Mid-Atlantic
Norfolk, Virginia

Final

Project Management Plan
Fiscal Years 2021-2025

Naval Air Station Oceana
Virginia Beach, Virginia

August 2020

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Prepared for NAVFAC Mid-Atlantic
by CH2M HILL, Inc.
Virginia Beach, Virginia
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Acronyms and Abbreviations

AFFF	aqueous film-forming foam
AOC	area of concern
AR	Administrative Record
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CH2M	CH2M HILL, Inc.
CMS	Corrective Measures Study
COC	constituent of concern
COPC	constituent of potential concern
DD	Decision Document
DPT	direct-push technology
EarthTech	Earth Technology Corporation
EE/CA	Engineering Evaluation/Cost Analysis
ERA	Ecological Risk Assessment
ERP	Environmental Restoration Program
FS	Feasibility Study
FY	Fiscal Year
HHRA	Human Health Risk Assessment
IAS	Initial Assessment Study
IC	institutional control
IRP	Installation Restoration Program
LTM	long-term monitoring
LUC	land use control
MCL	maximum contaminant level
MIP	Membrane Interface Probe
MRP	Munitions Response Program
NALF	Naval Auxiliary Landing Field
NAS	Naval Air Station
Navy	Department of the Navy
NFA	No Further Action
NTCRA	Non-Time-Critical Removal Action
ORC	Oxygen-Release Compound
PA	Preliminary Assessment
PFAS	per- and polyfluoroalkyl substance
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PMP	Project Management Plan
POL	petroleum, oil, and lubricant
PRP	Potentially Responsible Party
RAO	Remedial action objective
RCRA	Resource Conservation and Recovery Act
RFA	Resource Conservation and Recovery Act Facility Assessment
RFI	Resource Conservation and Recovery Act Facility Investigation
RI	Remedial Investigation

SAP	Sampling and Analysis Plan
SI	Site Inspection
SMP	Site Management Plan
SWMU	solid waste management unit
TCLP	toxicity characteristic leachate procedure
USEPA	United States Environmental Protection Agency
UST	underground storage tank
UXO	unexploded ordnance
VC	vinyl chloride
VDEQ	Virginia Department of Environmental Quality
VI	vapor intrusion
VOC	volatile organic compound
WWTP	wastewater treatment plant

SECTION 1

Introduction

This document presents the Naval Air Station (NAS) Oceana, Virginia Beach, Virginia, Project Management Plan (PMP) for Fiscal Years (FYs) 2021 through 2025. This PMP provides a management tool for Naval Facilities Engineering Command Mid-Atlantic, United States Environmental Protection Agency (USEPA), Virginia Department of Environmental Quality (VDEQ), and activity personnel to be used for planning, scheduling, and determining the future of the NAS Oceana Environmental Restoration Program (ERP) sites, including Installation Restoration Program (IRP) sites, solid waste management units (SWMUs), Munitions Response Program (MRP) sites, Potentially Responsible Party (PRP) sites, and possible new sites identified based on the potential presence of known contaminants and chemicals of emerging environmental concern. The PMP provides long-term projections for these sites in accordance with the Department of the Navy (Navy) ERP and focuses on activities that are planned for FY 2021. Information on IRP and MRP sites located at NAS Oceana Dam Neck Annex and Naval Auxiliary Landing Field (NALF) Fentress, which are under the administrative cognizance of NAS Oceana, are included in the FY 2020 and FY 2021 Site Management Plans (SMPs) associated with those activities (CH2M, 2019a, 2020a). The FY 2021 SMP associated with Dam Neck Annex is currently being updated.

This PMP presents the rationale for all ongoing environmental investigations and the estimated schedule for completion of these activities for each active SWMU or site. Detailed activity schedules for FY 2021 are provided at the end of **Section 4**.

Previous SWMU investigations at NAS Oceana have been conducted under provisions of the Resource Conservation and Recovery Act (RCRA) in accordance with the RCRA Section 3008(h) Administrative Order on Consent (the Consent Order) issued by USEPA in 1991. As of July 1998, cleanup activities at these SWMUs have been accomplished in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) site management process based on a memorandum from the Chief of the RCRA Operations Branch (**Appendix A**); however, this does not relieve NAS Oceana of complying with the requirements of the final Consent Order. This PMP satisfies the requirement for the Navy to issue a PMP under Section VII B(7) and Attachment A, Task III A of the Consent Order.

The regulatory oversight for MRP sites varies based on location. All IRP and MRP sites located on NAS Oceana are managed with USEPA and VDEQ oversight. The MRP sites in the Chesapeake Bay (Tangier Island Target Site) are managed with VDEQ oversight only as they are not contiguous to the NAS Oceana main installation property and the Consent Order does not apply. The investigations and remediation for MRP sites located within North Carolina state waters (North Landing River Target, Northern Currituck Sound Target, and Former Palmetto Point Bombing Range) are overseen by the North Carolina Department of Environmental Quality, formerly known as the North Carolina Department of Environment and Natural Resources. The main body of this document includes information on all IRP and MRP sites within the main installation boundary. Information on other-than-operational ranges, which are noncontiguous, is provided in **Appendix B** for the purpose of completeness.

This PMP, previously referred to as the SMP, is intended to be a working document that is updated regularly to maintain current documentation and summaries of environmental actions at NAS Oceana. This PMP updates and supersedes all previous SMPs and PMPs. Detailed information is provided for active SWMUs and sites located at NAS Oceana. For SWMUs that have already been closed via a No Further Action (NFA) Decision Document (DD), only summary information is included. No USEPA concurrence has been identified for several sites that have been closed. A brief summary of the status of Petroleum, Oil, and Lubricant (POL) sites that are actively monitored and managed under the VDEQ POL program are referenced in **Appendix C**. Closure letters for all former POL sites are included in **Appendix D**. Detailed information will be added to future PMPs for any sites that are reopened for additional investigation.

SECTION 2

Environmental Restoration Program History

2.1 NAS Oceana Description

NAS Oceana (**Figure 2-1**) was established in 1943 as a small auxiliary airfield. Since 1943, NAS Oceana has grown to more than 16 times its original size and is now a 6,000-acre master jet base supporting an installation population of 19,000 people. The primary mission of NAS Oceana is to provide the personnel, operations, maintenance, and training facilities to ensure fighter and attack squadrons on aircraft carriers of the United States Atlantic Fleet are ready for deployment.

2.2 Environmental History

2.2.1 Initial Installation Restoration Program Investigations

Initial activities in support of the IRP were combined for NAS Oceana and NALF Fentress. Prior to state and federal environmental regulatory involvement, the Navy identified possible environmental contamination caused by operations at the facilities. Three investigations were conducted: the Initial Assessment Study (IAS) (Rogers, Golden & Halpern, 1984), the Final Round 1 Verification Step (CH2M, 1986), and the Line Shack Inspection Study (CH2M, 1989). These investigations are discussed briefly in the following sections. Detailed results of the investigations that specifically pertain to active sites are included in **Section 3**.

Initial Assessment Study

To identify and assess sites posing a potential threat to human health or the environment as a result of contamination from past operations, the Naval Energy and Environmental Support Activity conducted an IAS at NAS Oceana and NALF Fentress in 1984 (Rogers, Golden & Halpern, 1984). Information from historical records, aerial photographs, field inspections, and personnel interviews was collected and evaluated. A total of 15 potentially contaminated sites were identified at NAS Oceana. One additional site, Site 14 – Fentress Landfill, was identified at NALF Fentress and a detailed description of that site can be found in the FY 2021 SMP associated with NALF Fentress (CH2M, 2020a). Each of these sites were evaluated for contamination characteristics, migration pathways, and pollutant receptors. Following this evaluation, five sites at NAS Oceana were recommended for field investigation to evaluate the presence or absence of contaminants and extent of contamination at the sites. These sites were:

- Site 1, West Woods Oil Disposal Area
- Site 2, Line Shack Oil Disposal Areas
- Site 5, Old Static Engine Test Cell Mercury Spill
- Site 7, Fifth Green Landfill
- Site 8, North Station Landfill

Round 1 Verification Step

Consistent with the recommendations included in the IAS, a Round 1 Verification Step was conducted in 1986 (CH2M, 1986) to further evaluate Sites 1, 2, 5, 7, and 8. Because metals and organic compounds are present at these sites in soil and/or groundwater, additional investigation was recommended for all sites included in this study. The additional investigations for active sites are summarized in **Section 3**.

Line Shack Inspection Study

As a result of the IAS and Round 1 Verification Step, additional investigation of Site 2 was conducted. Specifically, two areas of Site 2 (designated as Site 2B and Site 2C) were subjected to additional soil and groundwater sampling as part of the Line Shack Inspection Study (CH2M, 1989). The results indicated that chemical concentrations in soils were not indicative of hazardous waste and did not warrant immediate action at either site. Volatile organic

compounds (VOCs) were detected in groundwater at Sites 2B and 2C; therefore, further investigations were recommended to evaluate potential risks to human health and the environment. These additional investigations are summarized in **Section 3**.

2.2.2 RCRA Corrective Action Process

RCRA Facility Assessment and RCRA Corrective Action Order

Application of RCRA corrective action began in June 1988, when USEPA contractors conducted a RCRA Facility Assessment (RFA) of NAS Oceana (USEPA, 1988). The RFA redesignated existing sites as SWMUs and used a different numbering strategy than was used in previous investigations. In later documents, however, the original site designators were used to label SWMUs. For example, "Site 1" from the IAS was referred to as "SWMU 1," and so forth, in the Corrective Measures Study (CMS), even though the RFA referred to this SWMU as "SWMU 57" (**Table 2-1**). Several additional SWMUs, including SWMU 66, were also identified and reviewed during the RFA. **Table 2-1** lists all RCRA SWMUs at NAS Oceana.

In 1991, following finalization of the RFA, the Consent Order was issued for NAS Oceana. The Consent Order outlined requirements for completion of an Interim Measures Work Plan, completion of a RCRA Facility Investigation (RFI), completion of a CMS, public participation, corrective measures implementation, completion of bimonthly progress reports, and completion of a PMP.

Interim RCRA Facility Investigation

According to the RCRA protocol, an RFI should follow the RFA when known or potential contamination warrants further study. CH2M HILL, Inc. (CH2M) conducted an Interim RFI in August 1990 to guide the RFI's scope of work (CH2M, 1991) prior to the initiation of a full-scale RFI at NAS Oceana. A total of 10 SWMUs were investigated. The Interim RFI recommended further investigation of SWMUs 1, 2B, 2C, 2D, 2E, and 11. No further investigation was recommended for SWMUs 2A, 6, 7, and 8.

Phase I RFI

The first phase of the RFI was conducted in 1992 and 1993 (CH2M, 1993). Seventeen SWMUs were investigated including the six recommended for further study in the Interim RFI. As a result of this investigation, SWMUs were classified into four categories:

- SWMUs that could advance to a CMS (SWMUs 1, 2B, and 2C)
- SWMUs that required additional characterization under a second phase of the RFI (SWMUs 2D, 2E, 15, 24, and 25)
- SWMUs where contamination could be remediated immediately on the basis of existing data (SWMUs 11, 18, 19, and 20)
- SWMUs requiring no additional study or remediation (SWMUs 16/16GC, 21, 22, and 26)

The SWMUs were divided into separate study tracks on the basis of these recommendations.

Phase II RFI

In early 1994, a Phase II RFI was conducted on five SWMUs (SWMUs 2D, 2E, 15, 24, and 25) that the Phase I RFI identified as requiring additional characterization. The Phase II RFI advised NFA at SWMUs 2D and 25, but recommended CMSs at SWMUs 2E, 15, and 24 to address remediation options for free-phase petroleum and dissolved-phase groundwater contamination. The investigation is fully documented in the Phase II RFI Report (CH2M, 1995a).

Petroleum, Oil, and Lubricant Corrective Measures Study

A CMS was conducted for SWMUs contaminated with POL wastes (SWMUs 11, 18, 19, 20, and 24) in soils. The CMSs documented in the *Petroleum Contaminated Soils Report* (CH2M, 1994) and the *Excavation, Transportation,*

and Disposal of Petroleum Contaminated Soils Report (CH2M, 1995b) describe the sampling conducted to delineate specific areas of contamination and the interim cleanup action to address these areas of contaminated soils.

Corrective Measures Studies

Two CMSs were completed at NAS Oceana between 1994 and 1995. The first CMS investigation was performed for SWMUs 1, 2B, and 2C. Field activities were conducted during the investigation to determine the extent of soil contamination and refine the selection of remediation approaches. Based on these activities and an evaluation of remediation alternatives, the CMS recommended free-product removal using skimmers for SWMU 1 and groundwater containment and source area extraction of groundwater with treatment using air stripping for SWMUs 2B and 2C. The results of this investigation are further described in the CMS Report for SWMUs 1, 2B, and 2C (CH2M, 1995c).

As a follow-up to the Phase II RFI, a CMS was conducted in the fall of 1994 to evaluate contamination at SWMUs 2E, 15, and 24. After evaluation of remediation alternatives, the CMS recommended plume containment and source-area remediation for groundwater at SWMUs 2E and 24, excavation and onsite composting for soil at SWMU 15, and natural attenuation for groundwater at SWMU 15. The remediation alternative evaluation is documented in the CMS Report for SWMUs 2E, 15, and 24 (CH2M, 1996).

Phase III RFI

The USEPA issued comments on the Phase I RFI, Phase II RFI, the POL CMS, and the *Excavation, Transportation, and Disposal of Petroleum Contaminated Soils Report* in the fall of 1997. Based on these comments, it was determined that additional data were needed at some of the SWMUs to determine an appropriate path forward. These additional data were collected during the 1997 Phase III RFI field investigation (CH2M, 1999a). SWMUs investigated included 1, 2B, 2C, 2D, 18, 21, 24, 25, and 26.

Based on additional samples collected, the Final Phase III RFI recommended NFA to address soils at all SWMUs included in the study. It was also recommended that quantitative Human Health Risk Assessments (HHRAs) be performed for groundwater at SWMUs 1, 2B, 2C, and 24. No quantitative HHRAs were recommended for the other SWMUs because there were no constituents detected at concentrations exceeding human health-based risk screening values. Additional quantitative Ecological Risk Assessments (ERAs) were recommended for SWMUs 1, 21, 25, and 26.

2.2.3 CERCLA Process

In 1998, it was determined that management of NAS Oceana SWMUs would be conducted following the CERCLA process (USEPA, 1998). There is no Federal Facilities Agreement for NAS Oceana; however, following the arrangement with USEPA, all investigations and documents in the NAS Oceana IRP have been completed in accordance with CERCLA. Following site closures, it is anticipated a statement of basis will be issued in accordance with the Consent Order to ensure that all sites are closed out in accordance with the Consent Order.

NFA Decision Documents

Based on the recommendations of previously summarized investigations, the Navy recommended NFA at 15 NAS Oceana IRP SWMUs under the following NFA DDs:

- *Decision Document SWMUs 2D, 18, 19, 20, and 23, NAS Oceana, Virginia Beach, Virginia* (CH2M, 2001a)
- *Decision Document SWMUs 11, 16, 16GC, 21, 22, and 26, NAS Oceana, Virginia Beach, Virginia* (CH2M, 2001b)
- *Decision Document, SWMU 15, NAS Oceana, Virginia Beach, Virginia* (CH2M, 2003a)
- *Decision Document, SWMU 25, NAS Oceana, Virginia Beach, Virginia* (CH2M, 2003b)
- *Decision Document, SWMUs 1 and 24, NAS Oceana, Virginia Beach, Virginia* (CH2M, 2008)

Appendix E includes all concurrence letters from USEPA for SWMUs with an NFA recommendation. **Appendix F** includes all Tier I Partnering Team Consensus Statements.

Most of the remaining SWMUs from the RFA were not carried forward or were recommended for NFA based on team decisions as shown in **Table 2-1**. In 2014, only SWMUs 2B, 2C, and 2E remained active and in long-term monitoring (LTM). However, in October 2014, the Assistant Secretary of the Navy, Energy, Installations and Environment issued a statement requiring evaluation of sites with the potential for per- and polyfluoroalkyl substance (PFAS) contamination under the Defense ERP. After a site review, SWMU 11 and SWMU 26 were identified for further evaluation of PFAS and are discussed in **Section 3.1.3**. Additionally, several other potential PFAS releases identified at NAS Oceana are being investigated concurrently with the reopened SWMUs/sites at each installation.

Site visits of landfills at NAS Oceana were conducted in 2017 to determine if evidence of landfilling was visible from the ground surface and to obtain photographic documentation of debris encountered. As a result of the debris noted above ground surface and a lack of closeout documentation, the West Side Landfill (Site 3/SWMU 29), Fifth Green Landfill (Site 7/SWMU 24), North Station Landfill (Site 8/SWMU 26), and Construction Debris Landfill (SWMU 22) were reopened for further investigation. Additionally, a site visit was conducted in 2018 to determine the current state of Oceana Pond, since no removal action was ever documented for potential metal contaminants found in a release assessment conducted in 2013. Additional investigation and/or actions are planned for the landfills and Oceana Pond. Details of the planned investigations are included in **Section 3**. Additionally, the NAS Oceana Partnering Team decided to reopen SWMU 2A and Site 6/SWMU 59 due to a lack of closeout documentation and limited historical sampling. The NAS Oceana Partnering Team is reviewing formerly closed sites on a case-by-case basis and sites may be reopened as needed. As with the aforementioned SWMUs, if additional investigations are determined to be needed, SWMUs will be added to future PMPs.

2.3 Munitions Response Program Investigations

The Machine Gun Boresight Range (Unexploded Ordnance [UXO] 5) was first evaluated as part of a Preliminary Assessment (PA) conducted by Malcolm Pirnie in 2008. The PA evaluated the history of munitions use, and recommended additional investigation for UXO 5 (Malcolm Pirnie, 2008). A potential dive-bombing target site was also identified during the Oceana Aerial Photograph Study (CH2M, 2019b) and was carried forward for additional evaluation.

Detailed results of the investigations that specifically pertain to active sites are included in **Section 3**. Several other-than-operational ranges are also managed under NAS Oceana but are not discussed in detail in this PMP because they are noncontiguous to the Oceana main installation property. The status of these ranges is included in **Appendix B**.

Table 2-1. RCRA Facility Assessment Summary

Naval Air Station, Oceana, Project Management Plan for FY 2021

SWMU ID *	Site Name	Redesignation	Current Status	EPA Concurrence on Decision Documents
1	Hazardous Waste Storage Area, Bldg 23	Redesignated as part of Site 2E	Active	N/A
2	Hazardous Waste Storage Area, Bldg 122N	N/A	NFA, not included in order	N/A
3	Hazardous Waste Storage Area, Bldg 204	Redesignated as Site 18	NFA - July 2001 Decision Document[4]	September 27, 2001 Concurrence Letter
4	Hazardous Waste Storage Area, Bldg 513 (600 Div)	N/A	NFA, not included in order	N/A
5	Hazardous Waste Storage Area, Bldg 513 (700 Div)	N/A	NFA, not included in order	N/A
6	Hazardous Waste Storage Area, Bldg 513A	N/A	NFA, not included in order	N/A
7	Hazardous Waste Storage Area, Bldg 527	N/A	NFA, not included in order	N/A
8	Hazardous Waste Storage Area, Bldg 1102	N/A	At the time of the RCRA Order, this site had a Corrective Action Plan that was under review by Virginia's Water Pollution Control Department. As per the August 23, 1990 letter, USEPA agreed to address under that program.	N/A
9	Hazardous Waste Storage Area, Bldg 2005	N/A	NFA, not included in order	N/A
11	Hazardous Waste Storage Area, Permitted	N/A	Removed from the order because this is a permitted hazardous waste storage facility, as per USEPA Letter dated August 23, 1990.	N/A
12	Hazardous Waste Storage Building, Bldg 122	N/A	NFA, not included in order	N/A
13	Hazardous Waste Storage Building, Bldg 204	N/A	NFA, not included in order	N/A
14	Hazardous Waste Storage Building, Bldg 301	N/A	NFA, not included in order	N/A
15	Hazardous Waste Storage Building, Bldg 401	N/A	NFA, not included in order	N/A
16	Hazardous Waste Storage Building, Bldg 404	N/A	NFA, not included in order	N/A
17	Hazardous Waste Storage Building, Bldg 500	N/A	NFA, not included in order	N/A
18	Hazardous Waste Storage Building, Bldg 513A	N/A	NFA, not included in order	N/A
19	Hazardous Waste Storage Building, Bldg 820	N/A	NFA, not included in order	N/A
20	Hazardous Waste Storage Building, Bldg 830	N/A	NFA, not included in order	N/A
21	Asbestos Landfill	N/A	NFA, not included in order	N/A
22	Construction Debris Landfill	Redesignated as Site 22	NFA - December 2001 Decision Document [2]	March 26, 2002 Concurrence Letter
24	Fifth Green Landfill	Redesignated as Site 7	Closed NFA based on Technical Review Committee Meeting Minutes from October 31, 1991, Interim RFI did not indicate a release. Reopened in 2017 based on observations during a site visit.	N/A
25	Inert Landfill	Redesignated as Site 25	NFA - October 2003 Decision Document[2]	September 29, 2003 Concurrence Letter
26	North Station Landfill	Redesignated as Site 8	Closed NFA based on Technical Review Committee Meeting Minutes from October 31, 1991, Interim RFI did not indicate a release. Reopened in 2017 based on observations during a site visit.	N/A
27	Old CPO Club Landfill		Previously could not identify any closeout documentation for this site; therefore, a NFA Technical Memorandum is being developed and is anticipated to be finalized in FY 2020.	N/A
28	Sanitary Landfill	Landfill Permit #278 (D Avenue Landfill)	Addressed under the Virginia Solid Waste Program. NFA as per USEPA Letter dated August 23, 1990.	N/A
29	West Side Landfill	Designated as Site 3 in the IAS	Could not identify any closeout documentation for this site. Reopened in 2017 based on observations during a site visit.	N/A
30	Oil/Water Separators, Bldg 23	N/A	Addressed under permits and NFA as per USEPA Letter dated August 23, 1990.	N/A
31	Oil/Water Separators, Bldg 138			
32	Oil/Water Separators, Bldg 301			
33-36	Oil/Water Separators, Bldg 404			
37	Oil/Water Separators, Bldg 406			
38-39	Oil/Water Separators, Bldg 500			
40-42	Oil/Water Separators, Bldg 513			
43-44	Oil/Water Separators, Bldg 830			
45	Oil/Water Separators, Bldg 1102			
46	Oil/Water Separators, Bldg 1105			
47	Washracks, Bldg 404	N/A	NFA, not included in order	N/A
48	Washracks, Bldg 500	N/A	NFA, not included in order	N/A
49	Washracks, Bldg 589	N/A	Based on Navy explanation in their May 15, 1990 letter, this site had very low potential for release. USEPA agreed to remove from order in their August 23, 1990 letter.	N/A
50	Washracks, Bldg 840	N/A	NFA, not included in order	N/A
51	Line Shack Disposal Areas, Bldg 23	Redesignated as Site 2E	Active	N/A
52	Line Shack Disposal Areas, Bldg 125	Redesignated as Site 2D	NFA - July 2001 Decision Document[3]	September 27, 2001 Concurrence Letter
53	Line Shack Disposal Areas, Bldg 131	Redesignated as Site 2B	Active	N/A
54	Line Shack Disposal Areas, Bldg 400	Redesignated as Site 2C	Active	N/A
55	Line Shack Disposal Areas, Bldg 500	Redesignated as Site 2A	Closed NFA based on Technical Review Committee Meeting Minutes from October 31, 1991 because this site was investigated in the Interim RFI and not recommended for additional study. Reopened in FY 2019 to confirm sampling results.	N/A
56	Bouganville Mercury Spill Area	Designated as Site 4 in the IAS	No additional investigation necessary as per USEPA Letter dated August 23, 1990.	N/A
57	West Woods Oil Disposal Pit	Redesignated as Site 1	NFA under CERCLA - Not formally transferred to VDEQ POL-UST Program[2]	No USEPA Concurrence identified
58	Abandoned Tank Farm, Old CPO Club	Redesignated as Site 15	NFA - September 2003 Decision Document[5]	September 29, 2003 Concurrence Letter
59	Navy Exchange Maintenance Building Waste Oil Disposal Area, Bldg, 518	Designated as Site 6 in the IAS	Closed NFA based on Technical Review Committee Meeting Minutes from October 31, 1991 . Interim RFI did not indicate evidence of release and recommended NFA. Reopened in FY 2019 to confirm sampling results.	N/A
60	Mercury Spill Areas, Bldg 305	N/A	No additional investigation necessary as per USEPA Letter dated August 23, 1990 because soil sampling following building demolition did not indicate a release.	N/A

Table 2-1. RCRA Facility Assessment Summary

Naval Air Station, Oceana, Project Management Plan for FY 2021

SWMU ID *	Site Name	Redesignation	Current Status	EPA Concurrence on Decision Documents
61	Mercury Spill Areas, Bldg 1102	N/A	No additional investigation necessary as per USEPA Letter dated August 23, 1990 because the spill was very small and cleaned up with a dental kit.	N/A
62	Old Burn Pit	Redesignated as Site 11 (62 & 63)	Formerly NFA under December 2001 Decision Document - reopened for PFAS investigation.	March 26, 2002 Concurrence Letter
63	New Burn Pit			
65	Fire Station Burn Pit	Redesignated as Site 26	Formerly NFA under December 2001 Decision Document - reopened for PFAS investigation.	March 26, 2002 Concurrence Letter
66	Old Tank	Tank removed and within boundaries of Site 11	Reopened for PFAS investigation	N/A
67	Waste Oil Storage Tanks, Bldg 301	N/A	No additional investigation necessary as per USEPA Letter dated August 23, 1990 - tranferred to POL Program.	N/A
68	Waste Oil Storage Tanks, Bldg 513		No additional investigation necessary as per USEPA Letter dated August 23, 1990 - tranferred to POL Program.	N/A
69	Waste Oil Storage Tanks, Bldg 541		No additional investigation necessary as per USEPA Letter dated August 23, 1990 - tranferred to POL Program.	N/A
70	Waste Oil Storage Tanks, Bldg 543		No additional investigation necessary as per USEPA Letter dated August 23, 1990 - tranferred to POL Program.	N/A
71	Waste Fuel Storage, Bldg 541	Redesignated as Site 19	NFA - July 2001 Decision Document[4]	September 27, 2001 Concurrence Letter
72	Waste Fuel Storage, Bldg 543	Redesignated as Site 20	NFA - July 2001 Decision Document[4]	September 27, 2001 Concurrence Letter
73	Waste Fuel Storage Tank A	N/A	NFA, not included in order	N/A
74	Waste Fuel Storage Tank B	N/A	NFA, not included in order	N/A
75	Waste Fuel Storage Tank C	N/A	No additional investigation necessary as per USEPA Letter dated August 23, 1990 - tranferred to POL Program.	N/A
78	Bowsers, Bldg 830	Redesignated as Site 23	NFA - July 2001 Decision Document[3]	September 27, 2001 Concurrence Letter
79	Bowsers, Bldg 840	Redesignated as Site 24	NFA - September 2007 Decision Document[3]	No USEPA Concurrence identified
80	Scrap Metal Storage Area	N/A	NFA, not included in order	N/A
81	Silver Recovery Unit A, Bldg 321	N/A	NFA, not included in order	N/A
82	Silver Recovery Unit B, Bldg 321	N/A	NFA, not included in order	N/A
83	Auto Hobby Shop Trench Drain, Bldg 543	N/A	NFA, not included in order	N/A
84	Old WWTP Anaerobic Digester	N/A	NFA, not included in order	N/A
85	Test Cell, Bldg 1102	N/A	NFA, not included in order	N/A
86	Test Cell, Bldg 1105	N/A	NFA, not included in order	N/A
87	Corrosion Control Shop Degreaser Pit, Bldg 513	N/A	No additional investigation necessary as per USEPA Letter dated August 23, 1990.	N/A
88	Trash Dumpsters	N/A	NFA, not included in order	N/A
89	Battery Storage Area, Bldg 401	N/A	NFA, not included in order	N/A
90	Battery Storage Area, Bldg 830	N/A	NFA, not included in order	N/A
91	Battery Storage Area, Bldg 840	N/A	NFA, not included in order	N/A
92	Battery Storage Area, Bldg 541	N/A	NFA, not included in order	N/A
93	Battery Acid Neutralization Sink, Bldg 401	N/A	NFA, not included in order	N/A
94	Battery Acid Neutralization Drum, Bldg 401	N/A	NFA, not included in order	N/A
95	Pesticide Storage Area, Bldg 821	Redesignated as Site 16	NFA - December 2001 Decision Document (includes SWMU 16GC - Golf Course Support Facilities)[2]	March 26, 2002 Concurrence Letter
96	Asbestos Storage Area, Bldg 830	N/A	NFA, not included in order	N/A
97	Transformer Storage Area, Bldg 830	Redesignated as Site 21	NFA - December 2001 Decision Document [2]	March 26, 2002 Concurrence Letter
98	Tire Storage Area, Bldg 541	N/A	NFA, not included in order	N/A
99	Tire Storage Area, Bldg 543	N/A	NFA, not included in order	N/A
Areas of Concern Identified in the RFA				
A	Fuel Storage Tanks at the Tank Farm	N/A	Not formally transferred to POL program; currently being addressed as Fuel Farm POL site.	N/A
B	Fuel Storage Tanks, Bldg 1102	N/A	Not formally transferred to POL program; currently being addressed as Jet Test Cell Site. One monitoring well at this site will be sampled as part of the basewide PFAS investigation at NAS Oceana.	N/A
C	Fuel Storage Tanks, Bldg 602	N/A	No additional investigation necessary as per USEPA Letter dated August 23, 1990.	N/A
E	Material Storage Areas (Bldgs 20, 401, 601, 830, 840, and 920)[1]	N/A	No additional investigation necessary as per USEPA Letter dated August 23, 1990.	N/A

NFA No Further Action
RFA RCRA Facility Assessment
USEPA United States Environmental Protection Agency

[1] The Material Storage Area at Building 20 is located at Naval Auxiliary Landing Field Fentress and is included in the FY 2020 Site Management Plan for that installation (CH2M, 2019).

[2] The DD for this SWMU recommended NFA due to no unacceptable risk to human health and low to negligible ecological risk.

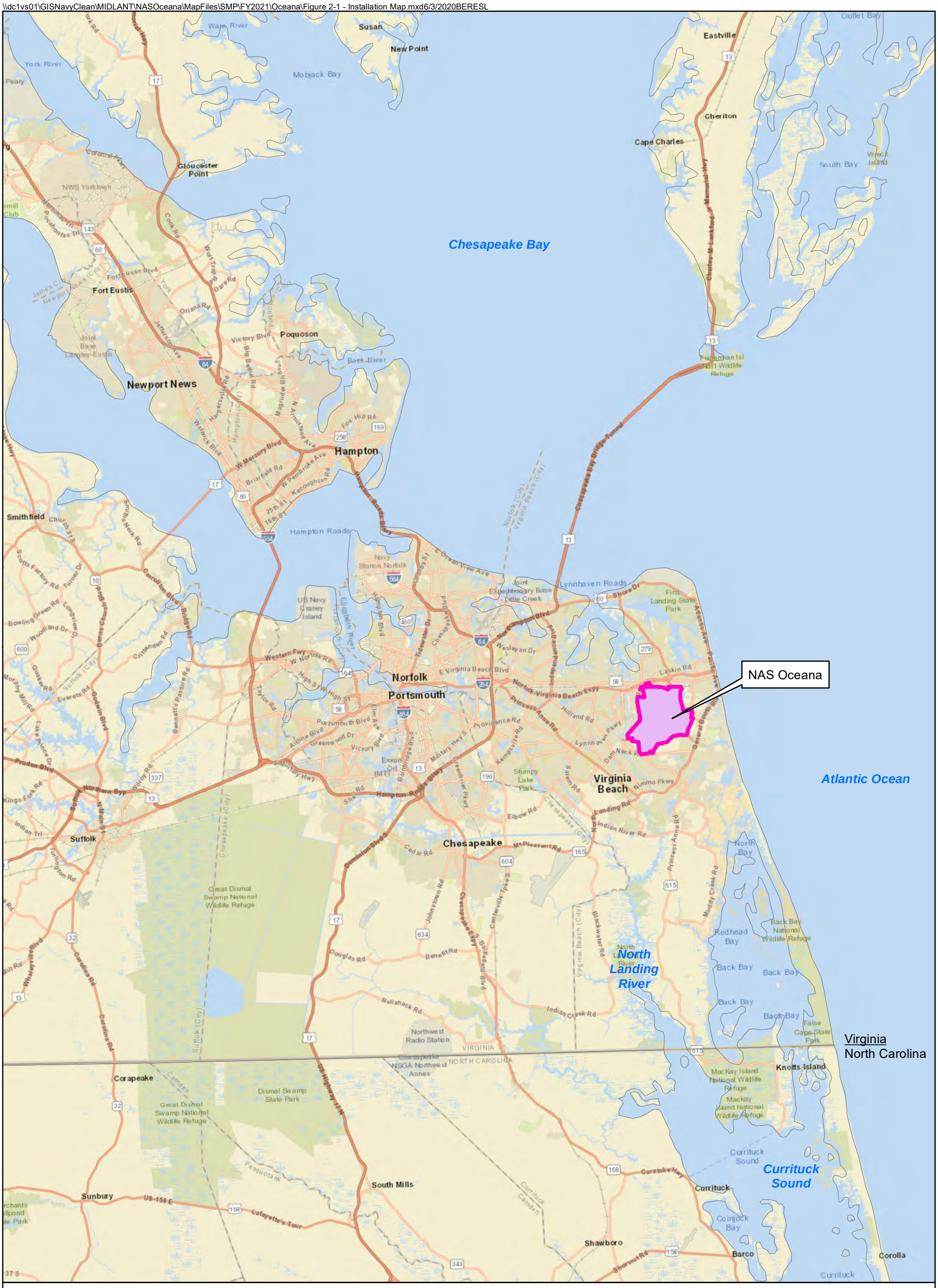
[3] The DD for this SWMU recommended NFA due to no unacceptable risk to human health and no complete exposure pathways to ecological receptors.

[4] The DD for this SWMU recommended NFA due to no unacceptable risk to human health and no complete exposure pathways to ecological receptors following excavation of contaminated soil.

[5] The DD for this SWMU recommended NFA due to unacceptable risk to human health based on POL contamination, which will be addressed under the VDEQ POL UST program.

Closed via technical review committee meeting minutes
Closed per decision document
Transferred to POL Program
NFA, not included in final order
Active or reopened
Closed as per USEPA's August 23, 1990 letter

\\dc1vs01\GISNavyClean\MIDLANT\NASOceana\MapFiles\SMP\FY2021\Oceana\Figure 2-1 - Installation Map.mxd6/3/2020BERESL



Legend
- NAS Oceana Boundary
- State Boundary

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Basemap Source: ©2016, Esri

Figure 2-1
Installation Map
NAS Oceana
Virginia Beach, Virginia

ch2m

SECTION 3

Site Descriptions

The following subsections present the IRP and MRP sites. **Table 3-1** summarizes the status of IRP SWMUs that are actively being investigated or remediated. **Table 3-2** summarizes the status of MRP sites. **Figure 3-1** shows the location of each active SWMU/site.

3.1 Installation Restoration Program Sites

3.1.1 Solid Waste Management Units

The SWMUs at NAS Oceana are grouped into two categories: active and NFA. Previous investigations and DDs for NFA SWMUs have been summarized in **Section 2**. Only SWMUs being actively investigated or remediated are discussed in detail in this section. It is acknowledged that additional SWMUs may be reopened to satisfy the requirements of the Consent Order in accordance with Partnering Team discussions. These SWMUs will be added to future versions of the PMP as needed.

SWMU 2A – Line Shack Disposal Area, Building 500

	SWMU 2A Summary
Status:	Investigation Ongoing
Current IR Activities:	Site Inspection
Media Investigated:	Groundwater
Removal and Remedial Actions:	None
Media Closed:	N/A
Waste and/or Debris Present Onsite:	N/A

Site Description and History

SWMU 2A is located in the central portion of NAS Oceana, in the vicinity of Building 500, and includes Line Shacks 31 through 33. A map of the SWMU is presented on **Figure 3-2**. The line shacks are flight line shops located next to hangars for the purpose of servicing naval aircraft. Past management practices include routine disposal of waste oils directly to the ground from 1963 to the early 1980s. Waste oils, hydraulic fluid, PD 680, and lubrication, stripping, and degreasing compounds were disposed of outside of these areas (A.T. Kearney, 1989). It is estimated that between 7,000 and 15,000 gallons of wastes were discarded behind the line shacks during that time (Rogers, Golden & Halpern, 1984). According to the RFA, SWMU 2A (referred to as SWMU 55 in the RFA) was located to the west of Building 500. However, the Interim RFI identified SWMU 2A as the disposal area outside of Line Shacks 31 through 33. In 1991, the Technical Review Committee, consisting of members of the Navy, VDEQ, and USEPA, determined that SWMU 2A did not require additional assessment as part of the RFI due to Round 1 results suggesting little to no contamination was leaving the site. The line shacks have since been demolished and Building 505 has been constructed in the area that was previously Line Shacks 31 through 33.

Current and Future Activities

SWMU 2A was reopened for investigation in FY 2019 due to a lack of closure documentation. The Site Inspection (SI) Sampling and Analysis Plan (SAP) is anticipated to be finalized in FY 2020. Following finalization of the SAP, the SI fieldwork is anticipated to begin in late FY 2020 and will consist of direct-push technology (DPT) soil borings, well installation, soil, and groundwater sampling. The SI Report, including the ecological and human health risk screenings, is anticipated to be submitted for regulatory review in FY 2021.

SWMU 2B—Line Shack Disposal Area, Buildings 130-134

SWMU 2B Summary	
Status:	Investigation Ongoing, LTM On Hold
Current IR Activities:	Remedy Optimization Stage of Investigation
Media Investigated:	Groundwater, Soil, Surface Water, Sediment, Indoor Air, Subslab Vapor
Removal and Remedial Actions:	Continued Enhanced Bioremediation with LTM and LUCs
Media Closed:	Soil, Surface Water, Sediment
Waste and/or Debris Present Onsite:	N/A

Site Description and History

SWMU 2B is located in the central to east portion of NAS Oceana, southeast of main Medium Attack Wing Hangar 122. A detailed map of the SWMU is presented on **Figure 3-3**. Most of the ground surface in the vicinity of SWMU 2B is now covered with concrete and asphalt. The limited exposed ground surface between the buildings, parking areas, and tarmac is grassy and maintained as mowed lawn. SWMU 2B contains a stormwater drainage ditch, surrounded by a band of vegetation, that is used to convey surface runoff from the site to the south. Groundwater discharges to this drainage ditch, which maintains a perennial base flow. No submerged aquatic vegetation has been observed in the ditch. Chemicals such as waste oil, hydraulic fluid, PD 680, paint thinners and strippers, Turco, naphthalene, benzene, toluene, and derivatives were disposed of between 1963 and the early 1980s, when a hazardous waste recovery program was initiated. An oil-water separator was installed in the 1980s.

A summary of relevant documents and milestones is presented in **Table 3-3.**

Table 3-3. Summary of Relevant Documents and Milestones for SWMU 2B

Document Title/Milestone	Summary
Ecological Risk Assessment (CH2M, 2001c) – Administrative Record (AR) #000690	In accordance with the recommendations in the Phase III RFI, the screening and the initial step of the Baseline Ecological Risk Assessment was completed for SWMU 2B. Potentially complete exposure pathways were identified for ecological receptors at this site via exposure to surface soil, surface water, and sediment in the ditch southeast of the site. The risk assessment recommended additional evaluation to address ecological concerns when evaluating remedial alternatives for SWMU 2B in a Feasibility Study (FS).
Human Health Risk Assessment (CH2M, 2004) – AR #000856	Soil and groundwater analytical results from samples collected during the various phases of the RFI, CMS, and groundwater investigation activities were used in support of the HHRA to characterize potential risks to current and future exposure to site media. The risk assessment concluded that soil did not pose an unacceptable risk based on current and future land use. However, it was concluded that potable use of groundwater at SWMU 2B may pose an unacceptable risk to future receptors because of the presence of VOCs and metals (arsenic, iron, and manganese).
Feasibility Study (CH2M, 2002a) – AR #000606	Based on the recommendations in the ERA, additional surface soil data were subsequently collected to refine the ecological risk evaluation. The results indicated that although some small areas may pose risks to ecological receptors, these areas are isolated and are not migrating. Therefore, NFA was recommended at SWMU 2B based on ecological considerations. Institutional controls (ICs) and LTM were recommended as the preferred alternative to address potential human health risks from exposures to VOCs and metals in groundwater.
Groundwater Treatability Study (CH2M, 2007a) – AR #000035	A VOC Groundwater Treatability Study was conducted in August and September 2004, which included the injection of hydrogen release compound. Post-injection monitoring events were conducted in November 2004, January 2005, May 2005, and September 2005.
Statistical Evaluation and Metals Risk Management Technical Memoranda (CH2M, 2005a, 2005b)	In order to address the inorganic constituents of concern (COCs) identified in the HHRA, additional data evaluation and statistical analyses were conducted to further assess the presence and source of arsenic, iron, and manganese in groundwater. Based on the results of this analysis, it was concluded that NFA was warranted for metals present in groundwater at SWMU 2B (CH2M, 2005a, 2005b).

Table 3-3. Summary of Relevant Documents and Milestones for SWMU 2B

Document Title/Milestone	Summary
Feasibility Study Addendum (CH2M, 2005b) – AR #000669	Changes in site status were evaluated via an addendum to the 2002 FS Report as a result of implementing the treatability studies and the information contained in the metals risk management technical memoranda (CH2M, 2005a, 2005b).
Final Decision Document, SWMUs 2B, 2C, and 2E (CH2M, 2008) – AR #00751	The DD identified the selected remedy (Continued Enhanced Bioremediation, LTM, and Land Use Controls [LUCs]) to address chlorinated VOCs in groundwater at the SWMU.
LTM Reports, 2006 to 2016 (CH2M, 2007b, 2009, 2010, 2012a, 2014a, 2014b, 2017a, 2017b, 2018a) – AR #000771, 000862, 000866, 01137, 001141, 001162	During the 2008 and subsequent 2009 sampling events, concentrations of chlorinated VOCs in the upgradient and downgradient wells exceeded maximum contaminant levels (MCLs). Consequently, a delineation of the contaminated area was completed in 2010 using Membrane Interface Probe (MIP) technology and confirmatory DPT groundwater sampling to facilitate the planning of additional groundwater treatment at the SWMU. Following the LTM data from 2008 to 2010 (well installation, MIP investigation, and DPT confirmation results), it was observed that conditions were no longer optimal for degradation of chlorinated VOCs. Consequently, the Tier I Partnering Team recommended additional treatment of the SWMU 2B area. Additional treatment was completed in 2013 using an electron donor source, 3DMe. The emulsion was injected into the aquifer to encompass the expected vertical and horizontal extent of contamination. The Final 2012 LTM Report (CH2M, 2014a) provides specific details regarding the groundwater treatment (CH2M, 2012b). This treatment was consistent with the remedy selected in the *Final Decision Document, SWMUs 2B, 2C and 2E, Naval Air Station Oceana, Virginia Beach, Virginia* (CH2M, 2008) (Continued Enhanced Bioremediation, LTM, and LUCs). The October 2016 LTM memorandum recommended additional groundwater investigation in select areas of the SWMU.
Pre-Treatability Design Investigation (CH2M, 2018b) – AR #001226	In order to address the data gaps identified during the last few years of LTM, a data gap investigation, including DPT groundwater sampling and monitoring well installation, was completed in 2017 in accordance with the SAP (CH2M, 2017c). The purpose of the investigation was to refine the extent of contamination to optimize future treatment. The results indicated that the VOC plume did not extend under Hangar 145 or along the northern and eastern boundaries of the concrete jet parking/taxi area runway. During this investigation, two shallow DPT groundwater samples had VOC detections greater than the vapor intrusion (VI) screening levels. As a result, a VI investigation was recommended to assess the potential for VI impacts in Hangar 145 and Line Shack 131 and additional subsurface investigation was recommended to determine if there is a potential soil source area impacting groundwater concentrations.
Vapor Intrusion Site Inspection (CH2M, 2018c, 2019c) – AR #001303	The VI investigation was completed during September and October 2018. Based on the results, it was determined that the VI pathway is incomplete and not impacting indoor air at levels exceeding regulatory targets in Line Shack 131 and Hangar 145. The VI investigation technical memorandum was finalized in FY 2020.
Remedy Optimization SAP and Fieldwork (CH2M, 2019d) – AR #001441	The Remedy Optimization SAP was finalized in July 2019, and the corresponding fieldwork was conducted in July 2019. The objective of this investigation was to determine if soil at SWMU 2B is acting as a continual source of contamination. The fieldwork consisted of saturated and unsaturated soil sampling and groundwater sampling.

The current nature and extent of contamination for each medium at SWMU 2B is summarized in **Table 3-4**.

Table 3-4. Summary of Constituents of Concern at SWMU 2B

Medium	Potential Risk	COC
Groundwater	Human Health	Vinyl chloride (VC), trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE)
Soil	None Identified	
Surface Water	None Identified	
Sediment	None Identified	
Indoor Air	None Identified	

Current and Future Activities

LUCs will remain in place at SWMU 2B until VOC concentrations are reduced to acceptable levels for unlimited use and unrestricted exposure, and annual inspections will continue for the duration of remedy implementation; however, LTM has been suspended until additional remedial options have been implemented to address the concentrations of chlorinated VOCs in groundwater above MCLs. The Remedy Optimization Report is anticipated to be submitted for regulatory review in late FY 2020. Following finalization of the Remedy Optimization Report, a path forward will be developed, based on the recommendations in the Remedy Optimization Report, to address concentrations of CVOCs.

SWMU 2C—Line Shack Disposal Area, Building 400

SWMU 2C Summary	
Status:	Remedial Action Operation (RAO) Phase
Current IR Activities:	Remediation Phase LTM
Media Investigated:	Groundwater, Soil, Surface Water, Sediment
Removal and Remedial Actions:	Continued Enhanced Bioremediation with LTM and LUCs
Media Closed:	Soil, Sediment, Surface Water
Waste and/or Debris Present Onsite:	N/A

Site Description and History

SWMU 2C is located in the central portion of NAS Oceana and includes Line Shack 400 and Buildings 301, 401, and 404. A detailed map of the SWMU is presented on **Figure 3-4**. Most of the ground surface in the vicinity of SWMU 2C is impervious. Mowed lawn represents the only exposed ground surface in the area. A pre-existing drainage ditch at SWMU 2C has been filled in and paved over. Activities in this area include aircraft maintenance and cleaning. Disposal of chemicals, such as waste oil, hydraulic fluid, PD 680, paint thinners and strippers, Turco, naphtha, and B&D 3400 Engine Cleaner occurred near Line Shack 400 from 1963 to the early 1980s when a hazardous waste recovery program was initiated. The area was capped with concrete in the 1980s.

A summary of relevant documents and milestones is presented in **Table 3-5**.

Table 3-5. Summary of Relevant Documents and Milestones for SWMU 2C

Document Title/Milestone	Summary
Ecological Risk Assessment (CH2M, 1999b) – AR #000493	The RFI identified VOCs as COCs in SWMU 2C media. Following the Phase III sampling, the drainage ditch area at SWMU 2C was removed, eliminating the exposure point for ecological receptors. In accordance with the recommendations in the Phase III RFI, the screening and the initial step of the Baseline Ecological Risk Assessment was completed for SWMU 2C. No complete exposure pathways were identified, and no further action for ecological risk was recommended.
Groundwater Investigation Report (CH2M, 2001d) – AR #000555	In 2001, additional groundwater sampling was conducted to delineate the horizontal and vertical extents of the chlorinated VOC plume and to evaluate naturally occurring conditions for treatment options. Discrete groundwater samples were collected using DPT and the vertical extent of the plume was verified using MIP. The results of this investigation indicated that the VOC groundwater plume was present at 9 to 24 feet below ground surface and that the vertical and lateral extents were primarily controlled by lithology. Additionally, the report concluded that aquifer conditions at the site were favorable for natural degradation of chlorinated solvents in groundwater; however, to achieve complete degradation of chlorinated VOCs in groundwater, groundwater treatment was recommended.

