INSTALLATION RESTORATION PROGRAM

NAVAL SUPPORT FACILITY
INDIAN HEAD
3838 STRAUSS AVENUE
INDIAN HEAD, MARYLAND
20640-5133

RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES

Date of Meeting: April 21, 2016, 6:00 pm

RAB Member Attendees:
Mr. Joseph Rail (N) *
Mr. Curtis Detore (S)

Additional Attendees:
Ms. Susan Yates (N)
Mr. Travis Wray (N)
Mr. Jeffrey Bossart (N)
Ms. Tara Meadows (N)
Mr. Alex Scott (N)
Ms. Kathy Garcia (N)
Ms. Tara Carlson (C)
Mr. Jim Long (C)
Mr. Brian Klaas (C)
Ms. Jeron Hayes (N)

RAB Members Not in Attendance:
Mr. Robert Thomson (F)
Mr. Mark Williams (L)
Mr. Fred Pinkney (F)
Mr. Elmer Biles (C)
Ms. Karen Wiggen (L)
CAPT Mary Feinberg (N)

* Co-chair

C= Community
F= Federal Official
K= Contractor
L= Local Official
N= Navy Official
R= Newspaper Reporter
S= State Official

Topics Discussed:
1. Arrival/Welcome

Mr. Joseph Rail of the Naval Facilities Engineering Command, Washington (NAVFAC Washington) began the meeting by conducting introductions and welcoming everyone to the Indian Head Senior Center. Copies of RAB presentations and the agenda were offered to anyone in attendance. Mr. Rail then presented the meeting agenda, which is included in Attachment A.

2. RAB Presentations

Presentations and updates were given by Mr. Rail of NAVFAC Washington and Mr. Travis Wray of Naval Support Facility Indian Head. Mr. Rail presented the Site 38 Remedial Action Update and Site 70 Remedial Investigation Update. Mr. Wray presented the Site 47 LTM Update and Site 67 Remedial Investigation Update. Copies of all presentations are included in Attachment D.

3. Comments, Questions and Answers

Numerous comments were made and questions asked during the meeting. These comments, questions and answers are provided in Attachment B. Additional correspondence concerning the Installation Restoration Program (IRP) or the Munitions Response Program (MRP) at the facility can be directed to:

Public Affairs Officer
Naval Support Facility South Potomac
Attn: Public Affairs Officer, Code 00P
6509 Sampson Rd.
Dahlgren, VA 22448-5108
PHONE: (540) 284-0129
FAX: (540) 653-4269
Email: jeron.hayes@navy.mil

4. Meeting Adjourn

Mr. Rail presented the tentative agenda for the next RAB meeting, which is scheduled for October 20, 2016. A copy of the draft agenda is included in Attachment C. Mr. Rail then concluded the meeting at 7:30 pm and thanked everyone in attendance.

NAVAL SUPPORT FACILITY INDIAN HEAD
INSTALLATION RESTORATION (IR) PROGRAM
RESTORATION ADVISORY BOARD (RAB) MEETING AGENDA

April 21, 2016

6:00 - 6:05 pm	**ARRIVAL/WELCOME** Mr. Joseph Rail Naval Facilities Engineering Command, Washington (NAVFACWASH) Remedial Project Manager
6:05 – 6:25 pm	**SITE 38-RUM POINT LANDFILL REMEDIAL ACTION UPDATE** Mr. Joseph Rail
6:25 – 6:40 pm	**SITE 47-MERCURIC NITRATE DISPOSAL AREA MONITORING UPDATE** Mr. Travis Wray
6:40 – 7:00 pm	**SITE 67-HOG OUT FACILITY REMEDIAL INVESTIGATION RESULTS** Mr. Travis Wray
7:00 – 7:30 pm	**SITE 70-GROUNDWATER CONTAMINATION ALONG WATER WORKS WAY REMEDIAL INVESTIGATION RESULTS** Mr. Joseph Rail
7:30 pm	**ADJOURN**

Attachment A

INSTALLATION RESTORATION PROGRAM

NAVAL SUPPORT FACILITY
INDIAN HEAD
3838 STRAUSS AVENUE
INDIAN HEAD, MARYLAND
20640-5133

RESTORATION ADVISORY BOARD (RAB) MEETING
COMMENTS, QUESTIONS AND ANSWERS
April 21, 2016

Arrival/Welcome

No questions were asked nor comments made during this topic.

SITE 38-RUM POINT LANDFILL REMEDIAL ACTION UPDATE

Question: Where were the pictures taken from that show the full extent of the landfill?

Answer: Pictures showing the entire landfill were taken from the top of the slope on the south side of the landfill.

Question: How many cubic yards of soil have been screened to date?

Answer: As of 4/25/16, approximately 9,792 c.y. of soil has been screened and stockpiled.

Question: What is the expected future usage of the site?

Answer: The goal for the site is to reach unlimited use and unrestricted exposure and re-forest the area.

Question: What does “MPPEH” stand for?

Answer: MPPEH stands for “Material Potentially Presenting an Explosive Hazard.”

Question: Who certifies that a potential munition item is safe?

Answer: A potential munition item is inspected by two of the contractor’s certified technicians. If the item is found to be safe, it is designated as “MDAS” or Material Documented as Safe.

Attachment B

Question: What happens if an item can’t be designated as safe?

Answer: If the safety of an item is questioned, the contractor may possibly stop work and request an emergency response from the Naval Explosive Ordnance Department (EOD.) They will make a determination of whether an item is safe to move and safe to store in a locked container.

SITE 47-MERCURIC NITRATE DISPOSAL AREA MONITORING UPDATE

Question: Why are the concentrations in charts fluctuating up and down over time?

Answer: Fluctuations could be due to groundwater geochemistry conditions, variations in weather such as rainfall amounts, and breakdown of injected treatment materials.

Question: Did the pilot study take 20 years to complete?

Answer: No, the pilot study took about one month to complete which included groundwater injections with sodium persulfate and recirculation via horizontal wells. The site is now in the monitoring phase.

Question: How often is the site monitored?

Answer: The site is monitored quarterly.

Question: How many wells are at the site?

Answer: There are 22 permanent monitoring wells that have been monitored during post-injection events.

Question: What are the cleanup levels where monitoring can stop?

Answer: The cleanup goals from the Record of Decision for the most prevalent contaminants are: carbon tetrachloride-5 ug/L, tetrachloroethene-5 ug/L, and vinyl chloride-2 ug/L.

Question: Are contaminant trends only evaluated at Five Year Reviews?

Answer: No, contaminant levels are evaluated each year and are discussed in an annual monitoring summary report.

Question: If a different remedy is needed, do you have to start over with investigating the site?

Answer: No, the nature and extent of contamination has been fully characterized and a reasonable remedy (per bench scale tests and a pilot study) has been implemented. If monitored natural attention is not being achieved in a timely manner and an alternate remedy is required to meet site remediation goals, the Navy may complete a revised Proposed Plan with another remedy.

Question: Do you have sampling data from 20 years to determine how much contaminant concentrations have declined?

Answer: No, fieldwork for the persulfate injection was completed in November 2013, so monitoring includes less than 3 years of data. Given that modeling predicted 52 years to reach cleanup goals, we are very early in the monitored natural attenuation phase.

Question: Have you contacted XDD, the contractor that performed the persulfate pilot study injection fieldwork, to discuss the latest sampling results?

Answer: Sampling results have been discussed with XDD in the past and they may be used again if a revised remedy is deemed necessary.

SITE 67-HOG OUT FACILITY REMEDIAL INVESTIGATION RESULTS

Question: Is chromium a contaminant of concern at this site?

Answer: No, the primary contaminant of concern at Site 67 is perchlorate.

Question: Is there any concern with cadmium at the site?

Answer: Yes, cadmium was evaluated and sampled for in groundwater and test pit soil samples in the unloading area south of Building 135.

Question: What do the yellow contours on the figure show?

Answer: The yellow lines are perchlorate isoconcentration contours.

Question: Is perchlorate flowing into the Mattawoman Creek?

Answer: No. During the remedial investigation, 15 surface water/sediment samples were taken along the Mattawoman

Creek shoreline and all results were nondetect for perchlorate.

Question: Do you have good records of what happened in nearby buildings?

Answer: We know that Building 1419 was used for washing out of rocket motors and that Building 201 was used for storage of perchlorate grains. While we don't have detailed records of releases, we assume that spills occurred over time during operations in these two buildings which caused the extent of current contamination.

SITE 70-GROUNDWATER CONTAMINATION ALONG WATER WORKS WAY REMEDIAL INVESTIGATION RESULTS

Question: What are piezometers?

Answer: Piezometers are similar to monitoring wells and they are installed to primarily monitor groundwater levels.

Question: Is TCE, or tetrachloroethene, the same contaminant that you're finding at other sites?

Answer: Yes, TCE is found at many sites as it was widely used as a solvent for degreasing and cleaning operations.

Question: What does the dashed yellow line indicate on the figures?

Answer: The dashed yellow lines are interpolated concentration lines for TCE.

General Questions

Question: It's frequently mentioned that high concentrations of manganese are found at Indian Head sites; have you considered road salt to be a possible source?

Answer: No, road salt is typically composed of sodium chloride, potassium chloride, or magnesium chloride. There may have been some confusion between manganese and magnesium when this question was asked. For many of the Indian Head sites, it has been found that manganese is naturally-occurring and has high concentrations in some Maryland soils.

Attachment B

NAVAL SUPPORT FACILITY INDIAN HEAD
INSTALLATION RESTORATION (IR) PROGRAM
RESTORATION ADVISORY BOARD (RAB) DRAFT MEETING AGENDA

October 20, 2016

6:00 - 6:05 pm	**ARRIVAL/WELCOME** Mr. Joseph Rail Naval Facilities Engineering Command, Washington (NAVFACWASH) Remedial Project Manager
6:05 – 6:30 pm	**STUMP NECK MRP SITES REMEDIAL INVESTIGATION UPDATE** Mr. Joseph Rail
6:30 – 6:45 pm	**SITE 1-THORIUM SPILL CLOSEOUT** Mr. Travis Wray
6:45 – 7:15 pm	**SITE 38-RUM POINT LANDFILL REMEDIAL ACTION UPDATE** Mr. Joseph Rail
7:15 – 7:30 pm	**SITE 43-TOLUENE DISPOSAL AREA PRE-DESIGN INVESTIGATION UPDATE** Mr. Travis Wray
7:30 – 7:45 pm	**SITE 66-TURKEY RUN DISPOSAL AREA BASELINE ECOLOGICAL RISK ASSESSMENT** Mr. Travis Wray
7:45 – 8:00 pm	**SITE 69-BUILDING 1018 REMEDIAL INVESTIGATION UPDATE** Mr. Joseph Rail
8:00 pm	**ADJOURN**

Attachment C

Attachment D- RAB Presentations

SITE 38- RUM POINT LANDFILL REMEDIAL ACTION UPDATE

Presented By
Joseph Rail
Naval Facilities Engineering Command (NAVFAC) Washington

4/21/16

Presentation Objectives

Objective:

- Present overview of the Site 38 Rum Point Landfill Remedial Action at Naval Support Facility, Indian Head, MD

