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FINAL WORK PLAN FOR SALVAGE YARD ACCESS ROAD NON-TIME CRITICAL REMOVAL
ACTION NAS OCEANA VIRGINIA BEACH VA
3/26/2012
SES-TECH ATLANTIC

**DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, ATLANTIC
REMEDIAL ACTION OPERATIONS (RAO)/LONG TERM MANAGEMENT (LTM),
ENVIRONMENTAL MULTIPLE AWARD CONTRACT (EMAC)
CONTRACT NO. N40085-11-D-0043
TASK ORDER NO. 0001**

**FINAL
WORK PLAN
FOR
OCEANA SALVAGE YARD ACCESS ROAD
NON-TIME-CRITICAL REMOVAL ACTION
AT
NAVAL AIR STATION OCEANA
VIRGINIA BEACH, VA**

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ABBREVIATIONS AND ACRONYMS

APP	Accident Prevention Plan
AHA	activity hazard analysis
ARAR	Applicable or Relevant and Appropriate Requirements
bgs	below ground surface
BMPs	best management practices
BTEX	benzene, toluene, ethylbenzene, and xylene
CCR	Construction Completion Report
CM	Construction Manager
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
C.F.R.	Code of Federal Regulations
CPR	cardiopulmonary resuscitation
CRZ	contamination reduction zone
CY	cubic yard
DoD	Department of Defense EMAC Environmental Multiple Award Contract
EE/CA	Engineering Evaluation/Cost Analysis
ELAP	Environmental Laboratory Accreditation Program
EM	Engineering Manual
EZ	exclusion zone
FEAD	Facilities Engineering and Acquisition Division
FSP	Field Sampling Plan
ft	foot or feet
HASP	Health and Safety Plan
LTM	Long Term Monitoring
mg/kg	milligrams per kilogram
MSDS	material safety data sheet
NAS	Naval Air Station
NAVFAC MIDLANT	Naval Facilities Engineering Command, Mid-Atlantic
NCP	National Oil and Hazardous Substances Contingency Plan
No.	number
NEDD	NIRIS Electronic Data Deliverable
NIRIS	Navy Installation Restoration Information Solution
NTCRA	non-time-critical removal action
OSHA	Occupational Safety and Health Administration
PE	Professional Engineer
PESM	Program Environmental Safety Manager
PCB	polychlorinated biphenyl
PPE	personal protective equipment
ppm	parts per million
PM	Project Manager
PQCM	Project Quality Control Manager
QACP	Quality Assurance and Control Plan
QA/QC	quality assurance/quality control
QAPP	Quality Assurance Project Plan
RAO	Remedial Action Objective

RCRA	Resource Conservation and Recovery Act
RPM	Remedial Project Manager
RSLs	USEPA Regional Screening Levels
SAP	Sampling and Analysis Plan
SES	Sealaska Environmental Services, LLC
SES-TECH	Sealaska Environmental Services, LLC and Tetra Tech EC, Inc.
SOW	Scope of Work
SSHP	Site Safety and Health Plan
SSHO	Site Safety and Health Officer
SWPPP	Storm Water Pollution Prevention Plan
SVOC	semi-volatile organic compound
TO	Task Order
TtEC	Tetra Tech EC, Inc.
TPH	total petroleum hydrocarbons
TCLP	Toxicity Characteristic Leaching Procedure
TSCA	Toxic Substances Control Act
USACE	United States Army Corps of Engineers
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
VDEQ	Virginia Department of Environmental Quality
VDOT	Virginia Department of Transportation
VSWMRs	Virginia Solid Waste Management Regulations
VHWMRs	Virginia Hazardous Waste Management Regulations
VOC	volatile organic compound
WMP	Waste Management Plan

1.0 INTRODUCTION

This Work Plan describes the approach and methods to be used during a non-time-critical removal action (NTCRA) of lead-contaminated soils at Oceana Salvage Yard Access Road Site (the Site) at Naval Air Station (NAS) Oceana, Virginia Beach, Virginia. The planned NTCRA will be performed by SES-TECH ATLANTIC (SES-TECH), a joint venture between Sealaska Environmental Services, LLC (SES) and Tetra Tech EC, Inc. (TtEC) under the Naval Facilities Engineering Command Mid-Atlantic (NAVFAC MIDLANT) Remedial Action Operation Long Term Monitoring (LTM) Environmental Multiple Award Contract (EMAC), Contract Number (No.) N40085-11-D-0043, Task Order (TO) No. 0001.

The NTCRA will be performed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Virginia Department of Environmental Quality (VDEQ) regulations. The United States Department of Navy (Navy) is the lead agency responsible for the NTCRA.

The NTCRA was designed to ensure that contaminated soils are remediated and/or capped with a protective cover to protect human health. The work to be performed at the Site is consistent with the Draft (addresses Navy and privately owned Oceana Salvage Yard property) Administrative Settlement and Order on Consent for Removal Response Action, Oceana Salvage Yard Site, Docket No. CERC-032007-0130DC, which was prepared by USEPA Region III for the Site and is in accordance with CERCLA and the National Oil and Hazardous Substances Contingency Plan (NCP). This removal action is a NTCRA because a planning period of at least six months is available between the time the removal action was determined to be necessary and its commencement at the Site.

1.1 Work Plan Organization

This Work Plan is designed to address the NTCRA for lead-contaminated soil located along the Access Road to the Oceana Salvage Yard. The Work Plan is organized as follows:

- **Section 1.0: Introduction** – Provides an overview of the project and describes how the Work Plan is organized.
- **Section 2.0: Site Conditions and Background** – Presents the conditions, location and site investigation background.
- **Section 3.0: Regulatory Framework** – Presents the regulatory framework which determines the NTCRA and other site actions.
- **Section 4.0: Project Requirements** – Presents the project objective and the scope of work (SOW) for the NTCRA.
- **Section 5.0: Project Management Plan and Project Schedule** – Presents the management approach and the project schedule to complete the NTCRA.
- **Section 6.0: Pre-Construction Activities** – Presents details on project and site preparation activities to be completed prior to start of site work.
- **Section 7.0: Site Work** – Presents a summary of the activities to be performed as part of the planned NTCRA.
- **Section 8.0: Waste Management** – Presents details on waste classification, storage and disposal requirements.
- **Section 9.0: Site Restoration** – Presents the details on site restoration activities.
- **Section 10.0: Post-Construction Requirements** – Presents a summary of activities to be performed after the completion of site activities.

- **Section 11.0: Construction Completion Report Requirements** – Describes documentation of the performance of activities presented in the Work Plan.
- **Section 12.0: Field Sampling and Laboratory Analysis** - Presents details on sample collection and laboratory analysis.
- **Section 13.0: References** – Includes a list of documents used to prepare the Work Plan.

Attachment A contains the applicable or relevant and appropriate requirements (ARARs) for this project as presented in the Engineering Evaluation/Cost Analysis (EE/CA) for the Site, prepared by CHM2HILL in May 2011. Attachment B provides the Quality Assurance and Control Plan (QACP). Attachment C presents the Project Schedule. Attachment D presents the detailed Project Drawings and Specifications. Attachment E presents the Road Layout and Construction figures provided by the Navy. Attachment F provides the Storm Water Pollution Prevention Plan (SWPPP). Attachment G contains information regarding soil treatment by the Ecobond® process. Attachment H provides the Waste Management Plan (WMP). Attachment I provides the Sampling and Analysis Plan (SAP). The Health and Safety Plan (HASp) includes the Accident Prevention Plan (APP) and is submitted under separate cover.

2.0 SITE CONDITIONS AND BACKGROUND

This section reviews site information regarding the Oceana Salvage Yard. Pertinent information regarding site conditions, previous site operations and investigation results are presented in this section. The following information was provided to SES-TECH by the Navy.

2.1 Site Conditions and Location

NAS Oceana, located in Virginia Beach, Virginia, has been in existence since 1940 when it was established as a small auxiliary airfield. Since 1940, NAS Oceana has grown to more than 16 times its original size and is now a 6,000-acre master jet base supporting a community of more than 9,100 Navy personnel and 11,000 dependents. The primary mission of NAS Oceana is to provide the personnel, operations, maintenance, and training facilities to ensure that fighter and attack squadrons on aircraft carriers of the U.S. Atlantic Fleet are ready for deployment.

The Site is not within the gated portion of the base, but it is owned by the Navy. Oceana Salvage Yard (privately owned property) is located within the buffer zone of NAS Oceana, to the east of Oceana Boulevard, Figure 1. Because Navy property land-locks Oceana Salvage Yard, the Access Road to Oceana Salvage is on Navy property; Oceana Salvage maintains an easement to allow access.

The Site consists of a gravel and soil roadway and shoulders surrounded by minimal wetland areas and wooded areas. The entrance to the Site and start of the Access Road is to the east of and just off Oceana Blvd. The Access Road travels east across the Site and for the NTCRA areas, ends just before the road opens to the Oceana Salvage Yard property parking and building areas at the east end of the Site, Figure 2.

2.2 Site Investigation Background

The Oceana Salvage Yard Access Road was first investigated as part of an Environmental Survey of the entire salvage yard. During this investigation, several soil samples were collected within the Access Road and analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), and inorganics. Lead was detected in soil from waste piles at concentrations of up to 86,500 milligrams per kilogram (mg/kg). Interviews of salvage yard personnel

indicated that a large volume of crushed car battery casings were brought to the salvage yard in the 1960s and were used as fill material for the road base.

In January 2005, the Navy completed a direct-push investigation to verify whether the Access Road was actually constructed on crushed car batteries. Direct-push samples were collected at twenty-five locations along the roadway to a depth of four feet (ft) below ground surface (bgs). Waste containing battery casings was encountered at all but one sample location. Battery fragments were encountered between approximately 0.1 and 3 ft bgs. The average depth to the bottom of the batteries was approximately 2.5 ft bgs, with batteries extending to 3.0 ft bgs at two locations. The thickness of the layer of battery fragments was approximately 0.5 ft to 1.0 ft. All soil samples were field screened for lead using field test kits. The majority of the samples exceeded the field test kit maximum detection limit of 400 mg/kg. Four soil samples were collected for laboratory lead analysis. Concentrations of lead detected in these samples ranged from 18.1 mg/kg to 149,000 mg/kg. Lead concentrations detected were found above the residential soil screening level of 400 mg/kg from United States Environmental Protection Agency's (USEPA) Regional Screening Level (RSL) Table (USEPA, 2010) and therefore were determined to potentially pose unacceptable risks to human receptors.

In 2007, the USEPA drafted a Draft Administrative Settlement and Order on Consent for Removal Response Action (Draft Settlement Agreement) (USEPA, 2007) to implement actions to prevent exposure to contaminants potentially posing unacceptable risk to human health related to lead contamination in soil, defined as soils exceeding 800 mg/kg (lead), beneath the Oceana Salvage Access Road (including the improved staging areas at the east end of the Access Road) and the Access Road shoulders (strips of land extending ten feet from the edges of either side of the Access Road to a maximum depth of two feet bgs).

In 2010, the Navy delineated areas of lead contamination, as defined in the USEPA's Draft Settlement Agreement. To delineate the shoulders of the Access Road, a total of thirty-five grids were established along both sides of the Access Road/staging areas. Each grid extended ten feet from the edge of the Access Road/staging areas and had a length of fifty feet (approximate) along the Access Road/staging areas. Three point composite samples were collected to a depth of two feet bgs. Of the thirty-five grids delineated and sampled, eighteen grids were determined by the Navy to exceed the USEPA Draft Settlement Agreement's action level, Figure 2.

An EE/CA for a NTCRA for the Oceana Salvage Yard Access Road and Burial Unit (CH2MHill, May 2011) was prepared to evaluate alternatives and document the selected alternative and decision to take action. The general approach for the NTCRA for the Oceana Salvage Yard Access Road provided to SES-TECH Atlantic through the Navy solicitation package is also presented in the EE/CA and does not include the Burial Unit or non-roadway debris. The NTCRA also does not address groundwater.

3.0 REGULATORY FRAMEWORK

The Navy is the lead agency responsible for the NTCRA. Oversight will be provided by the Navy and VDEQ.

As discussed in the EE/CA (CH2MHill, 2011), through analysis of site background, nature of the problem, ARARs, and potential use scenarios, the Remedial Action Objective (RAO) for the Oceana Salvage Yard Access Road Site stated in the EE/CA is the following:

- Minimize the potential risks to public health and the environment associated with lead contaminated soil beneath the Access Road and Access Road Shoulders.

The Navy has evaluated the ARARs relative to the Access Road, Access Road shoulders, and Burial Unit since these areas are located on Navy property. The ARARs were evaluated in the EE/CA for the Site. Attachment A contains the ARAR tables presented in the EE/CA and provides a summary of each potentially related environmental law. A more detailed discussion of the ARARs is included in the EE/CA.

The NTCRA will, to the extent practicable, comply with the ARARs under Federal and State environmental laws, as described in 40 CFR 300.415. Other Federal and State advisories, criteria, or guidance were considered in formulating the ARARs for the NTCRA. Applicable requirements are those requirements specific to the conditions at the Oceana Salvage Access Road, Access Road shoulders, and Burial Unit and the surrounding vicinity that satisfy all jurisdiction prerequisites of the law or requirements (CH2MHill, 2011).

3.1 Compliance with Section 404 of the Clean Water Act

The engineered shoulder of the newly constructed Access Road will permanently impact (i.e., fill) approximately 1,400 square feet (0.03 acres) of wetlands. The presence of wetlands in the project area was verified by the United States Army Corp of Engineers (USACE) in a (May 20, 2011) Jurisdictional Determination. Affected wetlands comprise emergent and scrub /shrub cover classes located adjacent to the existing access road. Removal activities in these wetlands will comply with the substantive requirements of Section 404 of the Clean Water Act. Section 404 requires that activities in wetlands be avoided and where unavoidable minimized to the maximum extent practicable. Through a series of previous site investigations, area of lead concentrations above residential and industrial soil screening levels were determined. Since elevated concentrations of lead were detected in wetlands, excavation is required and will be limited to those areas of exceedance. Unavoidable permanent impacts above a threshold of one tenth acre require compensatory mitigation, since total permanent fill will be limited to 0.03 acres compensatory mitigation is not required.

The proposed activity in wetlands, including permanent and temporary impacts, substantively complies with the requirements for a Section 404 Nationwide Permit No. 38 – Cleanup of Hazardous Waste as demonstrated by the following:

1. Navigation. The activity will not take place in navigable waters and therefore will have no adverse effect on navigation.
2. Aquatic Life Movements. The activity will not take place in flowing water and appropriate soil erosion and sediment control measures will be implemented preventing impacts to surrounding waters; therefore it will not disrupt the necessary life cycle movements of indigenous aquatic life.
3. Spawning Areas. The activity will not take place in flowing waters and appropriate soil erosion and sediment control measures will be implemented; therefore it will avoid direct or indirect impact to spawning areas.
4. Migratory Bird Breeding Areas. Vegetation removal will be conducted to the maximum extent practicable outside the breeding season for migratory birds.
5. Shellfish Beds. The activity will not occur in areas of concentrated shellfish populations.
6. Suitable Material. No unsuitable material will be used for construction or discharged into wetlands and all materials used will be free from toxic pollutants in toxic amounts.
7. Water Supply Intakes. The activity will not take place in the proximity of a public water supply intake.

8. Adverse Effects from Impoundments. No waters will be impounded as a result of the proposed activities.
9. Management of Water Flows. The activity will not take place in open water.
10. Fills Within 100-Year Floodplains. The activity is not located with a 100-year floodplain.
11. Equipment. All construction access will be along the existing access road. Heavy equipment will work from the existing access road to excavate access road shoulder located in wetlands to the maximum extent practicable to minimize soil disturbance.
12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls will be used and maintained in effective operating condition during construction. All exposed soil and other fills will be permanently stabilized at the earliest practicable time during and following construction.
13. Removal of Temporary Fills. Temporary fills will be removed in their entirety and the affected areas returned to pre-construction elevations and reseeded with appropriate native grass mixes.
14. Proper Maintenance. Fill (clean fill and topsoil) will be properly maintained, including maintenance to ensure public safety.
15. Wild and Scenic Rivers. The activity will not occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river.”
16. Tribal Rights. The activity or its operation will not impair reserved tribal rights.
17. Endangered Species. No threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or their critical habitat has been documented within or adjacent to the Site. Although no federally listed species or critical habitat is currently known to occur at NAS-Oceana, which includes the Oceana Salvage Yard Access Road, the State-listed (canebrake rattlesnake) and watch-list species (silky camellia, and southern bog lemming) that do occur, are afforded protection through the designation of special interest areas at NAS-Oceana. The Oceana Salvage Yard Access Road Site is not located in these special interest areas.
18. Historic Properties. The activity will not affect properties listed, or eligible for listing, in the National Register of Historic Places, based on the determination that the project will be restricted to previously disturbed soils that lack archaeological integrity. There are no historic buildings, structures, or districts within view of the Area of Potential Effect.
19. Designated Critical Resource Waters. The proposed activities will not occur in or in the vicinity of designated critical resource waters.
20. Mitigation. Wetland losses will not exceed one tenth acre; therefore, mitigation will not be required.
21. Water Quality. The Virginia Department of Environmental Quality has previously certified compliance of NWP No. 38 with CWA Section 401.
22. Coastal Zone Management. The proposed activity is consistent with State coastal zone management requirements. Site activities affect the state’s coastal zone; however the activities will be consistent to the maximum extent practicable with the State’s enforceable policies.
23. Regional and Case-By-Case Conditions. The activity complies with applicable regional conditions specifically:
 1. *Waters Containing Submerged Aquatic Vegetation (SAV) Beds*. The activity will not occur in waters containing SAV.
 2. *Designated Critical Resource Waters, which include National Estuarine Research Reserved*. See Item 19 above.
 3. *Waters with federally listed endangered or threatened species, waters federally designated as Critical Habitat, and one mile upstream (including tributaries) of any such waters*. See Item 17 above.
 4. *Designated Trout Waters*. The activity will not take place in designated trout waters.

- 5. Conditions Pertaining to Countersinking of Pipes and Culverts in Nontidal Waters.* N/A
24. Use of Multiple Nationwide Permits. Not applicable.
 25. Transfer of Nationwide Permit Verifications. Not applicable.
 26. Compliance Certification. Not applicable.
 27. Pre-Construction Notification. Not applicable.
 28. Single and Complete Project. The activity constitutes a single and complete project.

4.0 PROJECT REQUIREMENTS – REMEDIATION OBJECTIVES AND SCOPE OF WORK

The following sections present the project objectives and the SOW related to the NTCRA for the Site.

4.1 Project Objectives

The objective of the construction activity associated with this NTCRA is to prevent exposure to contaminants potentially posing unacceptable risk to human health related to lead contamination in soil beneath the Oceana Salvage Access Road, the staging areas at the east end of the Access Road, and the Access Road shoulders (strips of land extending ten feet from the edges of either side of the Access Road to a maximum depth of two feet bgs). For purposes of this NTCRA, 800 mg/kg (lead), as defined in the Draft Settlement Agreement for Removal Response Action Order (USEPA, August 2007) is the action level established for this project.

4.2 Scope of Work

Specifically, the following SOW for the Oceana Salvage Yard Access Road Site NTCRA will be performed to meet the objective above:

- Access Road Shoulder Area: Treatment by in-situ chemical stabilization of soil determined hazardous waste by pre-excavation Toxicity Characteristic Leaching Procedure (TCLP) lead analysis followed by excavation of contaminated soils exceeding the project action levels, off-site disposal of excavated contaminated soils, backfill of excavated areas with off-site clean fill, and installation of gravel cover or re-vegetation/seedling of the excavation areas to match existing grades.
- North and South Staging Areas (north and south of the east end of Access Road): Excavation of contaminated soils, off-site disposal of excavated contaminated soils, backfill of excavated areas with off-site clean fill, installation of gravel cover or re-vegetation/seedling of the excavation areas to match existing grades.
- Access Road: Construction of a gravel and asphalt cap over the existing Oceana Salvage Access Road to serve as a protective barrier from human exposure to lead-contaminated soil.

Additional activities to support this NTCRA are:

- Preparation of project plans including this Work Plan, HASP, SAP, WMP, SWPPP, QACP, and detailed Project Drawings and Specifications related to the SOW.
- Determination of the concentration of lead in the soil remaining at the base of each excavation area (at 2 feet bgs) by confirmation sample collection and analysis as well as demarcation of the bottom of excavation areas with an orange protective fabric.
- Performance of health and safety measures and controls as well as soil erosion and sediment controls to protect personnel, the public and the environment.

- Performance of waste characterization sampling and waste management to identify, manage and dispose of all waste streams in accordance with applicable laws and regulations.
- Preparation of a Construction Completion Report (CCR) that includes compilation of daily activity forms, clean fill certificates, waste disposal manifests and load tickets, surveyed as-built drawings, and other project documentation.

5.0 PROJECT MANAGEMENT PLAN AND PROJECT SCHEDULE

The project management team will be responsible for all technical and administrative aspects of the NTCRA. The project management team is configured such that one person, Mr. John Dormi, has overall administrative and technical responsibilities for this TO and interacts with the NAVFAC Construction Manager (CM) and Remedial Project Manager (RPM). As the Project Manager, Mr. Dormi reports directly to Mr. Peter McCormick, the EMAC Program Manager. Mr. Dormi is responsible for planning and scheduling the NTCRA, ensuring that project deliverables are submitted on a timely basis, tracking and managing budgets and schedules, and maintaining a safe work environment and a record of site activities. Mr. Dormi or his authorized delegate will also attend project meetings to discuss schedule and progress updates with the Navy, as required. Mr. Dormi will also function as the Project Quality Control Manager (PQCM). The SES-TECH Site Superintendent will also function as the Site Safety and Health Officer (SSHO) and will report to Mr. Dormi. The Site Superintendent/SSHO will be responsible for field personnel and the supervision of day to day site activities. A project organization chart with key project personnel and their contact information is provided in the QACP (Attachment B).

5.1 Project Schedule

The Project Schedule will address field activities detailed in the Work Plan. The project schedule also details the submittal schedule for required deliverables. Attachment C contains the Project Schedule. The Project Manager will review and update the project schedule weekly and provide to the Navy as an electronic deliverable via email. The updated schedule will be coordinated with and approved by the NAVFAC CM and RPM. The schedule for field work is based on a four 10-hr day work week, Monday through Friday.

5.2 Health and Safety Program

Health and safety is a priority for SES-TECH and prevention of all work place incidents is the goal. The HASP will include the required APP and Site Safety and Health Plan (SSHP) and will be prepared in compliance with Engineering Manual (EM)-385-1-1, Safety and Health Requirements Manual (USACE, 2008), Occupational Safety and Health Administration (OSHA) requirements in 29 Code of Federal Regulations (C.F.R.) Parts 1910 and 1926 regulations (U.S. Department of Labor, 2008), and the Navy Environmental Restoration Program Manual (Department of the Navy, 2006). The APP is intended as guidance for the SSHO on conducting field work, responding to changing conditions, and making professional judgments based on field data and related hazard control measures. As such, the APP will identify the health and safety responsibilities and reporting requirements for project field and office personnel, specify necessary training, identify health and safety program plans applicable to the project scope of work, and specify site-specific hazards and controls. The SSHP will provide detailed discussion of the potential site-specific physical and chemical or biological hazards associated with the site work and the measures that must be implemented for protection of the site personnel and the surrounding community. Among other safe work practice measures provided by the APP, the SSHP will include the activity hazard analysis (AHA) for each field activity to be conducted, the personal protective equipment (PPE) that will be necessary, and the emergency response action plan for the Site.

The Project Environmental Safety Manager (PESM) will certify the APP and SSHP and will ensure compliance with these plans. The SSHO will review relevant safety information in these documents with the field team and any subcontractors at the beginning of each day and update the AHAs as needed for each field activity. The SSHO will report to the PM to ensure that measures detailed in the APP/SSHP will be implemented.

As indicated in the SSHP, and pursuant to 29 CFR 1910.120, site personnel performing any activities in an exclusion zone (EZ) must have received a minimum of 40 hours of initial health and safety training for hazardous waste site operations. In addition to the required initial training, each employee must have received three (3) days of directly supervised on-the-job training appropriate for the activities they will be required to perform. Annual 8-hour refresher training will be required of all hazardous waste site personnel in order to maintain their qualifications for fieldwork. The Project Superintendent/SSHO will also have received 24 hours of on-the-job supervised training, 8-hour supervisor training, and First Aid/Cardiopulmonary Resuscitation (CPR) with blood borne pathogens training. Documentation will be obtained from each site worker to ensure current compliance and will be stored in the site files.

5.3 Emergency Response and Release Reporting

An Emergency Response Plan is included in the SSHP. Details include incident reporting, emergency response, and spill control and prevention activities on site.

Any release of petroleum, hazardous substances, or hazardous waste to land, surface water, groundwater, or air is defined as a reportable release by VDEQ. The Navy has primary responsibility for release reporting, although they may delegate this authority to SES-TECH. Prior to mobilization, SES-TECH will discuss notification requirements with the Navy, and establish the reporting responsibilities for each party. Note that releases which occur onto an impervious surface (provided no runoff is released to State waters), or those which are contained, and are immediately cleaned up are not defined as reportable releases by VDEQ, but must still be reported internally.

6.0 PRE-CONSTRUCTION ACTIVITIES

The following sections detail the pre-construction activities.

6.1 Fieldwork Planning and Preparation

Pre-construction activities include the preparation of project submittals. Preparation and approval of the Work Plan and associated project plans are the primary components of this task. Other submittals include the APP/SSHP, Sampling and Analysis Plan which includes the Field Sampling Plan (FSP)/Quality Assurance Project Plan (QAPP), Waste Management Plan, Storm Water Pollution Prevention Plan, Quality Assurance and Control Plan, and the Project Drawings and Removal Action Design Specifications. Associated project plans will be submitted as separate documents, concurrently with this Work Plan. Project plans (Internal Draft, Draft, Draft Final, and Final) will be prepared and submitted to the Navy for review, comment/revision, and approval. SES-TECH will submit the Draft Final documents to VDEQ for review as well as incorporate the regulator comments into the Final submittals.

Subsequent to approval of the Work Plan by NAVFAC, SES-TECH will begin the procurement process for subcontractors, materials, and equipment. Subcontracted activities will likely include:

- Utility Clearance/Geophysical Survey
- Survey
- In-situ Treatment
- Excavation/Earthwork
- Backfill/Material Supply
- Asphalt Paving
- Transportation and Disposal
- Analytical Laboratory

Other preparatory activities will include appropriate notification and a project team meeting with the NAVFAC personnel and the Navy Facilities Engineering and Acquisition Division (FEAD).

6.1.1 Project Team Meeting

Prior to the start of the field activities at the Site, a project team meeting will be held. The purpose of this meeting is to finalize project plans as well as to develop a mutual understanding of the field activities, health and safety practices, contractor quality control details, forms to be used, administration of on-site work, and project schedule. SES-TECH will prepare minutes of the meeting for submittal to the Navy.

7.0 SITE WORK

This section describes the activities and procedures involved in preparation for, and field implementation of, the proposed NTCRA. Detailed Project Drawings and Removal Action Design Specifications are presented in Attachment D. Additional drawings for Road Layout and Construction details, as provided by the Navy, are provided in Attachment E. The planned activities include the tasks listed below and they are described in the following sections.

- Mobilization, including underground utility clearance, site control/traffic control, and erosion and sediment control measures
- Clearing and Grubbing
- In-situ treatment of soil in grids determined hazardous waste by pre-excavation TCLP lead analysis
- Excavation of the shoulder and staging areas and soil management
- Confirmatory soil sampling and barrier fabric placement
- Excavation backfilling and regrading
- Installation of the engineered shoulders and Access Road asphalt cap
- Waste management
- Decontamination
- Restoration of the Access Road, Access Road shoulders, and staging areas
- Site survey
- Demobilization

7.1 Mobilization

Mobilization activities will include site preparation, inspection and approval of the NTCRA work area by the Navy, a geographical survey of the site, movement of equipment and materials to the Site, and arranging NAS Oceana access for field personnel, if needed. At least two weeks prior to mobilization, the

appropriate Navy personnel will be notified about the planned schedule for mobilization. Additional mobilization tasks are described in the following sections and include performance of an underground utility survey and mark-out, implementation of site control/traffic control, and installation of erosion and sediment control measures.

Upon receipt of authorizations, field personnel, required equipment, and materials will be mobilized to the Site. Trailers or storage boxes will not be installed at the Site however sanitary facilities will be rented and placed on-site. All personnel will be required to attend site-specific safety training prior to working on site.

7.1.1 Utility Clearance (Geophysical Survey)

Prior to the commencement of subsurface work, existing utility drawings, if available, will be reviewed and a site walk with the FEAD will be held to review the proposed excavation area and sampling locations. The area of proposed soil excavation will also be surveyed using geophysical methods (i.e., ground-penetrating radar and/or electromagnetic induction instruments) to identify underground utilities. Virginia Miss Utility (Virginia utility clearance) will be contacted at least three business days before subsurface work is to begin. Survey findings and the Miss Utility mark-out tickets will be provided to the FEAD for review. A dig permit will be applied for and obtained from the FEAD before commencement of excavation activity.

7.1.2 Site Control /Traffic Control

The Site is surrounded by a chain-link fence with a gate at the entrance at Oceana Blvd. The Access Road is in use by Oceana Salvage Yard. Access to the Site will be controlled at the front gate and with signage and barriers as needed. Site security will not be provided.

Traffic controls will be implemented so that field activities can be completed in an efficient and safe environment. Figure 2 of this Work Plan will be used as a base map for the Traffic Control Plan. Since most work is occurring on the ingress/egress road for the Site, the Traffic Control Plan will be a living document in which copies of the figure will be marked in the field to identify and illustrate new traffic patterns. Traffic patterns will change frequently based on the location of excavation or road construction areas. The Site Superintendent will update the Traffic Control Plan as traffic patterns change and will share the plan changes with site workers at daily safety meetings. The Traffic Control Plan will identify traffic flow for site traffic, vehicle turn-around areas, and material staging areas.

