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## OPERABLE UNIT 2 - OFFSITE GROUNDWATER INVESTIGATION

APRIL 2014 RESTORATION ADVISORY BOARD

NAVAL WEAPONS INDUSTRIAL  
RESERVE PLANT BETHPAGE  
LONG ISLAND, NEW YORK

04/09/2014

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# OFFSITE INVESTIGATION PROGRAM PRESENTATION



- 1 - Description of Purpose and Program
- 2 - Conceptual Site Model and Applicability to Bethpage Plume
- 3 - Maps of Existing Vertical Profile Borings and Wells
- 4 - Description of Work Performed since last Restoration Advisory Board
- 5 - Description of Future Work
- 6 - Recent Reports
- 7 - Plume extent

# OPERABLE UNIT 2 GROUNDWATER INVESTIGATION - PURPOSE



- Delineate groundwater contamination in areas south of Naval Weapons Industrial Reserve Plant 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
  - Data logging of water levels to support United States Geological Survey modeling and capture zone analysis for wells

# OPERABLE UNIT 2 INVESTIGATION - VERTICAL PROFILE BORING PROGRAM

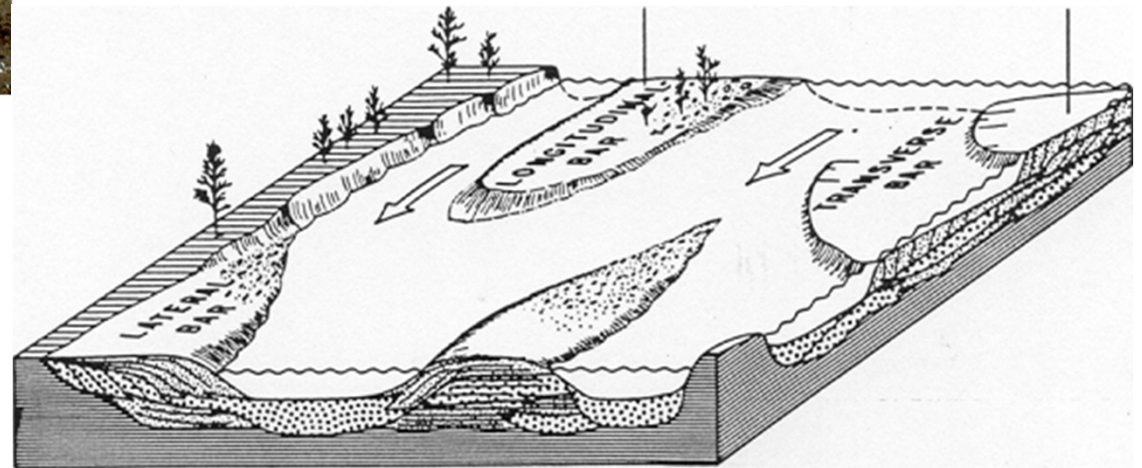


- A vertical profile boring is a 12-inch diameter hole drilled into the ground. At select depths, the drilling is stopped, a device is lowered to depth, and a sample of the water is collected.
- The borings will extend to the Raritan Clay Layer at a depth up to 860 to 1000 feet below ground surface.
- 36 groundwater samples are collected per boring and analyzed for Volatile Organic Compounds
- Generally it takes 4 to 8 weeks to complete a boring/well

# CONCEPTUAL SITE MODEL BASAL MAGOTHY AQUIFER



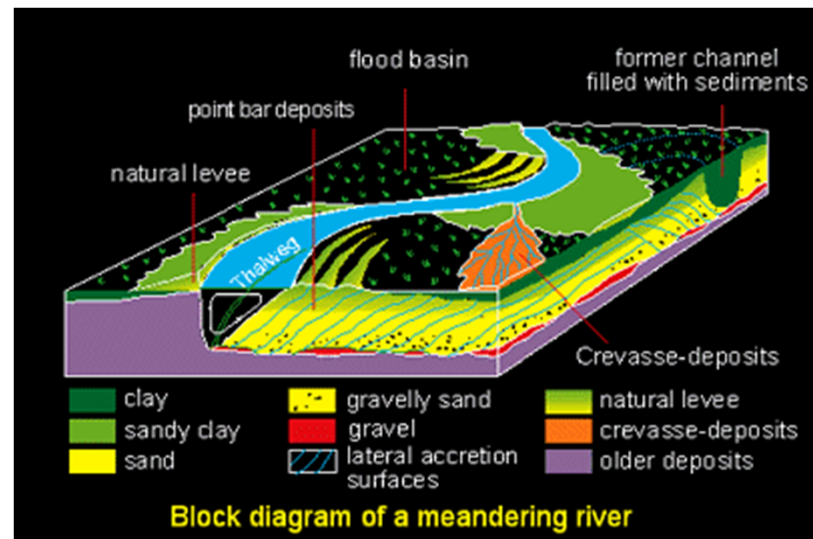
Results in interbedded sands and gravels



