



NOR-03098

September 8, 2023

Ms. Kristin Granzen
Project Manager, Remedial Bureau D, Section B
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, New York 12233-7015

Reference: CLEAN Contract No. N6247016D9008
Contract Task Order WE13

Subject: Final CERCLA Letter Work Plan
Phase II Data Gap – Operable Unit (OU) 2 Groundwater Program
Naval Weapons Industrial Reserve Plant (NWIRP) Bethpage, New York

Dear Ms. Granzen:

On behalf of the Department of the Navy, Tetra Tech is submitting the *Final CERCLA Letter Work Plan, Phase II Data Gap - OU2 Groundwater Program, NWIRP Bethpage* to the New York State Department of Environmental Conservation (NYSDEC) for its records.

If you have any questions, please contact Mr. Scott Sokolowski, NAVFAC MIDLANT, at scott.c.sokolowski.civ@us.navy.mil or (757) 341-2011.

Sincerely,

A handwritten signature in black ink, appearing to read 'Ernie Wu'.

Ernie Wu
Project Manager

Enclosures: Final CERCLA Letter Work Plan
Phase II Data Gap – Operable Unit (OU) 2 Groundwater Program
Naval Weapons Industrial Reserve Plant (NWIRP) Bethpage, New York

Distribution:
NYSDEC, Jason Pelton
NAVFAC MIDLANT, Scott Sokolowski
Tetra Tech, David Brayack
Tetra Tech, Rick Moore
Project File

**CERCLA LETTER WORK PLAN
PHASE II DATA GAP – OU2 GROUNDWATER PROGRAM
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
BETHPAGE, NEW YORK
SEPTEMBER 2023**

1.0 INTRODUCTION

The Department of Navy (Navy) is conducting an investigation to support the planned and ongoing remediation of the Site 1 Operable Unit (OU) 2 groundwater volatile organic compound (VOC) plume at the former Naval Weapons Industrial Reserve Plant (NWIRP) Bethpage (Figure 1). This investigation addresses data gaps identified in the vicinity of Navy groundwater recovery wells associated with the Phase I (RW4), Phase II (RW5A/B, RW6A/B, and RW7A/B), and Phase III (RW8, RW9, and RW10A [planned]) groundwater treatment systems (Figure 2). A vertical profile boring (VPB) and monitoring well(s) will be installed at each identified drilling location. The VPBs will provide data to support installation of monitoring well(s). Information collected from the VPBs and monitoring wells will also be incorporated into the Navy's groundwater flow model. Drilling of the VPBs and installation of the monitoring wells described in this work plan will follow the general procedures described in the *Final December 2018 On-Property Letter Work Plan, Vertical Profile Boring and Monitoring Well Installation Program* (Tetra Tech, 2018a).

The Navy undertakes and documents its environmental remedial activities with respect to releases/suspected releases from the former NWIRP through Navy Work Plans. These documents outline technical requirements for conducting these activities and include provisions to protect health and safety and to minimize impact to the local community. These provisions include restricting impacts to noise, dust, work hours, and site maintenance (e.g., cleanliness).

This work plan is being prepared by Tetra Tech under the Naval Facilities Engineering Command Mid-Atlantic Comprehensive Long-Term Environmental Action Navy Contract (Number N6247016D9008; Task Order WE13). This document is provided for review and comment in accordance with CERCLA requirements for notice of environmental restoration activities. The Department of Navy will address reviewer's comments prior to finalization of the document.

2.0 SCOPE AND OBJECTIVE

The VPB and monitoring well outlined in the Phase II Data Gap Investigation will provide data to support the Navy's ongoing and planned remediation of the OU2 groundwater VOC plume. The drilling of VPBs and groundwater monitoring wells will be conducted using mud rotary drilling techniques. The VPBs will provide in situ data through visual logging of lithology, down hole geophysical logging, and VOC data via collection and laboratory analysis of groundwater grab samples.

Evaluation of VPB data and well construction data from adjacent Navy recovery wells will be used to select monitoring well screen intervals for wells planned at the associated VPB location. The groundwater wells to be installed will be used to measure performance of the Phase I, II, and III groundwater treatment systems through capture zone analysis and/or evaluation of chemical data over time. In addition, data from the VPBs and monitoring wells will be incorporated into the Navy's groundwater model to improve understanding of groundwater flow and plume migration.

3.0 PROTECTION OF THE COMMUNITY

Each drilling location will be maintained in a manner to protect the health and safety of the surrounding community. This protection will be achieved through implementation of best operational practices and controls applicable to drilling activities in residential areas. This section provides a summary of these practices and controls.

3.1 Notification of Drilling Activities

Prior to mobilization of equipment, drilling notifications will be distributed to residents located near the drilling sites to inform the residents of the Navy's intent and plans. Notifications will be hand-delivered a minimum of one week prior to mobilization to residents in the vicinity of a drill site. An example notification letter is provided in Attachment 1. Tailored letters are to be provided to residents at those addresses where the drill rig will be located. The New York State Department of Environmental Conservation (NYSDEC) will be notified at least 48-hours prior to the distribution of residential drilling notifications. The local municipality where the drilling will occur will also be notified prior to distribution of residential drilling notifications.

3.2 Drilling Controls

The drilling of VPBs and monitoring wells will be conducted using mud rotary drilling technique. General work hours for active operation of the drill rig will typically be weekdays from 8:00 am – 4:30 pm. The work site will be maintained to ensure cleanliness both inside and outside of the drill site. Trash will be maintained in an acceptable receptacle and be removed on a regular basis from the site as to not allow for excessive accumulation. The Navy's contractor will provide a field operations manager to visit the site and inspect for cleanliness and safety.

The drilling of VPBs and installation of monitoring wells typically occurs in the narrow grass strip between the sidewalk and roadway to minimize impacts to residents and traffic. In the event monitoring wells are installed, the final construction results in a non-obtrusive metal cover (secured) placed flush with ground surface, thus minimizing potential trip hazard.

Although work is not routinely conducted on weekends or holidays, there may be instances where work will be required outside of the general work hours. For example,

over a weekend or holiday, an active borehole may require inspection or the addition of drilling mud to ensure the integrity of the hole. Site workers will minimize their time at the drill site during non-routine work hour visits.

3.3 Site Controls

A security fence equipped with a lockable gate will be erected around each drill site to control access. The drill rig, equipment and materials, and waste receptacle will be contained within the fenced area. The gate will be secured with a lock at the end of each workday. As necessary on a site-specific basis, a sound barrier may be deployed to mitigate excessive noise from the drill site. Where applicable, pedestrians are alerted to closed sidewalks and crossing using signage as shown in the traffic control figures (Attachment 2).

3.4 Traffic Control

The drill rig and fenced work area occupy a portion of a street and sidewalk for the duration of VPB drilling and monitoring well installation. Traffic is alerted to the obstruction using signs placed in the roadway at a distance in both directions from the work site. The beginning and end of each work area is identified with signage.

Each traffic control design is tailored to each drill site to manage traffic flow. Figures presenting the traffic management and control for each drilling location addressed in this work plan are provided in Attachment 2.

3.5 Monitoring for Airborne Matter

Excessive airborne matter and VOCs are not expected to be generated during drilling of VPBs and construction of groundwater monitoring wells; however, to ensure safety to workers and the surrounding community, air monitoring will be conducted during these operations. The Navy's plan closely follows procedures outlined in New York State Department of Health (NYSDOH) guidance for community air monitoring during restoration activities.

The constituents of concern in the OU2 plume area are VOCs. VOCs will be monitored during drilling activities using a photo-ionization detector (PID) equipped with a 10.2 eV or 10.6 eV lamp. Drilling activities will not likely result in the generation of particulate matter which would trigger particulate monitoring; however, to ensure the safety of the workers and community, particulate monitoring will be conducted during drilling. Particulates will be monitored using a particulate air monitor equipped with a micro-processor to perform real-time measurement of airborne concentrations in microgram per cubic meter ($\mu\text{g}/\text{m}^3$).

Both the PID and particulate monitoring equipment will be calibrated on a daily basis when they are used. The PID will be calibrated using a 100 parts per million (ppm) isobutylene air standard. The particulate air monitoring equipment will be calibrated

using the appropriate air standard as specified in the equipment manufacturer's instructions. Calibration records will be maintained in the field log/notes.

