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CC: sxscharf@gw.dec.state.ny.us; kent.smith@ngc.com; Stein.Carol@epamail.epa...
Date: 1/3/2011 6:17 PM
Subject: Kickoff Call - Bethpage OU-2 Site 1 - Remedy Validation & Optimization
Attachments: Bethpage OU2 Kickoff Call Agenda.docx; Team Members_Remedy Validation and Optimization of Bethpage Site 1.docx

All,

This is a reminder that tomorrow Tuesday Jan 4th we will be having the kickoff call for the Bethpage Remedy Validation and Optimization team. The call will be at 10am pacific / 1pm eastern and will last 2 hours. Call-in Number is 1-866-745-1157 with the passcode 172507.

Attached is an agenda for the call, which also includes team goals and a schedule. I've also attached an updated list of team members. Keep your eyes open for another e-mail prior to the call with an attached presentation covering site background.

Looking forward to talking with you tomorrow!

Karla

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Remedy Validation and Optimization of Bethpage Site 1
Team Members

Core Technical Team

- Team Leader – NAVFAC Engineering Service Center
  - **Karla Harre, P.E.**
    - Responsible for securing team members, timeliness, ensuring quality report
    - Technical expertise in remedy optimization & site closeout

- Team Facilitator – NAVFAC Atlantic
  - **Arun Gavaskar**
    - Focuses team discussion to address goals, ensures appropriate technical input from team members, final decision-maker on conflicting views
    - Technical expertise in remedy optimization & site closeout

- Lead Report Writer and Technical Expert – Battelle Memorial Institute
  - **Heather Rectanus, PhD**
    - Coordinates input from team to document the evaluation, recommendations, and conclusions.
    - Bioremediation technical specialist, MNA in chlorinated solvent plumes, DNAPL remediation strategies, biobarriers, biosparging.

- Technical Experts
  - **Chuck Newell, PhD, P.E. (GSI)**
    - Expertise in chlorinated solvents, DNAPLs, hydrogeology, site characterization, groundwater modeling, risk assessment, natural attenuation, bioremediation, non-point source studies, software development, and long-term monitoring projects.
  - **Mark Widdowson, PhD (Virginia Tech)**
    - Professor of Civil and Environmental Engineering
    - Expertise in reactive contaminant transport modeling of chlorinated solvents. Additional expertise in bioremediation, phytoremediation, modeling groundwater flow and transport, hydrology, and hydraulics.
  - **Paul Misut (USGS)**
    - Modelling/Hydrologist familiar with site and groundwater model.
  - **Richard W. Humann, P.E. (H2M Group)**
    - H2M Group (consultant for Water Districts)

Ad Hoc Members & Informational Support

- **Lora Fly** - NAVFAC Remedial Project Manager for Bethpage
- **David Brayack** – TetraTech Navy Contractor for Bethpage
- **Kim Parker Brown, P.E.** - NAVFAC Headquarters

- **Kent Smith** - Northrup-Grummin / Arcadis
- **Carol Stein** - USEPA Region 2
- **Steve Scharf** - NYSDEC
- Other Navy in-house technical support as needed – Donna Caldwell, Dawn Hayes, Tanwir Chaudhry, Ruth Owens, Josh Fortenberry

Kickoff Call
Remedy Optimization & Validation of Bethpage OU-2, Site 1

Date: January 4, 2011 at 10am Pacific / 1pm Eastern

Dial-in: 1-866-745-1157 with passcode 172507

Agenda:

1. Welcome and introductions (Karla Harre)
2. Background – why we convened this expert team (Lora Fly)
3. Site & remedy information (TetraTech - David Brayack)
4. Pertinent documents/data to review (TetraTech - David Brayack)
5. Goals of the team (Arun Gavaskar)
6. Roles & responsibilities (Arun Gavaskar/Karla Harre)
7. Schedule (Heather Rectanus)
8. Summarize next steps and action items (Karla Harre)

Team Goals:
The goal of the Bethpage Review Team is to optimize the implementation of the groundwater remedy at the Bethpage site. The team will discuss and make recommendations on how best to evaluate (a) the effectiveness of previous and ongoing treatments and (b) the effectiveness of the current well network in monitoring the progress of the plume.

Schedule:
Conference calls will be scheduled as needed.

Target Date	Key Item	Details
4 January 2011	Kickoff Conference Call	Introduce team members, site, and project objectives
11 January 2011	Overview Presentation	Battelle to provide Navy with short overview presentation of Bethpage Review Team
8-10 February 2011	Site Visit and Team Meetings	On-site visit and team meetings to explore
14 February 2011	Site Visit Meeting Minutes	Battelle submits meeting notes to team.
25 February 2011	Team Member Drafts	Submit team members drafts of report to Battelle
4 March 2011	Working Draft of Summary of Major Conclusions	Submit working draft to Navy for review – 2 weeks for review
4 March 2011	Internal Draft Report	Submit internal draft report to Navy – 2 weeks for review
18 March 2011	Comments on Internal Draft	Receive comments on internal draft; 2 weeks to incorporate review
18 March 2011	Presentation Briefing Outline	Submit presentation outline for Navy review
1 April 2011	Second Internal Draft Report	Submit second internal draft report to

		Navy
1 April 2011	Draft Final Summary of Major Conclusions	Submit draft final Summary of Major Conclusions to Navy
Pause for EPA Model Report. Assumes the EPA report will come in 15 April. The following dates below are tentative and subject to change.		
29 April 2011	Draft Report	Submit draft report to Ad-Hoc review– 2 weeks for review
29 April 2011	Final Summary of Major Conclusions	Submit final Summary of Major Conclusions
13 May 2011	Comments on Draft Report	Receive comments from Ad-Hoc review; 2 weeks to incorporate review
13 May 2011	Draft Briefing Presentation	Submit draft presentation. Update presentation based on Ad-Hoc's review of report.
27 May 2011	Draft Final Report	Submit to Southeast Nassau Water Committee – 4 weeks for review
27 May 2011	Final Briefing Presentation	Submit presentation to Navy. Date for presentation TBA.
24 June 2011	Draft Final Report Comments	Receive comments from Southeast Nassau Water Committee review; 3 weeks to incorporate review
15 July 2011	Final Report	Submit final report to Navy and Southeast Nassau Water Committee

