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: October 13, 2022, 6 p.m.

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

Additional Attendees:

Mr. Russell Ashley (S)	Mr. Timothy Boyd (N)
Mr. Andrew Louder (N)	Mr. Joshua Coe (N)
Ms. Tara Meadows (N)	Mr. Andrew Revelos (N)
Ms. Debra Krahling (C)	Ms. Tara Carlson (C)

RAB Members Not in Attendance:
Mr. Robert Thomson (F)
Ms. Jeron Hayes (N)
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 Systems 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 FY23 Budget Update, the Site 67 Non-Time Critical Removal Action Update, and the Stump Neck UXO 26 Remedial Investigation Update. Mr. Scott presented the Basewide Five Year Review Update and the Site 71-PFAS Areas of Concern Preliminary Assessment Update. Mr. Louder presented the Site 43 Non-Time Critical Removal Action Update, the Site 66 Remedial Investigation Fieldwork Update, and the Site 68 Update. Copies of all presentations are included in Attachment D.

3. Comments, Questions and Answers

Any comments made or questions asked during the meeting were noted. 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.l.hayes.civ@us.navy.mil

4. Meeting Adjourn

Mr. Rail presented the tentative agenda for the next RAB meeting, which is scheduled for October 12, 2023. A copy of the draft agenda is included in Attachment C. Mr. Rail then concluded the meeting at 7:45 pm and thanked everyone in attendance.

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

October 13, 2022

6:00 - 6:05 pm	**ARRIVAL/WELCOME** Mr. Joseph Rail Naval Facilities Engineering Command, Washington (NAVFACWASH) Remedial Project Manager
6:05 – 6:15 pm	**FY23 BUDGET UPDATE** Mr. Joseph Rail
6:15 – 6:30 pm	**BASEWIDE FIVE YEAR REVIEW UPDATE** Mr. Alex Scott
6:30 – 6:40 pm	**SITE 43 TOLUENE DISPOSAL AREA NON-TIME-CRITICAL REMOVAL ACTION UPDATE** Mr. Andrew Louder
6:40 – 6:50 pm	**SITE 66 TURKEY RUN DISPOSAL AREA REMEDIAL INVESTIGATION FIELDWORK UPDATE** Mr. Andrew Louder
6:50 – 7:00 pm	**SITE 67-HOG-OUT FACILITY NON-TIME-CRITICAL REMOVAL ACTION UPDATE** Mr. Joseph Rail
7:00 – 7:15 pm	**SITE 68 FORMER BUILDING 259 CONTAMINATION UPDATE** Mr. Andrew Louder
7:15 – 7:45 pm	**SITE 71-PFAS AREAs OF CONCERN PRELIMINARY ASSESSMENT UPDATE** Mr. Alex Scott
7:45 – 8:00 pm	**STUMP NECK UXO 26-VALLEY IMPACT AREA REMEDIAL INVESTIGATION UPDATE** Mr. Joseph Rail
8:00 pm	**ADJOURN**

Attachment A

INSTALLATION RESTORATION PROGRAM

NAVAL SUPPORT FACILITY-
INDIAN HEAD
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INDIAN HEAD, MARYLAND
20640-5133

RESTORATION ADVISORY BOARD (RAB) MEETING
COMMENTS, QUESTIONS AND ANSWERS
October 13, 2022

Arrival/Welcome

No questions were asked nor comments made during this topic.

FY23 BUDGET UPDATE

No questions were asked nor comments made during this topic.

BASEWIDE FIVE YEAR REVIEW UPDATE

Question: How long will it be until the Final Five Year Review Report is available?

Answer: The final report is projected to be signed in January 2023, but it may be delayed due to regulatory review.

Question: What is a LUC?

Answer: LUC is an acronym which stands for "Land Use Control."

Question: What do you do to restore a wetland?

Answer: Wetland restoration may include grading and placement of select soils and planting of native vegetation found within a wetland.

Question: What is the difference between wetland construction and wetland restoration?

Answer: Wetland construction may take place in an area that never had the characteristics of a wetland (soil type, plant species, and drainage.) Wetland restoration repairs a wet area that may have been excavated or disturbed to address contamination.

Attachment B

Question: How do you know that the Indian Head base is not contaminating groundwater drinking wells that are off the base?

Answer: Naval Support Facility Indian Head is located on an isolated peninsula that's bounded by the Mattawoman Creek to the east and the Potomac River to the west. Any off-base wells would be upgradient of any potential release of contaminants and would not be impacted. Numerous studies and groundwater flow maps have been completed over time to demonstrate this.

SITE 43-TOLUENE DISPOSAL AREA NON-TIME CRITICAL REMOVAL ACTION UPDATE

Question: Where does the contaminated soil that is excavated go to?

Answer: Excavated soil goes to a permitted off-site disposal facility (landfill.)

Question: Where does clean fill come from?

Answer: Clean fill comes from a pre-approved off-site borrow source. Usually, this is a vendor that has stockpiled soil available for purchase.

Site 66-TURKEY RUN DISPOSAL AREA REMEDIAL INVESTIGATION FIELDWORK UPDATE

Question: Can you increase the size of the photos in the presentation?

Answer: Yes, increasing the size of photos will be considered in the future. For presentations with numerous photos, it may make sense to include more than one photo per page but efforts will be made to ensure the information is legible.

SITE 67-HOG-OUT FACILITY NON-TIME CRITICAL REMOVAL ACTION UPDATE

No questions were asked nor comments made during this topic.

Attachment B

SITE 68-FORMER BUILDING 259 CONTAMINATION UPDATE

No questions were asked nor comments made during this topic.

SITE 71-PFAS AREAs OF CONCERN PRELIMMINARY ASSESSMENT UPDATE

Question: How are PFAS sites identified? Evidence of a release? Word of mouth?

Answer: Potential PFAS sites may be identified several ways such as historical records, reports of a release or training activity, or by interviews.

Question: Did you conduct interviews with firefighters?

Answer: Yes, firefighters were interviewed during a Preliminary Assessment effort.

Question: Were all fires or explosions that were extinguished by aqueous film forming foam (AFFF) documented in historical records?

Answer: It's unknown whether every response that utilized AFFF was documented in historical records.

Question: Did you only interview Navy employees during the PFAS Preliminary Assessment?

Answer: Efforts were made to contact and interview anyone that may have had useful information. That included both Navy employees and non-Navy individuals.

STUMP NECK UXO 26-VALLEY IMPACT AREA REMEDIAL INVESTIGATION UPDATE

No questions were asked nor comments made during this topic.

GENERAL QUESTIONS

A general comment from a meeting attendee was that numerous parties may be responsible for affecting environmental conditions within the Mattawoman Creek watershed and it's nice to see that the Navy is doing their part to ensure environmental protection and restoration, when needed.

Attachment B

NAVAL SUPPORT FACILITY INDIAN HEAD
INSTALLATION RESTORATION (IR) PROGRAM
RESTORATION ADVISORY BOARD (RAB) DRAFT MEETING AGENDA
October 12, 2023

6:00 - 6:05 pm	**ARRIVAL/WELCOME** Mr. Joseph Rail Naval Facilities Engineering Command, Washington (NAVFACWASH) Remedial Project Manager
6:05 – 6:15 pm	**FY24 BUDGET UPDATE** Mr. Joseph Rail
6:15 – 6:30 pm	**SITE 43 TOLUENE DISPOSAL AREA NON-TIME-CRITICAL REMOVAL ACTION UPDATE** Mr. Joseph Rail
6:30 – 6:40 pm	**SITE 66 TURKEY RUN DISPOSAL AREA REMEDIAL INVESTIGATION UPDATE** Mr. Alex Scott
6:40 – 6:50 pm	**SITE 68 FORMER BUILDING 259 CONTAMINATION NON-TIME CRITICAL REMOVAL ACTION UPDATE** Mr. Andrew Louder
6:50 – 7:00 pm	**SITE 70-GROUNDWATER CONTAMINATION ALONG WATER WORKS WAY REMEDIAL INVESTIGATION UPDATE** Mr. Andrew Louder
7:00 – 7:15 pm	**SITE 71-PFAS AREAs OF CONCERN PRELIMINARY ASSESSMENT UPDATE** Mr. Alex Scott
7:15 – 7:30 pm	**UXO 9-SINGLE-BASE PROPELLANT GRAIN SPILL AREA SAMPLING UPDATE** Mr. Alex Scott
7:30 – 7:45 pm	**UXO 20-SAFETY THERMAL TREATMENT POINT REMEDIAL INVESTIGATION UPDATE** Mr. Andrew Louder
7:45 – 8:00 pm	**STUMP NECK MRP REMEDIAL INVESTIGATION/FEASIBILITY STUDY UPDATE** Mr. Joseph Rail
8:00 pm	**ADJOURN**

Attachment C

Attachment D- RAB Presentations

FY23 BUDGET & SCHEDULE UPDATE

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

10/13/22

FY23 Budget & Schedule Update

Approximate budget for FY 2023:

- $3.3 mil for Installation Restoration Program (IRP)
- $2.1 mil for Munitions Response Program (MRP)

Planned work includes:

- Remedial Investigation (RI)/Feasibility Study (FS)
- Interim Removal Action (IRA)
- Remedial Action-Operation (RA-O)
- Long-Term Monitoring (LTM)

FY23 Budget & Schedule Update

- **RI/FS for:**
  - Site 67 – Hog-out Facility
  - Site 70 – Groundwater Contamination Along Water Works Way
  - UXO 19 – Igniter Area
  - UXO 27 – Sonar Training Area
  - UXO 26 – Valley Impact Area
  - UXO 31 – Pope's Creek
- **IRA for:**
  - Site 67 – Hog-Out Facility
  - Site 68 – Former Building 259 Contamination

FY23 Budget & Schedule Update

- **RA-O for:**
  - Site 17 – Disposed Metal Parts Along Shoreline
  - Site 47 – Mercuric Nitrate Disposal Area
  - Site 57 – Building 292 TCE Contamination

- **LTM for:**
  - Site 11 – Caffee Road Landfill
  - Site 12 – Town Gut Landfill
  - Site 14 – Lab Area
  - Site 21 – Bronson Road Landfill
  - Site 28 – Original Burning Ground
  - Site 36 – Closed Landfill
  - Site 42 – Olsen Road Landfill
  - UXO 32 – Scrap Yard

Contacts and Questions

Points of Contact:

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

Questions ?

Naval Facilities Engineering Command
Engineering and Expeditionary Warfare Center

NSF INDIAN HEAD – BASEWIDE FIVE YEAR REVIEW UPDATE

Presented By
Alex Scott, Remedial Project Manager (RPM)
Naval Facilities Engineering Command (NAVFAC)
Washington

[10/13/2022]

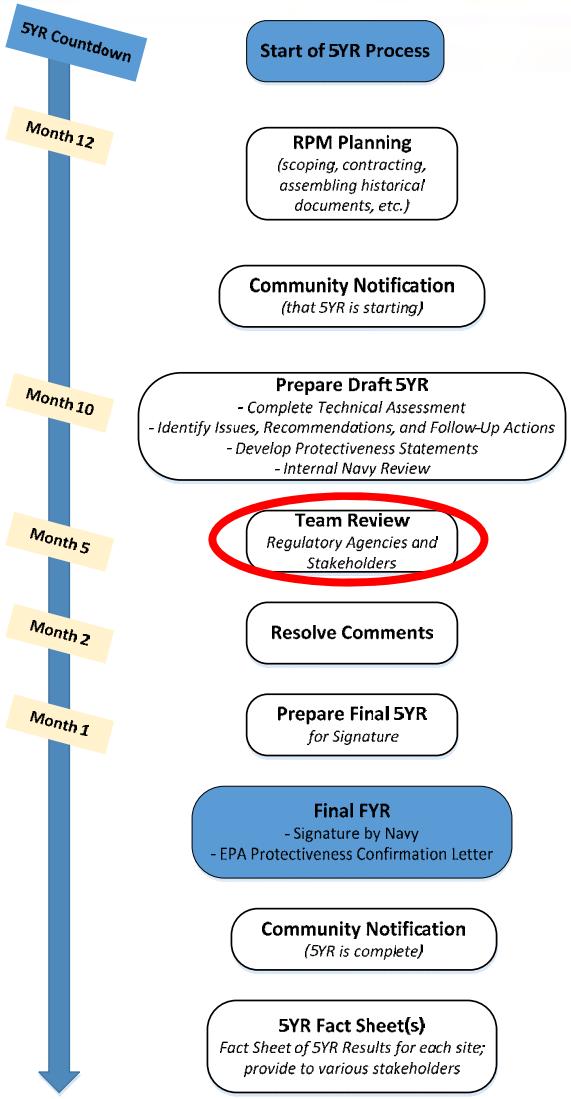
Presentation Objectives

Objectives:

- Present a brief overview of the Five-Year Review (5YR) process for Navy Environmental Restoration (ER,N) sites at NSF Indian Head (NSFIH)
- Update site statuses based on the **Draft** 2022 5YR document, pending regulatory review and acceptance.

5YR Process

- 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 5YR process is underway and expected to be completed by the end of March 2023
- The next 5YR is due to be completed by September 2027



The 5YR and CERCLA

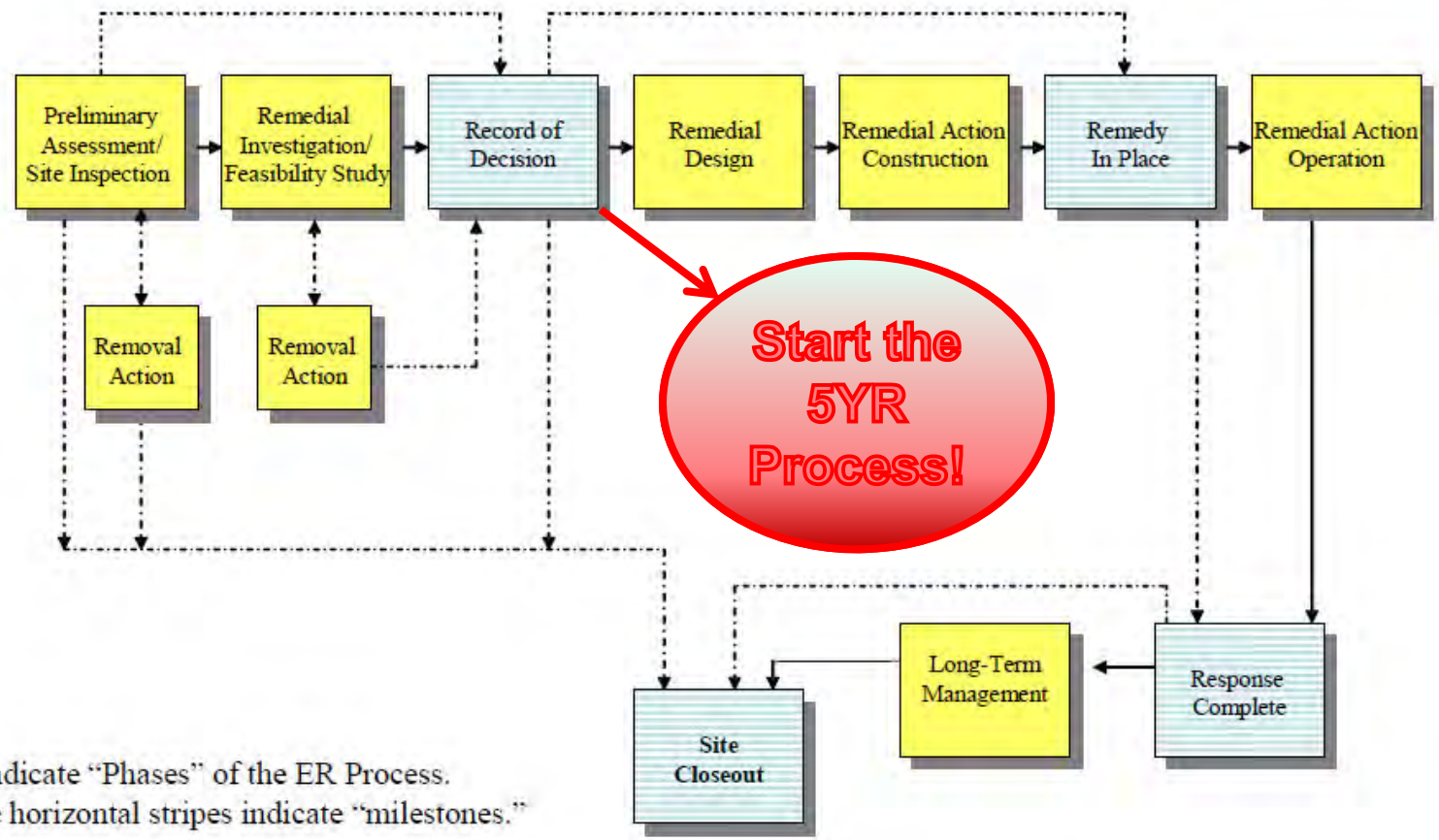


Figure 5-1. DON Environmental Restoration Process – Phases and Milestones

- Navy Environmental Restoration Program (NERP) Manual, 2006

2022 Draft 5YR Update

The Draft 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)

All finalized CERCLA process documents are available for the public to view on Navy's Environmental Restoration website for NSF Indian Head. Please visit:

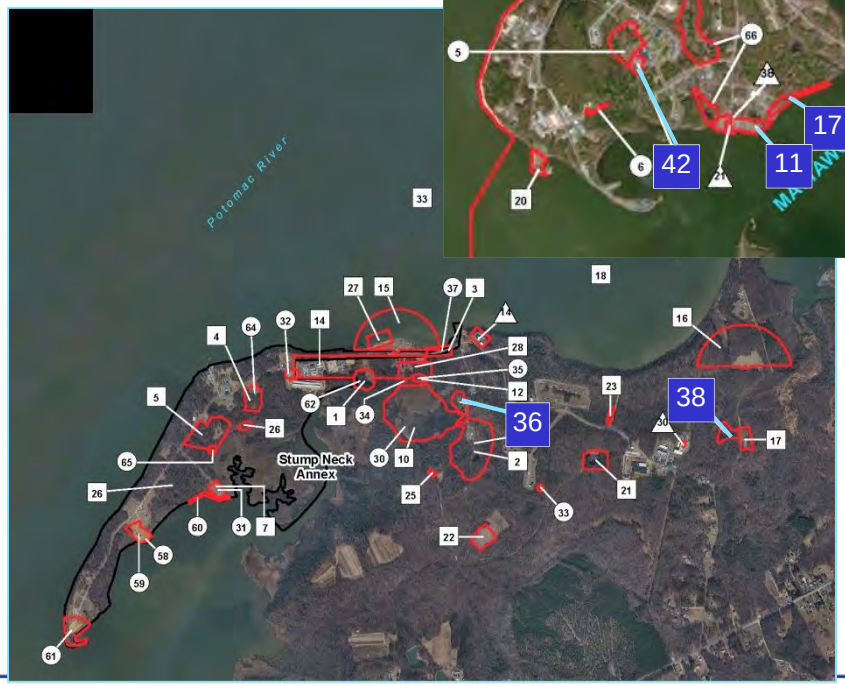
http://go.usa.gov/DyQF

Twelve Sites for Fourth 5YR (2022)

- **Site 11 – Caffee Road Landfill**
- **Site 12 – Town Gut Landfill**
- **“Lab Area” (Sites 14, 15, 16, 49, 50, 53, 54, and 55)**
- **Site 17 – Disposed Metal Parts Along Shoreline**
- **Site 21 – Bronson Road Landfill**
- **Site 28 – Original Burning Ground**
- **UXO 32 – Scrap Yard (formerly IRP Site 41)**
- **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**

Site Locations

NSFIH Main Area



NSFIH Stump Neck Annex

U.S. Navy

Site 11 – Caffee Road Landfill

Site 11 – Caffee Road Landfill

2022 5YR Draft Update

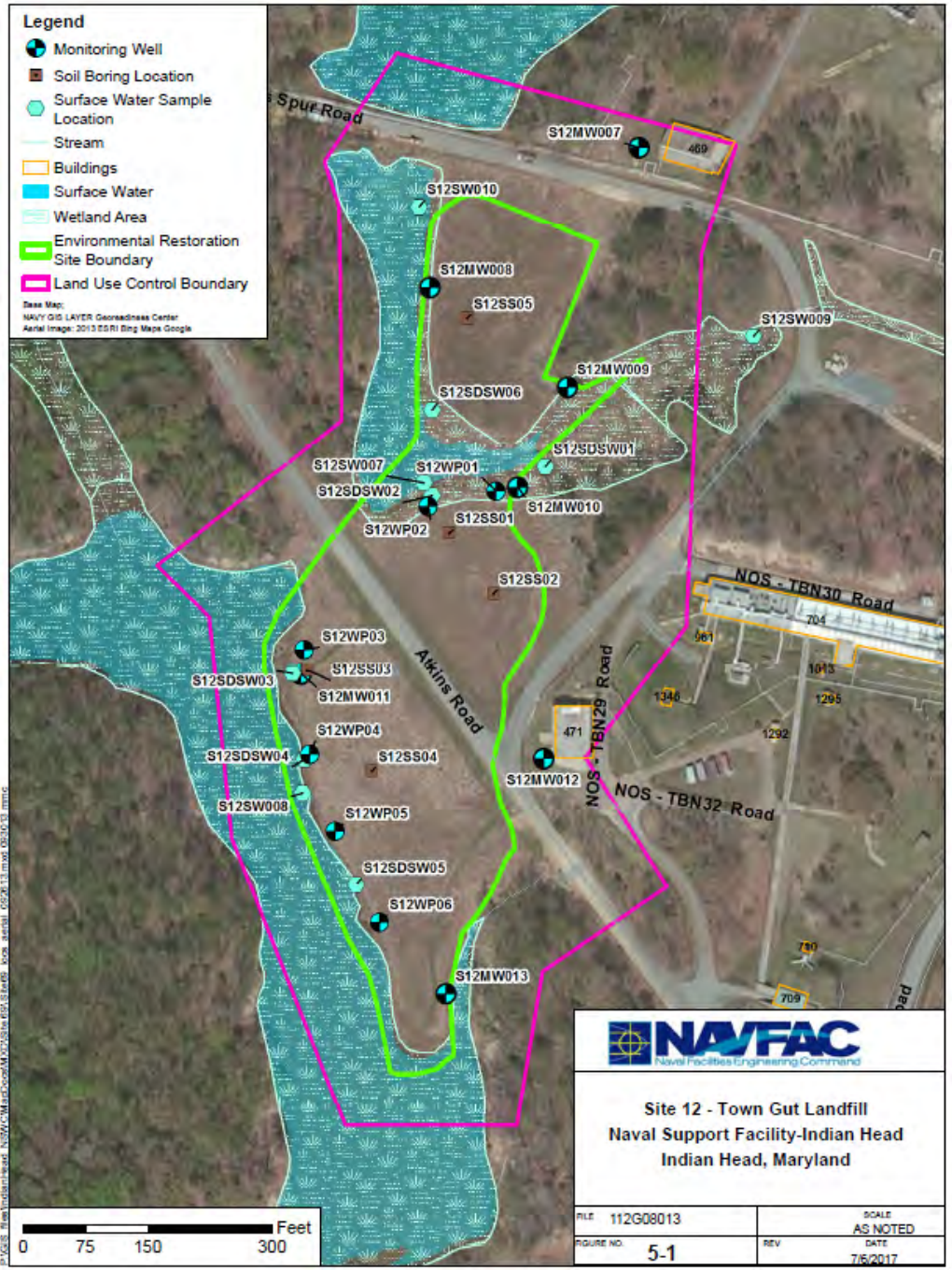
Implementation & Performance: Remedy has been implemented as described in the ROD, and is and is functioning as intended.

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

Data Evaluation: Contaminant concentrations demonstrate a mix of increasing, decreasing, and 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.

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

Site 12 – Town Gut Landfill



Site 12 – Town Gut Landfill

2022 5YR Draft Update

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

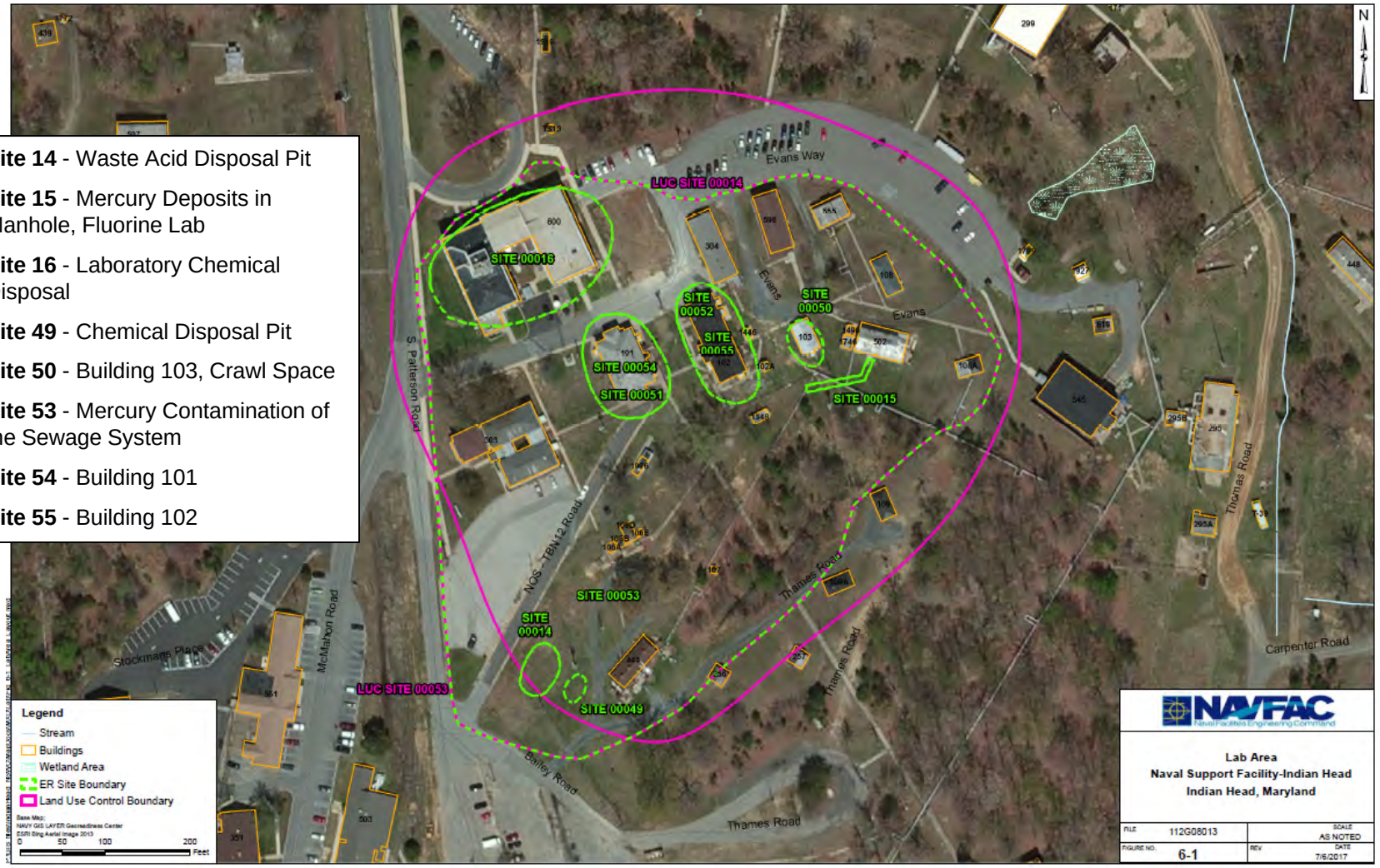
Protectiveness: Remedy is protective of human health and the environment. Exposure pathways that could result in unacceptable risk are being controlled.

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

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.

Lab Area

- **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

2022 5YR Draft Update

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: 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.

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

Site 17 – Disposed Metal Parts Along Shoreline

Site 17 – Disposed Metal Parts Along Shoreline

2022 5YR Draft Update

Implementation & Performance: Remedy has been implemented as described in the ROD in the south plume area. However, site conditions in the north plume area contain high levels of contaminant concentrations.

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

Data Evaluation: Contaminant concentrations demonstrate a mix of increasing and decreasing trends in the south plume area. The majority of contaminant concentrations demonstrate no trend in the north plume area. Contaminant concentrations continue to exceed background levels, and MCLs.

Selected Remedy: Clearing and removal of munitions. Treatment of the aquifer with zero-valent iron (ZVI) to chemically-reduce aquifer contamination in-situ (in place). Groundwater monitoring and LUCs. ESTCP demonstration project (Grout Bomber Pilot Study) for North Plume area initiated in 2017 and performance monitoring is ongoing. Additional investigation for South Plume area initiated in 2021 to evaluate optimization of the remedy.

Site 21 – Bronson Road Landfill

Site 21 – Bronson Road Landfill

2022 5YR Draft Update

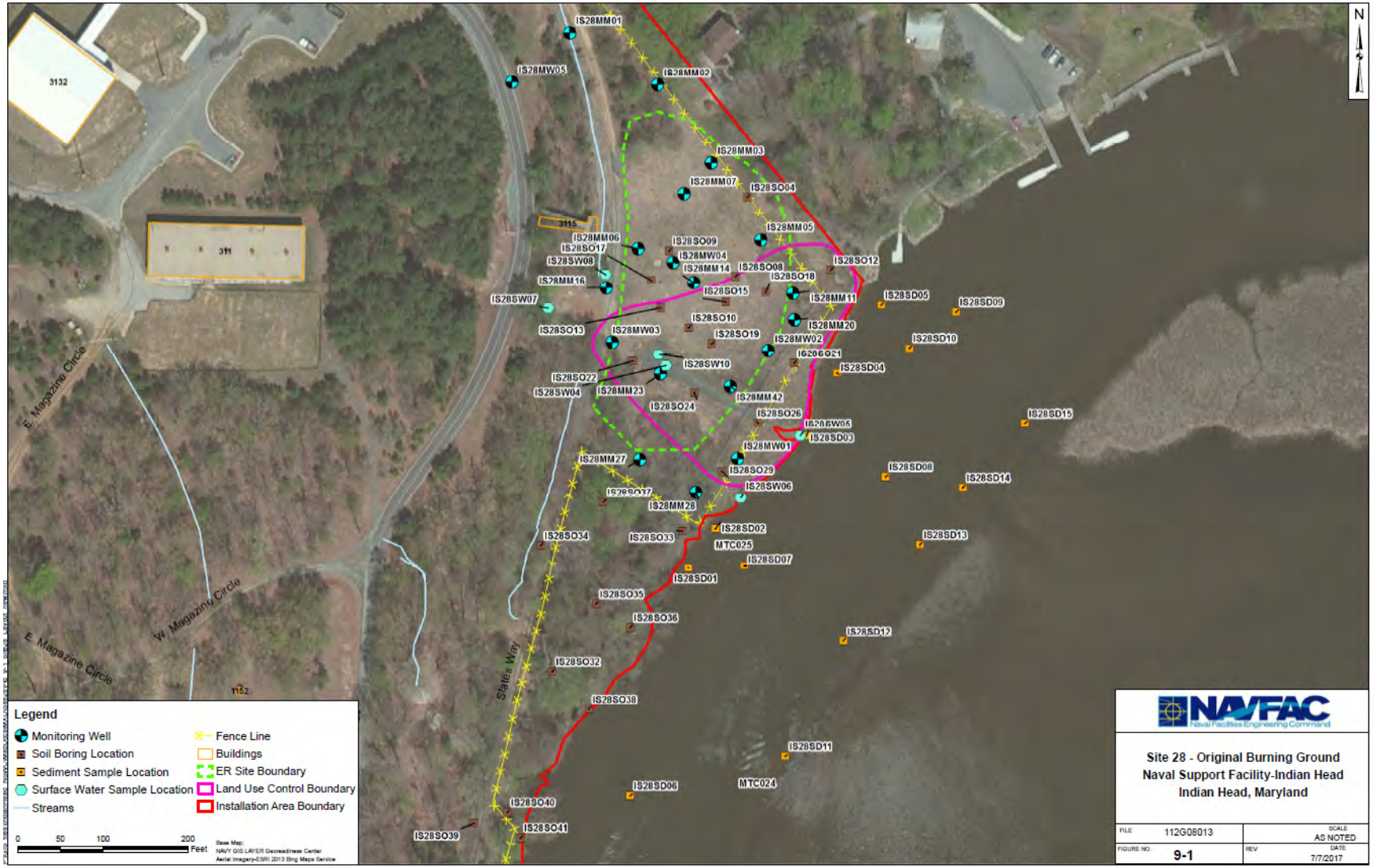
Implementation & Performance: Remedy has been implemented as described in the ROD, and is functioning as intended.

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 no trend. Contaminant concentrations continue to exceed background levels and MCLs.

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

Site 28 – Original Burning Ground



Site 28 – Original Burning Ground

2022 5YR Draft Update

Implementation & Performance: Remedy has been implemented as described in the ROD. LTM sampling results will demonstrate the remedy's long-term protectiveness and if the remedy is performing as intended.

Protectiveness: Remedy will be protective of human health and the environment. Exposure pathways that could result in unacceptable risk will be controlled. The currently operating remedy and NSFIH ICs are protective of human health and the environment in the short-term.

Data Evaluation: The majority of contaminant concentrations demonstrate decreasing or no trend. Concentrations of arsenic and zinc remain above the SRGs after 2 years of monitoring.

