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Final  
2004-2005  
Site Management Plan  
Naval Weapons Station Yorktown  
Yorktown, Virginia  
and  
Cheatham Annex Site  
Williamsburg, Virginia



Prepared For  
**Department of the Navy**  
**Atlantic Division**  
**Naval Facilities Engineering Command**  
**Norfolk, Virginia**

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Environmental, Inc.

**FINAL**

**2004 – 2005  
SITE MANAGEMENT PLAN  
NAVAL WEAPONS STATION YORKTOWN  
YORKTOWN, VIRGINIA  
AND  
CHEATHAM ANNEX SITE  
WILLIAMSBURG, VIRGINIA**

**CONTRACT TASK ORDER 0275**

*Prepared for:*

**DEPARTMENT OF THE NAVY  
ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
*Norfolk, Virginia***

*Under the:*

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## ACRONYMS AND ABBREVIATIONS

AOC	Area of Concern
AST	Aboveground Storage Tank
Baker	Baker Environmental, Inc.
CAX	Cheatham Annex Site
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DOD	Department of Defense
DON	Department of the Navy
EE/CA	Engineering Evaluation/Cost Analysis
EOD	Explosives Ordnance Disposal
EPIC	Environmental Photographic Interpretation Center
FFA	Federal Facility Agreement
FISC	Fleet and Industrial Supply Center
FY	Fiscal Year
HRSD	Hampton Roads Sanitation District
IAS	Initial Assessment Study
IRP	Installation Restoration Program
LANTDIV	Naval Facilities Engineering Command, Atlantic Division
NCP	National Oil and Hazardous Substance Contingency Plan
NEDED	Naval Explosives Development Engineering Department
NEESA	Naval Energy and Environmental Support Activity
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
OU	Operable Unit
PAH	Polynuclear Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyl
PRAP	Proposed Remedial Action Plan
RA	Remedial Action
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SI	Site Investigation
SMP	Site Management Plan
SSA	Site Screening Area
SSP	Site Screening Process

**ACRONYMS AND ABBREVIATIONS**  
**(Continued)**

STP	Sewage Treatment Plant
SVOC	Semivolatile Organic Compound
SWMU	Solid Waste Management Unit
TAL	Target Analyte List
TCL	Target Compound List
TNT	Trinitrotoluene
TRC	Technical Review Committee
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
UXO	Unexploded Ordnance
VDEQ	Virginia Department of Environmental Quality
VOC	Volatile Organic Compound
WES	Waterways Experimental Station
WPNSTA Yorktown	Naval Weapons Station Yorktown, Yorktown, Virginia

## **1.0 INTRODUCTION**

This document presents the Site Management Plan (SMP) for Naval Weapons Station Yorktown (WPNSTA), Yorktown, Virginia and the Cheatham Annex Site (CAX), Williamsburg, Virginia. As part of the Federal Facility Agreement (FFA) (USEPA, 1994), the SMP is required as the management tool for planning, reviewing, and setting priorities for all remedial response activities to be conducted at a facility. The SMP is updated annually to revise priorities as work progresses and additional information becomes available. This SMP presents the rationale for the sequence of future investigation and remediation activities to be completed and the estimated schedule for completion of these activities, with detailed schedules and deadlines presented for Fiscal Years (FY) 2004 and 2005, as required by the FFA. For reasons such as Federal budgetary constraints, changes in scope of investigation/remediation activities, or other unanticipated events, an SMP allows for annual adjustment in scheduled activities without modifying the FFA. Section XII of the FFA requires that the SMP include the detailed scheduling of activities for two fiscal years, annual updating of the scheduled activities, and review and approval by the United States Environmental Protection Agency (USEPA) Region III and the Commonwealth of Virginia.

### **1.1 Facility Descriptions**

WPNSTA Yorktown is a 10,624-acre installation located on the Virginia Peninsula in York and James City Counties and the City of Newport News (Figure 1-1). WPNSTA Yorktown is bounded on the northwest by CAX and the Virginia Emergency Fuel Farm, on the northeast by the York River and the Colonial National Historic Parkway, on the southwest by Route 143 and Interstate 64, and on the southeast by Route 238 and the town of Lackey. Originally named the U.S. Mine Depot, WPNSTA Yorktown was established in 1918 to support mine laying in the North Sea during World War I. For 20 years after World War I, the depot received, reclaimed, stored, and issued mines, depth charges, and related materials. During World War II, the facility was expanded to include three additional trinitrotoluene (TNT) loading plants and new torpedo overhaul facilities. A research and development laboratory for experimentation with high explosives was established in 1944. In 1947, a quality evaluation laboratory was developed to monitor special tasks assigned to the facility, which included the design and development of depth charges and advanced underwater weapons. On August 7, 1959, the depot was renamed the U.S. Naval Weapons Station. Today, the primary mission of WPNSTA Yorktown is to provide ordnance, technical support, and related services to sustain the war-fighting capability of the armed forces in support of national military strategy.

As part of the FFA development and by mutual consent of the Navy and the USEPA, several Resource Conservation and Recovery Act (RCRA) Solid Waste Management Units (SWMUs) at WPNSTA were included for investigation and evaluation under the FFA. Fifteen former SWMUs, two areas identified in the Environmental Photographic Interpretation Center (EPIC) study, one Area of Concern (AOC), and one former Installation Restoration Program (IRP) site were listed in Appendix A of the FFA as Site Screening Areas in need of further investigation. In addition to these 19 Site Screening Areas (SSAs) listed in the FFA, five additional SSAs were added for investigation and evaluation, for a total of 24 SSAs. Based on the results of the site screening process (SSP), to date, eight SSAs at WPNSTA have been retained as IRP sites for additional Remedial Investigation/Feasibility Study (RI/FS) efforts. Scheduled and completed activities for 25 sites and 16 SSAs at WPNSTA are presented in this SMP. Table 1-1 is a listing of the sites and SSAs at WPNSTA.

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 1943, the property was used for farming or 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. At inception, CAX occupied approximately 3,349 acres. Several portions of the original base have since been declared surplus and transferred to other government jurisdictions, including the National Park Service, the Commonwealth of Virginia, and York County. CAX is currently comprised of 1,578 acres (Figure 1-1). The Activity is divided into two separate parcels, with the larger parcel situated along the banks of the York River. Almost all of the activities at CAX (administration, training, maintenance, support, and housing) take place in this portion of the Activity. The smaller parcel is located south of the Colonial National Historic Parkway. This area contains Jones Pond and 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.

In October 1998, CAX control was transferred from Fleet and Industrial Supply Center (FISC) to WPNSTA. Although CAX has yet to be formally incorporated into the WPNSTA FFA, it will be in the near future. Until the incorporation of CAX into the WPNSTA FFA is complete, CAX will be voluntarily managed under the WPNSTA FFA. On December 1, 2000, CAX was included on the National Priorities List (NPL). Prior to this, all IRP actions initiated at CAX were voluntary and consistent with other Department of Navy (DON) installations. To date, a total of 12 sites and 8 AOCs have been identified at

CAX. Scheduled and completed activities for all CAX sites and AOCs are presented in this SMP. Table 1-2 is a listing of the sites and AOCs at CAX.

## **1.2 WPNSTA Environmental Status/Previous Investigations and Reporting**

The environmental condition of WPNSTA Yorktown is being investigated through the Department of Defense's (DOD's) IRP. On October 15, 1992, WPNSTA Yorktown was included on the NPL primarily because of nearby wetlands and the potential impact on the surrounding environment.

Previous investigation reports completed through the IRP include an Initial Assessment Study (IAS) (July 1984), two Confirmation Study Reports (June 1986 and June 1988), a Remedial Investigation (RI) Interim Report (July 1991), a Site Inspection Report for Site 21 (February 1992), a Focused Biological Sampling and Preliminary Risk Evaluation Report (April 1993), and a Round One RI Report (July 1993). In addition, several Round Two RIs and SSA Investigations have been completed. The following paragraphs briefly describe important historic investigations conducted at WPNSTA Yorktown.

### **1.2.1 Initial Assessment Study**

The purpose of the IAS (C.C. Johnson & Associates, Inc. and CH2M Hill, 1984) was to identify and assess sites posing a potential threat to human health and/or the environment due to contamination from past operations. A total of 19 potentially contaminated sites were identified based on information from historical records, aerial photographs, field inspections, and personnel interviews. Each site was evaluated for the type of contamination, migration pathways, and pollutant receptors. The IAS concluded that 15 of the 19 sites were a sufficient enough threat to human health or the environment to warrant Confirmation Studies.

### **1.2.2 Confirmation Study and Remedial Investigation Interim Report**

Two rounds of data were obtained during the Confirmation Study. During the first round of sampling, conducted in the winter of 1986, environmental samples were collected from the 15 sites identified in the IAS. This effort was documented in the "Confirmation Study Step IA (Verification), Round One," (Dames & Moore, 1986a). The initial sampling effort included:

- Installation and sampling of 26 monitoring wells
- Collection and analysis of 21 surface water and sediment samples
- Collection and analysis of 26 surface soil samples

The second round of sampling was conducted during November and December 1987. The Round Two effort included:

- Collection and analysis of 26 groundwater samples from the previously installed wells
- Collection and analysis of 26 surface water and 32 sediment samples
- Collection and analysis of 12 surface soil samples

The results of the analyses and comparisons with appropriate regulatory standards were presented in the “Confirmation Study Step IA (Verification), Round Two,” (Dames & Moore, 1988a). The Draft RI Interim Report contained the combined and summarized results of these field efforts (Dames & Moore, 1989). This report was subsequently revised by Versar in 1991 to incorporate comments from the Technical Review Committee (TRC); this revised report is the RI Interim Report (Versar, 1991). The RI Interim Report recommended that further RI activities be completed at 14 of the 15 sites for which data were available.

### **1.2.3 Site Investigation Report for Site 21**

In November 1990, WPNSTA Yorktown personnel identified an additional site (Site 21, the Battery and Drum Disposal Area) that had not been included in the previous investigations. A Site Investigation (SI) at Site 21 was conducted in October 1991. Three monitoring wells were installed and sampled, and surface and subsurface soil samples were collected. The results of this investigation were presented in the “Draft Final Site Inspection Report, Site 21-Battery and Drum Disposal Area, Naval Weapons Station Yorktown, Yorktown, Virginia” (Baker and Weston, 1992).

### **1.2.4 Focused Biological Sampling and Preliminary Risk Evaluation**

The Focused Biological Sampling and Preliminary Risk Evaluation Report (Baker and Weston, 1993a) summarized the results of a limited biological tissue, surface water, and sediment sampling effort conducted in October 1992. The primary objective of the sampling program was to evaluate the potential human health risk associated with consumption of fish and shellfish taken from select waters within WPNSTA Yorktown. Analytical results of the biota sampling indicated that contaminants have not bioaccumulated in significant quantities in the fish and shellfish of Lee Pond, Roosevelt Pond, Indian Field Creek, and Felgates Creek so as to pose a significant risk to individuals who fish and/or harvest shellfish from those water bodies.

### 1.2.5 Round One RI

A Round One RI was conducted in 1993. Although the RI Interim Report recommended that only 14 of the 15 sites be included for further study, all 15 sites were evaluated during the Round One RI because available data indicated all 15 sites warranted investigation. In addition, based on the data obtained from the SI at Site 21, this site was also included in the Round One study (Baker and Weston, 1993b).

The Round One RI sampling effort included:

- Geophysical investigations
- Biota investigations
- Tidal investigations
- Aquifer testing
- Monitoring well installation (23 wells)
- Collection and analysis of 51 groundwater samples (22 new wells, 29 existing wells; 1 newly installed well was dry)
- Collection and analysis of 196 surface water and sediment samples
- Collection and analysis of 115 surface soil samples
- Collection and analysis of 48 subsurface soil samples

The results of the Round One RI indicated that further investigation was needed at all but 1 of the 16 sites to better define the nature and/or extent of contamination associated with each site. At Site 5, further action was determined to be unnecessary (this decision is discussed in more detail in the Site 5 description section).

A Round One RI was conducted in 1997 for SSAs retained as IRP sites as recommended by the SSP investigations (Baker, 2002a). These sites included:

- Site 23 – Building 428 Teague Road Disposal Area (former SSA 1)
- Site 24 – Aviation Field (former SSA 6)
- Site 25 – Building 373 Rocket Plant (former SSA 7)
- Site 26 – Building 1816 Mark 48 Waste Otto Fuel Tank (former SSA 18)

Another Round One RI was conducted in 2000 for SSAs retained as IRP sites following SSP investigations. These sites included:

- Site 27 – Building 1751 Chemistry Lab Neutralization Unit and Drainage Area (former SSA 9)

- Site 28 – X-Ray Facility Tank Drain Field (former SSA 10)
- Site 29 – Lee Pond (former SSA 20)
- Site 30 – Bracken Road Incinerator (former SSA 24)

### **1.2.6 Round Two RIs**

Following the Round One RIs, Round Two RI field investigations were conducted for the following areas to supplement the Round One RI:

- Sites 1 and 3 (Baker, 1998a), Sites 4, 21, and 22 (Baker, 2001a), and Sites 11 and 17 (Baker, 1997a) in 1996
- Sites 2, 8, and 18, and SSA 14 (Baker, 2002b) in 1997
- Sites 6 and 7 (Baker, 1998b), Site 12 (Baker, 1996a), Site 16 and SSA 16 (Baker, 1995a) and Background for the York River Drainage Area in 1994
- Sites 9 and 19 (Baker, 1997b) in 1995

### **1.2.7 SSA Investigations**

The following SSA investigations have been conducted at WPNSTA Yorktown since 1994:

- SSAs 1, 6, 7, and 15 during 1994 (Baker, 1996b)
- SSAs 2, 17, 18, and 19 in early 1995 (Baker, 1996c)
- SSAs 3, 4, 5, 6, 10, 20, 21, 22, 23, and 24 in the latter part of 1997 (Baker, 2001b)
- SSAs 8, 11, 12, and 13 in early 1996 (Baker, 1997c)

Environmental media including surface soil, subsurface soil, groundwater, surface water, and sediment were investigated, as appropriate.

SSAs 3, 4, 5, 17, 19, 21, and 22 have been removed from the RI/FS process because these SSAs did not pose unacceptable human health or ecological risks according to the risk screening. Long-term monitoring at SSA 2 (an active Open Burn/Open Detonation Range) has been included in a RCRA Part B – Permit Application. SSA 15 was combined with another investigation area (Site 12).

## **1.3 CAX Environmental Status/Previous Investigations and Reporting**

On December 1, 2000, CAX was included on the NPL, primarily because of the nearby wetlands and the potential impact on the surrounding environment.

### **1.3.1 Initial Assessment Study**

The IAS at CAX was conducted in 1984 to identify and assess sites posing a potential threat to human health or the environment due to contamination from past operations (Naval Energy and Environmental Support Activity [NEESA], 1984). A total of 12 potentially contaminated sites were identified based on information from historical records, aerial photographs, field inspections, and personnel interviews. Each site was evaluated for the type of contamination, migration pathways, and pollutant receptors. The IAS concluded that 4 of the 12 sites were a sufficient threat to human health or the environment to warrant Confirmation Studies.

### **1.3.2 Confirmation Studies**

The Confirmation Studies were conducted by Dames & Moore in two rounds. During the first round of sampling, conducted in the winter of 1986, environmental samples were collected from the four sites (Sites 1, 9, 10, and 11) identified in the IAS. This effort was documented in the Confirmation Study Step IA (Verification), Round One, submitted to Naval Facilities Engineering Command, Atlantic Division (LANTDIV) in June 1986 (Dames & Moore, 1986b). The first round of work at these four sites included the installation of five new monitoring wells and the collection and analysis of groundwater samples. Groundwater samples were also collected from four existing monitoring wells installed for landfill closure at Site 1. Three surface water samples plus bottom sediment samples from the same locations were collected and analyzed. Twenty-two surface soil samples were also collected and analyzed. The Transformer Storage Area (Site 9) was taken off the list based on the results of the sampling completed during Round One of the Confirmation Study. Additional investigations were recommended for the three remaining sites (Sites 1, 10, and 11) under the Confirmation Studies.

The second round of sampling for the Confirmation Study was conducted during November and December 1987. The Round Two effort for the three sites included the collection and analysis of nine groundwater samples (Sites 1 and 11) and three surface water and three sediment samples (Site 11). The results of the analyses performed on these samples and comparisons with applicable regulatory standards were presented in the Confirmation Study Step IA (Round Two), submitted to LANTDIV in June 1988. No recommendations were presented (Dames & Moore, 1988b).

### **1.3.3 Remedial Investigation Interim Report**

A Draft RI Interim Report prepared by Dames & Moore was submitted to LANTDIV in March 1989. The report was finalized by Dames & Moore and submitted in February 1991 under Environmental Science and Engineering, Inc. cover (Dames & Moore, 1991). The purpose of the RI Interim Report was to summarize available data for Sites 1, 9, 10, and 11 and, based on the data, provide recommendations for additional efforts to be conducted to complete the RI. The recommendations included aerial photographic interpretation, an off-Base well inventory, limited biota sampling, and background sampling of soil, surface water, and sediment. Site-specific recommendations included collection of groundwater samples from Site 1, historical aerial photographic interpretation to gather information regarding disposal activities at Site 10, and collection of groundwater, surface water, sediment, and soil samples from Site 11.

### **1.3.4 Site Investigation Report for Sites 1, 10, and 11**

In July 1992, Roy F. Weston, as a subcontractor to Baker, conducted additional field activities at Sites 1, 10, and 11. These activities included well installation, a soil gas survey, and collection and analysis of soil, groundwater, surface water, and sediment samples. Results of this investigation are presented in the Final Site Investigation Report for Sites 1, 10, and 11 (Weston, 1994). The recommendations presented in the SI included limited actions as follows:

- Site 1 – Re-sampling of monitoring wells for volatile organic compounds (VOCs) and dissolved (filtered) metals and a file search of past records to verify closure status of the landfill.
- Site 10 – Re-sampling of monitoring wells for VOCs and dissolved (filtered) metals.
- Site 11 – Re-sampling of shallow soils for VOCs, re-sampling of monitoring wells for VOCs and dissolved (filtered) metals, and re-sampling of surface water for VOCs.

### **1.3.5 Site Screening Process Report for Sites 1, 10, and 11**

In August 1997, Baker collected groundwater samples from the existing monitoring wells at Sites 1, 10, and 11. The samples were analyzed for Target Compound List (TCL) volatiles, semivolatiles, and pesticides, polychlorinated biphenyls (PCBs), and Target Analyte List (TAL) metals, both total and dissolved.

As part of the SSP, human health and ecological risk screenings were performed to determine whether contaminants detected in environmental media posed unacceptable risks to human receptors and/or the

environment. The risk screening process was completed in accordance with the SSP Guidelines (Baker, 1994a).

The results of this report indicated that no additional investigation or remedial action was warranted for Sites 1, 10, and 11. However, it was recommended that the soil cover of the landfill at Site 1 be maintained, and monitoring wells that penetrate the landfill be abandoned to eliminate a future potential pathway for contaminants from the fill material (Baker, 1997d).

### **1.3.6 Field Investigation Report – Site 1 and AOC 2**

A field investigation was conducted at Site 1 and AOC 2 in October 1998. The findings of the investigation are documented in the Field Investigation Report (Baker, 1999a).

For Site 1, the Field Investigation Report recommended removing surficial debris that had collected on the flat, intertidal beach area in the vicinity of the eroding bank; implementing interim measures to mitigate erosion in the 60-foot stretch of shoreline where the landfill was being undermined; instituting a periodic inspection program so that the condition of the slope could be monitored and documented; abandoning monitoring wells of poor integrity and those that were installed through the landfill; and developing and implementing solutions for long-term management of the landfill.

The Field Investigation for AOC 2 consisted of a geophysical survey and soil and groundwater investigations including installation of temporary monitoring wells. VOCs, pesticides, and inorganics were detected in the soil samples at low levels. Semivolatile organic compounds (SVOCs) and inorganics were also detected in groundwater samples at low levels. These constituents were not suspected to be site related.

For AOC 2, the Field Investigation Report recommended that the sources of the geophysical anomalies and potential sources of contamination be identified by excavating a total of six shallow test pits in the vicinity of the most significant anomalies.

### **1.3.7 Site Inspection Narrative Report for the Penniman Shell Loading Facility**

In January 1999, Weston performed a site investigation for the USEPA that included collection of soil, sediment, surface water, and waste samples. The investigation was conducted to assess potential sources

of contamination associated with the Penniman Facility and determine the need for additional investigation.

A total of 29 samples were collected including 14 waste source samples, 2 surface water samples, 1 drinking water sample, 9 sediment samples, and 3 background samples. Several areas of potential concern associated with remnant waste materials from the Penniman loading operations were noted. Based on the findings of the site investigation, additional sampling of groundwater, waste materials, soil, treated drinking water, surface water, and sediment, as well as a human health risk assessment were recommended (Weston, 1999a).

### **1.3.8 Final Pond Study Report**

This report summarizes a field investigation conducted in April 2000 to support future screening-level ecological risk assessments that will be performed at CAX. During this investigation, surface water and sediment samples were collected from four water bodies at CAX and analyzed for TCL organics and TAL metals. The samples were collected from Cheatham Pond, Jones Pond, Youth Pond, and Penniman Lake (Baker, 2001c).

### **1.3.9 Draft Final Remedial Investigation Report for Site 1 – Landfill Near Incinerator**

This report presents the results of the RI conducted at Site 1 – Landfill Near Incinerator. Data evaluation for this RI Report included soil samples from 1999 and soil and groundwater samples from 2000, as well as soil samples from 1992, and soil, surface water, and sediment samples from 1998. Results of the investigation showed that the landfill contained a variety of wastes that are both non-hazardous and hazardous by characteristic. The analytical data presented showed that samples of landfilled material contain polynuclear aromatic hydrocarbons (PAHs), pesticides, PCBs, and inorganic compounds, particularly copper and lead. The data suggest that the landfill has affected the surrounding environment to a limited extent. The RI Report recommended conducting a feasibility study at Site 1 (Baker, 2000a).

### **1.3.10 Final Site Inspection Report, Site 4 and AOC 1**

In November 1999, Baker performed a site inspection that included collection of soil and sediment at Site 4 and soil, surface water, and sediment at AOC 1. The findings of the investigation are documented in the Final Site Inspection Report (Baker, 2001d). The Site Inspection Report recommended completing

Engineering Evaluation/Cost Analyses (EE/CAs) for both Site 4 and AOC 1 to evaluate the most appropriate means of removing or covering the debris that is present.

### **1.3.11 Final Field Investigation Report, Site 7 and AOC 2**

This Field Investigation Report summarizes the November 1999 Field Investigation activities that were conducted at Site 7 and AOC 2. The purpose of the Field Investigation was to collect data necessary to gain a better understanding of the nature and extent of possible contamination at Site 7 and AOC 2. The findings of the investigation are documented in the Final Field Investigation Report (Baker, 2001e). For Site 7, the Field Investigation Report recommended completing an EE/CA to determine the appropriate management strategy for the site (e.g., removal, capping, monitoring, no action, etc.).

During a site visit by representatives from the Navy and USEPA in August 2000, a fourth location for the disposal area was discovered. At this time, concrete and metal surface debris was found in the wooded area between the recreational cabins and the York River. Debris was also found along a portion of the shoreline of the York River. Based on the location and type of debris found in this area (e.g., pieces of charred, melted glass and engine parts from the World War I era), it is believed that this fourth location is in fact the site that received wastes from Penniman and the DuPont Facility. This area will be designated as a new site, the Penniman Disposal Area, and will be addressed under a separate investigation.

For AOC 2, the Field Investigation Report recommended conducting a limited geophysical investigation to delineate the lateral extent of buried respirator cartridge canisters and to locate the eastern perimeter of disposal along “Deer Pit” Road. The Field Investigation Report further recommended conducting a test pit investigation to confirm the results of the limited geophysical investigation.

## **1.4 Reporting**

### **1.4.1 WPNSTA Reporting**

#### **1.4.1.1 Sites and Site Screening Areas**

Subsequent to the field investigations, RI Reports and SSP Reports were generated for sites and SSAs. The following reports have been submitted in Draft form to USEPA Region III and the Commonwealth of Virginia:

### RI Reports

- Sites 2, 8, 18, and SSA 14 (Baker, 2002b)
- Sites 23, 24, 25, and 26 (Baker, 2002a)

### Feasibility Studies

- Sites 2, 8, 18, and SSA 14 (Baker, 1998c)

### Miscellaneous Reports

- Waterways Experimental Station (WES) Bench Scale Treatability Study Report (Army Corps document – not likely to become final)

The following reports have been submitted in Final form to USEPA Region III and the Commonwealth of Virginia:

### RI Reports

- Site 16/SSA 16 (Baker, 1995a)
- Site 12 (Baker, 1996a)
- Sites 9 and 19 (Baker, 1997b)
- Sites 1 and 3 (Baker, 1998a)
- Sites 6 and 7 (Baker, 1998b)
- Sites 11 and 17 (Baker, 1997a)
- Sites 4, 21, and 22 (Baker, 2001a)

### Feasibility Studies

- Site 12 (Baker, 1996d)
- Sites 9 and 19 (Baker, 1997e)
- Sites 1 and 3 (Baker, 1997f)
- Sites 6 and 7 (Baker, 1998d)
- Sites 11 and 17 (Baker, 1999b)
- Sites 4, 21, and 22 (Baker, 2001f)

### Proposed Remedial Action Plans (PRAPs)/RODs

Table 1-1 provides the dates of completed RODs,

- Site 5 (No Further Remedial Action) (Baker, 1994b)
- Site 16/SSA 16 (No Further Remedial Action with Institutional Controls) (Baker, 1995b)

- Site 12 (Cover, long-term monitoring) (Baker, 1997g)
- Sites 9 and 19 (Excavation and biological treatment of Site 19 soil) (Baker, 1998e)
- Sites 1 and 3 (Site 1 – Landfill cover restoration and arsenic removal, Site 3 – excavation and offsite disposal of soil) (Baker, 1999c)
- Sites 6 and 7 (Removal of Site 6 impoundment soil/sediment, biological treatment and reuse, long-term monitoring) (Baker, 1998f)
- Sites 11 and 17 (Removal and offsite disposal of soil) (Baker, 2000b)
- Site 21 (Removal and offsite disposal of soil) (Baker, 2003a)
- Site 22 (Removal and offsite disposal of soil) (Baker, 2003b)

#### SSP Reports

- SSAs 3, 4, 5, 9, 10, 20, 22, 23, and 24 (Baker, 2001b)
- SSAs 1, 6, 7, and 15 (Baker, 1996b)
- SSAs 2, 17, 18, and 19 (Baker, 1996c)
- SSAs 8, 11, 12, and 13 (Baker, 1997c)

#### Miscellaneous Reports

- Community Relations Plan
- Environmental Restoration Site Photograph Album
- Focused Biological Sampling and Preliminary Risk Evaluation Report
- Site 5 Risk Evaluation Report
- Background Literature Review Report
- Pilot Scale Treatability Study for Explosives Contaminated Soil
- York River Background Report
- WES Treatability Study Work Plan
- Sites 4 and 21 Post Removal Confirmatory Sampling Report and Baseline Risk Assessment
- Soil Assessment Report for SSA 12 (Baker, 1995c)
- Habitat Evaluation
- Installation Restoration Program Site and SSA Photograph Album
- Relative Risk Ranking System Data Collection Investigation Report for SSAs 9, 10, & 14
- Area of Concern Report

#### 1.4.1.2 Operable Units

A Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remedial action is often divided into Operable Units (OUs). As defined by the National Oil and Hazardous Substance Contingency Plan (NCP), an OU means a discrete action that comprises an incremental step toward comprehensively addressing site problems. This discrete portion of a remedial response manages migration, eliminates a release, mitigates a release, threat of release, or pathway of exposure. OUs can address geographical portions of a site or specific site problems or may consist of any set of actions over time or that are concurrent but located in different parts of a site. At WPNSTA Yorktown, sites are designated as OUs when investigative activities are completed. Assigning sites to OUs aids in the selection of remedial action alternatives and serves accounting purposes for multiple IRP site RODs produced for WPNSTA Yorktown. OUs have been determined for the following sites:

Site 5 – OU I

Site 16/SSA 16 – OU II

Site 12 – OUs III, IV, V

Sites 9 and 19 – OUs VI and VII

Sites 1 and 3 – OUs VIII and IX

Sites 11 and 17 – OUs X and XI

Sites 6 and 7 – OUs XII, XIII, XIV, and XV

Sites 4 and 22 – OUs XVI and XVII

Site 21 – OU XVIII

##### Operable Unit No. I (Site 5)

A “No Further Action” Record of Decision for Site 5 was signed in September 1994. There are no other IRP activities associated with this site.

##### Operable Unit No. II (Site 16/SSA 16)

A “No Further Remedial Action with Institutional Controls” Record of Decision for Site 16/SSA 16 was signed in September 1995. There are no other IRP activities associated with this site.

##### Operable Unit No. III (Site 12 Area A Soil)

The ROD for Site 12 was signed in May 1997. This ROD included OUs III, IV, and V. A soil/clay equivalent cover was constructed on soil which exceeded the USEPA lead action level (400 mg/kg). Erosion control measures and institutional controls were implemented. Institutional controls include

groundwater and land-use restrictions. Long-term monitoring of groundwater and sediment has been implemented.

Operable Unit No. IV (Site 12 Areas B/C and Wood/Debris Disposal Area Soil)

A “No Further Action” Record of Decision for Site 12 Areas B/C and Wood/Debris Disposal Area soil was signed in May 1997. There are no other IRP activities associated with this OU.

Operable Unit No. V (Site 12 Groundwater across the Study Area and Surface Water and Sediment in Ballard Creek)

The ROD for Site 12 groundwater was signed in May 1997. Long-term groundwater monitoring, as per the NCP, has been implemented. The NCP includes a review of the remedy every five years. In addition, sediment within Ballard Creek and its tributaries that drain the Site 12 area will be monitored as agreed to by USEPA, Virginia Department of Environmental Quality (VDEQ), and DON. The first five years of long-term monitoring were completed in June 2003 and, based on the results of this period, the Yorktown Partnering Team adjusted the sampling schedule from yearly to biennial.

Operable Unit No. VI (Site 19 Conveyor Belt Soil)

The ROD for Site 19 was signed in March 1998. Explosives-contaminated soil (i.e., 2,4,6-trinitrotoluene greater than 15 mg/kg and RDX greater than 5 mg/kg) was removed from beneath the conveyor belt (to a depth of 4 feet bgs) and treated at the Site 22 biocell in 1998. Aluminum-contaminated surface soil (0-6” depth) was also excavated around Building 527 and placed in the bottom of the conveyor belt excavation. Excavated areas were backfilled with clean fill and revegetated. Institutional controls have been implemented since contaminated soil was removed to industrial remediation levels.

Operable Unit No. VII (Site 9 Soil, Surface Water, and Sediment)

The ROD for Site 9 was signed in March 1998. No Action is specified for this OU because human health risks fall within acceptable risk ranges and remediation would result in greater harm to the environment than the presence of low-level contamination.

Operable Unit No. VIII (Site 1 Soil)

The ROD for Site 1 was signed in June 1999. Surface debris and arsenic-contaminated soil (exceeding 63 mg/kg) around monitoring wells 1GW12A and 1GW12B has been removed. Surface soil was removed to a depth of two feet and excavated areas were backfilled with clean fill. The existing soil cover at Site 1 was also restored. In addition, institutional controls have been implemented because of the landfill cover.

#### Operable Unit No. IX (Site 3 Soil)

The ROD for Site 3 was signed in June 1999. Surface debris and PAH-contaminated soil (total carcinogenic PAHs exceeding 10 mg/kg) in the northeast portion of the site has been removed. Surface soil was removed to a depth of two feet. Excavated areas were backfilled with clean fill and covered with six inches of topsoil. In addition, institutional controls have been implemented because soil was removed to industrial levels.

#### Operable Unit No. X (Site 11 Soil)

The ROD for Site 11 was signed in October 2000. Surface soil with levels of copper above 100 mg/kg or mercury above 0.06 mg/kg was removed. Excavated soil at Site 11 was combined with soil removed from Site 17. Excavated areas were backfilled with clean fill and covered with six inches of topsoil.

#### Operable Unit No. XI (Site 17 Soil)

The ROD for Site 17 was signed in October 2000. Surface debris and PAH (total carcinogenic PAHs exceeding 10 mg/kg) contaminated soil was removed. Excavated areas were backfilled with clean fill and covered with six inches of topsoil.

#### Operable Unit No. XII (Site 7 Soil)

The ROD for Site 7 was signed in October 1998. No additional remedial action is specified for this OU because risks posed to human health and the environment have been mitigated by a removal action conducted in support of a full-scale pilot study for bioremediation of explosives-contaminated sediment. Contaminated soil at the site was remediated to industrial cleanup levels; therefore, institutional controls are required at Site 7.

#### Operable Unit No. XIII (Site 6 - Drainage Flume Area Soil and Sediment)

The ROD for Site 6 was signed in October 1998. This ROD included OUs XIII, XIV, and XV. The remedial action specified for this OU, the removal of soil and sediment contaminated with explosives, VOCs, and nickel from the flume area, has been completed. Habitat has not yet been reestablished. In addition, the sewer outlet at SWMU 179 was plugged and grouted, and sludge was removed from the trenches under Building 109 (AOC C). Institutional controls were established which prohibit residential use.

Operable Unit No. XIV (Site 6 - Excavated Area Soil)

In the excavated area at Site 6, the cadmium- and zinc-contaminated soil has remained in place. Eight inches of backfill and four inches of topsoil have been placed as a cover to prevent contact with contaminated surface soil. This area is prohibited to residential use.

Operable Unit No. XV (Site 6 - Impoundment Area Surface Water, Sediment, and Study Area Groundwater)

A relatively large portion of the sediment in this area has been excavated and has received *ex situ* remediation using Daramend® at the biocell located along Bellfield Road (near Site 24). In addition, on-site treatment of the Impoundment Area sediment began in late FY03 and is expected to continue into FY04. Long-term monitoring of groundwater, surface water, and sediment for nitramine/nitroaromatics, chlorinated volatile organics, and inorganics was initiated to assess the efficacy of the flume area remediation (OU XIII) and evaluate environmental concerns associated with contaminants left in place. However, considering the remedial action is on-going and the GWOU for this site is scheduled to begin during FY04, long-term monitoring for this site has been suspended for now.

Operable Unit No. XVII (Site 22)

A “No Further Action” Record of Decision for Site 22 was signed in September 2003. There are no other IRP activities associated with this site.

Operable Unit No. XVIII (Site 21)

A “No Further Action” Record of Decision for Site 21 was signed in September 2003. There are no other IRP activities associated with this site.