At least one lane of traffic will be available for Oceana Salvage Yard use at all times. Traffic to and from Oceana Salvage Yard may pass closely to excavation areas or the EZ. Excavation activities will halt when Oceana Salvage Yard traffic is in close proximity to excavation areas or the EZ. The Access Road cap will be constructed in phases such that ingress and egress will not be impeded by construction activities. A flagman will be used to control traffic flow, when needed.

Additional areas will likely be established within the north and south staging areas to support staging and containerized waste storage areas. Also, staging areas and/or waste storage areas may be located at NAS Oceana, as determined by the Navy. SES-TECH will arrange access to NAS Oceana and truck traffic at NAS Oceana will be coordinated with the FEAD and appropriate personnel.

Access to the excavation areas will be established as per the SSHP. A support zone, contamination reduction zone (CRZ) and EZ will be established around excavation areas with temporary barriers (i.e.,

caution tape) and signage, as needed. Excavations will be backfilled upon completion of excavation and confirmatory sample collection.

7.1.3 Soil Erosion and Sediment Control Measures

Soil erosion and sediment control measures will be implemented prior to and during the field activities. The Soil Erosion and Sediment Control Plan is included in the SWPPP, Attachment F. The SWPPP was prepared in accordance with the Commonwealth of Virginia general permit for storm water discharges from construction sites. Soil erosion and sediment control measures consist of the installation of silt fencing along the excavation areas. Project drawings C-103 and C-104, Attachment D, detail the Soil Erosion and Sediment Control Plan. Additional soil erosion and sediment control measures will be implemented around staging areas as needed (i.e., hay bales surrounding backfill stockpiles). Stockpiling of contaminated soil is not anticipated.

7.2 Clearing and Grubbing

Clearing and grubbing will be completed along the shoulders of the Access Road prior to excavation. An excavator will be used for most of the clearing and grubbing. Saplings (with a trunk diameter of less than 6 inches) will be cut down with a chainsaw as necessary. Trees with trunk diameters exceeding 6 inches will not be removed. Instead the soil around the tree will be removed with care taken to not damage the root system. Materials (i.e., root balls) that are grubbed from the ground will be segregated and staged on-site in lined, tarped rolloffs for subsequent off-site disposal as **Resource Conservation and Recovery Act (RCRA) hazardous waste**. Other above ground vegetative waste will be chipped for mulch for use on the Site. Areas to receive mulch will be determined in coordination with the FEAD. Additional details on clearing and grubbing are presented in the Removal Action Design Specifications.

7.3 In-situ Treatment, Excavation, Backfilling and Grading

To delineate the shoulders of the Access Road, a total of thirty-five grids were established along both sides of the Access Road/staging areas. Each grid extended ten feet from the edge of the Access Road/staging area and had a length of fifty feet (approximate) along the Access Road/staging area. Excavation will be completed to a depth of two feet bgs.

The areas of excavation are based on the eighteen grids that have concentrations of lead over the project action level of 800 mg/kg and the north and south staging areas adjacent to the Access Road as shown on Figure 2. Approximately 726.5 cubic yards (CY) of lead-contaminated soil will be excavated from the eighteen grids. Approximately 259.5 CY of lead-contaminated soil will be excavated from the north and south staging areas. The total estimated soil volume to be excavated from the Access Road shoulders and the staging areas is approximately 986 CY.

Soil determined hazardous by pre-excavation TCLP lead analysis will be treated prior to excavation, in-situ, to provide a permanent chemical stabilization of lead. The chemical metal stabilization process is known as Ecobond® and it requires mixing of Ecobond® Pb into the soil by mechanical means (i.e., spread over the soil and mixed into it with the excavator bucket). A description of the Ecobond® technology and the site-specific treatability report provided by MT2 is included in Attachment G. A material safety data sheet (MSDS) for the specific material to be used for the site soil, Ecobond® Pb, is provided in Attachment G as well. Waste classification sampling for TCLP lead analysis will be conducted on the treated soil to confirm that soil has been treated to non-hazardous levels (i.e., lead concentrations in samples do not exceed the RCRA TCLP lead limit) via the Ecobond® process.

When the excavation depth of two feet bgs has been reached, three-point composite samples will be collected from each excavated grid cell and from the north side and south side staging areas. Refer to Section 12.2 of this Work Plan for details on confirmatory sampling protocols. Prior to backfilling activities, orange barrier fabric will be placed at the bottom of each excavation. Excavations will be backfilled after confirmatory samples are collected; sample results will not be received and evaluated prior to backfill. Grading of the backfill, construction of the engineered shoulders and the Access Road cap, and site restoration will follow excavation and backfilling activities. Details on site restoration are presented in Section 9.0 of this Work Plan.

7.3.1 Grid and Area Waste Classification for Excavation of Soil

The grids and staging areas were grouped for pre-excavation waste classification sampling as described in Section 12.0 of this Work Plan. The pre-excavation waste classification of grids and areas, by group, is shown on Table 7-1. The table also contains data from previous sampling (Total Lead Range) provided by the Navy during the project planning stage and data from the pre-excavation waste classification samples collected on October 5, 2011 (TCLP-Lead and PCBs). Analytical data indicates that Groups 1 and 3 are currently classified as RCRA Characteristically Hazardous for Lead (D008). Analytical data indicates that Group 2 is characterized as non-hazardous waste. Based on the analytical results for PCBs, the waste is not Toxic Substances Control Act (TSCA)-regulated waste. Other detected constituents had very low concentrations that do not impact waste characterization for disposal purposes. Additional information on the waste classification and disposal requirements is included in Section 8.0 of this Work Plan and in the WMP.

Table 7-1 Grid and Area Pre-excavation Waste Classification

Group 1	Group 2	Group 3
RCRA Hazardous for Lead	Non-Hazardous	RCRA Hazardous for Lead
Grid#	Grid # / Area	Grid #
S009	S011	S012
S010	S014	S016
S013	S025	S017
S020	S026	S018
S024	S027	S019
	South Staging Area	S021
	North Staging Area	S022
		S023
Total Lead Range: 2,685 to 3,800 mg/L	Total Lead Range: 200 to 2,450 mg/L	Total Lead Range: 6,785 to 24,000 mg/L
TCLP-Lead: 54 mg/l	TCLP-Lead: 2.8 mg/l	TCLP-Lead: 160 mg/
Total PCBs: 0.78 mg/kg	Total PCBs: 1.09 mg/kg	Total PCBs: 2.13 mg/kg

7.3.2 In-situ Chemical Stabilization Procedures

Soil in thirteen of the eighteen grids (Groups 1 and 3) will be treated in-situ to achieve chemical stabilization of the lead contamination. Ecobond Pb® will be spread upon the soil by hand and/or mechanical spreading (i.e., a broadcast spreader). The Ecobond Pb® will then be mixed into the soil by mechanical means (i.e., excavator bucket), in-situ, in each grid, to a total depth of two feet bgs. The excavator will likely be staged on the Access Road and will not enter the excavations to reduce contact

with contamination. Equipment that contacts contamination will be decontaminated at the end of treatment as described in Section 7.6 of this Work Plan.

Post-treatment waste classification samples will be collected from the treated soil for TCLP lead analysis. Waste classification sample collection and data evaluation is detailed in Section 12.3.1 of this Work Plan. It is anticipated that TCLP lead levels in treated soil will not exceed the TCLP lead limit after the first treatment. However, if a post-treatment sample result indicates an exceedance of the TCLP lead limit, soil in grids represented by that sample will receive additional treatment with Ecobond Pb® and then will be sampled for TCLP lead analysis again. Treatment and sample collection will be conducted until the TCLP lead concentrations in the soil do not exceed the TCLP lead limits. Once the soil has been treated and sample analysis confirms that TCLP lead concentrations are below the RCRA limit, the soil will be removed from the excavation for transport and disposal off-site as described in the following section.

7.3.3 Soil Excavation Procedures

After treatment, excavation of approximately 986 CY of soil will be conducted in the eighteen designated grids and the north and south staging areas. Project Drawings C-105 and C-106, Attachment D, detail the excavation site plan and details. Details on excavation and handling of contaminated material handling are presented in the Removal Action Design Specifications.

Generally, an excavator will be used to excavate the treated soils down to a depth of two feet bgs. Excavation to the two feet depth will commence with grid cells at the eastern end of the Access Road (Navy-Oceana Salvage Yard property line) and will continue toward the west (S. Oceana Blvd). Excavated material will be direct-loaded into lined, Virginia Department of Transportation (VDOT) permitted trucks for transport for off-site disposal at an approved subtitle D landfill. The need to stockpile of excavated soils should not be necessary since the excavated soil will be direct-loaded into the trucks.

Additionally, approximately 12 CY of soil will be removed from the existing Access Road to allow transition from the Access Road to Oceana Blvd and to the Oceana Salvage Yard property during the construction of a gravel and asphalt cap over the existing Oceana Salvage Access Road. This soil will be treated with Ecobond Pb® and included in the post-treatment waste classification sample collection.

7.3.4 Excavation Backfilling and Grading Procedures

When the excavation depth of two feet bgs has been reached and confirmatory samples have been collected from the bottom of excavation area, orange barrier fabric will be placed at the bottom of each excavation. Excavations will be backfilled upon completion of excavation down to two feet bgs and collection of confirmatory samples. Details on backfilling and grading are presented in the Removal Action Design Specifications. Project Drawing C-107 presents the final site grading plan.

Certified clean backfill soil will be imported and placed on top of an orange fabric barrier installed at the bottom of each excavation area. The backfill soil will be moved into place by use of a back-hoe or bull dozer. The backfill soil will be installed to a depth of eighteen inches and compacted with the back-hoe bucket and/or track compacted with a bull dozer. The remaining six inches will be backfilled with compacted VDOT 21A stone or topsoil depending on the area. When possible, backfill will be directly off-loaded in the excavated areas. At times, due to site traffic flow and excavation sequence, it may be necessary to stockpile backfill materials. Additional details on backfilling and grading the excavated areas are presented below. Project drawing C-107, Attachment D, details the Final Site Grading Plan.

7.3.4.1 *Engineered Shoulder*

An engineered shoulder will be constructed adjacent to both sides of the newly constructed Access Road. The engineered shoulder will consist of at least six inches of compacted VDOT 21A stone overlying eighteen inches of backfill soil. Construction of the engineered shoulders is discussed in further detail in Section 7.4 of this Work Plan.

7.3.4.2 *Remaining Shoulder Areas*

At least six inches of top soil will be spread over eighteen inches of backfill/vegetative support material to backfill the remaining shoulder areas. The top soil will be placed adjacent to the engineered shoulder and extend to the outer limits of the excavation areas. A bull dozer will be used to spread and grade the top soil outward from the engineered shoulders to meet the original grade. The disturbed areas will be seeded with a local grass seed mixture.

7.3.4.3 *Clean Fill Certification*

The excavation areas will be backfilled using clean imported fill materials (i.e., general backfill, vegetative support material, top soil). Specifications for backfill materials are provided in the Removal Action Design Specifications. SES-TECH will determine that imported backfill material is certified 'clean' through the review of analytical data provided by the supplier of the imported backfill materials. SES-TECH will review the analytical data to determine that concentrations of VOCs, SVOCs, pesticides/PCBs and metals do not exceed the USEPA RSLs. Backfill with any exceedance of the RSL criteria will not be allowed for use as backfill without written consent provided by the Navy prior to the backfilling operations. Additionally, data will be evaluated to determine that fill material contains less than 50 mg/kg total petroleum hydrocarbons (TPH) and less than 10 mg/kg benzene, toluene, ethylbenzene, and xylene (BTEX). SES-TECH will present the data to the Navy for their review and final approval for the use of the backfill materials.

General backfill and vegetative support material will consist of clean fill with a maximum particle size of 3 inches. Vegetative support material will be used to provide a suitable base for topsoil. Topsoil will be classified as a loam, sandy loam, silt loam, sandy clay loam, or clay loam and have a maximum particle size of $\frac{3}{4}$ inch. Acceptable topsoil meet the definition of a "native or amended soil with an organic salt concentration less than 500 parts per million (ppm), organic content at a minimum of 1.5 percent, and a pH of 6 to 7.5. SES-TECH will coordinate with the Navy to determine soil mix conducive for wetland re-establishment.

7.4 Installation of the Engineered Shoulders and Access Road Asphalt Cap

After backfill completion, the existing Access Road will be capped with five inches of an asphalt concrete base course over a six-inch aggregate base course to create a paved twenty-four foot Access Road with engineered stone shoulders.

Figures 3 through 5 in Attachment E were provided by the Navy and provide details of the road layout and construction and the shoulder area grading. The centerline of the constructed paved road will be the same as that of the existing Access Road (Figure 3, Attachment E); however, the width of the new road will be uniform, 24-ft in total width. An engineered shoulder area adjacent to both sides of the constructed Access Road will be made of compacted VDOT 21A stone graded to a 2:1 slope to meet existing grade (Figure 4, Attachment E). Where the proposed 11-inch thick road cap meets the existing grade at Oceana Boulevard and the existing grade at the property line shared with Oceana Salvage Yard,

the Access Road will be excavated in such a way to maintain the 11-inch cap throughout the entire transition from existing grade to proposed surface elevation of the new roadway; the transition slope should be minimum of 6% or maximum of 8% grade (Figure 4, Attachment E). This will require the excavation and off-site disposal of approximately 12 CY of lead-contaminated soil which will be managed with other excavated soil waste. Figure 5 in Attachment E illustrates a typical cross-section of an area to be excavated, backfilled, and road construction elevations.

7.5 Material Stockpiling

7.5.1 Excavated Soil

Excavated soils requiring off-site disposal will not be stockpiled. Stockpile of excavated materials would require protocols consistent with the Virginia Solid Waste Management Regulations (VSWMRs) and/or the Virginia Hazardous Waste Management Regulations VHWMRs.

7.5.2 Backfill and Construction Materials

Clean backfill and construction materials (i.e., stone underlayment for Access Road) may be stockpiled on-site prior to placement in the excavated areas. Stockpiling protocols for clean imported materials, such as containment and sediment control, are detailed on Project Drawing C-104 and in the Removal Action Design Specifications.

7.6 Decontamination

Decontamination facilities will be set up for personnel who may come in contact with the contaminated soils. Due to the potential for exposure to contaminated soil, provisions will be made for personnel decontamination. The decontamination process and equipment required are described in the SSHP. The SSHO will be responsible for maintaining compliance with the SSHP.

A temporary equipment decontamination area will be prepared for the decontamination of sampling equipment. Disposable sampling equipment will be used when possible. The decontamination fluid will be placed into temporary storage in DOT-approved 55-gallon drums for off-site disposal.

Dry decontamination will be conducted on site equipment that encounters contaminated soil, (i.e., excavator bucket). It is anticipated that vehicles and equipment will not enter the EZ therefore tires and tracks will not contact contamination. Best management practices (BMPs) as detailed in the SWPPP will be implemented. Care will be taken to not track any loose soil (non-contaminated) off the Site. Additional details on equipment dry decontamination will be included in the Removal Action Design Specifications.

7.7 Site Survey

SES-TECH will subcontract a professional surveyor licensed in the Commonwealth of Virginia. Prior to excavation, the estimated limits of excavation and each grid cell/staging area will be surveyed and marked in the field. A post-construction survey will be performed to provide as-built documentation of construction efforts. The final road limits and excavation boundaries will be surveyed. Each confirmatory soil sampling location will be mapped by the field geologist or engineer to a minimum accuracy of 1-meter horizontally relative to surveyed location for inclusion on a site figure.

7.8 Demobilization

Demobilization will consist of dry decontamination of equipment that was used to conduct the NTCRA. SES-TECH will collect and dispose of all waste as per the WMP. After all waste has been removed but prior to receiving an authorization to demobilize, SES-TECH will conduct a final walk through with the FEAD and establish a punch list of items that require further attention. After addressing all punch-list items, SES-TECH will remove all equipment and personnel from the Site and the field work will be considered complete.

8.0 WASTE MANAGEMENT

A summary of waste management activities for the anticipated waste streams is presented below. Detailed waste management protocols and procedures are presented in the WMP, Attachment H. Waste generated during the NTCRA will consist predominantly of lead-contaminated soil excavated from the site; after treatment and post-treatment waste sampling indicates that the soil is non-hazardous waste, the soil waste will be disposed of as detailed in this Work Plan and the WMP, at an approved subtitle D landfill. Trash, wastewater (decontamination fluids), vegetation mulch/debris, PPE, and contaminated materials/disposable sampling equipment are also anticipated waste streams.

Pursuant to 40 CFR 172 Subpart H, SES-TECH site personnel involved in shipping any hazardous materials regulated by the United States Department of Transportation (USDOT) will be trained per USDOT regulations. Site personnel responsible for RCRA hazardous waste management activities will receive annual training in accordance with 40 CFR 265.16. Training is also required for those employees who perform hazardous materials transportation functions, including preparation of shipping papers/manifests and selection, filling, labeling, or marking of containers.

8.1 Summary of Waste Storage and Disposal Protocols

All containers will be staged at waste storage area(s) designated by the Navy. There may be both non-hazardous and hazardous waste storage areas. Wastes will be handled and stored in accordance with the VSWMRs, VHWMRs and applicable Federal regulations for on-site storage and management.

Non-hazardous waste containers will be affixed with non-hazardous labels and hazardous waste containers will be affixed with hazardous waste labels. The Project Superintendent/SSHO will serve as site contact for the waste accumulation/storage area(s) and will be responsible for coordinating any emergency response activities related to waste storage area spills/releases. An inventory of waste containers (i.e., drums and/or rolloffs) will be maintained, and wastes will be logged while in the container storage areas. In addition, weekly inspections of 90-day hazardous waste storage areas/satellite accumulation areas will be conducted. The inspections will check the integrity of the containers and secondary containment, check for leaks or spills, and ensure that labels and markings are in good condition. Specific handling procedures for wastes and waste storage areas will be determined by SES-TECH in coordination with the FEAD and are detailed in the WMP.

Waste documentation and transport will be coordinated with the Navy. SES-TECH will review waste transporters and waste disposal facilities and obtain Navy approval for waste subcontractor selection as detailed in the WMP. In summary, wastes will be disposed of at waste facilities approved by the Navy and appropriate to the waste type and classification. Waste profiles for facility acceptance and waste manifests will be completed for the off-site transport and disposal of waste. Both waste profiles and waste manifests will be submitted to the Navy for review and approval. The Navy will inspect the waste to be

shipped and sign the manifest prior to the truck leaving the site. Waste transporters will be approved by the Navy and appropriately permitted to transport waste based on type and classification. Wastes will be properly manifested and labeled for shipment and waste transport vehicles will be properly placarded and marked with current permits. Copies of the waste documentation will be included in the CCR.

8.1.1 Waste Soil Management

Waste soil will be managed as detailed in the WMP, the Removal Action Design Specifications and as in this Work Plan. After treatment, it is anticipated that the excavated soil will be classified as non-hazardous waste based upon the results post-treatment waste classification sampling (See Section 12.3.1.). The waste soil was shown to contain PCBs at levels below the TSCA-regulated waste limit of 50 mg/kg. After treatment and review of post-treatment waste sampling results, excavated material will be direct-loaded into lined VADOT trucks for off-site disposal, segregated by its waste classification (See Table 7-1 of this Work Plan).

8.1.2 Other Waste Streams

Other waste streams include trash, decontamination fluids, vegetation debris/mulch, PPE, and contaminated materials/disposable sampling equipment. These waste streams will be handled as detailed in the WMP. A summary of the waste stream and their management is given below. Trash will be disposed of as municipal waste at an area designated by the Navy.

Wastewater generated from personal and limited sampling equipment decontamination will be collected in DOT-approved 55-gallon drums and labeled as "Wastewater – Pending Analysis." The drums will be temporarily staged within the waste storage area. Wastewater will be sampled and analyzed as per the disposal facilities requirements and as detailed in Section 12.0 of this Work Plan to determine its waste classification.

Vegetative debris from clearing and grubbing activities will be generated. Root balls will be considered lead-contaminated and will be segregated, staged in lined, tarped rolloffs for subsequent disposal as RCRA hazardous waste. Other vegetative debris (from above the soil surface) will be chipped and used on site as mulch as directed by the NAVY.

Used PPE will be stored in labeled, DOT-approved 55-gallon drums within the waste storage area pending off-site disposal. Used PPE is considered non-hazardous solid waste.

Contaminated materials consist of materials that are covered with contaminated soil, such as soil contaminated plastic sheeting and disposable sampling equipment. These wastes will be stored in labeled, DOT-approved 55-gallon drums within the waste storage area pending off-site disposal. Contaminated materials will not be sampled and are considered RCRA hazardous waste.

9.0 SITE RESTORATION

Restoration activities will be completed for the disturbed (i.e., excavated) areas of the Site. The Access Road shoulders have been identified as wetlands according to a Jurisdictional Determination completed by the USACE. Backfill and grading of the grids along the Access Road shoulders to original grade will provide for a "temporary impact" determination by the Navy. Backfill and grading of the north and south staging areas will allow for restoration of wetland conditions. Specifically, backfill materials in wetland areas (i.e., vegetative support material, top soil) will consist of materials conducive for wetland re-

establishment and will be graded to meet surrounding elevations. A native wetland species seed mix, as approved by the Navy, will be placed onto the topsoil in the disturbed areas and covered with a thin layer of straw to protect the seed and to allow germination. Wetland plantings, other than a native wetland species seed mix, will not be completed during this site restoration.

The engineered shoulder of the newly constructed Access Road will permanently impact (i.e., take) approximately 1,400 square feet (0.03 acres) of wetlands. Because permanent impact of wetlands is less than one-tenth of an acre for the project, these wetlands will not require compensatory mitigation. The Site is located in the James River-Otter Creek hydrologic unit.

10.0 POST-CONSTRUCTION REQUIREMENTS

Post-construction requirements include the preparation and submittal of the CCR and as-built survey drawings. No other post-construction requirements are expected.

11.0 CONSTRUCTION COMPLETION REPORT REQUIREMENTS

Field activities will be summarized in a CCR. The CCR will include a compilation of daily activity forms, clean fill certificates, waste disposal manifests and load tickets, surveyed as-built drawings, and other project documentation. The CCR (Internal Draft, Draft Final and Final) will be prepared and submitted to the Navy for review, comment/revision and approval. The Draft Final version will be submitted to VDEQ. SES-TECH will incorporate regulator comments into the Final submittal.

SES-TECH will obtain access to the Navy Installation Restoration Information Solution (NIRIS) for submittal of analytical data. NIRIS Electronic Data Deliverable (NEDD) submittals will be coordinated with the NAVFAC RPM. Analytical reports will be submitted to the Navy for review prior to NIRIS submittal. Environmental spatial data (i.e., site boundary information) will be submitted in accordance with the current Non-NEDD Deliverable Submittal Guidelines

12.0 FIELD SAMPLING AND LABORATORY TESTING

Sampling and analysis will be performed in support of the NTCRA at the Site. The sampling for this project will include the following:

- Confirmatory soil sampling and laboratory analysis to characterize the concentration of total lead remaining at the bottom of the excavation areas.
- Sampling and laboratory analysis of decontamination liquids to characterize the materials for off-site disposal.

Attachment I provides a Tier 2 SAP, consisting of a FSP/QAPP, which details the protocols, methodologies, and quality assurance/quality control (QA/QC) requirements for the collection and analysis of the confirmatory samples included in this Work Plan for NTCRA. Additional sample collection and analysis details are provided below.

Samples will be analyzed by a Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP) certified laboratory approved by the Navy.

12.1 Sample Equipment Decontamination

Disposable sampling equipment will be used when possible to reduce the need for field decontamination of sampling equipment. Decontamination of non-disposable equipment used for soil sampling will be conducted between each sampling location. Decontamination procedures are detailed in the Tier 2 SAP. All decontamination wastewater/residue will be collected, containerized and analyzed for waste classification and off-site disposal.

12.2 Confirmatory Soil Sampling

It is anticipated that soils below the project's excavation limits of two feet bgs may contain lead; therefore, prior to backfilling activities, SES-TECH will collect confirmatory samples from the bottom of the excavated areas (consisting of the eighteen grids and two staging areas). The confirmatory soil samples will be collected and analyzed to characterize the lead concentrations in the soil remaining at the bottom of the excavation areas, after the two feet of surface soil is removed. Soil below two feet bgs will remain in place and will not be removed during this NTCRA. No additional soil will be excavated, even if contamination extends below the excavation depth of two feet bgs.

A total of twenty-four three-point (3:1) composite soil samples will be collected from the eighteen grids and two staging areas. The north and south staging areas will be sub-divided by area for sample collection. The 3:1 compositing of the samples is consistent with the sampling conducted on the Oceana Salvage Yard property in the past. Each confirmatory sample will consist of a composite of three locations collected within each grid or sub-divided staging area. One 3:1 composite will be collected from each of the eighteen grids, resulting in eighteen samples. The north staging area (2,433 SF) will be divided into four equal sub-areas; a confirmatory sample will be collected from each of these sub-areas, resulting in four samples. The south staging area (807 SF) will be divided into two equal sub-areas for the confirmatory sampling; a confirmatory sample will be collected from each of these sub-areas, resulting in two samples.

The confirmatory samples will be analyzed for total lead using EPA Method 6010B as detailed in the Tier 2 SAP. Sample collection procedures, QA/QC, analytical requirements, sample identification protocols, and sample shipping procedures are included in the Tier 2 SAP.

12.3 Waste Classification Sampling

Waste classification sample collection and analysis has been conducted to characterize the soil to be excavated for off-site transport and disposal, but a summary of details are presented in the next section. Waste classification sampling will be conducted on waste water generated during the NTCRA activities as per the disposal facility requirements. The analytical results along with existing analytical data will be used in preparation of the waste profile for transportation and disposal. The completed waste profiles will be submitted to Navy for review and signature followed by submittal to disposal facilities for approval as detailed in the WMP. Waste classification samples will not be included in the Tier 2 SAP.

12.3.1 Excavated Soil Sampling

Pre-excavation samples were collected from the soil in the excavation areas. Based on the results for TCLP lead analysis and a treatability study conducted on the pre-excavation samples, soil determined hazardous by pre-excavation sample analysis will be treated prior to excavation. Treatment will provide a permanent chemical stabilization of lead and reduce the contamination to non-hazardous levels in the soil.

Post-treatment samples will be analyzed for TCLP lead to confirm that the treated soil does not exceed the RCRA TCLP lead limit.

12.3.1.1 Pre-Excavation Samples

On October 5, 2011, waste characterization samples were collected in-situ from the soil in the excavation areas. Previously identified grids/areas were grouped based on the range of total lead concentrations identified in previous sampling, with Group 2 having the lowest total lead concentrations and Group 3 having the highest total lead concentrations. Total lead concentrations in Group 1 fell in between the total lead concentration ranges of Groups 2 and 3. Table 7-1 presents the ranges of lead concentrations for each group. Sample collection and analysis was conducted as per the requirements of the disposal facility. Table 7-1 of this Work Plan details how the grids and staging areas were segregated into groups and shows the waste classification, based on the October 5, 2011 waste classification sample analytical results, for Groups 1, 2, and 3.

12.3.1.2 Post-Treatment Waste Classification Samples

Soil from the thirteen grids in Groups 1 and 3 will be treated by the Ecobond® process to achieve concentrations of TCLP lead that are below the RCRA limit. One post-treatment soil sample will be collected per approximately 200 CY or less of soil for waste classification purposes. Each grid contains approximately 38 CY of soil. Four to five grids will be grouped to form composite samples, resulting in three post-treatment soil samples. One grab sample will be collected from each of the first five grids receiving treatment. The five grab samples will then be composited to form the first post-treatment sample. The second post-treatment sample will be a 4:1 composite from grab samples collected from the next four grids receiving treatment. The third post-treatment sample will be a 4:1 composite from the last four grids receiving treatment.

Post-treatment waste classification samples will be analyzed by a DoD Environmental Laboratory Accreditation Program (ELAP) certified analytical laboratory. Post-treatment sample data will be evaluated to confirm that TCLP lead levels in the treated soil do not exceed the RCRA TCLP lead limit of 5.0 mg/L. Additional treatment will be conducted for the grids that were composited to form any post-treatment sample indicating an exceedance of the TCLP lead limit.

The three initial post-treatment samples will be identified as listed below. Additional samples, if required, will be identified for each grouping by using a -1, -2, -3, etc, as the last digit in place of the "0". Sample information will be recorded in a site log book documenting sample identification, time, location, material, analyses required, etc.

OSYAR-PT-01-0
OSYAR-PT-02-0
OSYAR-PT-03-0

12.3.2 Waste Water Sampling

Waste water will consist of decontamination fluids. Waste water will be sampled to determine waste classification prior to off-site disposal. A grab sample of the waste water will be collected from the storage container (at a frequency required by the disposal facility). A clean bottle or a drum thief will be lowered into the container and the contents will be placed into the appropriate labeled sample bottles. The sample(s) will be documented and shipped using the protocols presented in the Tier 2 SAP. The waste water samples will be analyzed to meet the requirements of the disposal facility. It is anticipated that waste water will be classified as non-hazardous based on the sample analysis.

12.3.3 The first waste water sample will be identified as OSYAR-WW-1, with the last digit incrementally increasing if more than one waste water sample is required. Sample information will be recorded in a site log book documenting sample identification, time, location, material, analyses required, etc. Other Waste Streams

Trash, vegetation mulch/debris, used PPE, and contaminated material/disposable sampling equipment will not be sampled for waste classification. Refer to Section 8.0 of this Work Plan and the WMP for details on disposal requirements for these wastes.