Table 3-5. Summary of Relevant Documents and Milestones for SWMU 2C

Document Title/Milestone	Summary
Human Health Risk Assessment (CH2M, 2002b) – AR #000587	Soil and groundwater analytical results from samples collected during the various phases of the RFI, CMS, and groundwater investigation activities were used in support of the HHRA to characterize potential risks to current and future exposure to site media. The risk assessment concluded that soil does not pose an unacceptable risk based on current and future land use. However, it was concluded that potable use of groundwater at SWMU 2C may pose an unacceptable risk to future receptors because of the presence of VC, arsenic, benzo(b)fluoranthene, naphthalene, and iron.
Feasibility Study (CH2M, 2002a) – AR #000606	Based on the conclusions of the HHRA, the site conditions posed an unacceptable risk from the potable use of groundwater. Enhanced Bioremediation with Monitored Natural Attenuation and ICs was recommended in the FS as the preferred remedial alternative.
Groundwater Treatability Study (CH2M, 2007a) – AR #000035	A VOC Groundwater Treatability Study was conducted in August and September 2004, which included the injection of Oxygen-Release Compound (ORC) (northern portion of site) and emulsified vegetable oil (southern portion of site). Post-injection monitoring events were conducted in November 2004, January 2005, May 2005, and September 2005.
Statistical Evaluation and Metals Risk Management Technical Memoranda (CH2M, 2005a, 2005b)	To address the inorganic COCs identified in the HHRA, additional data evaluation and statistical analyses were conducted to further assess the presence and source of arsenic, iron, and manganese in groundwater. Based on the results of this analysis, it was concluded that NFA was warranted for metals present in groundwater at SWMU 2C.
Feasibility Study Addendum (CH2M, 2005b) – AR #000669	Based on additional groundwater data collected, an addendum to the 2002 FS Report was prepared and recommended Enhanced Bioremediation and LUCs as the recommended remedial alternative.
Final Decision Document, SWMUs 2B, 2C, and 2E (CH2M, 2008) – AR #00751	The DD identified the selected remedy (Continued Enhanced Bioremediation, LTM, and LUCs) to address chlorinated VOCs in groundwater at the SWMU.
LTM Reports, 2006 to 2017 (CH2M, 2007b, 2009, 2010, 2012a, 2014a, 2014b, 2017a, 2017b, 2018a, 2018d, 2019e) – AR #001162 (2016 LTM Report), AR #001310 (2017 LTM Report)	Groundwater monitoring has been completed on an annual basis since the 2004 Treatability Study was conducted. Chlorinated VOC concentrations in samples from site monitoring wells have generally decreased following the initial treatment at the SWMU. The only chlorinated VOC present at SWMU 2C at levels greater than the MCL is VC. Based on 2009 and 2010 sampling results, it appeared that conditions were no longer conducive to degradation of VC at SWMU 2C. Consequently, the Tier I Partnering Team recommended additional treatment at SWMU 2C and the Team agreed to install oxygen-release compound (ORC) socks in selected wells following the subsequent LTM event. During the 2018 LTM event, groundwater samples were collected at the majority of the monitoring wells at SWMU 2C to re-establish a new monitoring well network. All 18 operable monitoring wells at SWMU 2C were sampled for site COCs and parent compounds. The concentration of VC exceeded the MCL at four monitoring wells (OW2C-MW05, OW2C-MW18, OW2C-MW25, and OW2C-MW33). During the 2019 LTM event, groundwater samples were collected from the four wells with MCL exceedances. The concentration of VC exceeded the MCL at three of the monitoring wells (OW2C-MW05, OW2C-MW18, and OW2C-MW25). Based on the 2019 LTM data, it is recommended ORC socks are installed in the three wells with MCL exceedances prior to the 2020 sampling event and that all four wells remain in the remediation phase monitoring well network. The ORC socks will be removed prior to the 2020 sampling event which is scheduled for September 2020.

The current nature and extent of contamination for each medium at SWMU 2C is summarized in **Table 3-6**.

Table 3-6. Summary of Constituents of Concern at SWMU 2C

Medium	Potential Risk	COC
Groundwater	Human Health	VC
Soil	None Identified	
Surface Water	None Identified	
Sediment	None Identified	

Current and Future Activities

Monitoring of the treatment effectiveness will continue and LUCs will remain in place until VOC concentrations are reduced to acceptable levels for unlimited use and unrestricted exposure in accordance with the revised USEPA recommended approach for evaluating completion of groundwater remedial actions (USEPA, 2014). All wells in the network will be sampled for a minimum of four rounds during the remediation monitoring phase. Once MCLs are reached and if contaminant levels show a decreasing trend, treatment will end, and the site will then enter the attainment monitoring phase where eight rounds of sampling will be completed. An updated LTM SAP was finalized in FY 2019 and the 2019 LTM report is anticipated to be submitted for regulatory review in late FY 2020. Annual inspections of SWMU 2C will continue for the duration of remedy implementation.

SWMU 2E—Line Shack Disposal Area, Building 109

SWMU 2E Summary	
Status:	RAO Phase
Current IR Activities:	Attainment Phase LTM
Media Investigated:	Groundwater, Soil
Removal and Remedial Actions:	Continued Enhanced Bioremediation with LTM and LUCs
Media Closed:	Soil
Waste and/or Debris Present Onsite:	N/A

Site Description and History

SWMU 2E is located in the central portion of NAS Oceana and includes Line Shack 109, Building 110, and the surrounding storage yard. A detailed map of the SWMU is presented on **Figure 3-5**. As with the other Line Shacks, most of the ground surface in the vicinity of SWMU 2E is paved with asphalt or covered in concrete. The only exposed ground surface in the site boundary is maintained turf grass. SWMU 2E has been used for aircraft maintenance and cleaning and for equipment and materials storage since 1963. Waste chemicals generated during aircraft maintenance and cleaning were disposed of on the ground in this area, and floating free-phase hydrocarbons were discovered in 1991.

A summary of relevant documents and milestones is presented in **Table 3-7**.

Table 3-7. Summary of Relevant Documents and Milestones for SWMU 2E

Document Title/Milestone	Summary
Ecological Risk Assessment (CH2M, 1999b) – AR #000493	The results of the Phase I RFI indicated that media at SWMU 2E were potentially contaminated by VOCs, semivolatile organic compounds, and free product. The results of the Phase II RFI indicated the presence of a dissolved-phase VOC groundwater plume and confirmed the presence of free-phase petroleum at the soil-groundwater interface. In 1999, SWMU 2E was included in a multisite Screening Ecological Risk Assessment to identify potentially complete exposure pathways for ecological receptors; however, no complete exposure pathways were identified. Therefore, NFA was recommended to address potential ecological impacts at SWMU 2E (CH2M, 1999b).
Human Health Risk Assessment (CH2M, 2002b) – AR #000587	Soil and groundwater analytical results from samples collected during the various phases of the RFI, CMS, and groundwater investigation activities were used in support of an HHRA (CH2M, 2002b). It was concluded that potable use of groundwater at SWMU 2E may pose an unacceptable risk to future receptors because of the presence of VOCs and metals (arsenic, iron, and manganese).
Feasibility Study (CH2M, 2002a) – AR #000606	Based on the recommendations in the HHRA, free-phase removal, ICs, and LTM were recommended as the preferred alternative.

Table 3-7. Summary of Relevant Documents and Milestones for SWMU 2E

Document Title/Milestone	Summary
Feasibility Study Addendum (CH2M, 2003c) – AR #000669	An addendum to the FS was completed in 2003 to provide technical justification for transferring regulatory oversight of the petroleum-contaminated area of the SWMU from CERCLA to the VDEQ Underground Storage Tank (UST)-POL Program because the principal COCs were fuel-related products (which are exempt from CERCLA actions). Since this time, the northern part of the SWMU has been transferred to the VDEQ UST-POL Program to address the petroleum contamination.
Statistical Evaluation and Metals Risk Management Technical Memoranda	To address the inorganic COCs identified in the HHRA, additional data evaluation and statistical analyses were conducted to further assess the presence and source of metals in SWMU 2E groundwater. Metals concentrations in SWMU 2E groundwater were determined to be either unrelated to a source release or were within acceptable criteria. Based on this evaluation it was determined that NFA was warranted for metals present in groundwater at SWMU 2E (CH2M, 2005b).
Groundwater Treatability Studies (CH2M, 2007a) – AR #000035	Following the POL exclusion (CH2M, 2006) and supplemental evaluation of metals concentrations in groundwater, the only remaining CERCLA-related organic COC at SWMU 2E was VC. A Groundwater Treatability Study was conducted in August and September 2004 to address the one well in which the concentration of VC exceeded the MCL. The Groundwater Treatability Study involved injection of ORC. Post-injection monitoring events were conducted in November 2004, January 2005, May 2005, and September 2005. Based on the results described above, an addendum to the 2002 FS recommending ICs and Enhanced Bioremediation was completed (CH2M, 2005b).
Final Decision Document, SWMUs 2B, 2C, and 2E (CH2M, 2008) – AR #00751	The DD for SWMU 2E identified the selected remedy (Continued Enhanced Bioremediation, LTM, and LUCs) to address chlorinated VOCs in groundwater at the SWMU.
LTM Reports, 2006 to 2017 (CH2M, 2007b, 2009, 2010, 2012a, 2014a, 2014b, 2017a, 2017b, 2018a, 2018d, 2019e) – AR #000862, 000866, 001183, 001162, 001310	Groundwater monitoring has been completed on an annual basis since the 2004 Treatability Study was conducted. Following the 2010 sampling results, the Tier I Partnering Team agreed to install ORC socks in selected wells as it appeared that conditions were no longer conducive to degradation of VC. ORC socks were most recently installed in February 2017 and removed in July 2017, prior to LTM sampling. The concentration of VC did not exceed the MCL in monitoring well MW09R during the 2017 LTM event; therefore, the Team agreed to begin attainment monitoring, to include site monitoring wells MW09R, MW18, and MW19 in 2018 in accordance with the revised USEPA recommended approach for evaluating completion of groundwater remedial actions (USEPA, 2014). Remediation monitoring was completed during the 2017 LTM event and attainment monitoring was initiated in 2018. An updated LTM SAP, including the revised exit strategy and attainment monitoring frequency, was finalized in FY 2019 and the first round of attainment monitoring was completed in December 2018. The second, third, and fourth rounds of attainment monitoring were conducted in March, June, and September of 2019, respectively. The fifth round of attainment monitoring was conducted in March 2020. The concentration of VC during all rounds of attainment monitoring remained less than the MCL.

Current and Future Activities

Monitoring of the treatment effectiveness will continue and LUCs will remain in place until VOC concentrations are reduced to acceptable levels for unlimited use and unrestricted exposure in accordance with the revised USEPA recommended approach for evaluating completion of groundwater remedial actions (USEPA, 2014). Quarterly attainment monitoring will continue until eight rounds of sampling, with concentrations below the MCL or statistical trend analysis indicating concentrations are stable or decreasing, are completed. Following completion of attainment monitoring, an NFA Memorandum will be submitted for regulatory review. An updated LTM SAP was finalized in FY 2019 and the 2019 LTM report is anticipated to be submitted for regulatory review in late FY 2020. Annual inspections of SWMU 2E will continue for the duration of remedy implementation.

Site 3/SWMU 29—West Side Landfill

	West Side Landfill Summary
Status:	Investigation Ongoing
Current IR Activities:	Site Inspection
Media Investigated:	Groundwater, Soil, Surface Water, Sediment
Removal and Remedial Actions:	None
Media Closed:	None
Waste and/or Debris Present Onsite:	Buried and visible waste present throughout site

Site Description and History

West Side Landfill is located west of the runway. A detailed map of the site is presented on **Figure 3-6**. West Side Landfill was initially identified as Site 3 during the IAS and was described as a 6-acre landfill which was operated from 1941 to 1945. Wastes disposed of in the landfill reportedly included construction debris, municipal wastes, and unknown debris. The IAS report did not recommend a confirmation study of the site; however, the IAS made assumptions regarding the amount of waste disposed of from the whole installation during 1946–1984. The IAS estimated that the site could contain roughly 60 pounds of asbestos, 400 gallons of paints and thinners, and 24 pounds of pesticide residues (Rogers, Golden & Halpern, 1984).

West Side Landfill is currently not maintained. The ground surface is wooded and grass-covered, and trees present at the site are primarily pine. The terrain is flat, with elevations ranging from 10 to 20 feet above mean sea level (**Figure 3-6**). A stormwater conveyance is present on the west of the site and runs north to south. A smaller conveyance exists in the northeastern corner of the SWMU and runs east to west toward the larger conveyance.

The West Side Landfill was designated SWMU 29 during the RFA (USEPA, 1988). Waste was left in place at this SWMU without LUCs.

A summary of relevant documents and milestones is presented in **Table 3-8**.

Table 3-8. Summary of Relevant Documents and Milestones for West Side Landfill

Document Title/Milestone	Summary
Geophysical and Test Pitting Investigation (CH2M, 2018e) – AR #001320	In 2017, the Navy recommended an SI after a site visit to the landfill. This SI is planned to determine appropriate actions necessary to ensure protection of human health and the environment, and properly document closeout for the site. Prior to scoping the SI, test pitting and a geophysical investigation were completed in FY 2018 to determine the lateral extent of buried wastes and the thickness of the soil cover at the site. A technical memorandum summarizing the results of this investigation was finalized in October 2018.
SI SAP and Fieldwork (CH2M, 2019f)	The SI SAP was finalized in May 2019 and the corresponding fieldwork was conducted in April and July 2019. The SI fieldwork consisted of surface and subsurface soil sampling, monitoring well installation, groundwater level surveying, groundwater sampling, and surface water and sediment sampling. The groundwater level survey determined that flow is generally towards drainage swales, and to the north and northwest. Risk-based screening levels for groundwater, subsurface soil, and surface soil were exceeded.

Current and Future Activities

The SI Report was submitted for regulatory review and is anticipated to be finalized in FY 2020. Following finalization of the SI Report, the Non-Time-Critical Removal Action (NTCRA) Engineering Evaluation/Cost Analysis (EE/CA) will be prepared and is anticipated to be submitted for regulatory review in early FY 2021. A basewide background investigation for groundwater and soil SAP is planned for FY 2020 and the fieldwork is planned for FY 2021. The background investigation results will be used to support site decision-making.

Site 6/SWMU 59—Navy Exchange Maintenance Building Waste Oil Disposal Area, Building 518

Site 6 Summary	
Status:	Investigation Ongoing
Current IR Activities:	Site Inspection
Media Investigated:	None
Removal and Remedial Actions:	None
Media Closed:	None
Waste and/or Debris Present Onsite:	N/A

Site Description and History

Site 6/SWMU 59 includes a strip of ground approximately 25 feet long adjacent to a fence outside of Building 518, the Naval Exchange Maintenance Building. A map of the SWMU is presented on **Figure 3-7**. Building 518 is located in the central portion of NAS Oceana near the intersection of Hornet Drive and 5th Street.

The Navy Exchange maintenance operations were based in Building 518 as early as the late 1950s. Maintenance operations included minor repairs (e.g., wire splicing, bulb changing, etc.), air conditioning/refrigeration recharging and repair, and minor painting and carpentry for NAS Oceana and Dam Neck Annex Exchange facilities. Empty Freon containers and Formica cleaner cans were disposed of in nearby dumpsters and Safety Kleen solvent, used to clean parts, was contained in a 15-gallon batch tank that was drained and refilled approximately four times per year (Rogers, Golden & Halpern, 1984). Less than 15 gallons of waste oil per year were reportedly dumped at the site during the 1970s for approximately 10 years. The waste oil was generated from vehicle maintenance activities. After 1982, waste oil was collected by Public Works for disposal (Rogers, Golden & Halpern, 1984).

Approximately 100 to 150 batteries per month were removed from cars and reportedly stored outside of Building 518 on pallets. A private contractor reportedly removed the old batteries and replaced them with new ones. Some refilling of the batteries, estimated to be up to 25 gallons per year, was performed and empty electrolyte waste cartons were disposed of in nearby dumpsters.

Following the RFI, the Technical Review Committee, consisting of members of the Navy, VDEQ, and USEPA, determined that Site 6 did not require additional assessment as part of the RFI due to the small volumes of waste involved. No investigations have been completed at Site 6 since that time.

Current and Future Activities

The NAS Oceana Partnering Team agreed to reopen Site 6 in FY 2019 due to a lack of closeout documentation. The SI SAP is anticipated to be finalized in FY 2020. Following finalization of the SAP, the SI fieldwork is anticipated to begin in FY 2020 and will consist of DPT soil borings, well installation, soil sampling, and groundwater sampling. After fieldwork is completed, the SI Report, including the ecological and human health risk screenings, is anticipated to be submitted in FY 2021 for regulatory review.

Site 7/SWMU 24—Fifth Green Landfill

Fifth Green Landfill Summary	
Status:	Investigation Ongoing
Current IR Activities:	Site Inspection
Media Investigated:	Groundwater, Soil, Surface Water, Sediment
Removal and Remedial Actions:	None
Media Closed:	None
Waste and/or Debris Present Onsite:	Buried and visible waste present throughout site

Site Description and History

Fifth Green Landfill is located in the southeastern portion of NAS Oceana on the current golf course. A detailed map of the site is presented on **Figure 3-8**. The site is currently maintained as approximately 3 acres of the local golf course for use by military personnel, their guests, and dependents. The golf course was built in 1948, but initially was not placed on top of Fifth Green Landfill. Between 1982 and 2003, the golf course was expanded and a portion of it is now located on Fifth Green Landfill. The ground surface is covered with grass and cart paths. The terrain is rolling, with concrete debris visible along some slopes. Elevation ranges from 12 to 22 feet above mean sea level. Engineered ponds are present to the east, southeast, and west of the site. Stormwater conveyances are present to the north, east, and south. Trees present at the site are primarily pine.

Fifth Green Landfill was initially identified as Site 7 during the IAS. The site was described as an unlined, 4-acre landfill, which was operated from 1954 to 1961. Wastes disposed of in the landfill reportedly included asbestos, solvents, pesticides, transformers, municipal wastes, photofinishing wastes, and construction debris. Wastes were burned prior to disposal at the site (Rogers, Golden & Halpern, 1984). The IAS recommended additional investigation of the site.

A summary of relevant documents and milestones is presented in **Table 3-9**.

Table 3-9. Summary of Relevant Documents and Milestones for Fifth Green Landfill

Document Title/Milestone	Summary
Geophysical Investigation (CH2M, 2018f) – AR #001316	In 2017, the Navy completed a site visit at the landfill and recommended an SI due to improper closeout documentation. Prior to scoping the SI, a geophysical investigation was completed in FY 2018 to determine the lateral extent of buried wastes and the thickness of the soil cover at Site 7/SWMU 24. The waste boundary was confirmed to be east of the original IAS boundary. A technical memorandum summarizing the results of this investigation was finalized in October 2018.
SI SAP and Fieldwork (CH2M, 2019g)	The SI fieldwork was conducted in February, March, and July 2019, following submittal of the final SI SAP. The fieldwork consisted of monitoring well installation, groundwater sampling, surface and subsurface soil sampling, surface water and sediment sampling, water level surveying, and slug testing. The groundwater level survey indicated that groundwater flow is directed towards drainage swales, and generally flows to the north. However, in the southern portion of the site, it flows to the northeast. Risk-based screening levels were exceeded in all media.

Current and Future Activities

The SI Report is anticipated to be submitted for regulatory review in FY 2020. Following completion of the SI Report, the Remedial Investigation (RI) SAP is anticipated to be finalized in FY 2021 and fieldwork will begin following finalization of the SAP.

Site 8/SWMU 26 – North Station Landfill

North Station Landfill Summary	
Status:	Investigation Ongoing
Current IR Activities:	Site Inspection
Media Investigated:	Groundwater, Soil
Removal and Remedial Actions:	None
Media Closed:	None
Waste and/or Debris Present Onsite:	Buried and visible waste present throughout site

Site Description and History

North Station Landfill is located in the eastern portion of NAS Oceana. A detailed map of the site is presented on **Figure 3-9**. Site 8 was initially identified as part of the IAS and was later referred to as SWMU 26 during the RFA and Interim RFI. The site was reported to be a 4-acre site located on the eastern side of the installation. The site was used in the early 1950s to 1954 and appeared to be an unlined borrow pit excavated to below the water table and subsequently filled with waste. During the operating period, it is believed that the landfill received all solid wastes generated at the facility. The solid waste likely included solvents, pesticides, construction debris, municipal wastes, electrical conductors, transformers, sanitary, photo lab, and nonhazardous waste (EarthTech, 1989).

A summary of relevant documents and milestones is presented in **Table 3-10**.

Table 3-10. Summary of Relevant Documents and Milestones for North Station Landfill

Document Title/Milestone	Summary
SI SAP and Fieldwork, February and March 2019 – (CH2M, 2018g) – AR #001319	The SI fieldwork, which included test pitting to determine the lateral and vertical extent and nature of the waste, monitoring well installation, and collection of soil and groundwater, was completed in February and March 2019. Based upon the 2017 site walk, sediment and surface water was not present within the ditch on the southern end of the site, and water was not present within the depression throughout the SI fieldwork, so sediment and surface water samples were not collected. The groundwater level survey indicated that the groundwater generally flows to the west.

Current and Future Activities

The SI Report is anticipated to be finalized in FY 2020. Following finalization of the SI Report, the NTCRA EE/CA and Action Memorandum are anticipated to be finalized in FY 2021 followed by completion of the NTCRA. A basewide background investigation SAP for groundwater and soil is anticipated to be submitted for regulatory review in FY 2020 and the fieldwork is planned for FY 2021. The background dataset will be used to support site decision-making.

SWMU 22 – Construction Debris Landfill

Construction Debris Landfill Summary	
Status:	Investigation Ongoing
Current IR Activities:	Site Inspection
Media Investigated:	Groundwater, Soil, Surface Water, Sediment
Removal and Remedial Actions:	None
Media Closed:	None
Waste and/or Debris Present Onsite:	Visible debris present onsite

Site Description and History

Construction Debris Landfill is located in the northeastern portion of NAS Oceana. A detailed map of the SWMU is presented on **Figure 3-10**. The site is an approximately 0.55-acre unlined landfill. The years of operation are unknown, but the site was discovered in 1986 and was reported to be in use at the time of the RFA. Based on a recent review of aerial photography, it appears that activities within the site boundary may have begun in the late 1950s or early 1960s. The landfill was designated for construction debris; however, no controls were in place to prevent other waste from being disposed of. Based on observations during the RFA, the waste disposed of at the site included construction debris, furniture, empty paint cans, tires, and scrap metal (EarthTech, 1989).

The ground surface is wooded and covered with thickets, except for an access road into the site. The terrain varies with mounded berms around the approximate landfill boundary and low-lying wetlands on the eastern portion of the site. Very little concrete debris was observed onsite. Ground elevations range from 6 to 22 feet above mean sea level. A stormwater conveyance is present along the northern side of the site and extends southwest to

northeast. An engineered pond, shown as the wetland area, is present on the eastern half of the site; previously, there were two ponds, but at present the two ponds (identified as "sandpit ponds") appear to be connected. Additionally, a borrow pit was identified within the center of the access road loop. In 2017, a site visit was conducted, and the Navy recommended an SI due to waste in place with no LUCs. A site visit with the Tier I Partnering Team was also completed in December 2018.

A summary of relevant documents and milestones is presented in **Table 3-11**.

Table 3-11. Summary of Relevant Documents and Milestones for Construction Debris Landfill

Document Title/Milestone	Summary
Ecological Risk Assessment (CH2M, 1999b) – AR #000493	A Screening and Baseline ERA was completed in 1999 and groundwater, surface soil, surface water, and sediment samples were collected. The Baseline ERA recommended NFA (CH2M, 2001c). The 2001 DD indicated that NFA is necessary at SWMU 22. However, waste was left in place without LUCs and the site boundary may need to be extended based on historical aerial photographs.
Geophysical Investigation and Test Pitting Results (CH2M, 2020b)	The geophysical investigation and test pitting were completed between October 2019 and January 2020. The lateral extent of debris was identified as approximately 11 acres, and the vertical extent is approximately 10 feet below ground surface. Surface debris located across the site consisted of a riveted airplane part, iron pipes, rusted and empty drums, rusted metal, demolished concrete and asphalt, and a Conex box. Subsurface debris consisted of miscellaneous metal, copper wiring, rebar, concrete, asphalt, bathroom tile, cinderblocks, and bricks.

Current and Future Activities

The SI SAP is anticipated to be submitted for regulatory review in FY 2020. The SI fieldwork will begin following finalization of the SAP in FY 2021.

3.1.2 Other Active IRP Sites

Four active sites at NAS Oceana were not included in the RFA or Consent Order. Those sites are discussed in detail in this section. It is acknowledged that additional sites may be opened to satisfy the requirements of the Consent Order in accordance with Partnering Team discussions. These sites will be added to future versions of the PMP as needed. **Table 3-1** summarizes the current status of all SWMUs, including the sites in this section, that are actively being investigated or remediated. **Figure 3-1** shows the location of each active IRP site.

Oceana Pond

Oceana Pond Summary	
Status:	Investigation Ongoing
Current IR Activities:	Site Inspection
Media Investigated:	Soil, Sediment
Removal and Remedial Actions:	None
Media Closed:	None
Waste and/or Debris Present Onsite:	Visible debris present onsite

Site Description and History

Oceana Pond is located along the eastern boundary of NAS Oceana and east of Oceana Boulevard. A detailed map of the site is presented on **Figure 3-11**. The pond is a recreational area outside of the secure area of the installation. The area is surrounded by leased farmland and is heavily wooded. In 2012, Navy personnel noted that there were two debris areas located near the pond, on each side of the fishing pier. There are no formal records available to document the origin of the debris. Under typical rainfall conditions, no engineered or natural drainage

pathways are present that allow stormwater runoff from the debris areas to discharge to Oceana Pond; however, it is noted stormwater runoff may reach Oceana Pond under extreme weather conditions (such as hurricane conditions). Prior to 2012, two debris areas were located by NAS Oceana Natural Resource employees. No formal records are available to document the origin of the debris. A historical aerial photograph analysis of the site indicates that a potential borrow pit was backfilled sometime between 1973 and 1981.

A summary of relevant documents and milestones is presented in **Table 3-12**.

Table 3-12. Summary of Relevant Documents and Milestones for Oceana Pond

Document Title/Milestone	Summary
Debris Areas 1 and 2 Release Assessment (CH2M, 2013)	A release assessment of the debris area was conducted in 2013 and included test pitting, soil sampling, and sediment sampling. Debris found during this assessment included glass bottles, rusted drums, construction and metal debris, and plastic containers. Although the debris was found along low-lying areas with water, there was no debris found beneath the ground surface. The technical memo recommended removal of the debris and impacted soil based on ecological risks from aluminum, iron, arsenic, and other select metals. The human health risk assessment recommended that a second risk assessment be performed following those events to confirm there would no longer be an unacceptable risk to human health (CH2M, 2013). However, this memo was never finalized, and no removal action was documented following the technical memo. Additional investigation was determined to be needed.
SI SAP (CH2M, 2020c)	In February 2019, a test pitting investigation was conducted to determine if buried debris was present and if so, delineate the lateral and vertical extents and nature of waste present within the backfilled borrow pit. A total of 18 test pits were excavated, and debris was noted in all but two test pits in the former borrow pit. The estimated extent of the debris area (**Figure 3-11**) is based on the results of the test pitting investigation; however, the full extent could not be determined based on the area of standing water, which did not allow for contingency test pitting locations to the north, northwest, and east. Following the results of the test pitting investigation conducted in 2019, a housekeeping action was completed in FY 2020 to remove surface debris in the vicinity ofnear the backfilled borrow pit, including the two debris areas investigated in 2013; however, asbestos-containing material was located and could not be removed during the housekeeping action due to health and safety concerns. An SI SAP was finalized in FY 2020 and is planned to determine if potentially unacceptable human health and/or ecological risks are present in soil, surface water, sediment, or groundwater at the site following completion of the housekeeping action.

Current and Future Activities

An additional housekeeping action is planned for FY 2021 to remove the asbestos-containing material that was located during the FY 2020 housekeeping action. The SI SAP fieldwork is expected to begin in FY 2021 following removal of the asbestos-containing material. The SI report will be developed following the fieldwork.

A basewide background investigation SAP for groundwater and soil is anticipated to be submitted for regulatory review in FY 2020 and the fieldwork is planned for FY 2021. The background dataset will be reviewed to support risk-management decision-making if needed.

Locomotive Shop, Former Building 606

Locomotive Shop, Former Building 606 Summary	
Status:	Investigation Ongoing
Current IR Activities:	Site Inspection
Media Investigated:	None
Removal and Remedial Actions:	None
Media Closed:	None
Waste and/or Debris Present Onsite:	N/A

Site Description and History

The former Locomotive Shop, also known as the Locomotive Service Building, is located in the southwestern part of the installation, west of Hornet Drive. A map of the site is presented on **Figure 3-12**. This building is referred to as the Railroad Equipment Shop in the 1986 NAS Oceana Master Plan. No additional information is known about the use of this building.

Based on historical aerial photographs, the site appears to have been active from the mid-1950s to 1990s. It appears to have been demolished as of 2015 and used for storage of Conex boxes since 2016, according to aerial photographic analysis.

Current and Future Activities

The Navy opened this site for investigation in FY 2019 after it was considered as a potential area of interest in the NAS Oceana Aerial Photograph Analysis Report (CH2M, 2019b). The SI SAP was submitted for regulatory review and is anticipated to be finalized in FY 2020. The SI fieldwork, which is anticipated to begin in late FY 2020, will consist of DPT soil borings, well installation, soil sampling, and groundwater sampling. After fieldwork is completed, the SI Report, including ecological and human health risk screenings, is anticipated to be submitted in FY 2021 for regulatory review.

Former Wastewater Treatment Plant (WWTP)

Former Wastewater Treatment Plant (WWTP) Summary	
Status:	Investigation Ongoing
Current IR Activities:	Site Inspection
Media Investigated:	None
Removal and Remedial Actions:	None
Media Closed:	None
Waste and/or Debris Present Onsite:	N/A

Site Description and History

The former Wastewater Treatment Plant (WWTP) was located at the northwestern part of NAS Oceana, west of the active runway. A detailed map of the site is presented on **Figure 3-13**. In the mid-1970s, NAS Oceana was connected to the Hampton Roads Sanitation District regional collection system; however, prior to that time all sanitary and industrial wastewater was treated at the on-installation plant (Buildings SD1 through SD10). The WWTP was put in operation in 1951 and prior to that, another WWTP was operated approximately 1,500 feet northeast of the WWTP. The effluent from the WWTP was discharged to a ditch running to the west of NAS Oceana. Sludge from the WWTP was either applied to land on the western edge of the installation, given away as fertilizer, or disposed of in landfills (Rogers, Golden & Halpern, 1984).

Based on historical aerial photographs, it appears that the WWTP to the northeast was active between 1945 and 1951, and the WWTP was operational from 1951 through the 1970s. The inactive WWTP was demolished in 1983 and 1984. The contents of the anaerobic digester (SWMU 84) that was used at the WWTP were disposed of at the sanitary landfill on the installation sometime shortly after February 1985. These contents included 75,000 gallons of digester water and 350 cubic yards of sludge (A.T. Kearney, 1989). The former location of the WWTP is currently a swampy area with some vegetation.

Current and Future Activities

The Navy opened the site for investigation in FY 2019 after consideration as a potential area of interest in the Aerial Photographic Analysis Report (CH2M, 2019b). The SI SAP was submitted in FY 2020 for regulatory review. The SI fieldwork, which is anticipated to begin in late FY 2020 following finalization of the SAP, will consist of DPT

soil borings, well installation, soil and sediment sampling, and groundwater sampling. After fieldwork is completed, the SI Report, including the ecological and human health risk screenings, is anticipated to be submitted in FY 2021 for regulatory review.

Area North of Hazardous Waste Storage

Area North of Hazardous Waste Storage Summary	
Status:	Investigation Ongoing
Current IR Activities:	Site Inspection
Media Investigated:	None
Removal and Remedial Actions:	None
Media Closed:	None
Waste and/or Debris Present Onsite:	Visible debris present onsite

Site Description and History

The Hazardous Waste Storage Area is located in the southwestern portion of NAS Oceana, west of Hornet Drive. A detailed map of the site is presented on **Figure 3-14**. The area north of the Hazardous Waste Storage Area, also referred to as the Debris Pile, consists of a large debris pile containing disassembled railroad tracks. The debris is mostly metallic and wood and contains steel matting. The Debris Pile appears to have been started in the 1990s.

Current and Future Activities

The Navy opened the Debris Pile for investigation in FY 2019 after it was identified by NAS Oceana Environmental personnel. The Debris Pile is planned to be removed during a housekeeping action in late FY 2020. Following the housekeeping action, an SI will be initiated. The SI SAP was submitted for regulatory review in FY 2020 and the fieldwork, which will consist of groundwater and soil sampling, will begin once the SAP is finalized. After fieldwork is completed, the SI Report, including the ecological and human health risk screenings, is anticipated to be submitted in FY 2021 for regulatory review.

3.1.3 Potential PFAS Release Areas

In October 2014, the Assistant Secretary of the Navy, Energy, Installations and Environment issued a statement requiring evaluation of sites with the potential for PFAS contamination under the Defense ERP. As a result of the site review, SWMU 11 and SWMU 26 were identified for further evaluation of PFAS. Additionally, the potential for offsite migration of PFAS contamination is currently under assessment based on the presence of PFAS in groundwater in likely source areas on-installation. The PFAS investigation is being conducted under CERCLA. PFAS have been identified as chemicals of emerging environmental concern that could have been historically released. PFAS are primarily associated with the use of aqueous film-forming foam (AFFF) during firefighting and fire-training activities; however, they are also present in a variety of pesticides, paints, cleaners, and waxes. PFAS are environmentally persistent and can be present in environmental media long after a release.

SWMU 11 (including former SWMU 66)

SWMU 11 (including former SWMU 66) Summary	
Status:	Investigation Ongoing
Current IR Activities:	Site Inspection
Media Investigated:	Groundwater, Soil, Surface Water, Sediment
Removal and Remedial Actions:	Soil removal action of non-PFAS constituents completed in FY 1995
Media Closed:	None
Waste and/or Debris Present Onsite:	None

Site Description and History

SWMU 11, the former Firefighting Training Area, consists of two former firefighting training rings and their immediate surroundings. A detailed map of the SWMU is presented on **Figure 3-15**. SWMU 11 was previously identified as SWMU 11, SWMU 62, and SWMU 63 in the RFA for NAS Oceana (EarthTech, 1989). The site is at the intersection of two abandoned runways on the western side of NAS Oceana. A third firefighting training area, a jet mock-up, exists to the north.

According to the IAS, SWMU 11 was used for firefighting training twice a week from the 1960s to the 1980s. In the mid-1970s, the first fire pit was installed with an earthen berm to contain runoff. Prior to this, training exercises were performed on the abandoned runway. Waste fuel and oil were dumped onto the runway, ignited, and extinguished with AFFF. In 1969, the annual usage of AFFF was estimated to be 2,000 gallons. After construction of the first fire pit, training exercises were performed within the earthen berm and runoff would occasionally flow onto surrounding soils. In the early 1980s, a second fire training ring was installed on a concrete pad with a concrete berm and an oil/water separator to contain POL.

In the 1990s, a third training ring was built to the north as a jet mock-up on a concrete pad with runoff collection devices. Historical use of this area has not been documented.

In 2001, SWMU 11 was closed with NFA following bioremediation of the contaminated site soil. However, SWMU 11 was reopened for PFAS investigation based on the evaluation of sites with potential PFAS contamination (**Table 3-1**).

SWMU 66 was previously identified in the USEPA's RFA and was not part of the IRP sites. The exact location of SWMU 66 (also known as the Old Tank) is unknown, but it is in the general vicinity of SWMU 11, south to southeast of the former firefighting training rings. SWMU 66 consisted of an aboveground steel tank that was used for firefighting training exercises prior to the use of the firefighting training rings at SWMU 11. Very little is known about the frequency of training exercises or the usage of AFFF at SWMU 66.

A summary of relevant documents and milestones is presented in **Table 3-13**.

Table 3-13. Summary of Relevant Documents and Milestones for SWMUs 11 and 66

Document Title/Milestone	Summary
PFAS SI Report (CH2M, 2018h) – AR #001287	An SI for PFAS at SWMU 11 was completed in 2016-2017 and identified perfluorooctanesulfonic acid (PFOS) and/or perfluorooctanoic acid (PFOA) in groundwater above the USEPA Regional Screening Levels (RSLs) in both the Columbia/Surficial and Yorktown aquifers. The PFAS SI Report was finalized in August 2018; however, additional investigation was recommended to further delineate the extent of PFAS contamination.
PFAS SI Addendum SAP and Fieldwork (CH2M, 2019h) – AR #001512	The SI Addendum SAP was finalized, and fieldwork, including groundwater, soil, sediment and surface water sampling, was completed in FY 2019. One private drinking water well had an exceedance of the USEPA Lifetime Health Advisory for PFOA/PFOS and is suspected to be shallow and in the Surficial/Columbia aquifer. In accordance with the SWMU 11 Action Memorandum (Navy, 2019), bottled water has been, and continues to be, provided to the off-installation parcel that uses non-City-provided groundwater as drinking water with exceedances of the USEPA Lifetime Health Advisory for PFOA/PFOS.
Basewide Monitoring Well Network Water Level Gauging (CH2M, 2020d)	Water level surveys were conducted in June 2018, September 2018, December 2018, and February 2019 to determine the potential for PFAS migration offsite. A groundwater gauging technical memorandum summarizing the results from these water level survey events was finalized in FY 2020. The technical memorandum recommended conducting groundwater gauging events annually and the next event is scheduled for September 2020.

Current and Future Activities

The SI Addendum Report is anticipated to be submitted for regulatory review in FY 2021. Following finalization of the SI Addendum Report, an RI SAP will be prepared and is anticipated to be submitted for regulatory review in FY 2021.

SWMU 26

SWMU 26 Summary	
Status:	Investigation Ongoing
Current IR Activities:	Site Inspection Addendum
Media Investigated:	Groundwater, Soil
Removal and Remedial Actions:	None
Media Closed:	None
Waste and/or Debris Present Onsite:	None

Site Description and History

SWMU 26 (identified as SWMU 65 in the RFA [EarthTech, 1989]) southeast of Building 220 (Fire Station), consisted of a partially buried tank that was filled with waste fuel and oil, ignited, and extinguished with fire extinguishers. A detailed map of the SWMU is presented on **Figure 3-16**. SWMU 26 was used for fire extinguisher training exercises from the 1960s to the 1980s. The tank was removed from the ground by 1990. When in use, the burn residue and water were removed from the tank to an adjacent swale through a valved underdrain. Stormwater collects in the swale, but it does not drain to any surface water bodies. In 2001, SWMU 26 was closed with NFA. However, SWMU 26 was reopened for PFAS investigation based on the evaluation of sites with potential PFAS contamination (**Table 3-1**).

A summary of relevant documents and milestones is presented in **Table 3-14**.

Table 3-14. Summary of Relevant Documents and Milestones for SWMU 26

Document Title/Milestone	Summary
PFAS SI Report (CH2M, 2018h) – AR #001287	An SI for PFAS at SWMU 26 was completed in 2016-2017 and identified PFOS and/or PFOA in groundwater above the RSLs. The PFAS SI Report was finalized in late August 2018 (CH2M, 2018h); however, additional investigation is recommended to further delineate the extent of PFAS contamination.
PFAS SI Addendum SAP and Fieldwork (CH2M, 2019h) – AR #001512	The SI Addendum SAP was finalized, and fieldwork, including groundwater, soil, sediment and surface water sampling, was completed in FY 2019.
Basewide Monitoring Well Network Water Level Gauging (CH2M, 2020d)	Water level surveys were conducted in June 2018, September 2018, December 2018, and February 2019. A groundwater gauging technical memorandum summarizing the results from these water level survey events was finalized in FY 2020. The technical memorandum recommended conducting groundwater gauging events annually, and the next event is scheduled for September 2020.

Current and Future Activities

The SI Addendum Report is anticipated to be submitted for regulatory review in FY 2021. Following finalization of the SI Addendum Report, an RI SAP will be prepared and is anticipated to be submitted for regulatory review in FY 2021.

Other Potential PFAS Sources

The investigation objectives for the Basewide SI for PFAS were to determine whether PFAS are present in groundwater in likely source areas on-installation to determine potential for offsite migration of PFAS contamination. Potential PFAS source areas include SWMU 11, SWMU 26, known crash locations, known accidental release locations, the Jet Test Cell, aircraft hangars and maintenance buildings, the POL Fuel Tank, and the Photo Lab.

In addition to investigations of the closed SWMUs described above, the Basewide SI for PFAS also included sampling of other potential source areas on-installation and perimeter wells to determine the potential for offsite

migration. The SI was initiated in 2016 and identified PFOS and/or PFOA concentrations in groundwater above the RSLs and Lifetime Health Advisory in additional source areas (the Jet Test Cell and the Aircraft Hangar area), and below the Lifetime Health Advisory at the installation perimeter wells. In December 2016, a public information session was held to notify nearby residents of potential PFAS contamination and to coordinate sampling of private drinking water wells within a 1-mile radius of potential source areas. The SI, including off-installation sampling of private potable wells, was completed in FY 2017. One additional off-installation sample was collected in FY 2018 at the request of the property owner. Off-installation sampling is being offered to property owners within the designated sampling area twice annually. In total, 16 wells have been sampled on 15 properties. PFOS and/or PFOA were not detected at most of the off-installation properties; however, PFOS and/or PFOA were detected below the Lifetime Health Advisory at two properties east of the installation and above the Lifetime Health Advisory at one parcel north of the installation. The parcel with exceedances of the Lifetime Health Advisory is currently being supplied bottled water and an NTCRA EE/CA was finalized in FY 2020 recommending connecting this parcel to City of Virginia Beach water. The property will be connected through a private easement from either the water main to the east or the west because of development plans.

The SI PFAS Report was finalized in August (CH2M, 2018h); however, additional investigation was recommended to further delineate the extent of PFAS contamination. The SI Addendum SAP was finalized, and fieldwork, including groundwater, soil, sediment and surface water sampling, was completed in FY 2019. The SI Addendum Report is anticipated to be submitted for regulatory review in FY 2021. A potable well sampling event was conducted in October/ November of 2019 and February 2020 to allow for inclusion of additional properties based on SI Addendum results. Subsequent private, potable well sampling events will be conducted twice a year. A PFAS PA is also being developed and is anticipated to be submitted for regulatory review in late FY 2020. The objective of this PFAS PA is to evaluate additional potential PFAS source areas that were not identified during the SI. Based on the results of the SI, SI Addendum, and PA, potential source areas were grouped into three areas of concern (AOCs) and four individual sites. The RI SAPs for the three AOCs (which include SWMUs 11 and 26) are anticipated to be submitted for regulatory review in FY 2021. A Watershed Contaminant Source Document is being developed to identify potential non-Navy related sources of PFAS within the NAS Oceana watershed. This document is anticipated to be submitted for regulatory review in late FY 2020 and will be used to assist in interpretation of data which may represent a mixture of Navy and non-Navy sources.

Additionally, installation-wide water level surveys were conducted in June 2018, September 2018, December 2018, and February 2019. A groundwater gauging technical memorandum summarizing the results from these water level survey events was finalized in FY 2020. The technical memorandum recommended conducting groundwater gauging events annually and the next event is scheduled for September 2020.

A bench-scale treatability study was conducted to assess advanced alkaline oxidation for treatment of PFAS and co-contaminated groundwater from SWMUs 2B and 2E. The Round 1 and Round 2 tests were completed in FY 2019 and indicated this technology would not likely be effective for in-situ treatment of PFAS and co-contaminated groundwater at SWMUs 2B and 2E. The bench-scale treatability study report is anticipated to be submitted for regulatory review in late FY 2020.

3.1.4 Potentially Responsible Party Sites

SWMU 100

SWMU 100 Summary	
Status:	Investigation Ongoing
Current IR Activities:	Remedial Investigation
Media Investigated:	Groundwater, Soil, Surface Water, Sediment
Removal and Remedial Actions:	None
Media Closed:	None
Waste and/or Debris Present Onsite:	Buried and visible debris present onsite

Site Description and History

The only PRP site currently active at Oceana is SWMU 100, the Oceana Salvage Yard Access Road, Burial Unit and Surrounding Area. SWMU 100 is located east of the secure area of NAS Oceana adjacent to a privately-owned salvage yard, which is located off-installation. A detailed map of the SWMU is presented on **Figure 3-17**. Access to the Salvage Yard is provided by a road created between 1955 and 1963 that runs from Oceana Boulevard through Navy property to the Salvage Yard property. Use of the Salvage Yard began in the 1960s and has been continuous since that time.

During operation of the privately-owned Salvage Yard, waste has been disposed of on the Navy property to the north and south of the Access Road in numerous debris piles (**Figure 3-18**). Additionally, waste was buried in a portion of the Navy property just west of the Salvage Yard referred to as the "Burial Unit." Interviews of Oceana Salvage Yard personnel indicated that a large volume of crushed car battery casings was brought to the Oceana Salvage Yard in the 1960s and was used as fill material for the road base. From 1993 through 1995, the Salvage Yard property owners purportedly engaged in a cleanup of the Burial Unit; however, the owners did not create a closure plan during the purported cleanup period.

The portions of Oceana Salvage Yard Access Road and Burial Unit that lie within the boundary of NAS Oceana were first investigated by the Navy as part of an environmental survey (ABB, 1997). In January 2005, CH2M completed a DPT investigation to determine whether the roadway built by the Salvage Yard owners on NAS Oceana property was constructed on crushed car batteries (CH2M, 2005c). The 2005 field investigation confirmed the presence of crushed battery casings beneath the Oceana Salvage Yard Access Road; however, the extent of the contamination was not delineated. Subsurface soil analytical results from the Access Road indicated contamination above the USEPA lead screening toxicity values for residential and industrial soil. The presence or absence of surface soil contamination was not determined. Groundwater was not assessed during the 2005 investigation. Additional investigation was recommended to further evaluate the nature and extent of contamination at this site.

In 2007, USEPA issued a Draft Consent Order for the privately-owned Salvage Yard Site, including the Access Road on Navy property (USEPA, 2007). This version of the Consent Order was never finalized; however, a previous version that did not include the Navy property was finalized and required cleanup on the Salvage Yard property (not Navy property). After a lack of remedial action performed onsite, the USEPA required the Salvage Yard to begin treating and capping the lead-contaminated soil, with USEPA oversight. Approximately 1,200 cubic yards of soil and debris were gathered into approximately 250 cubic yard piles and treated using lead binding technology. Both the USEPA and the Salvage Yard collected a sample to test using the toxicity characteristic leachate procedure (TCLP). After confirming that all soil piles passed the TCLP criteria, the piles were graded into an onsite berm and capped (SCS, 2009). In 2010, the Partnering Team agreed that the Navy property would be remediated in accordance with the 2007 Draft Consent Order.
A summary of relevant documents and milestones is presented in **Table 3-15**.

Table 3-15. Summary of Relevant Documents and Milestones for SWMU 100

Document Title/Milestone	Summary
EE/CA (CH2M, 2011) – AR #000154	Additional soil samples were collected during 2010 and 2011 to delineate lead contamination. In 2011, an EE/CA was completed recommending Alternative #2b, Gravel and Asphalt Cap of the Access Road, Excavation of the Access Road Shoulders and Burial Unit with Offsite Disposal and Restoration, and Removal of Non-Roadway Associated Debris (CH2M, 2011). The NTCRA was completed in 2012 in accordance with the preferred alternative in the EE/CA (SES-TECH, 2013). LUCs are currently in place and regular inspections are conducted.
Remedial Investigation (RI) SAP and Fieldwork (CH2M, 2019i) – AR #001340	Based on Partnering Team discussion in 2017 and 2018, several data gaps were identified, including a lack of groundwater, sediment, and surface water data, waste (including battery casings) remaining on Navy property, and limited removal of soil during the removal action. The RI SAP was developed to address data gaps from previous investigations (**Section 2**) and was finalized in February 2019.

Table 3-15. Summary of Relevant Documents and Milestones for SWMU 100

Document Title/Milestone	Summary
RI Fieldwork – January 2019	The RI fieldwork was initiated in January 2019 and included monitoring well installation, and groundwater, soil, sediment, and surface water sampling. Additionally, a groundwater level survey was completed for the newly installed monitoring wells and slug testing was completed at three site wells. Groundwater level survey results indicate that the groundwater flows to the east. PAHs, PFOS, PFOA, and metals were identified as human health and ecological COPCs in groundwater. PAHs, dioxins, and metals were identified as human health and ecological COPCs in soil. Metals were identified as human health and ecological COPCs in sediment. PAHs and metals were identified as human health and ecological COPCs in surface water.

Current and Future Activities

Additional investigation is needed to determine the nature and extent of contamination in all media.

A basewide background investigation SAP for groundwater and soil is anticipated to be submitted for regulatory review in FY 2020 and the fieldwork is planned for FY 2021. The background dataset will be used to support site decision-making. Based on the results of the background study, the RI SAP Addendum will be prepared

3.2 Munitions Response Program Sites

One MRP site was investigated during the 2008 PA and SI, and one potential MRP site is currently being investigated as part of an PA/SI (**Figure 3-1**). The following section describes the history, investigations, and planned activities for the site.

3.2.1 Machine Gun Boresight Range

Machine Gun Boresight Range (UXO 5) Summary	
Status:	Investigation Complete
Current IR Activities:	NFA Recommended
Media Investigated:	Soil
Removal and Remedial Actions:	Soil removal action completed in FY 2018
Media Closed:	Soil
Waste and/or Debris Present Onsite:	N/A

Site Description and History

Machine Gun Boresight Range (UXO 5) covers approximately 1.7 acres and is north of Dorr Place and west of Runway 14. A detailed map of the site is presented on **Figure 3-18**. The eastern half of the site is generally flat and consists of maintained grass; the western portion previously contained a soil berm and a concrete backstop, which were removed during the FY 2018 removal action. UXO 5 was initially used as a maintenance and testing range for aircraft-mounted machine guns and was later converted to a small-arms firing range (Malcolm Pirnie, 2008). Ammunition was likely limited to .50- and .30-caliber rounds for aircraft guns and small-arms ammunition.

A summary of relevant documents and milestones is presented in **Table 3-16**.

Table 3-16. Summary of Relevant Documents and Milestones for UXO 5

Document Title/Milestone	Summary
Human Health Risk Assessment and Ecological Risk Assessment (CH2M, 2012c) – AR #000756	Surface and subsurface soils were evaluated at the site during the SI. Groundwater was not anticipated to be affected at the site; therefore, the SI did not evaluate groundwater as a potential route of exposure. There was no surface water or sediment present onsite. The SI identified antimony, copper, lead, and zinc as constituents of potential concern (COPCs) in soil. All COPC results exceeded established background values for eastern Virginia (Gustavsson et al., 2001) and the eastern United States (Shacklette and Boerngen, 1984), indicating a potential release occurred at the site. Based on the Human Health Risk Screening and ecological evaluations, potentially unacceptable human health and ecological risks were identified for both surface soil and subsurface soil.
Expanded Site Inspection Results Technical Memoranda (CH2M, 2015) – AR #001030	Expanded SI sampling was conducted in December 2013 to further delineate the horizontal and vertical extent of COPCs exceeding human health and ecological screening levels and to assess background conditions (CH2M, 2015). Lead was the primary contaminant observed at UXO 5, exceeding the human health and/or ecological screening levels and background levels throughout much of the site. The results of the Expanded SI sampling indicated that metals contamination exceeding screening levels extended beyond the toe of the berm, and that additional investigation was needed to fully delineate the horizontal and vertical extent of the soil COPCs.
Engineering Evaluation/Cost Analysis (CH2M, 2017d) – AR #001243	Delineation of the soil contamination was completed in 2014 through additional site characterization activities using a combination of X-ray fluorescence screening and laboratory analysis. An NTCRA EE/CA and Action Memorandum to address contaminated soil at the site were finalized in July and August 2017, respectively. The recommended alternative identified in the EE/CA was removal of the contaminated soil. A public notice was published in the local newspaper in June 2017 for public review of the EE/CA and no comments were received during the comment period.
Construction Completion Report (APTIM, 2018)	The NTCRA, which included the excavation of 900 cubic yards of contaminated soil, was completed from June 2017 to March 2018. A Construction Completion Report of the NTCRA activities was completed in September 2018.

