FINAL
WORK PLAN ADDENDUM
Site 4 – Former Underground Storage Tanks
Former NWIRP Bethpage
Bethpage, New York

Contract Number: N62470-16-D-9004
Contract Task Order: WE03

Document Control Number: APTIM-9004-WE03-0001

April 2021

Submitted to:

NAVFAC Mid-Atlantic HR IPT
9324 Virginia Avenue, Building Z140
Norfolk, VA 23511

Submitted by:
APTIM Federal Services LLC
150 Boush Street, Suite 701
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Prepared by: _____ Date: April 30, 2021
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Approved by: _____ Date: April 30, 2021
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Acronyms and Abbreviations

AHA	Activity Hazard Analysis
APP	Accident Prevention Plan
APTIM	APTIM Federal Services, LLC
bgs	below ground surface
CCR	Construction Completion Report
CFR	Code of Federal Regulations
EPP	Environmental Protection Plan
ft	feet/foot
NAPL	non-aqueous phase liquid
NAVFAC	Naval Facilities Engineering Command
Navy	U.S. Department of the Navy
NYSDEC	New York State Department of Environmental Conservation
NWIRP	Naval Weapons Industrial Reserve Plant
PQCP	Project Quality Control Plan
QC	Quality Control
RPM	Remedial Project Manager
SAP	Sampling and Analysis Plan
SOP	Standard Operating Procedure
SSHO	Site Safety and Health Officer
UFGS	Unified Facilities Guide Specifications
USACE	U.S. Army Corps of Engineers
WMP	Waste Management Plan

1.0 Introduction

This Work Plan Addendum presents the specific tasks and procedures that will be implemented by APTIM Federal Services LLC (APTIM) during the drilling, installation, and development of two monitoring wells in the vicinity of the former monitoring wells designated as MW01 and MW02 as well as collection of groundwater samples from selected site wells at Naval Weapons Industrial Reserve Plant (NWIRP) Bethpage Site 4, located in Bethpage, New York (Figure 1). This project is being performed for the U.S. Department of the Navy (Navy) Naval Facilities Engineering Command (NAVFAC) Mid-Atlantic, under Contract No. N62470-16-D-9004, Contract Task Order WE03. This work is being performed under the Navy Environmental Restoration Program.

The work at Site 4 shall be executed in accordance with the *Statement of Work, Well Installation, Monitoring, and Continued Operation of the Operable Unit 3 Site 4 Treatment System, Naval Weapons Industrial Reserve Plant Bethpage, New York* (NAVFAC, 2020) and the *Final Work Plan, Site 4 – Former Underground Storage Tanks Former NWIRP Bethpage, Bethpage, New York* ([Final Work Plan] CB&I, 2017).

1.1 Scope of Work

The scope of the planned activities includes the following elements:

- Pre-construction submittals including this Work Plan Addendum, schedule, and meetings
- Completion of relevant permits
- Mobilization and Site Setup
- Fieldwork including monitoring well drilling, installation, development and groundwater sampling
- Site restoration
- Post-construction deliverables including the Construction Completion Report

Final approval of this Work Plan Addendum is required by NAVFAC Mid-Atlantic and New York State Department of Environmental Conservation (NYSDEC).

A construction completion report (CCR) with sections discussing the activities addressed in this Work Plan Addendum will be prepared upon completion of the scope of work to document the site activities and results. Further details concerning preparation of the CCR are discussed in Section 8.0 of the Final Work Plan (CB&I, 2017).

1.2 Site Safety

Occupational Safety and Health Administration regulations and notification requirements will be followed, including 29 Code of Federal Regulations (CFR) 1910 and 29 CFR 1926. Site activities will be conducted in accordance with the U.S. Army Corps of Engineers (USACE) *Safety and Health Requirements Manual EM 385-1-1* (2014), and the *Unified Facilities Guide Specifications (UFGS) Section 01 35 26 Governmental Safety Requirements* (NAVFAC, 2012).

Field activities will be conducted in accordance with the *Accident Prevention Plan, Steam Injection with Free Product Recovery, and Biosparging, Site 4 – Former Underground Storage Tanks, Naval Weapons Industrial Reserve Plant (NWIRP) Bethpage, New York* (Final Work Plan, Appendix B [CB&I, 2017]).