Groundwater Operable Units

Separate from the OUs, the Yorktown Partnering Team developed GWOUs to determine a discrete portion of a remedial response to mitigate a release, threat of release, or pathway of exposure to groundwater. The following GWOUs have been determined for WPNSTA:

<b>GWOU</b>	<b>Area Covered</b>	<b>Sites Included</b>
I	Croaker Flats	1, 3, 6, 7, 11, 17, 24, and 25 and SSA 3
II	Roosevelt Pond Area	5, 23, and 30 and SSAs 4, 5, and 21
III	Site 12 Area	Site 12 and SSAs 11, 13, and 15
IV	East Branch Felgates	4, 8, 16, 21, 22, and 27 and SSAs 14 and 16
V	Site 26 Area	26 and SSA 17
VI	South Branch Felgates	2 and 28
VII	Lee Pond Drainage Area	9, 18, 19, and 29 and SSAs 8, 12, and 22
VIII	Q-Area	SSA 23
IX	West Branch Felgates	None
X	OB/OD	SSAs 2 and 19

#### **1.4.2 CAX Reporting**

The following reports have been submitted in Draft form to USEPA Region III and the Commonwealth of Virginia:

##### RI Reports

- Site 1 - Landfill Near Incinerator (Baker, 2000a)

##### Feasibility Studies

- Site 1 - Landfill Near Incinerator (Baker, 2000c)

##### Miscellaneous Reports

- Background Study Report (Baker, 2003c)
- Sites 4, 9, and 11, Ecological Risk Assessment (Steps 1 & 2)

The following reports have been submitted in Final form to USEPA Region III and the Commonwealth of Virginia:

##### SSP Reports

- Sites 1, 10, and 11 (Baker, 1997d)

##### Miscellaneous Reports

- Field Investigation Report, Site 1 and AOC 2 (Baker, 1999a)
- Action Memorandum - TCRA - Site 1 (Baker, 1999d)

- Construction Closeout Report - Site 1 Time Critical Removal Action (Baker, 2000d)
- Site Inspection Report, Site 4 and AOC 1 (Baker, 2001d)
- Field Investigation Report, Site 7 and AOC 2 (Baker, 2001e)
- Pond Study Report (Baker, 2001c)
- Action Memorandum for Contaminated Soil – Site 1 (Baker, 2003d)

#### Operable Units

No operable units have been identified at CAX.

#### Groundwater Operable Units

No groundwater operable units have been identified for CAX.

## **2.0 WPNSTA SITE AND SSA DESCRIPTIONS**

This section describes the history of the disposal practices at each of the RI/FS sites included in the FFA, the four sites which were former SSAs, and the site which has been added for investigation and evaluation which was not included in the FFA. Figure 2-1 provides the locations of the sites and SSAs discussed in this section. The information presented is from previous studies (C.C. Johnson & Associates and CH2M Hill, 1984; USEPA, 1992a and 1992b) and has been updated based on additional historical review and discussions with WPNSTA Yorktown personnel.

This section also describes the history of past disposal practices at each of the SSAs currently included in the FFA and the four SSAs which have been added for investigation and evaluation which were not included in the FFA. As these are primarily relatively new identified areas, there is limited historical information available. The information contained in the following sections has been adapted from the SSP reports (Baker, 1997c and 2001b), USEPA Region III's "RCRA Solid Waste Management Unit Investigation" (Kearney/Centaur Division, 1992) and "Study Area Analysis, Yorktown Naval Weapons Station Yorktown, Yorktown, Virginia," Volume 1 (USEPA, 1992b).

## Site 1 – Dudley Road Landfill

ROD Signed June 1999

RA Complete April 2000

**Status:** Institutional controls and long-term monitoring  
Groundwater to be addressed under GWOU I

### Site Description:

Site 1 is a 6-acre area located just north of the headwaters of Indian Field Creek. The solid waste landfill was in use for general disposal from approximately 1965 to 1979, with one area used for disposal of plastic lens grinding waste until 1983. The solid waste landfill operated under a conditional permit (No. 287) issued by the Commonwealth of Virginia. The site was originally used for sand mining. Two unfilled borrow pits were found at this site. One was located within the eastern portion of the site the other was located in the southwest portion of the site and accumulated surface water runoff. The water within this borrow pit fluctuated throughout the year from a few inches to two feet deep. Seasonal ponding also occurred in the southeastern section of the site. Wastes disposed within the depression created by sand mining included asbestos insulation from steam piping; oil, grease, paint, and solvent containers; nitramine-contaminated carbon; household appliances; scrap metal banding; construction rubble; plastic lens grinding wastes; tree limbs; lumber; packaging wastes; electrical wires; and waste oil. The landfill received an estimated 255 tons of waste during the time in which the site was in use. Later, the landfill was covered by approximately two feet of soil and the abandoned sand reclamation area was covered by eight feet of soil.

A Final ROD was signed by USEPA Region III in the summer of 1999. The ROD specified debris removal and excavation and disposal of arsenic contaminated soil and reestablishment of the soil cover over the solid waste landfill portion of the site. The site has been remediated. Long-term monitoring of groundwater, surface water, and sediment has been initiated at this site. Groundwater at this site will be addressed under GWOU I.



## Site 2 – Turkey Road Landfill

**Status:** Draft RI for Sites 2, 8, 18, and SSA 14 in progress

### Site Description:

Site 2 is a 5-acre disposal area located east of Turkey Road in a wetland area adjacent to the southern branch of Felgates Creek. Operations at the disposal area reportedly began in the 1940s and ceased in 1981. Wastes disposed include mercury and carbon-zinc batteries, tree stumps and limbs, construction rubble, missile hardware (e.g., wings, fins, and power packs), electrical devices, and unidentified drums and/or tanks. Waste quantities have been estimated at 240 tons during the period of use. Hard waste material (mine casings) was primarily located along the tributaries to the southern branch of Felgates Creek. A removal of hard waste material was conducted during the summer of 1994; the site photo below was taken during this removal. Wastes encountered at Site 2 included large concrete masses, asphalt, HEPA filter drums, scrap metal, empty drums, miscellaneous construction/demolition debris, and unexploded ordnance (UXO). Excavated wastes consisted of batteries and soil. All ordnance items were certified as inert.



## Site 3 – Group 16 Magazine

ROD Signed Summer 1999

RA Complete Summer 2000

**Status:** No further action for soil;  
Groundwater to be addressed under GWOU I

### Site Description:

Site 3 is a 2-acre area located behind the Group 16 magazines, just south of Site 1 (separated from Site 1 by a ravine), along the headwaters of Indian Field Creek. Although it was named for its proximity to the Group 16 Magazines, this landfill was unrelated to the operations there. The landfill area was reportedly in use from 1940 to 1970 and received an estimated 90 tons of waste during the time in which the site was in use. The site was originally used for sand mining. Wastes disposed within the depression created by sand mining include solvents, sludge from boiler cleaning operations, grease trap wastes, Imhoff tank skimmings containing oil and grease, and animal carcasses. Most of the site, which is overgrown with trees, was covered by approximately two feet of soil with some scattered surface debris.

A Final ROD for this site was signed by USEPA Region III in the summer of 1999. The ROD specifies debris removal excavation of a PAH hotspot, off-site disposal of a small volume of soil, and institutional controls prohibiting residential use. Soil at this site has been remediated. Groundwater will be addressed under a GWOU.



## Site 4 – Burning Pad Residue Landfill

**Status:** ROD Pending;  
Second Removal Action Nearing Completion

### Site Description:

Site 4 was a landfill approximately 10-acres in size. The site is bordered by the Explosives Burning Facility 1401 (Site 22) to the southwest, Site 21 (the Battery and Drum Disposal Area) and an unnamed drainage way to the southeast, West Road to the northeast, and a gravel road leading to the burning facility to the northwest. This area was used as a land disposal area from 1940 until 1975 during which time it received an estimated 595 tons of waste. The landfill was reportedly backfilled three to four times a week. An ash pile measuring approximately 100 feet by 150 feet was located in the northeast corner of the site. Materials reportedly disposed at the site included: carbon-zinc batteries from underwater weapons, burning pad residues, tree stumps, fly ash from coal-fired boilers, mine casings, electrical equipment, and transformers. A large battery disposal area was identified in the southeast portion of the site. In addition, construction debris, pipes, glass, concrete, bottles, cans, and drums have been discovered in various locations within the site boundary.

A removal action was conducted at Site 4 during the summer of 1994, as evident in the site photo below, and the area has been revegetated. Wastes encountered during the removal action included surface debris consisting of large concrete masses, empty drums, steel cables, tree stumps, assorted construction debris, asphalt shingles, slate shingles, scrap metal, and assorted porcelain fixtures including a kitchen sink. Excavated wastes consisted of batteries and explosives containing ash residue. Several suspect UXO devices also were encountered and identified as inert. An approximate total of 7,285 tons of material, including 2,460 tons of ash, 3,025 tons of batteries, 1,295 tons of soil, and 510 tons of debris, was removed from the site. A second removal action began at Site 4 during FY03 and is nearing completion. Details on the volume of wastes and soil removed will be included in the next SMP update, provided the Construction Closeout Report is available.



## Site 5 – Surplus Transformer Storage Area

No Action ROD Signed September 1994

**Status:** No further action

### Site Description:

Site 5 is located off Barracks Road in the northeastern portion of the WPNSTA. It was adjacent to the north end of Building 76; however, this building has since been demolished. Site 5 is approximately 1,000 square feet in size. It was fenced and had two concrete pads and a gravel area located within the fence; however, all of these materials were removed when the buildings in the area were razed. This site was used from 1940 to 1981 as a storage area for surplus PCB-containing transformers, which were stored on and around the two large concrete pads.

An estimated 300 pounds of PCB-containing fluids reportedly leaked from stored transformers. A cleanup effort, conducted in December 1982, included the removal of contaminated soil at Site 5. However, the success of this removal effort was not documented (i.e., no information on the amount of soil removed, verification samples, and type and source of backfill). The completed Round One RI investigation and a Risk Evaluation confirmed that the contaminated soil was successfully removed during this effort. Based on the results of the Risk Evaluation and limited confirmation sampling by USEPA Region III, a No Action ROD was finalized for Site 5 on September 29, 1994.



## Site 6 – Explosives-Contaminated Wastewater Impoundment

ROD Signed October 1998

RA On-going

**Status:** Impoundment area sediment remedial action currently underway;  
Groundwater to be addressed in GWOU I

### Site Description:

Site 6 contains a 3-acre, unlined, surface impoundment located adjacent to wetlands along a small tributary to the main branch of Felgates Creek. This impoundment operated from 1942 to 1975 and received contaminated wastewater and solvents from the explosives reclamation facility at Building 109 and from weapons loading operations (washdown water) at Building 110. In 1975, a carbon adsorption tower was installed to treat the contaminated wastewater prior to discharge into the drainage way, and the discharge of solvents ceased. A National Pollutant Discharge Elimination System (NPDES) permit was granted by USEPA Region III to allow the discharge of effluent from the carbon adsorption tower containing relatively low concentrations of nitramines/nitroaromatics. In 1986, the effluent from the tower was diverted to the sanitary sewer and ultimately to the Hampton Roads Sanitation District (HRSD). Currently, the impoundment collects only surface runoff from the area between Buildings 109 and 110 (Building 109 pipes and trenches have been identified in the FFA for additional RI/FS activities).

In addition, north of the impoundment and northwest of Building 1249, a previously excavated area has been identified via aerial photography. This area is currently wooded, but concrete rubble and miscellaneous debris are evident.

The Site 6 ROD was signed on October 5, 1998, and it specified removal of contaminated soil and sediment from the flume area and onsite biological treatment, backfilling of the flume area and the Site 6 excavated area (north of the impoundment), and long-term monitoring of the groundwater, impoundment area surface water, and sediment. However, long-term monitoring at this site has been suspended pending the completion of the RA. Treated soil and sediment will be reused at the site or elsewhere at WPNSTA. Remediation at Site 6 is currently underway.



## Site 7 – Plant 3 Explosives-Contaminated Wastewater Discharge Area

ROD Signed October 1998

Removal Action Complete 1996

**Status:** Institutional controls and long-term monitoring  
Groundwater to be addressed under GWOU I

### Site Description:

Site 7 is a 300-foot long (approximately) drainage area located adjacent to wetlands and along a small tributary to Felgates Creek, approximately one mile upstream from the confluence of Felgates Creek and the York River. This drainage area received nitramine-contaminated wastewater from Loading Plant 3 between the years 1945 and 1975. In 1975, a carbon adsorption tower was installed to treat the contaminated wastewater prior to discharge into the drainage way. An NPDES permit was granted by the USEPA Region III to allow this discharge. In 1986, the effluent from the tower was diverted to the sanitary sewer and ultimately to HRSD. The site reverted to a natural drainage area and received no discharge from the Plant 3 complex beyond 1986. To provide soil/sediment for a full-scale pilot study of nitramine/nitroaromatic contamination of bioremediation, this area was excavated (Baker/OHM, 1996).

The Final ROD for Site 7 was signed October 5, 1998, and specified no additional action because the removal of contaminated soil and sediment for use in the bioremediation full-scale pilot study conducted in 1996 mitigated potential human health risks and ecological concerns. However, the selected remedy outlined in the ROD was no further action with the implementation of institutional controls since contaminated soil was removed to industrial remediation levels. The selected remedy also included long-term monitoring of groundwater. Groundwater at Site 7 will be addressed as GWOU I.



## Site 8 - NEDED Explosives-Contaminated Wastewater Discharge Area

**Status:** Draft RI for Sites 2, 8, 18, and SSA 14 in progress

### Site Description:

Site 8 is a 300-foot drainage way located along the eastern branch of Felgates Creek, approximately 1.5 miles from the confluence of the creek and the York River. This area received wastewater from the Naval Explosives Development Engineering Department (NEDED) complex (Building 456) from 1940 to 1975. The wastewater reportedly contained unspecified solvents, spent/neutralized acids, and nitramine compounds. In 1974, a carbon adsorption tower was installed to treat the contaminated wastewater prior to discharge into the drainage area. An NPDES permit was granted by USEPA Region III to allow this discharge. In 1986, the effluent from the tower was diverted to the sanitary sewer and ultimately to HRSD. The site has reverted to a natural drainage area.



## Site 9 – Plant 1 Explosives-Contaminated Wastewater Discharge Area

ROD Signed March 1998

**Status:** No further action for soil;  
Groundwater to be addressed under GWOU VII

### Site Description:

Site 9 is a 600-foot drainage ditch located just east of Lee Pond (which empties into the eastern branch of Felgates Creek) and topographically downslope from Site 19. This area was reportedly in use from the late 1930s to 1975. Contaminants in the wastewater from Plant 1 (Building 10) included nitramine compounds as well as organic solvents. During the more than 40 years that the drainage area was used, an estimated 6,800 pounds of nitramine- and solvent-contaminated material may have been discharged to the area. A carbon adsorption tower was installed in 1974 to treat the contaminated wastewater prior to discharge into the drainage area. An NPDES permit was granted by USEPA Region III to allow this discharge. In 1986, the effluent from the tower was diverted to the sanitary sewer and ultimately to HRSD. Currently, the site has reverted to a natural drainage way for surface runoff from surrounding areas and receives no discharge from the Plant 1 complex. A limited removal action was conducted for hard waste present at Site 9 in the natural drainage way between Bollman Road and Lee Pond during the summer and early fall of 1994. Two types of wastes were removed from Site 9: ordnance, which consisted primarily of depth charges, and railroad ties.

A ROD for Site 9 was finalized for soil, surface water, and sediment in March of 1998. The selected remedy for Site 9 was no further action. Site 9 groundwater will be evaluated at a later date under GWOU VII.



## Site 11 – Abandoned Explosives Burning Pits

ROD Signed October 2000

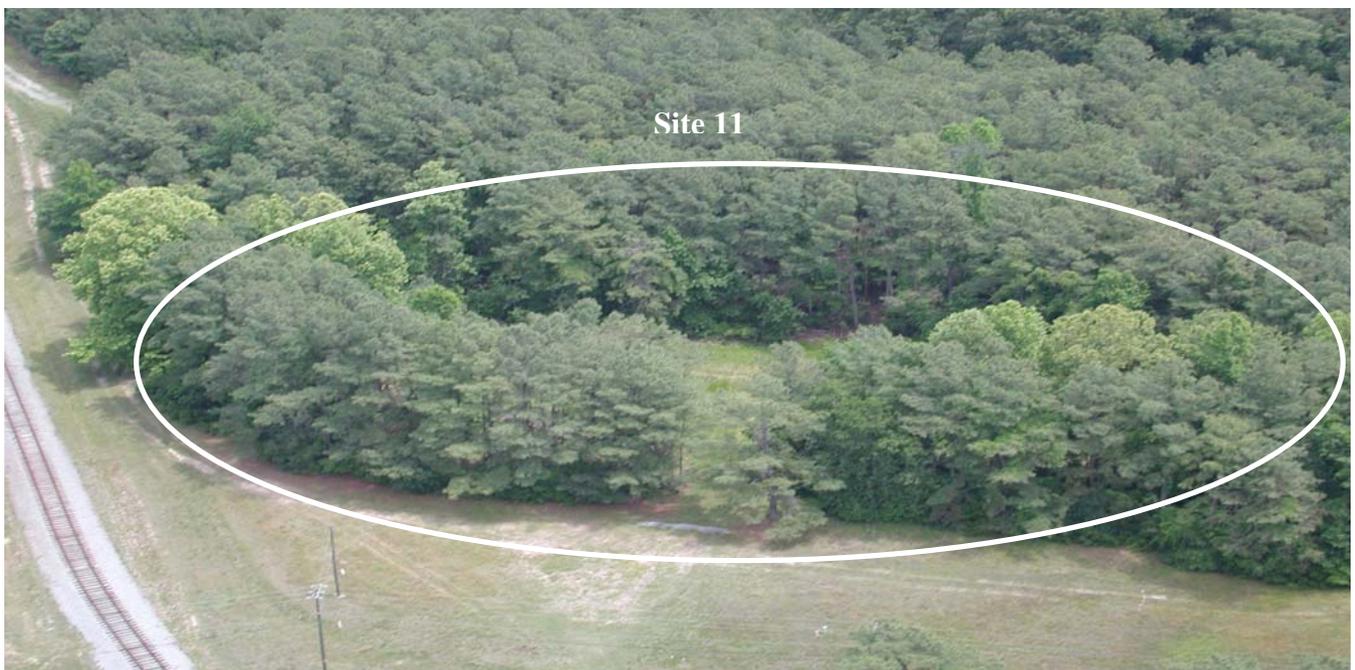
RA Complete

**Status:** No further action for soil;  
Groundwater to be addressed under GWOU I

### Site Description:

Site 11 is an approximate 0.5-acre area located south of Dudley Road, east of Main Road, west of Site 1, and north of a drainage channel leading to Indian Field Creek. This area was used from 1930 to 1950 for burning ordnance and ordnance-contaminated waste. Ashes and residues from the open burning of nitramine-containing wastes and sludges were potentially present at the site. During the 20 years that the pits were used, approximately 200 pounds of nitramine waste residues may have been deposited. The area was thickly vegetated.

The ROD for Site 11 was signed in 2000. A remedial action for Site 11 consisted of the removal of approximately 40 cubic yards of soil contaminated with inorganics. Groundwater at the site will be addressed under GWOU I.



## Site 12 – Barracks Road Landfill

ROD Signed April 1997

RA Complete November 1997

**Status:** No further action for soil;

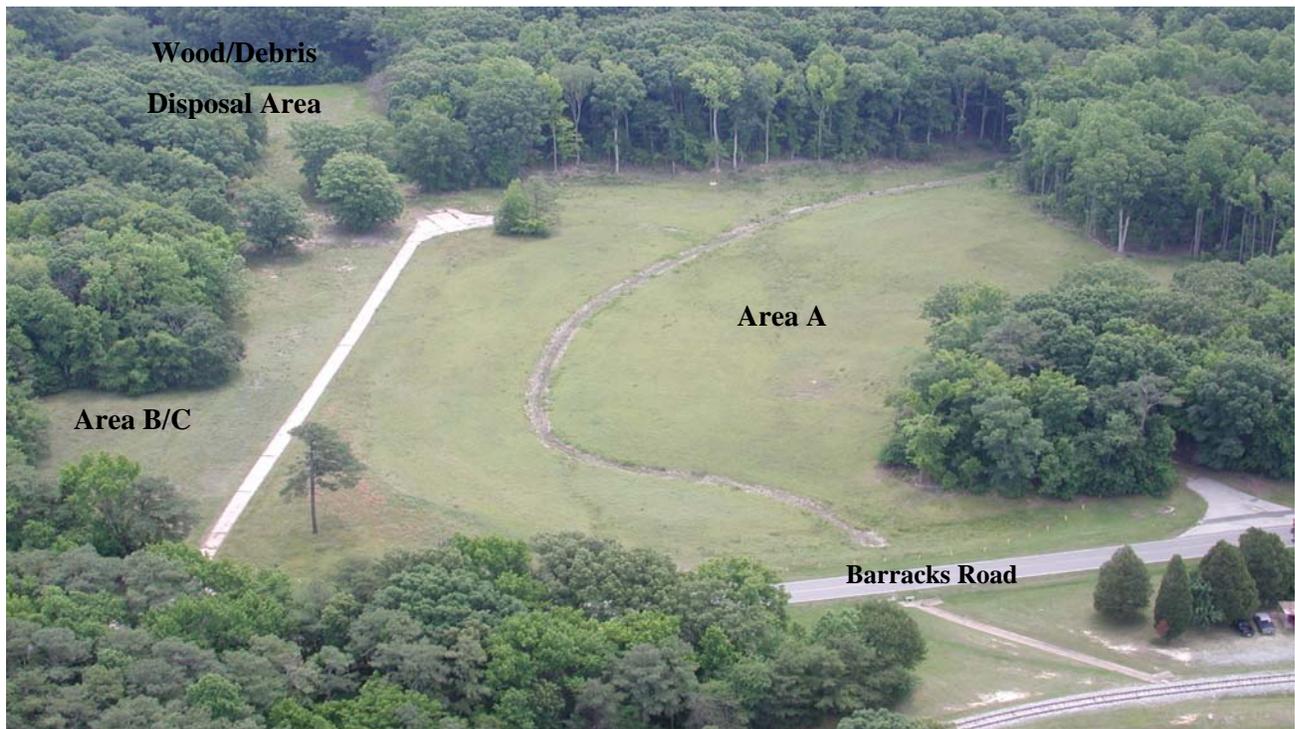
Long-term monitoring of groundwater and Ballard Creek sediment implemented

### Site Description:

Site 12 is a 4-acre landfill located east of Barracks Road, north of the community of Lackey, and northwest of the Colonial National Historical Park along a drainage swale leading to Ballard Creek. This area was in operation from approximately 1925 to the mid-1960s. Wastes reported to have been disposed in the landfill (designated as Area A) include refuse, scrap wood, and nitramine-contaminated packaging. Because this facility was the predecessor to the Dudley Road Landfill (Site 1), it is likely that wastes similar to those identified at Site 1, including solvents, also were disposed in this area. The landfill received an estimated 1,400 tons of waste during the time the site was in use. Adjacent to the landfill were two incinerators used to burn a variety of waste, both industrial and nonindustrial. Incineration ash was disposed on the hillside behind the incinerator buildings. Scrap metal, charred wood and cloth, and medicine bottles were observed in the ash. A ROD was finalized for Site 12 on April 16, 1997, and remediation of Area A was completed in November 1997.

Another former disposal area, designated as Area B/C, covers approximately 1.6 acres. A portion of Area B/C is an open field, while the rest of it is wooded and contains steep slopes and ravines. Miscellaneous debris at Area B/C was removed in May and June of 1998. A third former disposal area, located approximately 400 feet east of Site 12 is the Wood/Debris Disposal Area, which is approximately 3.3 acres in size. This area consists of a steep ravine in which wooden pallets and construction debris have been disposed. A ditch with an intermittent stream channel that drains toward Ballard Creek is located adjacent to the Wood/Debris Disposal Area. The debris in this area remains in place.

The first five years of long-term monitoring were completed in June 2003. Based on the results from this period, the Yorktown Partnering Team adjusted the sampling schedule from yearly to biennial.



**Site 16 – West Road Landfill**  
Removal Action Completed Summer 1994  
ROD Signed September 1995

**Status:** Institutional controls  
Groundwater to be addressed under GWOU IV

**Site Description:**

Site 16 is a 5-acre area located adjacent to West Road near Indian Field Road. This site was operated from the early 1950s to the early 1960s. Wastes reported to have been disposed include dry carbon-zinc (Leclanche) batteries, banding materials, pressure transmitting fluid, unknown types of chemicals, and 55-gallon drums (contents unknown). An investigation at this site in 1992 (Baker and Weston, 1993b) confirmed the presence of drums, scrap metal, batteries, mine casings, and construction debris. Another waste area was also identified beneath one of the drum piles. This waste area consisted of glass containers, cans, and newspapers. Landfill boundaries are not evident from visual observation of the area. The site is wooded, except for the northern portion along West Road, which is covered with grasses.

During the summer of 1994, a removal action was conducted at Site 16 to remove drums, scrap metal, batteries, and construction debris. Site 16 was evaluated in conjunction with SSA 16 because of its proximity and geophysical data, which indicated overlap between the two areas. Wastes encountered at this site included drums filled with silica gel desiccant, dry cell carbon/zinc batteries, surface debris, steel cables, underwater mine casings, and scrap ordnance. Approximately 420 tons of batteries, 60 tons of debris, 125 tons of silica gel, and the following ordnance items were removed: 3 Mk 13 torpedo sections, 3 Mk 51 Underwater mines, 29 Mk 10 Mod 3 mines, 8 500# general purpose bombs, 3 2000# general purpose bombs, 3 Mk 36 mines, 2 AN&M fragmentation bombs, 10 Mk 13 mines, 1 Zuni rocket motor, 1 1,000 pound armor piercing bomb, and 90 Burstier tubes. All ordnance items were certified inert.

Based on the results of the risk evaluation and limited confirmation sampling by USEPA Region III, no further remedial action with institutional controls was the selected remedy in the ROD finalized for Site 16/SSA 16 on September 29, 1995. Groundwater for this site will be addressed under GWOU IV.



## Site 17 – Holm Road Landfill

ROD Signed Summer 2000  
Remedial Action Complete

**Status:** No further action for soil;  
Groundwater to be addressed under GWOU I

### Site Description:

Site 17 is a 2-acre disposal area located south of Holm Road and east of Main Road. The site was operated for approximately 10 years, from the 1950s to the 1960s. Wastes reportedly disposed include acid batteries from underwater weapons, hydraulic fluids (Dolconik) from the demilling of torpedoes, other types of hydraulic fluids, drums from the Public Works Department and ordnance production shops, and scrap metal. An estimated 60 tons of waste were deposited during the period the landfill was in use. The site was overgrown with mature trees, and no evidence of surficial waste was apparent. Results from the geophysical investigation of this site during the Round One RI did not indicate any evidence of buried material.

The Final ROD was signed in summer of 2000. The remedial action for Site 17 consisted of the removal of approximately 1,300 cubic yards of PAH-contaminated soil. This site's soil was cleaned to residential levels. Groundwater at the site will be addressed under GWOU I.



## Site 18 – Building 476 Discharge Area

**Status:** Draft RI for Sites 2, 8, 18, and SSA 14 in progress

### Site Description:

Site 18 is a 0.25-mile long, unlined drainage ditch located north of Building 476 in the southeastern area of WPNSTA along a small tributary leading to Lee Pond. This area was in use for approximately 20 years from the 1940s to the 1960s. The discharge into the area reportedly contained battery acid waste, consisting of hydrochloric acid or calcium hydroxide and dissolved metals such as lead, cadmium, nickel, and antimony. An estimated 100 to 200 pounds of metal may have been discharged during the operational period. Battery acid waste is no longer discharged from Building 476 into this drainage way.



## Site 19 – Conveyor Belt Soils at Building 10

ROD Signed March 1998

RA Complete 1998

**Status:** Institutional controls

### Site Description:

Site 19 is a 500-foot long soil strip located beneath and around Building 10, approximately 300 feet from Site 9 and connected to Site 9 via a drainage channel. Nitramine-contaminated soil was reported beneath the conveyor belt between Buildings 10 and 98. In 1973/1974, soil below the conveyor belt was removed; however, later tests indicated that contamination remained.

The Site 19 ROD was signed on March 23, 1998. The selected remedy outlined in the ROD for Site 19 involved the dismantling and disposal of the conveyor belt, removing soil containing concentrations of explosives exceeding remediation levels beneath the belt, and transporting the soil to a biocell for treatment. In 1998, the conveyor belt was dismantled and the metallic components were decontaminated to remove residual explosives. Asbestos components of the conveyor belt were double bagged and sent to a special waste landfill. Soil from beneath the conveyor belt (approximately 1000 cubic yards) was excavated and treated at the Site 22 biocell using J.R. Simplot's SABRE<sup>®</sup> technology. The former site of the conveyor belt has been revegetated. Institutional controls have been implemented since contaminated soil was removed to industrial remediation levels.



## Site 21 – Battery and Drum Disposal Area

Second Removal Action Completed Spring 2003

ROD Signed September 2003

**Status:** Groundwater to be addressed under GWOU IV

### Site Description:

Site 21 covers approximately 1 acre and is located south of West Road adjacent to the ravine that separates Site 21 from Site 4. Historical information for this site is limited. Wastes identified in this area include various sized cans and drums, dry carbon-zinc batteries (Leclanche), empty solvent containers, and scrap metal. A removal action was conducted at Site 21 during the summer of 1994. Wastes encountered at this site consisted primarily of batteries, empty drums, scattered debris, and the seven drums of unknown oils. A total of 6,070 tons of batteries and screened soil, 90 tons of soil, 650 tons of debris, and four drums of hazardous waste liquids were removed from the site. The site has been revegetated in those areas affected by the removal.

A second removal action was completed in the spring of 2003. This removal action included the excavation and off-site disposal of approximately 145 cubic yards of contaminated soil exceeding remediation levels. Soil at the site has been remediated to residential levels. Groundwater at the site will be addressed under GWOU IV.



**Site 22 – Burn Pad**  
Removal Action Completed Summer 2002  
ROD Signed September 2003

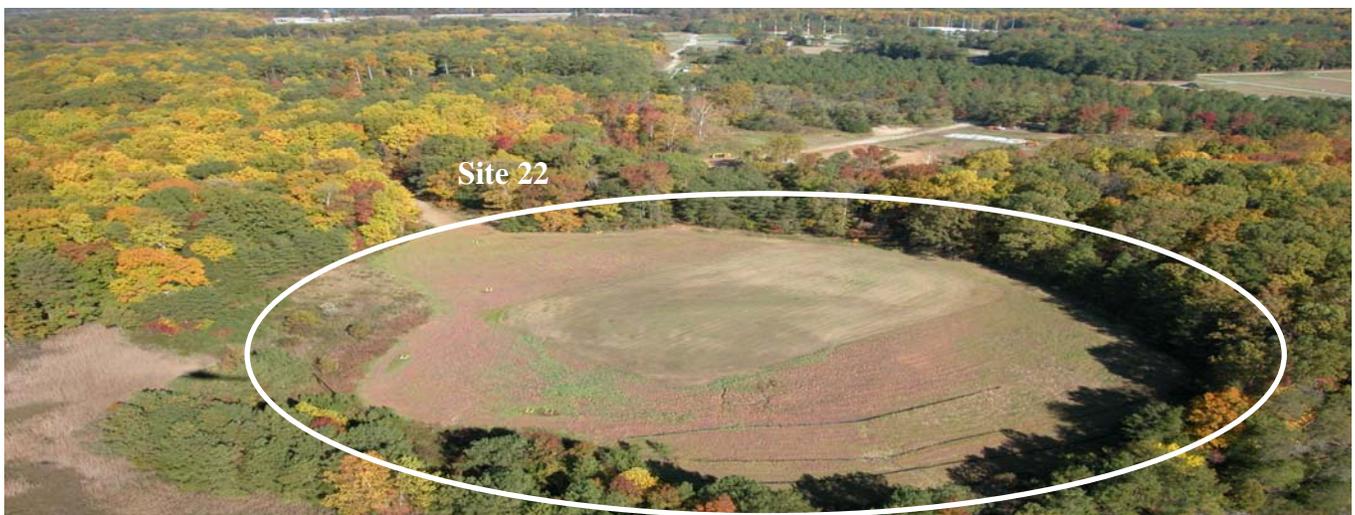
**Status:** Groundwater to be addressed under GWOU IV

**Site Description:**

Site 22 covers approximately 9 acres and is located in the central portion of WPNSTA between Sites 4 and 21. A circular array of 11 steel burning pans was used for burning waste plastic explosives and spent solvents. The pans surround a 150-foot inch diameter circular area.

The site became an area used for a treatability study for the treatment of explosive-contaminated soil. As a part of the treatability study, a biocell was constructed which measured 153-feet long by 86-feet wide by 7-feet deep. Soil samples were obtained from the “footprint” of the biocell prior to the placement of liners and footers for the rail system, upon which a gantry rested. The cell was completed in 1996 and was used to remediate soil from Site 19.

A removal action was completed in the spring of 2002. This removal action included the excavation of approximately 3,450 cubic yards of contaminated soil exceeding remediation levels and demolition of the biocell. Soil at the site has been remediated to residential levels. Groundwater at the site will be addressed under GWOU IV.



## Site 23 – Building 428 Teague Road Disposal Area

RA On-going

**Status:** Removal action currently underway  
Final RI for Sites 23, 24, 25, and 26 in progress

### Site Description:

Site 23 is approximately 2.8 acres in size and is located northeast of Building 428, in the northeast portion of WPNSTA, along the WPNSTA boundary. The site includes five smaller areas of SSA 1 that are adjacent to railroad tracks as well as an unnamed ditch. The York River is located to the north of Site 23 and Roosevelt Pond bounds the area to the west/northwest. The area is wooded and bisected by the railroad tracks, which were constructed in 1919 and are no longer operational.

Disposal activities reportedly began in 1940 and ceased in 1960. A pier fire occurred in the mid-1950s and debris from this fire was disposed in this area (1955 to 1957). Aerial photography suggests that past waste storage occurred at Site 23 (primarily in 1945). From 1960 to the present, there is no evidence of additional waste storage or release. However, a land survey, conducted in the fall of 1993 as part of a removal action, indicated discrete piles of debris that appear to have been dumped on top of native soil, while other areas of debris appear to be partially buried. The debris was identified as concrete rubble; scrap metal; wooden pilings and railroad ties; empty fuel cans; empty, open, and corroded drums; asbestos pipe insulation; and shingles.

A removal action was conducted during the summer and early fall of 1994 to remove surface debris. Items removed included two 55-gallon drums of paint cans/spilled paint, 443 tons of wooden creosote timbers (remains of the burnt pier), 763 tons of ordinary non-hazardous debris, 1,119 tons of debris containing non-friable asbestos, 1,680 pounds of pipe wrapped with friable asbestos, 31 tons of recyclable metal, and 2 truck batteries. Approximately 5,800 tons of TNT and trinitrobenzene contaminated ash/soil also were removed from an area north of the railroad tracks at the northeast portion of the site. Contaminants of potential concern at Site 23 include PAHs that may be associated with former disposal activities.

A second removal action began in the spring of 2003 to remove contaminated surface and subsurface soil exceeding residential remediation levels.



## Site 24 – Aviation Field

**Status:** Final RI for Sites 23, 24, 25, and 26 in progress

### Site Description:

Site 24 is approximately 15 acres in size and located around the helicopter-landing pad. Bounded by Bellfield Road to the north, railroad tracks to the east, Main Road to the south, and storage areas to the west, the site is an open grassy area around the helicopter-landing pad where mine components coated with Aroclor-1254 containing antifoulant were discovered in the subsurface soil. Historically, the area was used as an aviation field until 1927, after which it was used for storage of munitions in underground caches. Aerial photography indicates that peak storage activity on the ground surface occurred in 1968. No storage of liquid or hazardous waste was reported or observed. In addition, this area may also have been used briefly as an explosives burning area, although available data do not indicate the presence of nitramines/nitroaromatics. The helicopter pad and an air control tower are still present on the aviation field. In addition, a Daramend® greenhouse/biocell was constructed in 1999 at the north end of Site 24 to treat Site 6 soil and sediment.