Site 38-Rum Point Landfill Location

Site 38 Background

- Located in eastern portion of Stump Neck Annex west of Rum Point Road
- Approximately 2 acres in size
- Landfill relatively flat and slopes steeply to west, north, and northeast toward intermittent streams
- Used for disposal of biodegradable waste and inactive since 1989
- Limited information on dates of waste disposal or amounts
- Ash from a thermal treatment tank may have been disposed on one-time basis
- Wastes observed on surface included scrap metal, tires, wood, and concrete

U.S. Navy

U.S. Navy

Site 38 History

Previous Investigations

- 1983 - Initial Assessment Study (IAS)
- 1997 – Resource Conservation and Recovery Act (RCRA) Facility Investigation
- 2003 – Site Visit
- 2005 - 2007 – Site Screening Process Investigations
  - Soil, sediment, surface water, and groundwater samples collected
  - Samples analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), TCL SVOCs, explosives, nitrocellulose, nitroglycerin, nitroguanidine, Target Analyte List (TAL) metals, hexavalent chromium, and cyanide
- 2009 – Geophysical Survey
- 2012 – Test Trenching
- 2013 – Feasibility Study

Remedy Selection

- Final Proposed Plan completed in 2013 which chose Alternative 3-Landfill Removal, Monitoring, and Land Use Controls as the preferred remedy
- Record of Decision (ROD) signed in 2014

2012 Test Trenching

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U.S. Navy

ROD Summary

Basis for Action:

- Unacceptable human health risks for exposure to arsenic and benzo(a) pyrene in soil and manganese in shallow groundwater

Remedial action objectives include:

- Close the landfill in a manner that protects human health and the environment in accordance with Maryland solid waste management regulations
- Prevent unacceptable risks to human receptors from exposure to manganese in groundwater
- Return groundwater to beneficial use to the extent practicable

Components of the remedy include:

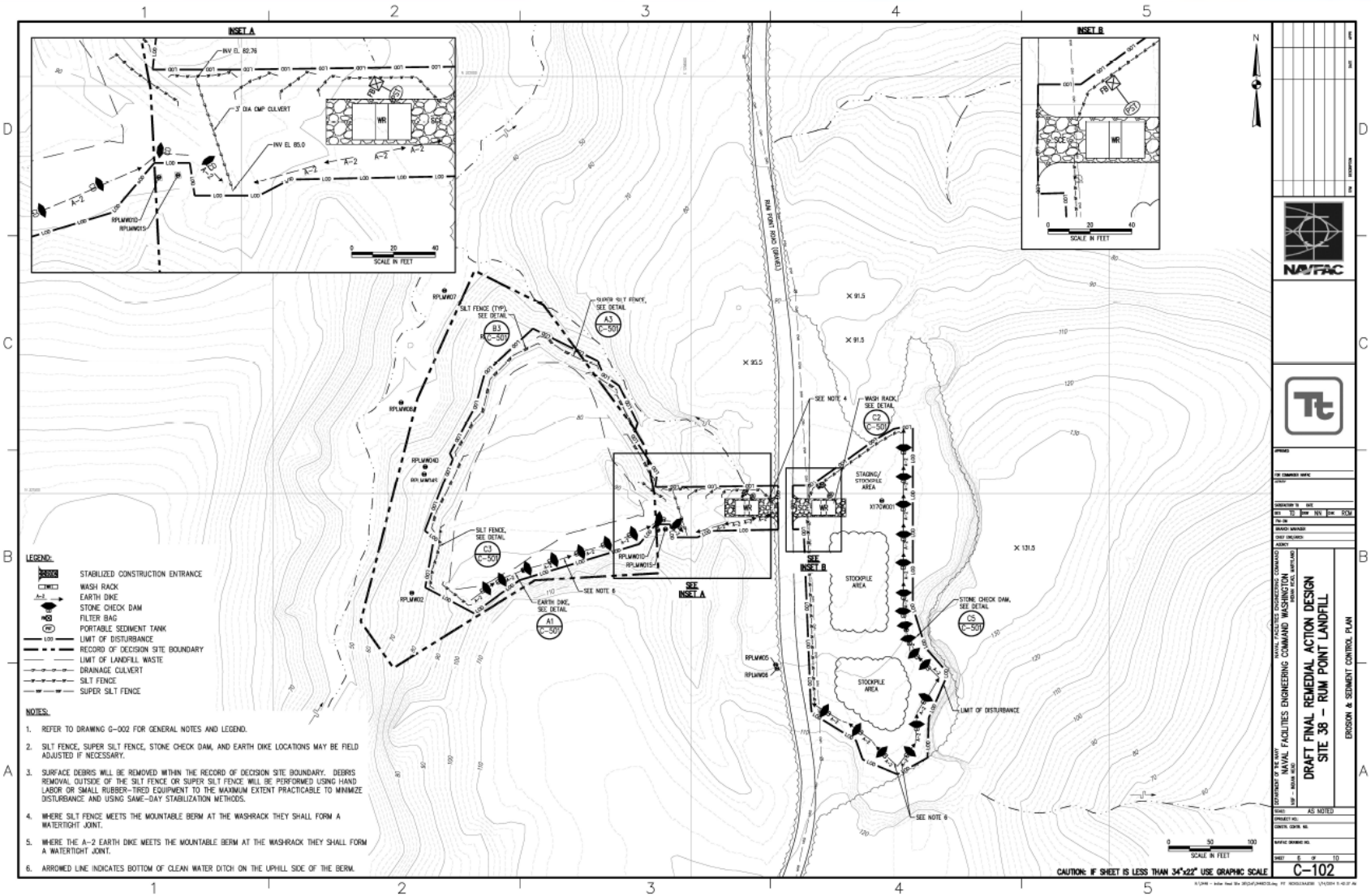
- Excavation and off-site disposal of debris and landfill waste
- Sampling to confirm that residual contamination has been removed
- Land use controls to prevent use of shallow groundwater
- Long-term monitoring of groundwater
- Five-Year Reviews until site conditions allow for unlimited use and unrestricted exposure

Remedial Design Overview

Remedial Design Parameters:

- Limit of landfill waste covers approximately 36,200 square feet
- Depth of fill ranges from 1 to 7 feet
- Area to be excavated and re-graded will be 1.08 acres
- Estimated landfill volume is 4,630 cubic yards
- Landfill will be excavated until native soil is reached and waste is no longer encountered
- Soil, waste, debris, and vegetative material will be characterized, transported, and disposed of at an off-site permitted landfill
- Excavated areas will be covered with 4” of topsoil, seeded, and mulched

Remedial Action Site Layout



Remedial Action Planning

Required Submittals:

- Remedial Action Work Plan (RAWP)
- Uniform Federal Policy Sampling and Analysis Plan (UFP-SAP)
- Explosive Safety Submission (ESS)

Sequence of Fieldwork:

- Mobilization and site set-up
- Excavate landfill contents and screen for unexploded ordnance (UXO) items while excavating
- Mechanically screen excavated materials for Munitions and Explosives of Concern/Material Potentially Presenting an Explosive Hazard (MEC/MPPEH)
- Segregate excavated materials into three waste streams (soil, construction debris, scrap metal)
- Characterize and transport waste materials offsite for recycling or disposal

ESS Overview

Primary and Contingency MGFDs

MGFD Type	Munitions Item	HFD (ft)	MFD-H (ft)
Primary	20mm M56A4, Projectile	65[a]	535[a]
Contingency	M8 JATO Rocket Motor	472[a]	2123[a]

Notes:
a. From Fragmentation Data Review Form (DDESB, 2014)

- UXO technicians to conduct visual and detector-aided surveys prior to any manual operations
- Equipment to be equipped with shielding to prevent penetration of a fragment based on MGFD
- Mechanized screening of excavated soil to separate MEC and MPPEH
- MPPEH to be placed in a temporary MPPEH locker
- For a suspect MEC/MPPEH item:
  - Call for temporary work stoppage
  - SUXOS to identify and/or verify identity of item and safe to move
  - If not safe to move, blow-in-place procedures are implemented

Initial Access

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Clearing & Grubbing

U.S. Navy

U.S. Navy

Erosion Controls

U.S. Navy

U.S. Navy

U.S. Navy

Stockpiling & Excavation

U.S. Navy

U.S. Navy

Work Area & Support Zone

U.S. Navy

U.S. Navy

U.S. Navy

Screener Setup

U.S. Navy

Shielding & Armoring

U.S. Navy

U.S. Navy

Screener Operation

U.S. Navy

U.S. Navy

Screener Issues

U.S. Navy

U.S. Navy

U.S. Navy

Screener Issues (cont.)

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U.S. Navy

Screener Modifications

Original 3” Screen

U.S. Navy

New 3” Screen

U.S. Navy

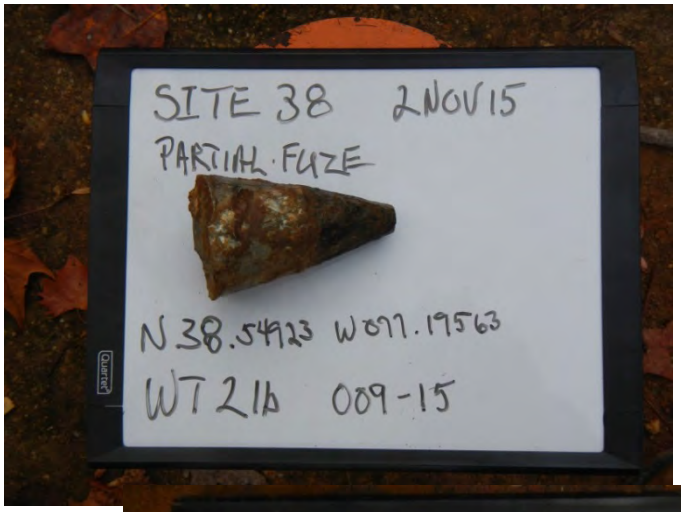
U.S. Navy

Screened Material

U.S. Navy

U.S. Navy

Material Potentially Presenting an Explosive Hazard (MPPEH) Items



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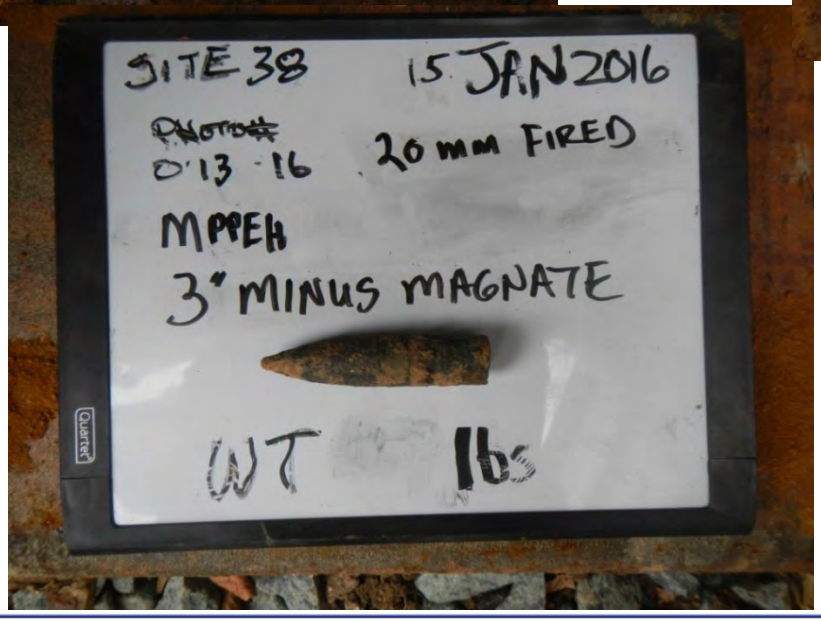