2.0 Site Conditions and Background

A general description of the site, the history, topography and site features, climate, geology, hydrogeology, and chemicals of concern is presented in Section 2.0 of the Final Work Plan (CB&I, 2017).

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3.0 Regulatory Framework

The Regulatory Framework is presented in Section 3.0 of the Final Work Plan (CB&I, 2017).

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4.0 Project Requirements

Required project plans are discussed in this section.

4.1 Accident Prevention Plan/Site Safety and Health Plan

An Accident Prevention Plan (APP) is provided in Appendix B of the Final Work Plan (CB&I, 2017). The APP was prepared to support fieldwork for the remedial action in accordance with the *Safety and Health Requirements Manual EM 385-1-1* (USACE, 2014) and *UFGS Section 01 35 26 Governmental Safety Requirements* (NAVFAC, 2012).

4.2 Environmental Protection Plan

An Environmental Protection Plan (EPP) is provided in Section 9.0 of the Final Work Plan (CB&I, 2017). The EPP was developed in accordance with all applicable local, state, and federal regulations.

4.3 Waste Management Plan

A Waste Management Plan (WMP) is included in Section 10.0 of the Final Work Plan (CB&I, 2017). The WMP describes how waste streams will be identified and the transportation and disposal of selected wastes.

4.4 Site Plan

The general site layout is shown on Figure 1 and illustrates the proposed work area and the locations of the proposed monitoring wells. A staging area for equipment and supplies will be determined during the Preconstruction Meeting.

4.5 Sampling and Analysis Plan

A Sampling and Analysis Plan (SAP) (which includes a Field Sampling Plan and Quality Assurance Project Plan) is provided in Appendix D of the Final Work Plan (CB&I, 2017). The SAP was developed in accordance with the Uniform Federal Policy guiding the development of Quality Assurance Project Plans and the U.S. Department of Defense Policy and Guidelines for Acquisitions Involving Environmental Sampling and Testing.

4.6 Project Quality Control Plan

A Project Quality Control Plan (PQCP) was prepared and is included as Appendix E to the Final Work Plan (CB&I, 2017). The PQCP details definable features of work, phases of control, and quality control procedures which will be implemented throughout the remedial action and during operation and maintenance activities.

4.7 Traffic Control Plan

A Traffic Control Plan is described in Section 5.4.6 of this text. The Traffic Control Plan describes the procedures to conduct intrusive site activities during remedial action construction to limit interference with activities in surrounding buildings.

4.8 Post Construction Documents

A Construction Completion Report will be generated after the remedial action is complete. The Construction Completion Report will document all construction activities, results of any testing performed, "As Built" drawings, and an Operation and Maintenance Section for all new equipment on site.

5.0 Pre-Construction Activities

Pre-construction activities are discussed in the following subsections.

5.1 Notifications

Prior to field activities, APTIM will notify the Navy Remedial Project Manager (RPM), Steel Equities, and appropriate fire department personnel as to the nature of the anticipated work. Steel Equities is the commercial developer that rents space to separate businesses within Plant 3. APTIM will coordinate with Steel Equities to relay information to Plant 3 tenants.

5.2 Preparatory Activities and Meetings

Meetings will be held routinely leading up to and throughout the project to establish and review the work schedule, quality control (QC), health and safety performance, and sample results, etc.

5.2.1 Pre-Construction and Mutual Understanding Meeting

A pre-construction and mutual understanding meeting will be held prior to mobilization of equipment and personnel to the field. The purpose of the meeting will be to discuss project-specific topics, roles, and responsibilities of all project personnel, project schedule, health and safety concerns, and other topics that require discussion before field mobilization. The pre-construction meeting will be attended by representatives of the following:

- Navy RPM, other Navy personnel
- NYSDEC
- APTIM [Project Manager, Site Construction Manager, Project QC Manager, and Site Safety and Health Officer (SSHO)]
- Subcontractors as appropriate

5.2.2 Construction Quality Control Meetings

Construction Quality Control Meetings will not be held due to the short duration of fieldwork. While Quality Control Meetings will not be held, status updates will be provided to the Navy during regularly scheduled status update calls.