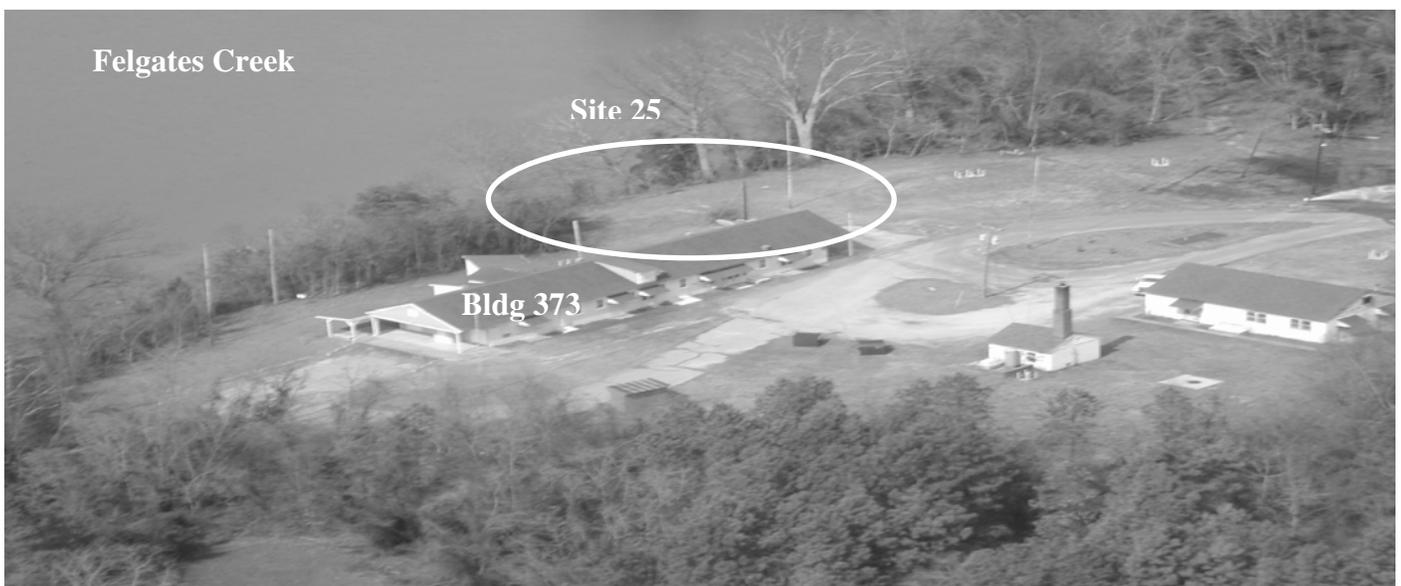
## Site 25 – Building 373 Rocket Plant

Removal Action Completed July 1996

**Status:** Final RI for Sites 23, 24, 25, and 26 in progress

### Site Description:

Site 25 is approximately 0.14 acres in size and located immediately northwest of Building 373. Site 25 consists of a 500-gallon (approximately) precast concrete pipe, which was used as an underground storage tank (UST), and the associated cast iron piping. The concrete pipe was installed vertically into the ground with a bottom section cast in the concrete pipe. Prior to the 1960s, wash/rinse water from the cleanup of formulation/pouring equipment drained into a settling basin within the building for removal of suspended solids. The solids were open burned at Site 4 (Burning Pad Residue Landfill). The wash/rinse water subsequently was discharged into Felgates Creek. The discharge line to the creek was replaced in the early 1960s by a 500-gallon UST installed to contain the wash/rinse water. From the 1960s to 1980s, the UST received batch wastes from NEDED assembly operations of 2.75-inch rockets as well as the wash/rinse waters. Once the tank was filled, the water was filtered through a carbon unit and discharged to the sanitary sewer system. The UST was closed in the early 1980s when the current aboveground storage tank (AST) was installed. Materials contained within the tank consisted of binders, curatives, catalysts, stabilizers, and explosives. A removal action was conducted in June/July 1996 to remove the 500-gallon UST and associated piping. During the removal action, the bottom section, which had been cast to the concrete pipe, was heavily stained. The soil from beneath and around the UST was removed.



## Site 26 – Building 1816 Mark 48 Waste Otto Fuel Tank

**Status:** Final RI for Sites 23, 24, 25, and 26 in progress

### Site Description:

Site 26 is approximately 6.7 acres in size and is located in the central portion of the WPNSTA at Building 1816, north of Sharpe Road and west of the intersection of Sharpe Road and Lee Road. A 2,500-gallon concrete UST and network of ancillary drain pipes that were formerly used to store waste Otto fuel were found within this area. This fuel consisted of a mixture of Otto fuel and water, which may have also contained oil, denatured ethyl alcohol, detergent, and trace amounts of cyanide, halogenated hydrocarbons, and heavy metals. In late 1987, waste Otto fuel was discovered leaking from the tank. The fuel was removed, the tank was cleaned, and a RCRA closure permit was filed. In March 1995, the 2,500-gallon waste Otto fuel UST and an 8,000-gallon UST located in the vicinity were removed. Site 26 has been retained as an IRP site because of chlorinated volatiles detected in shallow groundwater.



## Site 27 – Building 1751 Chemistry Laboratory Neutralization Unit and Drainage Area

**Status:** Draft RI for Sites 27, 28, 29, and 30 in progress

### Site Description:

Site 27 occupies an area of approximately 1.9 acres and is located adjacent to Building 1751 in the north central portion of the WPNSTA (near Site 8, the NEDED Explosives-Contaminated Wastewater Discharge Area). It consists of a below-grade cylindrical unit into which acids from the Chemistry Lab were discharged for neutralization. Because it is below the ground, the integrity of the unit, which operated from 1969 to early 1995, is unknown. The discharge was diverted to the sanitary sewer and ultimately to HRSD in 1995. In addition, there are four underground septic tanks in the area.



## Site 28 – Building 28 X-Ray Facility Tank Drain Field

**Status:** Draft RI for Sites 27, 28, 29, and 30 in progress

### **Site Description:**

Site 28 is located at Building 28 in the south central portion of the WPNSTA and occupies an area of approximately 5.8 acres, which consists of a septic tank drain field that receives sanitary wastewater from the X-Ray Facility at Building 28. The X-ray process began in the late 1960s. Before silver recovery units were installed, the tanks may have stored hazardous wastes. In the later part of 1998, this wastewater was diverted to the sanitary sewer and ultimately to HRSD.



## Site 29 – Lee Pond

**Status:** Draft RI for Sites 27, 28, 29, and 30 in progress

### Site Description:

Site 29 is an approximately 4.1 acre pond located in the east central portion of WPNSTA. The pond receives drainage from Building 10 via Site 9 located due east of the pond. The Site 9 drainage area is approximately 500 to 600 feet in length and was subjected to a limited removal action in 1994. Site 29 also receives stormwater runoff from the industrial area and sites therein, such as Sites 18 and 19 and SSAs 8 and 22.

Lee Pond empties into a channel, which in turn flows around the Site 16/SSA 16 study area into Felgates Creek. The pond has been subjected to limited investigations by the Commonwealth of Virginia in 1994 and a Focused Biological Sampling and Preliminary Risk Evaluation (Baker, 1993b). Water levels in Lee Pond are raised and lowered during summer and winter respectively for support of the local ecology. The SSP Report (Baker, 2001b) for Lee Pond indicated that additional RI/FS activities were necessary to address the site and area groundwater as an operable unit.



## Site 30 – Bracken Road Incinerator and Environs

**Status:** Draft RI for Sites 27, 28, 29, and 30 in progress

### Site Description:

Site 30 is in an area approximately 0.1 acres located north of Site 5 and south of the railroad tracks near the Yorktown Piers. The USEPA collected samples and detected metals and nitramine compounds exceeding regulatory screening levels. Therefore, additional investigation was warranted under an SSP Report to determine potential human health risks and ecological concerns. The SSP Report (Baker, 2001b) indicated that additional RI/FS activities were necessary to address environmental concerns at this site.



## Site Screening Area 2 – Former EOD Burning/Disposal Area

**Status:** Long-term monitoring of groundwater on-going  
RI/FS scheduled to begin in FY04

### Site Description:

SSA 2 is an irregular, U-shaped area located at the north end of the existing Explosives Ordnance Disposal (EOD) range and occupies an area of approximately 400 feet by 450 feet. The area was wooded and strewn with non-explosive arming devices, MK 46 shipping containers, various types of scrap metal, and debris. Numerous earthen berms and depressions indicate that bulldozers and other earth-moving equipment were used throughout the SSA. Demolition records indicate that the area was the original site of the EOD range for WPNSTA Yorktown and was actively used throughout the 1950s and 1960s for routine destruction of ordnance material. The area was closed in 1970 and operations were moved south to the present EOD range location. Anecdotal information indicates that the move was prompted by growing concerns that range operations might cause forest fires in the wooded areas bordering the SSA. A removal action was conducted at SSA 2 during the summer and early fall of 1994 to remove three dump truck loads of scrap metal, 14 containers of lead, and 11 live ordnance pieces. The scrap metal included torpedo casings, bomb casings, powder cans, used detonation devices, tractor parts, marsh matting and other miscellaneous debris.

Based on the results of the SSP, no further RI/FS activities were to be conducted at SSA 2; however, the Navy, with VDEQ concurrence, plans on moving the SSA from the RCRA program to CERCLA, and an RI/FS is scheduled to begin at this SSA in FY04. Long-term monitoring of groundwater is still conducted as part of the Part B RCRA permit.



## Site Screening Area 3 – Fire Training Pits and Vicinity

Removal Action Completed Summer 1996

**Status:** No further action

### Site Description:

SSA 3 occupies an area of approximately 2.7 acres and is located just north of Main Road and Site 16 in the north central portion of WPNSTA. The area consisted of three concrete oil pits; one was T-shaped and the other two were rectangular. One rectangular pit was located at the eastern end of the field, the second rectangular pit was located in the western end of the field, and the T-shaped pit was located in the central section of the field, where a patch of stressed vegetation was evident. Berms were built around each of the pit areas in 1986 and a roof was added to each area in 1991. Debris was reportedly placed in each pit, doused with jet fuel and set on fire. In addition, in the vicinity of the pits, there appeared to be portions of a tanker trailer that was formerly used for confined space entry training. The trailer was open on the bottom and placed directly on the soil. The inside of the trailer was blackened and burned. A removal action was conducted during the late spring/early summer of 1996 to remove the fire training pits. Based on the results of the SSP Report (Baker, 2001b), no further RI/FS activities are recommended at this SSA.



## Site Screening Area 4 – Weapons Casing/Drum Disposal Area

Removal Action Completed Early Fall 1994

**Status:** No further action

### Site Description:

SSA 4 occupies approximately 0.5-acre between Main Road and Bypass Road at the headwaters of a tributary leading to Roosevelt Pond. The area consists of a ravine in which debris, including weapons casings and drums, was deposited. A flat, grassy area just along the roadway indicates that this area may have been an old landfill. Some of the material in the ravine may have been present as a result of landfilling activities. A removal action to remove surface debris in the ravine was conducted at SSA 4 during the summer and early fall of 1994. The wastes encountered included various types of ordnance, empty drums, miscellaneous construction/demolition debris, fire extinguishers, and nominal amounts of paint wastes and paraffin wax. Based on the results of the SSP Report (Baker, 2001b), no additional RI/FS activities are recommended for this SSA.



## Site Screening Area 5 – Bypass Road Landfill

Removal Action Completed Summer 1994

**Status:** No further action

### Site Description:

SSA 5 is located just north of Bypass Road and covers approximately 0.9 acres. This area consists of a ravine in which debris is evident. A small stream passes through the site and exits from a culvert that begins south of Bypass Road. The small stream is the second tributary which flows into Roosevelt Pond. Both Bypass Road and the railroad system were constructed in 1919 and are still in use.

Metal debris, with lesser amounts of concrete and miscellaneous materials, was present at SSA 5. Two empty drums were also present. No wood materials were identified among the surface debris piles. During the summer of 1994, a removal action was conducted at SSA 5 to remove the small amount of ordinary debris including empty drums, pipes, scrap metal, and rubble. Based on the results of the SSP Report (Baker, 2001b), no additional RI/FS activities are recommended for this SSA.



## Site Screening Area 8 – Building 350 Rail Roundhouse Maintenance Area Trench Outfall

**Status:** No further action

### **Site Description:**

SSA 8 occupies an area of approximately 0.4 acres, and is located outside Building 350, on the western side of the railroad tracks, in the southeastern corner of WPNSTA. Within Building 350 is one concrete trench, which was (and is presently) used during train maintenance for access to train engines from below. There are no records of any releases from the trench. Liquid may have dripped during maintenance activities into the trench, but it was covered with absorbent material that was put into drums for disposal. The floor of the trench appears heavily stained; however, the trench drain has been plugged. The drain pipe from the trench leads to a catch basin approximately 100 yards south of the locomotive repair building. The outfall associated with the catch basin extends under the railroad tracks toward Bollman Road. Natural surface drainage (overland flow) extends under Bollman Road toward the wooded area east of Site 18. The Final SSP Report for SSA 8 (Baker, 1997c) concluded that this area should not be retained as an IRP site for further investigation.



## Site Screening Area 11 – Building 3 Neutralization Unit

**Status:** No further action

### Site Description:

SSA 11 is located at the southeast corner of Building 3 in the eastern section of WPNSTA (southwest of Site 12 near SSAs 12 and 13) and occupies an area of approximately 0.2 acres. SSA 11 consists of an open, metal tank (approximately 3 feet by 5 feet by 3 feet deep) and associated trench and sump. This tank was apparently used for neutralization of wastes from an unknown process, but has been inactive for at least 15 years. Chipping and pitting are evident in the trench and sump. The trench drains to the storm sewer system. The outfall from the SSA 11 storm sewer system is located in the vicinity of the headwaters of Ballard Creek.

The Final SSP Report for SSA 11 (Baker, 1997c) concluded that this area should not be retained as an IRP site for further investigation.



## Site Screening Area 12 – Public Works Storage Yard/Building 683 Vicinity

**Status:** No further action

### Site Description:

SSA 12 is approximately 1.5 acres in size and is located in the Public Works storage yard and the surrounding area in the eastern portion of WPNSTA near Site 12 and SSAs 11 and 13. Surface water bodies are not located near this SSA. One area consists of a field, approximately 150 feet by 300 feet, in which waste generated by the Public Works Department is stored. Drums of used motor oil and used batteries were observed on pallets and directly on the ground (Kearney, 1992). Historically, the area stored old tires. Another area, controlled by Building 645, consists of a fenced yard used to store new electrical transformers and other electrical equipment. Used or damaged transformers were not stored at SSA 12. The new transformers were staged on pallets before installation. Historical records indicate that wastes may have been stored in this area in the past. In addition, concrete debris is visible at the edge of a formerly wooded area where demolition debris was reportedly deposited. Currently, approximately one-half of the area is used for vehicle storage.

In September 1994, a soil investigation was conducted by Baker at SSA 12 in the proposed location of a new building (P-518). This investigation involved the sampling of surface and subsurface soil to determine if site soil was contaminated, and thus, affected the construction of the new building (Baker, 1995a).

In February 1996, a potential UST was discovered during site reconnaissance when a partially buried pipe was discovered in the area. It is reported that the UST may have been a gasoline tank that was removed prior to any formal UST program; therefore, records of the removal are not available.

The Final SSP Report for SSA 12 (Baker, 1997c) concluded that this area should not be retained as an IRP site for further investigation.



## Site Screening Area 13 – Building 529 Battery Drainage Area

**Status:** No further action

### Site Description:

SSA 13 occupies an area of approximately 0.5-acre and is located outside Building 529 in the eastern portion of WPNSTA near Site 12 and SSAs 11 and 12. The area consists of pavement where neutralized battery washwater, created from washing the external portion of the batteries and neutralizing the washwater with baking soda, was released and migrated to a storm drain approximately 100 feet away. The storm drain is located below the southeastern corner of the concrete platform of Building 529. The pavement on the western side of Ballard Road and the eastern side of Building 529 is sloping on all sides toward the storm drain. The surface water is channeled to the storm sewer system and eventually to the Ballard Creek headwaters. The entire area is asphalt covered. The pavement is currently worn, but intact, with some vegetation apparent. The final SSP Report for SSA 13 (Baker, 1997c) concluded that this area should not be retained as an IRP site for further investigation.



## Site Screening Area 14 – Building 537 Discharge to Felgates Creek

**Status:** Draft RI for Sites 2, 8, 18 and SSA 14 in progress

### Site Description:

SSA 14 occupies an area of approximately 0.4-acres and is located outside Building 537 between Site 8 and SSA 9, in the north central portion of WPNSTA. This SSA consists of a pipe leading from the building, through which nitramine-contaminated wastewater was reportedly discharged to Felgates Creek. Some rubble and rusted piping were found where this pipe was reportedly located. SSA 14 was investigated with Sites 2, 8, and 18 in 1997. Results of the investigation are forthcoming in the Draft RI.



## Site Screening Area 15 – Sewage Treatment Plant #1 Sludge Drying Beds and Discharge Area

Removal Action Completed Summer 2001

**Status:** No further action

### Site Description:

SSA 15 is comprised of the sewage treatment plant (STP) #1/Sludge Drying Beds and Discharge Area and represents AOCs 5, 6, and 7, which are also former sewage treatment plants. SSA 15 is located in the southeastern corner of the WPNSTA, east of Buildings 3 and 4 and south of Site 12 (Barracks Road Landfill). This site covers approximately 0.3 acres and consisted of an Imhoff tank, a trickling filter, a sludge drying bed, and a chlorination unit. Wastewater reportedly entered the Imhoff tank, which operated as a primary settling basin for the waste. The water then was passed through the trickling filter for biological treatment and pumped back to the Imhoff tank for secondary settling. The water was chlorinated in the chlorination unit and discharged to a tributary of Ballard Creek. Sludge from the Imhoff tank periodically was removed and placed in the sludge drying bed. STP #1 received and managed only sanitary waste from physical plants and the Officer's Club located nearby, but may have treated nitramine-containing and other industrial wastewater. WPNSTA personnel have reported that during the operation of STP #1, a mercury-containing bearing on the trickling filter cracked, allowing mercury to be released. Also, WPNSTA personnel indicated that sludges from SSA 15 were transported to SSA 6 and land farmed.

Based on the results of the SSP, no further RI/FS activities will be conducted. However, because of the site's proximity to Site 12 and the Industrial Area, a final action at SSA 15 was addressed in the Site 12 ROD. Additional investigative efforts for SSA 15 or AOCs 5, 6, and 7 are not recommended. However, demolition activities of the STP indicated that the main bearing of the trickler may have contained elemental mercury. Therefore, additional sampling of soil/sediment was required as part of the demolition that was completed in 2001.



This aerial photo shows SSA 15 prior to the removal of the STP infrastructure. It is now an open grassy area.

## Site Screening Area 16 – Building 402 Metal Disposal Area and Environs

ROD Signed September 1995

**Status:** Institutional controls

### Site Description:

SSA 16 is located between West Road and a set of railroad tracks, just west of Building 402, and encompasses the northern area of Site 16. The area is a large dirt field, approximately 0.4 acres in size, where scrap metal was stored. Dumpsters containing scrap metal were located on the lower southwest side of the yard; scrap metal and empty drums also were scattered over the ground surface near these dumpsters. This area was reportedly used for scrap metal storage prior to the construction of the Hazardous Waste Storage Facility.

SSA 16 was evaluated in conjunction with Site 16 because of its proximity and geophysical data, which indicate overlap between the two areas. Based on the results of the risk evaluation and limited confirmation sampling by USEPA Region III, no further remedial action with institutional controls was the selected remedy in the ROD finalized for Site 16/SSA 16 on September 29, 1995.



## Site Screening Area 17 – Building 1456 Mark 46 Waste Otto Fuel Tank

Removal Action Completed March 1995

**Status:** No further action

### Site Description:

SSA 17, which occupies an area of approximately 330 feet by 310 feet, is located approximately 400 feet north of Sharpe Road and approximately 2,000 feet northwest of the intersection of Sharpe and Lee Roads in the central portion of WPNSTA. This area previously consisted of an inactive, 5,000-gallon, underground steel tank and a network of ancillary drain pipes. The tank, located under the parking apron, was used to store waste Otto fuel generated during cleaning of MK 46 torpedoes. Waste Otto fuel is a mixture of Otto fuel and water which potentially contained oil, denatured ethyl alcohol, detergent, and trace amounts of cyanide. In June 1988, a tank integrity test was performed on the waste Otto fuel tank. The tank system failed the hydrostatic integrity test and was subsequently taken out of service, the floor drains leading to the tank were sealed, and a RCRA closure and post-closure plan was submitted to VDEQ in November 1988. The 5,000-gallon waste Otto fuel UST system was removed in March 1995. The MK 46 torpedo shop subsequently accumulated waste Otto fuel in compatible, 55-gallon drums, which were stored for less than 90 days prior to transport off site for disposal. Waste Otto fuel is not currently generated or stored at SSA 17. Based on the results of the SSP, no further RI/FS activities are recommended at SSA 17.



## Site Screening Area 19 – Beaver Road/Ponds 11 and 12 Drainage Area and Environs

**Status:** No further action

### Site Description:

Circumjacent to SSA2, SSA 19, which occupies an area of approximately 164 acres (3,000 feet by 3,500 feet), is located in the northwestern section of WPNSTA and encompasses the area surrounding the EOD range, including drainage into Ponds 11 and 12. A smaller pond, Pond 11A, is situated along its northwest perimeter. The EOD range began operations in 1970 when the former disposal range (SSA 2) was taken out of service.

SSA 19 is used for explosive waste destruction. Soil is mounded approximately 40 feet high, holes are dug about 12 to 20 feet into the mound of soil, and the holes are filled with explosive ordnance, then backfilled. The explosives are detonated; the same soil is used repeatedly. During the winter, this area is covered and grass is grown to prevent erosion. Unlined settling ponds collect runoff, through pipes, from this area. Effluent from these ponds may discharge to nearby Ponds 11 and 12 and ultimately to King Creek and the York River. In addition, nine metal containers of varying sizes are used for burning explosive waste when hotter burning is required. This type of burning is performed one to two times per year, primarily in the summer. Based on the results of the SSP (Baker, 2001b), no further RI/FS activities were recommended at SSA 19.



## Site Screening Area 21 – Roosevelt Pond

**Status:** No further action

### Site Description:

Roosevelt Pond is an approximately 22.2 acre pond located in the eastern portion of WPNSTA. The pond receives stormwater from the industrial area and sites therein, such as SSAs 4 and 5.

Roosevelt Pond empties into the York River. The pond has been the subject of limited investigations by the Commonwealth of Virginia in 1994 and a Focused Biological Sampling and Preliminary Risk Evaluation (Baker, 1993b). The SSP Report (Baker, 2001b) for SSA 21 indicates that no additional RI/FS efforts are needed to address environmental concerns at this SSA.



## Site Screening Area 22 – Sand Blasting Grit Pile

Removal Action Completed in 2000

**Status:** No further action

### Site Description:

Site Screening Area 22 (formerly AOC 4) is an area which consists of approximately 0.5 acres in the eastern portion of WPNSTA adjacent to Building 530, which was built and put into operation in 1945 and operated until the early to mid 1980s. Bomb fins and wings, inert bomb casings, and various other inert ordnance items were grit blasted inside Building 530 in a blasting booth and outside at the northern end of the building near a personnel door. Blasting material may have been composed of coal slag or steel grit. The blasting booth within the building utilized a dust collector; the dust which was accumulated there may have been deposited in the vicinity of the northern side of Building 530. AOCs were investigated in 1995 by Baker. Elevated concentrations of lead were detected in SSA 22 soil samples which warranted some general “housekeeping” actions by WPNSTA to prevent further movement of lead contamination away from the source area. A removal was conducted in 2000 at SSA 22 to remove soil containing lead at concentrations exceeding 200 mg/kg. Lead containing soil was disposed in an off-site disposal facility. In addition, Building 530 has since been razed.

Based on the results of the confirmation samples collected, no further RI/FS activities are recommended for SSA 22.



## Site Screening Area 23 – Coal Storage Area

Removal Action Completed Autumn 1998

**Status:** No further action

### Site Description:

SSA 23, an area of approximately one acre adjacent to Building 708, was used to store coal from 1953 to the late 1970s. A 9-inch thick reinforced concrete wall surrounded the coal pile. The walled-in storage area is referred to as Building 1827. Every 20 feet, a 2- by 6-inch hole, which released water from the coal storage area, was located at the ground surface of Building 1827 on the north side of the walled area. As with other AOCs, SSA 23 was investigated in 1997 and elevated concentrations of inorganics, including arsenic and vanadium, were detected in surface soil samples. Some samples were collected near the drainage holes in the wall surrounding the coal pile. Additional investigation under the SSP was, therefore, necessary to determine potential human health risks and ecological concerns associated with this SSA. The SSP Report (Baker, 2001b) indicated that housekeeping activities were warranted for this area and could address the potential concerns raised by inorganic contamination. The inorganic contaminated soil was removed and disposed; therefore, this SSA will not be listed as an IRP site and no further actions are recommended.



### **3.0 CAX SITE AND AOC DESCRIPTIONS**

This section provides summaries of the site histories and status for each IRP site and AOC. Table 1-2 lists these areas, and Figure 2-1 depicts their approximate sizes and locations.

## Site 1 – Landfill Near Incinerator

Removal Action began June 2003

**Status:** Final RI in progress and scheduled for submission September 2003; Round Two RI for sediment to be conducted

### Site Description:

Site 1, which covers approximately 1.3 acres, is located along the York River behind the old incinerator, which was dismantled between 1989 and 1992. From 1942 to 1951 the landfill was used as a disposal area for burn residues, and from 1951 to 1972, it was used as a general landfill. A variety of wastes, including empty paint cans and paint thinner cans, cartons of ether and other unspecified drugs, railroad ties, tar paper, sawdust, rags, concrete, and lumber, were burned and disposed in the landfill until 1981, after which date the landfill was no longer used. During its operation, an estimated 34,500 tons of solid waste were buried at the landfill. The surface of the landfill is relatively flat and is overgrown with vegetation most of the year. In 1981 the landfill was regraded and a 2-foot soil cover was placed over the debris. The areas immediately adjacent to the former landfill are wooded.

There is a steep drop to the York River 25 feet below the landfill. The bank of the river adjacent to the landfill is not vegetated. Baker conducted a limited shoreline erosion assessment of the river bank in the vicinity of Site 1. The assessment concluded that the erosion of the river bank is caused by high water levels and wave action.

A large area of debris is present to the north of the landfill. The area contains cables, conex boxes, an empty storage tank, automobiles, airplane/boat parts, and other miscellaneous items. This area was previously designated as AOC 5 - Debris Area, but is currently being managed as part of Site 1.

A small area along the northeastern perimeter has been eroding. The area in which the landfill perimeter was eroding was difficult to access during high tide and was littered with fallen/washed up trees/wood. A time-critical removal action was conducted to remove the debris that had collected on the beach area (December 1999) and to stabilize the toe of the bank in the erosion area (January 2000). Three sand-filled geosynthetic tubes were installed to stabilize the toe of the landfill.

Approximately 18,700 cubic yards of contaminated soil and landfill material were removed from the landfill in 2003. An additional 1,100 cubic yards of surface debris was also removed. Potential groundwater and sediment contamination will be addressed in the future.



## Site 2 – Contaminated Food Disposal Area

NFRAP signed August 2003

**Status:** No further action

### Site Description:

This site is located in a grassy area in the woods behind the cold storage warehouse. Ammonia-contaminated frozen food was buried in a disposal pit approximately 50 feet in diameter and 12 to 15 feet deep in 1970. The ammonia contamination resulted from a leak that developed in one of the cold storage rooms. The food was buried with cellophane wrappers and boxes intact. The site was overgrown at the time of the IAS (NEESA, 1984). The IAS concluded that additional study was not warranted for the site because the wastes buried at the site would naturally decompose.

The Yorktown Partnering Team agreed on June 18, 2003 to include Site 2 as part of a multi-site No Further Remedial Action Plan (NFRAP). The Final NFRAP was signed in August 2003.



## Site 3 – Submarine Dye Disposal Area

NFRAP signed August 2003

**Status:** No further action

### Site Description:

This site is located at the northeastern corner of Building CAD 15 and is presently used as a storage lot. Dye was stored in 55-gallon drums on two or three pallets located between the warehouses. The drums corroded and dye leaked onto the ground and into the storm sewer system. On rainy days, puddles containing a green fluorescein dye were observed. At times, the dye would leak into the storm sewer leading to the York River, turning the river green. The Coast Guard notified the Activity, and the drums were subsequently removed in the early 1970s. The IAS concluded that additional study was not warranted for the site because the dye no longer posed an environmental hazard.

The Yorktown Partnering Team agreed on June 18, 2003 to include Site 3 as part of a multi-site NFRAP. The Final NFRAP was signed in August 2003.



## Site 4 – Outdated Medical Supply Disposal Area

**Status:** Recommended for EE/CA and Removal Action

### Site Description:

Site 4 is located along an unnamed pond just upgradient of Youth Pond, between buildings CAD 11 and CAD 12. In 1968 or 1969, out-of-date medical supplies, possibly including syringes, empty IV bottles, and one-inch metal banding, were unloaded down a bank in this area and covered with soil. Much of that material was reportedly removed from the site because syringe needles were getting stuck in deer hooves. After heavy rains, what appeared to be syringes could sometimes be seen floating in the adjacent pond and in Youth Pond.

The IAS concluded that additional study was not warranted for the site due to the inert nature of the materials disposed. During a May 4, 1998, site visit with VDEQ representatives, packages of what appeared to be unused needles wrapped in foil were noted within the drainage swale leading to the unnamed pond. In May 1998, Reactives Management, Inc. removed surficial debris. Approximately 200 pounds of debris and 13 pounds of sharps (metal and plastic) were recovered from the site and incinerated. Debris was removed from the surface, by hand or with hand tools, and no intrusive work (e.g., excavation) was conducted.

The Final Site Inspection Report (Baker, 2001d) recommended that a limited investigation to define the lateral extent of debris at the site be performed. In addition, an EE/CA was recommended to evaluate the most appropriate means of removing or covering the debris that is present at the site. In November 2001, Baker conducted some trenching at Site 4 to define the lateral extent of the debris.



## Site 5 – Photographic Chemicals Disposal Area

NFFRAP signed August 2003

**Status:** No further action

### Site Description:

In 1967 or 1968 outdated photographic chemicals were reportedly disposed in a pit of unknown dimensions. This site was originally a borrow pit located behind (southeast) the old DuPont munitions factory area, near Second Street. Based on the small quantity and the non-hazardous nature of the chemicals that were disposed, the IAS concluded that further study was not warranted.

In June 1998, Baker and LANTDIV representatives visited Site 5 and reconnoitered the area to locate the site. No signs of contamination, distressed areas, or evidence of the disposal pit could be identified. Based on the small quantity of the chemicals that were reportedly disposed and the lack of evidence of contamination, the site is not considered to be a significant source of contamination.

The Yorktown Partnering Team agreed on June 18, 2003 to include Site 5 as part of a multi-site NFRAP. The Final NFRAP was signed in August 2003.



## Site 6 – Spoiled Food Disposal Area

NFRAP signed August 2003

**Status:** No further action

### Site Description:

Site 6 is located to the west of the old DuPont ammunition factory. Reportedly, approximately 750 cubic yards of food spoiled in cold storage were buried in a 12 to 15 foot deep pit around 1970. The IAS concluded that additional study was not warranted for the site because the decomposed food was not hazardous.

The Yorktown Partnering Team agreed on June 18, 2003 to include Site 6 as part of a multi-site NFRAP. The Final NFRAP was signed in August 2003.



## Site 7 – Old DuPont Disposal Area

**Status:** Scheduled for future investigation

### Site Description:

Site 7 is located along the York River. The area is comprised of a flat, sparsely vegetated depression, with a berm along the northern perimeter. 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 outcropping from the edge of the slope. The nature of the debris indicates that the disposal occurred more recently than the World War I era.

According to the IAS, Site 7 received wastes from the City of Penniman and from the DuPont facility. Specific information documenting the types and quantities of wastes was not available. E.I. DuPont de Nemours and Company was contacted during the IAS, but specific information regarding disposal practices was not available. The surface of the site was described as level and supporting a variety of grasses. No evidence of stressed vegetation was noted during the IAS. The western, northern, and eastern boundaries of the site are clearly defined by steep banks rising an estimated 10 to 20 feet in elevation. The IAS also indicates that ammunition waste was disposed at the site, but it is not clear how this determination was made.

Delineation activities have been scheduled for February 2004 to define the debris disposal area.



## Site 8 – Landfill Near Building CAD 14

NFRAP signed August 2003

**Status:** No further action

### Site Description:

Site 8 is located approximately 300 feet north of Building CAD 14 and is estimated to be less than one-quarter acre in size. The disposal area reportedly consisted of a series of trenches 2,000 feet long and 10 feet deep. The site was used at various times since the early 1940s but was most active before the Landfill Near the Incinerator (Site 1) was opened. Waste was reportedly disposed at the site as recently as 1980.

Specific information documenting disposal practices is not available. Reportedly, only non-hazardous materials such as spoiled meat, spoiled candy, and clothing have been disposed at the site. The surface of the site is level and overgrown with tall grasses, and, at the time of the IAS, there was no surface evidence of waste and no stressed vegetation.

The IAS concluded that additional study was not warranted for the site because wastes disposed at the site were not hazardous. Based on the inert nature of the materials that were reportedly buried at Site 8 and a site visit conducted in 2002, the site is not considered to be a significant source of contamination.

The Yorktown Partnering Team agreed on June 18, 2003 to include Site 8 as part of a multi-site NFRAP. The Final NFRAP was signed in August 2003.



## Site 9 – Transformer Storage Area

**Status:** Scheduled for future investigation

### Site Description:

This site is approximately 7,000 square feet in size and located adjacent to the northwest corner of Building CAD 16. Between 1973 and 1980, electrical transformers, some of which contained PCBs, were reportedly stored at the site for repair or disposal. Between 6 and 30 transformers were stored at the site at a time. 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 (NEESA, 1984).

The IAS recommended additional study due to the potential for PCB contamination. The Confirmation Study Step 1A (Verification), Round One (Dames and Moore, 1986b) included collection of 13 soil samples from Site 9 for analysis of PCBs and 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD). Aroclor-1260 was the only PCB detected (8 of 13 samples). TCDD was not detected in any samples. Detected concentrations of Aroclor-1260 ranged from 21 micrograms per kilogram (mg/kg) to 321 mg/kg. No additional sampling was recommended because of the low levels of the detections.

A Draft Final NFRAP Decision Document was submitted for the site in December 1999. The document was reviewed by the VDEQ and USEPA, and further investigation and an ecological risk assessment were recommended (Baker, 1999e).