U.S. Navy

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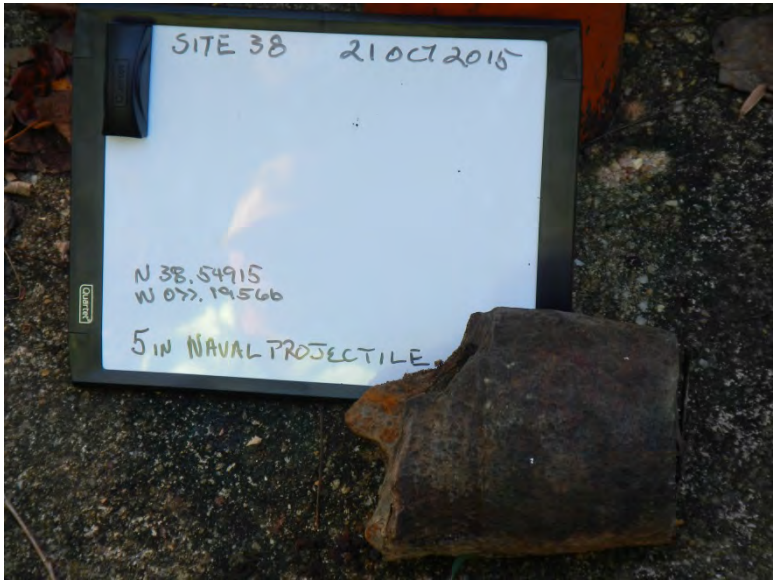
MPPEH Items (cont.)

U.S. Navy



U.S. Navy

U.S. Navy

What Caused Delays or Cost Impacts?

- Rain (0.62”) and wind (22 mph) – 10/28/15
- Re-stage materials in support zone to avoid adjacent MRP site – 10/29/15
- Rain (1.6”) that yielded excessive site saturation – 12/1/15
- Discovery of unknown UXO (5” Naval round) – 1/6/16
- Blizzard snowfall (24”) – 1/29/16
- Warmup (temps in the 50s) and heavy rain (0.5”+) – 2/3/16

Winter Storm Jonas

U.S. Navy

U.S. Navy

U.S. Navy

Winter Storm Jonas (cont.)

U.S. Navy

U.S. Navy

U.S. Navy

Additional Weather Issues

U.S. Navy

U.S. Navy

Favorable Screening Conditions

U.S. Navy

U.S. Navy

Soil Stockpiling

U.S. Navy

U.S. Navy

Excavated Debris

U.S. Navy

U.S. Navy

Current Site Conditions

U.S. Navy

Landfill Excavation Benefits

Landfill excavation vs. capping has benefits:

- Similar costs for Site 38 (FS estimated $1.9 vs. $1.6 mil)
- Reduction in LTM and need for 5-Year Reviews (savings of $25-50K annually)
- Removal of hazards (soil, waste, and MPPEH)

Site 38 Remedial Action Summary

Project Cost/Length:

- Approximately $2.9 mil total to date ($2.4 mil negotiated amount plus $500K contract modification)
- 7 months to complete RA

Project Successes:

- Potential for site to be unlimited use/unrestricted exposure (UU/UE)
- Considerable savings for future long-term monitoring (LTM) (cost reduction potential of $750K or more)
- 23,400 lbs. MDAS removed from site (at 70% project completion)
- 3,400 lbs. MPPEH recovered (at 70% project completion)
- 9,220 of general trash and construction debris collected (at 70% completion)
- 7,500 lbs. metal recycled
- 170 C.Y. concrete recovered

Contacts and Questions

Points of Contact:

- **NAVFAC Washington:** Joseph Rail
- **NAVFAC Washington (Base RPM):** Travis Wray

Questions ?

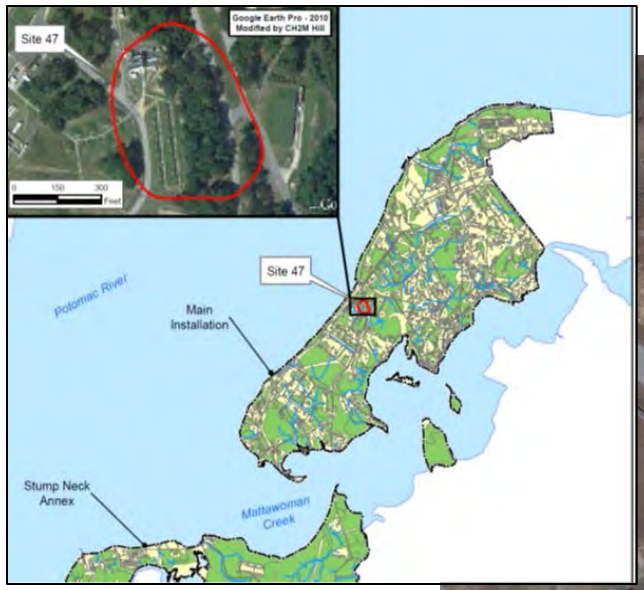
Site 47
Post Remedial Action
Annual Monitoring Update

Travis Wray
Naval Support Facility Indian Head
NAVFAC Washington
April 21, 2016

Background

- *Site 47 – Mercuric Nitrate Disposal Area*
  - *Mercuric nitrate*
    - *Catalyst used in missile propellant production and reportedly dumped outside SE corner of bldg between 1957-1965*
  - *Barium pit*
    - *Estimated 2,000 pounds may have been disposed east of bldg between 1969-1974*
  - *Carbon tetrachloride (CT) may have been poured down drains/stored in leaky drums*
  - *Tetrachloroethene (PCE) detected during remedial investigation but source unknown*

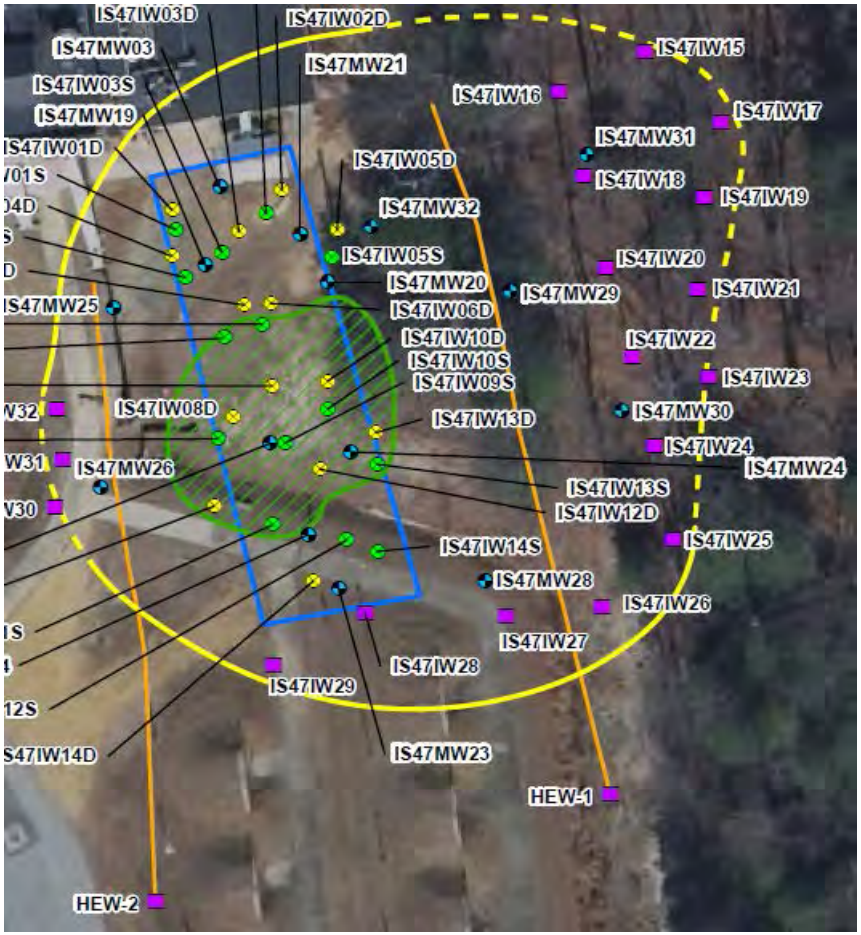
Site Location



Summary of Investigations

- *Preliminary Assessment conducted in 1992*
- *Site Inspection, Remedial Investigation, Feasibility Study, and Pilot Study completed over 20 years to select appropriate Remedial Action*
- *Selected Remedy in ROD*
  - *in situ chemical oxidation (ISCO) in source zone area (CT and PCE concentrations >=500 ug/l)*
  - *monitored natural attenuation (MNA) in remaining area*
  - *institutional controls (ICs)*
- *Performance sampling*
  - *Baseline, Years 1 and 2 complete, Year 3 underway*