# CONCEPTUAL SITE MODEL MIDDLE TO UPPER MAGOTHY AQUIFER



Results in interbedded sands and clays





Naval Weapons Industrial Reserve Plant Bethpage / Northrop Grumman Corporation

Groundwater Flow

2012 to 2014 Completed (orange)

# 2009 to 2014 Vertical Profile Borings and Monitoring Wells

Vertical Profile Borings and Monitoring Wells

2009 Completed (green)

2010 to 2012 Completed (blue)

- Legend**
- Monitoring Well
  - Vertical Profile Boring
  - Vertical Profile Boring - Proposed
  - Water Supply Well
  - Extraction Well



# OPERABLE UNIT 2 – CURRENT AND FUTURE VERTICAL PROFILE BORINGS AND MONITORING WELLS



- Work performed since last Restoration Advisory Board (November 2013)
  - Mobilization of 2 drilling rigs
  - Installation of Vertical Profile Borings:
    - 142 and 144 located North of Hempstead Turnpike Area
    - 148 located North of Southern State Parkway Area
    - 146 located South of Southern State Parkway Area
- Future work:
  - Mobilization of 3 drilling rigs
  - Installation of Vertical Profile Borings
    - 7 North of Hempstead Turnpike Area
    - 5 North of Southern State Parkway Area
    - 2 South of Southern State Parkway Area
  - Installation of 6 monitoring wells South of Southern State Parkway Area



# CURRENT AND PLANNED VERTICAL PROFILE BORING LOCATIONS



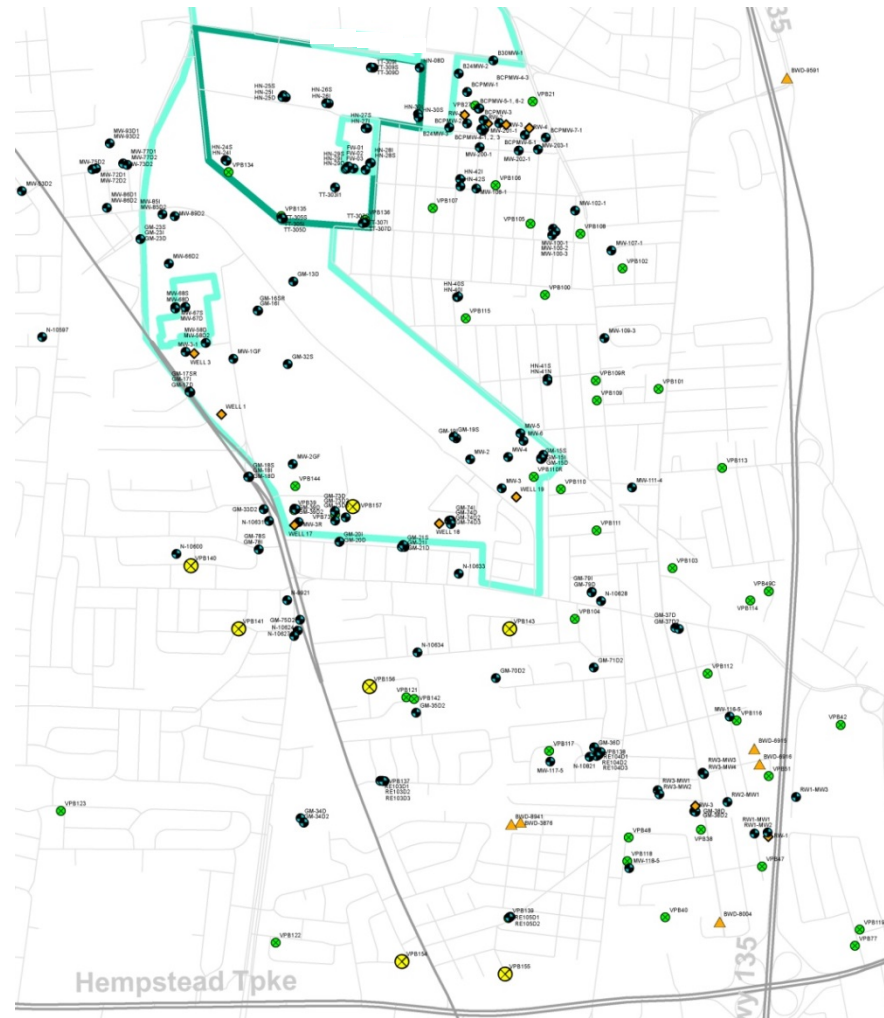
*Please refer to the posters provided for detail*