Current and Future Activities

An NFA Memorandum was finalized in FY 2020 (included in **Appendix F**). With the NFA determination, detailed information for UXO 5 will not be provided in subsequent PMPs.

3.2.2 Potential Dive-Bombing Target Range

Potential Dive-Bombing Target Range Summary	
Status:	Investigation Ongoing
Current IR Activities:	Site Inspection
Media Investigated:	None
Removal and Remedial Actions:	None
Media Closed:	None
Waste and/or Debris Present Onsite:	Suspected Munitions and Explosives of Concern

Site Description and History

The potential Dive-Bombing Target Range, located in the northwestern portion of NAS Oceana, was identified during the analysis of historical aerial photographs. A detailed map of the site is presented on **Figure 3-19**. It appears this area was possibly used for aerial-to-ground dive-bombing between 1937 and 1943.

A summary of relevant documents and milestones is presented in **Table 3-17**.

Table 3-17. Summary of Relevant Documents and Milestones for the Potential Dive-Bombing Target Range

Document Title/Milestone	Summary
PA (CH2M, 2020e)	A PA for this site was completed in FY 2020 (CH2M, 2020e) and recommended an SI to determine if material potentially presenting an explosive hazard/munitions and explosives of concern are present due to historical activities.

Current and Future Activities

An SI MR-QAPP is anticipated to be submitted for regulatory review in FY 2021. Following finalization of the QAPP, the SI fieldwork is anticipated to take place in FY 2021. The SI Report is anticipated to be submitted for regulatory review in FY 2021.

Table 3-1. Current Status Summary of Active IRP SWMUs

Naval Air Station, Oceana, Project Management Plan for FY 2021

Site/SWMU Number	IRP Site Name	Former Site/ SWMU ID	IAS	RFA	Interim RFI	Phase I RFI	Phase II RFI	CMS	Phase III RFI	HHRA	ERA	SI	RI	FS	PRAP	DD	Closure Status	Path Forward
2A	Line Shack Disposal Area, Bldg. 500	Site 2/SWMU 55	1984	1988	1991	--	--	--	--	--	--	FY 2021[1]	TBD	TBD	TBD	TBD	Reopened[2]	Site Inspection Report planned to be submitted for regulatory review in FY 2021
2B	Line Shack 130-131	Site 2/SWMU 53	1984	1988	1991	1993	--	1995	1998	2003	2001	--	--	--	2007	2008	Active	DD recommend Continued Enhanced Bioremediation, LTM, and LUCs Remedy Optimization Report planned to be submitted for regulatory review in FY 2020
2C	Line Shack 400	Site 2/SWMU 54	1984	1988	1991	1993	--	1995	1998	2003	2000	--	--	--	2007	2008	Active	DD recommend Continued Enhanced Bioremediation, LTM, and LUCs
2E	Line Shack 109, Bldg. 23	Site 2/SWMUs 1 & 51	1984	1988	1991	1993	1995	1996	--	2003	2000	--	--	--	2007	2008	Active	DD recommend Continued Enhanced Bioremediation, LTM, and LUCs
3	West Side Landfill	SWMU 29	1984	1988	--	--	--	--	--	--	--	FY 2020[1]	TBD	TBD	TBD	TBD	Reopened[2]	Site Inspection Report planned to be finalized in FY 2020 Engineering Evaluation/Cost Analysis and Action Memorandum planned for FY 2021
6	Navy Exchange Maintenance Building Waste Oil Disposal Area, Bldg. 518	SWMU 59	1984	1988	1991	--	--	--	--	--	--	FY 2021[1]	TBD	TBD	TBD	TBD	Reopened[2]	Site Inspection Report planned to be submitted for regulatory review in FY 2021
7	Fifth Green Landfill	SWMU 24	1984	1988	1991	--	--	--	--	--	--	FY 2020[1]	TBD	TBD	TBD	TBD	Reopened[2]	Site Inspection Report planned to be submitted for regulatory review in FY 2020 Remedial Investigation SAP planned to be submitted for regulatory review in FY 2021
8	North Station Landfill	SWMU 26	1984	1988	1991	--	--	--	--	--	--	FY 2020[1]	TBD	TBD	TBD	TBD	Reopened[2]	Site Inspection Report planned to be finalized in FY 2020 Engineering Evaluation/Cost Analysis and Action Memorandum planned for FY 2021
11	Fire Fighting Training Ring	Site 11/62 & 63	1984	1988	1991	1993	--	1994[3]	--	--	2001	2018	TBD	TBD	TBD	2002	Reopened	Site reopened for PFAS investigation and Site Inspection Addendum Report is planned to be submitted for regulatory review in FY 2021
22	Construction Debris Landfill	SWMU 22	--	1988	--	1993	--	--	--	--	2001	FY 2021[1]	TBD	TBD	TBD	2002	Reopened[4]	Site Inspection SAP planned to be submitted for regulatory review in late FY 2020
26	Fire Fighting Burn Pit, Bldg 220 (Former Tank)	SWMU 65	1984	1988	--	1993	--	--	1998	--	2001	2018	TBD	TBD	TBD	2002	Reopened	RFI redesignated SWMU 65 as Site 26. Site reopened for PFAS investigation and Site Inspection Addendum Report is planned to be submitted for regulatory review in FY 2021
66	Former Fire Fighting Training Tank	SWMU 66	--	1988	--	--	--	--	--	--	--	2018	TBD	TBD	TBD	TBD	Reopened	Site reopened as part of SWMU 11 for PFAS investigation and Site Inspection Addendum Report is planned to be submitted for regulatory review in FY 2021
--	Other PFAS Sites	--	--	--	--	--	--	--	--	--	--	2018	TBD	TBD	TBD	TBD	Active	Aviation crash sites and other areas where AFFF may have been released are currently undergoing investigation and Site Inspection Addendum Report is planned to be submitted for regulatory review in FY 2021.
--	Oceana Pond	--	--	--	--	--	--	--	--	--	--	FY 2021[1]	FY 2023[1]	TBD	TBD	TBD	Active	Site was not included in RCRA Consent Order, but is open to investigate debris piles located near recreational area. Site Inspection fieldwork is anticipated for FY 2021.
100	Oceana Salvage Yard Access Road, Burial Unit, and Surrounding Area	--	--	--	--	--	--	--	--	--	--	--	TBD	TBD	TBD	TBD	Active	PRP site that was not included in RCRA Consent Order. The RI SAP Addendum is on hold pending the background investigation results.
--	Locomotive Service Building, Former Building 606	--	--	--	--	--	--	--	--	--	--	FY 2021[1]	TBD	TBD	TBD	TBD	Active	Site opened in FY 2019 and Site Inspection fieldwork is anticipated to begin FY 2021.
--	Former Wastewater Treatment Plant (WWTP)	--	--	--	--	--	--	--	--	--	--	FY 2021[1]	TBD	TBD	TBD	TBD	Active	Site opened in FY 2019 and Site Inspection fieldwork is anticipated to begin FY 2021.
--	Area North of Hazardous Waste Storage	--	--	--	--	--	--	--	--	--	--	FY 2021[1]	TBD	TBD	TBD	TBD	Active	Site opened in FY 2019 and Site Inspection fieldwork is anticipated to begin FY 2021.

1998 - Fiscal Year Activity Completed
CMS - Corrective Measures Study
DD - Decision Document
EI - Environmental Investigation
ERP - Environmental Restoration Program
FY - Fiscal Year
IAS - Initial Assessment Study
LTM - Long Term Monitoring
LUC - Land Use Controls

Table 3-2. Current Status Summary of MRP Sites

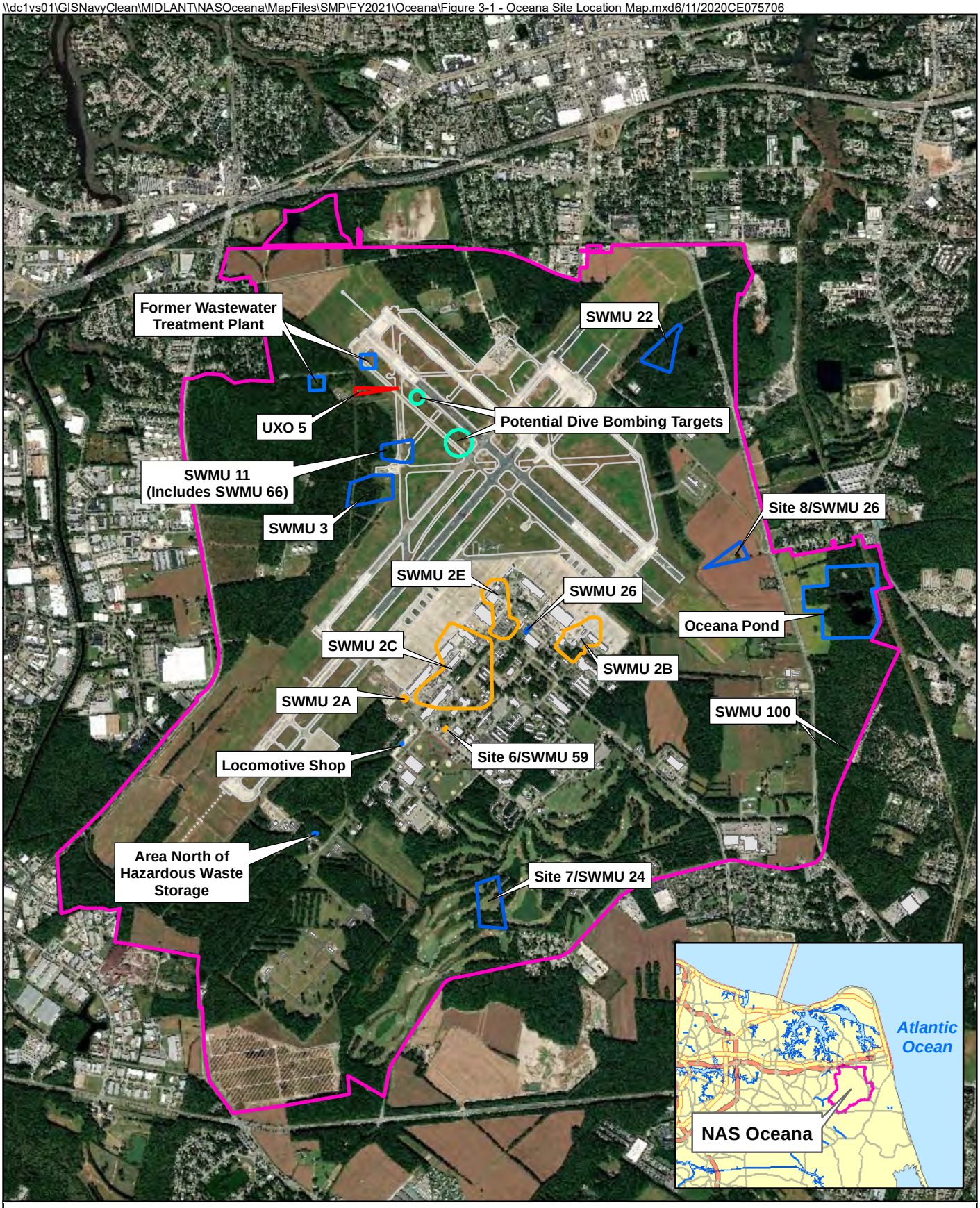
Naval Air Station, Oceana, Project Management Plan for FY 2021

Site Number	MRP Site Name	PA	SI	Expanded SI	EE/CA	NTCRA	RI/FS	DD	Path Forward
UXO 5	NAS Oceana Machine Gun Boresight Range	2008	2011	2013	2017	2018	NA	2020	NA
Potential MRP Sites									
--	Dive Bombing Target Range	2020	2021	TBD	TBD	TBD	TBD	TBD	SI planned in FY 2021

LEGEND:

NAS =	Naval Air Station
PA =	Preliminary Assessment
SI =	Site Inspection
TBD =	To Be Determined
NA =	Not Applicable

\\dc1vs01\GISNavyClean\MIDLANT\NASOceana\MapFiles\SMP\FY2021\Oceana\Figure 3-1 - Oceana Site Location Map.mxd6/11/2020CE075706



Legend

- NAS Oceana Proper Boundary
- Action DD SWMU Boundary
- Active MRP Site Boundary
- Active IRP Site Boundary
- Potential MRP Site Boundary
- Buildings
- Runways

N
W E
S

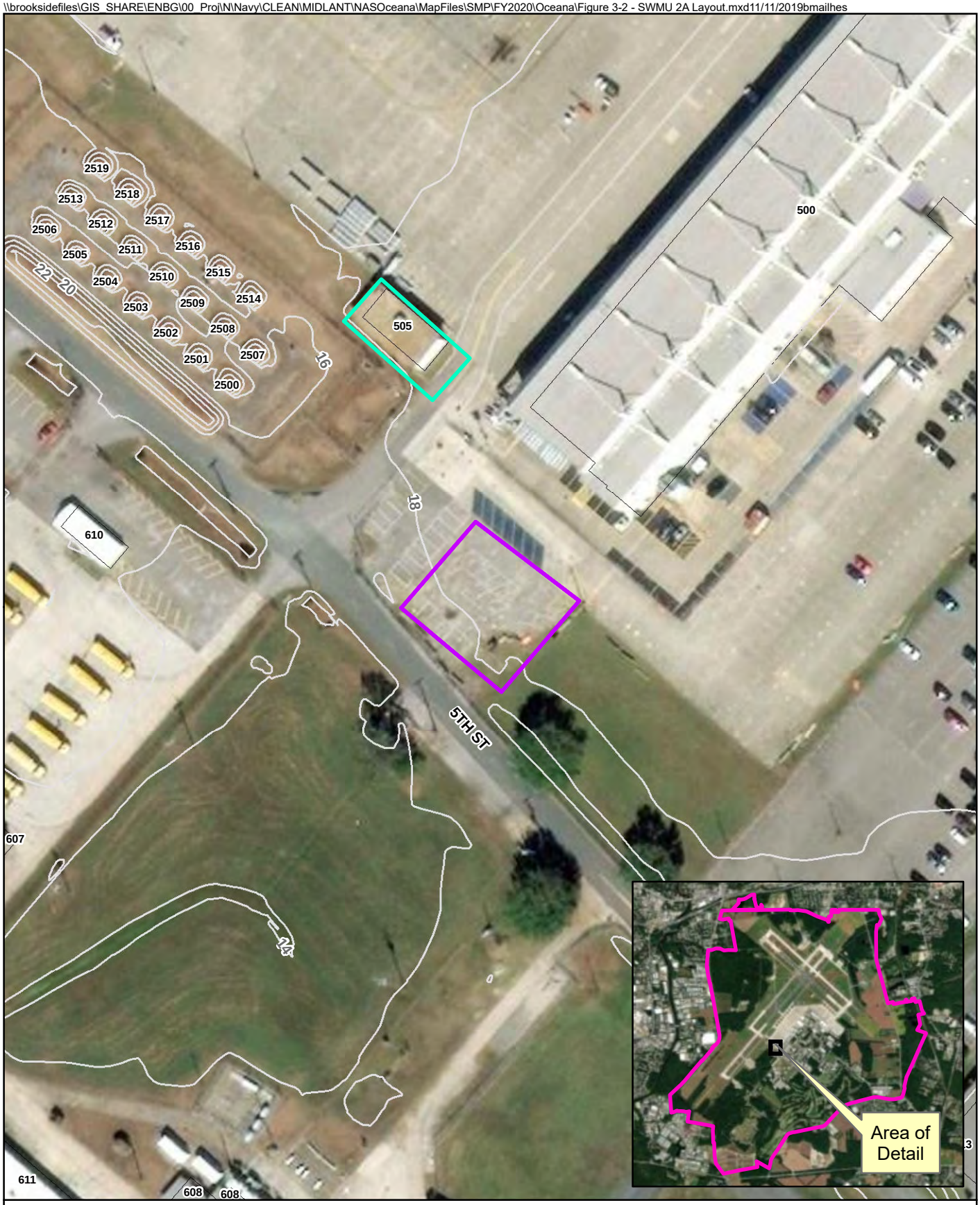
0 1,500 3,000
Feet

Imagery Source: ©2019, Esri

Figure 3-1
NAS Oceana Site Location Map
NAS Oceana
Virginia Beach, Virginia

ch2m

\\brooksidefiles\GIS_SHARE\ENBG\00_Proj\N\Navy\CLEAN\MIDLANT\NASOceana\MapFiles\SMP\FY2020\Oceana\Figure 3-2 - SWMU 2A Layout.mxd11/11/2019bmailhes



Legend

- Site Boundary from NIRIS
- Site Boundary from Interim RFI
- Elevation Contour (2 ft interval)
- NAS Oceana Boundary

N
W E
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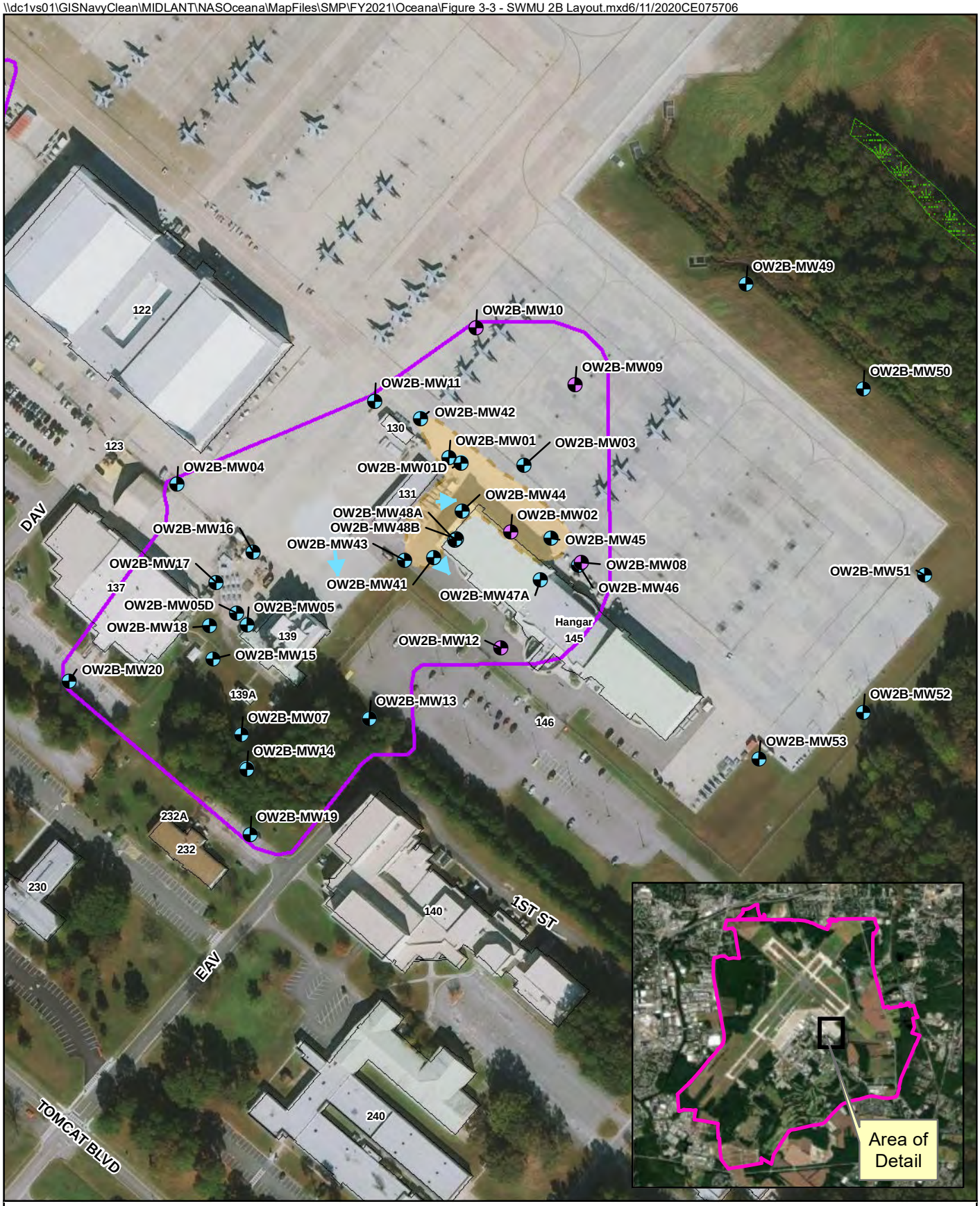
0 50 100
Feet

Imagery Source: ©2018, Esri

Figure 3-2
SWMU 2A Layout
NAS Oceana
Virginia Beach, Virginia

ch2m.

\\dc1vs01\GISNavyClean\MIDLANT\NASOceana\MapFiles\SMP\FY2021\Oceana\Figure 3-3 - SWMU 2B Layout.mxd6/11/2020CE075706



Legend

- Former Monitoring Well Location
- Existing Monitoring Well Location
- Groundwater Flow Direction (2017)
- Elevation Contour (2 ft interval)
- SWMU/LUC Boundary
- Approximate Current Extent of VOCs above USEPA Maximum Contaminant Levels
- Wetland
- NAS Oceana Boundary

N
W E
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0 125 250
Feet

Imagery Source: ©2019, Esri

Figure 3-3
SWMU 2B Layout
NAS Oceana
Virginia Beach, Virginia

ch2m

\\brooksidefiles\GIS_SHARE\ENBG\00_Proj\N\Navy\CLEAN\MIDLANT\NASOceana\MapFiles\SMP\FY2020\Oceana\Figure 3-4 - SWMU 2C Layout.mxd10/25/2019bmailhes

Legend

- Monitoring Wells
- Monitoring Well in Current LTM Network
- Target Treatment Area (2004)
- SWMU/LUC Boundary
- Groundwater Flow Direction (2018)
- Elevation Contour (2 ft interval)
- Wetland
- NAS Oceana Boundary

N W E S

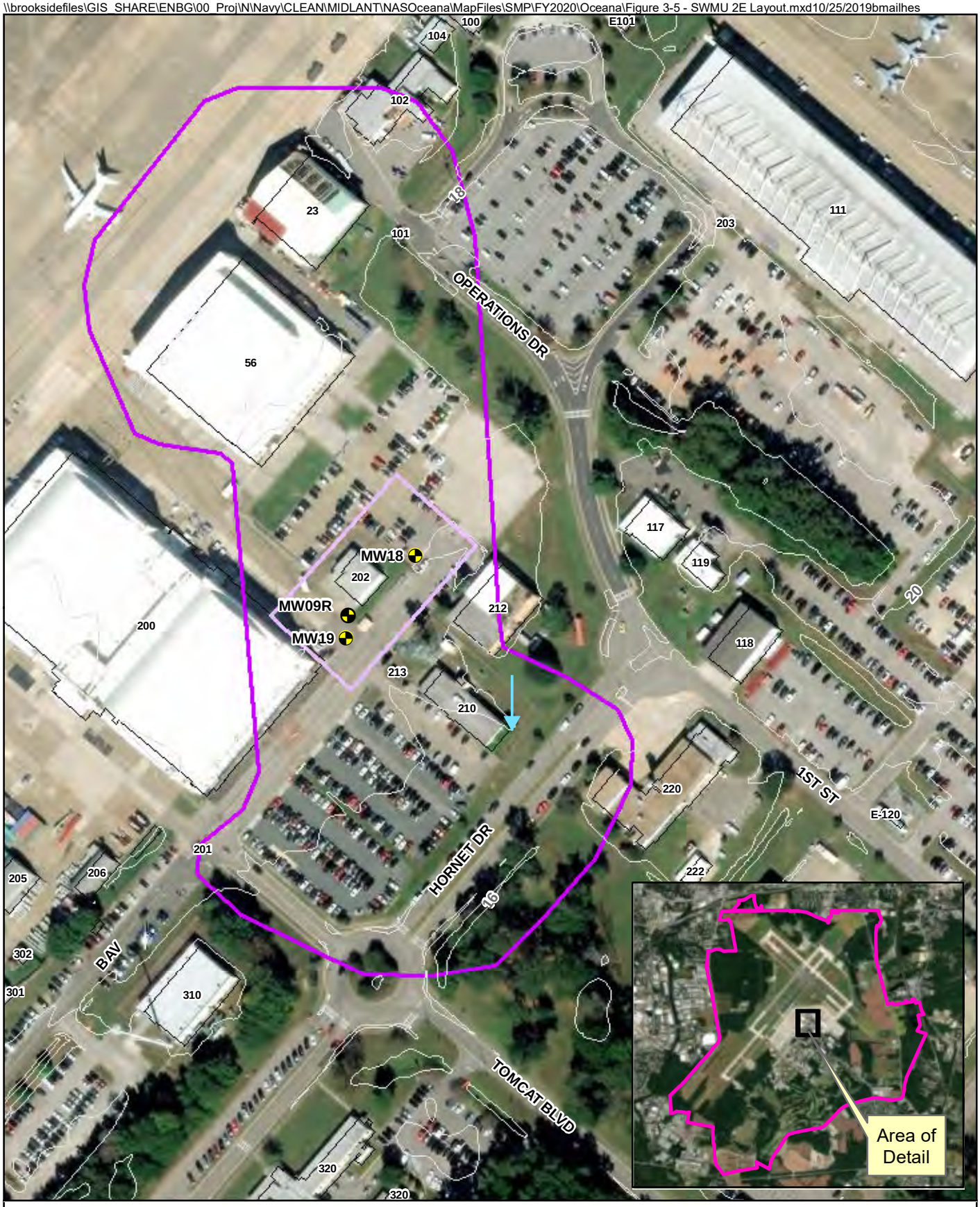
0 150 300 Feet

Imagery Source: ©2018, Esri

Figure 3-4
SWMU 2C Layout
NAS Oceana
Virginia Beach, Virginia

ch2m.

\\brooksidefiles\GIS_SHARE\ENBG\00_Proj\N\Navy\CLEAN\MIDLANT\NASOceana\MapFiles\SMP\FY2020\Oceana\Figure 3-5 - SWMU 2E Layout.mxd10/25/2019bmailhes



Legend

- Monitoring Well in Current LTM Network
- NAS Oceana Boundary
- LUC Boundary
- SWMU Boundary
- Groundwater Flow Direction (2018)
- Elevation Contour (2 ft interval)

N
W E
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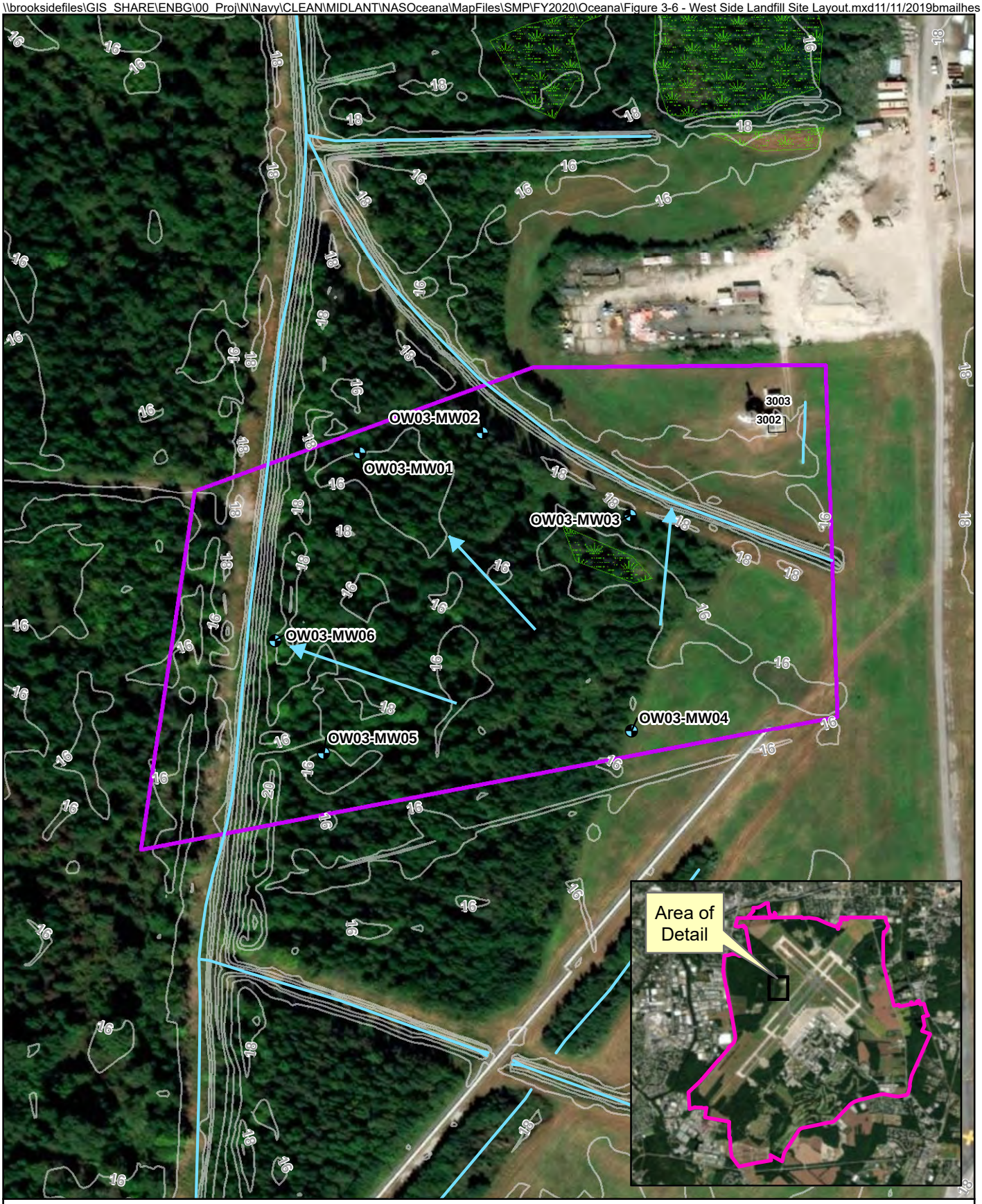
0 100 200
Feet

Imagery Source: ©2018, Esri

Figure 3-5
SWMU 2E Layout
NAS Oceana
Virginia Beach, Virginia

ch2m.



Legend

- Monitoring Well Location
- Drainage Feature
- Groundwater Flow Direction
- Elevation Contour (2 ft interval)
- Site Boundary
- Wetland
- NAS Oceana Boundary

N
W E
S

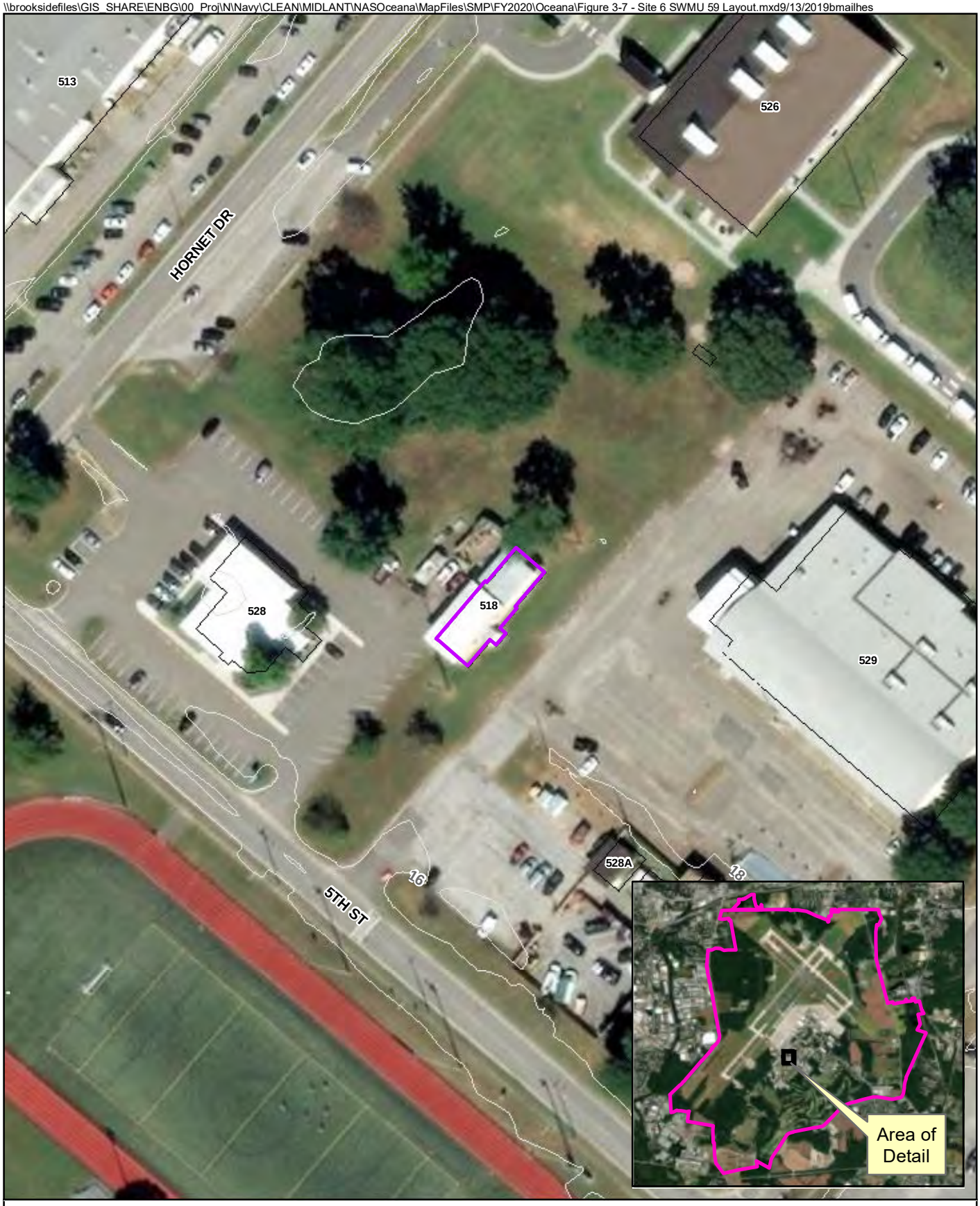
0 100 200
Feet

Imagery Source: ©2018, Esri

Figure 3-6
West Side Landfill Site Layout
NAS Oceana
Virginia Beach, Virginia

ch2m

\\brooksidefiles\GIS_SHARE\ENBG\00_Proj\N\Navy\CLEAN\MIDLANT\NASOceana\MapFiles\SMP\FY2020\Oceana\Figure 3-7 - Site 6 SWMU 59 Layout.mxd9/13/2019bmailhes



Legend

- Site Boundary
- Elevation Contour (2 ft interval)
- NAS Oceana Boundary

N
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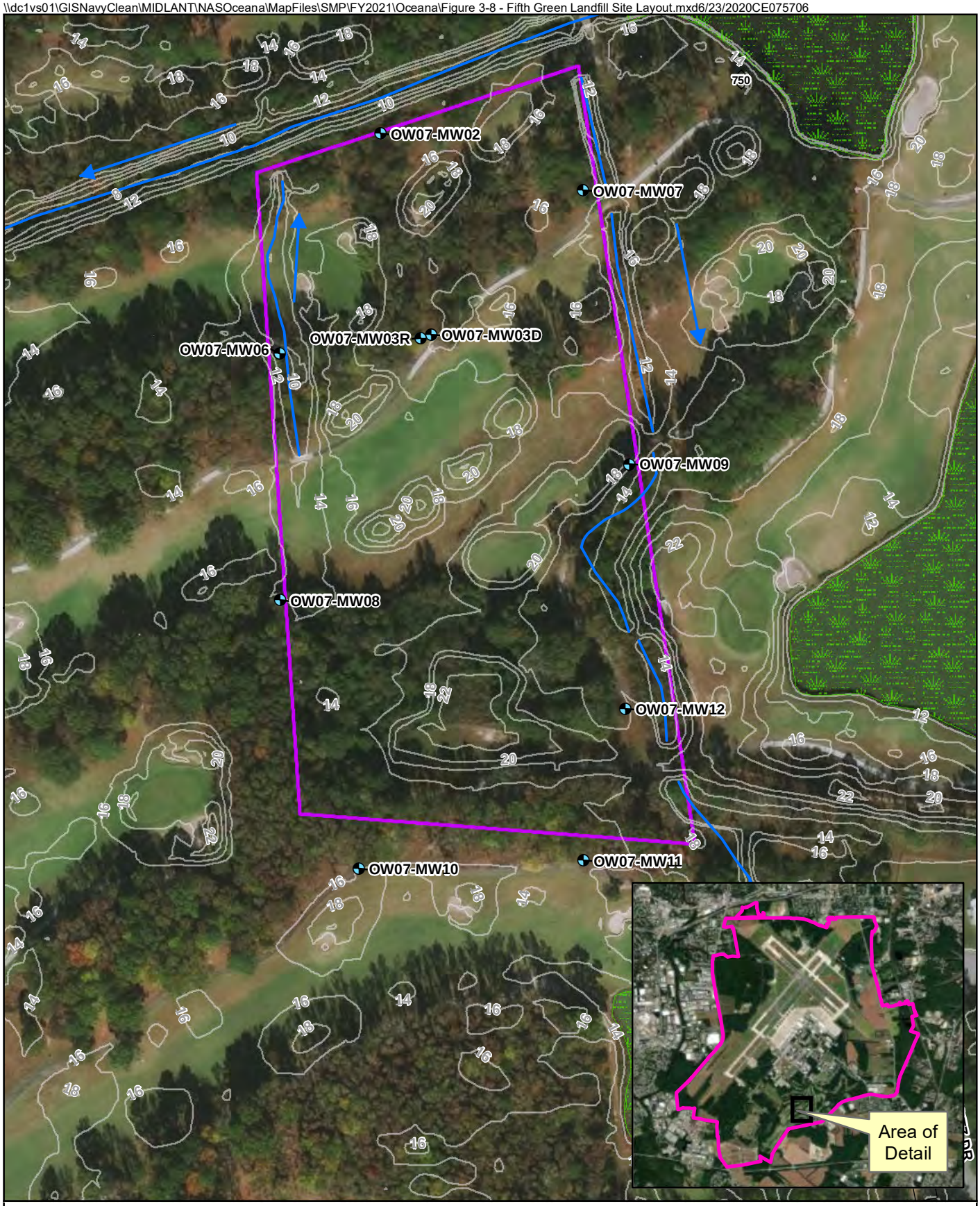
0 50 100
Feet

Imagery Source: ©2018, Esri

Figure 3-7
Site 6/SWMU 59 Layout
NAS Oceana
Virginia Beach, Virginia

ch2m.

\\dc1vs01\GISNavyClean\MIDLANT\NASOceana\MapFiles\SMP\FY2021\Oceana\Figure 3-8 - Fifth Green Landfill Site Layout.mxd6/23/2020CE075706



Legend

- Monitoring Well Location
- Drainage Feature Flow
- Drainage Feature
- Elevation Contour (2 ft interval)
- Site Boundary
- NAS Oceana Boundary
- Wetland

N W E S

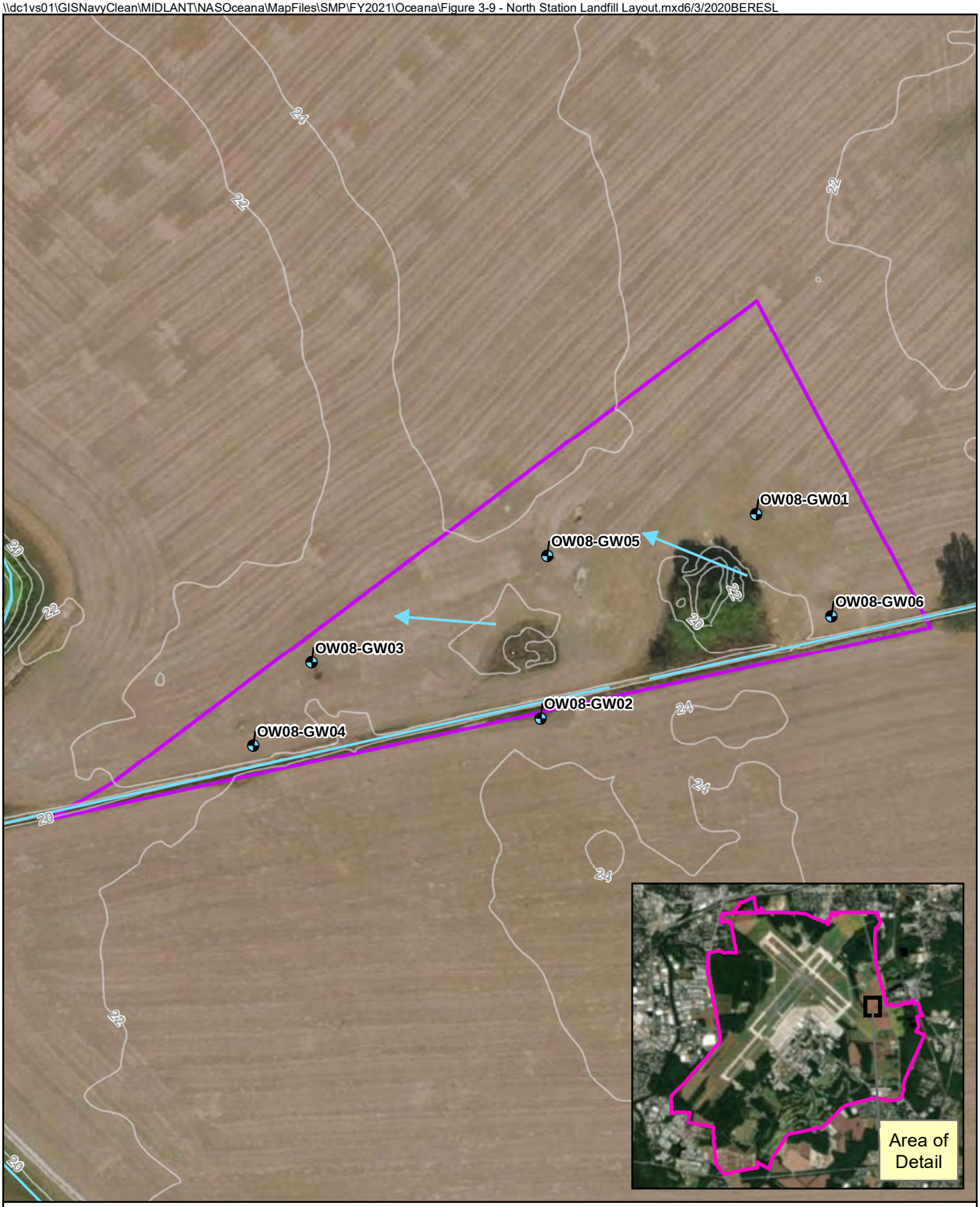
0 100 200 Feet

Imagery Source: ©2019, Esri

Figure 3-8
Fifth Green Landfill Site Layout
NAS Oceana
Virginia Beach, Virginia

ch2m

\\dc1vs01\GISNavyClean\MIDLANT\NASOceana\MapFiles\SMP\FY2021\Oceana\Figure 3-9 - North Station Landfill Layout.mxd6/3/2020BERESL



Legend

- Monitoring Well Location
- Drainage Feature
- Groundwater Flow
- Elevation Contour (2 ft interval)
- Site Boundary Based on Aerial Photos
- NAS Oceana Boundary

N
W E
S

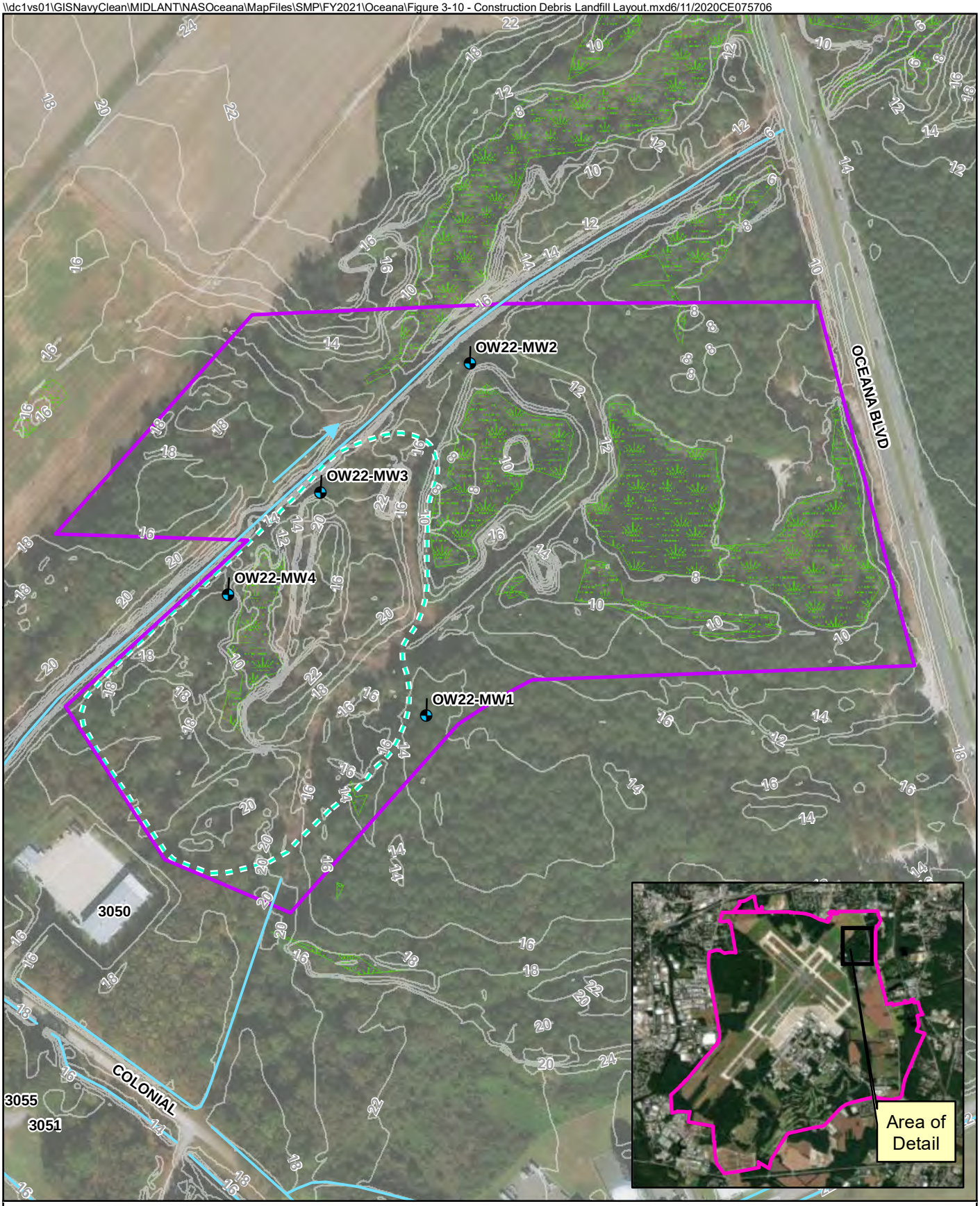
0 75 150
Feet

Imagery Source: ©2017, Esri

Figure 3-9
North Station Landfill Site Layout
NAS Oceana
Virginia Beach, Virginia

ch2m.

\\dc1vs01\GISNavyClean\MIDLANT\NASOceana\MapFiles\SMP\FY2021\Oceana\Figure 3-10 - Construction Debris Landfill Layout.mxd6/11/2020CE075706



Legend

- Monitoring Well Location
- Groundwater Flow Direction
- Drainage Feature
- Elevation Contour (2 ft interval)
- Wetland
- Estimated Extent of Surface and Subsurface Debris
- Site Boundary
- NAS Oceana Boundary

N
W E
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0 150 300
Feet

Imagery Source: ©2019, Esri

Figure 3-10
Construction Debris Landfill Site Layout
NAS Oceana
Virginia Beach, Virginia

ch2m.