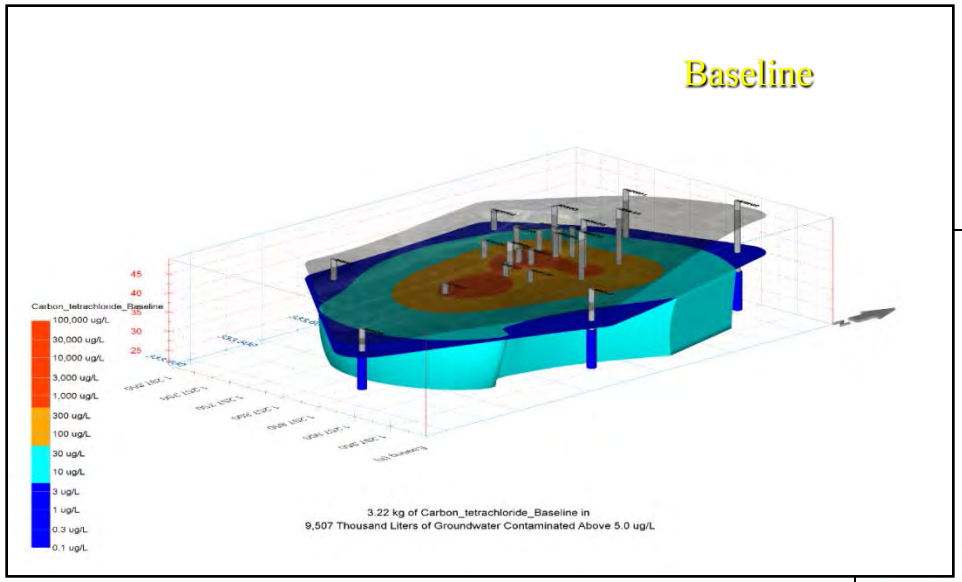
Site Layout

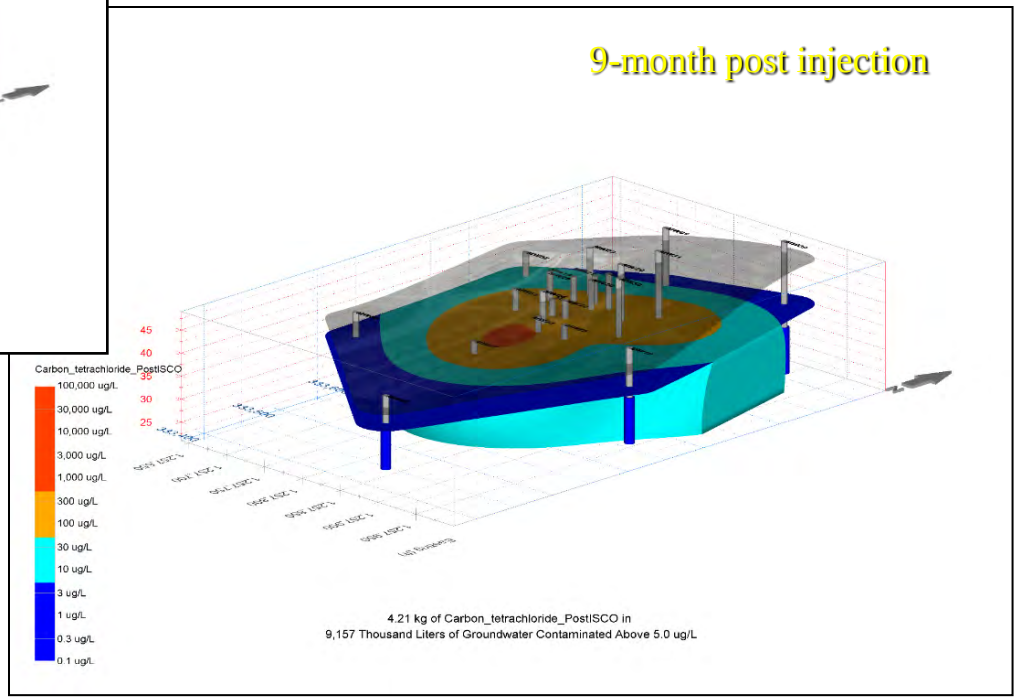


Legend

- Injection Well Location
- Monitoring Well Location
- Shallow Permanent Injection Well (6-12' bgs)
- Deep Permanent Injection Well (12-18' bgs)
- Pilot Study Area
- Inferred Residual DNAPL Area
- Source Area (CT and PCE >= 500 ppb)

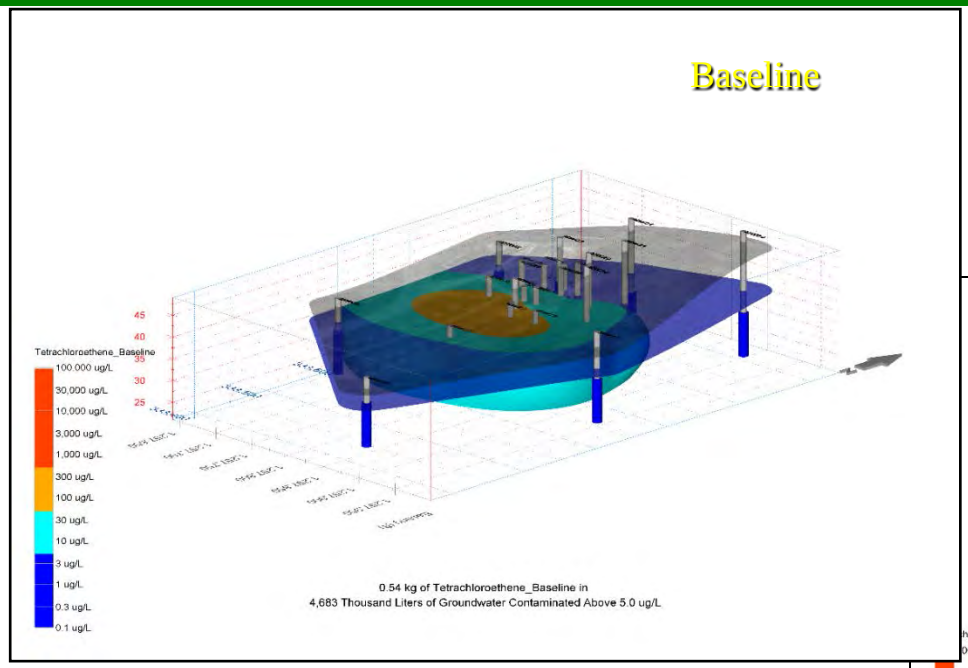
CT Plume configuration Year 1

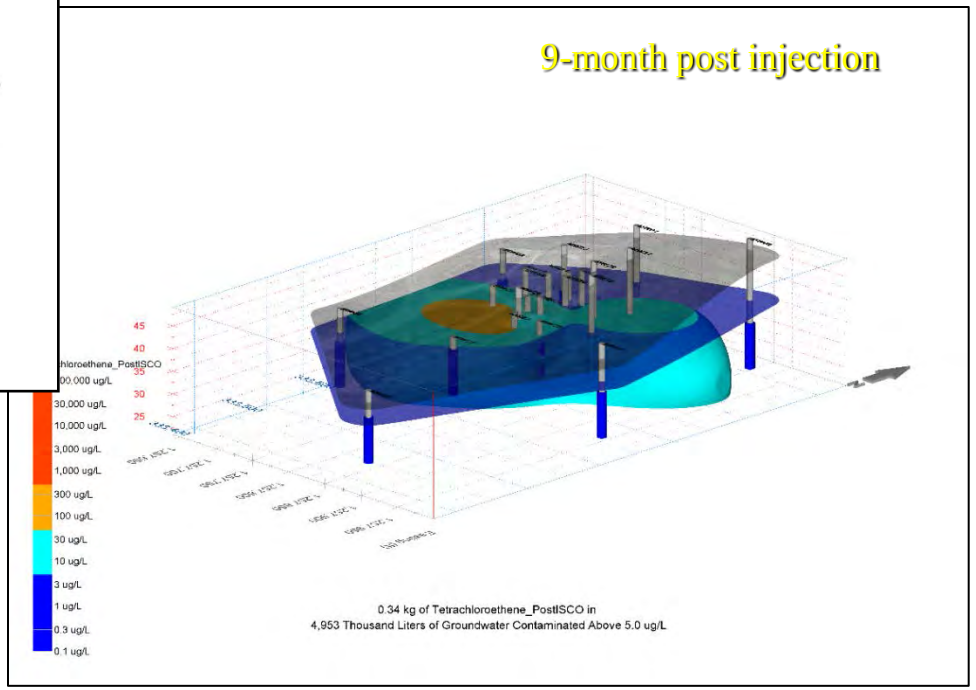




Plume showed some spatial decrease but concentrations still > 500 ug/l in many wells