## Site 10 – Decontamination Agent Disposal Area Near First Street

NFRAP signed August 2003

**Status:** No further action

### Site Description:

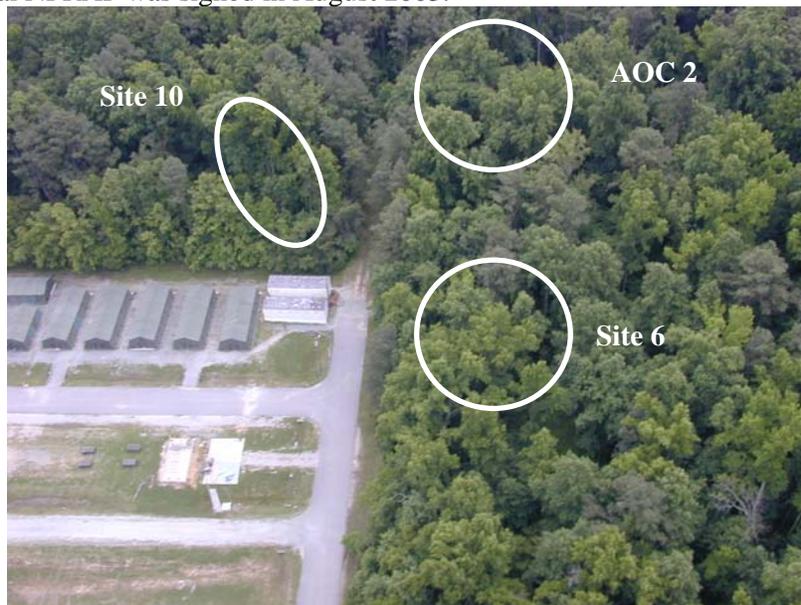
Site 10 is located south of First Street in the southernmost part of the old DuPont munitions plant. An estimated 75 to 100 gallons of decontamination agent (DS-2) were reportedly buried at the site before 1982. DS-2, which is toxic to humans and corrosive to metals, is used for decontaminating equipment contaminated with nerve or blister agents. It is not known if the DS-2 was neutralized prior to disposal.

At the time of the IAS, the surface of the site was covered with a variety of grasses. No evidence of stressed vegetation was noted, and surrounding vegetation and animal life showed no visible adverse effects. The IAS recommended that a magnetometer survey be performed to locate metallic containers of DS-2, and this survey was performed in December 1985 (Geosight, 1985). The results of the survey indicated that the mounds of soil present in the wooded area contained little iron. The magnetometer survey was summarized in the Final Remedial Investigation Interim Report (Dames and Moore, 1991). The report recommended that historical aerial photographs be reviewed to ascertain additional information about the disposal activities and that a risk assessment be performed.

The Site Investigation for Site 10 was performed in 1992. As part of the Site Investigation, three monitoring wells were installed within the shallow aquifer. One surface soil sample and three subsurface soil samples were collected from each monitoring well boring, and groundwater samples were collected from each well. The report concluded that low levels of contamination in soil and groundwater did not appear to be related to DS-2.

In 1997, as part of the SSP investigation, Baker re-sampled the three Site 10 monitoring wells to confirm the Site Investigation results. No organic compounds were detected in groundwater. SI and SSP investigation sampling did not locate any significant sources of contamination at the site. The buried containers of DS-2 have not been located to date. Based on the results of these investigations and the relatively small volume of DS-2 that was reportedly buried, the site does not appear to pose a significant threat to human health or the environment.

The Yorktown Partnering Team agreed on June 18, 2003 to include Site 10 as part of a multi-site NFRAP. The Final NFRAP was signed in August 2003.



## Site 11 – Bone Yard

**Status:** Draft RI in progress and scheduled for submission November 2003

### Site Description:

Site 11 encompasses an estimated 8-acre area located approximately 250 ft south of Antrim Road, behind the public works facility. The site was reportedly used between 1940 and 1978 to dispose oil, asphalt, and gasoline. These wastes were contained in 15 55-gallon drums and two 500-gallon aboveground tanks at the time of the IAS. It was reported that unspecified wastes might also have been buried at the site.

During the IAS, scrap metal, old containers (fuel oil, mixing tanks, etc), fence posts, and abandoned cars were found inside the gate within an estimated one-acre area. Various discarded clamshell buckets and other surplus metal objects used in heavy construction were also located throughout the area. Approximately ten five-gallon containers labeled “paraplastic” (concrete sealant) were also present. South of the entrance, numerous barrels containing petroleum products were discovered, as well as several 500-gallon square tanks containing asphalt or oil used in making asphalt. These tanks were reported to have leaked in the past.

Numerous tar cylinders were deposited at the end of the road leading into the site. The cylinders had apparently been there for quite a while, as their initial cardboard containers had decomposed and the tar had melted. Numerous pieces of scrap metal and surplus construction equipment were scattered along the path. Due to the oil and gasoline at the site, as well as reported spills and waste burial, the IAS recommended additional study for Site 11.

During the SSP groundwater investigation (August 1997), approximately 60 drums were noted in the woods along with three tanks that contained tar. Approximately one half of the drums were empty. The remaining drums contained one or a combination of the following: tar, leaves, soil, or sludge. The drums and tanks were removed from the site in early September 1997 by Industrial Marine Services, Inc. of Norfolk, Virginia. Approximately 60 tons of material, including drums, tanks, solidified tar, and miscellaneous scrap/materials were disposed as non-hazardous waste.

The Draft Removal Closeout Report (Baker, 2000e) summarizes removal activities that have occurred at Site 11 - Bone Yard. Previous investigations at Site 11 have not located any sources of significant contamination. Previous removals and housekeeping activities have eliminated sources of contamination from the site; however, a remedial investigation was conducted in 2002 to thoroughly evaluate the site.



## Site 12 – Disposal Site Near Water Tower

**Status:** Limited Field Investigation Report in progress and scheduled for submission December 2003

### Site Description:

Site 12, located approximately 2,000 feet west of Jones Pond, was used for surface disposal of scrap metal, primarily old automobile parts and iron pipe. Based on visual inspection of the site, approximately 10 to 110 cubic feet of material was disposed at the site. Because these materials were reportedly not hazardous, the IAS recommended no further study.

A limited field investigation consisting of eight surface and eight subsurface soil samples was conducted at Site 12 in June 2002. Not long after these samples were collected, CAX public works employees ran a new water/utility line through Site 12 and toward the Jones Pond water plant west of Site 12. In the aerial photo below, the disturbed area in the center of Site 12 shows where the utility trench was dug then backfilled. How this activity will affect the result of the limited field investigation and future actions at Site 12 is still being considered.



## AOC 1 – Scrap Metal Dump

**Status:** Additional investigation planned

### Site Description:

AOC 1 is a debris disposal area located just west of Chapman Road in two ravines along unnamed tributaries to Jones Pond. Wood and metal debris outcrop from the banks of the ravines.

In November 1999 a field investigation that included a geophysical survey and collection of soil, surface water, and sediment samples was performed. VOCs, SVOCs, pesticides, PCBs, inorganics, and cyanide were detected in the surface soil samples. SVOCs and inorganics were detected in the surface water at low levels. VOCs, SVOCs, PCBs, and inorganics were detected in the sediment samples. The extensive volume of debris at the AOC is a potential source of contamination.

The Final Site Inspection Report (Baker, 2001d) recommended that a limited investigation to evaluate disposal parameters be performed. In addition, an EE/CA was recommended to evaluate the most appropriate means of removing or covering the debris present at the site.



## AOC 2 – Dextrose Dump

**Status:** Scheduled for EE/CA and Removal Action

### Site Description:

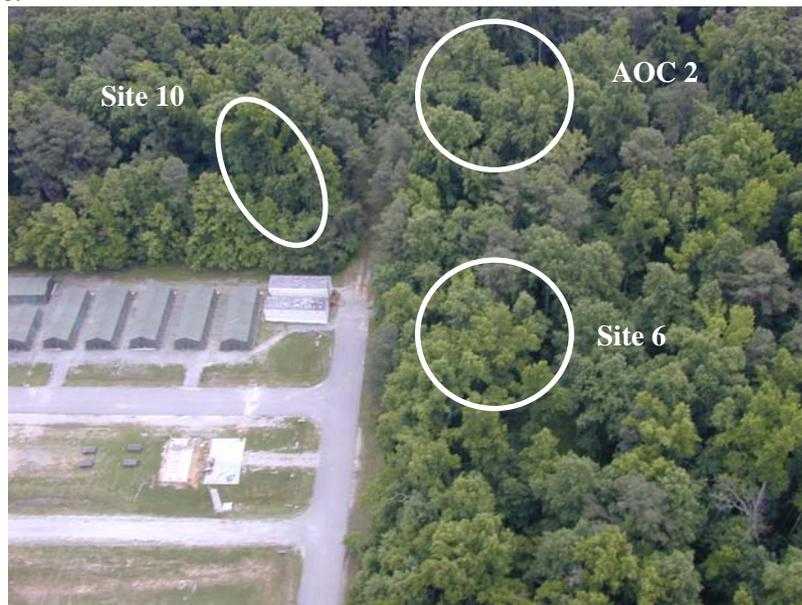
AOC 2 was discovered during site visits performed by LANTDIV, USEPA, VDEQ, and Baker in late 1997 and early 1998. The area is situated in woods, north of Garrison Road, along the southern perimeter of CAX and contains several rows of concrete foundation piers, which at one time apparently supported a Shipping House at the former Penniman Shell Loading Plant. 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. Several glass bottles, many of which are labeled dextrose, were present. In addition, several partially buried empty drums were also noted. Mounds of soil that are present may also indicate buried materials. Additional buried drums may be located in this area.

During May 1998, Reactives Management, Inc. removed 470 bottles from the site as part of a routine housekeeping operation and selected 24 bottles for random analysis. Each bottle contained greater than 2,000 ppm glucose indicating that the bottles did contain dextrose, as suspected.

In 1998, Baker performed a Field Investigation for AOC 2 that consisted of a geophysical survey and soil and groundwater investigations. The Field Investigation Report (Baker, 1999a) recommended that the sources of the geophysical anomalies and potential sources of contamination be identified by excavating a total of six shallow test pits in the vicinity of the most significant anomalies detected.

In November 1999, Baker performed a field investigation that included test pits and exploratory hand auger borings to define the lateral extent of buried debris at the site. Samples of native soil and soil within the debris zones were collected. During the investigation, a large volume of buried drums and respirator filter canisters was encountered. A few of the drums contained a thin layer of tar coating or residue. The remaining drums were empty.

In the Final Field Investigation Report (Baker, 2001e), additional geophysical surveying with confirmatory test pitting was recommended to further delineate the extent of buried debris, with emphasis placed on locating areas of buried respirator cartridge canisters. Based on the findings of the investigation, it was recommended that an EE/CA be completed to determine the appropriate management strategy for the site.



## AOC 3 – CAD 11/12 Pond Bank

**Status:** Scheduled for EE/CA and Removal Action

### Site Description:

AOC 3 consists of an approximately 20 foot by 20 foot by 10 foot high pile of metal banding along the north bank of the unnamed pond, situated between Buildings 11 and 12, north of D Street. This area, which also contains a few empty drums, is adjacent to Site 4 - Medical Supplies Disposal Area. This location was designated as an AOC in 1998 following site visits by LANTDIV, USEPA, and VDEQ representatives.

During the 1999 field investigation, two soil samples and two sediment samples were collected next to the metal banding pile. Results for the samples (which were collected as part of the Site 4 investigation) were included in the Site Inspection Report - Site 4 and AOC 1 (Baker, 2001d). The site is not currently considered to be a significant source of contamination.

This area will be managed separately from Site 4. The samples collected during the 1999 field investigation were intended to determine if future investigation is warranted and to confirm that there are no sources of contamination present within the pile so the pile can be removed as part of a housekeeping measure, rather than under a removal action.



## **AOC 4 – Outdated Medical Supply Disposal Area**

**Status:** No further action

### **Site Description:**

During 1998, AOC 4 was identified as a new AOC by LANTDIV. However, based on review of site history and available information, it was determined that AOC 4 is actually the same area as Site 4. AOC 4 will no longer be addressed as a separate entity.

## AOC 5 – Debris Area

**Status:** No further action

### **Site Description:**

During 1998, AOC 5 was identified as a new AOC by LANTDIV. AOC 5, the large pile of debris at the toe of the Site 1 landfill, contains cables, conex boxes, an empty storage tank, automobiles, airplane/boat parts, and other miscellaneous items. Based on the results of the 1998 field investigation (Baker, 1999a), which included a geophysical survey and soil and sediment sampling in the vicinity of the pile, LANTDIV decided that it was more appropriate to manage these two areas (Site 1 and AOC 5) as one unit. VDEQ concurred. Consequently, AOC 5 will no longer be addressed as a separate unit and will be managed as part of Site 1.

**Status:** Scheduled for future investigation

### **Site Description:**

The Penniman Shell Loading Plant was an explosives manufacturing facility operated by the DuPont de Nemours Company on what is now CAX and adjacent properties. This facility operated as a TNT manufacturing plant beginning in approximately 1916, and subsequently began loading artillery shells for the war effort in 1918. Between 1918 and 1925, following the end of World War I, this facility was demolished and reverted to farmland. The Navy established CAX on a portion of this property in 1942 (Weston, 1999a).

Based on aerial photographic analysis, five sub-areas have been identified within this AOC:

- Ammonia Settling Pits - This area consists of earthen ammonia settling pits that were part of a former shell loading area located on Cheatham Annex. 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 - This area consists of waste metallic slag material that is located throughout the shell loading area predominantly along the railroad tracks.
- 1918 Drum Storage - This area was used for the storage of wooden kegs when the shell loading area was active.

Since CAX was added to the NPL in December 2000, the USEPA and the Navy have discussed various approaches for conducting a site investigation of these sub-areas. In August 2000, the USEPA and the Navy agreed that only three of the five sub-areas would be investigated: Ammonia Settling Pits, TNT Graining House Sump, and TNT Catch Box Ruins. The USEPA recommended that all five sub-areas be investigated since all five sub-areas were included in the hazard scoring for the NPL.

These sub-areas of the Penniman AOC have not yet been investigated. Detailed figures presenting the site plan have not been developed. Figure 3-1 shows the approximate location of the Penniman AOC. The Yorktown Partnering Team is currently discussing future investigations at the Penniman AOC. Pending results of these discussions, a RI/FS may be recommended for the Penniman AOC.

## **4.0 SITE MANAGEMENT PLAN SCHEDULES**

This section presents the project schedules for the sites, SSAs, and AOCs identified in Sections 2.0 and 3.0. Schedules depicting the major project activities for each site, SSA, and AOC are provided. These schedules are tentative based on funding allocation, completion of removal actions, and government comments received for the reports. In addition, specific submittal deadlines planned for fiscal years 2004 and 2005 are being developed. Appendix A presents actions (removal actions and finalized reports) which have been completed. Appendix B presents sites, SSAs, and AOCs that are currently active.

### **4.1 Scheduling Assumptions**

Assumptions regarding document review periods and deviations from the FFA are discussed in the following sections.

#### **4.1.1 Federal Facility Agreement Assumptions**

RI/FS and Remedial Design (RD)/Remedial Action (RA) deliverables are classified as “primary” or “secondary” documents in the FFA. A primary document is typically a major, discrete portion of an RI/FS or RD/RA activity, whereas a secondary document may be a discrete portion of a primary document or may serve as a feeder document to a primary document. The project schedules have been developed using the primary and secondary document review and comment process specified in the FFA.

The time required for review will vary according to the length and complexity of the document. In an effort to expedite document finalization, the draft document review period may be decreased from the FFA 60-day duration to a 30-day period for the secondary documents listed below, as these secondary documents are expected to be short in length and relatively straightforward in nature compared with the other primary and secondary documents:

- Treatability Study Work Plan
- Treatability Study Report
- Engineering Evaluation/Cost Analysis Report
- Removal Action Memorandum

#### **4.1.2 Document Preparation, Field Investigation, and Sample Analysis/Validation Assumptions**

Durations for work plan preparation and field investigation activities have been based on the available information for the sites, while taking into account the overall complexity of each area (e.g., size, media types, potential receptors, proximity to other sites). The sampling efforts needed to support RI/FS activities (i.e., required to fill existing risk-, hydrogeologic-, and engineering-related data gaps) also were taken into account. These factors will be more thoroughly evaluated during work plan development.

Work Plan development, field investigation, and sample analysis/validation activities for the sites, SSAs, and/or AOCs have been combined to optimize coordination of these efforts (e.g., document review, field mobilization/demobilization, database management).

The work plan durations represent the estimated time required to generate the first draft document (referred to as the Preliminary Draft). The field investigation durations include the time required for subcontractor procurement and mobilization of equipment and personnel.

With respect to sample analysis, a 28-day duration is the contractual turnaround time for NEESA approved laboratories. Thirty days, however, is a more realistic estimate for receipt of analytical data and is therefore used as the standard turnaround time for receipt of all laboratory analyses. For data validation, a 14-day duration was assumed for all analytical data, which is also the standard turnaround time for the data validation firms currently under contract.

For preparation of other RI/FS and RD/RA documents, “typical” or “average” durations were assumed based on prior experience in preparing these reports. More accurate estimates of document preparation times can be made in subsequent SMPs as more data become available; estimates will be updated in each site-specific work plan.

#### **4.2 Site Management Plan Schedules**

This section presents the proposed activities and schedules for the sites, SSAs, and AOCs identified in Section 2.0. The overall schedules for completion of activities at WPNSTA Yorktown and CAX are provided as Figure 4-1. Appendix A presents the schedules for completed actions. Appendix B presents detailed SMP schedules for RI/FS/RD activities that are currently underway.

The basic strategy employed during development of the SMP schedules was to overlap the RI/FS and RD/RA activities to the maximum extent practicable in order to compress the entire project schedule. The amount of overlap was based on the degree of dependency between the various tasks and documents and requested review times of government agencies. Key dependencies and related assumptions are outlined below:

- Remedial Investigation: Preparation of the Preliminary Draft RI was assumed to start once all the analytical data are received prior to completion of data validation. Certain RI tasks can begin before the data are validated; to prevent duplication of effort, this overlap was assumed to be two weeks.
- Feasibility Study: Many FS tasks are dependent on the nature and extent of contamination which is determined in the RI document. Preparation of the Preliminary Draft FS was assumed to start upon submission of the Draft Final RI for those future sites which require a FS.
- Proposed Plan: Preparation of the Preliminary Draft Proposed Plan was assumed to start upon submission of the Draft Final FS. As comments are received from USEPA and the Commonwealth of Virginia on the FS, modifications to the PRAP will be made concurrently.
- Public Comment Period: The 45-day public comment period on the PRAP will begin when the final PRAP is submitted. Public comments on the PRAP can then be considered and addressed in the Responsiveness Summary section of the ROD.
- Record of Decision: Preparation of the ROD will begin upon submission of the Draft Final PRAP. The final ROD will incorporate all public comments received during the Public Comment Period.
- Remedial Design: The RD was assumed to start when the Draft Final ROD is submitted. Full scale preparation of the RD will, however, not begin until concurrence with the selected alternative(s) is obtained.

#### **4.2.1 Proposed Removal Actions**

Removal actions are planned for WPNSTA Yorktown Sites 2 and 8 and SSA 14 in FY 2004. In FY 2005, removal actions are under consideration for WPNSTA Yorktown Site 24 and CAX Sites 1 (wetland restoration) and 11.

#### **4.2.2 RI/FS and RD/RA Schedules**

Appendix B presents detailed schedules, including submittal deadlines and target dates, for the sites where activities are currently underway.

#### **4.2.3 Treatability Study Schedule**

All treatability studies scheduled for WPNSTA Yorktown have been completed. There have been no treatability studies completed at CAX. No new treatability studies are planned for WPNSTA or CAX in FY 2004 or FY 2005.

#### **4.2.4 Presumptive Remedies**

Presumptive remedies are preferred technologies for common categories of sites based on historical patterns of remedy selection and USEPA's scientific and engineering evaluation of performance data on technology implementation. The objective of presumptive remedies is to use past agency experience to streamline site investigation and expedite selection of cleanup actions by eliminating the need for the initial identification and screening of alternatives during the FS.

Presumptive remedies evolve from the expectation that containment will be the likely focus at sites having wastes that pose relatively low, long-term threats or where treatment is impracticable. Presumptive remedies, typically applicable to municipal and CERCLA landfills, are types of sites where treatment of the waste may be impractical because of their size and the heterogeneity of their contents.

Sites at WPNSTA that could potentially be candidate sites for presumptive remedies include Site 2 (the Former Turkey Road Landfill) and Site 23 (Building 428 Teague Road Disposal Area).

The potential use of a presumptive remedy at WPNSTA will be evaluated in FY 2004 and FY 2005 as RI/FS efforts are completed and receive agency approval.

#### **4.3 Yorktown-CAX Partnering Team**

A formal Yorktown-CAX Partnering Team was established in July 1997 to manage the cleanup of IRP sites at WPNSTA Yorktown and CAX. The Partnering Team includes representatives from the USEPA and the Virginia Department of Environmental Quality. The Team meets throughout the year to develop

long-term goals, review on-going projects, and to discuss site-specific strategies to achieving site closure. Partnering Team decisions are documented through consensus statements, which usually address specific sites and agreements made by the Team. These consensus statements often affect schedules and overall activities at the sites. Table 4-1 provides a list of the consensus statements for WPNSTA Yorktown and CAX.

## 5.0 REFERENCES

Baker Environmental, Inc. 2003a. Final Record of Decision for Site 21, Naval Weapons Station Yorktown, Yorktown, Virginia. September 2003.

Baker Environmental, Inc. 2003b. Final Record of Decision for Site 22, Naval Weapons Station Yorktown, Yorktown, Virginia. September 2003.

Baker Environmental, Inc. 2003c. Final Background Investigation, Naval Weapons Station Yorktown, Yorktown, Virginia, Cheatham Annex Site. October 2003.

Baker Environmental, Inc. 2003d. Action Memorandum for Contaminated Soil, Site 1 – Landfill Near Incinerator, Naval Weapons Station Yorktown, Yorktown, Virginia, Cheatham Annex Site. June 2003.

Baker Environmental, Inc. 2002a. Draft Final Remedial Investigation Report for Site 23, 24, 25, and 26, Naval Weapons Station Yorktown, Yorktown Virginia. February 2002.

Baker Environmental, Inc. 2002b. Draft Final Round Two Remedial Investigation Report for Sites 2, 8, 18, and Site Screening Area 14, Naval Weapons Station Yorktown, Yorktown, Virginia. April 2002.

Baker Environmental, Inc. 2001a. Final Round Two Remedial Investigation for Sites 4, 21, and 22, Naval Weapons Station Yorktown, Yorktown, Virginia. January 2001.

Baker Environmental, Inc. 2001b. Site Screening Process Report for Site Screening Areas 3, 4, 5, 6, 10, 20, 21, 22, 23, and 24, Naval Weapons Station Yorktown, Yorktown, Virginia. October 2001.

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TABLE 1-1

SITES AND SITE SCREENING AREAS  
 NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

Site No.	Site Name	Navy OU No. <sup>(1)</sup>	CERCLIS OU No. <sup>(2)</sup>	Former SSA Designation	Current Site Designation	ROD Signed	Institutional Controls	GW OU No.
1	Dudley Road Landfill	VIII	6	-	-	6/9/1999	Yes	I
2	Turkey Road Landfill	-	9	-	-	NA	NA	VI
3	Group 16 Magazine Landfill	IX	6	-	-	6/9/1999	Yes	I
4	Burning Pad Residue Landfill	XVI	7	-	-	NA	NA	IV
5	Surplus Transformer Storage Area	I	1	-	-	9/29/1994	No	II
6	Explosives-Contaminated Wastewater Impoundment	XIII, XIV, XV	2	-	-	10/13/1998	NA	I
7	Plant 3 Explosives-Contaminated Wastewater Discharge Area	XII	2	-	-	10/13/1998	Yes	I
8	NEDED Explosives-Contaminated Wastewater Discharge Area	-	9	-	-	NA	NA	IV
9	Plant 1 Explosives-Contaminated Wastewater Discharge Area	VI	3	-	-	3/23/1998	NA	VII
10	-	-	-	-	-	-	-	-
11	Abandoned Explosives Burning Pits	X	8	-	-	10/2/2000	No	I
12	Barracks Road Landfill	III, IV, V	4	-	-	4/16/1997	Yes	III
13	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-
16	West Road Landfill	II	5	-	-	9/29/1995	Yes	IV
17	Holm Road Landfill	XI	8	-	-	10/2/2000	No	I
18	Building 476 Discharge Area	-	9	-	-	NA	NA	VII
19	Conveyor Belt Soils at Building 10	VII	3	-	-	3/23/1998	Yes	VII
20	-	-	-	-	-	-	-	-
21	Battery and Drum Disposal Area	XVIII	7	-	-	9/30/2003	No	IV
22	Burn Pad	XVII	7	-	-	9/30/2003	No	IV
23	Building 428 Teague Road Disposal Area	-	10	SSA 1	-	NA	NA	II
24	Aviation Field	-	10	SSA 6	-	NA	NA	I
25	Building 373 Rocket Plant	-	10	SSA 7	-	NA	NA	I
26	Building 1816 Mark 48 Waste Otto Tank	-	10	SSA 18	-	NA	NA	V
27	Building 1751 Chemistry Laboratory Neutralization Unit and Drainage Area	-	11	SSA 9	-	NA	NA	IV
28	Building 28 X-Ray Facility Drain Field	-	11	SSA 10	-	NA	NA	VI
29	Lee Pond	-	11	SSA 20	-	NA	NA	VII
30	Bracken Road Incinerator and Environs	-	11	SSA 24	-	NA	NA	II

TABLE 1-1

SITES AND SITE SCREENING AREAS  
 NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA

SSA No.	Site Name	Navy OU No. <sup>(1)</sup>	CERCLIS OU No. <sup>(2)</sup>	Former SSA Designation	Current Site Designation	ROD Signed	Institutional Controls	GW OU No.
1	Now Site 23	-	-	-	23	-	-	-
2	Former Explosives Ordnance Disposal Burning/Disposal Area	-	-	-	-	NA	NA	X
3	Fire Training Pit and Vicinity	-	-	-	-	NA	No	I
4	Weapons Casing/Drum Disposal Area	-	-	-	-	NA	No	II
5	Bypass Road Landfill	-	-	-	-	NA	No	II
6	Now Site 24	-	-	-	24	-	-	-
7	Now Site 25	-	-	-	25	-	-	-
8	Building 350 Rail Roundhouse Maintenance Area Trench Outfall	-	-	-	-	NA	No	VII
9	Now Site 27	-	-	-	27	-	-	-
10	Now Site 28	-	-	-	28	-	-	-
11	Building 3 Neutralization Unit	-	-	-	-	NA	No	III
12	Public Works Storage Yard/Building 683 Vicinity	-	-	-	-	NA	No	VII
13	Building 529 Battery Drainage Area	-	-	-	-	NA	No	III
14	Building 537 Drainage to Felgates Creek	-	9	-	-	NA	NA	IV
15	Sewage Treatment Plant #1 Sludge Drying Beds and Discharge Area	-	-	-	-	NA	No	III
16	Building 402 Metal Disposal Area and Environs	II	5	-	-	9/29/1995	Yes	IV
17	Building 1456 Mark 46 Waste Otto Tank	-	-	-	-	NA	No	V
18	Now Site 26	-	-	-	26	-	-	-
19	Beaver Road/Ponds 11 and 12 Drainage Area and Environs	-	-	-	-	NA	No	X
20	Now Site 29	-	-	-	29	-	-	-
21	Roosevelt Pond	-	-	-	-	NA	No	II
22	Sand Blasting Grit Pile (formerly AOC 4)	-	-	-	-	NA	No	VII
23	Coal Storage	-	-	-	-	NA	No	VIII
24	Now Site 30	-	-	-	30	-	-	-

Notes:

(1) An Operable Unit (OU) is a discrete action that comprises an incremental step toward comprehensively remediating the site. The Navy and USEPA have assigned different numbering systems for the OUs at WPNSTA Yorktown and CAX.

(2) CERCLIS is the USEPA's Comprehensive Environmental Response, Compensation and Liability Information System. CERCLIS contains information on hazardous waste sites, potential hazardous waste sites, and remedial activities across the nation, including sites that are on the National Priorities List (NPL) or being considered for the NPL.

**TABLE 1-2**

**SITES AND AREAS OF CONCERN  
NAVAL WEAPONS STATION YORKTOWN, YORKTOWN, VIRGINIA  
CHEATHAM ANNEX SITE**

<b>Site No.</b>	<b>Site Name</b>	<b>Navy OU No. <sup>(1)</sup></b>	<b>CERCLIS OU No. <sup>(2)</sup></b>	<b>Former AOC Designation</b>	<b>Current Site Designation</b>	<b>ROD Signed</b>	<b>Institutional Controls</b>	<b>GW OU No.</b>
1	Landfill Near Incinerator	-	1	5	-	NA	NA	NA
2	Contaminated Food Disposal Area	-	8	-	-	NFRAP 8/14/03	No	NA
3	Submarine Dye Disposal Area	-	8	-	-	NFRAP 8/14/03	No	NA
4	Outdated Medical Supply Disposal Area	-	4	4	-	NA	NA	NA
5	Photographic Chemicals Disposal Area	-	8	-	-	NFRAP 8/14/03	No	NA
6	Spoiled Food Disposal Area	-	8	-	-	NFRAP 8/14/03	No	NA
7	Old DuPont Disposal Area	-	3	-	-	NA	NA	NA
8	Landfill Near Building CAD 14	-	8	-	-	NFRAP 8/14/03	No	NA
9	Transformer Storage Area	-	6	-	-	NA	No	NA
10	Decontaminated Agent Disposal Area Near First Street	-	8	-	-	NFRAP 8/14/03	No	NA
11	Bone Yard	-	5	-	-	NA	NA	NA
12	Disposal Near Water Tower	-	7	-	-	NA	NA	NA
<b>AOC No.</b>								
1	Scrap Metal Dump	-	-	-	-	NA	NA	NA
2	Dextrose Dump	-	3	-	-	NA	NA	NA
3	CAD 11/12 Pond Bank	-	-	-	-	NA	NA	NA
4	Now Site 4	-	-	-	4	NA	-	-
5	Now Site 1	-	-	-	1	NA	-	-
NA	Penniman AOC	-	2	-	-	NA	NA	NA

Notes:

(1) An Operable Unit (OU) is a discrete action that comprises an incremental step toward comprehensively remediating the site. The Navy and USEPA have assigned different numbering systems for the OUs at WPNSTA Yorktown and CAX.

(2) CERCLIS is the USEPA's Comprehensive Environmental Response, Compensation and Liability Information System. CERCLIS contains information on hazardous waste sites, potential hazardous waste sites, and remedial activities across the nation, including sites that are on the National Priorities List (NPL) or being considered for the NPL.

TABLE 4-1

**WPNSTA YORKTOWN/CAX  
PARTNERING TEAM  
CONSENSUS STATEMENT SUMMARY**

NUMBER	CONSENSUS STATEMENT NUMBER	DATE	FACILITY	SITE	AOC	TOPIC	CONSENSUS STATEMENT	SIGNATURES C=core, A=adjunct
	NA	10/23/2001	WPNSTA	18		Site 18	The Team agreed to separate the Mercury issue from the Site 18 ROD.	
	NA	10/23/2001	WPNSTA			Dec. 2002 Partnering Meeting	The team agreed to start at 12:00 noon Monday, December 3, 01 (lunch on own prior to starting) and meet through Wednesday evening with site visits Thursday December 6, 2001.	
	NA	10/24/2001	CAX	2		Site 2 – Contaminated Food Disposal Area	The team thinks 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. Milhako stated that DEQ 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 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	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	WPNSTA	6, 7		LUCIP Review Sites 6 & 7	state the site size and then the size of the restricted area, annotate Global Position Coordinates (GPS) of restricted area on figures.	
	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 "mari" 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 TAL/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	12/4/2001	WPNSTA	6		Site 6 – Explosives-Contaminated Wastewater Impoundment	This site is former cache where TNT was placed in a hole and stored. The hole was later backfilled. Soil with concentrations of cadmium and zinc were left in the hole and then backfilled with 4 feet of soil. After discussing the conditions of the site, the team agreed to evaluate whether further action was required at this site.	
	NA	2/5/2002	CAX	9		Site 9 - Transformer Storage Area	Based upon review of 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.	
	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.	
	NA	2/5/2002	WPNSTA	18		Site 18	Because Site 18 is NFA, the team proposed to schedule preparation of documents for this site on the same schedule as Sites 23-26.	