North of Hempstead Turnpike Area: 140-144; 154-157

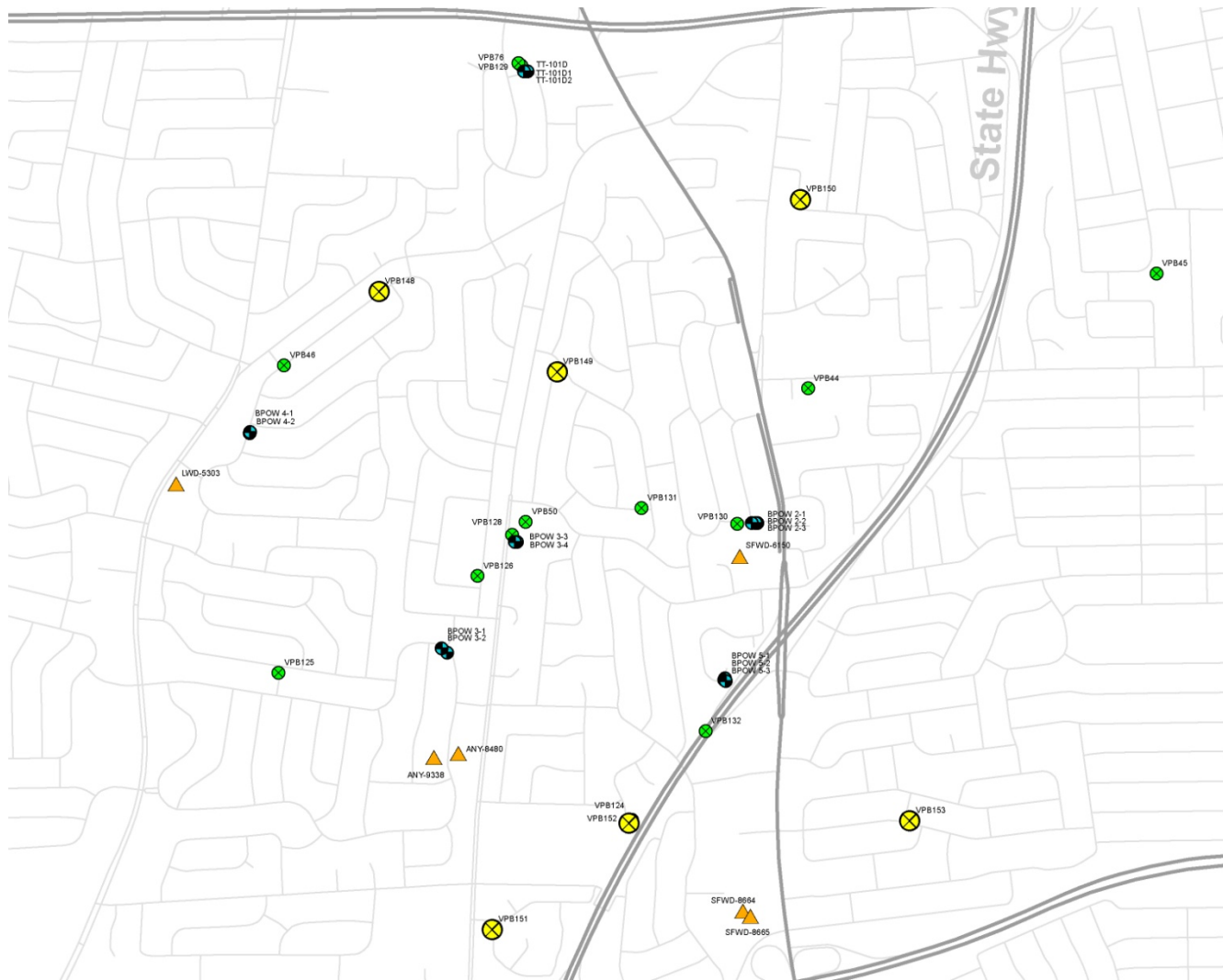
North of Southern State Parkway Area: 148-153