NAVFAC
Naval Facilities Engineering Command

Remedy Optimization & Validation of Bethpage OU-2, Site 1

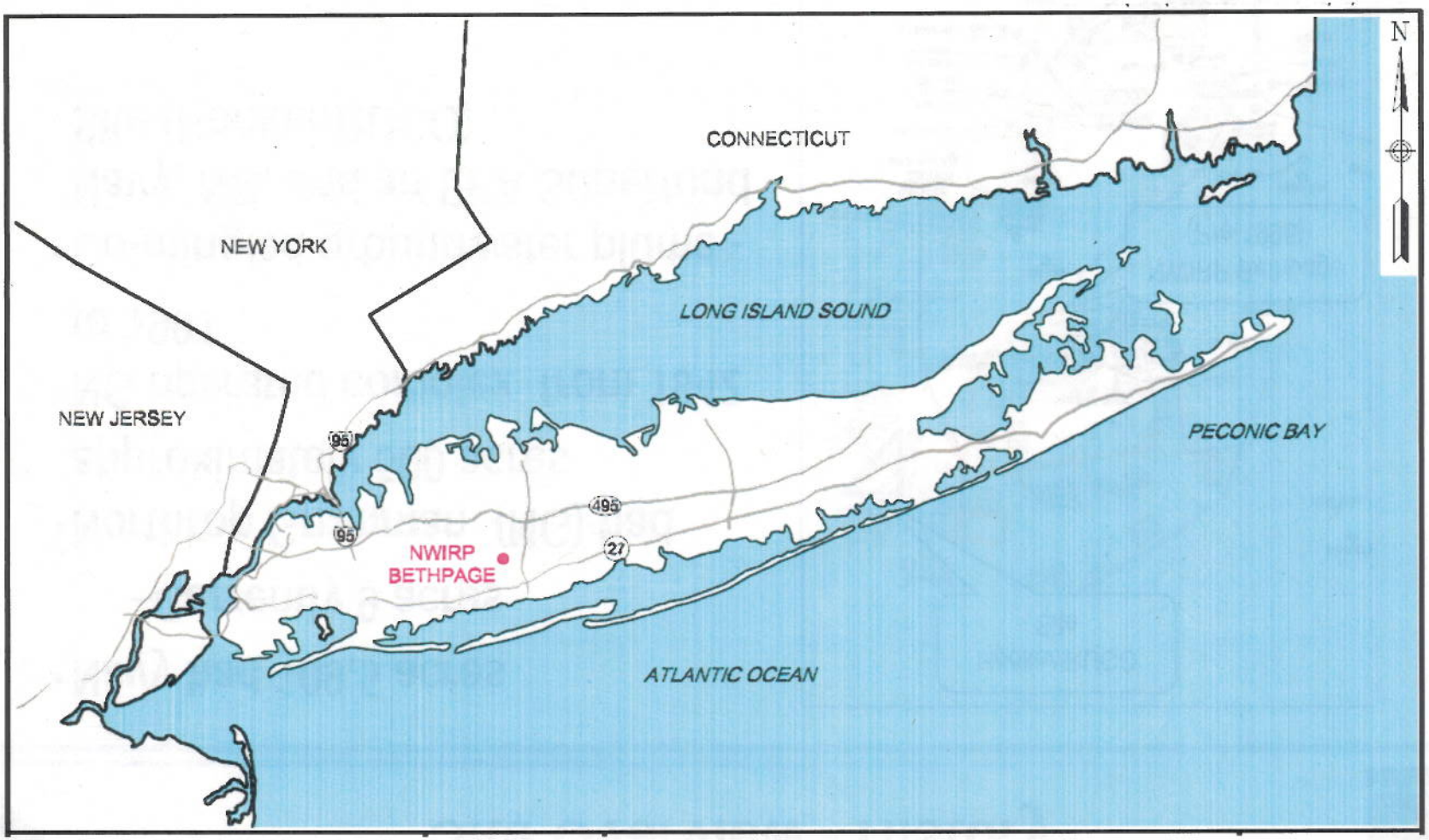
Site & Remedy Presentation, January 2011

Naval Weapons Industrial Reserve Plant (NWIRP) Bethpage, New York

Presentation Outline

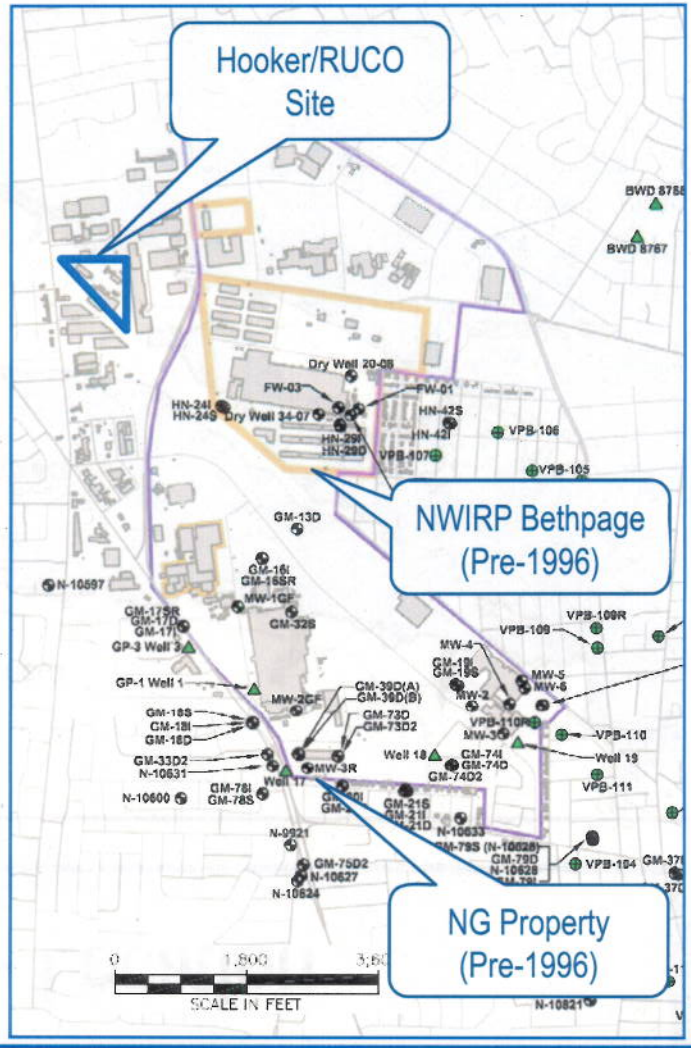
- Site Overview
- Regulatory Status
- Pre-ROD Groundwater Activities
- Navy OU2 Remedy (2003)
- Post-ROD Groundwater Activities
- OU2 Groundwater Summary (2010)
- Reference Documents/Share Point Site