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

UXO 32 – Scrap Yard

UXO 32 – Scrap Yard

2022 5YR Draft Update

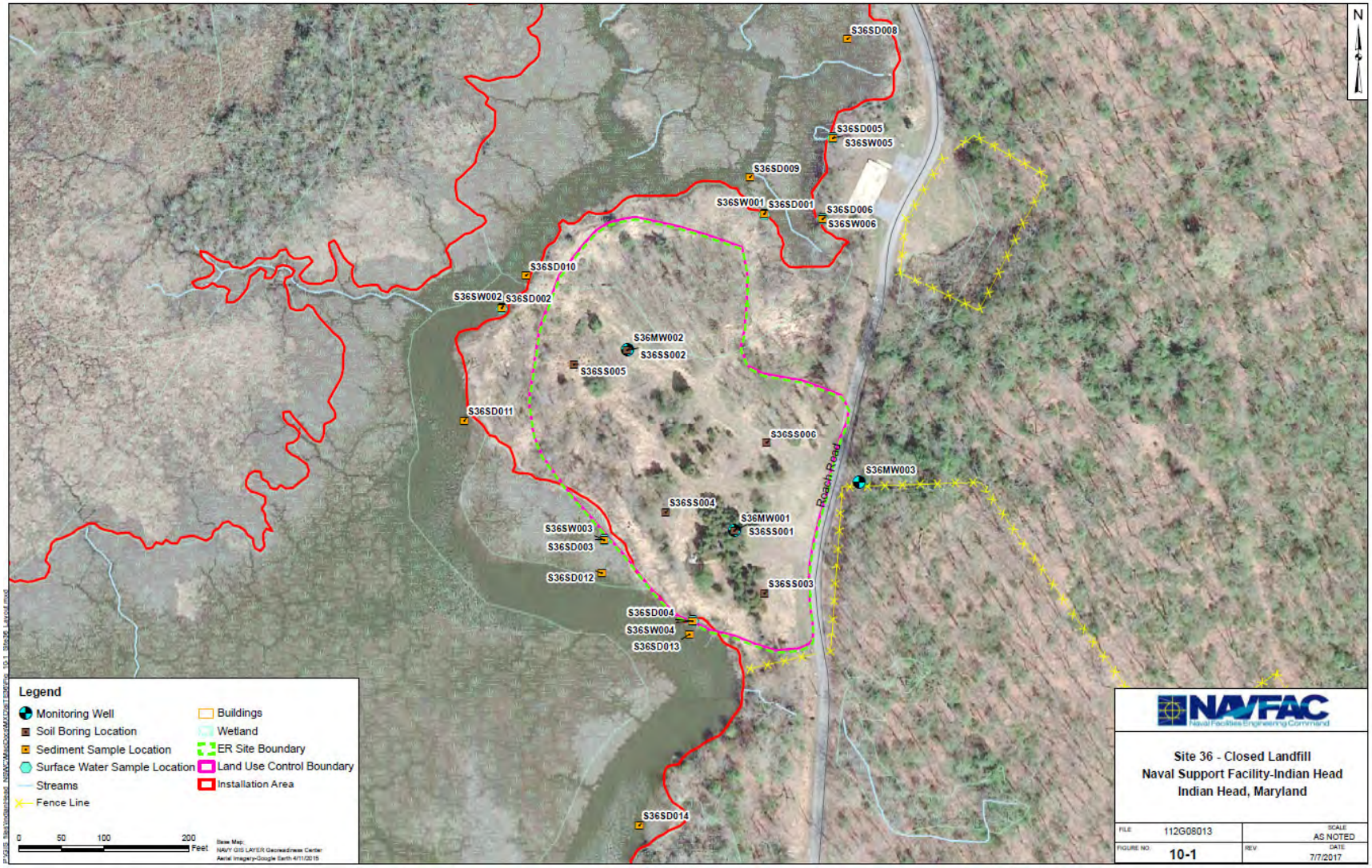
Implementation & Performance: Remedy has been implemented as described in the ROD, and is functioning as intended.

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

Data Evaluation: 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.

Selected Remedy: Debris, soil, and munitions removal via IRAs (2002, 2006 & 2007). LUCs in the long-term.

Site 36 – Closed Landfill



Site 36 – Closed Landfill

2022 5YR Draft Update

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

Protectiveness: Remedy will be protective of human health and the environment. Exposure pathways that could result in unacceptable risk will be controlled. The currently operating remedy and NSFIH ICs are protective of human health and the environment in the short-term.

Data Evaluation: Elevated Arsenic concentrations detected at downgradient pore water sample locations. Currently no exposure to the porewater. Will continue to evaluate to determine protectiveness in the long-term.

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

Site 38 – Rum Point Landfill

Site 38 – Rum Point Landfill

2022 5YR Draft Update

Implementation & Performance: Remedy is currently being implemented as described in the ROD.

Protectiveness: Remedy is protective of human health and the environment.

Data Evaluation: Three post-landfill-excavation events performed as required by Maryland. No trends or issues with MDE RCRA I&II parameters identified.

Selected Remedy: Completed comprehensive landfill waste removal. Post removal groundwater monitoring and LUC inspections completed. Conditions for site closeout are under evaluation.

Site 42 – Olsen Road Landfill

Site 42 – Olsen Road Landfill

2022 5YR Draft Update

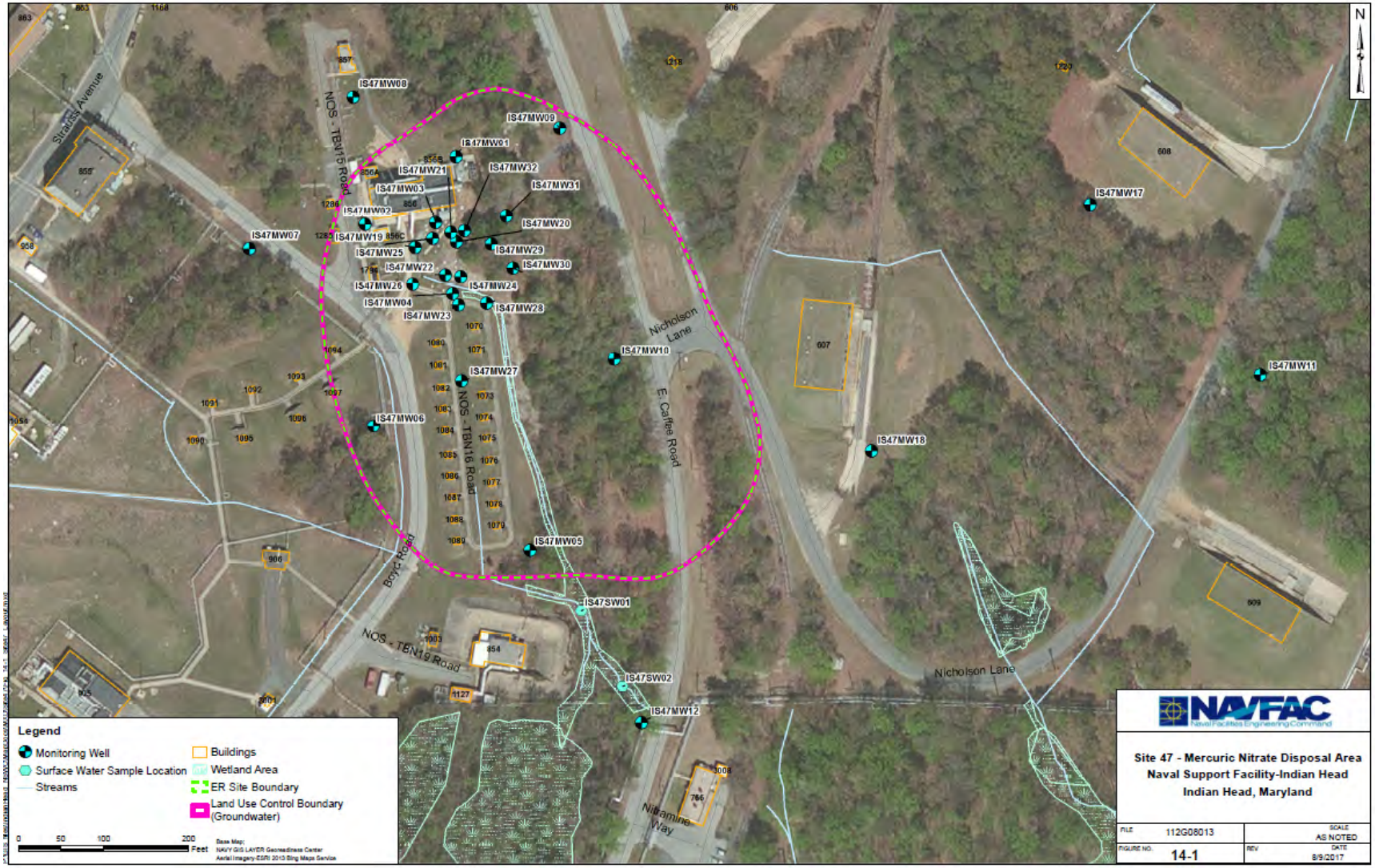
Implementation & Performance: Remedy has been implemented as described in the ROD, and is functioning as intended.

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.

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

Site 47 – Mercuric Nitrate Disposal Area



Site 47 – Mercuric Nitrate Disposal Area

2022 5YR Draft Update

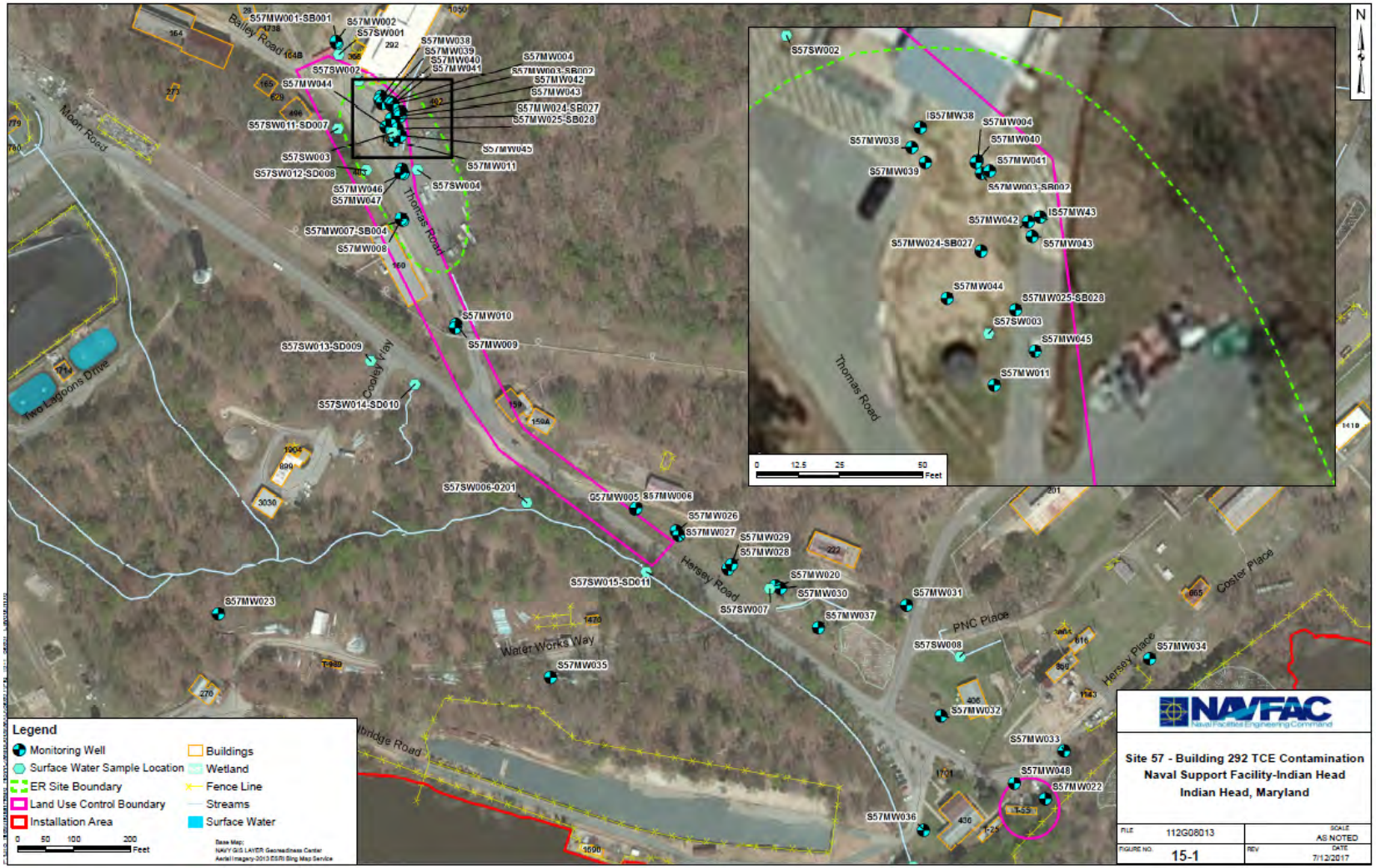
Implementation & Performance: Remedy has been implemented as described in the ROD, and is functioning as intended. However, high levels of carbon-tetrachloride and PCE persist in the source area, and may not achieve performance goals.

Protectiveness: Remedy will be protective of human health and the environment. Exposure pathways that could result in unacceptable risk will be controlled. The currently operating remedy and NSFIH ICs are protective of human health and the environment in the short-term.

Data Evaluation: Groundwater contaminant concentrations continue to exceed background levels and MCLs. The majority of contaminant concentrations demonstrate no trend; however, increasing trends were noted at two locations (MW03 and MW26).

Selected Remedy: In-situ chemical oxidation using alkaline-activated sodium persulfate (AAP) and catalyzed hydrogen peroxide. Groundwater monitoring and LUCs. Contamination source area is currently being evaluated for further remediation to improve remedy performance.

Site 57 – Building 292 TCE Contamination



Site 57 – Building 292 TCE Contamination

2022 5YR Draft Update

Implementation & Performance: Remedy has been implemented as described in the ROD. Persistent exceedances of trichloroethene (TCE) indicate that remedy performance may not be what was predicted in the ROD.

Protectiveness: Remedy will be protective of human health and the environment. Exposure pathways that could result in unacceptable risk will be controlled. The currently operating remedy and NSFIH ICs are protective of human health and the environment in the short-term.

Data Evaluation: Groundwater contaminant concentrations continue to exceed background levels and MCLs.

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).

Groundwater monitoring and LUCs in the long-term.

The site is currently being evaluated for optimization to improve remedy performance.

Actions Before Next 5YR

- Evaluate potential for Climate Change Impact
- Evaluate potential risk from cobalt in Groundwater due to changes in toxicity and background values
- Complete PFAS site investigations

Contacts and Questions

Points of Contact:

- **NAVFAC Washington Remedial Project Manager:**
  - Cassie Shoup, email: cassandra.shoup@navy.mil
  - Alex Scott, email: alex.e.scott5.civ@us.navy.mil
- **Indian Head PM:** Andrew Louder, email: andrew.r.louder.civ@us.navy.mil

Questions ?

IR SITE 43-TOLUENE DISPOSAL SITE NON-TIME CRITICAL REMOVAL ACTION (NTCRA)

Presented By
Andrew Louder
Naval Facilities Engineering Systems Command (NAVFAC) Washington
10/13/22

IR 43 NTCRA: Location

- IR Site 43 is located in the southern portion of the restricted area on Naval Support Facility Indian Head. It extends from east of Glennon Road proceeding westward toward the Potomac River shore.
- Previous investigations identified TCE in the soil. Current action is a non-time critical removal action (NTCRA) to address a “hot spot” of TCE-impacted soils.

IR 43 NTCRA: Removal Action Objectives(RAOs)

RAOs are site-specific goals formed based on the type and characteristics of the contaminants, the impacted media, exposure routes/receptors, and cleanup goals.

The RAO developed for Site 43 include:

- Reduce the exposure risk to human receptors (eg. residential child/adult, construction worker, etc) associated with inhalation (including potential vapor intrusion), ingestion, or dermal exposure by addressing the highest concentrations of TCE in groundwater and soil.
- Minimize the potential leaching of TCE from impacted soil to groundwater in excess of cleanup levels.

Planned Removal Action includes:

- Established a Preliminary Remediation Goal (PRG) of 300 ug/kg for TCE at Site 43.

- Excavate to approximately 8-feet below ground surface (bgs), to remove and dispose of TCE contaminated soil with concentrations greater than the PRG (approximately 0.4 acres). Actual extent of the excavated area during the removal action may be revised depending on the confirmation sampling.

IR 43 NTCRA: Scope

Site activities to include the follow:

- soil sampling
- debris/vegetation clearance
- excavation
- waste characterization
- offsite disposal of waste/site restoration

Excavated Material

- Anticipate removal of approximately **5,156 cubic yards (CY)** of contaminated soils and **118 CY of asphalt**.
- Excavated soil and asphalt will be sent off-site to a Subtitle D landfill.

Selected remedy is excavation and off-site disposal for soil only.
NOTE: Groundwater to be addressed separately.

IR 43 NTCRA: Schedule (Tentative)

Sept-Oct 2022	• Mobilization • Land survey • Vegetation Removal
Oct-Nov 2022	• Pre-excavation sampling and set up of erosion and sediment controls • Excavation • Waste characterization/off-site disposal
Nov-Dec 2022	• Finish off-site disposal • Backfill/Site Restoration • Demobilization

Contacts and Questions

Points of Contact:

- **NAVFAC Washington:** Joseph Rail

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

Questions ?

IR SITE 66 - TURKEY RUN DISPOSAL AREA REMEDIAL INVESTIGATION (RI) FIELD WORK UPDATE

Presented By
Andrew Louder
Naval Facilities Engineering Systems Command (NAVFAC) Washington
10/13/22

IR 66 Phase 3 RI: Location and Previous Work Completed

Site 66, Turkey Run Disposal Area, is approximately 13 acres in size and is near the south end of the Main Installation.

- The site was an unregulated dump area discovered in 2003
- Contains various solid wastes, including ash, construction debris, metal scrap, lead flooring, scrap wood, asphalt, clinker, and laboratory bottles.
- 2007: Site Inspection (SI) was completed
- 2010: Remedial Investigation (RI) completed
- 2014: Expanded RI completed
    - Recommended additional investigation, a BERA, and a wetland delineation to fill data gaps.