Both VOCs and particulate monitoring will be conducted at the upwind and downwind perimeter of the drill site. The location of the monitoring equipment may be adjusted as necessary based on wind shifts. Real-time air monitoring field logs/data will be maintained to allow for interpretation of the data when necessary and will be available for review. Site conditions, weather conditions, work activities, and, implemented engineer controls will be documented in field logs/notes.

VOC and particulate monitoring recordings will be maintained in project files. These records will be made available for NYSDEC and NYSDOH personnel to review upon request. Any exceedances of the action levels will be reported to NYSDEC and NYSDOH personnel.

In addition to real time air monitoring, during drilling activities, two air samples per boring will be collected and analyzed for VOCs using United States Environmental Protection Agency (EPA) Method TO-15. Air samples will be collected using SUMMA canisters over an approximate 8-hour period. One air sample will be collected near/downwind of the drill rig and one air sample will be collected upwind of the drill rig.

4.0 VPB AND WELL INSTALLATION

4.1 Drilling Locations for VPBs and Monitoring Wells

Figure 2 provides the regional location of the proposed VPBs and monitoring wells discussed in this work plan. The VPBs and monitoring wells will be installed near existing or planned Navy recovery wells.

4.2 Vertical Profile Borings

Vertical profile borings will be drilled to the Raritan Clay layer which is anticipated to be encountered at approximately 1,000 feet bgs. During VPB drilling, groundwater grab samples will be collected via a hydropunch-type sampler. The VPB sampling program is summarized in Table 1 and is discussed below. In addition to VOCs, the groundwater samples will be analyzed for pH, temperature, specific conductivity, oxidation reduction potential, dissolved oxygen, and turbidity as volume permits. Soil and groundwater samples will be collected from each VPB at the following depths:

- Discrete groundwater samples will be collected from the VPBs at depths spaced at 50-foot intervals from 50 to 200 feet bgs: (four samples per boring).
- Discrete groundwater samples will be collected from the VPBs at depths spaced at 20-foot intervals from 220 feet bgs to the bottom of the boring (approximately 1,000 feet bgs).

- Each groundwater sample will be analyzed for VOCs via method SW846 8260B. If adequate groundwater sample volume is available, samples from every other sample interval will be analyzed for 1,4-dioxane via method SW-846 8270 SIM.
- Split spoon soil samples will be collected during the drilling to observe and record subsurface lithologies and to confirm the presence of the Raritan Clay layer. Verification of the Raritan Clay formation will be confirmed when three consecutive 5-foot split spoon samples are collected of a significant clay unit at a depth at which the Raritan Clay would be expected.
- Once the boring completion depth is reached, a natural gamma geophysical log will be performed from the ground surface to the bottom of the boring. This log will be used in combination with the split spoon samples and drilling mud observations to determine subsurface lithology. The boring will then be abandoned using a cement/bentonite grout.

Additional down-hole geophysical surveys may be conducted in the VPB to evaluate the effectiveness of alternative techniques in helping describe lithology and contaminant flow. The subsurface lithology and analytical data collected will support groundwater flow modeling, monitoring well construction, recovery well locations and target screen intervals.

4.3 MONITORING WELL INSTALLATION

Groundwater monitoring wells will be installed at each VPB location during this investigation. It is anticipated up to two monitoring wells may be installed at each VPB location. The number of monitoring wells installed and well screen depths will be selected based on VPB data, recognized data gaps, depth of the upgradient OU2 VOC plume and screen interval of nearby Navy groundwater recovery well(s). Evaluation of the aforementioned data will be reviewed immediately after VPB drilling is complete so monitoring wells can be installed during the same mobilization if practical. Monitoring wells will be installed using mud rotary drilling techniques. A typical well construction diagram is presented in Attachment 3.

The construction details for these monitoring wells are as follows:

- Split spoon samples will be collected at 5- to 10-foot intervals in the screened interval of each well for lithology.
- The wells will be 4-inch diameter, Schedule 80 National Sanitation Foundation (NSF)-grade polyvinyl chloride (PVC) well casing and screen.
- Screens will be 10 to 30 feet in length with a 10 slot (0.010 inches) screen.
- After setting the well screen and casing, a gravel pack (#1 quartz sand) will be placed within the boring annulus to a minimum of 10 feet above top of screen

(150 to 365 feet bgs), 20 feet above the top of screen (365 to 530 feet bgs), or 25 feet above the top of screen (greater than 530 feet bgs).

- A 5-foot thick (150 to 365 feet bgs), 10-foot thick (365 to 530 feet bgs), or 15-foot thick (greater than 530 feet bgs) fine sand layer (#0 quartz sand) will be placed in the annulus on top of the gravel pack.
- A 4-foot thick (minimum) bentonite seal will be installed above the fine sand layer.
- A bentonite/cement grout will be installed within the annular space above the bentonite seal.
- Wells will be completed at grade using a 12-inch diameter, locking curb box in place over the wells.
- A 0.5-foot thick concrete apron measuring 2 feet by 2 feet square will be installed around each well.
- The wells will be covered with a clean well cap. Well locks will be used to secure the wells. Final well construction details will be documented on well construction log sheets.

4.4 Groundwater Monitoring Well Development

Following the installation, wells will be developed no sooner than 5 days after installation to evacuate drilling mud, silts, and other fine-grained sediments which may have accumulated within the well during installation. Wells will be developed using a combination of air lifting and mechanical surging. Field parameters (pH, temperature, specific conductivity, oxidation reduction potential, dissolved oxygen, and turbidity) will be monitored and recorded throughout well development. Development will continue until drilling mud is not observed and the well produces clear, sediment-free water, to the extent practicable. In compliance with NYSDEC policy, wells will be developed until turbidity is less than 50 NTUs.

Well development will also include purging stagnant water from the well above the screen interval and rinsing the interior well casing above the water table using only water from that well.

At the conclusion of well development activities, a groundwater grab sample will be collected from the monitoring well(s). Samples will be analyzed for VOCs via Method SW-846 8260 and 1,4-dioxane via Method SW-846 8270 SIM. These samples are being collected for screening level data. These samples are not considered high quality samples and therefore will not receive validation.

4.5 Surveys

The location of each vertical profile boring and all newly installed monitoring wells will be surveyed by a New York State licensed surveyor. Survey information will be added to each VPB log sheet and well construction diagram.

5.0 INVESTIGATION DERIVED WASTE

Investigation derived waste (IDW) generated from drilling activities will be managed in a manner that is protective to the community. IDW created during this program will include soil cuttings, drilling fluids, groundwater, and decontamination fluids. All IDW will be containerized, covered, and properly labeled, characterized, and temporarily stored at a central staging area located at NWIRP Bethpage or the drill site. It is anticipated all IDW generated from drilling activities will be non-hazardous. IDW drilling fluids will also include wash fluids generated from decontamination of down-hole drilling equipment (e.g., augers and rods).

IDW will be disposed of properly based on waste characterization results. The management of IDW generated during this investigation will follow procedures outlined in Tetra Tech Standard Operating Procedure (SOP) SA-7.1 *Decontamination of Field Equipment and Management of Investigation Derived Waste* (Tetra Tech, 2016) and EPA *Guide to Management of Investigation-Derived Wastes* (OSWER, 1992).

6.0 DECONTAMINATION

A centrally-located decontamination pad at NWIRP Bethpage will be used to decontaminate drilling equipment and tooling. However, a decontamination pad may also be constructed at the drill site if an initial cleaning of drilling equipment and tools is necessary prior to transporting back to the centrally-located decontamination pad. All decontamination fluids will be collected from the pad and managed as IDW. Decontamination activities conducted during this investigation will follow procedures outlined in Tetra Tech SOP SA-7.1 *Decontamination of Field Equipment and Management of Investigation Derived Waste*.

7.0 MONITORING WELL SAMPLING

Monitoring wells installed during this program will be sampled utilizing the following procedures. Wells will be sampled after completion of well development. Each well will be allowed to stabilize for a minimum of 14-days prior to sampling. Wells will be sampled in accordance with similar procedures outlined in the Final Letter Work Plan, 2018 On-Property VOC and 1,4-Dioxane Groundwater Investigation, Facility Wide, NWIRP Bethpage, NY (Tetra Tech, 2018b). Groundwater samples will be analyzed for VOCs via Method 8260B and 1,4-dioxane via Method 8270D SIM.

