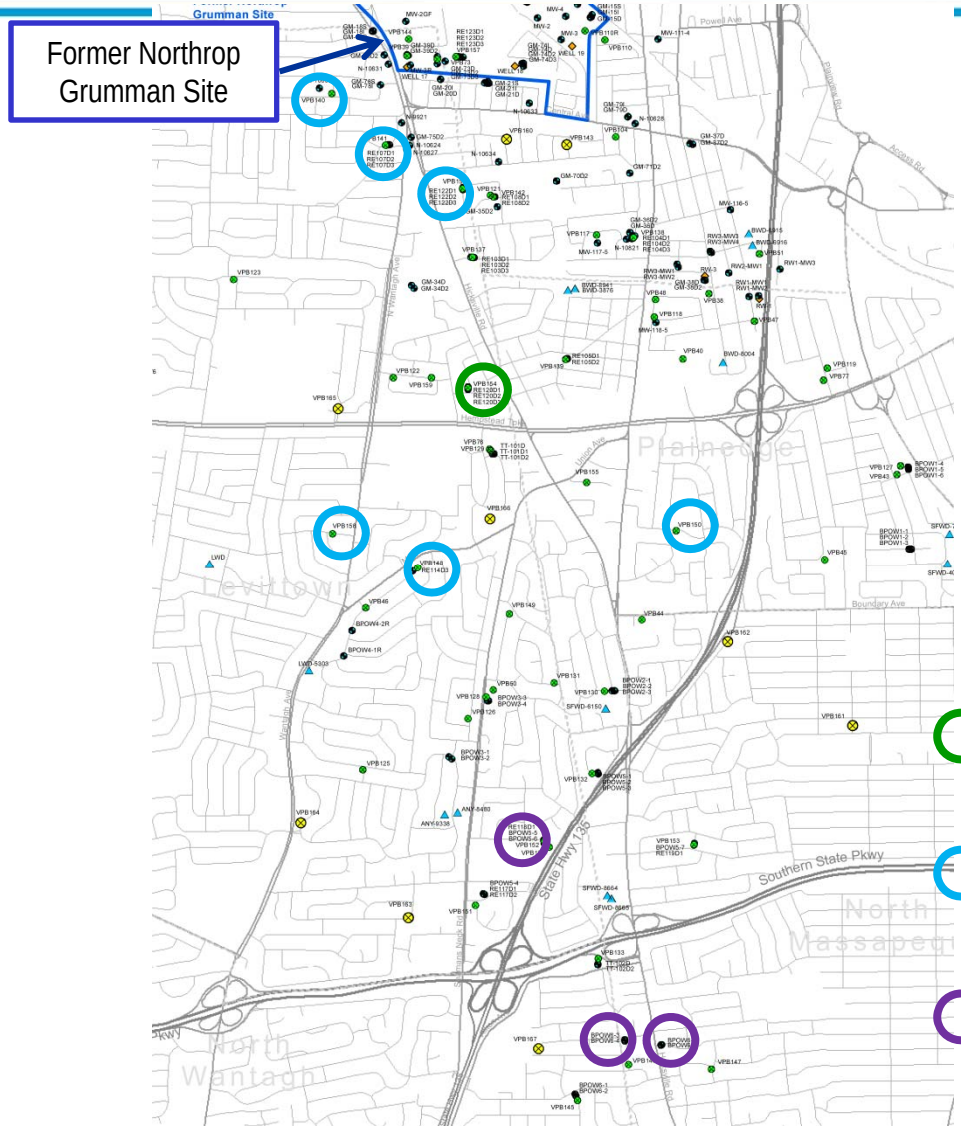
The primary contaminant being used to track the plume is trichloroethene because it has the highest concentrations.

- Acceptable Maximum Contaminant Limit (MCL) is a limit established by Federal and State regulations
- The Maximum Contaminant Limit for trichloroethene is 5 parts per billion

Hotspot Identification

- Area with >1,000 parts per billion of total volatile organic compounds
- Defined in the Operable Unit 2 Offsite Groundwater 2003 Record of Decision

