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FINAL SITE MANAGEMENT PLAN FOR FISCAL YEARS 2014 AND 2015 CHEATHAM ANNEX

FISC WILLIAMSBURG VA

10/1/2013

CH2M HILL

Site Management Plan
Fiscal Years 2014–2015

Naval Weapons Station Yorktown Cheatham Annex
Williamsburg, Virginia

Contract Task Order WE75

October 2013

Prepared for

Department of the Navy
Naval Facilities Engineering Command
Mid-Atlantic

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Prepared by

CH2MHILL

Virginia Beach, Virginia

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Acronyms and Abbreviations

AM	Action Memorandum
AOC	area of concern
bgs	below ground surface
CAX	Cheatham Annex
CCR	Construction Closeout Report
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CIP	Community Involvement Plan
COPC	contaminant of potential concern
CTE	central tendency exposure
cy	cubic yard
DCE	dichloroethene
DD	Decision Document
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethylene
DDT	dichlorodiphenyltrichloroethane
DoD	Department of Defense
DOI	Department of the Interior
EE/CA	Engineering Evaluation/Cost Analysis
ER	Environmental Restoration
ERA	ecological risk assessment
ERP	Environmental Restoration Program
ESI	Expanded Site Inspection
ESS	Explosives Safety Submission
ESV	Ecological Screening Value
ft	feet/foot
ft/day	feet per day
ft^2	square feet
$ft^{2/}$day	square feet per day
FFA	Federal Facilities Agreement
FS	Feasibility Study
FY	Fiscal Year
HHRA	human health risk assessment
HI	hazard index
HRS	Hazard Ranking System
IAS	Initial Assessment Study
LUC	Land Use Control
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
MCL	maximum contaminant level
MEC	munitions and explosives of concern
mg/kg	milligrams per kilogram
MMRP	Military Munitions Response Program

NAVFAC	Naval Facilities Engineering Command
NCP	National Contingency Plan
NFA	no further action
NFRAP	No Further Response Action Plan
ng/kg	nanograms per kilogram
NPL	National Priorities List
PA	Preliminary Assessment
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PP	Proposed Plan
ppm	parts per million
RA	Removal or Remedial Action
RAB	Restoration Advisory Board
RBC	risk-based concentration
RC	response complete
RD	Remedial Design
RDX	cyclotrimethylene trinitroamine
RI	Remedial Investigation
RIP	remedy in place
RME	reasonable maximum exposure
ROD	Record of Decision
SERA	Screening Ecological Risk Assessment
SI	Site Investigation/Inspection
SMP	Site Management Plan
SSP	Site Screening Process
SVOC	semivolatile organic compound
TBD	to be determined
TCE	trichloroethylene
TCLP	toxicity characteristic leaching procedure
TCRA	Time-critical Removal Action
TM	Technical Memorandum
TNT	trinitrotoluene
UFP-QAPP	Uniform Federal Policy for Quality Assurance Project Plans
UFP-SAP	Uniform Federal Policy for Sample Analysis Plan
USEPA	United States Environmental Protection Agency
UU/UE	unlimited use and unrestricted exposure
VDEQ	Virginia Department of Environmental Quality
VOC	volatile organic compound
WPNSTA	Naval Weapons Station

SECTION 1

Introduction

This document presents the fiscal years (FYs) 2014 through 2015 annual amendment to the Site Management Plan (SMP) for Naval Weapons Station (WPNSTA) Yorktown Cheatham Annex (CAX), Williamsburg, Virginia. This SMP meets the requirements of the Federal Facilities Agreement (FFA) between the United States Environmental Protection Agency (USEPA) Region 3, Commonwealth of Virginia Department of Environmental Quality (VDEQ), and Naval Facilities Engineering Command (NAVFAC) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (USEPA et al., 2005). This annual amendment to the SMP is being submitted in accordance with the requirements of the FFA. **Figure 1-1** illustrates the location of CAX within the southeast portion of the Commonwealth of Virginia.

The purpose of the SMP is to provide a management tool for NAVFAC Mid-Atlantic, WPNSTA Yorktown, CAX, VDEQ, USEPA, and their consultants to use in planning, reviewing, and setting priorities for all response activities at CAX. The SMP establishes schedules and conceptual approaches for continued CERCLA activities at CAX Environmental Restoration (ER) Program sites. The prioritization of activities, proposed schedules, and work descriptions were jointly developed by the Navy, USEPA, and VDEQ on the basis of goals agreed to by all parties.

The SMP establishes schedules and conceptual approaches for continued CERCLA activities at CAX ER Program sites. The schedules and work descriptions consist of the following:

- Site descriptions and proposed activities for the current FY
- Conceptual schedules and general work approaches for activities planned for the two-year period FY 2014 through FY 2015

The drafting of this SMP was completed in October 2013 with concurrence from the USEPA and VDEQ; however, in accordance with the FFA, this SMP will not be considered as a Final document until funds authorized and appropriated by Congress are received by the Environmental Restoration, Navy Account, so that the planned work for this fiscal year, as defined in this SMP, can be accomplished. The SMP is a working document that is updated yearly to maintain current documentation and summaries of environmental actions at CAX. This SMP updates and supersedes the FYs 2013 to 2014 SMP (CH2M HILL, 2013a).

V:\USNAVFACENGCOM\CHEATHAMANNEX\MAPFILES\SMP_FY2013-2014\FIGURE 1-1 - LOCATION OF CAX.MXD BHATHAWA 5/24/2012 11:09:47 AM

Legend

Activity Boundaries

City/County Boundaries

N
W E
S

0 0.6 1.2 Miles

Figure 1-1
Location of CAX
Site Management Plan for FY2014 to FY2015
Naval Weapons Station Yorktown, CAX
Williamsburg, Virginia

CH2MHILL

SECTION 2

Background and Regulatory Framework

2.1 CAX Activity Description

CAX is located on the site of the former Penniman Shell Loading Plant, which was a large powder- and shell-loading facility operated during World War I. The Penniman facility closed in 1918 and between 1918 and 1923 was dismantled. Between 1923 and 1943, the property was used for farming or was left idle, until CAX was commissioned in 1943 as a satellite unit of the Naval Supply Depot to provide bulk storage facilities and serve as an assembly and overseas shipping point throughout World War II. CAX is bordered to the east by the York River, to the north by Queen Creek, to the west by the Queens Lake neighborhood, and to the south by King Creek and WPNSTA Yorktown (**Figure 1-1**). At inception, CAX occupied approximately 3,349 acres; however, several portions of the original base were declared surplus and transferred to other government jurisdictions, including the Department of Interior (DOI) (i.e., National Park Service), the Commonwealth of Virginia, and York County. CAX is currently comprised of 2,300 acres and is divided into two separate parcels, with the larger parcel situated along the banks of the York River and the smaller parcel located south of the Colonial Parkway and encompassing Jones Pond (**Figure 1-1**). Included in the 2,300 acres is the 786-acre former DOI property, which was located north and west of Site 2 up to Queens Creek and reacquired by the Navy in July 2004. Almost all of the activities at CAX (administration, training, maintenance, support, and housing) take place in the larger portion of the Installation. The smaller parcel is used mainly as a watershed protection area. In July 1987, CAX was designated the Hampton Roads Navy Recreational Complex. Today, the mission of CAX includes supplying Atlantic Fleet ships and providing recreational opportunities to military and civilian personnel.

2.2 CAX Environmental History

2.2.1 Regulatory History

The first environmental investigation completed at CAX was conducted by the Navy prior to state and federal regulatory oversight of environmental activities at the installation. A Navy Initial Assessment Study (IAS) was conducted in 1984 and identified 12 potentially contaminated areas (C.C. Johnson & Associates and CH2M HILL, 1984). The IAS recommended additional investigation at Sites 1, 9, 10, and 11. In 1998, the Navy, USEPA, and VDEQ performed a site visit and identified five additional potential source areas and designated them as Areas of Concern (AOCs) 1 through 5. In 1999, USEPA identified potential sources associated with the past Penniman Facility and designated this area as AOC 6. CAX was included on the National Priorities List (NPL) in January 2001 with a Hazard Ranking System (HRS) score of 48.7. Additional investigations and activities were conducted in 2002.

In 2003, the Navy, USEPA, and VDEQ agreed that no further action (NFA) was necessary for some of the sites and a No Further Response Action Planned (NFRAP) Decision Document (DD) for Sites 2, 3, 5, 6, 8, and 10 was signed (Baker, 2003). The response complete (RC) decision for Site 12 was documented in a 2004 NFRAP DD (Baker, 2004a).

In 2004, the Navy also identified AOC 7 (Drum Disposal Area and Can Pit) as an area of concern for desktop audit. This AOC was included in Appendix B of the FFA which was signed in March 2005 and identified the 12 sites initially identified in the IAS and seven AOCs (USEPA et al., 2005). Sites 1, 4, 7, and 11 are identified in the FFA Findings of Fact for CERCLA implementation with ultimate closure under a Record of Decision (ROD). During field investigations in 1999, it was determined that the area thought to be Site 7 (a World War I era disposal site) was actually a more recent disposal area. The actual location of Site 7 was later identified approximately 500 feet (ft) to the north; therefore, the area previously thought to be Site 7 was re-designated as AOC 8 (Area South of Site 7). In 2006, the Navy initiated investigations of numerous Military

Munitions Response Program (MMRP) sites including the other-than-operational Marine Pistol and Rifle Range at CAX, which had an NFA determination (CH2M HILL, 2008a). In 2009, the NFA ROD for Site 1 was signed (CH2M HILL, 2009a), and the Navy designated Penniman Lake as AOC 9. In 2010, the NFA ROD for Site 11 was signed (CH2M HILL, 2010). In 2011, the CAX Partnering Team agreed to conduct an RI at Youth Pond because it has a catch and release fishing restriction in place (based on the detection of bioaccumulative constituents). Although AOC 8, the Marine Pistol and Rifle Range, AOC 9, and Youth Pond were not included in the FFA, investigations at these sites have been or will be conducted following CERCLA guidance and are included in this document.

Table 2-1 identifies both active sites and AOCs addressed under CERCLA at CAX and those sites for which it was determined that no action or NFA is required. **Figure 2-1** shows the location of each site/AOC at CAX. Active sites and AOCs are discussed in Section 3. Inactive sites (those with no action or NFA decisions) will be removed from Section 3 in the SMP update subsequent to their signed DD, with the exception of the one CAX MRP site, which will remain in the SMP's MRP section although it has had an NFA decision. The FY08-09 SMP update (CH2M HILL, 2008b) was a complete revision of the CAX SMP and is considered a "baseline" SMP, as it includes descriptions for all CAX sites, even those that had NFA decisions prior to FY08 (i.e., Site 2, Site 3, Site 5, Site 6, Site 8, Site 10, Site 12, AOC 4, and AOC 5). Thus, it is a good reference document for those sites.

Partnering

The Navy works in partnership with USEPA and VDEQ and has established a formal CAX Partnering Team to implement CERCLA. Partnering Team decisions are documented through consensus statements and/or through the meeting minutes; a summary of Team[1] consensus statements is presented in **Table 2-2**.

2.2.2 Hydrogeologic Setting

CAX is situated within the Virginia Coastal Plain Physiographic Province, which is underlain by unconsolidated sediment of the Quaternary, Tertiary, and Cretaceous ages. These sediments dip to the southeast, with a combined thickness of 1,900 ft in the vicinity of CAX. Deposition and erosion associated with fluctuating sea levels resulted in terraces that decrease in topographic elevation in a stair-step pattern with scarps, oriented north to south, that delineate the eroded shoreline along the toe of each terrace.

A total of ten geologic formations have been identified (Brockman et al., 1997) beneath CAX. The upper most geologic formations consists of alluvial, colluvial, and marsh deposits composed of silt, sand, and pebbles with some clay. The geologic units are grouped into hydrostratigraphic units based upon hydraulic characteristics. The aquifers separated by confining/semi-confining units relevant to CERCLA investigations at CAX are, from youngest to oldest (i.e., from shallow to deep); the Columbia aquifer, the Cornwallis Cave aquifer, and the Yorktown-Eastover aquifer. Groundwater flow is locally controlled by topography with discharge to nearby surface water bodies and a primary flow and discharge direction toward the York River.

When present, the Columbia aquifer ranges in thickness from 5 to 10 ft thick, with horizontal hydraulic conductivity between about 0.4 to 8 feet per day (ft/day) and vertical hydraulic conductivity between 1.7×10^{-4} to 1.7×10^{-1} ft/day (Brockman et al., 1997). The hydraulic properties of the Cornwallis Cave aquifer are highly variable due to depositional effects and physical and geochemical weathering. In general, horizontal hydraulic conductivity ranges from 0.3 to 9 ft/day and vertical conductivity ranges from 6.2×10^{-4} to 2.4×10^{-1} ft/day (Speiran and Hughes, 2001).

The Yorktown-Eastover aquifer extends across all of CAX and ranges from 60 to 100 ft thick. Horizontal hydraulic conductivity ranges from 0.004 to 3 ft/day and vertical hydraulic conductivity ranges from 1.7×10^{-5} to 4.8×10^{-1} ft/day. Transmissivity of the aquifer ranges from 0.5 to 40 square feet per day (ft^2/day), with groundwater flow from west-to-east.

[1] WPNSTA Yorktown and CAX conducted joint Partnering from 2000 through September 2008, when the bases split into separate Partnering Teams.

2.3 CERCLA Process

The following sections provide an overview of the CERCLA process. The objectives of the CERCLA process are to evaluate the nature and extent of contamination at a site, and to identify, develop, and implement appropriate remedial actions (RAs) in order to protect human health and the environment. The major elements of the CERCLA process are identified below and described in greater detail in **Table 2-3**:

- Preliminary Assessment (PA)
- Site Investigation/Inspection (SI)
- Remedial Investigation/Feasibility Study (RI/FS)
- Treatability Study
- Engineering Evaluation/Cost Analysis (EE/CA) and Removal Action (may be implemented at any time in the CERCLA process)
- Proposed Plan (PP) and ROD
- Five-Year Review
- Remedial Design (RD) and RA
- Post-RA Monitoring and Reporting
- RC/Remedy In Place (RIP)

2.3.1 Military Munitions Response Program

The Department of Defense (DoD) has established the Military Munitions Response Program (MMRP) under the Defense Environmental Restoration Program (DERP) to address munitions and explosives of concern (MEC) and munitions constituents (MCs) at other than operational ranges. The DoD and the Navy are establishing policy and guidance for response actions under the MMRP; however, the key program drivers developed to date conclude that munitions response actions will be conducted under the process outlined in the National Contingency Plan (NCP) as authorized by CERCLA.

2.3.2 Community Participation

In conjunction with WPNSTA Yorktown, CAX has developed a Community Involvement Plan (CIP) (CH2M HILL, 2009b) and established a Restoration Advisory Board (RAB) comprised of members of the community, local environmental group members, and state and federal officials who meet semi-annually (May and November) to keep the community informed on environmental issues at WPNSTA Yorktown and CAX.

The documents prepared for the program are maintained in the administrative record file for review by the public. The index of CAX Administrative Records is available at the information repository, the York County Public Library at 8500 George Washington Memorial Highway, Yorktown, Virginia. Documents from the administrative record are available through the CAX public website: http://go.usa.gov/DynP.

For additional information, to review documents, make comments or express concerns please contact:

NAVFAC Mid-Atlantic
Public Affairs Office
9742 Maryland Avenue.
Norfolk, VA 23511-3095
(757) 445-8732, ext. 3096
wpnsta.pao@navy.mil

Additional information regarding RAB meetings or environmental cleanup programs at CAX may also be obtained from the Naval Weapons Station Yorktown/CAX Public Affairs Officer:

Mr. Mark Piggott, Public Affairs Officer
160 Main Road
Yorktown, VA 23691-0160
Phone: (757) 887-4939

Table 2-1
CAX Site Summary
FY14-15 SMP

Site ID	Site Name	Site Description	EPA HRS (Source #)	FFA Status (1994)[1]	Current CERCLA Status	Comments/Notes
Site 1	Landfill Near Incinerator	1.3 acre landfill; 1999 removal action of river bank debris and bank stabilization; 2003 removal of surface debris; 2003 removal action of soil; 2005 removal action of soil & debris and breakwater construction; 2007 removal action of soil/SD	Source scored (1)	Findings of Fact CERCLA RI/FS/PP/ROD	Response Complete (all media)	NFA ROD for all media (signed September 2009)
Site 2	Contaminated Food Disposal Area	50 ft diameter food disposal pit; 12 to 15 feet deep No SW/SD associated with site	Not identified in HRS	Appendix C - NFA	Response Complete (all media)	NFRAP for all media (signed August 2003)
Site 3	Submarine Dye Disposal Area	55 gallon drum storage area; 1970 removal action of drums No SW/SD associated with site	Source not scored	Appendix C - NFA	Response Complete (all media)	NFRAP for all media (signed August 2003)
Site 4	Outdated Medical Supply Disposal Area	Ravine used as a disposal area covered with soil; 1998 removal action of surface debris	Source not scored	Findings of Fact CERCLA RI/FS/PP/ROD	RI (all media)	RI sample data QC, upload, and evaluation and draft RI report (with BERA) preparation (2013)
Site 5	Photographic Chemicals Disposal Area	Borrow pit used as a disposal area No SW/SD associated with site	Source not scored	Appendix C - NFA	Response Complete (all media)	NFRAP for all media (signed August 2003)
Site 6	Spoiled Food Disposal Area	12 to 15 feet deep disposal pit No SW/SD associated with site	Source not scored	Appendix C - NFA	Response Complete (all media)	NFRAP for all media (signed August 2003)
Site 7	Old DuPont Disposal Area	Large disposal area; 2004-2006 removal action of surface debris and geotube installation; 2008 removal action of soil/waste	Source not scored	Findings of Fact CERCLA RI/FS/PP/ROD	RI (all media)	RI UFP-SAP and Field Investigation (2013)
Site 8	Landfill Near Building CAD 14	0.25 acre landfill No SW/SD associated with site	Source not scored	Appendix C - NFA	Response Complete (all media)	NFRAP for all media (signed August 2003)
Site 9	Transformer Storage Area	7000 square foot storage area;1980 area was graded and covered with gravel No SW/SD associated with site	Source scored (2)	Appendix A - CERCLA SI/SSP	ESI	ESI UFP-SAP and Field Investigation (2013)
Site 10	Decontaminated Agent Disposal Area Near First Street	75 to 100 gallon decontamination agent disposal area No SW/SD associated with site	Source not scored	Appendix C - NFA	Response Complete (all media)	NFRAP for all media (signed August 2003)
Site 11	Bone Yard	2.7 acre storage area; 1999 removal action of surface debris	Source scored (3)	Findings of Fact CERCLA RI/FS/PP/ROD	ROD (all media)	NFA ROD for all media (signed August 2010)
Site 12	Disposal Site Near Water Tower	Scrap metal disposal area No SW/SD associated with site	Not identified in HRS	Appendix C - NFA	Response Complete (all media)	NFRAP for all media (signed April 2004)
AOC 1	Scrap Metal Dump	Consists of two areas: 0.2 acre northern area and 0.4 acre southern area	Source not scored	Appendix A - CERCLA SI/SSP	ESI	ESI UFP-SAP and Field Investigation (2013)
AOC 2	Dextrose Dump	1 acre disposal Area; 1998 housekeeping operation of surface debris No SW/SD associated with AOC	Source not scored	Appendix A - CERCLA SI/SSP	SI Addendum for Additional Soil Sample Collection Consensus Letter to Document SI Recommendation for NFA for Groundwater	UFP-SAP Addendum and Field Investigation (2013) Consensus Letter (2013)
AOC 3	CAD 11/12 Pond Bank	Pile of metal banding, empty drums 1999 FI; SW/SD associated with AOC investigated as Site 4	Not identified in HRS	Appendix A - CERCLA SI/SSP	Response Complete Incorporated into Site 4	Response Complete
AOC 4	Outdated Medical Supply Disposal Area	Determined to be the same area as Site 4	Not identified in HRS	Not Identified	Response Complete Incorporated into Site 4	Response Complete
AOC 5	Debris Area	Determined to be the same area as Site 1	Not identified in HRS	Not Identified	Response Complete Incorporated into Site 1	Response Complete
AOC 6	Penniman AOC Penniman Shell Loading Plant operated by DuPont Corporation TNT manufacturing plant in 1916 (Plant demolished in 1925)	Earthen ammonia settling pits	Source scored (4)	Appendix A - CERCLA SSA/SSP	ESI	ESI UFP-SAP and Field Investigation (2013)
		Concrete-lined TNT graining house sump	Source scored (5)		RI (all media)	RI UFP-SAP and Field Investigation (2013)
		Earthen and brick-lined TNT catch box ruins	Source scored (6)		RI (all media)	RI UFP-SAP and Field Investigation (2013)
		Metallic waste slag material	Source scored (7)		UFP-SAP Addendum to Collect Soil Samples	Technical Memorandum and EE/CA (2013)
		1918 wooden drum storage	Source scored (8)		Consensus Letter to Document SI Recommendation for NFA for All Media	Consensus Letter (2013)
AOC 7	Drum and Can Disposal Area	4800 ft^3 disposal area containing cans of PCE; 2006 removal action of surface debris	Not identified in HRS	Appendix B - Preliminary screening area	ESI (Groundwater) EE/CA for Soil Hotspot Removal	ESI UFP-SAP and Field Investigation (for Groundwater) (2013) EE/CA (for soil and debris) (2013)
AOC 8	Area South of Site 7	Debris disposal area; formerly referred to as Site 7	Not Scored	Not Identified	RI (all media)	RI UFP-SAP and Field Investigation (2013)
AOC 9	Penniman Lake	48-acre surface water body located in the southeastern portion of CAX 2000 Pond Study resulted in "catch and release" fishing restrictions because of bioaccumulative constituent detections (mainly Aroclor -1260) in sediment (restriction is a conservative measure and not based on toxicity testing)	Not Scored	Not Identified	SI (soil/sediment)	SI sample data QC, upload, and evaluation; Step 2 Technical Memoradum (Part 1); and Tissue Analyses (2013)
(Not assigned)	Youth Pond	Approximate 2.5-acre surface water body located between D Street and the York River, east (and downgradient) of Site 4 2000 Pond Study resulted in "catch and release" fishing restrictions because of bioaccumulative constituent detections (mainly Aroclor -1260) in sediment (restriction is a conservative measure and not based on toxicity testing)	Not Scored	Not Identified	RI (all media)	RI sample data QC, upload, and evaluation and draft RI report preparation (2013)
Marine Pistol and Rifle Range	Marine Pistol and Rifle Range	7 acre small caliber munitions range	Not Scored	MRP	Response Complete (all media)	NFA Declaration (ESI, March 2008)

Notes:
[1] -FFA Findings of Fact (pg 16) identified Sites 1, 4, 7, & 11 as RI/FS/PP/ROD for closure, but also identifed these Sites in Appendix A as SSP
NA or NFA Sites

AOC - Area of Concern
CAX - Cheatham Annex
CERCLA - Comprehensive Environmental Response Compensation and Liability Act
EE/CA - Enginnering Evaluation/Cost Analysis
ESI - Expanded Site Investigation
FFA - Federal Facilities Agreement
ft - feet
FS - Feasibility Study
FY - Fiscal Year
GW - Groundwater
HRS - Hazard Ranking Score
NA - No Action
NFA - No Further Action
NFRAP - No Further Response Action Planned
PCE - Tetrachloroethene
PP - Proposed Plan
RI - Remedial Investigation
ROD - Record of Decision
SAP - Sampling Analysis Plan
SD - Sediment
SI - Site Investigation
SW - Surface Water
TM - Technical Memorandum
TNT - Trinitrotoluene
UFP - Unified Federal Policy

Table 2-2
CAX Partnering Team Consensus Statement Summary
FY 14-15 SMP

NUMBER	CONSENSUS STATEMENT NUMBER	DATE	FACILITY	SITE	AOC	TOPIC	CONSENSUS STATEMENT
	NA	10/24/2001	CAX	2		Site 2 – Contaminated Food Disposal Area	The team thinks no further action (NFA) for site review site at end of site visit.
	NA	10/24/2001	CAX	3		Site 3 – Submarine Dye Disposal Area	The team decided to review the site at the end of the site visit.
	NA	10/24/2001	CAX	4		Site 4 – Outdated Medical Supply Disposal Area	The team wants to use the site visit to determine the extent of the debris. S. Milhalko stated that Virginia Deparment of Environmental Quality (VDEQ) would require that site would either have to have removal with backfill or cover such that it would not be uncovered again.
	NA	10/24/2001	CAX	6		Site 6 – Spoiled Food Disposal Area	The team agreed to drive by site to determine location at end of site visit.
	NA	10/24/2001	CAX	12		Site 12 – Disposal Site Near Water Tower	The team proposed that approach be a Site Screening Area (SSA) and during site visit evaluate need for this. For site visit, evaluate a proposed sampling plan to be evaluated during site visit, prepare site map for site visit.
	NA	10/24/2001	CAX		4	Area of Concern (AOC) 4 – IR Site 4 – Outdated Medical Supply Disposal Area	During the site visit, the approach will be evaluated and a decision is to be made.
	NA	10/24/2001	CAX		5	AOC 5 – Debris Area	Group decided to combine AOC 5 and Site 1, eliminate AOC 5.
	NA	10/24/2001	CAX			Site Update	Dave Martin, as topic leader, and other members wanted to focus on reviewing sites proposed for NFA, then review sites during site visit & what the team wants to do during the site visit (drive by versus walk the site).
	NA	10/24/2001	CAX			Site Update	For site visit, the team decided that a technical guide to the sites would be prepared that incorporates previous information on the site, the Partnering Team discussion, approach to the site, data gaps. This package is to include: site descriptions, maps, previous sampling locations, aerial photographs with site locations/approximate boundaries and for some sites a proposed sampling plan.
	NA	12/3/2001				Define Metrics in Partnering Deliverable	Keep as stated in deliverable.
	NA	12/4/2001	CAX	2		Site 2 – Contaminated Food Disposal Area	The team agreed that no further action is warranted at this site given that only spoiled food was disposed of at the site.
	NA	12/4/2001	CAX	4		Site 4 – Outdated Medical Supply Disposal Area	AOC-3 is part of AOC-4, AOC-4 is now Site 4- Outdated Medical Supply Disposal Area.
	NA	12/4/2001	CAX	5		Site 5 – Photographic Chemicals Disposal Area	Due to the small volume of photochemicals disposed in an area that can not be located using historical records and the disposal of these wastes in a "marl" pit consisting of clayey native soils that would prohibit transport of the photochemicals, no further action is warranted at this site.
	NA	12/4/2001	CAX	6		Site 6 – Spoiled Food Disposal Area	The team agreed that no further action is warranted at this site given that only spoiled food was disposed of at the site.
	NA	12/4/2001	CAX	8		Site 8 - Landfill Near Building CAD 14 Site Visit	On page 4-16 of handout, last paragraph, delete first sentence "The VDEQ….site."
	NA	12/4/2001	CAX	8		Site 8 - Landfill Near Building CAD 14 Site Visit	The team agreed that no further action is warranted at this site given that only non-hazardous materials such as spoiled meat, spoiled candy, and clothing were disposed at the site and all anecdotal records indicate that the clothing was not impregnated with any chemicals.
	NA	12/4/2001	CAX	11		Site 11 – Bone Yard	The team agreed to investigate Penniman Lake and Site 11 separately. Penniman Lake is already in the budget cycle as a separate site.
	NA	12/4/2001	CAX	12		Site 12 – Disposal Site Near Water Tower	The team agreed that further sampling is required at the site prior to making a NFA decision. The approach agreed to consist of a grid of five soil samples (1 center, 4 corner points). One sample will be analyzed for Target Analyte List (TAL)/Target Compound List (TCL) and the remaining 4 will be analyzed for TAL metals only. An additional three soil samples will be collected between the railroad tracks adjacent to the site. These analytical results will be compared to the grid analytical results to determine whether or not the railroad maybe a source area.
	NA	2/5/2002	CAX	9		Site 9 - Transformer Storage Area	Based upon review of polychlorinated biphenyl (PCB) confirmation data, proceed with NFA for Site 9.
	NA	2/5/2002	CAX	11		Site 11 – Bone Yard	The team agreed with the proposed sampling plan pending resolution of their comments.
		2/5/2002	CAX	12		Site 12 – Disposal Site Near Water Tower	The team agreed to analyze all soil samples for TCL organics in addition to the planned TAL Metals.
	NA	2/5/2002	CAX		1	AOC 1 - Scrap Metal Dump	AOC 1 will continue as an AOC, a Work Plan will be developed for the debris removal. If no significant contamination is found, based on confirmatory soil sampling, (i.e.: meet Eco/HH requirements), the AOC will be closed. The Work Plan will be flexible to allow for in-field adjustments.