South of Southern State Parkway Area: 145-147

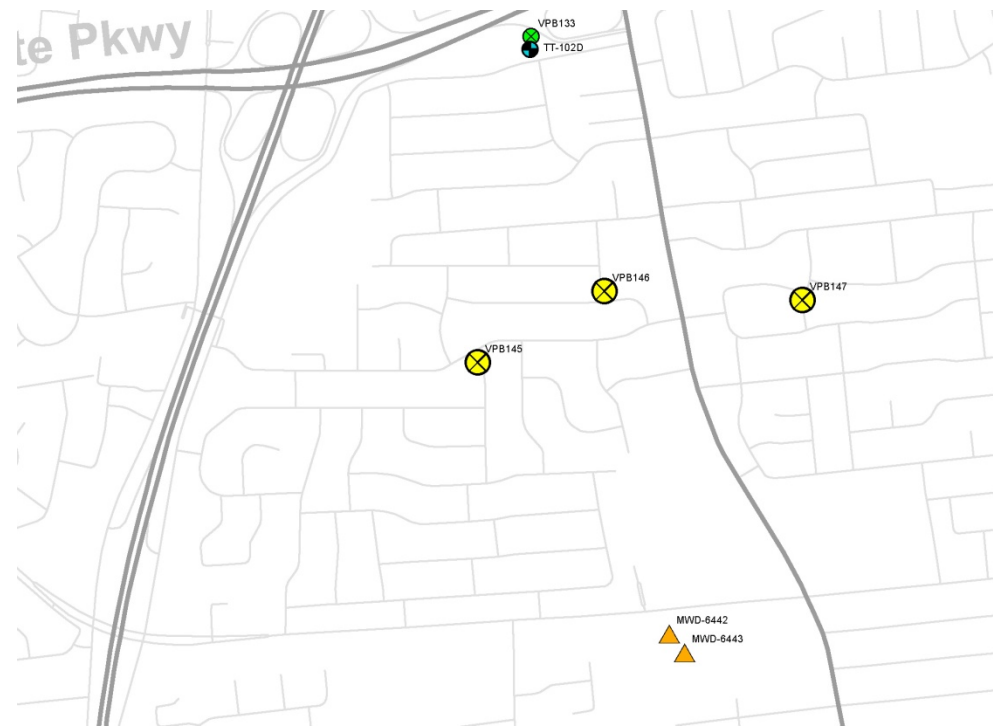
# CURRENT AND PLANNED VERTICAL PROFILE BORINGS – NORTH OF HEMPSTEAD TURNPIKE AREA