RECENT VPB RESULTS

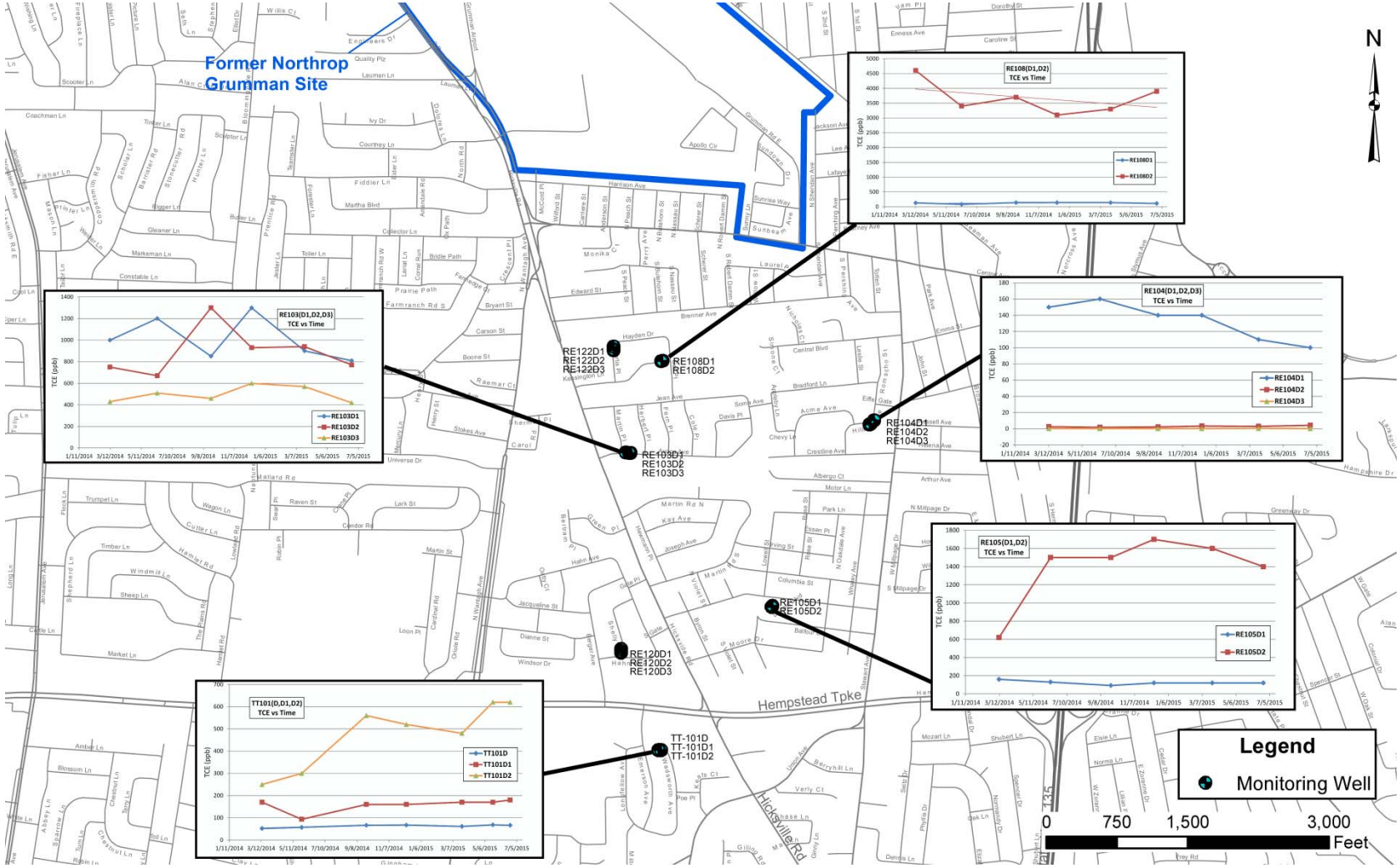


> 1,000 parts per billion trichloroethene

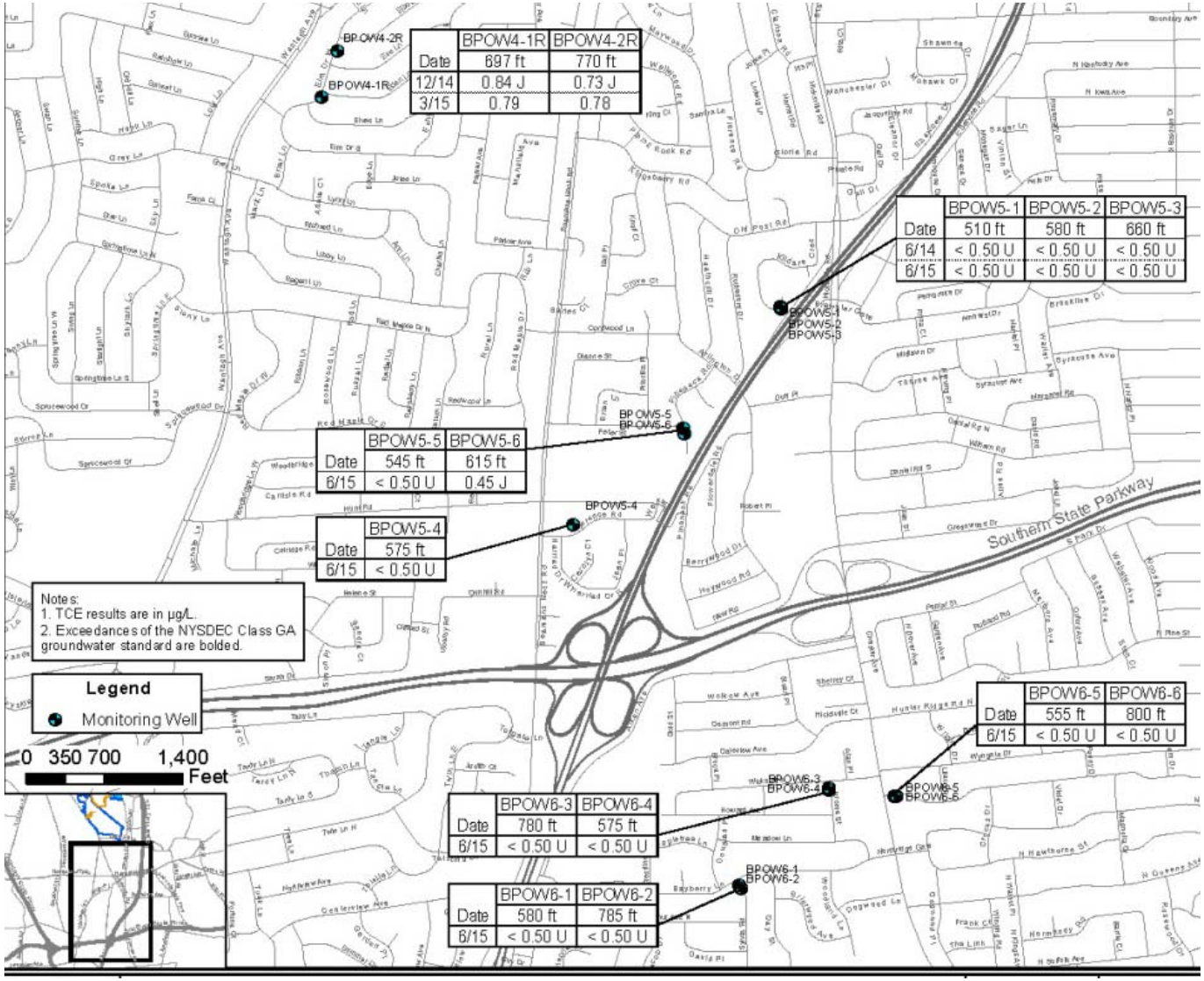
<1,000 parts per billion trichloroethene