Table 2-2
CAX Partnering Team Consensus Statement Summary
FY 14-15 SMP

NUMBER	CONSENSUS STATEMENT NUMBER	DATE	FACILITY	SITE	AOC	TOPIC	CONSENSUS STATEMENT
	NA	2/5/2002	CAX			GIS Needs Assessment	The Draft Final CAX GIS Needs Assessment submitted in September 2001 will be considered final. Baker will proceed with the awarded CAX GIS Implementation.
		2/5/2002	WPNSTA/CAX	12		5-Year Review	The team agreed to form a subgroup to research and report out at the March meeting on this issue. The subgroup consists of Bob Stroud and Jennifer Davis.
	NA	2/5/2002	WPNSTA/CAX			2002 Goals Update	The team agreed to include the Goals as part of each meeting's minutes.
	NA	2/5/2002	WPNSTA/CAX			Consensus Statement Documentation	The team agreed to document Consensus Statements by site as an addendum to the Site Management Plan. Mary is to evaluate possible methods (by site, chronologically, etc.) and report back to the team during the March Meeting.
	NA	2/5/2002	WPNSTA/CAX			Draft FFA	Scott Park/Jennifer Davis to prepare Draft FFA Addendum for counsel review and submittal to USEPA and VDEQ.
1	3/13/2002-1	3/13/2002	WPNSTA/CAX			Documentation of Consensus Statements	The team agreed to document Consensus Statements by site as an addendum to the Site Management Plan. A tracking number will be used to track the documents consisting of date and numerical sequence (i.e.: Month/Day/Year-Number – 3/13/02-1).
3	4/23/2002-3	4/23/2002	WPNSTA/CAX			Identification of new sites	The Team agrees that the Federal Facilities Agreement (FFA) (Sections 9.3a and 9.3b) gives the team the authority to add newly identified sites to the Site Management Plan (SMP).
4	4/24/2002-4	4/24/2002	WPNSTA/CAX			Site Management Plan	The team agreed to go final with the Fiscal Year (FY) 2002/2003 Draft SMP and revise text for the FY 2003/2004 submittal. Baker will provide Final covers for the FY 2002/2003 SMP.
5	4/24/2002-5	4/24/2002	CAX	11		Approval of Proposed Field Investigation Sampling Locations presented in the Project Plans for CTO 236	The team agreed with the sampling location revisions made during the site visit and agreed that the field investigation can be performed. The field activities will be scheduled for May 2002.
5	4/24/2002-6	4/24/2002	CAX		6 - Penniman	Penniman AOC Sub-areas Investigation approach	The Team agrees to follow a general approach to the Penniman AOC sub-areas as follows: 1918 Drum Storage Area: Verify whether or not the kegs were used to store Ammonium Nitrate. Consider collecting surface soil samples between Buildings 225 and 113. Waste Slag Area: Based upon the understanding that the waste slag is most likely associated with maintenance activities along the rail line, a sampling approach will be developed.
7	4/24/2002-7	4/24/2002	WPNSTA/CAX			Community Relations Plan	The Team agrees to go final with the Community Relations Plan. If appropriate, final covers and spines will be submitted.
9	8/6/2002-9	8/6/2002	CAX	2, 3, 5, 8, 9, 10, 12		NFRAP Decision Document Format	The Team agreed to use the Quantico format for the NFRAP document. The team will review the No Further Response Action Plan (NFRAP) documents before finalizing them.
11	8/6/2002-11 **ON HOLD**	8/6/2002	CAX	3		Fluorescein Dye	The Team agrees that since Fluorescence Dye is still in use, is very water soluble hence dilutes infinitely.
12	9/18/2002-12	9/18/2002	WPNSTA/CAX			New technical team member	The Team agreed to add Marlene Ivester as a technical member to the team.
13	9/18/2002-13	9/18/2002	WPNSTA/CAX			Facilitator	The team agreed a facilitator is needed for a few meetings.
15	10/23/2002-15	10/23/2002	WPNSTA/CAX			N/A	The Team agreed to add a goal to the FY03 Team Goals to be self-facilitating by end of third Quarter 2003 (5 additional meetings).
17	10/23/2002-17	*12/4/2002 Revised*	WPNSTA/CAX			WPNSTA-SSAs 3-24; 23-26; 2, 8, 18 & SSA 14; GWOU I, 27-30 CAX-1, 4 & 9, 11, Background Study, NFRAP 2, 3, 5, 6, 9, 10 & 12	The WPNSTA Yorktown/CAX Partnering Team empowers the ecological technical support team to address and resolve ecological issues for various sites at WPNSTA Yorktown/CAX (see table below) to meet the dates and priority specified by the WPNSTA Yorktown/CAX Team, with Ed Corl to take the lead on meeting the schedule determined by the Team. WPNSTA: SSAs 3-24 Site Screening Process (SSP); 23-26 DF Remedial Investigation (RI); 2, 8, 18 & SSA 14 DF RI; Groundwater Operatable Unit (GWOU) I Draft WP; 27-30 Draft RI CAX: 1 DF RI; 4 & 9 Draft RI (Screening Ecological Risk Assessment (SERA)); 11 Draft RI, Draft Background Study; 2, 3, 5, 6, 9, 10 & 12 Draft NFRAP
18	12/5/2002-18	12/5/2002	WPNSTA/CAX	21, 22		WPNSTA Sites 21 & 22	Based upon EPA Region III comments, Sites 21 and 22 Record of Decisions (RODs) will be rewritten as RODs with no institutional controls (ICs) because they were remediated to residential levels.
19	12/5/2002-19	12/5/2002	WPNSTA/CAX			Site Action Status Report	The Team agrees to use the SASR as a tracking tool and add it to the standard meeting format.
20	12/5/2002-20	12/5/2002	WPNSTA/CAX			Action Item List	The Team agreed that the Action Item List will be addressed during the Agenda Building Call with respect to whether or not the Action Item has been completed. If completed, a "C" will be put in the Outcome column of the Action Item list and the item will not be addressed during the subsequent Partnering Team Meeting.
21	1/29/2003-21	1/29/2003	WPNSTA/CAX			CAX Site 1 Baseline Risk Assessment	The eco subgroup discussed the issues for the CAX Site 1 RI and determined that a baseline risk assessment was warranted for the wetland area based upon a conference call prior to the December Partnering Meeting. The Navy RPM determined that based upon the existing ROD schedule and funding execution for the site, it was determined that (revised per team concurrence by MM 3/12/03) the ROD and funding schedule could not be met. Therefore, the Navy recommended that an EECA for soils/debris removal at CAX Site 1 would be the best approach. The Team agrees upon this approach.

Table 2-2
CAX Partnering Team Consensus Statement Summary
FY 14-15 SMP

NUMBER	CONSENSUS STATEMENT NUMBER	DATE	FACILITY	SITE	AOC	TOPIC	CONSENSUS STATEMENT
23	3/13/2003-23	3/13/2003	CAX	1		Site clean-up goals	The Team agrees that the Draft Final Engineering Evaluation/Cost Analysis (EE/CA) for CAX Site 1 can be distributed for public comment without specific site clean-up goals. Specific clean-up goals will be presented to the Team for review and approval, and final clean-up goals will be incorporated in the Final EE/CA.
25	4/29/2003-25	4/29/2003	CAX	1		Clean-up goals at CAX Site 1	The Team agrees to the clean-up goals for the planned removal action under the EE/CA for CAX Site 1 established during a conference call on April 14, 2003 (see the attached table).
27	6/11/2003-27	6/11/2003	CAX	1		Concurrence on CAX Site Removal	USEPA Region III, Virginia Department of Environmental Quality and Atlantic Division, Naval Facilities Engineering Division agree to the proposed removal action at Cheatham Annex Site 1 – Landfill Near the Incinerator as documented in the Draft Final April 2003 EE/CA and the Action Memorandum.
28	6/17/2003-28	6/17/2003	CAX	1		CAX Site 1 RI Schedule	For CAX Site 1, the Team agrees: 1. Issue RI as a Final Round I RI with replacement pages and cover letter explaining the decision rationale. 2. Defer the Proposed Plan (PP) & ROD for the site until after completion of wetlands Baseline Ecological Risk Assessment (BERA) and Round II RI for sediments. 3. Issue a letter to file that the Feasibility Study (FS) will be deferred until completion of the Round II RI.
29	6/17/2003-29	6/17/2003	CAX	2, 3, 5, 6, 8, 10		CAX Sites 2, 3, 5, 6, 8 & 10, No further action decision	The Team agrees with the NFA remedy for CAX Sites 2, 3, 5, 6, 8 and 10 based upon the information presented for the Draft NFRAP Decision Document.
31	10-30-03-31	10/30/2003	CAX	7		CAX Site 7 TCRA	Based upon the landfill's proximity to the York River and the erosional damage associated with Hurricane Isabel, the team agrees that additional funding is necessary for a Time Critical Removal Action (TCRA) at CAX Site 7 in order to stabilize the shoreline. If additional FY 2004 funds can be obtained, the team agrees to delineate and characterize the landfill and determine the feasibility of landfill removal in the near term.
35	3-9-04-35	3/11/2004	CAX	12		Site 12 NFRAP	The team agrees with the NFA remedy for CAX Site 12 – Disposal Site Water Tower based upon the no further action remedy recommended in the Technical Memorandum submitted for review on January 12, 2004. NFRAP Decision Document with a Final Technical Memorandum as an appendix will be prepared for submittal by March 31, 2004 in accordance with the annual team 2004 goals.
36	3-22-04-36	3/22/2004	CAX	7		CAX Site 7	Based upon the field investigation conducted at CAX Site 7N, as summarized in the Draft Trenching Letter Report dated 19 March 2004, the team has agreed to move forward with a TCRA Action Memorandum as an interim action that will recommend appropriate erosion control and shoreline stabilization for the site. The team also agrees that removal of the CAX Site 7N landfill will be accomplished under an EE/CA when funding is available. While the team agreed that an esthetic clean up of the beach in the vicinity of the landfill does little to mitigate risk, the team agreed to move forward with a beach cleanup at the request of the Navy.
38	5-19-04-38	5/19/2004	WPNSTA/CAX			BTAG	The Yorktown/CAX Partnering Team agrees that the role of USEPA Biological Technical Assistance Groug (BTAG) members will be changed from Adjunct Member to Technical Member.
48	4-28-08-48	4/28/2008	CAX	1		CAX Site 1 GW	The Partnering Team agrees potential groundwater risks at CAX Site 1 to be acceptable for unrestricted use/unrestricted exposure as presented in the Groundwater Risk Management Technical Memorandum.
NA	(Documented in a Tech Memo)	5/22/2008 (signed)	CAX	1		CAX Site 1 Waste, Soil and Sediment	The Partnering Team agrees that NFA is warranted for waste, soil, and sediment at CAX Site 1 as presented in the Documentation for No Further Action (NFA) Regarding Site Waste, Soil, and Sediment technical memorandum.
NA	(Documented in Meeting Minutes)	3/5/2009	CAX			Add'l EPA concerns regarding remanents of former Penniman Shell Loading Plant	Team agreed to the following paths forward: • <u>In-ground batteries</u> – Could not locate. Plan to conduct another site visit in May 2009. • <u>Mixing Tanks</u> – Based on the site visit and documentation, agreement that the "mixing tanks" were in fact latrines/privies and no further action is necessary. • <u>Large Drums with side ports</u> – Soil surrounding the one known drum was sampled and nothing was detected. If others are found, additional investigations should be conducted, however at this time, no further action is needed. • <u>Detonation craters</u> – Collect one DPT soil and groundwater sample for explosives and metals near where craters are concentrated. • <u>Fuse Pit</u> – The Navy plans on digging around the footer of the fuse pit to look for piping. The Navy also will excavate around the other side of the berm adjacent to the TNT Catch Box Ruins and around the Ammonia Settling Pit (AOC 6) to look for piping. The Navy will be researching Penniman archives at the Hagley Museum for blueprints related to the TNT Catch Box Ruins, Ammonia Settling Pits, and booster test pit building. The EPA concerns will be documented in either the AOC 6 SI report or a separate tech memo.
NA	(Documented in Meeting Minutes)	7/16/2009	CAX			Partnering Team Deliverable	The Partnering Team agrees the Partnering Deliverable is final.
NA	(Documented in Conference Call Minutes)	11/20/2009	CAX			PCB Study	The Partnering Team agrees to include the PCB Study in the upcoming Penniman Lake SI to have one comprehensive study.
NA	(Documented in a Tech Memo)	12/14/2009 [last signature (EPA)]	CAX	11		CAX Site 11 Soil and GW	The Partnering Team agrees that NFA is warranted for soil and groundwater at CAX Site 11, as presented in the *Consensus for No Further Action in Soil and Groundwater, Site 11 - Bone Yard* technical memorandum.
NA	(Documented in Meeting Minutes)	3/18/2010	CAX			Use of Preliminary BG 95% UTLs for Draft SI reporting	The Partnering Team agrees to use the preliminary background values (calculated using the method presented in the Background Technical Memorandum that was sent to EPA Las Vegas in February 2010) for draft SI reporting (multiple AOC SI and Sites 4/9 and AOC 3 SI).

Table 2-2
CAX Partnering Team Consensus Statement Summary
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NUMBER	CONSENSUS STATEMENT NUMBER	DATE	FACILITY	SITE	AOC	TOPIC	CONSENSUS STATEMENT
NA	(Documented in Meeting Minutes)	5/12/2010	CAX		9	Penniman Lake SI	The Partnering Team agrees to a step-approach for conducting the Penniman Lake SI.
NA	(Documented in Meeting Minutes)	9/21/2010	CAX		6	Waste Slag Subarea	The Partnering Team agrees to: (1) conduct another site visit in the winter (January timeframe) to try and locate it; (2) collect a downgradient soil sample and analyze for metals if found; and (3) document the results, conclusions, and recommendations in a technical memorandum.
NA	(Documented in Meeting Minutes)	9/21/2010	CAX			Former Penniman Shell Loading Plant "Detonation Crater" Area	The Partnering Team agrees to collect one DPT GW sample from within a detonation crater on the former DOI property and analyze for explosives and metals only.
NA	(Documented in Meeting Minutes)	11/16/2010	CAX	7		SI Fieldwork	The Team agrees the groundwater and soil (pH only) investigation can go forward while the Team discusses the path forward for sediment.
NA	(Documented in a Tech Memo)	12/30/2010	CAX			Background UTLs	The Team accepts the groundwater and soil Background UTL calculation methods.
NA	(Documented through correspondence)	1/18/2011 (VDEQ email) 1/5/2011 (EPA email)	CAX	7		SI UFP SAP	The Team agrees the UFP-SAP will focus on collecting groundwater samples (and soil for pH) and defer sediment discussions to a later date. As a result of deferring the sediment discussions, all information regarding the soil risk screening results will be removed from the UFP-SAP and included in the SI Report.
NA	(Documented in Meeting Minutes)	3/9/2011	CAX		6	Waste Slag Subarea	Waste slag pile found during January 2011 site visit. The Team agrees on an EE/CA to dig up and remove the slag pile, then collect floor and wall samples to be analyzed for inorganic constituents. If the samples indicate that there is no risk, NFA would be documented in a TM. However, how to document closure of the area has not been determined, but likely will be in the future AOC 6 ROD.
NA	(Documented in Meeting Minutes)	3/9/2011	CAX			UFP SAPs	The Team agrees to sign the SAP signature page over sending acceptance emails/letters in order to document concurrence within the SAP itself (better/easier for adminstrative record archive).
NA	(Documented in the Final report)	5/6/2011 (VDEQ letter) 5/3/2011 (EPA letter)	CAX			Background Values	The Team concurs with the background values and use of background data presented in the Background Study report.
NA	(Documented in Meeting Minutes)	5/20/2011	CAX		2	EE/CA	The Team agrees to remove the respirator cartridges only, as the dextrose bottles and military clothing are inert and not CERCLA-related.
NA	(Documented in Partnering Meeting Minutes)	7/27/2011	CAX	4	3	Prelilminary Site 4 RI Discussion (ahead of the UFP-SAP scoping session)	The Team agreed to incorporate AOC 3 into Site 4.
NA	(Documented in Partnering Meeting Minutes)	9/14/2011	CAX	4		RI UFP SAP Scoping Session	The Team agreed to the new Site 4 study area boundary.
NA	(Documented in Conference Call Meeting Minutes)	10/19/2011	CAX		6	Waste Slag Material Subarea	Team agreed to: (1) remove the Waste Slag from the EE/CA; (2) collect surface (0-6") and subsurface (6-24") soil samples for inorganic constituent analysis only; (3) prepare a SAP Addendum, which will detail sample quantity and location and objectives; and (4) prepare a TM to present the data and path forward. In addition, the Team agreed that the results of the inorganic constituent analysis will be screened against the CAX background values, site-specific ecological screening values (ESVs) & Residential RSLs. The Team preferred to capture this agreement in the conference call meeting minutes instead of a formal consensus statement.
NA	(Documented in Partnering Meeting Minutes)	11/16/2011	CAX	Basewide		Risk Screening Constituents that Do Not Have Screening Values	The Team agreed to this process for constituents that do not have screening values: (1) Define surrogate value(s) used. (EPA has the right to refute surrogate value used.) (2) If surrogate value(s) are exceeded, include the constituent as a COPC. (3) However, on a case by case basis, certain constituents (e.g., acetone) may not need to be carried through into a future investigation after the SI phase. Don't write them off in the SI, but include text in the SI to set-up they are probably not a concern, and discuss eliminating them (and the reasons why) in the SAP.
NA	(Documented in Partnering Meeting Minutes)	11/16/2011	CAX	Basewide		Use of maximum background values in the SI phase	The Team discussed and agreed to not use maximum background values in the SI Phase; however, maximum background concentrations could be used to make risk management decisions in future investigations that include quantitative risk assessments.
NA	(Documented in Partnering Meeting Minutes)	11/16/2011	CAX	Basewide		Pesticide Detections	The Team agreed to use the threshold of 50 ppb when making risk management decisions on pesticides (i.e., pesticide detections of 50 ppb or below could be attributable to basewide pesticide use and not attributable to a CERCLA-related release).
NA	(Documented in Partnering Meeting Minutes)	11/16/2011	CAX	Basewide		NFA Decisions	The Team agreed that in order for a site and/or site medium to go NFA, a risk analysis needs to be completed prior to making a decision for site closure.
NA	(Documented in Partnering Meeting Minutes)	1/18/2012	CAX		2, 6 (Waste Slag Pile subarea), 7	EE/CA	The Team agreed to putting the EE/CA for AOC 2, AOC 6 (Waste Slag), and AOC 7 on-hold since additional soil sampling is needed at two of three sites before the removal area can be defined.

Table 2-2
CAX Partnering Team Consensus Statement Summary
FY 14-15 SMP

NUMBER	CONSENSUS STATEMENT NUMBER	DATE	FACILITY	SITE	AOC	TOPIC	CONSENSUS STATEMENT
NA	(Documented in Partnering Meeting Minutes)	3/8/2012	CAX		2	Additional soil sample collection	The Team agreed that the data collected as part of the SAP addendum can be provided in a separate document (i.e., a technical memoradum) and will not hold up finalizing the Multiple AOC SI.
NA	(Documented in Partnering Meeting Minutes)	3/8/2012	CAX	Basewide		"AOC" versus "Site" Nomenclature	The team agreed to leave all current site designations (either “Site” or “AOC”) as they are (meaning none of the current AOCs will be redesignated as a "Site").
NA	(Documented in Partnering Meeting Minutes)	9/12/2012	CAX		2, 6 (Waste Slag Pile subarea), 7	EE/CA	The Team agreed to go ahead and prepare the AOC 7 EE/CA instead of keeping the site's removal action on-hold while additional samples are collected at AOCs 2 and 6.
NA	(Documented in Partnering Meeting Minutes)	11/14/2012	CAX	Partnering		SASR	The Team agreed since the new Goals format requested by Tier 2 is so comprehensive, there is no need to continue updating and using the SASR.
NA	(Documented in Partnering Meeting Minutes)	11/14/2012	CAX	Partnering		Montlhly Calls	The Team agreed to start holding one hour conference calls each month to help the team remain cohesive and up-to-date in between Partnering meetings. The calls will start in January (next Partnering meeting is March '13).
NA	(Documented in Partnering Meeting Minutes)	3/12/2013	CAX	4 and Youth Pond		RI Report	The Team agreed to work out the approach for the data evaluation and how to present in the RI. The approach will be discussed by the Team, and after agreement reached, the RI report will be prepared.
NA	(Documented in Partnering Meeting Minutes)	3/12/2013	CAX		6 (1918 Drum Storage Area)	Consensus Letter	The Team agreed to continue with the preparation and submission of the draft Consensus Letter for Team review.
NA	(Documented in Partnering Meeting Minutes)	4/25/2013	CAX	4 and Youth Pond		RI Report	The Team agreed on the proposed groupings and exposure scenarios.

Notes:
Decisions # 2,6,8,10,14,16,22,24,26,30,32-34,37,39-47 were strictly for WPNSTA
CAX and WPNSTA conducted joint Partnering from 2000 through September 2008, when the bases split into separate Partnering Teams.

AOC - Area of Concern
BERA - Baseline Ecological Risk Assessment
BTAG - Biological Technical Assistance Group
CAX - Cheatham Annex
EE/CA - Enginnering Evaluation/Cost Analysis
FFA - Federal Facilities Agreement
FY - Fiscal Year
GWOU - Groundwater Operable Unit
IC - Institutional Controls
NA - Not Applicable
NFA - No Further Action
NFRAP - No Further Response Action Planned
PCB - Polychlorinated Biphenyl
PP - Proposed Plan
RI - Remedial Investigation
ROD - Record of Decision
SERA - Screening Ecological Risk Assessment
SMP - Site Management Plan
SSA - Site Screening Area
SSP - Site Screening Process
TAL - Target Analyte List
TCL - Target Compound List
TCRA - Time Critical Removal Action
USEPA - United States Environmental Protection Agency
VDEQ - Virginia Department of Environmental Quality
WPNSTA - Naval Weapons Station Yorktown

Table 2-3
Major Elements of the CERCLA Process
FY 14-15 SMP

Preliminary Assessment (PA)	Initiation of concern about a site, area, or potential contaminant source. The PA is a limited-scope assessment designed to distinguish between sites that clearly pose little or no threat to human health or the environment and sites that may pose a threat and require further investigation. Environmental samples are rarely collected during a PA. The PA also identifies sites requiring assessment for possible response actions. If the PA results in a recommendation for further investigation, an SI is conducted.
Site Investigation (SI)	Some sites warrant preliminary or interim investigations, studies, or removal/remedial actions. If it is unclear as to whether a site should be included in the CERCLA RI/FS process, an SI is sometimes conducted to make a general determination if activities at the site have impacted environmental media. SIs typically include the collection of environmental and waste samples to determine which hazardous substances are present at a site and to determine if these substances have been released to the environment.
Remedial Investigation (RI)	During an RI, data is collected to characterize site conditions, determine the nature of the waste, assess risk to human health and the environment, and, if necessary, conduct treatability testing to evaluate the potential performance and cost of the treatment technologies being considered.
Treatability Study (TS)	Treatability studies may be conducted at any time during the CERCLA process. The need for a treatability study generally is identified during the FS. Treatability studies may be classified as either bench-scale (laboratory study) or pilot-scale (field studies). For technologies that are well-developed and tested, bench-scale studies are often sufficient to evaluate performance. For innovative technologies, pilot tests may be required to obtain the desired information. Pilot tests simulate the physical and chemical parameters of the full-scale process, and are designed to bridge the gap between bench-scale and full-scale operations. Treatability studies are performed to assist in the evaluation of a potentially promising remedial technology. The primary objectives of treatability testing are to provide sufficient data to allow treatment alternatives to be fully developed and evaluated during the FS and support the remedial design of a selected alternative.
Engineering Evaluation/Cost Analysis (EE/CA) and Interim Removal Action (IRA)	Removal actions are implemented to clean up or remove hazardous substances from the environment at a specific site in order to mitigate the spread of contamination. Removal actions may be implemented at any time during the CERCLA process. Removal actions are classified as either time-critical or non-time-critical actions. Actions taken immediately to mitigate an imminent threat to human health or the environment, such as the removal of corroded or leaking drums, are classified as time-critical removal actions. Removal actions that may be delayed for 6 months or more without significant additional harm to human health or the environment are classified as non-time-critical removal actions (NTCRA). For a NTCRA, an EE/CA is prepared rather than the more extensive FS. The public has an opportunity to comment on the EE/CA during an announced formal public comment period. An EE/CA focuses only on the substances to be removed rather than on all contaminated substances at the site. It is possible for a removal action to become the final remedial action if the risk assessment results indicate that no further remedial action is required in order to protect human health and the environment.
Feasibility Study (FS)	The FS is the mechanism for the development, screening, and detailed evaluation of alternative remedial actions. The RI and FS can be conducted concurrently; data collected in the RI influences the development of remedial alternatives in the FS, which in turn affect the data needs and scope of treatability studies and additional field investigations. This phased approach encourages the continual scoping of the site characterization effort, which minimizes the collection of unnecessary data and maximizes data quality.
Proposed Plan (PP)	A PP presents the remedial alternatives developed in the FS and recommends a preferred remedial alternative. The public has an opportunity to comment on the PP during an announced formal public comment period. Site information is compiled in an administrative record and placed in the general IR program information repositories established at local libraries for public review. The public comments are reviewed and the responses are recorded in a document called a Responsiveness Summary. At the end of the public comment period, an appropriate remedial alternative is chosen to protect human health and the environment. All parties directly involved in the restoration program (Navy, EPA, and VDEQ) must agree on the selected alternative.
Record of Decision (ROD)	The ROD document is issued to explain the selected remedial action. Public comments received during the PP are addressed as part of the responsiveness summary in the ROD. A notice to the public is issued when the ROD is signed by Navy and EPA following State concurrence.
Remedial Design/Remedial Action (RD/RA)	The final stage in the process is the RD/RA. The technical specifications for cleanup remedies and technologies are designed in the RD phase. If land use controls are a component of the remedy, the Land Use Control Remedial Design is generated during this phase. The RA is the actual construction or implementation phase of the cleanup process.
Remedy In Place	For long-term remedies where it is anticipated that remedial action objectives will be achieved over a long period, the RIP milestone signifies the completion of the remedial action construction phase, and that the remedy has been implemented and has been demonstrated to be functioning as designed (i.e., all testing has been accomplished and the remedy will function properly). Once all RCs and RIPs have been documented for every site at the facility and the terms of the FFA have been met, site closeout and NPL deletion is completed.
Response Complete	Within the CERCLA process there are multiple points at which a decision can be made that no further response action is required; properly documented (necessary regulatory notification or application for concurrence has occurred) these decisions constitute response complete and/or site closeout. RC is the point at which the remedy has achieved the required reduction in risk to human health and the environment (cleanup goals have been met). Response complete is followed by site closeout.
Five Year Review	Five-year reviews generally are required by CERCLA or program policy when hazardous substances remain on site above levels that permit unrestricted use and unlimited exposure. Five-year reviews provide an opportunity to evaluate the implementation and performance of a remedy to determine whether it remains protective of human health and the environment. Generally, reviews are performed five years after the initiation of a CERCLA response action, and are conducted every five years as long as future uses remain restricted. Five-year reviews for Cheatham Annex are performed by the Navy, the lead agency for the site, but EPA retains responsibility for determining the protectiveness of the remedy.

DVR \\MNUSTRCTGFS01\PROJECTS\USNAVFACENGCOM\0450\CHEATHAMANNEX\MAPFILES\SMP_FY2013-2014\FIGURE 2-1 - SITES, AOCS, CERCLA STATUS.MXD JCROCKETT 6/12/2013 11:39:23 AM

Legend

- Active RI/FS (one or more media) Site or AOC
- Active Site or AOC
- No Further Action Site or AOC
- CAX Boundary

N
W E
S

0 300 600 1,200
Feet

Figure 2-1
Sites/AOC Locations and CERCLA Status
Site Management Plan for FY2014 to 2015
Cheatham Annex
Williamsburg, Virginia

CH2MHILL

SECTION 3

CAX Site and AOC Descriptions

This section provides a summary of base-wide investigations as well as a brief history of CERCLA activities (chronology of significant CERCLA documents and milestones), a summary of the nature and extent of potential contamination, a summary of potential unacceptable risks, and the CERCLA path forward for each of the active sites and AOCs at CAX. Active site and AOC figures and schedules follow the site descriptions. Schedules illustrate planned CERCLA implementation activities through 2014.

