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 19, 2018, 6:00 pm

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

Additional Attendees:

Ms. Tara Carlson (C)	Mr. Jim Long (C)
Mr. Andrew Louder (N)	Ms. Jeron Hayes (N)
Mr. Robert Thomson (F)	Ms. Susan Yates (N)
Ms. Tara Meadows (N)	Ms. Lisa Laschalt (L)

RAB Members Not in Attendance:
Ms. Karen Wiggen (L)
Mr. Fred Pinkney (F)

* 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 and Mr. Scott of NAVFAC Washington and Mr. Louder of Naval Support Facility Indian Head. Mr. Rail presented the Mission Cleanup overview and the Site 67 & 69 Remedial Investigation Update. Mr. Louder presented the Site 17 and Site 47 Monitoring Updates. Mr. Scott presented the UXO 9 Remedial Investigation/Feasibility Study Update and Five Year Review Finalization. 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 18, 2018. A copy of the draft agenda is included in Attachment C. Mr. Rail then concluded the meeting at 8:00 pm and thanked everyone in attendance.

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

April 19, 2018

6:00 - 6:05 pm	**ARRIVAL/WELCOME** Mr. Joseph Rail Naval Facilities Engineering Command, Washington (NAVFACWASH) Remedial Project Manager
6:05 – 6:15 pm	**MISSION CLEANUP INTRODUCTION** Mr. Joseph Rail
6:15 – 6:30 pm	**SITE 17 LONG-TERM MONITORING UPDATE** Mr. Andrew Louder
6:30 – 6:45 pm	**UXO 9 REMEDIAL INVESTIGATION /FEASBILITY STUDY UPDATE** Mr. Alex Scott
6:45 – 7:00 pm	**FIVE YEAR REVIEW FINALIZATION** Mr. Alex Scott
7:00 – 7:15 pm	**SITE 47 MONITORING UPDATE** Mr. Andrew Louder
7:15 – 7:30 pm	**SITE 67 & 69 REMEDIAL INVESTIGATION UPDATE** 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 19, 2018

Arrival/Welcome

No questions were asked nor comments made during this topic.

MISSION CLEANUP INTRODUCTION

Question: Is Mission Cleanup a new initiative and is it only for communication?

Answer: Yes, Mission Cleanup is new and its goal is to enhance communication of work being performed under the Navy Environmental Restoration (ER) Program.

Question: Has your budget been increased to support Mission Cleanup?

Answer: No; however, any expenses associated with Mission Cleanup are expected to be included in current and future fiscal year funding.

Question: Is there a Mission Cleanup social media site?

Answer: There is not a specific Mission Cleanup social media site at this time, but there is a Naval Support Facility South Potomac Facebook page and an Indian Head public website. Both have the ability to make announcements and provide community outreach.

SITE 17 LONG-TERM MONITORING UPDATE

Question: What technology was used in the north plume?

Answer: A grout bomber was used which is an excavator that's equipped with a drilling mast that injects amendments into groundwater in a tightly-spaced grid.

Attachment B

Question: How far are the Continuous Multichannel Tubing wells (CMTs) from the monitoring wells?

Answer: The CMTs are within 15-20’ of the monitoring wells.

Question: Was any contamination found in the pore water of the Mattawoman Creek?

Answer: No, there was no contamination identified in the pore water of the Mattawoman Creek.

Question: How long is monitoring planned for Site 17?

Answer: The length of monitoring is to be determined and will depend on the effectiveness of grout bombing and the ability to meet cleanup goals.

UXO 9 REMEDIAL INVESTIGATION/FEASIBILITY STUDY UPDATE

Question: Is the source of lead and arsenic important to determine who’s responsible for cleanup?

Answer: Yes, the source is important to determine an appropriate remedy and potentially eliminate a continuing source such as lead paint that is peeling off of old buildings.

Question: Would you expect to see similar arsenic issues along the Rails-to-Trails acreage outside the base?

Answer: Spraying of herbicides and pesticides to control vegetation along railroads was widely used in the past. While we don’t have any sampling data along the Rails to-Trails areas, it’s very possible that similar levels of arsenic are present.

Question: Why are you addressing this site if it’s still active?

Answer: The portions of the site to be addressed are no longer active.

Question: Are the herbicides still in use?

Answer: No, the rail lines are no longer used and herbicides are not applied.

FIVE YEAR REVIEW FINALIZATION

Question: Are the Land Use Controls (LUCs) physical barriers to avoid exposure?

Answer: Most of the LUCs are restrictions on groundwater for potable use. However, all sites are within secured, fenced-in areas of the installation and trespassing is not allowed.

Question: Is a pore sample taken in soil or water?

Answer: Pore samples are taken in water such as a stream or creek.

Question: Are elevated levels of manganese at Site 36 affecting benthic organisms and fish?

Answer: An ecological screening assessment was completed for Site 36 in the past and no unacceptable risks were identified for benthic organisms or fish.

Question: Do you know if there's a trichloroethylene problem in Building 292 at Site 57?

Answer: A vapor intrusion investigation is currently being planned for Building 292 to evaluate risks.

Question: Which Five Year Review site has seen the most progress?

Answer: From a standpoint of cleanup progress, Site 38-Rum Point Landfill and UXO 32-Scrap Yard have seen the most risk reduction and elimination of waste.

SITE 47 MONITORING UPDATE

Question: What's the difference between carbon tetrachloride (PCE) and trichloroethylene (TCE)?

Answer: TCE is a form of PCE with PCE being the parent product. Both are solvents used commercially as industrial degreasers, spot removers, and in dry cleaning.

Question: Is the reduction of plume size in the 3-D models significant even though contaminant concentrations are still high?

Attachment B

Answer: Yes, the reduction in plume size indicates that the source area has been reduced and the area of contamination potentially needing further treatment is smaller.

Question: Was interpolation used in generating the plume maps?

Answer: Yes, with limited data points, some level of interpolation is used in generating plume maps.

Question: How did you find out about the mercuric nitrate disposal pit and its use at Site 47?

Answer: The disposal pit was identified in historical records.

Question: Are there signs throughout the base warning of exposure or dangerous conditions?

Answer: Yes, most areas with known hazards are secured or identified with warning signs.

SITE 67 & 69 REMEDIAL INVESTIGATION UPDATE

Question: What happens to microbes after injection work is completed?

Answer: In time, the microbes die off as their food source is depleted.

Question: For Site 67, where does the name "Hog Out" come from?

Answer: It is assumed that "Hog Out" came from the process of cleaning out rocket motor tubes which are called "Hogs."

Attachment B

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

October 18, 2018

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 SMALL ARMS/SKEET RANGE REMOVAL ACTION UPDATE** Mr. Joseph Rail
6:30 – 6:45 pm	**UXO 9-PROPELLANT GRAIN SPILL RI/FS UPDATE** Mr. Alex Scott
6:45 – 7:00 pm	**SITE 17 LONG-TERM MONITORING UPDATE** Mr. Andrew Louder
7:00 – 7:15 pm	**SITE 57-BUILDING 292 TCE CONTAMINATION OPTIMIZATION UPDATE** Mr. Andrew Louder
7:15 – 7:30 pm	**SITE 66-TURKEY RUN DISPOSAL AREA BASELINE ECOLOGICAL RISK ASSESSMENT** Mr. Alex Scott
7:30 – 7:45 pm	**SITE 67-HOG-OUT FACILITY FEASIBILITY STUDY UPDATE** Mr. Joseph Rail
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

MISSION CLEANUP INTRODUCTION

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

4/19/18

Mission Cleanup

What is Mission Cleanup?

A cohesive strategy for partners to communicate work being performed under the Navy Environmental Restoration (ER) Program with a higher degree of transparency. It aims to go above and beyond the minimum requirements of CERCLA and make stakeholders aware of the positive impact and critical nature of work being performed.

Mission Cleanup

Objectives:

- To facilitate public outreach, Mission Cleanup was developed with an objective to communicate how Navy, U.S. EPA, and states work together to restore clean air, land, and water for future generations.

- Mission Cleanup encourages the use of consistent vocabulary and strategies reminding stakeholders that a Federal Facility cleanup uses sound science to:

    1) **CLEAN** up federal land,
    2) **PROTECT** communities, and
    3) **RESTORE** land and water to be safely re-used

Mission Cleanup

Messaging:

- CERCLA requires specific community involvement to be undertaken at certain milestones throughout cleanup process
- Under Mission Cleanup, Tier I teams will develop key messages for each milestone
- Messages are to be short, succinct, and use plain English
- Once messages are developed, various communication tools will be used for community involvement.

* ***This information is not intended to replace required community engagement activities, but to ensure teams are proactive about communicating and amplifying the work being completed on their sites.***

Communication Tools

Engagement Matrix	Suggested Communication Tool														
Key Milestone	Press Release	Interview**	Social Media Post	"In the Moment" video	Factsheets	Public Notice	RAB Meeting Presentation	Public Meeting (and Transcript)	City Council Notification/Presentation	Community Group Presentation	Door to Door*	Site Tour Opportunity	Ribbon Cutting	Ground Breaking Ceremony	Presentation to Tenants/Base Personnel
No Further Action Decision Document					R	R									
Proposed Remedial Action Plan Public Review and Comment	R		R		M	C	R	C	R						
Record of Decision	R		R		M	C									
Remedial Design Completion	R		R		C	C		C			R	R		R	R
Remedial Action Completion			R	R	R	R	R								
Non-Time Critical Removal Action	C	C			M	C			C		R	R		R	R
Time Critical Removal Action	C					C			C						
Five Year Review Start					M	C									
Five Year Review Completion	R		R		M	C	R		R						
Construction Complete	R		R		R	R	R		R	R		R	R		
Community Involvement Plan		C					R								
Delisting from NPL ☺	R		R		M	C	R		R			R	R		
Award Presentation	R		R						R						
Optimization, Green and Sustainable, or other Success Story	R		R		R										

C – CERCLA Requirement ***M-Tier II Requirement*** ***R-Tier II Recommendation***

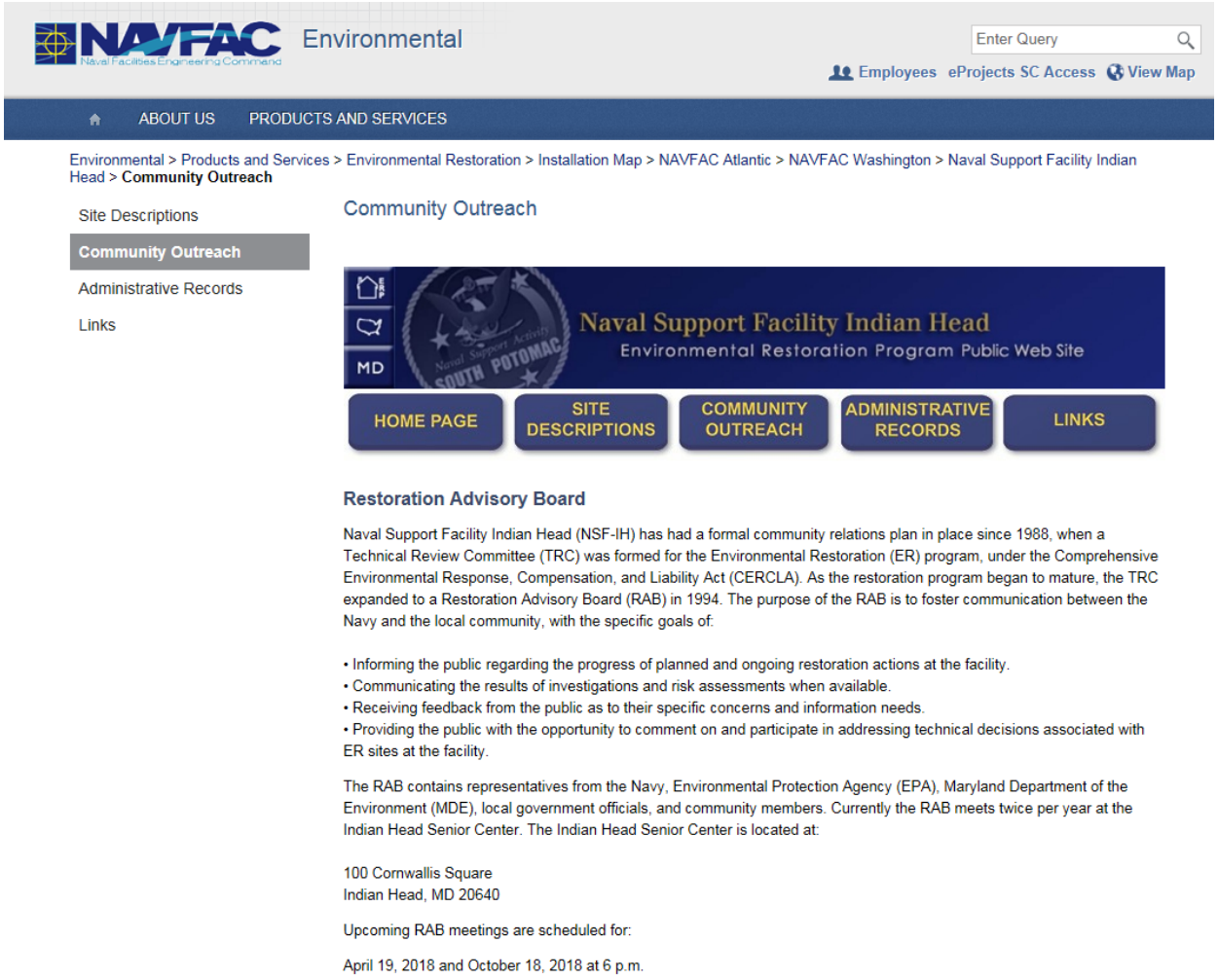
Example Messages

Key Milestone	Messaging
No Further Action Decision (signed)	**Message**: This Mission Cleanup milestone is being/has been achieved due to the ongoing partnership between (**insert facility name**), (**insert specific state DEP**) and the EPA.
Proposed Remedial Action Plan Public Review	**Message:** (**Insert facility name**), (**insert specific state DEP**) and the EPA invite public comment on this preferred remedy, which supports the mission of Mission Cleanup. Your involvement in this process will help to ensure that federal lands are cleaned, protected, and restored for future use.
Five Year Review Completion	**Message**: (**Insert facility name**), (**insert specific state DEP**) and the EPA worked together to achieve this **Five Year Review Completion**, in which we assessed the remedy to ensure it continues to *"clean, protect and restore"* in the long-term. **Message**: Mission Cleanup is an ongoing federal-state partnership that capitalizes on sound science to *Clean, Protect & Restore* federal lands.
Construction Complete	**Message**: Mission Cleanup milestone, **Construction Complete**, is the highest accomplishment a National Priorities Listed (NPL) site can achieve. Since being listed on the NPL in YYYY, Environmental Restoration Program *(***insert facility name***)* identified (**insert number**) sites requiring investigation; (**insert number**) of these sites required no further action. For the remaining (**insert number**) sites, all immediate threats have been addressed and all long-term threats are under control.
Award Presentation	**Message:** The Indian Head partnering team, which also includes experts from MDE and the U.S. EPA, is the recipient of the **FY17 Green Team of the Year** for their Mission Cleanup achievements in cleaning, protecting, and restoring the environment using sound science. The team developed a soil reuse plan gaining regulatory acceptance for Site 38 which resulted in 19,000 tons of soil being reused instead of being hauled and disposed in an offsite landfill. This was an excellent example of a green and sustainable approach to cleanup. #MissionCleanup
RAB	**Message:** Under Mission Cleanup, we are inviting the community to participate in the **Restoration Advisory Board** to ensure continued protection of public health and restoration of land and water. **Message:** (**Insert facility name**), (**insert specific state DEP**) and the EPA are committed to the **Restoration Advisory Board**, which symbolizes our commitment to maintaining open dialog with impacted communities as we work together to *Clean, Protect & Restore* federal land.

Indian Head Public Website

Website URL:

http://go.usa.gov/DyQF



Mission Cleanup

Points of Contact:

- **NAVFAC Washington:** Joseph Rail
- **NAVFAC Washington (Base RPM):** Andrew Louder

Questions ?