Trichloroethene not detected

RECENT TRENDS FROM QUARTERLY SAMPLING



RECENT QUARTERLY GROUNDWATER SAMPLING TRICHLOROETHENE RESULTS



Date	BPOW4-1R 697 ft	BPOW4-2R 770 ft
12/14	0.84 J	0.73 J
3/15	0.79	0.78

Date	BPOW5-1 510 ft	BPOW5-2 580 ft	BPOW5-3 660 ft
6/14	< 0.50 U	< 0.50 U	< 0.50 U
6/15	< 0.50 U	< 0.50 U	< 0.50 U

Date	BPOW5-5 545 ft	BPOW5-6 615 ft
6/15	< 0.50 U	0.45 J

Date	BPOW5-4 575 ft
6/15	< 0.50 U

Date	BPOW6-5 555 ft	BPOW6-6 800 ft
6/15	< 0.50 U	< 0.50 U

Date	BPOW6-3 780 ft	BPOW6-4 575 ft
6/15	< 0.50 U	< 0.50 U

Date	BPOW6-1 580 ft	BPOW6-2 785 ft
6/15	< 0.50 U	< 0.50 U

GROUNDWATER SAMPLING RECENT RESULTS

•Conclusions:

Objective 1 -Outpost wells recently installed

– BPOW 6-4, BPOW 6-5, BPOW 6-6, BPOW 5-4, BPOW 5-5, BPOW 5-6, and BPOW 5-7

Objective 2 -Assessment of hotspots

– New hotspot (RE108) has been identified by latest phase of Navy drilling program

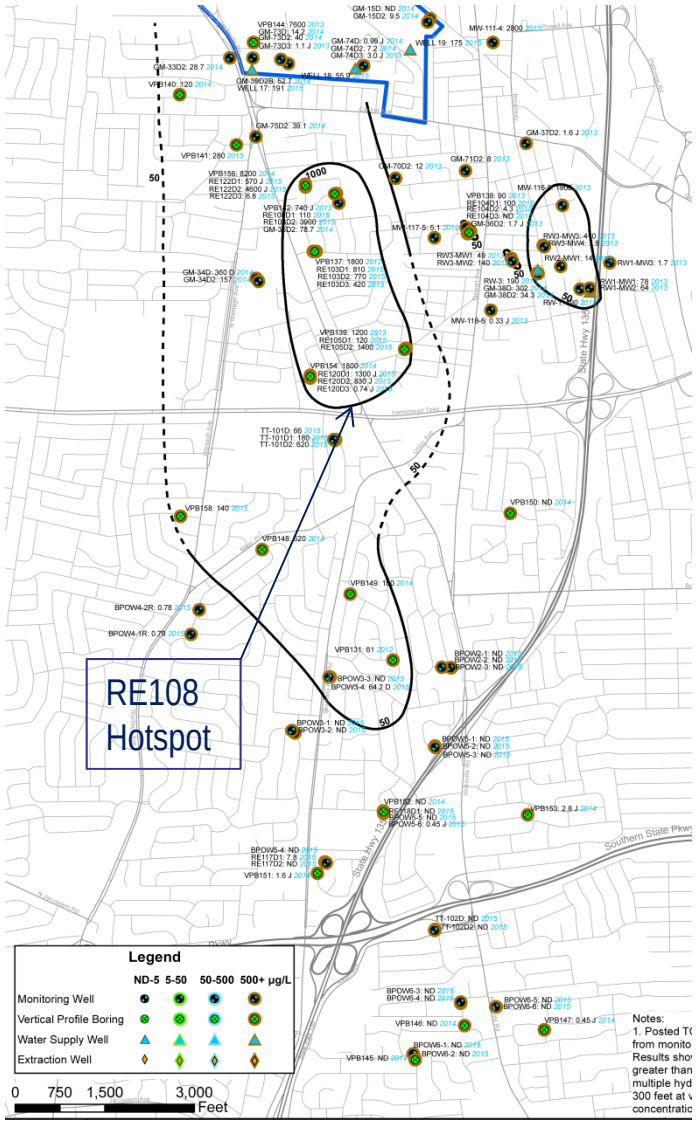
- Trichloroethene found above 1,000 parts per billion in the North of Hempstead Turnpike Area at depths greater than 600 feet
- Additional drilling is planned to the north, south and west