12.4 Quality Control Procedures

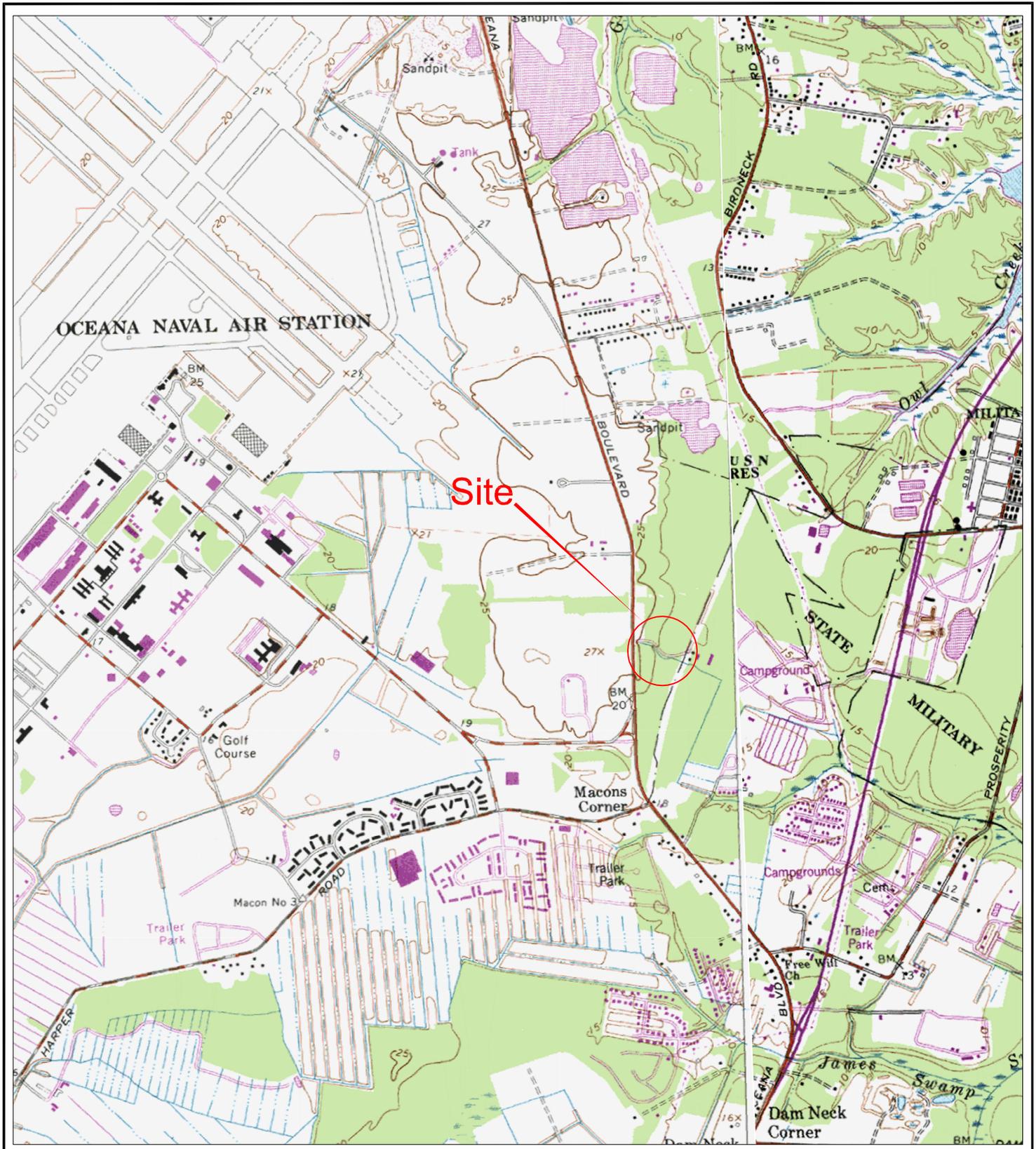
Appropriate QA/QC procedures will be implemented to ensure that the data collected are representative, defensible, and accurate for the purposes of this project. Sampling and analyses will be performed in accordance with the Tier 2 SAP to ensure attainment of project objectives and to ensure the chemical data meets the Navy QC requirements. QA/QC samples, if required, include equipment blanks and matrix spike and matrix spike duplicates. QA/QC sample details on the methodologies, sample frequencies, and the purpose of the samples is included in the Tier 2 SAP. QA/QC samples, as detailed in the Tier 2 SAP, are required when conducting the confirmatory sampling. QA/QC samples will not be collected for the waste characterization samples.

13.0 REFERENCES

- CHM2Hill. *Engineering Evaluation/Cost Analysis (EE/CA) Oceana Salvage Yard Access Road and Burial Unit*. May 2008.
- U.S. Army Corp of Engineers. *Safety and Health Requirements Engineering Manual (EM) 385-1-1*. September 2008.
- U.S. Department of Labor, Occupational Health and Safety Administration. Code of Federal Regulations (C.F.R.) Title 29. Parts 1910 and 1926 *Occupational Safety and Health Administration (OSHA) Requirements*. December 2008.
- U.S. Department of the Navy. *Environmental Restoration Program Manual*. August 2006.
- U.S. Department of Transportation. C.F.R. Title 49 Part 172.5. *Hazardous Materials Transportation Law*. October 2003.
- U.S. Environmental Protection Agency. C.F.R. Title 19 Sections (§§) 2601–2692, *Toxic Substances Control Act*. October 1976.
- U.S. Environmental Protection Agency. C.F.R Title 40 Part 300.415[b][2][iv] and [vii] *National Oil and Hazardous Substance Pollution Contingency Plan*. 1994.
- U.S. Environmental Protection Agency. C.F.R. Title 40 Section (§) 122.44(k)(2) and (4). *National Pollutant Discharge Elimination System (NPDES) Storm Water Pollution Prevention, General Permit for Discharges of Storm Water Runoff Associated with Construction, Establishing*

FIGURES

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0 2000 4000 Feet

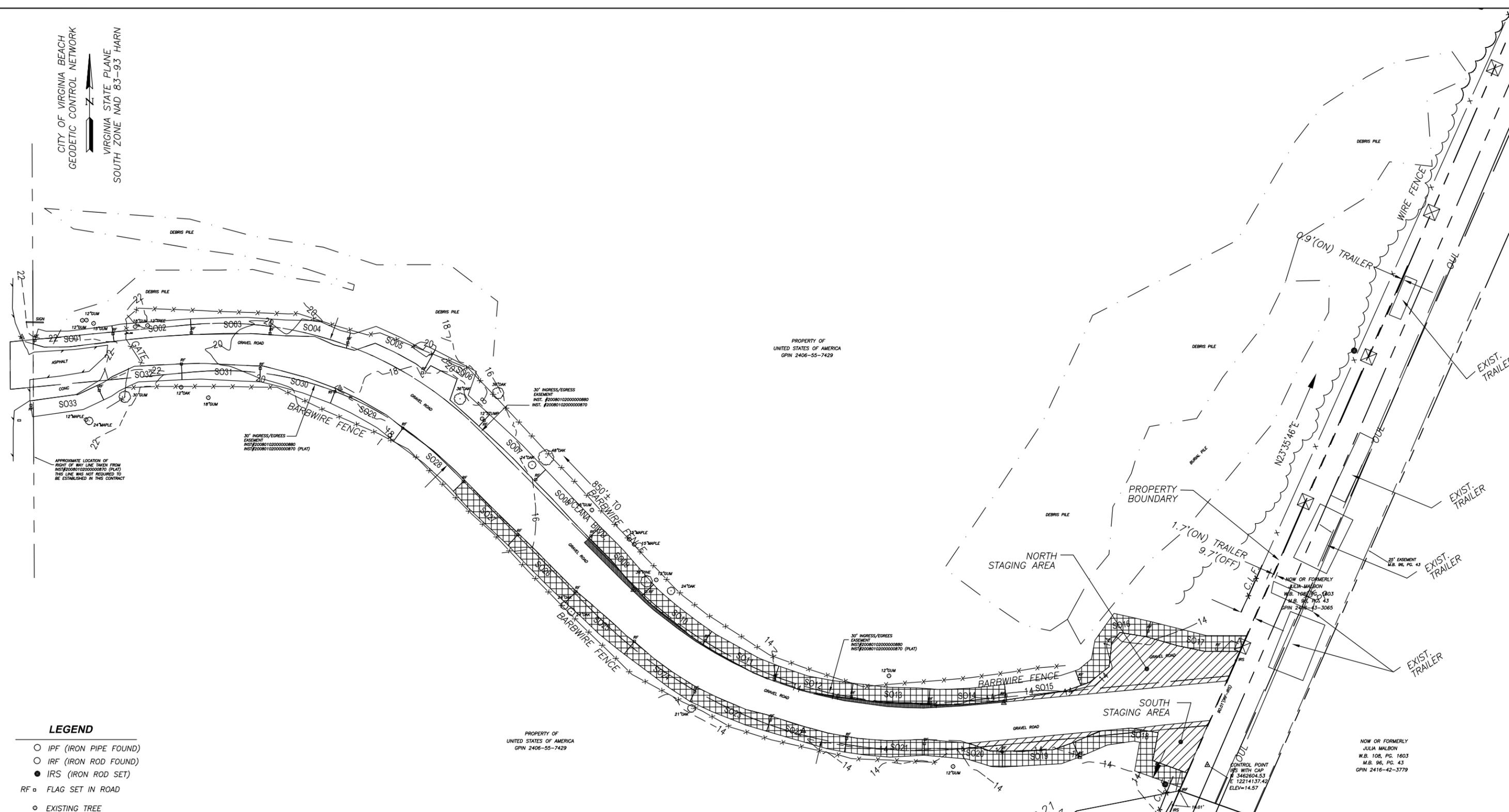


Source: U.S.G.S. Topographic Maps (7.5 Minute)
Princess Anne & Virginia Beach, VA Quadrangles

<p>NAVFAC MID-ATLANTIC Hampton Roads RAO LTM EMAC</p>
<p>NAS Oceana, Virginia Beach, VA Oceana Salvage Access Road Removal Action & Asphalt Cap</p>
<p>Figure 1 Site Location Map</p>
<p>SES-TECH Atlantic</p>

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CITY OF VIRGINIA BEACH
 GEODETIC CONTROL NETWORK
 VIRGINIA STATE PLANE
 SOUTH ZONE NAD 83-93 HARN

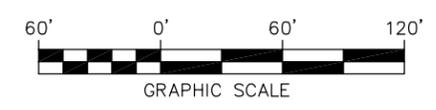


LEGEND

- IPF (IRON PIPE FOUND)
- IRF (IRON ROD FOUND)
- IRS (IRON ROD SET)
- RF □ FLAG SET IN ROAD
- EXISTING TREE
- TELEPHONE PEDESTAL
- ▨ PROPOSED EXCAVATION GRID
- ▨ STAGING AREA
- ▨ GRID CELL EXTENDED TO MATCH NEW ROAD
- SO19 EXCAVATION CELL I.D.
- ⊠ TRANSMISSION LINE POLE

NOTES:

1. SURVEY PERFORMED BY MICHAEL SURVEYING & MAPPING P.C., 735 THIMBLE SHOALS BLVD., SUITE 130, NEWPORT NEWS, VA 23606.
2. HORIZONTAL COORDINATE INFORMATION IS BASED ON CITY OF VIRGINIA BEACH GEODETIC CONTROL NETWORK. VIRGINIA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE NAD 83-93 HARN.
3. THIS PLAT IS BASED ON A CURRENT FIELD BOUNDARY SURVEY OF A PORTION OF PROPERTY LINE SHOWN.



N 3462588.21
 E 12214119.73
 TO R CORNER

S23°35'46"W
 362.73'

NAVFAC MID-ATLANTIC
 Hampton Roads RAO LTM EMAC
NAS Oceana, Virginia Beach, VA
 Oceana Salvage Access Road
 Removal Action & Asphalt Cap

Figure 2
 Site Layout Map

SES-TECH Atlantic

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ATTACHMENT A

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS DETERMINATION SUMMARY

Tables

A-1 Federal Chemical-Specific ARARs

A-2 Federal Location-Specific ARARs

A-3 Federal Action-Specific ARARs

A-4 Virginia Chemical-Specific ARARs

A-5 Virginia Location-Specific ARARs

A-6 Virginia Action-Specific ARARs

SOURCE: Engineering Evaluation/Cost Analysis (EE/CA), Oceana Salvage Yard Access Road and Burial Unit, Naval Air Station Oceana, Virginia Beach, Virginia; CH2MHill, May 2011.

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TABLE A-1

Federal Chemical-Specific ARARs

Location	Requirement	Prerequisite	Citation	ARAR Determination	Comment
There are no Federal Chemical-Specific ARARs for the Selected Remedy.					

TABLE A-2

Virginia Chemical-Specific ARARs

Location	Requirement	Prerequisite	Citation	ARAR Determination	Comment
There are no Virginia Chemical-Specific ARARs for the Selected Remedy.					

TABLE A-3

Federal Location-Specific ARARs

Location	Requirement	Prerequisite	Citation	ARAR Determination	Comment
Clean Water Act [33 USC §§ 1251-1387]^a					
Wetlands	Avoid adverse effects, minimize potential harm, and compensate for unavoidable impacts.	Existing wetland is filled in or permanently destroyed.	40 CFR 230.2(b), .10-.12, .20.32, .41, .53, .60-.77, .93, .94(c)(2)-(c)(12), .95-.98 33 CFR 320.4(a)-(d), (h), (p), (r), 332.3, 332.4(c)(2)-(c)(12),, 332.5-8	Applicable	Poor quality wetland areas are present along the 10-foot distance off the sides of the access road. Any activities conducted in wetland areas will involve restoration/compensation of wetlands.
Coastal Zone Management Act [16 USC §§ 1451-1464]^a					
Coastal zone or area that will affect the coastal zone	Federal activities must be consistent with, to the maximum extent practicable, state coastal zone management programs.	Action causes an effect in state's coastal zone.	<i>Coastal Zone Management Act</i> , 16 USC 1456(c), 15 CFR 930.30 - .33, .36(a), .39(b-d)	Applicable	Construction activities at Oceana Salvage affect the state's coastal zone, the activities will be consistent to the maximum extent practicable with the State's enforceable policies.
Migratory Bird Treaty Act [16 USC § 703]^a					
Migratory bird area	Forbids the unregulated taking of native birds, their nests, or their eggs in the United States.	Presence of migratory birds.	<i>Migratory Bird Treaty Act</i> , 16 USC 703	Applicable	If migratory birds, or their nests or eggs, are identified at Oceana Salvage, construction activities will not destroy the birds, nests or eggs.

Note, Table A-3:

a: Statutes and policies, and their citations, are provided as headings to identify general categories of potential ARARs for the convenience of the reader; listing the statutes and policies does not indicate that the DON accepts the entire statutes or policies as potential ARARs; specific potential ARARs are addressed in the table below each general heading; only pertinent substantive requirements of the specific citations are considered potential ARARs.

TABLE A-4

Virginia Location-Specific ARARs

Location	Requirement	Prerequisite	Citation	ARAR Determination	Comment
General Provisions Relating to Marine Resources Commission [VA Code Ann. §§ 28.2-1300 to 1320 (1998)]^a					
Wetlands	Compensation or mitigation for permanent loss of wetlands will be determined on a case-by-case basis.	Permanent loss of wetlands	<i>Wetlands Mitigation Compensation Policy, 4 VAC 20-390-30 to 50</i>	Applicable	Wetlands are present at Oceana Salvage. Any construction activities conducted in wetlands will involve restoration to natural conditions. If permanent loss of wetlands occurs, compensation or mitigation will be determined based on this regulation.
State Water Control Law [VA Code Ann. §§ 62.1-44.2 to 44.34:28 (2003)]^a					
Wetlands	Activities performed in a wetland will comply with these requirements.	Activities may be performed in a wetland.	<i>Virginia Water Protection Permit Program, 9 VAC 25-210-50</i>	Applicable	Any wetland activities will be conducted in accordance with this regulation.

Note, Table A-4:

a: Statutes and policies, and their citations, are provided as headings to identify general categories of potential ARARs for the convenience of the reader; listing the statutes and policies does not indicate that the DON accepts the entire statutes or policies as potential ARARs; specific potential ARARs are addressed in the table below each general heading; only pertinent substantive requirements of the specific citations are considered potential ARARs.

TABLE A-5

Federal Action-Specific ARARs

Action	Requirement	Prerequisite	Citation	ARAR Determination	Comment
Clean Water Act [33 USC §§ 1251-1387]^a					
Discharge of dredge-and-fill	No discharge of dredged or fill material will be allowed unless appropriate and practicable steps are taken that minimize potential adverse impacts of the discharge on the aquatic ecosystem.	Discharges of dredged or fill material to surface waters, including wetlands.	40 CFR 230.2(b), .10.12, .20-.32, .41, .53, .60-.77, .93, .94(c)(2)(c)(12), .95-.98 33 CFR 320.4(a)-(d), (h), (p), (r), 332.3, 332.4(c)(2)-(c)(12),, 332.5-8	Applicable	Construction operations that result in filling of adjacent wetlands will be conducted in accordance with these regulations.

Note, Table A-5:

a: Statutes and policies, and their citations, are provided as headings to identify general categories of potential ARARs for the convenience of the reader; listing the statutes and policies does not indicate that the DON accepts the entire statutes or policies as potential ARARs; specific potential ARARs are addressed in the table below each general heading; only pertinent substantive requirements of the specific citations are considered potential ARARs.

TABLE A-6

Virginia Action-Specific ARARs

Action	Requirement	Prerequisite	Citation	ARAR Determination	Comment
Stormwater Management Act [VA Code Ann. §§ 10.1-562 – 573 (2005)]^a					
Construction activities that disturb one acre or more of land.	Procedures, requirements, and Best Management Practices to be followed in connection with construction activities.	Construction activities that disturb one acre or more of land.	<i>Stormwater Management Regulations</i> , 4VAC 50-60-50-80 , 300, 310, 420, 430, 1100 to 1140, 1160, 1170, 1182, 1186	Applicable	If construction activities disturb one acre or greater of land, a site-specific stormwater management plan will be developed for these activities. The Navy will follow the substantive, but not procedural requirements of the regulation.
Erosion and Sediment Control Law [VA Code Ann. §§ 10.1-1300 to 1326 (1998)]^a					
Construction activities that disturb 10,000 sq ft or more of land.	Regulations for the effective control of soil erosion, sediment deposition and nonagricultural runoff which must be met in any control program to prevent the unreasonable degradation of properties, stream channels, waters and other natural resources.	Construction activities that disturb 10,000 sq ft or greater of land.	<i>Erosion and Sediment Control Regulations</i> , 4 VAC 50-30-40, 60.A	Relevant and Appropriate	If construction activities disturb at least 10,000 sq ft, an erosion and sediment control plan will be established to monitor and prevent erosion of soils to adjacent water bodies.
Virginia Waste Management Act [VA Code Ann. §§ 10.1-1400 to 1457 (2004)]^a					
Waste/soil/water and Handling, Storage, treatment, and disposal of Investigative Derived Waste (IDW)	Wastes to be managed must be sampled for appropriate waste characterization, storage, and disposal requirements.	Management of wastes.	<i>Solid and Hazardous Waste Regulations</i> 9 VAC 20-60-261 (incorporating 40 CFR Part 261) (hazardous waste identification) 9 VAC 20-62-262 (incorporating 40 CFR Parts 262.11 and 262.34) (generator requirements) 9 VAC 20-80-140, 150, 240.C	Applicable	This remedy will consist of on-site stabilization of the hazardous material and characterization via Toxicity Characteristic Leaching Procedure (TCLP) to confirm that the stabilized material is non-hazardous prior to onsite soil immobilization.
Air Pollution Control Board [VA Code Ann. §§ 10.1 -1300 to 1326 (1998)]^a					
Fugitive dust caused by construction activities	Reasonable precautions will be taken to prevent particulate matter from becoming airborne.	Fugitive dust emission from disturbance of soil, treatment of soil or water, or other pollutant management activities.	<i>Standard for Fugitive Dust/Emissions</i> , 9 VAC 5-50-90	Applicable	Fugitive dust caused by construction activities will be managed according to this requirement.

Note, Table A-6:

a: Statutes and policies, and their citations, are provided as headings to identify general categories of potential ARARs for the convenience of the reader; listing the statutes and policies does not indicate that the DON accepts the entire statutes or policies as potential ARARs; specific potential ARARs are addressed in the table below each general heading; only pertinent substantive requirements of the specific citations are considered potential ARARs.

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ATTACHMENT B

QUALITY ASSURANCE AND CONTROL PLAN

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**DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, ATLANTIC
REMEDIAL ACTION OPERATIONS (RAO)/LONG TERM MANAGEMENT (LTM),
ENVIRONMENTAL MULTIPLE AWARD CONTRACT (EMAC)
CONTRACT NO. N40085-11-D-0043
TASK ORDER NO. 0001**

**FINAL
QUALITY ASSURANCE AND CONTROL PLAN
FOR
OCEANA SALVAGE YARD ACCESS ROAD
NON-TIME-CRITICAL REMOVAL ACTION
AT
NAVAL AIR STATION OCEANA
VIRGINIA BEACH, VA**

Issued:

March 26, 2012

Prepared for:

Department of the Navy
Naval Facilities Engineering Command, Mid-Atlantic
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DCN: SESTECH-RAO/LTM-12-0021

Revision	Date	Prepared By	Approved By	Pages Affected
00	3/26/12	E. Casey	S. Patselas	All

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LIST OF ACRONYMS AND ABBREVIATIONS

AHA	Activity Hazard Analysis
APP	Accident Prevention Plan
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CIH	Certified Industrial Hygienist
CMT	Construction Management Technician
CO	Contracting Office
CQC	Contractor Quality Control
CQCR	Contractor Quality Control Report
CTO	Contract Task Order
DCN	Design Change Notice
DFW	definable feature of work
DoD	United States Department of Defense
Navy	Department of the Navy
EHS	Environmental Health and Safety
EM	Engineer Manual
FEAD	Facilities Engineering and Acquisition Division
FCR	Field Change Request
MSDS	Material Safety Data Sheet
NCR	Nonconformance Report
PCQC	Project Contractor Quality Control
PESM	Project Environmental Safety Manager
PM	Project Manager
PQCM	Project Quality Control Manager
PRC	preliminary remediation criteria
QA	quality assurance
QAO	Quality Assurance Officer
QC	quality control
QCPM	Quality Control Program Manager
QP	Quality Program
PESM	Project Environmental Safety Manager
RCRA	Resource Conservation and Recovery Act
RPM	Remedial Project Manager
SSHO	Safety and Health Officer
SSHP	Site Safety and Health Plan
SES-TECH	SES-TECH Atlantic
SES	Sealaska Environmental Services, LLC.
SOW	scope of work
SWDA	Solid Waste Disposal Act

TO	Task Order
TSCA	Toxic Substances Control Act
TtEC	Tetra Tech EC, Inc.
UFGS	Unified Facilities Guide Specification

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1.0 INTRODUCTION

SES-TECH has prepared this Quality Assurance and Control Plan (QACP) for performing a Non-Time Critical Removal Action (NTCRA) at the Naval Air Station (NAS) Oceana, located in Virginia Beach, Virginia. The NTCRA includes in-situ chemical stabilization and excavation of contaminated soils, off-site disposal of excavated contaminated soils, backfill of excavated areas with off-site clean fill, and the construction of a gravel and asphalt cap over the existing Oceana Salvage Access Road. The NTCRA will be performed by SES-TECH Atlantic (SES-TECH), a joint venture between Sealaska Environmental Services, LLC (SES) and Tetra Tech EC, Inc. (TtEC) under the Naval Facilities Engineering Command Mid-Atlantic (NAVFAC MIDLANT) Remedial Action Operation (RAO) Long Term Monitoring (LTM) Environmental Multiple Award Contract (EMAC), Contract No. N40085-11-D-0043, Task Order (TO) No. 0001.

This QACP establishes the procedures and methods to be implemented for the specific activities pertaining to NTCRA at the Naval Air Station (NAS) Oceana, Virginia. This QACP will be considered one of the contract documents for this project. The purpose of this QACP is to specify the methods, procedures and frequency of inspection and testing activities to verify the quality of the construction activities during this project in accordance with the basic provisions of the EMAC Program Quality Control Management Plan for the NAVFAC MIDLANT EMAC. Project data and information collected will be used as the basis to verify that the construction has been completed in accordance with the Contract Drawings and Technical specifications (i.e., Oceana Project Drawings and Removal Action Design Specifications) and the Work Plan for Oceana Salvage Yard Access Road NTCRA (Work Plan).

The Quality Control (QC) program outlined in this QACP was developed to verify that the placement and quality of the materials used in construction are in compliance with the Contract Drawings and Technical Specifications. This QC program applies to all definable features of work (DFW) performed by SES-TECH on this project as well as all subcontractors to SES-TECH.

1.1 Purpose

The NTCRA will be performed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Virginia Department of Environmental Quality (VDEQ) regulations. The United States (U.S.) Department of Navy (Navy) is the lead agency responsible for the NTCRA.

The NTCRA was designed to ensure that contaminated soils are remediated and/or capped with a protective cover to protect human health. The work to be performed at the Site is consistent with the Draft (addresses Navy and privately owned Oceana Salvage Yard property) Administrative Settlement and Order on Consent for Removal Response Action, Oceana Salvage Yard Site, Docket No. CERC-032007-0130DC, which was prepared by USEPA Region III for the site and is in accordance with CERCLA and the National Oil and Hazardous Substances Contingency Plan (NCP).

The QACP is applicable to all DFW listed in Section 3.0. All work activities will be conducted in accordance with this QACP and the Work Plan.

1.2 Background

NAS Oceana, located in Virginia Beach, Virginia, has been in existence since 1940 when it was established as a small auxiliary airfield. Since 1940, NAS Oceana has grown to more than 16 times its original size and is now a 6,000-acre master jet base supporting a community of more than 9,100 Navy personnel and 11,000 dependents. The primary mission of NAS Oceana is to provide the personnel, operations, maintenance, and training facilities to ensure that fighter and attack squadrons on aircraft carriers of the U.S. Atlantic Fleet are ready for deployment.

The Site is not within the gated portion of the base, but it is owned by the Navy. Oceana Salvage Yard (privately owned property) is located within the buffer zone of NAS Oceana, to the east of Oceana Boulevard, Figure 1. Because Navy property land-locks Oceana Salvage Yard, the Access Road to Oceana Salvage is on Navy property; Oceana Salvage maintains an easement to allow access.

The Site consists of a gravel and soil roadway and shoulders surrounded by minimal wetland areas and wooded areas. The entrance to the Site and start of the Access Road is to the east of and just off Oceana Blvd. The Access Road travels east across the Site and for the NTCRA areas, ends just before the road opens to the Oceana Salvage Yard property parking and building areas at the east end of the Site.

The Oceana Salvage Yard Access Road was first investigated as part of an Environmental Survey of the entire salvage yard. During this investigation, several soil samples were collected within the Access Road and analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), and inorganics. Lead was detected in soil from waste piles at concentrations of up to 86,500 milligrams per kilogram (mg/kg). Interviews of salvage yard personnel indicated that a large volume of crushed car battery casings were brought to the salvage yard in the 1960s and were used as fill material for the road base.

In January 2005, the Navy completed a direct-push investigation to verify whether the Access Road was actually constructed on crushed car batteries. Direct-push samples were collected at twenty-five locations along the roadway to a depth of four feet (ft) below ground surface (bgs). Waste containing battery casings was encountered at all but one sample location. Battery fragments were encountered between approximately 0.1 and 3 ft bgs. The average depth to the bottom of the batteries was approximately 2.5 ft bgs, with batteries extending to 3.0 ft bgs at two locations. The thickness of the layer of battery fragments was approximately 0.5 ft to 1.0 ft. All soil samples were field screened for lead using field test kits. The majority of the samples exceeded the field test kit maximum detection limit of 400 mg/kg. Four soil samples were collected for laboratory lead analysis. Concentrations of lead detected in these samples ranged from 18.1 mg/kg to 149,000 mg/kg. Lead concentrations detected were found above the residential soil screening level of 400 mg/kg from United States Environmental Protection Agency's (USEPA) Regional Screening Level (RSL) Table (USEPA, 2010) and therefore were determined to potentially pose unacceptable risks to human receptors.

In 2007, the USEPA drafted a Draft Administrative Settlement and Order on Consent for Removal Response Action (Draft Settlement Agreement) (USEPA, 2007) to implement actions to prevent exposure to contaminants potentially posing unacceptable risk to human health related to lead contamination in soil, defined as soils exceeding 800 mg/kg (lead), beneath the Oceana Salvage Access Road (including the improved staging areas at the east end of the Access Road) and the Access Road shoulders (strips of land extending ten feet from the edges of either side of the Access Road to a maximum depth of two feet bgs).

In 2010, the Navy delineated areas of lead contamination, as defined in the USEPA's Draft Settlement Agreement. To delineate the shoulders of the Access Road, a total of thirty-five grids were established along both sides of the Access Road/staging areas. Each grid extended ten feet from the edge of the Access Road/staging areas and had a length of fifty feet (approximate) along the Access Road/staging areas. Three point composite samples were collected to a depth of two feet bgs. Of the thirty-five grids delineated and sampled, eighteen grids were determined by the Navy to exceed the USEPA Draft Settlement Agreement's action level, Figure 2.

An Engineering Evaluation/Cost Analysis (EE/CA) for a NTCRA for the Oceana Salvage Yard Access Road and Burial Unit (CHM2Hill, May 2011) was prepared to evaluate alternatives and document the selected alternative and decision to take action. The general approach for the NTCRA for the Oceana Salvage Yard Access Road provided to SES-TECH Atlantic through the Navy solicitation package is also presented in the EE/CA and does not include the Burial Unit or non-roadway debris. The NTCRA also does not address groundwater.