\\dc1vs01\GISNavyClean\MIDLANT\NASOceana\MapFiles\SMP\FY2021\Oceana\Figure 3-11 - Pond.mxd6/19/2020CE075706

Legend

- NAS Oceana Boundary
- Site Boundary
- Wetland
- Estimated Extent of Buried Debris
- Elevation Contour (2 ft interval)

N
W E
S

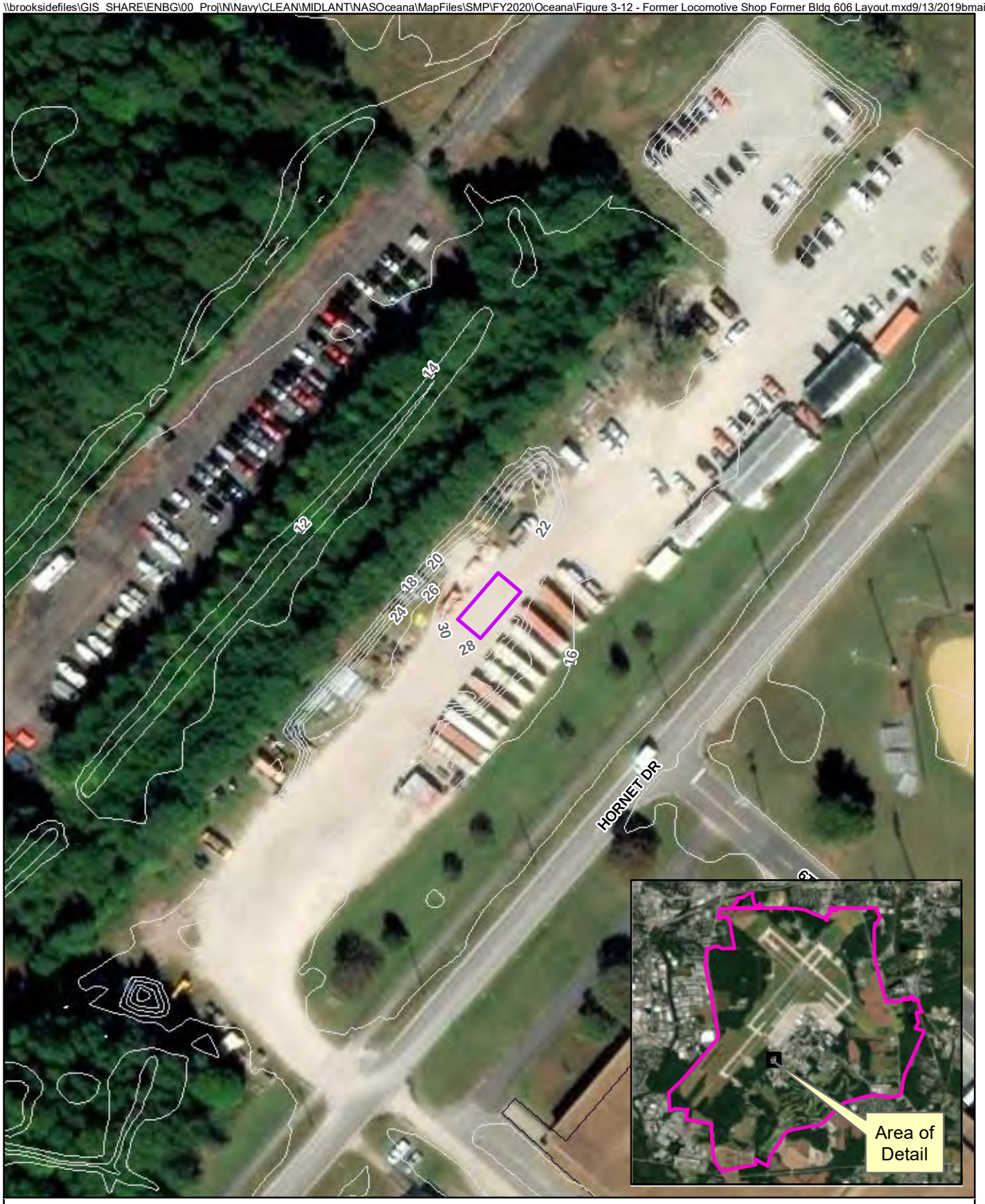
0 180 360
Feet

Imagery Source: ©2019 Esri

Figure 3-11
Oceana Pond Layout
NAS Oceana
Virginia Beach, Virginia

ch2m

\\brooksidefiles\GIS_SHARE\ENBG\00_Proj\N\Navy\CLEAN\MIDLANT\NASOceana\MapFiles\SMP\FY2020\Oceana\Figure 3-12 - Former Locomotive Shop Former Bldg 606 Layout.mxd9/13/2019bmailhes



Legend
- Site Boundary
- Elevation Contour (2 ft interval)
- NAS Oceana Boundary

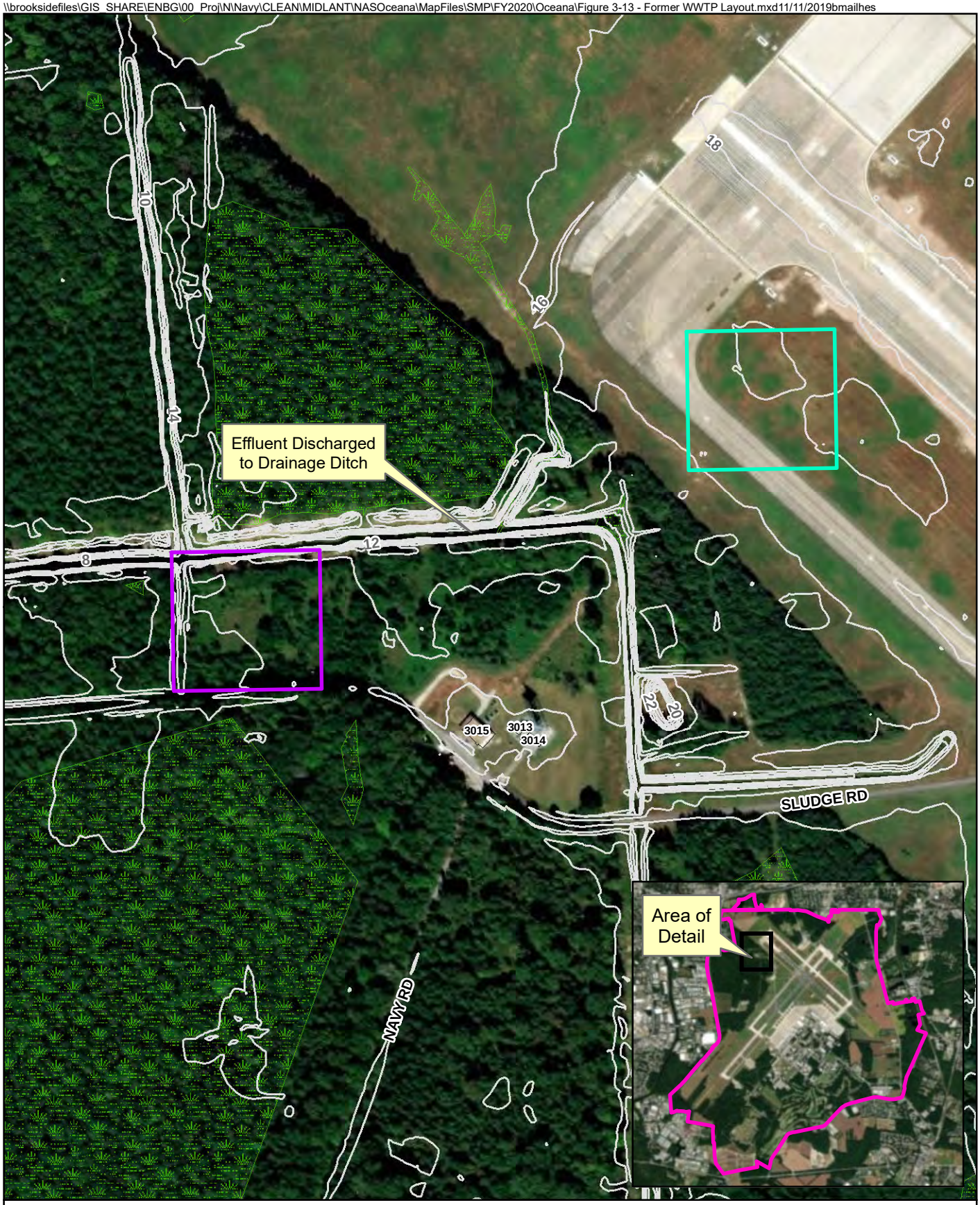
N
W E
S

0 50 100
Feet

Imagery Source: ©2018, Esri

Figure 3-12
Former Locomotive Shop, Former Building 606 Layout
NAS Oceana
Virginia Beach, Virginia

ch2m.



Legend

- Former Wastewater Treatment Plant (Estimated Years of Operation: 1945-1951) Site Boundary
- Former Wastewater Treatment Plant (Estimated Years of Operation: 1951 through the 1970s) Site Boundary
- Elevation Contour (2 ft interval)
- NAS Oceana Boundary

N
W E
S

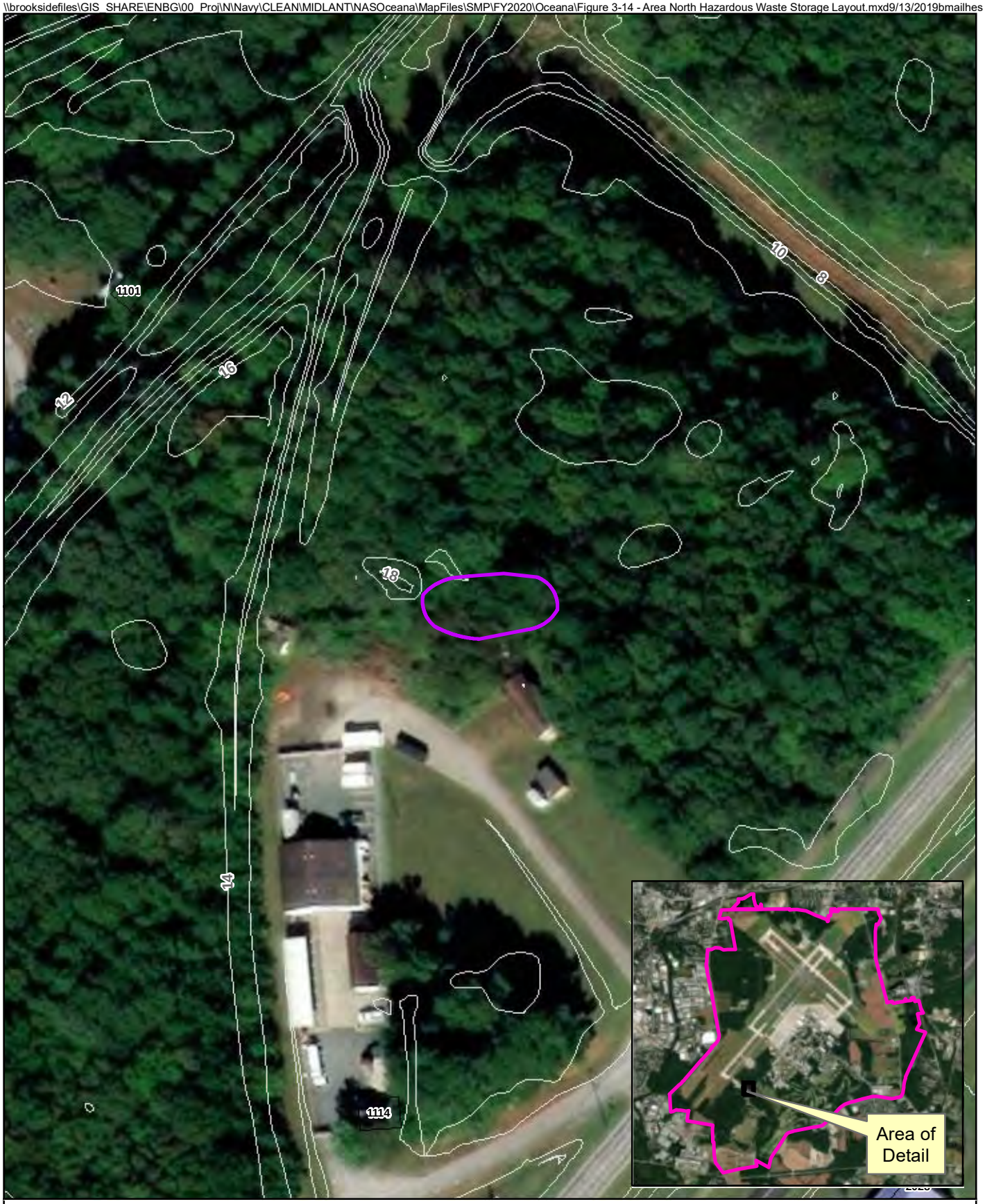
0 150 300
Feet

Imagery Source: ©2018, Esri

Figure 3-13
Former Wastewater Treatment Plant (WWTP) Layout
NAS Oceana
Virginia Beach, Virginia

ch2m.

\\brooksidefiles\GIS_SHARE\ENBG\00_Proj\N\Navy\CLEAN\MIDLANT\NASOceana\MapFiles\SMP\FY2020\Oceana\Figure 3-14 - Area North Hazardous Waste Storage Layout.mxd9/13/2019bmailhes



Legend

- Site Boundary
- Elevation Contour (2 ft interval)
- NAS Oceana Boundary

N
W E
S

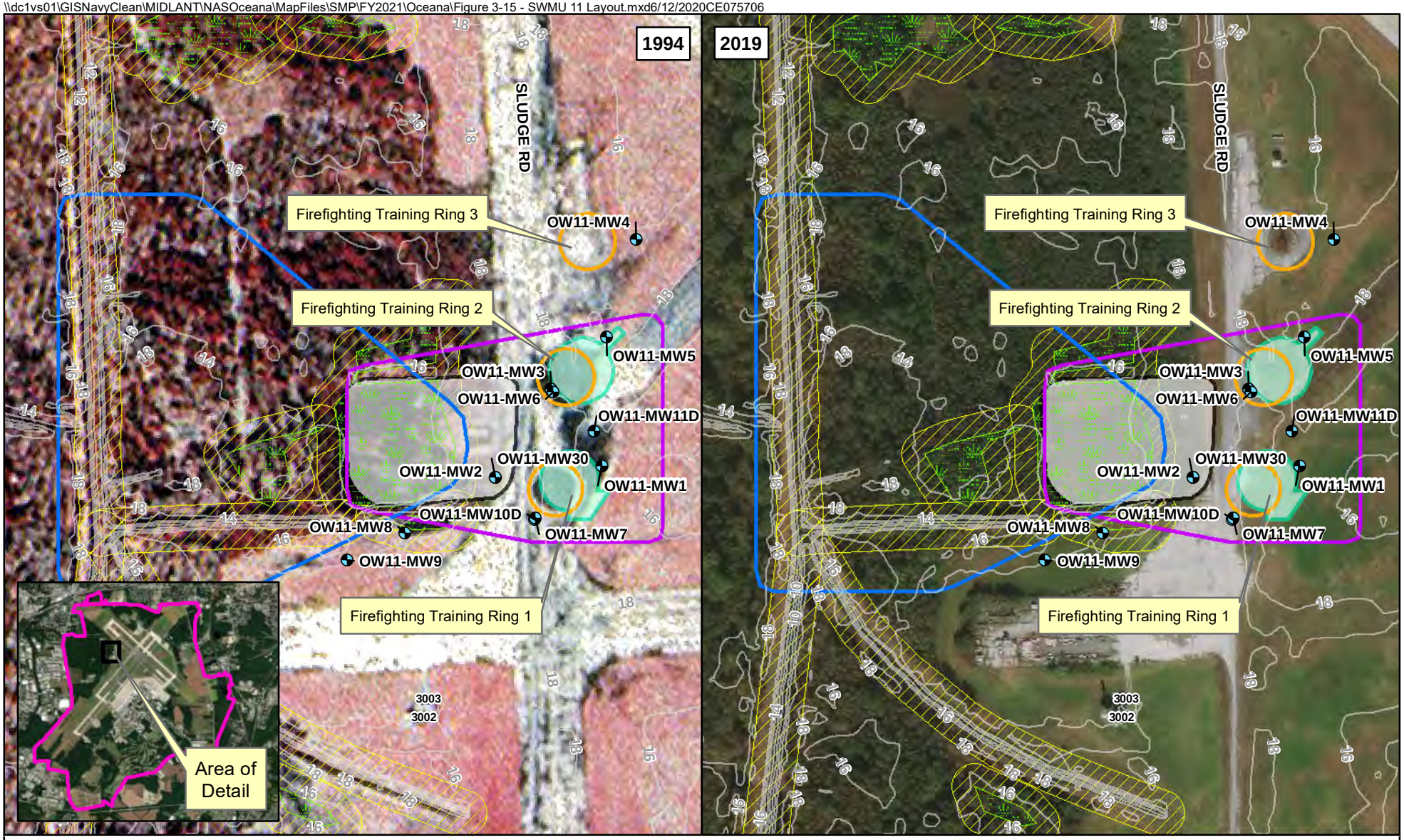
0 50 100
Feet

Imagery Source: ©2018, Esri

Figure 3-14
Area North of Hazardous Waste Storage Layout
NAS Oceana
Virginia Beach, Virginia

ch2m.

\\dc1vs01\GISNavyClean\MIDLANT\NASOceana\MapFiles\SMP\FY2021\Oceana\Figure 3-15 - SWMU 11 Layout.mxd6/12/2020CE075706



Legend

- Existing Monitoring Well Location
- Elevation Contour (2 ft interval)
- Firefighting Rings
- SWMU 11 Boundary
- SWMU 1 Boundary
- Wetland
- Wetland Buffer (50 feet)
- Approximate Boundary of Land Farming Area
- Removal Action Area
- NAS Oceana Boundary

N
W E
S

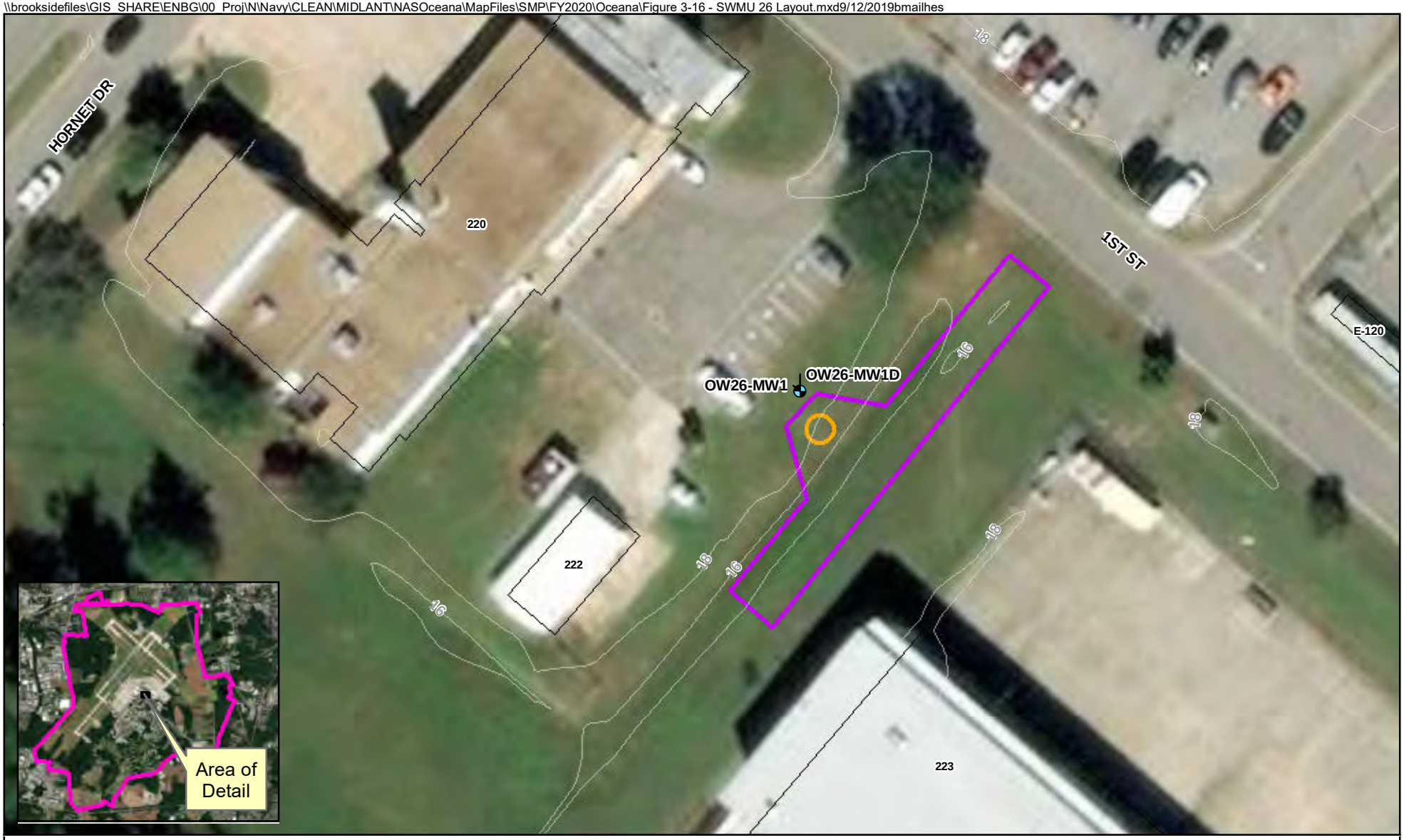
0 150 300
Feet

Imagery Source: ©2019 Esri

Figure 3-15
SWMU 11 Layout
NAS Oceana
Virginia Beach, Virginia

ch2m

\\brooksidefiles\GIS_SHARE\ENBG\00_Proj\N\Navy\CLEAN\MIDLANT\NASOceana\MapFiles\SMP\FY2020\Oceana\Figure 3-16 - SWMU 26 Layout.mxd9/12/2019bmailhes



Legend

- Monitoring Well Location
- Elevation Contour (2 ft interval)
- Former Tank Location
- Site Boundary
- NAS Oceana Boundary

N
W E
S

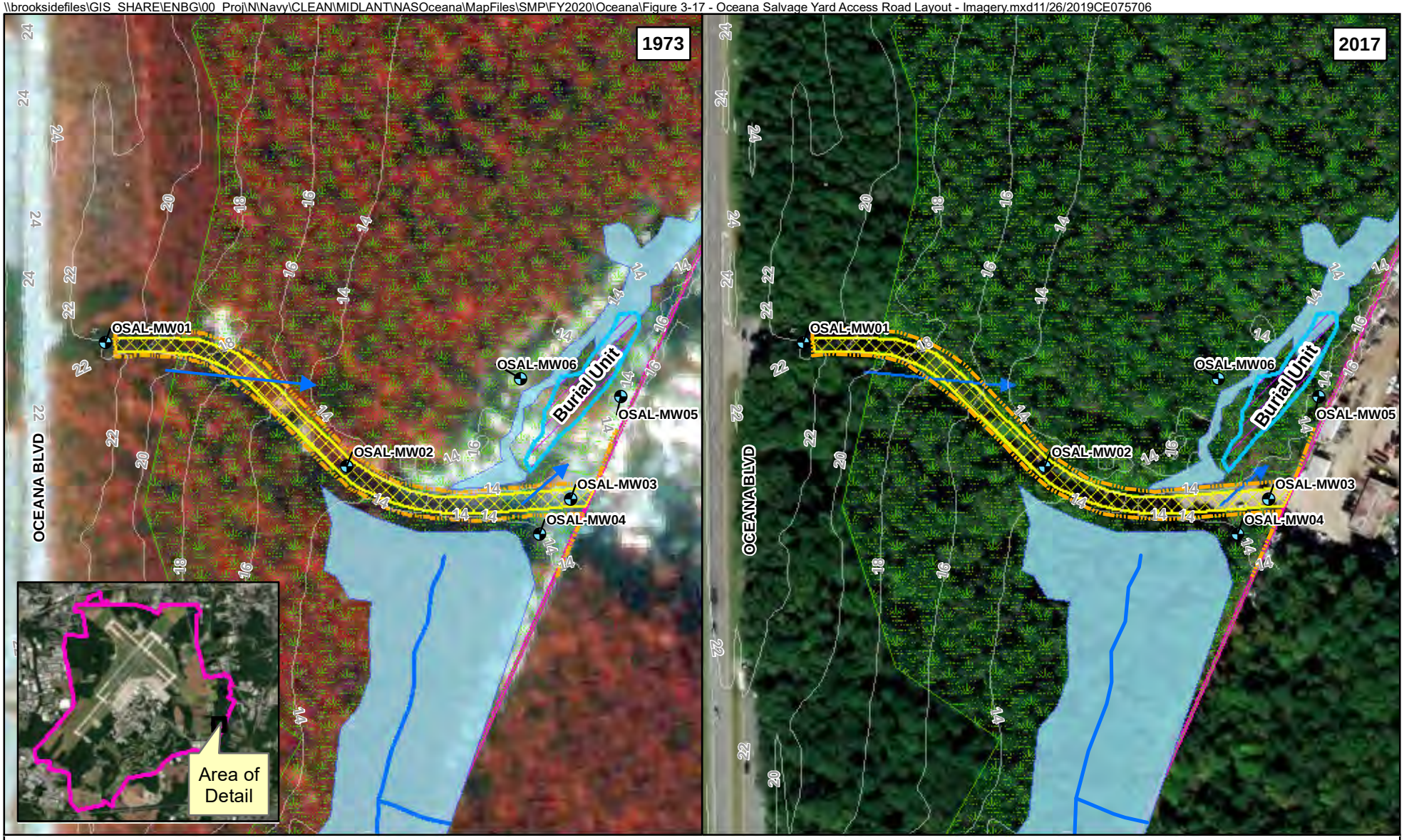
0 25 50
Feet

Imagery Source: ©2018 Esri

Figure 3-16
SWMU 26 Layout
NAS Oceana
Virginia Beach, Virginia

ch2m:

\\brooksidefiles\GIS_SHARE\ENBG\00_Proj\N\Navy\CLEAN\MIDLANT\NASOceana\MapFiles\SMP\FY2020\Oceana\Figure 3-17 - Oceana Salvage Yard Access Road Layout - Imagery.mxd11/26/2019CE075706



Legend

- Monitoring Wells
- Ditch
- Elevation Contour (2 ft interval)
- Groundwater Flow Direction
- Fence Line
- Asphalt Cover
- Burial Unit Boundary
- Extent of Removal Action
- Wetland
- Field Observed Surface Water Area
- NAS Oceana Boundary

N
W E
S

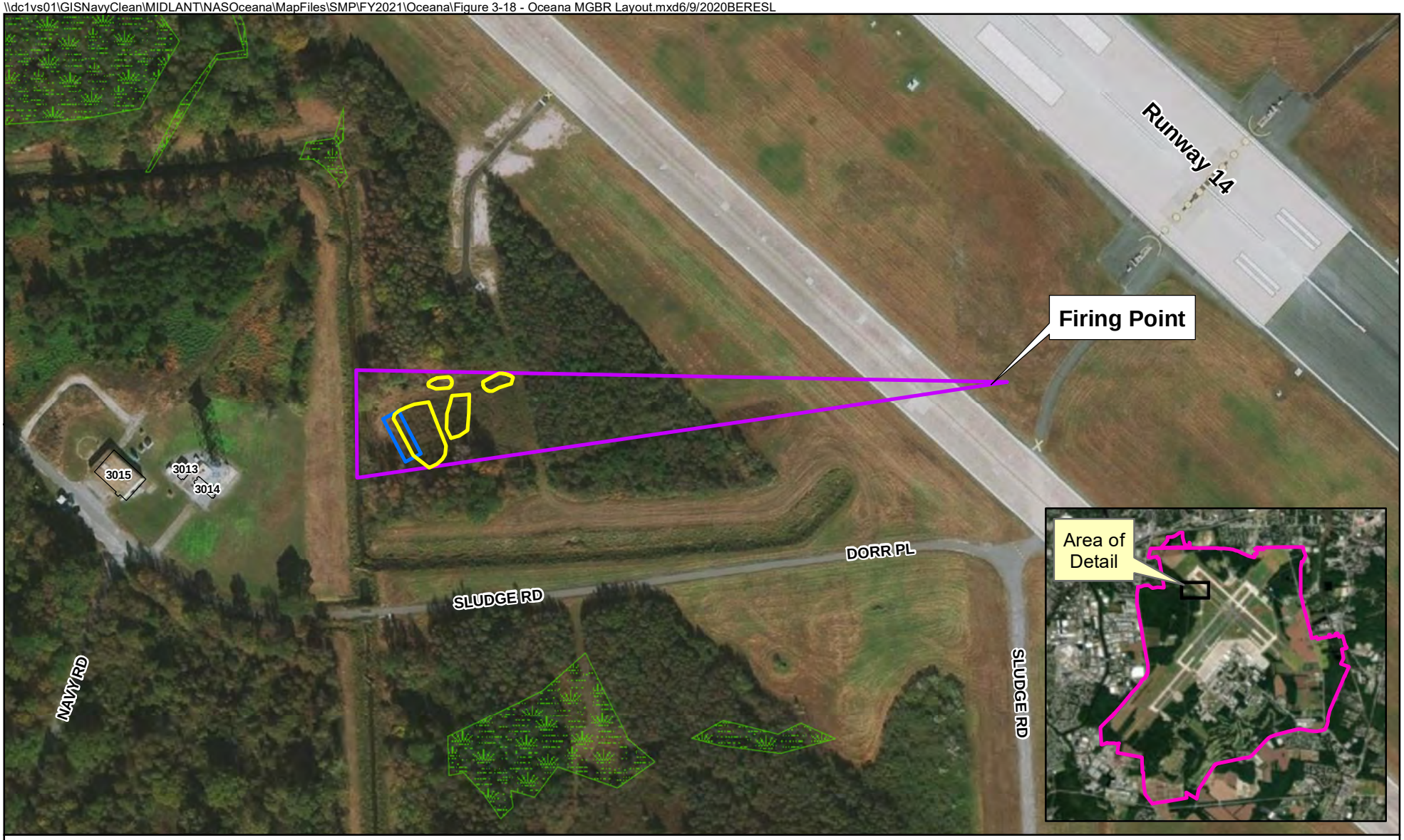
0 100 200 Feet

Imagery Source: ©2018 Esri

Figure 3-17
Oceana Salvage Yard Access Road, Burial Unit, and Surrounding Area
NAS Oceana
Virginia Beach, Virginia

ch2m

\\dc1vs01\GISNavyClean\MIDLANT\NASOceana\MapFiles\SMP\FY2021\Oceana\Figure 3-18 - Oceana MGBR Layout.mxd6/9/2020BERESL



Legend
- MRP Site
- Former Backstop
- Wetland
- Removal Action Areas
- NAS Oceana Boundary

N
W E
S

0 100 200
Feet

Imagery Source: ©2018, Esri

Figure 3-18
UXO 05 - Machine Gun Boresight Range Site Layout
NAS Oceana
Virginia Beach, Virginia

ch2m.

\\dc1vs01\GISNavyClean\MIDLANT\NASOceana\MapFiles\SMP\FY2021\Oceana\Figure 3-19 - Potential Dive Bombing Target Site.mxd6/9/2020BERESL

1942/1943

2018

MITCHER BLVD
SLUDGE RD
Taxiway B
Runway 14L-32R
Runway 14 R-32L
Runway 5L-23R
Runway 5R-23L
Taxiway A
22
20
18
16
14
12
10
8

Legend

- Elevation Contour (2 ft interval)
- Suspected Site Boundary
- Airfield Section Area
- Wetland

Notes:
1. Site boundary may appear shifted with respect to aerial imagery due to georeferencing
2. 2018 Imagery: Esri

N
W E
S

0 300 600
Feet

Figure 3-19
Potential Dive-Bombing Target Range Layout
NAS Oceana
Virginia Beach, Virginia

ch2m

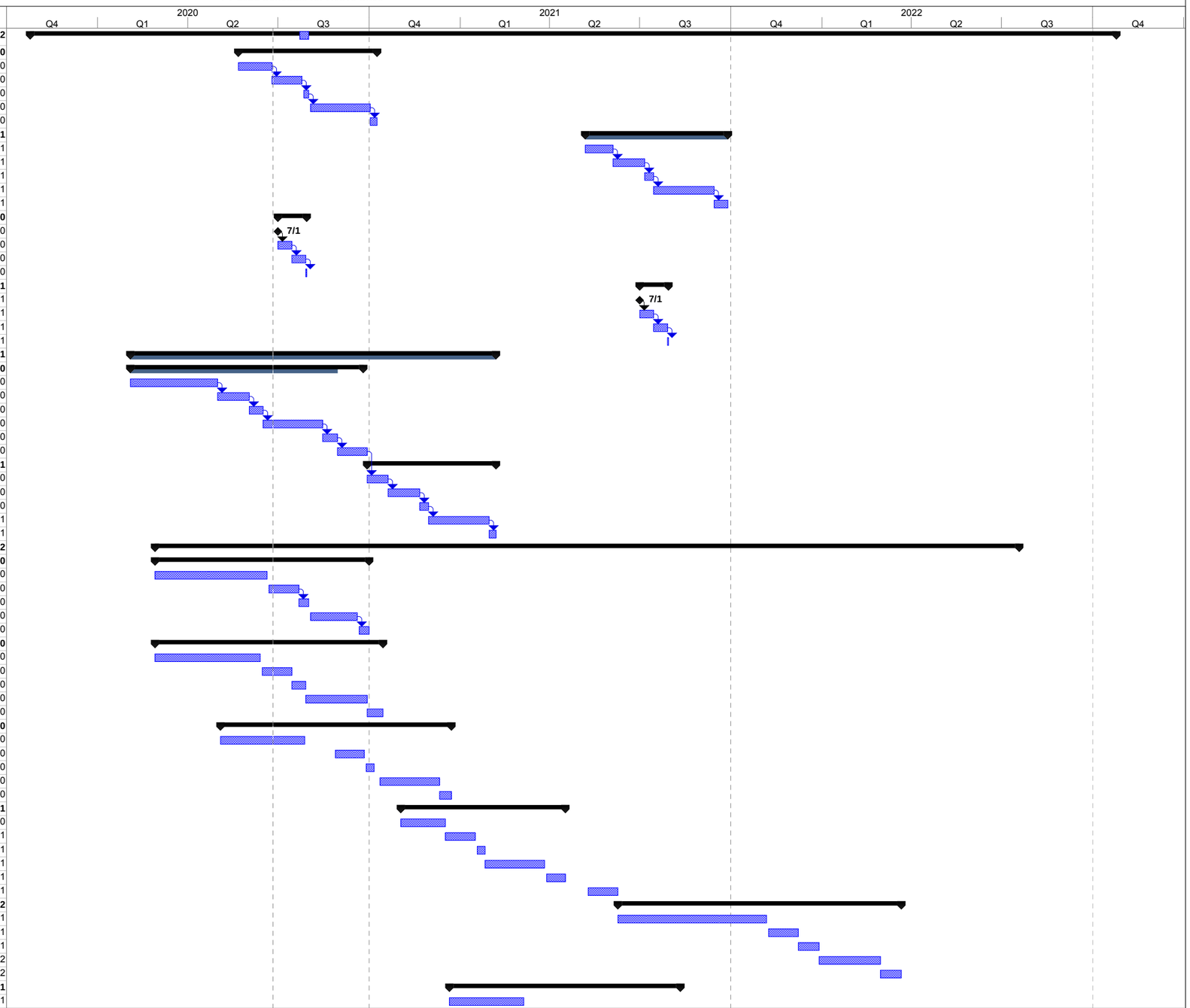
SECTION 4

Management Schedules for Active Sites and SWMUs

Site management schedules for all active sites are shown on **Figure 4-1**.

Figure 4-1
FY 2021 Schedule for Active Sites

ID	Task Name	Duration	Start	Finish
1	**NAS Oceana IRP Sites**	**1096 days?**	**Fri 10/25/19**	**Mon 10/24/22**
2	**Project Management Plan 2021-2025**	**140 days**	**Fri 5/22/20**	**Thu 10/8/20**
3	Preliminary Draft Generation	34 days	Fri 5/22/20	Wed 6/24/20
4	Navy Review of Preliminary Draft	30 days	Thu 6/25/20	Fri 7/24/20
5	Navy RTCs and Draft Generation	5 days	Mon 7/27/20	Fri 7/31/20
6	Regulator Review of Draft	60 days	Mon 8/3/20	Thu 10/1/20
7	Regulator RTCs and Final Generation	7 days	Fri 10/2/20	Thu 10/8/20
8	**Project Management Plan 2022-2026**	**144 days**	**Fri 5/7/21**	**Mon 9/27/21**
9	Preliminary Draft Generation	28 days	Fri 5/7/21	Thu 6/3/21
10	Navy Review of Preliminary Draft	32 days	Fri 6/4/21	Mon 7/5/21
11	Navy RTCs and Draft Generation	9 days	Tue 7/6/21	Wed 7/14/21
12	Regulator Review of Draft	61 days	Thu 7/15/21	Mon 9/13/21
13	Regulator RTCs and Final Generation	14 days	Tue 9/14/21	Mon 9/27/21
14	**Site Inspection Checklist 2020**	**29 days**	**Wed 7/1/20**	**Wed 7/29/20**
15	Submit to Navy	0 days	Wed 7/1/20	Wed 7/1/20
16	Navy Review	14 days	Wed 7/1/20	Tue 7/14/20
17	Navy RTCs	14 days	Wed 7/15/20	Tue 7/28/20
18	Submit to Regulators	1 day	Wed 7/29/20	Wed 7/29/20
19	**Site Inspection Checklist 2021**	**29 days**	**Thu 7/1/21**	**Thu 7/29/21**
20	Submit to Navy	0 days	Thu 7/1/21	Thu 7/1/21
21	Navy Review	14 days	Thu 7/1/21	Wed 7/14/21
22	Navy RTCs	14 days	Thu 7/15/21	Wed 7/28/21
23	Submit to Regulators	1 day	Thu 7/29/21	Thu 7/29/21
24	**Basewide Background Investigation**	**369 days**	**Mon 2/3/20**	**Fri 2/5/21**
25	**UFP-SAP**	**235 days**	**Mon 2/3/20**	**Thu 9/24/20**
26	Preliminary Draft Generation	88 days	Mon 2/3/20	Thu 4/30/20
27	Navy Review of Preliminary Draft	32 days	Fri 5/1/20	Mon 6/1/20
28	Navy RTCs and Draft Generation	14 days	Tue 6/2/20	Mon 6/15/20
29	Regulator Review of Draft	60 days	Tue 6/16/20	Fri 8/14/20
30	Regulator RTCs and Final Generation	15 days	Sat 8/15/20	Sat 8/29/20
31	Fieldwork	30 days	Sun 8/30/20	Mon 9/28/20
32	**Report**	**130 days**	**Tue 9/29/20**	**Fri 2/5/21**
33	Preliminary Draft Generation	21 days	Tue 9/29/20	Mon 10/19/20
34	Navy Review of Preliminary Draft	32 days	Tue 10/20/20	Fri 11/20/20
35	Navy RTCs and Draft Generation	9 days	Sat 11/21/20	Sun 11/29/20
36	Regulator Review of Draft	61 days	Mon 11/30/20	Fri 1/29/21
37	Regulator RTCs and Final Generation	7 days	Sat 1/30/21	Fri 2/5/21
38	**Basewide PFAS Investigation**	**872 days**	**Fri 2/28/20**	**Mon 7/18/22**
39	**PFAS PA Report**	**216 days**	**Fri 2/28/20**	**Wed 9/30/20**
40	Preliminary Draft Generation	113 days	Fri 2/28/20	Fri 6/19/20
41	Navy Review of Preliminary Draft	30 days	Mon 6/22/20	Tue 7/21/20
42	Navy RTCs and Draft Generation	10 days	Wed 7/22/20	Fri 7/31/20
43	Regulator Review of Draft	47 days	Mon 8/3/20	Fri 9/18/20
44	Regulator RTCs and Final Generation	10 days	Mon 9/21/20	Wed 9/30/20
45	**Bench-Scale Treatability Study Report**	**230 days**	**Fri 2/28/20**	**Wed 10/14/20**
46	Preliminary Draft Generation	106 days	Fri 2/28/20	Fri 6/12/20
47	Navy Review of Preliminary Draft	30 days	Mon 6/15/20	Tue 7/14/20
48	Navy RTCs and Draft Generation	14 days	Wed 7/15/20	Tue 7/28/20
49	Regulator Review of Draft	62 days	Wed 7/29/20	Mon 9/28/20
50	Regulator RTCs and Final Generation	16 days	Tue 9/29/20	Wed 10/14/20
51	**SI Addendum Report**	**233 days**	**Mon 5/4/20**	**Tue 12/22/20**
52	Preliminary Draft Generation	85 days	Mon 5/4/20	Mon 7/27/20
53	Navy Review of Preliminary Draft	29 days	Fri 8/28/20	Fri 9/25/20
54	Navy RTCs and Draft Generation	8 days	Mon 9/28/20	Mon 10/5/20
55	Regulator Review of Draft	60 days	Mon 10/12/20	Thu 12/10/20
56	Regulator RTCs and Final Generation	12 days	Fri 12/11/20	Tue 12/22/20
57	**RI SAP (AOC 1)**	**166 days**	**Mon 11/2/20**	**Fri 4/16/21**
58	Preliminary Draft Generation	45 days	Mon 11/2/20	Wed 12/16/20
59	Navy Review of Preliminary Draft	30 days	Thu 12/17/20	Fri 1/15/21
60	Navy RTCs and Draft Generation	8 days	Mon 1/18/21	Mon 1/25/21
61	Regulator Review of Draft	60 days	Tue 1/26/21	Fri 3/26/21
62	Regulator RTCs and Final Generation	19 days	Mon 3/29/21	Fri 4/16/21
63	RI Fieldwork	30 days	Mon 5/10/21	Tue 6/8/21
64	**RI Report (AOC 1)**	**286 days**	**Wed 6/9/21**	**Mon 3/21/22**
65	Preliminary Draft Generation	150 days	Wed 6/9/21	Fri 11/5/21
66	Navy Review of Preliminary Draft	30 days	Mon 11/8/21	Tue 12/7/21
67	Navy RTCs and Draft Generation	21 days	Wed 12/8/21	Tue 12/28/21
68	Regulator Review of Draft	62 days	Wed 12/29/21	Mon 2/28/22
69	Regulator RTCs and Final Generation	21 days	Tue 3/1/22	Mon 3/21/22
70	**RI SAP (AOC 2)**	**233 days**	**Mon 12/21/20**	**Tue 8/10/21**
71	Preliminary Draft Generation	75 days	Mon 12/21/20	Fri 3/5/21

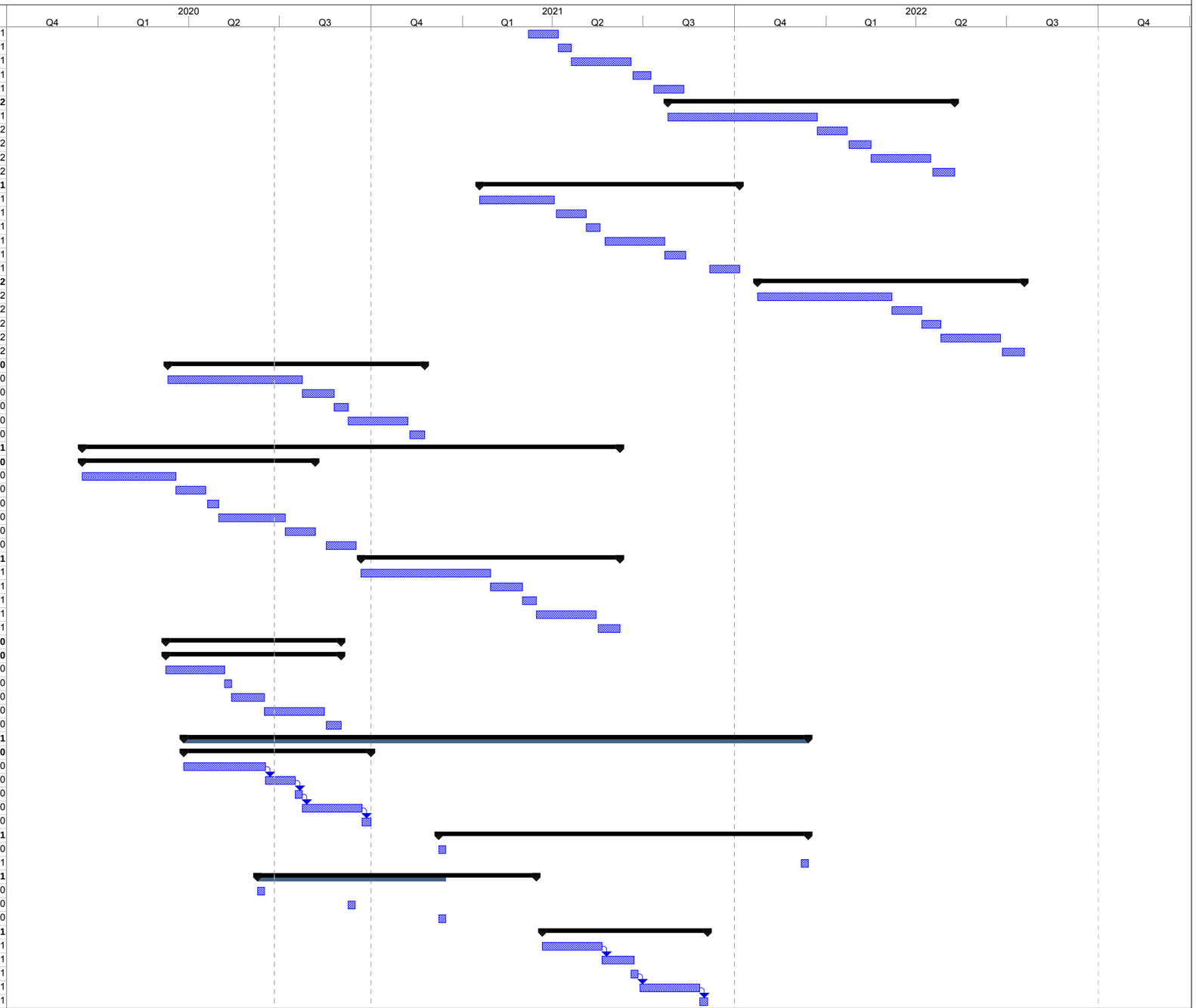


Date: Fri 6/26/20

Task | Milestone | External Milestone | External Milestone | Inactive Summary | Duration-only | Finish-only | Progress
Split | Summary | External Milestone | Inactive Milestone | Manual Task | Start-only | External Tasks

Figure 4-1
FY 2021 Schedule for Active Sites

ID	Task Name	Duration	Start	Finish
72	Navy Review of Preliminary Draft	30 days	Mon 3/8/21	Tue 4/6/21
73	Navy RTCs and Draft Generation	13 days	Wed 4/7/21	Mon 4/19/21
74	Regulator Review of Draft	60 days	Tue 4/20/21	Fri 6/18/21
75	Regulator RTCs and Final Generation	18 days	Mon 6/21/21	Thu 7/8/21
76	RI Fieldwork	30 days	Mon 7/12/21	Tue 8/10/21
77	**RI Report (AOC 2)**	**288 days**	**Mon 7/26/21**	**Mon 5/9/22**
78	Preliminary Draft Generation	150 days	Mon 7/26/21	Wed 12/22/21
79	Navy Review of Preliminary Draft	30 days	Thu 12/23/21	Fri 1/21/22
80	Navy RTCs and Draft Generation	22 days	Mon 1/24/22	Mon 2/14/22
81	Regulator Review of Draft	60 days	Tue 2/15/22	Fri 4/15/22
82	Regulator RTCs and Final Generation	22 days	Mon 4/18/22	Mon 5/9/22
83	**RI SAP (AOC 3)**	**261 days**	**Mon 1/18/21**	**Tue 10/5/21**
84	Preliminary Draft Generation	75 days	Mon 1/18/21	Fri 4/2/21
85	Navy Review of Preliminary Draft	30 days	Mon 4/5/21	Tue 5/4/21
86	Navy RTCs and Draft Generation	14 days	Wed 5/5/21	Tue 5/18/21
87	Regulator Review of Draft	60 days	Mon 5/24/21	Thu 7/22/21
88	Regulator RTCs and Final Generation	21 days	Fri 7/23/21	Thu 8/12/21
89	RI Fieldwork	30 days	Mon 9/6/21	Tue 10/5/21
90	**RI Report (AOC 3)**	**268 days**	**Sun 10/24/21**	**Mon 7/18/22**
91	Preliminary Draft Generation	135 days	Sun 10/24/21	Mon 3/7/22
92	Navy Review of Preliminary Draft	30 days	Tue 3/8/22	Wed 4/6/22
93	Navy RTCs and Draft Generation	19 days	Thu 4/7/22	Mon 4/25/22
94	Regulator Review of Draft	60 days	Tue 4/26/22	Fri 6/24/22
95	Regulator RTCs and Final Generation	22 days	Mon 6/27/22	Mon 7/18/22
96	**Watershed Contaminant Source Document**	**258 days**	**Wed 3/11/20**	**Mon 11/23/20**
97	Preliminary Draft Generation	135 days	Wed 3/11/20	Thu 7/23/20
98	Navy Review of Preliminary Draft	32 days	Fri 7/24/20	Mon 8/24/20
99	Navy RTCs and Draft Generation	14 days	Tue 8/25/20	Mon 9/7/20
100	Regulator Review of Draft	60 days	Tue 9/8/20	Fri 11/6/20
101	Regulator RTCs and Final Generation	15 days	Mon 11/9/20	Mon 11/23/20
102	**SWMU 2A**	**540 days**	**Mon 12/16/19**	**Mon 6/7/21**
103	**SI UFP-SAP**	**234 days**	**Mon 12/16/19**	**Wed 8/5/20**
104	Preliminary Draft Generation	94 days	Mon 12/16/19	Wed 3/18/20
105	Navy Review of Preliminary Draft	30 days	Thu 3/19/20	Fri 4/17/20
106	Navy RTCs and Draft Generation	11 days	Mon 4/20/20	Thu 4/30/20
107	Regulator Review of Draft	67 days	Fri 5/1/20	Mon 7/6/20
108	Regulator RTCs and Final Generation	30 days	Tue 7/7/20	Wed 8/5/20
109	SI Fieldwork	30 days	Mon 8/17/20	Tue 9/15/20
110	**SI Report**	**260 days**	**Mon 9/21/20**	**Mon 6/7/21**
111	Preliminary Draft Generation	130 days	Mon 9/21/20	Thu 1/28/21
112	Navy Review of Preliminary Draft	32 days	Fri 1/29/21	Mon 3/1/21
113	Navy RTCs and Draft Generation	14 days	Tue 3/2/21	Mon 3/15/21
114	Regulator Review of Draft	60 days	Tue 3/16/21	Fri 5/14/21
115	Regulator RTCs and Final Generation	22 days	Mon 5/17/21	Mon 6/7/21
116	**SWMU 2B**	**176 days**	**Mon 3/9/20**	**Mon 8/31/20**
117	**Remedy Optimization Report**	**176 days**	**Mon 3/9/20**	**Mon 8/31/20**
118	Preliminary Draft Generation	59 days	Mon 3/9/20	Wed 5/6/20
119	Navy Review of Preliminary Draft	7 days	Thu 5/7/20	Wed 5/13/20
120	Navy RTCs and Draft Generation	33 days	Thu 5/14/20	Mon 6/15/20
121	Regulator Review of Draft	60 days	Tue 6/16/20	Fri 8/14/20
122	Regulator RTCs and Final Generation	15 days	Mon 8/17/20	Mon 8/31/20
123	**SWMUs 2C and 2E LTM**	**627 days?**	**Fri 3/27/20**	**Mon 12/13/21**
124	**2019 LTM Report**	**188 days**	**Fri 3/27/20**	**Wed 9/30/20**
125	Preliminary Draft Generation	82 days	Fri 3/27/20	Tue 6/16/20
126	Navy Review of Preliminary Draft	30 days	Wed 6/17/20	Thu 7/16/20
127	Navy RTCs and Draft Generation	7 days	Fri 7/17/20	Thu 7/23/20
128	Regulator Review of Draft	60 days	Fri 7/24/20	Mon 9/21/20
129	Regulator RTCs and Final Generation	9 days	Tue 9/22/20	Wed 9/30/20
130	**SWMU 2C LTM (Annual)**	**371 days**	**Tue 12/8/20**	**Mon 12/13/21**
131	2020 LTM Fieldwork	7 days	Tue 12/8/20	Mon 12/14/20
132	2021 LTM Fieldwork	7 days	Tue 12/7/21	Mon 12/13/21
133	**SWMU 2E LTM (Quarterly)**	**280 days?**	**Tue 6/9/20**	**Mon 3/15/21**
134	2020 LTM Fieldwork	7 days	Tue 6/9/20	Mon 6/15/20
135	2020 LTM Fieldwork	7 days	Tue 9/8/20	Mon 9/14/20
136	2020 LTM Fieldwork	7 days	Tue 12/8/20	Mon 12/14/20
137	**2020 LTM Report**	**166 days**	**Mon 3/22/21**	**Fri 9/3/21**
138	Preliminary Draft Generation	60 days	Mon 3/22/21	Thu 5/20/21
139	Navy Review of Preliminary Draft	32 days	Fri 5/21/21	Mon 6/21/21
140	Navy RTCs and Draft Generation	7 days	Sat 6/19/21	Fri 6/25/21
141	Regulator Review of Draft	60 days	Mon 6/28/21	Thu 8/26/21
142	Regulator RTCs and Final Generation	8 days	Fri 8/27/21	Fri 9/3/21