PCE Plume configuration Year 1





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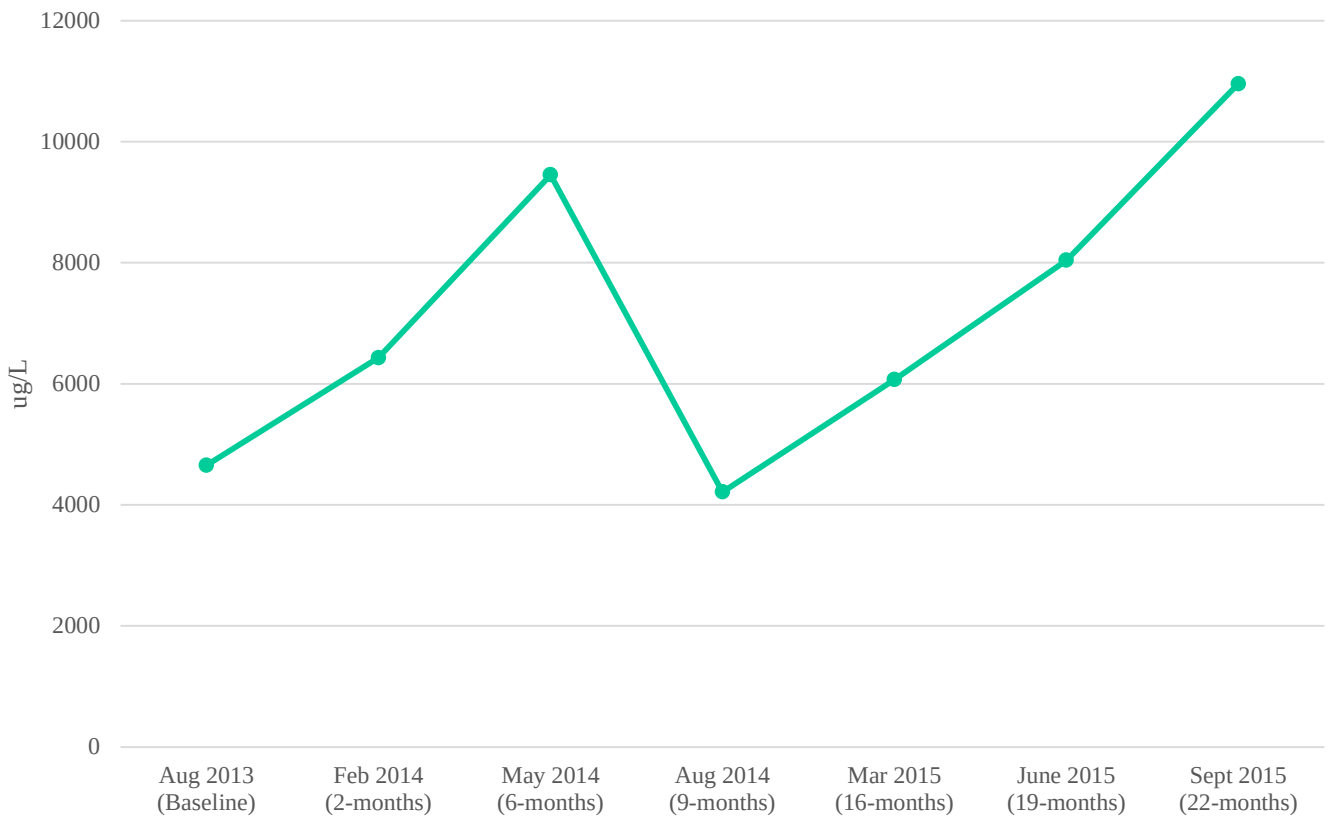
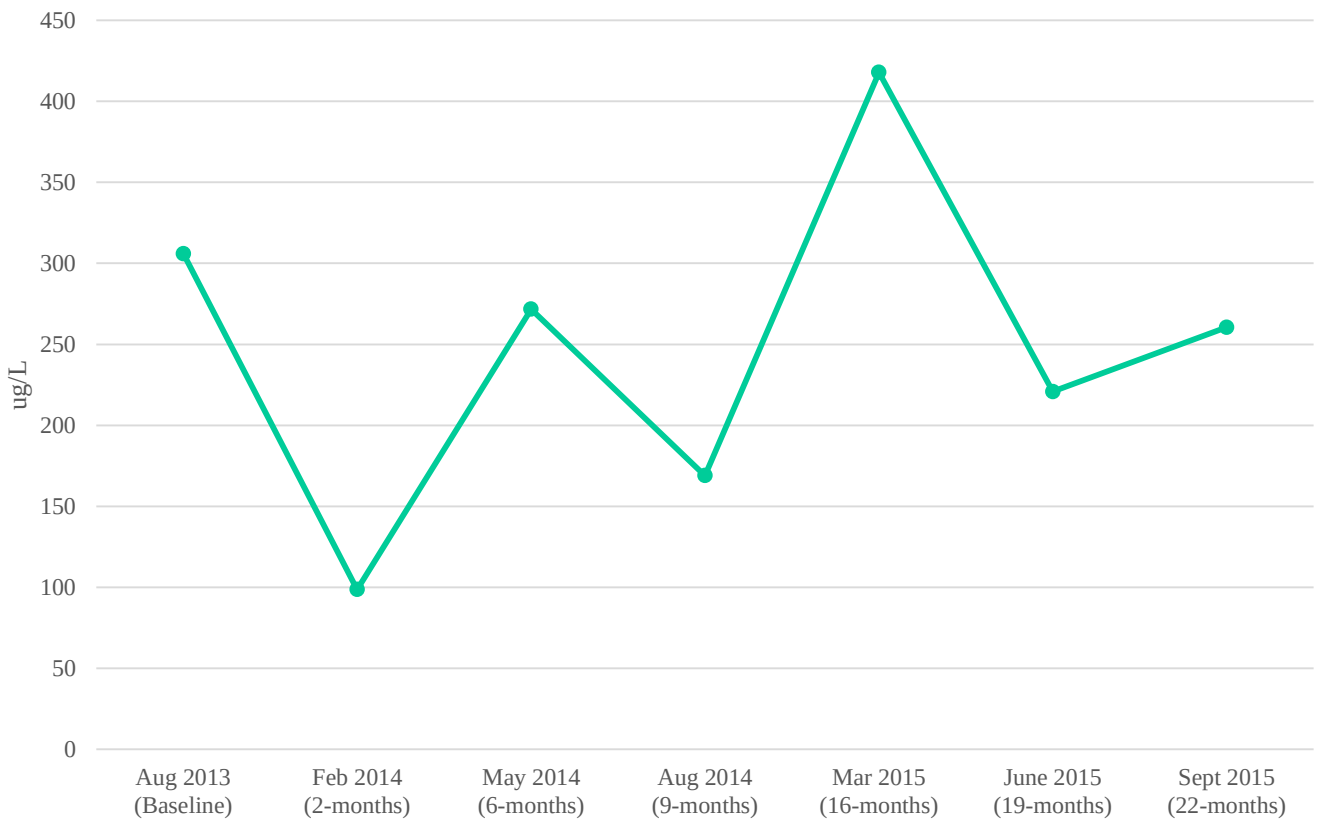
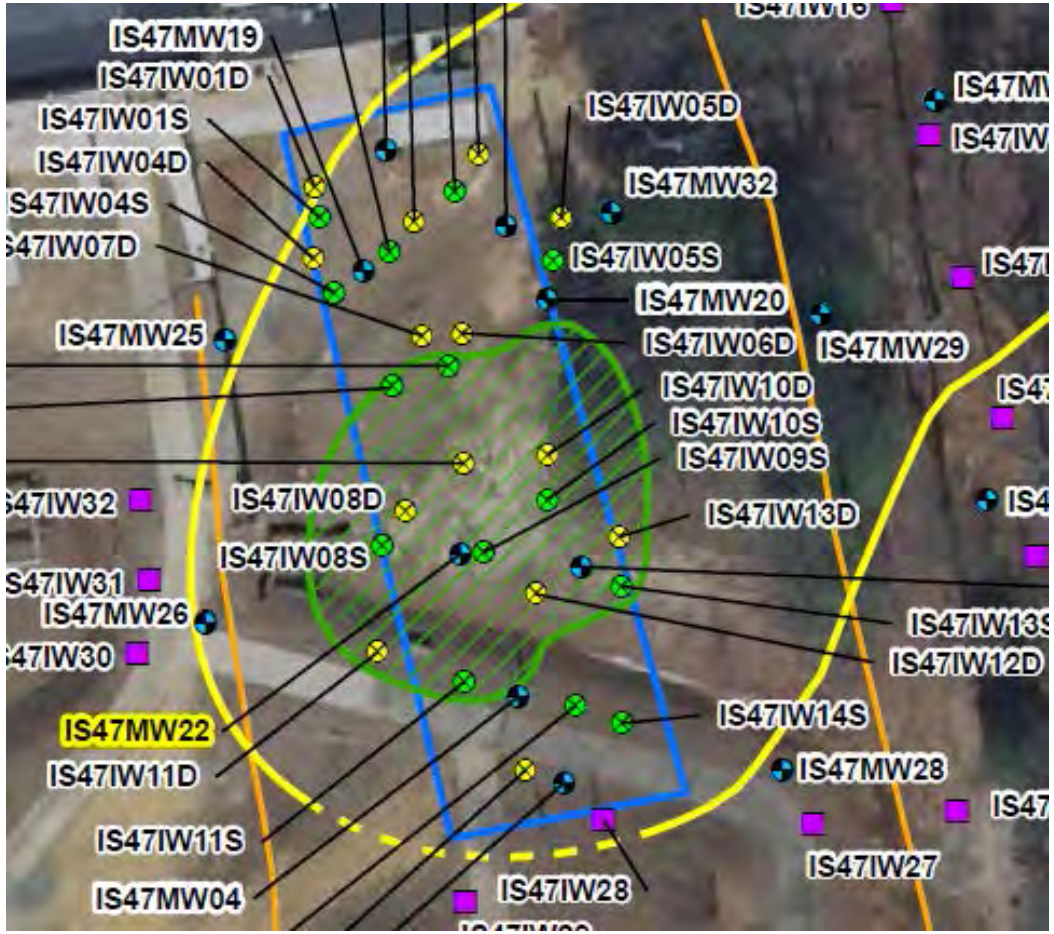
Average CT Source Area Concentrations



Average PCE Source Area Concentrations



Location of MW22



Legend

- Injection Well Location
- Monitoring Well Location
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- Pilot Study Area
- Inferred Residual DNAPL Area
- Source Area (CT and PCE >= 500 ppb)

Path Forward

- *Continue Year 3 monitoring per ROD (end of 2016)*
- *Consider additional source zone treatment alternatives*
  - *site constraints limit treatment options*
  - *source zone treatment good option due to small size and immobility of plume*
- *Evaluate other alternatives if current remedy is deemed ineffective*

Site 47 Post Remedial Action Annual Monitoring Update

Questions???

Site 67
Remedial Investigation Results

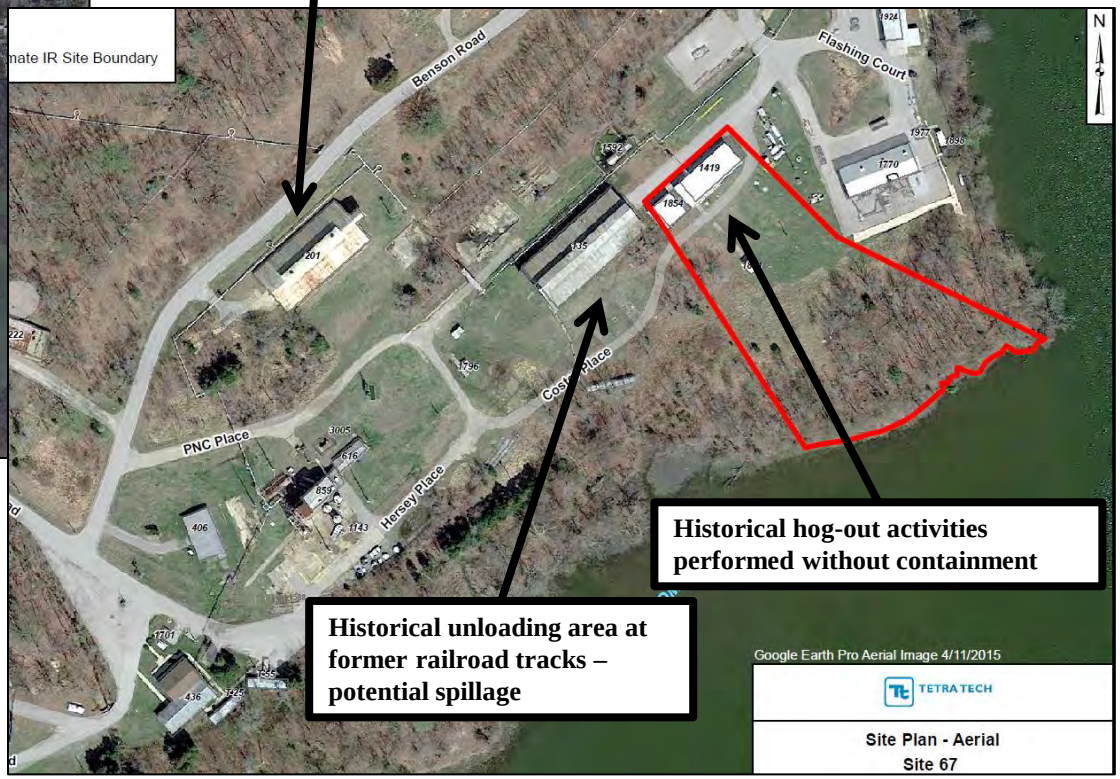
Travis Wray
Naval Support Facility Indian Head
NAVFAC Washington
April 21, 2016

Background

- *Site 67 – Hog-out Facility*
  - *Washed out rocket motors outside of bldg 1419*
    - *Perchlorate and other compounds*
  - *Spillage while unloading rockets at end of railroad tracks*
  - *Storage of perchlorate grains in and around bldg 201 which contained unpaved floor*

Site Location

Building 201 historically/currently stores perchlorate grains - probable source



Goals of Remedial Investigation

- *Sample surface and subsurface soil, surface water, sediment and groundwater for target analytes*
- *Confirm groundwater flow*
- *Identify and bound extent of contamination*
- *Complete Human Health Risk and Ecological Assessment*

Target Analytes

Analytes for Groundwater, Soil, Sediment, and Surface Water

SVOCs

Phthalates
- Bis(2-ethylhexyl)phthalate
- Butyl benzyl phthalate
- Diethyl phthalate
- Dimethyl phthalate
- Di-n-butyl phthalate
- Di-n-octyl phthalate

PAHs
- 2-Methylnaphthalene
- Acenaphthene
- Acenaphthylene
- Anthracene
- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Benzo(g,h,i)perylene
- Benzo(k)fluoranthene
- Chrysene
- Dibenzo(a,h)anthracene
- Fluoranthene
- Fluorene
- Indeno(1,2,3-c,d)pyrene
- Naphthalene
- Phenanthrene
- Pyrene

Metals (Total & Dissolved)
- Aluminum
- Boron
- Lithium
- Zinc

Explosives
- 2,4-Dinitrotoluene
- 2,6-Dinitrotoluene
- HMX
- RDX
- Nitroglycerin
- Tetryl