IR Site 17- Disposed Metal Parts Along the Shoreline

Presented By
Andrew Louder-IR/MRP Manager
Naval Facilities Engineering Command (NAVFAC)
Washington

4/19/2018

Presentation Objectives

Objective:

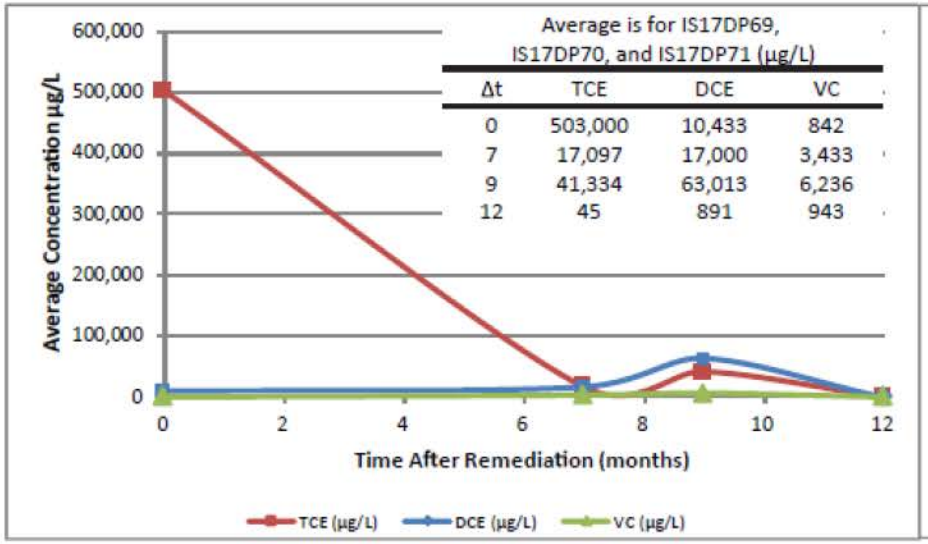
- Discuss the results of the 4 year South Plume Post Soil Mixing LTM and North Plume ESTCP Study
  - Background of IR 17
  - Results
  - Path Forward

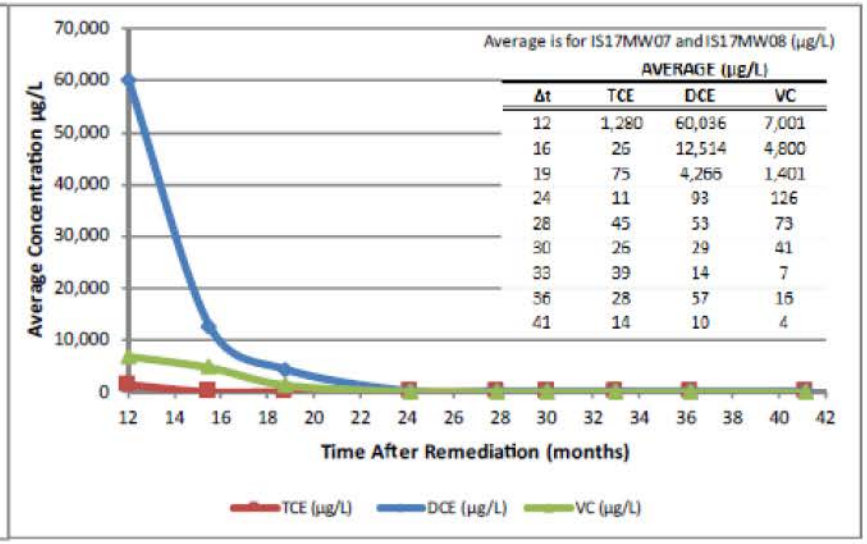
IR Site 17

- Site 17 is a 1,000-foot stretch of shoreline along Mattawoman Creek where metal parts were discarded from the 1960s until the early 1980s. The discarded materials included rocket motor casings, shipping containers, empty drums, and various metal parts.. Based on a Remedial Investigation (RI) that was completed for this site (CH2M, 2004), two shallow groundwater plumes were identified: North Plume and South Plume. Each plume is defined by an area of attainment, which is the area where the site remediation goals were exceeded for the primary constituents of concern (COCs)—trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), and vinyl chloride (VC).

IR Site 17-Site Map

IR Site 17- South Plume Results





NOTES:

1. Average concentrations based on analytical data from IS17DP69, IS17DP70, & IS17DP71, and IS17MW07 & IS17MW08, respectively.
2. µg/L = microgram per liter
3. Δt = change in time
4. TCE = trichloroethene
5. DCE = cis-1,2-dichloroethene
6. VC = vinyl chloride
7. The source zone area initially had TCE concentration greater than 100,000 ug/L.

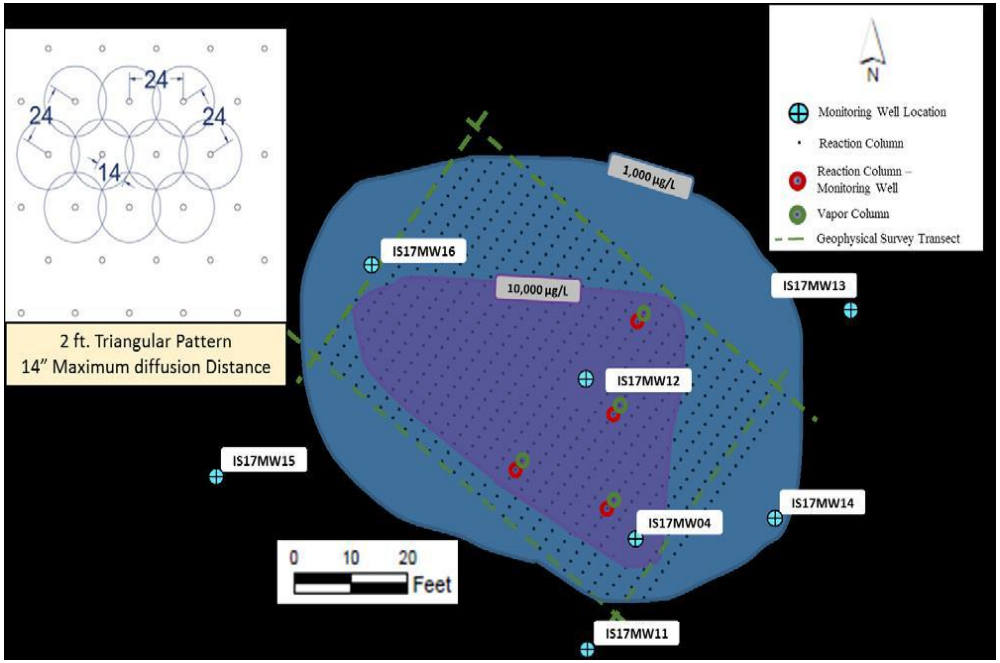
Figure 3-1
Average COC Concentrations Over Time in Source Zone Area Groundwater
Site 17 Year 4 Post-Soil Mixing Monitoring Report
NSFIH, Indian Head, Maryland

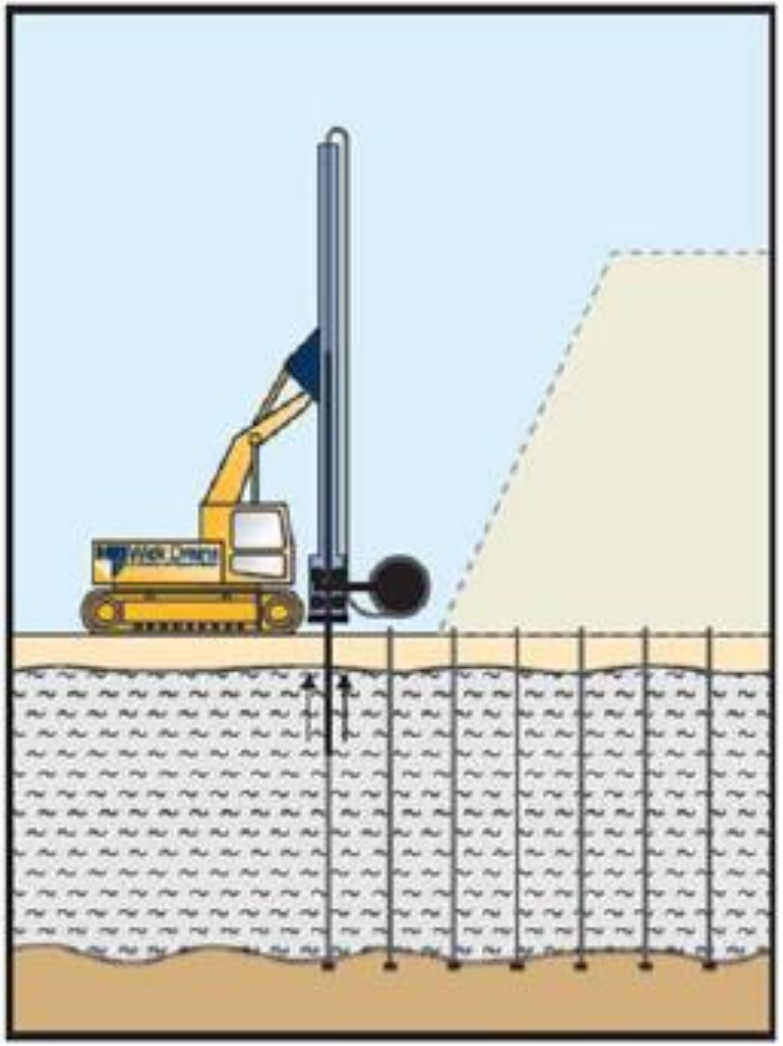
IR Site 17-South Plume Conclusions

- The soil mixing in the South Plume at Site 17 has been effective in reducing the TCE, DCE, and VC concentrations within the source zone area by more than 98 percent and concentration trends continue toward SRGs.
- Removal of soil sampling in the south plume due to the success of the soil mixing.

IR Site 17-North Plume

- **Grout bomber pilot study by ESTCP.**
- **Preliminary Results available.**
- **1 year post study sampling to occur October 2018.**





IR Site 17-North Plume Preliminary Results

- **3 sampling events since application.**
  - **Baseline (July-August 2017, GSI), 1-month post install (September 2017, GSI), and ~7-months (February 2018, CH2M)**

- **Reductions in TCE concentrations in site wells since the baseline sampling (MW-04, MW-12, MW-14, and MW-16).**
  - **Exception is MW-14 which had an increase. Further evidence is needed to shed light on why.**
    - Anomaly?, Seasonal change in groundwater flow, etc.

- **MW-16 has shown greatest decrease in TCE with a reduction from 1700 to 8.8 ug/L**
  - **MW-16 is adjacent to the oil column area.**

- **MW-04, 12, and 16 are sampled for biomarkers.**
  - **Orders of magnitude increases in 12 and 16 since application of the microbial population.**

IR Site 17-North Plume Preliminary Results Cont'd

- **Continuous Multichannel Tubing (CMT) Wells**
- **Installed within the reaction column.**
  - **Better suited for identifying degradation.**
- **On average, concentrations in CMT wells are 2-3 orders of magnitude lower than their adjacent Monitoring Wells.**
  - **This means the reaction columns are working!**

IR Site 17-Conclusions

South Plume

- **Since the soil mixing, concentrations of TCE, DCE, and VC have decreased in the source area by 98%.**
- **Removal of soil sampling in the south plume due to the effectiveness of the soil mixing.**

North Plume

- **Although its early in the stages of performance monitoring, site wide trends, in general, appear to be moving in the right direction.**
- **Reaction columns are working as intended due to the data collected at the CMT wells in reference to the adjacent MW wells.**
- **Strong evidence of abiotic and biotic mechanisms (increased microbial population)**

Contacts and Questions

Points of Contact:

- **NAVFAC Washington:** Joe Rail
- **NAVFAC Washington (Base RPM):** Andrew Louder

Questions ?

UXO 09 – RI/FS UPDATE

Presented By
Alex Scott
Naval Facilities Engineering Command (NAVFAC)
Washington

04/19/2018

Presentation Objectives

Objectives:

- Present a brief overview of the UXO 09 Site
- Updated results from sampling efforts.
- Path forward for the RI/FS

Presentation Objectives

Objectives:

- Present a brief overview of the UXO 09 Site
- Updated results from sampling efforts.
- Path forward for the RI/FS

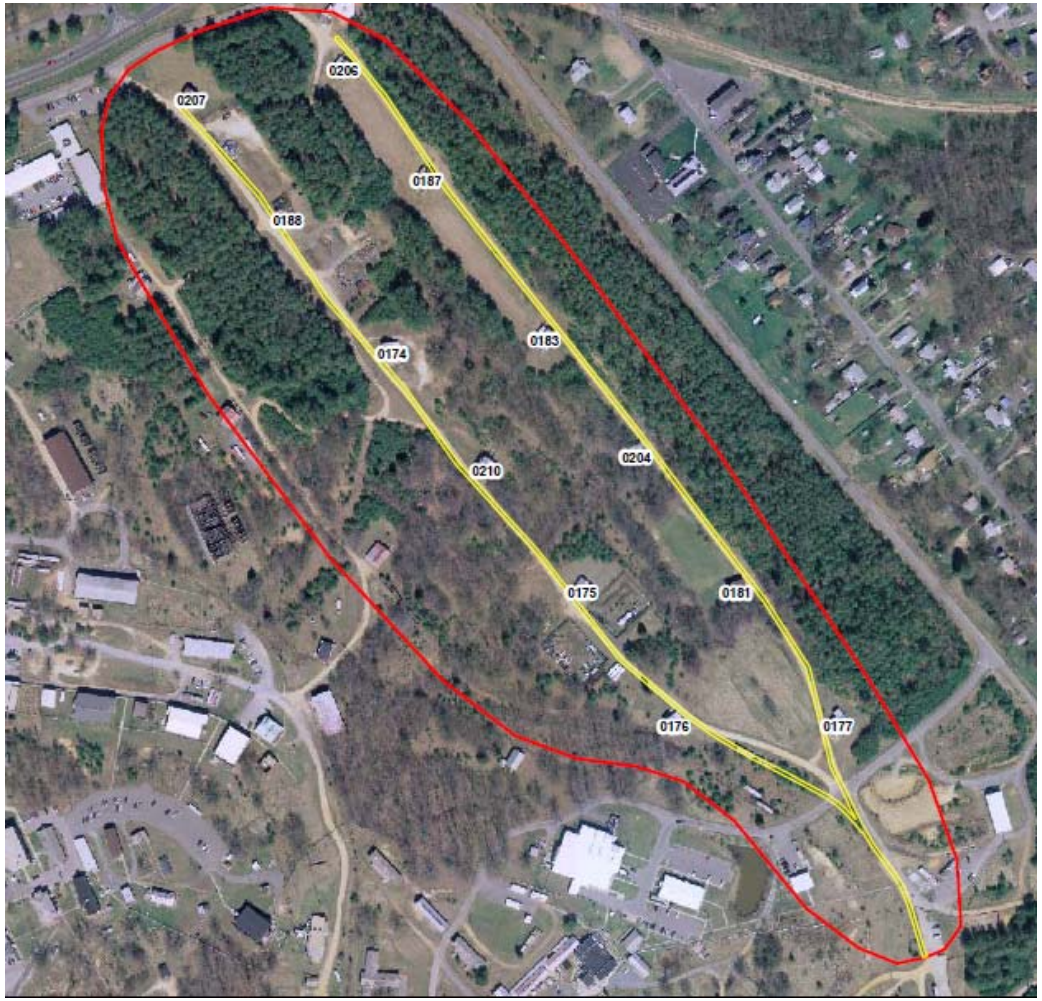
Site Location

NSFIH
Main Area

U.S. Navy

UXO 9 Site Background

- 52-acre land site
- Consists of an area where propellant grains were spilled during transportation of the propellant by rail to storage/drying buildings.
- Transportation of grains started between 1927 and 1942 and ended in the late 1980s, the rail lines were abandoned.
- Facility operations may have resulted in Munitions and Munitions Constituents (MC) being released into the environment



UXO 9 Investigation History

1983 – Initial Assessment Study identified site as potentially impacted by Nitrocellulose (NC), a.k.a. gun cotton.

2005 – Preliminary Assessment (PA) identified area as impacted by activities related to propellant grain production, and recommended a follow-up Site Investigation (SI).

2010 – SI indicated that propellant grains were spilled on site, near and around the dry-house and storage buildings.

2014 – Initial RI identified the following COCs:

Explosives MCs were found in soils, but not in quantities or forms that present a hazard or unacceptable health or eco risk.

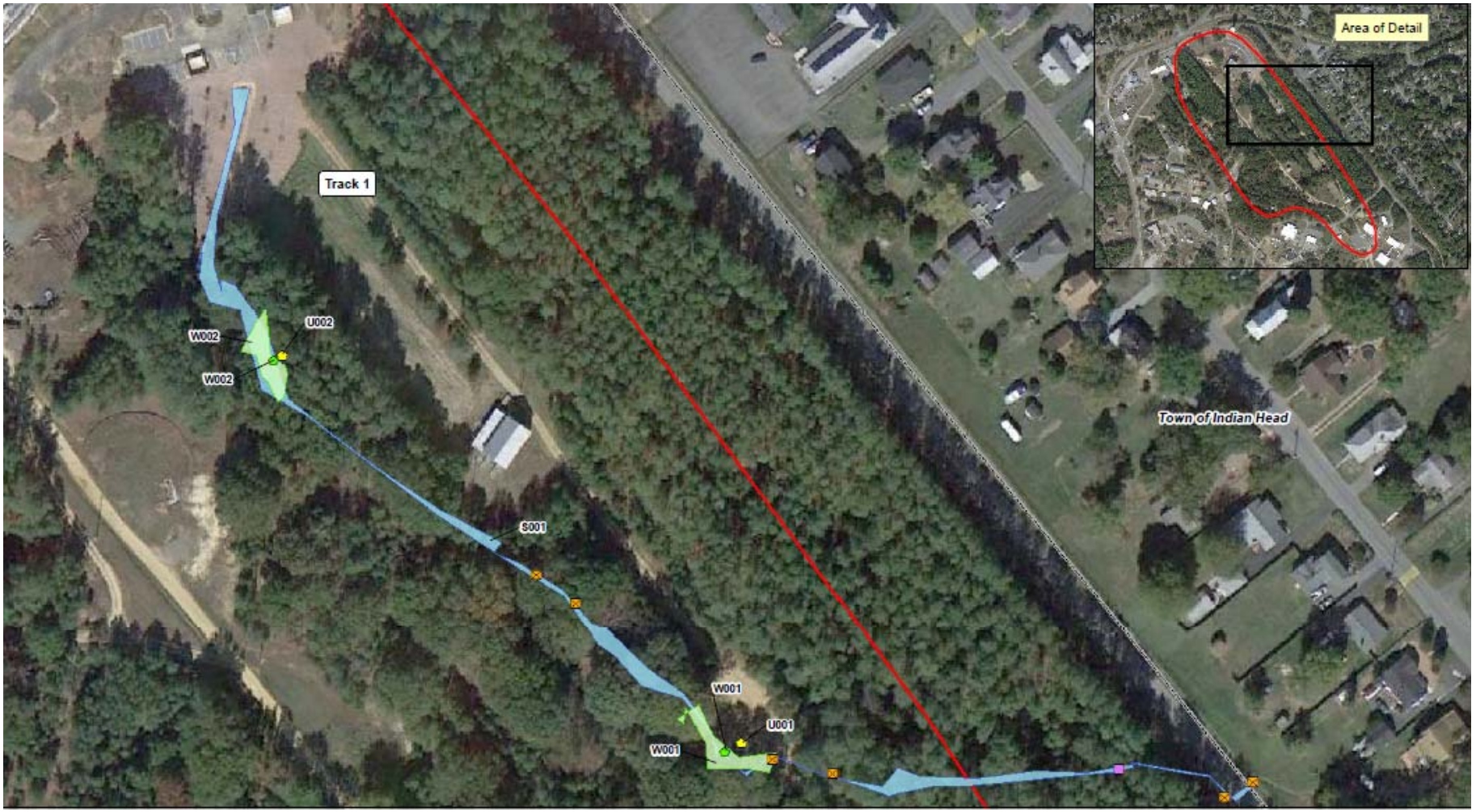
Cobalt exceeds background in groundwater, but is not considered an MC related to propellant grains. Cobalt is not considered site related.