5.2.3 Health and Safety Meetings

Daily tailgate safety meetings will be held before starting work. Construction staff, including subcontractors, will attend these meetings and sign a tailgate safety meeting form. The meetings will be held by the SSHO, or his or her qualified designee, and will cover various safety issues. Any subcontractor, inspector, agency, or Navy personnel that visit the site during the day will be required to review and sign the tailgate form prior to entering the work site.

5.3 Mobilization

Mobilization activities will include site preparation, movement of equipment and materials to the site, and orientation and training of field personnel. At least two weeks prior to mobilization, the Navy RPM will be notified regarding the planned schedule for mobilization and site remediation activities. Upon receipt of the appropriate authorizations, field personnel, temporary facilities, and required construction materials will be mobilized to the jobsite.

5.4 Site Preparation

Site preparation activities are discussed in the following subsections.

5.4.1 Temporary Construction Facilities

Temporary facilities are not anticipated for this project, as Building 304 will be available for use as office space and Building 03-35 will be available for materials and equipment storage as needed. All staging areas will be located within the boundary of Site 4.

5.4.2 Erosion and Sediment Control Measures

Erosion and sediment (E&S) control will be performed in accordance with the EPP in section 9.0 of the Final Work Plan (CB&I, 2017). Any staging areas shall be constructed with adequate containment of possible runoff and erosion during the anticipated period of staging. Erosion control structures shall be adequate to sustain weather damage and degradation and shall be maintained until site restoration has been completed. E&S control measures will be inspected and maintained to ensure that they are functioning as designed. Monitoring and maintenance activities associated with the E&S control are described in the EPP.

5.4.3 Photographic Documentation

Photographs of the site will be collected during the performance of the remedial activities. Photographs will be taken during each feature of work in order to provide a detailed photographic history. Photographs may be included with daily QC reports, or at the conclusion of the remedial action with the Construction Completion Report.

5.4.4 Utility Survey

APTIM will contract a private utility locator to perform a utility mark-out at Site 4 prior to beginning construction activities. A field inspection to verify the locations of the utilities, if present, will be conducted prior to remedial activities.

5.4.5 Material Handling and Storage Areas

Materials staging areas and storage areas will be located within the boundaries of Site 4. These areas will be determined during the Preconstruction Meeting.

5.4.6 Traffic Control Plan

During construction activities, trafficked areas shall be maintained in accordance with EM 385-1-1 Sections 8B and 8C (both inside and outside the designated work areas, storage areas, and access routes). Precautions are taken to minimize the impact of work in trafficked areas:

- Barricades, signs, and cones, as appropriate, will be erected before any work commences in the work activity areas.
- All personnel will wear high visibility Class II apparel.
- APTIM will be responsible for providing, erecting, maintaining, and removing all traffic signs, barricades, and other traffic control devices necessary for maintenance or traffic in and around the working area.
- APTIM and subcontractors will make every effort to minimize the effect of construction activities on the normal operation of Steel Equities tenants.

5.5 Site Safety and Security

Tools and small equipment will be secured daily. Incidents will be reported to the APTIM Project Manager, who will also inform the Navy promptly.

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6.0 Construction Remedial Activities

This section describes the specific construction activities and procedures to implement the remedial action requirements. The planned remedial activities include:

- Monitoring Well Installation and Development
- Groundwater Sampling
- Waste Characterization
- Site Restoration
- Demobilization

6.1 Monitoring Well Installation and Development

Two groundwater monitoring wells will be installed by a driller licensed in the State of New York in accordance with NYSDEC requirements with oversight by APTIM personnel. The wells will be installed to monitor the effectiveness of the previously installed steam injection and free product recovery system.

One well, designated AOC22-MW12 will be installed at a depth of 68 feet (ft) near the location of previously abandoned monitoring well MW01; a second well, AOC22-MW13, will be installed at a depth of 66 ft near the location of previously abandoned monitoring well MW02 (Figure 1). All downhole drilling equipment will be pressure-washed and decontaminated prior to drilling and between boring locations.