The objective of the construction activity associated with this NTCRA is to prevent exposure to contaminants potentially posing unacceptable risk to human health related to lead contamination in soil beneath the Oceana Salvage Access Road, the staging areas at the east end of the Access Road, and the Access Road shoulders (strips of land extending ten feet from the edges of either side of the Access Road to a maximum depth of two feet bgs. For purposes of this NTCRA, 800 mg/kg (lead), as defined in the Draft Settlement Agreement (USEPA, August 2007) is the project action level,

2.0 PROJECT ORGANIZATION, RESPONSIBILITY, POINTS OF CONTACT

The organizations involved in this project include NAVFAC MIDLANT and the Contractor, SES-TECH.

This section describes the organization and authority of project personnel. The organizational structure, functional responsibilities, levels of authority, and lines of communication within the organization have been established to ensure high-quality work. The project organization chart showing the reporting lines for key personnel is provided in Figure 2. The responsibilities of key personnel are described in the following subsections. A listing of the point of contact for the project is provided in Section 2.

The roles of the CQC personnel are described within this QACP.

2.1 Remedial Project Manager

The Remedial Project Manager (RPM) has primary responsibility with the Navy for day-to-day management of the project activities performed under this Work Plan and for its successful completion.

The RPM is Ms. Krista Parra.

2.2 Quality Assurance Officer

The Quality Assurance Officer (QAO) is the Navy representative with primary responsibility for ensuring that the contract-required quality assurance (QA) measures are in place and effective for the work performed.

The QAO is Ms. Krista Parra. The QAO is responsible for the following:

- Provide formal technical direction to the SES-TECH project team, as needed.
- Coordinate with other RPMs for other projects being performed to ensure that proper controls are in place.
- Act as lead in interacting with regulatory agencies
- Review and approve Sampling and Analysis Plans.
- Provide Navy oversight of the SES-TECH QA Program.
- Provide quality-related directives through the Contracting Officer.
- Act as the point of contact for matters pertaining to generating data and maintaining the quality of data.
- Authorize the suspension of project execution if QA requirements are not adequately met.

2.3 Facilities Engineering and Acquisition Division

The Facilities Engineering and Acquisition Division (FEAD) is the Navy representative with the primary responsibility for providing on-site QA and safety oversight of contractors.

The FEAD is Mr. Harold Bishop. The FEAD is responsible for the following:

- Perform project management for the Navy.
- Ensure the project scope of work (SOW) requirements are fulfilled.
- Oversee the project cost and schedule.
- Verify that all work has been completed per contract and technical specifications prior to final government acceptance.
- Perform ongoing field inspection to verify that all work is in compliance with both contract and technical specifications.
- Notify the contractor of any work not in compliance.
- Notify the contractor of any work being performed in an unsafe manner.

- Interact with the contractor's Project Quality Control Manager (PQCM) on quality-related issues.
- Review and sign waste manifests as the generator's representative.
- Review Contractor Daily Reports for completeness and accuracy.
- Attend preparatory phase, initial phase, pre-final, and final acceptance inspections.
- Attend weekly QC meetings.

2.4 Program Manger

The SES-TECH Program Manager's responsibilities include overseeing TOs for remedial actions. The Program Manger is empowered with full decision authority and he is accountable for project success and execution. Program Manager duties include monitoring and controlling project costs and QC; assigning personnel consistent with contract requirements; understanding and assuring compliance with the CERCLA, RCRA, Toxic Substances Control Act (TSCA), Solid Waste Disposal Act (SWDA), and U.S. Department of Defense (DoD) Explosives Safety Standards 6055.9 regulations and guidance as well as their state counterparts, and other applicable or relevant and appropriate requirements; and performing as SES-TECH Corporate's Program contract representative. The Program Manager provides general contract oversight of the setup and management of the EMAC contract.

Mr. Peter McCormick is the Program Manager. Specifically, the Program Manager is responsible for the following:

- Ensuring that a technically sound approach on each project has been chosen.
- Determining staffing requirements and balancing resource needs among multiple projects.
- Executing the work in a cost-effective and safe manner to meet the client's expected level of quality.
- Ensuring that work planning and execution are compliant with regulations and SES-TECH policy and procedures.
- Ensuring that all work performed is compliant with contract terms and conditions.
- Preparing annual performance evaluations for remediation staff providing performance input to functional managers for non-remediation staff.
- Participating in decisions regarding non-remediation staffing selections and promotions.
- Participate in TO negotiations.

2.5 Project Manager

The Project Manager (PM) is the SES-TECH representative responsible for the direction, execution, and successful completion of project tasks to achieve overall project goals. The PM has responsibility for and the authority to direct all segments of the project including technical, construction, and administrative activities.

The PM is Mr. John Dormi. The PM is responsible for the following:

- Coordinate work activities of subcontractors and SES-TECH personnel and ensure that all personnel adhere to the administrative and technical requirements of the project.
- Monitor the status and progress of work and ensure that project deliverables are completed on time and within the project budget.
- Monitor the budget and schedule, and notify the client and the Program Manager of any changes that may require administrative actions.
- Ensure adherence to the quality requirements of the contract, project scope of work, and the QC plans.
- Ensure that all work meets the requirements of the work plans, procedures, and technical specifications and complies with applicable codes and regulations.
- Ensure that all work activities are conducted in a safe manner in accordance with the Accident Prevention Plan (APP)/Site Safety and Health Plan (SSHP) – Safety and Health Requirements (Engineer Manual [EM]-385-1-1) (USACE 2008), and all applicable Occupational Safety and Health Administration (OSHA) regulations.
- Ensure that change conditions are properly identified and documented with the appropriate approvals.
- Serve as the primary contact with the Navy and SES-TECH for actions and information related to the work and make sure to include appropriate SES-TECH lead and experts in decision-making.
- Coordinate satisfactory resolution and completion of evaluation and acceptance for Nonconformance Reports (NCRs).
- Attend required meetings

2.6 Project Environmental Safety Manager

The Project Environmental Safety Manager (PESM) is the SES-TECH representative responsible for implementing and overseeing the Contract Health and Safety Program and for developing, implementing, and approving all APPs/SSHPs. Any changes to the established Contract Health and Safety Program or APP/SSHP must be at the direction and approval of the PESH, with concurrence of the Navy Administrative Contracting Officer. The PESH or designee will not necessarily be on-site during all remedial activities but will be readily available for consultation when required.

The PESH or designee is a Certified Industrial Hygienist (CIH) who is certified by the American Board of Industrial Hygiene. The PESH supervises and directs the activities of the Site Safety and Health Officer (SSHO). The PESH has the authority to stop unsafe operations, remove unqualified personnel from the work area, and approve changes to the APP/SSHP.

The PESH is Mr. Roger Margotto. The PESH is responsible for the following:

- Oversee all aspects of the APP/SSHP from development to implementation.
- Advise the SSHO on all related health and safety matters.

- Review site-specific plans for completeness and compliance.
- Review other site documents as they affect health and safety (e.g., Activity Hazard Analyses [AHAs] and sampling plans).
- Review and evaluate all monitoring results.
- Establish and monitor all related health and safety procedures through site safety inspections and audits.
- Ensure that SES-TECH employees receive required environmental health and safety (EHS) regulatory training.
- Fulfill specific responsibilities for project EHS personnel that are identified within each EHS procedure.
- Function as a technical resource for all environmental compliance, safety, loss control, and industrial hygiene issues.

2.7 Quality Control Program Manager

The Quality Control Program Manager (QCPM) is the SES-TECH representative responsible for the oversight of program QC, including field activities and data acquisition.

The QCPM is Mr. Greg Joyce. The QCPM is responsible for the following:

- Coordinate and resolve quality concerns.
- Provide quality-related direction and ensure the training of the POCM and others performing quality-related functions.
- Suspend project activities if quality standards are not maintained.
- Interact with the Navy, including the QAO, on quality-related issues.
- Review audit and surveillance reports.
- Implement the Navy technical directives related to quality.

2.8 Site Superintendent

The Site Superintendent is a SES-TECH representative who reports to the PM and is responsible for coordinating, directing, implementing, and supervising site construction activities. The Site Superintendent or designated representative will be on-site at all times during field activities.

The Site Superintendent is Mr. Jerrett Patterson. The Site Superintendent is responsible for the following:

- Implement field activities in accordance with the Work Plan.
- Direct support personnel and subcontractors.
- Administer site access and communication.
- Maintain the work site, facilities, vehicles, and equipment.
- Coordinate work activities and ensure all personnel adhere to the administrative and technical requirements of the project.
- Prepare status reports and estimate future scheduling needs.

- Prepare daily Contractor Production Reports.
- Monitor the status and progress of field activities and ensure that project deliverables are completed on time and within the project budget.
- Ensure work activities in the field are conducted in a safe manner in accordance with the APP/SSHP.
- Investigate with the SSHO all incidents, accidents, injuries, illnesses, and near misses

2.9 Project Quality Control Manager (PQCM)

The PQCM is the SES-TECH representative responsible for overall management of project QC and reports to the QCPM. The PQCM has the authority to stop work on site-related issues affecting the quality of the work performed and for directing the correction of all nonconforming work. The PQCM or designated representative will be on-site at all times during field activities.

The PQCM's delegation of authorization letter and resume are found in Appendix 2.

The PQCM is Mr. John Dormi. The PQCM is responsible for the following:

- Provide and maintain an effective QC system for all site activities.
- Monitor QC activities to ensure conformance with authorized policies, procedures, contract specifications, required standards, and methods of quality construction.
- Prepare the daily Contractor Quality Control Reports (CQCRs).
- Coordinate and perform the three phases of inspection (preparatory, initial, and follow-up) for all DFWs.
- Responsible for issuance, maintenance, and enforcement of NCRs and other quality actions.
- Ensure that on-site and off-site inspections, testing, and sampling are performed in accordance with the plans, procedures, specifications, and applicable codes.
- Ensure that all required tests and inspections are performed and documented.
- Conduct required QC meetings, including the coordination and mutual understanding meeting, site survey visit, and other scheduled meetings.
- Coordinate and maintain submittal register, photograph log sheet, request for information, and NCR log and other required logs or registers.
- Review and maintain records of approved submittals, Design Change Notices (DCNs), and Field Change Requests (FCRs) for construction activities.
- Inspect material delivery handling and storage in accordance with technical specifications.
- Review and approve submittals and shop drawings and/or forward submittals as information only or for approval.
- Review project plans and procedures for quality issues.
- Confirm the removal or rework of material, equipment, or work activity that is not in compliance with plans and specifications.

2.10 Site Safety and Health Officer (SSHO)

The SSHO is the SES-TECH representative who reports directly to the PESM and ensures all elements of the APP/SSHPs are implemented and enforced on-site. The SSHO has full authority to issue stop work orders or evacuation orders when work operations or noncompliance(s) may threaten the health and safety of site workers or the public.

The SSHO is Jerrett Patterson. The SSHO is responsible for the following:

- Ensure that all personnel understand the requirements of the SES-TECH EHS program and procedures through training and communication.
- Investigate with the Site Superintendent all incidents, accidents, injuries, illnesses, and near misses.
- Ensure project personnel are trained in the hazards of substances used on the project, maintain Material Safety Data Sheets (MSDSs) and make them accessible to project personnel, and perform inspections and oversight to ensure the Waste Management Plan is being followed.
- Ensure tailgate safety meetings are conducted daily prior to start of work and are documented.
- Ensure project safety equipment is inspected and in good working order as required by the EHS program.
- Coordinate site health and safety requirements as the Site Superintendent with the PM.
- Ensure that all health and safety monitoring equipment and personal protective equipment are maintained and direct site-monitoring activities.
- Coordinate daily field activities with the Site Superintendent.
- Coordinate site safety and emergency response duties and verify site communications system with site personnel.
- Report incidents to the FEAD as required by EM 385-1-1 (USACE 2008).
- Report immediately to the PM, RPM, and FEAD any fatal injury, persons admitted to a hospital, or damage to government property.
- Ensure all personnel have the required training and medical clearance prior to entering the exclusion zone at the site; inform the Site Superintendent of any site personnel with medical restrictions.
- Determine and post routes to medical facilities and telephone numbers for emergency transportation to medical facilities.
- Serve as the Project Hazard Communication Coordinator.
- Maintain training records and medical certifications for all on-site personnel, including subcontractors.
- Initiate revisions or changes to the APP/SSHP to support changing site conditions.
- Maintain site control procedures.
- Maintain current records of certification for first aid and cardiopulmonary resuscitation training for field personnel.

- Attend meetings, including the preconstruction conference, weekly QC meetings, pre- and post-construction site inspections, and other project meetings.

2.11 Program Chemist

The Program Chemist is the SES-TECH representative who oversees sample collection, handling, analysis, and analytical data reporting.

The Program Chemist is Lynn Caragan. The Program Chemist is responsible for the following:

- Develop the Sampling and Analysis Plan.
- Evaluate and select qualified subcontract laboratories.
- Implement data QC procedures.
- Review off-site laboratory data prior to use.
- Ensure that a proper review of on-site laboratory data is performed.
- Prepare analytical reports and supporting project reports.

The Project Chemist will assist the Program Chemist with implementing the above responsibilities during on-site activities. The Project Chemist is Loren Casale.

2.12 Subcontractors and Vendors

Qualified subcontractors may be selected to provide various services for this project. The subcontractor is required to provide labor, material, and equipment necessary to conduct construction activities as directed by the PM. Subcontractors and vendors will be required to conform to SES-TECH's quality requirements of all approved procedures, technical specifications, and contract provisions.

The subcontractor is responsible for field inspection of their construction and operating activities. SES-TECH personnel will monitor, oversee, and make on-site observations and inspections of work in progress to determine whether the subcontractor's work is proceeding in accordance with SES-TECH's quality requirements.

Subcontractor personnel are responsible for maintaining a daily log of the project activities they perform and for providing information needed to complete the Daily CQC Report. All inspection records, including inspection reports, deficiency reports, and re-inspections of corrective actions, will be documented.

2.13 Points of Contact

The following is a list of the key project contacts:

Table 2-1 Project Points of Contacts

Name and Organization	Title	Address	Phone Number
Krista Parra, NAVFAC	Remedial Project Manager	9742 Maryland Avenue Norfolk, VA 23511-3095	(757) 341 0395
Harold Bishop, NAVFAC	NAS OCEANA FEAD	953 Hornet Drive, Bldg 820, Rm 213 Virginia Beach, VA 23460- 2190	(757) 433 2618 (office) (757) 342-4295 (cell)
TBD, NAVFAC	Quality Assurance Officer	TBD	TBD
Peter McCormick, SES-TECH	Program Manager	P.O. Box 869 Poulsbo, WA 98370	(360) 930-3301 (office) (206) 948-5738 (cell)
John Dormi, SES-TECH	Project Manager/Project Quality Control Manager	Twin Oaks 1 5700 Lake Wright Dr., Ste 309 Norfolk, VA 23502	(757) 461-3930 (office) (757) 685-9566 (cell)
Greg Joyce, SES-TECH	Quality Control Program Manager	1230 Columbia St., Ste. 750 San Diego, CA 92101-8536	(619) 471-3530 o (360) 780-3571 c
Stavros Patselas, SES-TECH	Technical Manager	820 Town Center Drive, Suite 100 Langhorne, PA 19047	(215) 702-4099
Roger Margotto, SES-TECH	Project Environmental Safety Manager	1230 Columbia St., Ste. 750 San Diego, CA 92101	(619) 471-3503
Jerrett Patterson, SES-TECH	Site Superintendent/ Site Safety and Health Officer	1050 NE Hostmark St. Ste. 202 Poulsbo, WA 98370	(360) 434-5449
Lynn Caragan, SES-TECH	Program Chemist	P.O. Box 869 Poulsbo, WA 98370	(619) 889-7902
Loren Casale, SES-TECH	Project Chemist	1000 The American Road Morris Plains, NJ 07950	(973) 630-8012

3.0 DEFINABLE FEATURES OF WORK

A DFW is defined as an activity or task separate and distinct from other activities that requires separate control activities. The DFW establishes the control measures required to verify both the quality of work performed and compliance with specified requirements, which include inspecting materials and workmanship before, during, and after each DFW.

Preparatory and Initial inspections will be performed on all DFWs, with the exception of mobilization and demobilization (site cleanup and final inspection). Follow-up inspections will be performed as needed and documented on the Contractors Daily Report.

3.1 Project Tasks

The project consists of tasks required to perform a NTCRA, specifically, lead contamination in soil beneath the Oceana Salvage access road. This removal action includes, the staging areas at the east end of the access road, and the access road shoulders (strips of land extending ten feet from the edges of either side of the access road to a maximum depth of two feet bgs). For purposes of the this removal action, 800 mg/kg (lead), as defined in the Draft Administrative Settlement and Order on Consent for Removal Response Action Order (EPA, August 2007), is the action level established for this project.

The following tasks are required to meet this objective are listed below. The tasks compromise the DFW. Specific details on performing these activities are included the Work Plan for Oceana Salvage Yard Access Road NTCRA and the Project Drawings and the Removal Action Design Specifications. Other project plans detailing specific requirements to perform the activities were also prepared and are listed in the Work Plan.

- Mobilization, including underground utility clearance, site control/traffic control, and erosion and sediment control measures
- Clearing and Grubbing
- In-situ treatment of soil in grids determined hazardous waste by pre-excavation TCLP lead analysis
- Excavation of the shoulder and staging areas and soil management
- Confirmatory soil sampling
- Excavation backfilling and regrading
- Installation of the engineered shoulders and Access Road asphalt cap
- Waste management
- Decontamination
- Restoration of the Access Road, Access Road shoulders, and staging areas
- Site survey
- Demobilization

Subcontracted activities will likely include:

- Utility Clearance/Geophysical Survey
- Survey
- In-Situ Treatment
- Excavation/Earthwork
- Backfill/Material Supply
- Asphalt Paving
- Transportation and Disposal
- Analytical Laboratory

3.2 Table of Definable Features of Work

The following table identifies the

Table 3-1 Definable Features of Work

Mobilization	Mobilize personnel, equipment and materials to the Site.
Underground Utility Clearance	Review available utility drawings, perform Miss Utility Call, perform geophysical survey to identify underground utilities
Implement site control and site traffic control	Implement site access controls such as signage and barriers to control access to the site for the public, Oceana Salvage Yard personnel and site personnel. Implement Traffic Control Plan to control flow of site traffic.
Install erosion and sediment control measures	Install silt fence in accordance with Storm Water Pollution Prevention Plan and Soil Erosion and Sediment Control Plan. Install soil erosion and sediment control around clean backfill materials staging area as needed.
Clearing and Grubbing	Perform clearing and grubbing in excavation areas.
In-situ treatment of soil in grids determined hazardous waste by pre-excavation sampling	Treat the soil by a chemical metal stabilization treatment process that requires mixing of Ecobond® Pb into the soil by mechanical means (i.e., spread over the soil and mixed into it with the excavator bucket).
Post-treatment soil sampling	Collect soil samples from the treated soil to confirm that soil has been treated to non-hazardous levels and for waste classification.
Excavation of the shoulder and staging areas and soil management	Excavate soils to a depth of two feet bgs in the eighteen designated grids for removal action along the shoulders of the access road as well as the north and south staging areas identified as having lead concentrations above the project action level of 800 mg/kg lead. Place orange barrier fabric to demarcate the bottom of the excavation.

Confirmatory soil sampling	Collect confirmatory samples from the surface soil at the bottom of the excavations to characterize the concentrations of lead in the soils at the bottom (and remaining in) the excavations. No additional excavation to be conducted based on confirmatory sample results.
Excavation backfilling and regrading	Install 18-inches of general backfill/vegetative support material with a 6-inch cover of stone or top soil in the excavated areas. Stone will be place and sloped to create engineered shoulders. Top soil will be placed and graded to cover the excavated/backfilled areas. Grade areas to meet specifications for engineered shoulders or to approximate original grade for the remaining shoulder areas.
Installation of the shoulders and Access Road asphalt cap	Install five inches of an asphalt concrete base course over a 6-inch aggregate base course to create a paved twenty-four foot Access Road with stone shoulders. Install 6-inches of stone over backfill materials to create engineered shoulders along the newly constructed Access Road.
Waste management	Segregation, waste classification, storage and handling of waste materials including lead-contaminated excavated soil, trash, wastewater (decontamination fluids), vegetation mulch/debris, PPE, and contaminated materials/disposable sampling equipment. The Waste Management Plan and the Removal Action Design Specifications detail waste management requirements.
Decontamination	Decontamination facilities will be set up for personnel who may come in contact with the contaminated soils. A temporary equipment decontamination area will be prepared for the decontamination of sampling equipment. Disposable sampling equipment will be used when possible. Dry decontamination will be conducted on site equipment that encounters contaminated soil, (i.e., excavator bucket). The Removal Action Design Specifications detail waste management requirements.
Site survey	Perform a survey of the estimated limits of excavation and each grid cell/staging area prior to excavation activities. Perform a post-construction survey to provide as-built documentation of construction efforts.
Demobilization	Demobilization will consist of dry decontamination of equipment and final disposal of all waste. Conduct a final walk through with the FEAD and establish a punch list of items that require further attention. Complete punch list to complete site work.

4.0 SUBMITTALS

This section describes the review and approval process of submittals. SES-TECH will institute and maintain a submittal register to track submittals from issuance to approval. A list of required submittals will be developed at the initiation of project activities. These Submittal requirements will be reference in the Removal Action Design Specifications and may be updated and revised as necessary. Submittals will be scheduled, reviewed, certified, and managed in accordance with the procedures defined in this section.

4.1 Review of Submittals

Submittals will be reviewed to ensure completeness, accuracy, and contract compliance. Submittal of a certification will be inspected and approved by the PQCM for conformance to the project specifications or certification criteria. All items will be checked and approved by the PQCM or designated representative. Any submittals requiring modifications or changes will be returned to the originating organization for correction and then resubmitted for review and approval prior to acceptance. Approved submittals will be stamped, signed or initialed, and dated. During the preparatory phase of the QC inspections, the PQCM or designated representative will ensure that all materials and equipment have been tested and approved. No field activities will be performed without the required approval of applicable submittals.

4.2 Submittal Procedures and Initial Submittal Register

4.2.1 Types of Submittals

Types of submittals include, but are not limited to samples, catalog cuts, certifications, laboratory results, inspections, and test reports.

4.2.2 Review and Approval Authority

The PQCM or designee is responsible for reviewing and certifying that the submittals are in compliance with contract requirements. The approving authority is the PQCM unless submission to the NAS Oceana FEAD is required for the specific submittal.

The following submittal constraints are defined for this project:

- **Submission:** Submittals will be completed as required by the specifications and drawings for each DFW. Components of the definable features inter-related as a system will be submitted at the same time.
- **Acceptability:** If submittal acceptability is dependent on conditions, items, or materials included in separate subsequent submittals, the submittal will be not be accepted and will be returned without review.
- **Approval:** Approval of a separate material, product, or component does not imply approval of the assembly in which the item functions.

4.3 Scheduling

Scheduling requirements are outlined as follows:

- **Coordination:** The preparation and processing of submittals will be coordinated with performance of the work so that submittal processing or the need for resubmission will not delay work.
- **Review Period:** Except as specified otherwise, the review period, beginning with receipt by the approving authority, is at least 15 working days for submittals requiring PQCM approval and 20 working days for submittals requiring NAS Oceana FEAD approval. The period of review for submittals with Navy or designated representative approval begins when the Navy receives the submittal from SES-TECH's QC organization. The period of review for each re-submittal is the same as for the initial submittal.

4.3.1 Transmittal Form

Transmit each submittal with transmittal form to the office of the NAS Oceana FEAD. The transmittal form will identify the submittal as being from SES-TECH, indicate the date of the submittal, and include information prescribed by the transmittal form and required in the following section, Identifying Submittal

4.3.2 Identifying Submittals

Identify submittals, except sample panel and sample installation, with the following information permanently adhered to or noted on each separate component of each submittal and noted on the transmittal form. Mark each copy of each submittal identically, with the following:

- Project title and location.
- Construction contract number and TO.
- The specification section and/or drawing number by which the submittal is required.
- The name, address, and telephone number of the subcontractor, supplier, manufacturer and any other second tier subcontractor associated with the submittal.
- Product identification and location in project.

4.3.3 Quantity of Submittals

Submit five copies of all submittals except when exceptions are noted in specific Technical Specifications.

4.3.4 Submittal Register

The initial Submittal Register will be determined based on requirements set forth in the various Technical Specifications. The final QACP will include the Initial Submittal Register. A sample Submittal Register can be found in Appendix A.

4.4 Submittal Process

Required submittals will be provided to project personnel as determined by the distribution schedule. Each submittal will be assigned a unique document control number.

A transmittal form will accompany each submittal. Each transmittal will be identified with:

- Contract and TO number
- Name and address of the submitting organization
- Date of submittal
- Description of item being submitted, including reference to specification section (if applicable)
- Approval of submitting organization indicating conformance to the requirements

The PQCM will update the submittal register as needed.

4.5 Review and Processing of Submittals That Do Not Require Navy Approval

Material submitted for review by the PQCM will indicate whether or not it conforms to established requirements. The PQCM will inform the submitter of the results of the review. The submittal log will be updated to indicate the status.

Conforming submittals will be transmitted to project and Navy personnel as determined by the distribution schedule. A transmittal form will accompany all items sent to the Navy and will list each item transmitted, the date it was reviewed by the PQCM, and its review status.

Nonconforming submittals will be returned to the submitter for correction, resolution of comments, and resubmittal.

4.6 Review and Processing of Submittal That Require Navy Approval

Submittals reviewed by the PQCM will then be transmitted to the Navy in accordance with the project distribution schedule for further review and approval. All items sent to the Navy will use a transmittal form that will indicate each item transmitted, the date reviewed by the PQCM, and its review status. Upon completion of review, the NAS Oceana FEAD will either return the transmittal form to the PQCM for further action or accept the submittal as complete.

The PQCM will advise the submitter of the results of the review in writing and include any comments. The submittal log will be updated to indicate status. Nonconforming submittals may be returned to the submitter for correction, resolution of comments, and resubmittal, if required.

4.7 Revised Submittals

Revised submittals will be logged, reviewed, and processed in a manner identical to the initial submittal.

5.0 TESTING

The PQCM or designated representative will verify the performance of all tests specified or required by the Work Plan to ensure that control measures are adequate to provide a product conforming to project specifications and drawings. General requirements for testing procedures to be implemented for this project are included in the Work Plan.

5.1 Documentation

All test results will be documented in the Daily Contractor Quality Control (CQC) Report for the day the results are obtained. Paragraph reference, location where tests were taken, and the sequential control number identifying the test will be given. The test reports will be available for review by the NAS Oceana NAS FEAD and transmitted with the Project Closure Report.

5.2 Laboratory Testing

An independent testing laboratory will provide laboratory services, as needed. The laboratory will be selected and qualified in accordance with recognized industry and applicable project requirements.

5.3 Accreditation/Certification

The NAS Oceana FEAD will be provided with a copy of the certificate of accreditation, scope of accreditation, and the latest directory of the accrediting organization for accredited laboratories. The scope of the laboratory's accreditation will include the test methods required for the project.

Acceptable accreditation programs are as follows:

- National Institute of Standards and Technology (NIST).
- DoD Environmental Laboratory Accreditation Program
- American Association of State Highway and Transportation Officials (AASHTO).
- American Association for Laboratory Accreditation (AALA).

The NAS Oceana FEAD must approve any deviation from the above in writing.

5.3.1 Capability Check

The NAS Oceana FEAD retains the right to check laboratory equipment in the proposed laboratory and review the laboratory's testing procedures, techniques, and other items pertaining to testing, for compliance with project requirements.

5.3.2 Test Results

The PQCM will maintain all project test results at the project site. The actual laboratory test results will be submitted to the NAS Oceana FEAD and placed on the updated submittal register. These results will be reviewed by the PQCM for conformance with the project requirements. The cover page for these

results will be conspicuously stamped with 'Conforms' or 'DOES NOT CONFORM' to the project requirements, whichever is applicable.

A summary report of the results of all field testing will be attached to the last daily CQCR for each month.

5.4 TESTING PLAN LOG

The Testing Plan and Log (Attachment 3) lists tests required by the project specifications and drawings. Testing will be conducted to verify that control measures are adequate to provide a product conforming to contract specifications. General requirements for testing procedures to be implemented for this project are included in the Work Plan.

6.0 QUALITY CONTROL MEETINGS

6.1 Coordination and Mutual Understanding Meeting

Prior to the start of site work, a coordination and mutual understanding meeting will be held to discuss the QC Program requirements. Navy personnel attending the meeting will include the RPM, NAS Oceana FEAD and other NAVFAC personnel. The purpose of this meeting is to develop a mutual understanding of the QC details, including forms to be used, administration of on-site and off-site work, coordination of the field activities, production, and the PQCM duties with the FEAD. At a minimum, the SES-TECH personnel required to attend the meeting will include the PM, Site Superintendent, PQCM, and SSHO. Minutes of the meeting shall be prepared by the PQCM and signed by the PM and the Navy's RPM and/or NAS Oceana FEAD or designated representative. The meeting may be held in conjunction with the preconstruction/project team meeting.

6.2 QC Meetings

After the start of field activities, the PQCM will conduct QC meetings at a frequency of once per week or as required by the NAS Oceana FEAD. The meetings will be held at the project site and will be attended by the NAS Oceana FEAD, Site Superintendent, SSHO, and PQCM. The PQCM will notify the NAS Oceana FEAD at least 48 hours in advance of each meeting.

The following will be covered at each weekly QC meeting:

- Review the minutes of the previous meeting.
- Review the schedule:
- Work or testing accomplished since last meeting
- Rework items identified since last meeting
- Rework items completed since last meeting
- Review the status of submittals:
- Submittals reviewed and approved since last meeting
- Submittals required in the near future

- Review the work to be accomplished in the following 2 weeks, documentation required and schedule for the three phases of control and testing:
- Establish completion date for rework items
- Required preparatory phase inspections
- Required initial phase inspections
- Required follow-up phase inspections
- Required testing
- Status of off-site work or testing
- Required documentation
- Identification of deficient conditions
- Resolve QC and production problems.
- Address items that may require revisions to the QACP.