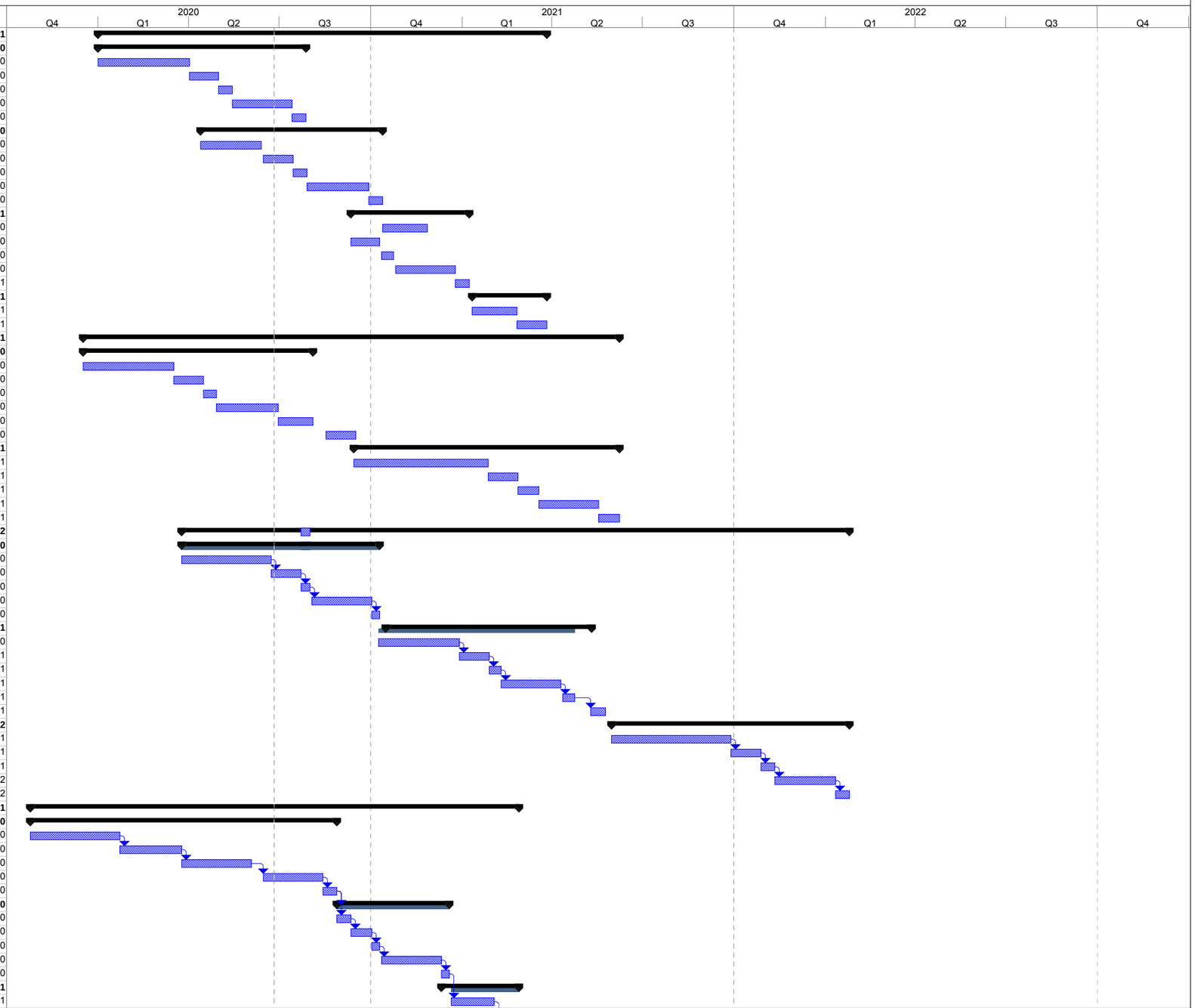


Date: Fri 6/26/20

Task | Milestone | External Milestone | External Milestone | Inactive Summary | Duration-only | Finish-only | Progress
Split | Summary | External Milestone | Inactive Milestone | Manual Task | Start-only | External Tasks

Figure 4-1
FY 2021 Schedule for Active Sites

ID	Task Name	Duration	Start	Finish
143	**West Side Landfill (Site 3)**	**451 days**	**Wed 1/1/20**	**Fri 3/26/21**
144	**SI Report**	**209 days**	**Wed 1/1/20**	**Mon 7/27/20**
145	Preliminary Draft Generation	92 days	Wed 1/1/20	Wed 4/1/20
146	Navy Review of Preliminary Draft	29 days	Thu 4/2/20	Thu 4/30/20
147	Navy RTCs and Draft Generation	14 days	Fri 5/1/20	Thu 5/14/20
148	Regulator Review of Draft	60 days	Fri 5/15/20	Mon 7/13/20
149	Regulator RTCs and Final Generation	14 days	Tue 7/14/20	Mon 7/27/20
150	**NTCRA RAA**	**183 days**	**Mon 4/13/20**	**Mon 10/12/20**
151	Preliminary Draft Generation	61 days	Mon 4/13/20	Fri 6/12/20
152	Navy Review of Preliminary Draft	30 days	Mon 6/15/20	Tue 7/14/20
153	Navy RTCs and Draft Generation	14 days	Wed 7/15/20	Tue 7/28/20
154	Regulator Review of Draft	62 days	Wed 7/29/20	Mon 9/28/20
155	Regulator RTCs and Final Generation	14 days	Tue 9/29/20	Mon 10/12/20
156	**EE/CA**	**119 days**	**Fri 9/11/20**	**Thu 1/7/21**
157	Preliminary Draft Generation	45 days	Tue 10/13/20	Thu 11/26/20
158	Navy Review of Preliminary Draft	29 days	Fri 9/11/20	Fri 10/9/20
159	Navy RTCs and Draft Generation	12 days	Mon 10/12/20	Fri 10/23/20
160	Regulator Review of Draft	60 days	Mon 10/26/20	Thu 12/24/20
161	Regulator RTCs and Final Generation	14 days	Fri 12/25/20	Thu 1/7/21
162	**Action Memo**	**75 days**	**Mon 1/11/21**	**Fri 3/26/21**
163	Regulator Review of Draft	45 days	Mon 1/11/21	Wed 2/24/21
164	Regulator RTCs and Final Generation	30 days	Thu 2/25/21	Fri 3/26/21
165	**Navy Exchange Maintenance Building Waste Oil Disposal Area**	**539 days**	**Tue 12/17/19**	**Mon 6/7/21**
166	**SI UFP-SAP**	**231 days**	**Tue 12/17/19**	**Mon 8/3/20**
167	Preliminary Draft Generation	91 days	Tue 12/17/19	Mon 3/16/20
168	Navy Review of Preliminary Draft	30 days	Tue 3/17/20	Wed 4/15/20
169	Navy RTCs and Draft Generation	13 days	Thu 4/16/20	Tue 4/28/20
170	Regulator Review of Draft	62 days	Wed 4/29/20	Mon 6/29/20
171	Regulator RTCs and Final Generation	35 days	Tue 6/30/20	Mon 8/3/20
172	SI Fieldwork	30 days	Mon 8/17/20	Tue 9/15/20
173	**SI Report**	**267 days**	**Mon 9/14/20**	**Mon 6/7/21**
174	Preliminary Draft Generation	135 days	Mon 9/14/20	Tue 1/26/21
175	Navy Review of Preliminary Draft	30 days	Wed 1/27/21	Thu 2/25/21
176	Navy RTCs and Draft Generation	21 days	Fri 2/26/21	Thu 3/18/21
177	Regulator Review of Draft	60 days	Fri 3/19/21	Mon 5/17/21
178	Regulator RTCs and Final Generation	21 days	Tue 5/18/21	Mon 6/7/21
179	**Fifth Green Landfill (Site 7)**	**671 days**	**Wed 3/25/20**	**Mon 1/24/22**
180	**SI Report**	**199 days**	**Wed 3/25/20**	**Fri 10/9/20**
181	Preliminary Draft Generation	90 days	Wed 3/25/20	Mon 6/22/20
182	Navy Review of Preliminary Draft	30 days	Tue 6/23/20	Wed 7/22/20
183	Navy RTCs and Draft Generation	9 days	Thu 7/23/20	Fri 7/31/20
184	Regulator Review of Draft	60 days	Mon 8/3/20	Thu 10/1/20
185	Regulator RTCs and Final Generation	8 days	Fri 10/2/20	Fri 10/9/20
186	**RI UFP-SAP**	**207 days**	**Fri 10/16/20**	**Mon 5/10/21**
187	Preliminary Draft Generation	81 days	Fri 10/9/20	Mon 12/28/20
188	Navy Review of Preliminary Draft	30 days	Tue 12/29/20	Wed 1/27/21
189	Navy RTCs and Draft Generation	12 days	Thu 1/28/21	Mon 2/8/21
190	Regulator Review of Draft	60 days	Tue 2/9/21	Fri 4/9/21
191	Regulator RTCs and Final Generation	12 days	Mon 4/12/21	Fri 4/23/21
192	RI Fieldwork	15 days	Mon 5/10/21	Mon 5/24/21
193	**RI Report**	**239 days**	**Mon 5/31/21**	**Mon 1/24/22**
194	Preliminary Draft Generation	120 days	Mon 5/31/21	Mon 9/27/21
195	Navy Review of Preliminary Draft	30 days	Tue 9/28/21	Wed 10/27/21
196	Navy RTCs and Draft Generation	14 days	Thu 10/28/21	Wed 11/10/21
197	Regulator Review of Draft	61 days	Thu 11/11/21	Mon 1/10/22
198	Regulator RTCs and Final Generation	14 days	Tue 1/11/22	Mon 1/24/22
199	**North Station Landfill (Site 8)**	**491 days?**	**Fri 10/25/19**	**Fri 2/26/21**
200	**SI Report**	**308 days**	**Fri 10/25/19**	**Thu 8/27/20**
201	Preliminary Draft Generation	90 days	Fri 10/25/19	Wed 1/22/20
202	Navy Review of Preliminary Draft	62 days	Thu 1/23/20	Tue 3/24/20
203	Navy RTCs and Draft Generation	70 days	Wed 3/25/20	Tue 6/2/20
204	Regulator Review of Draft	60 days	Mon 6/15/20	Thu 8/13/20
205	Regulator RTCs and Final Generation	14 days	Fri 8/14/20	Thu 8/27/20
206	**EE/CA**	**113 days**	**Fri 8/28/20**	**Fri 12/18/20**
207	Preliminary Draft Generation	14 days	Fri 8/28/20	Thu 9/10/20
208	Navy Review of Preliminary Draft	21 days	Fri 9/11/20	Thu 10/1/20
209	Navy RTCs and Draft Generation	8 days	Fri 10/2/20	Fri 10/9/20
210	Regulator Review of Draft	60 days	Mon 10/12/20	Thu 12/10/20
211	Regulator RTCs and Final Generation	8 days	Fri 12/11/20	Fri 12/18/20
212	**Action Memo**	**78 days?**	**Fri 12/11/20**	**Fri 2/26/21**
213	Regulator Review of Draft	43 days	Mon 12/21/20	Mon 2/1/21

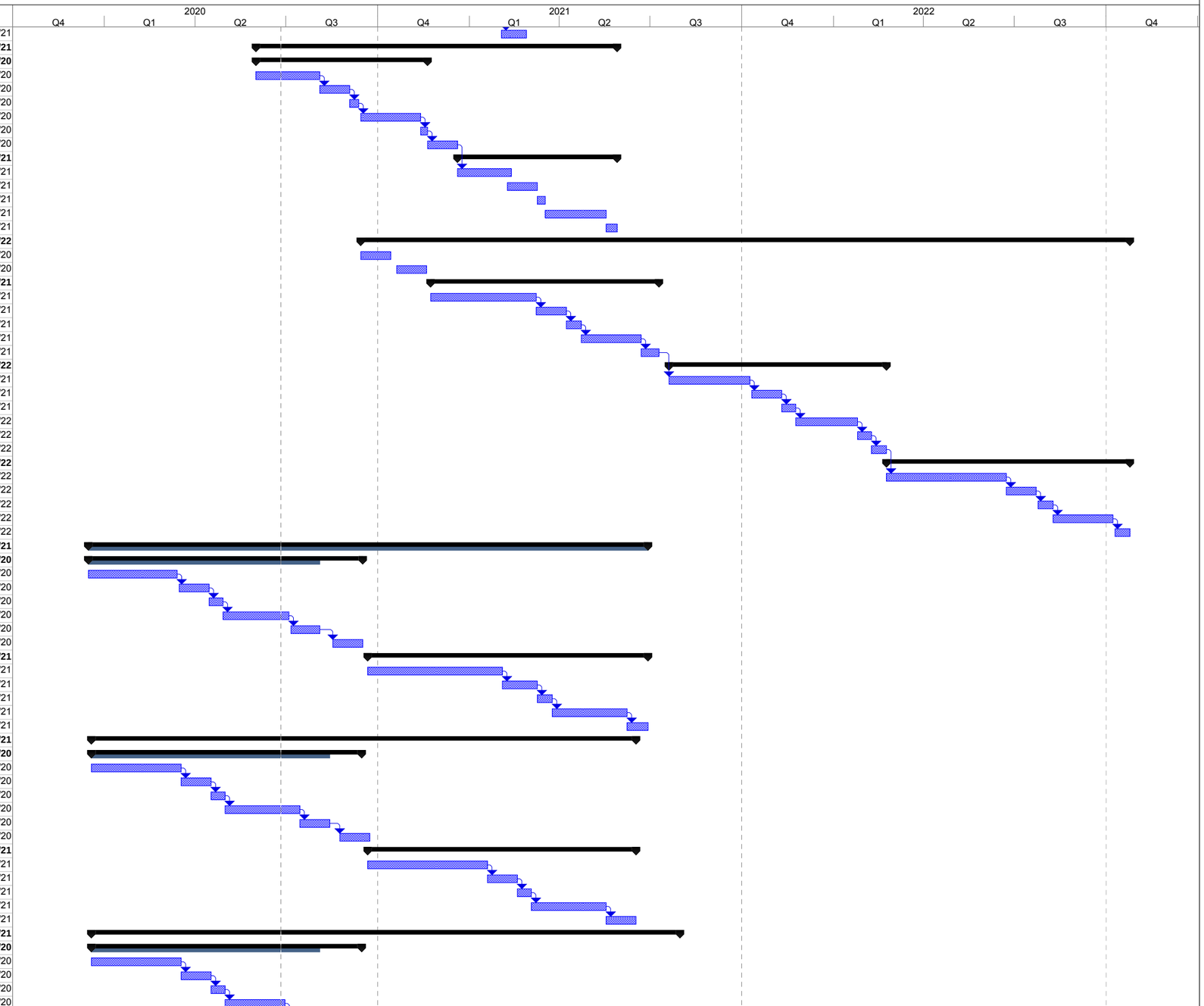


Date: Fri 6/26/20

Task | Milestone | External Milestone | External Milestone | Inactive Summary | Duration-only | Finish-only | Progress
Split | Summary | External Milestone | Inactive Milestone | Manual Task | Start-only | External Tasks

Figure 4-1
FY 2021 Schedule for Active Sites

ID	Task Name	Duration	Start	Finish
214	Regulator RTCs and Final Generation	25 days	Tue 2/2/21	Fri 2/26/21
215	**Construction Debris Landfill (Site 22)**	**362 days**	**Mon 6/1/20**	**Fri 5/28/21**
216	**SI UFP-SAP**	**172 days**	**Mon 6/1/20**	**Thu 11/19/20**
217	Preliminary Draft Generation	64 days	Mon 6/1/20	Mon 8/3/20
218	Navy Review of Preliminary Draft	30 days	Tue 8/4/20	Wed 9/2/20
219	Navy RTCs and Draft Generation	9 days	Thu 9/3/20	Fri 9/11/20
220	Regulator Review of Draft	60 days	Mon 9/14/20	Thu 11/12/20
221	Regulator RTCs and Final Generation	7 days	Fri 11/13/20	Thu 11/19/20
222	SI Fieldwork	30 days	Fri 11/20/20	Sat 12/19/20
223	**SI Report**	**160 days**	**Sun 12/20/20**	**Fri 5/28/21**
224	Preliminary Draft Generation	54 days	Sun 12/20/20	Thu 2/11/21
225	Navy Review of Preliminary Draft	30 days	Mon 2/8/21	Tue 3/9/21
226	Navy RTCs and Draft Generation	8 days	Wed 3/10/21	Wed 3/17/21
227	Regulator Review of Draft	61 days	Thu 3/18/21	Mon 5/17/21
228	Regulator RTCs and Final Generation	11 days	Tue 5/18/21	Fri 5/28/21
229	**Oceana Pond**	**771 days**	**Mon 9/14/20**	**Mon 10/24/22**
230	House Keeping Action Fieldwork	30 days	Mon 9/14/20	Tue 10/13/20
231	SI Fieldwork	30 days	Tue 10/20/20	Wed 11/18/20
232	**SI Report**	**229 days**	**Mon 11/23/20**	**Fri 7/9/21**
233	Preliminary Draft Generation	106 days	Mon 11/23/20	Mon 3/8/21
234	Navy Review of Preliminary Draft	30 days	Tue 3/9/21	Wed 4/7/21
235	Navy RTCs and Draft Generation	15 days	Thu 4/8/21	Thu 4/22/21
236	Regulator Review of Draft	60 days	Fri 4/23/21	Mon 6/21/21
237	Regulator RTCs and Final Generation	18 days	Tue 6/22/21	Fri 7/9/21
238	**RI UFP-SAP**	**218 days**	**Tue 7/20/21**	**Tue 2/22/22**
239	Preliminary Draft Generation	81 days	Tue 7/20/21	Fri 10/8/21
240	Navy Review of Preliminary Draft	30 days	Mon 10/11/21	Tue 11/9/21
241	Navy RTCs and Draft Generation	14 days	Wed 11/10/21	Tue 11/23/21
242	Regulator Review of Draft	62 days	Wed 11/24/21	Mon 1/24/22
243	Regulator RTCs and Final Generation	14 days	Tue 1/25/22	Mon 2/7/22
244	RI Fieldwork	15 days	Tue 2/8/22	Tue 2/22/22
245	**RI Report**	**244 days**	**Wed 2/23/22**	**Mon 10/24/22**
246	Preliminary Draft Generation	120 days	Wed 2/23/22	Wed 6/22/22
247	Navy Review of Preliminary Draft	30 days	Thu 6/23/22	Fri 7/22/22
248	Navy RTCs and Draft Generation	15 days	Mon 7/25/22	Mon 8/8/22
249	Regulator Review of Draft	60 days	Tue 8/9/22	Fri 10/7/22
250	Regulator RTCs and Final Generation	15 days	Mon 10/10/22	Mon 10/24/22
251	**Former Locomotive Shop**	**561 days**	**Mon 12/16/19**	**Mon 6/28/21**
252	**SI UFP-SAP**	**275 days**	**Mon 12/16/19**	**Tue 9/15/20**
253	Preliminary Draft Generation	89 days	Mon 12/16/19	Fri 3/13/20
254	Navy Review of Preliminary Draft	30 days	Mon 3/16/20	Tue 4/14/20
255	Navy RTCs and Draft Generation	14 days	Wed 4/15/20	Tue 4/28/20
256	Regulator Review of Draft	66 days	Wed 4/29/20	Fri 7/3/20
257	Regulator RTCs and Final Generation	29 days	Mon 7/6/20	Mon 8/3/20
258	SI Fieldwork	30 days	Mon 8/17/20	Tue 9/15/20
259	**SI Report**	**281 days**	**Mon 9/21/20**	**Mon 6/28/21**
260	Preliminary Draft Generation	135 days	Mon 9/21/20	Tue 2/2/21
261	Navy Review of Preliminary Draft	35 days	Wed 2/3/21	Tue 3/9/21
262	Navy RTCs and Draft Generation	15 days	Wed 3/10/21	Wed 3/24/21
263	Regulator Review of Draft	75 days	Thu 3/25/21	Mon 6/7/21
264	Regulator RTCs and Final Generation	21 days	Tue 6/8/21	Mon 6/28/21
265	**Former Wastewater Treatment Plant**	**546 days**	**Thu 12/19/19**	**Wed 6/16/21**
266	**SI UFP-SAP**	**271 days**	**Thu 12/19/19**	**Mon 9/14/20**
267	Preliminary Draft Generation	90 days	Thu 12/19/19	Tue 3/17/20
268	Navy Review of Preliminary Draft	30 days	Wed 3/18/20	Thu 4/16/20
269	Navy RTCs and Draft Generation	14 days	Fri 4/17/20	Thu 4/30/20
270	Regulator Review of Draft	75 days	Fri 5/1/20	Tue 7/14/20
271	Regulator RTCs and Final Generation	30 days	Wed 7/15/20	Thu 8/13/20
272	SI Fieldwork	30 days	Mon 8/24/20	Tue 9/22/20
273	**SI Report**	**269 days**	**Mon 9/21/20**	**Wed 6/16/21**
274	Preliminary Draft Generation	120 days	Mon 9/21/20	Mon 1/18/21
275	Navy Review of Preliminary Draft	30 days	Tue 1/19/21	Wed 2/17/21
276	Navy RTCs and Draft Generation	14 days	Thu 2/18/21	Wed 3/3/21
277	Regulator Review of Draft	75 days	Thu 3/4/21	Mon 5/17/21
278	Regulator RTCs and Final Generation	30 days	Tue 5/18/21	Wed 6/16/21
279	**Area North of Hazardous Waste Storage Area**	**590 days?**	**Thu 12/19/19**	**Fri 7/30/21**
280	**SI UFP-SAP**	**271 days?**	**Thu 12/19/19**	**Mon 9/14/20**
281	Preliminary Draft Generation	90 days	Thu 12/19/19	Tue 3/17/20
282	Navy Review of Preliminary Draft	30 days	Wed 3/18/20	Thu 4/16/20
283	Navy RTCs and Draft Generation	14 days	Fri 4/17/20	Thu 4/30/20
284	Regulator Review of Draft	60 days	Fri 5/1/20	Mon 6/29/20

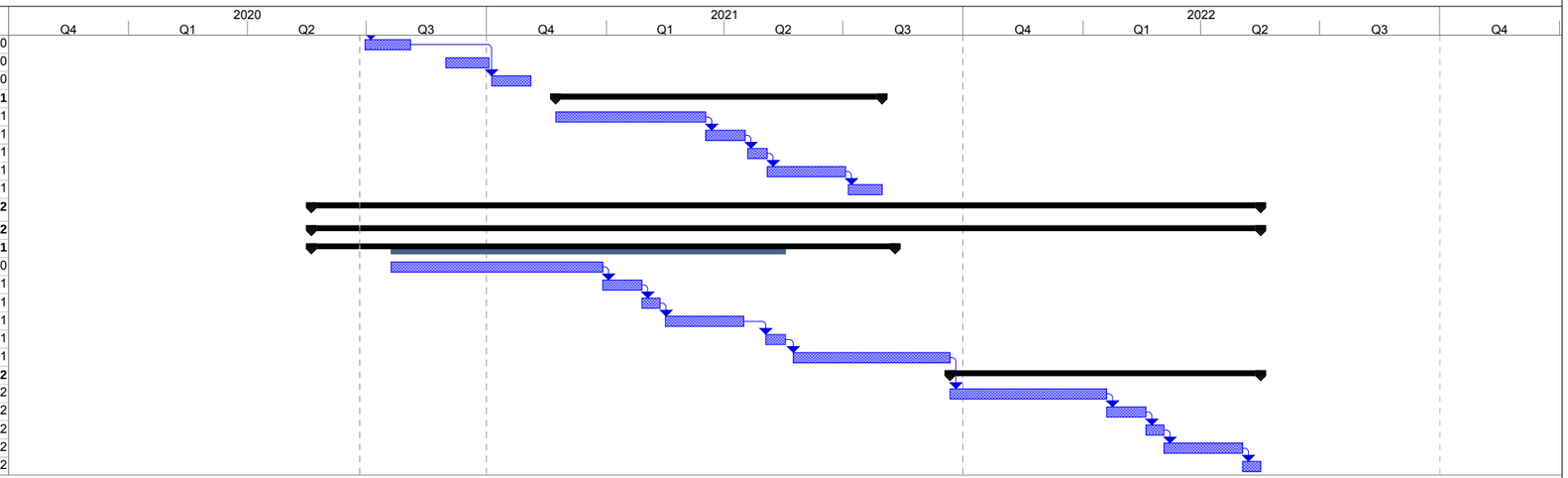


Date: Fri 6/26/20

Task
Split
Milestone
Summary
External Milestone
External Milestone
External Milestone
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Start-only
Finish-only
External Tasks
Progress

Figure 4-1
FY 2021 Schedule for Active Sites

ID	Task Name	Duration	Start	Finish
285	Regulator RTCs and Final Generation	35 days	Tue 6/30/20	Mon 8/3/20
286	House Keeping Action Fieldwork	33 days	Mon 8/31/20	Fri 10/2/20
287	SI Fieldwork	30 days	Mon 10/5/20	Tue 11/3/20
288	**SI Report**	**250 days**	**Mon 11/23/20**	**Fri 7/30/21**
289	Preliminary Draft Generation	115 days	Mon 11/23/20	Wed 3/17/21
290	Navy Review of Preliminary Draft	30 days	Thu 3/18/21	Fri 4/16/21
291	Navy RTCs and Draft Generation	15 days	Mon 4/19/21	Mon 5/3/21
292	Regulator Review of Draft	60 days	Tue 5/4/21	Fri 7/2/21
293	Regulator RTCs and Final Generation	26 days	Mon 7/5/21	Fri 7/30/21
294	**NAS Oceana MRP Sites**	**727 days**	**Wed 5/20/20**	**Mon 5/16/22**
295	**Potential Dive-Bombing Target Range**	**727 days**	**Wed 5/20/20**	**Mon 5/16/22**
296	**SI MR QAPP**	**447 days**	**Wed 5/20/20**	**Mon 8/9/21**
297	Preliminary Draft Generation	162 days	Mon 7/20/20	Mon 12/28/20
298	Navy Review of Preliminary Draft	30 days	Tue 12/29/20	Wed 1/27/21
299	Navy RTCs and Draft Generation	14 days	Thu 1/28/21	Wed 2/10/21
300	Regulator Review of Draft	60 days	Mon 2/15/21	Thu 4/15/21
301	Regulator RTCs and Final Generation	15 days	Mon 5/3/21	Mon 5/17/21
302	SI Fieldwork	120 days	Mon 5/24/21	Mon 9/20/21
303	**SI Report**	**238 days**	**Tue 9/21/21**	**Mon 5/16/22**
304	Preliminary Draft Generation	120 days	Tue 9/21/21	Tue 1/18/22
305	Navy Review of Preliminary Draft	30 days	Wed 1/19/22	Thu 2/17/22
306	Navy RTCs and Draft Generation	14 days	Fri 2/18/22	Thu 3/3/22
307	Regulator Review of Draft	60 days	Fri 3/4/22	Mon 5/2/22
308	Regulator RTCs and Final Generation	14 days	Tue 5/3/22	Mon 5/16/22



Date: Fri 6/26/20

Task | Milestone | External Milestone | External Milestone | Inactive Summary | Duration-only | Finish-only | Progress
Split | Summary | External Milestone | Inactive Milestone | Manual Task | Start-only | External Tasks

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Appendix A
RCRA to CERCLA Memorandum

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

August 24, 1998

SUBJECT: RCRA Corrective Action Federal Facilities Referred to Non-RCRA Federal Authorities

FROM: Robert E. Greaves, Chief
RCRA Operations Branch, 3WC23

Paul Gotthold, Chief
PA Operations Branch, 3WC22

TO: Henry J. Sokolowski, Chief
Federal Facilities Branch, 3HS50

Hank...the RCRA HQs Permits and State Programs Division has recently issued a memo which requires Regional RCRA Programs to get written concurrence for RCRA Facilities where the entire site's Corrective Action (CA) responsibilities have been referred to another Federal (Non-RCRA) authority (e.g., CERCLA). By coding a facility as "referred to a non-RCRA Authority" in the RCRIS data base, the RCRA program is acknowledging that a facility does not belong on the RCRA CA Program's Baseline for GPRA purposes since the receiving program would account for the site's progress.

To ensure the removal of these sites from the RCRA CA Baseline is verifiable, HQ's has requested that a formal referral be documented. HQ's will not remove facilities from the RCRA CA Baseline list until a completed referral form is in the administrative file.

Attached is a list of sites that have been traditionally acknowledged as CERCLA leads in your Branch and the certification which HQs has requested. Please note that the Washington Navy Yard, Naval Air Station Oceana, and the US Naval Ordnance Station - Stump Neck have been included as appropriate CERCLA leads reflecting our most recent discussions. If you agree the list is accurate, please sign the certification and return it so we can forward the information to HQs. A copy will also be placed in each facility's RCRA file. If you have any questions regarding any of the listed facilities, please let us know.

cc: Maria Vickers

Entire-Facility Referral Documentation

RCRA to Non-RCRA Federal Authority

The Federal Facilities in Attachment 1 are ones that are subject to RCRA Corrective Action (CA).

Historically, the Region 3 RCRA and SF Programs have determined it is most advantageous that a non-RCRA Federal Authority be used to address the Corrective Action responsibilities at the attached facilities. Because the Hazardous Site Cleanup Division, Federal Facilities Branch has taken responsibility for the cleanup of these sites, they will no longer be tracked on the RCRA CA program's GPRA Baseline.

Robert E. Greaves, Chief
RCRA Operations Branch, 3WC23
Waste & Chemicals Management Division

Date 9/3/98

Paul Gottfield, Chief
PA Operations Branch, 3WC22
Waste & Chemicals Management Division

Date 9-3-98

Henry J. Sokolowski, Chief
Federal Facilities Branch, 3HS50
Hazardous Site Cleanup Division

Date 9/3/98

ATTACHMENT 1

U.S. ENVIRONMENTAL PROTECTION AGENCY
RCRIS NATIONAL OVERSIGHT DATABASE

DATE: 08/24/98

LISTING OF HIGH PRIORITY FACILITIES IN THE CORRECTIVE ACTION WORKLOAD UNIVERSE THAT HAVE BEEN DEFERRED TO THE CERCLA PROGRAM

EPA ID	HANDLER NAME	LOCATION ADDRESS	CITY	ST.	ZIP CODE	CURRENT NCAPS RANKING
STATE: DELAWARE						
DE8570024010	DOVER AIR FORCE BASE	436 MILITARY AIRLIFT WING	DOVER	DE	19901	HIGH
STATE: DISTRICT OF COLUMBIA						
DC9170024310	HQ NAVAL DISTRICT WASHINGTON	WASHINGTON NAVY YD BLDG 197	WASHINGTON	DC	20374-5001	HIGH
STATE: MARYLAND						
MD4170024109	NAVAL SURFACE WARFARE CENTER	101 STRAUSS AV	INDIAN HEAD	MD	20640	HIGH
MD3210021355	U S ABERDEEN PROVING GROUNDS	SW OF RTE 1 BRIDGE	ABERDEEN	MD	21005	HIGH
MD9210020567	U S DEPT OF THE ARMY FT MEADE	MD RTE 175	FORT GEORGE G MEADE	MD	20755	HIGH
MD4170090001	U S NAVAL EXPLOSIVE ORDN DISP	STUMP NECK ROAD	INDIAN HEAD	MD	20640	HIGH
MD0170023444	U S NAVAL SURFACE WEAPONS-WARE	WHITE OAK LABORATORY	SILVER SPRING	MD	20903	HIGH
STATE: PENNSYLVANIA						
PA5213820892	DRMO - TOBIHANNA ARMY DEPOT	TOBYHANNA ARMY DEPOT	TOBYHANNA	PA	18466	HIGH
PA6213820503	LETTERKENNY ARMY DEPOT MULTIP	FRANKLIN ST EXT	CHAMBERSBURG	PA	17201	HIGH
PA6170024545	NAVAL AIR DEVEL CTR	ST & JACKSONVILLE RDD	WARMINSTER	PA	18974	HIGH
STATE: VIRGINIA						
VA3971520751	DEFENSE SUPPLY CENTER RICHMOND	8000 JEFFERSON DAVIS HWY	RICHMOND	VA	23297-5000	HIGH
VA1170024722	MARINE CORPS DEV & ED COMMAND	MARINE CORPS DEV & ED COMMAND	QUANTICO	VA	22134	HIGH
VA2170024606	NAVAL AIR STATION OCEANA	NAVAL AIR STATION OCEANA	OCEANA	VA	23460	HIGH
VA8170024170	NAVAL WEAPONS STA	US NAVAL WEAPONS STATION	YORKTOWN	VA	23691	HIGH
VA1170024813	NORFOLK NAVAL SHIPYARD	NORFOLK NAVAL SHIPYARD	PORTSMOUTH	VA	23709	HIGH
VA7213720082	U S ARMY ENG CNTR FT BELVOIR	DEH BLDG 1442 ATZA-DEH-EN	FORT BELVOIR	VA	22060	HIGH
VA7170024684	US NAVAL SURFACE WARFARE CTR	2 MI EAST OF INTERSECT 301-206	DAHLGREN	VA	22448	HIGH
VA6170061463	US NORFOLK NAVAL BASE	BLDG N26 NAVAL STATION	NORFOLK	VA	23511	HIGH
STATE: WEST VIRGINIA						
WV0170023691	ALLEGANY BALLISTICS LAB PT 1	ROCKET CENTER		WV	26753	HIGH

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

March 4,1999

MEMORANDUM

SUBJECT: RCRA Corrective Action Federal Facilities Referred to Non-RCRA Federal Authorities

FROM: Robert E. Greaves, Chief
RCRA Operations Branch, 3WC23

Paul Gotthold, Chief
PA Operations Branch, 3WC22

TO: Henry J. Sokolowski, Chief
Federal Facilities Branch, 3HS50

Hank, this memo is a follow-up to our conversation regarding clean-up of federal facilities that have been designated as a high priority by the RCRA Program.

Per our discussion, the HSCD Federal Facilities Branch will continue to be the lead for the attached list of federal facilities. As a result of your involvement, RCRA will no longer track these sites on its GPRA Baseline.

Please sign the Attachment to acknowledge your agreement. A copy will be placed in the each federal facility's RCRA file.

Thanks for your continued help in addressing these sites!

cc: Maria Vickers w/attachment

HIGH PRIORITY RCRA FACILITIES DEFERRED TO CERCLA
March 4, 1999

	FACILITY	ID #	COMMENTS
1	Fort Ritchie	MD8210020758	BRAC clean-up
2	U S Andrews AFB	MD0570024000	proposed NPL site
3	US Naval Air - Patuxent	MD7170024536	NPL site
4	Naval Inventory Control Point	PA3170022104	NPL site; aka Mechanicsburg
5	US Naval Base	PA4170022418	BRAC clean-up; aka Phila. Shipyard
6	Fort Pickett	VA0213720931	BRAC clean-up
7	Langley Air Force Base	VA4570024477	NPL site
8	NASA GSFC Wallops Flight Facility	VA8800010763	SF lead
9	NASA Langley Research Ctr	VA2800005033	NPL site
10	Naval Air Station Oceana	VA2170024606	SF Lead; 3008(h) CA order
11	Naval Communications Area Master Sta La	VA9170022488	BRAC clean-up; aka UNSN NRTF Driver
12	US Cameron Station MDW Army	VA4210220139	BRAC clean-up completed
13	US Woodbridge Research Facility	VA0210000907	BRAC clean-up
14	Vint Hill Farms Station	VA3211220931	BRAC clean-up
15	Radford Army Ammunition Plant	VA1210020730	SF lead; 3004(u) CA permit

Robert E. Greaves, Chief
RCRA Operations Branch, 3WC23

Date 3/4/99

Paul Gottfried, Chief
PA Operations Branch, 3WC22

Date 3-4-99

Henry J. Sokolowski, Chief
Federal Facilities Branch, 3HS50

Date 3-4-99

HIGH PRIORITY NCAPS FACILITIES REFERRED TO SUPERFIND AND REMOVED FROM THE GPRA BASELINE

	FACILITY	ID #	LEAD	STATUS	COMMENTS	
1	HQ Naval District (Washington Navy Yard)	DC9170024310	C	R	SF concurrence letter 8/24/98	
1	Dover Air Force Base	DE8570024010	C	R	SF concurrence letter 8/24/98	
1	Essex Industrial Chemicals Inc	MDD990686552	C	R	SF concurrence letter 9/28/98	
2	Fort Ritchie	MD8210020758	C	R	BRAC	09/30/95
3	J & L Industries inc	MDD022527584	C	R	SF concurrence letter 9/28/98	
4	Naval Surface Warfare Center	MD4170024109	C	R	SF concurrence letter 8/24/98	
5	Spectron Inc	MDD000218008	C	R		05/26/96
6	U S Aberdeen Proving Grounds	MD3210021355	C	R	SF concurrence letter 8/24/98	
7	U S Andrews AFB	MD0570024000	C	R	proposed NPL	09/30/97
8	U S Dept of the Army Ft Meade	MD9210020567	C	R	SF concurrence letter 8/24/98	
9	U S Naval Explosive Ordn Disp	MD4170090001	C	R	SF concurrence letter 8/24/98	
10	U S Naval Surface Weapons-Warehouse	MD0170023444	C	R	SF concurrence letter 8/24/98	
11	US Naval Air - Patuxent	MD7170024536	C	R	final NPL	
1	Chemclene Corporation	PAD014353445	C	R	SF concurrence letter 9/3/98	
2	Digilog Circuits Inc	PAD002506210	C	R	SF concurrence letter 10/21/98	
3	DRMO - Tobihanna Army Depot	PA5213820892	C	R	SF concurrence letter 8/24/98	
4	Goodrich, B F Co	PAD002334696	C	R	SF concurrence letter 10/21/98	
5	Horsehead Resource Dev Co Inc	PAD002395887	C	R	SF concurrence letter 12/10/98	
6	Letterkenny Army Depot Mult Appl	PA6213820503	C	R	SF concurrence letter 8/24/98	
7	Naval Air Devel Ctr	PA6170024545	C	R	SF concurrence letter 8/24/98	
8	Naval Inventory Control Point	PA3170022104	C	R	NPL	09/30/96
9	Occidental Chemical Corp	PAD002334753	C	R	SF concurrence letter 12/10/98	
10	Printed Circuits Inc	PAD054717475	C	R	SF concurrence letter 10/21/98	
11	Rutgers Organics Corp State College Plt	PAD000436261	C	R	SF concurrence letter 12/10/98	
12	Sharon Steel Corp	PAD001933175	C	R	SF concurrence letter 12/10/98	
13	Techalloy Co Inc	PAD002351070	C	R	SF concurrence letter 10/21/98	
14	Tonolli Corp	PAD073613663	C	R	SF concurrence letter 12/10/98	
15	US Naval Base	PA4170022418	C	R	BRAC	09/30/88
16	Whitmoyer Laboratories Inc	PAD003005014	C	R	SF concurrence letter 12/10/98	
17	CBS CORP (WESTINGHOUSE)	PAD015000575	C	R	SF concurrence letter 2-10-00	✓
1	Clark, L A & Son Inc	VAD007972482	C	R		12/30/88&09/29/95
2	Commonwealth Wood Preservers Inc	VAD081057697	C	R		10/31/89
3	Defense Supply Center Richmond	VA3971520751	C	R	SF concurrence letter 8/24/98	
4	Everdure Inc	VAD003121142	C	R		03/25/96
5	Fort Pickett	VA0213720931	C	R	BRAC	09/30/95
6	Langley Air Force Base	VA4570024477	C	R	NPL	12/31/96
7	Marine Corps Dev & Ed Command	VA1170024722	C	R	SF concurrence letter 8/24/98	
8	NASA GSFC Wallops Flight Facility	VA8800010763	C	R	proposed NPL	10/30/98
9	NASA Langley Research Ctr	VA2800005033	C	R	NPL	12/31/93
10	Naval Air Station Oceana	VA2170024606	C	R		09/22/98
11	Naval Amphibious Base Little Creek	VA5170022482	C	R	SF concurrence letter 8/24/98	
12	Naval Communications Area Master Sta La	VA9170022488	C	R	BRAC	09/30/93
13	Naval Weapons Sta	VA8170024170	C	R	SF concurrence letter 8/24/98	

14	Norfolk Naval Shipyard	VA1170024813	C	R	SF concurrence letter 8/24/98	
15	Rea Magnet Wire Co	VAD065399008	C	R		09/30/97
16	US Army Eng Cntr Ft Belvoir	VA7213720082	C	R	SF concurrence letter 8/24/98	
17	US Cameron Station MDW Army	VA4210220139	C	R	BRAC - done	09/30/88
18	US Naval Surface Warfare Ctr Dl	VA7170024684	C	R	SF concurrence letter 8/24/98	
19	US Norfolk Naval Base	VA6170061463	C	R	SF concurrence letter 8/24/98	
20	US Woodbridge Research Facility	VA0210000907	C	R	BRAC	09/30/88
21	Vega Precision Labs (Valley Plating)	VAD980832836	C	R	SF Concurrence letter 3/3/99	
22	Vint Hill Farms Station	VA3211220931	C	R	BRAC	09/30/93
1	Allegany Ballistics Lab Plant 1	WV0170023691	C	R	SF concurrence letter 8/24/98	
2	Artel Chem Co	WVD047989207	C	R		02/19/97
3	Clean Up WV Ordnance Works	WVD980713036	C	R		09/30/87
4	Hanlin Chem West Virginia	WVD000765297	C	R	SF concurrence letter 9/3/98	
5	Sharon Steel Corp-Fairmont Coke Works	WVD000800441	C	R		09/17/97

Region III Pennsylvania Database
Facilities with Event CA210 , REFERRED TO A NON-RCRA AUTHORITY
Actual date range: 100180 to 101998 Scheduled date range: Not sele
Event status codes accepted NACPS Rank: All
Selected states: PA Only events with actual dates: Y

Facility	EPA ID	E / S	St #	Cd	Schedule	Actual
US NAVAL BASE	PA4170022418	E	1	SF		09/30/88

Comment: BRAC SITE CLOSURE ROUND #1 - 1988

MORE =>

ɪrtrunon: October31,20016:12AM

DRMO-TOBIHANNAARMYDEPOT **PA5213820892**

TOBYHANNA,MONROECOUNTY PENNSYLVANIA Region03

Universes SubjCEI:---S- PCWrkId: ClosWrkId: PermC/PC:---S- PermWrkId:---S- SubjCA:X CAWrkId:X

AreaName	Seq.	EventCode	Seq.	Resp.Agcy	Loc.	ActualDate	Sched.Orig.	Sched.New
ENTIREFACILITY	1	CA100	1	EPA	PA	08/24/1998		
		Notes:TRANSFERREDTOCERCLA						
		CA075HI	1	EPA	PA	11/01/1991		
		CA210SF	1	EPA	PA	11/30/1990		
		Notes:CERCLAIAGSIGNED11/90						
		CA050	1	EPA	PA	08/06/1987		
	Notes:							

*** End of Report ***

Region III Pennsylvania Database
Facilities with Event CA210 , REFERRED TO A NON-RCRA AUTHORITY
ual date range: 100180 to 101998 Scheduled date range: Not sele
status codes accepted NACPS Rank: All
lected states: PA Only events with actual dates: Y

Facility	EPA ID	E / S	St #	Cd	Schedule	Actual
Comment: BRAC SITE CLOSURE ROUND #3 - 1993						
DRMO - TOBIHANNA ARMY DEPOT	PA5213820892	E	1	SF		11/

MORE =>

Region III Pennsylvania Database
Facilities with Event CA210 , REFERRED TO A NON-RCRA AUTHORITY
tual date range: 100180 to 101998 Scheduled date range: Not sele
, status codes accepted NACPS Rank: All
lected states: PA Only events with actual dates: Y

Facility	EPA ID	E / S	St #	Cd	Schedule	Actual
Comment: CERCLA IAG SIGNED 11/90						
HERCULES INC - JEFFERSON PLANT	PAD000606285	E	1	OT		09

MORE =>

Region III Pennsylvania Database
Facilities with Event CA210 , REFERRED TO A NON-RCRA AUTHORITY
:tual date range: 100180 to 101998 Scheduled date range: Not sele
. status codes accepted NACPS Rank: All
lected states: PA Only events with actual dates: Y

Facility	EPA ID	E / S	St #	Cd	Schedule	Actual
		- -	--	--------	------	
Comment: REFERRED TO STATE						
LETTERKENNY ARMY DEPOT MULTIPL	PA6213820503	E	1	SF		

MORE =>

Region III Pennsylvania Database
Facilities with Event CA210 , REFERRED TO A NON-RCRA AUTHORITY
tual date range: 100180 to 101998 Scheduled date range: Not sele
status codes accepted NACPS Rank: All
elected states: PA Only events with actual dates: Y

Facility	EPA ID	E / S	St	#	Cd	Schedule	Actual
Comment: CERCLA IAG SIGNED - 02/89							
LETTERKENNY ARMY DEPOT MULTIPL	PA6213820503	E		2	SF		
Comment: BRAC SITE CLOSURE ROUND #4 - 1995							

MORE =>

Region III Pennsylvania Database
Facilities with Event CA210 , REFERRED TO A NON-RCRA AUTHORITY
tual date range: 100180 to 101998 Scheduled date range: Not sele
status codes accepted NACPS Rank: All
elected states: PA Only events with actual dates: Y

Facility	EPA ID	E / S	St	#	Cd	Schedule	Actual
NAVAL AIR DEVEL CTR	PA6170024545	E		1	SF		09/30/90
Comment: CERCLA IAG SIGNED - 09/90							
NAVAL AIR DEVEL CTR	PA6170024545	E		2	SF		09/30/91

MORE =>

Region III Pennsylvania Database
Facilities with Event CA210 , REFERRED TO A NON-RCRA AUTHORITY
'ual date range: 100180 to 101998 Scheduled date range: Not sele
status codes accepted NACPS Rank: All
lected states: PA Only events with actual dates: Y

Facility	EPA ID	E / S	St #	Cd	Schedule	Actual
Comment: BRAC SITE CLOSURE ROUND #2 - 1991						
NAVAL AIR DEVEL CTR	PA6170024545	E	3	SF		09/30/95
Comment: BRAC SITE CLOSURE ROUNE #4 - 1995						

MORE =>

Region III Pennsylvania Database
Facilities with Event CA210 , REFERRED TO A NON-RCRA AUTHORITY
tual date range: 100180 to 101998 Scheduled date range: Not sele
status codes accepted NACPS Rank: All
lected states: PA Only events with actual dates: Y

Facility	EPA ID	E / S	St #	Cd	Schedule	Actual
NAVAL INVENTORY CONTROL POINT	PA3170022104	E	1	SF	09/30/19	

Comment: CERCLA IAG PROJECTED DATE OF AGREEMENT - 09/30/96

MORE =>

Region III Pennsylvania Database
Facilities with Event CA210 , REFERRED TO A NON-RCRA AUTHORITY
ual date range: 100180 to 101998 Scheduled date range: Not sele
. status codes accepted NACPS Rank: All
lected states: PA Only events with actual dates: Y

Facility	EPA ID	E / S	St #	Cd	Schedule	Actual

Number of occurances of this event, PA : 12
Number of facilities with this event, PA : 9

MORE =>

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

March 9,1999

MEMORANDUM

SUBJECT: RCRA Corrective Action Federal Facilities Referred to Non-RCRA Federal Authorities

FROM: Robert E. Greaves, Chief
RCRA Operations Branch, 3WC23

TO: Henry J. Sokolowski, Chief
Federal Facilities Branch, 3HS50

RE: WV Ordnance Works (WVD980713036)

Hank, this memo is a follow-up to our conversation regarding clean-up of federal facilities that have been designated as a high priority by the RCRA Program. This site was inadvertently left off the memo Paul and I sent to you last week.

Per our discussion, the HSCD Federal Facilities Branch will continue to be the lead for the WV Ordnance Works site. As a result of your involvement, RCRA will no longer track this site on its GPRA Baseline.

Thanks for your assistance! A copy of this memo will be placed in the facility's RCRA file.

cc: Maria Vickers

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

March 4,1999

MEMORANDUM

SUBJECT: RCRA Corrective Action Federal Facilities Referred to Non-RCRA Federal Authorities

FROM: Robert E. Greaves, Chief
RCRA Operations Branch, 3WC23

Paul Gotthold, Chief
PA Operations Branch, 3WC22

TO: Henry J. Sokolowski, Chief
Federal Facilities Branch, 3HS50

Hank, this memo is a follow-up to our conversation regarding clean-up of federal facilities that have been designated as a high priority by the RCRA Program.