TABLE 4-1

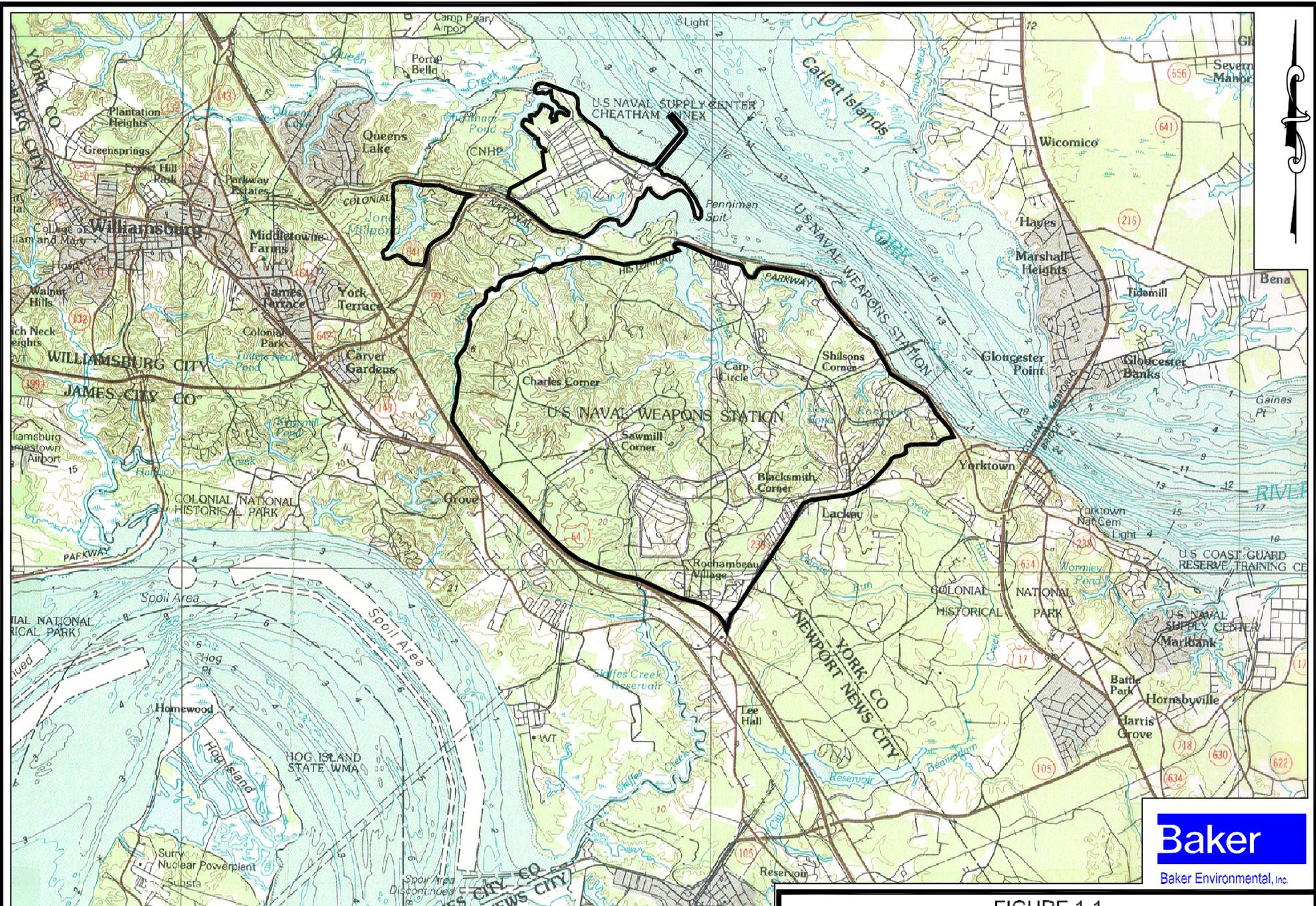
WPNSTA YORKTOWN/CAX  
PARTNERING TEAM  
CONSENSUS STATEMENT SUMMARY

NUMBER	CONSENSUS STATEMENT NUMBER	DATE	FACILITY	SITE	AOC	TOPIC	CONSENSUS STATEMENT	SIGNATURES C=core, A=adjunct
	NA	2/5/2002	WPNSTA	2, 8, 14		Sites 2, 8, and SSA 14	Sites 2, 8, and SSA 14 (2 will be a ROD, 8 & SSA 14 will be a ROD) will track on a later schedule than Sites 23-26.	
	NA	2/5/2002	WPNSTA	8, 18, SSA 14		RI Sites 8, 18 & SSA 14	Baker will update the report and resubmit for review and comment.	
		2/5/2002		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				2002 Goals Update	The team agreed to include the Goals as part of each meeting's minutes.	
	NA	2/5/2002				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				Draft FFA	Scott Park/Jennifer Davis to prepare Draft FFA Addendum for counsel review and submittal to EPA and DEQ.	
1	3/13/2002-1	3/13/2002				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).	C, A
2	3/13/2002-2	3/13/2002	WPNSTA	4		Clean-up level	If Site 4 removal action cannot achieve residential levels then Sites 4 and 22 ROD will split into two separate RODS.	C, A
3	4/23/2002-3	4/23/2002				Identification of new sites	The Team agrees that the FFA (Sections 9.3a and 9.3b) gives the team the authority to add newly identified sites to the SMP.	C, A
4	4/24/2002-4	4/24/2002				Site Management Plan	The team agreed to go final with the 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.	C, A
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.	C & JMc; PK-no
5	4/24/2002-6	4/24/2002	CAX		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.	C, A
7	4/24/2002-7	4/24/2002				Community Relations Plan	The Team agrees to go final with the Community Relations Plan. If appropriate, final covers and spines will be submitted.	C, A
8	6/03/2002-8	6/3/2002	WPNSTA	GWOU 1		Groundwater Operable Unit 1 - Work Plan	The Team agrees to investigate and install groundwater monitoring wells if a removal action(s) at site 24 within Groundwater Operable Unit I shows contamination or materials that pose a potential risk to receptors with the potential of exposure to groundwater (waste left in place or confirmatory samples detections exceed PRG).	C, A
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 NFRAP documents before finalizing them.	C
10	8/6/2002-10	8/6/2002	WPNSTA			Five Year Review Report, WPNSTA Yorktown Sites 1, 6, 7, 12, 16, and 19	The team agrees with the 5-year review Report findings and agrees to go final with the document. Jeff Harlow to pursue signature of the document by Admiral.	C
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				New technical team member	The Team agreed to add Marlene Ivester as a technical member to the team.	C
13	9/18/2002-13	9/18/2002				Facilitator	The team agreed a facilitator is needed for a few meetings.	C
14	10/22/2002-14	10/22/2002	WPNSTA			LUCIPs	The Team agreed to revise the LUCIP to incorporate two sections: Site Environmental History and References. Also, the LUCIP will include a brief executive summary of the ROD (about 1 paragraph, similar to the Camp Allen Landfill LUCIP). The numbers of signs for each site is as follows: - Site 12: At least four signs, placed at egress points to the site (of the ten proposed, four will be mandatory) - Site 19: At least three signs, placed at egress points to the site - Site 1: At least three signs, placed at egress points to the site - Sites 6 & 7: At least three signs for Site 6 at egress points and one sign at Site 7 egress point	C
15	10/23/2002-15	10/23/2002				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).	C
16	10/23/2002-16	10/23/2002	WPNSTA			GWOU 1	The Team agreed that Baker can proceed with submitting the response to comments and with submitting a revised Draft Final Work Plan for GWOU 1 to the normal distribution list.	C

TABLE 4-1

**WPNSTA YORKTOWN/CAX  
PARTNERING TEAM  
CONSENSUS STATEMENT SUMMARY**

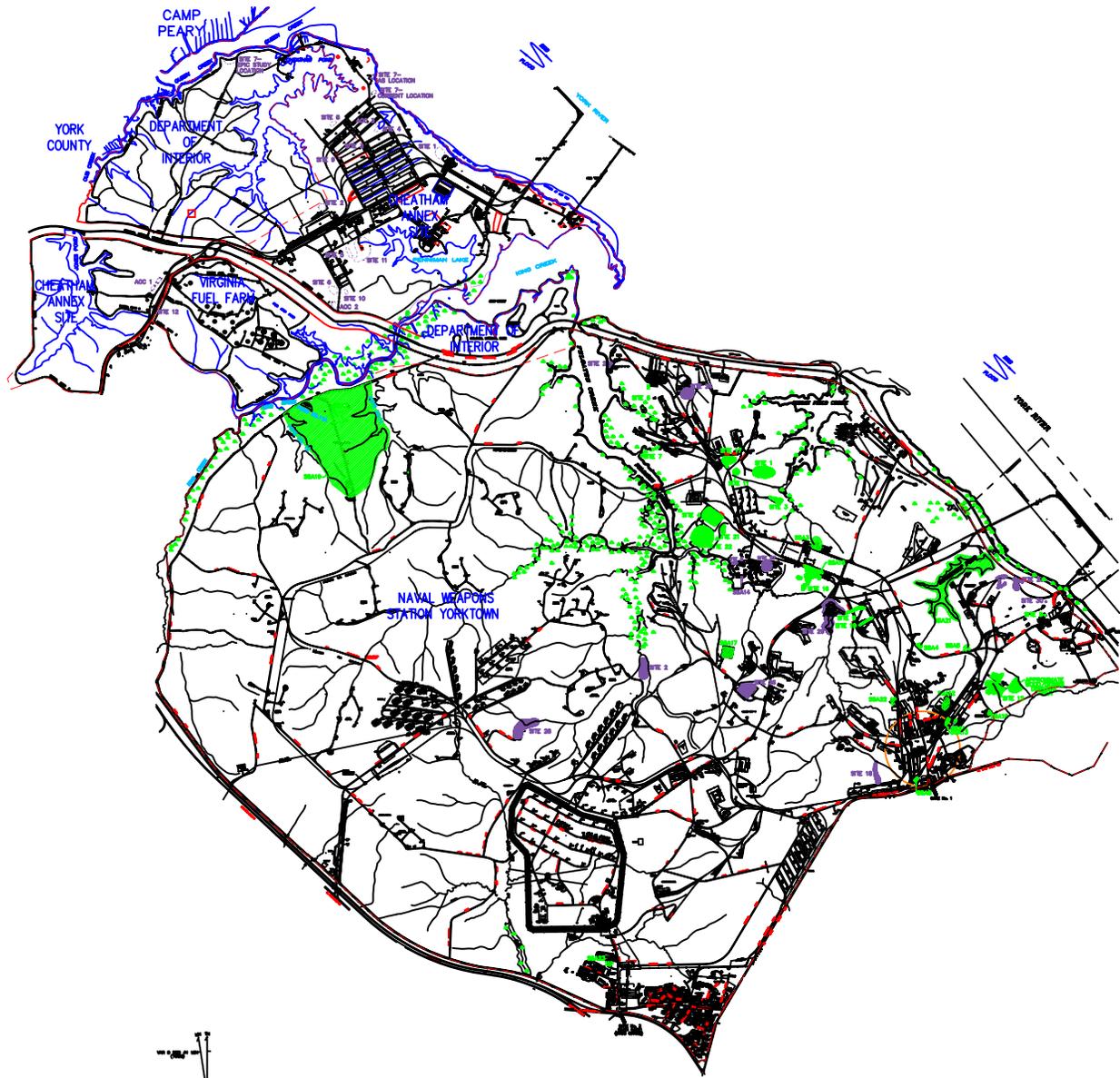
NUMBER	CONSENSUS STATEMENT NUMBER	DATE	FACILITY	SITE	AOC	TOPIC	CONSENSUS STATEMENT	SIGNATURES C=core, A=adjunct
17	10/23/2002-17	12/4/2002 Revised				WPNSTA-SSAs 3-24; 23-26; 2, 8, 18 & SSA 14; GWOU I, 27-30 CAX-1, 4 & 9, 11, Background Study, NFRAP 2, 3, 5, 6, 9, 10 & 12	The WPNSTA Yorktown/CAX Partnering 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 SSP; 23-26 DF RI; 2, 8, 18 & SSA 14 DF RI; GWOU I Draft WP; 27-30 Draft RI CAX: 1 DF RI; 4 & 9 Draft RI (SERA); 11 Draft RI, Draft Background Study; 2, 3, 5, 6, 9, 10 & 12 Draft NFRAP	C
18	12/5/2002-18	12/5/2002		21, 22		WPNSTA Sites 21 & 22	Based upon EPA Region III comments, Sites 21 and 22 RODs will be rewritten as No Further Action (NFA) RODs with no institutional controls (ICs) because they were remediated to residential levels.	C
19	12/5/2002-19	12/5/2002				Site Action Status Report	The Team agrees to use the SASR as a tracking tool and add it to the standard meeting format.	C
20	12/5/2002-20	12/5/2002				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.	C
21	1/29/2003-21	1/29/2003				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.	C
22	3/13/2003-22	3/13/2003	WPNSTA	23		Confirmation sampling during removal action	At Yorktown Site 23, the Team agrees that the removal action should meet the following goals: Areas A and C are large areas and confirmation sampling will include multiple bottom samples as proposed in the confirmation sampling plan. All other sample locations that exceed cleanup goals at this time will be removed as hot spots.	C & JMc
23	3/13/2003-23	3/13/2003	CAX	1		Site clean-up goals	The Team agrees that the Draft Final 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.	C & JMc
24	3/13/2003-24	3/13/2003	WPNSTA	4		Site clean-up goals	The team agrees that the ROD for Site 4 should be drafted upon completion of the on-going non-time critical removal action (NTCRA) to ensure that the ROD will be most appropriate in light of final conditions following the NTCRA. The team understands that \$600,000 will be committed in March 2003 to fund the NTCRA and that the Navy RPM projects that the NTCRA may require additional funding at the start of FY04 to complete the clean up.	C & JMc
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).	JH & DJ
26	6/17/2003-26	6/17/2003	WPNSTA	24		Groundwater investigation at WPNSTA Site 24 - Aviation Field	Based upon past sample results and the reported solid waste disposed of at WPNSTA Site 24 - Aviation Field, the Partnering Team agrees that a groundwater investigation is not warranted at this time unless the planned removal action at WPNSTA Site 24 can not meet human health or ecological clean-up goals that have yet to be determined for sediment and soil.	C & JMc
27	6/11/2003-27	6/11/2003	CAX	1		Concurrence on CAX Site Removal	EPA 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.	C & JMc
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 PRAP & ROD for the site until after completion of wetlands BERA and Round II RI for sediments. 3. Issue a letter to file that the FS will be deferred until completion of the Round II RI.	C
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.	C
30	6/19/2003-30	6/18/2003	WPNSTA	12		Long term monitoring program at WPNSTA Site 12	Based upon the information presented on June 19, 2003 at the Partnering Meeting on the long term monitoring program at WPNSTA Site 12 (years one through five), the Partnering Team agreed to the following: 1. Eliminate LTM monitoring at wells 12GW13 and 12GW4 (located upgradient of site) and collect one round of samples during the next 5 year LTM period at wells 12GW8, 12GW19, 12GW18 and 12GW 18A and analyze for 6 RCRA metals (total metals only). 2. The team agreed to install a new monitoring well, 12GW20, down gradient of well 12GW07 at the site to identify the migration pathway for VOCs. 3. Eliminate sampling at wells 12GW01A, 12GW06 for VOCs because: a. 12GW01A is screened in the deeper aquifer and has no history of detections; b. 12GW06 - concentrations have decreased over time and it is recommended that monitoring at 12GW01 will adequately monitor groundwater pathway. 4. Collect samples from at 10 wells (12GW01, 12GW05, 12GW07, 12GW09, 12GW13, 12GW14, 12GW17, 12GW15, 12GW16, and 12GW20 (new well)) every two years and analyze for all VOCs. 5. The team agreed to collect 4 or 5 sediment samples at locations 12SDCW1, 12SD32, 12SD34, 12SD37, and RI 8C	C



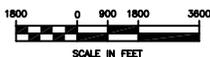
**FIGURE 1-1**  
**LOCATION OF NAVAL WEAPONS STATION YORKTOWN,**  
**YORKTOWN, VIRGINIA AND CHEATHAM ANNEX SITE**  
**WILLIAMSBURG, VIRGINIA**

SOURCE: U.S.G.S. 1:100,000-SCALE PLANIMETRIC MAP, WILLIAMSBURG, VIRGINIA, 1984.

8333 0 4166 8333 16666  
 1 inch = 8333 ft.  
 2195500W

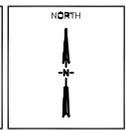


- LEGEND**
- APPROXIMATE SITE/AOC BOUNDARY
  - APPROXIMATE PROPERTY BOUNDARY
  - LAKE/POND
  - STREAM OR SHORE LINE
  - STRUCTURE
  - STORAGE TANK
  - ROAD
  - RAILROAD TRACKS
  - FENCE
  - SSA IN PROGRESS
  - SITE IN PROGRESS
  - SSA COMPLETE
  - SITE COMPLETE
  - BUILDINGS
  - STRUCTURES
  - ROADS: PAVED
  - ROADS: UNPAVED
  - TRACK/TRAIL
  - RAILROADS
  - STATION BOUNDARY
  - STATION BOUNDARY W/FENCE
  - MARSH, SWAMP
  - GATE
  - FENCES
  - WALLS
  - ▲ TRANSFORMER



NO.	REVISIONS
1	
2	
3	
4	
5	
6	
7	
8	

DESIGNED BY: CHK  
 CHECKED BY: KTW  
 S.O. NO.: 28007-276  
 FILE: 22785018



NAVAL WEAPONS STATION YORKTOWN AND CHEATHAM ANNEX SITE

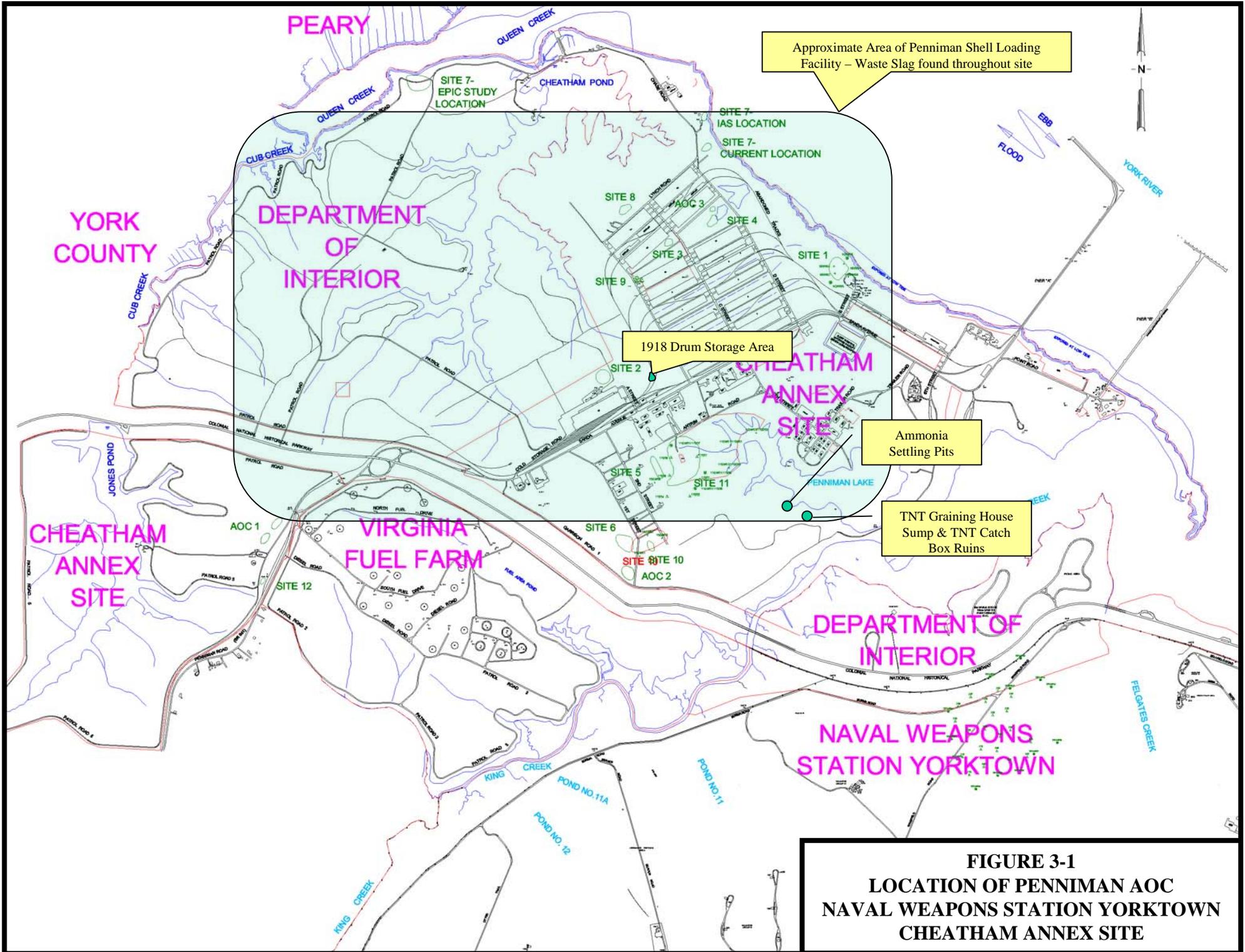
Baker Environmental, Inc.  
 Virginia Beach, Virginia



LOCATION OF AREAS OF INVESTIGATION

SCALE: 1" = 1800'  
 DATE: JUNE 2003

FIGURE 2-1



**FIGURE 3-1**  
**LOCATION OF PENNIMAN AOC**  
**NAVAL WEAPONS STATION YORKTOWN**  
**CHEATHAM ANNEX SITE**

**Figure 4-1  
FY 2004/2005 Schedule for Activities to be Conducted at WPNSTA Yorktown and CAX  
Naval Weapons Station Yorktown, Yorktown, Virginia**

Task Name	Start	Finish	2004												2005											
			September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August
<b>CTO-0034, Open Burn/Open Detonation Range</b>	<b>Mon 9/1/03</b>	<b>Tue 2/1/05</b>																								
Physical Delineation Work Plan	Mon 9/1/03	Mon 12/15/03																								
RI Project Plans	Mon 9/1/03	Mon 3/1/04																								
Groundwater Closeout Report	Mon 2/2/04	Fri 8/13/04																								
RI Field Investigation	Tue 3/2/04	Fri 4/2/04																								
Remedial Investigation Report	Mon 4/5/04	Tue 2/1/05																								
<b>CTO-0035, SSAs 3, 4, 5, 9, 10, 20, 21, 22, 23, and 24</b>	<b>Wed 3/25/98</b>	<b>Wed 3/31/04</b>																								
Site Screening Process Report	Wed 3/25/98	Wed 3/31/04																								
<b>CTO-035, Sites 23, 24, 25 and 26</b>	<b>Sun 12/1/96</b>	<b>Thu 3/16/06</b>																								
Work Plan	Sun 12/1/96	Tue 7/15/97																								
Remedial Investigation Report	Tue 11/25/97	Thu 9/30/04																								
Feasibility Study Site 24	Fri 10/1/04	Mon 1/17/05																								
Proposed Plan	Tue 1/18/05	Thu 4/14/05																								
Public Comment Period	Fri 4/15/05	Tue 5/31/05																								
Record of Decision	Wed 6/1/05	Thu 10/27/05																								
Removal Action for Site 23 Soils	Tue 4/1/03	Fri 1/30/04																								
EE/CA for Site 23 Sediments	Thu 1/1/04	Wed 3/31/04																								
Removal Action for Site 23 Sediments	Mon 5/3/04	Thu 9/30/04																								
Removal Action for Site 24	Fri 10/28/05	Thu 3/16/06																								
<b>CTO-0102, LTM Sites 1, 3, 6, and 7</b>	<b>Mon 3/28/05</b>	<b>Fri 7/29/05</b>																								
Draft LTM Report	Mon 3/28/05	Fri 4/15/05																								
Draft Review	Mon 5/2/05	Fri 7/1/05																								
Final LTM Report	Mon 7/11/05	Fri 7/29/05																								
<b>CTO-0172, CAX- Landfill</b>	<b>Tue 3/14/00</b>	<b>Wed 5/11/05</b>																								
Remedial Investigation- Site 1	Tue 3/14/00	Fri 11/12/04																								
Focused Feasibility Study - Site 1	Tue 8/1/00	Mon 2/2/04																								
EE/CA for Site 1 Soil	Fri 11/1/02	Wed 7/9/03																								
Removal Action for Site 1 Soil	Fri 8/1/03	Mon 12/15/03																								
Proposed Remedial Action Plan	Tue 11/16/04	Tue 12/28/04																								
Record of Decision (all media)	Wed 12/29/04	Wed 5/11/05																								
<b>CTO-0196, CAX Background Investigation and Report</b>	<b>Wed 3/14/01</b>	<b>Tue 9/30/03</b>																								
Work Plan	Wed 3/14/01	Wed 6/20/01																								
Background Report	Wed 8/29/01	Tue 9/30/03																								
<b>CTO-0213, GW OU I, RI/FS/PRAP/ROD</b>	<b>Tue 5/8/01</b>	<b>Fri 12/23/05</b>																								
Work Plan	Tue 5/8/01	Wed 3/31/04																								
Field Investigation	Thu 4/1/04	Thu 4/15/04																								
Remedial Investigation Report	Mon 5/3/04	Fri 11/12/04																								
Feasibility Study	Mon 11/15/04	Wed 3/16/05																								



**Figure 4-1  
FY 2004/2005 Schedule for Activities to be Conducted at WPNSTA Yorktown and CAX  
Naval Weapons Station Yorktown, Yorktown, Virginia**

Task Name	Start	Finish	2004												2005											
			September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August
Site 22	Mon 9/24/01	Fri 10/4/02																								
Site 21	Tue 12/11/01	Fri 10/3/03	█																							
Site 4	Tue 12/11/01	Fri 7/30/04	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
<b>Record of Decision</b>	<b>Mon 6/2/03</b>	<b>Wed 6/30/04</b>																								
Site 21 NFA ROD	Mon 6/2/03	Tue 9/30/03	█																							
Site 22 NFA ROD	Mon 6/2/03	Tue 9/30/03	█																							
Site 4 NFA ROD	Mon 2/2/04	Wed 6/30/04																								
<b>CTO-0363, Sites 2, 8, 18 &amp; SSA 14</b>	<b>Fri 2/20/98</b>	<b>Mon 2/7/05</b>																								
Remedial Investigation Report	Fri 2/20/98	Wed 6/30/04	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Feasibility Study - Sites 2, 8, SSA 14	Thu 9/17/98	Wed 6/30/04	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Proposed Plan - Sites 2, 8 SSA 14	Mon 11/13/00	Mon 10/4/04	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Public Comment Period - Sites 2, 8, 18, SSA 14	Tue 10/5/04	Wed 11/17/04																								
Record of Decision - Site 2	Fri 10/1/04	Wed 1/12/05																								
Record of Decision - Site 8 and SSA 14	Fri 10/1/04	Mon 2/7/05																								
Record of Decision, Site 18 (NFA)	Fri 6/29/01	Thu 9/30/04	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Removal Action - Site 2	Wed 6/30/04	Thu 9/30/04																								
Removal Action - Site 8 and SSA 14	Wed 3/31/04	Thu 9/30/04																								
<b>CTO-0386, LTM Site 12</b>	<b>Thu 8/20/98</b>	<b>Fri 4/2/04</b>																								
Fieldwork - Baseline Year	Thu 8/20/98	Sat 8/22/98																								
Final LTM Report (Baseline Year)	Thu 3/30/00	Fri 3/31/00																								
Fieldwork - Years 2 to 5	Sat 5/13/00	Thu 5/1/03																								
Draft LTM Report (Years 1 to 5)	Mon 12/8/03	Fri 1/23/04																								
Draft Review	Mon 1/26/04	Fri 3/5/04																								
Final LTM Report (Years 1 to 5)	Mon 3/15/04	Fri 4/2/04																								
<b>CTO-0394, Sites 27, 28, 29, and 30</b>	<b>Tue 6/1/99</b>	<b>Thu 9/7/06</b>																								
Work Plan	Tue 6/1/99	Mon 4/10/00																								
Remedial Investigation Report	Mon 7/10/00	Thu 9/30/04	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
ERA Approach	Thu 7/1/04	Fri 10/29/04																								
BERA Project Plans	Mon 11/1/04	Mon 2/28/05																								
BERA for Sites 28 and 29	Tue 3/1/05	Fri 9/30/05																								
Feasibility Study	Mon 10/3/05	Fri 12/30/05																								
Proposed Plan	Mon 1/2/06	Tue 4/4/06																								
Public Comment Period	Wed 4/5/06	Thu 5/18/06																								
Record of Decision	Fri 5/19/06	Thu 9/7/06																								

Figure A - 1

FY 1994: Site 5 Risk Assessment, Proposed Plan, and Record of Decision  
 Naval Weapons Station Yorktown, Yorktown, Virginia

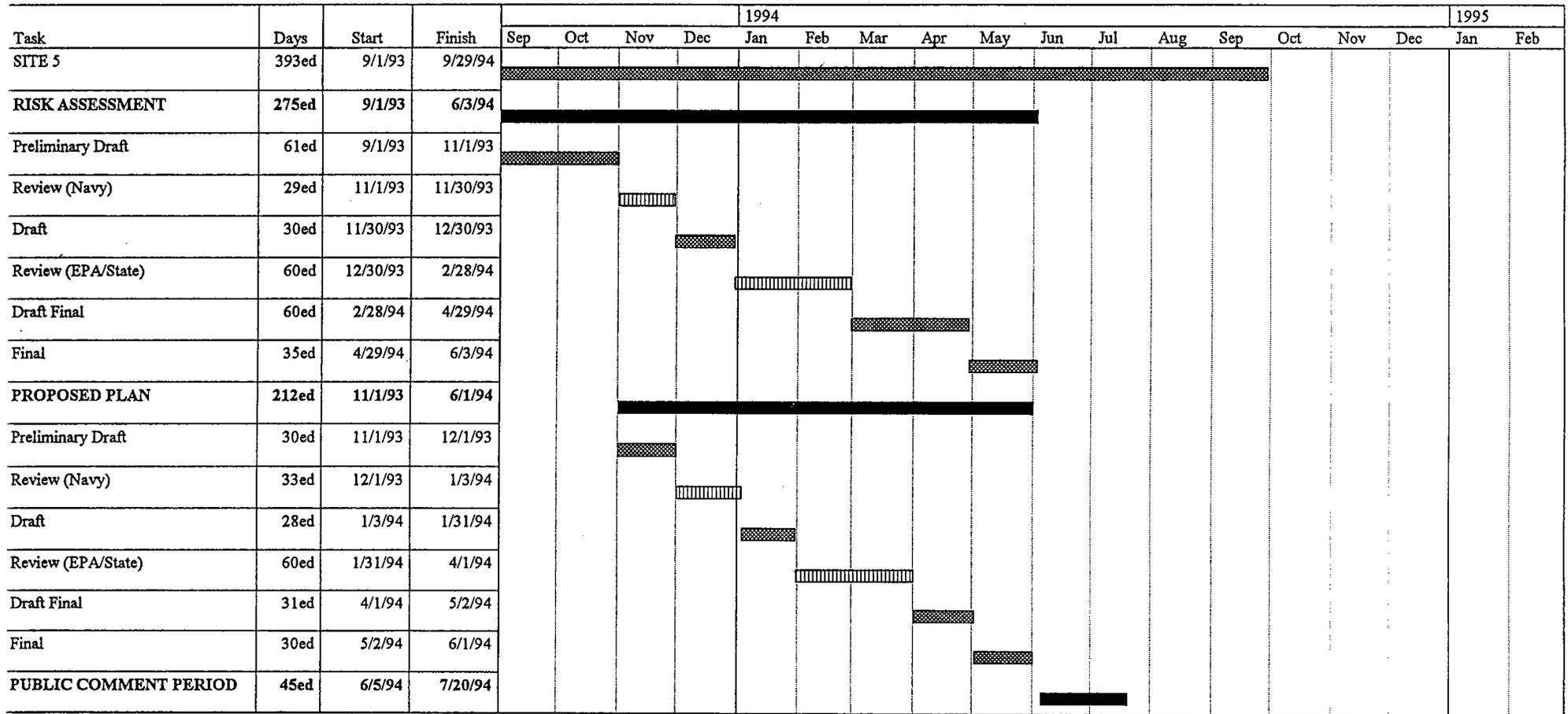




Figure A - 2  
 FY 1993: Removal Action at Sites 4, 16, and 21  
 Naval Weapons Station Yorktown, Yorktown, Virginia

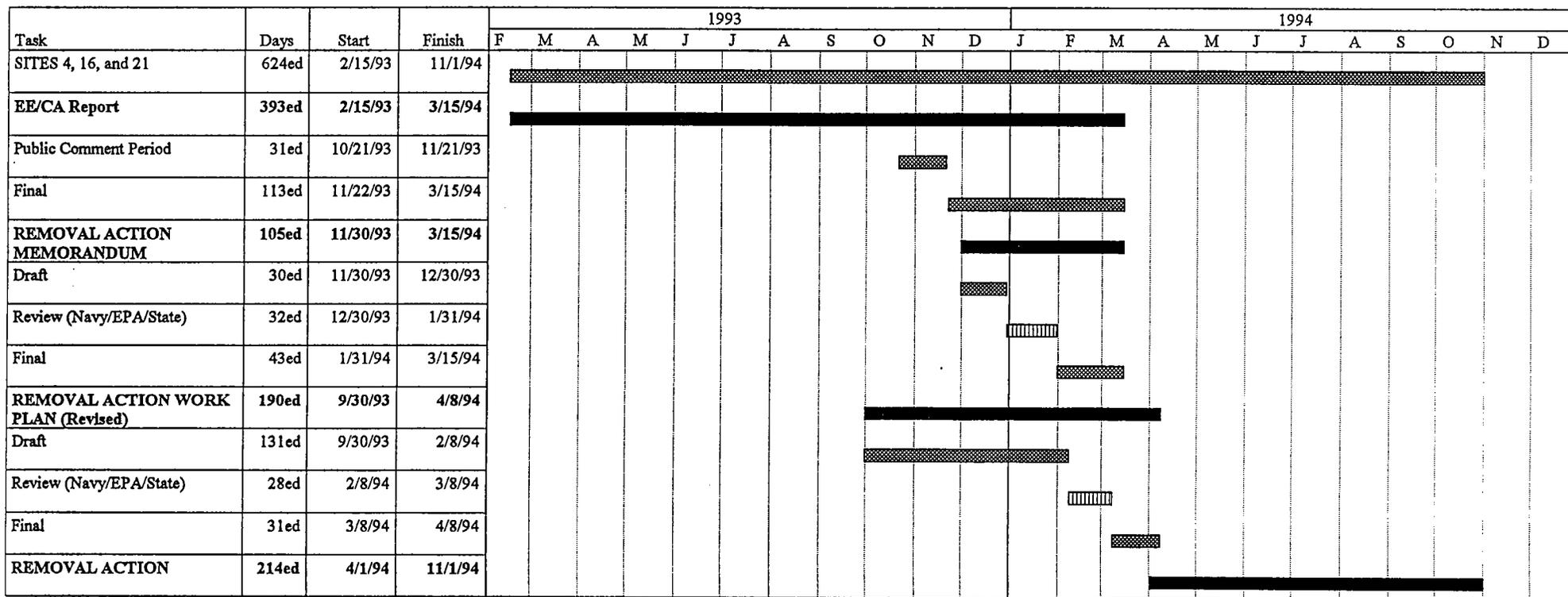
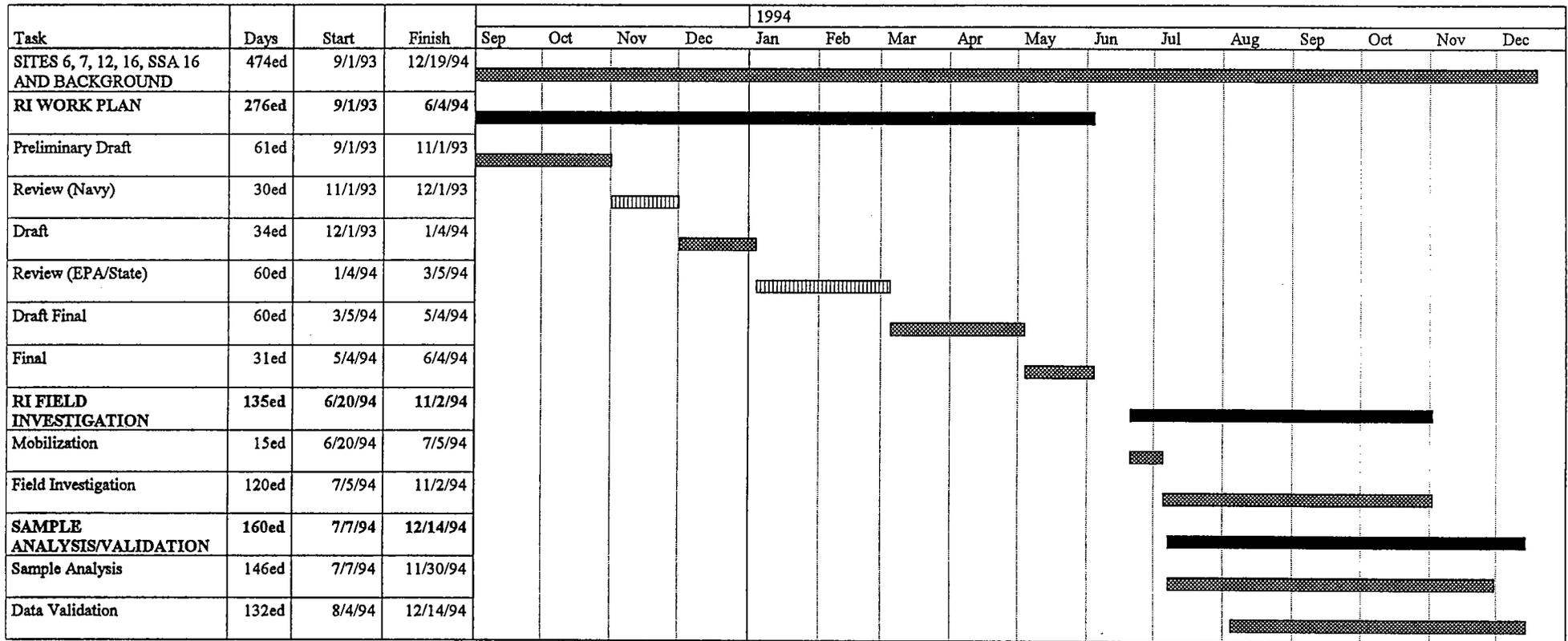