IR 66 Phase 3 RI: Site Photos

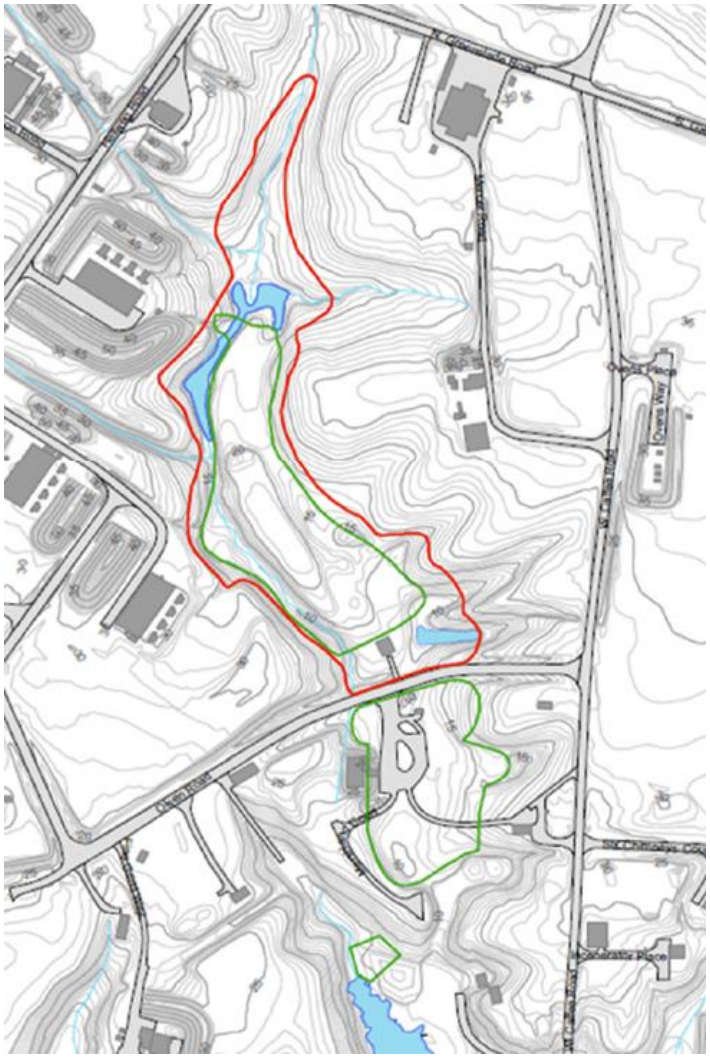
IR 66 Phase 3 RI: Scope of Work

The objectives of the Phase 3 RI are:

- Refine the vertical and lateral extents of the landfill to determine the landfill footprint.
- Define the nature and extent of contamination in groundwater, soil, surface water, sediment, and ash.
- Evaluate whether contaminant concentrations attributable to releases from the site present unacceptable risk to human health or the environment.
- Delineate Wetland boundaries.

Planned Phase 3 RI Activities:

- Site boundary survey (Completed)
- Vegetation clearing (Completed)
- Wetland Delineation (Completed)
- Digital geophysical mapping (DGM) (Completed)
- Radiological Screening (Completed)
- Hydrogeological testing (Schedule TBD)
- Excavate test pits(Schedule TBD) to confirm the landfill boundary (based on DGM)
    - Identify waste types and depth
- Collect environmental samples for chemical analyses (Schedule TBD)



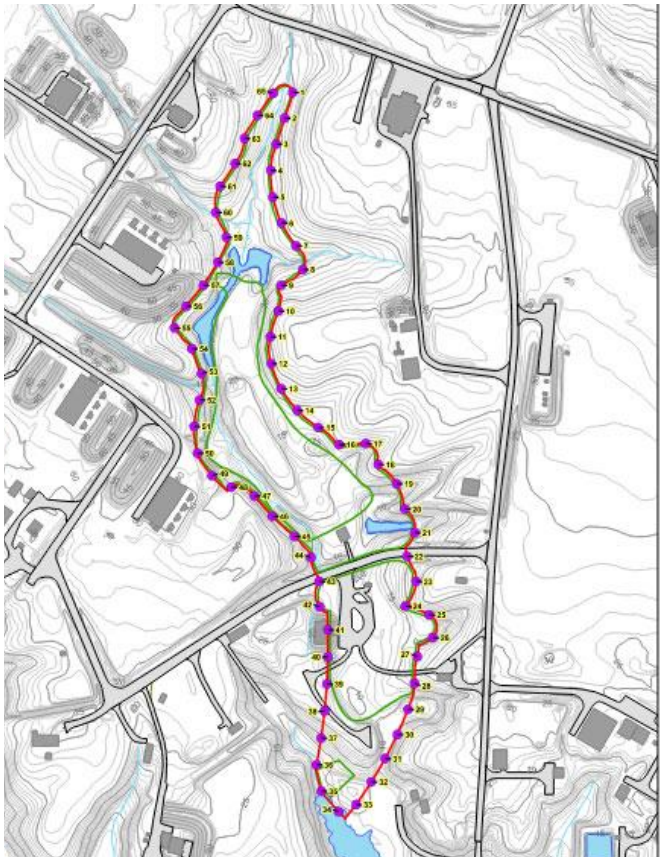
IR 66 Phase 3 RI: Human/Ecological Risk Summary

Media	Human Health	Ecological
Soil	• PAHs (Polycyclic aromatic hydrocarbon) • 4,4'-DDD(Dichlorodiphenyldichloroethane) • Metals – arsenic, chromium, cobalt, iron, manganese, and lead	• PAHs • Atrazine • Metals - Mercury
Sediment	• PAHs • Metals – arsenic, chromium, copper, and lead	• 4,4'-DDD • Metals – Copper and lead
Groundwater	• Heptachlor • Metals – Arsenic, cobalt, iron, and manganese	• Metals – Barium, iron, and manganese
Ash	• Metals	• Metals – Arsenic, mercury, and vanadium

IR 66 Phase 3 RI: Fieldwork

Site Boundary Survey

- Surveyed 13 acres with stakes placed along perimeter every 25 meters



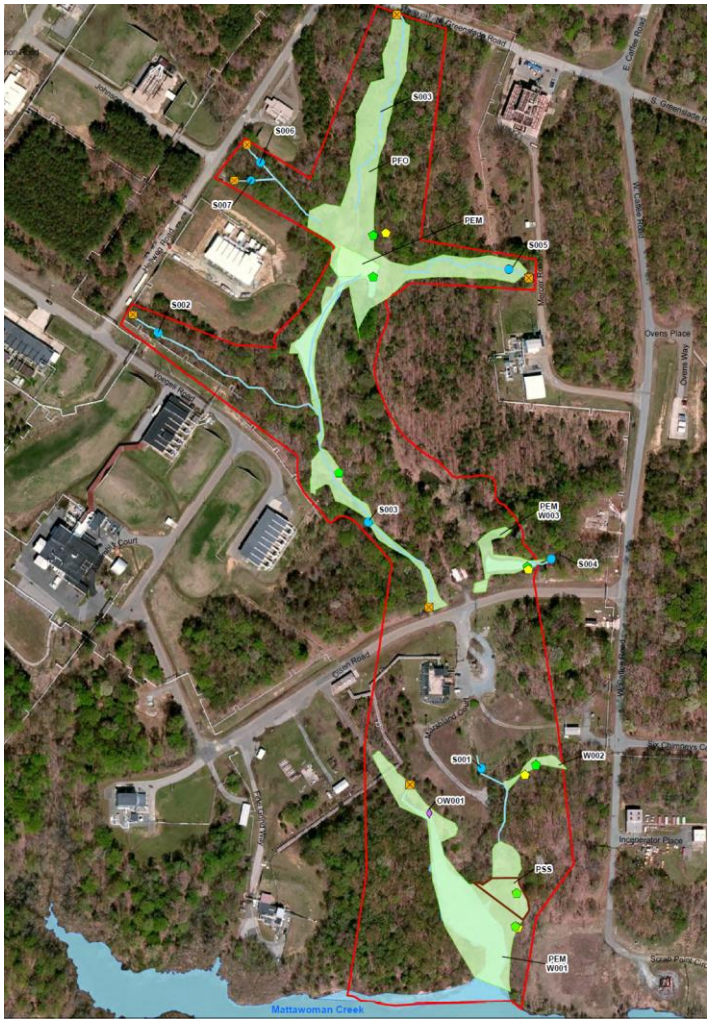
Vegetation Clearance

- Approximately 11 acres were cleared of vegetation, excluding wetland areas

IR 66 Phase 3 RI: Wetland delineation

Wetland Delineation

- Completed as part of the expanded RI
- Four wetlands (W001-W004), one open water feature (OW001), and seven waterbodies (S001-S007) were identified
- These features are likely to be considered jurisdictional waters of the United States because of the observed and inferred connectivity of all the wetland and waterbody features to Mattawoman Creek, a traditional navigable waterbody



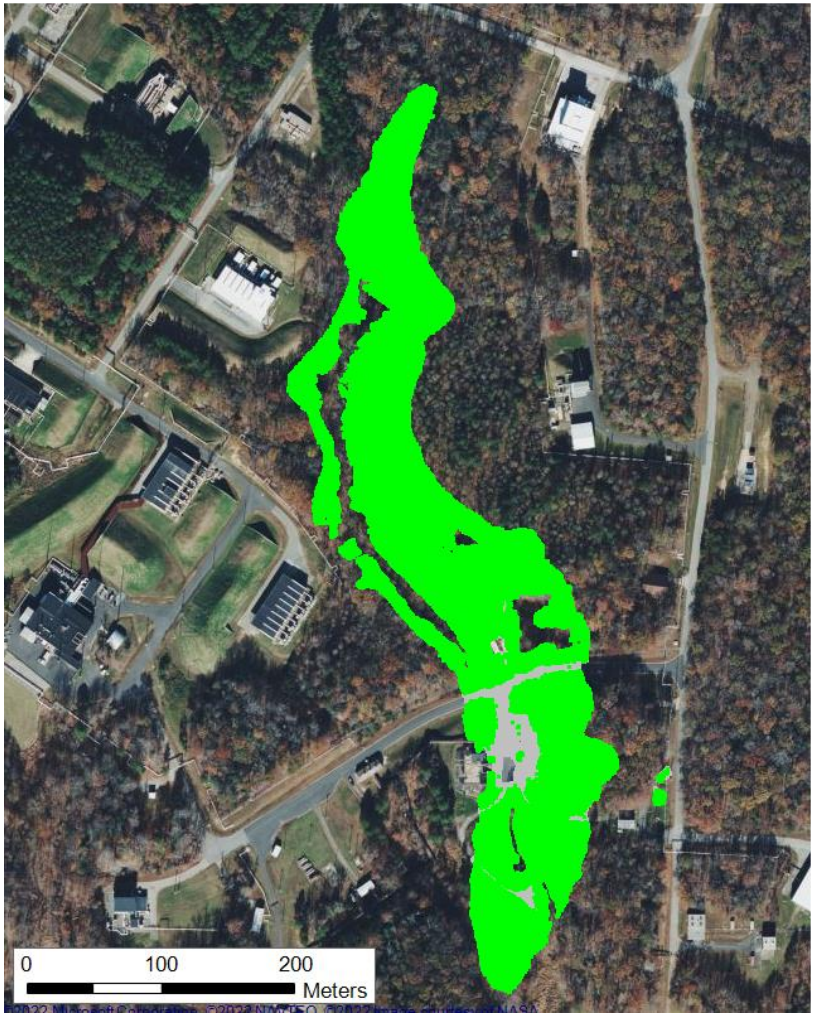
Legend

- Culvert
- Stream Data Point
- Upland Data Point
- Wetland Data Point
- Open Water Data Point
- Palustrine Scrub-Shrub
- Approximate Limit of Delineation
- Surface Waterbodies
- Wetland

IR 66 Phase 3 RI: Field Work continued

Gamma Walkover

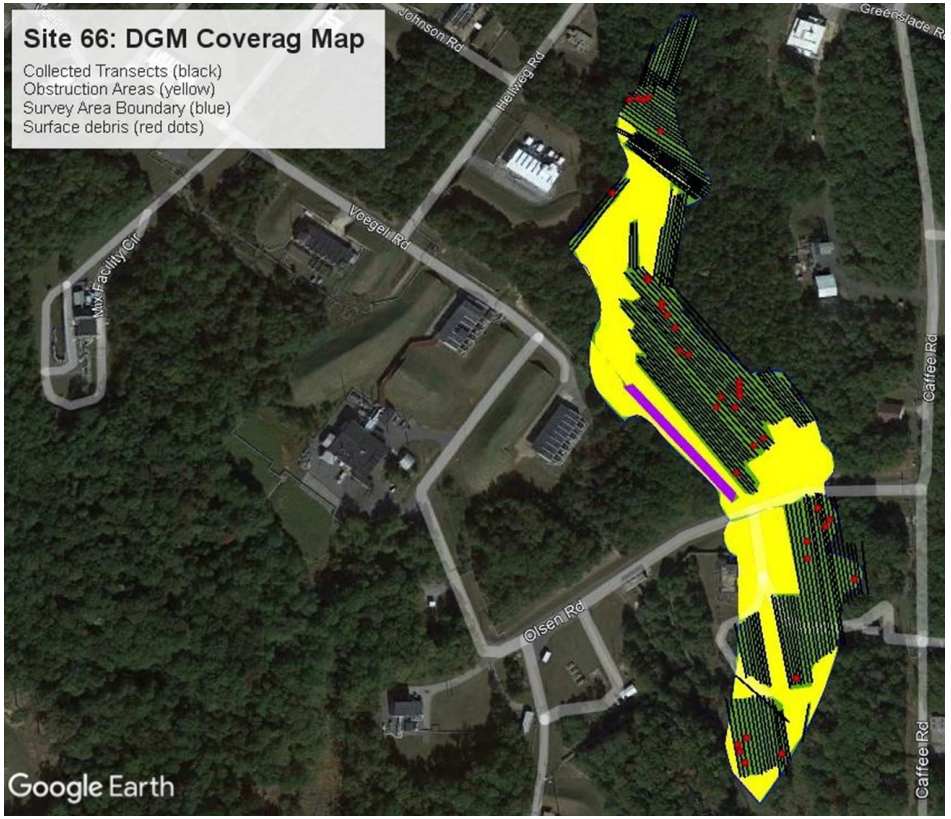
- Performed radiological scanning of the site surface on approximately 10 acres of the site (green area on figure); excluded wetland areas and potential asbestos locations



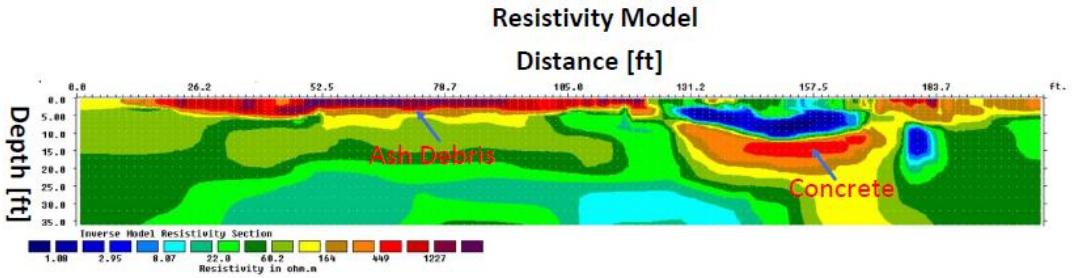
IR 66 Phase 3 RI: Field Work continued

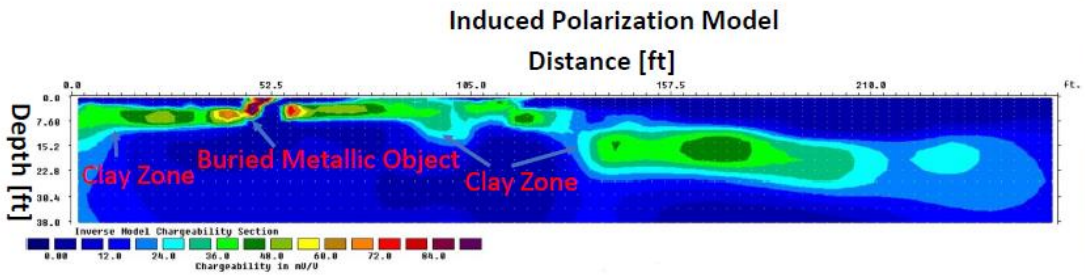
DGM Survey

- Use DGM data from Resistivity/Induced Polarization (IP) surveys to refine the vertical and lateral extents of the landfill and to improve the understanding of the volumes and types of wastes buried.
- Approximately 9 acres of resistivity/IP data was collected across the accessible areas of the site (black lines)
- Data gaps exist at obstruction areas (yellow) that include parking lots, building, wetlands, steep terrain, etc.



IR 66 Phase 3 RI: Preliminary DGM Results





Resistivity/IP Transect Locations (red)

Contacts and Questions

Points of Contact:

- **NAVFAC Washington:** Alex Scott/Cassandra Shoup

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

Questions ?