3.1 Base-Wide Studies

3.1.1 Initial Assessment Study

In the first phase of the Navy Assessment and Control of Installation Pollutants (NACIP) program (the precursor to the Environmental [nee Installation] Restoration Program), a team of engineers and scientists conducted an IAS at CAX in 1984 to identify and assess sites posing a potential threat to human health and/or the environment due to contamination from past operations. Twelve potentially contaminated sites were identified (Sites 1 through 12) based on information from historical records, aerial photographs, field inspections, and personnel interviews. The IAS concluded that four of the twelve sites (Sites 1, 9, 10, and 11) may pose a sufficient threat to human health or to the environment to warrant Confirmation Studies (phase two of the NACIP). However, none of the sites posed an immediate threat to human health or the environment. The results of the Confirmation Studies, which would involve actual sampling to confirm or deny the existence of the suspected contamination and quantify the extent of any problems which may exist, would be used to evaluate the necessity to implement mitigative actions and/or clean up operations (C. C. Johnson & Associates, Inc. and CH2M HILL, 1984).

3.1.2 Confirmation Studies

Two Confirmation Studies were conducted, one in 1986 and one in 1988. The 1986 study (Step 1A – Verification, Round 1) included the collection of groundwater samples at Site 1 (Landfill Near Incinerator), soil samples at Site 9 (Transformer Storage Area), and groundwater, soil, surface water/sediment, and drum content samples at Site 11 (the Bone Yard). No samples were collected at Site 10 (Decontamination Agent Disposal Area Near First Street), and the only reference to Site 10 in the report is in Table 1-1, which has the notation “Magnetometer Survey.” Site 10 is not cited again, and the referenced magnetometer survey was not documented in the report. Based on the results of the sampling that occurred at Sites 1, 9, and 11, a repeat of the first round of sampling and analysis was recommended for Sites 1 and 11 (minus drum samples), while for Site 9, the recommendation was to collect additional background information on the site before proceeding with a second round of sampling (Dames & Moore, 1986).

The second Confirmation Study (Step 1A – Verification, Round 2) sampling occurred in late 1987. Another round of groundwater samples was collected from Site 1 and another round of groundwater, surface water and sediment samples was collected from Site 11; all samples were collected at the same locations as with the round one sampling. A second round of soil samples was not collected at Site 11 (no explanation why was provided), even though it was recommended in the round one report. No sampling occurred at Site 9, and neither Site 9 nor Site 10 is mentioned in the report. At Site 1, two semi-volatile organic compounds (SVOCs), three metals, total phenols, and oil and grease were detected in groundwater; however, only zinc and total phenols exceeded the Virginia groundwater standards. At Site 11, two SVOCs and total phenols were detected in groundwater and surface water; however, only total phenols exceeded the Virginia groundwater standards and Virginia criterion for the protection of aquatic life (surface water). In addition, two volatile organic compounds (VOCs), total phenols, and oil and grease were detected in Site 11 sediment. No constituents in sediment exceeded their respective screening criteria at Site 11 (Dames & Moore, 1988).

In 1991, Dames and Moore finalized an RI Interim Report, which summarized the results of the two confirmation studies, including the magnetometer survey conducted at Site 10 during round one. The report recommended further RI activities for Sites 1, 10, and 11 and no further action for Site 9 (Dames and Moore, 1991).

3.1.3 Pond Study

In 2000, surface water and sediment samples were collected from 19 stations within four, man-made surface water bodies located within CAX - Jones Pond, Cheatham Pond, Youth Pond, and Penniman Lake (**Figure 3-1**). Based on the results, contaminants of potential concern (COPCs), including polychlorinated biphenyls (PCBs) and metals were identified as having the potential to cause risk to human and environmental receptors and further investigation into the potential sources of these bioacculmulative chemicals and their potential effects on human health and the environment was also recommended (Baker, 2001a). In addition, based on the presence of bioaccumulative chemicals (particularly PCBs) in the sediment of Youth Pond and Penniman Lake, fishing restrictions were recommended and signs for catch-and-release were posted.

3.1.4 Community Involvement Plan Update

A Community Involvement Plan (CIP) assists the Navy in its community outreach efforts for disseminating information about, and public participation in, the ongoing investigation and remedial processes and identifies community concerns (if any). An update to the existing WPNSTA Yorktown and CAX CIP (Baker, 2006, previously called the “Community Relations Plan”) was conducted in 2008/2009 and included mailing a survey to residences within a one mile radius of WPNSTA Yorktown and CAX (~3,141 surveys were mailed and 489 responses were received) and conducting interviews with representatives of municipal and County governments, environmental groups, business organizations, service organizations, churches, etc. (seven interviews were conducted). In general, the interviews revealed that public has a favorable attitude towards CAX/the Navy, and more information on environmental cleanup and RAB meetings were desired (CH2M HILL, 2009b).

3.1.5 Basewide Documents Available

Document Title /Milestone	Author/Date	AR Document Number
IAS	C.C. Johnson & Associates, Inc/ Hill, 1984	000247
Confirmation Study Round 1	Dames & Moore, 1986	000256
Confirmation Study Round 2	Dames & Moore, 1988	000259
RI Interim Report	Dames & Moore, 1991	000812
Pond Study Report	Baker, 2001a	001212
Community Involvement Plan	CH2M HILL, 2009b	000013

3.2 Site Descriptions

The following sites and AOCs had a no action or NFA decision prior to the submission of the FY2014-2015 SMP amendment:

- Site 1 – Landfill Near Incinerator
- Site 2 – Contaminated Food Disposal Area
- Site 3 – Submarine Dye Disposal Area
- Site 5 – Photographic Chemicals Disposal Area
- Site 6 – Spoiled Food Disposal Area
- Site 8 – Landfill Near Building CAD 14

- Site 10 – Decontaminated Agent Disposal Area Near First Street
- Site 11 – Bone Yard
- Site 12 - Disposal Site Near Water Tower
- AOC 4 – Outdated Medical Supply Disposal Area (incorporated into Site 4)
- AOC 5 – Debris Area (incorporated into Site 1)

In addition, at the July 2011 Partnering Meeting, the Team agreed to incorporate AOC 3 (CAD 11/12 Pond Bank) into Site 4 (Outdated Medical Supply Disposal Area) , due to the sites' close proximity to each other and Upstream Pond.

As previously mentioned, descriptions of Sites 2, 3, 5, 6, 8, 10, and 12 and AOCs 4 and 5 were included in the FY2008-2009 SMP update, but are not included herein and will not be included in future SMP updates. The Site 1 description was included through the FY2010-2011 update, then removed after its NFA ROD was signed (September 2009). The Site 11 description was included through the FY2011-2012 update, then removed after its NFA ROD was signed (August 2010). The AOC 3 description was included through the FY2012-2013 update and removed starting with the FY2013-2014 SMP update, now that it is part of Site 4. Information on the sites/ AOCs listed above is included in **Table 2-1.** Information regarding CAX sites that need further action or investigation also is included in **Table 2-1** and provided in more detail below.

3.2.1 Site 4—Outdated Medical Supply Disposal Area

Site Description

Site 4 (now including AOC 3) is located at the headwaters of Upstream Pond (upstream of Youth Pond) and between buildings CAD 11 and CAD 12 (**Figure 3-2**). In the late 1960's, out-of-date, unused, medical supplies, including syringes and empty intravenous bottles, and one-inch metal banding, were unloaded down a bank in this area and covered with soil. Reportedly, much of the material was later removed from the site because stories were circulating about syringe needles getting stuck in deer hooves. After heavy rain events, syringes could sometimes be seen floating in Upstream Pond and in the downstream Youth Pond. In addition, railroad ties and concrete debris were dumped along the main drainage channel to Upstream Pond. Recent (2009) test pits revealed buried debris at the site (area formerly known as AOC 3), including asphalt, bricks, concrete, metal, construction and wood debris, automotive parts, dark tar paper, shingles, and a 55-gallon drum. Stormwater runoff from the surrounding industrial area is discharged to Site 4 via Outfall 2 (**Figure 3-2**). A summary of relevant documents and action milestones is presented below.

Documents and Milestones

Document Title /Milestone	Author/Date	AR Document Number
Site Inspection Report, Site 4 and AOC 1	Baker, 2001b	001291
Trenching Letter Report, Site 1, Site 4, and AOC 2	Baker, 2002	001234
Screening Level Ecological Risk Assessment Report for Sites 4 and 9	Baker, 2005	001565
Site Inspection Report, Sites 4, Site 9, and Area of Concern 3	CH2M HILL, 2011	002425

Nature and Extent of Potential Contamination

In late 2009, an SI field investigation was completed at Site 4 to further evaluate the site media and determine if a CERCLA release has occurred. The results of this investigation, as well as samples collected in 1999 for the 2001 SI (Baker, 2001b), were presented in an SI report (CH2M HILL, 2011) and are summarized below.

Debris

Results from test pitting activities indicate that buried debris exists at Site 4, and the vertical and horizontal extent of the debris is unknown in the area near Upstream Pond. Buried debris was encountered along the edge of Upstream Pond; therefore, the southeastern and eastern boundaries of debris within Upstream Pond were not delineated. The maximum vertical extent of buried debris could not be determined in several test pits because the depth of buried debris was greater than the maximum excavation depth of the backhoe and/or buried debris was encountered below the water table and further excavation could not be conducted.

Soil

No VOCs exceeded any screening criterion in surface soil. Five VOCs (benzene, chloroform, ethylbenzene, methylene chloride, and tetrachloroethene [PCE]) exceeded the site screening level (SSL) for the protection of groundwater in subsurface soil samples. Chloroform and methylene chloride are common laboratory contaminants and are not likely site-related. Throughout Site 4, SVOCs were detected in surface and subsurface soil. There were several pesticide detections in soil; however, pesticides were not known to be disposed at Site 4 and are likely attributable to normal pesticide use at DoD facilities to control pests and weeds and not a CERCLA-regulated release. The highest PCB detections were detected in surface and subsurface soil samples collected next to the drainage channels during the 1999 field investigation. Aroclor-1254 was detected at a maximum concentration of 1,000 µg/kg in surface soil and 2,300 µg/kg in subsurface soil. Aroclor-1260 was detected at a maximum concentration of 2,700 µg/kg in surface soil and 1,600 µg/kg in subsurface soil. No explosives were detected in surface or subsurface soil. Fourteen inorganic constituents (aluminum, arsenic, cadmium, chromium, copper, iron, lead, mercury, nickel, selenium, silver, thallium, vanadium, and zinc) exceeded at least one screening criterion in surface soil samples. Eleven inorganic constituents (aluminum, antimony, arsenic, chromium, cobalt, manganese, mercury, selenium, silver, vanadium, and zinc) exceeded at least one screening criterion in subsurface soil samples.

Groundwater

Five VOCs (1,4-dichlorobenzene, benzene, ethylbenzene, PCE, and total xylenes) exceeded at least one screening criterion in groundwater samples. The VOC PCE was detected at a concentration of 1.1 micrograms per liter (µg/L) in groundwater at a location upgradient of the site. The source of PCE is not known and is not believed to be Site 4-related; however, the PCE source will be investigated initially as an addendum to the Site 4 remedial investigation UFP-SAP. All SVOC exceedances were detected in monitoring wells located within or downgradient of the estimated extent of buried waste north west of Upstream Pond. The most detected SVOCs were the high molecular weight PAHs (4 to 7 rings - from chrysenes to coronenes). No PCBs were detected in the groundwater samples. The maximum inorganic concentrations were for arsenic, iron, and manganese at 53.8J µg/L (total), 39,400 µg/L (total), and 642 µg/L (total), respectively. Four dissolved inorganic constituents (arsenic, cobalt, iron, and manganese) exceeded at least one screening criterion in groundwater samples. The one dissolved cobalt exceedance (1.1J µg/L) was only slightly higher than the background concentration of 0.7 µg/L. Arsenic, iron, and manganese are likely attributable to background conditions.

Surface Water

No VOCs, pesticides or PCBs were detected in surface water. Two SVOCs (benzo(a)pyrene and pyrene), seven total inorganic constituents (aluminum, arsenic, barium, cadmium, copper, iron and manganese), and four dissolved inorganic constituents (arsenic, barium, iron, and manganese) were detected in surface water.

Sediment

One VOC, carbon disulfide, exceeded at least one screening criterion in surface sediment; however, it is naturally occurring in swampy areas and likely not related to a site release. No VOCs were detected above

any screening criteria in subsurface sediment. In surface sediment, SVOCs were detected in all samples collected from Upstream Pond and in one sample located in the most upstream sample location within a drainage channel. In subsurface sediment, SVOCs were primarily detected in the samples collected from the perimeter of Upstream Pond. Several pesticides were detected in sediment; however, these concentrations are likely attributable to normal pesticide application at DoD facilities to control pests and weeds and are not a CERCLA-related release. Two PCBs (Aroclor-1254 and Aroclor-1260) were detected in the surface and subsurface sediment samples . Aroclor-1254 had maximum surface and subsurface sediment concentrations of 21,000 µg/kg and 8,900 µg/kg, respectively. Aroclor-1260 had maximum surface and subsurface sediment concentrations of 1,200 µg/kg and 580 µg/kg, respectively. Eleven inorganic constituents (arsenic**,** barium, cadmium, chromium, copper, iron, lead, mercury, nickel, silver, and zinc) exceeded at least one screening criterion in surface sediment samples. Twelve inorganic constituents (aluminum, arsenic**,** barium, cadmium, chromium, copper, iron, lead, nickel, silver, vanadium, and zinc) exceeded at least one screening criterion in subsurface sediment samples.

Potential Risks

The 2011 SI screened new and 1999 data for both human health and ecological risks to determine whether a release occurred that may pose unacceptable risk. These potential human exposure health risks were identified at Site 4:

- Exposure to surface and subsurface soil may result in unacceptable human health risks associated with PAHs, pesticides/PCBs, and metals.
- Exposure to groundwater may result in unacceptable human health risks associated with VOCs, PAHs, and metals. . However, the VOC PCE is not likely site-related since the only detection was upgradient of the site. If the results from this sampling point are removed from the Site 4 risk evaluation, there is no PCE risk in groundwater related to Site 4. Arsenic in groundwater is likely related to the natural conditions of the aquifer and not likely to be site-related.
- Exposure to indoor air may result in unacceptable human health risks associated with VOCs and SVOCs. However, the VOC PCE is not likely site-related since the only detection was upgradient of the site. If the results from this sampling point are removed from the Site 4 risk evaluation, there is no PCE risk to indoor air related to Site 4.
- Exposure to surface water in the drainage ditches may result in unacceptable human health risks associated with inorganic constituents. Exposure to surface water in Upstream Pond may result in unacceptable human health risks associated with SVOCs and inorganic constituents.
- Exposure to surface sediment in the drainage ditches may result in unacceptable human health risks associated with SVOCs and inorganic constituents. Exposure to subsurface sediment in the drainage ditches may result in unacceptable human health risks associated with inorganic constituents. Exposure to surface sediment in Upstream Pond may result in unacceptable human health risks associated with PAHs, pesticides/PCBs, and inorganic constituents. Exposure to subsurface sediment in Upstream Pond may result in unacceptable human health risks associated with SVOCs, PCBs/pesticides and inorganic constituents.

Potential unacceptable ecological risks were identified with exposure to surface soil attributable to SVOCs, pesticides, high and low molecular weight PAHs, and inorganic constituents. Potential unacceptable ecological risks were identified with exposure to subsurface soil attributable to pesticides and inorganic constituents. In the Site 4 drainage ditches, no potential unacceptable ecological risks were identified for exposure to surface and subsurface sediment. Potential ecological risks were identified with exposure to Upstream Pond surface sediment attributable to SVOCs, high and low molecular weight and total PAHs, pesticides/PCBs, and inorganic constituents and to Upstream Pond subsurface sediment attributable to pesticides/PCBs and inorganic constituents. Potential unacceptable ecological risks were identified with

exposure to surface water attributable to SVOCs and inorganic constituents in surface water within drainage ditches and Upstream Pond.

Remedial Action(s)

Approximately 200 pounds of debris and 13 pounds of sharps (metal and plastic) found on the surface were removed by Reactives Management, Inc. in May 1998 (Baker, 2001b, included as Appendix A).

Activities Completed 2013

Preparation of the Site 4 and Youth Pond RI was on-going during 2013. The final SAP Addendum to investigate the PCE in groundwater detection upgradient of Site 4 was submitted in August 2013, with subsequent sample collection in September 2013.

CERCLA Path Forward

- RI/FS/PP/ROD

Schedule 3-1 presents the FY14-15 schedule for Site 4.

3.2.2 Site 7—Old DuPont Disposal Area

Site Description

Site 7 is located along the York River, east of Chase Road (**Figure 3-3**); Davis Road transects the site. During the early 1900s, it was reported that non-hazardous and/or inert wastes from the City of Penniman and the DuPont Company Penniman facility were disposed along the York River. Site 7 was identified as a potential area of concern in the IAS (C. C. Johnson & Associates, Inc. and CH2M HILL, 1984).

Information on the types and quantities of wastes received is not available; however, as the shoreline eroded, site waste (e.g., dinner ware and incinerated bottles and metal) littered the beach. In 2003, Hurricane Isabel eroded approximately 15 to 20 ft of shoreline, causing a large of amount of debris to cover the beach and action was taken to minimize the impact. In February 2004, trenching with limited soil sampling adjacent to former Cabin 169 was conducted to delineate the extent of buried debris. Additional soil sampling was conducted in April 2004 to further delineate the extent of debris near former Cabin 170. The trenching report identified potential soil contamination adjacent to and encompassing former Cabins 169 and 170 (Baker, 2004b). In addition, a volume of ash and debris was identified in the southwestern portion of the site where erosion of the slope had occurred. This area is highly vulnerable to further erosion into the York River by surface water runoff and intense wave action. Therefore, an Action Memorandum (AM) was signed for a Time-critical Removal Action (TCRA) to prevent further erosion of the disposal area contents into the York River (Baker, 2004c). A debris removal action was started in 2007 and completed in 2008 (Shaw, 2009). A summary of relevant documents and action milestones is presented below.

Documents and Milestones

Document Title /Milestone	Author/Date	AR Document Number
Trenching and Limited Investigation Report, Site 7N	Baker, 2004b	001479
AM TCRA, Site 7N – Old DuPont Disposal Area	Baker, 2004c	001592
Explosive Safety Submission – Site 7	Bhate, 2005	N/A (see References)
Project Completion Report Site 1 – Landfill Near Incinerator and Site 7 – Old DuPont Disposal Area	Bhate, 2007a	N/A (see References)
Unexploded Ordnance (UXO) Remediation After Action Report, Site 7	Bhate, 2007b	000041
Construction Completion Report: Soil Debris Removal at Site 7	Shaw, 2009	N/A (see References)
Site Inspection Report, Site 7 – Old DuPont Disposal Area	CH2M HILL, 2012a	003015

Nature and Extent of Potential Contamination

In January 2011, an SI field investigation for groundwater was completed at Site 7 to further evaluate the site media and determine if a CERCLA release had occurred. The results of this investigation, as well as soil samples collected in 2008 as part of the soil and debris removal action (Shaw, 2009) were presented in an SI report (CH2M HILL, 2012a) and are summarized below.

Debris

All debris (surface and buried) at Site 7 was removed with the 2007/2008 removal action (described below under "Remedial Action(s)").

Soil

One SVOC (benzo[a]anthracene) and the dioxin 2,3,7,8-TCDD exceeded their respective SSL for the protection of groundwater in soil (10 µg/kg and 0.26 picograms per gram [pg/g], respectively); however, these constituents (detected at 18J µg/kg and 0.267 pg/g, respectively) were not detected in groundwater. One pesticide (endrin) exceeded its ESV (1.95 µg/kg) at a concentration of 2.4J µg/kg; however since pesticides were not known to be disposed at Site 7 this low detected concentration is likely attributable to normal pesticide use at DoD facilities to control pests and not from the disposal of pesticides. No other VOCs, SVOCs, pesticides, PCBs, or explosives were detected at concentrations exceeding their respective RSLs, SSLs, or ESVs.

Ten inorganic constituents (aluminum, arsenic, chromium, iron, lead, manganese, mercury, selenium, thallium, and vanadium) exceeded their respective background 95 percent UTLs and at least one screening criterion in soil.

Groundwater

Six VOCs (bromodichloromethane, chloroform, dibromochloromethane, PCE, trichloroethene [TCE], and vinyl chloride [VC]), one SVOC (2,4-dinitrotoluene), two pesticides (4,4'- dichlorodiphenyldichloroethane [DDD] and gamma-Chlordane), one dioxin (octachlorodibenzo-p-dioxin), and one explosive (hexahydro-1,3,5-trinitro-1,3,5-triazine [RDX]) exceeded at least one screening criterion in groundwater. Two total inorganic constituents (arsenic and manganese) and three dissolved inorganic constituents (arsenic, cobalt, and manganese) also exceeded at least one screening criterion in groundwater.

Potential Risks

The 2012 SI screened the new groundwater data and the 2008 soil data for both human health and ecological risks to determine whether a release occurred that may pose unacceptable risk.

Potential risk to human health and ecological receptors from exposure to soil is due to thallium and potentially selenium, respectively. However, since thallium was not detected in any soil samples collected prior to the 2008 samples, there is some uncertainty regarding these results and the concentrations may not be attributable to a release from the buried debris. Regarding selenium, it was not detected in any of the 2004 (pre-removal) surface and subsurface soil samples (all samples were flagged U or B). Therefore, there is some uncertainty regarding the results and the concentrations may not be attributable to a release from the buried debris. In addition, the screening value used for selenium is based upon potential impacts to plants. Soil screening values for other receptors (such as 4.10 mg/kg for soil invertebrates) are not exceeded (maximum selenium concentrations in soil were 2.90 mg/kg). Thus, selenium is not likely to constitute a risk to ecological receptors.

Results from the groundwater sampling indicate that there are potential human health risks associated with bromodichloromethane, chloroform, dibromochloromethane, PCE, TCE, VC, 2,4-dinitrotoluene, RDX, and arsenic. However, of these constituents, RDX was detected off-site and is not considered to be a site-related contaminant, and arsenic is likely attributable to natural background conditions. These constituents were detected in the general vicinity of former Building 169. It was in this area where the thickest ash was identified prior to the 2008 removal action.

Remedial Action(s)

During the 2004 beach surface debris cleanup, an apparently unfired, unfused, three-inch projectile was discovered and removed from the site for proper disposal. Due to this discovery, the TCRA was put on hold while the Navy obtained an Explosives Safety Submission (ESS) Waiver. The Final ESS (Bhate, 2005) was submitted to the Partnering Team on January 4, 2006. According to the "UXO Remediation After Action Report" (Bhate, 2007b), approximately 86 pounds of munitions scrap (i.e., lifting lugs and fuse adapters) were recovered, certified safe (i.e., free from explosive hazards) and shipped to a recycling facility and smelted for reuse. No live ordnance was found and the action was completed by August 9, 2006. In November 2006, Geotubes™ were installed to stabilize the shoreline and protect it from further erosion. In addition, a removal action was initiated in December 2007 to remove visible and buried debris from the previously identified disposal area and the former cabin site areas. Approximately 4,482 tons of debris and soil were removed (Shaw, 2009). Following the removal action, the slope of the site was graded back to be less steep and seeded.

Activities Completed 2013

The draft Site 7 RI UFP-SAP was submitted for Navy review in September 2013.

CERCLA Path Forward

- RI/FS/PP/ROD

Schedule 3-2 presents the FY14-15 schedule for Site 7.

3.2.3 Site 9—Transformer Storage Area

Site Description

Site 9 is a former transformer storage area approximately 7,000 square feet (ft^2) in size and located adjacent to the northwest corner of Building CAD 16 (**Figure 3-4**). Between 1973 and 1980, electrical transformers, some of which contained PCBs, were reportedly stored at the site for repair or disposal. The storage area was not paved; however, it was enclosed by an earthen wall. Transformers were not stored at the site after 1980, and the area was graded and covered with gravel. A summary of the relevant document and action milestones is below.

Documents and Milestones

Document Title /Milestone	Author/Date	AR Document Number
No Further Response Action Planned Decision Document, Site 9 – Transformer Storage Area	Baker, 1999a	001223[2]
Screening Level Ecological Risk Assessment Report for Sites 4 and 9	Baker, 2005	001565
Site Inspection Report, Sites 4, Site 9, and Area of Concern 3	CH2M HILL, 2011a	002425

Nature and Extent of Potential Contamination

In late 2009, an SI field investigation was completed at Site 9 to further evaluate the site media and determine if a CERCLA release had occurred. The results of this investigation, as well as samples collected in 1986 for the Confirmation Study (Dames and Moore, 1986), were presented in an SI report (CH2M HILL, 2011a) and are summarized below.

[2] Due to EPA concerns related to the human health risk assessment (HHRA) presented in the report, including the unknown depths of the soil samples, this document never went final. The document is in the AR as an "FYI," along with a letter explaining why it did not go final.

Soil

The VOC methylene chloride exceeded at least one screening criterion in surface and subsurface soil samples; however, methylene chloride is a common laboratory contaminant, and the low-level concentrations suggest that it is not likely site-related. In surface and subsurface soil samples, the only SVOC to exceed multiple screening criteria was benzo(a)pyrene at a concentration of 39 µg/kg in surface soil. There were a few pesticide detections in soil; however, these detections are likely attributable to normal pesticide use at DoD facilities to control pests and weeds and not a CERCLA-regulated release. Aroclor-1260 was detected at two surface soil locations with maximum concentrations of 321 µg/kg and 760 µg/kg. Aroclor-1260 also was detected at two subsurface soil sample locations (one the same as one of the surface soil locations) with concentrations of 41 µg/kg and 100 µg/kg. The dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) was not detected in any surface soil sample. Aluminum, chromium, copper, and nickel were detected in surface soil at maximum concentrations of 12,900 mg/kg, 18.7 mg/kg, 512 mg/kg, and 44.8 mg/kg, respectively. The most detected inorganic constituent in subsurface soil was aluminum, with a maximum concentration of 27,300 mg/kg.

Groundwater

No VOCs or PCBs were detected in groundwater samples, and no pesticide detections exceeded screening criteria. Benzo(a)anthracene and benzo(a)pyrene were detected at the same monitoring well with concentrations of 0.16J µg/L, and 0.11J µg/L, respectively. The maximum concentrations of total iron (5,050 µg/L), total manganese (113 µg/L) and dissolved manganese (93.9 µg/L) were only slightly higher than their respective background concentrations. These constituents are not likely site-related and are likely attributable to background conditions.

Surface Water

Due to lack of standing water in the drainage ditch across the street from Site 9, no surface water samples were collected.

Sediment

No VOC detections exceeded screening criteria. Five SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene) exceeded at least one screening criterion in surface sediment at one sampling location; however, no SVOC detections exceeded screening criteria in subsurface sediment. There were a few pesticides detections in the surface and subsurface sediment samples; however, pesticides were not known to be disposed at Site 9 and the detected concentrations are likely attributable to normal pesticide use at DoD facilities to control pests and weeds and not a CERCLA-regulated release. Aroclor-1260 was detected in all surface and subsurface sediment samples at a maximum concentration of 9,700 µg/kg and 1,700J µg/kg, respectively. Aluminum, arsenic, chromium, cobalt, and iron were the most detected inorganic constituents in surface sediment and exceeded their respective screening criteria. Aluminum, arsenic, chromium, and iron were the most detected inorganic constituents in subsurface sediment and exceeded one screening criterion (adjusted residential RSL).

Potential Risks

The 2011 SI screened new and existing data for both human health and ecological risks to determine whether a release occurred that may pose unacceptable risk. These potential human exposure health risks were identified at Site 9:

- Exposure to surface soil at Site 9 may result in unacceptable human health risks associated with inorganic constituents and one PCB (Aroclor-1260) in the vicinity of one SI sample location (SS02).
- Exposure to surface and subsurface sediment in the drainage ditch across the street from Site 9 may result in unacceptable human health risks associated with PAHs, pesticides, PCBs, and inorganic constituents.

Potential unacceptable ecological risks were identified with exposure to surface soil attributable to pesticides and inorganic constituents. In the drainage ditch across the street from Site 9, potential unacceptable ecological risks were identified with exposure to surface sediment attributable to pesticides, PCBs, and inorganic constituents and with exposure to subsurface sediment attributable to pesticides.

Remedial Action(s)

No CERCLA RAs have taken place at Site 9. The 2011 SI recommended an interim removal action to mitigate COPCs in soil at Site 9 and COPCs in sediment in the ditch across the street from the site. However, due to the re-working of the drainage ditch during installation of utility lines for a new RV park, the analytical results are no longer reflective of current site conditions and further action regarding the ditch will be recommended in the forthcoming Expanded SI (ESI).

Activities Completed 2013

The draft ESI UFP-SAP was submitted for EPA and VDEQ review in July 2013.

CERCLA Path Forward

- ESI
- EE/CA and NFA DD

Schedule 3-3 presents the FY14-15 schedule for Site 9.