Site Overview - Location



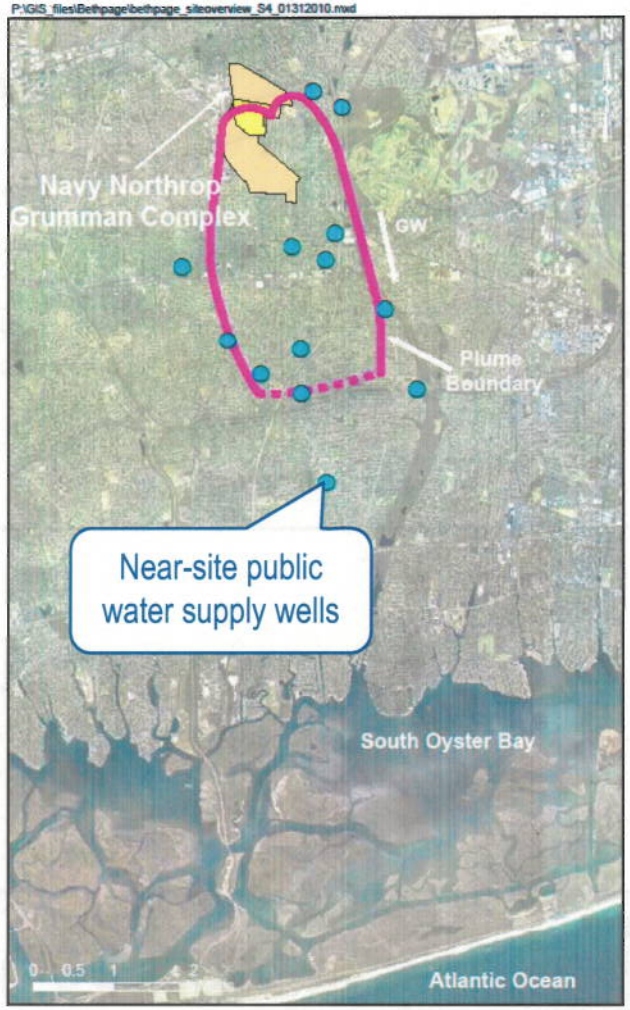
Site Overview - History

- Navy had 109.5 acres
  - –Currently 9 acres
- Northrop Grumman (NG) had approximately 500 acres
- NG operated complex from 1942 to 1997
- Co-mingled groundwater plume - Navy, NG, and an EPA Superfund Site (Hooker/RUCO)



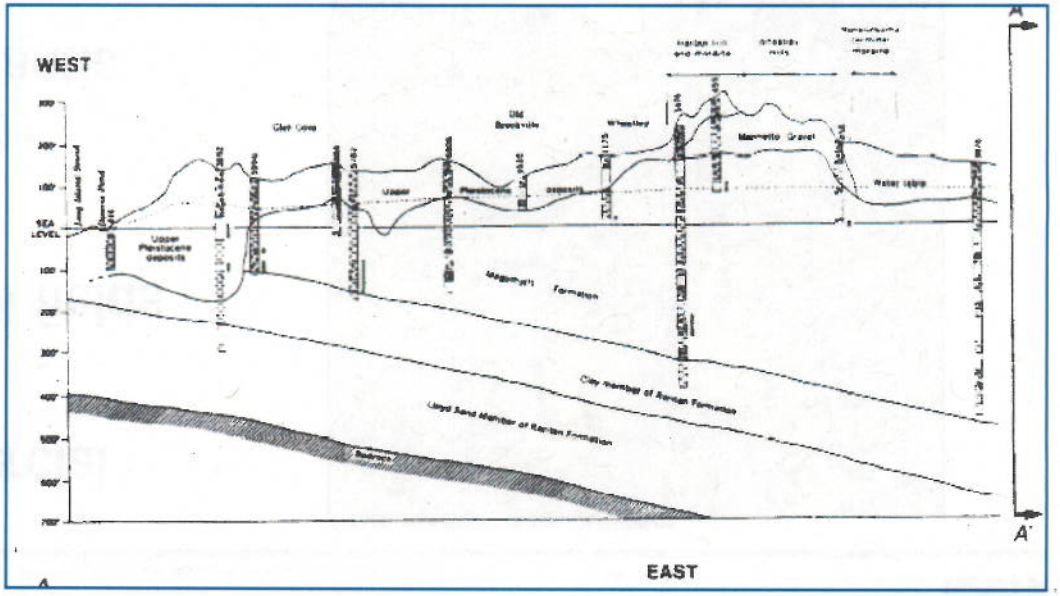
Site Overview

- Dense residential/commercial development
- Multiple water supply well fields down gradient of site
- Groundwater flows south - southeast toward Bay/Atlantic Ocean - 7 miles
- Not all depth intervals are impacted by contamination
- Well fields influence plume migration, horizontally and vertically