Per our discussion, the HSCD Federal Facilities Branch will continue to be the lead for the attached list of federal facilities. As a result of your involvement, RCRA will no longer track these sites on its GPRA Baseline.

Please sign the Attachment to acknowledge your agreement. A copy will be placed in the each federal facility's RCRA file.

Thanks for your continued help in addressing these sites!

cc: Maria Vickers w/attachment

HIGH PRIORITY RCRA FACILITIES DEFERRED TO CERCLA
March 4, 1999

	FACILITY	ID #	COMMENTS
1	Fort Ritchie	MD8210020758	BRAC clean-up
2	U S Andrews AFB	MD0570024000	proposed NPL site
3	US Naval Air - Patuxent	MD7170024536	NPL site
4	Naval Inventory Control Point	PA3170022104	NPL site; aka Mechanicsburg
5	US Naval Base	PA4170022418	BRAC clean-up; aka Phila. Shipyard
6	Fort Pickett	VA0213720931	BRAC clean-up
7	Langley Air Force Base	VA4570024477	NPL site
8	NASA GSFC Wallops Flight Facility	VA8800010763	SF lead
9	NASA Langley Research Ctr	VA2800005033	NPL site
10	Naval Air Station Oceana	VA2170024606	SF Lead; 3008(h) CA order
11	Naval Communications Area Master Sta La	VA9170022488	BRAC clean-up; aka UNSN NRTF Driver
12	US Cameron Station MDW Army	VA4210220139	BRAC clean-up completed
13	US Woodbridge Research Facility	VA0210000907	BRAC clean-up
14	Vint Hill Farms Station	VA3211220931	BRAC clean-up
15	Radford Army Ammunition Plant	VA1210020730	SF lead; 3004(u) CA permit

Date 3.4.99

Robert E. Greaves, Chief
RCRA Operations Branch, 3WC23

Date 3-4-99

Paul Gottlhold, Chief
PA Operations Branch, 3WC22

Date 3-4-99

Henry J. Sokolowski, Chief
Federal Facilities Branch, 3HS50

Appendix B
Other than Operational Range Management Plan

APPENDIX B

Other-than-Operational Munitions Response Program Site Management Plan

1. Introduction

This appendix represents the Site Management Plan (SMP) for the other-than-operational (OTO) ranges associated with Naval Air Station (NAS) Oceana. As these ranges are noncontiguous with NAS Oceana main base property, they are excluded from the RCRA 3008(h) order and are therefore not included in the 2021 NAS Oceana PMP main text.

The OTO ranges in the Chesapeake Bay (Tangier Island Target Site) are managed with VDEQ oversight only. The OTO ranges located within North Carolina state waters, (North Landing River Target, Northern Currituck Sound Target, and Former Palmetto Point Bombing Range) are overseen by the North Carolina Department of Environmental Quality, formerly known as the North Carolina Department of Environment and Natural Resources.

The four OTO Munitions Response Program (MRP) sites were investigated in 2008 and 2009 during the Preliminary Assessment (PA) and one additional potential MRP site, the Hog Island Bombing Range, will be investigated as part of an upcoming PA. **Table B-1** summarizes the current status of all active OTO MRP sites and the location of each OTO site is shown on **Figure B-1**. The following sections describe the history, investigations, and planned activities for these sites.

2. Tangier Island Target Site

The Tangier Island Target Site (**Figure B-2**) is located approximately 2,800 yards southwest of Tangier Island and approximately 65 miles north of Norfolk, Virginia, in the lower portion of the Chesapeake Bay, in relatively shallow waters ranging from 10 to over 30 feet deep. The site consists of a 1,000-yard-radius prohibited area and a 3-nautical-mile-radius restricted area surrounding a Primary Target location. It features multiple targets that were used for aerial bombardment and rocketry training from approximately 1970 until 1996, including Navy Targets 1 and 2, located northeast of the Primary Target, and since-sunken ships. The site also encompasses a 1,000-yard-radius prohibited area around the San Marcos Wreck, which was used in the 1920s and is located 5.5 miles south of the Primary Target. Only practice rockets and bombs were dropped on the Primary Target and Navy Targets 1 and 2, but there may exist an explosive hazard because of spotting and witness charges. Munitions usage around the San Marcos target is unknown, but live munitions may have been dropped there (Malcolm Pirnie, 2008).

A digital geophysical mapping (DGM) investigation was completed during the 2011 Site Inspection (SI) and resulted in the detection of 4,148 anomalies within the investigation areas of the Tangier Island Target Site. The majority of these anomalies are concentrated around presumed target locations, with the lowest anomaly densities observed at the San Marcos Target location and the highest observed surrounding Navy Target 1. The site is located in a sandy, shallow water environment that is exposed to wind and wave action. The Target Site has been identified as a net depositional environment, so munitions and explosives of concern (MEC), if present at the site, is likely to be gradually buried if it remains in place (CH2M, 2011).

The conclusion section of the SI Report recommended additional investigation to inspect and identify individual anomalies at each of the targets located at the Tangier Island Target Site. The SI also recommended additional sediment sampling for munitions constituents (MC) if a significant number of the items identified are determined to be MEC.

Because Navy Targets 1 and 2 were confirmed to be hard targets, the SI recommended that the areas surrounding the hard targets be added to the MRP Tangier Island Target Site definition and in the CFR to restrict access within the vicinity of the hard targets. Additional signage near the Primary Target to warn boaters of the potential

navigational hazards associated with the former target was also recommended (CH2M, 2011). A Basis of Design for the installation of warning signs on pilings was finalized in FY 2019. A Non-Time-Critical Removal Action (NTCRA) Engineering Evaluation/Cost Analysis (EE/CA) and Decision Document (DD) for Institutional Controls and Installation of Aids to Navigation are anticipated to be finalized in FY 2020 and FY 2021, respectively. The NTCRA is anticipated to be completed in FY 2021.

3. North Landing River Target Site

The NLRT Site (**Figure B-3**) consists of the waters of the North Landing River within a 1,000-yard radius from a target, although no visual signs of the target remain. The range is approximately 20 miles south of NAS Oceana, near the mouth of the North Landing River in the Currituck Sound, and is 649 acres in size. Approximately 60 percent of the site is located in open water in the shallow northern part of the Currituck Sound, while the remaining 40 percent is located on coastal salt marshes on a peninsula called Troublesome Point.

The site was used for day and night dive bombing by naval aircraft from the mid-1950s until the mid-1960s. Only practice bombs with "small explosive charges for producing smoke puffs to mark point of impact" were dropped on the target; however, the specific quantities and types of munitions used at the site could not be identified. No munitions have been used at the NLRT Site since the mid-1960s (Malcolm Pirnie, 2009), but the range was suspected to contain MEC and therefore required further investigation.

The SI identified numerous anomalies scattered throughout the range area; however, no notable evidence of significant range use or specific target locations were observed (CH2M, 2010). Current speeds and a lack of tides in the Northern Currituck Sound imply that any potential MEC is unlikely to be moved by currents, except possibly in extreme storm conditions. The SI Report indicated MEC is likely to be buried if it remains in place, although a long period of time would be required to completely isolate the MEC beneath newly deposited sediment (CH2M, 2010).

The SI Report recommended additional investigation in select locations at the NLRT Site within high-density anomaly areas to determine if the anomalies at the site are MEC or range-related debris. Additionally, evaluation of the nature and extent of the MEC and MC in the sediments and investigation of the land portion of Troublesome Point may be required if MEC is identified during future investigations.

MEC might be present within the waters of the target based on the historical site operations and results of the SI Report, which identified an anomaly field around the target. A Non-Time-Critical Removal Action (NTCRA) Engineering Evaluation/Cost Analysis (EE/CA) and Decision Document (DD) for Institutional Controls and Installation of Aids to Navigation are anticipated to be finalized in FY 2020 and FY 2021, respectively. The NTCRA is anticipated to be completed in FY 2021.

4. Northern Currituck Sound Target

The NCST Site (**Figure B-3**) contained one hard target (no visual signs of the target remain at the site) and has a total area of approximately 3,831 acres. The hard target is located in the approximate center of the site, in shallow waters of the northern portion of the Currituck Sound. The Atlantic Intracoastal Waterway lies immediately to the west, and the range is located approximately 25 miles south of NAS Oceana.

Similar to the NLRT Site, the NCST was used for day and night dive bombing by naval aircraft from approximately 1950 until the mid-1960s. Only practice bombs with "small explosive charges for producing smoke puffs to mark point of impact" were dropped on the target; however, specific quantities and types of munitions used at the site have not been identified (Malcolm Pirnie, 2009). No munitions have been used at the NCST Site since the mid-1960s.

A DGM investigation was completed at the site in support of the SI. The data resulting from the DGM investigation indicated a significant concentration of anomalies in the vicinity of the target, suggesting the target coordinates are accurate and the anomalies surrounding the target are likely range-related. The high response concentration

of anomalies was confined to a relatively small elliptical area, approximately 235 yards, around the target center (CH2M, 2010). Current speeds and a lack of tides in the Northern Currituck Sound imply that any potential MEC is unlikely to be moved by currents, except possibly in extreme storm conditions. The SI Report indicated that MEC is likely to be buried if it remains in place, although a long period of time would be required to completely isolate the MEC beneath newly deposited sediment (CH2M, 2010).

The SI Report recommended additional investigation in select locations at the NCST Site within high-density anomaly areas to determine if the anomalies at the site are MEC or range-related debris. Additionally, evaluation of the nature and extent of the MEC and MC in the sediments may be required if MEC is identified during future investigations.

MEC might be present within the waters of the target based on the historical site operations and results of the SI Report, which identified an anomaly field around the target. An NTCRA EE/CA and DD for Institutional Controls and Installation of Aids to Navigation are anticipated to be finalized in FY 2020 and FY 2021, respectively. The NTCRA is anticipated to be completed in FY 2021.

5. Palmetto Point Bombing Range

The PPBR Site (**Figure B-4**) has an area of approximately 18,440 acres and is located in relatively shallow waters off the south shore of the Albemarle Sound in North Carolina, approximately 55 miles south of NAS Oceana. The site was used for basic loft bombing and high-altitude dive bombing from approximately 1957 until 1998. It is believed to have contained approximately six hard targets, two of which survive in remnant form. Only non-explosive munitions (practice munitions, water-filled, or smoke bombs) were used at the site, but it was suspected to contain MEC and therefore required further investigation (Malcolm Pirnie, 2009).

Results of the SI indicated significant anomaly concentrations in three of the five target locations: Target NAB 42, the Primary Target, and an area approximately 630 yards northwest of Target D (CH2M, 2010). The anomaly concentrations surrounding these three targets are believed to indicate range-related usage. A high-density area was identified between Target NAB 42 and Target #42, with two separate areas of metal protruding above the water surface. Anomalies identified during the SI were confined to a relatively small area (approximately 110 yards) just to the southeast of the target and extending eastward. An evaluation of sedimentation completed in support of the SI indicated that MEC is unlikely to be transported away from their original location within the range because of weak wind-driven currents at the site, indicating that MEC is likely to be buried if it remains in place (CH2M, 2010).

The SI recommended additional investigation in select locations within high-density anomaly areas (near Target NAB 42, Primary Target, the area northwest of Target D, and Lewis Point) to determine if the anomalies at the site are MEC or range-related debris and the nature and extent of contamination if MEC is confirmed. Additionally, signage or buoys placed near the hard target locations were recommended to warn boaters of the potential navigational hazards associated with the former targets. A Basis of Design for the installation of warning signs on pilings was finalized in FY 2020. An NTCRA EE/CA and DD for Institutional Controls and Installation of Aids to Navigation are anticipated to be finalized in FY 2020 and FY 2021, respectively. The NTCRA is anticipated to be completed in FY 2021.

6. Potential Hog Island Bombing Range

The Hog Island Bombing Range, located southeast of Exmore, Virginia in Hog Island Bay, was identified on a 1940 Navy plan and details map (CH2M, 2020). A PA is planned in FY 2021 to determine if material potentially presenting an explosive hazard (MPPEH)/MEC are potentially present due to historical activities and to determine whether additional site evaluation may be warranted.

7. References

CH2M. 2010. *Final Site Inspection Report Munitions Response Program Other-than-Operational Water Ranges, North Carolina. Naval Air Station Oceana, Virginia Beach, Virginia*. December.

CH2M. 2011. *Final Site Inspection Report Munitions Response Program Tangier Island Target Site, Virginia. Naval Air Station Oceana, Virginia Beach, Virginia*. February.

CH2M. 2020. Final Records Search Technical Memorandum, Potential Munitions Response Site: Hog Island Bombing Target, Northampton County, Virginia. March.

Malcolm Pirnie. 2008. *Final Preliminary Assessment, Naval Air Station Oceana, Dam Neck Annex, and Naval Auxiliary Landing Field Fentress, Virginia Beach, Virginia*. October.

Malcolm Pirnie. 2009. *Final Preliminary Assessment, Naval Air Station Oceana, Virginia Beach, Virginia*. February.

Tables

Table B-1. Current Status Summary of OTO Ranges

Naval Air Station, Oceana, Project Management Plan

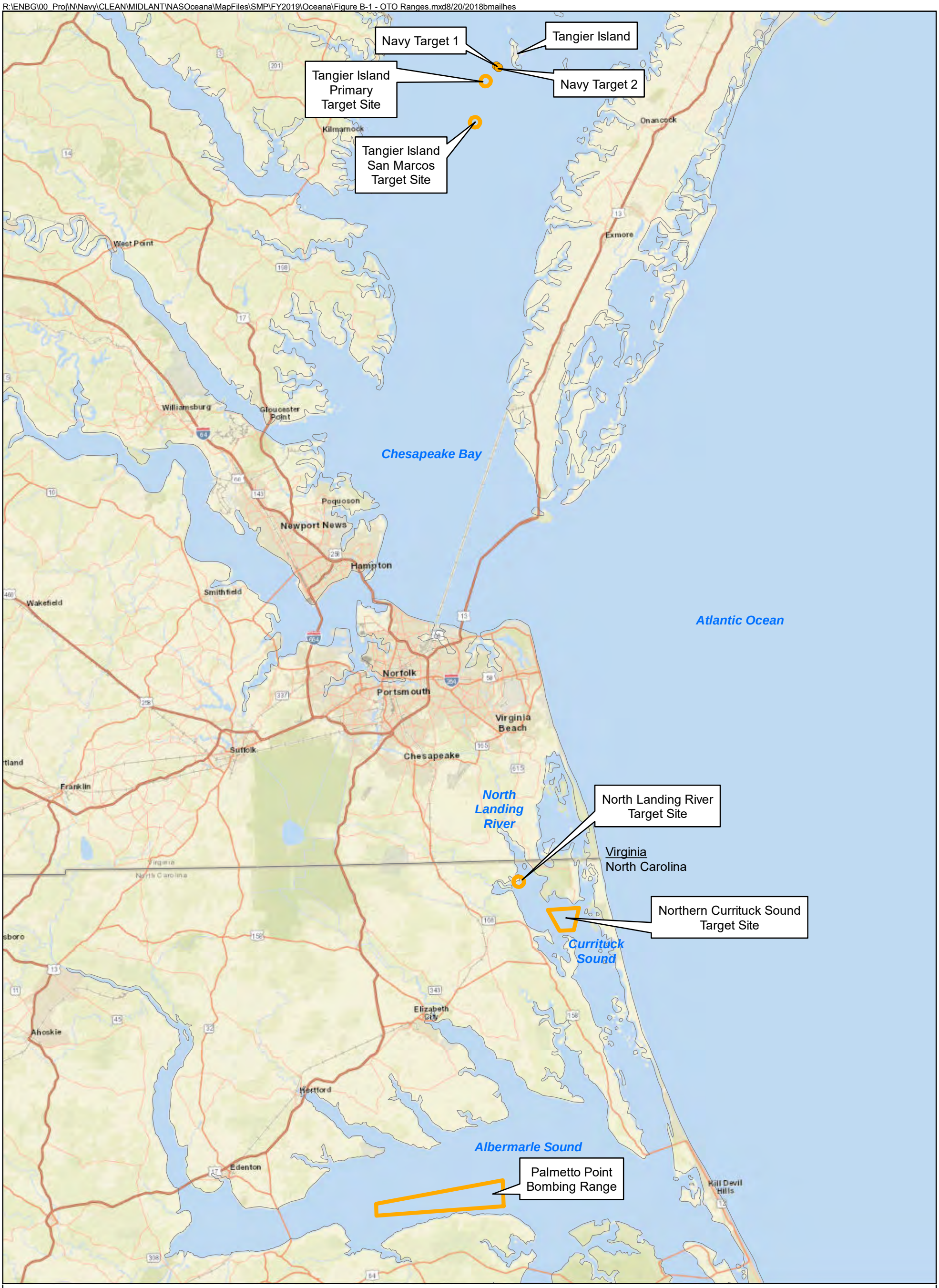
Site Number	MRP Site Name	PA	SI	SI Recommendation	Expanded SI	EE/CA	DD	NTCRA	RI/FS	DD	Path Forward
UXO 1	OTO North Landing River Target	Feb-09	Dec-10	Further Investigation	TBD	FY 2020	FY 2021	FY 2021	TBD	TBD	EE/CA in FY 2020
UXO 2	OTO Northern Currituck Sound Target	Feb-09	Dec-10	Further Investigation	TBD	FY 2020	FY 2021	FY 2021	TBD	TBD	EE/CA in FY 2020
UXO 3	OTO Palmetto Point Bombing Range	Feb-09	Dec-10	Further Investigation	TBD	FY 2020	FY 2021	FY 2021	TBD	TBD	EE/CA in FY 2020
UXO 4	OTO Tangier Island Target Site	Oct-08	Feb-11	Further Investigation	TBD	FY 2020	FY 2021	FY 2021	TBD	TBD	EE/CA in FY 2020
Potential MRP Sites											
NA	Hog Island Bombing Range	FY 2021	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	PA in FY 2021

LEGEND:

UXO =	unexploded ordnance
OTO	other than operational
FY =	fiscal year
EE/CA =	Engineering Evaluation/Cost Analysis
NTCRA =	Non-Time-Critical Removal Action
PA =	Preliminary Assessment
SI =	Site Inspection
RI/FS =	Remedial Investigation/Feasibility Study
DD =	Decision Document
TBD =	To Be Determined
NA =	Not Applicable

Figures

R:\ENBG\00_Proj\N\Navy\CLEAN\MIDLANT\NASOceana\MapFiles\SMP\FY2019\Oceana\Figure B-1 - OTO Ranges.mxd8/20/2018bmailhes



Legend

- Other Than Operational Range Boundaries including Tangier Island
- State Boundary

N W E S

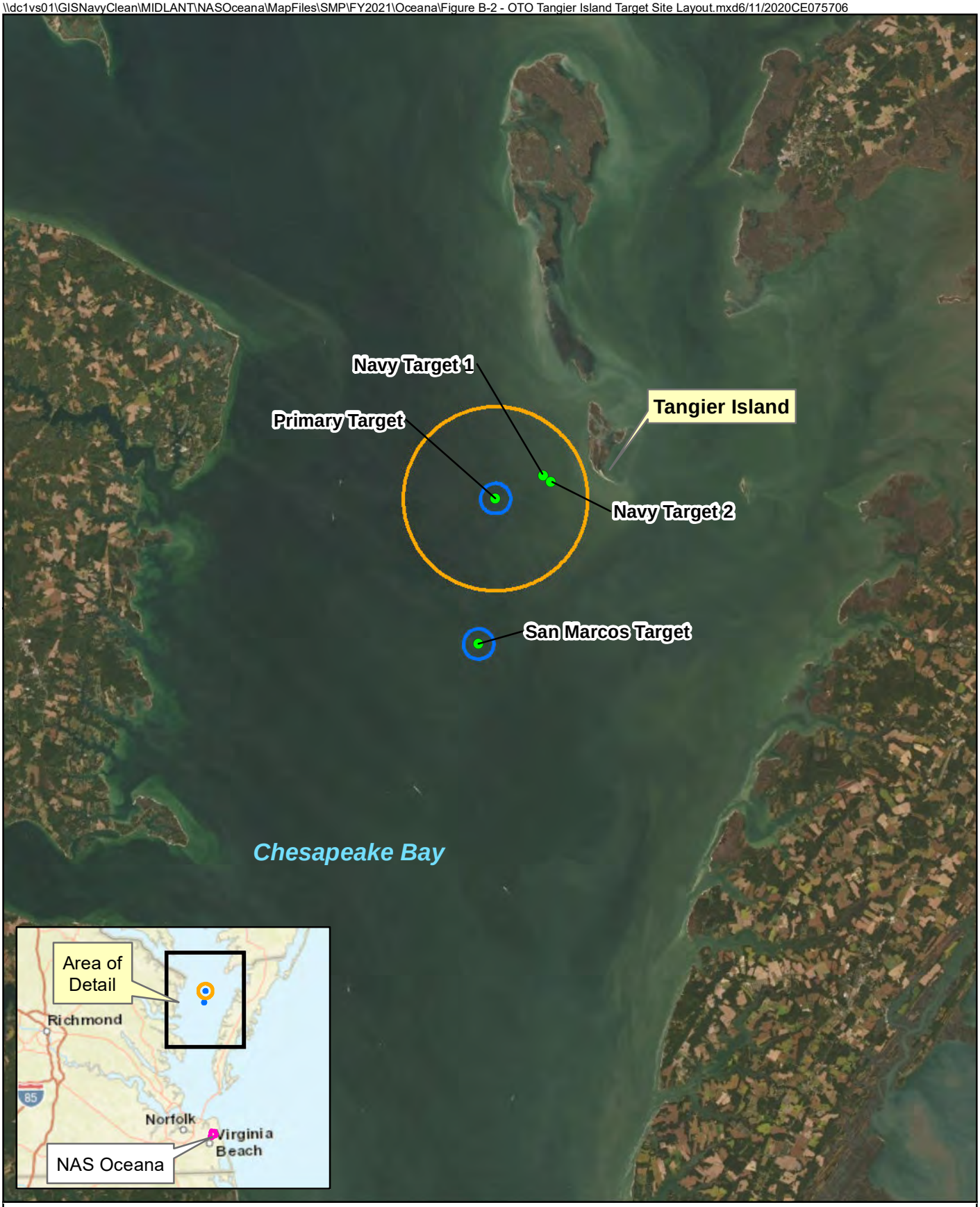
0 5 10 Miles

Basemap Source: ©2016, Esri

Figure B-1
Site Map
NAS Oceana Other than Operational Ranges
Virginia Beach, Virginia

ch2m

\\dc1vs01\GISNavyClean\MIDLANT\NASOceana\MapFiles\SMP\FY2021\Oceana\Figure B-2 - OTO Tangier Island Target Site Layout.mxd6/11/2020CE075706



Legend

- Target Location
- 1000-Yard Prohibited Area (Operational Range Designation and MRP Site Boundary)
- 3-Nautical Mile Restricted Area (Operational Range Designation)
- NAS Oceana Boundary

N
W E
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0 2.5 5
Miles

Imagery Source: ©2018, Esri

Figure B-2
OTO Tangier Island Target Site Layout
NAS Oceana
Virginia Beach, Virginia

ch2m.

\\dc1vs01\GISNavyClean\MIDLANT\NASOceana\MapFiles\SMP\FY2021\Oceana\Figure B-3 - OTO NLRT and NCST Site Layout.mxd6/11/2020CE075706

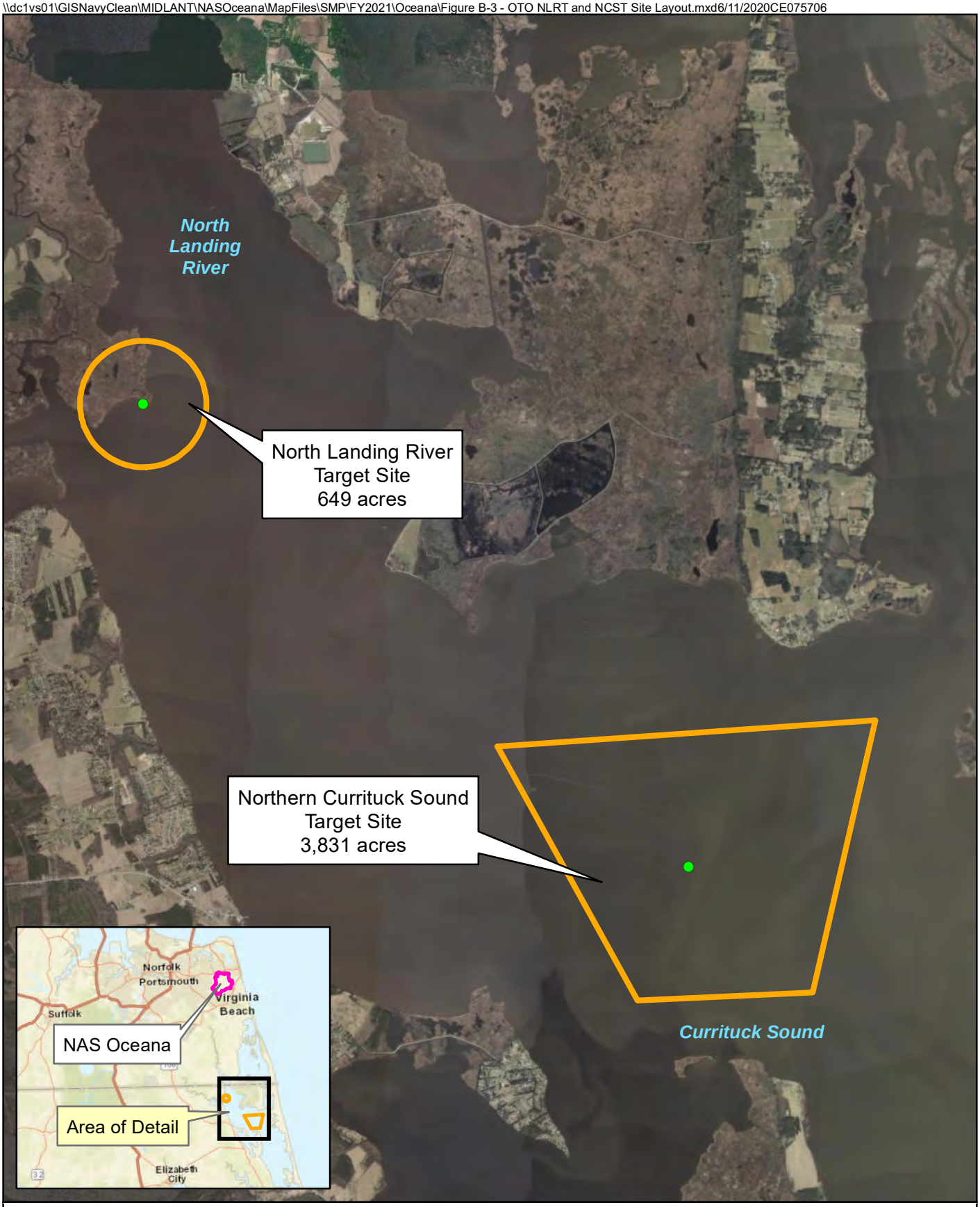
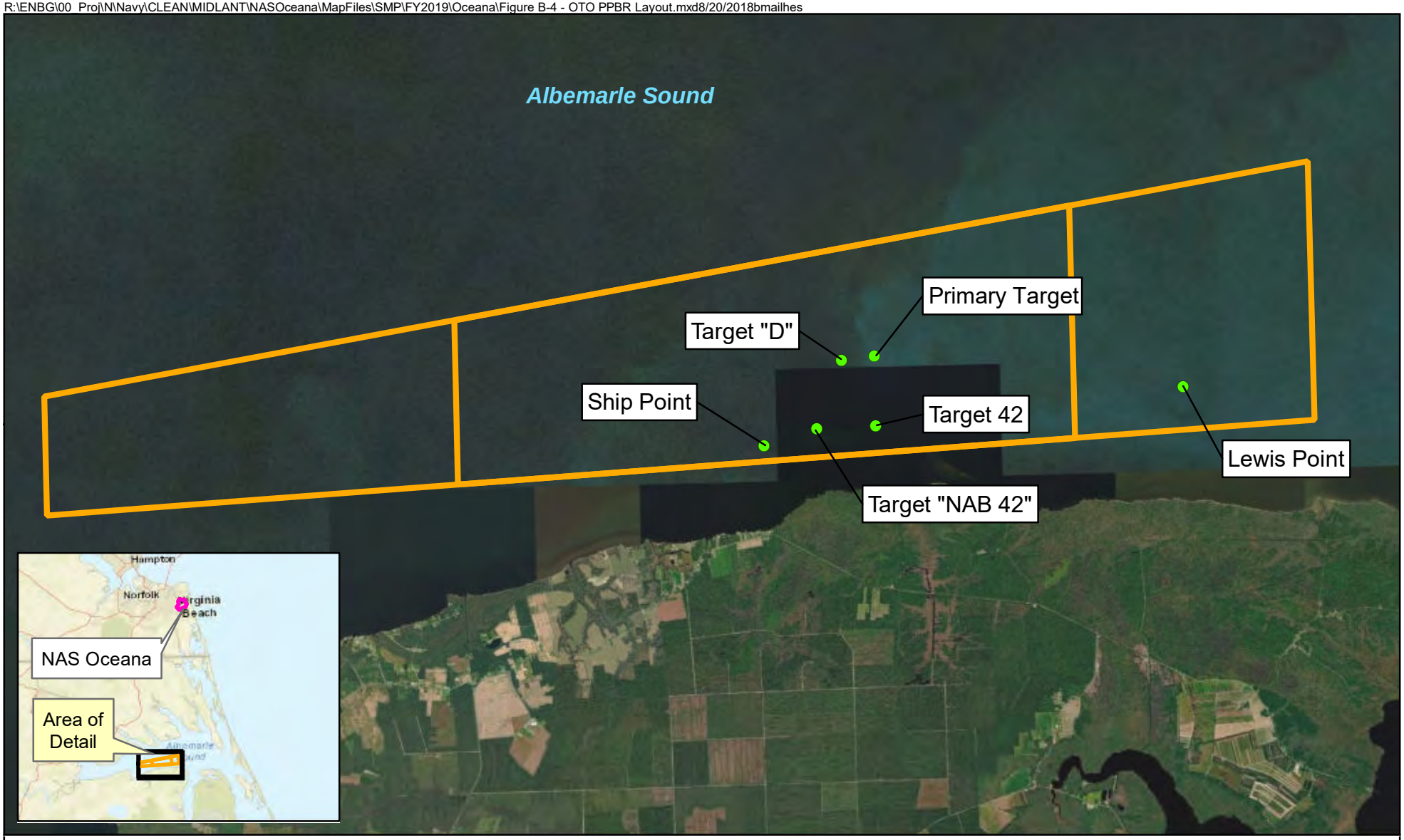


Figure B-3
North Landing River Target and Northern Currituck Sound Target Layout
NAS Oceana
Virginia Beach, Virginia

ch2m

R:\ENBG\00_Proj\N\Navy\CLEAN\MIDLANT\NASOceana\MapFiles\SMP\FY2019\Oceana\Figure B-4 - OTO PPBR Layout.mxd8/20/2018bmailhes



Legend

- Target Location
- Palmetto Point Range Area (18,440 acres)
- NAS Oceana Boundary

N
W E
S

0 1 2
Miles

Imagery Source: ©2017, Esri

Figure B-4
OTO Palmetto Point Bombing Range Layout
NAS Oceana
Virginia Beach, Virginia

ch2m

Appendix C
Active POL Sites at NAS Oceana

Review of Oceana POL Sites July 2019

Active POL Sites at NAS Oceana

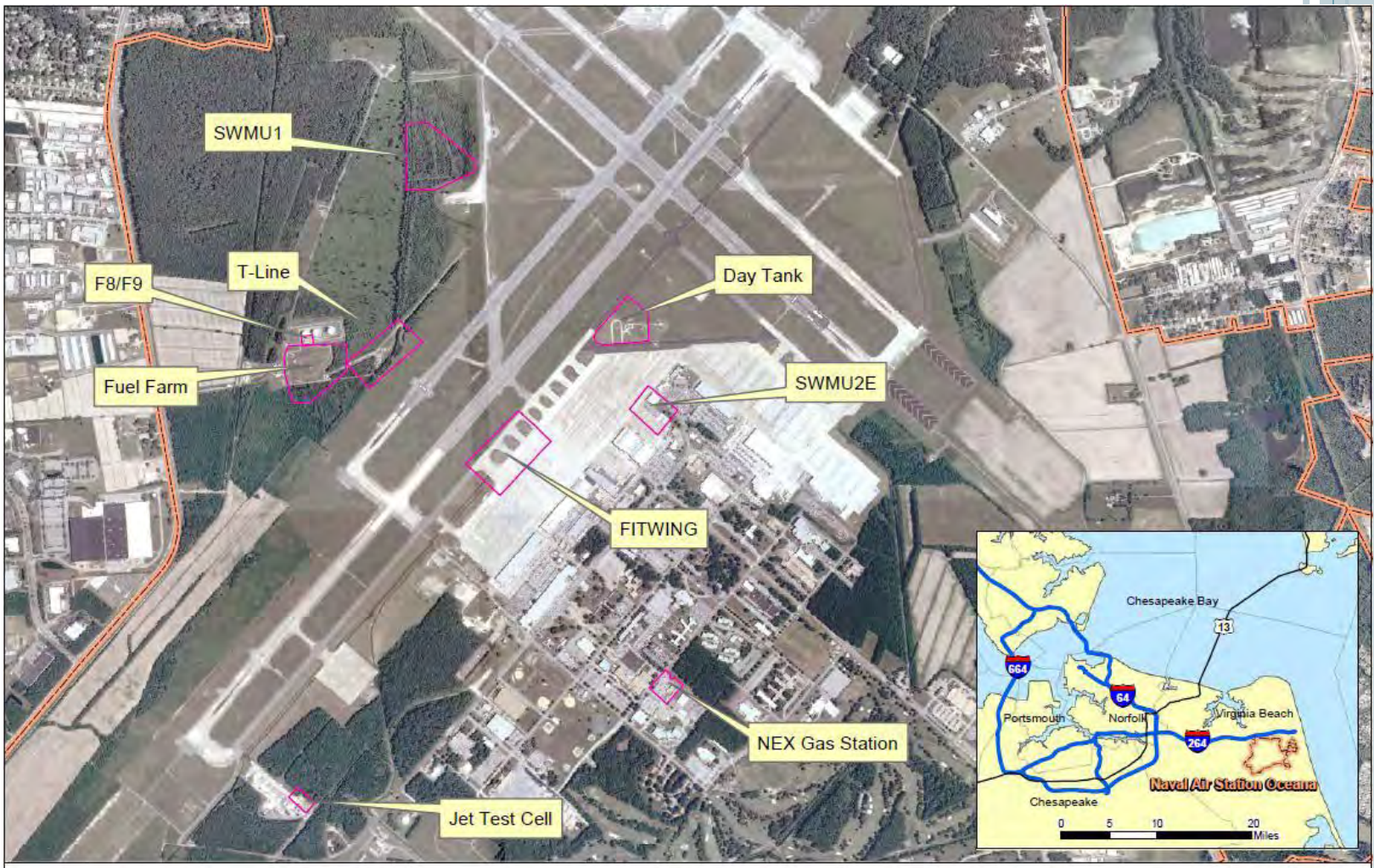


Figure 1
Active POL Remediation Site Location Map
Naval Air Station (NAS) Oceana
Virginia Beach, Virginia

MEADOWS
CONSULTING | MANAGEMENT | PLANNING

FITWING (PC# 92-1527) SITE HISTORY

Year	Report/Activity
1950s	Site used as 6 high speed refueling pits with underground pipeline
1989	Investigation confirmed fuel line leaks (JP-5)
1992	SCR identified two distinct free product plumes
1994	CAP to install a water table depression system and skimmers and a groundwater treatment system (OWS and air stripper). Remedial endpoints identified as: • 0.01 ft of product in monitoring wells • 500 mg/kg of TPH in soils • 10 mg/L of TPH in groundwater • 100 ppm of TPH in soil vapor
2009	CAP Addendum to take the groundwater treatment system offline for demolition and to install solar skimmers. Remedial endpoints identified as: • 0.01 ft of product in monitoring wells
2009-present	Current Monitoring Requirements: • Monthly gauging/recover of monitoring wells • Quarterly free product recovery report Current Corrective Action Activities: • Monthly free product recovery – pump and bailing (as needed) • One solar skimmer, biweekly O&M

PATH FORWARD: Continue efforts with solar skimmer at FITWING, manual hand bailing

***NOTE – PFOA and PFOS above the USEPA Lifetime Health Advisory based upon IDW results.

- Recovered free product to date ~11,427 gallons

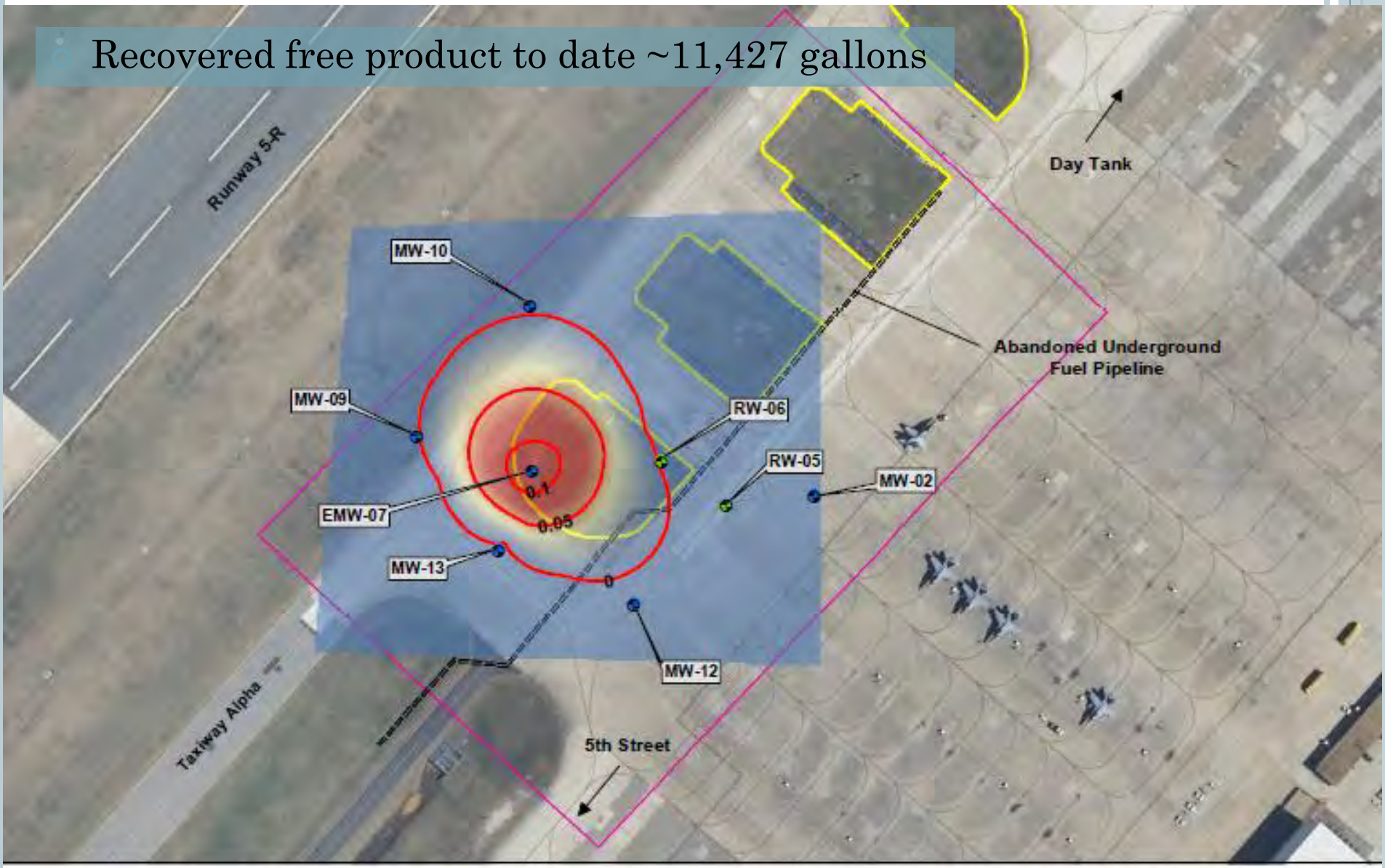


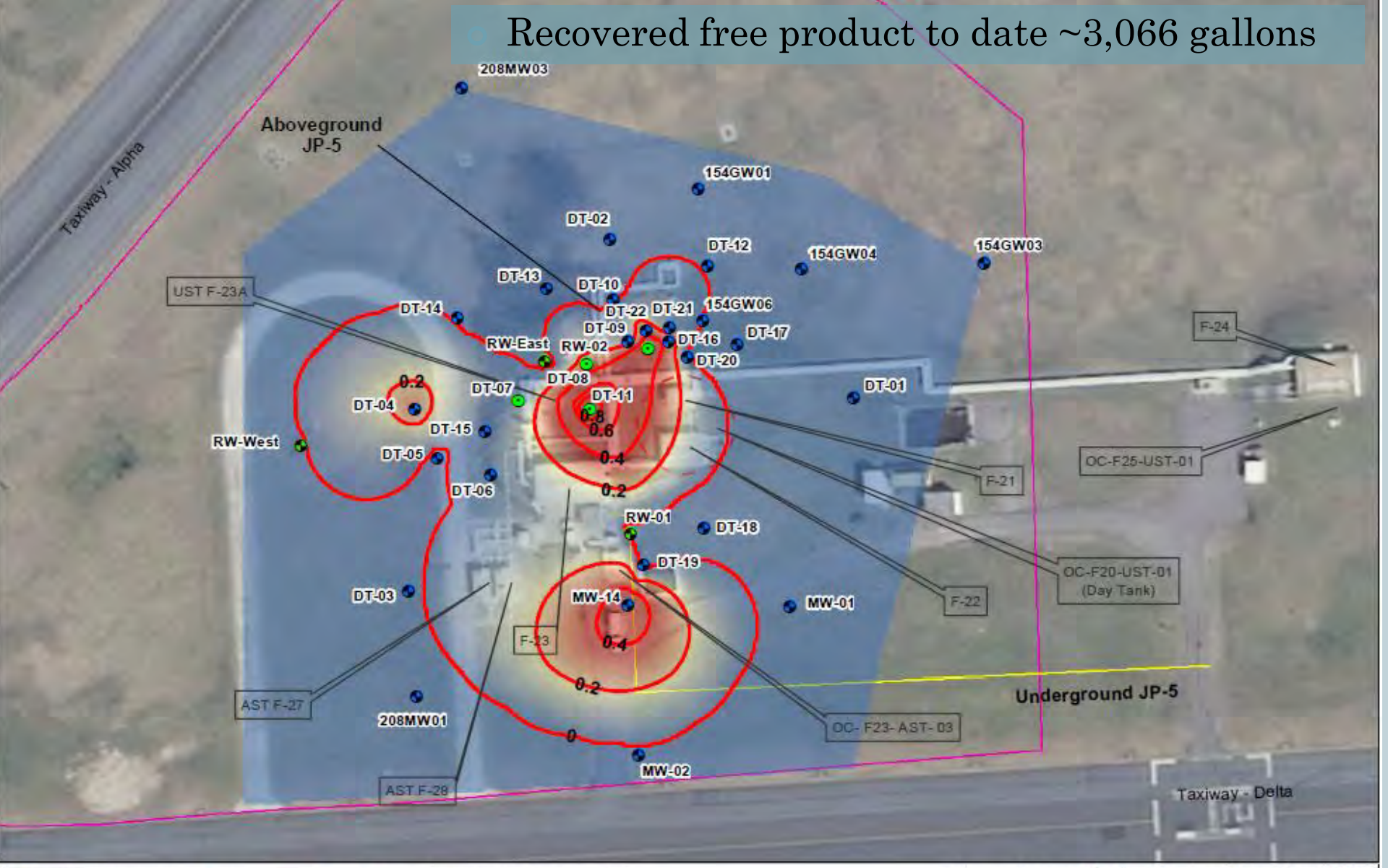
Figure 4 - Free Product Contour Map (April 2019)
FITWING
Naval Air Station (NAS) Oceana
Virginia Beach, Virginia

MEADOWS
CONSULTING | MANAGEMENT | PLANNING

Day tank (PC# 88-0666 and 93-0077) Site History

Date	Report/Activity
1984	IAS (Site 12) - 220,000 gallon day tank constructed in 1952. Tank overfills (1960, 1979, and 1981) and leaks in the underground return evacuation lines leading from refueling pits to the day tank have resulted in significant amounts of fuel in the soil and groundwater surrounding the day tank.
1992	SCR – Results indicated presence of TPH in soil and benzene and naphthalene in groundwater.
1994	CAP to install a water table depression system and free product recovery system using recovery wells, trenches, and skimmers in addition to a treatment system for the removal of benzene, naphthalene, and other dissolved phase contaminants. Remedial endpoints identified as: • 0.01 ft of product in monitoring wells
1997	CAP Amendment to include a combined remediation approach for the MATWING and Day Tank sites through the use of a single treatment plant and free product recovery via trench.
2000	CAP Amendment to run skimmers only and abandonment of the groundwater treatment approach.
2010	New release identified when JP-5 was observed seeping from the ground near building F-23. The release was caused by a leaking flange gasket in the Building F-21 fill house.
2013	CAP Amendment to run product skimmers and EFR may be appropriate for the Day Tank site.
2013 - present	Current Monitoring Requirements: • Monthly gauging/recover of monitoring wells • Quarterly free product recovery report • Annual Groundwater sampling (TPH-DRO and naphthalene) Current Corrective Action Activities: • Monthly free product recovery – pump and bailing (as needed) • AFVR implemented twice per month • Three solar skimmer, biweekly O&M
PATH FORWARD: Continue efforts with LNAPL skimming and manual bailing ***NOTE – AQ IDW generated detected PFOA + PFOS concentrations at 890 ppt.	

- Recovered free product to date ~3,066 gallons



Solar Skimmer Location
Monitoring Well
Recovery Well
Underground Storage Tank
Underground JP-5 Line
Day Tank Site Boundary

Free Product Contours (0.2ft) - May 2019

Free Product Plume - May 2019
High : 0.83
Low : 0

N
W E
S

0 35 70 140 Feet

Figure 4 - Free Product Contour Map (May 2019)
Day Tank
Naval Air Station (NAS) Oceana
Virginia Beach, Virginia

MEADOWS
CONSULTING | MANAGEMENT | PLANNING

NEX Gas Station (PC# 93-0990) Site History

Date	Report/Activity
1973	Operation began; 2 grass covered 20,000 gallon USTs were installed to store gasoline, one 55 gallon UST was installed for waste oil, and one 10,000 UST was installed.
1982	Leak test performed on Tanks A, B, and D and the associated piping identifying a leak from the pipeline leading from Tank A. The line was excavated and replaced.
1987	A release occurred from Tank A and the tank was repaired.
1990	Leak test performed on Tanks A, B, and D and the associated piping identifying a leak from the pipeline leading from Tank A. The line was excavated and replaced.
1991	CAP to install a free product recovery system and soil vapor extraction system; remedial endpoints identified as: • 0.01 ft of product in monitoring wells • Reduce soil TPH concentrations to less than 100 mg/kg
1995	CAP to install a combination of total fluids vacuum extraction and soil vapor extraction. Remedial endpoints identified as: • 0.01 ft of product in monitoring wells • Reduce soil TPH concentrations to less than 100 mg/kg • Reduce groundwater concentrations for benzene (29,000 ug/L), toluene (36,000 ug/L), ethylbenzene (2,500 ug/L), total xylenes (15,000 ug/L), and lead (300 ug/L)
2003 - 2010	VE system shutdown; manual bailing and AFVR initiated. Groundwater dissolved phase endpoint achieved.
2013 - present	Current Monitoring Requirements: • Monthly gauging/recover of monitoring wells • Quarterly free product recovery report • Annual Groundwater sampling (TPH-GRO, MTBE, and BTEX) Current Corrective Action Activities: • Monthly free product recovery – pump and bailing (as needed) • Periodic AFVR
PATH FORWARD: Continue efforts with product recovery and access NZSD ***NOTE – AQ IDW generated detected PFOA + PFOS concentrations at 390 ppt.	