3.2.4 AOC 1—Scrap Metal Dump

Site Description

AOC 1 was identified as an AOC in 1998, following site visits by the Navy, USEPA, and VDEQ. AOC 1 is a former debris disposal area located just west of Chapman Road within two ravines, known as “AOC 1 North” and “AOC 1 South” (**Figure 3-5**). The AOC 1 North ravine is normally dry and only receives water from overland flow during storm events, and when it does have water, it flows towards and converges with the drainage from AOC 1 South. The AOC 1 South drainage is generally wet year round (i.e., saturated soil and/or standing water), but does not always have a water flow; the amount of water (and flow velocity) is dependent on storm events. When there is flow, it enters an unnamed tributary of Jones Pond; however, there isn’t a continual, year-round flow of surface water toward Jones Pond. Based on site observations of generally dry conditions in the unnamed tributary between storm events, it is anticipated that only substantial storm events would produce sufficient surface flow to reach Jones Pond from the site.

Wood and metal debris outcrop from the banks of the ravines, with debris being more extensive within the southern ravine. Orange staining in the unnamed tributary that receives runoff from the southern ravine has been identified. Based on an average thickness of debris of three feet, the total volume of debris has been estimated to be 3,000 cubic yards (cy). Two cylinders were present along the top of bank along the northern ravine. Markings were distinguishable on both of the cylinders, and included raised lettering around the neck “The Liquid Carbonic Co.” These were later determined to be empty and were removed from the site. A summary of relevant documents and action milestones is presented below.

Documents and Milestones

Document Title /Milestone	Author/Date	AR Document Number
Site Inspection Report, Site 4 and AOC 1	Baker, 2001b	001291
Site Inspection Report, AOCs 1, 2, 6, 7, and 8	CH2M HILL, 2012b	002463

Nature and Extent of Potential Contamination

The 2001 SI and field investigation included a geophysical survey and collection of soil, surface water, and sediment samples; no groundwater samples were collected (Baker, 2001b). The geophysical survey concluded that debris in the northern area extended about 10 to 12 ft beyond the edge of visible surface

debris, and that there is no extensive buried debris in the remaining areas of the site. In late 2008, an SI field investigation was completed at AOC 1 to further evaluate the site media and determine if a CERCLA release occurred. The results of this investigation, as well as samples collected for the 2001 SI, were presented in an SI report (CH2M HILL, 2012b) and are summarized below.

AOC 1 North

Debris

During the SI field activities, debris observed at AOC 1 North included wood debris (former railroad ties); one 55-gallon empty, rusted drum; a concrete channel that formed via the disposal of wet, concrete waste that cured in place, mimicking the ground/terrain form; and sporadic, small areas of metal debris.

Soil

Five SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and ideno(1,2,3-cd)pyrene) were detected above screening criteria in surface soil within a localized area in the northeast portion of the site (SS04, SS05, and SS11). Two pesticides (endrin and endrin aldehyde) were observed slightly above ecological screening values in two surface soil samples; the low detected concentrations are likely attributable to normal pesticide use at DoD facilities to control pests and weeds and not a CERCLA-regulated release. No VOCs, PCBs, or explosives were detected above screening criteria in surface soil. No VOCs, SVOCs, pesticides, PCBs, or explosives were detected above screening criteria in subsurface soil. Nine inorganic constituents (aluminum, arsenic, chromium, cyanide, lead, manganese, mercury, vanadium, and zinc) exceeded at least one screening criterion in surface soil. Three inorganics (aluminum, arsenic, and cobalt) exceeded at least one screening criterion in subsurface soil.

Groundwater

No VOCs, SVOCs, pesticides, PCBs or explosives were detected at concentrations above screening criteria. Sixteen total inorganic constituents (aluminum, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, manganese, nickel, selenium, silver, vanadium, and zinc) and five dissolved inorganic constituents (aluminum, arsenic, cobalt, iron, and manganese) exceeded at least one screening criterion in groundwater samples. Dissolved inorganic constituents data are likely more representative of inorganic constituent concentrations migrating in groundwater, since the DPT method generally results in higher total inorganic constituent concentrations as a result of higher turbidity during sampling.

AOC 1 South

Debris

Debris observed at AOC 1 South consisted primarily of piles of concrete and metal debris and empty 55-gallon, rusted drums.

Soil

Five SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and ideno(1,2,3-cd)pyrene) were detected above screening criteria in only one surface soil sample (SS15). No VOCs, pesticides, PCBs or explosives were detected at concentrations above screening criteria in surface soil. Three SVOCs (benzo(a)pyrene, benzo(b)fluoranthene, and ideno(1,2,3-cd)pyrene) were detected above screening criteria in only one subsurface soil sample (SB17). No VOCs, pesticides, PCBs or explosives were detected at concentrations above screening criteria in subsurface soil. Nine inorganic constituents (aluminum, arsenic, chromium, copper, iron, lead, manganese, mercury, and zinc) exceeded at least one screening criterion in surface soil. Nine inorganic constituents (aluminum, antimony, arsenic, cobalt, copper, iron, lead, manganese, and zinc) exceeded at least one screening criterion in subsurface soil.

Groundwater

No VOCs, SVOCs, pesticides, PCBs or explosives were detected at concentrations above screening criteria in the groundwater samples. Thirteen total inorganic constituents (aluminum, arsenic, barium, beryllium, cadmium, chromium, copper, iron, lead, manganese, nickel, vanadium, and zinc) and six dissolved inorganic constituents (aluminum, arsenic, barium, iron, lead, and manganese) exceeded at least one screening criterion in groundwater.

Potential Risks

The 2012 SI screened the new (2008) data for both human health and ecological risks to determine whether a release occurred that may pose unacceptable risk. These potential human exposure health risks were identified at AOC 1:

- Exposure to surface soil at AOC 1 North and South may result in unacceptable human health risks associated with PAHs and inorganic constituents in localized “hot spot” areas.
- Exposure to subsurface soil at AOC 1 South may result in unacceptable human health risks associated with inorganic constituents.
- Exposure to groundwater at AOC 1 North and South may result in unacceptable human health risks associated with inorganic constituents.

Potential unacceptable risks were identified for exposure to AOC 1 North surface soil attributable to endrin, endrin aldehyde, and zinc. However, endrin and endrin aldehyde (with detections less than 50 µg/kg) are likely attributable to normal pesticide application. Potential unacceptable ecological risks were identified for exposure to surface and subsurface soil attributable to inorganic constituents. Potential unacceptable ecological risks were also identified with groundwater at AOC 1 South attributable to one inorganic constituent (iron).

Remedial Action(s)

No CERCLA RAs have taken place at AOC 1.

Activities Completed 2013

The draft ESI UFP-SAP was submitted for EPA and VDEQ review in July 2013.

CERCLA Path Forward

- ESI
- EE/CA and NFA DD or RI/FS/PP/ROD

Schedule 3-4 presents the FY14-15 schedule for AOC 1.

3.2.5 AOC 2—Dextrose Dump

Site Description

AOC 2 was identified during site visits by the Navy, USEPA, and VDEQ in 1998. The area is located in the woods, north of Garrison Road, along the southern perimeter of CAX and contains several rows of concrete foundation piers, which at one time supported a Shipping House at the former Penniman Shell Loading Plant (**Figure 3-6**). Most of the Penniman facility was demolished between 1918 and 1925. Grass-covered lanes, which lead to the area, are likely locations of former rail lines that have been removed. Glass bottles, many of which are labeled “dextrose,” are present at the site. In addition, several partially buried empty drums, unused respirator cartridges, unused military uniforms, and deer carcasses were also noted. A summary of relevant documents and action milestones is presented below.

Documents and Milestones

Document Title /Milestone	Author/Date	AR Document Number
Field Investigation Report, Site 1 and AOC 2	Baker, 1999b	001217
Site Inspection Report, Site 4 and AOC 1	Baker, 2001b	001291
Field Investigation Report, Site 7 and AOC 2	Baker, 2001c	001348
Trenching Letter Report, Site 1, Site 4, and AOC 2	Baker, 2002	001234
Site Inspection Report, AOCs 1, 2, 6, 7, and 8	CH2M HILL, 2012b	002463
No Action Consensus Letter for Groundwater at AOC 2	CH2M HILL, 2013b	(Pending)

Nature and Extent of Potential Contamination

A 1998 investigation consisted of a geophysical survey and soil and groundwater sampling (Baker, 1999b). A 1999 investigation included test pits and hand auger borings to define the extent of buried debris (Baker, 2001c). A total of 43 drums were unearthed or collected from the ground surface, then pressure washed, and scrapped off-site. Most of the drums were found to be empty; however, a few drums were coated with a small amount of tar or contained a small amount of tar residue on the bottom. At the request of the EPA, a sample of the tar was collected and submitted for chemical warfare materials and degradation products; none were detected. PID readings were collected during the test pit excavations. One of the test pits (A2-TP01; Baker, 2001c, included in Appendix A) was reported to have empty 55-gallon drums. The background PID reading was 2.3 ppm, and the point source PID reading was 3.9 ppm, which is negligible; also, the location inside the test pit where the point source reading was collected was not recorded. There was a crushed drum reported at one other test pit (A2-TP04; Baker, 2001c, included in Appendix A). The background and point source PID readings from that test pit were both 1.0 ppm. The investigation recommended further study and possible waste removal. In 2001, fifteen test trenches were excavated to determine the horizontal and vertical extent of the buried debris. In addition, the waste volumes for the three separate waste areas (i.e., respiratory canisters and 55-gallon drums, dextrose bottles and minor debris, and military clothing) were calculated (445 cy, 670 cy, and 220 cy, respectively) (Baker, 2002).

Data collected during the 1998 and 1999 field investigations were evaluated as part of the 2012 SI (CH2M HILL, 2012b). The results are summarized below.

Debris

Based on the aforementioned trenching activities, the horizontal extent of the debris was sufficiently characterized, and AOC 2 was separated into three areas based on the types of debris observed during the trenching activities. Areas 1a and 1b contain dextrose bottles and minor debris, and Area 3 contains military clothing. Area 2 contains respirator cartridge canisters and 55-gallon drums.

Soil

No VOCs, SVOCs, or explosives were detected at concentrations above respective screening criteria in surface or subsurface soil samples. Two pesticides in surface soil (4,4'-DDE and 4,4'-DDT) and one pesticide in subsurface soil exceeded at least one screening criterion. These three exceedances occurred at one sample location (A2HA02), which is located within Area 2. One PCB (Aroclor-1260) was detected in only one subsurface soil sample. Aroloclor-1260 is likely a localized occurrence and not migrating from the debris material; a native soil sample collected below the debris zone in which the exceedance occurred had no detection of Aroclor-1260. Six inorganic constituents (arsenic, chromium, iron, mercury, selenium, and vanadium) exceeded at least one screening criterion in surface soil. Twelve inorganic constituents (aluminum, arsenic, cadmium, chromium, cobalt, copper, iron, lead, mercury, selenium, and vanadium) exceeded background concentrations and at least one screening criterion in subsurface soil.

Groundwater

No VOCs, SVOCs, pesticides, PCBs, or explosives were detected at concentrations above their respective screening criteria in the groundwater samples. Twelve total inorganic constituents (aluminum, arsenic, beryllium, cadmium, chromium, cobalt, iron, lead, manganese, nickel, thallium, and vanadium) and two dissolved inorganic constituents (arsenic and manganese) exceeded at least one screening criterion and background concentrations. Dissolved inorganic constituents data are likely more representative of concentrations migrating in groundwater.

Potential Risks

The 2012 SI screened the existing data for both human health and ecological risks to determine whether a release occurred that may pose unacceptable risk. These potential human health risks were identified at AOC 2:

- Exposure to surface soil at AOC 2 may result in unacceptable human health risks associated with inorganic constituents (arsenic and chromium).
- Exposure to subsurface soil at AOC 2 may result in unacceptable human health risks associated with one PCB (Aroclor-1260) and inorganic constituents.
- Exposure to groundwater at AOC 2 may result in unacceptable human health risks associated with inorganic constituents; however, only two inorganic constituents (arsenic and manganese) were detected in the dissolved phase.

Potential unacceptable risks were identified for exposure to surface soil attributable to one pesticide and two inorganic constituents (specifically, 4,4'-DDT, mercury and iron); however, 4,4'-DDT may be attributable to normal pesticide application and iron is likely associated with background conditions. There is potential ecological risk in subsurface soil associated with one inorganic constituent (mercury).

Remedial Action(s)

In 1998, Reactives Management, Inc. removed 470 bottles from AOC 2 as part of a routine housekeeping operation and selected 24 bottles for random analysis. Glucose was detected in each bottle at concentrations greater than 2,000 parts per million (ppm), indicating that the bottles contained dextrose, as was suspected (Baker, 2001b, included as Appendix A). An EE/CA will be prepared to remove the respirator cartridges and remaining drums, after additional soil samples are collected to refine the removal area footprint. This removal action will also address all soil human health and ecological COPCs.

Activities Completed 2013

The final consensus letter for no action for groundwater was submitted in August 2013.

CERCLA Path Forward

- SAP Addendum and soil sample collection, followed by a technical memorandum (TM) presenting the results and recommendations
- EE/CA and Debris Removal/Removal Action
- NFA DD or RI/FS/PP/ROD

Schedule 3-5 presents the FY14-15 schedule for AOC 2.

3.2.6 AOC 6—Penniman AOC

Site Description

AOC 6 consists of five sub-areas related to the former Penniman Shell Loading Plant. The Penniman Shell Loading Plant was an explosives manufacturing facility operated by the DuPont de Nemours Company during World War I on what is now CAX and adjacent properties. This facility operated as a trinitrotoluene (TNT) manufacturing plant beginning in approximately 1916, and subsequently began loading artillery shells

for the war effort in 1918; it was not in operation long before the November 1918 armistice ending the war was signed. Between 1918 and 1925, the facility was demolished and reverted to farmland. The Navy established CAX on a portion of this property in 1942 (Roy F. Weston, Inc., 1999a).

The five AOC 6 sub-areas (**Figure 3-7**) were identified through aerial photographic analysis and are as follows:

- **Ammonia Settling Pits -** This area consists of earthen ammonia settling pits that were part of a former shell loading area located on CAX. Wastewater from an ammonia finishing building was discharged through these settling pits.
- **TNT Graining House Sump -** This area consists of a concrete-lined, open top pit believed to be the sump pit for the TNT graining house in the former shell loading area.
- **TNT Catch Box Ruins -** This area consists of an earthen, brick-lined depression located immediately adjacent to the TNT graining house in the former shell loading area. This area was used to separate TNT particles from wastewater.
- **Waste Slag Material -** The Waste Slag Material subarea of AOC 6 consists of a pile of metallic slag material that was identified and sampled during the 1999 SI (Roy F. Weston, 1999b). The waste source pile was defined as approximately 25 feet long by 10 feet wide, although it more circular than rectangular in shape. It is located in the southern portion of the base.
- **1918 Drum Storage -** This area was used for the storage of wooden kegs when the shell loading area was active. It was identified in historical photographs. The contents of the kegs are unknown.

A summary of relevant documents and action milestones is presented below.

Documents and Milestones

Document Title /Milestone	Author/Date	AR Document Number
Site Inspection Narrative Report, Penniman Shell Loading Plant	Roy F. Weston, Inc., 1999b	000161C
Data Acquisition/Summary Report, Penniman Shell Loading Plant	Roy F. Weston, Inc., 1999a	000162C
Site Inspection Report, AOCs 1, 2, 6, 7, and 8	CH2M HILL, 2012b	002463
No Action Technical Memorandum for Soil and Groundwater at the Waste Slag Subarea of AOC 6	CH2M HILL, 2013c	(Pending)
Consensus Letter for Soil and Groundwater at the Area of Concern 6 1918 Drum Storage Area Subarea	CH2M HILL, 2013d	(Pending)

Nature and Extent of Potential Contamination

A 1999 SI included the collection of soil, sediment, surface water, and waste samples to assess potential sources of contamination associated with the Penniman Facility and to support HRS evaluations. During this SI, a total of seven waste source samples were collected among the five areas of AOC 6 as summarized in **Table 3-1** (Roy F. Weston, Inc., 1999b). One waste source sample (PEN1-SO-07) of the slag itself was collected and analyzed. Visual inspection of the slag material in 1999 indicated that it was an “intact, relatively hard, rock-like material” that had a “low potential to migrate as particulates,” as documented in the SI (Roy F. Weston, Inc., 1999b).

TABLE 3-1
1999 Waste Source Sampling at AOC 6
Results Exceeding USEPA Region 3 RBCs for Residential Soil

Area	Sample ID	Analytical Results[1]
Ammonia Settling Pits	PEN1-SO-01	Arsenic – 6 mg/kg
TNT Graining House Sump	PEN1-SO-03 PEN1-SO-03A	2,4,6-TNT – 28 mg/kg Arsenic – 15.5 mg/kg Cadmium – 4 mg/kg Lead – 7,580 mg/kg Manganese – 886 mg/kg
TNT Catch Box Ruins	PEN1-SO-04	2,4,6-TNT – 620 mg/kg Arsenic – 11 mg/kg Lead – 813 mg/kg
Waste Slag Material	PEN1-SO-07	Antimony – 4.6 L mg/kg Arsenic – 33.4 mg/kg Chromium – 32.9 mg/kg Lead – 2,600 mg/kg Manganese – 2,070 J mg/kg
1918 Drum Storage Area	PEN1-SO-13 PEN1-SO-14	Arsenic - 4.7 mg/kg (PEN1-SO-13) Arsenic - 5.5 mg/kg (PEN1-SO-14)

Notes:
[1]Analytical results lists all compounds exceeding the USEPA Region 3 RBCs for Residential Soil in waste samples
L = Analyte present. Reported value may be biased low. Actual value is expected to be higher.
J = Analyte present. Reported value may or may not be accurate or precise.
mg/kg = milligrams per kilogram

In late 2008, an SI field investigation was completed at the 1918 Drum Storage, Ammonia Settling Pits, TNT Graining House Sump, and TNT Catch Box Ruins subareas of AOC 6 to further evaluate the site media and determine if a CERCLA release occurred. The results of this investigation were presented in an SI report (CH2M HILL, 2012b) and are summarized below. Note: The Waste Slag Material subarea was not included in the 2008 sample collection at the AOC 6 subareas and the subsequent SI report, because the waste slag pile source was considered anthropogenic and associated with former railroad activities and not considered a CERCLA release. Following the completion of the 2008 SI field activities, the Navy and USEPA agreed to address the Waste Slag Pile subarea, the results of which would be presented in a separate report.

1918 Drum Storage

Soil

No SVOCs or explosives were detected in surface and subsurface soil samples. Two inorganic constituents (aluminum and lead) exceeded at least one screening criterion in surface soil. Two inorganic constituents (aluminum and thallium) exceeded at least one screening criterion in subsurface soil.

Groundwater

No SVOCs or explosives were detected in groundwater samples. Sixteen total inorganic constituents (aluminum, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, manganese, nickel, selenium, thallium, vanadium, and zinc) and one dissolved inorganic constituent (aluminum) exceeded at least one screening criterion. Dissolved inorganic constituent data are likely more representative of concentrations migrating in groundwater, since the DPT method generally results in higher total inorganic constituent concentrations from the higher turbidity.

Ammonia Settling Pits

Soil

Three SVOCs (benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene) and one explosive (octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine [HMX]) exceeded at least one screening criterion in surface soil. No SVOCs or explosives exceeded any screening criterion in subsurface soil. One inorganic constituent (mercury) exceeded at least one screening criterion in surface soil samples. One inorganic constituent (aluminum) exceeded at least one screening criterion in subsurface soil samples.

Groundwater

No SVOCs and explosives were detected in groundwater samples. Eleven total inorganic constituents (aluminum, arsenic, cadmium, chromium, cobalt, iron, lead, manganese, nickel, vanadium, and zinc) and four dissolved inorganic constituents (arsenic, cobalt, iron, and manganese) exceeded at least one screening criterion in groundwater. Dissolved inorganic constituent data are likely more representative of concentrations migrating in groundwater, since the DPT method generally results in higher total inorganic constituent concentrations from the higher turbidity.

TNT Graining House Sump and TNT Catch Box Ruins

Soil

One SVOC (2,4-dinitrotoluene) and six explosives (1,3-dinitrobenzene, 2,4,6-trinitrotoluene [2,4,6-TNT], 2-amino-4,6-dinitrotoluene, 2-nitrotoluene, 3,5-dinitroaniline, and 4-amino-2,6-dinitrotoluene) exceeded at least one screening criterion in surface soil samples and are likely attributable to a historical release. One SVOC (2,4-dinitrotoluene) and three explosives (1,3-dinitrobenzene, 2,4,6-TNT, and 4-amino-2,6-dinitotoluene) exceeded at least one screening criterion in subsurface soil samples and are likely associated with a historical release. Ten inorganic constituents (aluminum, arsenic, chromium, iron, lead, mercury, selenium, thallium, vanadium, and zinc) exceeded at least one screening criterion in surface soil samples. Seven inorganic constituents (aluminum, arsenic, chromium, iron, selenium, thallium, and vanadium) exceeded at least one screening criterion in subsurface soil.

Groundwater

No SVOCs or explosives were detected in groundwater samples. Thirteen total inorganic constituents (aluminum, arsenic, beryllium, chromium, cobalt, copper, iron, lead, manganese, nickel, silver, vanadium, and zinc) and ten dissolved inorganic constituents (aluminum, arsenic, chromium, cobalt, copper, iron, lead, manganese, silver, and thallium) exceeded at least one screening criterion in groundwater. All 13 total inorganic constituents and all nine dissolved inorganic constituents exceeding their respective screening criteria and were detected in only one groundwater sample (DW07), located in the immediate vicinity of the Catch Box Ruins.

Penniman Lake Surface Water and Sediment Immediately Adjacent to AOC 6 Subareas

Surface Water

No SVOCs or explosives were detected in surface water samples above their respective screening criterion. Two total inorganic constituents (barium and thallium) and one dissolved inorganic constituent (barium) exceeded at least one screening criterion in surface water.

Sediment

One SVOC (2,6-dinitrotoluene) exceeded at least one screening criterion in sediment. No explosives exceeded screening criteria in surface and subsurface sediment samples. Two inorganic constituents (arsenic and chromium) exceeded at least one screening criterion in surface and subsurface sediment.

Potential Risks

The 2012 SI screened the new (2008) data for both human health and ecological risks to determine whether a release occurred that may pose unacceptable risk. These potential human exposure health risks were identified at AOC 6:

1918 Drum Storage

Exposure to groundwater may result in unacceptable human health risks associated with inorganic constituents. This potential risk is based on total inorganic constituents detected in the groundwater; however, the DPT method used to collect the groundwater samples generally results in higher total inorganic constituent concentrations from the higher turbidity. Aluminum and thallium were the only inorganic constituents detected in the dissolved fraction. Aluminum is likely attributable to background conditions and the one detection of dissolved thallium is within one order of magnitude of the unadjusted Tapwater RSL; therefore, no unacceptable human health risk above background is expected.

Ammonia Settling Pits

Exposure to groundwater may result in unacceptable human health risks associated with inorganic constituents.

TNT Graining House Sump and TNT Catch Box Ruins

- Exposure to surface soil at the TNT Graining House subarea may result in unacceptable human health risks associated with SVOCs, explosives, and inorganic constituents.
- Exposure to subsurface soil at the TNT Graining House subarea may result in unacceptable human health risks associated with SVOCs, explosives, and inorganic constituents.
- Exposure to groundwater at the TNT graining House subarea may result in unacceptable human health risks associated with inorganic constituents.

Penniman Lake Surface Water and Sediment Immediately Adjacent to AOC 6 Subareas

Exposure to surface water and sediment in the portions of Penniman Lake adjacent to the Ammonia Settling Pits, TNT Graining House Sump, and TNT Catch Box Ruins subareas, would not be expected to result in any unacceptable human health risks.

Potential unacceptable ecological risks were identified with exposure to groundwater at the Ammonia Settling Pits subarea attributable to two inorganic constituents (iron and manganese). Within the TNT Graining House and TNT Catch Box Ruins subareas, potential unacceptable ecological risks were identified from exposure to surface soil attributable to explosives and inorganic constituents (specifically, 2-nitrotoluene, 2,4,6-TNT, and selenium) and to subsurface soil attributable explosives and inorganic constituents (specifically, 2,4,6-TNT and selenium). Groundwater at the TNT Graining House and TNT Catch Box Ruins subareas may pose potential unacceptable ecological risks attributable to two inorganic constituents (aluminum and iron). No potential unacceptable ecological risks were identified with exposure to surface water or sediment in the portions of Penniman Lake adjacent to the Ammonia Settling Pits, TNT Graining House Sump, and TNT Catch Box Ruins subareas.

Remedial Action(s)

No CERCLA RAs have taken place at AOC 6.

Activities Completed 2013

The final technical memorandum presenting the results of the pre-removal soil sampling and recommendation for no further action for soil or groundwater at the Waste Slag Pile subarea was submitted in August 2013. The final consensus letter for no action for all media at the 1918 Drum Storage Area subarea was submitted in August 2013. The final RI UFP-SAP for the TNT Graining House and TNT Catch Box Ruins

subareas was submitted in September 2013, with subsequent sample collection in September and October 2013. The draft ESI UFP-SAP was submitted for EPA and VDEQ review in July 2013.

CERCLA Path Forward

- Ammonia Settling Pits subarea – ESI
- TNT Graining House and TNT Catch Box Ruins subareas - RI/FS
- 1918 Drum Storage Area – N/A (CERCLA activities are complete)
- Waste Slag Material subarea – EE/CA and removal
- PP (all subareas)
- ROD (all subareas)

Schedule 3-6 presents the FY14-15 schedule for AOC 6.

3.2.7 AOC 7—Drum Disposal Area and Can Pit

Site Description

In April 2004, the Navy identified a potential area of concern north of Building 14 and Site 8 (**Figure 3-8**). The area of concern consists of two small surface debris disposal areas, labeled as a "Can Pit" and a "Drum Disposal Area." The Can Pit is an excavated ground depression approximately 30 ft by 20 ft and 4 ft deep that contained 5-gallon rusted cans with labeling containing the word "tetrachloroethene." The Drum Disposal Area contained several rusted and empty, pails and 55-gallon drums, scattered about the surface. A summary of the relevant document and action milestones is presented below.

Documents and Milestones

Document Title /Milestone	Author/Date	AR Document Number
Completion Letter Report for Housekeeping Actions at CAX Site 1 and AOC 7	Shaw, 2006	N/A (see References)
Site Inspection Report, AOCs 1, 2, 6, 7, and 8	CH2M HILL, 2012b	002463

Nature and Extent of Potential Contamination

In late 2008, an SI field investigation was completed at AOC 7 to further evaluate the site media and determine if a CERCLA release occurred. The results of this investigation were presented in an SI report (CH2M HILL, 2012b) and are summarized below.

Debris

Test pitting activities were conducted on October 30 and 31, 2008 to determine the horizontal and vertical extent of debris within the Can Pit and the former Drum Disposal Area at AOC 7. Results from test pitting activities indicate that the vertical and horizontal extent of buried debris within the Can Pit has been delineated. No buried debris was encountered within the five test pits excavated from the former Drum Disposal area, confirming the 2006 housekeeping effort successfully removed all debris.

Soil

No VOCs, SVOCs, pesticides, PCBs, or explosives were detected at concentrations above their respective screening criteria in surface or subsurface soil samples. Nine inorganic constituents (aluminum, arsenic, chromium, cobalt, copper, iron, lead, manganese, and zinc) exceeded at least one screening criterion in pre-excavation surface soil samples. Six inorganic constituents (aluminum, arsenic, cobalt, lead, manganese, and zinc) exceeded at least one screening criterion in pre-excavation shallow subsurface soil. No inorganic constituents exceeded their respective screening criteria in deep subsurface soil.

Groundwater

Only one VOC (ethylbenzene) was detected above a screening criterion at one sample located upgradient of the site. No SVOCs, pesticides, PCBs, or explosives were detected above screening criteria. Thirteen total inorganic constituents (aluminum, arsenic, beryllium, cadmium, chromium, copper, iron, lead, manganese, nickel, selenium, vanadium, and zinc) and five dissolved inorganic constituents (aluminum, arsenic, chromium, cobalt, and iron) exceeded at least one screening criterion and background concentrations in groundwater

Potential Risks

The 2012 SI screened the data for both human health and ecological risks to determine whether a release occurred that may pose unacceptable risk. These potential human exposure health risks were identified at AOC 7:

- Exposure to surface soil may result in unacceptable human health risks associated with arsenic, chromium, and iron.
- Exposure to groundwater may result in potential human health risks associated with ethylbenzene, aluminum, arsenic, chromium, iron, manganese, and vanadium. However, maximum inorganic constituent concentrations were primarily associated with total inorganic constituents and were detected upgradient of the site.

Potential ecological risks are associated with exposure to lead, manganese, and zinc in surface soil within the former Drum Disposal Area and lead and manganese in surface soil in the Can Pit.

There are no potential human health or ecological risks associated with subsurface soil.