Oxidizers
- Perchlorate

Miscellaneous / Other

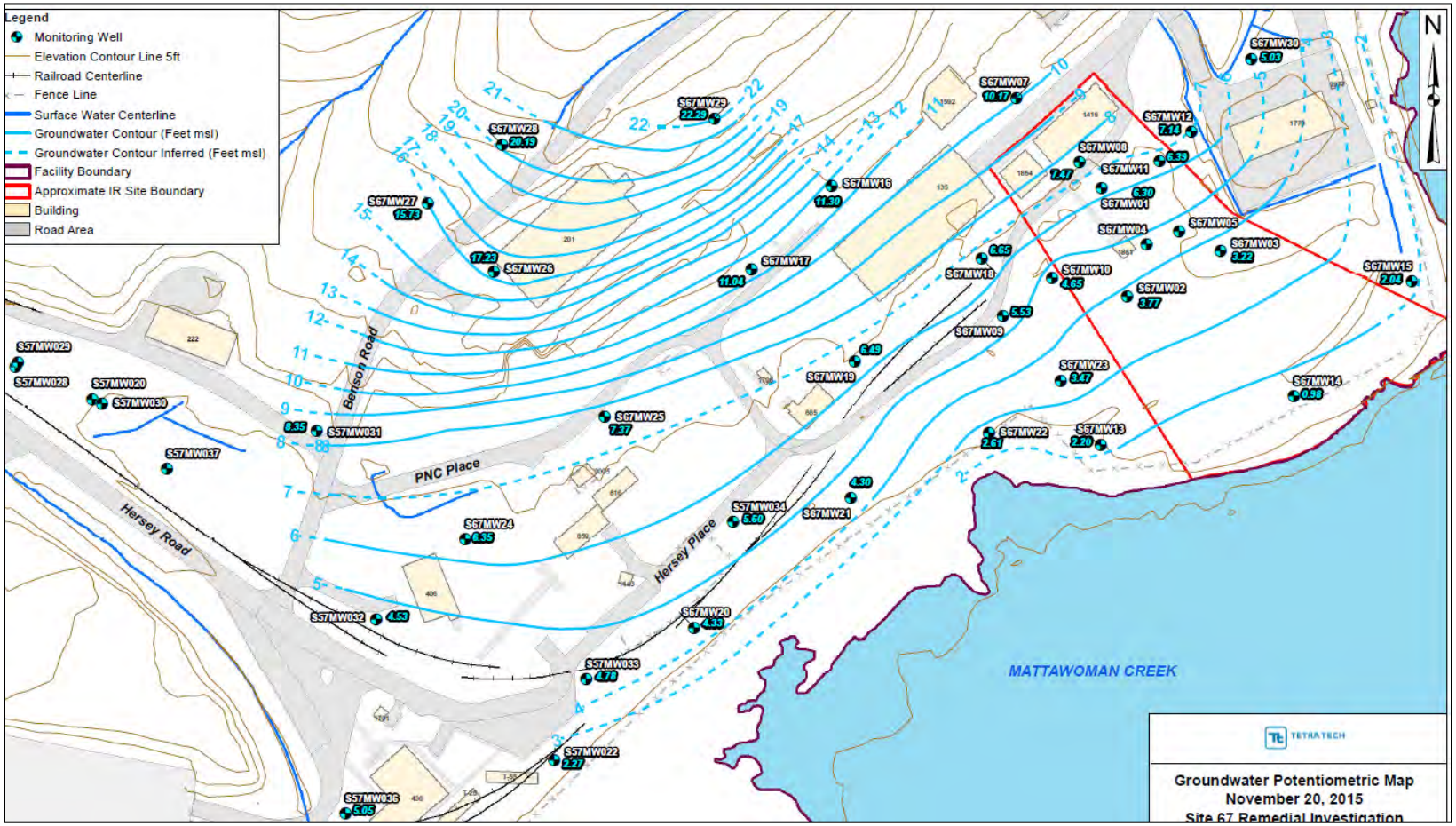
Groundwater
- Nitrate, Nitrite, and Chloride
- TOC
- Sulfate
- Methane
- qPCR

Sediment
- TOC

Surface Soil
- TOC
- pH

Surface Water
- Hardness

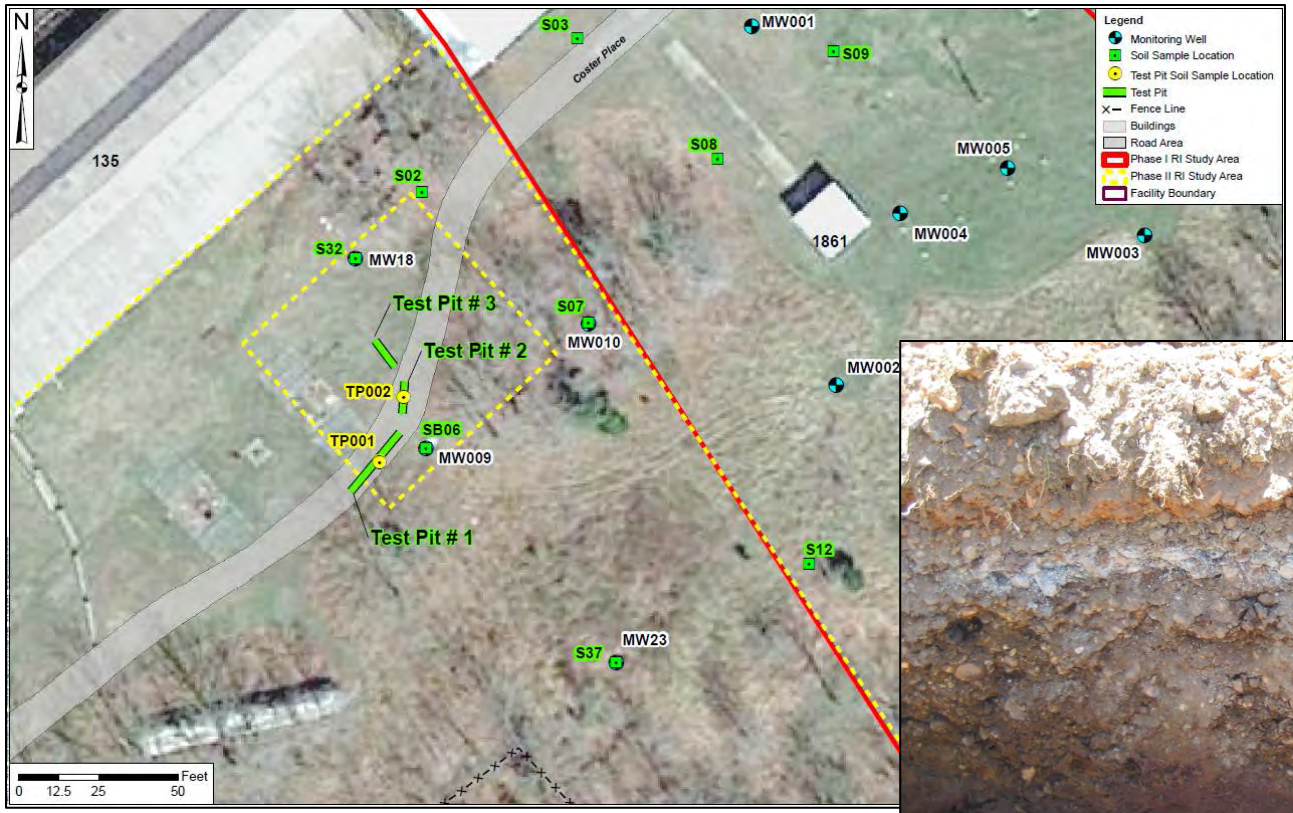
Site Groundwater



Site Layout


Legend
5 Perchlorate Concentraion in µg/L
Monitoring Well
Surface Water/Sediment Location
Groundwater Grab Sample Location
Perchlorate Isoconcentration Contour
Perchlorate Isoconcentration Contour Inferred
Fence Line
Railroad Centerline
Surface Water Centerline
Approximate IR Site Boundary
Facility Boundary
MATTAWOMAN CREEK
Benson Road
PNC Place
Hersey Place
15 µg/L
100 µg/L
1,000 µg/L
TETRA TECH

Soil Test Pits



Remedial Investigation Results

- *Remedial Investigation conducted in three phases (summer 2013 - fall 2015)*
  - *Unforeseen extent of perchlorate contamination*
- *Site characterized, conceptual site model complete, plume bounded*
- ***Perchlorate** present in groundwater above DoD action level in three distinct areas*
- ***Polycyclic Aromatic Hydrocarbons and metals** in groundwater cause future residential risk*
- ***Zinc** is ecological risk in soil, sediment and surface water*
- *Purple soil contains high concentrations of metals*

Path Forward

- *Complete Remedial Investigation report*
- *Proceed with Feasibility Study (late 2016/early 2017)*
  - *Address unacceptable human health risks in groundwater (perchlorate and metals)*
  - *Address unacceptable eco risks from Zinc*
- *Potential interim removal action for soil in unloading area*

Site 67 Remedial Investigation Results

Questions???