– GM-38 Hotspot previously identified to the east has been undergoing treatment since 2009

Objective 3 – Address Hot Spot

– Treatment options are being evaluated to mitigate potential impacts to public water supply wells; Pilot study has been started in cooperation with Bethpage Water District

– Groundwater monitoring will continue so concentration trends, if any, over time can be assessed



RE108 HOTSPOT UPDATE

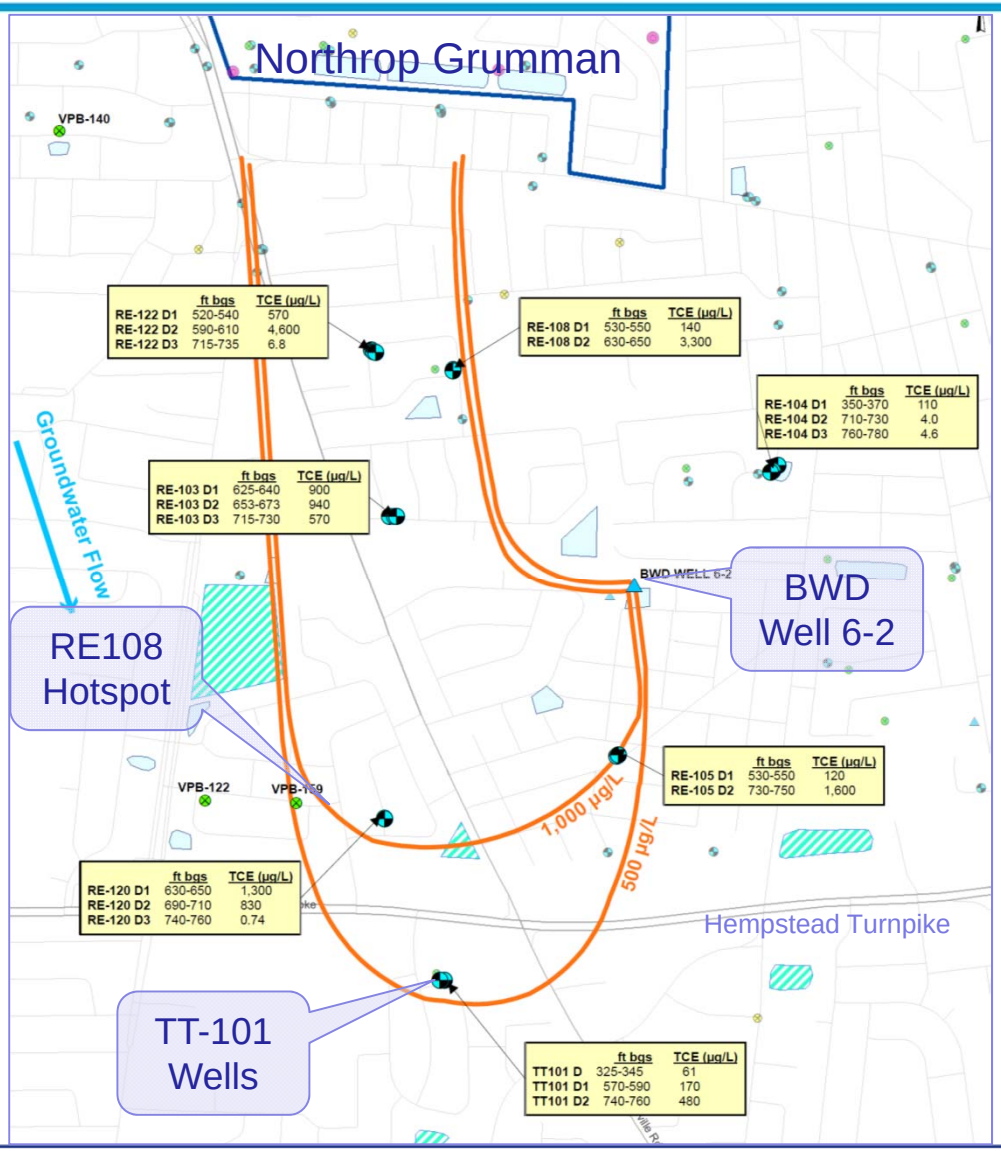
OCTOBER 2015 RESTORATION ADVISORY BOARD