Details of the well construction are shown in Figure 2 and are presented below:

- Prior to drilling, a 3-inch diameter hole will be hand-augured to a depth of 5 ft below ground surface (bgs) to clear the location for subsurface utilities.
- Borings will be advanced using a track-mounted sonic rig. A continuous soil core will be retrieved and logged by an APTIM Geologist using the Unified Soil Classification System and standard geologic techniques. The boreholes will be advanced to approximately 75 ft bgs to allow for soil analytical sample collection and will be tremie grouted with high-temperature grout to designed well bottom prior to well installation.
- In accordance with Section 6.2 System Operation and Maintenance of the Final Work Plan (CB&I, 2017), soil samples will be collected from six locations periodically during the implementation of the remedy to monitor performance. Two of the six samples will be collected during soil boring of AOC22-MW12 and AOC22-MW13. A continuous soil core will be retrieved during soil boring, and composite samples will be collected within five-

foot depth intervals between 30 and 75 ft bgs. Sampling and analysis will be performed in accordance with the Final Work Plan and SAP (CB&I, 2017).

- The monitoring wells will be constructed of 4-inch diameter, carbon threaded riser pipe and 20 ft stainless steel 0.010-inch factory slotted screen with a flush-threaded bottom cap. AOC22-MW12 will be screened from 48 ft to 68 ft bgs; AOC22-MW13 will be screened from 46 ft to 66 ft bgs.
- #2 sand pack will be used to backfill the annular space to approximately three feet above the screened zone; #00 sand will be placed to approximately 2 feet above the #2 sand pack.
- Remaining annular space will be tremie grouted using high-temperature grout.
- All materials will have a minimum temperature rating of 220 degrees Fahrenheit.
- The wells will be completed inside a flush-mount well vault, set in a 2 ft by 2 ft by 4-inch thick concrete pad with gasketed, bolt-down covers. All covers will have an H-20 roadway load capability. Each flush mount well will be equipped with a locking waterproof plug. Locks will be supplied by the Navy.
- Borehole logs and well construction diagrams will be completed for each installed well.

Each monitoring well will be fully developed to remove fine grained sediments from the well and sand pack. Monitoring well development will be performed no sooner than 24 hours after grout installation. Initial development will consist of swabbing, bailing, and/or pumping until little or no sediment enters the well based on visual observation of water removed from the well. Following initial development, the well will be continuously pumped using an electric submersible or pneumatic drive positive-displacement, or bladder pump. Field parameters (Temperature, pH, oxidation reduction potential, specific conductivity, dissolved oxygen, and turbidity) will be monitored during pumping, and readings will be recorded at regular intervals. The well will be developed until the column of water in each well is free of visible sediment, field parameters have stabilized within 10 percent, and turbidity is below 10 nephelometric turbidity units or five well volumes have been pumped. The site geologist will monitor and record all measurements on a Well Development Record form. Water and sediments removed from the wells will be containerized and staged onsite in accordance with the WMP in the Final Work Plan (CB&I, 2017).

Borehole drilling, monitoring well installation, and monitoring well development will be conducted in accordance with applicable Standard Operating Procedures (SOPs) found in the Final Sampling and Analysis Plan/Quality Assurance Plan (see Final Work Plan, Appendix D) (CB&I, 2017) and Activity Hazard Analysis (AHA) 3 Well and Piping Installation located in Appendix C of the Final Accident Prevention Plan (CB&I 2017)

6.2 Groundwater Sampling

APTIM will collect groundwater samples from AOC22-MW12 and AOC22-MW13 following construction and development using low-flow purging and sampling methods in accordance with the Final Work Plan and SAP (CB&I, 2017). In addition, existing wells MW03 and MW04 will be sampled. During purging, the field parameters listed above, plus ferrous iron, will be measured and recorded. Samples will be analyzed for select volatile organic compounds, select semi-volatile organic compounds, cobalt, and manganese as indicated in the SAP (CB&I, 2017).

AOC22-MW12 and AOC22-MW13 will be sampled a second time at the end of the air sparge period in conjunction with other existing Site 4 wells as per the Final Work Plan and SAP (CB&I, 2017).

In the event Non-Aqueous Phase Liquid (NAPL) is present in any new or existing Site 4 well, APTIM will measure the accumulation, remove the NAPL from the well, and containerize it for proper disposal.