Soils had elevated levels of arsenic, chromium, and lead. Sources are likely related to the application of herbicides, and deteriorating lead based paint.

UXO 9 RI Data Gaps and Follow-up Action

- **Evaluation of the Unnamed Tributary at the site for potential unacceptable risk to ecological receptors. Conduct an Ecological Risk Assessment (2017-2019).**
- **Determine sources of COC contamination is related to propellant grains spills, or to other site related activities, i.e. lead based paint. Actions taken to date:**
  - **Evaluate and delineate elevated arsenic in soils around buildings**
  - **Sample deteriorated building paint chips**

UXO 9 Unnamed Tributary Map



UXO 9 Arsenic Evaluation

Example of the systematic “grid” sampling and step-outs of the soils in front of the dry-house/storage buildings.

Step-outs will occur around locations that exceed a 90 mg/kg criteria.

Preliminary results indicate elevated arsenic in soil by buildings and their loading-areas along the rail-spurs.

UXO 9 Lead Paint Evaluation

Metal	mg/Kg in Soil from RI
Chromium	37
Lead	800
Zinc	2,600

Preliminary results from paint chip analysis (highest result in mg/Kg):

Lead - 211,000
Chromium - 25,100
Zinc – 76,600

Photo of Building 181 on site with extensive paint deterioration on exterior walls and railings.

UXO 9 RI/FS Future Actions

Anticipated actions for 2018-2020 to resolve outstanding questions regarding contaminant sources and their fate and transport:

- Potential future evaluation of arsenic along rail lines around NSF Indian Head and along the site, known historic arsenic-based herbicide application along rails per SOP. Compare with background soils.
- Sample propellant grains themselves to determine if those grains present on site are actually potential sources of observed elevated metals in the environment.
- Continue the Ecological Risk Assessment. Preliminary results indicate elevated metals above screening values are present in the sediments and surface waters of the drainage channel.

Contacts and Questions

Points of Contact:

- **NAVFAC Washington RPM:** Alex Scott
- **Indian Head PM:** Andrew Louder

Questions ?

NSF INDIAN HEAD – 3RD FIVE YEAR REVIEW FINALIZATION

Presented By
Alex Scott
Naval Facilities Engineering Command (NAVFAC)
Washington

04/19/2018

Presentation Objectives

Objectives:

- Present a brief overview of the Five-Year Review (5YR) process for Navy Environmental Restoration (ER,N) sites at NSF Indian Head (NSFIH)
- Final site statuses and recommended future actions from the Final 2017 5YR document.

Public Awareness

The FINAL 5YR, presentations, meeting minutes, public documents in the administrative record, and the NSFIH Site Management Plan are locatable at the ER,N NSFIH Public Website:

http://go.usa.gov/DyQF

The 5YR and CERCLA

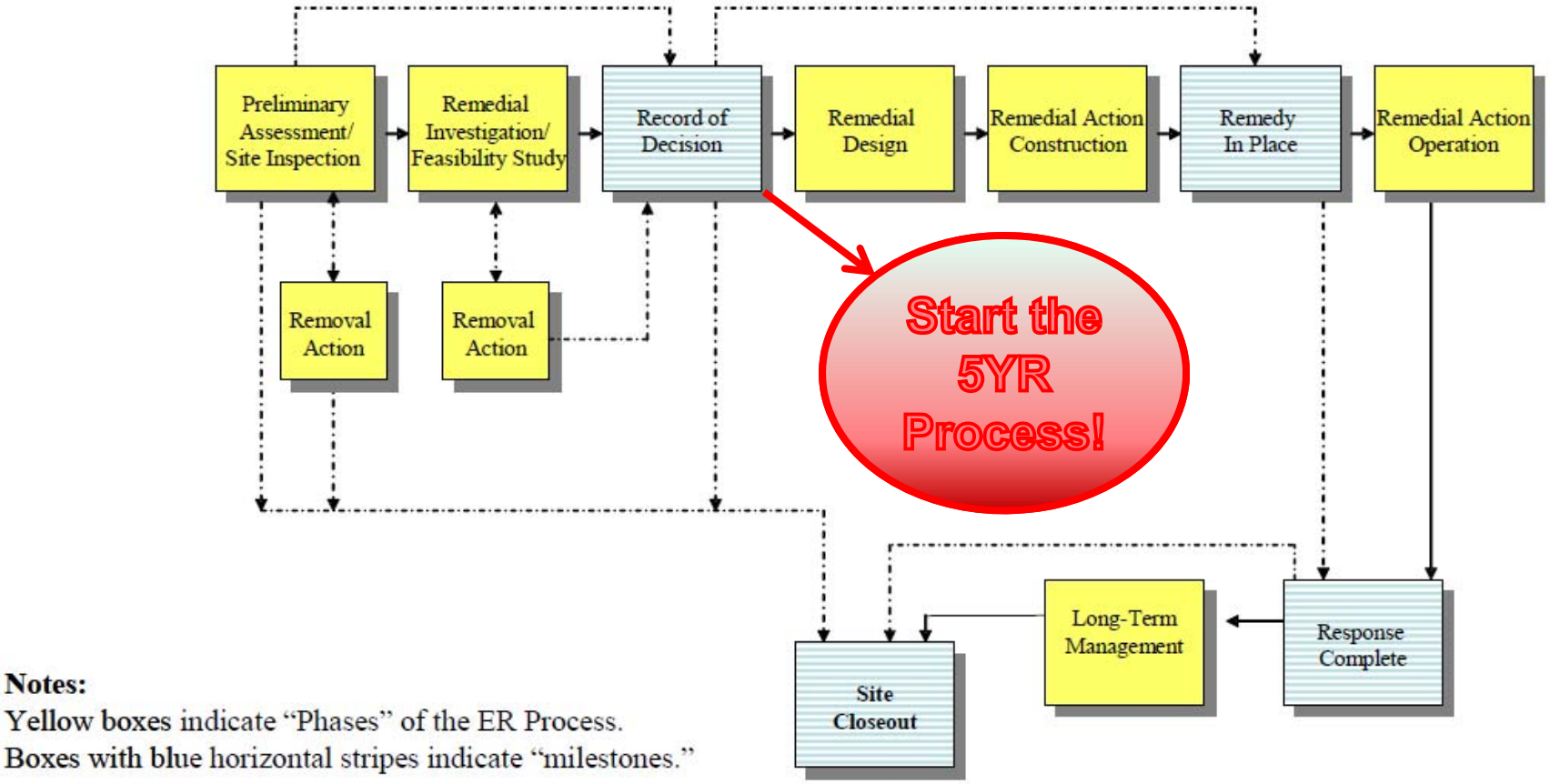
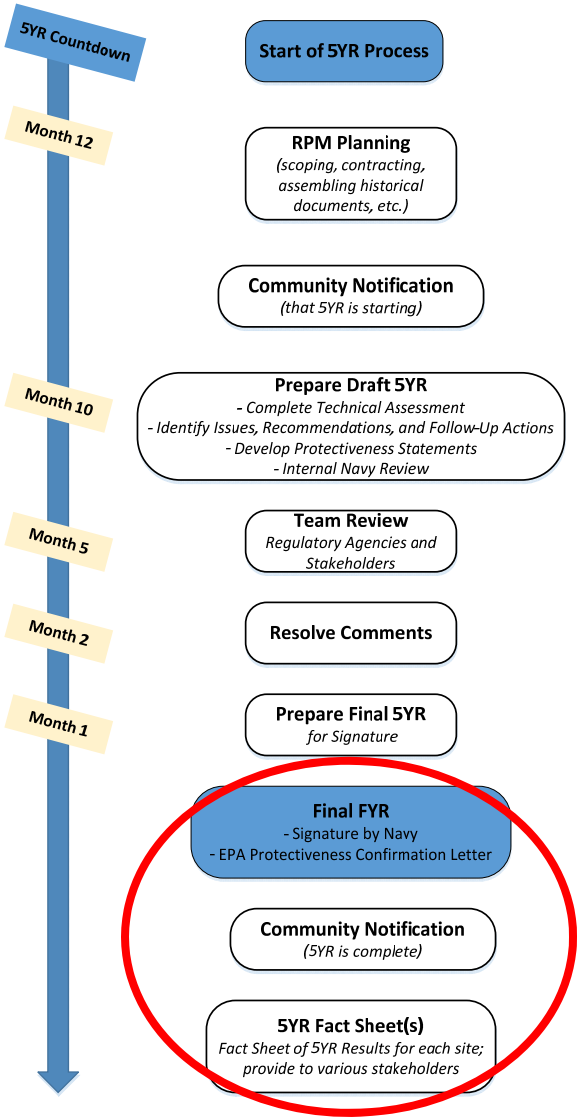


Figure 5-1. DON Environmental Restoration Process – Phases and Milestones

- Navy Environmental Restoration Program (NERP) Manual, 2006

5YR Process – Complete!

- A 5YR occurs at sites that have a record of decision (ROD) that implement a selected remedy at a site to address contamination per the 1980 Comprehensive Environmental Response Compensation and Liability Act (CERCLA).
- 5YR is required for sites with remedial action that does not (or does not yet) allow for unlimited use and unrestricted exposure (UU/UE), per CERCLA §121, as amended.
- Ultimate 5YR outcome is protectiveness determination for human health and the environment for each site/remedy, per EPA (2001) 5YR Comprehensive Guidance:
  - ✓ Protective
  - ✓ Will Be Protective
  - ✓ Protective in the Short-Term
  - ✓ Not Protective
  - ✓ Protectiveness Deferred
- Indian Head's 3rd 5YR (2012-2017) was finalized March 2018.



3rd Five Year Review Overview

The 5YR results answer the following:

- **Question A (Implementation & Performance):**
  Is the Selected Remedy functioning as intended per the ROD?
- **Question B (Data Review):**
  Are the exposure assumptions, toxicity data, and remedial action objectives (RAOs) used at the time of the remedy selection and ROD still valid?
- **Question C (Protectiveness Statement):**
  Has any other information come to light that calls into question the protectiveness of the selected remedy?

From the 5YR Technical Assessment Questions (EPA, 2001)

Protectiveness Summary:

12 Sites were reviewed in the 3rd 5YR, covering a period from 2012-2017.

5 of the 12 sites had issues identified where recommended follow-up actions will ensure the site remedy's ongoing protectiveness.

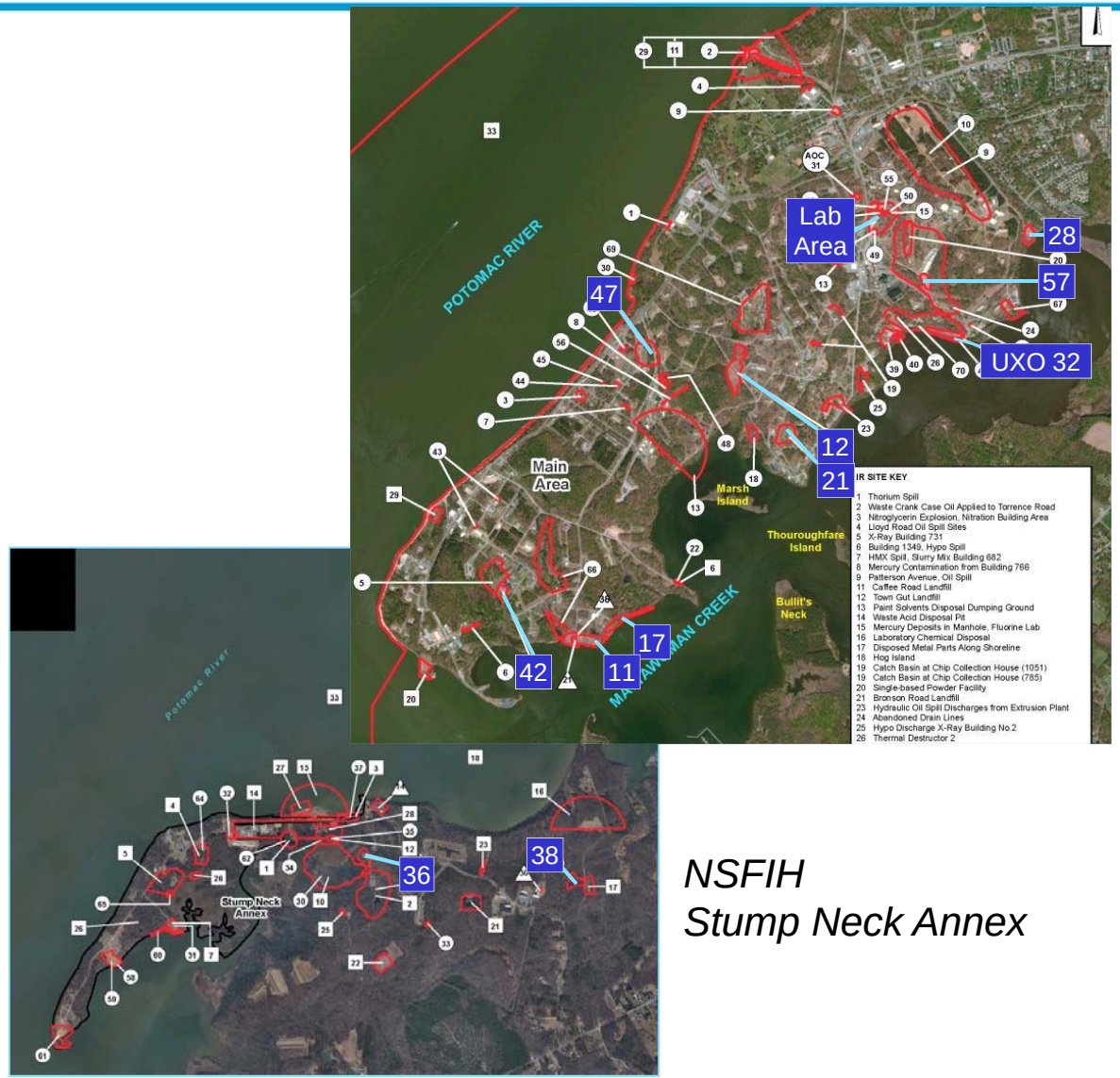
All 12 Sites were determined protective of human health and the environment.

The next (4th) 5YR is required to occur by 2022.