NAVAL WEAPONS INDUSTRIAL RESERVE PLANT BETHPAGE
LONG ISLAND, NEW YORK

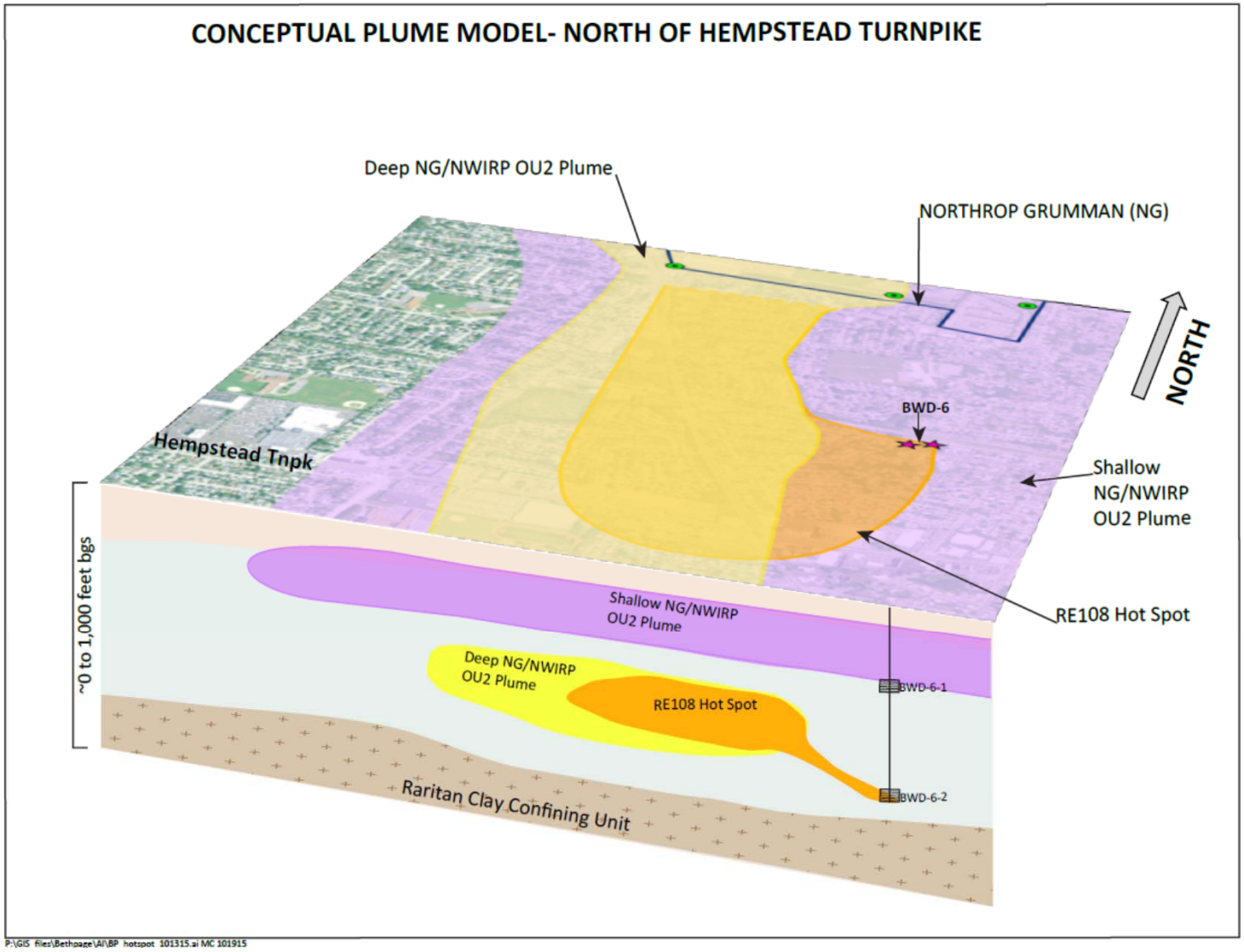
10/29/2015

RE108 Hotspot Area Investigation

- RE108 Hotspot Area
  - Formerly known as the Bethpage Water District (BWD) Plant 6 Hotspot
  - First confirmed in 2011 based on Trichloroethene (TCE) at greater than 1,000 micrograms per liter (ug/L) in BWD Well 6-2
  - Vertical profile boring and monitoring well data has been sufficiently defined to proceed, plume delineation subject to ongoing investigations