7.0 INSPECTION

This section discusses the inspection process for the DFWs that will ensure compliance with the contract. The DFWs for this project are identified in Section 3.0 and listed in Table 3-1.

The QACP includes implementing the following three control phases for all aspects of the work specified:

- Preparatory phase
- Initial phase
- Follow-up phase

7.1 Preparatory Phase Inspection

The PQCM will conduct preparatory phase inspections prior to starting the DFWs listed in Table 3-1 with the exception of mobilization and demobilization. These inspections shall include the following:

- Review the Work Plan and Standard Operating Procedures.
- Ensure that all required procurement forms for supplies and services are approved.
- Ensure that provisions have been made to provide the required QC inspection.
- Ensure that all personnel have the required training and certifications needed to perform the work.
- Examine the work area to ensure that all required preliminary work has been completed and is in compliance with the approved Work Plan.
- Examine the required materials and equipment to ensure that they are properly delivered to the site, conform to specifications, and are properly stored.
- Review the appropriate AHAs to ensure that safety requirements are met.
- Discuss procedures for performing the work, including potential repetitive deficiencies.
- Document workmanship standards for the particular phase of work.
- Ensure that the QACP for the work to be performed has been accepted by the Navy.

The PQCM will conduct frequent internal inspections of mobilization and demobilization, which will include the items listed on Table 3-1. The PQCM is not required to notify the Navy or the PM prior to these inspections.

The PM, Navy RPM, and FEAD will be notified at least 2 working days in advance of each preparatory phase activity. This phase will include a meeting conducted by the PQCM and attended by the Site Superintendent and any personnel involved in performing the DFW.

The issues discussed during the preparatory phase meetings will be documented on the Preparatory Inspection Checklist (Attachment 3). The PQCM will explain the acceptable level of workmanship required to personnel performing work activities.

7.2 Initial Phase Inspection

An initial inspection will be performed at the beginning of a DFW and will include the following:

- Check preliminary work to ensure that it is in compliance with contract requirements.
- Review the Inspection Checklist documenting results of the preparatory meeting.
- Verify full contract compliance, including required control inspections.
- Establish the required level of workmanship, testing, and inspection to ensure that work meets minimum acceptable standards.
- Resolve all differences.
- Check safety requirements to include compliance with and upgrading of the APP/SSHP and AHAs.

The PM, Navy RPM, and FEAD will be notified at least 2 working days in advance of each initial phase activity. The PQCM will document initial inspections for each item using the Initial Inspection Checklist (Attachment 3) and attach it to the Daily CQC Report. The location of the initial phase inspection and documentation will be identified for future reference and comparison with follow-up inspections.

The initial phase inspection will be reviewed each time a new work party/crew arrives on-site or when the DFW change.

7.3 Follow Up Phase Inspection

During the completion of a particular work feature, follow-up inspections will be conducted to ensure compliance with contract requirements. The frequency of the follow-up inspections will depend on the extent of the work being performed. Each follow-up inspection will be documented on the Daily CQC Report. A Follow-up Inspection checklist, will be generated for any deficient conditions identified during the Initial Inspection and attached to the Daily CQC Report when all items are resolved. A final follow-up check will be conducted on any completed work phase.

7.4 Receipt Inspection

The PQCM will conduct inspections of materials prior to their use and installation. These inspections will be documented on a receipt inspection form and maintained on-site. Any material(s) that does not meet design specifications will be rejected and returned to the vendor. Nonconforming material will be segregated and marked accordingly, to prevent inadvertent use. The PQCM will record on the Daily CQC Report that a material inspection was performed

7.5 Additional Inspections

The PQCM may conduct additional inspections on the same DFWs under the following circumstances:

- If the quality of ongoing work is unacceptable as determined by the PQCM, PM, Site Superintendent, Navy RPM, or NAS Oceana FEAD
- If the quality of the work is suspected of being below the established criteria of acceptance
- If work on a DFW is resumed after a substantial period of inactivity
- If other problems develop

7.6 Completion Inspections

Completion inspections will be performed as summarized in this section.

7.6.1 Construction Quality Control Completion Inspection

The PQCM will conduct a detailed inspection prior to the pre-final inspection, when all of the work or an increment of work is deemed to be substantially complete. The work will be inspected for conformance to plans and specifications, workmanship, and completeness. The PQCM will prepare an itemized list of work that does not conform to plans and specifications, inferior workmanship, or incomplete work. The list will also include outstanding administrative items, such as record (as-built) drawings. The list will be included in the QC documentation and submitted to the PM following the inspection and will specify an estimated date for correction of each deficiency. The completion inspection will be documented on the Completion Inspection Checklist and attached to the Daily CQC Report.

7.6.2 Pre-Final Inspection

The PM or designated representative will conduct the pre-final inspection. The Navy RPM, NAS Oceana FEAD, PQCM, Site Superintendent, and other primary management representative(s), as applicable, will attend. The PM will schedule the pre-final inspection when notified by the PQCM that the work is ready for inspection. The PQCM is required to verify at this time that all specific items previously identified as being unacceptable, along with all remaining project work, will be complete and acceptable by the date scheduled for the pre-final inspection. At this inspection, the NAS Oceana FEAD will develop a list of incomplete and/or unacceptable work performed under the contract and will provide this list to SESTECH.

7.6.3 Final Acceptance Documentation

The PM will schedule the final acceptance inspection based on notification from the PQCM of readiness. The Navy RPM, Site Superintendent, NAS Oceana FEAD, PQCM, and other primary management representative(s), as applicable, will attend. Notification will be provided prior to the planned final acceptance inspection date and must include verification that all specific items previously identified as being unacceptable, along with all remaining work performed under the contract, will be complete and acceptable by the date scheduled for the final acceptance inspection.

7.7 Inspection Documentation

The PQCM is responsible for maintaining the inspection records. Inspection records will be legible and clearly provide all information necessary to verify that the items or activities inspected conform to the specified requirements. In the case of nonconforming conditions, the PQCM will provide evidence that the conditions were brought into conformance or otherwise accepted by the NAS Oceana FEAD. All inspection records will be made available to the Navy.

8.0 DOCUMENTATION

Preparation, review, approval, and issuance of documents affecting quality will be controlled to the extent necessary to ensure compliance to specified requirements. Project documents that may be controlled, if issued, include the following:

- Meeting minutes, conference notes, and confirmation notes
- Submittal Register
- Inspection documentation
- Contractor Production Report
- Daily CQC Report
- Material inspection and shipping logs
- NCRs
- NCR log
- FCRs
- DCNs
- Rework Items list
- Photograph log
- Field logbooks

8.1 Daily Contractor Quality Control Report

The PQCM is responsible for maintenance of current records of QC operation, activities, inspections, and tests performed, including the work of subcontractors and suppliers. The records will include factual evidence that required QC activities and tests were performed. The Daily CQC Report will be completed to document site activities covered by the QACP and will include:

- Records of inspection and /or testing performed
- Identification and location of each DFW and its current phase (preparatory, initial, follow-up) of completion
- Results of inspections and/or testing
- Location and description of deficiencies
- Deficiencies corrected as of the date of the report
- Rework items
- Deviations from plans, difficulties, and resolution
- Test and/or control activities performed with results and references to specifications and/or plan requirements, including the control phase (preparatory, initial, and follow-up) and deficiencies (along with corrective action)
- Material received, with statement as to its acceptability and storage
- Submittals reviewed with contract reference, reviewer, and action taken
- Off-site surveillance activities, including actions taken

The records will describe both conforming and nonconforming features and include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. The Daily CQC Report attached to the Contractor Production Report will be furnished to the FEAD by 10:00 a.m. on the first work day following the date covered by the report, or as agreed to by the FEAD. The report need not be submitted for days in which no work is performed. At a minimum, one report will be prepared and submitted for every 7 days of no work and on the last day of a no-work period. All calendar days will be accounted for throughout the life of the contract. The first report following a day of no work will summarize work for that day only.

The Daily CQC Report will be signed and dated by the PQCM and other appropriate personnel, including subcontractors responsible for completion of activities. The report will include copies of test reports.

8.2 Contractor Production Report

The Contractor Production Report will be prepared for each day work is performed and will be attached to the Daily CQC Report prepared for the same day. The Contractor Production Report will be prepared, signed, and dated by the Site Superintendent or designated representative, and will contain the following information:

- Contractor and subcontractor(s) and their area of responsibility
- Trades working on the project that day and number of personnel
- Operating equipment, with hours worked, idle, or down for repair
- Work performed that day, including location, description, weather conditions, etc.
- Any delays encountered
- Site visitors and the purpose of the visit
- Job safety evaluations stating what was checked, results, instructions or corrective actions
- A list of instructions given and/or received and conflicts in plans and/or specifications
- Contractor's verification statement

8.3 Logbooks

The PQCM will maintain a logbook to document QC activities. The information in the logbook is intended to serve as a phone log and memory aide in the preparation of the Contractor Daily Quality Control Report and in addressing follow-up questions that may arise. Logbooks will be marked on the cover as QC Logbook, numbered consecutively, and maintained on site until the end of project.

8.4 Photographs and Photo Logs

The PQCM will maintain photographs and a photo log to document site activities. Each photograph will have a date and time stamp on it or the photograph will show a sign board documenting the date and time clearly and legibly in the photograph. The photo log will identify each photograph by date, time, location, and activity.

8.5 Meeting Notes

In addition to other required documentation, the PQCM is responsible for taking notes and preparing the meeting minutes for project meetings. Meeting notes will be typed and the original report furnished to the Navy within 7 days of the date of the conference for concurrence and subsequent distribution to all attendees. At a minimum, this report will include the following:

- Date and place the meeting was held
- List of attendees, including name, organization, and telephone number
- Comments made during the meeting and decisions affecting criteria changes
- Meeting notes that augment the written comments

9.0 CHANGE MANAGEMENT

This section describes the DCN and FCR, the two main vehicles to document project changes.

9.1 Design Change Notices

The following sections detail the identification, preparation, and review and approval process for Design Change Notices.

9.1.1 Identification

Any member of the Project Team may identify the need for a change to the design specifications or drawings. The Project Team member will notify the Field Engineer, who will evaluate the request and initiate a DCN, if determined necessary.

9.1.2 Preparation

The Field Engineer will generate a DCN form (Appendix A) and submit it to the Design Engineer for review and disposition. The DCN will identify the specification requirements, the proposed change, and the reason for the change

9.1.3 Review and Approval

Any member of the Project Team may identify the need for a change to the design specifications or drawings. The Project Team member will notify the Field Engineer, who will evaluate the request and initiate a DCN, if determined necessary.

9.1.4 Implementation of Approved DCN's

The Site Superintendent is responsible for the implementation of approved DCNs.

9.1.5 Records

Each approved DCN will be sequentially numbered as follows:

DCN-CTO X-YY

Where:

- X is the task order number
- YY is the DCN number, beginning with 01.

A DCN log shall be maintained by the PQCM that provides the DCN number, date of DCN, and brief description of contents.

Each DCN will be copied to all the management signatories, the Site Superintendent, PQCM, SSHO, and other personnel as deemed appropriate by the PM.

Copies of the approved DCN should be posted or otherwise included in daily site briefings as appropriate to ensure that all site personnel are aware of the changes to the task order program.

Copies of DCN will be issued to all holders of controlled copies. The DCNs will be required to be maintained with the controlled copy of the document that has been changed.

9.2 FIELD CHANGE REQUEST

Site personnel will document changes to the approved plans (except the design specifications and drawings) in the field through the FCR form (Appendix A). At a minimum, the following information will be documented in the FCR form:

- Project name
- CTO number
- FCR number
- Documents to which a change is requested (including revision number if applicable)
- Description of the item or condition for which the change is requested
- Reason for the change
- Recommended disposition
- Cost and schedule implication of the change, if any
- Approval of disciplines
- Approval of the PM, Site Superintendent, PQCM, PESM, and QCPM and concurrence from the RPM or FEAD

Once the FCR is approved, copies will be sent to document holders. The original will be kept on site with the controlled copy. The change will be identified in the controlled copy referencing the FCR.

10.0 NONCONFORMANCE

All deficiencies or nonconforming conditions discovered during inspections or other QC functions will be noted on either a Deficiency Notice (DN) or a Nonconformance Report (NCR), as appropriate.

A DN is used to document the failure to develop, document, or implement effectively any applicable element of approved plans or to follow established procedures. A deficiency could lead to a nonconformance.

An NCR is used to document a nonconforming condition that renders the quality of an item, process, or product that has been defined in the specifications or drawings as unacceptable or indeterminate.

Copies of these forms are provided in Appendix A along with the logs used for tracking these documents. All deficiencies and nonconforming conditions will be resolved prior to completion of the project and in the timeliest manner possible. The DN will be used for all conditions that do not affect the final work product. An NCR will be used when a condition may affect the final work product.

The PQCM will be notified of all deficiencies and nonconforming conditions identified during the course of the field activities to ensure that each of these occurrences is documented, reported, and tracked; and that corrective actions are taken and follow-up verification is conducted.

The PQCM will also document deficiencies and nonconforming conditions in the Contractor Daily Quality Control Report, noting the items found to be deficient or nonconforming; the date; time, and location; the person who identified the deficiency or nonconformance; and the status of the item to which the deficiency or nonconformance applies.

The PQCM will update the status of the deficiency when it changes. Before the work activities of the day begin, the PQCM will note the deficiencies or nonconforming conditions that require follow-up verification that day. New or changed status will be entered into the file at the end of each day. The Contractor Daily Quality Control Report will document completion of the corrective action for each deficiency or nonconformance for that day. Nonconforming conditions or deficiencies that require rework for resolution will be noted on the Rework Items List included in Attachment 3.

A Rework Item is a part or aspect of a DFWO that does not comply with the contract. This item can be, but is not limited to placed or delivered material; a delivered, installed or fabricated piece of equipment; or deficient workmanship that can cause a material, equipment or functionality of a system to perform less than specified by the requirements for that item.

10.1 Root Cause Analysis

The DN and the NCR forms both include space to enter information regarding the cause of the problem and the proposed resolution. The determination of the root cause of a deficiency or nonconformance is an integral part of the QC process. Root-cause analysis will be made by the PQCM in conjunction with other appropriate site personnel such as the Site Superintendent and the SHS. Criteria considered in the analysis will include:

- Staff qualifications and training
- Adequacy of procedures and methods
- Adequacy of equipment
- Adequacy of QC measures

Input will be obtained, as necessary, from field staff and technical advisors in order to identify the factors that led to the problem.

10.2 Corrective Action

Following the root cause analysis, the PQCM will evaluate potential solutions (corrective actions) to determine which remedy is most effective in correcting the problem. This process will include all appropriate staff. Potential remedies considered will include:

- Supplemental staff training
- Changes of equipment or modification of equipment currently in use
- Acquisition of supplemental equipment
- Implementation of new procedures or modification of existing procedures
- Changes in QC procedures

Final approval of all remedies will be the responsibility of the TOM.

Successful implementation of corrective action will be documented by the PQCM in the appropriate areas of the DN or NCR. This documentation will be supported by changes to the inspection procedures or schedule as warranted (i.e., the PQCM will not certify that corrective action has been taken until inspection of the actions and the resulting changes in the program are complete).

The rework items list is maintained by the PQCM at the project site. Items to be included on this list also include those identified by the NAS Oceana FEAD. A copy of the Rework Items list will be included with the last CQCR of each month.

10.3 Conditions Requiring Stop Work

If corrective actions are insufficient, resolution cannot be reached, or results of prior work are indeterminate, work may be stopped. The PQCM or PM will suspend work associated with the nonconformance until corrective action is complete. If there is a disagreement, the difference will be brought to the attention of the QC/PM until resolution is achieved.

The conditions of the suspension of work will be described in detail on the CQC daily report and on the Rework Items List, if corrective action is not completed by the end of the working day Work will not continue until the directed by the individual who authorized it.

11.0 QUALITY MANAGEMENT

In addition to the required QC field inspections, the SES-TECH QACP requires a quality management overview of the site QA/QC Program implementation. The PQCM will perform regular internal QC checks on the site implementation of the QA/QC Program. Reports of any deficiencies will be provided to the PM for corrective action. Inspections will be performed and checked for the following:

- Conformance with Work Plan and associated plans
- Thoroughness of performance
- Identification and completeness of documentation generated during performance

12.0 REFERENCES

SES-TECH Atlantic. *Implementation Plan for Oceana Salvage Yard Non-Time Critical Removal Action at Naval Air Station Oceana, Virginia Beach, Virginia*. April 8, 2011.

SES-TECH Atlantic. *Program Quality Control Management Plan*. Prepared for NAVFAC MID-Atlantic, Contract No. N40085-11-D-043. 2011.

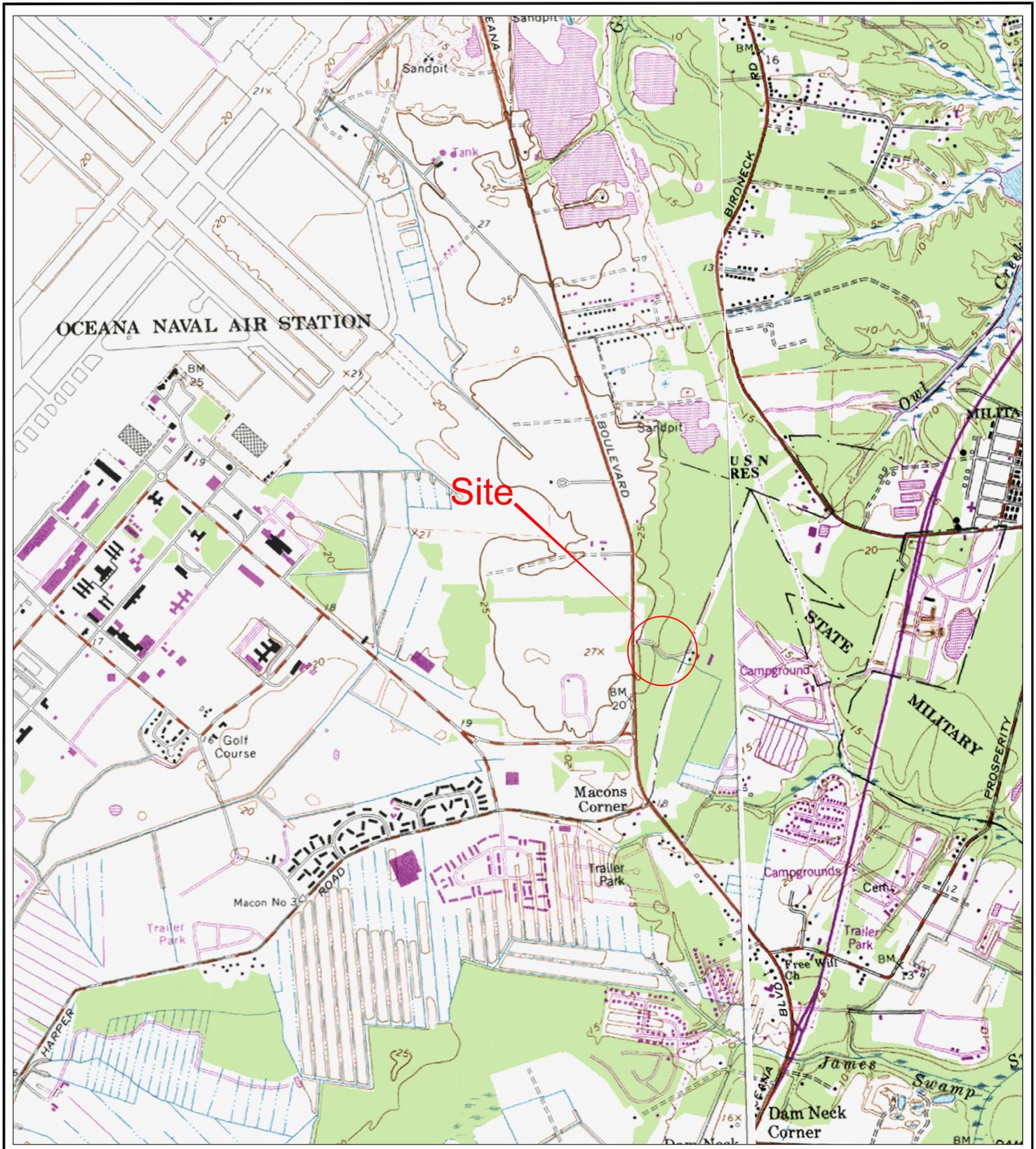
NAVFAC Mid-Atlantic. RFP for Contract No. N40085-11-D-043. *Scope of Work, Oceana Salvage Yard, NAS Ocean*. November 2010.

NAVFAC Mid-Atlantic. *Unified Facilities Guide Specifications (UFGS) 01330, Submittal Procedures*. April 2006.

United States Army Corps of Engineers. *Safety – Safety and Health Requirements, EM-385-1-1*. September 2008.

FIGURES

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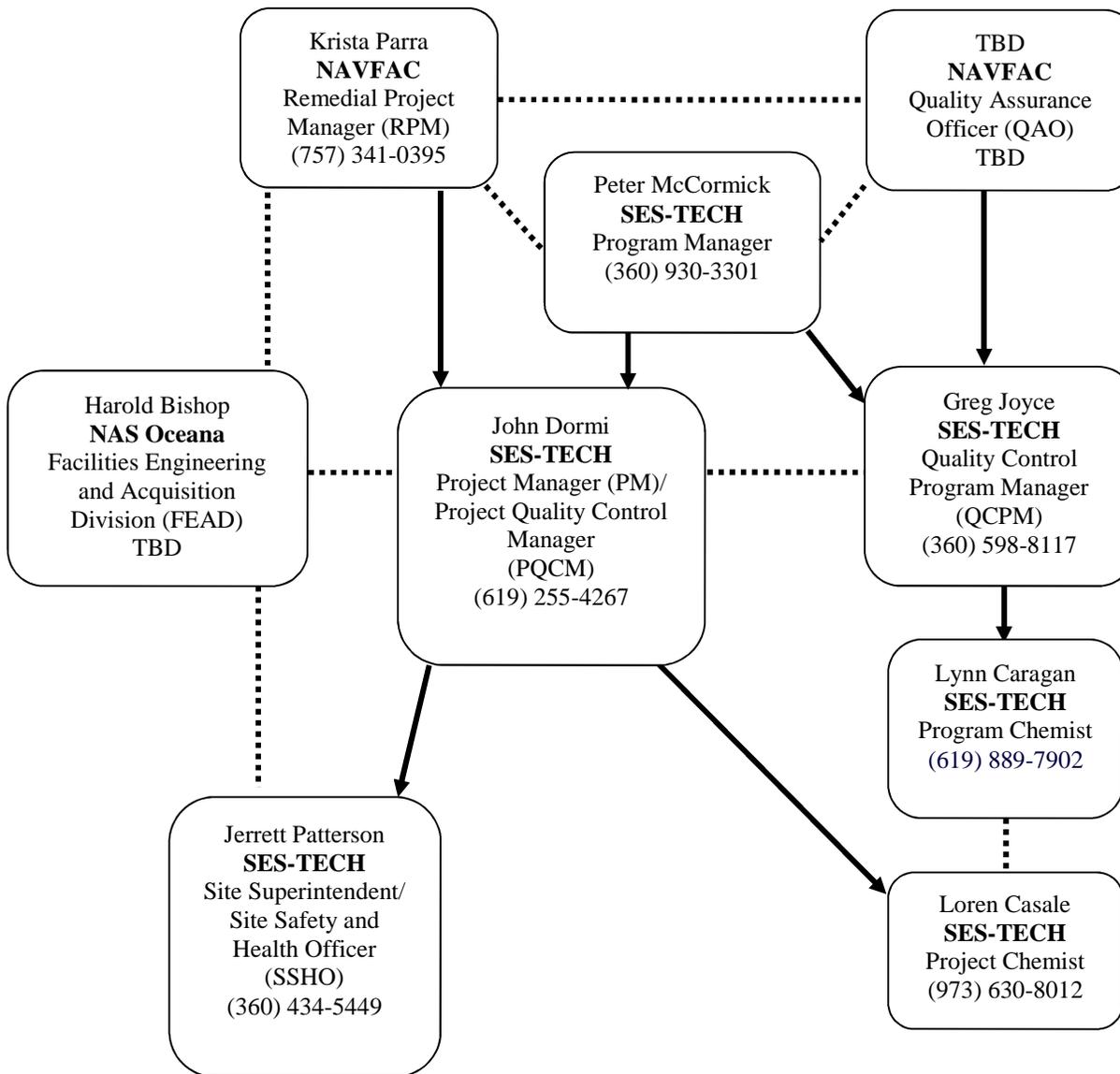


Source: U.S.G.S. Topographic Maps (7.5 Minute)
Princess Anne & Virginia Beach, VA Quadrangles

<p>NAVFAC MID-ATLANTIC Hampton Roads RAO LTM EMAC</p>
<p>NAS Oceana, Virginia Beach, VA Oceana Salvage Access Road Removal Action & Asphalt Cap</p>
<p>Figure 1 Site Location Map</p>
<p>SES-TECH Atlantic</p>

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**Figure 2
PROJECT ORGANIZATION CHART**



NOTE: The PM will direct subcontractors and vendors with field supervision provided by the Site Superintendent

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APPENDIX A

QC FORMS

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SES-TECH Atlantic

SES-TECH Atlantic.					0
Oceana Salvage Yard Access Road Virginia Beach, VA NAVY RAC CONTRACT NO. N62473-07-D-3211 N40085-11-D-0043 Task Order No. 0001					Sheet <u> 1 </u> Of <u> 1 </u> Date: _____ Receiving Date _____
MATERIAL RECEIVING REPORT					
Item No.	Brief Description of Material Received	Legend	Shipping Document ID Number	Transportation / Supplier Name	Purchase Order Number
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
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SES-TECH Atlantic CONSTRUCTION QUALITY CONTROL REPORT		Project: TO No. 0001	DATE:	Page <u>1</u> of <u>2</u>		
		Contract: N40085-11-D-0043				
		Project: Oceana Salvage Yard Access Road, Virginia Beach, VA				
Client: U.S. Navy, NAVFAC, Mid-Atlantic		NAVFAC Spec: N/A				
Location: NAS Oceana, Virginia Beach, VA		Task Order: 0001				
Subcontractor(s): See Daily Production Report		Visitors to Site: See Daily Production Report				
		MAX TEMP (°F)	MIN TEMP (°F)			
FIELD INSPECTIONS PERFORMED:		Spec. Section	Paragraph	V	W	P
1						
2						
3						
4						
5						
6						
7						
DOCUMENTATION SUBMITTED						
1						
2						
3						
DOCUMENTATION RECEIVED						
1						
2						
3						
4						
REWORK ITEMS IDENTIFIED TODAY		REWORK ITEMS CORRECTED TODAY		DATE IDENTIFIED		
1		1				
2		2				
3		3				
V = Verified - Confirmed by evidence that function or requirements are true W = Witnessed - Personal observation while task(s) or test(s) are performed P = Personal performance of task(s) or function(s)						
CQC REMARKS:						
<p>On behalf of the contractor, I certify that this report is complete and correct and equipment and material used and work performed during the reporting period is in compliance with the contract drawings and specifications to the best of my knowledge, except as noted in the report.</p> <p style="text-align: right;">SIGNED: _____</p>						
GOVERNMENT QUALITY ASSURANCE REPORT;						
REMARKS AND/OR EXCEPTIONS TO THIS REPORT:						

SES-TECH Atlantic		Task Order: 0001		DATE:	PAGE <u>2</u> OF <u>2</u>	
NUMBER	IDENTIFICATION OF FIELD INSPECTION	SPECIFICATION SECTION AND PARAGRAPH NO.		PHASE OF CONTROL	METHOD OF INSPECTION	
1	0	SECTION:	0	PREPARATORY	0	VERIFIED
				INITIAL	0	WITNESSED
		PARAGRAPH:	0	FOLLOW UP	0	PERFORMED
DETAILS OF ACTIVITIES :						
2	0	SECTION:	0	PREPARATORY	0	VERIFIED
				INITIAL	0	WITNESSED
		PARAGRAPH:	0	FOLLOW UP	0	PERFORMED
DETAILS OF ACTIVITIES :						
3	0	SECTION:	0	PREPARATORY	0	VERIFIED
				INITIAL	0	WITNESSED
		PARAGRAPH:	0	FOLLOW UP	0	PERFORMED
DETAILS OF ACTIVITIES :						
4	0	SECTION:	0	PREPARATORY	0	VERIFIED
				INITIAL	0	WITNESSED
		PARAGRAPH:	0	FOLLOW UP	0	PERFORMED
DETAILS OF ACTIVITIES :						
5	0	SECTION:	0	PREPARATORY	0	VERIFIED
				INITIAL	0	WITNESSED
		PARAGRAPH:	0	FOLLOW UP	0	PERFORMED
DETAILS OF ACTIVITIES :						
6	0	SECTION:	0	PREPARATORY	0	VERIFIED
				INITIAL	0	WITNESSED
		PARAGRAPH:	0	FOLLOW UP	0	PERFORMED
DETAILS OF ACTIVITIES :						
7	0	SECTION:	0	PREPARATORY	0	VERIFIED
				INITIAL	0	WITNESSED
		PARAGRAPH:	0	FOLLOW UP	0	PERFORMED
DETAILS OF ACTIVITIES :						

SES-TECH Atlantic
REQUEST FOR INFORMATION

TO: FEAD

RFI: _____ DATE: _____

Contract: N40085-11-D-0043
TO No. 0001

Attn: _____

FROM: _____
Project Engineer/PQCM

REFERENCES: _____

DRAWING: _____

SPEC SECTION: _____

Reply Needed By: _____

QUESTION (#1):

Name: _____

REPLY:

Date: _____

This reply is given with the expressed understanding that it does not constitute the basis for a change to the price or time for the contract.

If you do not concur, DO NOT PROCEED, and notify the writer immediately.