Remedial Action(s)

In June 2006, Shaw Environmental conducted a housekeeping effort and removed all of the surface debris (drums, pails, and cans) (Shaw, 2006). The 2011 SI recommended an interim removal action to remove buried debris and mitigate surface soil inorganic contamination in the Can Pit and to mitigate inorganic contamination at a localized hotspot within the former Drum Disposal Area surface soil.

Activities Completed 2013

The draft ESI UFP-SAP was submitted for EPA and VDEQ review in July 2013. The draft EE/CA was submitted for EPA and VDEQ review in August 2013.

CERCLA Path Forward

- EE/CA (soil/waste) and ESI (groundwater)
- NFA DD or RI/FS/PP/ROD

Schedule 3-7 presents the FY14-15 schedule for AOC 7.

3.2.8 AOC 8—Area South of Site 7

Site Description

AOC 8 is located along the York River on a flat, sparsely vegetated depression, with a berm along the northern perimeter (**Figure 3-9**). Gravel and ballast rock can be seen on the ground surface. To the east of the flat area, the land drops off slightly, and in a very small area along the perimeter, buried debris (pipe, metal, and wood) can be seen cropping out from the edge of the slope and along the beach. Based on the IAS description of Site 7, this area was thought to be Site 7 (a disposal area associated with the former World War I era Penniman Shell Loading Plant). However, test pits conducted in 1999 indicate that the waste post-dates World War I and does not appear to be associated with Penniman facility waste disposal (Baker, 2001c). Therefore, this area was determined to not be Site 7 and it was re-designated as AOC 8. A summary of relevant documents and action milestones is presented below.

Documents and Milestones

Document Title /Milestone	Author/Date	AR Document Number
Field Investigation Report, Site 7[3] and AOC 2	Baker, 2001c	001348
Site Inspection Report, AOCs 1, 2, 6, 7, and 8	CH2M HILL, 2012b	002463

Nature and Extent of Potential Contamination

In late 2008, an SI field investigation was completed at AOC 8 to further evaluate the site media and determine if a CERCLA release occurred. The results of this investigation were presented in an SI report (CH2M HILL, 2012b) and are summarized below.

Debris

Results from the test pitting activities indicate that buried debris exists at AOC 8; however, since the depth of buried debris was greater than the maximum excavation depth of the equipment used during test pitting (20 feet), the vertical extent of debris was not characterized in all test pits; however, it is unlikely that buried debris exists below the groundwater table (estimated to be less than 30 feet bgs based on site-specific DPT borings, test trenches, and the depth to water at nearby Site 7, located near and to the north of AOC 8). The horizontal extent of the southern buried debris area was not delineated outside of the berm.

Soil

One SVOC (benzo(b)fluoranthene), one PCB (Aroclor-1260), and one pesticide (endrin aldehyde) were detected above screening criteria in surface soil, and one PCB (Aroclor-1260) and one pesticide (endrin aldehyde) were detected above screening criteria in subsurface soil. VOCs and explosives were not detected above screening criteria in surface soil, and VOCs, explosives, and SVOCs were not detected above screening criteria in subsurface soil. Five inorganic constituents (arsenic, chromium, selenium, thallium, and zinc) exceeded background concentrations and at least one screening criterion in surface soil.

Groundwater

One VOC (PCE) exceeded at least one screening criterion in groundwater. No other VOCs, SVOCs, pesticides, PCBs, or explosives were detected in groundwater. Three total inorganic constituents (arsenic, iron, and manganese) and six dissolved inorganic constituents (aluminum, arsenic, cobalt, iron, thallium, and manganese) exceeded at least one screening criterion in groundwater

Potential Risks

The 2012 SI screened the data for both human health and ecological risks to determine whether a release occurred that may pose unacceptable risk. These potential human exposure health risks were identified at AOC 8:

- Exposure to surface soil at AOC 8 may result in unacceptable human health risks associated with one SVOC (aPAH, benzo(b)fluoranthene), one PCB (Aroclor-1260) and two inorganic constituents (arsenic and chromium).
- Exposure to groundwater at AOC 8 may result in unacceptable human health risks, associated with one VOC (PCE) and one inorganic constituent (arsenic).

Potential unacceptable ecological risks were identified for exposure to surface and subsurface soil attributable to endrin aldehyde. However, because of the low detected concentrations (all less than 50 µg/kg), they are likely attributable to normal pesticide use. No potential unacceptable ecological risks were identified with exposure to groundwater.

[3] In this instance, Site 7 refers to AOC 8.

Remedial Actions

No CERCLA RAs have taken place at AOC 8.

Activities Completed 2013

The final RI UFP-SAP was submitted in August 2013, with subsequent sample collection in September 2013.

CERCLA Path Forward

- RI/FS/PP/ROD

Schedule 3-8 presents the FY14-15 schedule for AOC 8.

3.2.9 AOC 9—Penniman Lake

Site Description

Penniman Lake is a 48-acre surface water body located in the southeastern portion of CAX that was created in 1943 when a portion of King Creek was dammed (**Figure 3-10**).

Following completion of the Pond Study, catch-and-release fishing restrictions were recommended for Penniman Lake, as a conservative measure, that was not based on a human health risk assessment. Subsequently, fishing restriction signs (catch-and-release only) were posted in August 2000. A summary of relevant documents and action milestones is presented below.

Documents and Milestones

Document Title /Milestone	Author/Date	AR Document Number
Pond Study Report	Baker , 2001a	001212
RI, Site 11 – Bone Yard	Baker, 2007	002171
TM, Results of the Step 1 Polychlorinated Biphenyls SI at Penniman Lake	CH2M HILL, 2012c	003080
TM, Summary of Step 2 Field Investigations and Recommendations on Analytical Suites for Tissue Analyses, Penniman Lake, Step 2 Site Inspection, Cheatham Annex	CH2M HILL, 2013e	(Pending)

Nature and Extent of Potential Contamination

During the 2000 Pond Study, a total of eight co-located surface water and surface sediment samples from Penniman Lake were analyzed for target compound list (TCL) organic compounds, target analyte list (TAL) inorganic constituents, and explosive compounds. Average concentrations of PCBs detected in Penniman Lake sediments were 0.5 mg/kg with a maximum concentration of 4.7 mg/kg. PCBs were not detected in surface water within Penniman Lake.

During the CAX Site 11 RI, surface water and sediment samples were collected in the drainages north and south of the site and within Penniman Lake and analyzed for TCL organic compounds, TAL inorganic constituents, and explosive compounds. These samples were collected to determine what, if any, impact Site 11 had on these areas. During upgradient/background sediment sampling associated with the RI, elevated levels of PCBs were detected immediately downgradient of Outfall 29, in the grassy area of the north drainage channel (total PCB concentration of 7.5 mg/kg) and within the northwest finger of Penniman Lake (total PCB concentration of 15 mg/kg). In addition, Aroclor-1260 was detected in one surface water sample at a concentration of 0.47 J µg/L. No other surface water samples contained PCBs.

In 2011, the first step of a multiple-step SI field investigation was conducted at AOC 9 to further evaluate the drainages into Penniman Lake to look for a PCB source and to determine if a CERCLA-related release occurred. The results of this investigation were presented in a TM (CH2M HILL, 2012c) and are summarized below.

Soil

In total, 25 surface soil samples plus three duplicate samples were collected from the drainages and outfalls leading into Penniman Lake. Aroclor-1260 concentrations ranged from below detection limits to a maximum of 63,000 µg/kg. The highest concentrations were detected in the drainage ways leading to the northwest cove of Penniman Lake.

Sediment

A total of 44 surface sediment samples and six duplicate samples were collected from Penniman Lake. Aroclor-1260 concentration ranged from below the detection limit in surface sediment to a maximum of 16,000 µg/kg. The highest surface sediment concentrations were detected in the sediment samples collected in the northwest cove of Penniman Lake. Outside of the northwest cove area, the highest Aroclor-1260 concentration was 810 µg/kg, located in the northeast finger of Penniman Lake.

Potential Risks

Results of Step 1 of the SI indicate that PCBs are distributed throughout Penniman Lake. However, the highest concentrations are found in the northwest cove area, near the storm water outfalls where the highest concentrations of Aroclor-1260 were detected in upstream surface soil samples. The results of Step 1 were not screened or evaluated for human health and ecological risks, as the search to locate the potential PCB source(s) continues. Step 2 of the SI will further evaluate four areas upstream of Penniman Lake where PCB concentrations were the highest and will include biota sample collection. In addition, the historic non-PCB data will be reviewed to help identify constituents of potential concern that may need further evaluation. The results of Step 2 and a recommended path forward will be presented in a TM, and this section of the SMP will be updated. It is anticipated that after Step 2, there may be a Step 3. After all of the SI steps are complete, the results will be evaluated for risk to human health and the environment and presented in a comprehensive report.

Remedial Actions

No CERCLA RAs have taken place in Penniman Lake.

Activities Completed 2013

The final TM for the proposed tissue analyses for Step 2 of the SI was submitted in August 2013, with subsequent tissue analyses in September 2013.

CERCLA Path Forward

- SI
- RI/FS/PP/ROD

Schedule 3-9 presents the FY14-15 schedule for Penniman Lake.

3.2.10 Youth Pond

Site Description

Youth Pond is an approximately two and a half acre freshwater, surface water body located between D Street and the York River, east (and downgradient) of Site 4(**Figure 3-11**).

Following completion of the Pond Study, catch-and-release fishing restrictions were recommended for Youth Pond, as a conservative measure that was not based on a human health risk assessment. Subsequently, fishing restriction signs (catch-and-release only) were posted in August 2000. A summary of relevant documents and action milestones is presented below.

Documents and Milestones

Document Title /Milestone	Author/Date	AR Document Number
Pond Study Report	Baker, 2001a	001212

Nature and Extent of Potential Contamination

During the 2000 Pond Study, a total of two co-located surface water and surface sediment samples were collected from Youth Pond and analyzed for target compound list (TCL) organic compounds, target analyte list (TAL) inorganic constituents, and explosive compounds. Aroclor-1260 was detected in both samples at concentrations of 1.9 K[4] mg/kg and 6.4 L[5] mg/kg. PCBs were not detected in surface water within Youth Pond.

An RI will be conducted at Youth Pond to further evaluate the nature and extent of PCB concentrations in the pond. Drainages into Youth Pond also will be evaluated to look for a PCB source. The results of this investigation will be presented in an RI report, and this section of the SMP will be updated.

Potential Risks

During the 2000 Pond Study, the maximum Aroclor-1260 concentration in sediment exceeded the ecological and human health risk screening criteria and was retained as a COPC. No risk assessments have been conducted for Youth Pond.

The RI will present both human health and ecological risk assessments that will evaluate the risk associated with exposure to site media, and this section of the SMP will be updated.

Remedial Actions

No CERCLA RAs have taken place in Youth Pond.

Activities Completed 2013

Preparation of the Site 4 and Youth Pond RI was on-going during 2013.

CERCLA Path Forward

- RI/FS/PP/ROD

Schedule 3-10 presents the FY14-15 schedule for Youth Pond.

3.3 MRP Site Descriptions

Because funding for both the Installation Restoration Program and the MRP (collectively known as the ERP) is managed by NAVFAC, sites classified as MRP also are included in this SMP. The only MRP site identified at CAX is the Other-than-Operational Marine Pistol and Rifle Range.

3.3.1 Other-than-Operational Marine Pistol and Rifle Range

The Other-than-Operational Marine Pistol and Rifle Range is approximately seven acres in the northwest portion of CAX (**Figure 3-12**). The range was used between approximately 1939 and the 1970s, exclusively for small-caliber munitions (less than 0.5 caliber rounds). A PA was conducted in 2006 for the closed range to identify possible MEC and possible sources of MC-related contamination. Consistent with expected results for a small arms site, the PA did not identify any MEC at the site. However, the PA indicated that potential MC-related contamination may exist at the site associated with bullets and bullet casings potentially present at the site. Indications of expended small caliber ammunition (bullet holes) were found in the old timber targets near the wooden backstop (Malcolm Pirnie, 2006). In 2007, an ESI was conducted

[4] K qualifier indicates the value is biased high.

[5] L qualifier indicates the value is biased low.

to determine whether a release with the potential to adversely affect human health or the environment occurred at the range while it was operational. The ESI concluded, based on the conservative risk screening process and the absence of a defined release, that the closed range posed no unacceptable risk to human health or the environment; therefore, no further investigation or action was recommended for the site (CH2M HILL, 2008a). A summary of relevant documents and action milestones is presented below.

Documents and Milestones

Document Title/ Milestone	Author/Date	AR Document Number
Final PA, WPNSTA Yorktown	Malcolm Pirnie, 2006	001942
Expanded SI Report for the Closed MWR Skeet Range and the Closed Marine Pistol and Rifle Range	CH2M HILL, 2008a	002180

Nature and Extent of Potential Contamination

The source of potential contamination is the spent ammunition (bullets and bullet casings) used at the range. A metal detector survey was conducted during the 2007 ESI. In addition, surface and subsurface soil samples were collected during the ESI and analyzed for lead and PAHs. The results indicated exceedances of human and ecological screening values and background levels existed for both zinc and arsenic in surface and subsurface soil.

Potential Risks

Although future anticipated land use is recreational, based on the conservative risk screening process used in the ESI, potential unacceptable human health risks from exposure to soil were considered acceptable for the following reasons: The cumulative carcinogenic risk (2.0×10^{-5}) for soil exposure was below the conservative threshold of 5×10^{-5} for UU/UE; therefore, potential risk is acceptable for the range and the sporadic distribution of detected concentrations did not constitute a release.

A metal detector survey did not identify any rounds or casings. Additionally, only several occurrences of zinc (seven of 41 surface soil samples and three of 25 subsurface soil samples) exceeded the corresponding ESV. However, the ESVs that were exceeded were for plants, which showed no signs of stress during the sampling event. Using a screening criterion for soil invertebrates, no exceedances resulted. Additionally, the mean concentration of zinc in soil, which is a more realistic scenario for receptor populations, is lower than the ESV.

Remedial Action(s)

No CERCLA RAs were necessary at the Other-than-Operational Marine Pistol and Rifle Range.

Activities Completed

CERCLA documentation is complete with signature of the NFA Declaration Signature page included in the ESI (CH2M HILL, 2008a). No other MRP activities are necessary or will occur.

V:\USNAVFACENGCOM\CHEATHAMANNEX\MAPFILES\SMP_FY2013-2014\FIGURE 3-1 - CAX SURFACE WATER BODIES.MXD BHATHAWA 5/24/2012 11:14:43 AM

Legend

Cheatham Annex Boundary

N
W E
S

0 1,000 2,000
Feet

Figure 3-1
Location of Major CAX Surface Water Bodies
Site Management Plan for FY2014 to FY2015
Cheatham Annex
Williamsburg, Virginia

CH2MHILL

VBO \\NORTHEND\PROJ\USNAVFACENGCOM\CHEATHAMANNEX\MAPFILES\388429_SITE4_RI_UFPSAP\FIGURE 2 - SITE LOCATION AND BOUNDARY MAP.MXD JCROCKETT 6/12/2013 10:43:43 AM

Legend

- Outfall
- Culvert
- Drainage Channels
- Storm Water Line
- Site 4 Study Area Boundary
- Former Site Boundaries
- Water Body

N
W E
S

0 100 200
Feet

Figure 3-2
Site 4 - Outdated Medical Supply Disposal Area
Site Management Plan for FY2014 to 2015
Cheatham Annex
Williamsburg, Virginia

CH2MHILL

V:\USNAVFACENGCOM\CHEATHAMANNEX\MAPFILES\SMP FY2013-2014\FIGURE 3-3 - SITE 7 OLD DUPONT DISPOSAL AREA.MXD BHATHAWA 5/24/2012 11:41:57 AM

Legend

Study Area Boundary

N
W E
S

0 40 80
Feet

Figure 3-3
Site 7 - Old DuPont Disposal Area
Site Management Plan for FY2014 to FY2015
Cheatham Annex
Williamsburg, Virginia

CH2MHILL

V:\USNAVFACENGCOM\CHEATHAMANNEX\MAPFILES\SMP FY2013-2014\FIGURE 3-4 - SITE 9 FORMER TRANSFORMER STORAGE AREA.MXD BHATHAWA 5/24/2012 12:32:32 PM

Legend

- Outfall
- Storm Water Line
- Site 4 Study Area Boundary
- Study Area Boundary

N
W E
S

0 150 300
Feet

Figure 3-4
Site 9 - Transformer Storage Area
Site Management Plan for FY2014 to FY2015
Cheatham Annex
Williamsburg, Virginia

CH2MHILL

V:\USNAVFACENGCOM\CHEATHAMANNEX\MAPFILES\SMP FY2013-2014\FIGURE 3-5 - AOC1 SCRAP METAL DUMP.MXD BHATHAWA 5/24/2012 12:38:19 PM

Legend

Study Area Boundary

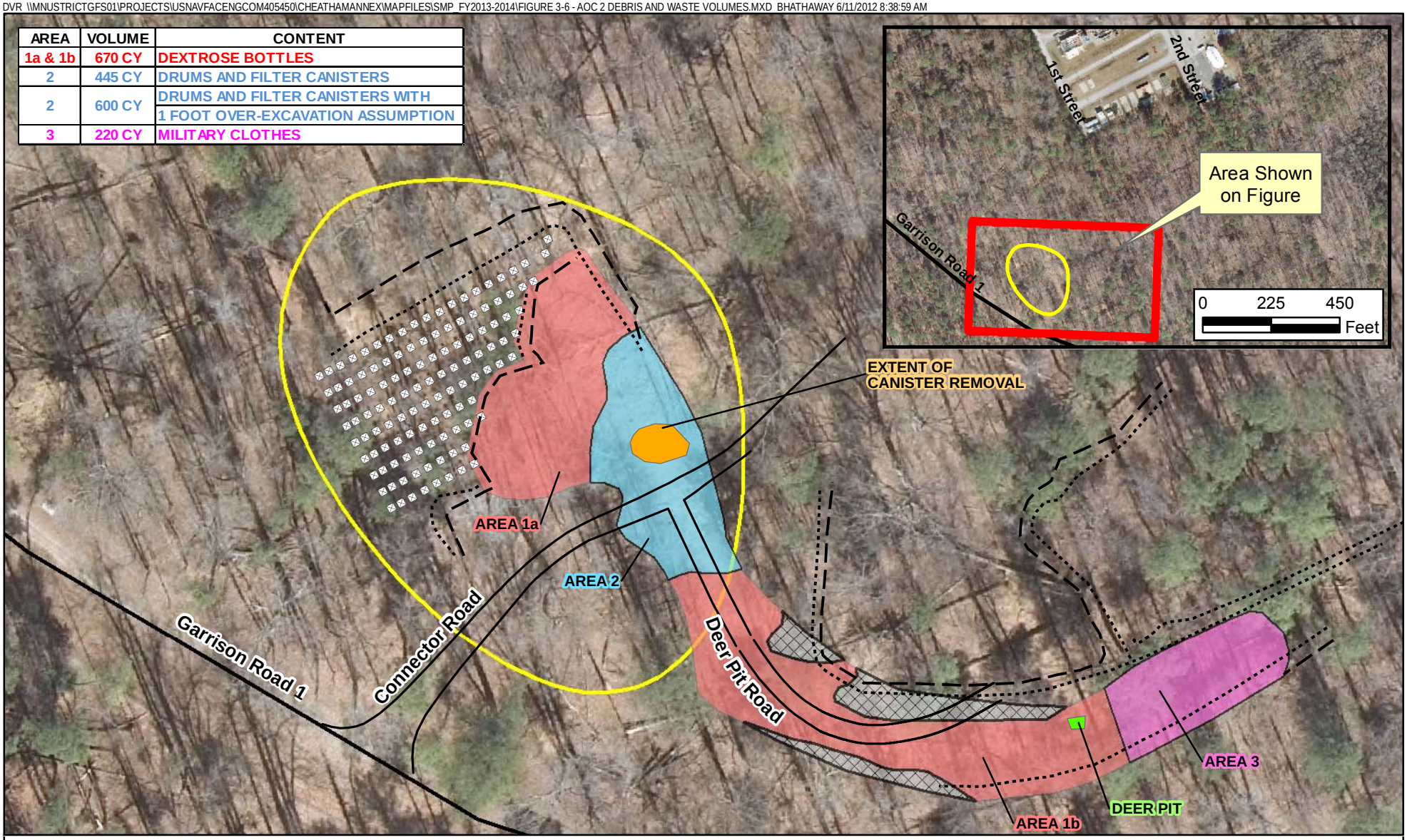
N
W E
S

0 150 300
Feet

Figure 3-5
AOC 1 - Scrap Metal Dump
Site Management Plan for FY2014 to FY2015
Cheatham Annex
Williamsburg, Virginia

CH2MHILL

DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\CHEATHAMANNEX\MAPFILES\SMP_FY2013-2014\FIGURE 3-6 - AOC 2 DEBRIS AND WASTE VOLUMES.MXD BHATHAWAY 6/11/2012 8:38:59 AM



AREA	VOLUME	CONTENT
1a & 1b	670 CY	DEXTROSE BOTTLES
2	445 CY	DRUMS AND FILTER CANISTERS
2	600 CY	DRUMS AND FILTER CANISTERS WITH 1 FOOT OVER-EXCAVATION ASSUMPTION
3	220 CY	MILITARY CLOTHES

Legend

- Study Area Boundary
- CAX Boundary / Fenceline
- Concrete Piers
- Top of Bank
- Toe of Slope

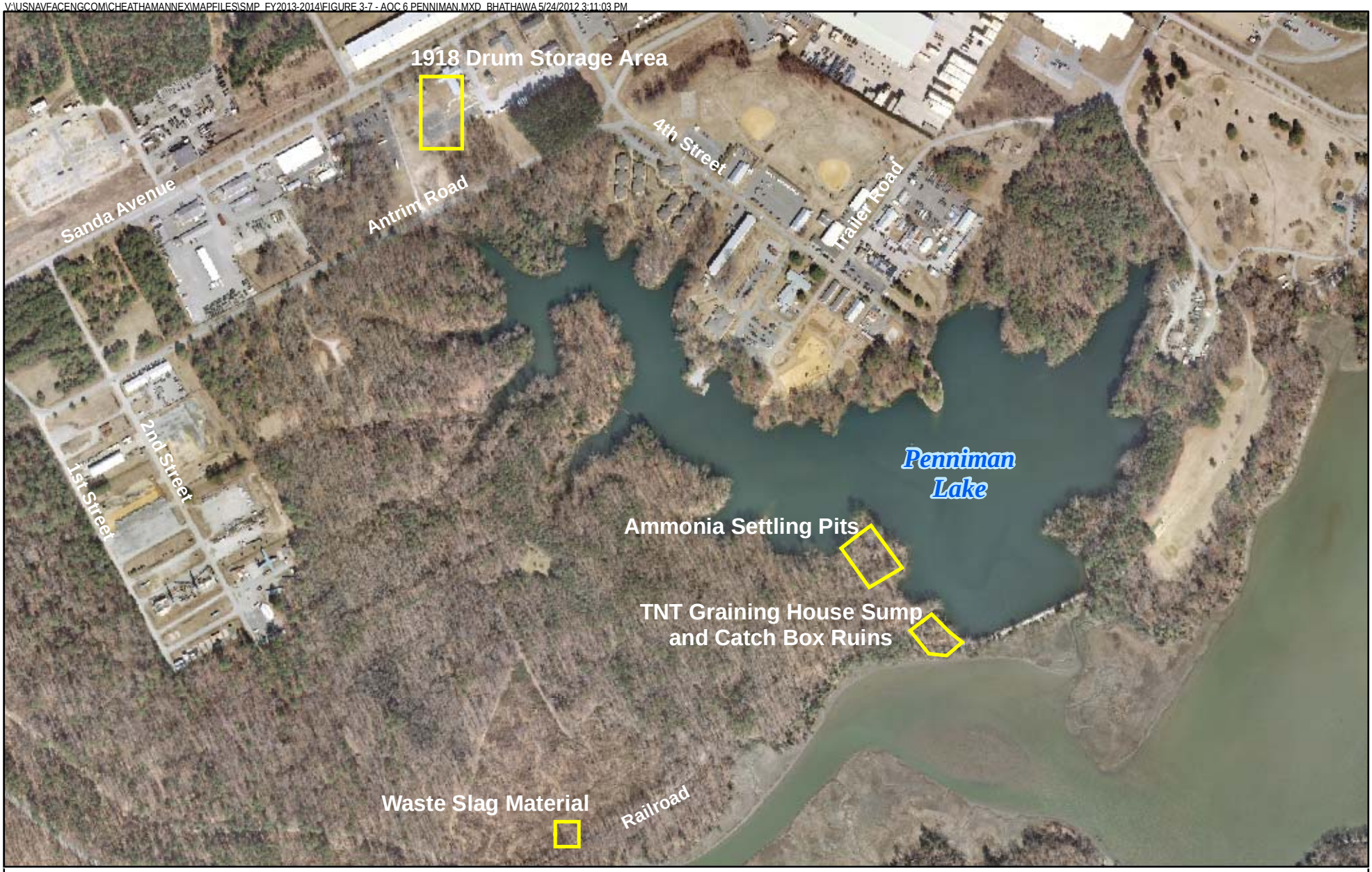
N W E S

0 30 60 Feet

Figure 3-6
AOC 2 - Dextrose Dump
Site Management Plan for FY2014 to FY2015
Cheatham Annex
Williamsburg, Virginia

CH2MHILL

V:\USNAVFACENGCOM\CHEATHAMANNEX\MAPFILES\SMP_FY2013-2014\FIGURE 3-7 - AOC 6 PENNIMAN.MXD BHATHAWA 5/24/2012 3:11:03 PM



Legend

Approximate Study Area Boundary

N
W E
S

0 300 600 Feet

Figure 3-7
AOC 6 - Penniman AOC
Site Management Plan for FY2014 to FY2015
Cheatham Annex
Williamsburg, Virginia

CH2MHILL

Legend

- Approximate Location of former Drum Disposal Area
- Approximate Location of former Can Pit
- Study Area Boundary

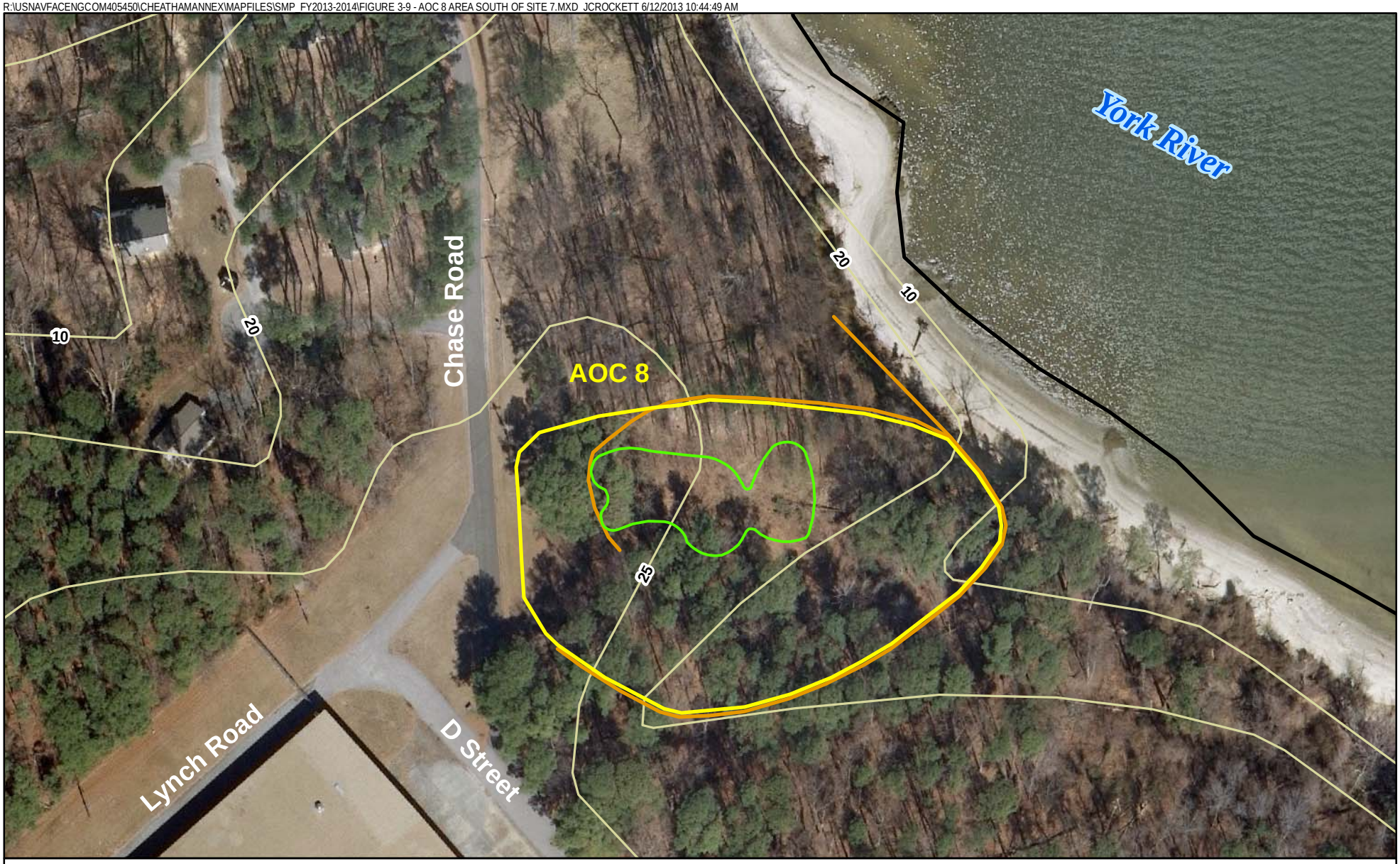
N
W E
S

0 150 300
Feet

Figure 3-8
AOC 7 - Drum Disposal Area and Can Pit
Site Management Plan for FY2014 to 2015
Cheatham Annex
Williamsburg, Virginia