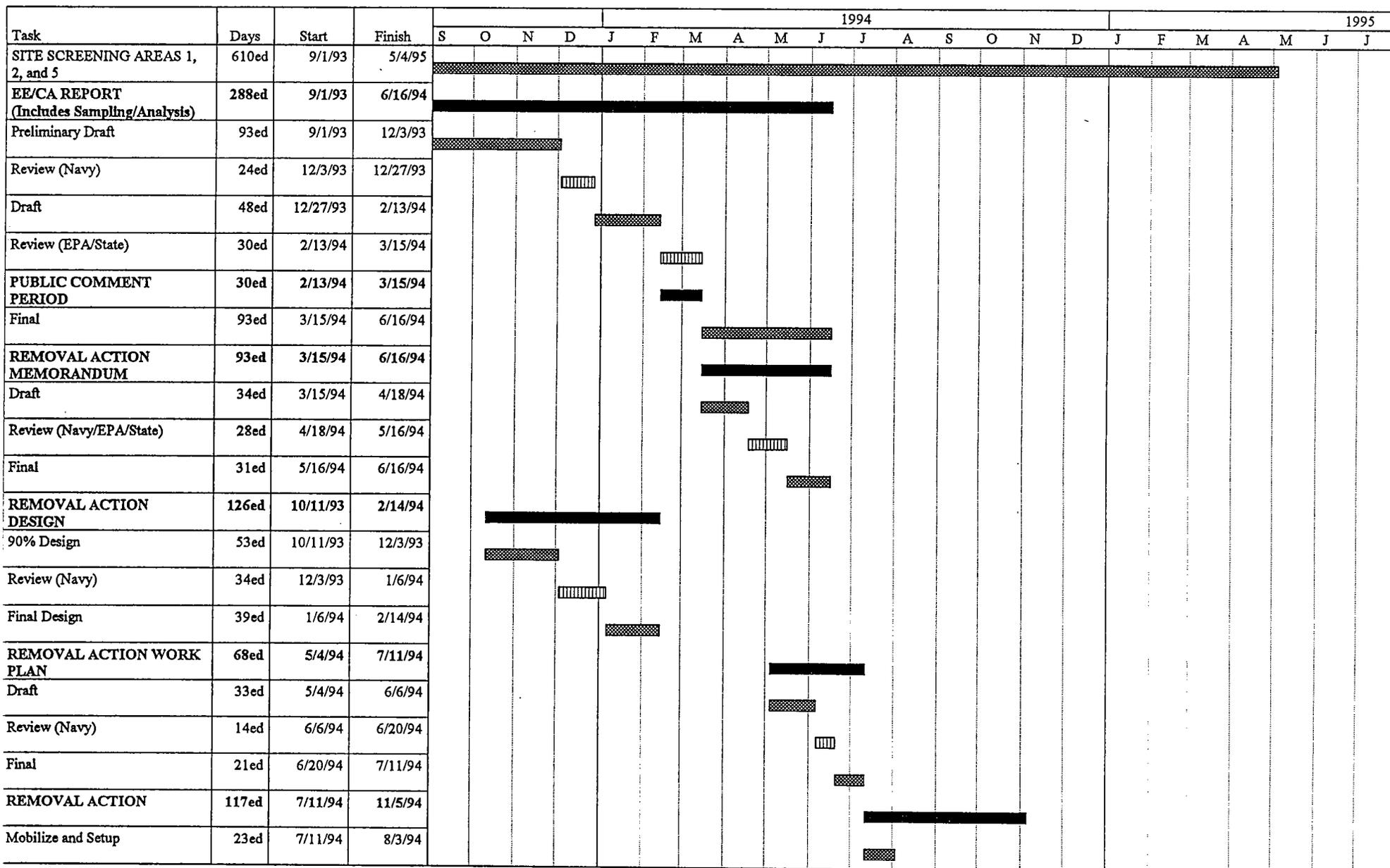
Figure A - 3

FY 1994: Sites 6, 7, 12, 16, SSA 16 and Background Work Plan / Field Investigation  
 Naval Weapons Station Yorktown, Yorktown, Virginia



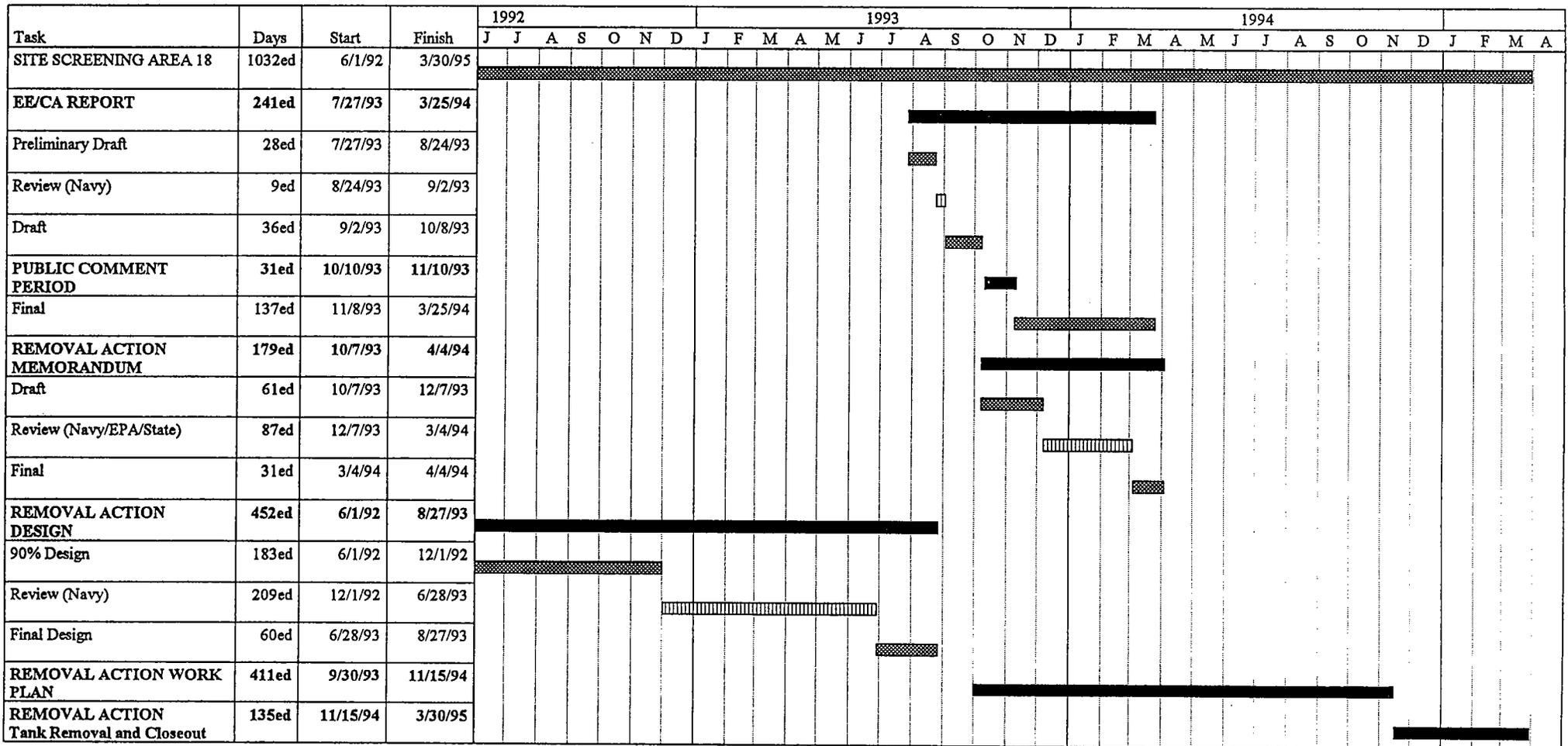


**Figure A - 5**  
 FY 1994: Removal Action at Site Screening Areas 1, 2 and 5  
 Naval Weapons Station Yorktown, Yorktown, Virginia

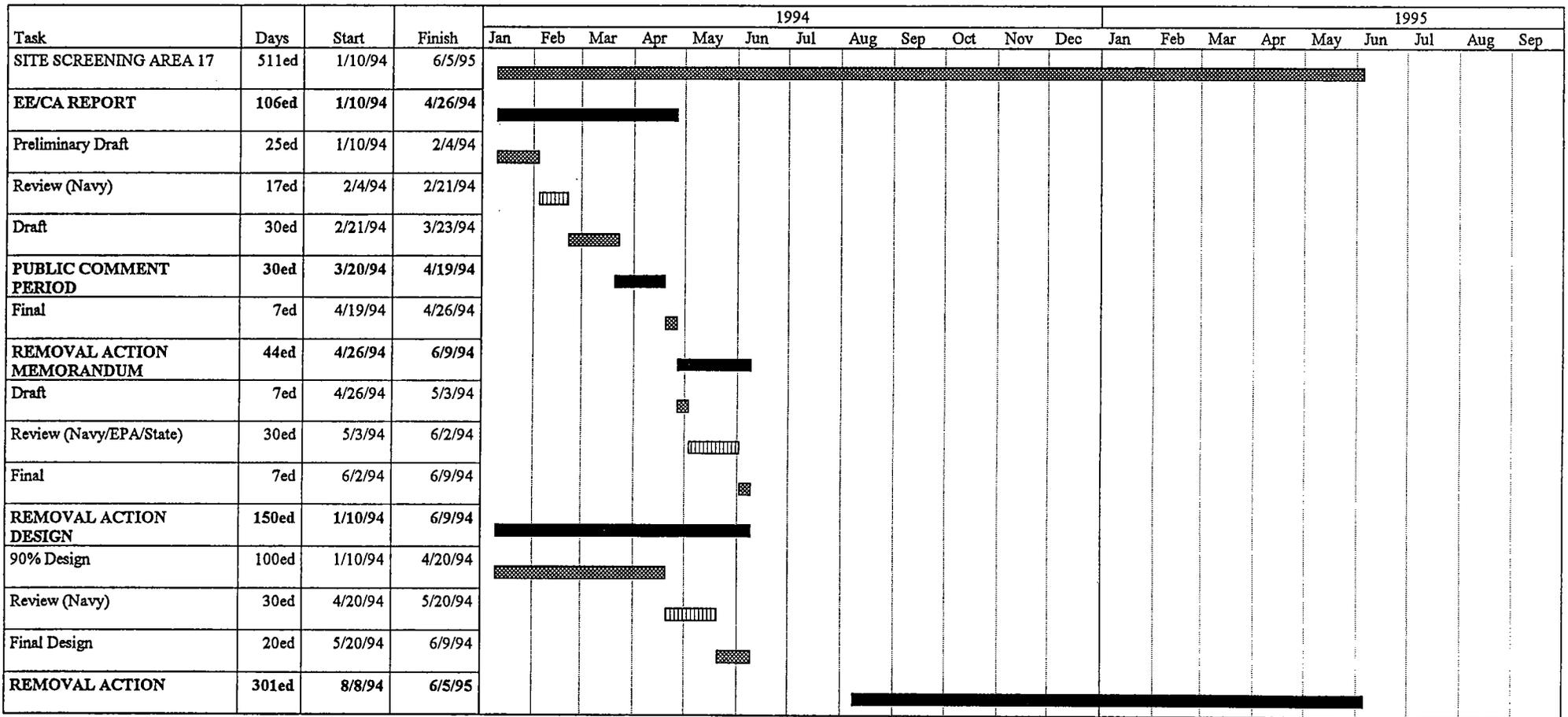




**Figure A - 6**  
**FY 1995: Removal Action at Site Screening Area 18**  
**Naval Weapons Station Yorktown, Yorktown, Virginia**



**Figure A - 7**  
**FY 1994: Removal Action at Site Screening Area 17**  
**Naval Weapons Station Yorktown, Yorktown, Virginia**



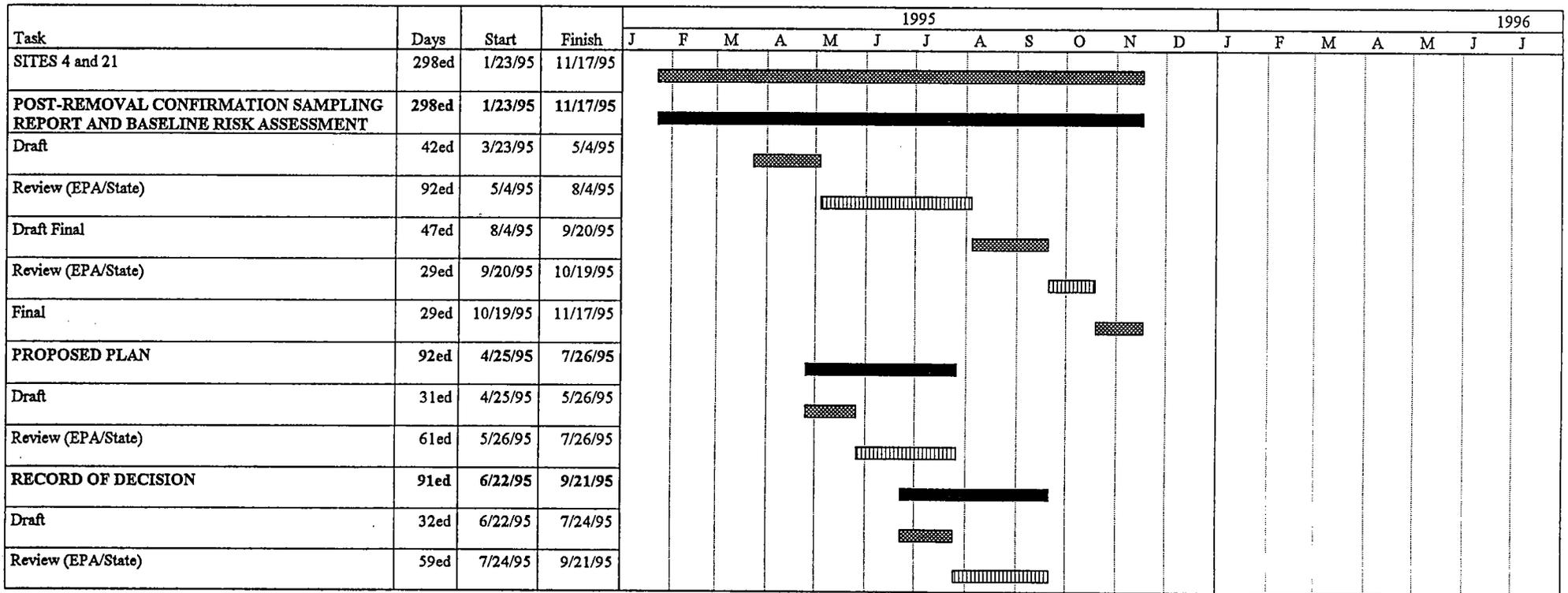
**Figure A - 8**  
 FY 1994: York River Basin Background Report  
 Naval Weapons Station Yorktown, Yorktown, Virginia

Task	Days	Start	Finish	1995											
				Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
<b>YORK RIVER BASIN BACKGROUND REPORT</b>	<b>288ed</b>	<b>12/1/94</b>	<b>9/15/95</b>												
Preliminary Draft	90ed	12/1/94	3/1/95												
Review (Navy)	30ed	3/1/95	3/31/95												
Draft	17ed	3/31/95	4/17/95												
Review (EPA/State)	60ed	4/17/95	6/16/95												
Final	35ed	6/16/95	7/21/95												

NOTE: The Draft Final Deliverable was not submitted due to limited Government comments.

Figure A - 9

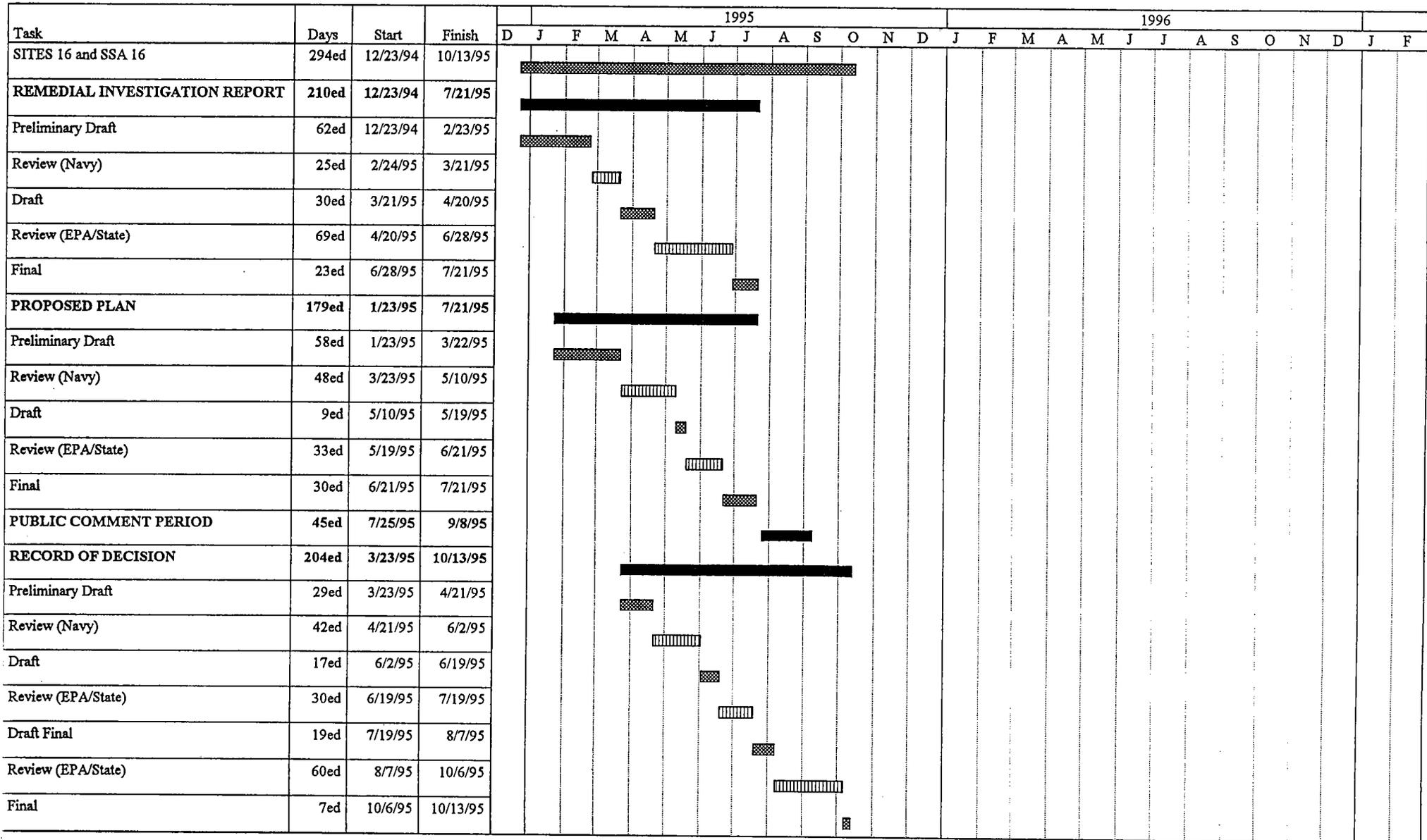
FY 1995: Sites 4 and 21 Post-Removal Confirmation Sampling Report and Baseline Risk Assessment, Proposed Plan, and Record of Decision  
 Naval Weapons Station Yorktown, Yorktown, Virginia



Note: The remaining deliverables for the Proposed Plan and Record of Decision were eliminated from the scope of work.

Figure A - 10

FY 1995: Site 16 and SSA 16 Remedial Investigation, Feasibility Study, Proposed Plan, and Record of Decision  
 Naval Weapons Station Yorktown, Yorktown, Virginia



NOTE: The Draft Final Deliverable was not submitted due to limited Government comments.

**Figure A - 11**  
 FY 1995: Sites 9 and 19 Work Plan/Field Investigation  
 Naval Weapons Station Yorktown, Yorktown, Virginia

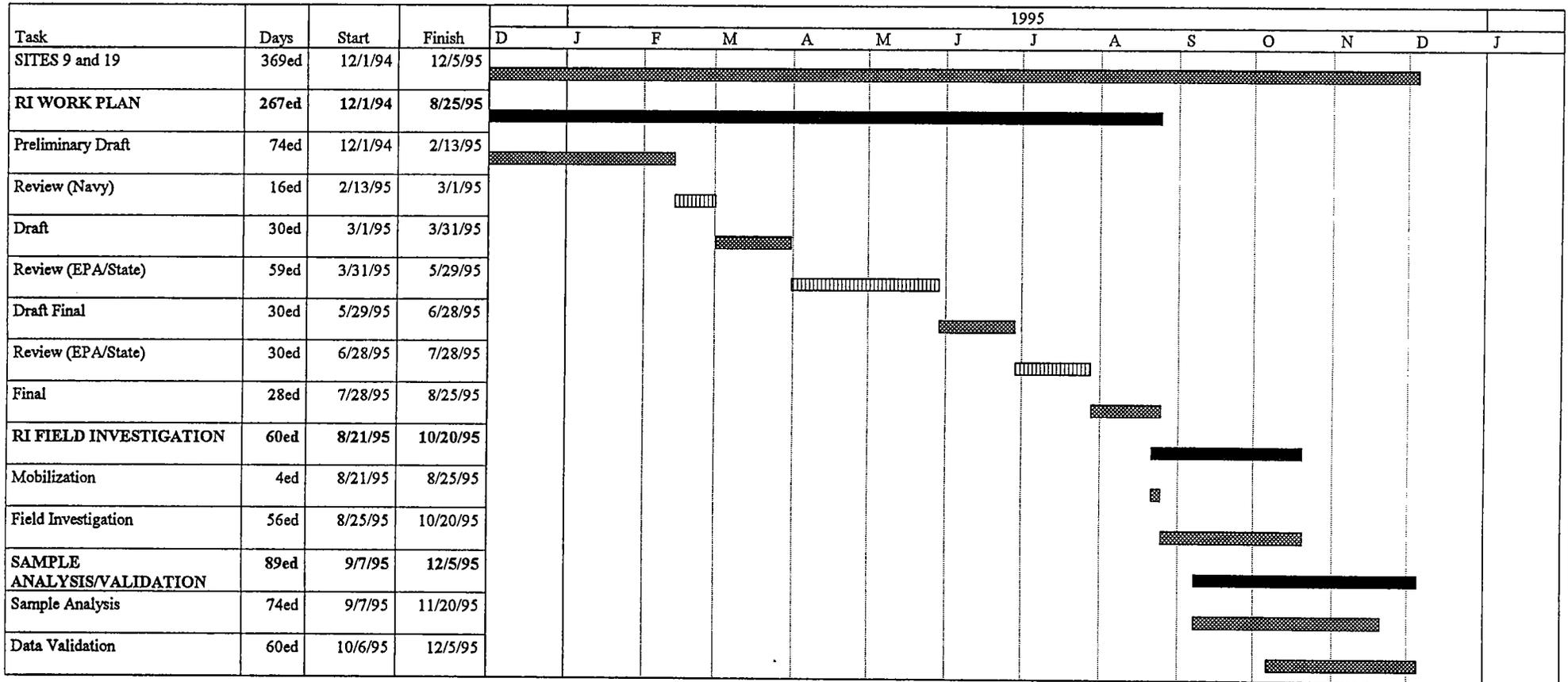
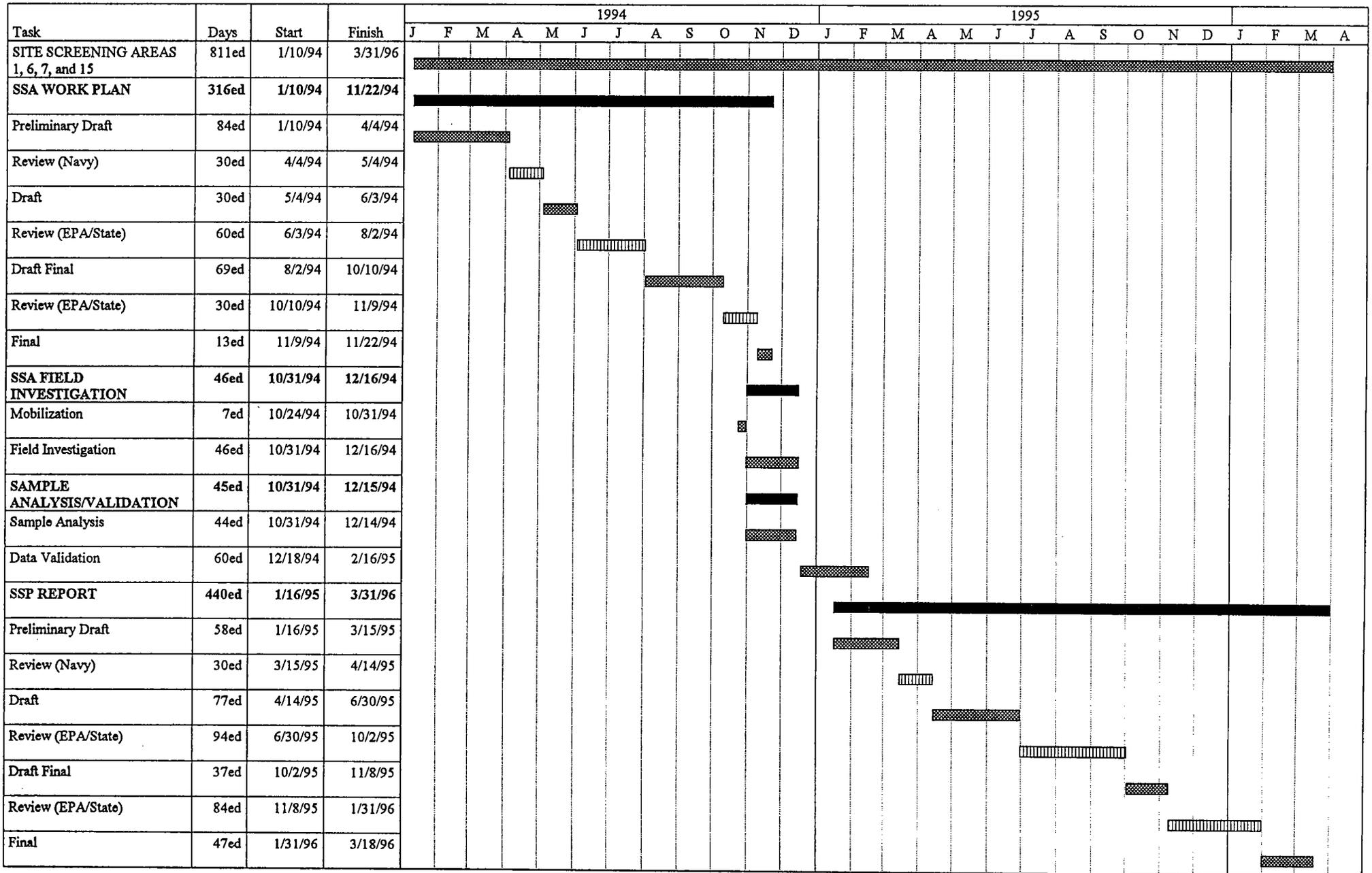
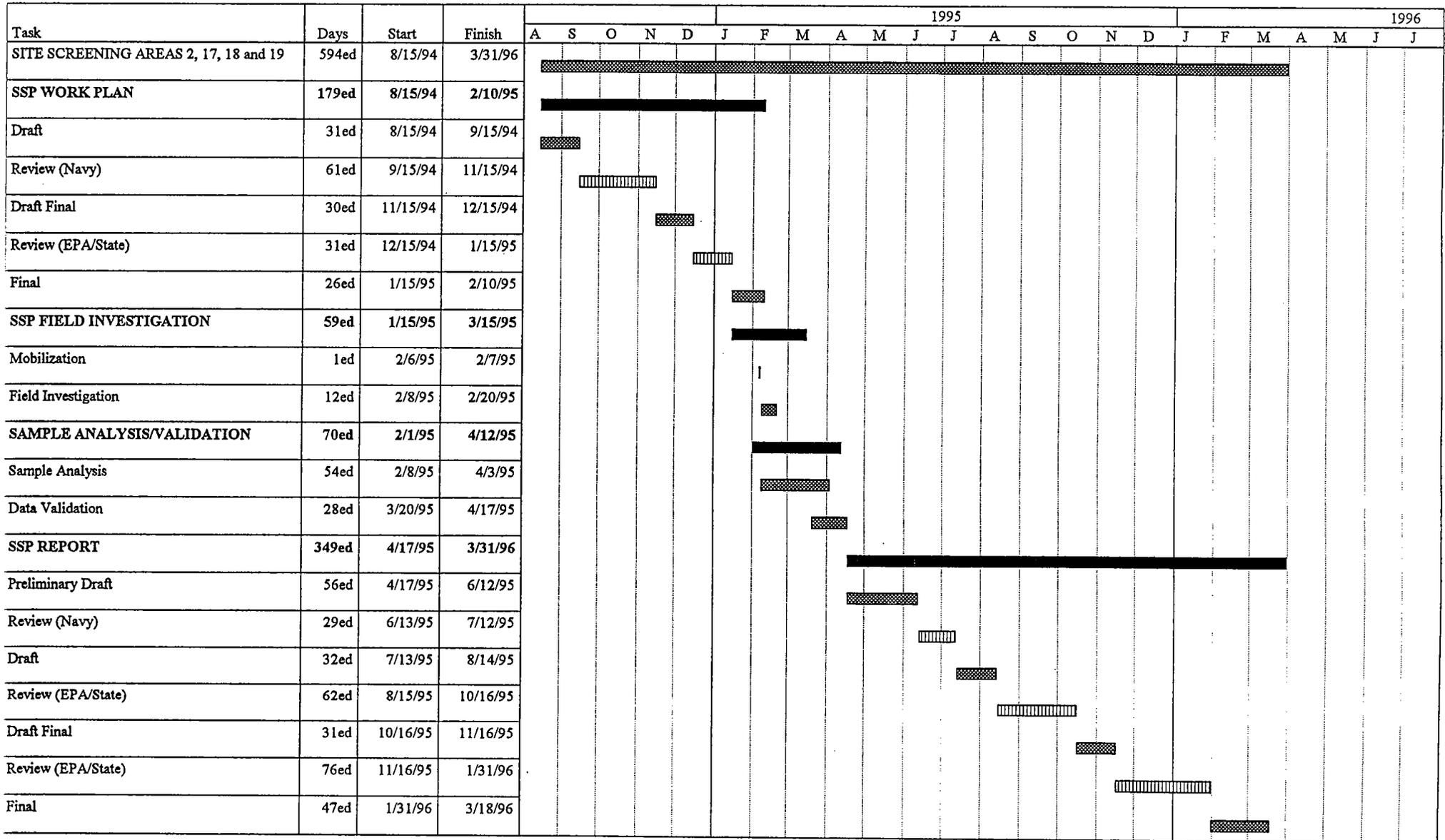


Figure A - 12  
 FY 1994: Site Screening Areas 1, 6, 7, and 15 Work Plan/Field Investigation/SSP Report  
 Naval Weapons Station Yorktown, Yorktown, Virginia



**Figure A - 13**  
**FY 1995: Site Screening Areas 2, 17, 18 and 19 Work Plan/Field Investigation/SSP Report**  
**Naval Weapons Station Yorktown, Yorktown, Virginia**

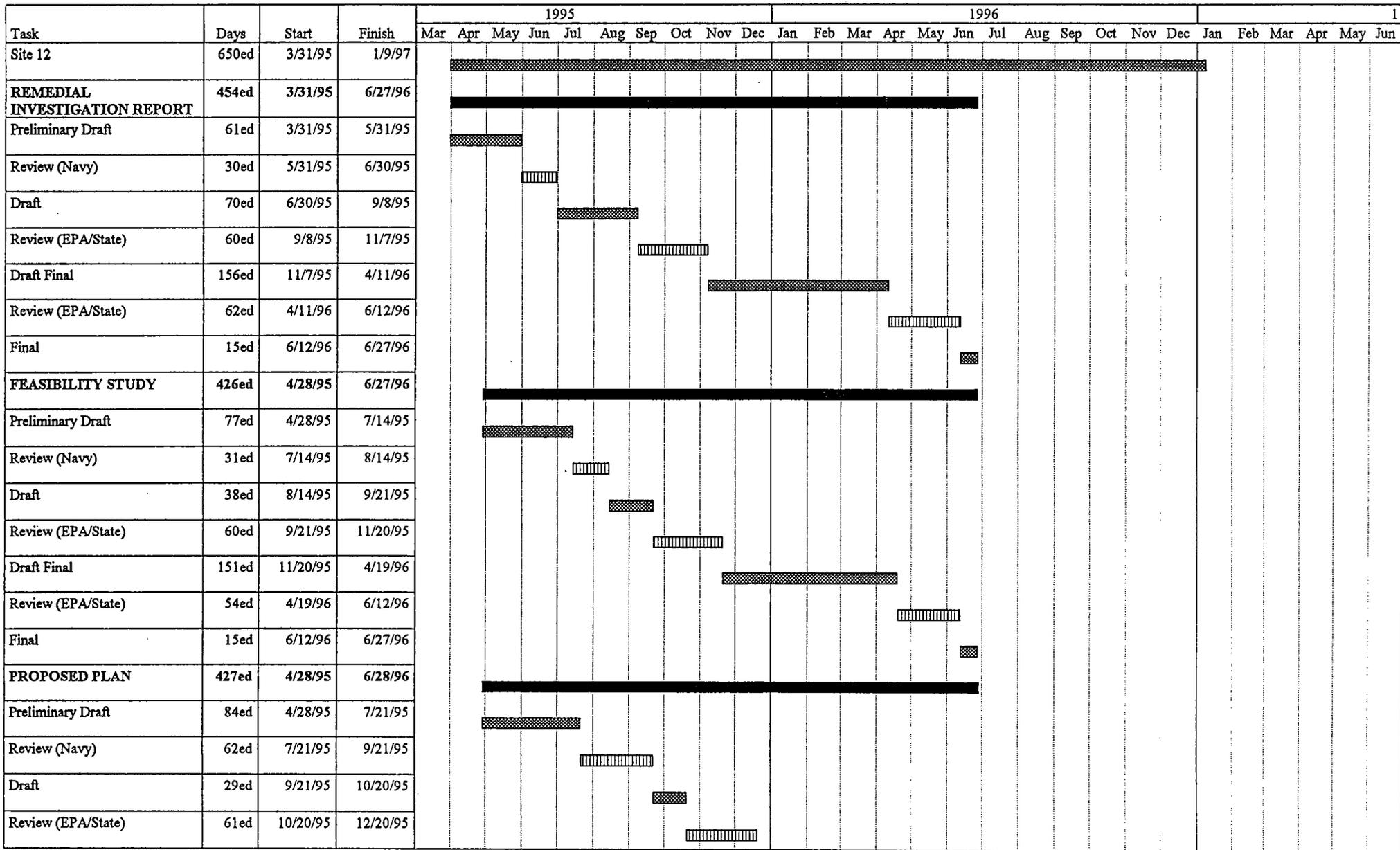


Note: Work Plan Production was funded in FY 1994.