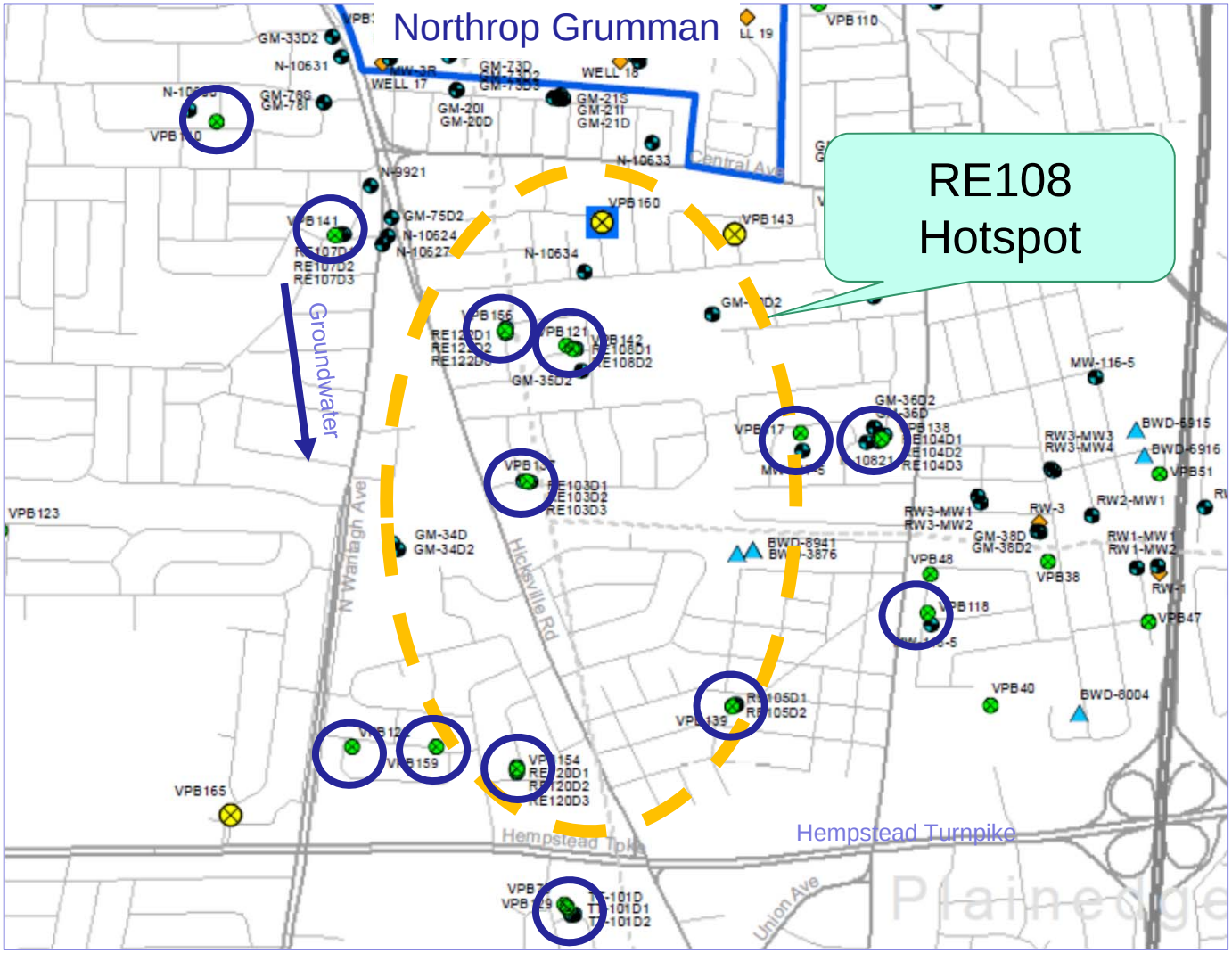


Conceptual Site Model – RE108 Hot Spot Area

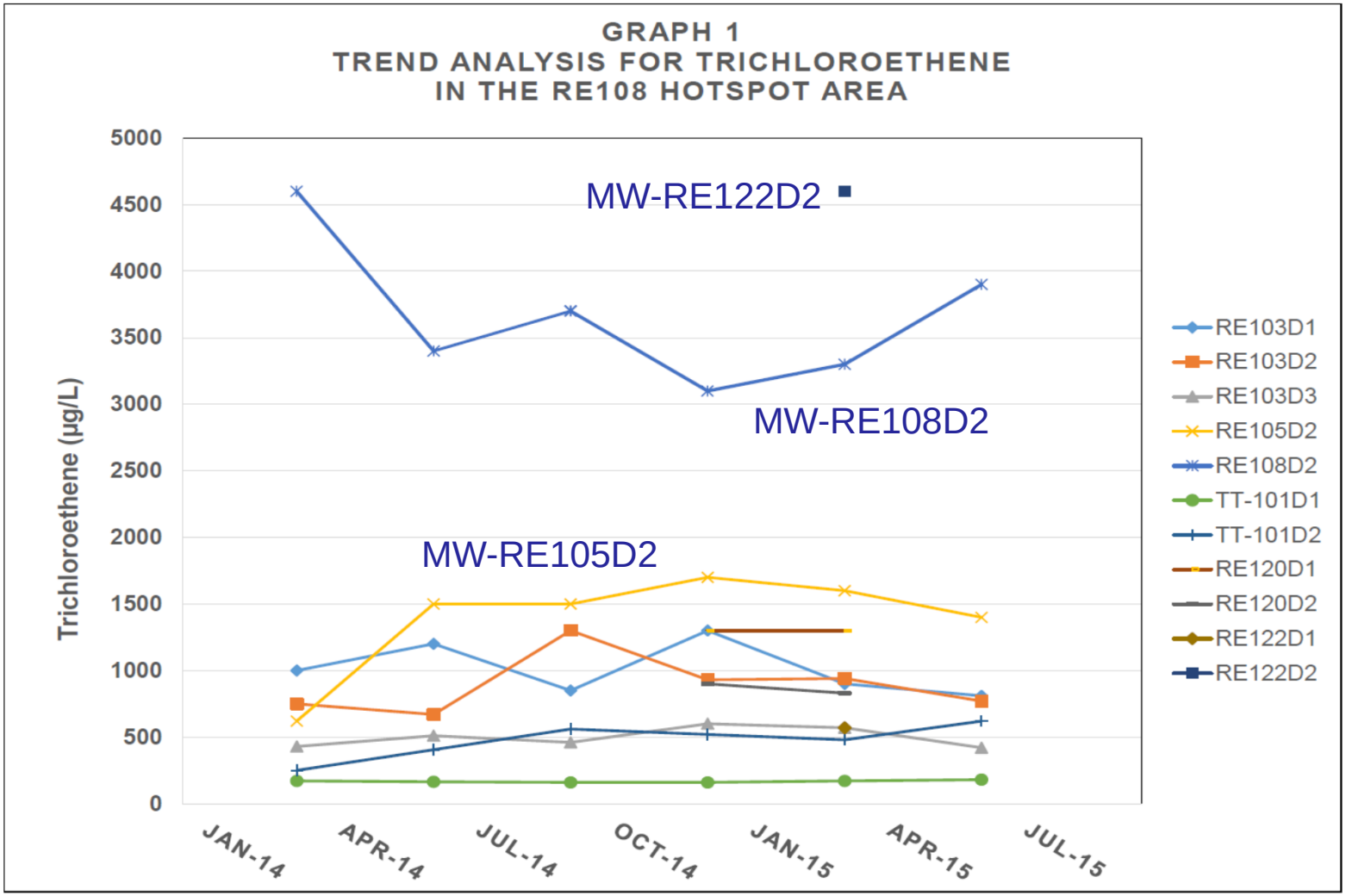


P:\GIS files\Bethpage\AI\BP hotspot 101315.ai MC 101915

RE108 Hotspot Area – Plume Delineation Using Vertical Profile Borings



RE108 Hotspot Area Investigation



RE108 Hotspot Area

Design

- Two to four extraction wells, 500 to 700 feet below ground surface
- Combined pumping rate of 900 to 1,200 gallons per minute
- Treatment Process: Air Stripping and Granular Activated Carbon