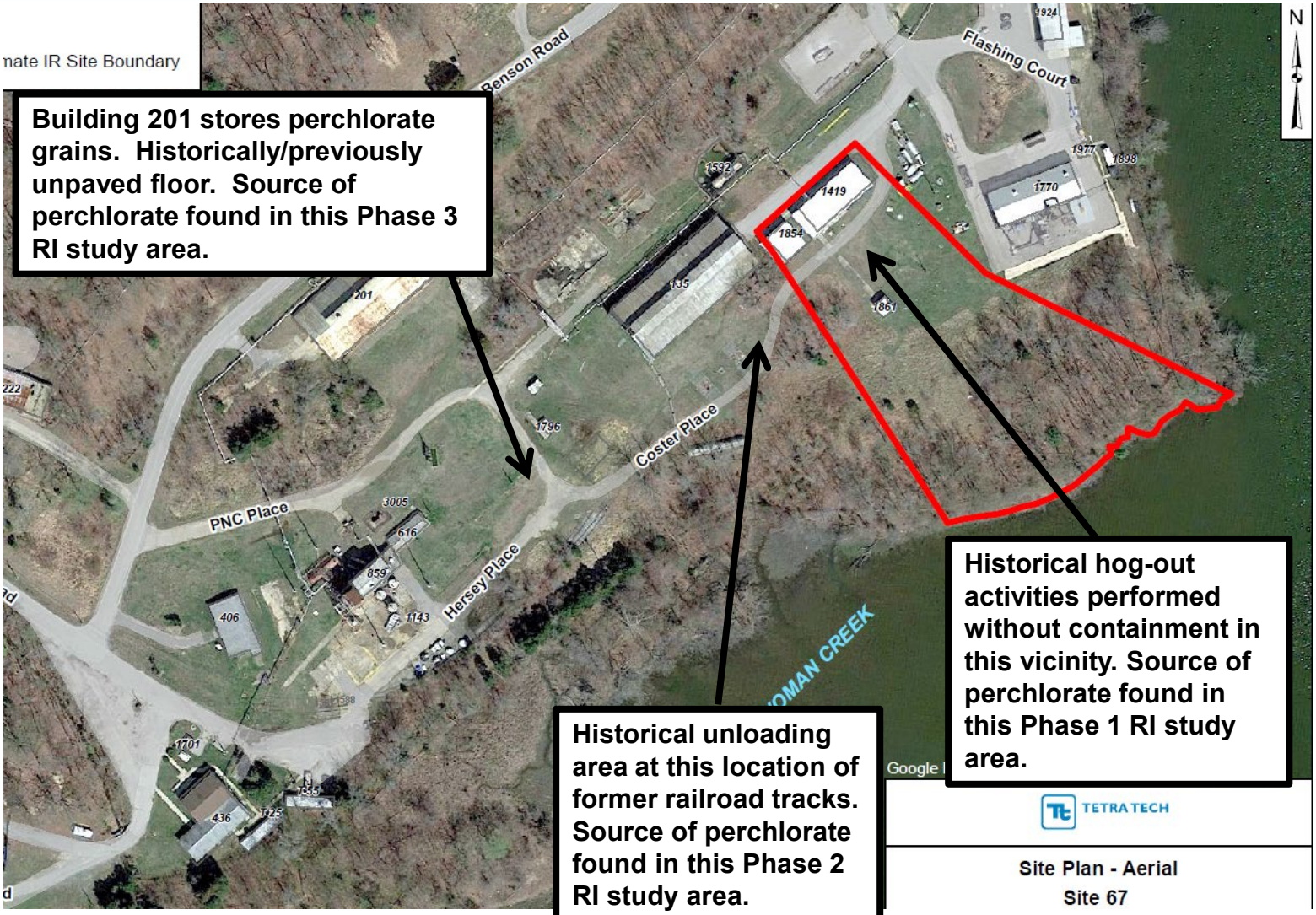
Site 67 Non-Time Critical Removal Action (NTCRA) Update

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

10/13/22

Site 67- Hog-Out Facility Location

Site Information



Site 67 NTCRA Overview

Removal Action Objectives (RAO) included:

- Reduce unacceptable risks to human and ecological receptors from exposure to chemicals of concern (COCs) in the Unloading Area soil.
- Reduce unacceptable risks to ecological receptors from exposure to zinc in surface soil and sediment.
- Reduce migration of zinc from upland soil to sediment in Mattawoman Creek.

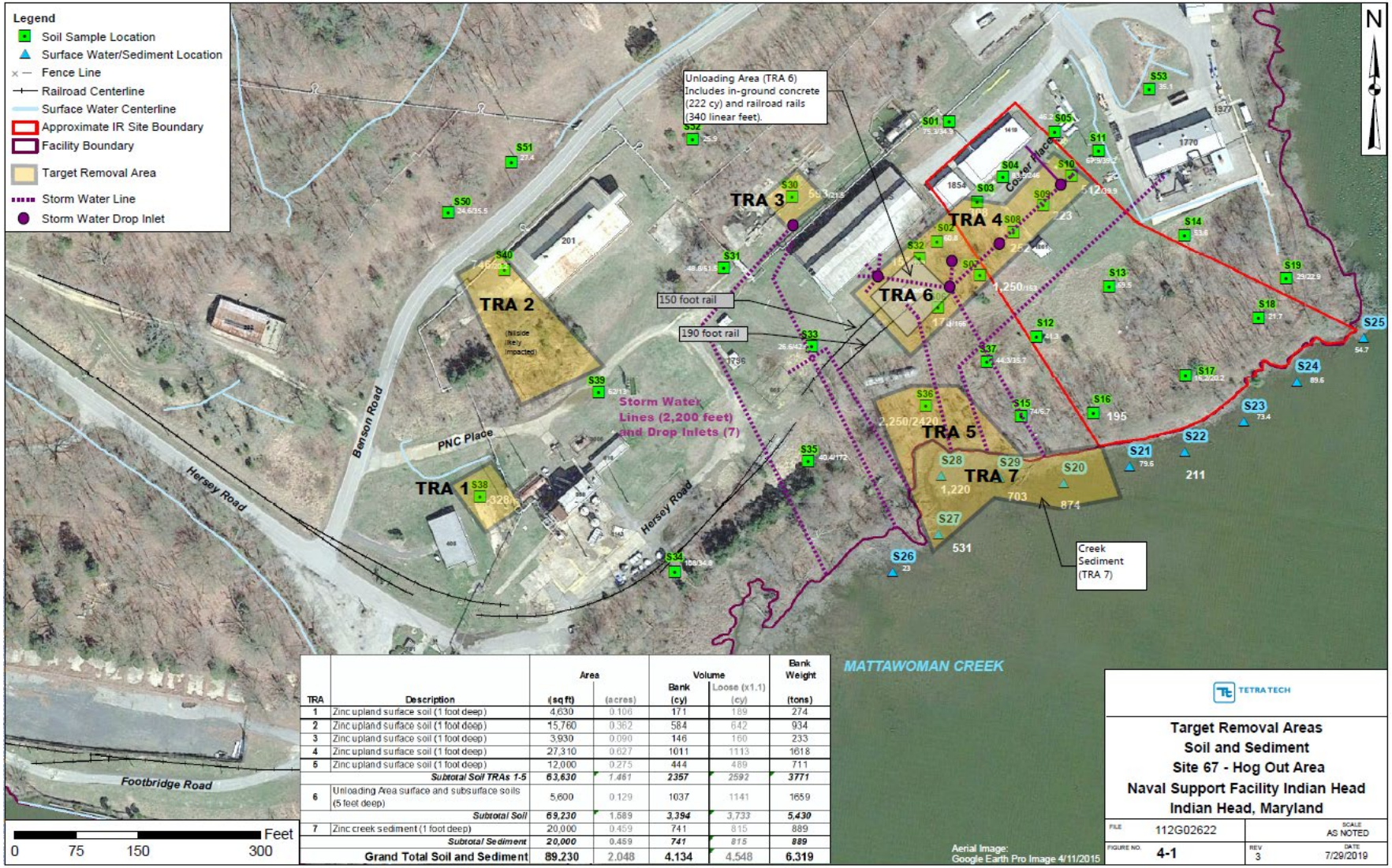
Selected remedy was excavation and off-site disposal for soil only.

NOTE: Groundwater to be addressed separately.

Site 67 NTCRA Progress

- Contractor mobilized to site in February 2021
- Stormwater infrastructure inspection completed via closed-circuit television (CCTV)
- Trees, shrubs, and other vegetation removed
- Property survey, pre-construction survey, and pre-excavation sampling completed
- Excavation completed for target removal areas (TRAs) 1-5
- Additional contamination found in TRA 6 & 7; excavation expanded via step-outs
- TRA 7 was mostly sediment removal within Mattawoman Creek; turbidity curtain used for sediment control

Site 67 Target Removal Areas



TRA	Description	Area (sq ft)	Area (acres)	Volume Bank (cy)	Volume Loose (x1.1) (cy)	Bank Weight (tons)
1	Zinc upland surface soil (1 foot deep)	4,630	0.106	171	189	274
2	Zinc upland surface soil (1 foot deep)	15,760	0.362	584	642	934
3	Zinc upland surface soil (1 foot deep)	3,930	0.090	146	160	233
4	Zinc upland surface soil (1 foot deep)	27,310	0.627	1011	1113	1618
5	Zinc upland surface soil (1 foot deep)	12,000	0.275	444	489	711
	Subtotal Soil TRAs 1-5	*63,630*	*1.461*	*2357*	*2592*	*3771*
6	Unloading Area surface and subsurface soils (5 feet deep)	5,600	0.129	1037	1141	1659
	Subtotal Soil	*69,230*	1.589	*3,394*	*3,733*	*5,430*
7	Zinc creek sediment (1 foot deep)	20,000	0.459	741	815	889
	Subtotal Sediment	*20,000*	0.459	*741*	*815*	*889*
	Grand Total Soil and Sediment	**89,230**	2.048	**4,134**	4,548	**6,319**

TETRA TECH

Target Removal Areas
Soil and Sediment
Site 67 - Hog Out Area
Naval Support Facility Indian Head
Indian Head, Maryland

FILE	112G02622	SCALE	AS NOTED
FIGURE NO.	4-1	REV	3
		DATE	7/29/2019

Aerial Image: Google Earth Pro Image 4/11/2015

Site 67 Area Photos

U.S. Navy

U.S. Navy

U.S. Navy

U.S. Navy

Site 67 Area Photos

U.S. Navy

U.S. Navy

U.S. Navy

U.S. Navy

Site 67 Area Photos

U.S. Navy

U.S. Navy

U.S. Navy

U.S. Navy

Site 67 Area Photos

U.S. Navy

Site 67 Current Status

- Placement of select fill and topsoil completed in excavated areas.
- Transportation & disposal (T&D) of on-site soils complete.
- Wetland restoration completed in September 2022.
- Stormwater repairs/pipe lining to be completed after contract modification.
- Confirmation samples revealed more widespread contamination that didn't meet cleanup goals (mostly arsenic and lead) in vicinity of TRA 6.
- Zinc remains a potential COC within TRA 7 and Mattawoman Creek.
- Pilot study is underway to address sediment and additional characterization is planned for soil and groundwater.

Site 67 Waste Totals

- Excavated material totals are shown below…

Waste Accumulation Table:

Stockpile	Date Created	Volume
Excavated Soil	3/29/21	Est. 6,998 cy
ACM Soil	5/25/21	58.87 tons (T&D complete 11/2/21)
Concrete #1	3/16/21	453.36 tons (T&D complete 8/2/21)
Concrete #2	8/11/21	79.65 tons (T&D complete 10/29/21)
Stumps	3/15/21	150 cy (T&D complete 7/8/21)
Metal (rebar, tracks, etc.)	3/16/21	Est. 55 cy
Creosote Timber (poles, rail ties, etc.)	3/30/21	Est. 18 cy
Total Soil, Concrete, Stump, Metal, & Timber Stockpiles		**est. 7,221 cy + 591.88 tons**

Site 67 NTCRA Update

Points of Contact:

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

Questions ?

IR SITE 68 BUILDING 259 (FORMERLY AOC 31) NON-TIME CRITICAL REMOVAL ACTION (NTCRA)

Presented By
Andrew Louder
Naval Facilities Engineering Systems Command (NAVFAC) Washington
10/13/22

IR 68 NTCRA: Location

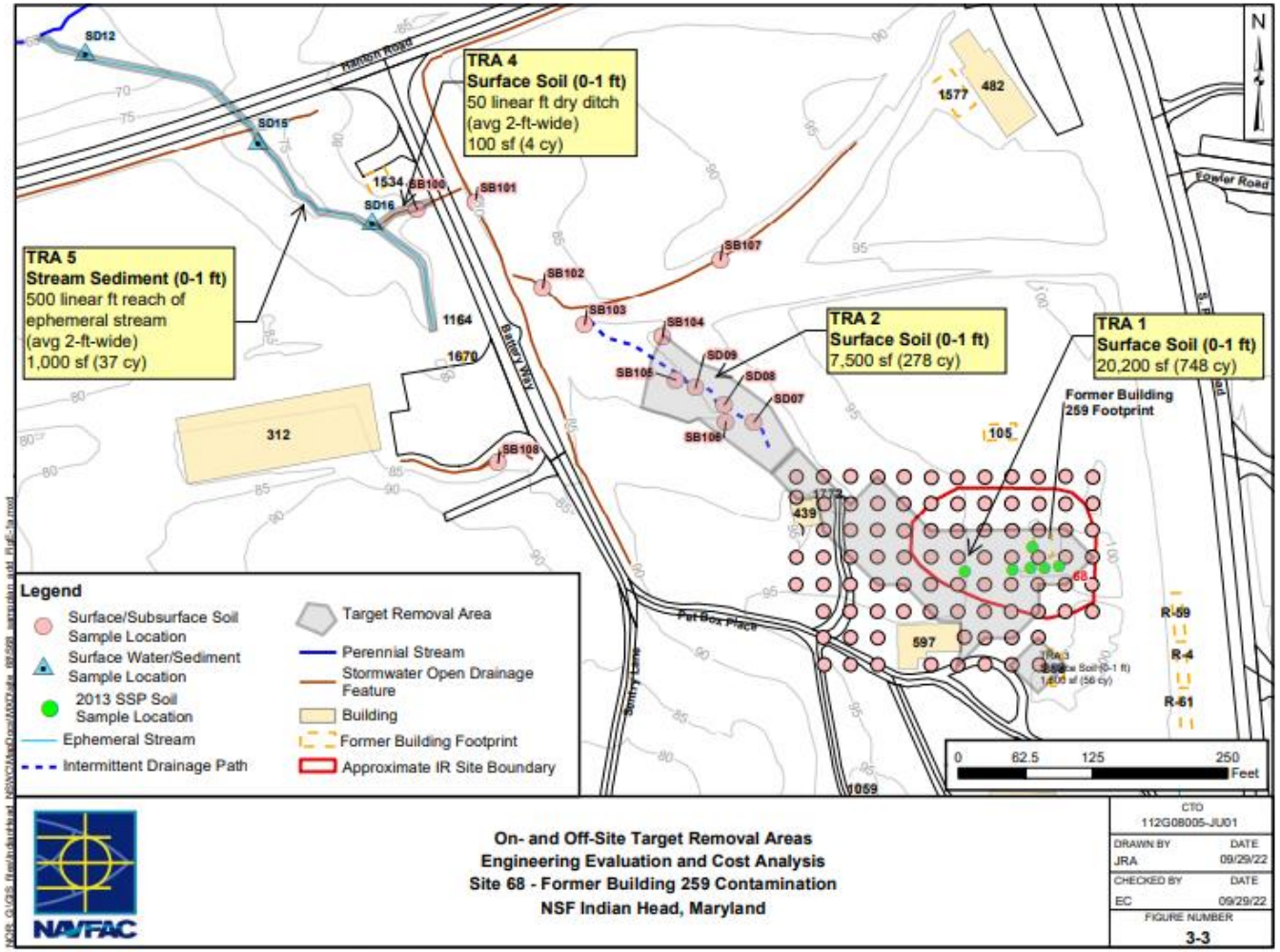
- Site 68 (old AOC 31)
  - “Detonator Production / Old Storehouse”
  - Former Building 259 (demolished)

- Note: Navy transitioned AOC 31 to IR Site 68 in order to authorize $$ for CERCLA response action

IR 68 NTCRA: Background/History

- Location:
  - Former Building 259, former concrete-lined cooling trench, and drainage vicinity
- Contamination:
  - Mercury and lead. (no explosives issues per Site Screening Investigation).
- From:
  - Detonator production outside of building and also Lead paint on former building. Lead azide was produced outside the building and cooled by water that ran through a trench. Building 259 was demolished, potentially leaving paint chip fragments.
- When:
  - Bldg 259 was an inert storehouse constructed in 1917. Detonator production timeframe during WW I.
- Current Use:
  - Demolished in 2011. None / no current or imminently planned usage of site area.

IR 68 NTCRA: Fieldwork



Contacts and Questions

Points of Contact:

- **NAVFAC Washington:** Joseph Rail

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

Questions ?

NSF INDIAN HEAD – PFAS AREAS OF CONCERN, PRELIMINARY ASSESSMENT (PA) UPDATE

Presented By
Alex Scott, Remedial Project Manager (RPM)
Naval Facilities Engineering Command (NAVFAC)
Washington

[10/13/2022]

Presentation Objectives

Objective:

- Summarize the findings and areas of concern identified in the Preliminary Assessment (PA) for polyfluoroalkyl substances (PFAS) conducted at NSF Indian Head.
- Future steps for evaluating the environmental impact of PFAS.

What is PFAS?

Polyfluoroalkyl Substances, known as PFAS for short, are a group of thousands of chemicals that persist in the environment.