The Phase II Data Gap Investigation wells will be incorporated into the Navy's ongoing groundwater sampling program. The frequency of routine sampling of the wells will be

evaluated following one year of quarterly sampling. Any exceptions to sampling frequencies prior to one year of quarterly sampling will be reviewed with NYSDEC before finalizing the sampling approach.

8.0 REPORTING OF RESULTS

8.1 Field Documentation

Field documentation required to support this project will consist of the following items:

- Field notebook.
- Boring log for each boring.
- Groundwater and soil sample log sheets.
- Chain of custody forms documenting shipment of sample to a fixed based analytical laboratory.
- Well completion form for each well.
- Well development record.

8.2 Data Validation

Groundwater analytical data collected from the VPBs and monitoring well sampling will undergo full data validation in accordance with EPA data validation guidelines (EPA, 2017).

Groundwater grab samples collected at the end of well development activities are being collected for screening level purposes. These samples are not considered high quality samples and therefore will not receive validation.

8.3 Reporting

A data summary report will be developed summarizing field activities and containing validated analytical results for each VPB addressed in this work plan. Figures and tables will be used to present analytical and lithology data. The report will include log sheets documenting VPB and monitoring well drilling, gamma log, well construction and development, and groundwater sampling. The data validation reports and a summary of air monitoring data will also be included in the report.

The Navy will provide reports to the NYSDEC for review and concurrence. These reports may be provided to the local municipalities as requested concurrent with issuance of the final document to the NYSDEC.

Validated analytical data from the VPBs and groundwater monitoring wells will be provided to NYSDEC as it become available. In addition, validated groundwater data

collected from monitoring wells will be submitted to NYSDEC as an EQIS data deliverable.

9.0 REFERENCES

EPA, 2017. USEPA National Functional Guidelines for Organic Superfund Methods Data Review. EPA-540-R-2017-002, January.

Office of Solid Waste and Emergency Response (OSWER), 1992. Guide to Management of Investigation-Derived Wastes, April.

Tetra Tech, 2016. Standard Operating Procedure SA-7.1 Decontamination of Field Equipment and Management of Investigation Derived Waste, July.

Tetra Tech, 2018a. December 2018 On-Property Letter Work Plan, Vertical Profile Boring and Monitoring Well Installation Program, December.

Tetra Tech, 2018b. Final Letter Work Plan, 2018 On-Property VOC and 1,4-Dioxane Groundwater Investigation, Facility Wide, April.

Tetra Tech, 2022. Final CERCLA Letter Work Plan, Recovery Wells RW8 and RW9 Installation. NWIRP Bethpage, New York, January.

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TABLE

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TABLE 1
VERTICAL PROFILE BORING AND MONITORING WELL SAMPLING PROGRAM
PHASE II DATA GAP - OU2 GROUNDWATER PROGRAM
NWIRP BETHPAGE, NEW YORK

Matrix	Station Identification ¹	Sample Identification	Analysis	Depth/ Sampling Interval
Groundwater	VPB-TT182	VPB-TT182-GW-XXX-XXX	VOC, Method 8260; 1,4-Dioxane Method 8270SIM ²	50-foot intervals from 50 to 200 feet bgs; 20-foot interval greater than 200 feet bgs.
Air		VPB-TT182-AIR-DW-YYYYMMDD	VOC, Method TO-15	Breathing zone, down wind from the VPB
Air		VPB-TT182-AIR-UW-YYYYMMDD	VOC, Method TO-15	Breathing zone, up wind from the VPB
Soil		VPB-TT182-SO-XXX-XXX	none, visual observation	Fine-grained material identified based on VPB results.
Groundwater	TT-182D1	TT-182D1-YYYYMMDD	VOC, Method 8260; 1,4-Dioxane Method 8270SIM ²	Groundwater sample collected from the well screen interval.

1 - The station identification number will be adjusted for each VPB location or monitoring well.

Groundwater duplicates of 1 in 10 samples. Matrix spike/matrix spike duplicates of 1 in 20 samples.

Trip blank of one per cooler. Equipment blank of one per piece of decontaminated equipment per week.

2 - If adequate groundwater sample volume is available, samples from every other sample interval will be analyzed for 1,4-dioxane.

VPB - vertical profile boring. MW - monitoring wells. SO - soil. GW - groundwater. DW - down wind. UP - up wind.

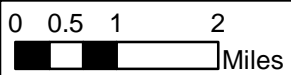
YYYYMMDD - year, month, day XXX - XXX top and bottom of sample interval in feet bgs.

bgs - below ground surface.

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FIGURES

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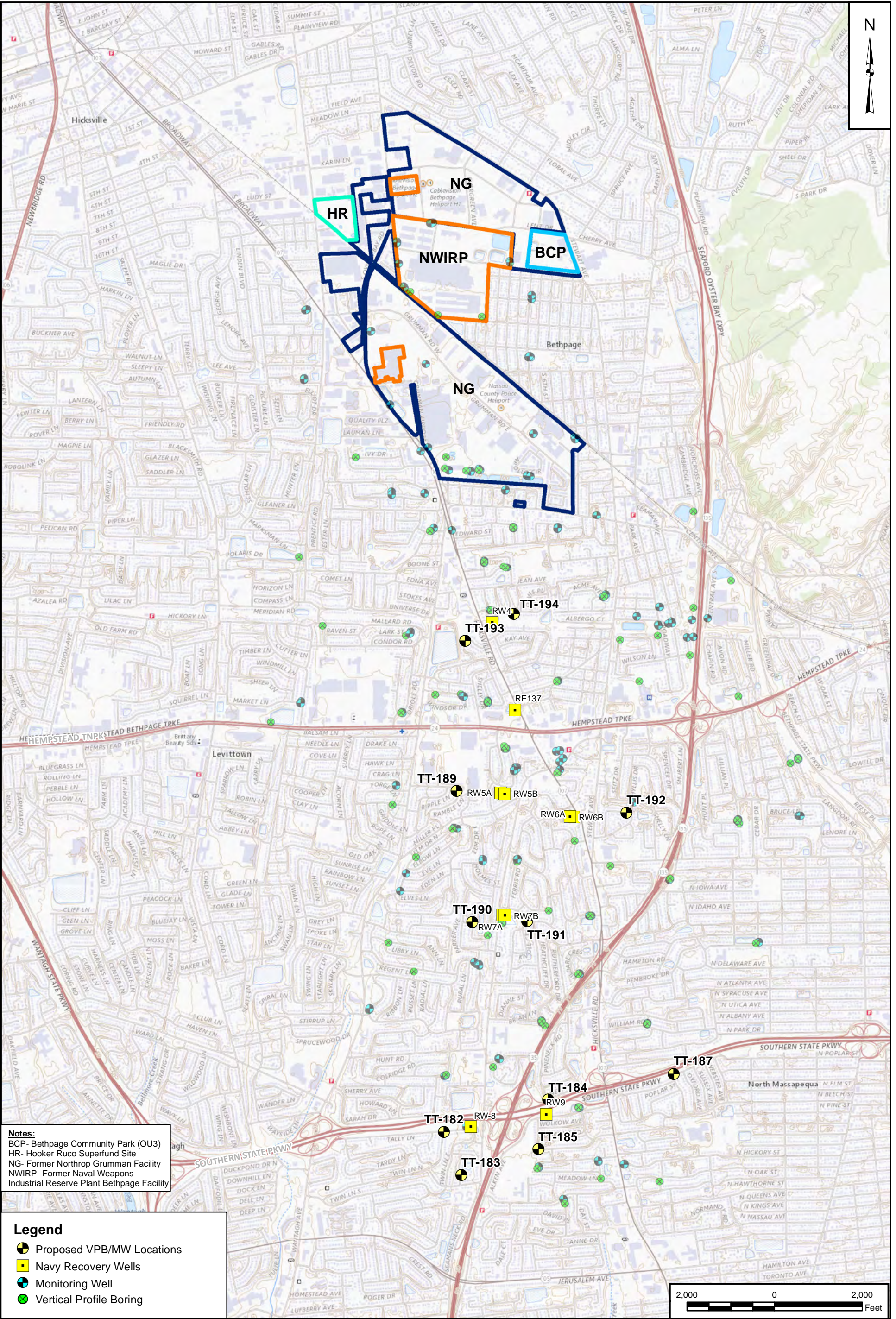
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**GENERAL LOCATION MAP
NWIRP BETHPAGE, NEW YORK**