CH2MHILL

R:\USNAVFACENGCOM405450\CHEATHAMANNEX\MAPFILES\SMP FY2013-2014\FIGURE 3-9 - AOC 8 AREA SOUTH OF SITE 7.MXD JCROCKETT 6/12/2013 10:44:49 AM



Legend

- Approximate AOC 8 Study Area
- CAX Boundary
- Observed Surficial Debris
- Topographic Surface Contour (feet above mean sea level)
- Approximate Location of Berm

N
W E
S

0 50 100
Feet

Figure 3-9
AOC 8 - Area South of Site 7
Site Management Plan for FY2014 to 2015
Cheatham Annex
Williamsburg, Virginia

CH2MHILL

V:\USNAVFACENGCOM\CHEATHAMANNEX\MAPFILES\SMP_FY2013-2014\FIGURE 3-10 - AOC 9 PENNIMAN LAKE.MXD BHATHAWA 5/24/2012 3:50:32 PM

Legend

- 36-inch Overflow Pipe
- Adjacent Environmental Restoration Program Sites
- Approximate Study Area Boundary

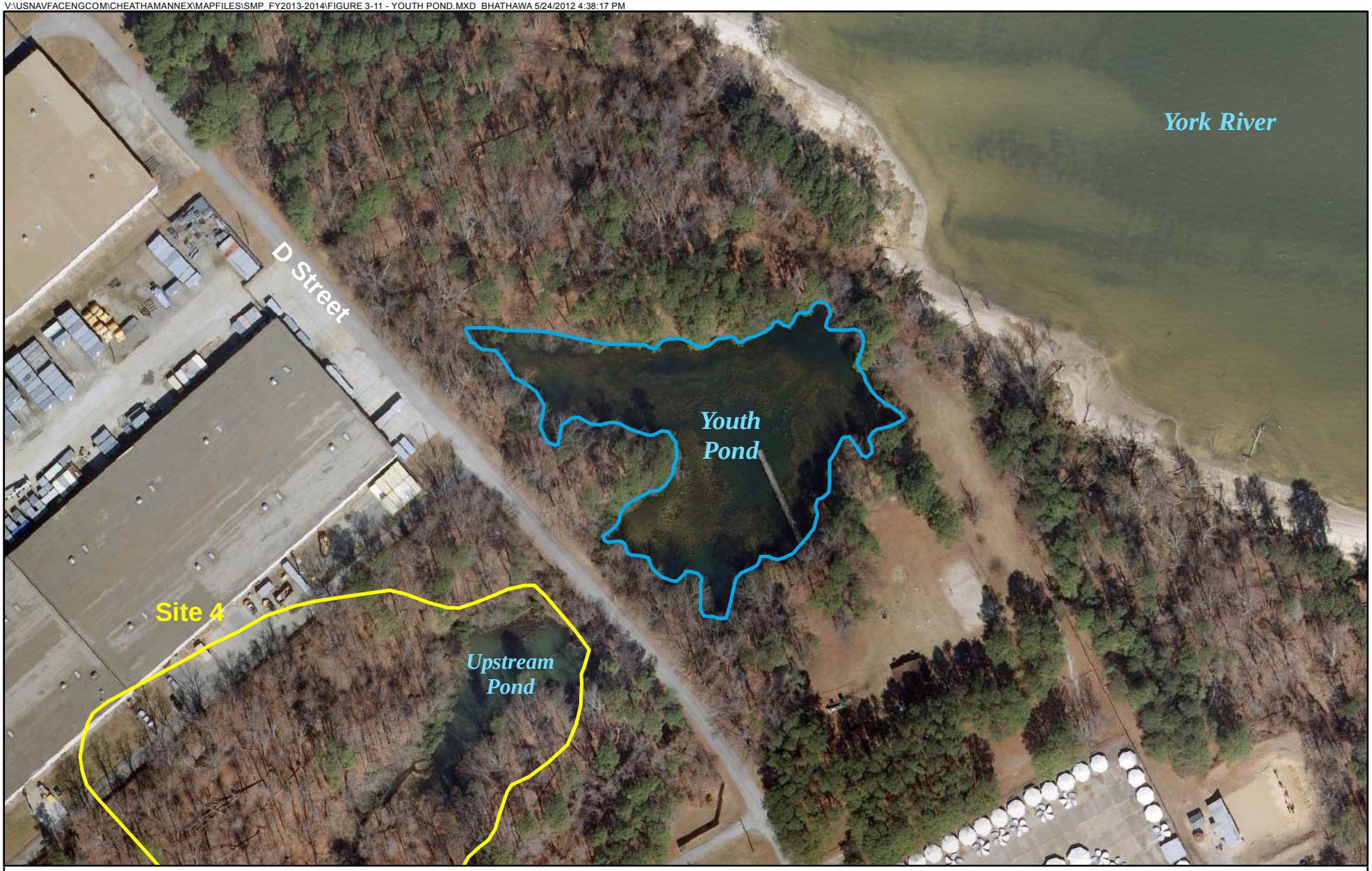
N
W E
S

0 225 450
Feet

Figure 3-10
AOC 9 - Penniman Lake
Site Management Plan for FY2014 to FY2015
Cheatham Annex
Williamsburg, Virginia

CH2MHILL

V:\USNAVFACENGCOM\CHEATHAMANNEX\MAPFILES\SMP_FY2013-2014\FIGURE 3-11 - YOUTH POND.MXD BHATHAWA 5/24/2012 4:38:17 PM



Legend

- Site 4 Study Area Boundary
- Youth Pond Study Area Boundary

N
W E
S

0 75 150 Feet

Figure 3-11
Youth Pond
Site Management Plan for FY2014 to FY2015
Cheatham Annex
Williamsburg, Virginia

CH2MHILL

V:\USNAVFACENGCOM\CHEATHAMANNEX\MAPFILES\SMP_FY2013-2014\FIGURE 3-12 - MARINE PISTOL AND RIFLE RANGE.MXD BHATHAWA 5/24/2012 3:58:18 PM

Legend

Marine Pistol and Rifle Range

N
W E
S

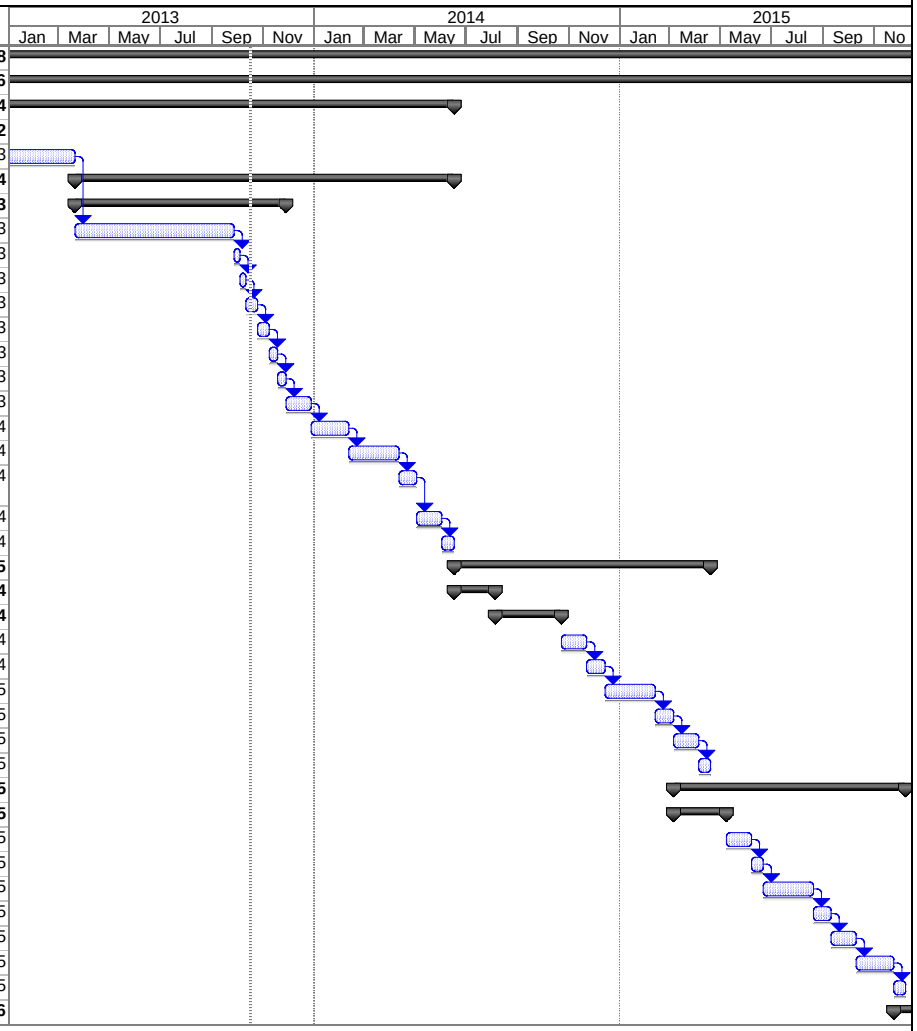
0 100 200
Feet

Figure 3-12
Marine Pistol and Rifle Range
Site Management Plan for FY2014 to FY2015
Cheatham Annex
Williamsburg, Virginia

CH2MHILL

Schedule 3-1
Site 4 FY14-FY15 Schedule

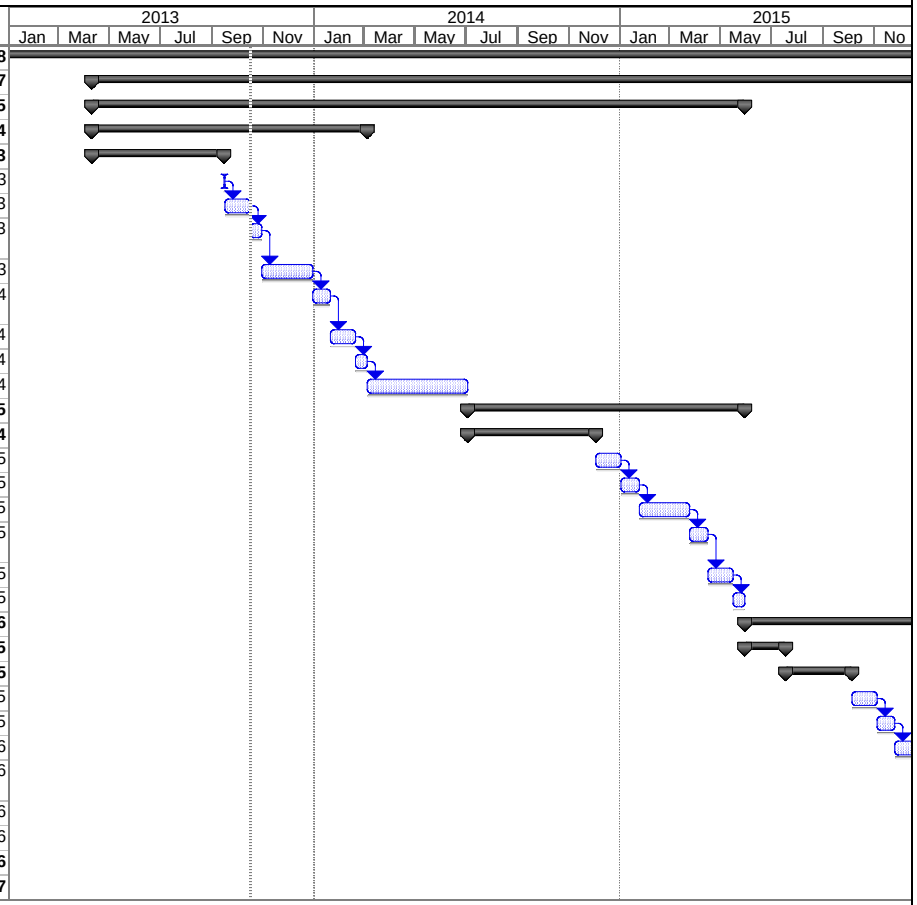
ID	Task Name	Duration	Start	Finish
1	**CAX**	**3582 days**	**Thu 2/12/09**	**Mon 12/3/18**
2	**Site 4**	**1789 days**	**Wed 9/14/11**	**Sat 8/6/16**
3	**Remedial Investigation**	**1008 days**	**Wed 9/14/11**	**Tue 6/17/14**
4	**RI UFP-SAP**	**357 days**	**Wed 9/14/11**	**Tue 9/4/12**
24	Field Investigation (and Laboratory)	198 days	Wed 9/5/12	Thu 3/21/13
25	**RI Report**	**453 days**	**Fri 3/22/13**	**Tue 6/17/14**
26	**Preliminary RI**	**252 days**	**Fri 3/22/13**	**Thu 11/28/13**
27	Draft Preliminary RI Report	190 days	Fri 3/22/13	Fri 9/27/13
28	AM Review of RI	7 days	Sat 9/28/13	Fri 10/4/13
29	Address AM Comments	7 days	Sat 10/5/13	Fri 10/11/13
30	STC Review of RI Report	14 days	Sat 10/12/13	Fri 10/25/13
31	Address STC Comments	14 days	Sat 10/26/13	Fri 11/8/13
32	AQM Review of RI Report	10 days	Sat 11/9/13	Mon 11/18/13
33	Address AQM Comments	10 days	Tue 11/19/13	Thu 11/28/13
34	Gov't Review and Comments	30 days	Fri 11/29/13	Sat 12/28/13
35	Address Gov't Comments and Issue Draft RI Report	45 days	Sun 12/29/13	Tue 2/11/14
36	Regulatory Review	60 days	Wed 2/12/14	Sat 4/12/14
37	Address Regulatory Comments and Issue Draft Final RI Report	21 days	Sun 4/13/14	Sat 5/3/14
38	Regulatory Review	30 days	Sun 5/4/14	Mon 6/2/14
39	Issue Final RI Report	15 days	Tue 6/3/14	Tue 6/17/14
40	**Feasibility Study**	**306 days**	**Wed 6/18/14**	**Sun 4/19/15**
41	**RAA Development**	**49 days**	**Wed 6/18/14**	**Tue 8/5/14**
47	**Preliminary FS Report**	**79 days**	**Wed 8/6/14**	**Thu 10/23/14**
55	Gov't Review and Comments	30 days	Fri 10/24/14	Sat 11/22/14
56	Address Gov't Comments and Issue Draft FS	22 days	Sun 11/23/14	Sun 12/14/14
57	Regulatory Review	60 days	Mon 12/15/14	Thu 2/12/15
58	Address Regulatory Comments and Issue Draft Final FS	22 days	Fri 2/13/15	Fri 3/6/15
59	Regulatory Review	30 days	Sat 3/7/15	Sun 4/5/15
60	Issue Final FS	14 days	Mon 4/6/15	Sun 4/19/15
61	**Proposed Plan**	**277 days**	**Sat 3/7/15**	**Tue 12/8/15**
62	**Preliminary PP**	**63 days**	**Sat 3/7/15**	**Fri 5/8/15**
70	Gov't Comments	30 days	Sat 5/9/15	Sun 6/7/15
71	Issue Draft PP	14 days	Mon 6/8/15	Sun 6/21/15
72	Regulatory/Legal Review	60 days	Mon 6/22/15	Thu 8/20/15
73	Draft Final PP	21 days	Fri 8/21/15	Thu 9/10/15
74	Regulatory Review	30 days	Fri 9/11/15	Sat 10/10/15
75	Public Comment Period	45 days	Sun 10/11/15	Tue 11/24/15
76	Issue Final PP	14 days	Wed 11/25/15	Tue 12/8/15
77	**Record of Decision**	**256 days**	**Wed 11/25/15**	**Sat 8/6/16**



Task | Milestone | External Tasks
Split | Summary | External Milestone
Progress | Project Summary | Deadline

Schedule 3-2
Site 7 FY14-FY15 Schedule

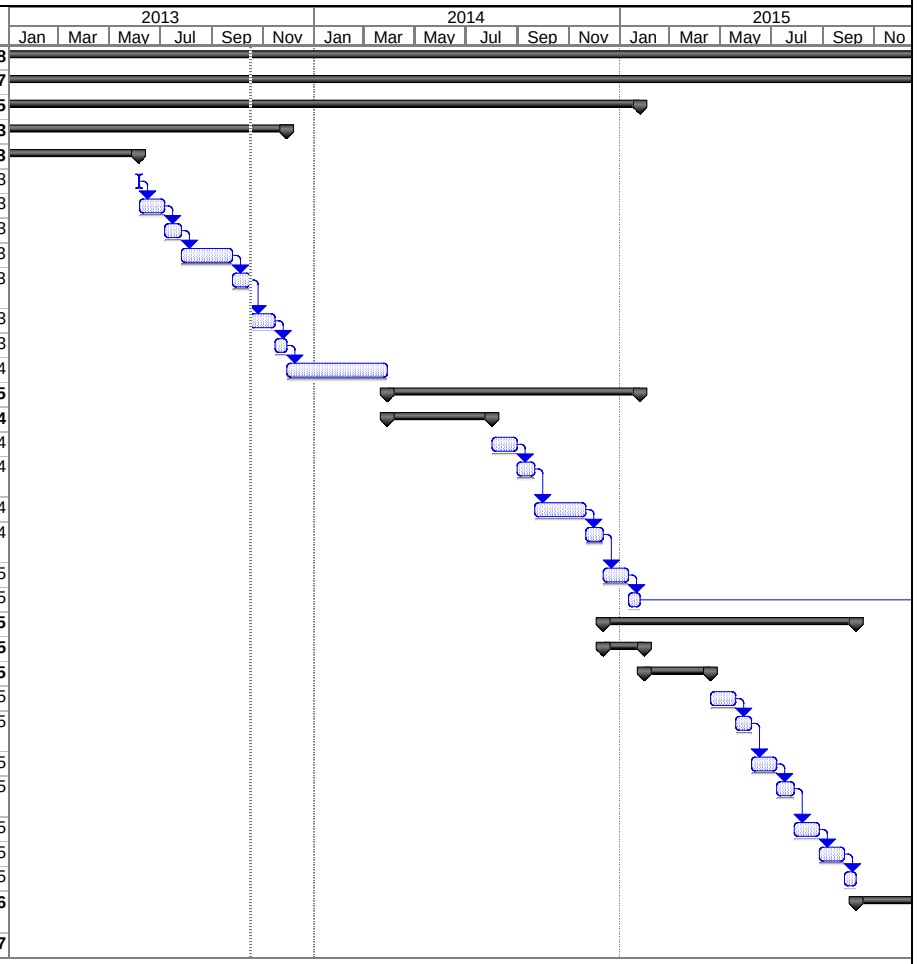
ID	Task Name	Duration	Start	Finish
1	**CAX**	**3582 days**	**Thu 2/12/09**	**Mon 12/3/18**
92	**Site 7**	**1559 days**	**Thu 4/11/13**	**Mon 7/17/17**
93	**Remedial Investigation**	**780 days**	**Thu 4/11/13**	**Sat 5/30/15**
94	**RI UFP-SAP**	**329 days**	**Thu 4/11/13**	**Wed 3/5/14**
95	**Preliminary RI UFP-SAP**	**158 days**	**Thu 4/11/13**	**Sun 9/15/13**
103	Upload to NIRIS for Navy Chemist Review	1 day	Mon 9/16/13	Mon 9/16/13
104	Gov't Review and Comments	30 days	Tue 9/17/13	Wed 10/16/13
105	Address Gov't Comments and Issue Draft RI UFP-SAP	14 days	Thu 10/17/13	Wed 10/30/13
106	Regulatory Review	61 days	Thu 10/31/13	Mon 12/30/13
107	Address Regulatory Comments and Issue Draft Final RI UFP-SAP	21 days	Tue 12/31/13	Mon 1/20/14
108	Regulatory Review	30 days	Tue 1/21/14	Wed 2/19/14
109	Issue Final RI UFP-SAP	14 days	Thu 2/20/14	Wed 3/5/14
110	Field Investigation (and Laboratory)	120 days	Thu 3/6/14	Thu 7/3/14
111	**RI Report**	**331 days**	**Fri 7/4/14**	**Sat 5/30/15**
112	**Preliminary RI**	**153 days**	**Fri 7/4/14**	**Wed 12/3/14**
120	Gov't Review and Comments	30 days	Thu 12/4/14	Fri 1/2/15
121	Address Gov't Comments and Issue Draft RI Report	22 days	Sat 1/3/15	Sat 1/24/15
122	Regulatory Review	60 days	Sun 1/25/15	Wed 3/25/15
123	Address Regulatory Comments and Issue Draft Final RI Report	22 days	Thu 3/26/15	Thu 4/16/15
124	Regulatory Review	30 days	Fri 4/17/15	Sat 5/16/15
125	Issue Final RI Report	14 days	Sun 5/17/15	Sat 5/30/15
126	**Feasibility Study**	**304 days**	**Sun 5/31/15**	**Tue 3/29/16**
127	**RAA Development**	**49 days**	**Sun 5/31/15**	**Sat 7/18/15**
133	**Preliminary FS Report**	**79 days**	**Sun 7/19/15**	**Mon 10/5/15**
141	Gov't Review and Comments	30 days	Tue 10/6/15	Wed 11/4/15
142	Address Gov't Comments and Issue Draft FS	21 days	Thu 11/5/15	Wed 11/25/15
143	Regulatory Review	60 days	Thu 11/26/15	Sun 1/24/16
144	Address Regulatory Comments and Issue Draft Final FS	21 days	Mon 1/25/16	Sun 2/14/16
145	Regulatory Review	30 days	Mon 2/15/16	Tue 3/15/16
146	Issue Final FS	14 days	Wed 3/16/16	Tue 3/29/16
147	**Proposed Plan**	**277 days**	**Mon 2/15/16**	**Thu 11/17/16**
163	**Record of Decision**	**256 days**	**Fri 11/4/16**	**Mon 7/17/17**



Task | Split | Progress | Milestone | Summary | Project Summary | External Tasks | External Milestone | Deadline

Schedule 3-3
Site 9 FY14-FY15 Schedule

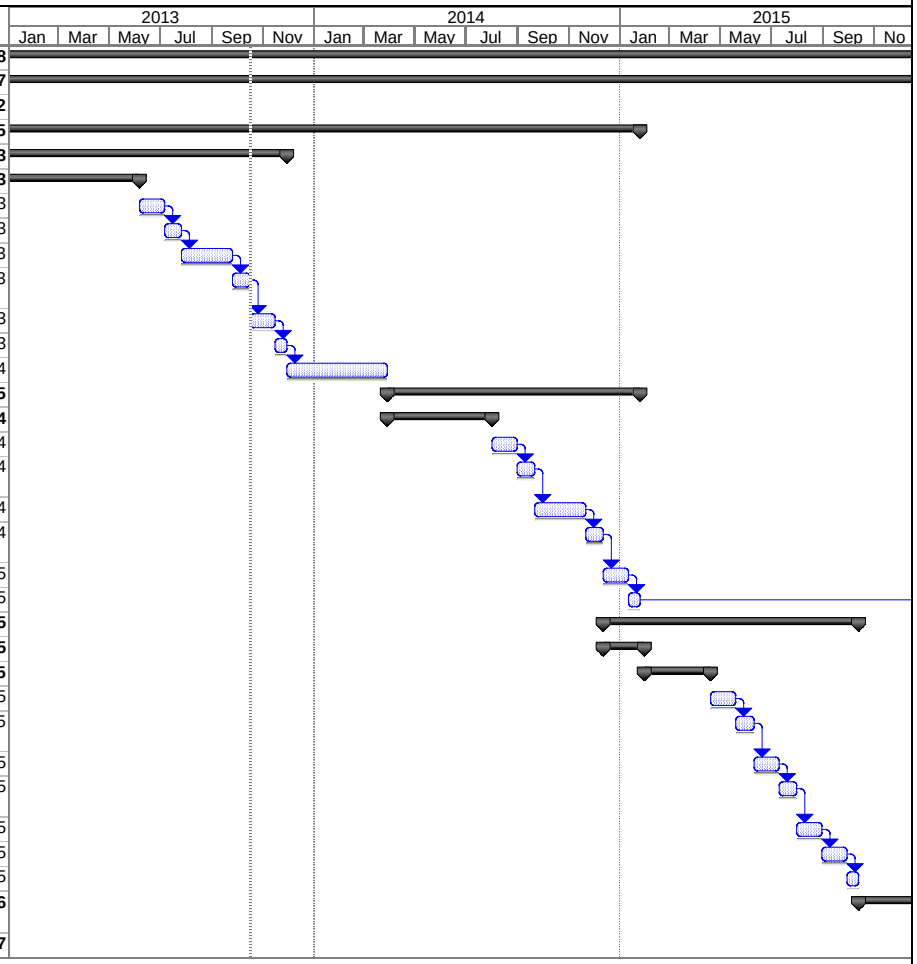
ID	Task Name	Duration	Start	Finish
1	**CAX**	**3582 days**	**Thu 2/12/09**	**Mon 12/3/18**
178	**Site 9**	**2074 days**	**Thu 1/19/12**	**Fri 9/22/17**
179	**Expanded SI**	**1103 days**	**Thu 1/19/12**	**Sun 1/25/15**
180	**Expanded SI UFP-SAP**	**681 days**	**Thu 1/19/12**	**Fri 11/29/13**
181	**Preliminary ESI UFP-SAP**	**504 days**	**Thu 1/19/12**	**Wed 6/5/13**
193	Upload to NIRIS for Navy Chemist Review	1 day	Thu 6/6/13	Thu 6/6/13
194	Gov't Review and Comments	30 days	Fri 6/7/13	Sat 7/6/13
195	Address Gov't comments and Issue Draft ESI UFP-SAP	20 days	Sun 7/7/13	Fri 7/26/13
196	Regulatory Review	61 days	Sat 7/27/13	Wed 9/25/13
197	Address Regulatory Comments and Issue Draft Final ESI UFP-SAP	21 days	Thu 9/26/13	Wed 10/16/13
198	Regulatory Review	30 days	Thu 10/17/13	Fri 11/15/13
199	Issue Final ESI UFP-SAP	14 days	Sat 11/16/13	Fri 11/29/13
200	Field Investigation (and Laboratory)	120 days	Sat 11/30/13	Sat 3/29/14
201	**ESI Report**	**302 days**	**Sun 3/30/14**	**Sun 1/25/15**
202	**Preliminary ESI**	**125 days**	**Sun 3/30/14**	**Fri 8/1/14**
210	Gov't Review and Comments	30 days	Sat 8/2/14	Sun 8/31/14
211	Address Gov't Comments and Issue Draft ESI Report	21 days	Mon 9/1/14	Sun 9/21/14
212	Regulatory Review	61 days	Mon 9/22/14	Fri 11/21/14
213	Address Regulatory Comments and Issue Draft Final ESI Report	21 days	Sat 11/22/14	Fri 12/12/14
214	Regulatory Review	30 days	Sat 12/13/14	Sun 1/11/15
215	Issue Final ESI Report	14 days	Mon 1/12/15	Sun 1/25/15
216	**EE/CA (if needed)**	**302 days**	**Sat 12/13/14**	**Sat 10/10/15**
217	**RAA Development**	**49 days**	**Sat 12/13/14**	**Fri 1/30/15**
223	**Preliminary EE/CA**	**79 days**	**Sat 1/31/15**	**Sun 4/19/15**
231	Gov't Review and Comments	30 days	Mon 4/20/15	Tue 5/19/15
232	Address Gov't Comments and Issue Draft EE/CA Report	19 days	Wed 5/20/15	Sun 6/7/15
233	Regulatory Review	30 days	Mon 6/8/15	Tue 7/7/15
234	Address Regulatory Comments and Issue Draft Final EE/CA Report	21 days	Wed 7/8/15	Tue 7/28/15
235	Regulatory Review	30 days	Wed 7/29/15	Thu 8/27/15
236	Public Comment Period	30 days	Fri 8/28/15	Sat 9/26/15
237	Issue Final EE/CA Report	14 days	Sun 9/27/15	Sat 10/10/15
238	**Implementation of EE/CA and Post-Construction Documentation (if needed)**	**443 days**	**Sun 10/11/15**	**Mon 12/26/16**
254	**NFRAP or Decision Document**	**270 days**	**Tue 12/27/16**	**Fri 9/22/17**