12 Sites for the 2017 5YR

- **Site 11** – Caffee Road Landfill
- **Site 12** – Town Gut Landfill
- **Site 17** – Disposed Metal Parts Along Shoreline
- **Site 21** – Bronson Road Landfill
- **Site 28** – Original Burning Ground
- **Site 36** – Closed Landfill
- **Site 38** – Rum Point Landfill
- **Site 42** – Olsen Road Landfill
- **Site 47** – Mercuric Nitrate Disposal Area
- **Site 57** – TCE Building 292 Area
- **Lab Area** (Sites 14, 15, 16, 49, 50, 53, 54, and 55)
- **UXO 32** – Scrap Yard (formerly IRP Site 41)

Site Locations

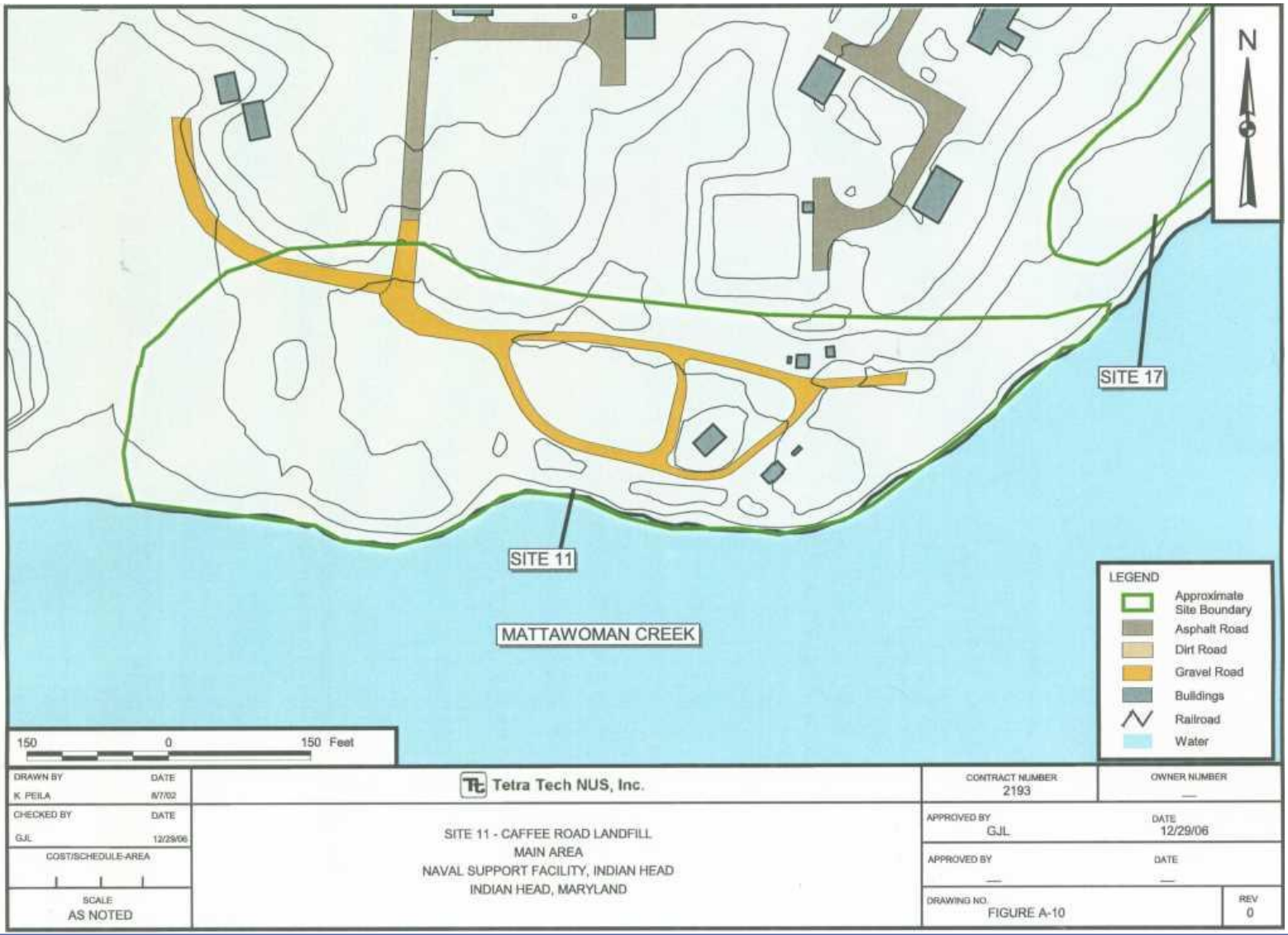


NSFIH
Main Area

NSFIH
Stump Neck Annex

U.S. Navy

Site 11 – Caffee Road Landfill



Site 11 – Caffee Road Landfill

Selected Remedy: Landfill with protective soil cover. Shoreline stabilization. Land-Use controls (LUCs). Groundwater Monitoring.

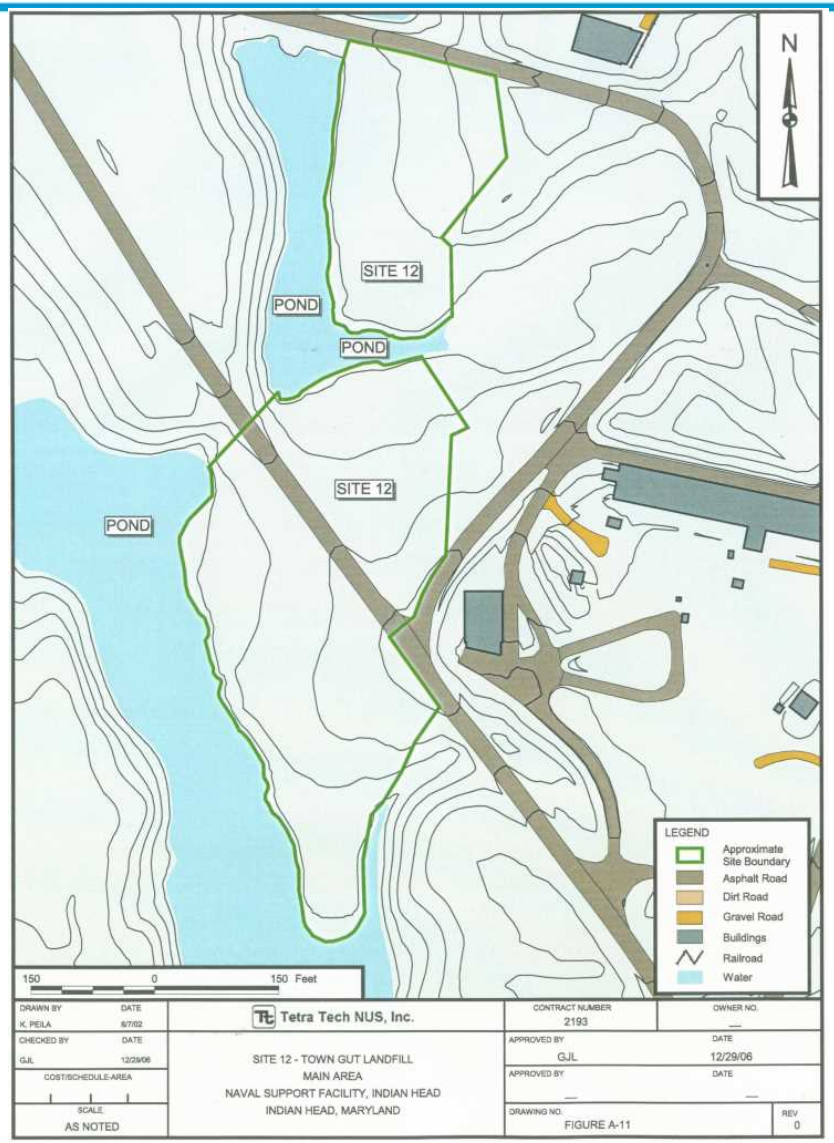
3rd 5YR Conclusions

Implementation & Performance: Remedy has been implemented as described in the ROD, and is functioning as intended.

Protectiveness: Remedy is overall protective of human health and the environment. Exposure pathways that could result in unacceptable risk are being controlled.

Data Evaluation: Contaminant concentrations demonstrate decreasing or no trend. Contaminant concentrations continue to exceed background levels, and the EPA's Maximum Contaminant Levels (MCLs), which is the maximum allowable amount of a contaminant in drinking water.

Site 12 – Town Gut Landfill



Site 12 – Town Gut Landfill

Selected Remedy: 2002 Interim-Removal Action (IRA) removed waste and regraded the area. A landfill protective soil cover was placed over remaining wastes. Land-Use controls (LUCs). Groundwater and Surface Water Monitoring.

3rd 5YR Conclusions

Implementation & Performance: Remedy has been implemented as described in the ROD, and is functioning as intended.

Protectiveness: Remedy is overall protective of human health and the environment. Exposure pathways that could result in unacceptable risk are being controlled.

Data Evaluation: Contaminant concentrations demonstrate decreasing or no trend. Contaminant concentrations continue to exceed background levels and MCLs.

Site 17 – Disposed Metal Parts Along Shoreline

Site 17 – Disposed Metal Parts Along Shoreline

Selected Remedy: Clearing and removal of munitions. Treatment of the Trichloroethene (TCE) contaminated aquifer with zero-valent iron (ZVI) to chemically-reduce aquifer contamination in-situ (in place). Groundwater monitoring and LUCs.

3rd 5YR Conclusions

Implementation & Performance: Remedy has been implemented as described in the ROD in the south plume area. However, recently discovered site conditions in the north plume area contain high levels of contaminant concentrations and is currently being evaluated to implement remediation technologies.

Protectiveness: Remedy is protective of human health and the environment in the short-term. Exposure pathways that could result in unacceptable risk are being controlled via the current operating remedy and NSFIH institutional controls (ICs).

Data Evaluation: Contaminant concentrations demonstrate decreasing or no trend in the south plume area. Contaminant concentrations continue to exceed background levels, and MCLs. An insufficient number of samples in the north plume area have been collected to provide a meaningful trend analysis. Environmental monitoring indicates that contamination is not migrating and/or threatening exposure to unacceptable risks.

Recommendations: COC concentrations in the North Plume warrant consideration for active treatment of the highest concentration area to optimize the remedy. Monitoring and COC trend analysis should continue until site remediation goals (SRGs) are met.

Site 21 – Bronson Road Landfill

Site 21 – Bronson Road Landfill

Selected Remedy: Landfill protective soil cover, LUCs, and groundwater monitoring.

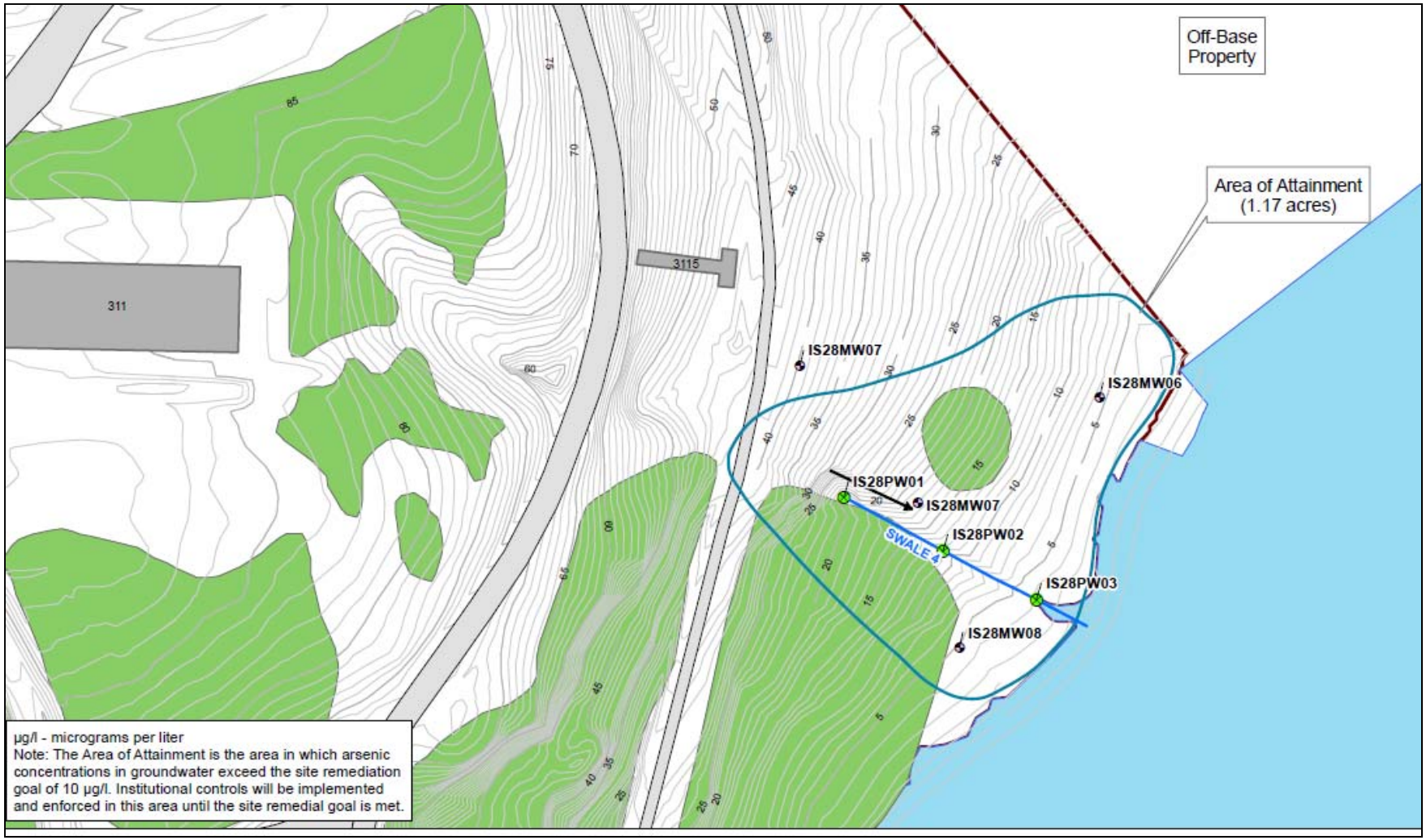
3rd 5YR Conclusions

Implementation & Performance: Remedy has been implemented as described in the ROD, and is functioning as intended.

Protectiveness: Remedy is protective of human health and the environment. Exposure pathways that could result in unacceptable risk are being controlled.

Data Evaluation: The majority of contaminant concentrations demonstrate decreasing or no trend. Contaminant concentrations continue to exceed background levels and MCLs.

Site 28 – Original Burning Ground



Site 28 – Original Burning Ground

Selected Remedy: 2008 IRA addressed soil sediment contaminant risks. Groundwater remedy consists of monitoring and LUCs.

3rd 5YR Conclusions

Implementation & Performance: Remedy has been implemented as described in the ROD. Environmental monitoring was implemented in 2017, with periodic sample collection and analysis of the results currently underway.

Protectiveness: Remedy is overall protective of human health and the environment. Exposure pathways that could result in unacceptable risk are being controlled.

Data Evaluation: Monitoring is being implemented. Analysis of the results will demonstrate the remedy's long-term protectiveness.

Site 36 – Closed Landfill

Site 36 – Closed Landfill

Selected Remedy: Removal of large metal debris along shoreline. Maintenance of existing landfill protective soil cover, LUCs, and groundwater monitoring.

3rd 5YR Conclusions

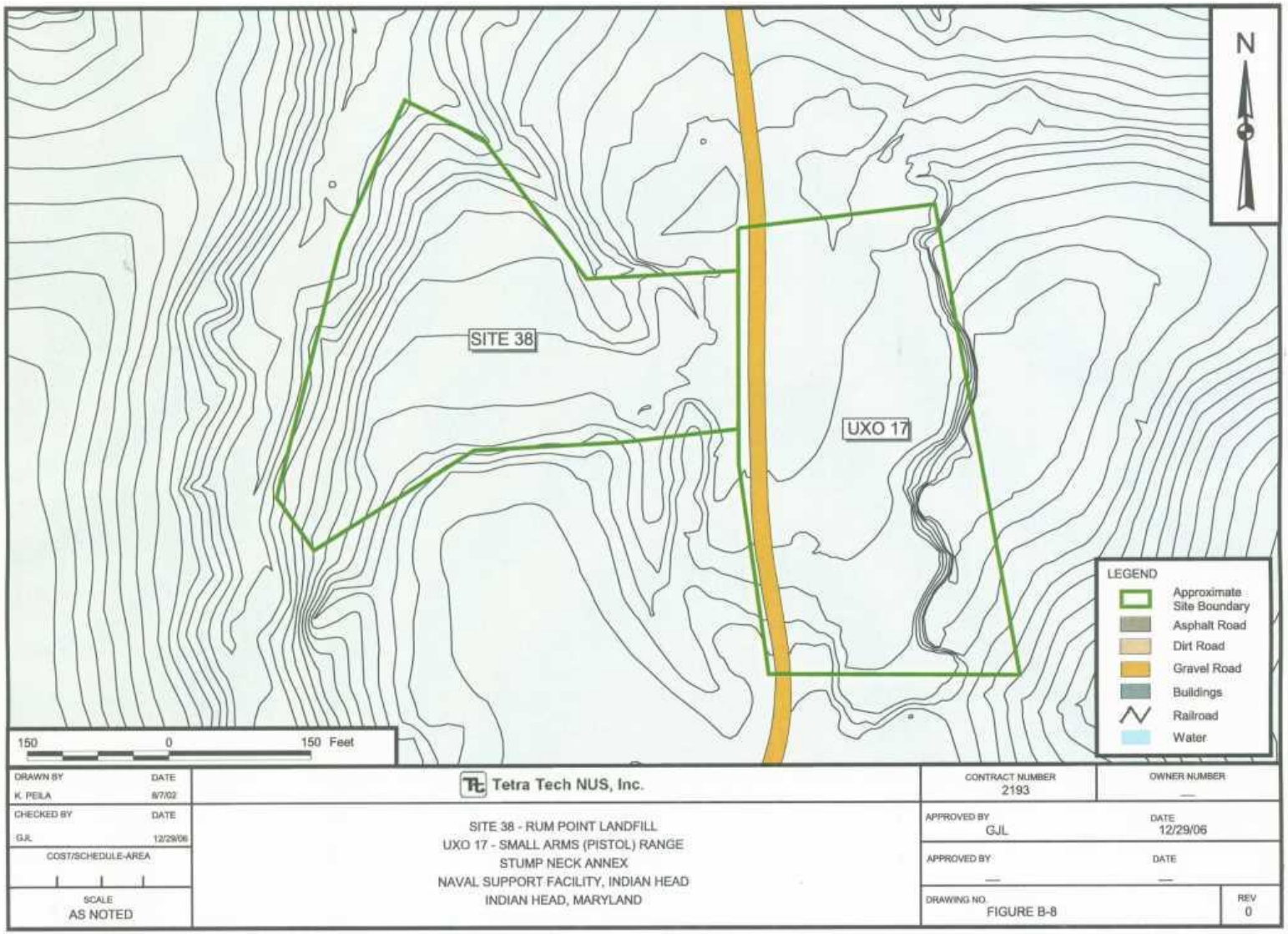
Implementation & Performance: Remedy has been implemented as described in the ROD, and is functioning as intended.

Protectiveness: Remedy is protective of human health and the environment in the short-term. Exposure pathways that could result in unacceptable risk are being controlled via the current operating remedy and NSFIH institutional controls (ICs).

Data Evaluation: Elevated manganese concentrations at downgradient pore water sample locations initially (2015) and continue to exceed MCLs.

Recommendations: Continue monitoring and evaluating trends in the downgradient pore water sampling locations to ensure that the remedy remains protective. Remedy optimization should be pursued if trend analyses in the future indicates no attenuation of contaminant concentrations.