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Notes:
 BCP- Bethpage Community Park (OU3)
 HR- Hooker Ruco Superfund Site
 NG- Former Northrop Grumman Facility
 NWIRP- Former Naval Weapons Industrial Reserve Plant Bethpage Facility

Legend

- Proposed VPB/MW Locations
- Navy Recovery Wells
- Monitoring Well
- Vertical Profile Boring

**PROPOSED MONITORING WELL LOCATIONS
 PHASE II DATA GAP INVESTIGATION
 NWIRP BETHPAGE, NEW YORK**



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ATTACHMENT 1
COMMUNITY DRILLING NOTIFICATION

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DRILLING NOTICE

Dover Avenue and Poplar Street, Massapequa, NY

December 13, 2022

This notification is being distributed on behalf of the Department of Navy (Navy) to inform you of environmental drilling to be conducted in your neighborhood. The Navy, in conjunction with the New York State Department of Environmental Conservation, will be conducting these activities at the intersection of Dover Avenue and Poplar Street.

The Navy is conducting remedial actions to address contaminated groundwater originating from the former Naval Weapons Industrial Plant (NWIRP) in Bethpage (termed the Navy-Northrop Grumman OU2 Plume). Industrial activities conducted from the 1950s to 1990s at NWIRP resulted in groundwater contamination. Industrial solvents known as trichloroethylene and perchloroethylene were used at this facility and some of these solvents made their way into the groundwater and have since moved off property to the south with the groundwater flow. Over the past 25 years, actions have been taken in several areas to clean up the groundwater and to protect water supplies. Although significant progress has been made, this process is not complete. The Navy is beginning the third phase of its remedial actions to intercept the Navy-Northrop Grumman OU2 Plume at its southern extent. A full explanation of the Navy's Phase III plans is available in a document titled the Operable Unit 2 Explanation of Significant Differences. This document is available online here: www.navfac.navy.mil/Business-Lines/Environmental/Products-and-Services/Environmental-Restoration/Mid-Atlantic/Bethpage-NWIRP/

The Navy has selected land in your area for consideration as part of its Phase III Groundwater Treatment System (recovery well). The town right-of-way in the area around the intersection of Dover Ave and Poplar Street will be the location for a vertical profile boring (VPB) and four groundwater monitoring wells. Data collected from this testing will be used to determine the location of a future recovery well in the area.

Because of the depth of the drilling work, the drill rig and support vehicles will be present at this specific location for approximately 24 to 26 weeks to complete the work. Once the work is completed, the work area will be returned to its current condition.

Work hours will be Monday through Friday, from 8:00 AM to 4:30 PM (no machinery will operate before 8:00 AM). However, periodically during drilling operations, extended work hours and weekend activities may be required. If it is necessary to visit the site during other hours or on the weekends, activities will be kept to a minimum. ***Mobilization and drilling activities will start after the New Year, on or about the first week of January 2023.***

Onsite contractors for the Navy will be Delta Drilling, who will be conducting the drilling operations, and Tetra Tech, who will provide oversight. Inquiries may be directed to Mr. Vincent Varricchio, the Onsite Field Manager, or other contacts as listed below.

If you require additional information, please contact:

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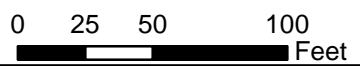
ATTACHMENT 2
DRILLING LOCATION/TRAFFIC CONTROL PLAN FIGURES


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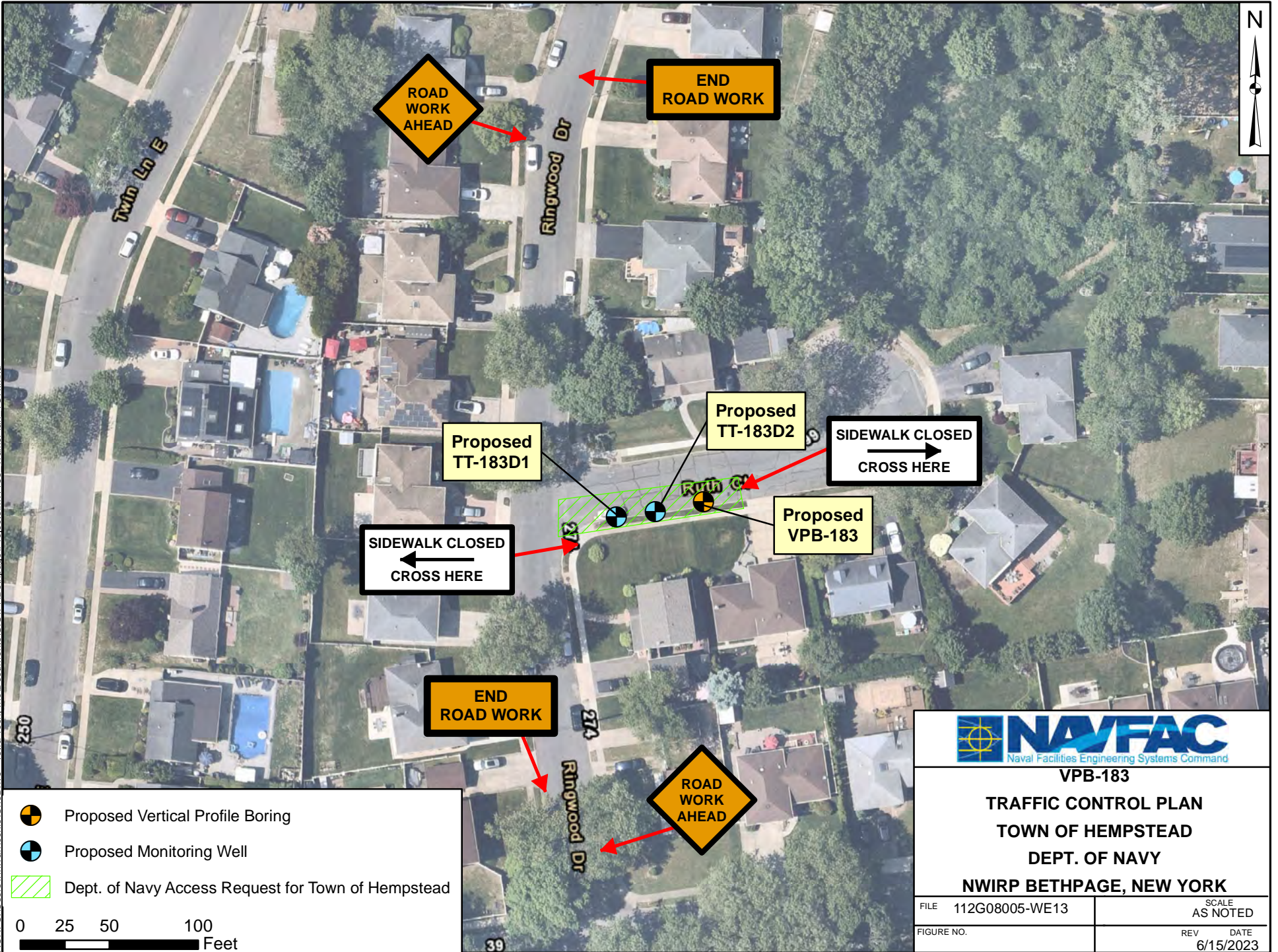
-  Proposed Vertical Profile Boring
-  Proposed Monitoring Well
-  Dept. of Navy Access Request for Town of Hempstead






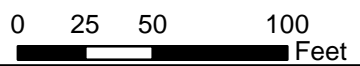
 Naval Facilities Engineering Systems Command	
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TRAFFIC CONTROL PLAN	
TOWN OF HEMPSTEAD	
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-  Proposed Vertical Profile Boring
-  Proposed Monitoring Well
-  Dept. of Navy Access Request for Town of Hempstead