# CURRENT AND PLANNED VERTICAL PROFILE BORINGS NORTH OF SOUTHERN STATE PARKWAY AREA



# CURRENT AND PLANNED VERTICAL PROFILE BORINGS – SOUTH OF SOUTHERN STATE PARKWAY AREA



# RECENT VERTICAL PROFILE BORING/WELL REPORTS



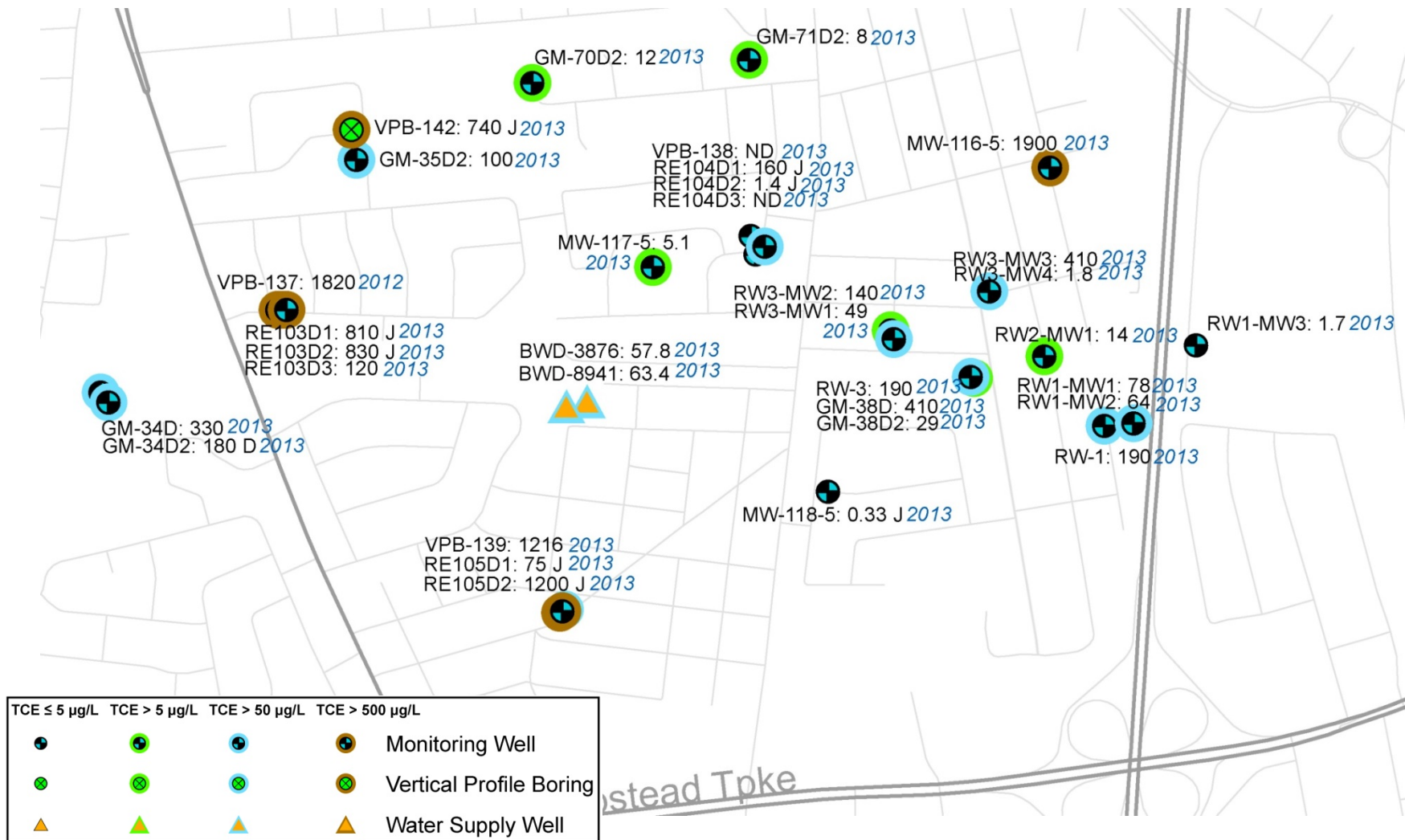
Data Summary Report Vertical Profile Borings 137-139 with 8 wells (North of Hempstead Turnpike Area) submitted March 10, 2014

Uploaded to the Administrative Record

Significant findings –

Elevated Trichloroethylene (>1000 parts per billion) in the vicinity of Vertical Profile Boring 139; this is being evaluated with additional groundwater sampling

# RECENT RESULTS – VERTICAL PROFILE BORINGS 137-139 AND SURROUNDING VERTICAL PROFILE BORINGS/WELLS



# OFFSITE DETECTIONS (>300 FEET) BASED ON RECENT DATA



Note that all public water supply wells are shown;  
Please refer to the large poster for greater detail.