Groundwater purging and sampling will be conducted in accordance with applicable SOPs found in the SAP (see Final Work Plan, Appendix D) (CB&I, 2017) and AHA 5 Sampling located in Appendix C of the APP (CB&I 2017)

6.3 Waste Characterization

Any required waste characterization and related transportation and disposal activities resulting from borehole drilling, monitoring well development, and groundwater sampling will be performed in accordance with Section 10.0 Waste Management Plan of the Final Work Plan (CB&I, 2017).

6.4 Site Restoration

Site restoration will include regrading and revegetating with permanent vegetation, where applicable, in accordance with state and local seeding requirements. Most of Site 4 is impermeable and will be restored using asphalt paving and other equivalent methods.

6.5 Demobilization

Demobilization will consist of decontaminating and removing all drilling equipment and materials, and cleaning and inspecting the project site. Prior to demobilization, a final closeout inspection with the Navy RPM will be performed to inspect the well installation, removal of all materials such as excess construction material, wood, debris, and other foreign material, and removal of all construction equipment and storage boxes.

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7.0 Project Management Plan

The Project Management Plan is presented in Section 7.0 of the Final Work Plan (CB&I, 2017).

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8.0 Reporting Requirements

Reporting requirements are presented in Section 8.0 of the Final Work Plan (CB&I, 2017).

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9.0 Environmental Protection Plan

The Environmental Protection Plan is presented in Section 9.0 of the Final Work Plan (CB&I, 2017).

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10.0 Waste Management Plan

The Waste Management Plan is presented in Section 10.0 of the Final Work Plan (CB&I, 2017).

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11.0 References

CB&I, 2017. *Final Work Plan, Site 4 – Former Underground Storage Tanks Former NWIRP Bethpage, Bethpage, New York.* August.

NAVFAC, 2020. *Statement of Work for Well Installation, Monitoring, and Continued Operation of the Operable Unit 3 Site 4 Treatment System.* June.

NAVFAC, 2012. *Unified Facilities Guide Specifications (UFGS) Section 01 35 26 Governmental Safety Requirements.*

USACE, 2014. *Safety and Health Requirements Manual EM 385-1-1.*

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Figures

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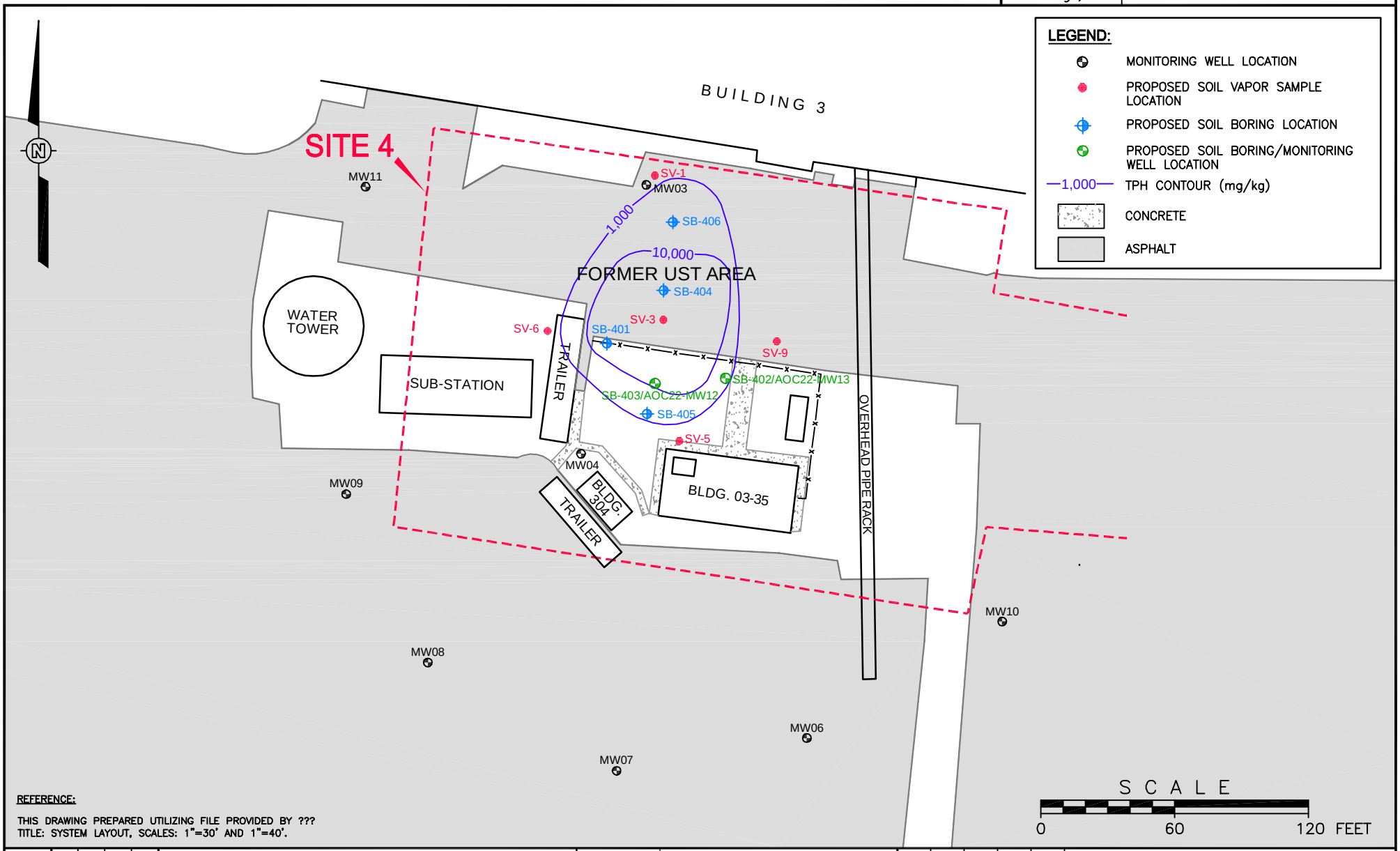
Plotted By: bernadette.oconnor