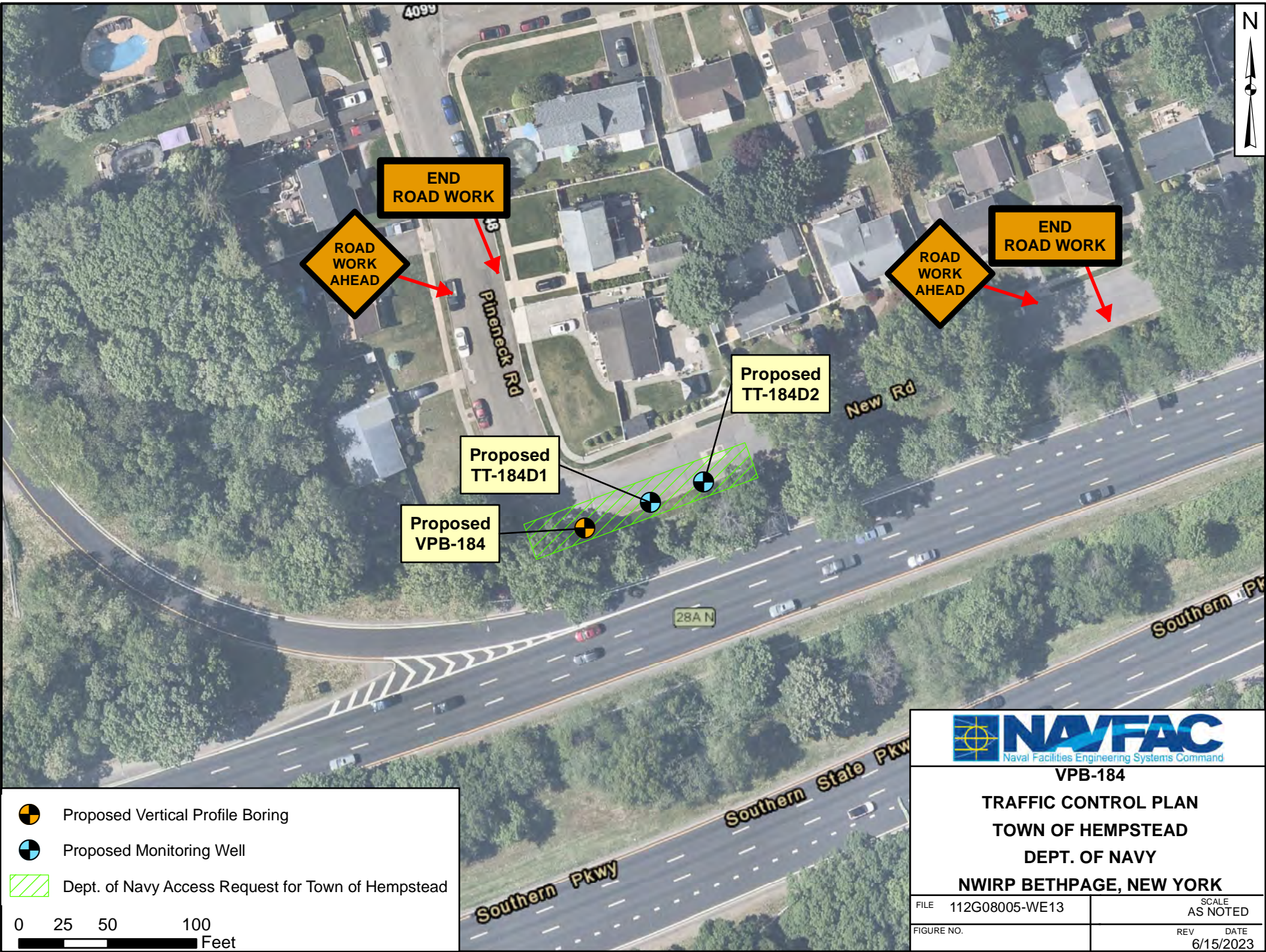


VPB-183
TRAFFIC CONTROL PLAN
TOWN OF HEMPSTEAD
DEPT. OF NAVY
NWIRP BETHPAGE, NEW YORK

FILE 112G08005-WE13	SCALE AS NOTED
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ROAD WORK AHEAD
END ROAD WORK

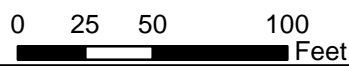
ROAD WORK AHEAD
END ROAD WORK

Proposed VPB-184

Proposed TT-184D1

Proposed TT-184D2

- Proposed Vertical Profile Boring
- Proposed Monitoring Well
- Dept. of Navy Access Request for Town of Hempstead

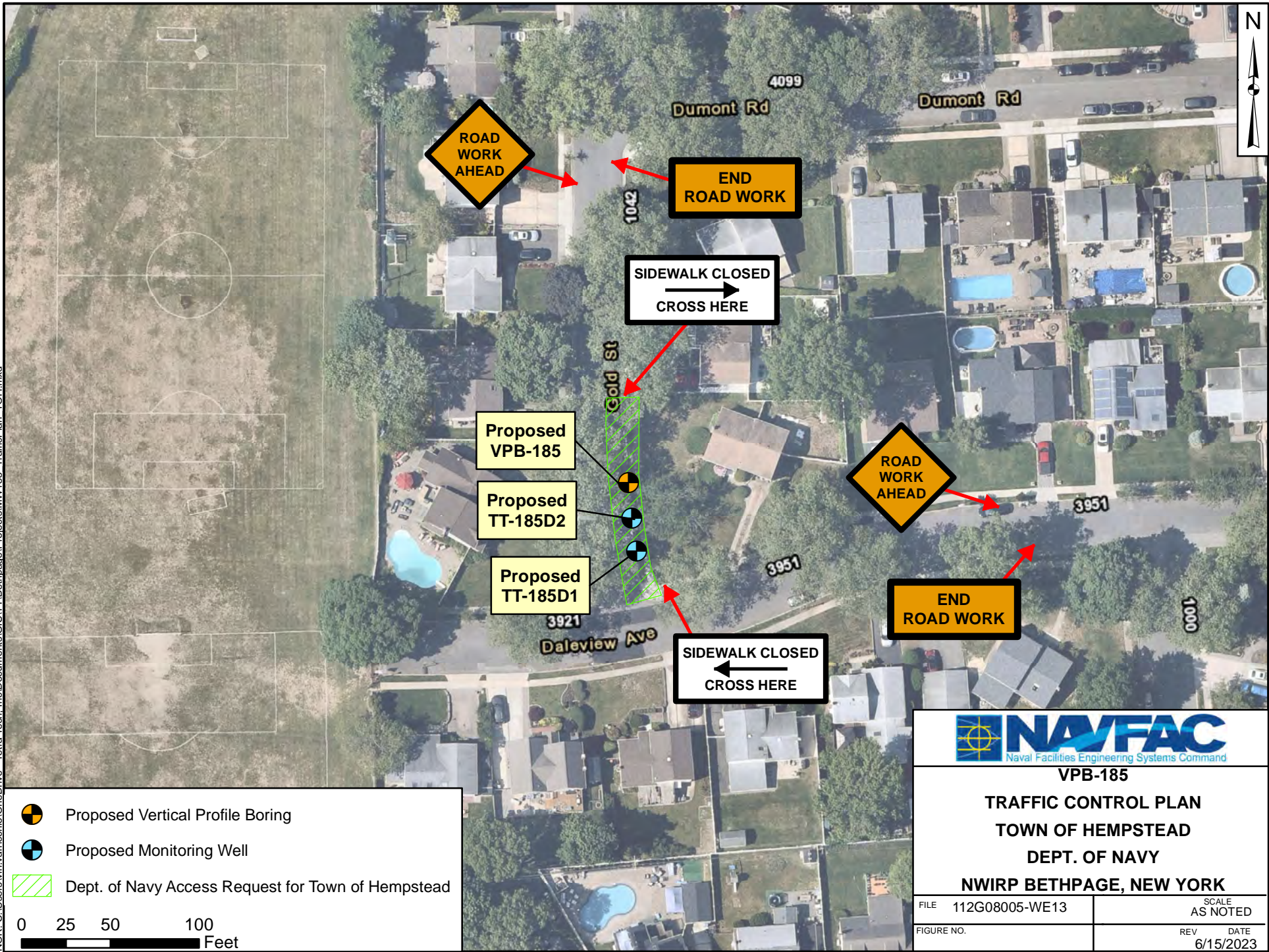





VPB-184
TRAFFIC CONTROL PLAN
TOWN OF HEMPSTEAD
DEPT. OF NAVY
NWIRP BETHPAGE, NEW YORK

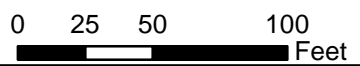
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-  Proposed Vertical Profile Boring
-  Proposed Monitoring Well
-  Dept. of Navy Access Request for Town of Hempstead