Name: _____

Title: _____

**SES-TECH Atlantic
Change Request Form**

Section 1 through 4 to be filled out by SES-TECH Atlantic, Section 5 to be filled out by Navy

PROJECT: NAVFAC TO NO. 0001	OFS No.:	Change Request Form: CRF - Rev.
---------------------------------------	-----------------	--

To: _____ Dept.: _____ Location: _____ Date: _____

Re: Drawing No. _____ Title _____
 Spec. No. _____ Title _____
 Other _____

1. DESCRIPTION *(Items involved, submit sketch if applicable)*

2. REASONS FOR CHANGE *(If from disposition of nonconformance report, list report number)*

3. RECOMMENDED DISPOSITION

<input type="checkbox"/> Technical Clarification [NTR & COTR approval required]	<input type="checkbox"/> Cost Growth
<input type="checkbox"/> In Scope Adjustment [COTR approval required]	<input type="checkbox"/> ROM Estimate (If Applicable) \$ _____
<input type="checkbox"/> Out of Scope [CO & COTR approval required]	<input type="checkbox"/> Schedule Impact (describe below)

TtEC Initiator (Signature/Title):

4. TtEC Project Manager (Signature)	Date	Project Superintendent Concurrence (Signature)	Date
-------------------------------------	------	--	------

5. NAVY DISPOSITION

Approved per recommended disposition

Not approved (give reason)

Approved with modification(s) [describe below]

NTR Concurrence <i>(signature)</i>	Date	ROICC Concurrence <i>(Signature)</i>	Date
Contracting Officer Technical Representative Approval <i>(Signature)</i>		Contracting Officer Approval <i>(Signature)</i>	
		Date	

Engineer signs and transmits to Resident Engineer with copies to:

_____ Project Manager	Others as Required _____
_____ Project Superintendent	File: _____
_____ Quality Control	_____

SES-TECH Atlantic DESIGN CHANGE NOTIFICATION

PROJECT _____	PROJ. NO. _____	DESIGN CHANGE NO. _____
---------------	-----------------	-------------------------

TO _____ DEPT. _____ LOCATION _____ DATE _____

RE: DRAWING NO. _____ TITLE _____
 SPEC NO. _____ PAGE _____
 OTHER _____ ANTICIPATED REVISION DATE OF FORMAL DOCUMENTS _____

ENGINEERING "HOLD" PLACED ON CONSTRUCTION ACTIVITIES IN AREA DEFINED HEREIN PENDING RECEIPT OF FORMALLY REVISED DOCUMENT(S) AND/OR REVISED DCN, PE SIGNATURE NOT REQUIRED.
 RELEASED FOR CONSTRUCTION ON BASIS OF MODIFICATION(S) PRESCRIBED BY THIS DCN.

APPLICABLE DOCUMENTS WILL BE REVISED BY:

HOME OFFICE SITE (Project Engineer to assign Open Engineering Item No.) _____
 AS-BUILT DRAWING BY RESIDENT ENGINEER'S STAFF OTHER _____

PROPOSED CHANGE	REASON FOR CHANGE
<u>DESCRIPTION</u>	<u>REASON FOR CHANGE</u>
_____	<input type="checkbox"/> FIELD CHANGE REQUEST (FCR No.) _____
_____	<input type="checkbox"/> REQUIRED MODIFICATIONS TO DESIGN OR SPECIFICATION
_____	<input type="checkbox"/> DISPOSITION OF NONCONFORMING ITEM
_____	<input type="checkbox"/> CHANGES IN REGULATORY OR OTHER REQUIREMENTS
_____	<input type="checkbox"/> OPERATIONAL EXPERIENCE
_____	<input type="checkbox"/> OTHER _____

EXHIBITS ATTACHED NO YES - IF YES, CHECK APPLICABLE BOX(ES)

COPIES OF MARKED-UP AREA OF DRAWING(S) OTHER (Describe) _____
 FIELD CHANGE REQUEST (FCR No. _____)

COMMENTS _____ SCHEDULED ERECTED/PLACEMENT DATE(S) _____

ORIGINATOR _____ DATE _____

DISTRIBUTION (Check as applicable and fill in name. Indicate with an asterisk (*) personnel who are to perform a QA review.)

<input type="checkbox"/> Project Manager _____	<input type="checkbox"/> Health and Safety _____	<input type="checkbox"/> Chemical _____
<input type="checkbox"/> Project Engineer _____	<input type="checkbox"/> Construction _____	<input type="checkbox"/> Regulatory _____
<input type="checkbox"/> Architectural _____	<input type="checkbox"/> Electrical _____	<input type="checkbox"/> Structural _____
<input type="checkbox"/> CAD _____	<input type="checkbox"/> Environmental _____	<input type="checkbox"/> Science (Specify) _____
<input type="checkbox"/> Building _____	<input type="checkbox"/> I&C _____	<input type="checkbox"/> PQAE _____
<input type="checkbox"/> Mechanical _____	<input type="checkbox"/> Security _____	<input type="checkbox"/> Project Supt _____
<input type="checkbox"/> Process _____	<input type="checkbox"/> Estimating _____	<input type="checkbox"/> Vendor Supt _____
<input type="checkbox"/> Civil _____	<input type="checkbox"/> Quality Assurance _____	<input type="checkbox"/> Site Manager _____

NOTE: Personnel indicated with an asterisk (*) are to perform a QA review and inform Originator of any comments, or approve and sign, as applicable, by _____ (date).

LEAD DISCIPLINE ENGINEER OR DESIGNEE (Signature)	DATE	PROJECT ENGINEER OR DESIGNEE (Signature)	DATE
--	------	--	------

QA REVIEWER (if indicated above) <input type="checkbox"/> COMMENTS (Attached) <input type="checkbox"/> NO COMMENTS	PROJECT MANAGER (After acceptance of all reviews)
SIGNATURE _____	SIGNATURE _____
DATE _____	DATE _____

FIELD EVALUATION

IMPLEMENT RECOMMENDED DISPOSITION DEFER RECOMMENDED DISPOSITION

RESIDENT ENGINEER (signature) _____ DATE _____

PREPARATORY INSPECTION CHECKLIST

CONTRACT No: N40085-11-D-0043 TO NO. 0001 DATE: _____

TITLE: _____ SPEC SECTION: _____

MAJOR DEFINABLE SEGMENT OF WORK: _____

A. PERSONNEL PRESENT:

<u>NAME</u>	<u>POSITION</u>	<u>COMPANY</u>
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____
6. _____	_____	_____

(List additional personnel on reverse side)

B. SUBMITTALS INVOLVED REVIEW - SPECIFICATIONS AND DRAWINGS:

<u>NUMBER & ITEM</u>	<u>CQC APPROVAL</u>	<u>NAVY APPROVED</u>
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____
6. _____	_____	_____

B.1 HAVE ALL ITEMS BEEN APPROVED? YES: _____ NO: _____

B.2 WHAT ITEMS HAVE NOT BEEN APPROVED?

<u>ITEM</u>	<u>STATUS</u>
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____

C. ARE ALL MATERIALS ON HAND? YES: _____ NO: _____

C.1 ARE ALL MATERIALS ON HAND IN ACCORDANCE WITH APPROVALS?

YES: _____ NO: _____

C.2 ITEMS NOT ON HAND OR NOT IN ACCORDANCE WITH SUBMITTALS:

1. _____
2. _____
3. _____

SES-TECH Atlantic

D. TESTS REQUIRED IN ACCORDANCE WITH CONTRACT REQUIREMENTS:

<u>TEST</u>	<u>PARAGRAPH</u>
1. _____	_____
2. _____	_____
3. _____	_____

E. ACCIDENT PREVENTION PREPLANNING - HAZARD CONTROL MEASURES:

E.1 WHAT ARE THE HAZARDS AND CONTROLS? (or attach activity hazard analysis)

1. _____
2. _____
3. _____
4. _____

F. EXAMINED THE WORK AREA TO ENSURE THAT THE REQUIRED PRELIMINARY WORK HAS BEEN COMPLETED. YES: _____ NO: _____

G. DISCUSSED THE PROCEDURES FOR CONTROLLING QUALITY OF THE WORK INCLUDING REPETITIVE DEFICIENCIES. YES: _____ NO: _____

H. DISCUSSION OF THE INITIAL CONTROL PHASE. YES: _____ NO: _____

PROJECT QUALITY CONTROL MANAGER

SES-TECH Atlantic
INITIAL PHASE INSPECTION CHECKLIST

OBSERVE THE INITIAL SEGMENT OF THE DEFINABLE FEATURE OF WORK TO ENSURE THAT THE WORK COMPLIES WITH CONTRACT REQUIREMENTS.

CONTRACT No: N40085-11-D-0043 TO NO.: 0001 DATE: _____

TITLE: _____ SPEC SECTION: _____

MAJOR DEFINABLE SEGMENT OF WORK: _____

DESCRIPTION AND LOCATION OF WORK INSPECTED: _____

REFERENCE CONTRACT DRAWINGS: _____

A. PERSONNEL PRESENT:

	<u>NAME</u>	<u>POSITION</u>	<u>COMPANY</u>
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____
5.	_____	_____	_____
6.	_____	_____	_____

(List additional personnel on reverse side)

B. MATERIALS BEING USED ARE IN STRICT COMPLIANCE WITH THE CONTRACT PLANS AND SPECIFICATIONS: YES: _____ NO: _____
IF NOT, EXPLAIN _____

C. PROCEDURES AND/OR WORK METHODS WITNESSED ARE IN STRICT COMPLIANCE WITH THE REQUIREMENTS OF THE CONTRACT SPECIFICATIONS: YES: _____ NO: _____
IF NOT, EXPLAIN _____

D. WORKMANSHIP IS ACCEPTABLE: YES: _____ NO: _____
STATE AREAS WHERE IMPROVEMENT IS NEEDED: _____

E. ENSURE THAT TESTING HAS BEEN PERFORMED BY APPROVED LABORATORY: YES: _____ NO: _____

F. SAFETY VIOLATIONS AND CORRECTIVE ACTION TAKEN: _____

REPEAT THE INITIAL PHASE FOR EACH NEW CREW TO WORK ON-SITE, OR WHEN ACCEPTABLE LEVELS OF SPECIFIED QUALITY ARE NOT MET.

PROJECT QUALITY CONTROL MANAGER

APPENDIX B

DELEGATION OF AUTHORITY LETTER AND PQCM RESUME

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TETRA TECH EC, INC.

March 19, 2012

John Dormi
SES-TECH
Twin Oaks 1
5700 Lake Wright Dr., Ste 309
Norfolk, VA 23502

Subject: Project Quality Control Manager

Reference: Contract No. N40085-11-D-0043
Remedial Action Operations (RAO)/Long Term Management (LTM), Environmental
Multiple Award Contract (EMAC), Contract Task Order (CTO) No. 0001,
Naval Air Station Oceana, Virginia Beach, VA

Dear Mr. Dormi:

In accordance with the terms of the SES-TECH Contract No. N40085-11-D-0043, this letter notifies you of your appointment as the Project Quality Control Manager for CTO No. 001, Oceana Salvage Yard Access Road, Non-Time-Critical Removal Action at Naval Air Station Oceana, Virginia Beach, VA.

As the designated Project Quality Control Manager, you will be responsible for managing the site-specific quality control requirements in accordance with the approved plan. You will be responsible for conducting quality control meetings, performing the three phases of control, and performing submittal review. You will be required to be present during all field activities to ensure that any testing is conducted in accordance with approved plans. In addition, you will be required to prepare the necessary quality control certification and documentation.

You have the authority and responsibility for suspending work when conditions adverse to quality are identified and for directing the correction of all nonconforming work.

This letter is effective immediately until modified by the Quality Control Program Manager with concurrence of the SES-TECH Project Manager, the NAVFAC MID-LANT, Remedial Project Manager, and the Resident Officer in Charge of Construction.

Sincerely,

A handwritten signature in blue ink that reads "Gregory D. Joyce".

Gregory D Joyce, ASQ CQM
Quality Control Program Manager
Tetra Tech EC, Inc.

cc: Stavros Patselas, Project Manager



Fields of Special Competence

- Managing environmental remediation and heavy construction projects.
- Site project management
- Remediation planning, remediation, and installation
- Construction management and oversight
- Hazardous and solid waste management
- Managing and supervising government construction projects and personnel

Education

Civil Engineering, 2002

Chemistry and Environmental Law, 1991

Business Management, 1982

Health and Safety Training

- OSHA 30-hour Construction Course
- Competent Person Training
- 10-hour Supervisor Training
- Confined Space Safety Training
- Red Cross Adult First Aid & CPR
- USACE Construction Quality Management for Contractors
- DOE Advanced Energy Codes
- DOE Advanced Lighting Design
- Certified Hazardous Waste Technician
- Certified Asbestos Technician
- UXO Survey Certified
- 40-hour OSHA HAZWOPER, 1985
- 8-hr. OSHA HAZWOPER refresher

Work History

Sealaska 2011-present

W.M. Schlosser Co. 2009-2011

Vanguard Contractors, LLC 2007-2009

Engineering & Environment, Inc. 2006-2007

ESA Environmental Specialist, Inc. 2004-2006

CAPE Environmental Services, 2002-2004

J.A. Jones Management Services Corp. 2001-2002

OHM/The IT Group 1991-2001

JOHN J. DORMI

Project Manager

Mr. Dormi brings over 20 years experience in managing fast-tracked environmental remediation and heavy construction projects. Including site, project management; remediation planning, remediation and installation; construction management and oversight; and hazardous and solid waste management; 10 years experience managing and supervising government construction projects, and personnel. Ten years experience in on-site construction Project Management, QAQC, Health & Safety Inspection and Management.

Notable Projects

Seymour Johnson Air Force Base - Regulated UST Removal/ AST Installation for Refueling Fighter Jets and Government Vehicles

Managed and coordinated the removal of six (6) regulated underground storage tanks (USTs). Managed the installation of one (1) 15,000 GAL AST, one (1) 4,000 gallon AST and one (1) 500 gallon AST. Managed the installation of the fuel distribution system for the F-22 Raptor Fighter Jets and managed the installation of the fuel distribution system for government vehicle. Managed the installation of a tank monitoring system, (Veeder--Root TSL 350) along with the design and installation of new Tank Accessories. Other responsibilities included managing and coordinating regulatory issues, for the UST removal, subcontractors, Contractor Quality Control, and Health & Safety oversight.

Atlantic Division NAVFACENGCOCOM - Dam Neck, VA, Building 469 Repair/ Upgrade Underground Storage Tank

On-Site Project Manager, SSHO for various upgrades and repair to three underground storage tanks. The installation of a tank monitoring system, (Veeder- Root TSL 350). The design and installation of a new Tank Access way Sump. Managed subcontractors and provided On-Site Contractor Quality Control and Health & Safety oversight.

Atlantic Division NAVFACENGCOCOM - Naval Station Roosevelt Roads, Ceiba, PR, SPCC Corrective Actions

On-Site Project Manager, SSHO, and QCO. This project had many different tasks ranging from the installation of nine (9) new Con-vault Aboveground Storage Tanks (ASTs) ranging in size, to the installation of new Veeder- Root Tank Monitoring Systems at 45 Location throughout the base. Managed subcontractors and provided On-Site Contractor Quality Control and Health & Safety oversight.

Norfolk Naval Station, Norfolk, VA – Repair Aircraft Parking Apron and Bulkhead, SP Area

The work included Install 820 feet of composite sheet pile bulkhead in front of an existing bulkhead filling in the space between the old and new sheet pile with lean concrete. Demolish 4000 liner feet of the pile cap along the entire length of the aircraft taxi – way and replace with new a concrete pile cap. Removal of paved apron and replacement with concrete apron, excavation of fill material behind an existing bulkhead, inspection, and repair of tie rods, backfilling of excavated material, jet grouting of a soil-cement curtain wall, installation of subsurface drains, and incidental related work.



EXPERIENCE

W.M. Schlosser Co, VA (2009-2011), Project Manager

HRT-Norfolk Light Rail Station Finishes – Norfolk, VA

This Contract consists of constructing concrete platforms for eleven stations located 7.5 miles starting from the Eastern Virginia Medical Center to Newtown Road. The work includes constructing concrete platforms, installing and furnishing, benches, trashcans, metal handrails, glass paneled patron shelters, metal roofing, metal structures, and installing lighting poles Construction of drainage facilities to interface with facilities. Installation of sediment and erosion control measures and devices. Installation of water, sewer, electric and communication services. Installation of platform shelter and exterior lighting for the station and surrounding area.

Vanguard Contractors, LLC, VA (2007-2009), Project Manager

Norfolk Naval Station, Norfolk, VA – Repair Aircraft Parking Apron and Bulkhead, SP Area

The work included Install 820 feet of composite sheet pile bulkhead in front of an existing bulkhead filling in the space between the old and new sheet pile with lean concrete. Demolish 4000 liner feet of the pile cap along the entire length of the aircraft taxi – way and replace with new a concrete pile cap. Removal of paved apron and replacement with concrete apron, excavation of fill material behind an existing bulkhead, inspection, and repair of tie rods, backfilling of excavated material, jet grouting of a soil-cement curtain wall, installation of subsurface drains, and incidental related work.

P-699 Aircraft Maintenance Hanger Norfolk Naval Station, Norfolk, VA – Aircraft Maintenance Hanger (MH-60 CV)

Managed a design Build project of two-module, Type I hangar for MH-60s helicopters. Demolish and install a concrete apron.

Engineering & Environment, Inc. (2006-2007), Project Manager

Seymour Johnson Air Force Base - Regulated UST Removal/ AST Installation for Refueling Fighter Jets and Government Vehicles

Managed and coordinated the removal of six (6) regulated underground storage tanks (USTs). Managed the installation of one (1) 15,000 GAL AST, one (1) 4,000 gallon AST and one (1) 500 gallon AST. Managed the installation of the fuel distribution system for the F-22 Raptor Fighter Jets and managed the installation of the fuel distribution system for government vehicle. Managed the installation of a tank monitoring system, (Veeder-- Root TSL 350) along with the design and installation of new Tank Accessories. Other responsibilities included managing and coordinating regulatory issues, for the UST removal, subcontractors, Contractor Quality Control, and Health & Safety oversight.

ESA Environmental Specialists, Inc. (2004-2006), Project Manager

Veterans Administration - Florence National Cemetery Gravesite Expansion - Florence, SC

Managed the Expansion of the Florence National Cemetery Gravesite, managed the construction of new rest facilities, new roadways, storm sewers and floral watering stations. Prepared project specific work plan, quality control plan site-specific health and safety plan. Prepared and submitted all required submittals as per the contract plans and specifications. Prepared all financial documentation as well as preparing and maintaining the construction progress schedule.

Department of Labor – Kittrell Wastewater treatment Plant - Kittrell, NC

Managed and coordinated the regulatory issues, managed and coordinated the I & I study and all costing and construction activities to bring the plant into compliance.

Department of Air Force – Design/Build Renovation to Bldg. 8730 at Eglin Air Force Base - Eglin, FL

Prepared project specific work plan, quality control plan site-specific health and safety plan. Prepared and submitted all required submittals as per the contract plans and specifications. Prepared all financial documentation as well as preparing and maintaining the construction progress schedule. Managed the engineering and design of the mechanical, electrical systems, HVAC ductwork, lightning protection, construction modifications and building structures.

Sothern Division NAVFACENGCOM- Pensacola Naval Air Station - Pensacola, FL

Managed a team of engineers consisting of Civil, Structural, Electrical Mechanical, and Environmental to collect review and analyze of the existing wastewater collection, conveyance, and treatment systems for outstanding repairs that are required to restore Pre-Ivan Conditions. Hardening improvements that were required to improve sustainability and decrease vulnerability to flooding and wind damage of future hurricane or tornado events.

DOAF – Pope Air Force Base, Fayetteville North Carolina, Survey and Repair 28 Hanger Doors & 8 Nose Dock Doors

Prepared project specific work plan, quality control plan site-specific health and safety plan. Prepared and submitted all required submittals as per the contract plans and specifications. Prepared all financial documentation as well as preparing and maintaining the construction progress schedule. Surveyed and repaired 36 Hangar doors and 18 Nose Dock doors, created a maintenance database based on the survey results. The database contains detailed information for maintaining the hangar doors. Inspected and evaluated all electrical, mechanical, safety systems, and components on all the doors. After the survey and database was completed, the repairs were made to all hangar doors. Do to the age of the buildings most of the parts were unavailable and had to be field manufactured. The parts that were made on-site where: wheels, axels, bearings, and tracks.

CAPE, Norfolk, VA (2002-2004), Project Manager

Atlantic Division NAVFACENGCOM – Norfolk Naval Station, Norfolk VA, Build E-13, Historical Train Station Restoration, and conversion to a CPO (chief petty officer) Club

Prepared project specific work plan, quality control plan site-specific health and safety plan. Prepared and submitted all required signals as per the contract plans and specifications. Prepared all financial documentation as well as preparing and maintaining the construction progress schedule. Managed the removal of ACM (asbestos containing material), and the removal of lead based paint. Conducted on-site progress meetings with the government and attended all government-required meetings. Interfaced with Navy contract officer throughout the project to maintain open communication regarding all necessary contractual requirements. Managed the demolition subcontractors and the construction of the CPO club and Restaurant.

Atlantic Division NAVFACENGCOM - Dam Neck, VA, Building 469 Repair/Upgrade Underground Storage Tank

On-Site Project Manager, SSHO for various upgrades and repair to three underground storage tanks. The installation of a tank monitoring system, (Veeder- Root TSL 350). The design and installation of a new Tank Access way Sump. Managed subcontractors and provided On-Site Contractor Quality Control and Health & Safety oversight.

Atlantic Division NAVFACENGCOM - Naval Station Roosevelt Roads, Ceiba, PR, SPCC Corrective Actions

On-Site Project Manager, SSHO, and QCO. This project had many different tasks ranging from the installation of nine (9) new Con-vault Aboveground Storage Tanks (ASTs) ranging in size, to the installation of new Veeder- Root Tank Monitoring Systems at 45 Location throughout the base. Managed subcontractors and provided On-Site Contractor Quality Control and Health & Safety oversight.

Atlantic Division NAVFACENGCOM - OP-1 Viequies Island, Viequies, PR, Tank Closure

Site Superintendent, SSHO, and QCO, The removal for Four Underground Storage Tanks from OP-1 Bombing range. Managed subcontractors and provided On-Site Contractor Quality Control and Health & Safety oversight.

Atlantic Division EFANFACENGCOM - Dover AFB, Dover, DE, RCRA Closure of Hazardous Waste Storage Facility 1306

Site Superintendent, SSHO and QCO, Decontamination of a three Bays at storage facility at Dover AFB. Managed subcontractors and provided On-Site Contractor Quality Control and Health & Safety oversight.

Atlantic Division, LANT NAVFACENGCOM - Asbestos Abatement, Operation Highland Beauty, DTA Harvey Point, NC, Abatement of all Asbestos Siding from a Newly Acquired Building

PM, Site Superintendent, SSHO and QCO, Abatement of Transite Asbestos Siding. Managed subcontractors and provided On-Site Contractor Quality Control and Health & Safety oversight.

Atlantic Division, LANT NAVFACENGCOM - Asbestos Removal at Seven Buildings NSGA Sabana Seca, PR

The Removal of various types of Asbestos from seven buildings, managing subcontractors and providing On-Site Contractor Quality Control and Health & Safety oversight.

OHM/The IT Group (1991-2001), Site Manager/Project Manager

Atlantic Division RAC, New Gosport Landfill - Portsmouth, VA

Site Manager for soil stabilization and excavation of 60,000 tons of lead-contaminated abrasive blast media (ABM) and disposal. Wetland restoration to restore pristine lands suitable for wildlife.

Atlantic Division RAC, Yorktown Naval Weapons, 1999–2000,

Site Manager for construction of a 650- by 50-foot greenhouse over a treatment cell for the biological treatment of 5,000 cubic yards (CY) of trinitrotoluene (TNT) contaminated soils. Construction of a temporary road into tidal wetlands to hold quad-axel trucks to haul soil from the wetlands to the bio-cell.

Atlantic Division RAC, Yorktown Naval Weapons Station, 1998

Site Manager for excavation and disposal of polyaromatic hydrocarbon (PAH) and lead-contaminated soils. Removal of a 5-acre landfill and restoration back to pristine land suitable for wildlife.

Atlantic Division RAC, Q Area, Norfolk Naval Base, 1998

Site Manager for construction of 2 miles of an extensive piping network and the construction of two buildings to house remediation equipment. Installation of three air sparging and vapor extraction systems. The three areas were impacted with dissolved phase 1, 1, 1-trichloroethelene in groundwater.

Atlantic Division RAC, Norfolk Naval Base, 1997-1999

Site Manager for installation of a product recovery system. Four areas were impacted with free product floating on the water table. The product present at Areas A, B, C and Pier 7 was predominately thick, viscous oil called Navy Special Fuel Oil (NFSO). The systems were installed to intercept and recover free-phase petroleum product to mitigate into the nearby Elizabeth River. The systems were designed and constructed with a value engineering approach that will enable subsequent enhancement and/or the addition of more recovery wells in the future. Work performed on time and under budget.

Atlantic Division RAC, Camp Allen Wastewater Treatment Plant, Camp Allen, Norfolk, VA, 1996

Site Manager for installation of several miles of double walled piping and a 75- by 100-foot brick building to house treatment equipment. Construction of a 50- by 30-foot steel building to house a vapor extraction system integrated with the water treatment plant. This water treatment plant designed to treat a maximum 500 gpm.

Atlantic Division RAC, Craney Island Fuel Facility, Portsmouth, VA, 1995

Site Manager for excavation and biological treatment of 80,000 CY of contaminated soil.

Atlantic Division RAC, The Naval Observatory, Washington, DC, 1995-1996.

Site Manager for the removal of a 550-gallon UST contaminated with fuel oil, and the installation of a 500-gallon AST to fuel an emergency generator for Vice President Al Gore. Project performed on schedule.

Atlantic Division RAC, Naval Air Warfare Center in Trenton, NJ, 1994-1995.

Site Manager for the construction of a fully automated water treatment plant to treat more than 2 million gallons of trichloroethene (TCE) contaminated water at 20 gpm.

Pennsylvania Power and Light, York Haven, PA.

Site Manager for the installation and startup of five dual vapor extraction units.

Pennsylvania Department of Environmental Protection.

Site Manager for the installation of a 22-well soil vapor extraction (SVE) system to remove solvents at Pennel Auto Body.

Conrail, Lancaster, PA.

Site Manager. Responsible for the bioremediation of 10,000 CY of soil contaminated with diesel fuel.

Conrail, Meadville, PA.

Site Manager. Responsible for the design and installation of a total fluids recovery system to reclaim product. Project tasks included the installation of six 36- by 25-foot recovery sumps and three 4- by 25-foot product recovery wells. This system was installed to draw down the water table to recover fuel oil from the groundwater and to keep the product from leaking into French Creek.

Economy Color Card, Elizabeth, NJ.

Site Manager. Managed the recovery of TCE and oil in groundwater and soil, and well sampling.

Patterson, NJ.

Site Manager. Managed product recovery and the installation of monitoring wells to perform soil and well sampling.

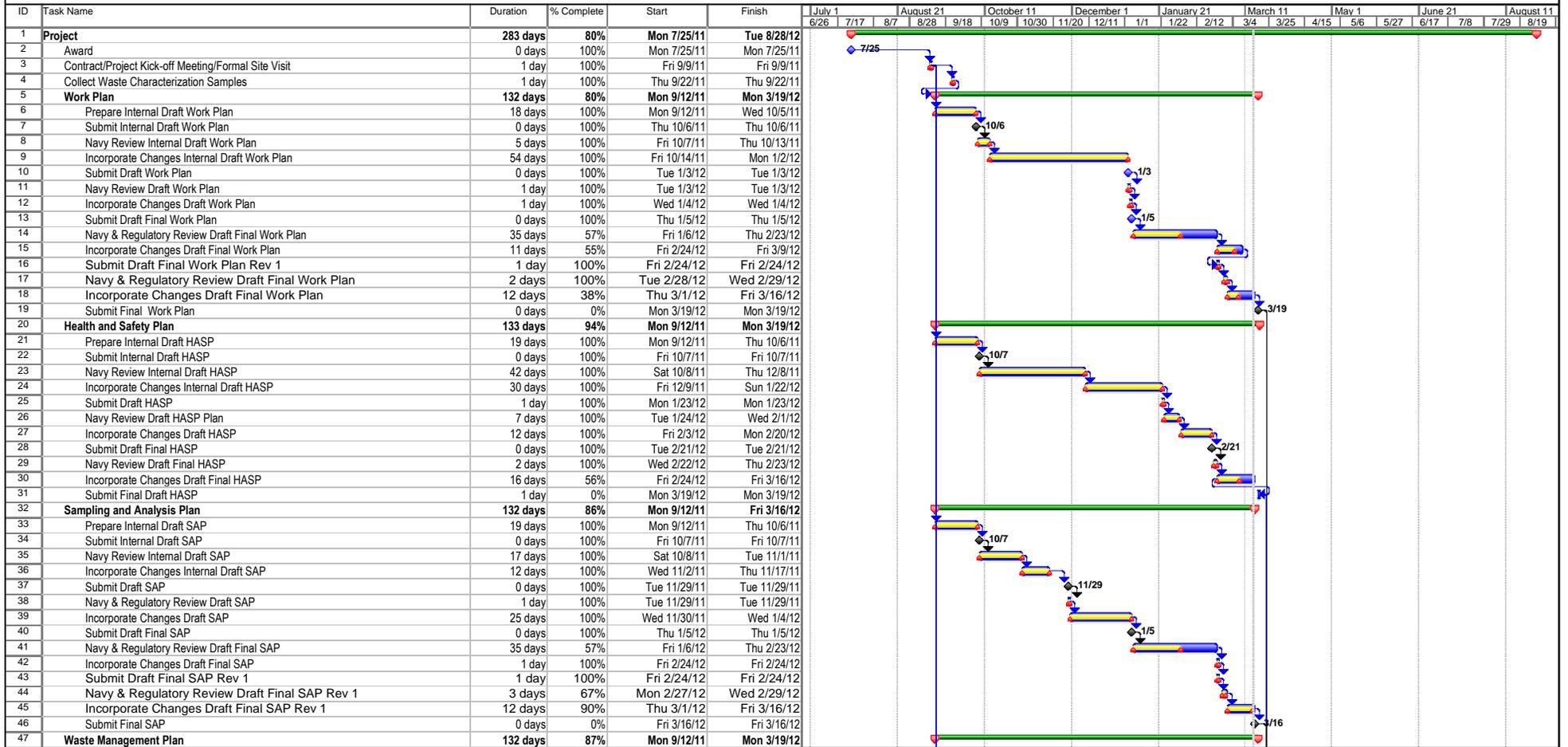
Chevron USA Fuel Farm, Linden, NJ.