- Treatment Goal: Drinking Water Standards

RE108 Hotspot Area

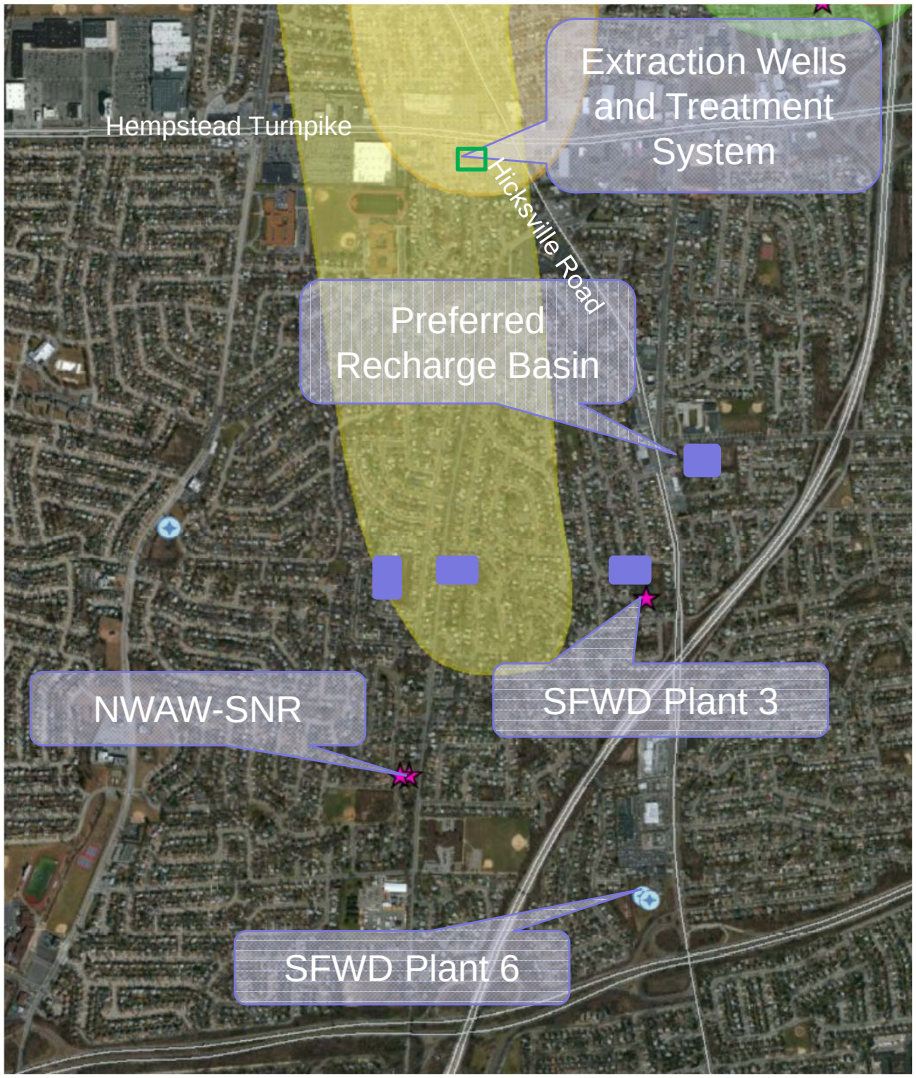
Design

- Treatment Plant Dimensions: 75 feet by 75 feet by 25 feet high
- Treatment Plant property buffer, minimum of 100 feet to occupied structures – 2 acres
- Additional land for extraction wells and piping
- Preferred initial location is near the intersection of Hicksville Road and Hempstead Turnpike (TP Opt1)
- Alternative Treatment Plant Locations include Wantagh Avenue (TP Opt 2) and Stewart Avenue (TP Opt3)