- Their many formulations are widely used in numerous consumer, commercial, and industrial products for their unique properties.
- Because PFAS are widespread and commonly found in the blood of humans and animals as well as the water and soil at locations across the world, they are challenging to study and assess their potential human health and environmental risks.
- More information regarding PFAS according to the EPA can be found at: https://www.epa.gov/pfas/pfas-explained

PFAS PA Objectives

The PFAS PA for NSF Indian Head (NSFIH) has been drafted and reviewed, and is currently being finalized. The goals of this effort were to:

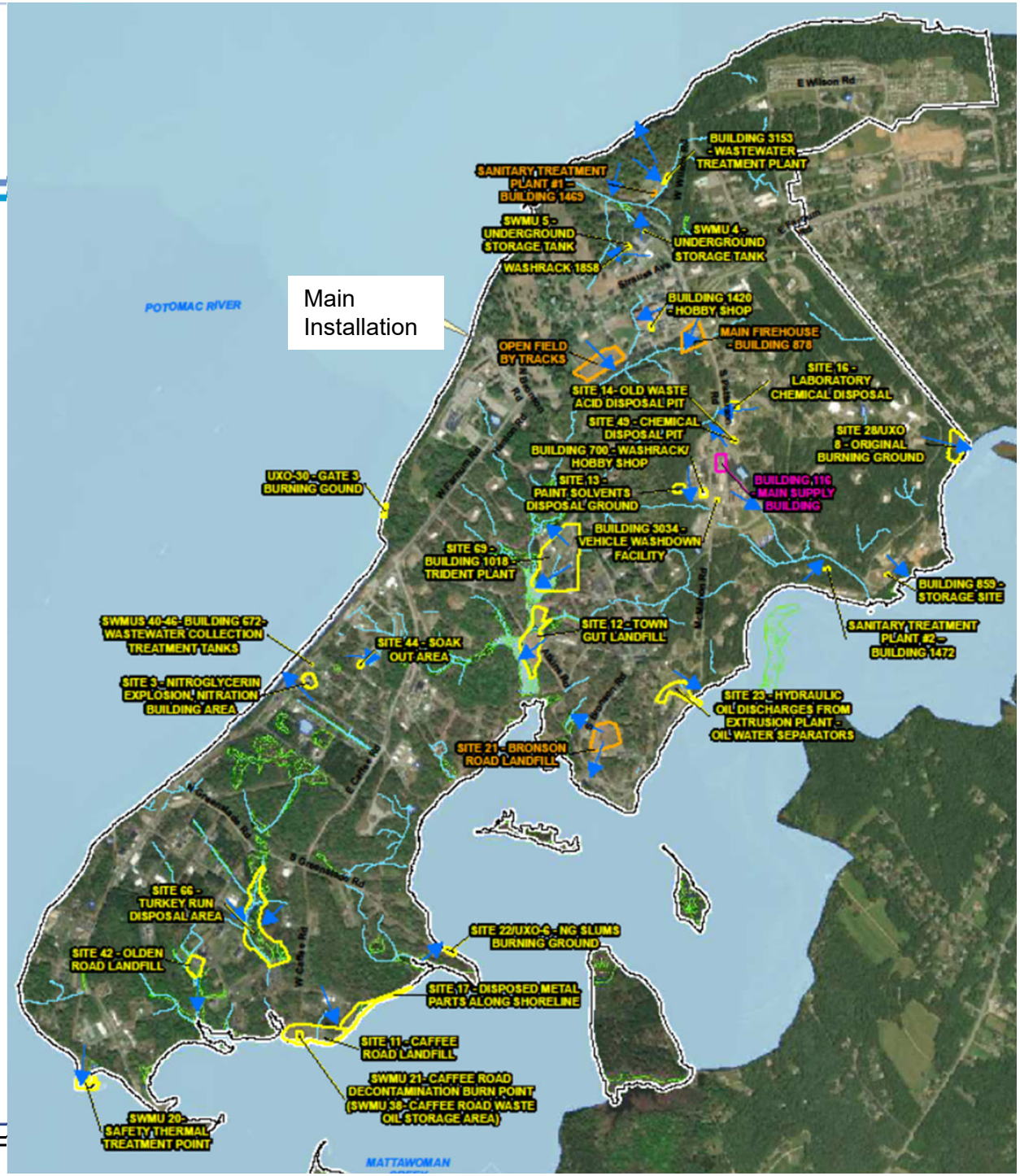
- Identify and catalog all potential or actual PFAS releases into the environment
- Eliminate from further consideration those areas where there is no evidence of PFAS release or suspected release and document the rationale for elimination
- Identify areas requiring further PFAS investigation

If applicable and within reason based on available information, the PA will identify which PFAS compounds may be present, how these compounds could migrate in the environment, and what receptors could be impacted by the PFAS. Gathering this information will guide the sampling and analysis approach of future site investigations (SI).

Draft PFAS PA Findings

Main Installation

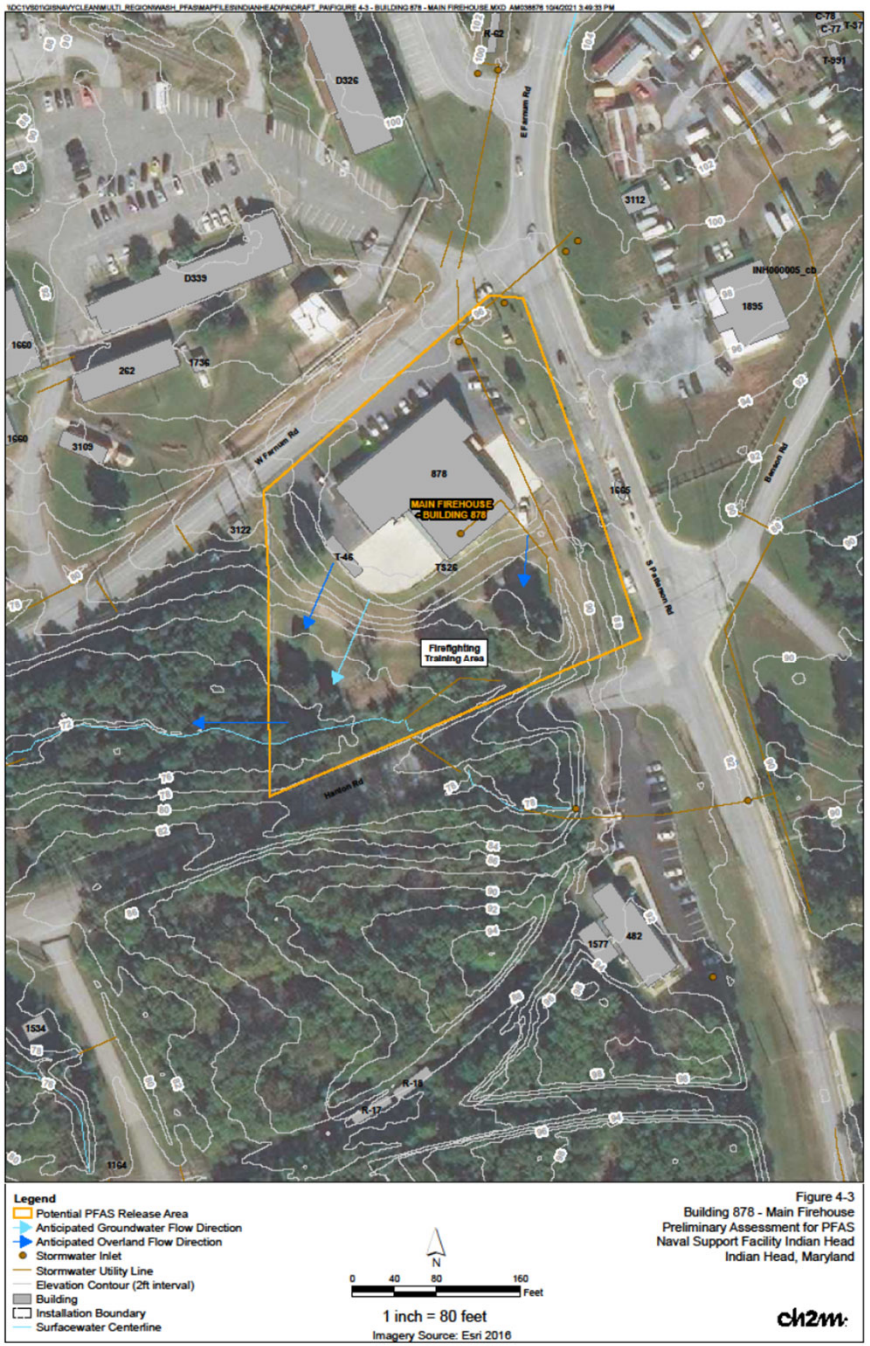
- A total of 30 areas were evaluated for the Main Installation in the Draft PA.
- A total of 25 were recommended for no further action at this time due to no documented releases of PFAS.
- A total of 5 areas were recommended for further investigation as a part of an SI.



Main Firehouse – Building 878

Main Firehouse – Building 878 is located in the northern portion of the Main Installation and houses the NSFIH Fire Department.

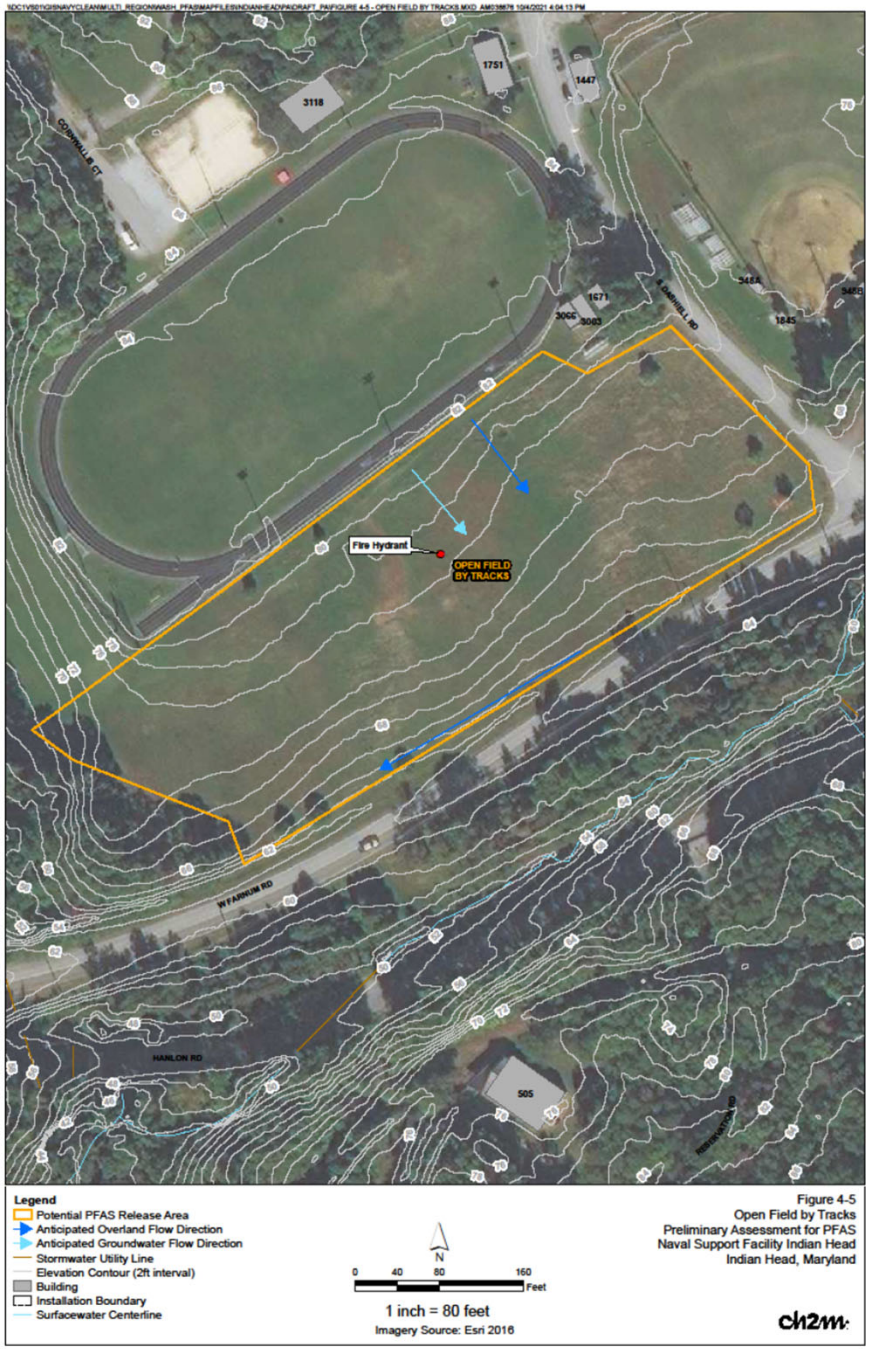
- Designated as a Potential PFAS Release Area in the Draft PA.
- All AFFF at the Main Installation was stored and handled at the Main Firehouse. The start date of this storage is not documented. No AFFF is currently stored at this location.
- Fire trucks are washed in a bay at the firehouse that discharges to the sanitary sewer.
- Interviews with former Navy personnel indicated that fire-fighting training historically occurred along the South Patterson Road and behind (to the southwest) of the Main Firehouse.
- The dates and types of firefighting training are unknown.



Open Field by Tracks

Open Field by Tracks is located in the north portion of the Main Installation.

- Designated as a Potential PFAS Release Area in the Draft PA.
- Interviews with former Navy personnel indicated that fire-fighting training historically occurred in the open field adjacent to the tracks.
- Training included spraying foam into the field.
- A fire hydrant is located in the middle of the field and likely used during training activities.
- The dates and types of firefighting training are unknown.



Sanitary Treatment Plant #1 – Building 1469

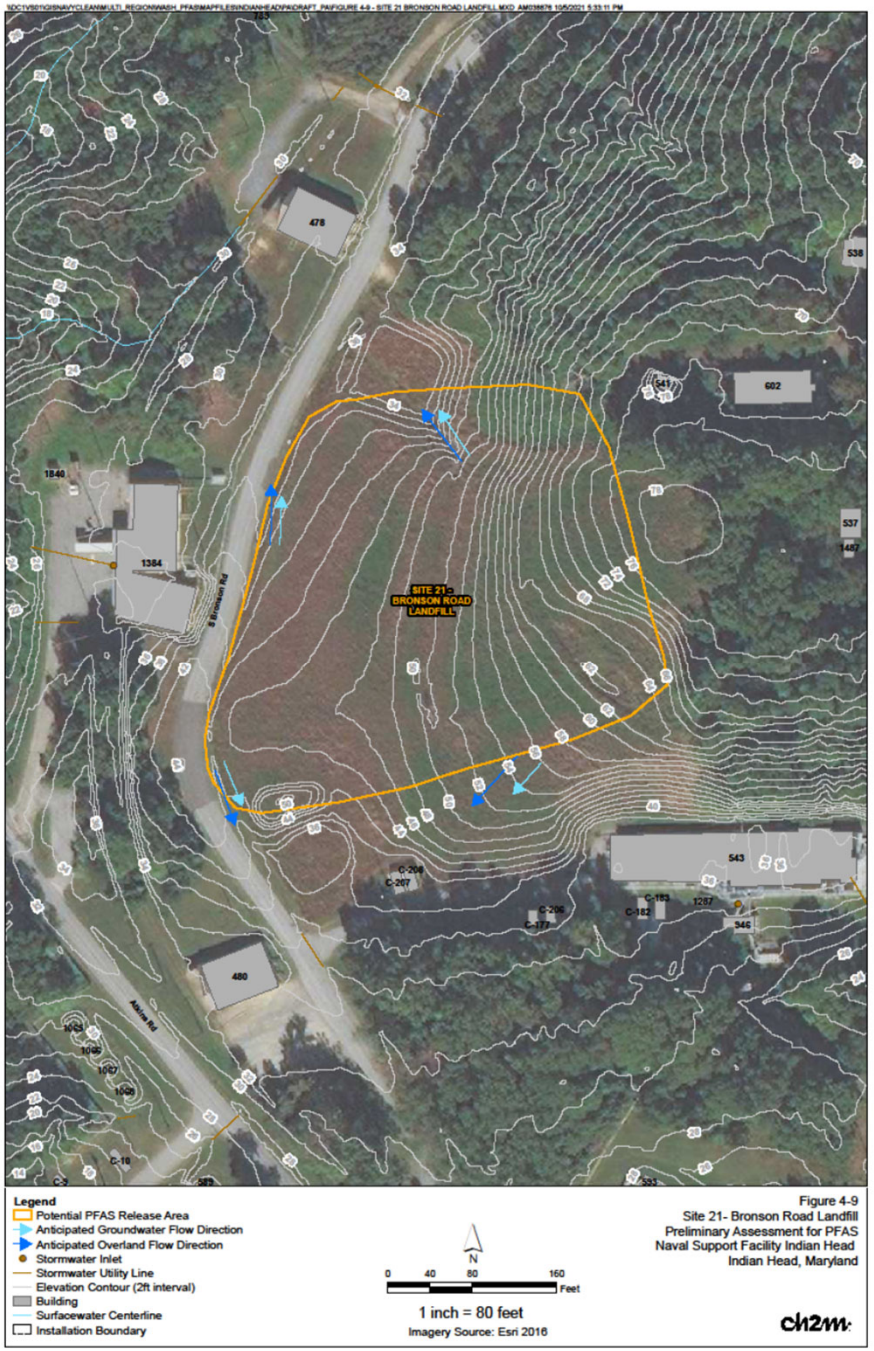
Sanitary Treatment Plant #1 is located in the northern portion of the Main Installation near the Old Navy Proving Ground.

- Designated as a Potential PFAS Release Area in the Draft PA.
- Plant #1 was expanded in the 1980s to take over primary sanitary sewage treatment for the Main Installation.
- Historically, sludge was dried in sludge-drying beds before being removed and deposited in dumpsters for disposal in an onsite landfill (Bronson Road Landfill).
- Sludge began being hauled offsite for disposal in 1990.
- There are potential releases of AFFF into the sanitary sewer system at the Main Firehouse during the washing of fire trucks.
- PFAS substances may have been present in sludge dried in the sludge-drying beds (demolished in 2010 and built over).

Site 21 – Bronson Road Landfill

Site 21 – Bronson Road Landfill is a 2-acre abandoned borrow pit located in the southeastern portion of the Main Installation.