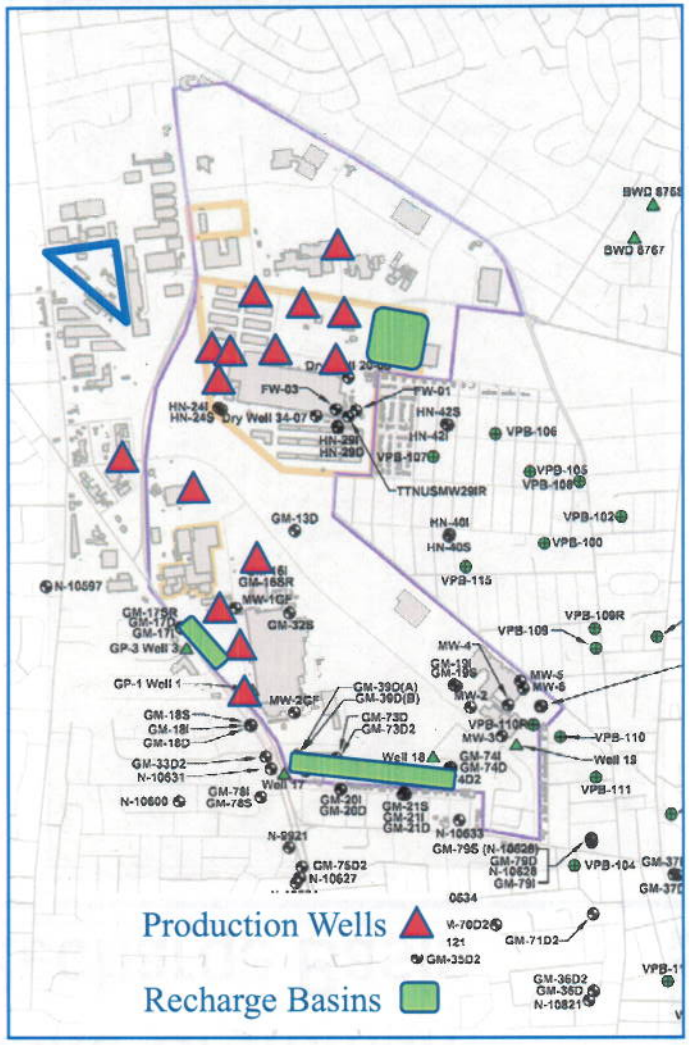
Site Overview - Geology

- Coarse-grained sands and gravels
  - –Groundwater migrates to the south
- Upper Glacial Aquifer - 0 to ~70 feet
- Magothy Aquifer - 70 to ~ 700/800 feet
- Raritan Clay Unit - 700/800 to ~1000 feet
- Lloyd Aquifer >1000 feet



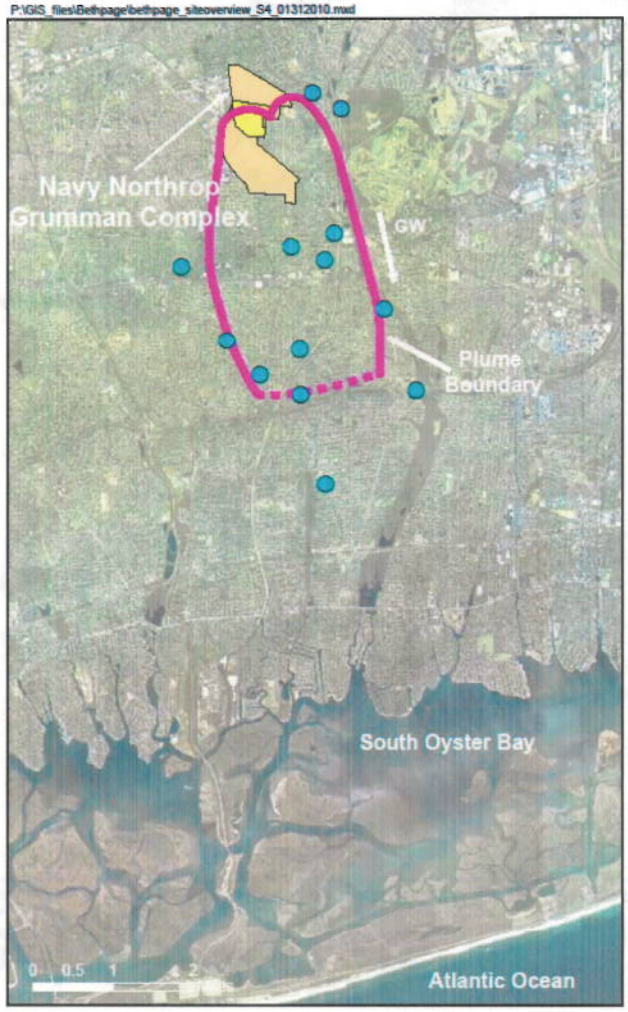
Site Overview - Onsite Grumman Production Wells/Recharge Basis

- Sources on Navy/NG properties resulted in the release of chlorinated VOCs to groundwater
- 15 Onsite Grumman Production Wells (GP or PW) resulted in contaminant flow to the southwest and deep (300 to 500 feet), high pumping rates
  - –Aug 1992: 10.7 MGD
  - –Feb 1992: 3.8 MGD
- Sources on Hooker/RUCO released VOCs, which then flowed southeast and were intercepted by Navy/NG Production Wells



Site Overview - Onsite Grumman Production Wells/Recharge Basis

- Production Well water was used for non-contact cooling and discharged to surface recharge basins along east, south, and southwest borders of property
  - –Most production wells operated from 1940s to mid-1990s.
  - –SPDES Permit allowed 50 µg/L of TCE, until early 1990s