VPB-185
TRAFFIC CONTROL PLAN
TOWN OF HEMPSTEAD
DEPT. OF NAVY
NWIRP BETHPAGE, NEW YORK

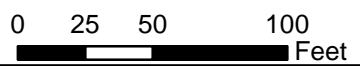
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FIGURE NO.	REV DATE 6/15/2023

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-  Proposed Vertical Profile Boring
-  Proposed Monitoring Well
-  Dept. of Navy Access Request for Town of Oyster Bay

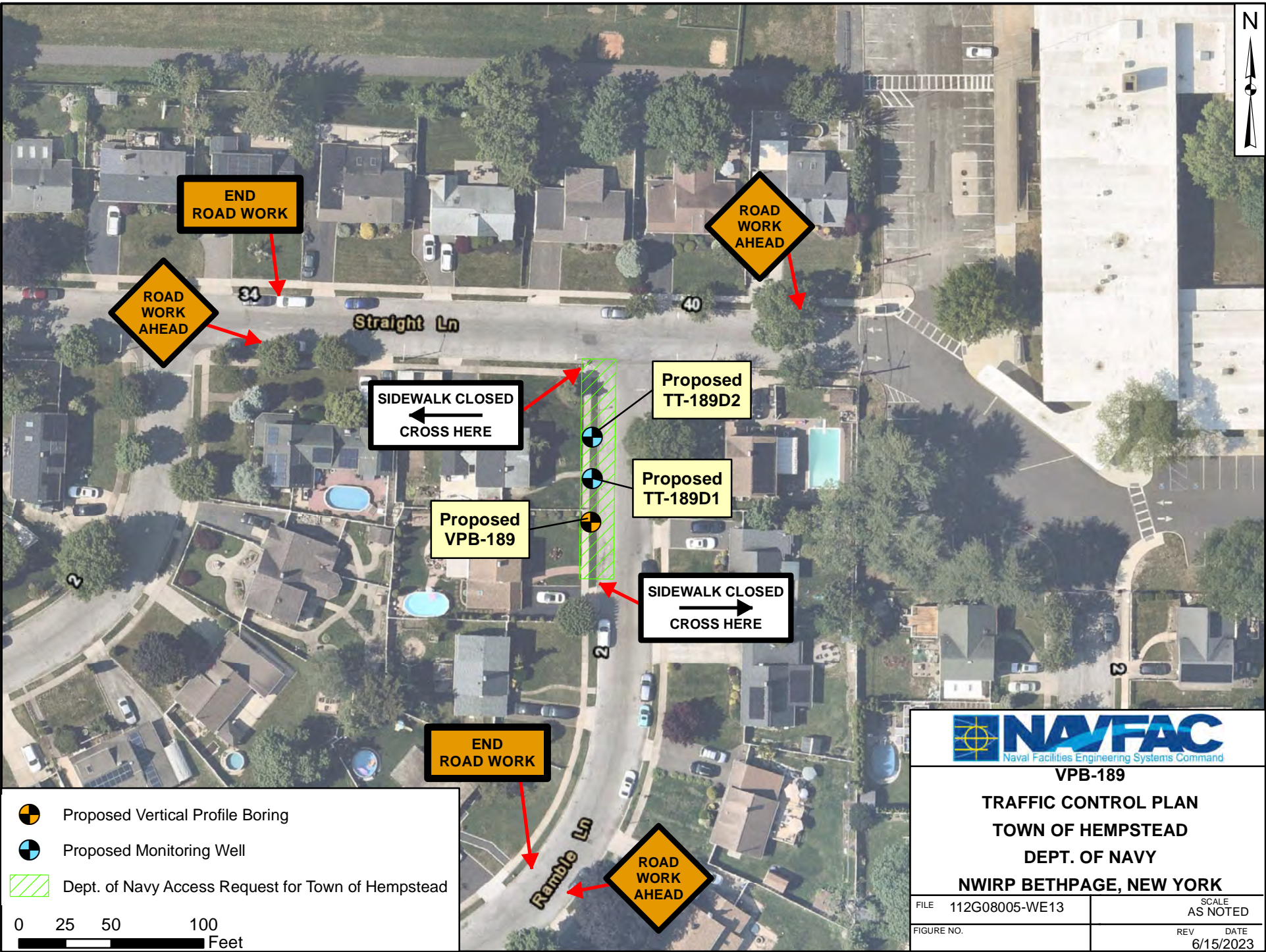





VPB-187
TRAFFIC CONTROL PLAN
TOWN OF OYSTER BAY
DEPT. OF NAVY
NWIRP BETHPAGE, NEW YORK

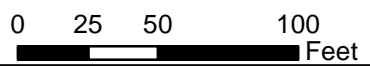
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FIGURE NO.	REV DATE 6/15/2023

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-  Proposed Vertical Profile Boring
-  Proposed Monitoring Well
-  Dept. of Navy Access Request for Town of Hempstead






VPB-189
TRAFFIC CONTROL PLAN
TOWN OF HEMPSTEAD
DEPT. OF NAVY
NWIRP BETHPAGE, NEW YORK

FILE 112G08005-WE13	SCALE AS NOTED
FIGURE NO.	REV DATE 6/15/2023

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-  Proposed Vertical Profile Boring
-  Proposed Monitoring Well
-  Dept. of Navy Access Request for Town of Hempstead