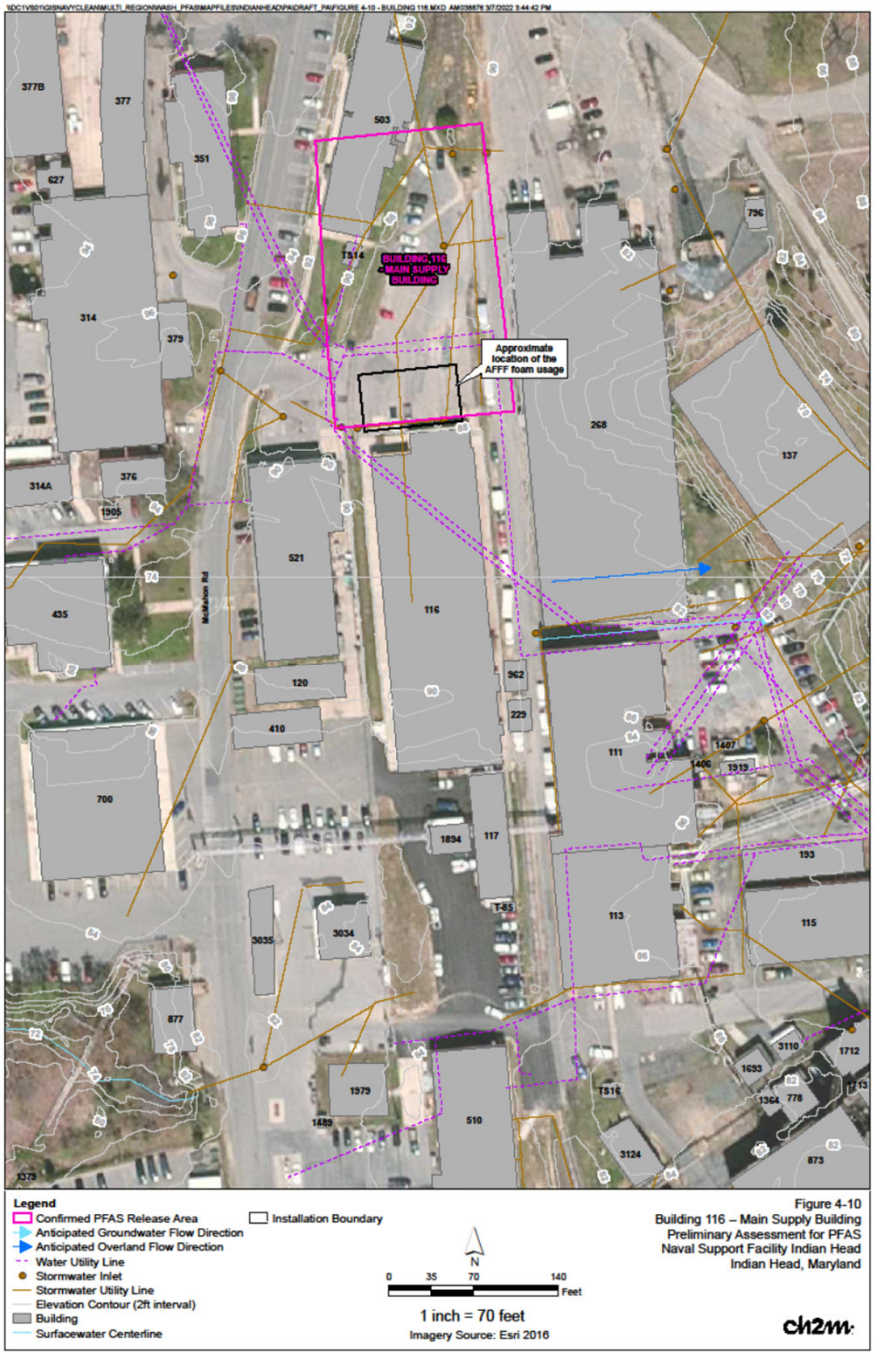
- Designated as a Potential PFAS Release Area in the Draft PA.
- The site was originally used as a gravel-mining pit, followed by a solid waste disposal area, receiving waste generated in the explosives manufacturing area.
- During operations the landfill accepted 150 cubic yards of sewage sludge generated at Plant #1 annually before ending the practice in 1981.
- The area was re-graded and a Remedial Action was completed in January 2013 (consisting of a soil cover, institutional controls, and groundwater monitoring).
- PFAS-containing substances might be present in the sewage sludge disposed in the landfill.



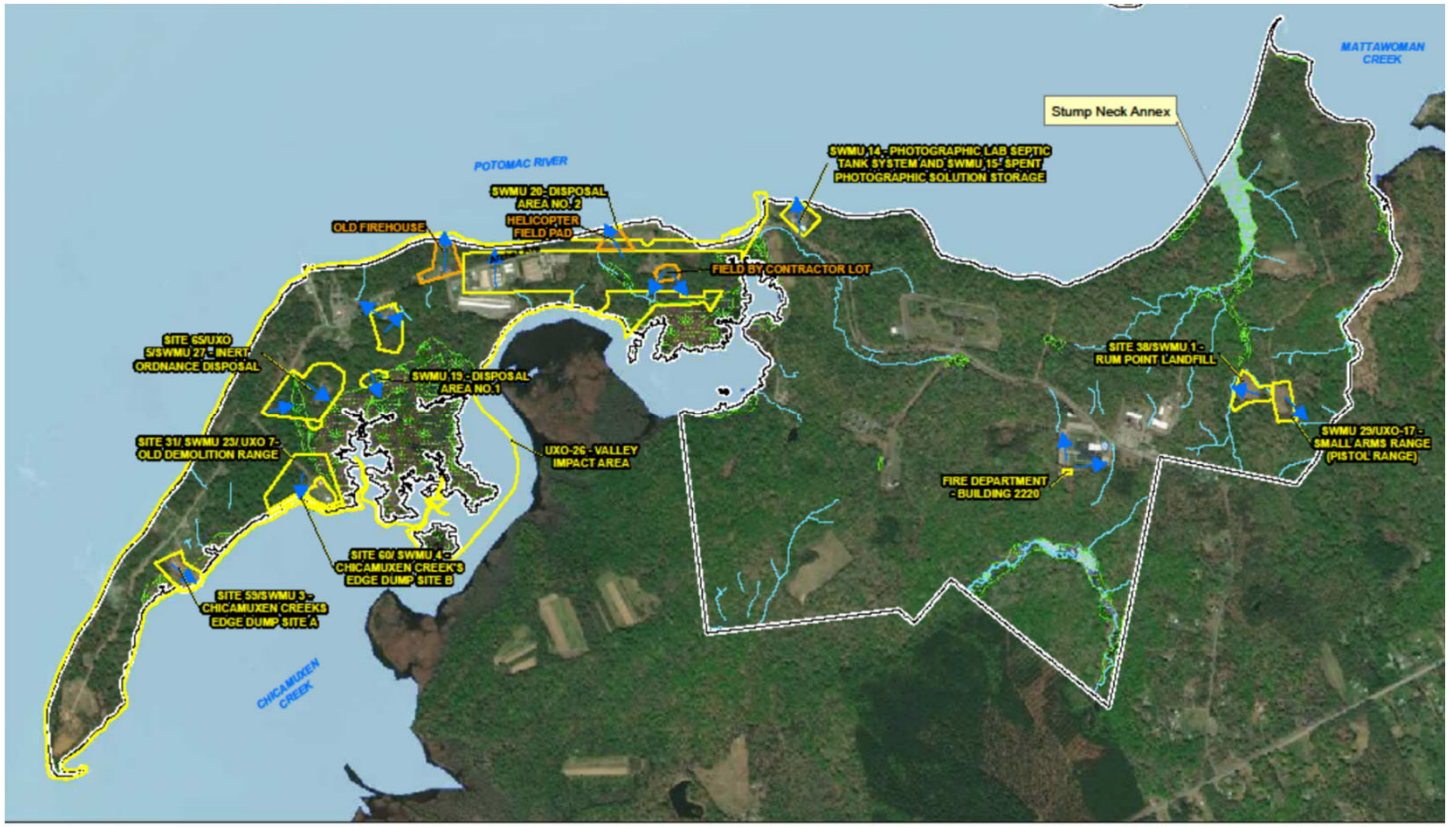
Building 116 – Main Supply Building

Building 116 – Main Supply Building is located in the northern portion of the Main Installation.

- Designated as a Confirmed PFAS Release Area in the Draft PA.
- On November 13, 2013 approximately 50 gallons of AFFF were used during an emergency response at Building 116.
- At the loading dock located at the northern end of Building 116, a truck containing fifty 55-gal drums of diethyl ether had several crushed containers that appeared to be venting.
- AFFF was used to blanket the inside of the truck.
- Containment around all storm drains in the area reduced runoff from leaving the area. Cleanup operations continued for an additional day.



Draft PFAS PA Findings – Stump Neck Annex

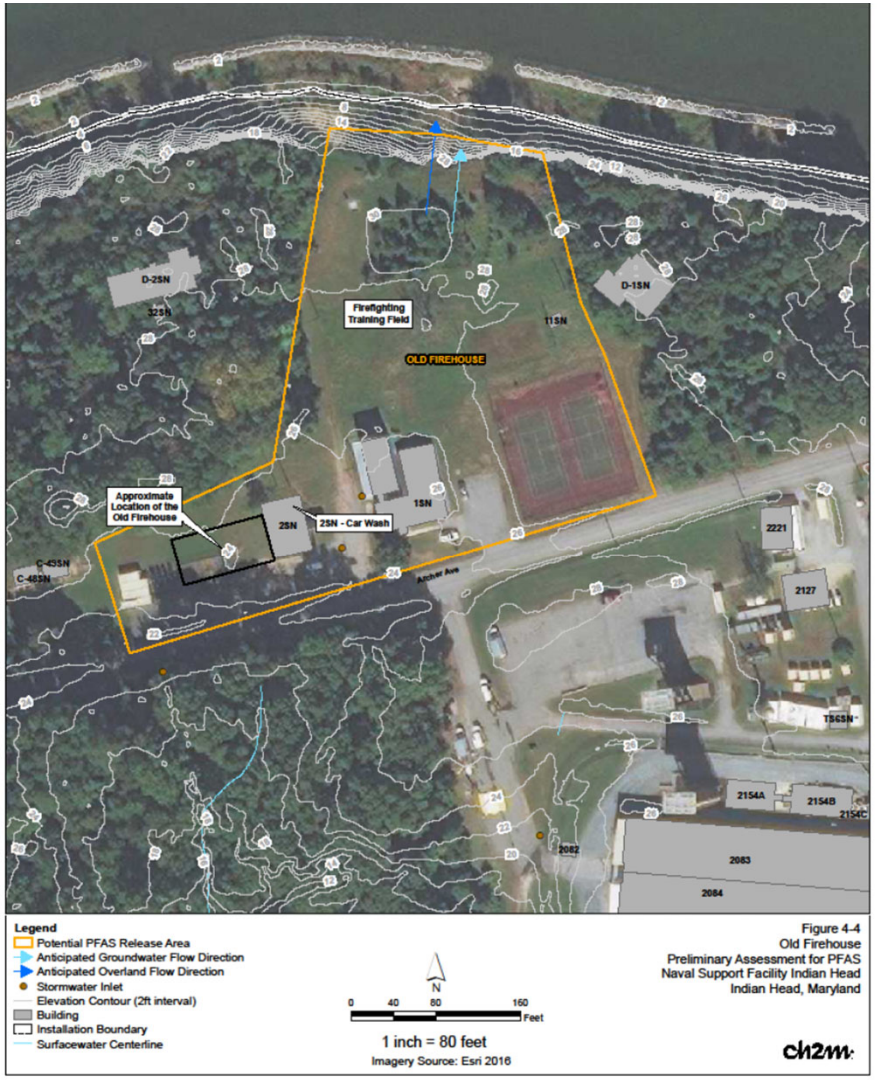


- A total of 15 areas were evaluated for Stump Neck Annex in the Draft PA.
- A total of 12 were recommended for no further action at this time due to no documented releases of PFAS.
- A total of 3 areas were recommended for further investigation as a part of an SI.

Old Firehouse

The Old Firehouse is located in the northwestern portion of Stump Neck Annex.

- Designated as a Potential PFAS Release Area in the Draft PA.
- AFFF was stored in the Old Firehouse.
- Interviews with former Navy personnel indicated that fire-fighting training historically occurred at the Old Firehouse training field.
- The training field by the Old Firehouse is a flat, grassy field extending behind (north) Building 15N until reaching the shoreline.
- A building was located in the training field that would be set on fire and extinguished during training.
- The dates and types of firefighting training are unknown.

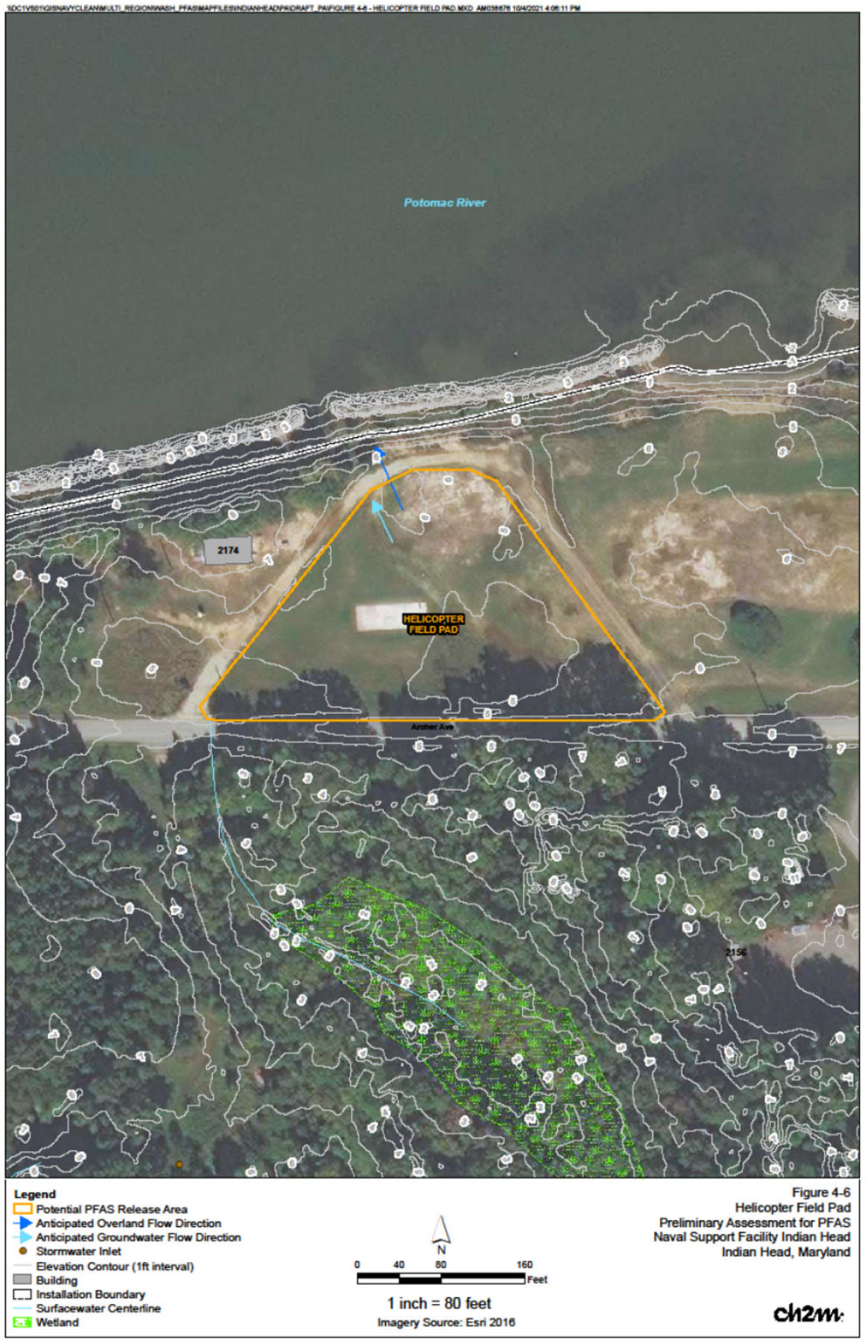


- The Car Wash – Building 2SN is located next to the footprint of the Old Firehouse, consisting of an open concrete pad - was reportedly used to wash fire trucks during the use of the Old Firehouse, draining to the ground surface.

Helicopter Field Pad

The Helicopter Field Pad is located in the north portion of Stump Neck Annex.

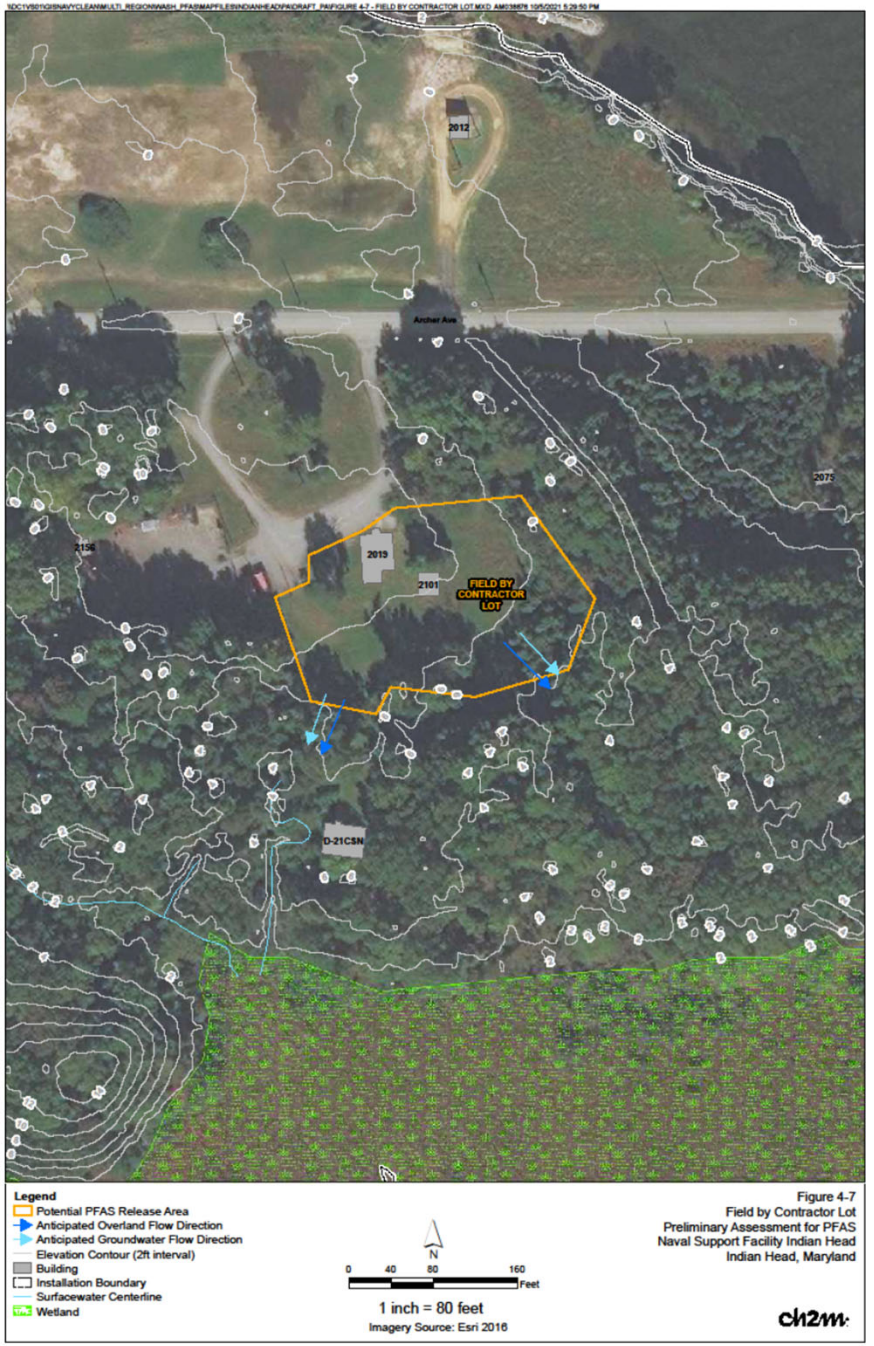
- Designated as a Potential PFAS Release Area in the Draft PA.
- The Helicopter Field Pad is within the boundaries of UXOs 15 and 26, and consists of a triangular, flat, grassy area with a concrete helipad.
- Interviews with former Navy personnel indicated that fire-fighting training historically occurred in the Helicopter Field Pad.
- The dates and types of firefighting training are unknown.