Task | Milestone | External Tasks
Split | Summary | External Milestone
Progress | Project Summary | Deadline

Schedule 3-4
AOC 1 FY14-FY15 Schedule

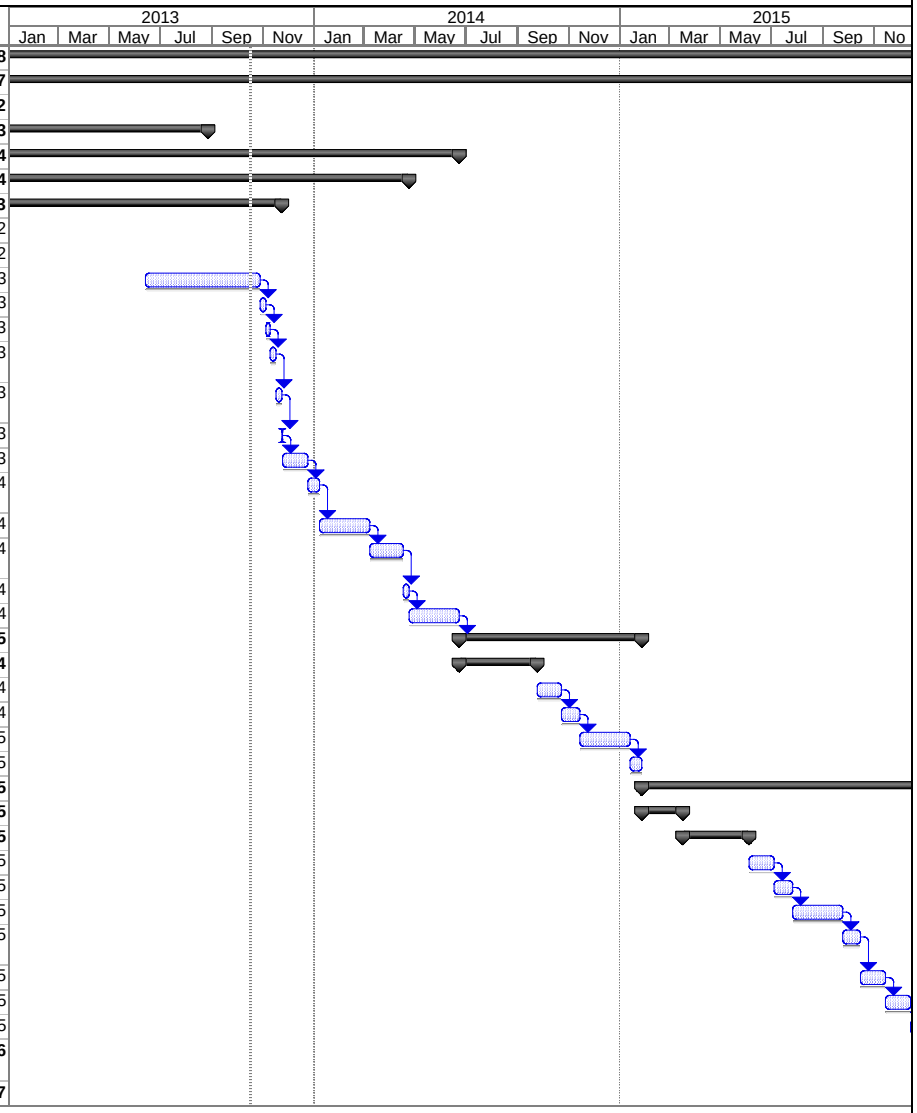
ID	Task Name	Duration	Start	Finish
1	**CAX**	**3582 days**	**Thu 2/12/09**	**Mon 12/3/18**
270	**AOC 1**	**3148 days**	**Thu 2/12/09**	**Mon 9/25/17**
271	**Site Inspection Report**	**1211 days**	**Thu 2/12/09**	**Wed 6/6/12**
279	**Expanded SI**	**1103 days**	**Thu 1/19/12**	**Sun 1/25/15**
280	**Expanded SI UFP-SAP**	**681 days**	**Thu 1/19/12**	**Fri 11/29/13**
281	**Preliminary ESI UFP-SAP**	**505 days**	**Thu 1/19/12**	**Thu 6/6/13**
294	Gov't Review and Comments	30 days	Fri 6/7/13	Sat 7/6/13
295	Address Gov't comments and Issue Draft ESI UFP-SAP	20 days	Sun 7/7/13	Fri 7/26/13
296	Regulatory Review	61 days	Sat 7/27/13	Wed 9/25/13
297	Address Regulatory Comments and Issue Draft Final ESI UFP-SAP	21 days	Thu 9/26/13	Wed 10/16/13
298	Regulatory Review	30 days	Thu 10/17/13	Fri 11/15/13
299	Issue Final ESI UFP-SAP	14 days	Sat 11/16/13	Fri 11/29/13
300	Field Investigation (and Laboratory)	120 days	Sat 11/30/13	Sat 3/29/14
301	**ESI Report**	**302 days**	**Sun 3/30/14**	**Sun 1/25/15**
302	**Preliminary ESI**	**125 days**	**Sun 3/30/14**	**Fri 8/1/14**
310	Gov't Review and Comments	30 days	Sat 8/2/14	Sun 8/31/14
311	Address Gov't Comments and Issue Draft ESI Report	21 days	Mon 9/1/14	Sun 9/21/14
312	Regulatory Review	61 days	Mon 9/22/14	Fri 11/21/14
313	Address Regulatory Comments and Issue Draft Final ESI Report	21 days	Sat 11/22/14	Fri 12/12/14
314	Regulatory Review	30 days	Sat 12/13/14	Sun 1/11/15
315	Issue Final ESI Report	14 days	Mon 1/12/15	Sun 1/25/15
316	**EE/CA (if needed)**	**305 days**	**Sat 12/13/14**	**Tue 10/13/15**
317	**RAA Development**	**49 days**	**Sat 12/13/14**	**Fri 1/30/15**
323	**Preliminary EE/CA**	**79 days**	**Sat 1/31/15**	**Sun 4/19/15**
331	Gov't Review and Comments	30 days	Mon 4/20/15	Tue 5/19/15
332	Address Gov't Comments and Issue Draft EE/CA Report	22 days	Wed 5/20/15	Wed 6/10/15
333	Regulatory Review	30 days	Thu 6/11/15	Fri 7/10/15
334	Address Regulatory Comments and Issue Draft Final ESI Report	21 days	Sat 7/11/15	Fri 7/31/15
335	Regulatory Review	30 days	Sat 8/1/15	Sun 8/30/15
336	Public Comment Period	30 days	Mon 8/31/15	Tue 9/29/15
337	Issue Final EE/CA Report	14 days	Wed 9/30/15	Tue 10/13/15
338	**Implementation of EE/CA and Post-Construction Documentation (if needed)**	**443 days**	**Wed 10/14/15**	**Thu 12/29/16**
354	**NFRAP or Decision Document**	**270 days**	**Fri 12/30/16**	**Mon 9/25/17**



Task | Milestone | External Tasks
Split | Summary | External Milestone
Progress | Project Summary | Deadline

Schedule 3-5
AOC 2 FY14-FY15 Schedule

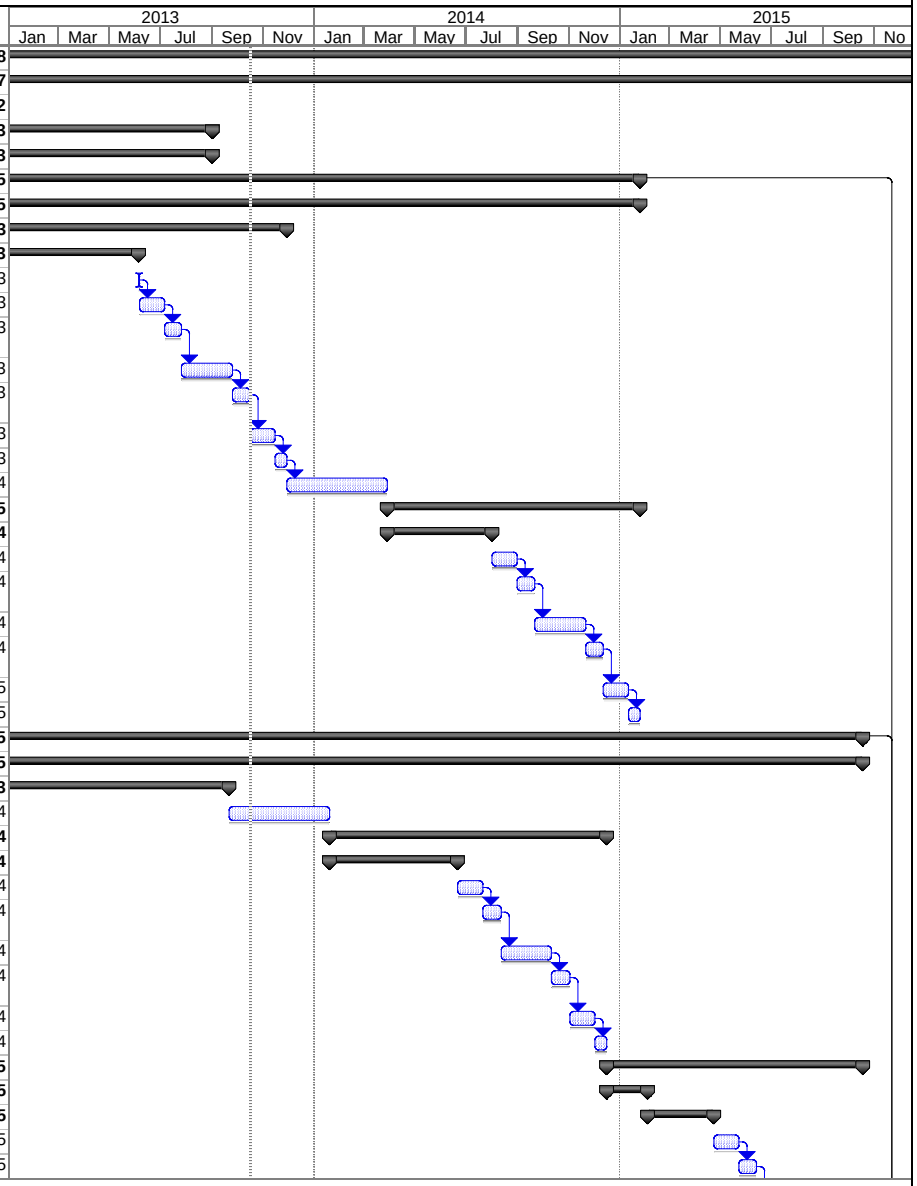
ID	Task Name	Duration	Start	Finish
1	**CAX**	**3582 days**	**Thu 2/12/09**	**Mon 12/3/18**
370	**AOC 2**	**3063 days**	**Thu 2/12/09**	**Sun 7/2/17**
371	**Site Inspection Report**	**1211 days**	**Thu 2/12/09**	**Wed 6/6/12**
379	**NFA Consensus Letter for Groundwater**	**392 days**	**Wed 8/1/12**	**Tue 8/27/13**
386	**Site Inspection Addendum**	**838 days**	**Thu 3/8/12**	**Mon 6/23/14**
387	**SI UFP-SAP Addendum**	**778 days**	**Thu 3/8/12**	**Thu 4/24/14**
388	**Preliminary SAP for Soil Sampling**	**626 days**	**Thu 3/8/12**	**Sat 11/23/13**
389	Scoping Session	1 day	Thu 3/8/12	Thu 3/8/12
390	Lab Procurement	21 days	Fri 3/9/12	Thu 3/29/12
391	Finish Drafting Preliminary UFP-SAP	137 days	Fri 6/14/13	Mon 10/28/13
392	AQM Review of UFP-SAP	7 days	Tue 10/29/13	Mon 11/4/13
393	Address AQM Comments	5 days	Tue 11/5/13	Sat 11/9/13
394	Program Chemist/Program Quality Manager Comments	7 days	Sun 11/10/13	Sat 11/16/13
395	Address Program Chemist/Program Quality Manager Comments	7 days	Sun 11/17/13	Sat 11/23/13
396	Upload to NIRIS for Navy Chemist Review	1 day	Sun 11/24/13	Sun 11/24/13
397	Gov't Review and Comments	30 days	Mon 11/25/13	Tue 12/24/13
398	Address Gov't Comments and Issue Draft SI UFP-SAP	14 days	Wed 12/25/13	Tue 1/7/14
399	Regulatory Review	60 days	Wed 1/8/14	Sat 3/8/14
400	Address Regulatory Commentson Draft SI UFP-SAP	40 days	Sun 3/9/14	Thu 4/17/14
401	Issue Final SI UFP-SAP	7 days	Fri 4/18/14	Thu 4/24/14
402	Field Investigation (and Laboratory)	60 days	Fri 4/25/14	Mon 6/23/14
403	**Technical Memorandum**	**218 days**	**Tue 6/24/14**	**Tue 1/27/15**
404	**Preliminary TM**	**93 days**	**Tue 6/24/14**	**Wed 9/24/14**
412	Gov't Review and Comments	29 days	Thu 9/25/14	Thu 10/23/14
413	Address Gov't Comments and Issue Draft TM	22 days	Fri 10/24/14	Fri 11/14/14
414	Regulatory Review	60 days	Sat 11/15/14	Tue 1/13/15
415	Issue Final TM	14 days	Wed 1/14/15	Tue 1/27/15
416	**EE/CA**	**335 days**	**Wed 1/28/15**	**Mon 12/28/15**
417	**RAA Development**	**49 days**	**Wed 1/28/15**	**Tue 3/17/15**
423	**Preliminary EE/CA**	**79 days**	**Wed 3/18/15**	**Thu 6/4/15**
431	Gov't Review and Comments	30 days	Fri 6/5/15	Sat 7/4/15
432	Address Gov't comments and Issue Draft EE/CA report	22 days	Sun 7/5/15	Sun 7/26/15
433	Regulatory Review	60 days	Mon 7/27/15	Thu 9/24/15
434	Address Regulatory Comments and Issue Draft Final ESI report	21 days	Fri 9/25/15	Thu 10/15/15
435	Regulatory Review	30 days	Fri 10/16/15	Sat 11/14/15
436	Public Comment Period	30 days	Sun 11/15/15	Mon 12/14/15
437	Issue Final EE/CA report	14 days	Tue 12/15/15	Mon 12/28/15
438	**Implementation of EE/CA and Post-Construction Documentation**	**295 days**	**Tue 12/29/15**	**Tue 10/18/16**
454	**NFRAP or Decision Document**	**271 days**	**Wed 10/5/16**	**Sun 7/2/17**



Task		Milestone		External Tasks	
Split		Summary		External Milestone	
Progress		Project Summary		Deadline	

Schedule 3-6
AOC 6 FY14-FY15 Schedule

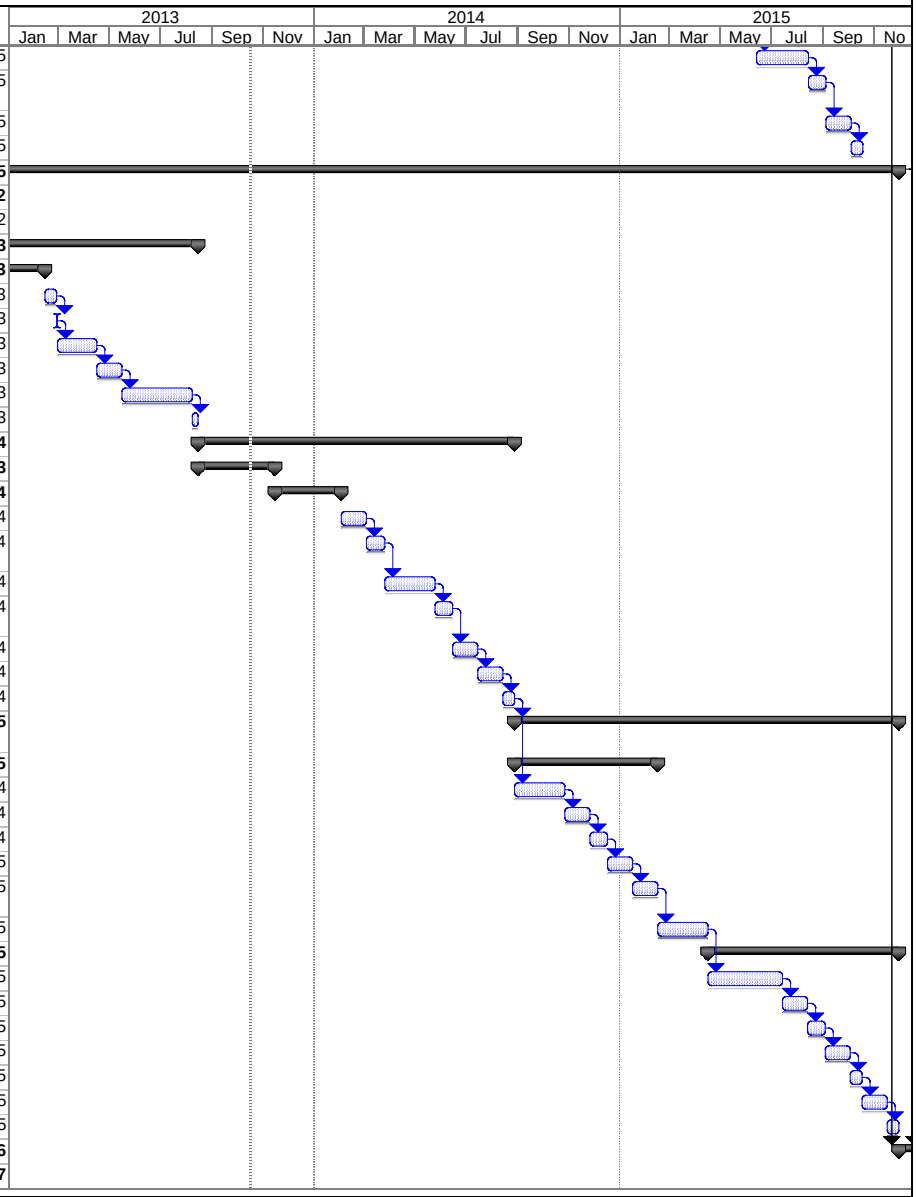
ID	Task Name	Duration	Start	Finish
1	**CAX**	**3582 days**	**Thu 2/12/09**	**Mon 12/3/18**
470	**AOC 6**	**3001 days**	**Thu 2/12/09**	**Mon 5/1/17**
471	**Site Inspection Report (All Subareas Except Waste Slag)**	**1211 days**	**Thu 2/12/09**	**Wed 6/6/12**
479	**1918 Drum Storage Area**	**428 days**	**Sun 7/1/12**	**Sun 9/1/13**
480	**NFA Consensus Letter**	**428 days**	**Sun 7/1/12**	**Sun 9/1/13**
486	**Ammonia Settling Pits**	**1104 days**	**Wed 1/18/12**	**Sun 1/25/15**
487	**Expanded SI**	**1104 days**	**Wed 1/18/12**	**Sun 1/25/15**
488	**Expanded SI UFP-SAP**	**682 days**	**Wed 1/18/12**	**Fri 11/29/13**
489	**Preliminary ESI UFP-SAP**	**505 days**	**Wed 1/18/12**	**Wed 6/5/13**
501	Upload to NIRIS for Navy Chemist Review	1 day	Thu 6/6/13	Thu 6/6/13
502	Gov't Review and Comments	30 days	Fri 6/7/13	Sat 7/6/13
503	Address Gov't Comments and Issue Draft ESI UFP-SAP	20 days	Sun 7/7/13	Fri 7/26/13
504	Regulatory Review	61 days	Sat 7/27/13	Wed 9/25/13
505	Address Regulatory Comments and Issue Draft Final ESI UFP-SAP	21 days	Thu 9/26/13	Wed 10/16/13
506	Regulatory Review	30 days	Thu 10/17/13	Fri 11/15/13
507	Issue Final ESI UFP-SAP	14 days	Sat 11/16/13	Fri 11/29/13
508	Field Investigation (and Laboratory)	120 days	Sat 11/30/13	Sat 3/29/14
509	**ESI Report**	**302 days**	**Sun 3/30/14**	**Sun 1/25/15**
510	**Preliminary ESI**	**125 days**	**Sun 3/30/14**	**Fri 8/1/14**
518	Gov't Review and Comments	30 days	Sat 8/2/14	Sun 8/31/14
519	Address Gov't Comments and Issue Draft ESI Report	21 days	Mon 9/1/14	Sun 9/21/14
520	Regulatory Review	61 days	Mon 9/22/14	Fri 11/21/14
521	Address Regulatory Comments and Issue Draft Final ESI Report	21 days	Sat 11/22/14	Fri 12/12/14
522	Regulatory Review	30 days	Sat 12/13/14	Sun 1/11/15
523	Issue Final ESI report	14 days	Mon 1/12/15	Sun 1/25/15
524	**TNT Graining House & TNT Catch Box Ruins**	**1433 days**	**Wed 11/16/11**	**Sun 10/18/15**
525	**Remedial Investigation**	**1433 days**	**Wed 11/16/11**	**Sun 10/18/15**
526	**RI UFP-SAP**	**676 days**	**Wed 11/16/11**	**Sat 9/21/13**
547	Field Investigation (and Laboratory)	120 days	Sun 9/22/13	Sun 1/19/14
548	**RI Report**	**331 days**	**Mon 1/20/14**	**Tue 12/16/14**
549	**Preliminary RI**	**153 days**	**Mon 1/20/14**	**Sat 6/21/14**
557	Gov't Review and Comments	30 days	Sun 6/22/14	Mon 7/21/14
558	Address Gov't Comments and Issue Draft RI Report	22 days	Tue 7/22/14	Tue 8/12/14
559	Regulatory Review	60 days	Wed 8/13/14	Sat 10/11/14
560	Address Regulatory Comments and Issue Draft Final RI Report	22 days	Sun 10/12/14	Sun 11/2/14
561	Regulatory Review	30 days	Mon 11/3/14	Tue 12/2/14
562	Issue Final RI Report	14 days	Wed 12/3/14	Tue 12/16/14
563	**Feasibility Study**	**306 days**	**Wed 12/17/14**	**Sun 10/18/15**
564	**RAA Development**	**49 days**	**Wed 12/17/14**	**Tue 2/3/15**
570	**Preliminary FS Report**	**79 days**	**Wed 2/4/15**	**Thu 4/23/15**
578	Gov't Review and Comments	30 days	Fri 4/24/15	Sat 5/23/15
579	Address Gov't Comments and Issue Draft FS	21 days	Sun 5/24/15	Sat 6/13/15



Task | Milestone | External Tasks
Split | Summary | External Milestone
Progress | Project Summary | Deadline

Schedule 3-6
AOC 6 FY14-FY15 Schedule

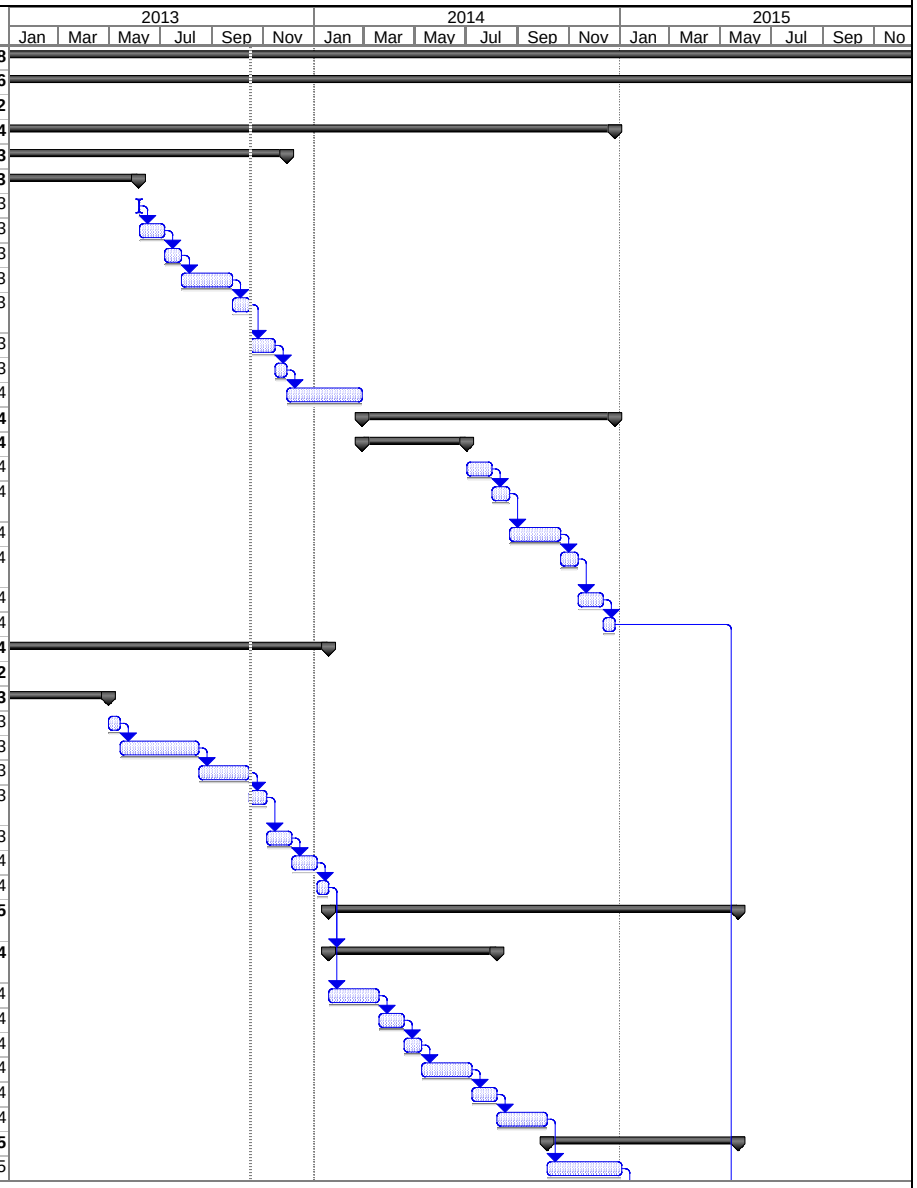
ID	Task Name	Duration	Start	Finish
580	Regulatory Review	62 days	Sun 6/14/15	Fri 8/14/15
581	Address Regulatory Comments and Issue Draft Final FS	21 days	Sat 8/15/15	Fri 9/4/15
582	Regulatory Review	30 days	Sat 9/5/15	Sun 10/4/15
583	Issue Final FS	14 days	Mon 10/5/15	Sun 10/18/15
584	**Waste Slag Material**	**1406 days**	**Wed 1/25/12**	**Mon 11/30/15**
585	**UFP-SAP Addendum**	**208 days**	**Wed 1/25/12**	**Sun 8/19/12**
605	Field Investigation (and Laboratory)	60 days	Mon 8/20/12	Thu 10/18/12
606	**NFA Tech Memo**	**301 days**	**Fri 10/19/12**	**Thu 8/15/13**
607	**Preliminary NFA TM**	**118 days**	**Fri 10/19/12**	**Wed 2/13/13**
613	Gov't Review and Comments	14 days	Thu 2/14/13	Wed 2/27/13
614	Address Gov't Comments and Issue Draft NFA TM	1 day	Thu 2/28/13	Thu 2/28/13
615	Regulatory Review	47 days	Fri 3/1/13	Tue 4/16/13
616	Address Regulatory Comments on the Draft NFA TM	30 days	Wed 4/17/13	Thu 5/16/13
617	Resolve Regulatory Comments on the Draft NFA TM	84 days	Fri 5/17/13	Thu 8/8/13
618	Issue Final NFA TM	7 days	Fri 8/9/13	Thu 8/15/13
619	**EE/CA**	**378 days**	**Fri 8/16/13**	**Thu 8/28/14**
620	**RAA Development**	**92 days**	**Fri 8/16/13**	**Fri 11/15/13**
626	**Preliminary EE/CA**	**79 days**	**Sat 11/16/13**	**Sun 2/2/14**
634	Gov't Review and Comments	30 days	Mon 2/3/14	Tue 3/4/14
635	Address Gov't Comments and Issue Draft EE/CA report	22 days	Wed 3/5/14	Wed 3/26/14
636	Regulatory Review	60 days	Thu 3/27/14	Sun 5/25/14
637	Address Regulatory Comments and Issue Draft Final EE/CA	21 days	Mon 5/26/14	Sun 6/15/14
638	Regulatory Review	30 days	Mon 6/16/14	Tue 7/15/14
639	Public Comment Period	30 days	Wed 7/16/14	Thu 8/14/14
640	Issue Final EE/CA report	14 days	Fri 8/15/14	Thu 8/28/14
641	**Implementation of EE/CA and Post-Construction Documentation**	**459 days**	**Fri 8/29/14**	**Mon 11/30/15**
642	**Preliminary Removal Action (RA) Workplan**	**171 days**	**Fri 8/29/14**	**Sun 2/15/15**
643	Preparation of Pre-Draft RA Work Plan	60 days	Fri 8/29/14	Mon 10/27/14
644	Gov't Comments	30 days	Tue 10/28/14	Wed 11/26/14
645	Issue Draft RA Workplan	21 days	Thu 11/27/14	Wed 12/17/14
646	Regulatory Review	30 days	Thu 12/18/14	Fri 1/16/15
647	Issue Final RA Workplan (assume DF not necessary)	30 days	Sat 1/17/15	Sun 2/15/15
648	Removal Action (and Laboratory)	60 days	Mon 2/16/15	Thu 4/16/15
649	**Post-Construction Documentation**	**228 days**	**Fri 4/17/15**	**Mon 11/30/15**
650	Preliminary CCR	89 days	Fri 4/17/15	Tue 7/14/15
651	Gov't Comments	30 days	Wed 7/15/15	Thu 8/13/15
652	Issue Draft CCR	21 days	Fri 8/14/15	Thu 9/3/15
653	Regulatory Review	30 days	Fri 9/4/15	Sat 10/3/15
654	Issue Draft Final CCR	14 days	Sun 10/4/15	Sat 10/17/15
655	Regulatory Review	30 days	Sun 10/18/15	Mon 11/16/15
656	Issue Final CCR	14 days	Tue 11/17/15	Mon 11/30/15
657	**Proposed Plan (All Five AOC 6 Subareas)**	**277 days**	**Tue 12/1/15**	**Fri 9/2/16**
673	**Record of Decision (All Five AOC 6 Subareas)**	**255 days**	**Sat 8/20/16**	**Mon 5/1/17**