Site 38 – Rum Point Landfill



Site 38 – Rum Point Landfill

Selected Remedy: Landfill waste removal. Post removal groundwater monitoring, interim LUCs until removal completed. Anticipated that all site contamination is removed and monitoring will confirm.

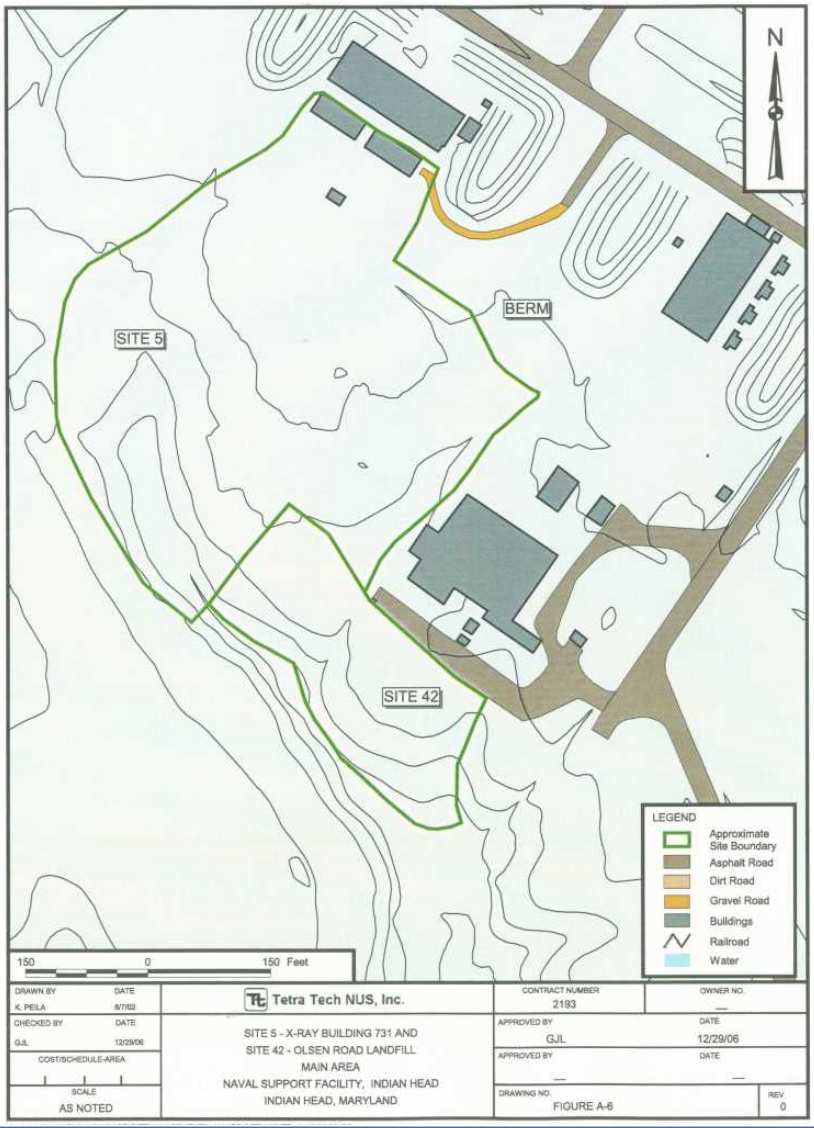
3rd 5YR Conclusions

Implementation & Performance: Remedy has been implemented as described in the ROD.

Protectiveness: Remedy is overall protective of human health and the environment. Exposure pathways that could result in unacceptable risk are being controlled.

Data Evaluation: Monitoring data is pending collection and analysis. The former landfill's wastes have been completely removed from the site.

Site 42 – Olsen Road Landfill



Site 42 – Olsen Road Landfill

Selected Remedy: Wetlands construction and engineered cap. Excess wastes removed. Groundwater and surface water monitoring.

3rd 5YR Conclusions

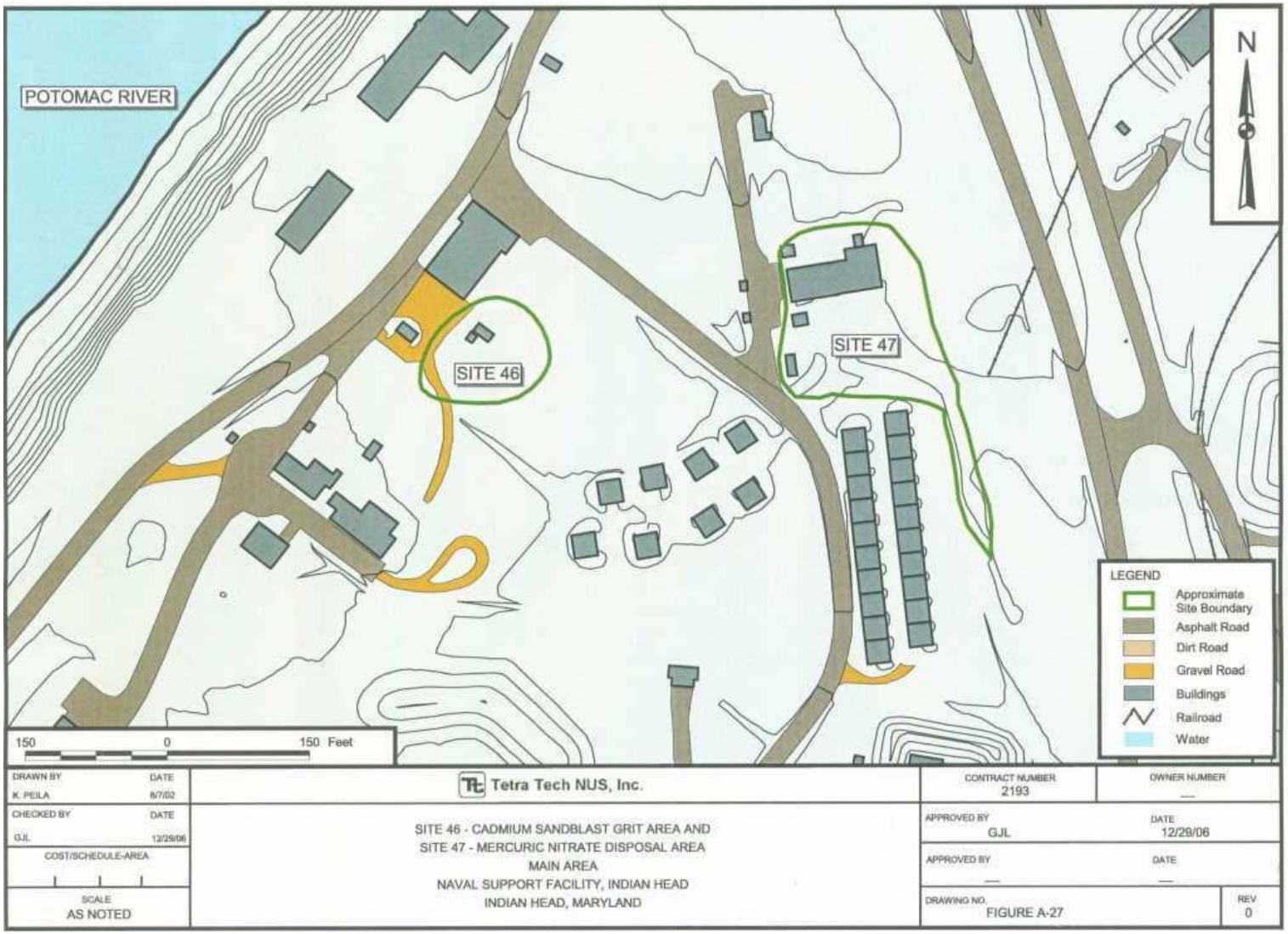
Implementation & Performance: Remedy has been implemented as described in the ROD, and is functioning as intended.

Protectiveness: Remedy is protective of human health and the environment in the short-term. Exposure pathways that could result in unacceptable risk are being controlled via the current operating remedy and NSFIH institutional controls (ICs).

Data Evaluation: The majority of contaminant concentrations demonstrate decreasing or no trend. Contaminant concentrations continue to exceed background levels and MCLs. There is an increasing TCE concentration trend noticed in one monitoring well downgradient from the landfill-cap. However, TCE does not appear to be migrating off-site, as wells farther downgradient do not demonstrate an increasing TCE trend.

Recommendations: Continue monitoring and evaluating trends in the downgradient pore water sampling locations to ensure that the remedy remains protective. Remedy optimization should be pursued if trend analyses in the future indicates no attenuation of contaminant concentrations.

Site 47 – Mercuric Nitrate Disposal Area



Site 47 – Mercuric Nitrate Disposal Area

Selected Remedy: In-situ chemical oxidation using alkaline-activated sodium persulfate (AAP) and catalyzed hydrogen peroxide. Groundwater monitoring and LUCs.

3rd 5YR Conclusions

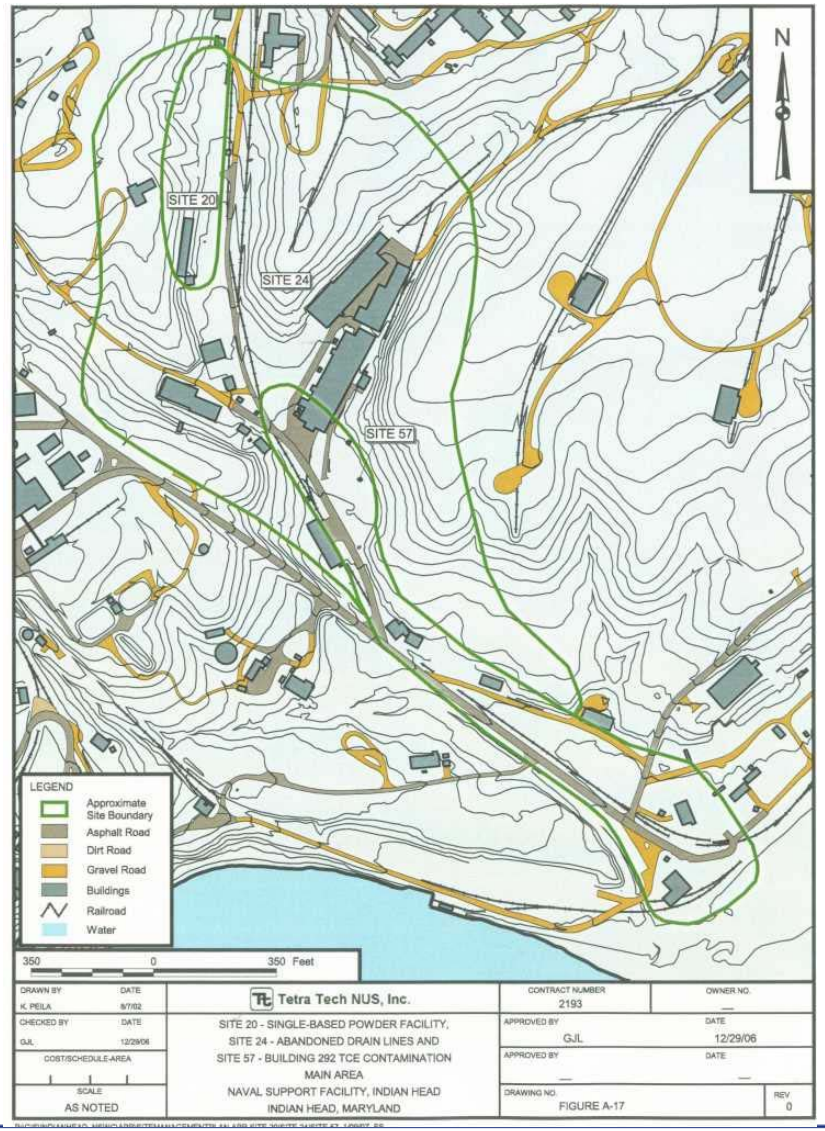
Implementation & Performance: Remedy has been implemented as described in the ROD, and is functioning as intended. However, high levels of carbon-tetrachloride (CT) and Tetracholorethene (PCE) persist in the source area, and may not achieve performance goals of reaching SRGs.

Protectiveness: Remedy is protective of human health and the environment in the short-term. Exposure pathways that could result in unacceptable risk are being controlled via the current operating remedy and NSFIH institutional controls (ICs).

Data Evaluation: The majority of contaminant concentrations demonstrate decreasing or no trend. Contaminant concentrations continue to exceed background levels and MCLs. Persistent high concentrations of carbon-tetrachloride in the source area is currently being evaluated for further remediation to improve remedy performance.

Recommendations: Continue monitoring and evaluating and optimizing the site remedy to remove contaminant mass and reduce concentrations of CT and PCE in the source area.

Site 57 – Building 292 TCE Contamination



Site 57 – Building 292 TCE Contamination (1 of 2)

Selected Remedy: In-situ bioremediation in the upper (source area) TCE plume by anaerobic reductive-dechlorination (electron donor) enhanced with substrate injections of Hydrogen Release Compound (HRC) directly into the surficial aquifer. This would form a “reactive barrier”, so the subsequent middle plume would continue to address degradation of the TCE via natural attenuation.

In-situ bioremediation in the downgradient plume with substrate injections of the Oxygen Release Compound (ORC) electron acceptor to achieve aerobic treatment of the breakdown products dichloroethene (DCE) and vinyl chloride (VC). Presently, the groundwater conditions in this area have reverted to anaerobic and reductive conditions, which differ from what was prescribed in the ROD.

Groundwater monitoring and LUCs in the long-term.

Site 57 – Building 292 TCE Contamination (2 of 2)

3rd 5YR Conclusions

Implementation & Performance: Remedy has been implemented as described in the ROD. However the site's groundwater conditions differ from the intended function described in the ROD. Additionally, persistent exceedances of trichloroethene (TCE) indicate that remedy performance may not be progressing towards SRGs.

Protectiveness: Remedy is protective of human health and the environment in the short-term. Exposure pathways that could result in unacceptable risk are being controlled via the current operating remedy and NSFIH institutional controls (ICs). There is a building near the current known extent of the TCE plume, and the vapor intrusion (VI) pathway has not yet been evaluated.

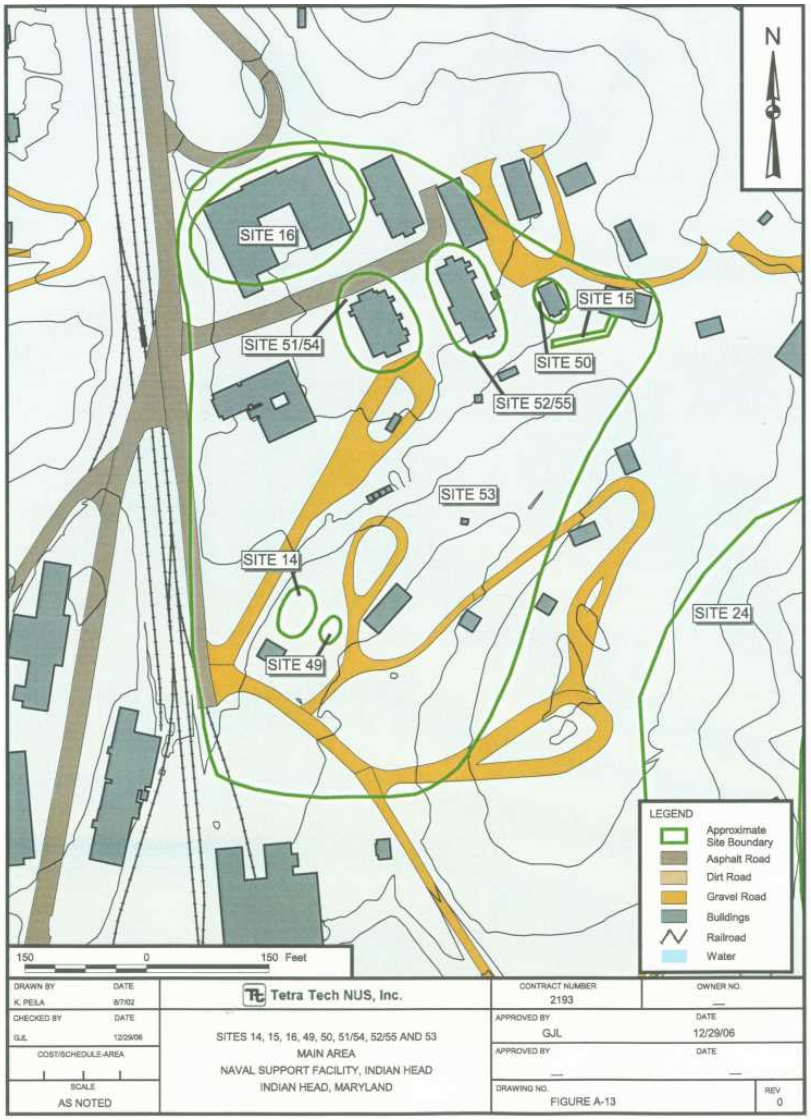
Data Evaluation: The majority of contaminant concentrations demonstrate decreasing or no trend. However contaminant concentrations continue to exceed background levels and MCLs. A recent pilot study was conducted to determine if there was an effective source area treatment. Although the technology itself was not promising, the use of amendment injections during the pilot study did demonstrate effective reductions in contaminant concentrations. The site is currently being evaluated for remedy optimization to improve performance.

Recommendations: Continue remedy optimization efforts and evaluate the VI pathway. Remedy may need modification if VI poses potential unacceptable risk to building occupants.