Field by Contractor Lot

The Field by Contractor Lot is located in the north portion of Stump Neck Annex.

- Designated as a Potential PFAS Release Area in the Draft PA.
- Interviews with former Navy personnel indicated that fire-fighting training historically occurred in the Field by Contractor Lot.
- The dates and types of firefighting training are unknown.



Next Step – PFAS SI Objectives

For potential or confirmed PFAS release areas that were identified during the PA will proceed to an SI:

- Determine whether PFAS are present in soil and/or groundwater at concentrations warranting further CERCLA investigation
- Refine the understanding of site geology and hydrogeology

Anticipated Timeline for the PA/SI

- Final PA anticipated – January 2023
- SI Fieldwork – January to February 2023
- *Preliminary Draft Site Investigation for PFAS, NSF Indian Head* – anticipated for initial Navy review – June 2023
- Draft PFAS SI to regulators for review anticipated – August 2023
- Final SI anticipated - September 2023

All finalized CERCLA process documents are available for the public to view on Navy's Environmental Restoration website for NSF Indian Head. Please visit:

http://go.usa.gov/DyQF

Contacts and Questions

Points of Contact:

- **NAVFAC Washington Remedial Project Manager:**
  - Cassie Shoup, email: cassandra.shoup@navy.mil
  - Alex Scott, email: alex.e.scott5.civ@us.navy.mil
- **Indian Head PM:** Andrew Louder, email: andrew.r.louder.civ@us.navy.mil

Questions ?

STUMP NECK UXO 26 VALLEY IMPACT AREA REMEDIAL INVESTIGATION UPDATE

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

10/13/22

Site Characterization Activities

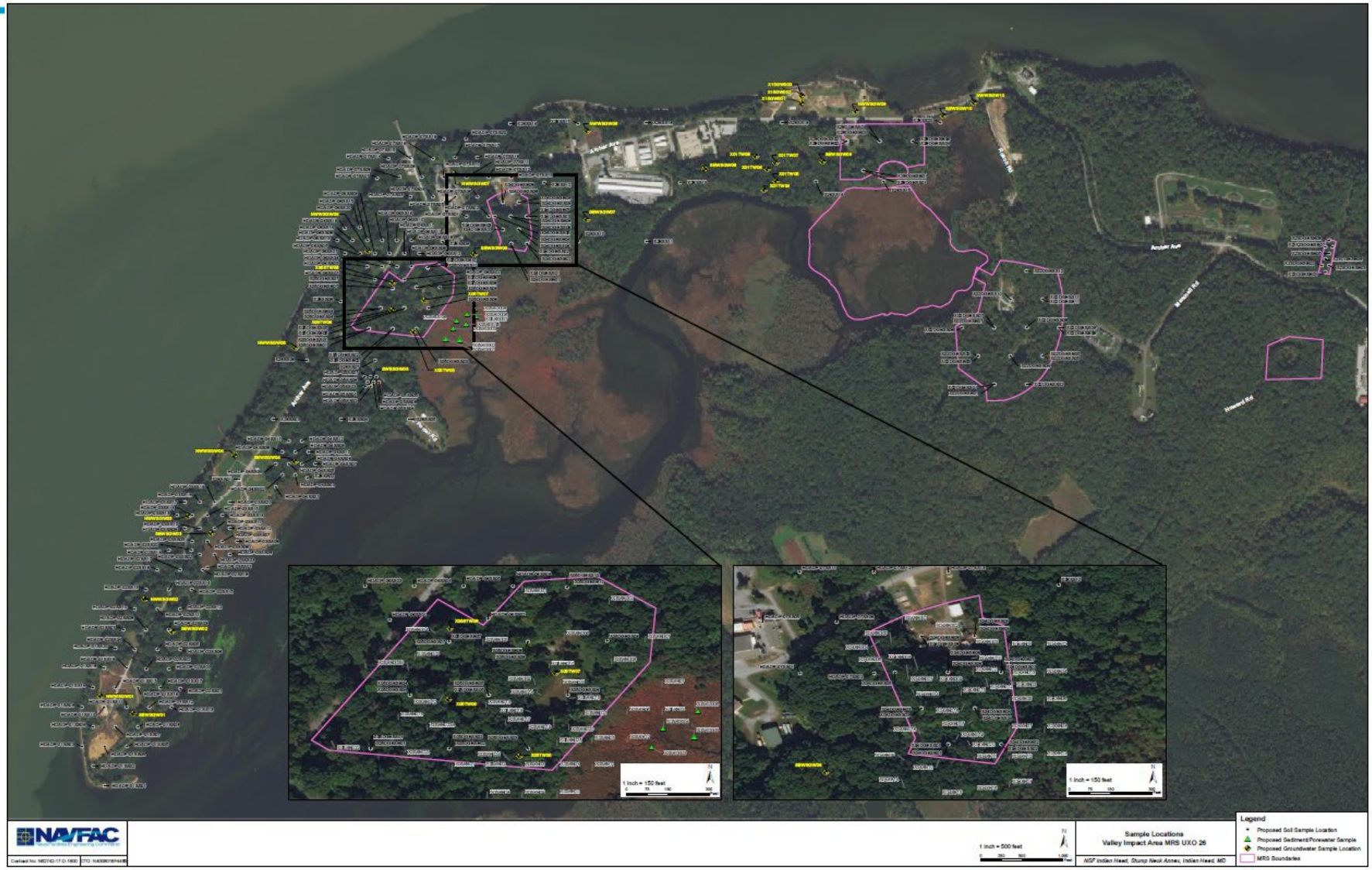
Munitions & Explosives of Concern (MEC): 22 Oct 2020-19 Jan 2021

- Geophysics Investigation
  - 36 transects covering 6,622 linear meters
  - 21 50'x50' grids
- Intrusive Investigation
  - 3,340 pounds MDAS (material documented as safe)
  - 51 DMM (discarded military munitions)

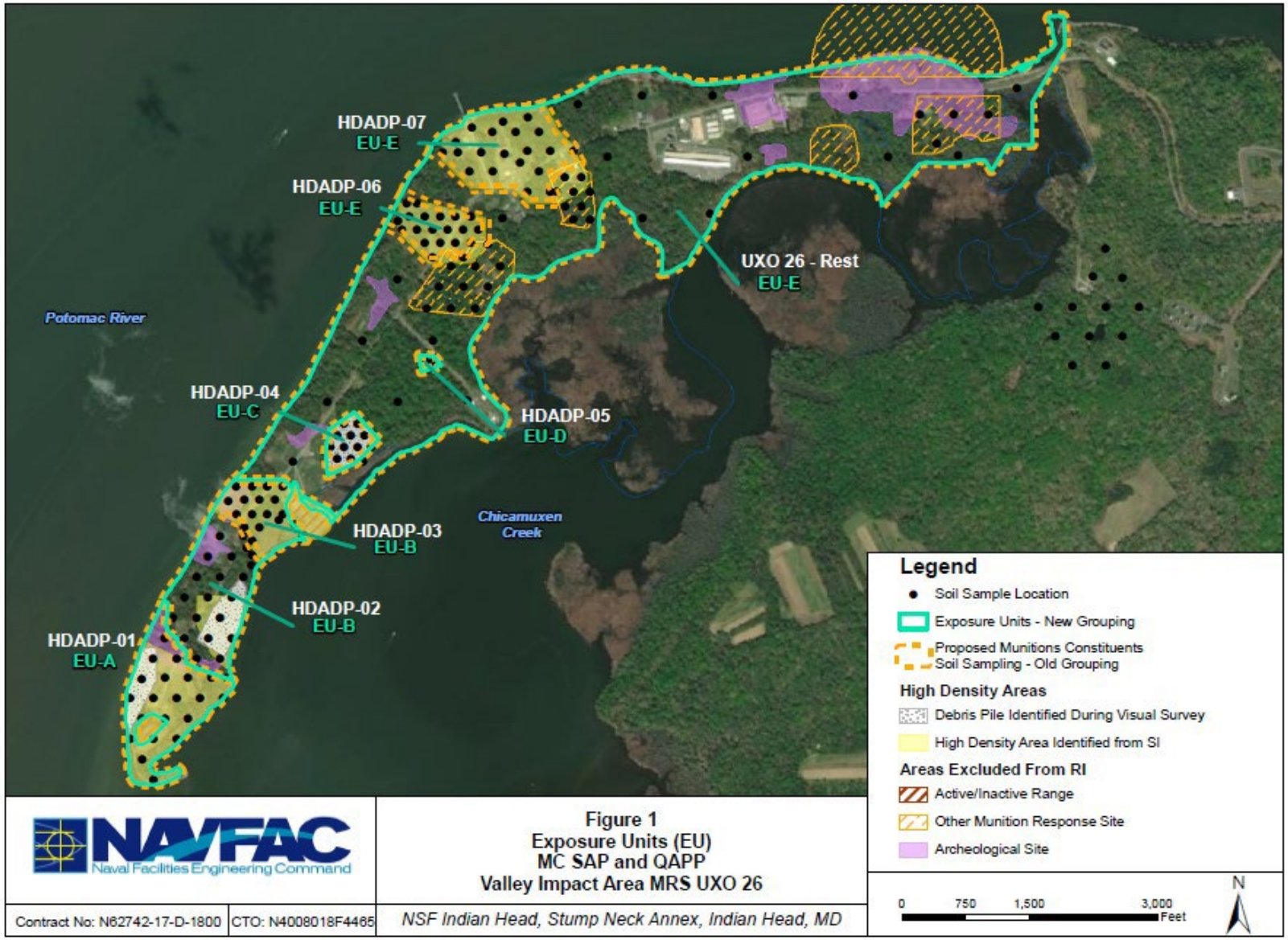
Munitions Constituents (MC) Investigation: 26 Oct 2021 – 9 Dec 2021

- Soil sampling (surface & subsurface): 366 locations
- Sediment & Pore Water: 16 samples
- Groundwater sampling: 29 new wells plus 3 existing wells

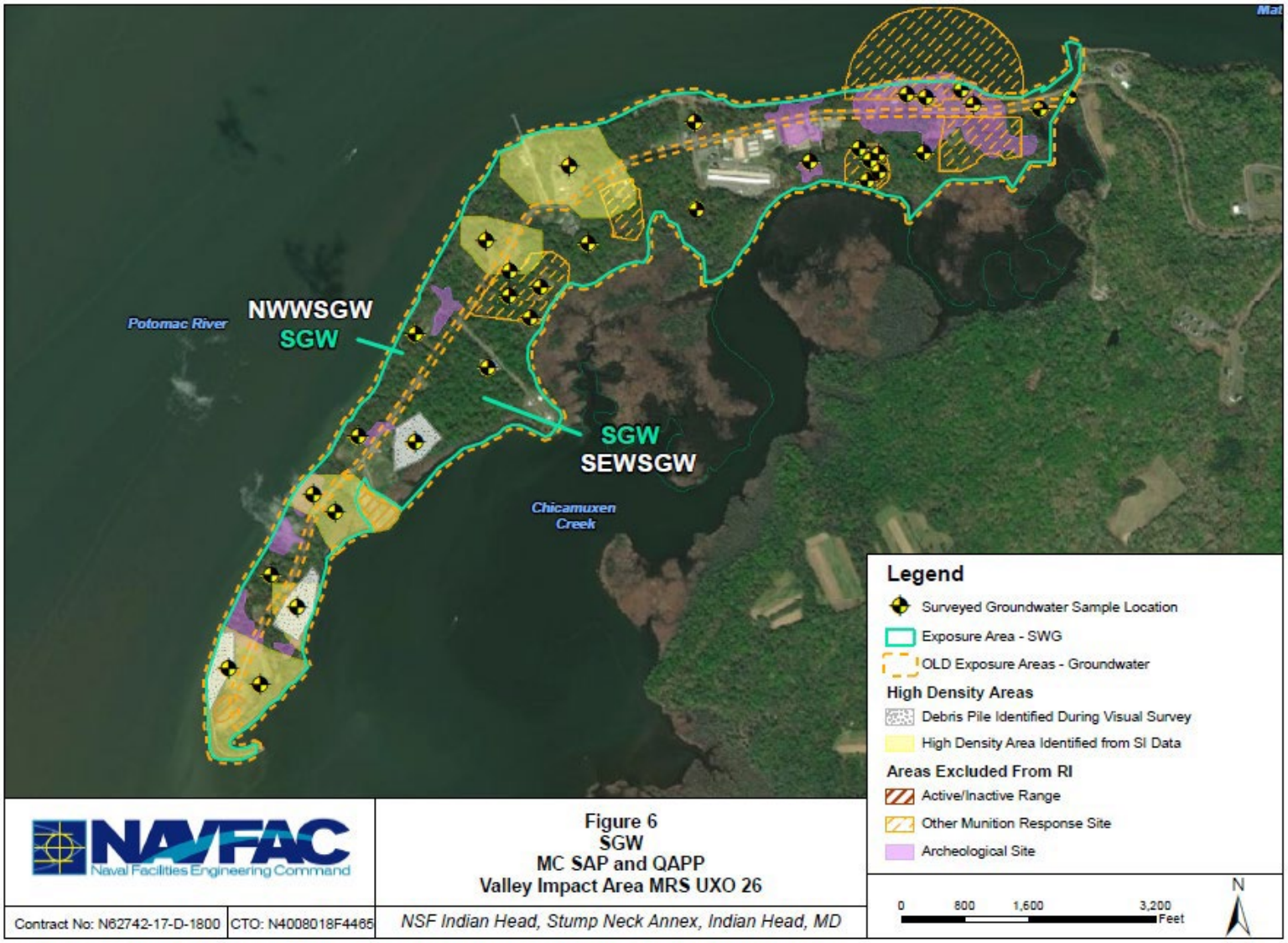
MC Sampling Locations



Exposure Unit Determination: Soil



Exposure Unit Determination: Groundwater



Human Health Risk Assessment

- Utilized final HHRA methodology from 9-Site RI Report and UXO 26 UFP-QAPP (Work Plan)
- Evaluated surface soil and total soil exposure media at five soil exposure units (EUs) and one sitewide groundwater (SWG) EU
- Risk based screening using May 2022 soil and tap water RSLs and VISLs
- Risk based screening results identified the following constituents of potential concern (COPCs):
  - 5 explosives
  - 13 metals (total and dissolved phase)
- Following HHRA risk calculations:
  - Conduct a line of evidence review which includes background conditions (i.e. BTV screen and hypothesis testing)
  - Geochemical evaluation to define HHRA site-related constituents on concern (COCs)

Human receptors evaluated:

- Current/future on-site Navy personnel
- Current/future on-site visitor
- Current/future on-site recreational user
- Current/future on-site trespasser
- Current/future on-site utility worker
- Future on-site construction worker
- Future on-site hypothetical resident

SLERA (Screening Level Ecological Risk Assessment)

- Approach consistent with 9-site RI ecological risk assessment; SLERA and Step 3a refinement
- Evaluating surface soil and total soil exposure media at soil EUs and SWG
- Comparisons to ecological screening values (ESVs) based on direct contact and wildlife exposure pathways
- Food web modeling conducted when concentrations exceed wildlife ESVs:
  - Northern bobwhite quail, American robin, red-shouldered hawk, red-tailed hawk
  - Meadow vole, short-tailed shrew, red fox
- Background conditions (BTVs, hypothesis testing) and geochemical evaluation will be considered in Step 3a refinement of constituents of potential ecological concern (COPECs) after screening and food web modeling

Overview/Findings of Geochemical Correlation Analysis

- **Objective: Differentiate pre-existing/naturally-occurring from impacted**
- **Basic premise: Consistent relation with 1 or more reference elements (aluminum, iron, or manganese) indicates background**
  - **Moderate to strong correlations were found in soil**
  - **Virtually no correlations were found in groundwater**

- **Evaluation of sampling data is underway and a report is expected in late 2022.**

Contacts and Questions

Points of Contact:

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

Questions ?