Site Overview

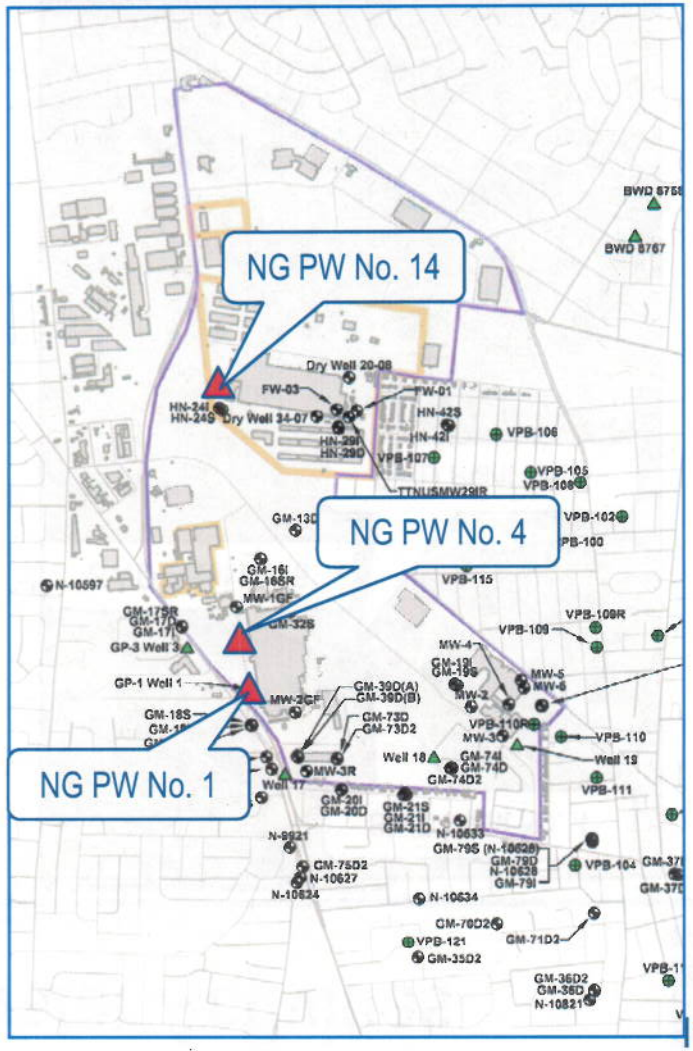
- Questions

Regulatory Status

- Navy operates under CERCLA authority, not an USEPA NPL Site.
- Facility is listed as a State Superfund Site
- Facility has a RCRA permit - current requirements are corrective actions only

Pre-ROD Groundwater Activities

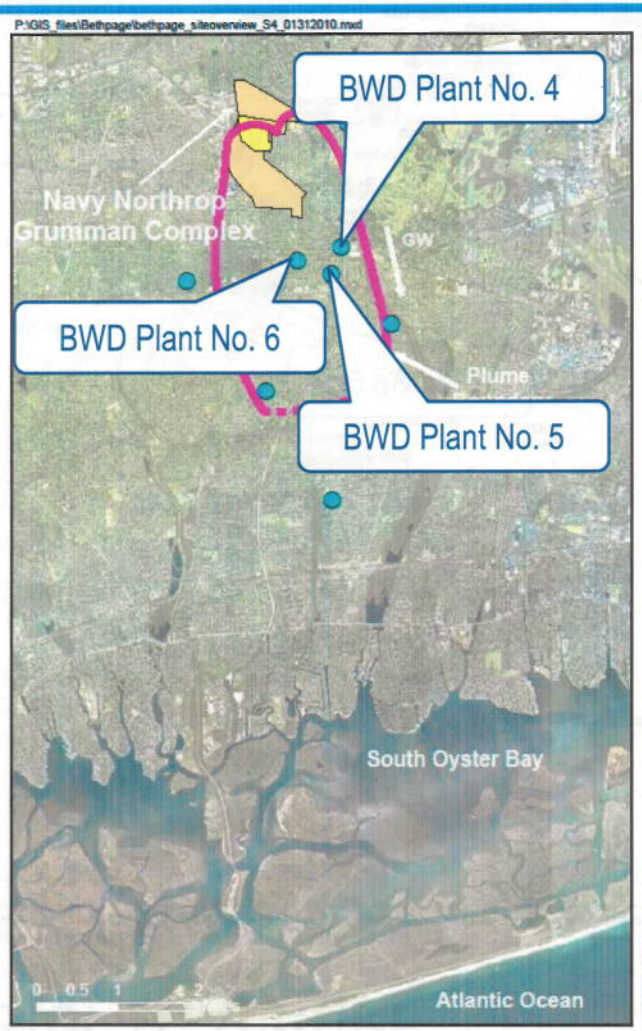
- 1970 NG water supply data:
  - NG PW No. 1: 2 ppm TCE (1976)
  - NG PW No. 4: 25 ppm of TCE (1976)
  - NG PW No. 14: 0.5 ppm of TCE, 0.071 ppm of VC (1978)
- 1980s - USGS groundwater investigations



Pre-ROD Groundwater Activities

- 1989/90- BWD Plant Nos. 4 and 6 Impacted by VOCs
- Treatment systems installed in 1990 and 1995

Well	Location	Screen Depth (feet)	Sample Date	Maximum Concentration (ug/l)			
				TCE	PCE	TCA	NO_3
4-1 (10)	Plant #4-Sophia St	540-603	1992	1.2	ND	ND	2.8
			1991	ND	ND	ND	1.3
			1990	2.6	ND	ND	2.7
4-2 (11)	Plant #4-Sophia St	556-606	1992	0.5	ND	ND	2.3
			1991	ND	ND	ND	2.7
			1990	ND	ND	ND	0.8
5-1	Plant #5-Broadway	675-735	1992	ND	ND	ND	ND
			1991	ND	ND	ND	0.4
			1990	ND	0.6	ND	0.2
6-1	Plant #6-Park La.	321-381	1992	240	9.9	3.3	ND
			1991	200	ND	5.3	5.0
6-2	Plant #6-Park La.	710-770	1992	ND	ND	ND	5.0
			1991	ND	ND	ND	0.6
			1990	ND	ND	ND	1.5