Lab Area

The Lab Area lumps the following sites together under one selected remedy:

- **Site 14** - Waste Acid Disposal Pit
- **Site 15** - Mercury Deposits in Manhole, Fluorine Lab
- **Site 16** - Laboratory Chemical Disposal
- **Site 49** - Chemical Disposal Pit
- **Site 50** - Building 103, Crawl Space
- **Site 53** - Mercury Contamination of the Sewage System
- **Site 54** - Building 101
- **Site 55** - Building 102



Lab Area

Selected Remedy: Removal of contaminated soils and sediments with elevated metals levels. Wetland restoration and clean fill soil. LUCs

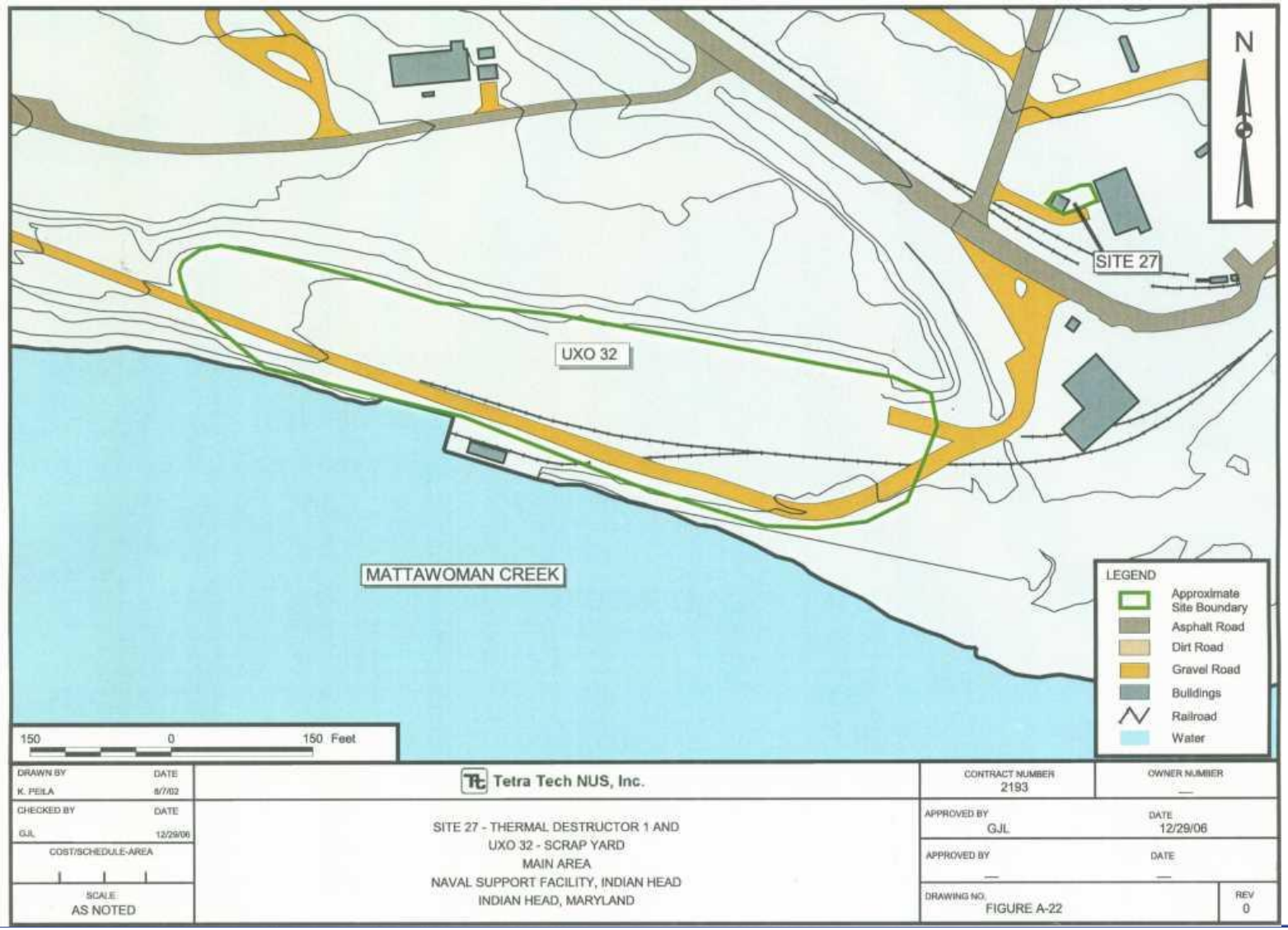
3rd 5YR Conclusions

Implementation & Performance: Remedy has been implemented as described in the ROD.

Protectiveness: Remedy is overall protective of human health and the environment. Exposure pathways that could result in unacceptable risk are being controlled.

Data Evaluation: Site risks posed by contamination have been addressed by removal actions. No additional sampling has been conducted. Groundwater is not impacted. LUCs are verified as protective as long as the site remains in an industrial land-use scenario.

UXO 32 – Scrap Yard



UXO 32 – Scrap Yard

Selected Remedy: Debris, soil, and munitions removal via IRAs (2002, 2006 & 2007). LUCs

3rd 5YR Conclusions

Implementation & Performance: Remedy has been implemented as described in the ROD.

Protectiveness: Remedy is overall protective of human health and the environment. Exposure pathways that could result in unacceptable risk are being controlled.

Data Evaluation: Site risks posed by contamination and ordnance have been addressed by removal actions. No additional sampling has been conducted. Groundwater in the site's vicinity is currently being studied as Site 70. LUCs are verified as protective as long as the site remains in an industrial land-use scenario, and ICs prevent the use of the shallow aquifer as drinking water.

.

Contacts and Questions

Points of Contact:

- **NAVFAC Washington RPM:** Alex Scott
- **Indian Head PM:** Andrew Louder

Questions ?

IR Site 47- Mercuric Nitrate Disposal Area Monitoring Update

Presented By
Andrew Louder-IR/MRP Manager
Naval Facilities Engineering Command (NAVFAC)
Washington

4/19/2018

Presentation Objectives

Objective:

- Discuss the results of the 3 year Post Injection remedy monitoring
  - Background of IR 47
  - Results
  - Path Forward

IR Site 47-Mercuric Nitrate Disposal Area

- Site 47 - Mercuric Nitrate Disposal Area
  - Buildings 856, 856A, 856B, 856C, and 1794 - offices, laboratories, and magazines.
- Mercuric nitrate disposal area
  - From 1957 to 1965, mercuric nitrate was used in Building 856 as a catalyst in the production of missile propellant and was reportedly disposed at a location near the southeast corner of the building.
  - Reportedly disposed as a solution containing 1 ounce of mercuric nitrate dissolved in a 55-gallon drum of 98 percent nitric acid. An estimated 274 pounds of mercuric nitrate were disposed.
  - Disposal area was approximately 4 feet by 6 feet and was covered with limestone chips for neutralization; evidence of the disposal area no longer exists
- Carbon tetrachloride was also used and may have been poured into drains or stored in leaky drums
- Tetrachloroethene was detected during the RI, but the source is unknown

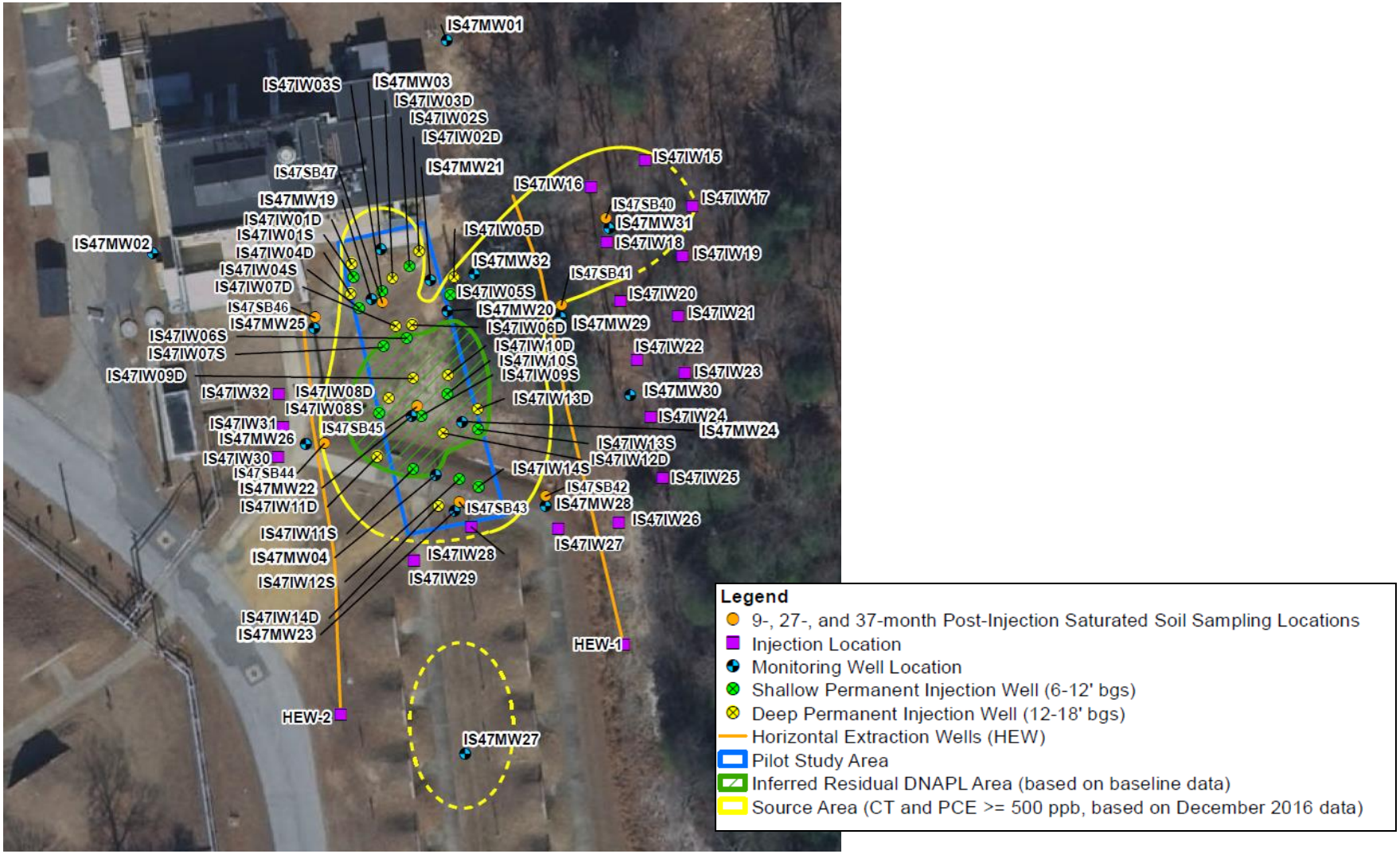
IR Site 47-Project Status

Selected Remedy in Record of Decision

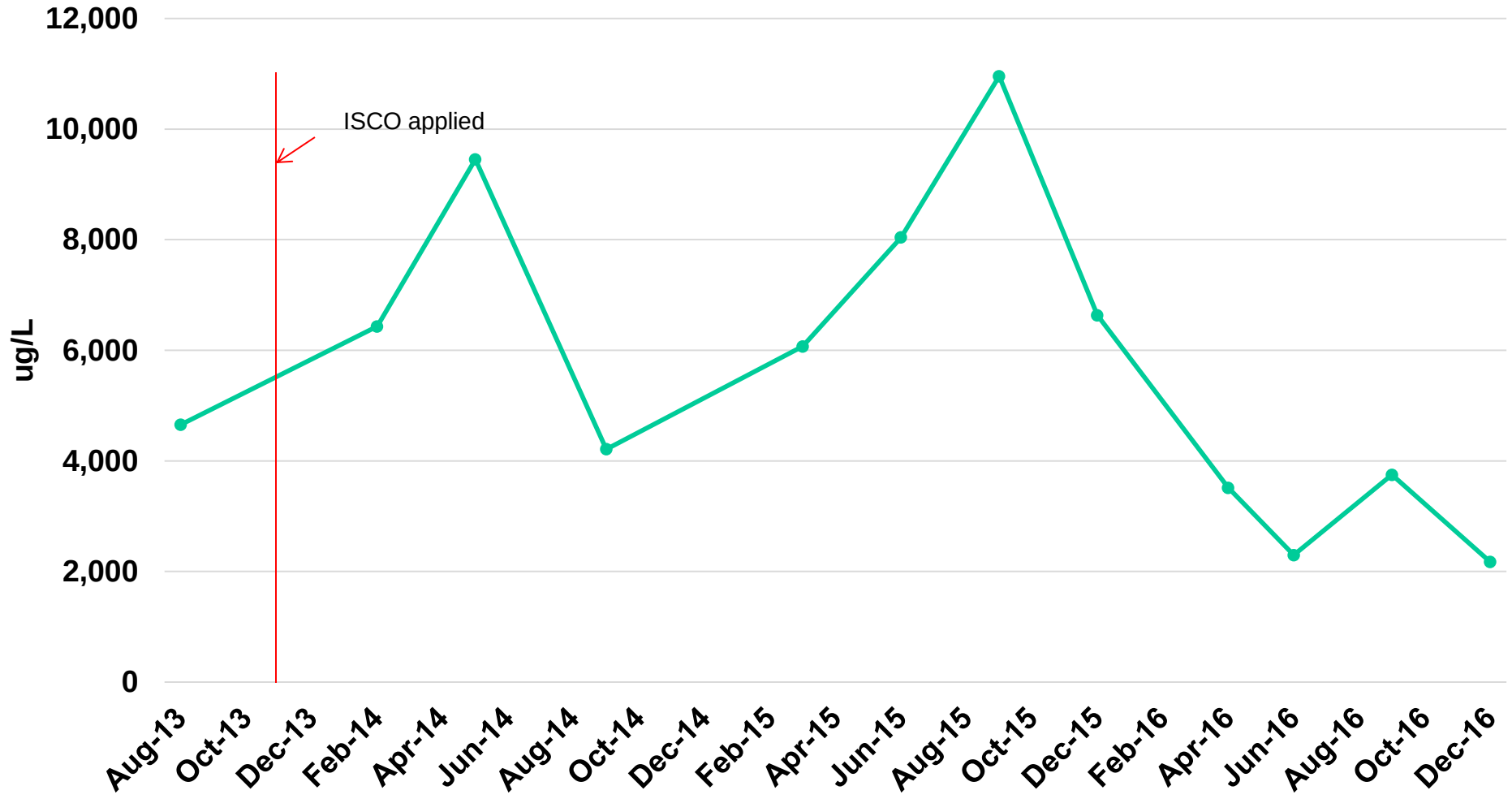
- In situ chemical oxidation (ISCO) in the source zone area, monitored natural attenuation (MNA) in the remaining area where the site remediation goals (SRGs) are exceeded, and institutional controls (ICs)
  - Short-term ISCO performance sampling at baseline and 2-, 6-, and 9-month post-ISCO
  - Long-term groundwater monitoring for 52 years or until SRGs are met
  - 5-year reviews until SRGs are met
  - ICs in the form of land and groundwater use restrictions
- Post-remedy Activities

2014 - Year 1 sampling completed (short-term performance monitoring)
2015 - Year 2 sampling completed
2016 - Year 3 sampling completed
2017 - Year 4 sampling competed
2018 - Year 5 sampling underway