Installation and O&M of four product recovery systems for soil and water sampling. These recovery systems were installed to recover free phase fuel oil from groundwater and to prevent it from leaking into the Raritan River.

ATTACHMENT C
PROJECT SCHEDULE

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NAS Oceana Salvage Yard NTCRA
 Contract No.: N40085-11-D-0043
 CTO No.: 0001

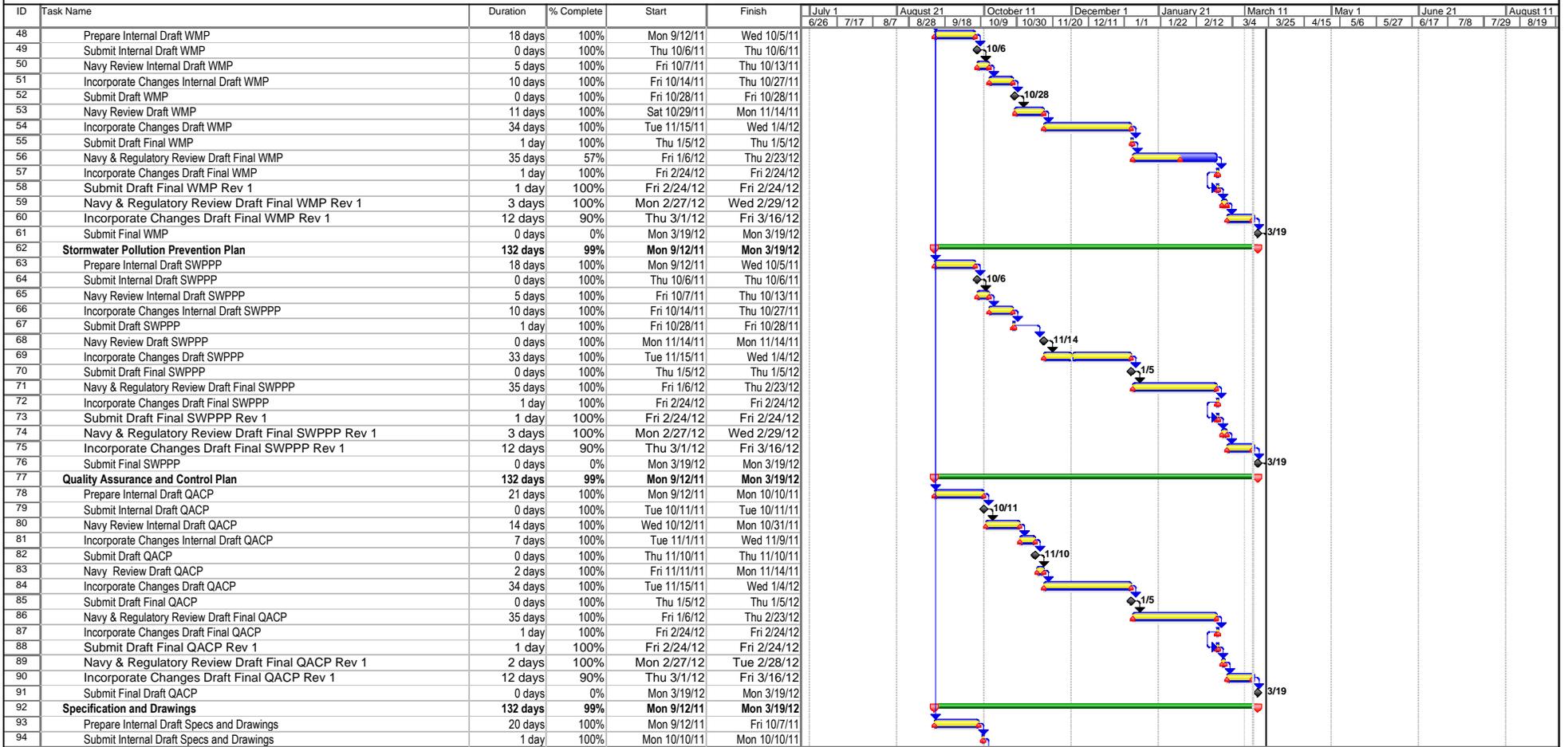


Project: Oceana Salvage Road NTCRA
 Date: Fri 3/16/12

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

Page 1

NAS Oceana Salvage Yard NTCRA
 Contract No.: N40085-11-D-0043
 CTO No.: 0001



Project: Oceana Salvage Road NTCRA
 Date: Fri 3/16/12

Task Progress: Milestone: Rolled Up Task: Rolled Up Progress: External Tasks: Group By Summary:

Summary: Rolled Up Milestone: Split: Project Summary: Deadline:

Page 2

NAS Oceana Salvage Yard NTCRA
 Contract No.: N40085-11-D-0043
 CTO No.: 0001

ID	Task Name	Duration	% Complete	Start	Finish	July 1		August 21		October 11		December 1		January 21		March 11		May 1		June 21		August 11	
						6/26	7/17	8/7	8/28	9/18	10/9	10/30	11/20	12/11	1/1	1/22	2/12	3/4	3/25	4/15	5/6	5/27	6/17
95	Navy Review Internal Draft Specs and Drawings	10 days	100%	Mon 10/10/11	Fri 10/21/11																		
96	Incorporate Changes Internal Draft Specs and Drawings	14 days	100%	Mon 10/24/11	Thu 11/10/11																		
97	Submit Draft Specs and Drawings	0 days	100%	Thu 11/10/11	Thu 11/10/11																		
98	Navy Review Draft Specs and Drawings	2 days	100%	Fri 11/11/11	Mon 11/14/11																		
99	Incorporate Changes Draft Specs and Drawings	35 days	100%	Tue 11/15/11	Thu 1/5/12																		
100	Submit Draft Final Specs and Drawings	1 day	100%	Fri 1/6/12	Fri 1/6/12																		
101	Navy & Regulatory Review Draft Final Specs and Drawings	35 days	100%	Fri 1/6/12	Thu 2/23/12																		
102	Incorporate Changes Draft Final Specs and Drawings	1 day	100%	Fri 2/24/12	Fri 2/24/12																		
103	Submit Draft Final Specs and Drawings Rev 1	1 day	100%	Fri 2/24/12	Fri 2/24/12																		
104	Navy & Regulatory Review Draft Final Specs and Drawings Rev 1	2 days	100%	Mon 2/27/12	Tue 2/28/12																		
105	Incorporate Changes Draft Final Specs and Drawings Rev 1	12 days	90%	Thu 3/1/12	Fri 3/16/12																		
106	Submit Final Specs and Drawings	0 days	0%	Mon 3/19/12	Mon 3/19/12																		
107	Project Team Meeting	5 days	0%	Tue 3/13/12	Mon 3/19/12																		
108	Meeting Preparation	1 day	0%	Mon 3/19/12	Mon 3/19/12																		
109	Attend Meeting	1 day	0%	Tue 3/13/12	Tue 3/13/12																		
110	Field Work	38 days	0%	Mon 3/26/12	Tue 5/29/12																		
111	Start Field Work	0 days	0%	Mon 3/26/12	Mon 3/26/12																		
112	Mobilization, Set up and Erosion Control	2 days	0%	Mon 3/26/12	Tue 3/27/12																		
113	Survey and Layout	1 day	0%	Mon 3/26/12	Mon 3/26/12																		
114	Clearing and Grubbing	6 days	0%	Mon 3/26/12	Tue 4/3/12																		
115	Soil Stabilization	5 days	0%	Mon 4/2/12	Fri 4/6/12																		
116	Waste Characterization Sampling	6 days	0%	Mon 4/9/12	Tue 4/17/12																		
117	Excavation of Shoulder Area	6 days	0%	Wed 4/18/12	Thu 4/26/12																		
118	Excavation of Staging Area	5 days	0%	Mon 4/30/12	Mon 5/7/12																		
119	Confirmatory Sampling	8 days	0%	Thu 5/10/12	Mon 5/21/12																		
120	Transportation and Disposal	11 days	0%	Wed 4/18/12	Mon 5/7/12																		
121	Restoration of Access Road and Staging Area	5 days	0%	Tue 5/8/12	Tue 5/15/12																		
122	Restoration of Access Road	6 days	0%	Wed 5/16/12	Thu 5/24/12																		
123	Demobilization	2 days	0%	Mon 5/28/12	Tue 5/29/12																		
124	Completion Report	72 days	0%	Mon 5/21/12	Tue 8/28/12																		
125	Prepare Internal Construction Completion Report	20 days	0%	Mon 5/21/12	Fri 6/15/12																		
126	Submit Internal Construction Completion Report	0 days	0%	Fri 6/15/12	Fri 6/15/12																		
127	Navy Review Internal Construction Completion Report	10 days	0%	Mon 6/18/12	Fri 6/29/12																		
128	Incorporate Changes Internal Construction Completion Report	10 days	0%	Mon 7/2/12	Fri 7/13/12																		
129	Submit Draft Construction Completion Report	0 days	0%	Fri 7/13/12	Fri 7/13/12																		
130	Navy and Regulatory Review Draft Construction Completion Report	22 days	0%	Mon 7/16/12	Tue 8/14/12																		
131	Incorporate Changes Draft Construction Completion Report	10 days	0%	Wed 8/15/12	Tue 8/28/12																		
132	Final Draft Construction Completion Report	0 days	0%	Tue 8/28/12	Tue 8/28/12																		

Project: Oceana Salvage Road NTCRA
 Date: Fri 3/16/12

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

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ATTACHMENT D

PROJECT DRAWINGS AND SPECIFICATIONS

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**DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, ATLANTIC
REMEDIAL ACTION OPERATIONS (RAO)/LONG TERM MANAGEMENT (LTM),
ENVIRONMENTAL MULTIPLE AWARD CONTRACT (EMAC)
CONTRACT NO. N40085-11-D-0043
TASK ORDER NO. 0001**

**FINAL
SPECIFICATIONS AND DRAWINGS
FOR
OCEANA SALVAGE YARD ACCESS ROAD
NON-TIME-CRITICAL REMOVAL ACTION
AT
NAVAL AIR STATION OCEANA
VIRGINIA BEACH, VA**

Issued:

March 23, 2012

Prepared for:

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SECTION 011100

SUMMARY OF WORK

PART 1 GENERAL

1.1 DEFINITIONS

- A. Wherever the following terms are used in these specifications, it is understood that they represent the following:
1. "Site" – The Oceana Salvage Access Road at the Oceana Naval Air Station, Virginia Beach, Virginia.
 2. "Navy" – Department of the Navy, Naval Facilities Engineering Command MidAtlantic.
 3. "Engineer" – SES - Tech Atlantic
 4. "Contractor" – SES – Tech Atlantic

1.2 SITE CONDITIONS

A. Site Description

NAS Oceana, located in Virginia Beach, Virginia, has been in existence since 1940 when it was established as a small auxiliary airfield. Since 1940, NAS Oceana has grown to more than 16 times its original size and is now a 6,000-acre master jet base supporting a community of more than 9,100 Navy personnel and 11,000 dependents. The primary mission of NAS Oceana is to provide the personnel, operations, maintenance, and training facilities to ensure that fighter and attack squadrons on aircraft carriers of the U.S. Atlantic Fleet are ready for deployment. The project Site is not within the gated portion of the base, but it is owned by the Navy. Oceana Salvage is located within the buffer zone of NAS Oceana, to the east of Oceana Blvd. Because Navy property land-locks Oceana Salvage, the access road to Oceana Salvage is on Navy property; Oceana Salvage maintains an easement to continue access. The Access Road provides the only ingress and egress from Oceana Boulevard to the adjacent Oceana Salvage Yard, which is privately owned. Interviews of salvage yard personnel indicated that a large volume of crushed car battery casings were brought to the salvage yard in the 1960s and were used as fill material for the base of the Access Road.

B. Site History and Investigation

The Oceana Salvage Yard Access Road was first investigated as part of an Environmental Survey of the entire salvage yard. During this investigation, several soil samples were collected within the Access Road and analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), and inorganics. Lead was detected in soil from waste piles at concentrations of up to 86,500 milligrams per kilogram (mg/kg).

In January 2005, the Navy completed a direct-push investigation to verify whether the Access Road was actually constructed on crushed car batteries. Direct-push samples were collected at 25 locations along the

Summary of Work

roadway to a depth of 4 ft below ground surface (bgs). Waste containing battery casings was encountered at all but one sample location. Battery fragments were encountered between approximately 0.1 and 3 ft bgs. The average depth to the bottom of the batteries was approximately 2.5 ft bgs, with batteries extending to 3.0 ft bgs at two locations. The thickness of the layer of battery fragments was approximately 0.5 ft to 1.0 ft. All soil samples were field screened for lead using field test kits. The majority of the samples exceeded the field test kit maximum detection limit of 400 mg/kg. Four soil samples were collected for laboratory lead analysis. Concentrations of lead detected in these samples ranged from 18.1 mg/kg to 149,000 mg/kg. Lead concentrations detected were found above the residential soil screening level of 400 mg/kg from USEPA's Regional Screening Level Table (USEPA, 2010) and therefore were determined to potentially pose unacceptable risks to human receptors.

In 2007, the USEPA drafted a Draft Administrative Settlement and Order on Consent for Removal Response Action Order ("AOC" or "Settlement Agreement") to implement actions to prevent exposure to contaminants potentially posing unacceptable risk to human health related to lead contamination in soil, defined as soils exceeding 800 mg/kg (lead), beneath the Oceana Salvage access road (including the improved staging areas at the east end of the access road) and the access road shoulders (strips of land extending 10 feet from the edges of either side of the access road to a maximum depth of 2 feet bgs).

In 2010, the Navy delineated areas of lead contamination, as defined by the EPA's AOC. To delineate the shoulders of the access road, a total of 33 grids were established along both sides of the access road/staging areas. Each grid extended 10-feet from the edge of the access road/staging area and had a length of approximately 50' along the road/staging area. Three point composite samples were collected to a depth of 2-feet bgs. Of the 33 grids delineated and sampled, 18 grids were determined by the Navy to exceed EPA AOC's action level. These grids are exclusively on the eastern half of the access road.

1.3 SUMMARY

- A. This section is intended to provide a brief summary of the various elements of work. This section does not provide the technical detail of the referenced sections for particular work activities, but describes the work as a whole, providing an overall perspective to the separate tasks and their interrelationships. This summary should be read in conjunction with other specifically referenced sections, the Construction Drawings, and the Project Plans. Use in conjunction with all other sections to establish the total requirements of the work.
- B. The work is being performed in accordance with the "Contract Task Order" for the Oceana Salvage Access Road, Oceana Naval Air Station, Virginia Beach, Virginia (hereinafter referred to as the "CTO").
- C. The remedial action will consist of open excavations to remove the contaminated soil, backfill the excavations, and capping the access road with gravel and asphalt in accordance with the Contract Drawings.
- D. The contaminated soil within the access road shoulders will be removed from an approximate area of 9,808 square feet, to a depth of two feet, for an estimated total of 726.5 cubic yards. To check for residual contamination remaining in the soil beneath this two feet excavation, a three-point composite soil sample will be collected from the bottom of each excavated grid in the shoulder area.

Summary of Work

- E. The contaminated soil within the staging areas (north and south) at the east end of the access road will be removed from an approximate area of 3,503 square feet, to a depth of two feet, for an estimated total of 259.5 cubic yards. To check for residual contamination remaining in the soil beneath this two feet excavation, a three-point composite soil sample will be collected from the bottom of each excavated area.
- F. The overall scope of work is divided into several activities as outlined below. The referenced sections for each work category represent the principal construction elements only. Most remaining sections are applicable to the majority of the categories of work, such as Health and Safety Procedures, etc.
1. Site Preparation
 - a. Temporary Erosion and Sediment Control and Stormwater Management
 - b. Mobilization
 2. Clearing and Grubbing
 - a. Site Clearing
 - b. Protection of larger trees
 3. Excavation and Backfilling
 - a. Removal and Disposal of Contaminated Soils
 - b. Transport & Disposal of Hazardous Materials
 - c. Fill excavated areas with general fill and topsoil or shoulder stone
 4. Access Road Capping
 - a. Gravel capping
 - b. Asphalt capping
- G. Work Covered by the Contract Documents
1. The major construction elements of the Work consists of, but is not necessarily limited to, the following activities:
 - a. Complying with the requirements of all permits, and providing all services, utilities, equipment, and facilities required to perform the work activities in accordance with these Specifications, the Construction Drawings, and the Project Plans. The Engineer will provide any necessary permits for this work.
 - b. Implementing the following Project Plans:

Summary of Work

- 1) Construction Work Plan
 - 2) Site Specific Health and Safety Plan (HSP)
 - 3) Quality Assurance and Control Plan
 - 4) Sampling and Analysis Plan
 - 5) Storm Water Pollution Prevention Plan
 - 6) Waste Management Plan
- c. Site Preparation activities include furnishing all labor, material, and equipment to provide the following:
- 1) Necessary utilities (if any)
 - 2) Site support facilities (barricades, parking, etc.)
 - 3) Equipment and material staging areas
 - 4) Personnel decontamination and hygiene facilities
 - 5) Establishment of exclusion zone and contaminant reduction zone
 - 6) Temporary barriers around the work zone
 - 7) Access control to the site and construction areas
 - 8) Coordination with affected utilities for the abandonment, removal and/or support of subsurface and aboveground utilities as needed to perform the Work
- d. Soil Erosion and Sediment Control
- e. Comply with the requirements of the Storm Water Pollution Prevention Plan (SWPPP) prepared by Engineer and approved by the Navy. Refer to Drawing notes and details for soil erosion and sediment control. A copy of the approved SWPPP will be provided to the Contractor prior to the start of construction.
- f. Install, maintain, and modify (if necessary) the temporary soil erosion and sediment control measures for the construction activities as shown on the Construction Drawings and in accordance with the approved SWPPP. If any modification to the approved SWPPP is required, inform Engineer prior to implementation in the field. Engineer will inform, in writing, the response to the proposed modification.

Summary of Work

- g. Clearing
- h. All affected areas of the Site shall be cleared as needed and as specified in Section 311000 – Site Clearing. Include all labor, equipment, and materials to perform the following:
 - 1) Removal/disposal/recycling of debris in areas requiring excavation.
 - 2) Removal and disposal/storage of fencing in areas needed to accomplish the work.
 - 3) Removal and disposal/storage of all existing vegetation, in areas requiring excavation, or as needed to perform the work.
 - 4) Removal and disposal/reuse of trees smaller than 6-inches in diameter within areas requiring excavation. All trees greater than 6-inches in diameter will remain in place and shall be protected during excavation activities.
- i. Excavation of Contaminated Soils
- j. Provide labor, equipment, and materials to perform the following:
 - 1) Coordination of excavations with the Navy’s or Oceana Salvage’s operations and activities.
 - 2) Excavation of soil in accordance with the Specifications and Construction Drawings.
 - 3) Excavation and handling of contaminated soil in accordance with Section 026100.
 - 4) Excavation of indigenous soil, historic fill, and other materials from the excavation areas.
 - 5) Loading of indigenous soil, historic fill, and other materials into trucks for off-site disposal.
 - 6) Stormwater management during all site activities, including removal of water within the excavation areas.
 - 7) Load, transport, and dispose of all non-contaminated concrete/masonry, metal, and all other debris to the Navy-approved disposal or recycling facilities.
 - 8) Placing, compacting, and testing certified clean fill from an approved off-site source within the excavation areas

Summary of Work

to the lines and grades as shown on the Construction Drawings.

- 9) Restoration of the excavation areas as depicted in the Construction Drawings and Specifications.

k. Gravel and Asphalt Cap (Access Road)

- l. Include furnishing all labor, equipment, and materials to perform the following:

- 1) Coordinate access road cap with other Work being performed at the Site. .
- 2) Excavate and dispose of contaminated material from the existing access road, as necessary, to slope the capped roadway surface to the existing roads on the west and east sides of the access road.
- 3) Install access road cap in accordance with the Specifications and Construction Drawings.

- m. Demobilization including removal and disposal of all temporary facilities installed under this contract.

2. Work Sequence

3. Plan, schedule, and perform the work in stages in order to complete the work within the requirements of this contract document and the requirements of the appropriate regulatory agencies.

a. Stage 1 – Project Start-up

- b. Project startup includes the following activities, which are not necessarily in the following order:

- 1) Develop and submit all required pre-construction submittals, including a detailed baseline project schedule, for acceptance;
- 2) Provide required entrance medical examinations;
- 3) Conduct site-specific safety training;
- 4) Provide temporary personnel areas and hygiene facilities;

Summary of Work

- 5) Establish a temporary active work area; install gates and signs to establish work zones and restrict access to the site and the work zones;
 - 6) Construct administration area, as necessary;
 - Safety equipment and supply storage; and
 - Site Security.
 - 7) Install materials and equipment for decontamination operations;
 - 8) Implement soil erosion and sediment control measures in accordance with the requirements of the Drawings, and the requirements of the Storm Water Pollution Prevention Plan (SWPPP) prepared by Engineer and approved by the Navy.
 - 9) Establishment of the exclusion zone, the contamination reduction zone and the support zone (or “clean zone”) prior to initiating intrusive activities; and
 - 10) Removal / Relocation of existing utilities including, but not limited to electric poles/lights, and associated underground / overhead lines.
 - 11) Removal of all surface vegetation in accordance with Section 311100.
- c. Stage 2 – Intrusive Remedial Operations
- d. The remedial (excavation, handling, disposal and backfill) operations include the activities as described in the approved Remedial Action Work Plan for the Oceana Salvage Access Road.
- e. Stage 3 – Access Road Cap Installation
- 1) Construction of the access road cap as depicted on the Construction Drawings.
- f. Stage 4 – Demobilization
- 1) Decontaminate and remove from the site all Contractor-owned construction equipment and facilities.
 - 2) Dispose of all contaminated materials generated during and after construction for which decontamination is inappropriate, at approved facilities; and

Summary of Work

- 3) Phase out and remove soil erosion and sediment control measures.

1.4 PART 2 PRODUCTS

- A. Not Used

1.5 PART 3 EXECUTION

- A. Contractor

1. The Contractor is advised that the work performed on a site that may contain hazardous waste. The Contractor is responsible for developing and implementing a Site Specific Health and Safety Plan (HASP) for its operations. Implement this plan taking precautions as necessary to protect the public and work force personnel from potential hazards. Utilize personnel with approved hazardous waste training.
2. Coordinate all Work with the Navy.
3. Utilize every precaution to protect the property, utility lines, trees, adjacent roadways, and other structures from damage. Repair or replace any damage inflicted in a prompt manner as directed by Engineer at no additional cost to the Navy.
4. Take all measures required to minimize adverse impacts from execution of the work on Navy property. Coordinate vehicular and pedestrian traffic control plans, as necessary, with Navy and other applicable local authorities, as required. Implement traffic control in accordance with the requirements of the local authorities.

- B. Contractor's Use of Premises

1. Use space within the proposed remediation areas for storage purposes (see the Construction Drawings for proposed locations of remediation areas). Potential storage areas located outside of the proposed remediation areas must be agreed upon by the Navy. All storage and lay down areas are to be agreed upon and accepted by the Navy.
2. The protection and safe keeping of products, equipment, materials, etc under this Contract that are stored during the construction activities are the responsibility of the Contractor.

- C. Other Requirements

1. Notify owners and operators of underground utilities when construction, excavation, or other work may affect such utilities.

Summary of Work

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2. Use special care and/or special considerations that may be necessary for proper execution of the work, but which may not be specifically identified in this section. Comply with the entire requirements of the Contract Documents and exercise special care wherever required for proper execution of the intended work of this contract.
3. Contractor to obtain known utility information from Con Edison.
4. Comply with all the requirements of all permits that have been obtained, or applied for, by the Engineer, its consultants, and/or contractor.

END OF SECTION

Summary of Work

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SECTION 013119

PRE-CONSTRUCTION CONFERENCES

PART 1 GENERAL

1.1 Section includes

A. Pre-Construction Conference

1.2 Pre-Construction Conference

- A. A Pre-Construction Conference will be held between the Navy, the Engineer, and the Contractor prior to starting on-site construction. Attendance by the Contractor's Project Manager, Contractor's Project Superintendent, Contractor's Professional Engineer, Contractor's QA Manager, Site Safety Officer, and any major subcontractor's superintendents is required.
- B. The Contractor's schedule, particularly for the initial start-up period, will be discussed. Questions concerning the administrative requirements outlined during the Pre-Construction Conference or any other aspect of the project may also be addressed.
- C. Develop the meeting agenda and submit to the Engineer and Navy three (3) business days prior to the meeting, which may include, but not be limited to, the following:
1. Designation of responsible personnel;
 2. Subcontractors;
 3. Coordination with other contractors;
 4. Construction schedule;
 5. Processing of Construction Drawings and distribution of Submittals;
 6. Processing of field change requests, Request for Information (RFI) Contract Change Orders;
 7. Requirements for copies of Contract Documents;
 8. Insurance in force;
 9. Schedule of Values;
 10. Processing and Schedule of Payments, Invoicing procedures;
 11. Use of premises;
 12. Contractor responsibility for Health and Safety and first aid procedures;

Pre-Construction Conference

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13. Security;
14. Housekeeping;
15. Construction Drawings;
16. Use of existing utilities, if applicable, and how payment is to be processed; and
17. Any other project related items including, but not limited to, a thorough review of all relevant documents including environmental reports and the Remedial Action Work Plan for this project.

1.3 MEASUREMENT AND PAYMENT

- A. No separate measurement and/or payment will be made for the Work required by this Section.

PART 2 PRODUCTS

- A. Not Used

PART 3 EXECUTION

- A. Not Used

END OF SECTION

Pre-Construction Conference

013119-2

SECTION 013120

PROJECT PROGRESS MEETINGS

PART 1 GENERAL

1.1 SUMMARY

- A. This section describes the general requirements for the convening of the Project Progress Meetings that are necessary during execution of construction work.
- B. Additional meetings may be called by the Navy, Engineer, or the Contractor during any stage of this project when it is deemed necessary to raise any significant questions, establish new guidelines, introduce a new aspect to the project, or discuss any other items that will affect the progress of work.
- C. Meetings and conferences may take place at the project Site or some other location that is satisfactory to the Navy, Engineer, and the Contractor.
- D. All expenses associated with attending the meetings, except those that are incurred by the Navy or Engineer, shall be borne by the Contractor.

1.2 ATTENDANCE

- A. The following is a suggested list of personnel for the project progress meetings:
 - 1. Navy Project Manager;
 - 2. Engineer;
 - 3. Contractor's Project Superintendent;
 - 4. Contractor's Project Manager;
 - 5. Contractor's Site Safety Officer;
 - 6. Subcontractors (as appropriate to the agenda);
 - 7. Contractor's Licensed Surveyor (as appropriate to the agenda);
 - 8. Suppliers (as appropriate to the agenda); and
 - 9. Others as requested by Navy.

1.3 MEASUREMENT AND PAYMENT

- A. No separate measurement and/or payment will be made for Work required by this Section.

Project Progress Meetings

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PART 2 PRODUCTS

- A. Not Used

PART 3 EXECUTION

3.1 GENERAL

- A. Schedule and administer progress meetings a minimum of bi-weekly , or more frequently as required or as requested by Navy.
- B. The Navy's Contractor will be responsible for preparation of meeting minutes.
- C. The meeting minutes will be distributed to all for review and comment with 3 business days.
- D. The Navy's Contractor will incorporate comments and redistribute.

END OF SECTION

Project Progress Meetings

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SECTION 017000
PROJECT CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Closeout procedures.
- B. Final cleaning.
- C. Protecting installed construction.
- D. Project record documents.

1.2 CLOSEOUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Engineer's review.
- B. Provide submittals to Engineer and Navy required by authorities having jurisdiction.
- C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

1.3 FINAL CLEANING

- A. Execute final cleaning prior to final project assessment.
- B. Clean debris from drainage systems, as applicable.
- C. Clean site; sweep paved areas, rake clean landscaped surfaces.
- D. Remove waste and surplus materials, rubbish, and construction facilities from site.

1.4 PROTECTING INSTALLED CONSTRUCTION

- A. Protect installed Work and provide special protection where specified in individual specification sections.
- B. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- C. Prohibit traffic from landscaped areas.

Project Closeout Requirements

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1.5 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed Shop Drawings, Product Data, and Samples.
 - 6. Manufacturer's instruction for assembly, installation, and adjusting.
 - 7. Storm Water Pollution Prevention Plan
- B. Ensure entries are complete and accurate, enabling future reference by the Navy.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress, not less than weekly.
- E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates utilized.
 - 3. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
 - 1. Measured depths of excavations.
 - 2. Measured horizontal and vertical locations of underground utilities, if present, and appurtenances, referenced to permanent surface improvements.
 - 3. Measured locations of access road capping.
 - 4. Field changes of dimension and detail.
 - 5. Details not on original Contract drawings.
- G. Submit documents to Engineer with claim for final Application for Payment.

Project Closeout Requirements

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

Project Closeout Requirements

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SECTION 017123

SURVEYING

PART 1 GENERAL

1.1 SUMMARY

- A. Provide all materials, items, operations, or methods specified, listed, or scheduled on the Construction Drawings, Specifications, or Project Plans including all materials, labor, equipment, and incidentals necessary and required to conduct proper surveys required to stake and layout the work.
- B. Perform surveys for measurement of completed work.
- C. Related Sections
 - 1. Section 011100 – Summary of Work

1.2 Quality Control

- A. Perform surveys, layouts, and related work under the supervision of and signed by a land surveyor registered in the State of Virginia.