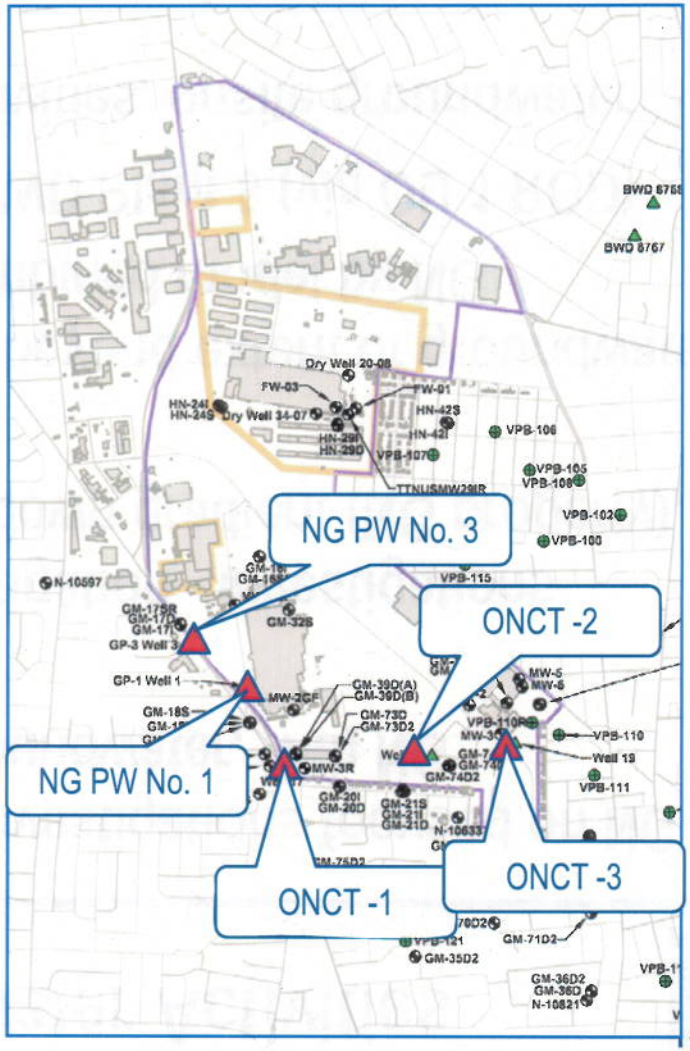


Pre-ROD Groundwater Activities

- 1992 - NG Remedial Investigation - Investigations focused on NG property and near down gradient groundwater, with NG groundwater model
- 1993 - Navy Phase 2 Remedial Investigation - Investigations focused on Navy property and near down gradient (NG property), with Navy groundwater model
- Late 1990s - Contamination extends beyond extent of groundwater models, Navy/NG proceed with a combined model by NG
- 1996/1997 - Treatment installed on BWD Plant 5 (via OU 1 ROD)
- 1996, NG ends majority of onsite activities, onsite groundwater extraction is significantly reduced

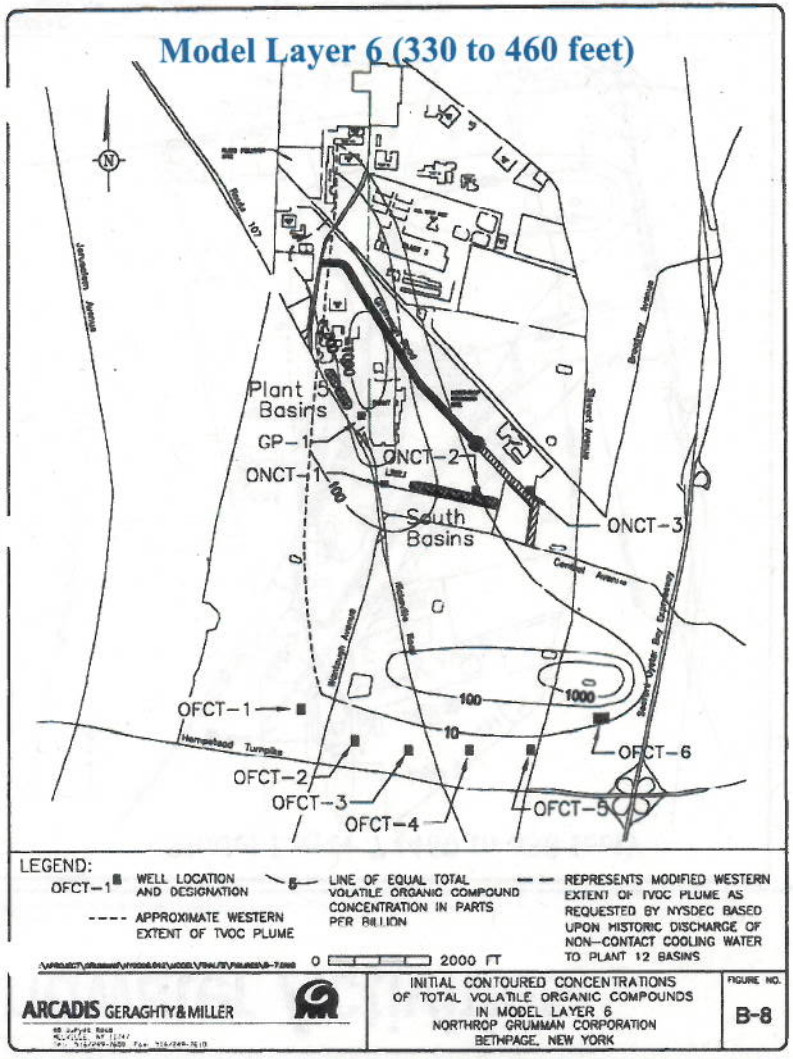
Pre-ROD Groundwater Activities

- 1998 - NG starts operation of Onsite Containment System (ONCT)
- 2009 - Mass removal - 5.4 MGD & 6.4 tons per year