FIGURE 3.jpg
NAVFAC Logo.jpg
Site Location Map.jpg
Site Map.jpg
site Map bing2.jpg
utilities.jpg

OFFICE	DRAWING NUMBER
Pittsburgh, PA	500689-A7



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SHEET I.D.	FIGURE 1			
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DELIVERY ORDER NO.	WE03			
SCALE:	AS SHOWN			
SIZE:	A			

NAVFAC Naval Facilities Engineering Command MID-ATLANTIC

NAVAL WEAPONS INDUSTRIAL RESERVE PLANT BETHPAGE, NEW YORK
SITE 4
PROPOSED SOIL BORING AND MONITORING WELL LOCATIONS

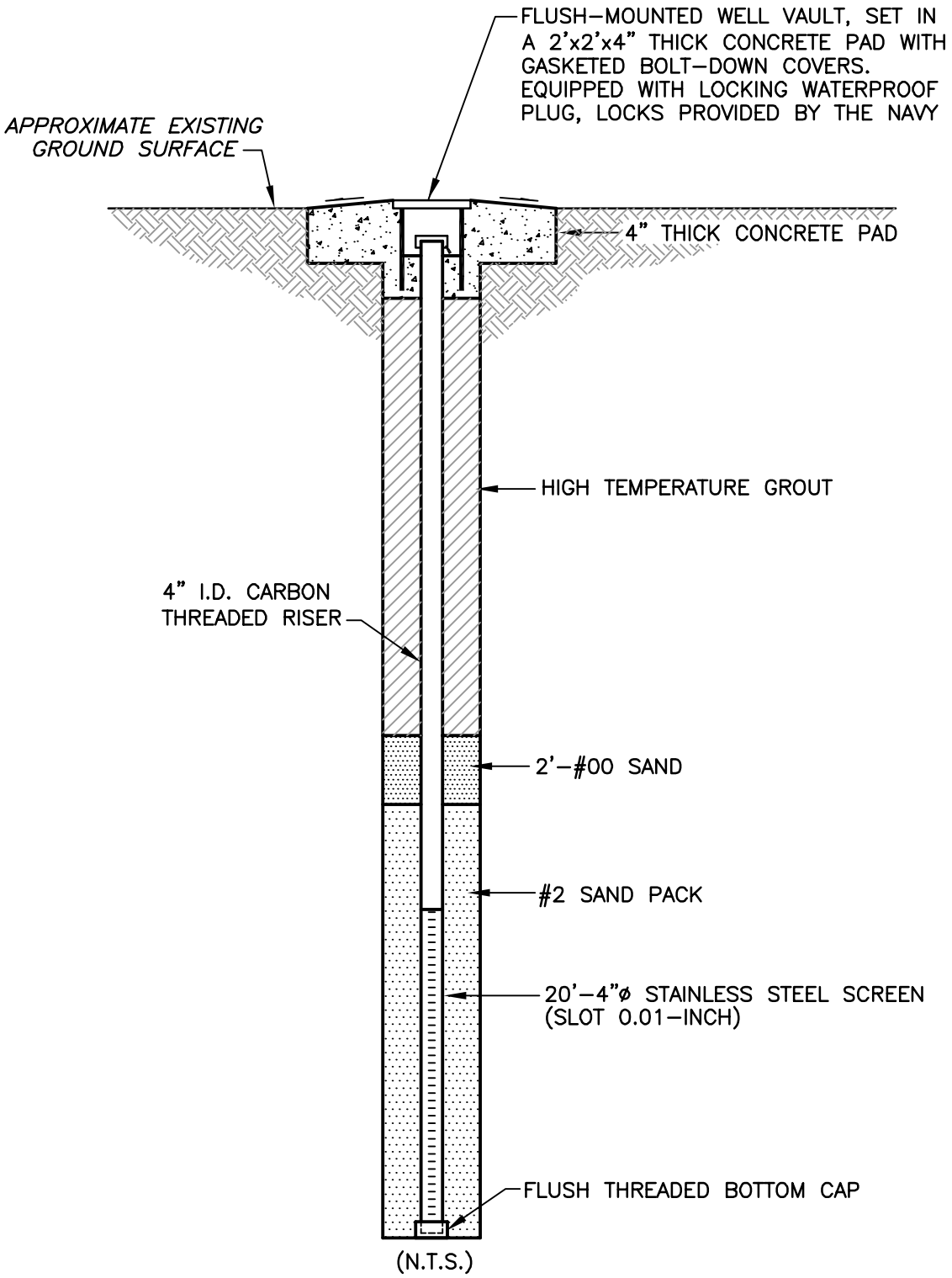
APTIM

APTIM Federal Services, LLC
150 Boush Street, Suite 701
Norfolk, Virginia 23510

DESIGNED BY	DATE	CHECKED BY	DATE
S. McCutcheon	*10/6/20*		
DRAWN BY	DATE	APPROVED BY	DATE
B. O'Connor	*10/6/20*		

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION/ISSUE

REVISIONS



NOTES:

1. SEE FIGURE 1 FOR PLAN LOCATION OF MONITORING WELL.