Figure A - 15

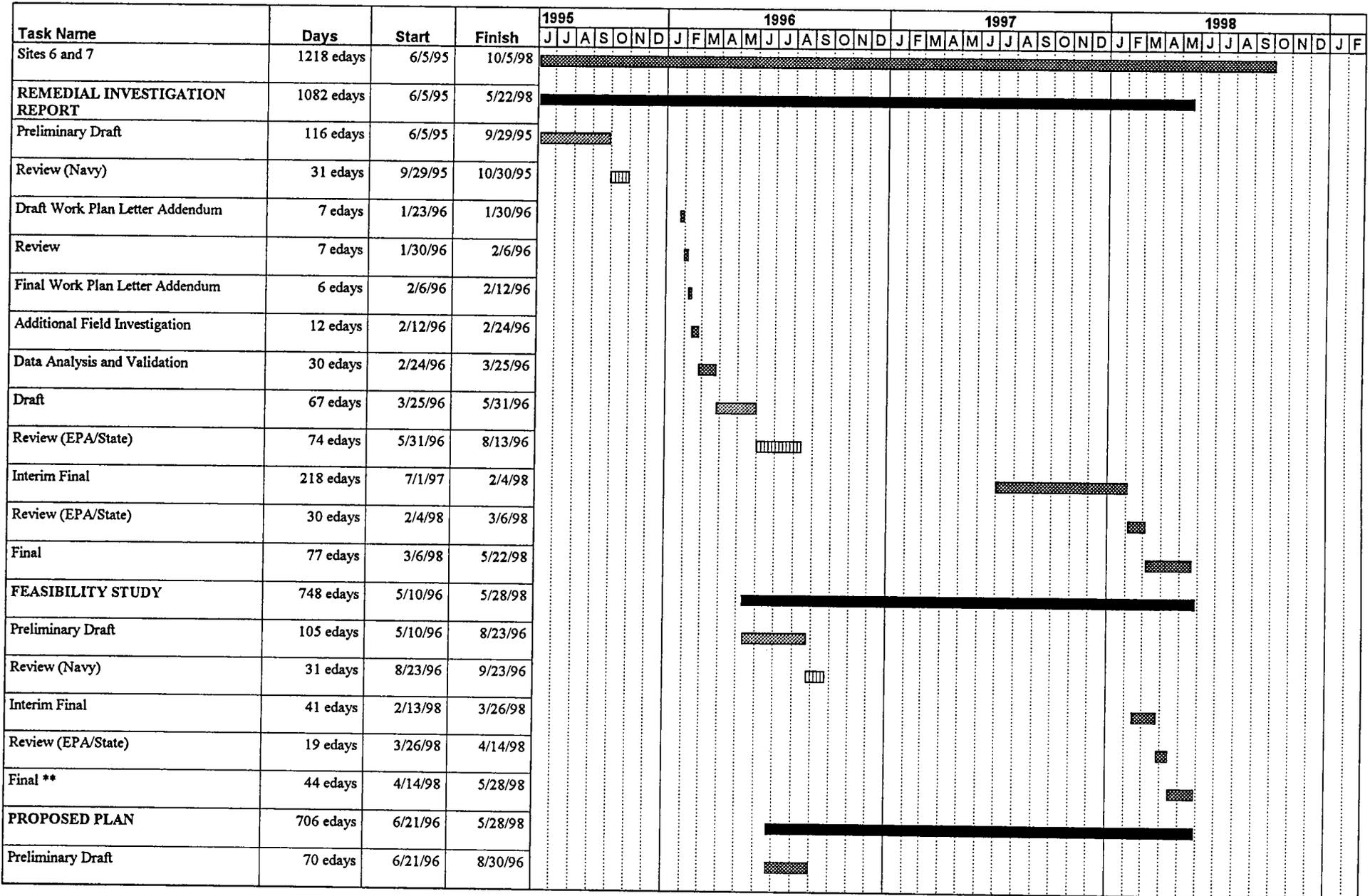
FY 1995: Site 12 Remedial Investigation/Feasibility Study/Proposed Plan/Record of Decision  
 Naval Weapons Station Yorktown, Yorktown, Virginia







**Figure A - 17**  
**FY 1995: Sites 6 and 7 Remedial Investigation/Feasibility Study/Proposed Plan/Record of Decision**  
**Naval Weapons Station Yorktown, Yorktown, Virginia**



NOTE: Public Comment Period will close prior to finalization of the Record of Decision. \*\* Review and Comments on documents covered under Partnering.







Figure A-19  
 FY 98: Site 12, Debris Removal - Area B/C  
 Naval Weapons Station Yorktown, Yorktown, Virginia

Task Name	Days	Start	Finish	1998																	
				Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	
SITE 12, Debris Removal - Area B/C	144 edays	1/26/98	6/19/98	██																	
Subcontractor Procurement	1 eday	1/26/98	1/27/98																		
Site Visit	1 eday	2/2/98	2/3/98																		
Mobilization	2 edays	4/20/98	4/22/98																		
Debris Removal	58 edays	5/4/98	7/1/98					████████████████													

Date: 5/30/00

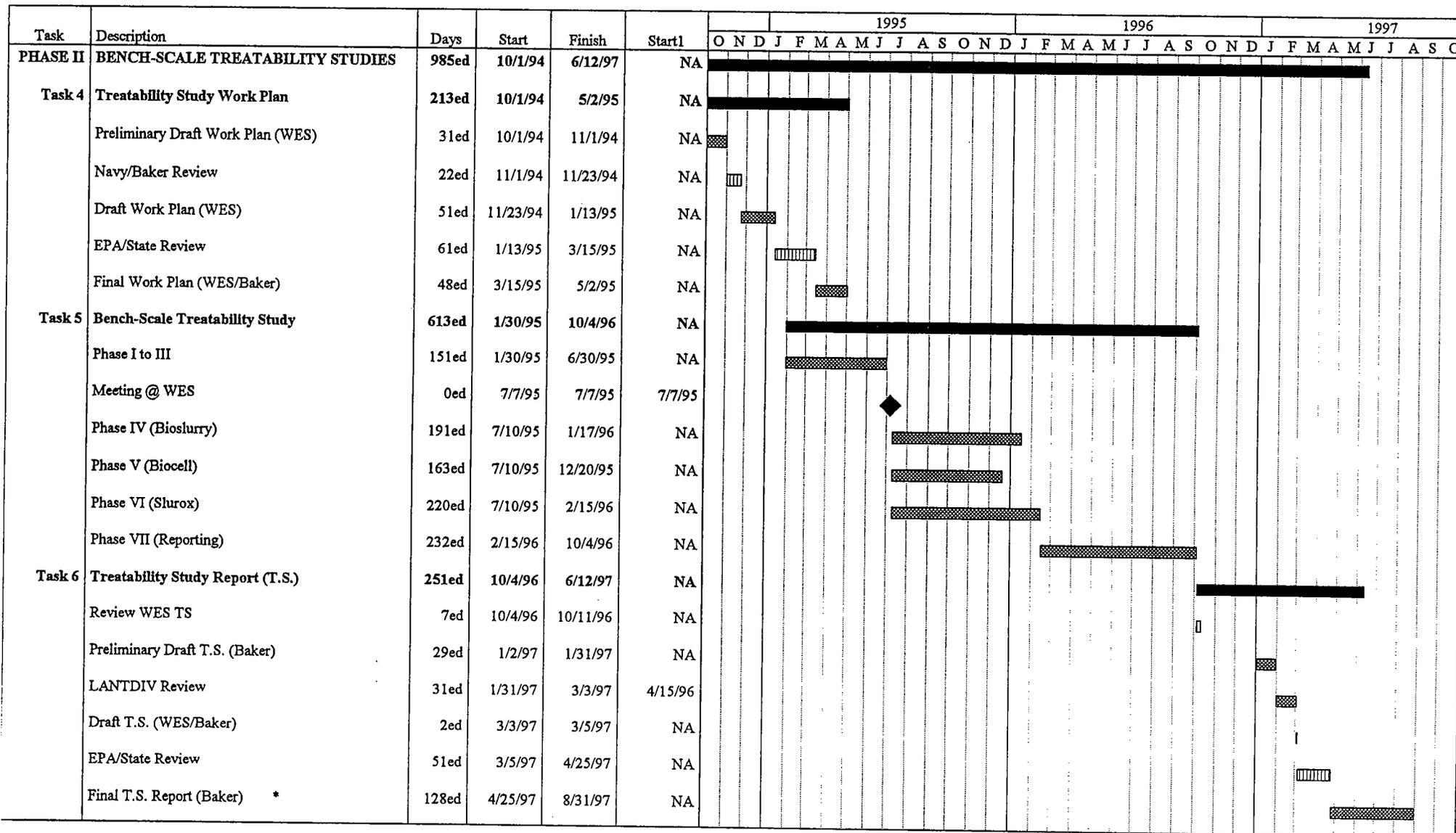
Figure A-20  
 FY 1995: CTO- 209 Bench-Scale Treatability Study  
 Naval Weapons Station Yorktown, Yorktown, Virginia

Task	Description	Days	Start	Finish	Start1	1995												1996												1997											
						O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
<b>PHASE I</b>	<b>SOIL CHARACTERIZATION/COLLECTION</b>	<b>125ed</b>	<b>10/1/94</b>	<b>2/3/95</b>	<b>NA</b>																																				
<b>Task 1</b>	<b>Soil Characterization</b>	<b>93ed</b>	<b>10/1/94</b>	<b>1/2/95</b>	<b>NA</b>																																				
	Project Scope Development	61ed	10/1/94	12/1/94	NA																																				
	Soil Characterization Work Plan	61ed	10/1/94	12/1/94	NA																																				
	Navy Review	7ed	12/1/94	12/8/94	NA																																				
	Field Preparation/Mobilization	5ed	12/5/94	12/10/94	NA																																				
	Field Investigation	5ed	12/12/94	12/17/94	NA																																				
	Laboratory Analysis	20ed	12/13/94	1/2/95	NA																																				
<b>Task 2</b>	<b>Soil Characterization Evaluation</b>	<b>7ed</b>	<b>1/5/95</b>	<b>1/12/95</b>	<b>NA</b>																																				
	Meeting @LANTDIV	0ed	1/5/95	1/5/95	1/5/95																																				
	Meeting Summary	6ed	1/6/95	1/12/95	NA																																				
<b>Task 3</b>	<b>Soil Sample Collection</b>	<b>21ed</b>	<b>1/13/95</b>	<b>2/3/95</b>	<b>NA</b>																																				
	Field Preparation	2ed	1/13/95	1/15/95	NA																																				
	Soil Collection	3ed	1/16/95	1/19/95	NA																																				
	Laboratory Analysis	7ed	1/19/95	1/26/95	NA																																				
	W.E.S Collection	0.67d	1/30/95	1/30/95	1/30/95																																				
	Documentation/Reporting	18ed	1/16/95	2/3/95	NA																																				

\* Deliverable due date will be modified pending peer review of the Army Corps of Engineers Report on the Treatability Study.

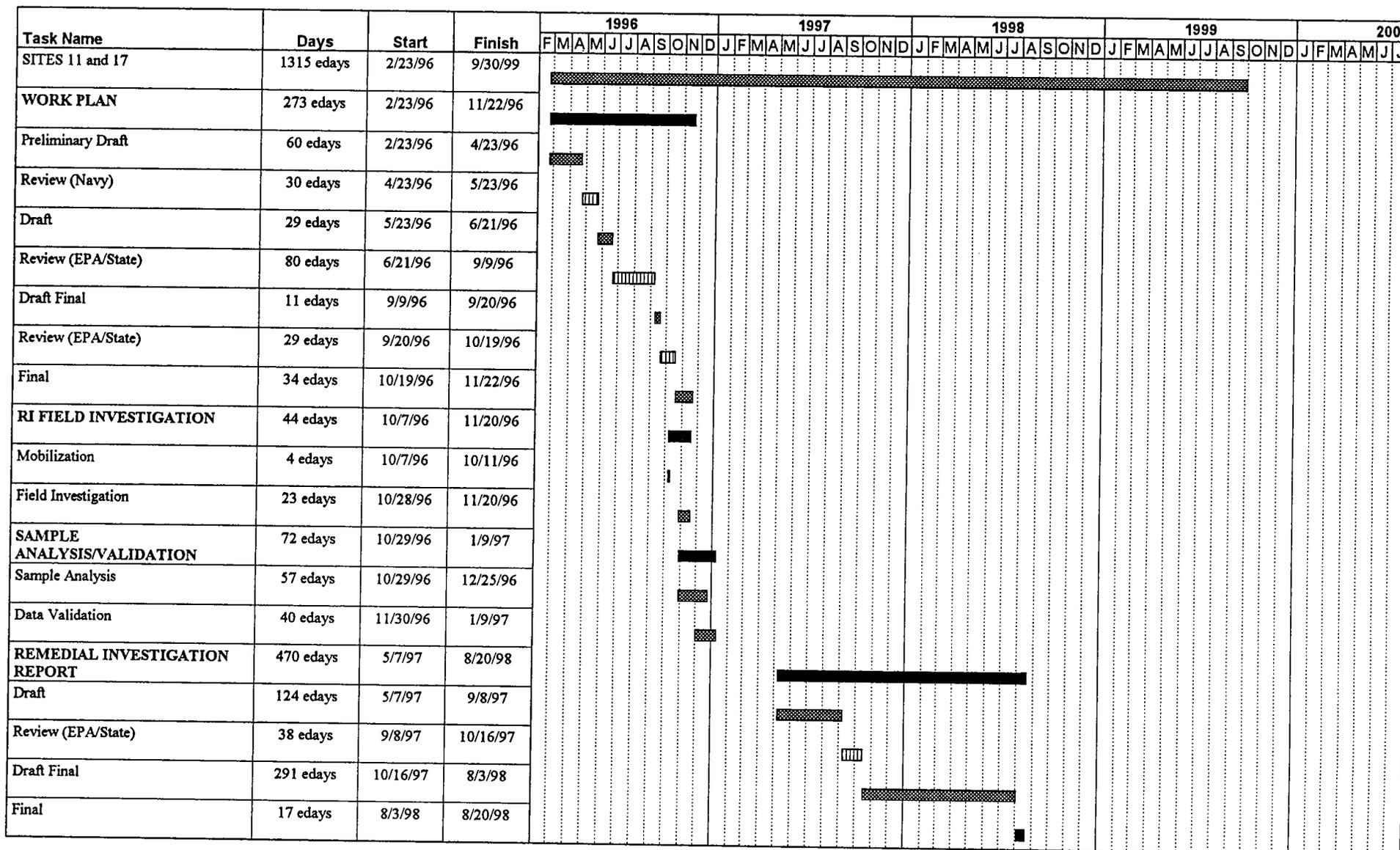
Figure A-21

FY 1995: CTO- 209 Bench-Scale Treatability Study  
 Naval Weapons Station Yorktown, Yorktown, Virginia



\* Deliverable due date will be modified pending peer review of the Army Corps of Engineers Report on the Treatability Study.

**Figure A-22**  
**FY 1996: CTO-354, Sites 11 and 17, Work Plan/Field Investigation/RI Report/FS Report/PRAP/ROD**  
**Naval Weapons Station Yorktown, Yorktown, Virginia**





**Figure A-23**  
**FY 1998 & 1999: CTO-0388 Field Investigation Report - Site 1 and AOC 2**  
**Naval Weapons Station Yorktown, Yorktown Virginia**  
**Cheatham Annex Site**

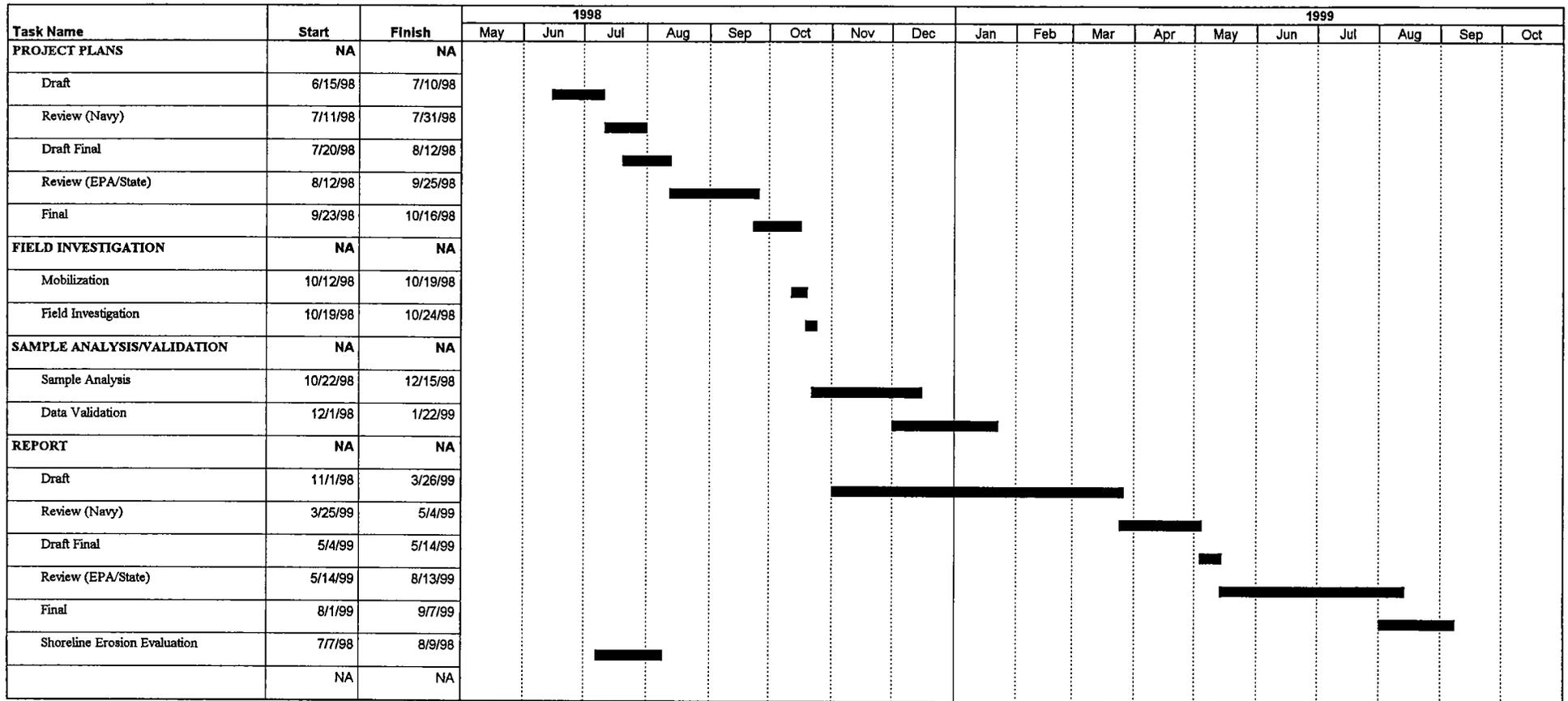


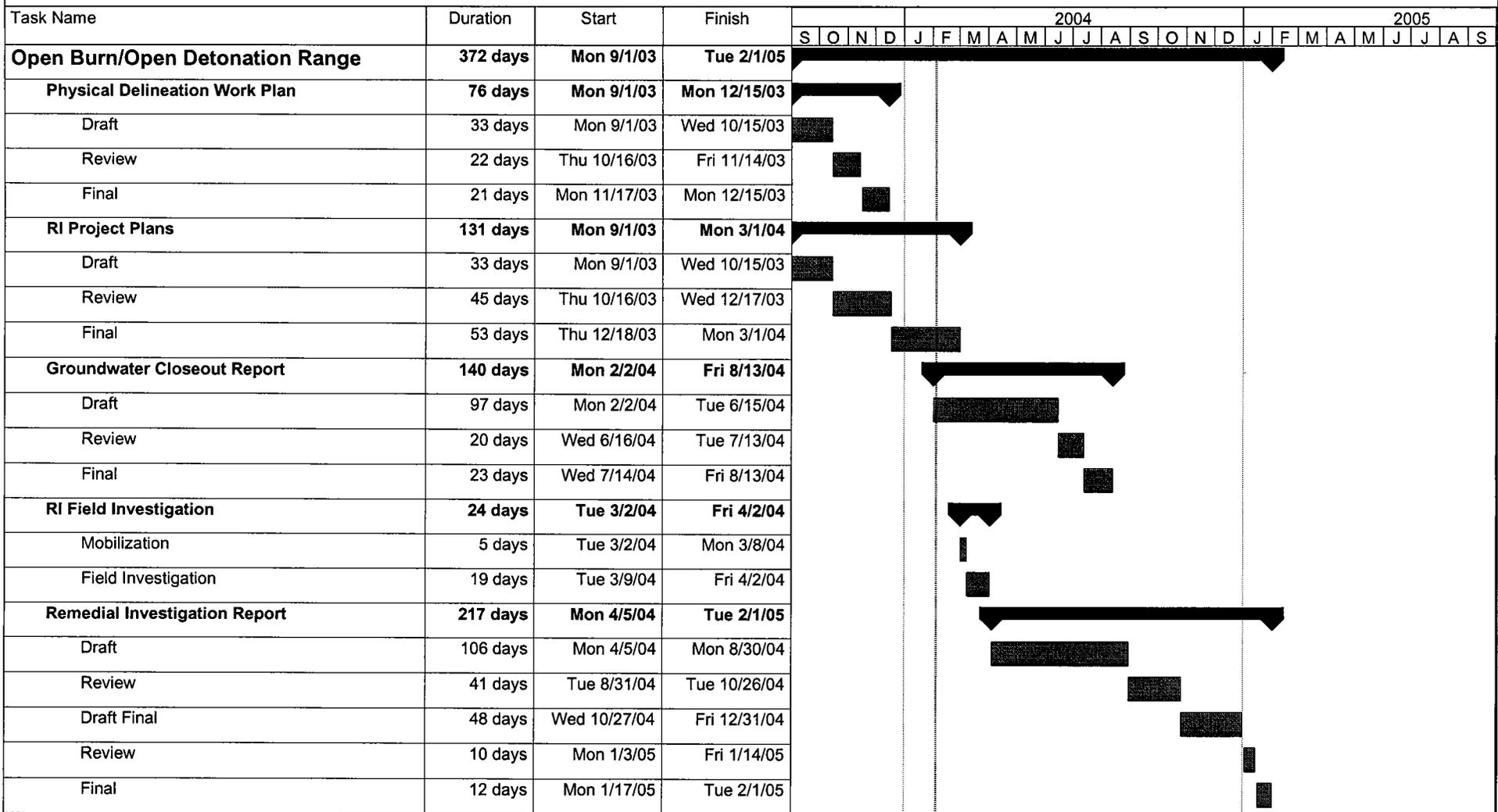


Figure A-25  
 CAX Sites 4, 9, 11 Ecological Risk Assessment, Steps 1 and 2  
 Cheatham Annex Site  
 Naval Weapons Station, Yorktown, Virginia

Task Name	Duration	Start	Finish	2001												2002		
				M	J	J	A	S	O	N	D	J	F	M	A	M	J	J
<b>Site Management Plan</b>	<b>251 days</b>	<b>Tue 5/15/01</b>	<b>Tue 4/30/02</b>															
Draft	24 days	Tue 5/15/01	Fri 6/15/01															
Navy and Agency Review	43 days	Mon 6/18/01	Wed 8/15/01															
Final	184 days	Thu 8/16/01	Tue 4/30/02															
<b>Ecological Risk Assessments</b>	<b>108 days</b>	<b>Mon 6/4/01</b>	<b>Wed 10/31/01</b>															
Draft	21 days	Mon 6/4/01	Mon 7/2/01															
Navy and Agency Review	43 days	Tue 7/3/01	Thu 8/30/01															
Final	44 days	Fri 8/31/01	Wed 10/31/01															
<b>Community Relations Plan</b>	<b>271 days</b>	<b>Wed 5/2/01</b>	<b>Wed 5/15/02</b>															
Draft	23 days	Wed 5/2/01	Fri 6/1/01															
Navy and Agency Review	31 days	Mon 6/4/01	Mon 7/16/01															
Final	217 days	Tue 7/17/01	Wed 5/15/02															
<b>Public Comment Period</b>	<b>31 days</b>	<b>Mon 6/3/02</b>	<b>Mon 7/15/02</b>															

Project: CTO-0195 Date: Wed 2/4/04 Page: 1	Task		Milestone		External Tasks	
	Split		Summary		External Milestone	
	Progress		Project Summary		Deadline	

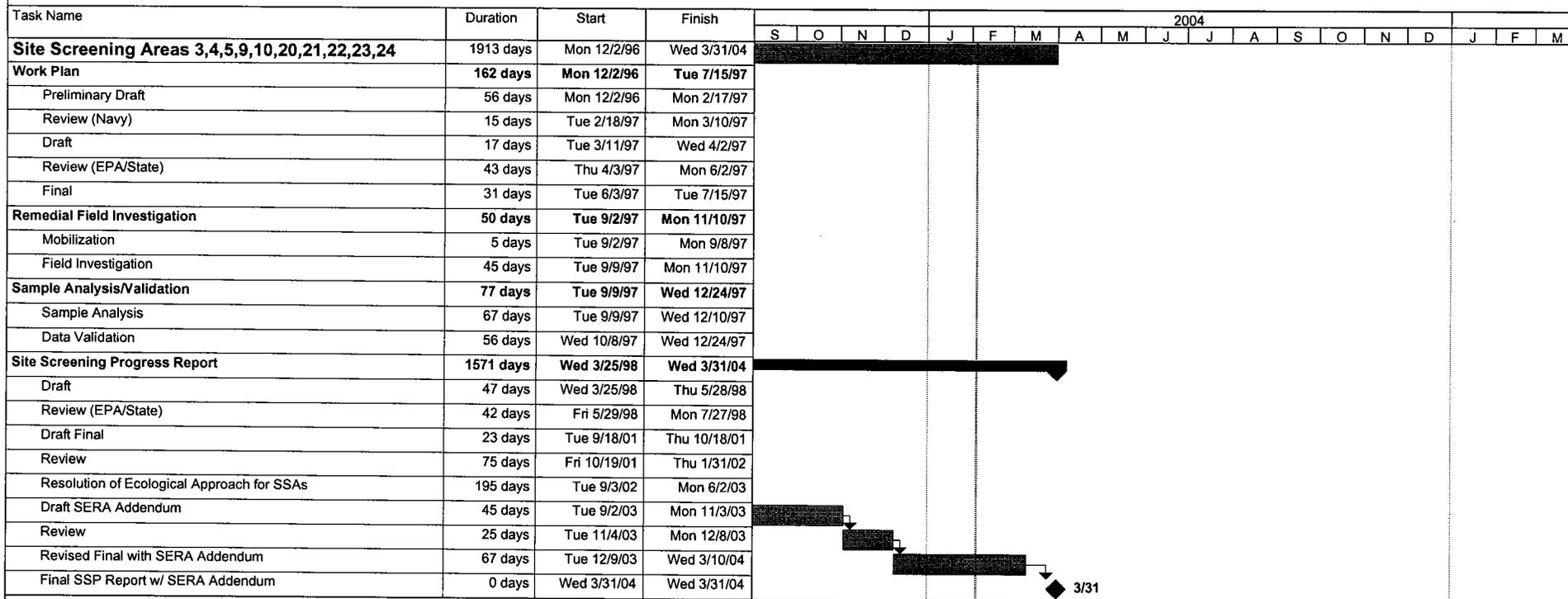
**Figure B-1**  
**CTO 034 - Open Burn/Open Detonation Range**  
**Naval Weapons Station, Yorktown, Virginia**



Project: CTO-034  
Date: Wed 2/4/04  
Page: 1

Task		Rolled Up Task		External Tasks	
Progress		Rolled Up Milestone		Project Summary	
Milestone		Rolled Up Progress		Group By Summary	
Summary		Split			

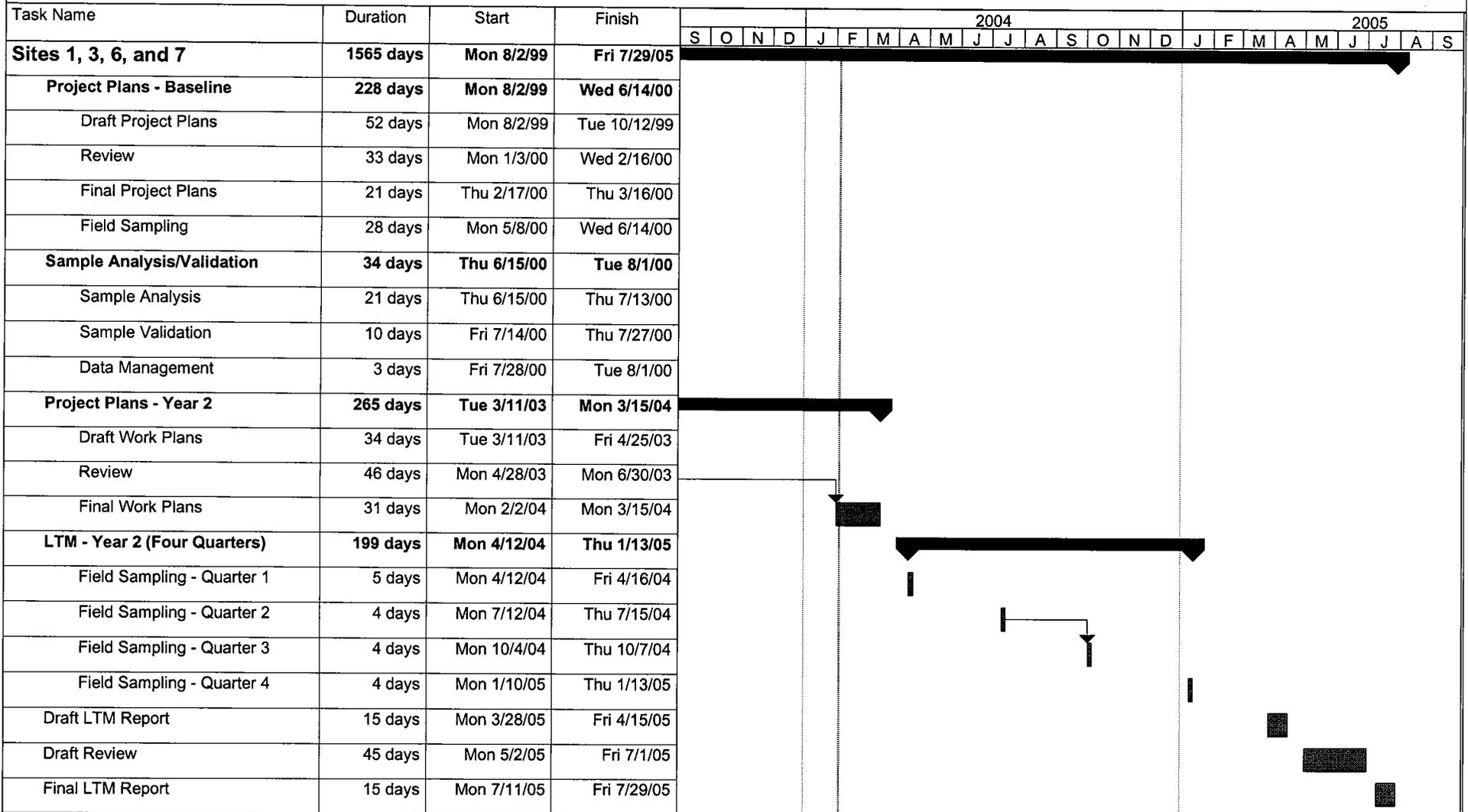
**Figure B-2**  
**CTO 035 - SSAs 3, 4, 5, 9, 10, 20, 21, 23, 24 Work Plan/Field Investigation/SSP Report**  
**Naval Weapons Station, Yorktown, Virginia**



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

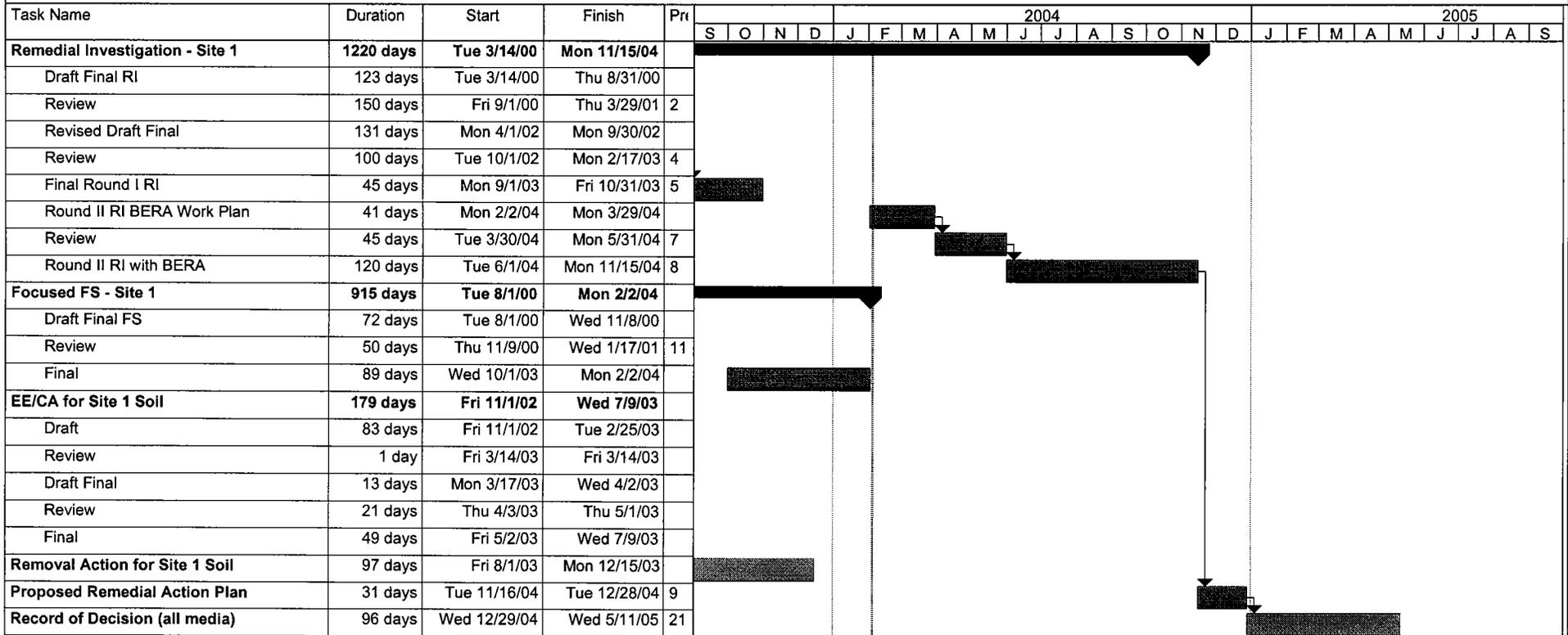


**Figure B-4**  
**CTO 102 - Sites 1, 3, 6, and 7 Long Term Monitoring**  
**Naval Weapons Station, Yorktown, Virginia**



Project: CTO-0102 Date: Wed 2/4/04 Page: 1	Task		Milestone		External Tasks	
	Split		Summary		External Milestone	
	Progress		Project Summary		Deadline	