RE108 Hotspot Area

Design (Continued)

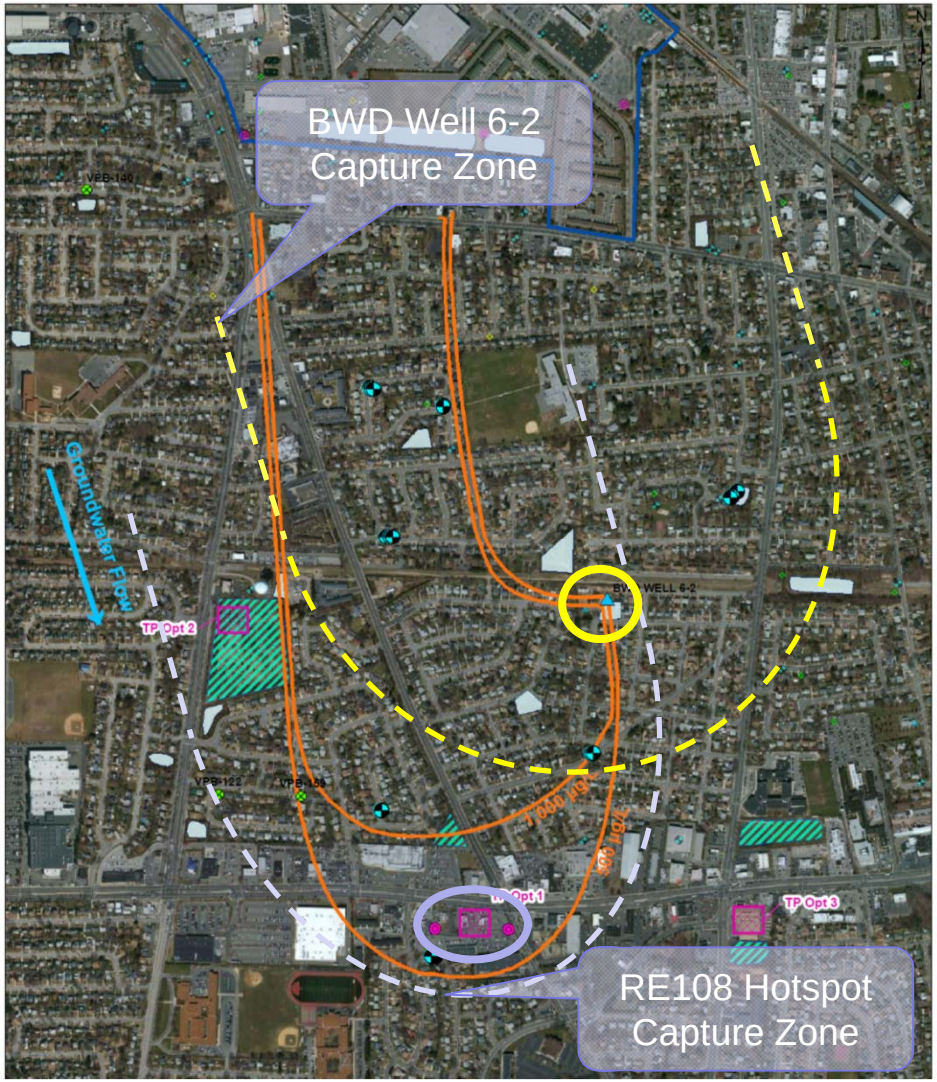
- Discharge to Recharge Basin, Hicksville Road – 3,500 feet southeast
- Concern with pushing plumes to other water districts:
  - Levittown Water District (LWD)
  - New York American Water (NYAW)
  - South Farmingdale Water District (SFWD)
- Other discharge options for treated water include:
  - Basins near TP Opt2 and Opt3 (previous slide)
  - Northrop Grumman/Naval Weapons Industrial Reserve Plant properties
  - Injection Wells various locations
  - Sanitary System (Cedar Creek)
  - South Oyster Bay



RE108 Hotspot Area Capture Zone

RE108 Hotspot Area Capture Zone

- Currently estimated capture zones for BWD Well 6-2 and RE108 Hotspot Wells
- Capture zones are based on 24-hour pumping test, evaluation indicates that BWD Well 6-2 sustained operation may miss a portion of the hot spot
- Navy is conducting a three-month pumping test using BWD Well 6-2 to better establish capture zone



RE108 Hotspot Area Path Forward

Path Forward

- Preliminary Design Activities Underway, Basis of Design Report – 2017
- Property Access – 2018 and 2019
- Design Activities – 2019 and 2020
- Construction/Startup – 2021 and 2022