–Issues

- Lingering thin layer of free product
- Confined LNAPL – free product appears with rising water table
- LNAPL transmissivity testing on MW-03 conducted using skimming method indicates LNA recoverable
- PID values indicated that new wells may have higher dissolved TPH than in 1994 (no NSZ conducted)

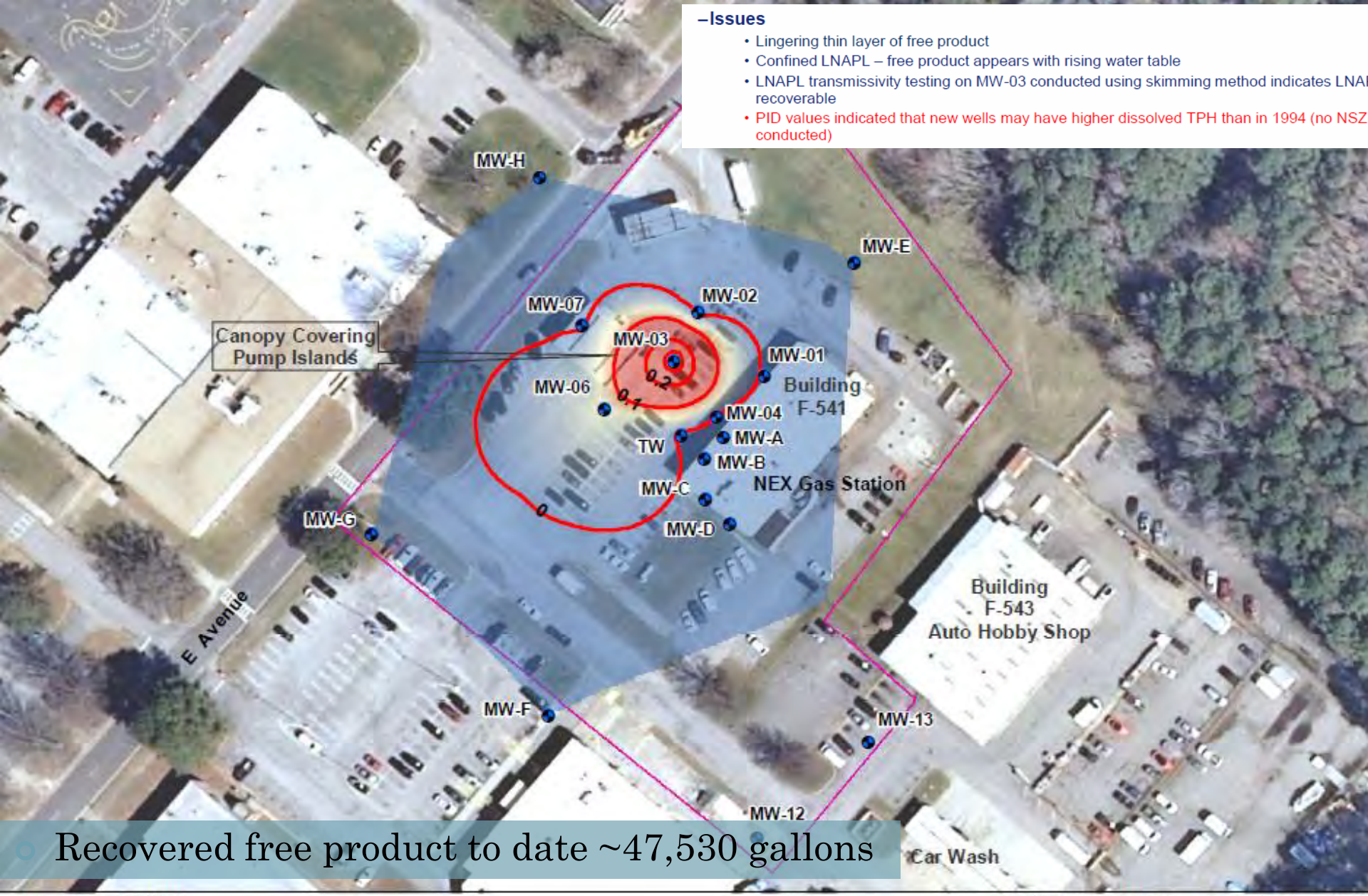


Figure 4 - Free Product Contour Map (April
NEX Gas S
Naval Air Station (NAS) O
Virginia Beach, V

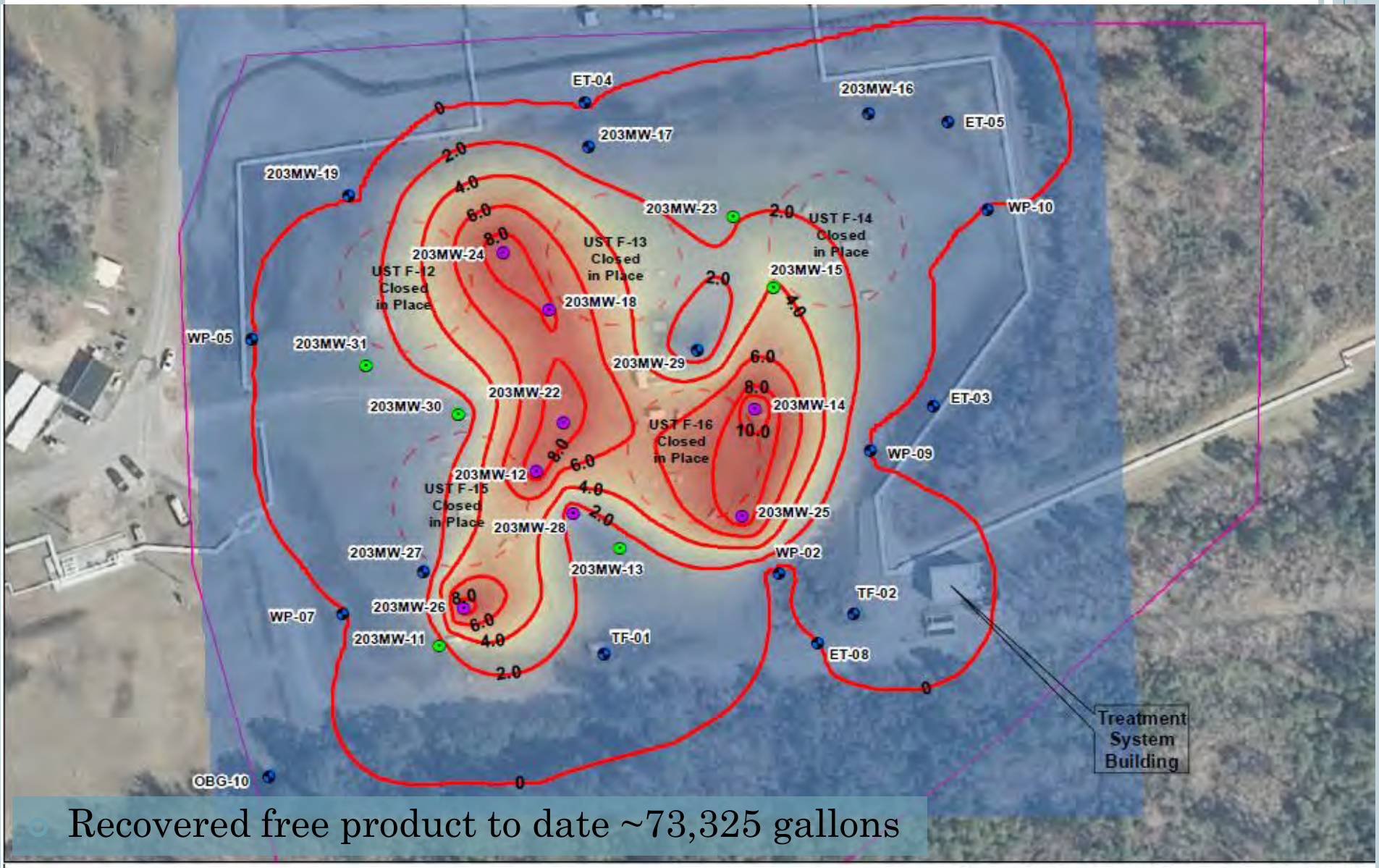
- Recovered free product to date ~47,530 gallons

Fuel Farm (PC# 88-0665) Site History

Date	Report/Activity
1951	Five 567,000 gallon JP-5 tanks (F12-F16) two 25,000 gallon No.2 fuel oil tanks constructed.
1965	One 420,000 gallon JP-5 tank (F-11) constructed.
1983	Leakage from fuel tanks confirmed via investigations. Fuel leakage at the tank farm is known to have occurred both at the surface and underground. The tanks have leaked for more than a decade. Underground transfer lines were moved aboveground, and the base of the tanks were resurfaced (IAS, 1984).
1992	Tracer gas study determine USTs (F12 – F16) were leaking.
1994	CAP to install a free product recovery and groundwater pump and treat system. Remedial endpoints identified as: • 0.01 ft of product in monitoring wells • Reduce groundwater concentrations of naphthalene to 5,000 ug/L
1997	USTs F12 – F16 decommissioned and closed in place.
1999	Groundwater extraction discontinued (discharge line failure); free product recovery via solar and pneumatic skimmers
2004	CAP Addendum to install additional product recovery skimmers, installation of product piping to a nearby AST, weekly inspections of the product recovery system, and evaluation of the feasibility of VE product skimmers (test were successful and converted to VE in 2006). Remedial endpoint for naphthalene achieved in 2004.
2013 - present	Current Monitoring Requirements: • Weekly AST inspection • Monthly gauging/recover of monitoring wells • Quarterly free product recovery report • Annual Groundwater sampling (napthalene) and system evaluation report Current Corrective Action Activities: • Monthly free product recovery – pump and bailing (as needed) • VER system; weekly O&M • Solar Skimmer system; biweekly O&M

PATH FORWARD: Continue efforts with product recovery

***NOTE – AQ IDW generated detected PFOA + PFOS concentrations at 74 ppt.



- Recovered free product to date ~73,325 gallons

Recovery System Wells
Solar Skimmer Location
Monitoring Well
Underground Storage Tank - Fuel Farm
Fuel Farm Site Boundary

Free Product Contours (2.0ft) - April 2019
Free Product Plume - April 2019
High : 10.33
Low : 0

N
W E
S

0 40 80 160
Feet

Figure 4 - Free Product Contour Map (April 2019)
Fuel Farm
Naval Air Station (NAS) Oceana
Virginia Beach, Virginia

MEADOWS
CONSULTING | MANAGEMENT | PLANNING

SWMU 2E (PC# 94-0423) Site history

Date	Report/Activity
1983	Identified in the IAS; waste chemicals from cleaning and maintenance activities were disposed.
1991 - 1993	Interim RFI recommended further action. Diesel fuel detected in monitoring wells during the Phase I RFA. Recommended a portion of SWMU 2E to be transferred to UST program. Phase II RFA recommended CMS.
1995	CMS recommended plume containment and source-area remediation of groundwater.
1999	SERA proposed NFA. HHRA indicated unacceptable risks to groundwater.
2002	FS recommending free product plume transfer to UST program.
2008	Northern portion of SWMU 2E transferred to UST program following PP and DD.
2009	SCR Addendum conducted, free product identified on top of the groundwater table.
2010	CAP to excavate contaminated soils and conduct free product recovery. Remedial endpoints are: • 0.01 ft of product in monitoring wells • Reduce soil concentrations to less than the diesel fuel saturation value (11,000 mg/kg)
2013 - present	Current Monitoring Requirements: • Monthly gauging/recover of monitoring wells • Quarterly free product recovery report Current Corrective Action Activities: • Limited soil removal action completed
PATH FORWARD: Assess NZSD when AFVR recovery rates decrease and conduct groundwater sampling. ***NOTE – have not tested physical site for PFOA/PFOS concentrations greater than USEPA Lifetime Health Advisory (70 ppt).	

- Recovered free product to date ~192 gallons

JET TEST CELL (PC# 04-5104) SITE HISTORY

Date	Report/Activity
1980s	JP-5 fuel supplied to area building by a series of above ground and underground piping connected to a pair of 20,000 gallon USTs, which were constructed.
2003	Fuel delivery systems lost pressure and immediately shutdown. Free product was identified and immediately removed via vacuum truck.
2004	Initial Abatement Measures report submitted; saturated soils along the asphalt road north of the release and outside of the UST fence line were removed for off-site disposal. The fuel line was temporarily replaced. SCR identified 2 separate releases. SCR Addendum
2004	A trench was excavated to facilitate fuel recovery and additional wells installed. During installation of one of these wells, a plastic fuel line was pierced and fuel was released. The area surrounding the release was excavated and the fuel line was replaced.
2016	CAP to conduct AFVR. Remedial endpoints are: • 0.01 ft of product in monitoring wells
2013 - present	Current Monitoring Requirements: • Monthly gauging/recover of monitoring wells • Quarterly free product recovery report • Annual groundwater sampling of wells for TPH-DRO and naphthalene Current Corrective Action Activities: • Monthly free product recovery – pump and bailing (as needed)
PATH FORWARD: Continue free product recovery (bailing and AFVR). ***NOTE – AQ IDW generated detected PFOA + PFOS concentrations at 647 ppt.	

- Recovered free product to date ~41 gallons

Monitoring Well
Drainage Swale
Fuel Line
Underground Storage Tank
Jet Test Cell Site Boundary

Free Product Contours (0.01ft) - April 2019
Free Product Plume - April 2019
High : 0.02
Low : 0

N
W E
S

0 25 50 100 Feet

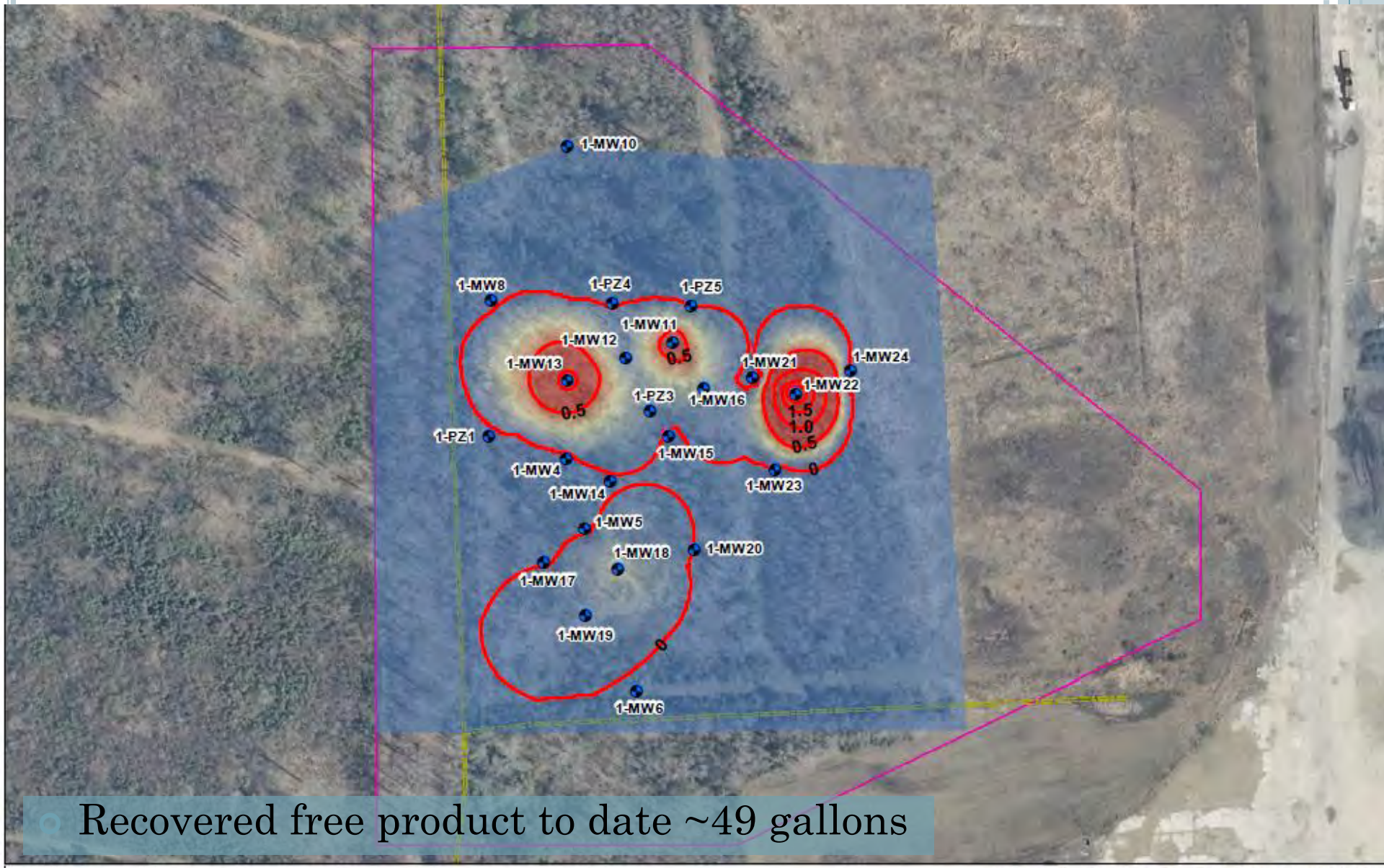
Figure 4 - Free Product Contour Map (April 2019)
Jet Test Cell
Naval Air Station (NAS) Oceana
Virginia Beach, Virginia

MEADOWS
CONSULTING | MANAGEMENT | PLANNING

SWMU 1 (PC# 2010-5038)

Date	Report/Activity
1950 – 1960s	50' by 100' pit reportedly used as a disposal area for waste oil, fuel, and aircraft maintenance chemicals.
Late 1960s	Oil was reportedly displaced from the pit and contaminated properties off-base; it's use was stopped and it was filled with soil.
1984 - 1986	Site identified within the IAS, it is estimated about 100,000 gallons of waste were placed in the pit over it's period of use. Round 1 verification Step recommended further investigation.
1988	RFA identified the site; site visit was not able to identify the pit however a drainage ditch associated with the pit was located. The ditch was used for transferring wastes to the pit when wet conditions prevented truck access to the pit. Wastes were regularly dumped into the ditch and ignited.
1991 - 1993	Interim RFI and Phase I RFI, recommended further investigation.
1995	CMS Report, recommended free-product removal using skimmers for SWMU 1.
1997	Solar powered LNAPL skimmers deployed to recover free product.
1999-2001	Phase III RFI, HHRA, and ERA conducted at SWMU 1. Potential unacceptable risk identified in the HHRA, no further action recommended in the RFA.
2002 - 2008	FS complete, recommended NFA. PP and DD selected NFA as selected remedy. Due to the presence of free product, site transferred to UST program.
2010-2015	SCR Addendum conducted additional investigation. Solar skimmer operated from 2011-2014. CAP to continue assessing NZSD. Remedial endpoints are: • 0.01 ft of product in monitoring wells
2013 - present	Current Monitoring Requirements: • Monthly gauging/recover of monitoring wells • Quarterly free product recovery report • Annual groundwater sampling to TPH-DRO and naphthalene Current Corrective Action Activities: • Monthly free product recover – pump and bailing (as needed) • Continue solar skimmer operation

PATH FORWARD: Assess NZSD when AFVR recovery rates decrease and conducted groundwater sampling.
***NOTE – AQ IDW generated detected PFOA + PFOS concentrations at 22,200 ppt.



- Recovered free product to date ~49 gallons

Monitoring Well
Drainage Swale
SWMU-01 Site Boundary

Free Product Contours (0.5ft) - April 2019
Free Product Plume - April 2019
High : 2.33
Low : 0

N
W E
S

0 80 160 320
Feet

Figure 4 - Free Product Contours (April 2019)
SWMU 01
Naval Air Station (NAS) Oceana
Virginia Beach, Virginia

MEADOWS
CONSULTING | MANAGEMENT | PLANNING

SCR UST Sites

- 2017 JP-5 Spill (96,000 gallons of JP-5 released within the active tank farm area) which migrated off base. Emergency response actions and initial SCR complete.
  - SCR Addendum anticipated in 2020
- Leaking UST associated with NEX gas station (across the street from the pass office)
  - SCR ongoing; report anticipated in October 2019

Appendix D
Pollution Complaint Closure Letters

COMMONWEALTH of VIRGINIA

STATE WATER CONTROL BOARD

Richard N. Burton
Executive Director

P. O. Box 11143
Richmond, Virginia 23230-1143
(804) 527-5000
TDD (804) 527-4261

Tidewater Regional Office
287 Pembroke Office Park
Suite 310 Pembroke No. 2
Virginia Beach, Virginia 23462
(804) 552-1840
FAX (804) 552-1849

DEC. 1 5 1992

Commander
Naval Air Station Oceana
Attn: Public Works Department
Environmental Division, Will Bullard
Virginia Beach, Virginia 23460-5120

Re: Underground Storage Tank (UST) release report for Bldg. 830, USTs A & B, NAS Oceana. SWCB PC# 90-1079

Dear Sir:

Thank you for providing the Site Characterization Report and ground water monitoring results for the above referenced location. Based on these assessments and current site conditions, no further assessment or remediation activity is required at this site. However, if petroleum contamination is identified in the future, further assessment or cleanup activity may be required.

If you have any questions concerning this case, please contact me at (804) 552-1152.

Sincerely,

T. E. Madigan
Geologist
Ground Water Section

cc: SWCB-TRO-OE&CA ref. PC# 90-1079

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Peter W. Schmidt
Director

Larry S. McBride
Regional Director

Water Regional Office
287 Pembroke Office Park
Pembroke 2, Suite 310
Virginia Beach, Virginia 23462
(804) 552-1840
FAX (804) 552-1849

August 15, 1994

Commanding Officer
Naval Air Station Oceana
Base Civil Engineer, Bldg, 830
Attn: Will Bullard
Virginia Beach, Virginia 23460-5120

re: PC#90-1080 Location: UST F-410A, MOGAS Station, NAS Oceana, Virginia Beach, Virginia

Dear Sir:

Thank you for providing a Report of Site Assessment, dated August 23, 1990, for subsurface petroleum contamination located at the above referenced site. Based on these assessments and reported current site conditions, no further assessment or remedial action is necessary at this site. However, should additional evidence of environmental contamination be discovered in the future, further assessment and remediation may be required.

If you have questions regarding this matter, please contact me at (804) 552-1157.

Sincerely,

Amy T. Webster
Geologist Senior
Ground Water Section

cc: DEQ-Water Div.-TRO-OE

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Peter W. Schmidt
Director

Larry S. McBride
Regional Director

Water Regional Office
287 Pembroke Office Park
Pembroke 2, Suite 310
Virginia Beach, Virginia 23462
(804) 552-1840
FAX (804) 552-1849

August 26, 1994

Commanding Officer
Naval Air Station Oceana
Base Civil Engineer, Bldg., 830
Attn: Will Bullard
Virginia Beach, Virginia 23460-5120

re: Site Characterization Report
Facility/Location: Jet Engine Test Cell, UST 1100A and UST 1100B, NAS Oceana, Virginia Beach
DEQ Tracking Numbers: PC 91-0379 & PC 91-1984

Dear Sir:

Thank you for providing the Department of Environmental Quality with the above referenced report for this site. Based on these assessments and reported current site conditions, no further assessment or remedial action is required at this site. However, should additional evidence of environmental contamination be discovered in the future, further assessment and remediation may be required.

If you have questions regarding this matter, please contact me at (804) 552-1157.

Sincerely,

Amy T. Webster
Geologist Senior
Ground Water Section

cc: DEQ-Water Div.-TRO-OE
file ref PC 91-0379 & PC 91-1984

SC/GA

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

George Allen
Governor

Becky Norton Dunlop
Secretary of Natural Resources

5636 Southern Boulevard
Virginia Beach, Virginia 23462
Fax (757) 518-2103
http://www.deq.state.va.us

Thomas L. Hopkins
Director

Francis L. Daniel
Tidewater Regional Director
(757) 518-2000

July 18, 1997

Commander
Naval Air Station Oceana
Environmental Compliance Div.
Building 820
Attn: Code 186, Will Bullard
Virginia Beach, VA 23460-5120

Re: Case Re-activation/Free Product Monitoring & Recovery
Facility Name/Location: NAS Oceana, Jet Engine Test Cell Area
DEQ Tracking Number: **PC#s 91-0379 & 91-1948**

Dear Sir:

In response to your letter dated February 11, 1997 and subsequent Free Product Recovery Reports, in which you reported the presence of free product in a monitoring well located at the referenced site, PC#s 91-0379 and 91-1948 are re-activated.

Please continue to monitor and recovery product at this site and provide monthly **Free Product Recovery Reports** by the **10th day of each month**.

If you have any questions or comments, you may contact me at (757) 518-2121.

Sincerely,

Amy T. Webster
Geologist Senior
Remediation Program

cc: file ref. PC#91-0379 & 91-1948

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

W. Tayloe Murphy, Jr.
Secretary of Natural Resources

5636 Southern Boulevard
Virginia Beach, VA 23462
www.deq.state.va.us
Fax # (757) 518-2009

February 7, 2003

Robert G. Burnley
Director

Francis L. Daniel
Tidewater Regional Director
(757) 518-2000

Commander, Navy Region Mid-Atlantic
PWC Regional Environmental Group, Code 970
Attention: Sean Heaney
9742 Maryland Avenue, Suite 211
Norfolk, VA 23511-3095

Re: **Case Closure**
Quarterly Free Product Recovery Reports
Site Name/Location: Naval Air Station Oceana, Jet Engine Test Cell
DEQ Tracking Number: PC#91-0379, XREF PC#91-1984

Dear Sir:

Thank you for providing the subject reports to the Department of Environmental Quality (DEQ). Based on the information you have provided, the State Water Control Board acting through the DEQ, as authorized by CODE § 62.1-44.34:8 through 9 and 9 VAC 25-580-10 et seq. believes that contamination levels at this site do not warrant further corrective action. This pollution complaint case is now closed. Should future environmental problems occur, which the DEQ determines are related to this release, additional investigation and corrective action may be required in accordance with State Law.

In order to reduce future risks to ground water, you should consider abandoning monitoring wells that will no longer be used for monitoring ground water contamination.

If you have any questions, please contact me at (757) 518-2121.

Sincerely,

Amy T. Webster
Geologist Senior
Remediation Program

cc: File PC#91-0379 & 91-1984

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Peter W. Schmidt
Director

Larry S. McBride
Regional Director

Water Regional Office
287 Pembroke Office Park
Pembroke 2, Suite 310
Virginia Beach, Virginia 23462
(804) 552-1840
FAX (804) 552-1849

AUG 26 1994

Commander
Naval Air Station Oceana
Public Works Department
Attn: Mr. Will Bullard
Virginia Beach, Virginia 23460-5120

Re: Underground Storage Tank (UST) release reports for NEX Gas Station Bldg. 541, NAS Oceana. DEQ PC# 91-0917 and 93-0990

Dear Sir:

Thank you for providing the Free Product Recovery and Monitoring Reports for the above referenced site. These reports indicate that petroleum free product recovery is still necessary. Please continue to monitor and recover product to the maximum extent practicable as outlined in Section 6.5 of the Virginia Underground Storage Tank (UST) Regulation VR-680-13-02. Future free product recovery reporting, assessment and/or remediation activity for this site should be conducted under PC# 93-0990. PC# 91-0917 is closed and will no longer be used.

Please continue to submit Free Product Recovery Reports in accordance with Section 6.5.4 of the UST Regulation on a monthly basis.

If you have any questions concerning this case, please contact Amy Webster at (804) 552-1157.

Sincerely,

T. E. Madigan
Environmental Specialist Senior
Ground Water Section

cc: DEQ Water Div. TRO-OE
DEQ Water Div. TRO file PC# 93-0990

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Peter W. Schmidt
Director

Larry S. McBride
Regional Director

Water Regional Office
287 Pembroke Office Park
Pembroke 2, Suite 310
Virginia Beach, Virginia 23462
(804) 552-1840
FAX (804) 552-1849

August 26, 1994

Commanding Officer
Naval Air Station Oceana
Base Civil Engineer, Bldg., 830
Attn: Will Bullard
Virginia Beach, Virginia 23460-5120

re: Site Characterization Report
Facility/Location: Jet Engine Test Cell, UST 1100A and UST 1100B, NAS Oceana, Virginia Beach
DEQ Tracking Numbers: PC 91-0379 & PC 91-1984

Dear Sir:

Thank you for providing the Department of Environmental Quality with the above referenced report for this site. Based on these assessments and reported current site conditions, no further assessment or remedial action is required at this site. However, should additional evidence of environmental contamination be discovered in the future, further assessment and remediation may be required.

If you have questions regarding this matter, please contact me at (804) 552-1157.

Sincerely,

Amy T. Webster
Geologist Senior
Ground Water Section

cc: DEQ-Water Div.-TRO-OE
file ref PC 91-0379 & PC 91-1984

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
TIDEWATER REGIONAL OFFICE
5636 Southern Boulevard, Virginia Beach, Virginia 23462
(757) 518-2000 Fax (757) 518-2009
www.deq.virginia.gov

Doug Domenech
Secretary of Natural Resources

David K. Paylor
Director

January 11, 2011

Commander
Navy Region Mid-Atlantic
Environmental Business Line, Code OPHREV4
9742 Maryland Avenue, Building N-26, Suite 3208
Norfolk, Virginia 23511-2737

Attn: Timothy A. Reisch, P.E., Environmental Restoration Division

Re: **Case Closure**
Site Name/Location: 5th Street Truck Loading Area, NAS Oceana
DEQ Tracking Number: PC#1992-0256

Dear Mr. Reisch:

The DEQ believes that endpoints established in the Corrective Action Plan (CAP) for the referenced site have been met and no further corrective action is necessary. Based upon the information you have provided regarding site conditions, the State Water Control Board acting through the DEQ, as authorized by CODE § 62.1-44.34:8 through 9 and 9 VAC 25-580-10 et seq. considers this case is closed. You are no longer constrained by the CAP requirements and are free to remove the cleanup system and all monitoring points covered by this CAP. Please be advised, should future environmental problems occur, which the DEQ determines are related to this release, corrective action may be required in accordance with State Law.

In order to reduce future risks to ground water at the site, all monitoring wells must be properly abandoned.

The DEQ thanks you for completing the Corrective Action Plan and appreciates your efforts and cooperation in cleaning up this site. If you have any questions regarding this matter, please contact Lynne E. Smith at (757) 518-2055.

Sincerely,

Maria R. Nold
Acting Regional Director

cc: File PC#1992-0256

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Peter W. Schmidt
Director

Larry S. McBride
Regional Director

AUG 26 1994

Water Regional Office
287 Pembroke Office Park
Pembroke 2, Suite 310
Virginia Beach, Virginia 23462
(804) 552-1840
FAX (804) 552-1849

Commander
Naval Air Station Oceana
Public Works Department
Attn: Mr. Will Bullard
Virginia Beach, Virginia 23460-5120

Re: Underground Storage Tank (UST) system release reports for MATWING Fuel Pits, NAS Oceana. DEQ PC# 92-0265, 92-2142

Dear Sir:

Thank you for providing the Free Product Recovery and Monitoring Reports for the above referenced site. These reports indicate that petroleum free product recovery is still necessary. Please continue to monitor and recover product to the maximum extent practicable as outlined in Section 6.5 of the Virginia Underground Storage Tank (UST) Regulation VR-680-13-02. Future free product recovery reporting, assessment and/or remediation activity for this site should be conducted under PC# 92-2142. PC# 92-0265 is closed and will no longer be used.

Please continue to submit Free Product Recovery Reports in accordance with Section 6.5.4 of the UST Regulation on a monthly basis.

If you have any questions concerning this case, please contact Amy Webster at (804) 552-1157.

Sincerely,

T. E. Madigan
Environmental Specialist Senior
Ground Water Section

cc: DEQ Water Div. TRO-OE
DEQ Water Div. TRO file PC# 92-2142

COMMONWEALTH of VIRGINIA

STATE WATER CONTROL BOARD

Richard N. Burton
Executive Director

P O Box 11143
Richmond, Virginia 23230-1143
(804) 527-5000
TDD (804) 527-4261

Tidewater Regional Office
287 Pembroke Office Park
Suite 310 Pembroke No. 2
Virginia Beach, Virginia 23462
(804) 552-1840
FAX (804) 552-1849

March 4, 1993

Commander
Naval Air Station Oceana
Environmental Division, Code 189
Building 830
Attn: Richard Hylton
Virginia Beach, Virginia 23460-5120

re: Site Name/Location: NAS Oceana, Abandoned Main Transmission Line Near Runways 5L and 5R (West and East Anamolies), Virginia Beach

PC#: 92-1539

Dear Sir:

Thank you for providing a Site Characterization report of subsurface petroleum contamination for your facility at the above referenced address. Based on these assessments and reported current site conditions, no further assessment or remedial action is necessary at this site. However, should additional evidence of environmental contamination be discovered in the future, further assessment and remediation may be required.

If you have questions regarding this matter, please contact me at (804) 552-1157.

Sincerely,

Amy T. Webster
Geologist Senior
Ground Water Section

cc: SWCB-TRO-OECA ref PC#92-1539

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Peter W. Schmidt
Director

Larry S. McBride
Regional Director

Water Regional Office
287 Pembroke Office Park
Pembroke 2, Suite 310
Virginia Beach, Virginia 23462
(804) 552-1840
FAX (804) 552-1848

AUG 26 1994

Commander
Naval Air Station Oceana
Public Works Department
Attn: Mr. Will Bullard
Virginia Beach, Virginia 23460-5120

Re: Underground Storage Tank (UST) release reports for 5th St. truck loading area, NAS Oceana. DEQ PC# 92-0256, 92-0988 and 92-1540

Dear Sir:

Thank you for providing the Free Product Recovery and Monitoring Reports for the above referenced site. These reports indicate that petroleum free product recovery is still necessary. Please continue to monitor and recover product to the maximum extent practicable as outlined in Section 6.5 of the Virginia Underground Storage Tank (UST) Regulation VR-680-13-02. Future free product recovery reporting, assessment and/or remediation activity for this site should be conducted under PC# 92-0256. PC# 92-0988 and 92-1540 are closed and will no longer be used.

Please continue to submit Free Product Recovery Reports in accordance with Section 6.5.4 of the UST Regulation on a monthly basis.

If you have any questions concerning this case, please contact Amy Webster at (804) 552-1157.

Sincerely,

T. E. Madigan
Environmental Specialist Senior
Ground Water Section

cc: DEQ Water Div. TRO-OE
DEQ Water Div. TRO file PC# 92-0256

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Peter W. Schmidt
Director

Larry S. McBride
Regional Director

Water Regional Office
287 Pembroke Office Park
Pembroke 2, Suite 310
Virginia Beach, Virginia 23462
(804) 552-1840
FAX (804) 552-1849

August 18, 1994

Commanding Officer
Naval Air Station Oceana
Base Civil Engineer, Bldg, 830
Attn: Will Bullard
Virginia Beach, Virginia 23460-5120

re: Draft Site Characterization Report, Dated July 24, 1992
Facility/Location: F-11 Fuel Tank Area, NAS Oceana, Virginia Beach
DEQ Tracking Number: PC92-1541

Dear Sir:

Thank you for providing the Department of Environmental Quality with the above referenced report for this site. Please be advised that additional assessments and cleanups that may be required for this site will be referred to under PC#88-0665, the Main Fuel Farm. Reviews of this report and any subsequent reports will be done in conjunction with the Main Fuel Farm site report reviews. Please update your records with this information.

If you have questions regarding this matter, please contact me at (804) 552-1157.

Sincerely,

Amy T Webster
Geologist Senior
Ground Water Section

cc: DEQ Water Div.-TRO-OE
file ref. PC#92-1541
file xref. PC#88-0665

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
TIDEWATER REGIONAL OFFICE
5636 Southern Boulevard, Virginia Beach, Virginia 23462
(757) 518-2000 Fax (757) 518-2009
www.deq.virginia.gov

Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

Maria R. Nold
Regional Director

March 11, 2015

Commander,
Navy Region Mid-Atlantic
Environmental Business Line, Code OPHREV4
9742 Maryland Avenue, Building N-26, Suite 3208
Norfolk, Virginia 23511-2737

Attn: Mr. Tom Kowalski

Re: **Corrective Action Plan (CAP)/Case Closure**
Site Location: EM Loop – NAS Oceana
DEQ Tracking Number: **PC#1992-1727**

Dear Commander:

Based upon the information you have provided regarding site conditions, the Department of Environmental Quality (DEQ) believes that endpoints established in the CAP for the referenced site have been met and no further corrective action is necessary. The State Water Control Board acting through DEQ, as authorized by Virginia Code § 62.1-44.34:8 through 9 and 9 VAC 25-580, considers this case is closed. You are no longer constrained by the CAP requirements and are free to remove the cleanup system and all monitoring points covered by this CAP. Please be advised, should future environmental problems occur, which DEQ determines are related to this release, corrective action may be required in accordance with State Law.

In order to reduce future risks to ground water at the site, all monitoring wells must be properly abandoned.

DEQ thanks you for completing the CAP and appreciates your efforts and cooperation in cleaning up this site. If you have any questions regarding this matter, please contact Lynne E. Smith of my staff at (757) 518-2055 or Lynne.Smith@deq.virginia.gov.

Sincerely,

Tom Madigan
Petroleum Program Manager

cc: File ref PC#1992-1727

~~EAS~~
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File

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
TIDEWATER REGIONAL OFFICE
5636 Southern Boulevard, Virginia Beach, Virginia 23462
(757) 518-2000 Fax (757) 518-2009
www.deq.virginia.gov

Doug Domenech
Secretary of Natural Resources

David K. Paylor
Director

Maria R. Nold
Regional Director

September 13, 2011

Commander
Navy Region Mid-Atlantic
Environmental Business Line, Code OPHREV4
9742 Maryland Avenue, Building N-26, Suite 3208
Norfolk, Virginia 23511-2737

Attn: Mary Margaret Kutz

Re: Corrective Action Plan (CAP) Closure
Case Closure
Site Location: NAS Oceana – Matwing Rapid Refueling Area
DEQ Tracking Number: PC#1992-2142

Dear Ms. Kutz:

The Department of Environmental Quality has reviewed your request for closure dated May 12, 2011. Based upon the information you have provided, the Department of Environmental Quality (DEQ) agrees that achievement of the endpoints established in the Corrective Action Plan (CAP) for the referenced site is not practicable, that free product levels at the site are asymptotic, and that risk to human health and the environment from free product remaining at the site is low. No further corrective action is warranted. The State Water Control Board acting through the DEQ, as authorized by Virginia Code § 62.1-44.34:8 through 9 and 9 VAC 25-580, considers this case is closed. You are no longer constrained by the CAP requirements and are free to remove the cleanup system and all monitoring points covered by this CAP. Please be advised, should future environmental problems occur, which the DEQ determines are related to this release, corrective action may be required in accordance with State Law.

In order to reduce future risks to ground water at the site, all monitoring wells must be properly abandoned.

The DEQ thanks you for completing the Corrective Action Plan and appreciates your efforts and cooperation in cleaning up this site. If you have any questions regarding this matter, please contact Lynne E. Smith at (757) 518-2055 or Lynne.Smith@deq.virginia.gov.

Sincerely,

Maria R. Nold
Regional Director

cc: David Cohn, Osage
PC Files 1992-2142

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Peter W. Schmidt
Director

Larry S. McBride
Regional Director

Water Regional Office
287 Pembroke Office Park
Pembroke 2, Suite 310
Virginia Beach, Virginia 23462
(804) 552-1840
FAX (804) 552-1848

August 30, 1994

Commanding Officer
Naval Air Station Oceana
Public Works Department
Attn: Will Bullard
Virginia Beach, Virginia 23460-5120

re: Draft Site Characterization Report
Facility/Location: Day Tank Dry Well Area, NAS Oceana, Virginia Beach
DEQ Tracking Numbers: PC 93-0077, XREF PC 88-0666 (Day Tank)

Dear Sir:

Thank you for providing the Department of Environmental Quality with the above referenced report for this site. Future free product recovery reporting, assessment, and/or remediation activity for this site should be conducted under PC# 88-0666. PC# 93-0077 is closed and will no longer be used.

If you have questions regarding this matter, please contact me at (804) 552-1157.

Sincerely,

Amy T. Webster
Geologist Senior
Ground Water Section

cc: DEQ-Water Div.-TRO-CA (Bob Allen)
file ref PC 93-0077 & PC 88-0666

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Richard N. Burton
Director

Water Regional Office
287 Pembroke Office Park
Pembroke 2, Suite 310
Virginia Beach, Virginia 23462
(804) 552-1840

Larry S. McBride
Regional Director

July 9, 1993

Commander
Naval Air Station Oceana
Public Works Department
Attn: Richard Hylton
Virginia Beach, Virginia 2346-5120

re: Site Name/Location: UST Adjacent to Building 603, NAS Oceana, Virginia Beach
DEQ Tracking #:93-0521

Dear Sir:

Thank you for providing the tank tightness test results for UST No. F-603A. Based on these results and reported current site conditions, no further assessment or remedial action is necessary at this site. However, should additional evidence of environmental contamination be discovered in the future, further assessment and remediation may be required.

If you have questions regarding this matter, please contact me at (804) 552-1157.

Sincerely,

Amy T. Webster
Geologist Senior
Ground Water Section

cc: DEQ-WD-TRO-OECA ref PC#93-0521

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Peter W. Schmidt
Director

Larry S. McBride
Regional Director

Water Regional Office
287 Pembroke Office Park
Pembroke 2, Suite 310
Virginia Beach, Virginia 23462
(804) 552-1840
FAX (804) 552-1849

August 31, 1994

Commanding Officer
Naval Air Station Oceana
Public Works Department
Attn: Will Bullard
Virginia Beach, Virginia 23460-5120

re: Final Site Characterization Report
Facility/Location: F-19A Fuel Farm Tank, NAS Oceana, Virginia Beach
DEQ Tracking Number: PC 93-0989

Dear Sir:

Thank you for providing the Department of Environmental Quality with the above referenced report for this site. Based on these assessments and reported current site conditions, no further assessment or remedial action is required at this site. However, should additional evidence of environmental contamination be discovered in the future, further assessment and remediation may be required.

It is my understanding that Tank F-19A is empty and will be tested some time in the future. Please send the results of your tank tightness tests for Tank F-19A when they are available.

If you have questions regarding this matter, please contact me at (804) 552-1157.

Sincerely,

Amy T. Webster
Geologist Senior
Ground Water Section

cc: DEQ-Water Div.-TRO-CA (Bob Allen)
file ref PC 93-0989

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Richard N. Burton
Director

Water Regional Office
287 Pembroke Office Park
Pembroke 2, Suite 310
Virginia Beach, Virginia 23462
(804) 552-1840

Larry S. McBride
Regional Director

April 8, 1993

Commander
Oceana Naval Air Station
Environmental Division
Code 189, Building 830
Attn: Richard Hylton
Virginia Beach, Virginia 23460-5120

Re: Site Name/Location: 543A Auto Hobby Shop, NAS Oceana, Virginia Beach, Virginia

Dear Sir:

Thank you for providing the tank tightness test results for the underground storage tank located at the above referenced address. Based on this information and reported current site conditions, no further assessment or remedial action is necessary at this site. However, should additional evidence of environmental contamination be discovered in the future, further assessment and remediation may be required.

If you have questions regarding this matter, please contact me at (804) 552-1157.

Sincerely,

Amy T. Webster
Geologist Senior
Ground Water Section

cc: file ref PC#93-0992

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Richard N. Burton
Director

Water Regional Office
287 Pembroke Office Park
Pembroke 2, Suite 310
Virginia Beach, Virginia 23462
(804) 552-1840

Larry S. McBride
Regional Director

February 18, 1994

Commander
Naval Air Station Oceana
Public Works Department
Attn: Will Bullard
Virginia Beach, Virginia 23460-5120

re: PC#93-2328 Location: UST 3030A, NAS Oceana,Virginia Beach

Dear Sir:

Thank you for providing a Site Characterization report of subsurface petroleum contamination for your facility at the above-referenced address. Based on these assessments and reported current site conditions, no further assessment or remedial action is necessary at this site. However, should additional evidence of environmental contamination be discovered in the future, further assessment and remediation may be required.

If you have questions regarding this matter, please contact me at (804) 552-1157.

Sincerely,

Amy T. Webster
Geologist Senior
Ground Water Section

cc: DEQ-Water Division-TRO-OECA ref PC#93-2328

file

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Richard N. Burton
Director

Water Regional Office
287 Pembroke Office Park
Pembroke 2, Suite 310
Virginia Beach, Virginia 23462
(804) 552-1840

Larry S. McBride
Regional Director

August 11, 1993

Commanding Officer
Naval Air Station Oceana
Virginia Beach, Virginia 23460-5120

re: Report of a Suspected Underground Storage Tank (UST) Release
Site Name/Location: Tank 323A, Near Bldg. 301, NAS Oceana, Virginia Beach
DEQ Tracking Number: PC 93-2579

Dear Sir:

Thank you for providing the Department of Environmental Quality (DEQ) with the additional information concerning the tank closure at the above referenced site. Based on this information and reported current site conditions, no further assessment or remedial action is necessary at this site. However, should additional evidence of environmental contamination be discovered in the future, further assessment and remediation may be required.

If you have any questions regarding this matter, please contact me at (804) 552-1156.

Sincerely,

LeAnn Moran

LeAnn Moran
Geologist
Ground Water Section

cc: DEQ-WD-TRO-OECA
Rick Hylton
File ref PC 93-2579

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Peter W. Schmidt
Director

Larry S. McBride
Regional Director

Water Regional Office
287 Pembroke Office Park
Pembroke 2, Suite 310
Virginia Beach, Virginia 23462
(804) 552-1840
FAX (804) 552-1849

August 13, 1994

Commanding Officer
Naval Air Station Ocean
Virginia Beach, Virginia 23460-5120

RE: Initial Abatement Measures and Site Check Report in Response to a Suspected Petroleum Release from an Underground Storage Tank (UST)
Facility/Location: UST 111A, Naval Air Station Oceana, Virginia Beach
DEQ Tracking Number: PC 94-0464

Dear Sir:

Thank you for providing the Department of Environmental Quality (DEQ) with the subject report for UST 111A at your facility. Based on this information and reported current site conditions, no further assessment or remedial action is necessary at this site. However, should additional evidence of environmental contamination be discovered in the future, further assessment and remediation may be required.

If you have not already done so, please complete and submit the enclosed form with closure documentation to our headquarters.

If you have any questions regarding this matter, please contact me at (804) 552-1156.

Sincerely,

LeAnn Moran

LeAnn Moran
Geologist
Ground Water Section

Encl.

cc: Will Bullard, NAS Oceana
DEQ-Water Div.-TRO-OE
√File ref PC 94-0464

File
PC94-1478

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Richard N. Burton
Director

Water Regional Office
287 Pembroke Office Park
Pembroke 2, Suite 310
Virginia Beach, Virginia 23462
(804) 552-1840

Larry S. McBride
Regional Director

January 26, 1994

Commanding Officer
Naval Air Station Oceana
Base Civil Engineer, Bldg. 930
Attn: Will Bullard
Virginia Beach, Virginia 23460-5120

re: Summary of Abatement Activities in Response to a Report of Petroleum Release from an Underground Storage Tank (UST)
Site Name/Location: UST F-410B, MOGAS Station, NAS Oceana, Virginia Beach
DEQ Tracking Number: PC 94 1478

Dear Sir:

Thank you for providing the Department of Environmental Quality (DEQ) with the information concerning a petroleum release of less than two gallons from a cracked test port of UST F-410B. Based on this information and previously reported site conditions associated with the petroleum release initially reported on February 16, 1990, no further assessment or remedial action is necessary in response to the January 10, 1994, release from UST F-410B. However, should additional evidence of environmental contamination be discovered in the future, further assessment and remediation may be required.

If you have any questions regarding this matter, please contact me at (804) 552-1156.

Sincerely,

LeAnn Moran
Geologist
Ground Water Section

cc: File ref PC 94-1478
Xref PC 94 1080

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MEMO

Department of Environmental Quality
Tidewater Regional Office

5636 Southern Boulevard, Virginia Beach, Virginia 23462

Subject: Administrative Closure

Site Name /PC#: NAS Oceana, FITWING Fuel Pit #2/ PC#95-2280

To: File

From: Lynne E. Smith, Remediation Geologist Senior

Date: 11/29/2006

This Pollution Complaint was opened November 17, 1994. The release resulted from a pipeline failure at FITWING Fuel Pit #2. Fuel releases from various FITWING Fuel Pits, including Fuel Pit #2, were actively being addressed under PC#92-1527, therefore, the Navy was directed to include all future cleanup work for this release under PC#92-1527. (Reference letter dated March 13, 1995.) The site is now being remediated under a Corrective Action Plan for PC#92-1527, however, the original Pollution Complaint is still listed as open.

This memo serves as administrative closure of PC#95-2280, NAS Oceana FITWING Fuel Pit #2.

LES

COMMONWEALTH of VIRGINIA

PETER W SCHMIDT
DIRECTOR

DEPARTMENT OF ENVIRONMENTAL QUALITY

FRANCIS L. DANIEL
REGIONAL DIRECTOR

TIDEWATER REGIONAL OFFICE
287 INDEPENDENCE BOULEVARD
PEMBROKE TWO, SUITE 310
VIRGINIA BEACH, VIRGINIA 23462
(804) 552-1840
FAX (804) 552-1849 TDD # - RICHMOND (804) 762-4021

August 18, 1995

Commander
Naval Air Station Oceana
Base Civil Engineer, Bldg. 830
Attn: Will Bullard
Virginia Beach, Virginia 23460-5120

re: Initial Abatement Measures Report
Site Name/Location: Fire Fighting Training Ring/NAS Oceana
Facility and Tank Identification: 5-019359/UST FFA & UST FFB
DEQ Tracking Number: PC#95-2410

Dear Sir:

Thank you for providing the subject report for the above referenced site to the Department of Environmental Quality (DEQ). Based on the information you have provided regarding current site conditions, the Department believes that contamination levels do not warrant further corrective action. Should future environmental problems occur, which the DEQ determines are related to this release, additional investigation and corrective action may be required in accordance with State Law.

If you have questions regarding this matter, please contact me at (804) 552-1157.

Sincerely,

Amy T. Webster
Geologist Senior
Remediation Program

cc: LANTNAVFACENGCOM/Steve Chambliss, P.E.
file ref. PC 95-2410

COMMONWEALTH of VIRGINIA

PETER W. SCHMIDT
DIRECTOR

DEPARTMENT OF ENVIRONMENTAL QUALITY

FRANCIS L. DANIEL
REGIONAL DIRECTOR

TIDEWATER REGIONAL OFFICE
287 INDEPENDENCE BOULEVARD
PEMBROKE TWO, SUITE 310
VIRGINIA BEACH, VIRGINIA 23462
(804) 552-1840
FAX (804) 552-1849 TDD # - RICHMOND (804) 762-4021

October 26, 1995

Commanding Officer
Environmental Compliance Division
Attn: John Ballinger
Bldg. 830
Oceana Naval Air Station
Virginia Beach, Virginia 23460-5121

Re: Initial Abatement Measures/Underground Storage Tank (UST) Closure Report for Case Closure
Site Name/Location: UST 108-E, NAS Oceana, Virginia Beach
Facility and Tank Identification: 5-019359/550-gal. diesel for emergency generator
DEQ Tracking Number: PC 96-2238

Dear Sir:

Thank you for providing the subject report for the above referenced site to the Department of Environmental Quality.

Based upon the information you have provided regarding current site conditions, the Department believes that contamination levels at this site do not warrant further corrective action. Should future environmental problems occur, which the DEQ determines are related to this release, additional investigation and corrective action may be required in accordance with State Law.

If you have any questions regarding this matter, please contact me at (804) 552-1156.