IR Site 47 – Site Remedy Layout

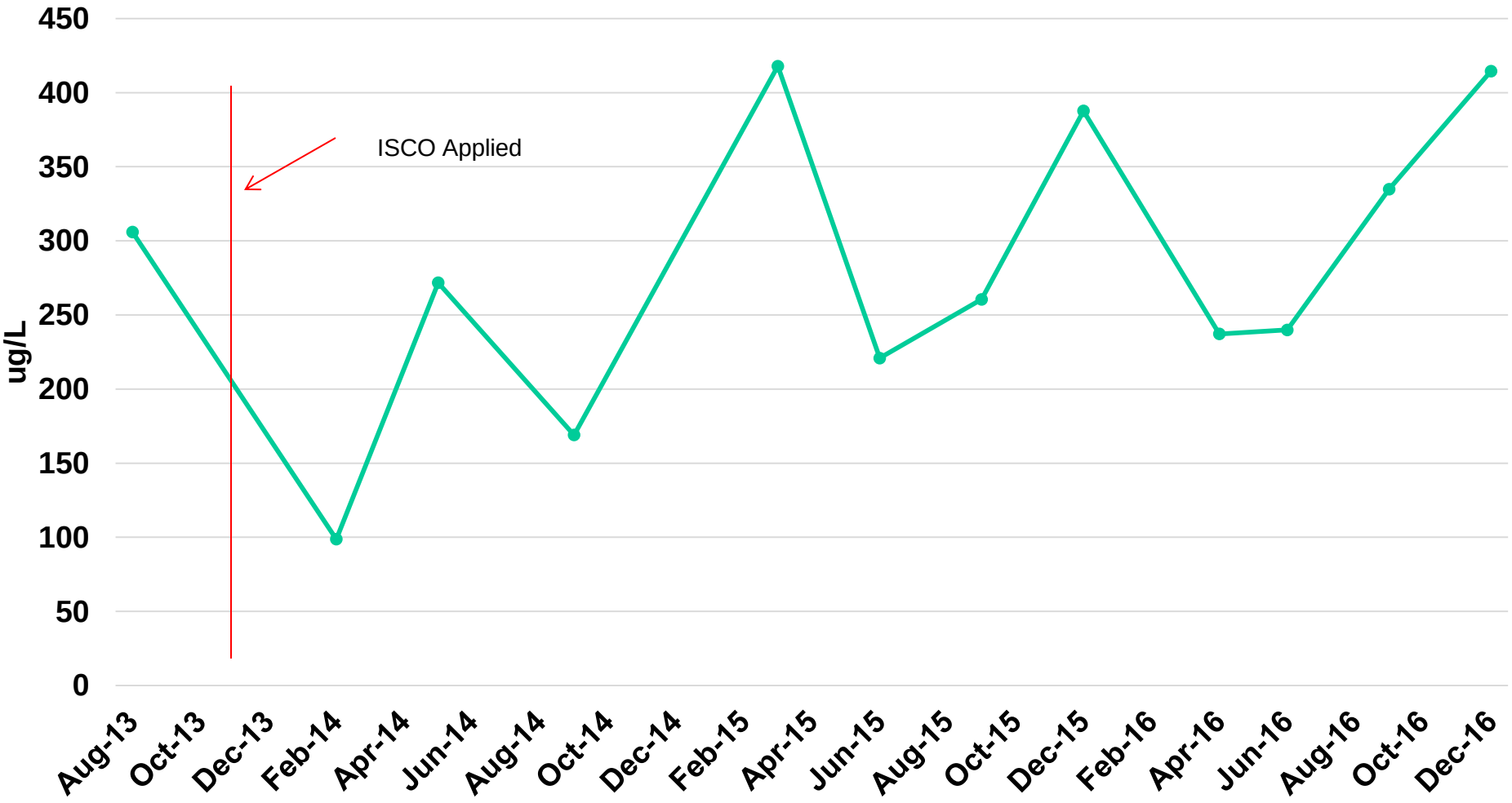


IR Site 47-Carbon Tetrachloride Concentrations

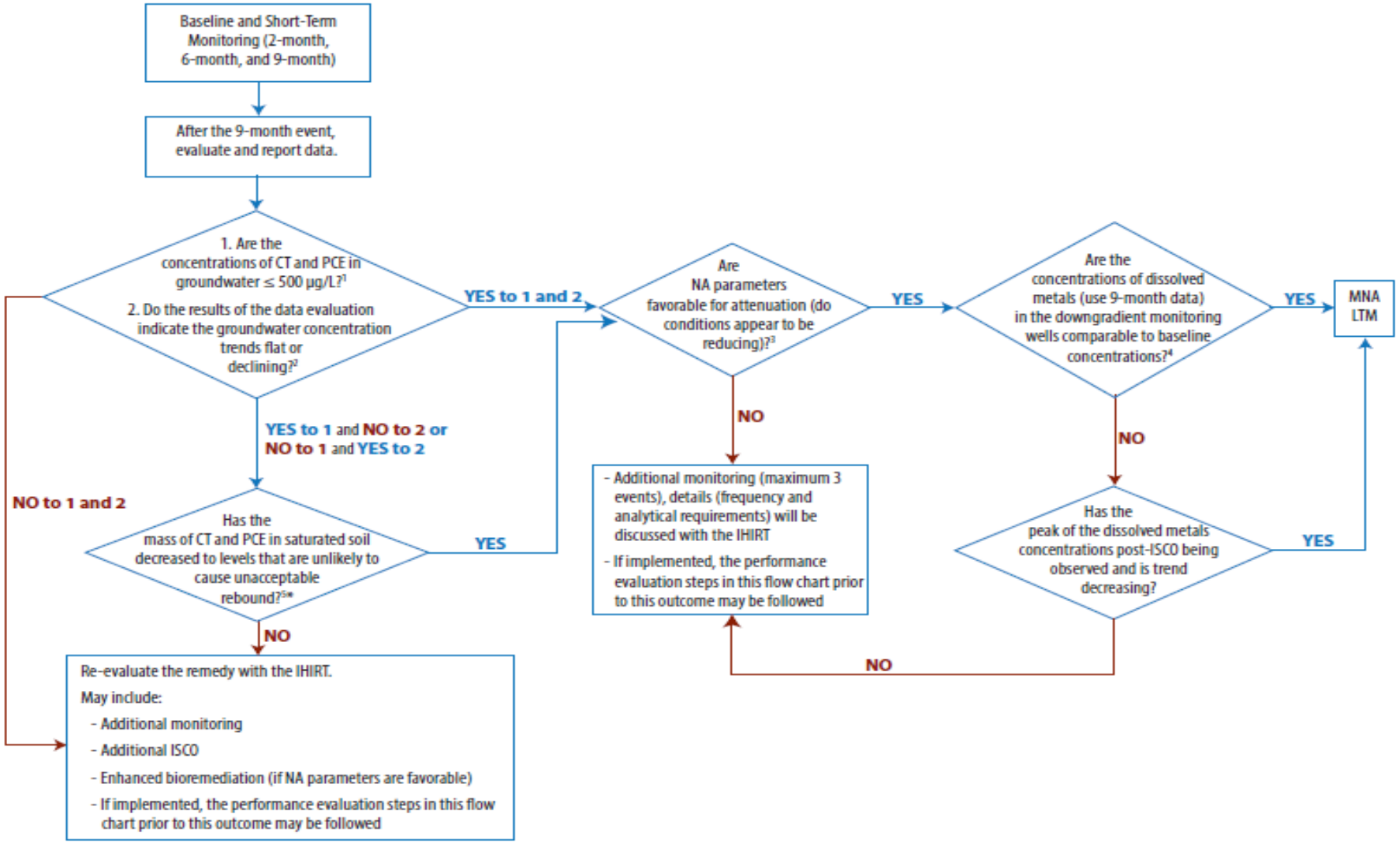


IR Site 47- Tetrachloroethene Concentrations

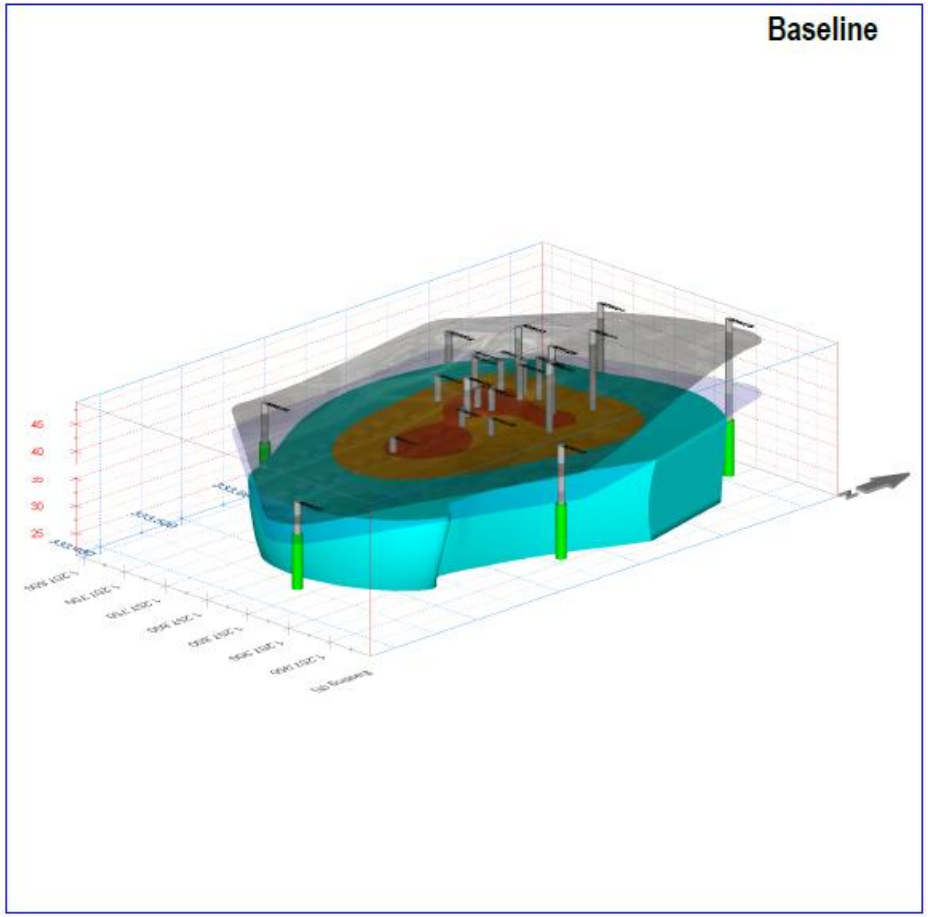
Baseline through Year 3 of Monitoring

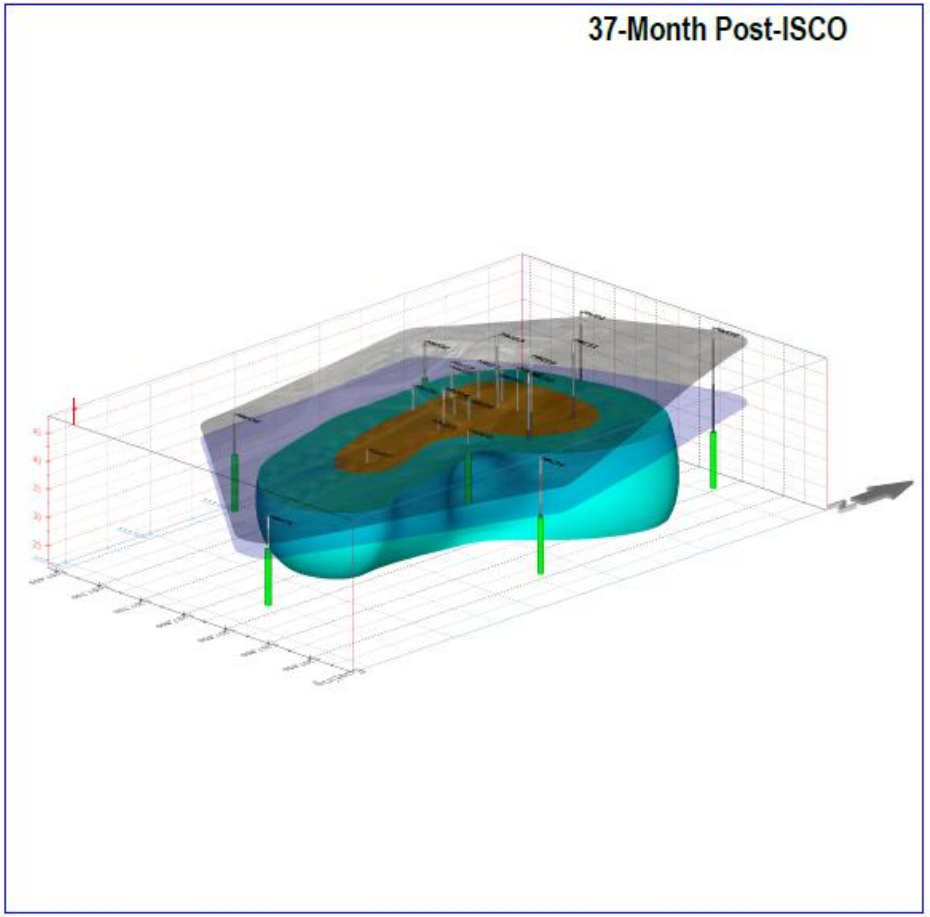


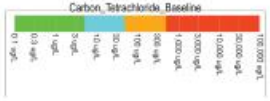
IR Site 47- Flowchart Performance Evaluation



IR Site 47-Remedy Evaluation – Carbon Tetrachloride







NOTES:

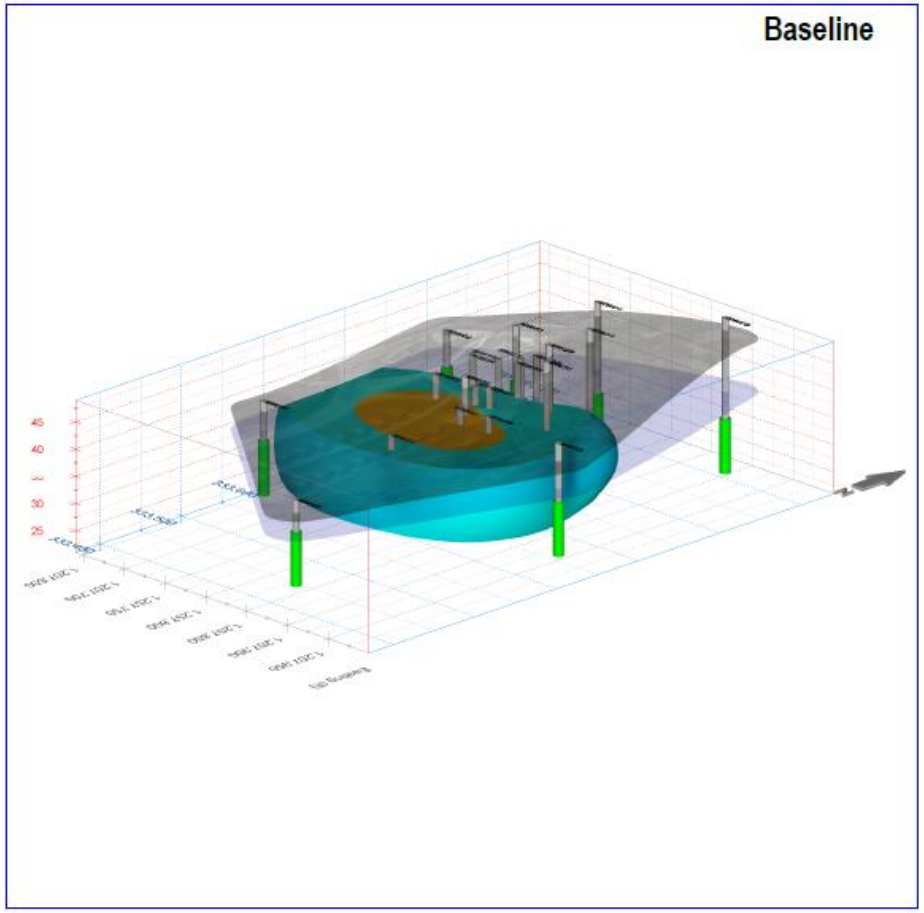
Estimated mass and volume of plume:

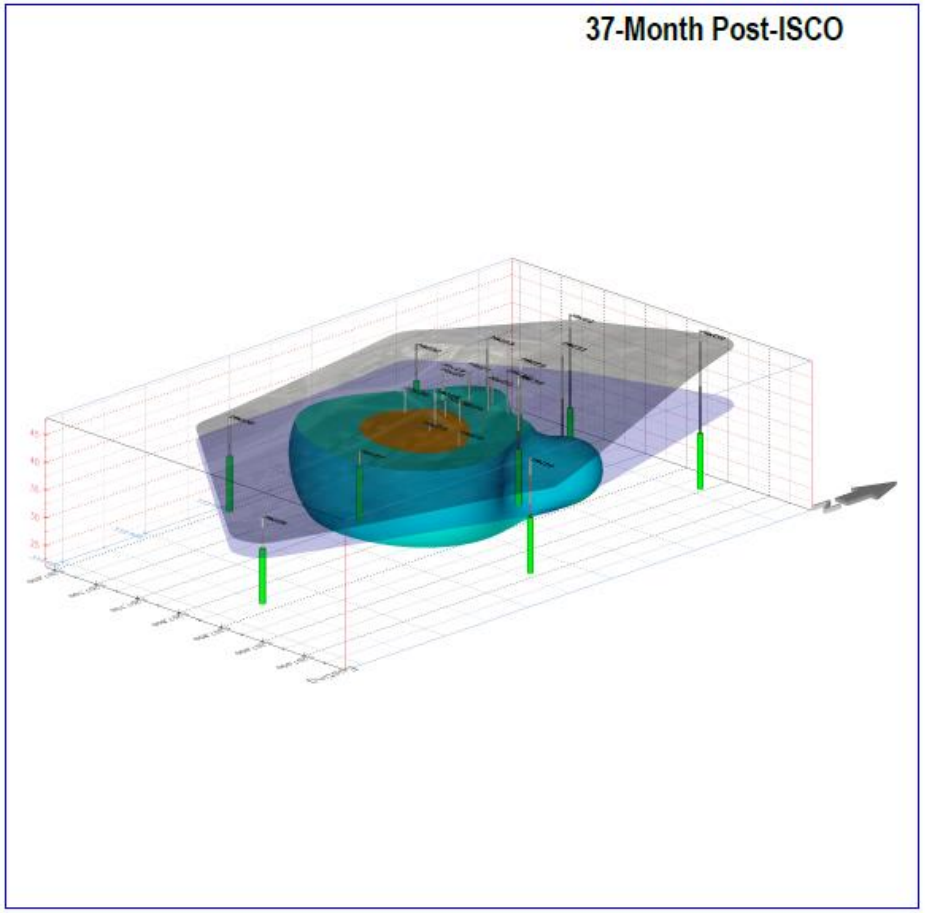
Baseline: 3.25 kg in 9,631,000 liters of groundwater above 5.0 ug/L

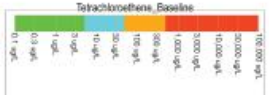
37-Month Post-ISCO: 1.63 kg in 6,132,000 liters of groundwater above 5.0 ug/L

Figure 3-13
3-Dimensional Carbon Tetrachloride Plumes –
Baseline and 37-Month Post ISCO
Site 47 Year 3 Performance Monitoring Report
NSFIH, Indian Head, Maryland

IR Site 47-Remedy Evaluation – Tetrachloroethene (PCE)







NOTES:

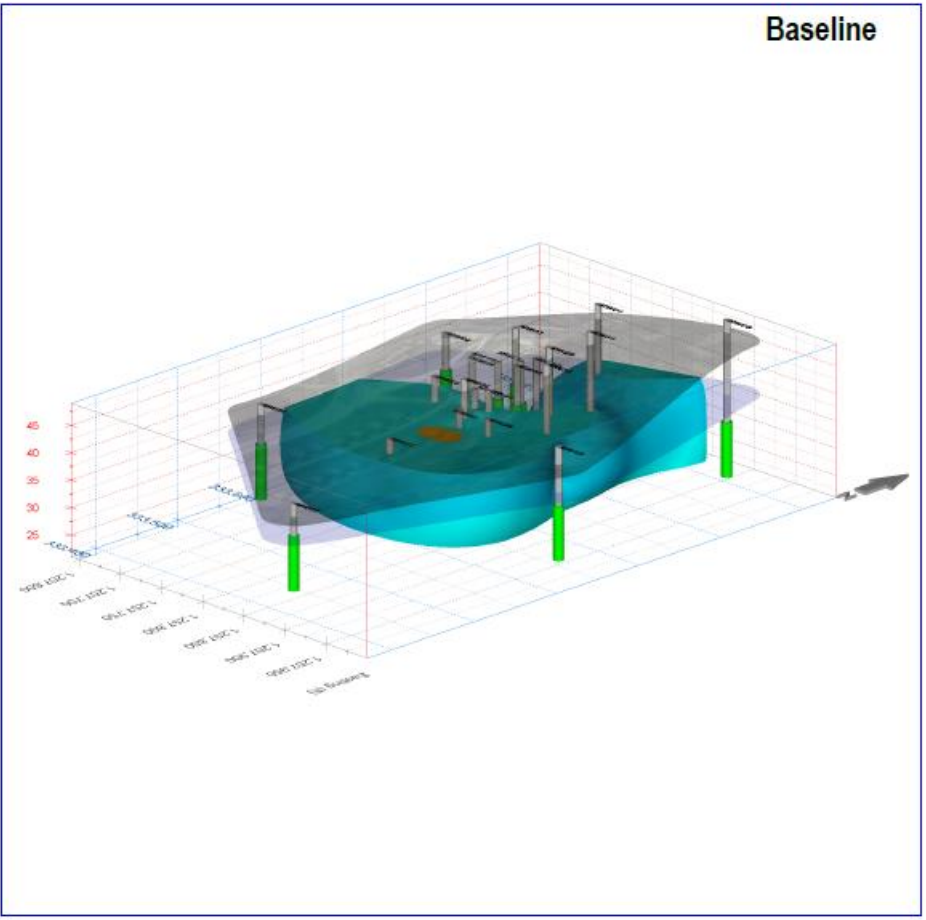
Estimated mass and volume of plume:

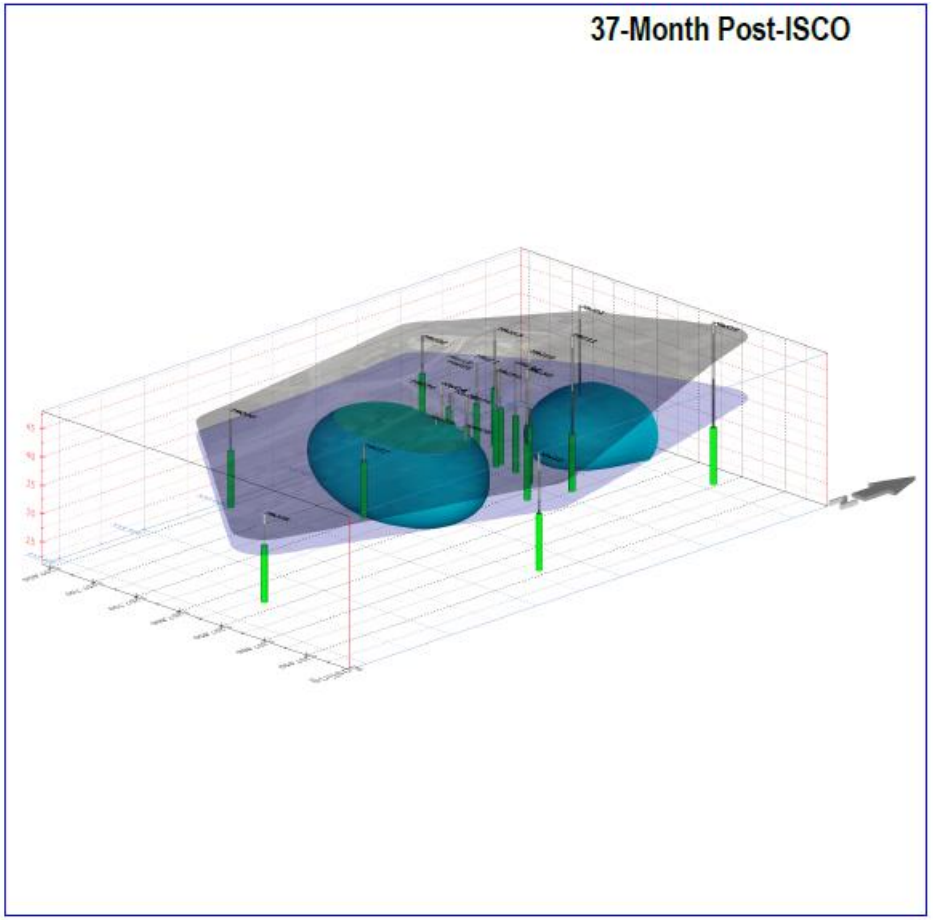
Baseline: 0.53 kg in 4,590,000 liters of groundwater above 5.0 ug/L

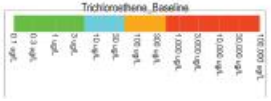
37-Month Post-ISCO: 0.41 kg in 3,184,000 liters of groundwater above 5.0 ug/L

Figure 3-15
3-Dimensional Trichloroethene Plumes –
Baseline and 37-Month Post ISCO
Site 47 Year 3 Performance Monitoring Report
NSFIH, Indian Head, Maryland

IR Site 47-Remedy Evaluation – Trichloroethene (TCE)







NOTES:

Estimated mass and volume of plume:

Baseline: 0.11 kg in 4,981,000 liters of groundwater above 5.0 ug/L

37-Month Post-ISCO: 0.04 kg in 1,730,000 liters of groundwater above 5.0 ug/L

Figure 3-16
3-Dimensional Trichloroethene Plumes –
Baseline and 37-Month Post ISCO
Site 47 Year 3 Performance Monitoring Report
NSFIH, Indian Head, Maryland

IR Site 47- Post ISCO Injection Results

- The two- and three-dimensional figures illustrate that the overall extent of the COC plumes shrunk over the 37-month monitoring period. However, while the concentrations of Carbon-Tet and TCE reduced, PCE concentrations significantly increased in the source area monitoring wells.
  - The overall concentration of carbon tetrachloride decreased 53 percent in the source area, while PCE increased 35 percent in the months following the application compared to baseline concentrations.

- 37 months after the application, 63 percent of the source area wells still had carbon tetrachloride concentrations above 500 µg/L and 13 percent of the source area wells had PCE concentrations remaining above 500 µg/L.

- VOCs in groundwater of individual wells showed variable trends.

- The metals aluminum, iron, and vanadium showed decreasing solubility in samples collected 37 months post injection in 55 percent of the wells that were monitored for metals; results show migration toward downgradient wells is not occurring. Metals solubility caused by ISCO is generally temporary.

IR Site 47- Post ISCO Results cont'd

- Dissolved and saturated soil TOC concentrations showed a decreasing trend at 78 percent of the wells that were sampled for TOC and in all of the saturated soil samples during the Year 3 performance monitoring, and only one well exhibiting dissolved TOC concentrations above 20 mg/L. This indicates that the microbial food source has been consumed.

- Overall, the carbon tetrachloride and PCE concentrations remained above 500 µg/L in 63 and 13 percent of the wells, respectively, and trend plots did not indicate flat or declining curves for carbon tetrachloride and PCE within the treatment zone. Therefore, in accordance with the decision tree flow chart on slide 8, the remedy at this site should be re-evaluated.

IR Site 47- What's Next

- Complete the Year 5 post injection monitoring sampling event.

- Additional data collection is planned to assess current and potential enhancements of biodegradation and abiotic degradation processes.
  - The results will be used to consider additional source zone treatment or augmentation.

Contacts and Questions

Points of Contact:

- **NAVFAC Washington:** Alex Scott
- **NAVFAC Washington (Base RPM):** Andrew Louder

Questions ?

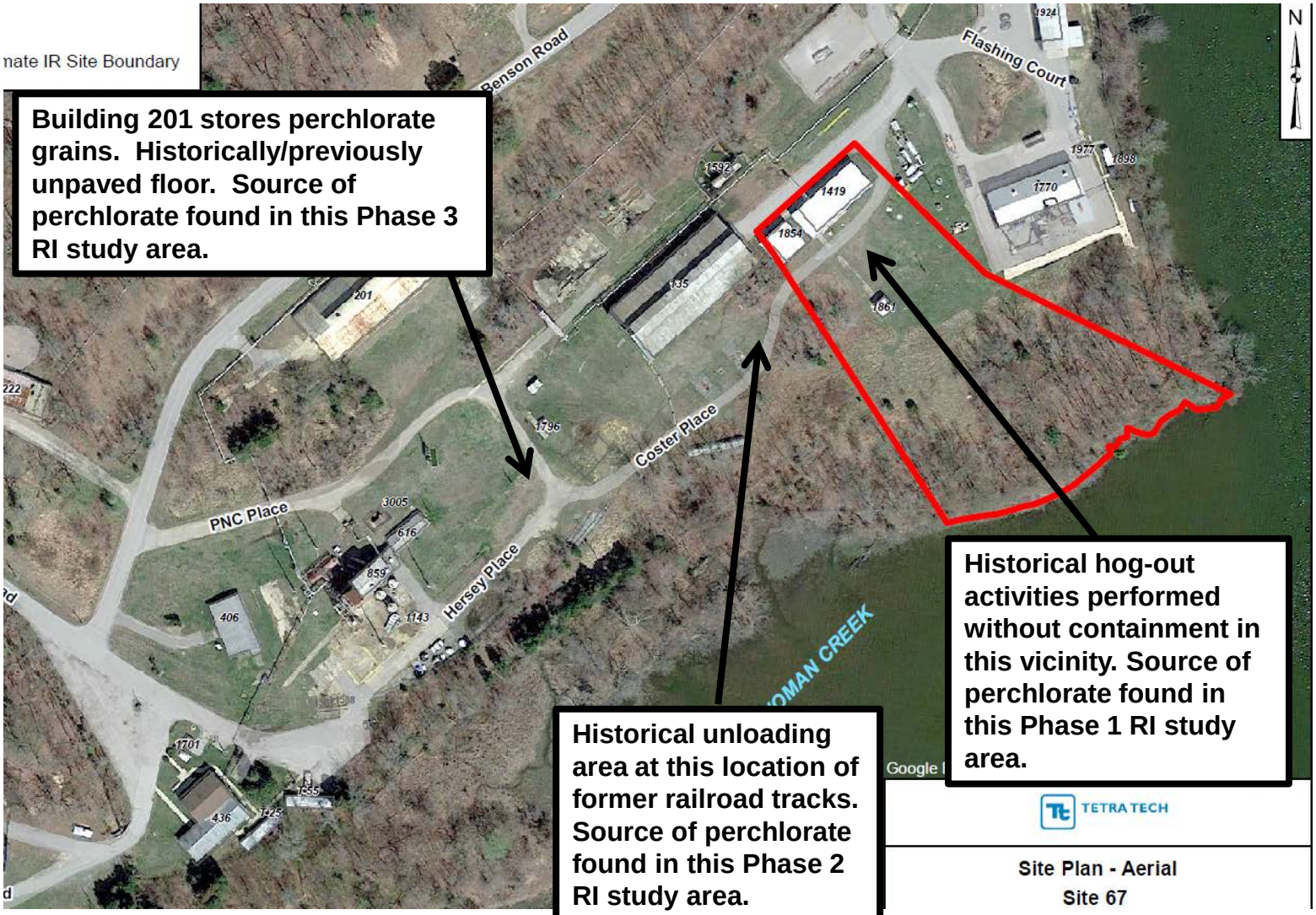
Site 67 & 69 Remedial Investigation Update

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

4/19/18

Site 67- Hog-Out Facility Location

Site Information



Site 67 RI Study Goals

- **Study Goals**:
  - Delineate perchlorate in soil and groundwater.
  - Determine if other potential operations-related contaminants are present (e.g., PAHs, explosives, metals).
  - Determine extent of contaminant source area(s).
  - Determine extent of contamination in soil, groundwater, surface water, and sediment.
  - Complete baseline Human Health Risk Assessment.
  - Complete screening-level Ecological Risk Assessment.
  - Determine if further corrective action is necessary at Site 67.

Site 67 Potential Remedy

Remedial Alternatives may include:

- Interim Remedial/Removal Action to excavate soils above human health & ecological Preliminary Remediation Goals
- Groundwater treatment
- Monitored natural attenuation
- Industrial Land Use Controls

Site 67 Groundwater Perchlorate & Metals

Site 69- Building 1018 (Oxidizer Process Facility) Location

Site Information

Former Building 1018

Surface releases of perchlorate during unloading and building rinse-outs

Site 69 RI Study Goals

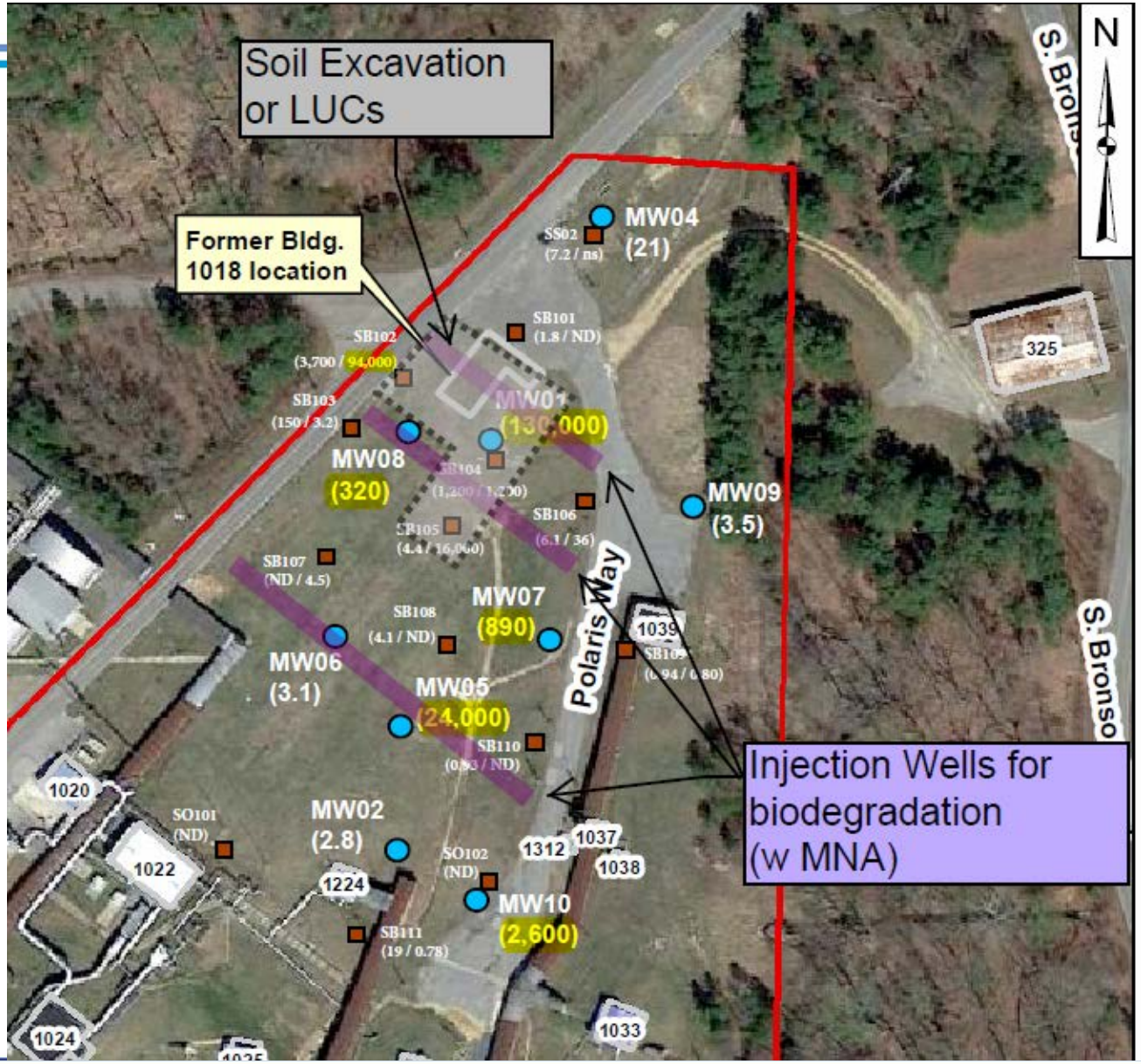
- **Study Goals**:
  - Delineate perchlorate contamination in soil and groundwater.
  - Determine extent of perchlorate source area near former Building 1018.
  - Determine extent of perchlorate contamination in surface water.
  - Complete baseline Human Health Risk Assessment.
  - Determine if further corrective action is necessary (at Site 69 and/or downgradient).

Site 69 Potential Remedy

Remedial Alternatives may include:

- Interim Remedial/Removal Action in source area to address perchlorate in soil
- Address perchlorate in groundwater through source treatment (enhanced biodegradation)
- Monitored natural attenuation
- Industrial Land Use Controls

Site 69 Potential Remedy



Site 67 & 69 Remedial Investigation Update

Points of Contact:

- **NAVFAC Washington:** Joseph Rail
- **NAVFAC Washington (Base RPM):** Andrew Louder

Questions ?