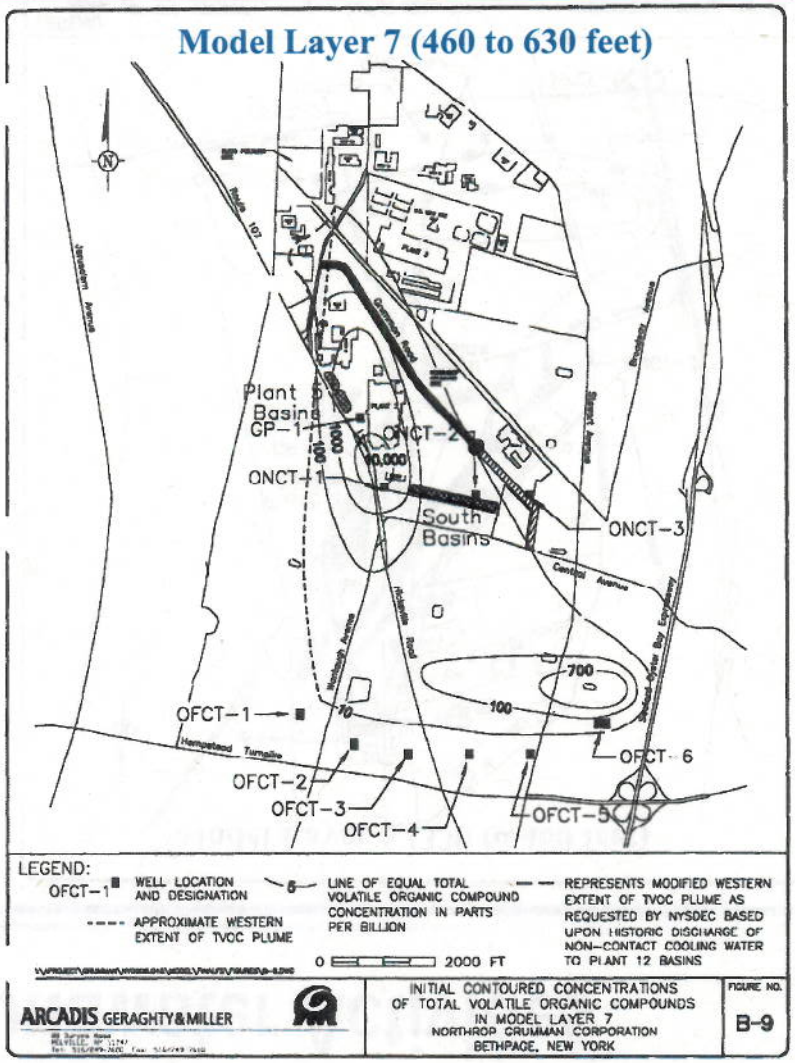
Pre-ROD Groundwater Activities

- 2000 - OU 2 Groundwater FS evaluated several options, including onsite containment (ONCT) and offsite containment (OFCT) extraction wells
- Area north of OFCT-6 becomes GM-38 Area



Pre-ROD Groundwater Activities

- Plume is limited to area north of Hempstead Turnpike
- Majority of contamination is located on NG property, near western boundary



Pre-ROD Groundwater Activities

- Questions

Navy OU2 ROD (April 2003)

- Onsite groundwater use restrictions and abandonment of onsite Grumman Production Wells (completed late 1990s)
- Operation of onsite groundwater containment system (1998 to current)
- Mass removal at the GM-38 Area:
  - –Investigations, design, and construction- 2001 to 2009
  - –Operation 2009 to current
- Groundwater investigation at GM-75D2 (late 2001):
  - –2002 to 2008 - monitoring well data trend evaluation
  - –Downgradient vertical profile borings - 2008 to current

Navy OU2 ROD (April 2003)

- Technical ~~Assistance~~ Committee (ongoing)
- Public Water Supply Contingency Plan (2003)
- Outpost Monitoring Wells (2003/2004, monitoring continuing)
- Wellhead Protection
  - –SFWD construction - 2010
  - –ANY design - 2010, construction 2011

Navy OU2 ROD (April 2003)

- Questions

Post-ROD Groundwater Activities

- 2000 to 2004 - Navy/NG continues installation of vertical profile borings (VPBs) and monitoring wells
  - –2000 to 2002 - VPBs identify groundwater contamination south of Hempstead Turnpike, some samples are contaminated
  - –2000 to 2001 - Additional monitoring wells installed on and near NG property to allow evaluation of ONCT capture zone
  - –2002 - Identify GM-75 Area as a Hotspot (becomes western deep plume)
- 2006 to 2008 - Navy prepares Work Plan for GM-75 Area Investigation, by 2005, GM-75D2 VOCs are less than 400 µg/L, focus of investigation shifts down gradient

Post-ROD Groundwater Activities

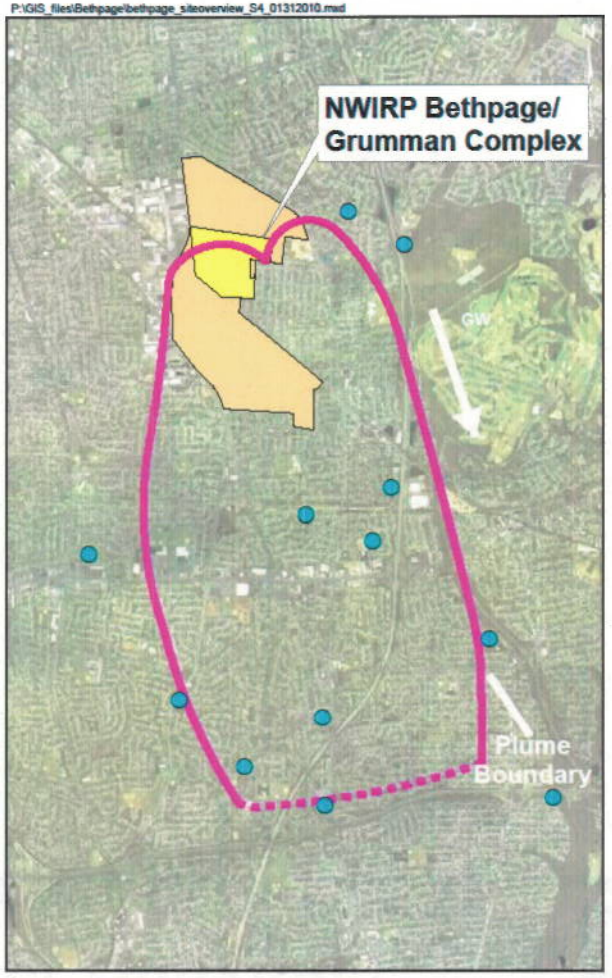
- 2006 to 2009 - NG conducts OU3 Groundwater Investigation, identifies eastern plume,
- 2009 - Installation of hydraulic containment for OU3 Site
- 2008 to current - Navy installs VPBs to better define extent of western deep plume and placement of outpost wells