0 25 50 100
Feet

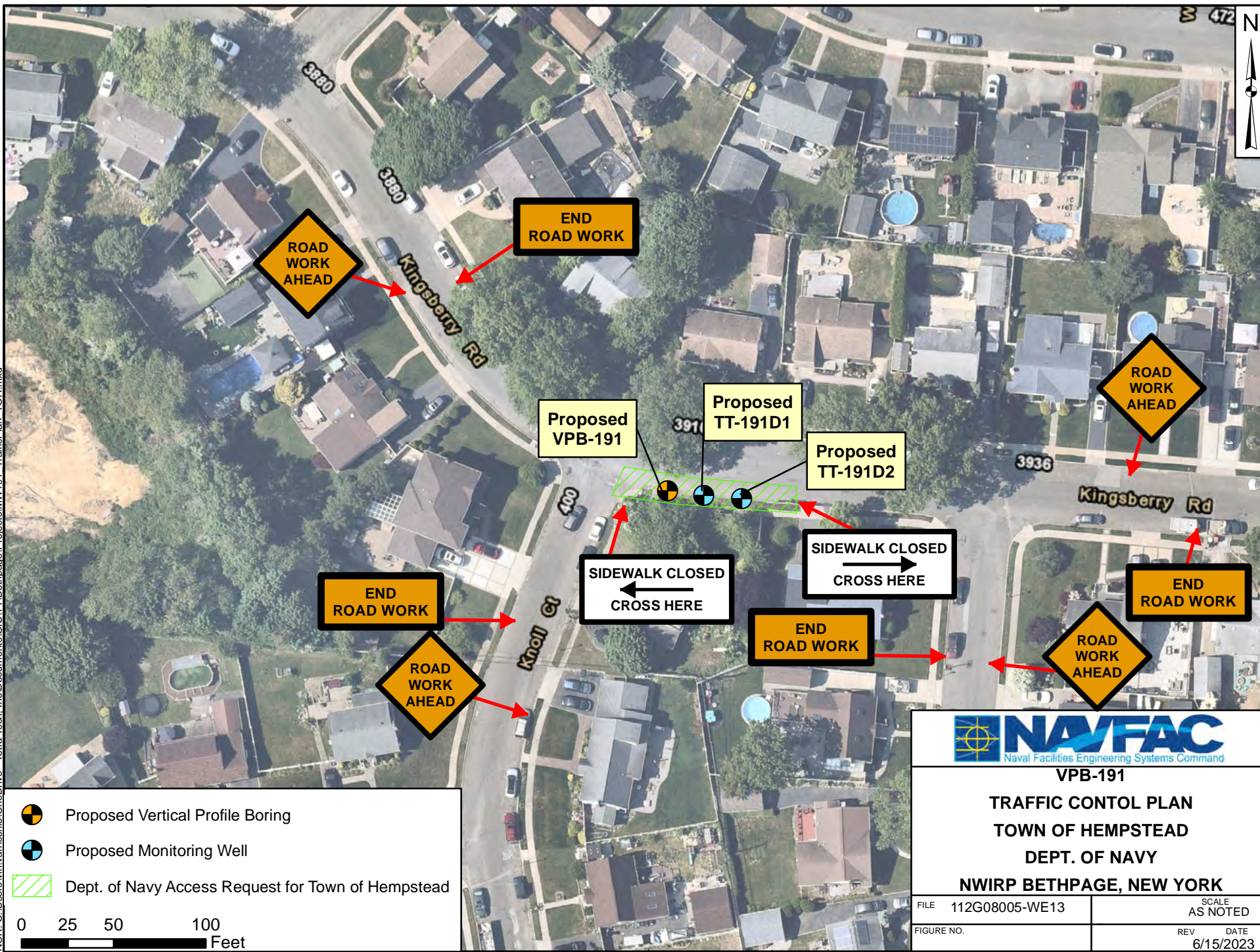





VPB-190
TRAFFIC CONTROL PLAN
TOWN OF HEMPSTEAD
DEPT. OF NAVY
NWIRP BETHPAGE, NEW YORK

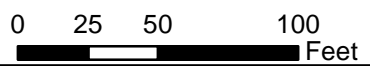
FILE 112G08005-WE13	SCALE AS NOTED
FIGURE NO.	REV DATE 6/15/2023

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-  Proposed Vertical Profile Boring
-  Proposed Monitoring Well
-  Dept. of Navy Access Request for Town of Hempstead

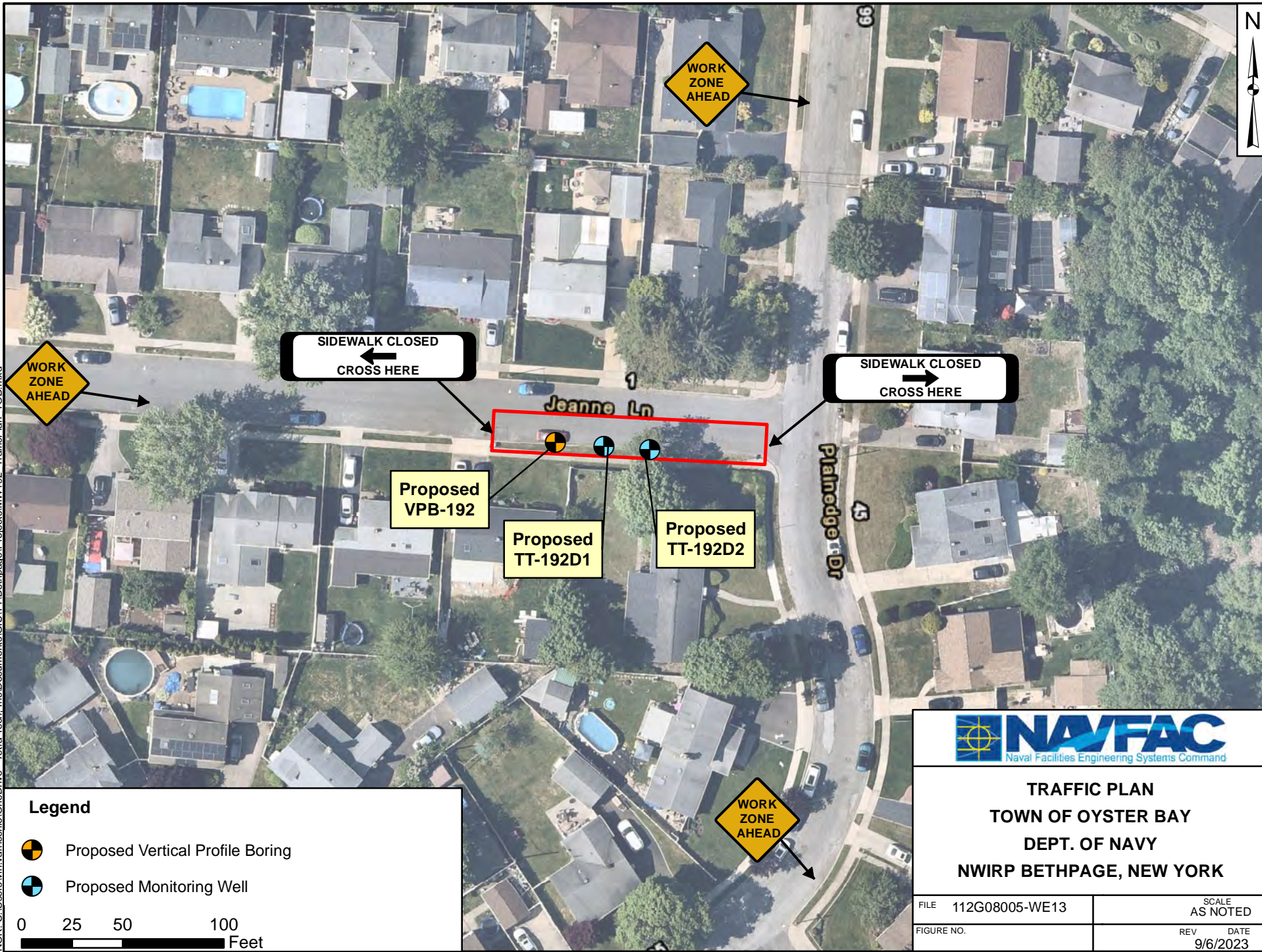


VPB-191
TRAFFIC CONTROL PLAN
TOWN OF HEMPSTEAD
DEPT. OF NAVY
NWIRP BETHPAGE, NEW YORK



FILE 112G08005-WE13	SCALE AS NOTED
FIGURE NO.	REV DATE 6/15/2023

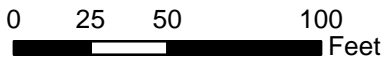
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Legend