Sincerely,

LeAnn Moran

LeAnn Moran
Geologist Senior
Remediation Section

cc: LANTVAVFACENGCOM/Steve Chambliss
File PC 96-2238

COMMONWEALTH of VIRGINIA

PETER W. SCHMIDT
DIRECTOR

DEPARTMENT OF ENVIRONMENTAL QUALITY

FRANCIS L. DANIEL
REGIONAL DIRECTOR

TIDEWATER REGIONAL OFFICE
287 INDEPENDENCE BOULEVARD
PEMBROKE TWO, SUITE 310
VIRGINIA BEACH, VIRGINIA 23462
(804) 552-1840
FAX (804) 552-1849 TDD # - RICHMOND (804) 762-4021

December 18, 1995

Commanding Officer
Environmental Compliance Division
Attn: Will Bullard
Bldg. 830
Oceana Naval Air Station
Virginia Beach, Virginia 23460-5121

Re: Amendment to the Initial Abatement Measures/Underground Storage Tank (UST) Closure Report for Case Closure
Site Name/Location: Tank E1201A, NAS Oceana, Virginia Beach
Facility and Tank Identification: 5-019359/550-gal. diesel for emergency generator
DEQ Tracking Number: PC 96-2243

Dear Sir:

Thank you for providing the subject report for the above referenced site to the Department of Environmental Quality.

Based upon the information you have provided regarding current site conditions, the Department believes that contamination levels at this site do not warrant further corrective action. Should future environmental problems occur, which the DEQ determines are related to this release, additional investigation and corrective action may be required in accordance with State Law.

If you have any questions regarding this matter, please contact me at (804) 552-1156.

Sincerely,

LeAnn Moran

LeAnn Moran
Geologist Senior
Remediation Section

cc: LANTVAVFACENGCOM/Steve Chambliss
File PC 96-2243

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

George Allen
Governor

Becky Norton Dunlop
Secretary of Natural Resources

5636 Southern Boulevard
Virginia Beach, Virginia 23462
Fax (757) 518-2103
http://www.deq.state.va.us

March 10, 1997

Thomas L. Hopkins
Director

Francis L. Daniel
Tidewater Regional Director
(757) 518-2000

Commanding Officer
Naval Air Station Oceana
Base Civil Engineering
Environmental Compliance Div.
Attn: Code 1893/John Ballinger
Virginia Beach, VA 23460-5120

Re: Review of Site Characterization Report
Site Name/Location: NAS Oceana, Building 2022A, Tank 2022A (1000 Gallon #2 Fuel Oil UST)
DEQ Tracking Number: PC #97-2261

Dear Sir:

Thank you for providing the subject report to the Department of Environmental Quality. Based upon the information you have provided regarding current site conditions, the Department believes that contamination levels at this site do not warrant further corrective action. Should future environmental problems occur, which the DEQ determines are related to this release, additional investigation and corrective action may be required in accordance with State Law.

Please inform us about the fate of the monitoring wells at the site. If the monitoring wells will not be used for their intended purpose, then you should abandon them properly in accordance with State Health Department regulations and guidelines. Monitoring well abandonment activities should be proposed to us in an Activity Authorization Form (AAF). Once we have approved your AAF for well abandonment and we receive the final AAF indicating that the work has been completed, then your site will be closed officially. If you choose to continue using your monitoring wells, please keep them maintained in order to prevent them from acting as pathways for subsurface contamination. When no longer needed, the wells should be properly abandoned as stated above.

If you have any questions regarding this matter, please contact me at (757) 518-2121.

Sincerely,

Amy T. Webster
Geologist Senior
Remediation Program

cc: File PC#97-2261

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

George Allen
Governor

Becky Norton Dunlop
Secretary of Natural Resources

5636 Southern Boulevard
Virginia Beach, Virginia 23462
Fax (757) 518-2103
http://www.deq.state.va.us

Thomas L. Hopkins
Director

Francis L. Daniel
Tidewater Regional Director
(757) 518-2000

January 16, 1997

Commanding Officer
Naval Air Station Oceana
Base Civil Engineering
Environmental Compliance Division
Code 1893, Attn: John Ballinger
Virginia Beach, Virginia 23460-5121

Re: Initial Abatement Measures/Underground Storage Tank (UST) Closure Report for Case Closure
Site Name/Location: Tank 100-0, NAS Oceana, Virginia Beach
Facility and Tank Identification: 5-019359/1,000-gal. diesel for emergency generator
DEQ Tracking Number: PC 97-2284

Dear Sir:

Thank you for providing the subject report for the above referenced site to the Department of Environmental Quality. Based upon the information you have provided regarding current site conditions, the Department believes that contamination levels at this site do not warrant further corrective action. Should future environmental problems occur, which the DEQ determines are related to this release, additional investigation and corrective action may be required in accordance with State Law. Please note that if you will no longer be using the monitoring well at the site for its intended purpose, then it should be abandoned in accordance with Health Department regulations and policies.

If you have any questions regarding this matter, please contact me at (757) 518-2126.

Sincerely,

LeAnn Moran

LeAnn Moran
Geologist Senior
Remediation Section

cc: LANTVAVFACENGCOM/Steve Chambliss
File PC 97-2284

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

James S. Gilmore, III
Governor

John Paul Woodley, Jr.
Secretary of Natural Resources

5636 Southern Boulevard
Virginia Beach, VA 23462
Fax (757) 518-2103
http://www.deq.state.va.us

Thomas L. Hopkins
Director

Francis L. Daniel
Tidewater Regional Director
(757) 518-2000

March 27, 1998

Commander
Navy Public Works Center
Code 941.6
Attn: Kevin Cloe
9742 Maryland Ave.
Norfolk, VA 23511-3095

re: **Case Closure**
Initial Abatement Measures Report
Site Name/Location: NAS Oceana, Steam Plant, Bldg. 601
Facility Identification No: 5-019359/UST FO602A (5,000 Gallon Spill Containment UST)
DEQ Tracking Number: PC#98-2288

Dear Sir:

Thank you for providing the subject report for the above referenced site to the Department of Environmental Quality (DEQ). Based on the information you have provided regarding current site conditions, the Department believes that contamination levels do not warrant further corrective action. Should future environmental problems occur, which the DEQ determines are related to this release, additional investigation and corrective action may be required in accordance with State Law.

If you have questions regarding this matter, please contact me at (757) 518-2121.

Sincerely,

Amy T. Webster
Geologist Senior
Remediation Program

cc: file ref. PC 98-2288

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

W. Tayloe Murphy, Jr.
Secretary of Natural Resources

5636 Southern Boulevard
Virginia Beach, VA 23462
www.deq.state.va.us
Fax # (757) 518-2009

March 5, 2004

Robert G. Burnley
Director

Francis L. Daniel
Tidewater Regional Director
(757) 518-2000

Navy Region Mid-Atlantic
Technical Support Department
Regional Environmental Group
Code 970
9742 Maryland Avenue
Norfolk, VA 23511-3095

Attention: Sean Heaney, Director

Re: **Request for Closure, Dated February 24, 2004**
SWUM 15 Feasibility Study Addendum: Transfer of Regulatory Oversight from CERCLA to VDEQ UST/POL, Dated May 29, 2003
Draft Final Proposed Remedial Action Plan for SWMU 15, Dated August 2003
Site Name/Location: Naval Air Station Oceana, Solid Waste Management Unit (SWMU) 15
DEQ Tracking Number: PC#04-5138

Dear Mr. Heaney:

Thank you for your request for the Department of Environmental Quality (DEQ) to consider closure of the referenced site under the DEQ Petroleum Program. Based on the information provided, the State Water Control Board acting through the DEQ, as authorized by CODE § 62.1-44.34:8 through 9 and 9 VAC 25-580-10 et seq. believes that contamination levels at this site do not warrant further corrective action. This pollution complaint case is now closed. Should future environmental problems occur, which the DEQ determines are related to this release, additional investigation and corrective action may be required in accordance with State Law.

In order to reduce future risks to ground water, all monitoring wells at the site should be properly abandoned.

If you have any questions, please contact me at (757) 518-2121.

Sincerely,

Amy T. Webster
Geologist Senior
Remediation Program

cc: Steven Mihalko, DEQ-Federal Facilities Program
File PC#04-5138

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
TIDEWATER REGIONAL OFFICE
5636 Southern Boulevard, Virginia Beach, Virginia 23462
(757) 518-2000 Fax (757) 518-2103
www.deq.virginia.gov

L. Preston Bryant, Jr
Secretary of Natural Resources

David K. Paylor
Director

Francis L. Daniel
Regional Director

November 7, 2006

Commander Navy Region, Mid-Atlantic
Attn: Kelly Jobst
Environmental Department, Code N45
1510 Gilbert Street
Norfolk, Virginia 23511

Re: **Case Closure**
Initial Abatement Measures Report
Site Name/Location: Naval Air Station Oceana – Tank F9-02
DEQ Tracking Number: PC#06-5159

Dear Ms. Jobst:

Thank you for providing the subject report and subsequent documentation of soil disposal to the Department of Environmental Quality (DEQ). Based on the information you have provided, the State Water Control Board acting through the DEQ, as authorized by CODE § 62.1-44.34:14 through 23 believes that contamination levels from this release do not warrant further corrective action. This pollution complaint case is now closed. Should future environmental problems occur, which the DEQ determines are related to this release, additional investigation and corrective action may be required in accordance with State Law.

If you have any questions, please contact me at (757) 518-2055.

Sincerely,

Lynne E. Smith

Lynne E. Smith
Geologist Senior
Remediation Program

cc: File PC#06-5159

~~EAS~~
LES
SCAN
File

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
TIDEWATER REGIONAL OFFICE
5636 Southern Boulevard, Virginia Beach, Virginia 23462
(757) 518-2000 Fax (757) 518-2009
www.deq.virginia.gov

Doug Domenech
Secretary of Natural Resources

David K. Paylor
Director

April 18, 2011

Commander
Navy Region Mid-Atlantic
Environmental Business Line, Code OPHREV4
9742 Maryland Avenue, Building N-26, Suite 3208
Norfolk, Virginia 23511-2737

Attn: Timothy A. Reisch, P.E., Environmental Restoration Division

Re: **Case Closure**
Site: NAS Oceana – 5th Street adjacent to Truck Loading Area
DEQ tracking number: **(PC) # 2010-5129**

Dear Mr. Reisch:

The Department of Environmental Quality (DEQ) has received your recent monitoring results and request for closure of the referenced pollution complaint case. Based on the information you have provided, the State Water Control Board acting through the DEQ, as authorized by CODE § 62.1-44.34:14 through 23 believes that contamination levels at this site do not warrant further corrective action. This pollution complaint case is now closed. Should future environmental problems occur, which the DEQ determines are related to this release, additional investigation and corrective action may be required in accordance with State Law.

In order to reduce future risks to ground water, all monitoring wells at the site must be properly abandoned.

If you have any questions, please contact me at Lynne.Smith@deq.virginia.gov or (757) 518-2055.

Sincerely,

Lynne E. Smith

Lynne E. Smith
Geologist Senior
Remediation Section

cc: File PC#2010-5129

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
TIDEWATER REGIONAL OFFICE
5636 Southern Boulevard, Virginia Beach, Virginia 23462
(757) 518-2000 Fax (757) 518-2009
www.deq.virginia.gov

Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

Maria R. Nold
Regional Director

March 26, 2014

Commander
Navy Region Mid-Atlantic
Environmental Business Line, Code OPHREV4
9742 Maryland Avenue, Building N-26, Suite 3208
Norfolk, Virginia 23511-2737

Attn: Sean Heaney

Re: Tank Closure Report
Site Location: NAS Oceana – AST#OC-602-01, Hornet Dr. & 5th St., Virginia Beach
Facility/Tank Identification: 5-019359
DEQ Tracking Number: PC#2014-5165

Dear Mr. Heaney:

Thank you for providing a Tank Closure Report for the referenced site to the Department of Environmental Quality (DEQ) on March 20, 2014.. Based upon the information you have provided, the State Water Control Board acting through DEQ, as authorized by CODE § 62.1-44.34:23 through 14, believes that contamination levels at this site do not warrant further corrective action. This pollution complaint case is now closed. Should future environmental problems occur, which DEQ determines are related to this release, additional investigation and corrective action may be required in accordance with State Law.

If you have any questions regarding this matter, please contact me at (757) 518-255.

Sincerely,

Lynne E. Smith

Lynne E. Smith
Geologist Senior II
Remediation Section

cc: Jengfu Chen, NAVFAC (via email jengfu.chen@navy.mil)
PC File 2014-5165

Appendix E
Site Closeout Closure Letters

06.01-9/27/01-00577

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

September 27, 2001

Commander Atlantic Division
Naval Facilities Engineering Command
Attn: Code 18225 Mr. Tim Reisch
1510 Gilbert Street (Bldg N-26)
Norfolk, VA 23511-2699

Re: Decision Documents for Solid Waste Management Units (SWMUs) 2D, 18, 19, 20 and 23, Naval Air Station Oceana, Virginia Beach, Virginia

Dear Mr. Reisch:

The Environmental Protection Agency has reviewed the Decision Document (DD) for SWMU 2D, Line Shack Disposal Area, SWMU 18, Hazardous Waste Storage Area, SWMU 19, Waste Oil Storage Area, Bldg. 541, SWMU 20, Waste Oil Storage Are, Bldg. 543, and SWMU 23, Bowser Bldg. 830. The EPA concurs with the no further remedial action decision as outlined in the DD dated June 2001.

If you have any questions regarding this DD, please feel free to contact me at 215-814-3366 or 410-305-2748.

Sincerely,

Robert W. Stroud, RPM
(3HS13)

cc: Steve Mibalko, VDEQ

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

March 26, 2002

Commander Atlantic Division
Naval Facilities Engineering Command
Attn: Code 18225 Mr. Tim Reisch
1510 Gilbert Street (Bldg N-26)
Norfolk, VA 23511-2699

Re: Decision Documents for Solid Waste Management Units (SWMUs) 11, 16, 16GC, 21, 22 and 26 at Naval Air Station Oceana, Virginia Beach, Virginia

Dear Mr. Reisch:

The Environmental Protection Agency has reviewed the Decision Document (DD) for SWMU 11, Fire Fighting Training Area, SWMU 16, Pesticide Storage Area, SWMU 16 GC, Pesticide Storage Area, Golf Course Maintenance Shop, SWMU 21, Transformer Storage Yard, Building 530, SWMU 22, Construction Debris Landfill and SWMU 26, Fire Fighting Training Area, Building 22. The EPA concurs with the no further remedial action decision as outlined in the DD dated November 2001.

If you have any questions regarding this DD, please feel free to contact me at 215-814-3366 or 410-305-2748.

Sincerely,

Robert W. Stroud, RPM
(3HS13)

cc: Steve Mihalko, VDEQ

9/29/03-00621

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

September 29, 2003

Commander
Naval Facilities Engineering Command
Atlantic Division
Attn: Code EV22TR
6506 Hampton Blvd.
Norfolk, VA 23508-1278

Re: Decision Documents for Solid Waste Management Units (SWMUs) 15 and 25, Naval Air Station Oceana, Virginia Beach, Virginia

Dear Mr. Reisch:

The Environmental Protection Agency (EPA) has reviewed the Decision Documents (DDs) for SWMU 15 (Abandoned Tank Farm) and SWMU 25 (Inert Landfill) at the Oceana Naval Air Station, Virginia Beach Virginia. The EPA concurs in these no further action decisions as outlined in the DDs dated September 2003.

If you have any questions regarding these DDs, please feel free to contact me at 215-814-2333.

Sincerely,

Greyson T. Franklin

Greyson T. Franklin, RPM
Hazardous Site Cleanup Division
(3HS13)

cc: Steve Mihalko, VDEQ

Appendix F
Tier I Partnering Team Consensus Statements

No Further Action Consensus Statement, SWMU 27 – Old CPO Club Landfill, Naval Air Station Oceana, Virginia Beach, Virginia

PREPARED FOR: Jillian Wheeler/Naval Facilities Engineering Command Mid-Atlantic
Connor O'Loughlin/U.S. Environmental Protection Agency, Region 3
Steve Mihalko/Virginia Department of Environmental Quality

PREPARED BY: CH2M HILL, Inc.

DATE: June 2020

Background

The Old CPO Club Landfill was identified as Solid Waste Management Unit (SWMU) 27 in the Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) for Naval Air Station (NAS) Oceana, Virginia Beach, Virginia (A.T. Kearney, 1989). The site reportedly consisted of tires and scrap metal disposed of on top of the pavement of the Old CPO Club parking lot; however, there was no documentation regarding the type of wastes disposed at this location. The dates of operation for this disposal area are unknown; however, it was no longer in use during development of the RFA in 1988.

The exact location of the Old CPO Club Landfill is unknown. The location of the Old CPO Club (Building I-17) is shown on **Figure 1**. This map has no indication of the location of the associated parking lot or any disposal area in the vicinity. According to a figure in the RFA, SWMU 27 is located southeast of North Station; however, the figure was marked up at an unknown time to indicate the location is actually to the northwest (**Figure 2**). The RFA also states that SWMU 27 is located on an abandoned concrete runway, which is not consistent with either location shown on **Figure 2**.

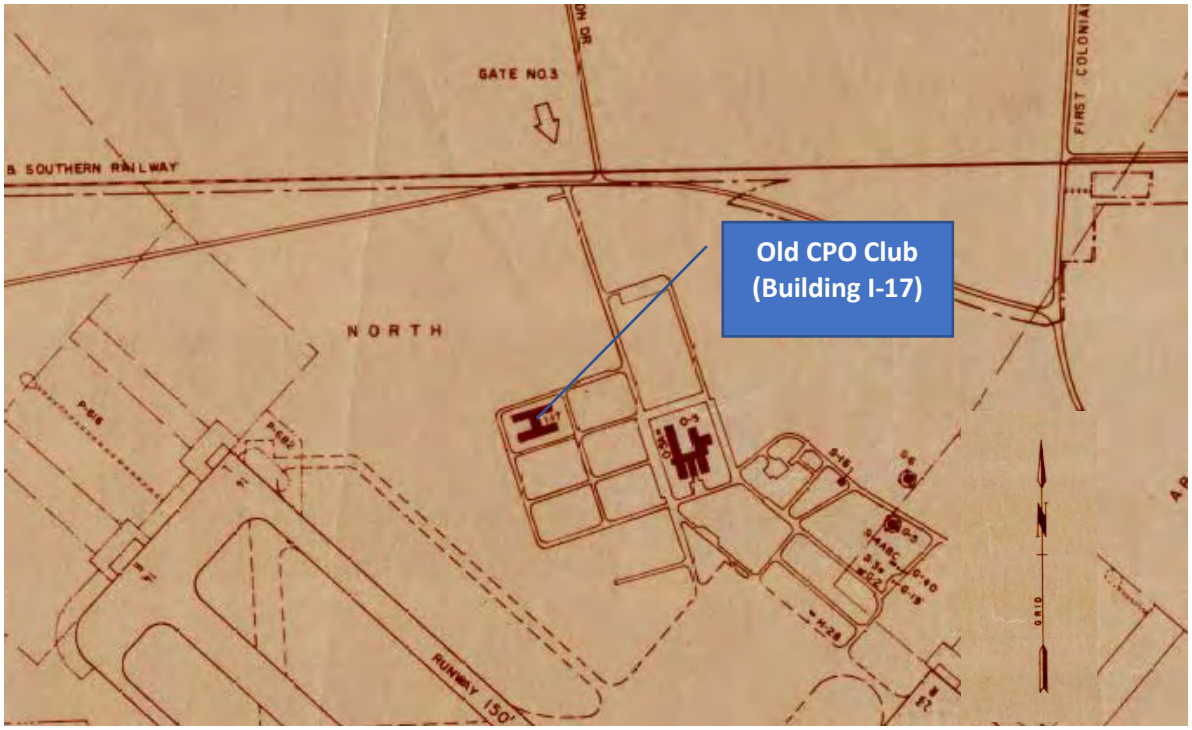


Figure 1. Excerpt from 1966 General Development Map Showing the Location of Building I-17

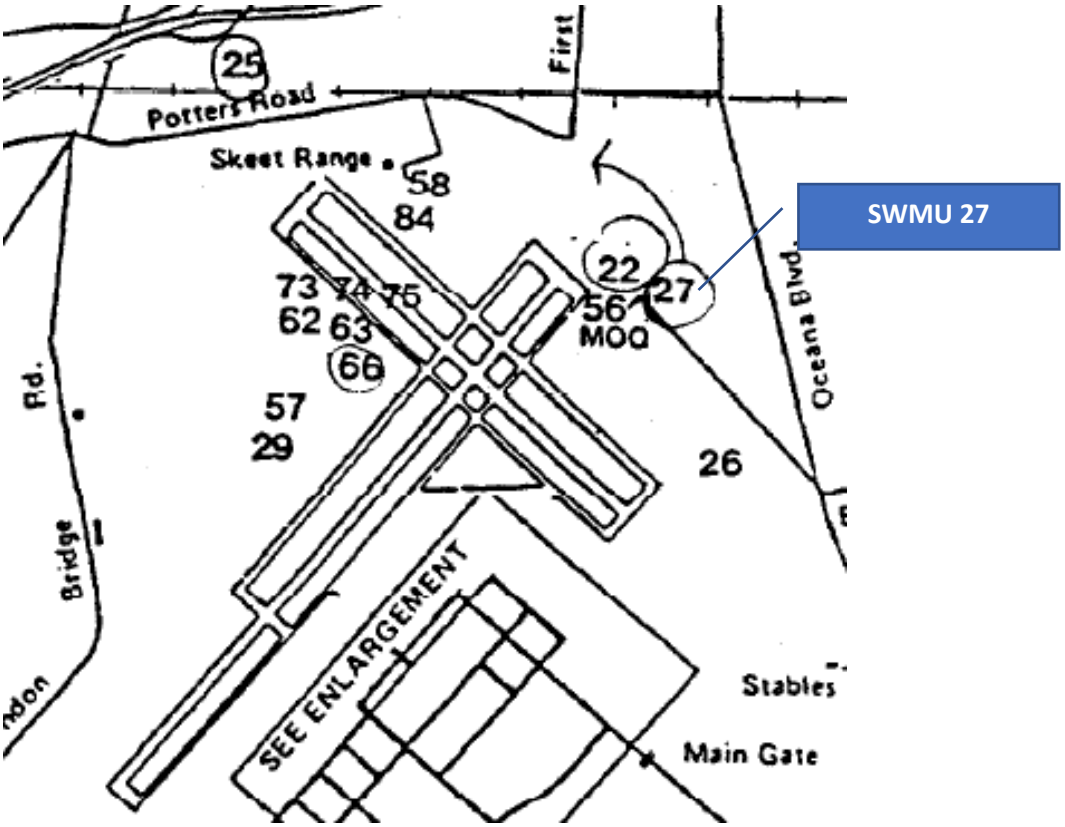
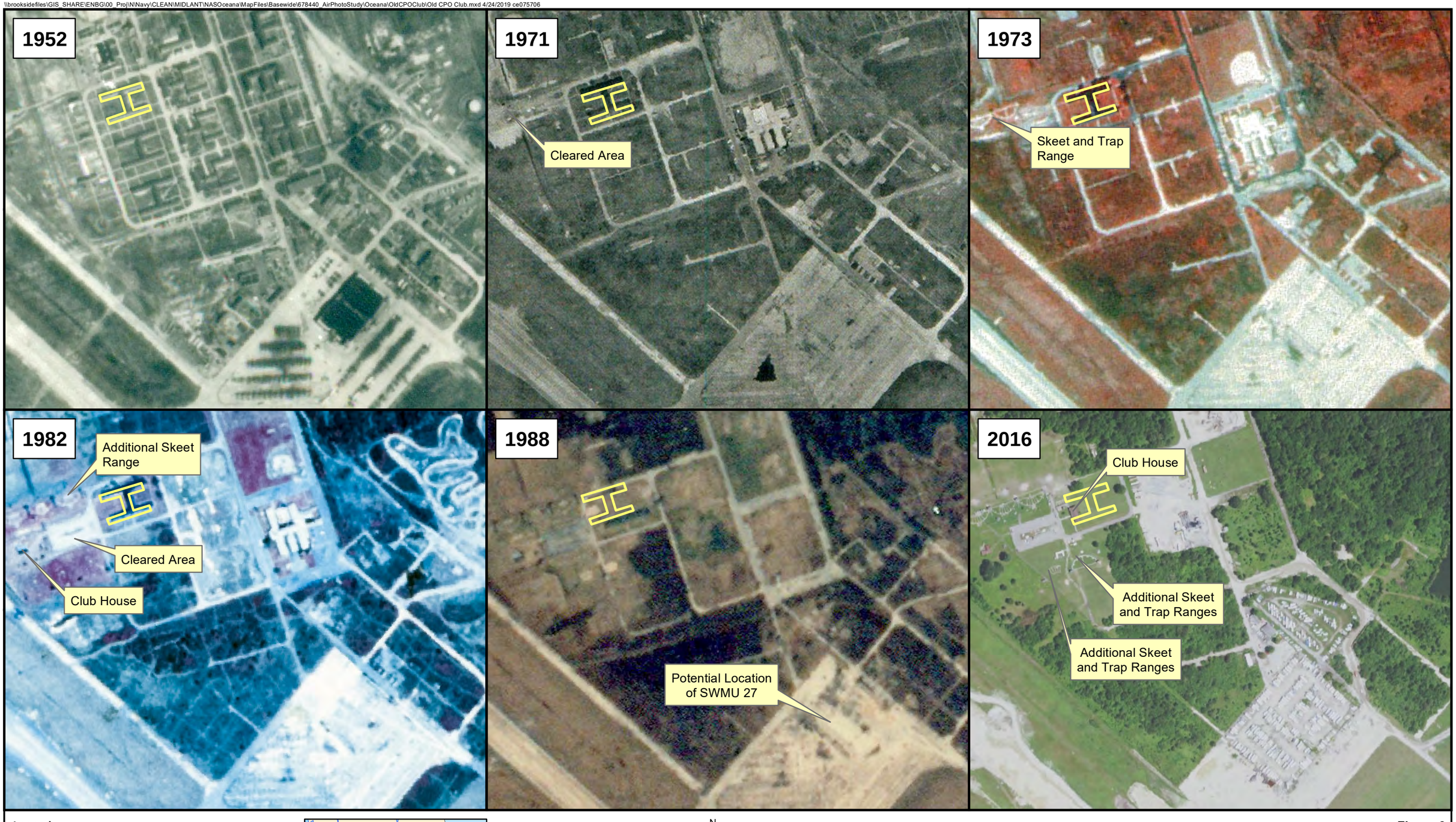


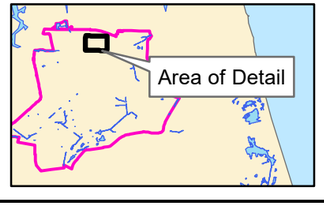
Figure 2. Excerpt from Figure 4-2 of the RFA (A.T. Kearney, 1989)

\\brooksidefiles\GIS_SHARE\ENBG\00_Proj\N\Navy\CLEAN\MIDLANT\NASOceana\MapFiles\Basewide\678440_AirPhotoStudy\Oceana\OldCPOClub\Old CPO Club.mxd 4/24/2019 ce075706



Legend

Approximate Boundary of the old CPO Club



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Feet

Figure 3
SWMU 27 - Old CPO Club Landfill
NAS Oceana
Virginia Beach, Virginia

ch2m

Historical Data Review

To determine the path forward at SWMU 27, the NAS Oceana Tier I Partnering Team reviewed the available historical documents, maps, and photographs. A timeseries of historical aerial photographs of the vicinity of the Old CPO Club was prepared using images from 1952 to 2016 (**Figure 3**). No obvious evidence of a disposal area was noted in any of the photographs. Additionally, based on the description in the RFA, the disposal area appears to have been contained within a paved parking area; therefore, the NAS Oceana Tier 1 Partnering Team agrees that no further action is necessary at SWMU 27.

CONNOR O'LOUGHLIN Digitally signed by CONNOR O'LOUGHLIN Date: 2020.06.30 09:10:14 -04'00'

Connor O'Loughlin Date
Project Manager
U.S. Environmental Protection Agency, Region 3

Stephen Mihalko 6/30/20

Steve Mihalko Date
Project Manager
Virginia Department of Environmental Quality

WHEELER.JILLIAN.1521679030 Digitally signed by WHEELER.JILLIAN.1521679030 Date: 2020.06.30 11:19:33 -04'00'

Jillian Wheeler Date
Project Manager
Naval Facilities Engineering Command, Mid-Atlantic

References

A.T. Kearney, Inc. 1989. *RCRA Facility Assessment Revised Phase II Report, Oceana Naval Air Station, Virginia Beach, Virginia*. March.

No Further Action Consensus Statement, Natural Resources Building, Naval Air Station Oceana, Virginia Beach, Virginia

PREPARED FOR: Jillian Wheeler/Naval Facilities Engineering Command Mid-Atlantic
Connor O'Loughlin/U.S. Environmental Protection Agency (USEPA), Region 3
Steve Mihalko/Virginia Department of Environmental Quality

PREPARED BY: CH2M HILL, Inc. (CH2M)

DATE: June 2020

Background

The Natural Resources Building (NRB) (Building 78) at Naval Air Station (NAS) Oceana is located on the east side of Oceana Boulevard, across from NAS Oceana Stables, and was acquired by the Navy in the 1980s (**Figure 1**). While the site is outside of the fenced portion of the installation, it lies within the installation boundary. The NRB is used to issue hunting and fishing permits and is surrounded by undeveloped and wooded land. Knowledge of site history is limited. The area is labeled as an agricultural out-lease on a 1965 map of the facility (NAS Oceana, 1965). Based on aerial photographs and facility records, Building 78 and the associated driveway appear to have been constructed by 1956 (Navy, 2018).

A nonpotable well is located near Building 78 and was installed in 1998 and screened from 103 to 108 feet below ground surface (bgs) (Installation Civil Engineer, NAS Oceana, 1995). The well is used for supplying water to a bathroom toilet, bathroom sink, and deer cleaning station. The toilet facilities at the NRB drain to a septic system and leach field located to the north and west of the NRB (**Figure 2**).

Because the NRB well is not used for drinking, ongoing monitoring is not required; however, routine monitoring was completed for all regulated chemicals in February 2015 and trichloroethene (TCE) was detected at a concentration of 6.1 micrograms per liter (µg/L), which exceeded the USEPA Maximum Contaminant Level (MCL) of 5 µg/L for drinking water (CH2M, 2017). This sample was also analyzed for total lead, total copper, volatile organic compounds (VOCs), combined nitrate and nitrite, total coliform/E. Coli, total iron, and total dissolved solids. With the exception of the TCE detection, all analytes were below their respective MCL or secondary MCL (for iron). An additional water sample collected in June 2016 and analyzed for chlorinated VOCs (CVOCs), confirmed the presence of TCE, but at a concentration below the MCL at 1.59 µg/L. No other CVOCs were detected. The sample was collected from a sink tap because the well pumping mechanism could not be disassembled at the time of collection to allow for a water sample to be collected directly from the well (CH2M, 2017).

Previous Investigations

Prior to the nonpotable well sampling in 2015 and 2016, an installation background well (MW-BG04) was installed and sampled near the NRB (**Figure 2**). MW-BG04, which is screened from 5 to 20 feet bgs, was sampled twice in 2003 as part of a Background Investigation conducted in support of site characterization of Solid Waste Management Units (SWMUs) 1, 2B, and 24 to determine the background concentrations of arsenic, iron, lead, and manganese. Arsenic and lead were not detected in this well during the background study, and iron and manganese concentrations were less than the corresponding Tapwater Risk Based Concentrations (CH2M, 2004).

In August 2017, 22 groundwater samples were collected in the area surrounding the NRB using direct push technology. The samples were collected at multiple depth intervals ranging from 7 to 11 feet bgs to 41 to 45 feet

bgs. The samples were analyzed for select CVOCs (TCE, tetrachloroethene [PCE], cis-1,2-dichloroethene [DCE], trans-1,2-DCE, 1,1-DCE, and vinyl chloride), and all results were nondetect. Additionally, MW-BG04 was determined to be damaged and was reinstalled (MW-BG04R) and sampled for select CVOCs. All results were also nondetect in the monitoring well (CH2M, 2018).

MW-BG04R was also sampled during the installation wide site inspection for per- and polyfluoroalkyl substances (PFAS) in 2017 and analyzed for six PFAS analytes[1]. Perfluorobutanesulfonic acid (PFBS) was detected below the Tapwater Regional Screening Level (based on a hazard quotient of 0.1) and perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) were detected below the USEPA Lifetime Health Advisory for drinking water (CH2M, 2018). In 2019, the well was sampled for 18 PFAS[2] as part of the Basewide Site Inspection Addendum. PFOS was not detected and PFBS and PFOA were detected below the USEPA Tapwater Regional Screening Level (based on a hazard quotient of 0.1) and USEPA Lifetime Health Advisory, respectively.

Recommendations

Based on the results of the investigations discussed above, it was concluded that the groundwater surrounding the NRB is not contaminated with TCE, other CVOCs (PCE, cis-1,2-DCE, trans-1,2-DCE, 1,1-DCE, and vinyl chloride), or PFAS at levels of concern. The source of the low levels of TCE previously detected in the nonpotable well may be from the use of TCE-containing solvents during well pump maintenance or cleaning. The NAS Oceana Tier 1 Partnering Team agrees that no further action is necessary at this site.

References

CH2M HILL, Inc. (CH2M). 2004. *Background Investigation Results for Select Inorganics, Naval Air Station Oceana, Virginia Beach, Virginia.* July.

CH2M. 2017. *Sampling and Analysis Plan Site Inspection, Natural Resources Building, Naval Air Station Oceana, Virginia Beach, Virginia*. May.

CH2M. 2018. *2017 Site Inspection, Natural Resources Building Naval Air Station Oceana, Virginia Beach, Virginia.* June.

Department of the Navy (Navy). 2018. *Naval Facilities Assets Data Store Other Environmental Liabilities Database (OEL).* Accessed July 2018.

Installation Civil Engineer, NAS Oceana. 1995. Letter to the Virginia Beach Health District. March 28.

Naval Air Station Oceana (NAS Oceana). 1965. *General Development Map.* Virginia Beach, Virginia. December.

[1] The six PFAS analyte list included perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), perfluorononanoic acid (PFNA), perfluorohexanesulfonic acid (PFHxS), perfluoroheptanoic acid (PFHpA), and perfluorobutanesulfonic acid (PFBS).

[2] The 18 PFAS analyte list included PFOS, PFOA, PFNA, PFHxS, PFHpA, PFBS, N-ethyl perfluorooctanesulfonamidoacetic acid, N-methyl perfluorooctanesulfonamidoacetic acid, perfluorodecanoic acid, perfluorododecanoic acid, perfluorohexanoic acid, perfluorotetradecanoic acid, perfluorotridecanoic acid, perfluoroundecanoic acid, 4,8-dioxa-3H-perfluorononanoic acid, 9-chlorohexadecafluoro-3-oxanone-1-sulfonic, 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid, and hexafluoropropylene oxide dimer acid.

CONNOR O'LOUGHLIN Digitally signed by CONNOR O'LOUGHLIN
Date: 2020.06.30 09:10:14 -04'00'

Connor O'Loughlin 6/30/2020 Date
Project Manager
U.S. Environmental Protection Agency, Region 3

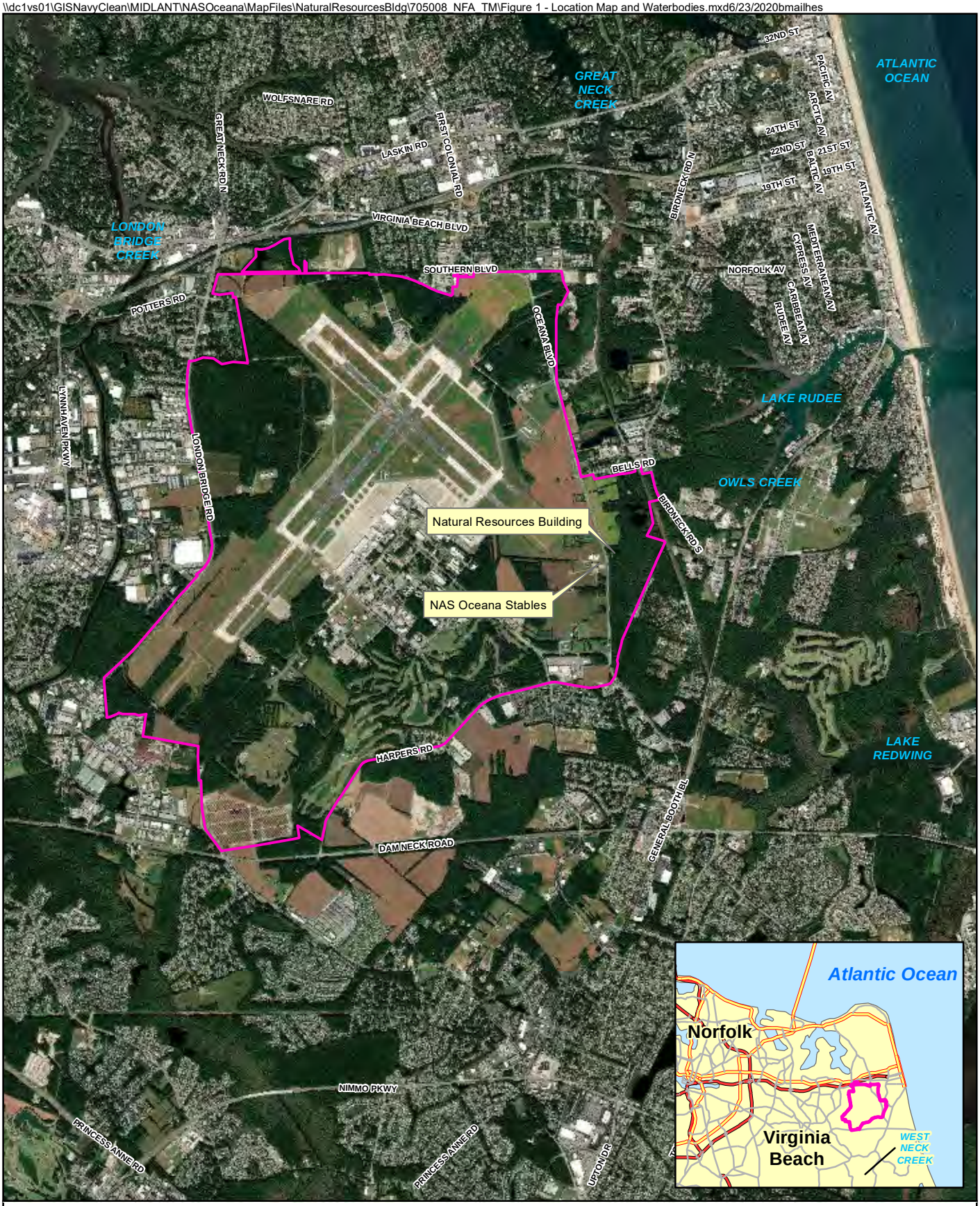
Steve Mihalko 6/30/20 Date
Project Manager
Virginia Department of Environmental Quality

WHEELER.JILLIAN.1521679030 Digitally signed by WHEELER.JILLIAN.1521679030
Date: 2020.06.30 09:51:30 -04'00'

Jillian Wheeler Date
Project Manager
Naval Facilities Engineering Command, Mid-Atlantic

Figures

\\dc1vs01\GISNavyClean\MIDLANT\NASOceana\MapFiles\NaturalResourcesBldg\705008_NFA_TM\Figure 1 - Location Map and Waterbodies.mxd6/23/2020bmailhes



Legend

Base Boundary

N

0 2,250 4,500

Feet

Figure 1
Location Map
NAS Oceana
Virginia Beach, Virginia

Imagery 2019 - Esri
Inset Basemap 2015 - Esri

ch2m:

\\dc1vs01\GISNavyClean\MIDLANT\NASOceana\MapFiles\NaturalResourcesBldg\705008_NFA_TM\Figure 2 - NRB Vicinity.mxd6/23/2020bmailhes

Legend
- Background Monitoring Well
- Background Monitoring Well Replacement
- Non-potable Water Supply Well
- Approximate Boundary for Septic System
- Building

N

0 50 100 Feet

1 inch = 100 feet

Imagery: Esri, 2019

Figure 2
Natural Resources Building and Vicinity
NAS Oceana, Virginia Beach, Virginia

ch2m

TECHNICAL MEMORANDUM

Final Decision Document for No Further Action at the Former Machine Gun Boresight Range, Naval Air Station Oceana, Virginia Beach, Virginia

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This Technical Memorandum (TM) documents approval of and provides rationale for No Further Action (NFA) at Naval Air Station (NAS) Oceana Former Machine Gun Boresight Range (MGBR), located in Virginia Beach, Virginia. This TM includes a summary of the site background, previous investigations, and the solid waste removal activities conducted at the site. This work is being performed under the Department of the Navy (Navy) Environmental Restoration Program, which follows processes outlined under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

In 2018, the Navy, Virginia Department of Environmental Quality (VDEQ) and the United States Environmental Protection Agency agreed that the impacted soil at the site would be removed as part of a Non-Time Critical Removal Action (NTCRA), based on the Engineering Evaluation/Cost Analysis (EE/CA) (CH2M, 2017). The NTCRA and site restoration activities were in 2018. After completion of the Site Inspection and NTCRA, NFA is warranted for NAS Oceana MGBR as it meets the statutory requirements of CERCLA and is protective of human health and the environment, complies with Federal and Commonwealth regulations that are applicable or relevant and appropriate, and allows for unlimited use and unrestricted exposure (UU/UE) to the site. There are no hazardous substances remaining at unacceptable levels at NAS Oceana MGBR. Background documents relevant to this site are provided in the Administrative Record; a brief summary of the site, environmental investigations and removal actions, along with the no further action consensus statement is provided in this TM.

Background

NAS Oceana is located within the southeastern portion of the city of Virginia Beach, Virginia, approximately 2 miles west of the Atlantic Ocean. The installation encompasses just over 5,300 acres, as well as approximately 3,600 acres in restrictive easements. In addition, NAS Oceana maintains control over several annex properties (including NALF Fentress) and outlying fields in the surrounding Virginia and North Carolina area. NAS Oceana is the Navy's East Coast Master Jet Base, home to F/A-18 Super Hornet fighter aircraft. The mission of the facility is to support the Navy's Atlantic and Pacific fleet forces of strike-fighter and joint/interagency operations (Malcolm Pirnie, 2008). The former MGBR is located in the northwestern portion of NAS Oceana and covers approximately 1.7 acres and is north of Dorr Place and west of Runway 14. The eastern half of the site is generally flat and consists of maintained grass because it borders an active aircraft runway. The western portion, however, is predominately overgrown with brush and trees because it is not actively used by the installation.

According to an archival map from 1943, the site was initially used as a maintenance and testing range for aircraft-mounted machine guns and was later converted to a small arms firing range (Malcolm Pirnie, 2008). Ammunition used at the former range reportedly consisted of .50- and .30-caliber rounds for aircraft guns, as well as 9-millimeter (mm) rounds for small arms. Additionally, expended 9-mm rounds for small arms were observed at the

site during a site reconnaissance by Malcolm Pirnie in 2007 (Malcolm Pirnie, 2008) and by CH2M HILL in 2009. A soil berm and concrete backstop were historically located in the western portion of the site, which suggests that the direction of fire was toward the west. The former firing point is approximately 900 feet east of the backstop (Malcolm Pirnie, 2008). There are no wetlands or water bodies on the site.

The uppermost geologic unit is a 4- to 8-foot layer of fine sediments, mainly silty clays and silty sands, which is underlain by a 15- to 20-foot layer of poorly graded fine to medium sand with some silty lenses.

Groundwater at NAS Oceana is generally within 4 to 10 feet of the native ground surface and groundwater flow is generally to the south/southeast. However, the MGBR soil berm at Oceana extended approximately 25 feet above the original ground surface. Groundwater was not encountered during soil sampling efforts at this site, so the exact depth to groundwater at the MGBR is not known.

Previous Investigations

Previous investigations at NAS Oceana MGBR included the 2010 Site Inspection and the 2013-2014 Expanded Site Inspection. The results of these investigations concluded that potentially unacceptable risks to human health from exposure to metals (antimony, copper, and lead) and to ecological receptors from exposure to metals (copper, lead, and zinc) were present in site soil. The proposed site remedy was evaluated and documented in the 2017 EE/CA.

2010 Site Inspection

This 2010 assessment identified constituents of potential concern (COPCs) in surface and subsurface soil to be antimony, copper, lead, and zinc. Arsenic and nickel were also analyzed but the results did not exceed human health and /or ecological screening criteria. Because groundwater in this area is not anticipated to be affected, the SI did not evaluate groundwater as a potential route of exposure (CH2M HILL, 2012). Surface soil (0 to 1 foot below ground surface [bgs]) and subsurface soil (1 to 2 feet bgs) samples were collected at 8 locations within the soil berm. Analytical results were compared to the USEPA residential soil Regional Screening Levels (RSLs) (USEPA, 2010) and the Ecological Soil Screening Levels (Eco-SSLs) to determine the COPCs with exceedances observed throughout the investigation area. Antimony, copper, and lead were observed at concentrations exceeding USEPA RSLs, while copper, lead, and zinc were observed at concentrations exceeding Eco-SSLs.

2013-2014 Expanded Site Inspection

In December 2013 and from September to November 2014, soil sampling was performed at the MGBR to delineate the horizontal and vertical extents of COPCs exceeding human health and ecological screening values. Both soil sampling with offsite analytical laboratory analysis and X-ray fluorescence (XRF) field screening were utilized. Subsurface soil samples were collected from 2 to 3-foot and 3 to 4-foot depth intervals from the eight sampling locations established within the berm in the 2010 SI. Surface (0 to 1 bgs) and subsurface (1 to 2 feet bgs) soil samples were also collected from the toe of the berm at 24 locations. In surface and subsurface soil, antimony, copper, and lead were observed at concentrations exceeding USEPA RSLs, while copper, lead, and zinc were observed at concentrations exceeding Eco-SSLs.

During the 2014 XRF screening and soil sampling effort, additional soil sampling was performed at the site to further delineate the extent of site COPC exceedances. For locations with screening criteria exceedances, additional soil samples were collected in a step-wise fashion and underwent XRF screening until two locations with concentrations less than human health and ecological screening values were identified in each direction. Both vertical and horizontal delineation was performed in this manner. The extent of site COPCs exceeding human health and ecological screening criteria at the site was delineated during the ESI and was found to include approximately 14,000 square feet total in four separate areas, with the largest area being at the former berm (CH2M HILL, 2015).

2017 Engineering Evaluation/Cost Analysis

The EE/CA was prepared to evaluate alternatives to mitigate risks to human health and the environment in an expedited manner by evaluating the effectiveness, implementability, and cost for one or more alternatives. Alternatives were evaluated with the intent of achieving UU/UE of the site. The preferred alternative proposed in the EE/CA consisted of soil excavation, stabilization, transport, and off-site disposal (CH2M HILL, 2017).

The Remedial Action Objective (RAO) for the MGBR is to prevent or limit human and ecological exposure to metals in soil at concentrations greater than acceptable risk levels for unrestricted land use. If the post-remedy soil concentration (for the applicable depth stratum) based on the 95% Upper Confidence Level (UCL) is less than the Site Remediation Goals (SRGs) for all COPCs, post-removal risks to human and ecological receptors are at an acceptable level for unrestricted land use.

The SRGs were derived based on the lower of the risk-based ecological and human health screening criteria and site-specific background concentrations. SRGs were developed for antimony (31 milligrams per kilogram [mg/kg]), copper (70 mg/kg), lead (120 mg/kg), and zinc (120 mg/kg).

The selected alternative for the MGBR was Excavation, Stabilization, Transport, and Disposal of Impacted Soil. The lateral and vertical extents of the removal action were determined based on the 95% UCL evaluation assuming residential use, with an estimated 470 cubic yards of soil proposed for removal over an area of 5,000 square feet.

NTCRA Activities

Removal action activities were completed in September of 2018, as detailed in the Construction Completion Report (APTIM, 2018).

During the removal action, approximately 470 cubic yards of contaminated soil were removed in accordance with the EE/CA and based on the post-excavation confirmation sampling results. Additionally, the concrete backstop was removed. During excavation, the soils were screened to remove ammunition fragments and other debris. All excavated soil was stabilized onsite using Portland cement to reduce leachable metals concentrations, allowing the soil to be disposed of as a non-hazardous waste. Characterization sampling of the soil confirmed that all site soil could be transported and disposed of as a non-hazardous waste.

A post-removal 95% UCL evaluation was then conducted utilizing the post-excavation confirmation samples and the previously-collected data from portions of the site where excavation did not occur. The post-removal 95% UCL concentration for each COPC was less than its respective SRG. Lead and zinc had soil concentrations that exceeded SRGs in at least one individual sample. For both lead and zinc, this occurred in two (different) post-removal floor confirmation samples. However, the ratio to the SRG for all these samples was less than 5, the upper threshold criterion for individual sample results developed as part of the pre-removal methodology to ensure that there were no “hot spots” remaining on the site.

The results of the post-removal 95% UCL evaluation indicate that the soil removal conducted at the site has resulted in post-removal soil concentrations for the COPCs that do not pose unacceptable risks to human health or ecological receptors (CH2M HILL, 2018). A post-excavation site topographic survey was completed to document the site excavation extent prior to backfilling. Site restoration included backfilling, compaction, and revegetation of the site.

Conclusions

The COPC-impacted soil at NAS Oceana MGBR has been removed and the area restored in accordance with the EE/CA (CH2M, 2017). The Construction Completion Report (APTIM, 2018), as well as this TM, document the NTCRA activities and the post-excavation 95% UCL evaluation results. The resulting site conditions at NAS Oceana MGBR are acceptable for UU/UE of the site.

No Further Action Consensus

The Navy, VDEQ and USEPA agree the RAO for NAS Oceana MGBR has been met, as post-remedial risks to human and ecological receptors are an acceptable level for UU/UE of the site. Therefore, NFA for NAS Oceana MGBR is warranted.

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Date: Jun 9, 2020

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