Post-ROD Groundwater Activities

- Questions

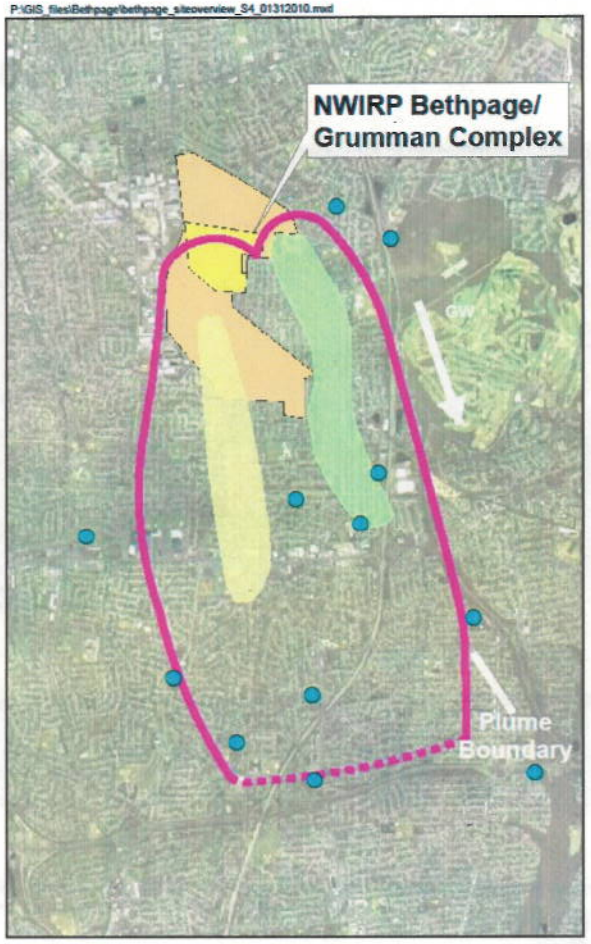
OU2 Groundwater Summary (2010)

- Offsite Groundwater Plume:
  - TCE (90%), PCE, and others
  - 3000+ acres, 1 mile by 3.5+ miles
  - Plume is 150 to 750 feet deep
  - Not all depths affected



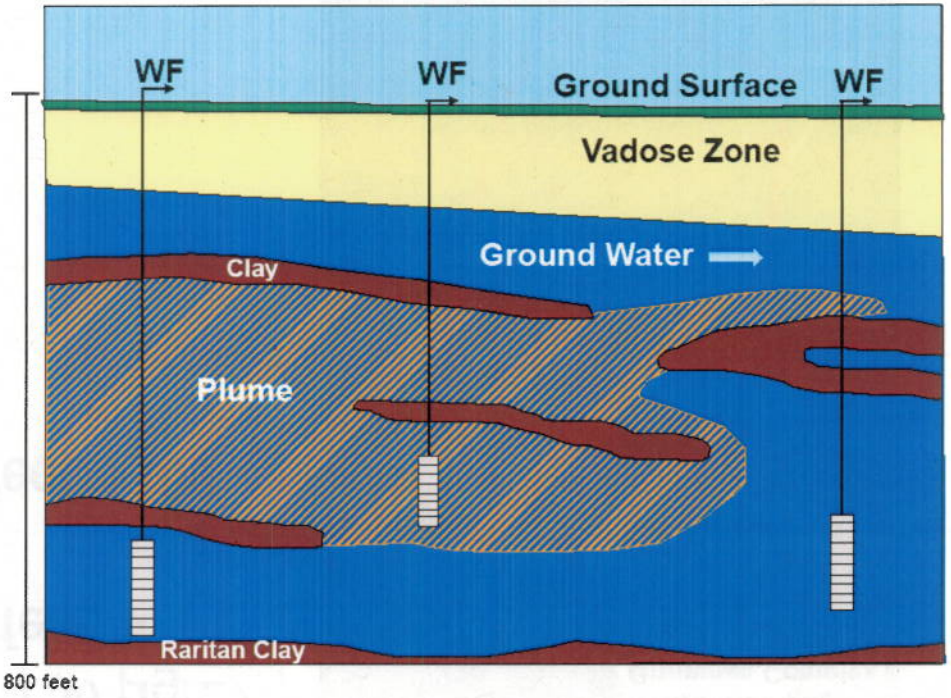
OU2 Groundwater Summary (2010)

- Three general VOC plumes:
  - -Shallow, 150 to 300 feet, 1 to 50 µg/L
  - -Eastern Deep, 300 to 600+ feet, > 500 µg/L
  - -Western Deep, 300 to 750 feet, >100 µg/L
  - -Other sources present



OU2 Groundwater Summary (2010)

- Complex hydrogeology
  - –Discontinuous clay units
  - –First true confining unit 800 feet
  - –Modeling uncertainty
  - –Minimal VOC attenuation



WF : Well Fields – either potable or production

OU2 Groundwater Summary (2010)

- Contamination is deep – 150 to 750 feet, plume thicknesses are variable - not contaminated at all depths
- Monitoring can be challenging,
  - –In downgradient area, one monitoring well cluster per 100 acres
  - –Lack of physical access
  - –Access agreements between Navy and Town/County
- High volume potable water supply well fields (1.3 to 6 MGD) can affect migration locally

OU 2 Offsite Groundwater Contamination

- Access Issues
  - –Dense residential areas – work in residential side-yard or surface water recharge basins
  - –Big rigs, 840 feet borings, 1 to 3 months per location

OU2 Groundwater Summary (2010)

- Questions

Reference Documents/Share Point

- Navy - Initial Assessment Study - 1986 - History of NWIRP Bethpage, geology/hydrogeology
- Navy - Remedial Investigation - 1992 (Phase 1) - Investigations focused on Navy property sources and soils
- NG - Remedial Investigation - 1992 (Phase 1) - Investigations focused on NG property and downgradient groundwater
- Navy - Phase 2 Remedial Investigation - 1993 - Investigations focused on Navy property and near downgradient, includes Navy modeling efforts - downgradient boundary - BWD wells
- NG - Phase II Remedial Investigation - 1996 - Investigations of onsite and offsite groundwater continued, includes NG modeling
- NG - Groundwater Feasibility Study - 2000 - Evaluated onsite and offsite groundwater containment options, includes NG modeling
- NYSDEC - 2001 - OU2 Record of Decision - Identifies both Navy and NG
- Navy - 2003 - OU2 Record of Decision - Identifies Navy actions
- Navy - 2003 - Public Water Supply Contingency Plan
- Navy - 2003 - ONCT Effectiveness Report, evaluates effectiveness of capture system
- NG - 2009 - OU3 Remedial Investigation, identifies sources and off site migration of groundwater contamination
- NG - 1998 to present - Quarterly and Annual Reports, presents groundwater results for monitoring wells and ONCT system operation

NWIRP Bethpage

Questions ?