**Figure B-5**  
**CTO 172 - Cheatham Annex Site 1 Remedial Investigations, Engineering and Design**  
**Naval Weapons Station, Yorktown, Virginia**

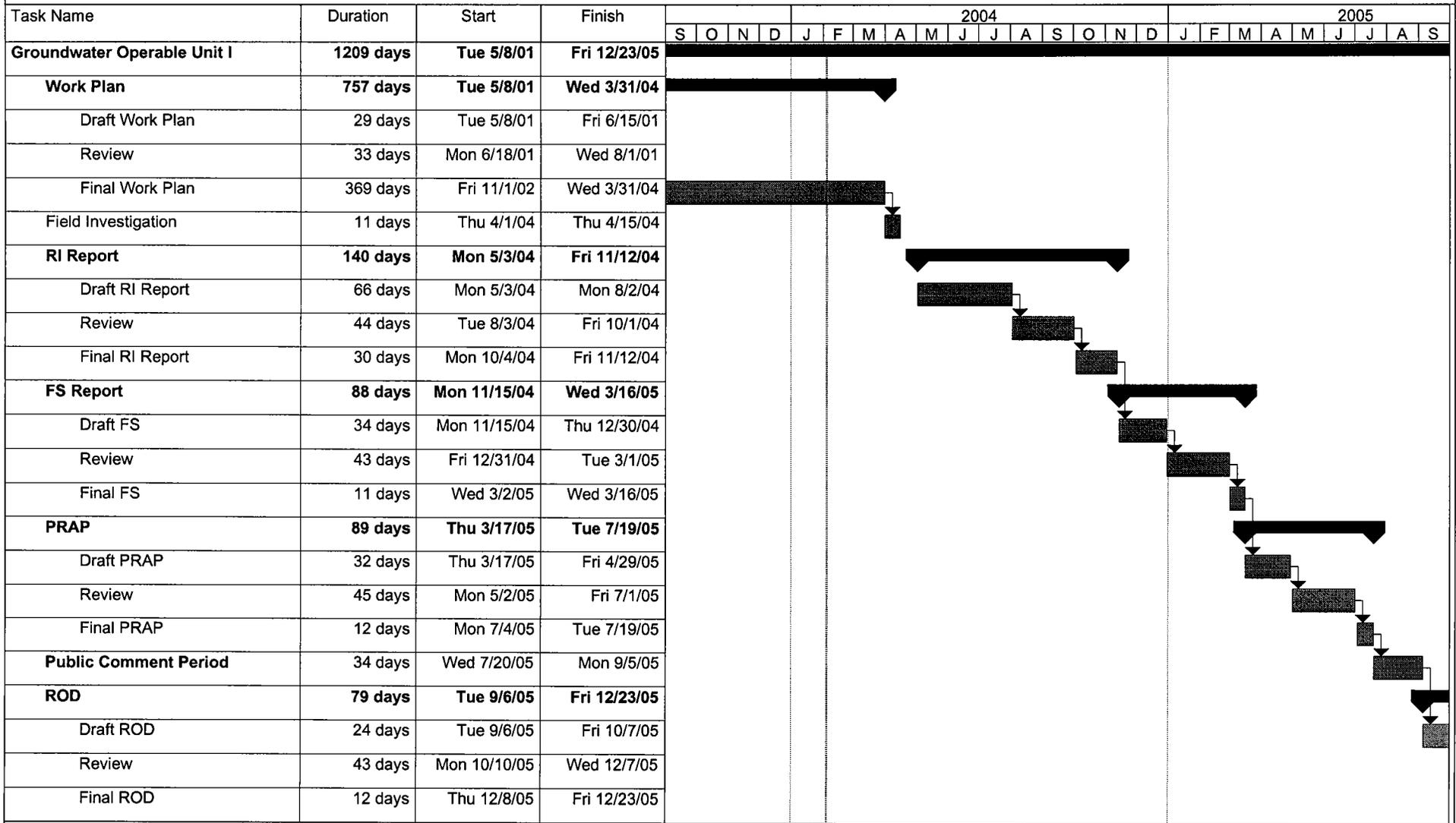


Project: CTO-0172  
 Date: Wed 2/4/04  
 Page: 1

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



**Figure B-7**  
**CTO 213 - Groundwater Operable Unit Work Plans, Field Investigation RI/FS, PRAP, and ROD**  
**Naval Weapons Station, Yorktown, Virginia**



Project: CTO-0213 Date: Wed 2/4/04 Page: 1	Task		Milestone		External Tasks	
	Split		Summary		External Milestone	
	Progress		Project Summary		Deadline	

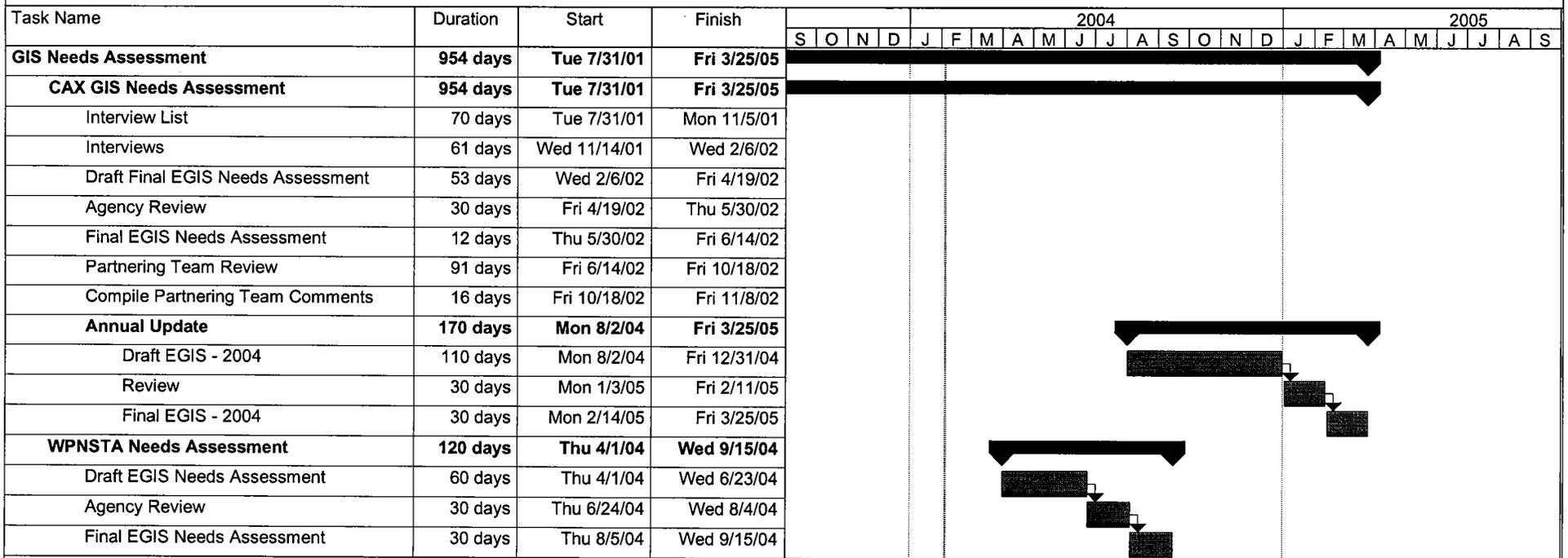
**Figure B-8**  
**CTO 214 - Work Plans, Field Sampling, Long Term Monitoring Report Site 25 & 26**  
**Naval Weapons Station, Yorktown, Virginia**

Task Name	Duration	Start	Finish				
				S	O	N	D
<b>LTM Sites 25 and 26</b>	<b>951 days</b>	<b>Mon 5/21/01</b>	<b>Mon 1/10/05</b>				
Draft LTM Work Plan	155 days	Mon 5/21/01	Fri 12/21/01				
Review	135 days	Mon 12/24/01	Fri 6/28/02				
Final LTM Work Plan	11 days	Tue 6/1/04	Tue 6/15/04				
Field Sampling	5 days	Mon 7/5/04	Fri 7/9/04				
Draft LTM Report	70 days	Mon 7/12/04	Fri 10/15/04				
Review	44 days	Mon 10/18/04	Thu 12/16/04				
Final LTM Report	17 days	Fri 12/17/04	Mon 1/10/05				

Project: CTO-0214  
 Date: Wed 2/4/04  
 Page: 1

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

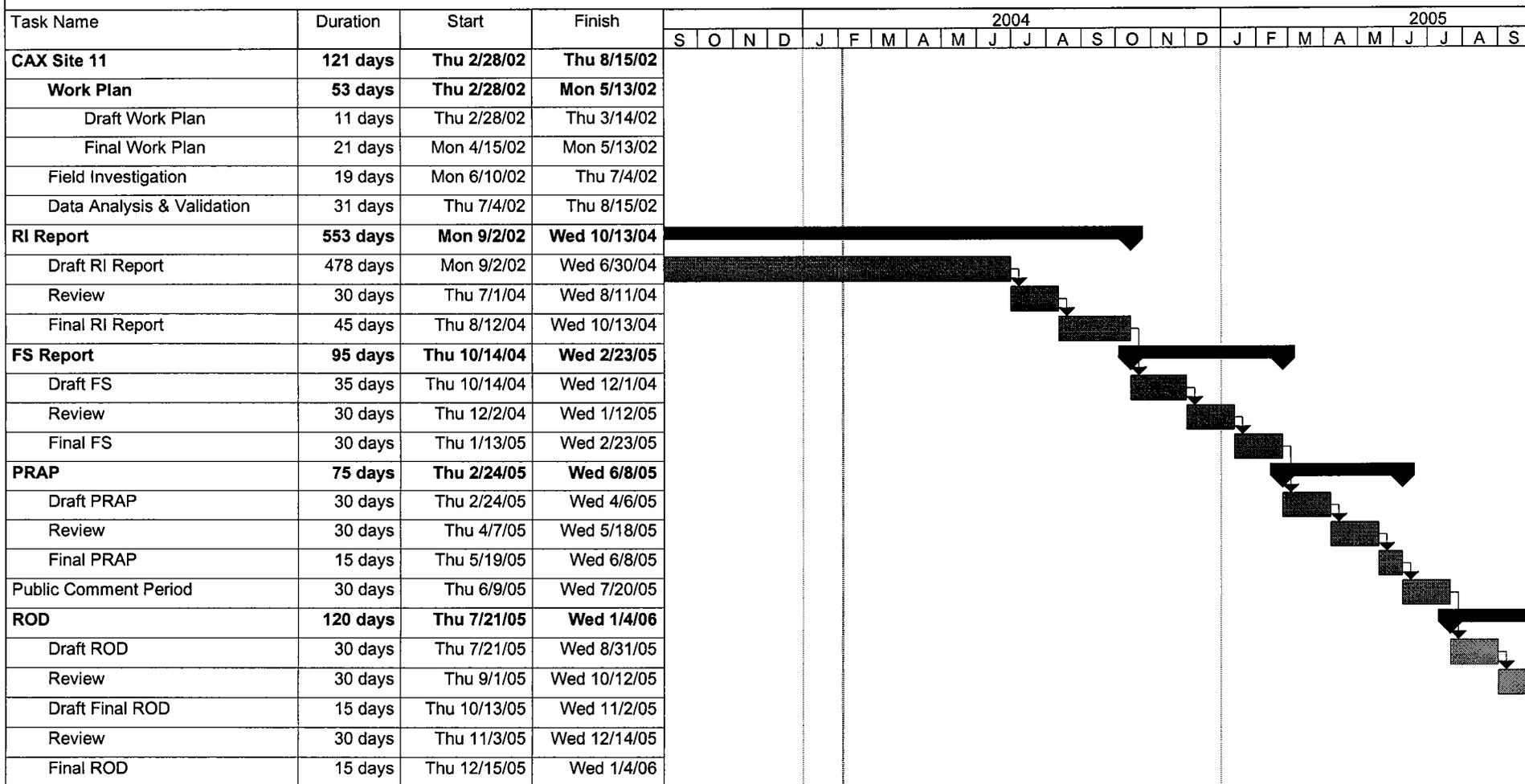
**Figure B-9**  
**CTO 221 - GIS Needs and Assessment for Facilities Management and Environmental GIS Implementation**  
**Naval Weapons Station, Yorktown, Virginia**



Project: CTO-0221  
 Date: Wed 2/4/04  
 Page: 1

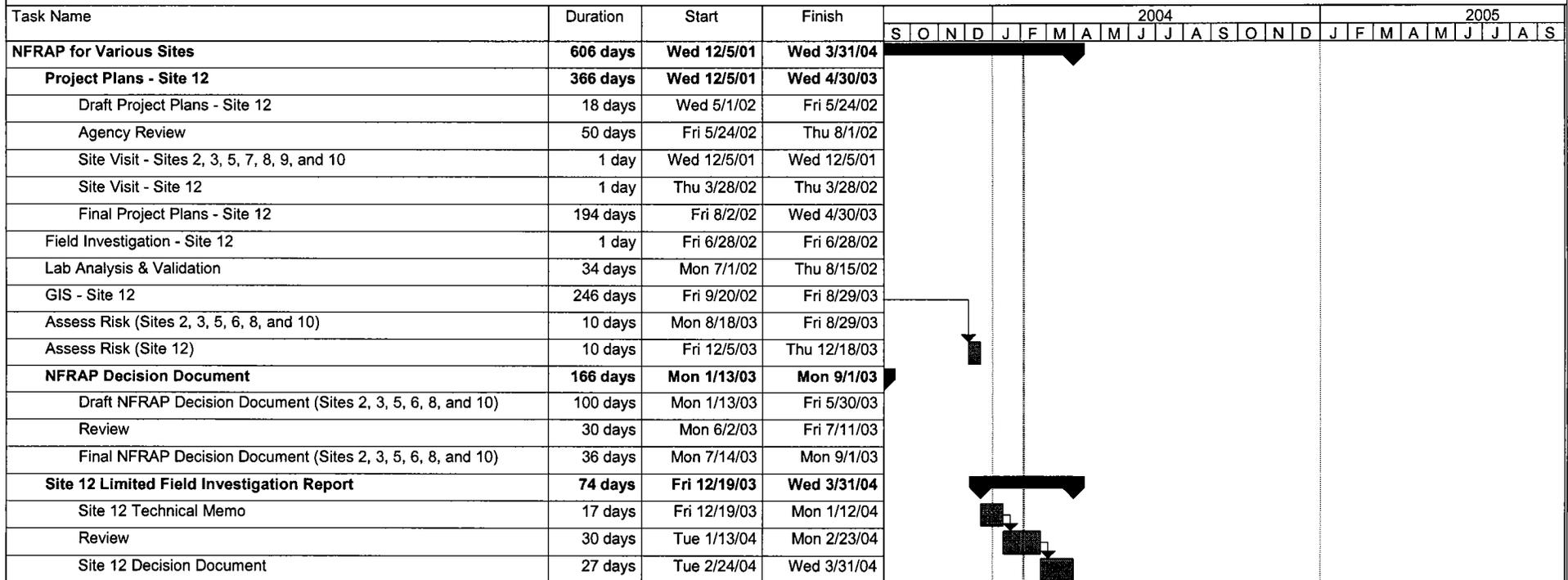
Task		Milestone		External Tasks	
Split		Summary		External Milestone	
Progress		Project Summary		Deadline	

**Figure B-10**  
**CTO 236 - CAX Site 11 Work Plans, Field Investigation, RI/FS, PRAP, and ROD**  
**Cheatham Annex Site**  
**Naval Weapons Station, Yorktown, Virginia**



Project: CTO-0236 Date: Wed 2/4/04 Page: 1	Task		Milestone		External Tasks	
	Split		Summary		External Milestone	
	Progress		Project Summary		Deadline	

**Figure B-11**  
**CTO 238 - No Further Response Action Planned (NFRAP) Decision Document at Various Sites**  
**Cheatham Annex Site**  
**Naval Weapons Station, Yorktown, Virginia**



**Figure B-12**  
**CTO 258 - Groundwater Operable Unit IV**  
**Work Plans, Field Investigation, RI/FS, PRAP, and ROD**  
**Naval Weapons Station, Yorktown, Virginia**

Task Name	Duration	Start	Finish	2004												2005											
				S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A
<b>Groundwater Operable Unit IV</b>	<b>406 days</b>	<b>Mon 6/17/02</b>	<b>Mon 1/5/04</b>	[Gantt bar from 6/17/02 to 1/5/04]																							
<b>Work Plan</b>	<b>54 days</b>	<b>Mon 6/17/02</b>	<b>Thu 8/29/02</b>	[Gantt bar from 6/17/02 to 8/29/02]																							
Draft Project Plans	21 days	Mon 6/17/02	Mon 7/15/02	[Gantt bar from 6/17/02 to 7/15/02]																							
Review	24 days	Tue 7/23/02	Fri 8/23/02	[Gantt bar from 7/23/02 to 8/23/02]																							
Final Project Plans	5 days	Fri 8/23/02	Thu 8/29/02	[Gantt bar from 8/23/02 to 8/29/02]																							
<b>Field Investigation</b>	<b>8 days</b>	<b>Mon 9/9/02</b>	<b>Wed 9/18/02</b>	[Gantt bar from 9/9/02 to 9/18/02]																							
<b>RI Report</b>	<b>81 days</b>	<b>Fri 11/15/02</b>	<b>Fri 3/7/03</b>	[Gantt bar from 11/15/02 to 3/7/03]																							
Draft RI Report	38 days	Fri 11/15/02	Tue 1/7/03	[Gantt bar from 11/15/02 to 1/7/03]																							
Review	30 days	Mon 1/13/03	Fri 2/21/03	[Gantt bar from 1/13/03 to 2/21/03]																							
Final RI Report	10 days	Mon 2/24/03	Fri 3/7/03	[Gantt bar from 2/24/03 to 3/7/03]																							
<b>FS Report</b>	<b>65 days</b>	<b>Mon 3/10/03</b>	<b>Fri 6/6/03</b>	[Gantt bar from 3/10/03 to 6/6/03]																							
Draft FS	22 days	Mon 3/10/03	Tue 4/8/03	[Gantt bar from 3/10/03 to 4/8/03]																							
Review	25 days	Mon 4/14/03	Fri 5/16/03	[Gantt bar from 4/14/03 to 5/16/03]																							
Final FS	15 days	Mon 5/19/03	Fri 6/6/03	[Gantt bar from 5/19/03 to 6/6/03]																							
<b>PRAP</b>	<b>63 days</b>	<b>Mon 6/9/03</b>	<b>Wed 9/3/03</b>	[Gantt bar from 6/9/03 to 9/3/03]																							
Draft PRAP	21 days	Mon 6/9/03	Mon 7/7/03	[Gantt bar from 6/9/03 to 7/7/03]																							
Review	29 days	Tue 7/8/03	Fri 8/15/03	[Gantt bar from 7/8/03 to 8/15/03]																							
Final PRAP	13 days	Mon 8/18/03	Wed 9/3/03	[Gantt bar from 8/18/03 to 9/3/03]																							
<b>Fact Sheet</b>	<b>15 days</b>	<b>Mon 9/15/03</b>	<b>Fri 10/3/03</b>	[Gantt bar from 9/15/03 to 10/3/03]																							
<b>Public Comment Period</b>	<b>25 days</b>	<b>Mon 10/6/03</b>	<b>Fri 11/7/03</b>	[Gantt bar from 10/6/03 to 11/7/03]																							
<b>ROD</b>	<b>81 days</b>	<b>Mon 9/15/03</b>	<b>Mon 1/5/04</b>	[Gantt bar from 9/15/03 to 1/5/04]																							
Draft ROD	15 days	Mon 9/15/03	Fri 10/3/03	[Gantt bar from 9/15/03 to 10/3/03]																							
Review	25 days	Mon 10/6/03	Fri 11/7/03	[Gantt bar from 10/6/03 to 11/7/03]																							
Draft Final	12 days	Mon 11/17/03	Tue 12/2/03	[Gantt bar from 11/17/03 to 12/2/03]																							
Review	13 days	Wed 12/3/03	Fri 12/19/03	[Gantt bar from 12/3/03 to 12/19/03]																							
Final ROD	11 days	Mon 12/22/03	Mon 1/5/04	[Gantt bar from 12/22/03 to 1/5/04]																							

Project: CTO-0258 Date: Wed 2/4/04 Page: 1	Task	[Solid Black Bar]	Milestone	[Diamond]	External Tasks	[Hatched Bar]
	Split	[Dotted Line]	Summary	[Thick Arrow]	External Milestone	[Diamond]
	Progress	[Solid Black Bar]	Project Summary	[Thick Arrow]	Deadline	[Vertical Line]

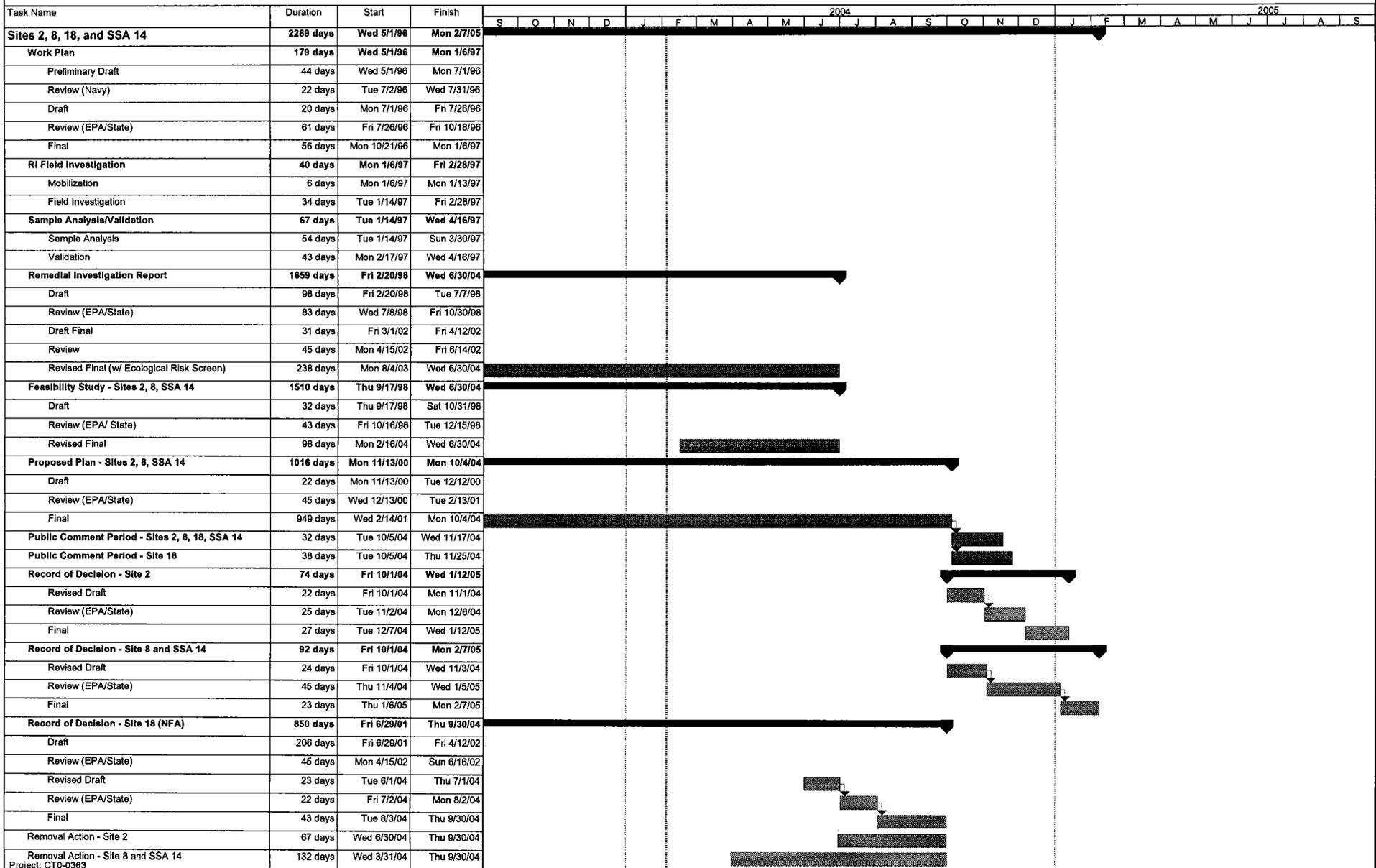
**Figure B-13**  
**CTO 349 - Sites 4, 21, and 22 Work Plan/Field Investigation/RI Report/FS Report/PRAP/ROD**  
**Naval Weapons Station, Yorktown, Virginia**

Task Name	Duration	Start	Finish	2004												2005											
				S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A
<b>Sites 4, 21, and 22</b>	<b>2204 days</b>	<b>Fri 2/23/96</b>	<b>Fri 7/30/04</b>																								
<b>Work Plan</b>	<b>197 days</b>	<b>Fri 2/23/96</b>	<b>Fri 11/22/96</b>																								
Preliminary Draft	44 days	Fri 2/23/96	Wed 4/24/96																								
Review (Navy)	22 days	Thu 4/25/96	Fri 5/24/96																								
Draft	19 days	Mon 5/27/96	Thu 6/20/96																								
Review (EPA/State)	57 days	Fri 6/21/96	Mon 9/9/96																								
Draft Final	10 days	Tue 9/10/96	Mon 9/23/96																								
Review (EPA/State)	22 days	Tue 9/24/96	Wed 10/23/96																								
Final	23 days	Thu 10/24/96	Fri 11/22/96																								
<b>RI Field Investigation</b>	<b>34 days</b>	<b>Mon 10/7/96</b>	<b>Wed 11/20/96</b>																								
Mobilization	5 days	Mon 10/7/96	Fri 10/11/96																								
Field Investigation	19 days	Mon 10/28/96	Wed 11/20/96																								
<b>Sample Analysis/ Validation</b>	<b>55 days</b>	<b>Tue 10/29/96</b>	<b>Thu 1/9/97</b>																								
Sample Analysis	44 days	Tue 10/29/96	Wed 12/25/96																								
Validation	30 days	Sat 11/30/96	Thu 1/9/97																								
<b>Remedial Investigation Report</b>	<b>595 days</b>	<b>Mon 6/30/97</b>	<b>Fri 10/8/99</b>																								
Draft	106 days	Mon 6/30/97	Mon 11/24/97																								
Review (EPA/State)	41 days	Tue 11/25/97	Tue 1/20/98																								
Final	448 days	Wed 1/21/98	Fri 10/8/99																								
<b>Feasibility Study</b>	<b>111 days</b>	<b>Fri 10/8/99</b>	<b>Fri 3/10/00</b>																								
Draft	21 days	Fri 10/8/99	Fri 11/5/99																								
Review (EPA/State)	43 days	Mon 11/8/99	Wed 1/5/00																								
Final	47 days	Thu 1/6/00	Fri 3/10/00																								
<b>Proposed Plan</b>	<b>276 days</b>	<b>Mon 6/12/00</b>	<b>Fri 6/29/01</b>																								
Draft	6 days	Mon 6/12/00	Mon 6/19/00																								
Review (EPA/State)	23 days	Tue 6/20/00	Thu 7/20/00																								
Final	247 days	Fri 7/21/00	Fri 6/29/01																								
<b>Public Comment Period</b>	<b>33 days</b>	<b>Sun 1/21/01</b>	<b>Tue 3/6/01</b>																								
<b>NTC Removal Actions</b>	<b>745 days</b>	<b>Mon 9/24/01</b>	<b>Fri 7/30/04</b>																								
Site 22	270 days	Mon 9/24/01	Fri 10/4/02																								
Site 21	474 days	Tue 12/11/01	Fri 10/3/03																								
Site 4	689 days	Tue 12/11/01	Fri 7/30/04																								
<b>Record of Decision</b>	<b>283 days</b>	<b>Mon 6/2/03</b>	<b>Wed 6/30/04</b>																								
Site 21 NFA ROD	87 days	Mon 6/2/03	Tue 9/30/03																								
Site 22 NFA ROD	87 days	Mon 6/2/03	Tue 9/30/03																								
Site 4 NFA ROD	108 days	Mon 2/2/04	Wed 6/30/04																								

Project: CTO-349  
 Date: Wed 2/4/04  
 Page: 1

Task		Summary		Rolled Up Progress		Project Summary	
Progress		Rolled Up Task		Split		Group By Summary	
Milestone		Rolled Up Milestone		External Tasks			

**Figure B-14**  
**CTO 363 - Sites 2, 8, 18, and SSA 14 Work Plan/Field Investigation/RI Report/FS Report/PRAP/ROD**  
**Naval Weapons Station, Yorktown, Virginia**



Date: Wed 2/4/04  
Page: 1

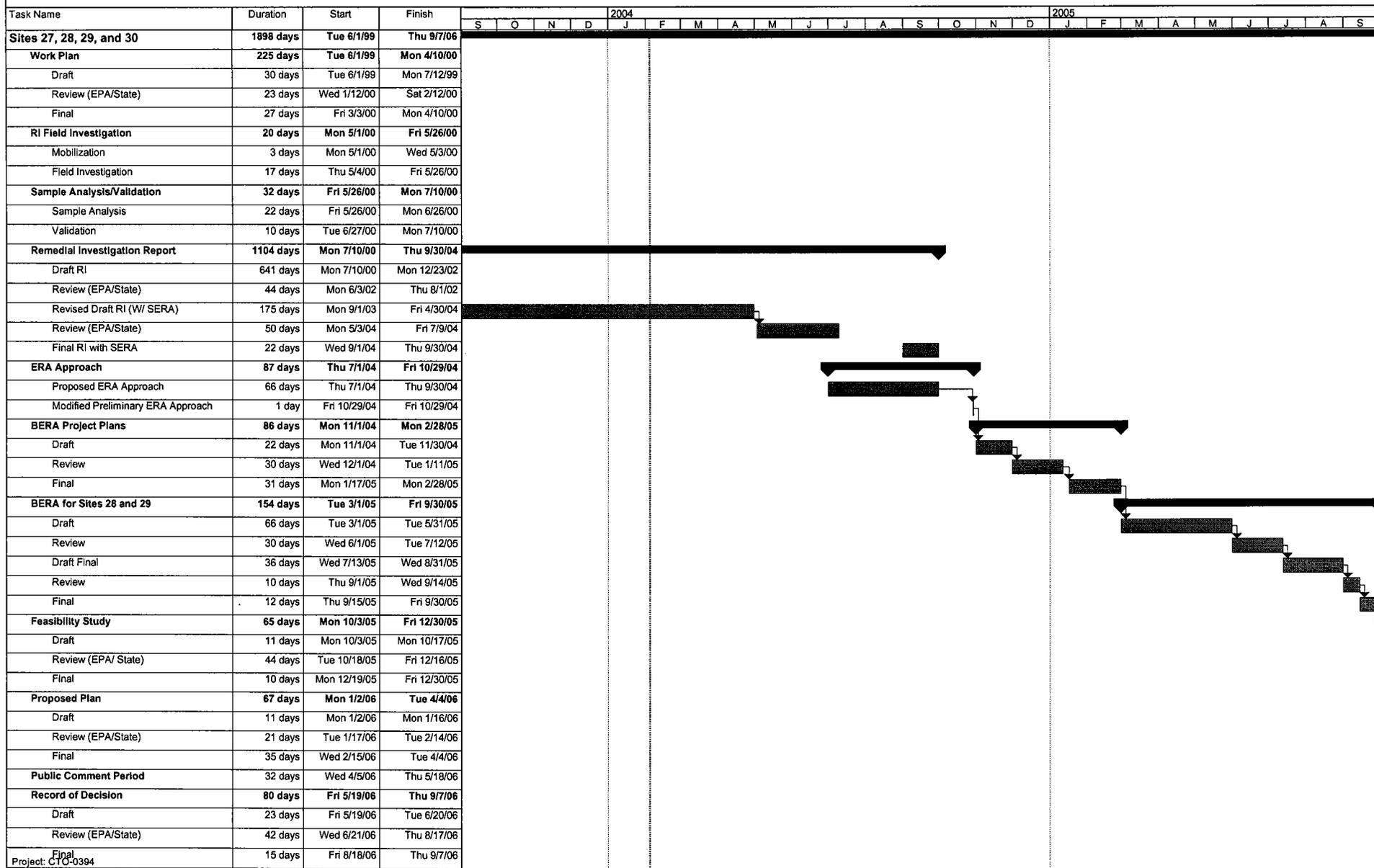
Task		Progress		Summary		External Tasks		Deadline	
Split		Milestone		Project Summary		External Milestone			

**Figure B-15**  
**CTO 386 - Site 12 Long Term Monitoring**  
**Naval Weapons Station Yorktown, Virginia**

Task Name	Duration	Start	Finish	2004												2005											
				S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A
<b>Site 12 Long Term Monitoring</b>	<b>1468 days</b>	<b>Thu 8/20/98</b>	<b>Fri 4/2/04</b>																								
<b>Year 1 Fieldwork - Baseline</b>	<b>2 days</b>	<b>Thu 8/20/98</b>	<b>Fri 8/21/98</b>																								
Annual Event - Baseline	2 days	Thu 8/20/98	Fri 8/21/98																								
Final LTM Report for Year 1	1 day	Fri 3/3/00	Fri 3/3/00																								
<b>Year 2 Field Work</b>	<b>208 days</b>	<b>Sat 5/13/00</b>	<b>Tue 2/27/01</b>																								
Annual Event and Area A Cover-Round 1	7 days	Sat 5/13/00	Mon 5/22/00																								
Area A Cover-Round 2	2 days	Tue 8/15/00	Wed 8/16/00																								
Area A Cover-Round 3	2 days	Wed 12/13/00	Thu 12/14/00																								
Area A Cover-Round 4	2 days	Mon 2/26/01	Tue 2/27/01																								
LTM Letter Report - Rounds 1 and 2	1 day	Mon 2/12/01	Mon 2/12/01																								
<b>Year 3 Field Work</b>	<b>118 days</b>	<b>Wed 6/27/01</b>	<b>Fri 12/7/01</b>																								
Annual Event and Area A Cover-Round 5	3 days	Wed 6/27/01	Fri 6/29/01																								
Area A Cover-Round 6	3 days	Wed 12/5/01	Fri 12/7/01																								
<b>Year 4 Field Work</b>	<b>103 days</b>	<b>Tue 7/30/02</b>	<b>Thu 12/19/02</b>																								
Annual Event and Area A Cover-Round 7	9 days	Tue 7/30/02	Fri 8/9/02																								
Area A Cover-Round 8	3 days	Tue 12/17/02	Thu 12/19/02																								
<b>Year 5 Field Work</b>	<b>4 days</b>	<b>Mon 4/28/03</b>	<b>Thu 5/1/03</b>																								
Annual Event and Area A Cover-Round 9	4 days	Mon 4/28/03	Thu 5/1/03																								
Draft LTM Report - Years 1 to 5	35 days	Mon 12/8/03	Fri 1/23/04																								
Draft Review	30 days	Mon 1/26/04	Fri 3/5/04																								
Final LTM Report - Years 1 to 5	15 days	Mon 3/15/04	Fri 4/2/04																								

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

**Figure B-16**  
**CTO 394 - Sites 27, 28, 29, 30 Work Plan/Field Investigation/RI Report/FS Report/PRAP/ROD and Site 14 Additional Work**  
**Naval Weapons Station, Yorktown, Virginia**



Project: CTO-0394  
 Date: Wed 2/4/04  
 Page: 1

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