NAVAL SUPPORT FACILITY INDIAN HEAD

Site 70-Groundwater Contamination Along Water Works Way RI Update

Joseph Rail

NAVFAC Washington

April 21, 2016

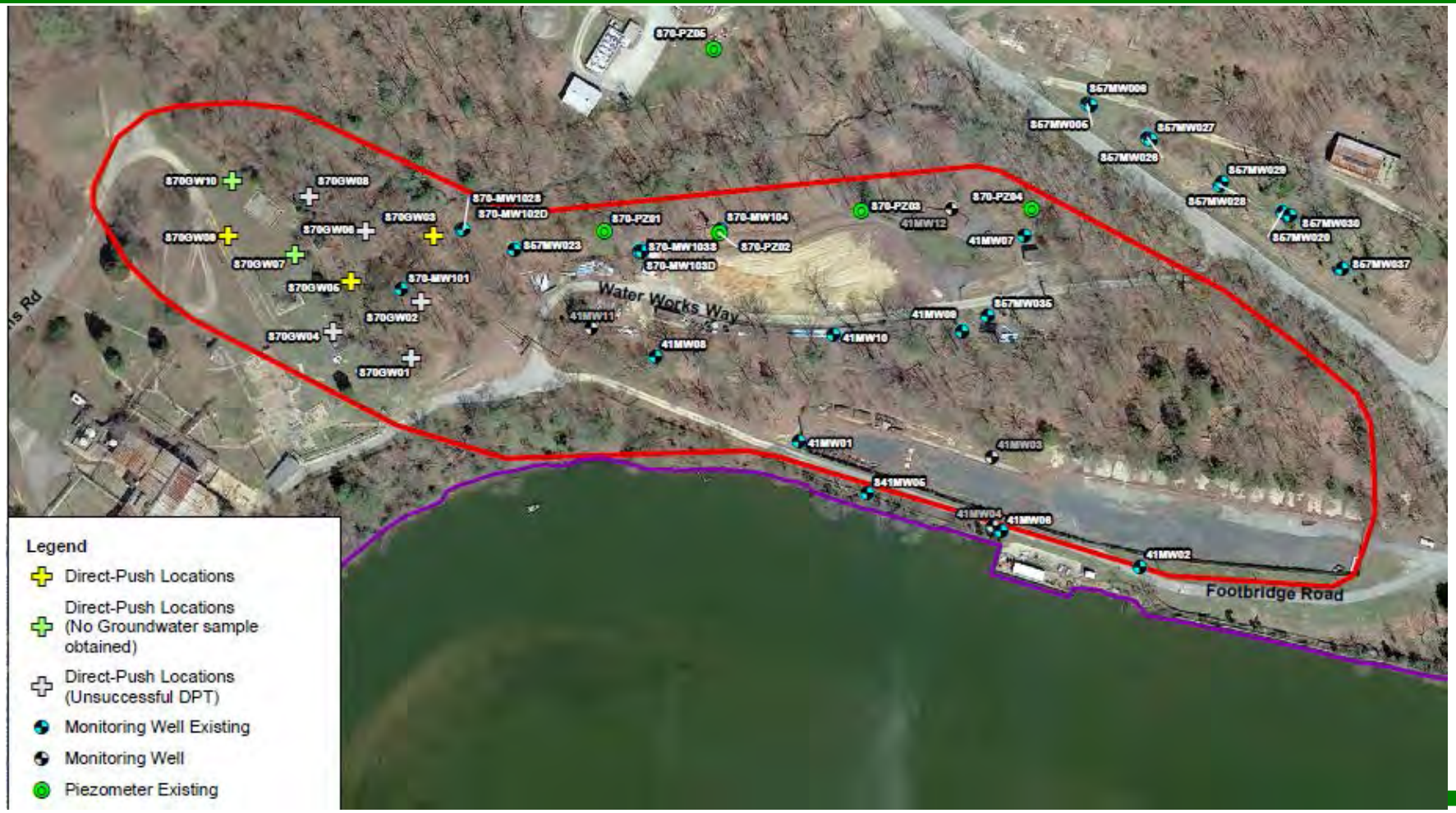
Site 70 Goal/Outcome

- *Presentation/Discussion Goal*
  - *Present RI Results.*
  - *Present Baseline Human Health Risk Assessment Findings.*
  - *Recommendations and Conclusions.*

Site Location & History

- ***Scrapyard media were addressed as IRP Site 41, and then as MRP UXO 32.***
- ***Scrapyard soil closed out under UXO 32. ROD complete 2014. LUCs in place for soil.***
- ***After understanding that TCE contamination at Scrapyard is a result of [unknown] upgradient source(s), Navy created new IRP Site 70 for groundwater medium at, and upgradient from, the Scrapyard.***
- ***Site 70 – Groundwater Contamination Along Waterworks Way***

Site 70 Layout



Site Background

Starting with…

UXO 32 – Scrapyard *(previously IRP Site 41)*

- ***Contamination****: Arsenic, iron, lead, and PCBs.*
- ***Amount****: Unknown.*
- ***From****: 1960s to 1988*
  - *Before Building 1440 was used for PCB transformer storage, they all went to the Scrapyard. Some in poor condition, leaded PCB oil on the ground.*
  - *Coal and lead-acid batteries also were stored in the Scrapyard, along with various scrap materials.*
- ***Status****:*
  - *Site 41 RI/FS through 2002*
  - *UXO 32 soil/debris/MPPEH interim removal action in 2011.*
  - *ROD signed and Remedy-In-Place (LUCs for soil) in 2014.*
  - *No action for sediment or surface water. Groundwater →Site 70.*

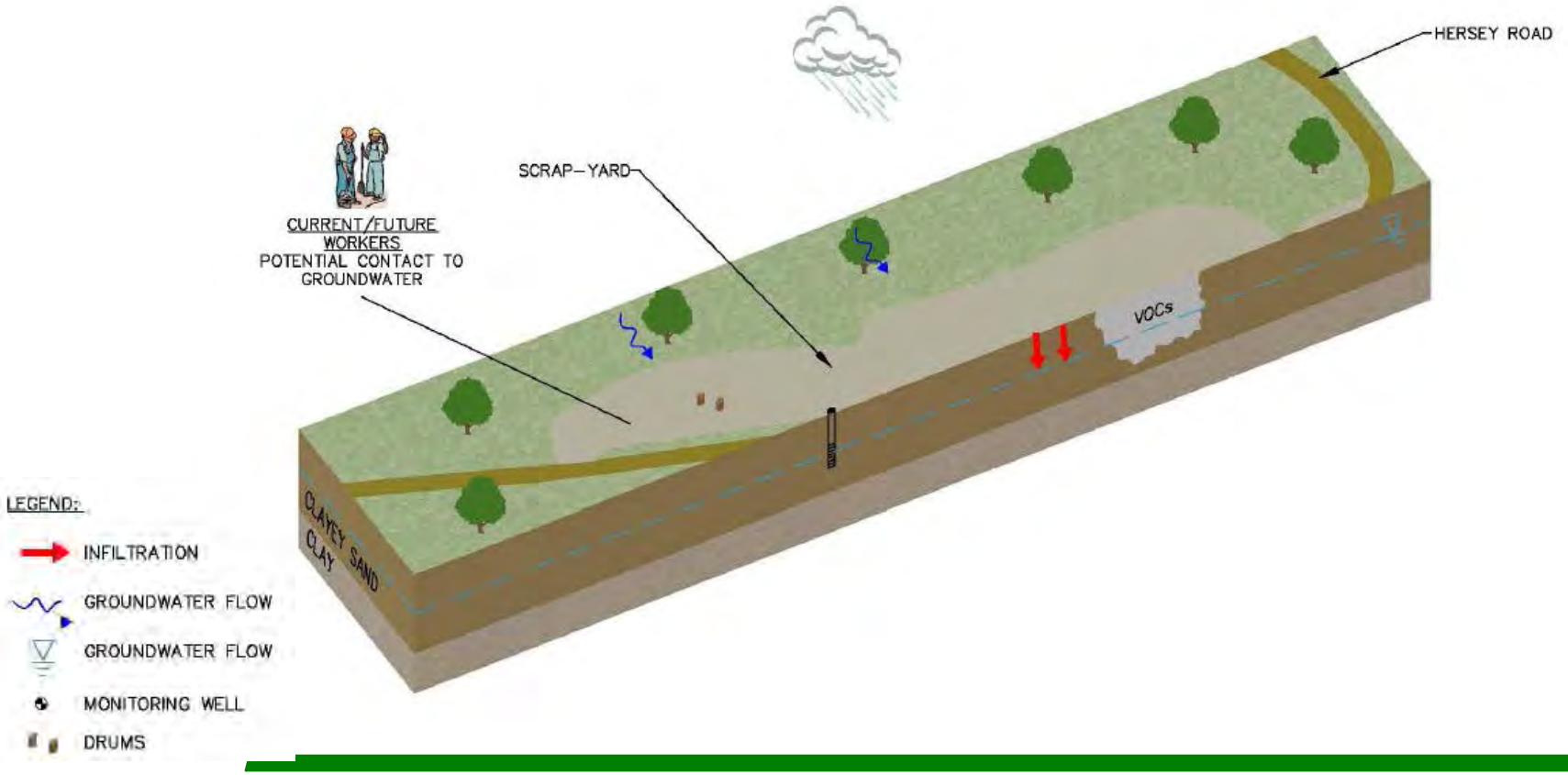
Site Background

…then from UXO 32 - Scrapyard to…

IRP Site 70 – GW Contamination

- ***Contamination:*** *TCE in groundwater.*
- ***Amount:*** *Unknown.*
- ***From:*** *1960s to 1988.*
  - *Historical releases during staging/storage of coal, PCB transformers, lead-acid batteries, and various scrap materials*
  - *Upgradient dumping release(s) – we know now.*
  - *Site 70 came about after attempting to find the source of TCE groundwater contamination during Scrapyard RI/FS.*
- ***Status:***
  - *Site 70 RI fieldwork completed in December 2015. Confirmed risks from groundwater.*
  - *RI and FS Reports planned for 2016.*

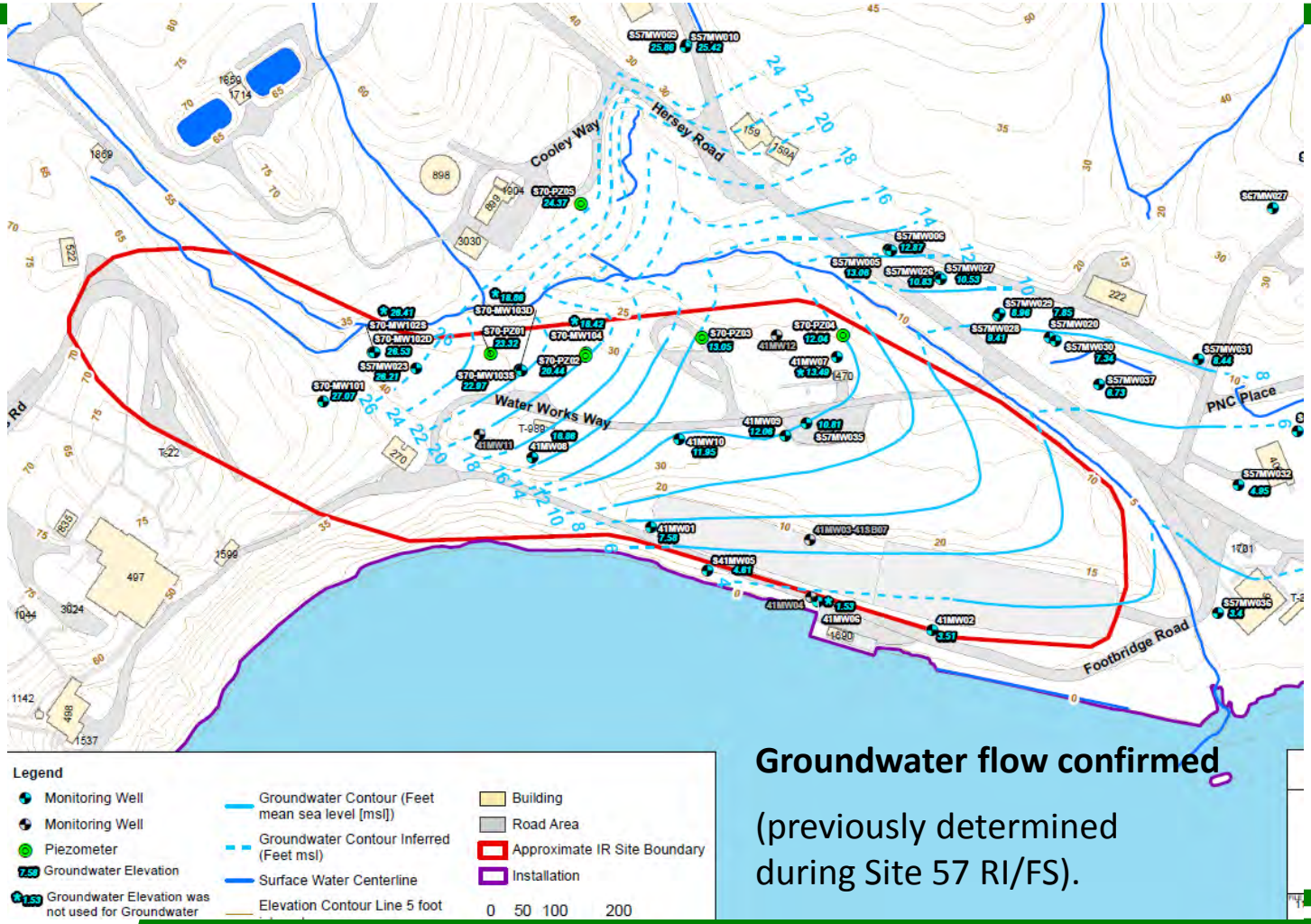
Conceptual Site Model (CSM)



Site 70 RI Work

- ***Comprehensive RI for groundwater medium***
  - *Groundwater from upgradient and within/under the Scrapyard.*
  - *Confirm groundwater flow.*
  - *Complete nature & extent (bound plume[s].)*
  - *Complete new Baseline HHRA considering additional data and revised CSM.*
- ***RI Fieldwork (Fall/Winter 2016)***
  - *Direct push grab groundwater sampling for TCE.*
  - *Installation of new monitoring wells and piezometers.*
  - *Monitoring well gauging and sampling.*
  - *Survey and investigative-derived waste (IDW) removal (nonhaz.)*

Groundwater Flow



Groundwater flow confirmed

(previously determined during Site 57 RI/FS).