2. ALL MATERIALS WILL HAVE A MINIMUM TEMPERATURE RATING OF 220 DEGREES FAHRENHEIT.

OFFICE: Pittsburgh, PA
DRAWING NUMBER: 500689-A7

REVISIONS

REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION/ISSUE

APTIM Federal Services, LLC
150 Boush Street, Suite 701
Norfolk, Virginia 23510

DESIGNED BY	DATE	CHECKED BY	DATE
S. McCutcheon	10/6/20		
DRAWN BY	DATE	APPROVED BY	DATE
B. O'Connor	10/6/20		

NAVAL WEAPONS INDUSTRIAL RESERVE PLANT BETHPAGE, NEW YORK
SITE 4
TYPICAL MONITORING WELL DETAIL

SCALE:	SIZE:
AS SHOWN	A

DELIVERY ORDER NO. WE03
CONSTR. CONTRACT NO. N62470-16-D-9004
NAVFAC DRAWING NO. --
SHEET I.D. FIGURE 2

Xref Image : APTIM Logo Standard Color.jpg
C-008 Sampling and Analysis Plan.jpg
NAVFAC Logo.jpg
Site Location Map.jpg
Site Map.jpg

File: O:\project\LANTDIV\Bethpage NY\500689\500689-A7.dwg
Plot Date/Time: Oct 06, 2020 - 11:50am
Plotted By: bernadette.oconnor