-  Proposed Vertical Profile Boring
-  Proposed Monitoring Well



TRAFFIC PLAN
TOWN OF OYSTER BAY
DEPT. OF NAVY
NWIRP BETHPAGE, NEW YORK

FILE 112G08005-WE13

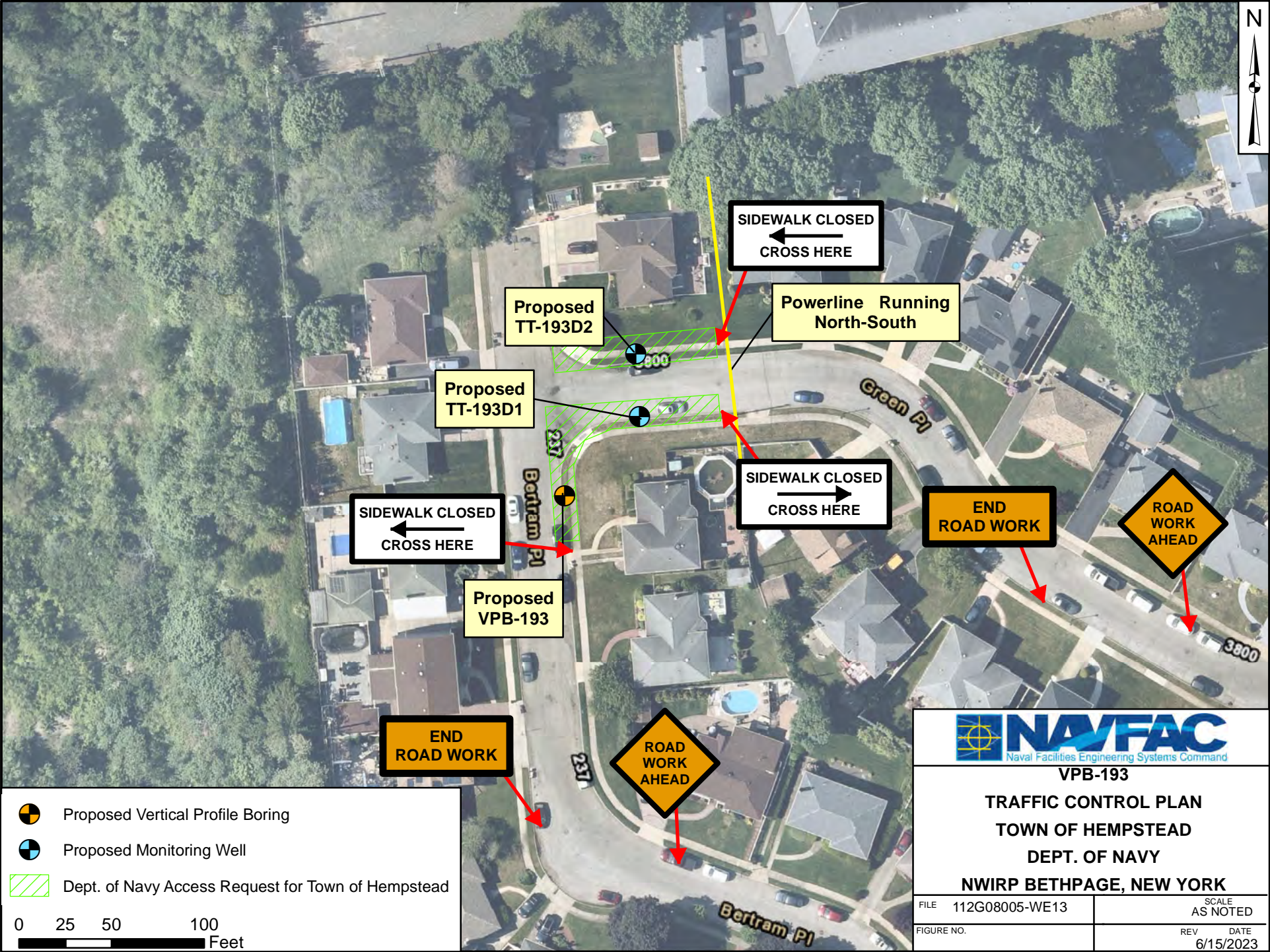
SCALE AS NOTED




FIGURE NO.

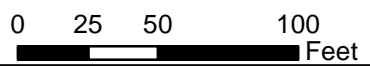
REV DATE
9/6/2023


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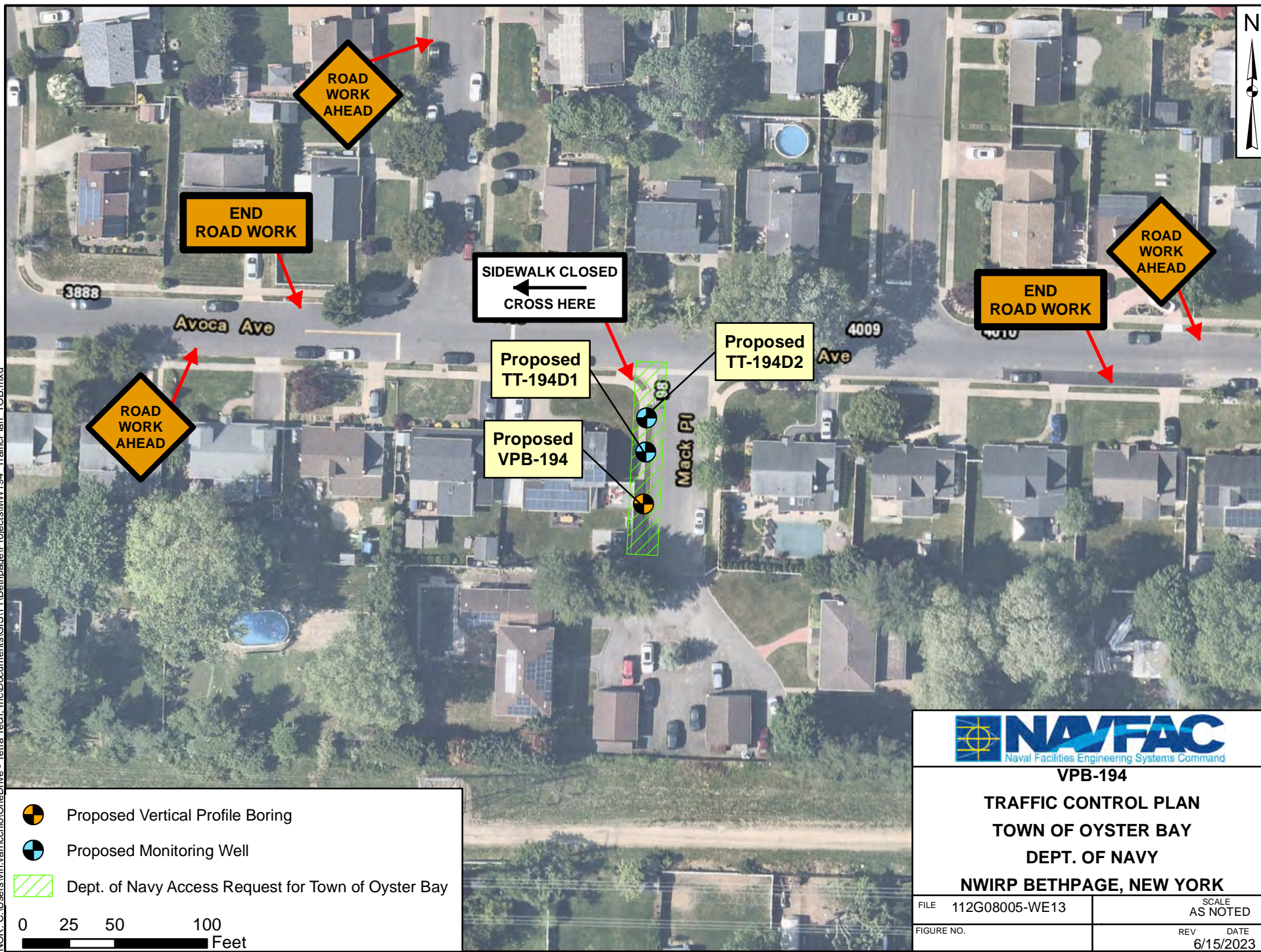
-  Proposed Vertical Profile Boring
-  Proposed Monitoring Well
-  Dept. of Navy Access Request for Town of Hempstead






 Naval Facilities Engineering Systems Command	
VPB-193	
TRAFFIC CONTROL PLAN	
TOWN OF HEMPSTEAD	
DEPT. OF NAVY	
NWIRP BETHPAGE, NEW YORK	
FILE 112G08005-WE13	SCALE AS NOTED
FIGURE NO.	REV DATE 6/15/2023


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-  Proposed Vertical Profile Boring
-  Proposed Monitoring Well
-  Dept. of Navy Access Request for Town of Oyster Bay

0 25 50 100
Feet



VPB-194
TRAFFIC CONTROL PLAN
TOWN OF OYSTER BAY
DEPT. OF NAVY
NWIRP BETHPAGE, NEW YORK

FILE 112G08005-WE13	SCALE AS NOTED
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ATTACHMENT 3
MONITORING WELL CONSTRUCTION DETAIL

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MONITORING WELL CONSTRUCTION SHEET OVERBURDEN / BEDROCK - FLUSH MOUNT

Project Name:	Drilling Co.:	Boring No.:
Project No:	Driller:	Date Completed:
Site Name:	Drilling Method:	Northing:
Geologist:	Dev. Method:	Easting:

Not To Scale

Elevation / Height Top of Flush Mount Casing: _____ / _____

Elevation / Depth Top of Riser: _____ / _____

Type of Surface Seal: _____

Type of Protective Casing: _____

I.D. of Protective Casing: _____

Borehole Diameter: _____

Type of Riser and I.D.: _____

Type of Backfill: _____

Elevation / Depth Top of Rock: _____ / _____

Depth and Diameter of Surface Casing: _____

Elevation / Depth of Seal: _____ / _____

Type of Seal: _____

Elevation / Depth Top of Filter Pack: _____ / _____

Elevation / Depth Top of Screen: _____ / _____

Diameter of Hole in Bedrock: _____

Type of Screen and I.D.: _____

Slot Size and Length: _____

Type of Filter Pack: _____

Elevation / Depth Bottom of Screen: _____ / _____

Elevation / Depth Bottom of Filter Pack: _____ / _____

Type of Backfill Below Filter Pack: _____

Elevation / Depth Bottom of Hole: _____ / _____

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