Task | Milestone | External Tasks
Split | Summary | External Milestone
Progress | Project Summary | Deadline

Schedule 3-7
AOC 7 FY14-FY15 Schedule

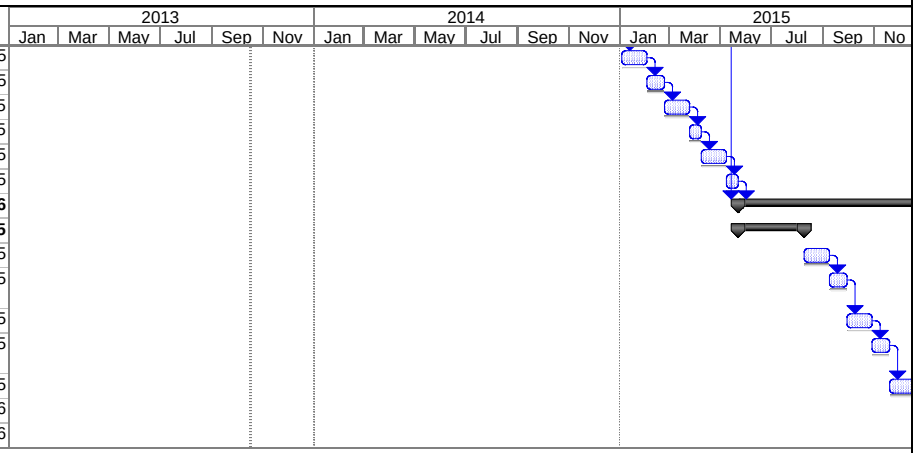
ID	Task Name	Duration	Start	Finish
1	**CAX**	**3582 days**	**Thu 2/12/09**	**Mon 12/3/18**
688	**AOC 7**	**2561 days**	**Thu 2/12/09**	**Tue 2/16/16**
689	**Site Inspection Report**	**1211 days**	**Thu 2/12/09**	**Wed 6/6/12**
697	**Expanded SI**	**1074 days**	**Wed 1/18/12**	**Fri 12/26/14**
698	**Expanded SI UFP-SAP**	**682 days**	**Wed 1/18/12**	**Fri 11/29/13**
699	**Preliminary ESI UFP-SAP**	**505 days**	**Wed 1/18/12**	**Wed 6/5/13**
711	Upload to NIRIS for Navy Chemist Review	1 day	Thu 6/6/13	Thu 6/6/13
712	Gov't Review and Comments	30 days	Fri 6/7/13	Sat 7/6/13
713	Address Gov't Comments and Issue Draft ESI UFP-SAP	20 days	Sun 7/7/13	Fri 7/26/13
714	Regulatory Review	61 days	Sat 7/27/13	Wed 9/25/13
715	Address Regulatory Comments and Issue Draft Final ESI UFP-SAP	21 days	Thu 9/26/13	Wed 10/16/13
716	Regulatory Review	30 days	Thu 10/17/13	Fri 11/15/13
717	Issue Final ESI UFP-SAP	14 days	Sat 11/16/13	Fri 11/29/13
718	Field Investigation (and Laboratory)	90 days	Sat 11/30/13	Thu 2/27/14
719	**ESI Report**	**302 days**	**Fri 2/28/14**	**Fri 12/26/14**
720	**Preliminary ESI**	**125 days**	**Fri 2/28/14**	**Wed 7/2/14**
728	Gov't Review and Comments	30 days	Thu 7/3/14	Fri 8/1/14
729	Address Gov't Comments and Issue Draft ESI Report	21 days	Sat 8/2/14	Fri 8/22/14
730	Regulatory Review	61 days	Sat 8/23/14	Wed 10/22/14
731	Address Regulatory Comments and Issue Draft Final ESI Report	21 days	Thu 10/23/14	Wed 11/12/14
732	Regulatory Review	30 days	Thu 11/13/14	Fri 12/12/14
733	Issue Final ESI report	14 days	Sat 12/13/14	Fri 12/26/14
734	**EE/CA**	**524 days**	**Mon 8/13/12**	**Sat 1/18/14**
735	**RAA Development**	**65 days**	**Mon 8/13/12**	**Tue 10/16/12**
741	**Preliminary EE/CA**	**196 days**	**Wed 10/17/12**	**Tue 4/30/13**
747	Gov't Review and Comments	14 days	Wed 5/1/13	Tue 5/14/13
748	Address Gov't Comments and Issue Draft EE/CA Report	94 days	Wed 5/15/13	Fri 8/16/13
749	Regulatory Review	60 days	Sat 8/17/13	Tue 10/15/13
750	Address Regulatory Comments and Issue Draft Final EE/CA Report	21 days	Wed 10/16/13	Tue 11/5/13
751	Regulatory Review	30 days	Wed 11/6/13	Thu 12/5/13
752	Public Comment Period	30 days	Fri 12/6/13	Sat 1/4/14
753	Issue Final EE/CA Report	14 days	Sun 1/5/14	Sat 1/18/14
754	**Implementation of EE/CA and Post-Construction Documentation**	**489 days**	**Sun 1/19/14**	**Fri 5/22/15**
755	**Preliminary Removal Action (RA) Workplan**	**201 days**	**Sun 1/19/14**	**Thu 8/7/14**
756	Preparation of Pre-Draft RA Work Plan	60 days	Sun 1/19/14	Wed 3/19/14
757	Gov't Comments	30 days	Thu 3/20/14	Fri 4/18/14
758	Issue Draft RA Workplan	21 days	Sat 4/19/14	Fri 5/9/14
759	Regulatory Review	60 days	Sat 5/10/14	Tue 7/8/14
760	Issue Final RA Workplan (assume DF not necessary)	30 days	Wed 7/9/14	Thu 8/7/14
761	Removal Action (and Laboratory)	60 days	Fri 8/8/14	Mon 10/6/14
762	**Post-Construction Documentation**	**228 days**	**Tue 10/7/14**	**Fri 5/22/15**
763	Preliminary CCR	89 days	Tue 10/7/14	Sat 1/3/15



Task		Milestone		External Tasks	
Split		Summary		External Milestone	
Progress		Project Summary		Deadline	

Schedule 3-7
AOC 7 FY14-FY15 Schedule

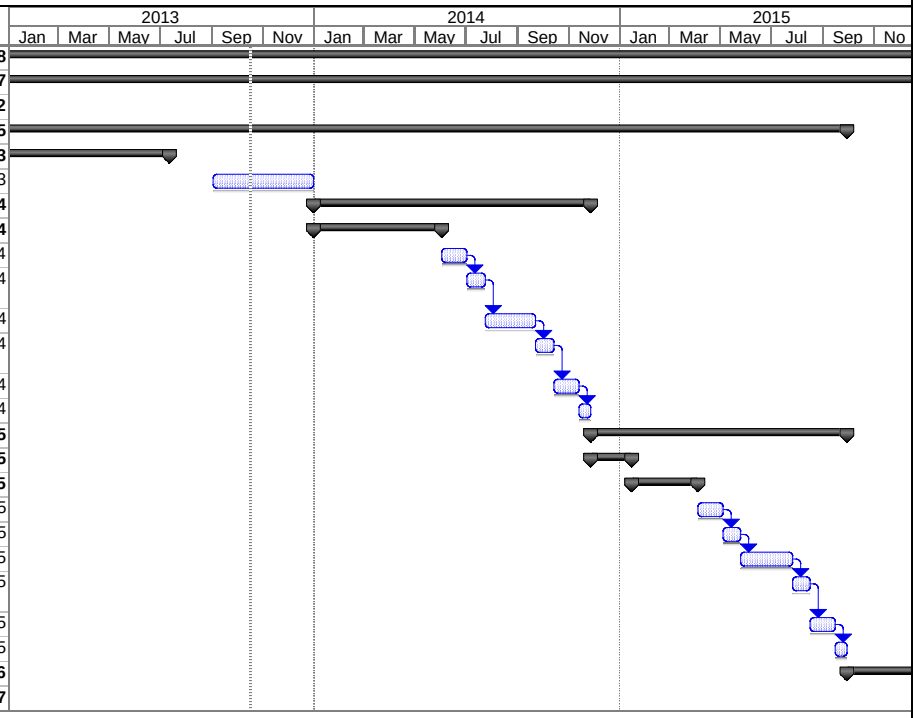
ID	Task Name	Duration	Start	Finish
764	Gov't Comments	30 days	Sun 1/4/15	Mon 2/2/15
765	Issue Draft CCR	21 days	Tue 2/3/15	Mon 2/23/15
766	Regulatory Review	30 days	Tue 2/24/15	Wed 3/25/15
767	Issue Draft Final CCR	14 days	Thu 3/26/15	Wed 4/8/15
768	Regulatory Review	30 days	Thu 4/9/15	Fri 5/8/15
769	Issue Final CCR	14 days	Sat 5/9/15	Fri 5/22/15
770	**NFRAP or Decision Document**	**270 days**	**Sat 5/23/15**	**Tue 2/16/16**
771	**Preliminary NFRAP or DD**	**79 days**	**Sat 5/23/15**	**Sun 8/9/15**
779	Gov't Review and Comments	30 days	Mon 8/10/15	Tue 9/8/15
780	Address Gov't Comments and Issue Draft NFRAP or DD Report	21 days	Wed 9/9/15	Tue 9/29/15
781	Regulatory Review	30 days	Wed 9/30/15	Thu 10/29/15
782	Address Regulatory Comments and Issue Draft Final NFRAP or DD Report	21 days	Fri 10/30/15	Thu 11/19/15
783	Regulatory Review	30 days	Fri 11/20/15	Sat 12/19/15
784	Public Comment Period	45 days	Sun 12/20/15	Tue 2/2/16
785	Issue Final NFRAP or DD Report	14 days	Wed 2/3/16	Tue 2/16/16



Task | Milestone | External Tasks
Split | Summary | External Milestone
Progress | Project Summary | Deadline

Schedule 3-8
AOC 8 FY14-FY15 Schedule

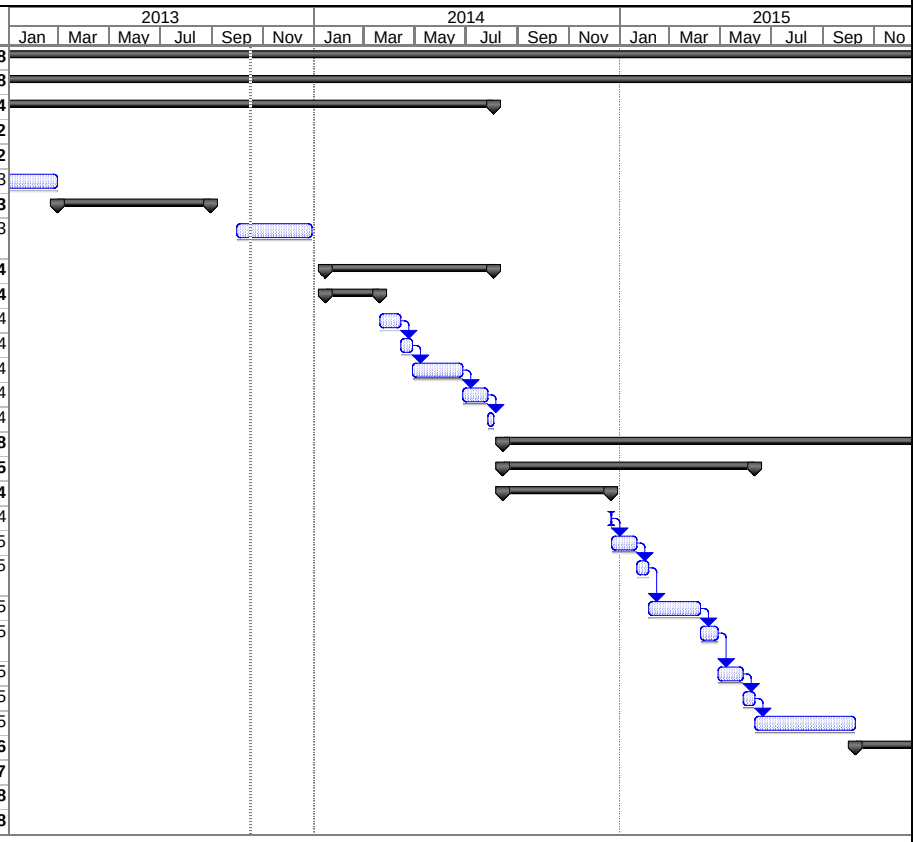
ID	Task Name	Duration	Start	Finish
1	**CAX**	**3582 days**	**Thu 2/12/09**	**Mon 12/3/18**
786	**AOC 8**	**2938 days**	**Thu 2/12/09**	**Mon 2/27/17**
787	**Site Inspection Report**	**1211 days**	**Thu 2/12/09**	**Wed 6/6/12**
794	**Remedial Investigation**	**1414 days**	**Wed 11/16/11**	**Tue 9/29/15**
795	**RI UFP-SAP**	**605 days**	**Wed 11/16/11**	**Fri 7/12/13**
819	Field Investigation (and Laboratory)	120 days	Tue 9/3/13	Tue 12/31/13
820	**RI Report**	**331 days**	**Wed 1/1/14**	**Thu 11/27/14**
821	**Preliminary RI**	**153 days**	**Wed 1/1/14**	**Mon 6/2/14**
829	Gov't Review and Comments	30 days	Tue 6/3/14	Wed 7/2/14
830	Address Gov't Comments and Issue Draft RI Report	22 days	Thu 7/3/14	Thu 7/24/14
831	Regulatory Review	60 days	Fri 7/25/14	Mon 9/22/14
832	Address Regulatory Comments and Issue Draft Final RI Report	22 days	Tue 9/23/14	Tue 10/14/14
833	Regulatory Review	30 days	Wed 10/15/14	Thu 11/13/14
834	Issue Final RI report	14 days	Fri 11/14/14	Thu 11/27/14
835	**Feasibility Study**	**306 days**	**Fri 11/28/14**	**Tue 9/29/15**
836	**RAA Development**	**49 days**	**Fri 11/28/14**	**Thu 1/15/15**
842	**Preliminary FS Report**	**79 days**	**Fri 1/16/15**	**Sat 4/4/15**
850	Gov't Review and Comments	30 days	Sun 4/5/15	Mon 5/4/15
851	Address Gov't Comments and Issue Draft FS	21 days	Tue 5/5/15	Mon 5/25/15
852	Regulatory Review	62 days	Tue 5/26/15	Sun 7/26/15
853	Address Regulatory Comments and Issue Draft Final FS	21 days	Mon 7/27/15	Sun 8/16/15
854	Regulatory Review	30 days	Mon 8/17/15	Tue 9/15/15
855	Issue Final FS	14 days	Wed 9/16/15	Tue 9/29/15
856	**Proposed Plan**	**277 days**	**Wed 9/30/15**	**Sat 7/2/16**
872	**Record of Decision**	**254 days**	**Sun 6/19/16**	**Mon 2/27/17**



Task | Milestone | External Tasks
Split | Summary | External Milestone
Progress | Project Summary | Deadline

Schedule 3-9
AOC 9 FY14-FY15 Schedule

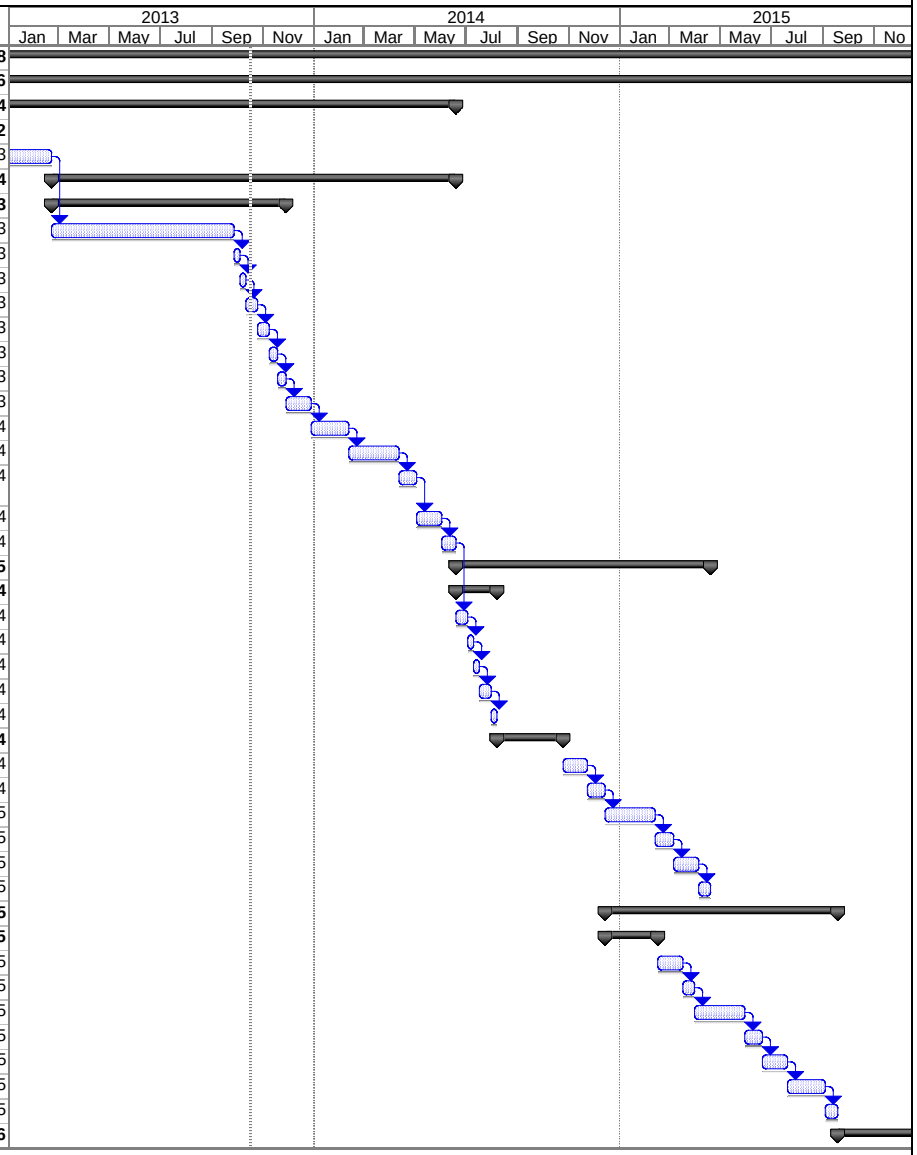
ID	Task Name	Duration	Start	Finish
1	**CAX**	**3582 days**	**Thu 2/12/09**	**Mon 12/3/18**
887	**AOC 9**	**2621 days**	**Sat 10/1/11**	**Mon 12/3/18**
888	**Site Inspection**	**1038 days**	**Sat 10/1/11**	**Sun 8/3/14**
889	**Step 1 Tech Memo**	**152 days**	**Sat 10/1/11**	**Wed 2/29/12**
905	**UFP-SAP Addendum for Step 2**	**224 days**	**Thu 3/22/12**	**Wed 10/31/12**
919	Field Investigation (and Laboratory)	120 days	Thu 11/1/12	Thu 2/28/13
920	**Step 2 Tech Memo - Part 1**	**183 days**	**Fri 3/1/13**	**Fri 8/30/13**
931	Fish and Frog Tissue Laboratory Analyses, Data Validation, Data Management	90 days	Tue 10/1/13	Sun 12/29/13
932	**Step 2 Tech Memo - Part 2**	**201 days**	**Wed 1/15/14**	**Sun 8/3/14**
933	**Preliminary Draft Tech Memo**	**65 days**	**Wed 1/15/14**	**Thu 3/20/14**
938	Gov't Comments	25 days	Fri 3/21/14	Mon 4/14/14
939	Issue Draft Tech Memo	14 days	Tue 4/15/14	Mon 4/28/14
940	Regulatory Review	60 days	Tue 4/29/14	Fri 6/27/14
941	Address Regulatory Comments on Draft Tech Memo	30 days	Sat 6/28/14	Sun 7/27/14
942	Issue Final Tech Memo	7 days	Mon 7/28/14	Sun 8/3/14
943	**Remedial Investigation**	**1572 days**	**Fri 8/15/14**	**Mon 12/3/18**
944	**RI UFP-SAP**	**301 days**	**Fri 8/15/14**	**Thu 6/11/15**
945	**Preliminary RI UFP-SAP**	**129 days**	**Fri 8/15/14**	**Sun 12/21/14**
957	Upload to NIRIS for Navy Chemist Review	1 day	Mon 12/22/14	Mon 12/22/14
958	Gov't Review and Comments	30 days	Tue 12/23/14	Wed 1/21/15
959	Address Gov't Comments and Issue Draft RI UFP-SAP	14 days	Thu 1/22/15	Wed 2/4/15
960	Regulatory Review	62 days	Thu 2/5/15	Tue 4/7/15
961	Address Regulatory Comments and Issue Draft Final RI UFP-SAP	21 days	Wed 4/8/15	Tue 4/28/15
962	Regulatory Review	30 days	Wed 4/29/15	Thu 5/28/15
963	Issue Final RI UFP-SAP	14 days	Fri 5/29/15	Thu 6/11/15
964	Field Investigation (and Laboratory)	120 days	Fri 6/12/15	Fri 10/9/15
965	**RI Report**	**329 days**	**Sat 10/10/15**	**Fri 9/2/16**
980	**Feasibility Study**	**302 days**	**Sat 9/3/16**	**Sat 7/1/17**
1001	**Proposed Plan**	**276 days**	**Tue 6/20/17**	**Thu 3/22/18**
1017	**Record of Decision**	**256 days**	**Fri 3/23/18**	**Mon 12/3/18**



Task		Milestone		External Tasks	
Split		Summary		External Milestone	
Progress		Project Summary		Deadline	

Schedule 3-10
Youth Pond FY14-FY15 Schedule

ID	Task Name	Duration	Start	Finish
1	**CAX**	**3582 days**	**Thu 2/12/09**	**Mon 12/3/18**
1032	**Youth Pond**	**1622 days**	**Wed 12/21/11**	**Sun 5/29/16**
1033	**Remedial Investigation**	**912 days**	**Wed 12/21/11**	**Thu 6/19/14**
1034	**RI UFP-SAP**	**298 days**	**Wed 12/21/11**	**Sat 10/13/12**
1054	Field Investigation (and Laboratory)	131 days	Sun 10/14/12	Thu 2/21/13
1055	**RI Report**	**483 days**	**Fri 2/22/13**	**Thu 6/19/14**
1056	**Preliminary RI**	**280 days**	**Fri 2/22/13**	**Thu 11/28/13**
1057	Draft Preliminary RI Report	218 days	Fri 2/22/13	Fri 9/27/13
1058	AM Review of RI	7 days	Sat 9/28/13	Fri 10/4/13
1059	Address AM Comments	7 days	Sat 10/5/13	Fri 10/11/13
1060	STC Review of RI Report	14 days	Sat 10/12/13	Fri 10/25/13
1061	Address STC Comments	14 days	Sat 10/26/13	Fri 11/8/13
1062	AQM Review of RI Report	10 days	Sat 11/9/13	Mon 11/18/13
1063	Address AQM Comments	10 days	Tue 11/19/13	Thu 11/28/13
1064	Gov't Review and Comments	30 days	Fri 11/29/13	Sat 12/28/13
1065	Address Gov't Comments and Issue Draft RI Report	45 days	Sun 12/29/13	Tue 2/11/14
1066	Regulatory Review	60 days	Wed 2/12/14	Sat 4/12/14
1067	Address Regulatory Comments and Issue Draft Final RI Report	21 days	Sun 4/13/14	Sat 5/3/14
1068	Regulatory Review	30 days	Sun 5/4/14	Mon 6/2/14
1069	Issue Final RI Report	17 days	Tue 6/3/14	Thu 6/19/14
1070	**Feasibility Study**	**304 days**	**Fri 6/20/14**	**Sun 4/19/15**
1071	**RAA Development**	**49 days**	**Fri 6/20/14**	**Thu 8/7/14**
1072	Draft RAA's	14 days	Fri 6/20/14	Thu 7/3/14
1073	STC Review of RAA's	7 days	Fri 7/4/14	Thu 7/10/14
1074	Address STC Comments	7 days	Fri 7/11/14	Thu 7/17/14
1075	Gov't Review and Comments	14 days	Fri 7/18/14	Thu 7/31/14
1076	Address Gov't Comments	7 days	Fri 8/1/14	Thu 8/7/14
1077	**Preliminary FS Report**	**79 days**	**Fri 8/8/14**	**Sat 10/25/14**
1085	Gov't Review and Comments	29 days	Sun 10/26/14	Sun 11/23/14
1086	Address Gov't Comments and Issue Draft FS	21 days	Mon 11/24/14	Sun 12/14/14
1087	Regulatory Review	60 days	Mon 12/15/14	Thu 2/12/15
1088	Address Regulatory Comments and Issue Draft Final FS	22 days	Fri 2/13/15	Fri 3/6/15
1089	Regulatory Review	30 days	Sat 3/7/15	Sun 4/5/15
1090	Issue Final FS	14 days	Mon 4/6/15	Sun 4/19/15
1091	**Proposed Plan**	**278 days**	**Mon 12/15/14**	**Fri 9/18/15**
1092	**Preliminary PP**	**63 days**	**Mon 12/15/14**	**Sun 2/15/15**
1100	Gov't Comments	30 days	Mon 2/16/15	Tue 3/17/15
1101	Issue Draft PP	14 days	Wed 3/18/15	Tue 3/31/15
1102	Regulatory/Legal Review	60 days	Wed 4/1/15	Sat 5/30/15
1103	Draft Final PP	21 days	Sun 5/31/15	Sat 6/20/15
1104	Regulatory Review	30 days	Sun 6/21/15	Mon 7/20/15
1105	Public Comment Period	45 days	Tue 7/21/15	Thu 9/3/15
1106	Issue Final PP	15 days	Fri 9/4/15	Fri 9/18/15
1107	**Record of Decision**	**254 days**	**Sat 9/19/15**	**Sun 5/29/16**



Task | Milestone | External Tasks
Split | Summary | External Milestone
Progress | Project Summary | Deadline

SECTION 4

Land Use Planning

Currently, CAX does not have any sites with Land Use Controls (LUCs) in place. Should LUCs be part of the remedy identified in a future ROD, the site will be listed within this section of the SMP, and the boundaries of potential environmental impact areas shown on a figure.

This information will be available to Base Planning personnel for environmental considerations during Base operational planning and decision making to ensure that LUCs are maintained at ER sites where the ROD identifies LUCs as part of the remedy. In the event DoD activities will influence LUC areas, the Navy Remedial Project Manager should be consulted. Contact information is listed below:

Mr. Scott Park
Naval Facilities Engineering Command, Mid-Atlantic
9742 Maryland Ave. Bldg N-26, Rm 3300
Norfolk, VA 23511-3095
(757) 341-0481
Email: Scott.Park@navy.mil

SECTION 5

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