Human Health Risk Assessment

- ***Media**: Groundwater*
- ***Receptors**: Potential receptors for groundwater exposure under*
  - *Current land use*
    - *Construction workers (via direct contact)*
    - *Industrial workers (via vapor intrusion)*
  - *Future land use*
    - *Construction workers (via direct contact)*
    - *Industrial workers (via vapor intrusion)*
    - *Hypothetical Residents (via direct contact and vapor intrusion)*

COCs Retained for FS

Chemical	Receptor				
	Construction Workers	Child Residents	Adult Residents	Lifelong Residents	
	Groundwater				Vapor Intrusion
Benzene		X	X	X	X
Methyl Tert-Butyl Ether		X	X	X	X
Trichloroethene		X	X	X	X
Arsenic		X	X	X	
Beryllium(1)		X(1)	X(1)		
Cobalt		X	X		

Notes:

X - Chemical is retained as a chemical of concern (COC).

A chemical is retained as a COC if it contributed more than $1x10^{-6}$ to a medium-specific cancer risk greater than $1x10^{-4}$ or more than 0.1 to a target organ hazard index greater than 1.

1 - Beryllium was additionally selected as a COC based on exceedances of the Maximum Contaminant Level (MCL).

RI Results

- ***TCE** present upgradient, but not as far as anticipated.*
  - *Apparent historical dumping of TCE with associated materials for which it was a solvent (e.g., benzene, BTEX.)*
  - ***Benzene** identified as a primary contaminant.*
- *Metals issues extend to upgradient.*
  - *No lead issue.*
  - ***Arsenic, beryllium, and cobalt** present.*
  - *Metals will be compared to background and evaluated in RI/FS Reports.*

Metals Results

TCE Results


S57MW009
S57MW010
Cooley Way
Hersey Road
S70-PZ05
S57MW006
S57MW005
S57MW026
S57MW027
S57MW029
8.96
S57MW028
S57MW030
S57MW020
S57MW037
12.3
S70-MW102D
S70-MW102S
8.21
5.76
S70-PZ02
S70-MW104
116
S70GW10
S70GW08
S70GW09
S70GW06
S70GW03
S70GW07
S70GW05
S70-MW101
S70GW02
S70GW04
S70GW01
ND
S70-PZ01
27
S57MW023
40.5
8.11
S70-MW103S
S70-MW103D
100 µg/L
41MW12
S70-PZ03
S70-PZ04
0.49 µg/L
41MW07
4.97
5.0 µg/L
S57MW035
1.04
Water Works Way
41MW11
29.2
41MW10
41MW09
70.6
18.7
41MW08
20.3
41MW01
41MW03
23.1
S41MW05
26.9
41MW06
41MW04
1.45
41MW02
Footbridge Road
Legend
Direct-Push Locations
Direct-Push Locations (No Groundwater sample obtained)
Direct-Push Locations (Unsuccessful DPT)
Monitoring Well Existing
Monitoring Well Abandoned
Piezometer Existing

VOC Results


Hersey Road
Water Works
Footbridge Road
S70-MW102S 20151209 feet bgs 10 - 20 VOCs (µg/L)
1,1-DCE 2.5 UJ
Benzene 824 J
CIS 1,2 DCF 2.5 UJ
MTBE 1370 J
PCF 2.5 UJ
Total Xylenes 7.5 UJ
TCL 8.21 J
S70-MW102D 20151209 feet bgs 20 - 30 VOCs (µg/L)
1,1-DCE 2.5 U
Benzene 1180
CIS-1,2-DCE 2.5 U
MTBE 1090
PCE 2.5 U
Total Xylenes 7.5 U
TCE 12.3
S70-MW103S 20151209 feet bgs 10 - 20 VOCs (µg/L)
1,1-DCE 1.25 UJ
Benzene 249
CIS-1,2-DCE 1.25 U
MTBE 468
PCE 1.25 U
Total Xylenes 3.75 U
TCE 27
S70-MW103D 20151209 feet bgs 28 - 33 VOCs (µg/L)
1,1-DCE 1.25 UJ
Benzene 323
CIS-1,2-DCE 1.25 U
MTBE 494
PCE 1.25 U
Total Xylenes 3.75 U
TCE 8.11
S57-MW23 20151210 feet bgs 10 - 20 VOCs (µg/L)
1,1-DCE 2.5 UJ
Benzene 418 J
CIS-1,2-DCE 2.5 UJ
MTBE 418 J
PCE 2.5 UJ
Total Xylenes 7.5 UJ
TCE 40.5 J
S70-PZ02 20151210 feet bgs 13 - 23 VOCs (µg/L)
1,1-DCE 0.25 UJ
Benzene 9.18 J
CIS-1,2-DCE 0.25 UJ
MTBE 27.8 J
PCE 0.25 UJ
Total Xylenes 0.75 UJ
TCL 5.76 J
S70-MW104 20151210 feet bgs 25 - 35 VOCs (µg/L)
1,1-DCE 1.8 J
Benzene 8.86 J
CIS 1,2 DCF 2.75 J
MTBE 61.7 J
PCF 0.843 J
Total Xylenes 0.75 UJ
TCE 106 J
S70-GW03 20151103 feet bgs 12 - 17 VOCs (µg/L)
1,1-DCE 0.5 U
Benzene 0.5 U
CIS-1,2-DCE 0.5 U
MTBE 1.27
PCE 0.5 U
Total Xylenes 1.5 U
TCE 0.5 U
S70-GW09 20151103 feet bgs 25 - 29 VOCs (µg/L)
1,1-DCE 1 U
Benzene 1 U
CIS 1,2 DCF 1 U
MTBE 1 U
PCE 1 U
Total Xylenes 3 U
TCE 1 U
S70-GW05 20151103 feet bgs 22 - 26 VOCs (µg/L)
1,1-DCE 2.5 U
Benzene 2.5 U
CIS 1,2 DCF 2.5 U
MTBE 2.5 U
PCE 2.5 U
Total Xylenes 7.5 U
TCL 2.5 U
S70-MW101 20151210 feet bgs 20 - 30 VOCs (µg/L)
1,1-DCE 0.25 UJ
Benzene 29.2
CIS-1,2-DCE 0.25 U
MTBE 122
PCE 0.25 U
Total Xylenes 1.12 J
TCL 0.25 U
S41-MW08 20151210 feet bgs 23 - 33 VOCs (µg/L)
1,1-DCE 1.25 UJ
Benzene 210 J
CIS-1,2-DCE 1.25 UJ
MTBE 561 J
PCE 1.25 UJ
Total Xylenes 3.75 UJ
TCE 18.7 J
S41-MW10 20151210 feet bgs 23 - 33 VOCs (µg/L)
1,1-DCE 1.25 UJ
Benzene 144 J
CIS-1,2-DCE 1.25 UJ
MTBE 419 J
PCE 1.25 UJ
Total Xylenes 3.75 UJ
TCE 29.2 J
S41-MW01 20151209 20151210 DUP feet bgs 9 - 19 9 - 19 VOCs (µg/L)
1,1-DCE 0.25 U 0.25 UJ
Benzene 0.32 J 0.634 J
CIS-1,2-DCE 0.25 U 0.25 UJ
MTBE 343 395 J
PCE 0.25 U 0.278 J
Total Xylenes 0.75 U 0.75 UJ
TCE 17.3 20.3 J
S41-MW05 20151209 feet bgs 7 - 17 VOCs (µg/L)
1,1-DCE 1.25 U
Benzene 1.25 U
CIS-1,2-DCE 1.25 U
MTBE 625 J
PCE 1.25 U
Total Xylenes 3.75 U
TCE 23.1
S41-MW09 20151210 feet bgs 18 - 28 VOCs (µg/L)
1,1-DCE 0.25 UJ
Benzene 11.4
CIS-1,2-DCE 0.86 J
MTBE 93.9
PCE 0.572 J
Total Xylenes 0.75 U
TCE 70.6
S57-MW35 20151210 feet bgs 22 - 32 VOCs (µg/L)
1,1-DCE 0.25 UJ
Benzene 11.9 J
CIS-1,2-DCE 0.25 UJ
MTBE 45 J
PCE 0.25 UJ
Total Xylenes 0.75 UJ
TCE 1.04 J
S41-MW07 20151209 feet bgs 20 - 30 VOCs (µg/L)
1,1-DCE 0.25 UJ
Benzene 2.43 J
CIS-1,2-DCE 0.25 UJ
MTBE 8.09 J
PCE 0.25 UJ
Total Xylenes 0.75 UJ
TCE 4.97 J
S41-MW06 20151209 feet bgs 7 - 17 VOCs (µg/L)
1,1-DCE 0.25 U
Benzene 0.25 U
CIS-1,2-DCE 0.461 J
MTBE 5.66
PCE 0.326 J
Total Xylenes 0.75 U
TCE 26.9
S41-MW02 20151209 feet bgs 9 - 19 VOCs (µg/L)
1,1-DCE 0.25 U
Benzene 0.25 U
CIS-1,2-DCE 0.327 J
MTBE 1.92
PCE 0.25 U
Total Xylenes 0.75 U
TCL 1.45
S70-PZ05
S70-PZ01
S70-PZ03
S70-PZ04
41MW12
41MW07
S57MW006
S57MW005
S57MW026
S57MW027
S57MW029
8.96
S57MW028
S57MW030
S57MW020
S57MW03
S70GW10
S70GW08
S70GW09
S70GW06
S70GW03
S70GW07
S70GW05
S70GW02
S70GW04
S70GW01
S70-MW101
S70-MW102S
S70-MW102D
S70-MW103S
S70-MW103D
S70-PZ02
S70-MW104
S57MW023
41MW11
41MW08
41MW10
41MW09
S57MW035
41MW01
S41MW05
41MW04
41MW06
41MW02
Legend
Direct-Push Locations
Direct-Push Locations (No Groundwater sample obtained)
Direct-Push Locations (Unsuccessful DPT)
Monitoring Well Existing
Monitoring Well Abandoned

RI Conclusions & Recommendations

- ***Submit RI Report***
  - *Will discuss nature and extent of contamination.*
- ***Proceed with FS***
  - *Address unacceptable risks in groundwater.*
  - *Provide remedial alternatives for co-mingled groundwater plume (CVOCs and petroleum, oil & lubricants-POL.)*
  - *FS will evaluate soils/materials that warrant removal if impacting groundwater.*

Site 70 RI Update

Questions?