1.3 Submittals

- A. Submit to the Engineer and Navy, for review and acceptance, the name, address, telephone number, and Virginia registration number of a Land Surveyor before starting work.
- B. Submit a certificate signed by the Surveyor, certifying that elevations and locations of site-constructed features are in conformance, or non-conformance, with the Construction Drawings.
- C. Any change, deviation, or non-conformance with the Contract Documents, Specifications, or Construction Drawings shall be documented by a Field Change Memorandum (FCM) and subject to review and acceptance by the Navy and Engineer prior to final disposition (*i.e.*, payment, corrective actions, etc.).
- D. Prior to construction, submit a detailed Field Change Memorandum Procedure Plan and sample forms to document changes and non-conformances.
- E. During construction, submit a Field Change Memorandum documenting any and all changes, non-conformances, and deviations from the design and/or Specifications. Do not proceed with any work on an alleged change until the Navy and Engineer approve the change.

Surveying

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- F. Prior to construction, submit samples of the format of a detailed Field Change Request to document any and all minor changes made in the field. Do not proceed with any work on an alleged change until the Navy and Engineer approve the change.
- G. During construction, submit a Field Change Request documenting any and all minor changes made in the field. Do not proceed with any work on an alleged change until the Navy and Engineer approve the change.

1.4 Project Record Documents

- A. Maintain on-site for review by the Navy and/or Engineer, a complete, accurate log documenting any and all approved changes and control of survey work as it progresses.
- B. Submit an updated site plan that includes as-built excavation and grading details and calculations prepared by a Virginia Licensed Surveyor at the end of the project.
- C. Maintain daily logs documenting quantities of excavation, disposal, and backfill and provide copies of those records to Navy on a weekly basis.
- D. Submit all Record drawings (hardcopies and AutoCAD files) to Navy at the conclusion of Work.

PART 2 PRODUCTS

2.1 General

- A. Conduct surveying in accordance with Navy requirements and the following requirements, whichever is more stringent.
- B. The precision of horizontal and vertical controls shall meet or exceed Third-Order Class I and Third-Order accuracies, respectively, as defined by the National Geodetic Survey Standards.
- C. Surveys shall be contoured in 1.0 foot intervals.
- D. All conformance check surveys for elevation shall be ± 0.03 feet and for horizontal, control angles shall be to the nearest twenty (20) seconds ± 10 seconds and measured distances shall be to ± 0.03 feet.
- E. All measurement surveys for elevation shall be to the nearest 0.1 feet ± 0.05 feet and for horizontal distances shall be to ± 0.1 feet.

2.2 Materials

- A. Provide all materials as required to properly perform the surveys, including, but not limited to, instruments, tapes, rods, measures, mounts and tripods, stakes and hubs, nails, ribbons, other reference markers, and all else as required. All material shall be of good professional quality and in first-class condition.

Surveying

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- B. Calibrate and maintain lasers, transits, and other instruments in accurate calibration throughout the execution of the work. Make available calibration certificates for Navy or Engineer review upon request.

PART 3 EXECUTION

3.1 General

- A. Exercise care during the execution of all phases of the work to eliminate any disturbance to existing property structures, and to the landscape in the areas surrounding the work site.

3.2 Inspection

- A. Verify with the Navy and Engineer locations of site reference and survey control points prior to starting work. Promptly notify the Navy and Engineer of any discrepancies discovered. Verify layouts periodically during construction.

3.3 Survey Reference Points

- A. Protect survey control points prior to starting site work and preserve permanent reference points during construction. Do not relocate site reference points without prior written acceptance from Navy.
- B. Promptly report to Navy the loss, damage, or destruction of any reference point or relocation required because of changes in grades or other reasons. Replace dislocated survey control points based on original survey control at no additional cost to Navy. Perform replacement of dislocated survey control points by previously accepted licensed land surveyor.

3.4 Survey Requirements

- A. Reference survey and site reference points to the provided control monuments and record locations of survey control points, with horizontal and vertical data, on Project Record Documents.
- B. Establish lines and levels, locate and layout by instrumentation and similar appropriate means:
 - 1. Site features to be constructed including necessary stakes for cut, fill, placement, and grading operations and stakes for utility locations, When necessary to remove a grade marker for construction operations, the grade lines shall be maintained parallel and extending at least one (1) grade marker adjacent on each side.
- C. Obtain working or construction lines or grades.
- D. Carefully preserve all marks provided and, if destroyed or removed without Navy's acceptance, reset at the Contractor's expense.

Surveying

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- E. The cost to the Contractor of all work and delays occasioned by providing of lines and grades, or making other necessary measurements, will be considered as having been included in the unit and lump sum prices for items of work.
- F. All work not performed with the methods and equipment as submitted by the Contractor and approved by Navy shall be removed and replaced by the Contractor at his own expense, unless instructed otherwise by Navy.
- G. Keep the Navy and Engineer informed of the times and places at which he intends to work in order that they may have ample opportunity to furnish and/or verify the lines and elevations with a minimum of inconvenience to them or delay to the Contractor.
- H. Survey the locations of post-excavation samples taken by the Engineer.

3.5 Surveys for Measurement and Payment

- A. Perform certified surveys, in a manner acceptable to Navy, to determine quantities of unit cost work and percent of completed lump sum work including surveys to establish measurement reference lines. At the completion of the work, prepare a final Certificate of Cost based upon the Surveyed Record Drawings and reconcile with Navy any quantity discrepancies. The Final Payment will provide any adjustment that may be necessary.

END OF SECTION

Surveying

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SECTION 025100
EQUIPMENT DECONTAMINATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Establish Decontamination Area
2. Equipment Decontamination.
3. Disposal of Decontamination Residuals.

B. Related Sections

1. Section 026100 Excavation and Handling of Contaminated Material
2. Section 028100 Transportation and Disposal of Hazardous material

1.2 SUBMITTALS

- A. The Contractor shall submit a plan to the Engineer detailing proposed decontamination procedures, as well as means and methods.

PART 2 PRODUCTS

- A. Not Used.

PART 3 EXECUTION

3.1 GENERAL

- A. All equipment and materials shall be used in a manner to minimize the potential for, and extent of, any unnecessary contamination.
- B. Any earthwork equipment that performs intrusive activities in any part of the construction area or is used to handle impacted soils shall be decontaminated prior to leaving the area of contamination. Material that is considered to be impacted includes any material identified to be above the soil cleanup criteria per the Administrative Settlement and Order on Consent for Removal Response Action Order (AOC).

Equipment Decontamination

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- C. All Site traffic and traffic to Oceana Salvage Yard shall take care to avoid cross-contamination by clean trucks remaining outside of the impacted areas, and kept separate from the potentially contaminated truck traffic.
- D. Careful attention to cross-contamination is warranted. Delivery and haul vehicles shall not enter impacted areas, to avoid tracking impacted soils.
- E. Dry “gross” removal of soils on earthmoving or delivery vehicles within or over the area to be excavated is preferred over a washing approach.

3.2 EQUIPMENT DECONTAMINATION

- A. Thorough brushing down of equipment shall be conducted within the work area and contaminated soil from equipment shall be disposed into haul trucks.
- B. All vehicles and equipment leaving the Site shall be cleaned and rendered free of any visible solids through dry decontamination.
- C. If in contact with contaminated soil, the undercarriage and wheels of all trucks and construction vehicles/equipment shall be decontaminated prior to departing work area.
- D. Any time a piece of equipment moves from an area identified with material impacted to levels above the soil cleanup criteria per the AOC in to an area identified as clean will need to be decontaminated.

3.3 DISPOSAL OF DECONTAMINATION RESIDUALS

- A. Prior to the removal of decontamination materials from the Site for off-site disposal, Contractor shall sample the material as necessary to meet the requirements of the selected treatment/disposal facility. The Contractor shall consult with the Navy on what disposal facility will be used.
- B. Contractor shall be responsible for the storage, transportation, and handling of all impacted materials in accordance with all applicable local, state, and federal regulations, and Site requirements.
- C. Impacted or potentially impacted materials shall not be removed from the Site by the Contractor without prior notification to, and the approval of, the Engineer.

END OF SECTION

Equipment Decontamination

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SECTION 026100

EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Furnishing all labor, equipment, and materials necessary for performing impacted material excavation and handling.
2. Excavating for Access Road shoulders.
3. Excavating for Staging Areas.
4. Excavating for landscaping.

B. Related Sections:

1. Section 025100 Equipment Decontamination
2. Section 028100 Transportation and Disposal of Hazardous Material
3. Section 311100 Site Clearing and Grubbing
4. Section 312323 Backfill

1.2 REFERENCES

- ###### A. Local utility standards when working within 24 inches of utility lines.

1.3 SUBMITTALS

- ###### A. Excavation and Handling Plan: The Contractor will submit an Excavation and Handling Plan at least 7 calendar days prior to the Pre-Construction Conference. The Contractor should note that adverse conditions (heavy rain) may be encountered during excavation operations and provision should be made for such an event. No work at the Site, with the exception of Site inspections and surveys, shall be performed until the plan is approved. At a minimum, The Excavation and Handling Plan should include all elements listed below.

1. Excavation Approach
2. Personnel requirements

Excavation and Handling of Contaminated Material

3. Equipment and methods of excavation and backfill
4. Excavation and backfill sequence
5. Handling of impacted material

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with State of Virginia Highways Public Work's standard.
- B. Follow the Construction Quality Assurance and Control Plan.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 PREPARATION

- A. Call Miss Utility of Virginia at 1-800-552-7001 or dial 811 in Virginia not less than three working days before performing Work.
 1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Identify required lines, levels, contours, and datum.
- C. Notify NAVFAC MIDLANT to schedule a meeting with all interested parties that shall potentially be affected by excavation activities.
- D. Protect utilities indicated to remain from damage.
- E. Protect plant life, lawns, trees with diameter greater than 6 in. and other features remaining as portion of final landscaping.
- F. Protect bench marks, survey control points, existing structures, fences, from excavating equipment and vehicular traffic.

3.2 EXCAVATION

- A. Clearing shall be performed in accordance with Section 311000 – Clearing and Grubbing.
- B. The Contractor shall provide surveying services, by a Virginia Licensed Surveyor, to lay out the limits of the excavation shown on the Contract Drawings.
- C. Excavate subsoil to the depths shown on Contract Drawings.

Excavation and Handling of Contaminated Material

- D. The cutting edges of the equipment used for excavating impacted material shall be toothless to prevent over digging of impacted material.
- E. Blasting shall not be permitted.
- F. Compact disturbed load bearing soil in direct contact with foundations to original bearing capacity; perform compaction in accordance with 312323 - Backfill.
- G. Grade top perimeter of excavation to prevent surface water from draining into excavation.
- H. Trim excavation. Remove loose matter.
- I. Remove lumped subsoil, boulders, and rock up to 1/3 cu yd measured by volume. Remove larger material as specified in Section 312323 - Backfill.
- J. Areas being excavated shall be maintained in a clean condition, free from leaves, brush, sticks, trash, and other debris. Organic materials including stumps, roots, and debris encountered during excavation shall be considered grubbed material and shall be segregated and disposed of as hazardous waste.
- K. Notify Engineer of unexpected subsurface conditions.
- L. All items having any apparent historical or archeological interests which are discovered in the course of any excavation activities shall be carefully preserved. The Contractor shall leave the archeological find undisturbed and shall immediately report the find to the Navy and Engineer so that the proper authorities may be notified. Historical or archeological finds that might require work stoppages are not anticipated to occur during construction. Impacted finds shall be decontaminated by the Contractor prior to removal from the Site.
- M. Correct areas over excavated with structural fill Type specified in Section 312323 - Backfill.
- N. Excavated material will be immediately removed from Site in dump trucks and disposed of at a pre-designated disposal facility, pre-approved by the Navy.
- O. If dewatering of soil excavated is needed, saturated soil will be mixed with wood chips from clearing for stabilization and to absorb moisture.
- P. If soil needs dewatering before removal from Site, stockpile in designated area with secondary containment.
- Q. Repair or replace items indicated to remain that were damaged by excavation.
- R. All vehicles and equipment used for excavation shall be decontaminated in accordance with Section 025100 - Equipment Decontamination.

Excavation and Handling of Contaminated Material

- S. Excavated material that will be hauled off-site will be transported to an appropriate disposal facility in accordance with Navy pre-approval.

3.3 PROTECTION

- A. Prevent displacement or loose soil from falling into excavation; maintain soil stability.
- B. Protect structures, utilities and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth operations.

END OF SECTION

SECTION 028100

TRANSPORTATION AND DISPOSAL OF HAZARDOUS MATERIAL

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Requirements for packaging and removal of contaminated material
- B. Related Sections
 - 1. Section 026100 - Excavation and Handling of Contaminated Material

PART 2 PRODUCTS

2.1 SPILL RESPONSE MATERIALS

- A. Provide appropriate spill response materials including, but not limited to the following: containers, adsorbents, shovels, and personal protective equipment. Make available spill response materials at all times when contaminated materials/wastes are being handled or transported. Spill response materials shall be compatible with the type of materials and contaminants being handled.

2.2 PACKAGING

- A. Provide containers for packaging hazardous materials/waste samples consistent with the authorizations referenced in the Hazardous Materials Table in 49 CFR 172, Section .101, Column 8.
- B. Meet the corresponding specifications in 49 CFR 173 referenced in the Hazardous Materials table, 49 CFR 172, Section .101 for bulk and non-bulking packaging.
- C. Conform to the general packaging requirements of Subpart B of 49 CFR 173, to the requirements of 49 CFR 178 at the specified packing group performance level, to the requirements of special provisions of column 7 of the Hazardous Materials Table in 49 CFR 172, Section.101, and be compatible with the material to be packaged as required by 40 CFR 262.
- D. Provide other packaging related materials such as materials used to cushion or fill voids in over packed containers, etc.
- E. Sorbent materials shall not be capable of reacting dangerously with, being decomposed by, or being ignited by the hazardous materials being packaged. Use non-biodegradable sorbents to treat free liquids to be disposed of in landfills as specified in 40 CFR 264, Section .314. In addition, packaging notifications will be provided to the Navy in

Transportation and Disposal of Hazardous Material

accordance with 49 CFR 172, Section .178.2(c) regarding type and dimensions of closures, including gaskets, needed to satisfy performance test requirements.

2.3 MARKINGS

- A. Provide markings for each hazardous material/waste package, freight container, and transport vehicle consistent with the requirements of 49 CFR 172, Subpart D , 40 CFR 262, Section .32 for hazardous waste). Markings shall be capable of withstanding, without deterioration or substantial color change, a 180 day exposure to conditions reasonably expected to be encountered during container storage and transportation.

2.4 LABELING

- A. Provide primary and subsidiary labels for hazardous materials/wastes consistent with the requirements in the Hazardous Materials Table in 49 CFR 172, Section .101, Column 6. Meet design specifications required by 49 CFR 172, Subpart E including size, shape, color, printing, and symbol requirements. Labels shall be durable and weather resistant and capable of withstanding, without deterioration or substantial color change, a 180 day exposure to conditions reasonably expected to be encountered during container storage and transportation.

PART 3 EXECUTION

3.1 GENERAL

- A. The Contractor will properly characterize, manage, and provide for off-site disposal of lead contaminated soils in accordance with state and federal regulations, and permit requirements of the selected waste disposal facility.
- B. All waste disposal facilities will require Navy approval prior to shipment of any wastes.
- C. In the Construction Completion Report provide a copy of all load tickets for waste disposal. Waste manifests shall be coordinated with NAVFAC CM and RPM.

3.2 CONTAMINATED MATERIAL STORAGE

- A. When accumulating hazardous waste onsite, comply with generator requirements in 40 CFR 262 and any applicable State or local laws or regulations.
 - 1. Onsite accumulation times shall be restricted to applicable time frames referenced in 40 CFR 262, Section .34 and any applicable State or local law or regulation.
 - 2. Accumulation start dates shall commence when waste is first generated (*i.e.*, containerized or otherwise collected for discard).
 - 3. Only use containers in good condition and compatible with the waste to be stored.

Transportation and Disposal of Hazardous Material

4. Be responsible for ensuring containers are closed except when adding or removing waste, and for immediately marking all hazardous waste containers with the words "hazardous waste" and other information required by 40 CFR 262, Section .32 and any applicable State or local law or regulation as soon as the waste is containerized.
 5. An additional marking shall be placed on containers of "unknowns" designating the date sampled, and the suspected hazard.
 6. Be responsible for inspecting containers for signs of deterioration and for responding to any spills or leaks.
- B. Use Roll-Off Units to store contaminated material.
1. Use water tight roll-off units to temporarily store contaminated material. Place a cover over the units to prevent precipitation from contacting the stored material. Remove and store liquids that collect inside the units as per specifications.

3.3 OFFSITE HAZARDOUS WASTE MANAGEMENT

- A. Use RCRA Subtitle C permitted facilities which meet the requirements of 40 CFR 264 or facilities operating under interim status which meet the requirements of 40 CFR 265. Offsite treatment, storage, and/or disposal facilities with significant RCRA violations or compliance problems (such as facilities known to be releasing hazardous constituents into groundwater, surface water, soil, or air) shall not be used.
- B. Submit Notices of Non-Compliance and Notices of Violation by a Federal, State, or local regulatory agency issued to the Contractor in relation to any work performed under this contract.
- C. Immediately provide copies of such notices to the Navy.
- D. Furnish all relevant documents regarding the incident and any information requested by Navy, and coordinate its response to the notice with the designated representative prior to submission to the notifying authority.
- E. Furnish a copy to the Navy of all documents submitted to the regulatory authority, including the final reply to the notice, and all other materials, until the matter is resolved.
- F. Treatment, Storage, and/or Disposal Facility and Transporter
 1. Provide the Navy with EPA ID numbers, names, locations, and telephone numbers of TSD facilities and transporters. This information shall be contained in the Hazardous Waste Management Plan and shall be approved by the Navy prior to waste disposal.
- G. Status of the Facility

Transportation and Disposal of Hazardous Material

1. Facilities receiving hazardous waste shall be permitted in accordance with 40 CFR 270 or operating under interim status in accordance with 40 CFR 265 requirements, or permitted by a state authorized by the Environmental Protection Agency to administer the RCRA permit program. Additionally, prior to using a TSD Facility, contact the EPA Regional Offsite Coordinator specified in 40 CFR 300, Section .440, to determine the facility's status, and document all information necessary to satisfy the requirements of the EPA Offsite policy and submit this information to the Navy.

H. Shipping Documents and Packaging Certification

1. Prior to shipment of any hazardous material offsite and a minimum of 14 calendar days prior to anticipated pickup, the Contractor's TDC shall provide for review written certification to the Navy that hazardous materials have been properly packaged, labeled, and marked in accordance with Department of Transportation and EPA requirements.
2. Furnish packaging assurances by the pre-designated disposal facility not later than 35 days after acceptance of the shipment.
3. Provide written certification by the Contractor's TDC regarding waste minimization efforts, documenting that efforts have been taken to reduce the volume and toxicity of waste to the degree economically practicable and that the method of treatment, storage, or disposal selected minimizes threats to human health and the environment.

I. Transportation

1. Use manifests for transporting hazardous wastes as required by 40 CFR 263 or any applicable state or local law or regulation.
2. Comply with all requirements in the Department of Transportation referenced regulations in the 49 CFR series.
3. Prepare hazardous waste manifests for each shipment of hazardous waste shipped offsite. Complete manifests using instructions in 40 CFR 262, Subpart B and any applicable state or local law or regulation.
4. Submit manifests and waste profiles to Navy for review and approval.
5. Prepare land disposal restriction notifications as required by 40 CFR 268 or any applicable state or local law or regulation for each shipment of hazardous waste.
6. Submit notifications with the manifest to the Navy for review and approval.
7. In accordance with DOT 4500.9R, inspect motor vehicles used to transport hazardous materials in accordance with 49 CFR and DOT safety regulations and complete DDForm 626, Motor Vehicle Inspection.

Transportation and Disposal of Hazardous Material

J. Treatment and Disposal of Hazardous Wastes

1. Transport hazardous waste to an approved hazardous waste treatment, storage, or disposal facility within 90 calendar days of the accumulation start date on each container.
2. Ship hazardous wastes only to facilities which are properly permitted to accept the hazardous waste or operating under interim status.
3. Ensure wastes are treated to meet land disposal treatment standards in 40 CFR 268 prior to land disposal.
4. Propose TSD facilities via submission of the Hazardous Waste Management Plan, subject to the approval of the Navy.

3.4 WASTE MINIMIZATION

- A. Minimize the generation of hazardous waste to the maximum extent practicable and take all necessary precautions to avoid mixing clean and contaminated wastes.
- B. Identify and evaluate recycling and reclamation options as alternatives to land disposal. Requirements of 40 CFR 266 shall apply to: hazardous wastes recycled in a manner constituting disposal; hazardous waste burned for energy recovery; lead-acid battery recycling; and hazardous wastes with economically recoverable precious metals.

3.5 RECORD KEEPING

- A. Be responsible for maintaining adequate records to support information provided to the Navy regarding exception reports, annual reports, and biennial reports; maintaining waste shipment records for a minimum of 3 years from the date of shipment or any longer period required by any applicable law or regulation or any other provision of this contract; and maintaining bill of ladings for a minimum of 375 calendar days from the date of shipment or any longer period required by any applicable law or regulation or any other provision of this contract.

3.6 SPILL RESPONSE

- A. In the event of a spill or release of a hazardous substance (as designated in 40 CFR 302), or pollutant or contaminant, or oil (as governed by the Oil Pollution Act (OPA), 33 U.S.C. 2701 et seq.), notify the Navy immediately. Any direction from the Navy concerning a spill or release shall not be considered a change under the contract. If the spill exceeds a reporting threshold, follow the pre-established procedures for immediate reporting to Navy.
- B. Comply with all applicable requirements of Federal, State, or local laws or regulations regarding any spill incident.

3.7 EMERGENCY CONTACTS

- A. Be responsible for complying with the emergency contact provisions in 49 CFR 172.604. Whenever the Contractor ships hazardous materials provide a 24 hr emergency response contact and phone number of a person knowledgeable about the hazardous materials being shipped and who has comprehensive emergency response and incident mitigation information for that material, or has immediate access to a person who possesses such knowledge and information. The phone shall be monitored on a 24 hour basis at all times when the hazardous materials are in transportation, including during storage incidental to transportation.
- B. Ensure that information regarding this emergency contact and phone number are placed on all hazardous material shipping documents.
- C. Designate an emergency coordinator and post the following information at areas in which hazardous wastes are managed:
 - 1. The name of the emergency coordinator.
 - 2. Phone number through which the emergency coordinator can be contacted on a 24 hour basis.
 - 3. The telephone number of the local fire department.
 - 4. The location of fire extinguishers and spill control materials.

Attachment A

SAMPLE OFF-SITE POLICY CERTIFICATION MEMO

Project/Contract #: _____
Waste Stream: _____
Primary TSD Facility, EPA ID # and Location: _____
Alter. TSD Facility, EPA ID # and Location: _____

EPA Region	Contact
I-----	(617) 918-1752
II-----	(212) 637-4130
III-----	(214) 814-5267
IV-----	(404) 562-8591
V-----	(312) 353-8207
VI-----	(214) 665-2282
VII-----	(913) 551-7154
VIII-----	(303) 312-6419
IX-----	(415) 972-3304
X-----	(206) 553-2859

EPA representative contacted: _____
EPA representative phone number: _____
Date contacted: _____

Comment: _____
The above EPA representative was contacted on _____. As of that date the above sites were considered acceptable in accordance with the Off-Site Policy in 40 CFR 300.440.

Signature: _____ Date: _____
Phone number: _____

END OF SECTION

Transportation and Disposal of Hazardous Material

SECTION 311000

SITE CLEARING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Furnishing all labor, equipment, and materials for performing clearing in designated areas of the Site as required to perform the specified work.
2. Removing surface debris,
3. Removing designated plant life.

PART 2 PRODUCTS

2.1 SITE CLEARING

A. Not Used

PART 3 EXECUTION

3.1 PREPARATION

- A. Call Miss Utility of Virginia at 1-800-552-7001 not less than three working days before performing Work.
1. Request underground utilities to be located and marked within and surrounding construction areas.

3.2 PROTECTION

- A. Locate, identify, and protect utilities indicated to remain, from damage.
- B. Protect trees, plant growth, and features designated to remain, as final landscaping.
- C. No trees having a diameter greater than 6 in. shall be removed.
- D. Protect bench marks and existing structures from damage or displacement.

3.3 CLEARING

- A. Clear areas required for access to Site and execution of Work to the existing ground level.

Site Clearing

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- B. Remove trees with a diameter less than 6 in., shrubs, and any surface debris within marked excavation areas indicated. Remove stumps, main root ball and root system.
- C. All trees removed will be chipped on-site and used for stormwater control, as directed by the Engineer or Navy.
- D. All roots, shrubs, etc. removed from below ground level will be classified as hazardous waste and removed from Site.
- E. Install required erosion and sediment controls after clearing the minimum required to install components.

3.4 ROUGH GRADING

- A. Identify required lines, levels, contours, and datum.
- B. Identify known underground, above ground, and aerial utilities. Stake and flag locations.
- C. Notify NAVFAC MIDLANT to schedule a meeting with all interested parties that shall potentially be affected by excavation activities.

END OF SECTION

Site Clearing

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SECTION 312323

BACKFILL

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Backfilling
 - 2. Fill for over-excavation.
- B. Related Sections:
 - 1. Section 026100 – Excavation and Handling of Contaminated Material.
 - 2. Section 311100 – Site Clearing.

1.2 SUBMITTALS

- A. Product Data: Submit data for geosynthetic indicating fabric and construction.
- B. Materials Source: Submit name of imported fill materials suppliers.
- C. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

PART 2 PRODUCTS

2.1 FILL MATERIALS

- A. First 18 in. of excavated areas will be backfilled with clean general fill. Remaining 6 in. will be filled with top soil.
- B. All backfill material will be certified “clean” through analytical testing of VOCs, SVOCs, pesticides/PCBs and metals and comparison to the USEPA Regional Screening Levels. All fill material will contain less than 50 mg/kg Total Petroleum Hydrocarbons and less than 10 mg/kg benzene, Toluene, ethylbenzene, and xylene (BTEX).
- C. General fill and vegetative support material will consist of clean fill with a maximum particle size of 3 in. Vegetative support material will be used to provide a suitable base for topsoil. Acceptable topsoil is defined as native or amended soil with an organic salt concentration less than 500 parts per million, organic content at a minimum of 1.5 percent, and a pH of 6 to 7.5. Topsoil shall be classified as a loam, sandy loam, silt loam, sandy clay loam, or clay loam and have a maximum particle size of $\frac{3}{4}$ in.

Backfill

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D. The Contractor will coordinate with the National Toxics Rule to determine soil mix conducive for wetland re-establishment.

E. The engineered shoulder should be constructed of VADOT 21 A stone.

2.2 ACCESSORIES

A. Geosynthetic: Non-biodegradable, orange, highly visible protective barrier.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify subgrade is properly prepared and in suitable condition to accept backfill.

3.2 PREPARATION

A. Compact subgrade with equipment bucket and tracks.

B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill and compact to density equal to or greater than requirements for subsequent fill material.

3.3 BACKFILLING

A. Backfill areas to contours and elevations with unfrozen general fill.

B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.

C. Place geosynthetic over bottom of excavation to leave as an intrusion warning barrier.

D. Place material in continuous layers as follows:

1. Clean general fill material will be used to fill initial 18 in. of 2 ft. excavation. Place 18 in layer in a minimum of two lifts.

2. The remaining 6 in. will be filled with topsoil. No compaction required.

E. Employ placement method that does not disturb or damage other work.

F. Maintain optimum moisture content of backfill materials to attain required compaction density.

G. Make gradual grade changes. Blend slope into level areas.

H. Remove surplus backfill materials from Site.

Backfill

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3.4 TOLERANCES

- A. Top Surface of General Backfilling: Plus or minus 0.1 feet from required elevations.

3.5 FIELD QUALITY CONTROL

- A. Three point confirmatory samples will be taken at the bottom of excavation of each grid and analyzed for TAL metals by a laboratory with Department of Defense Environmental Laboratory Accreditation Program certification.

3.6 PROTECTION OF FINISHED WORK

- A. Section 017000 - Project Closeout Requirements: Protecting finished work.
- B. Reshape and re-compact fills subjected to vehicular traffic.

END OF SECTION

Backfill

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SECTION 327200

SITE RESTORATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Furnishing all labor, equipment, material, and supervision to restore disturbed areas to pre-construction conditions or better, as required by the Contract and as described on the Contract Drawings.

B. Related Sections

1. Section 312323 Backfill

1.2 SUBMITTALS

- A. Contractor shall submit manufacturer/supplier specifications for seed mixtures and fertilizer for approval at least two weeks prior to seeding.
- B. Contractor shall provide seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.

1.3 DELIVERY, STORAGE, AND HANDLING OF MATERIALS

- A. Contractor shall deliver seed mixtures in sealed containers. Seed in damaged packaging is not acceptable.

PART 2 PRODUCTS

2.1 Fill Material

- A. First 18 in. of excavated areas will be backfilled with clean general fill. Remaining 6 in. will be filled with top soil.
- B. All backfill material will be certified "clean" through analytical testing of VOCs, SVOCs, pesticides/PCBs and metals and comparison the USEPA Regional Screening Levels. All fill material will contain less than 50 mg/kg Total Petroleum Hydrocarbons and less than 10 mg/kg benzene, Toluene, ethylbenzene, and xylene (BTEX).
- C. General fill and vegetative support material will consist of clean fill with a maximum particle size of 3 in. Vegetative support material will be used to provide a suitable base for topsoil. Acceptable topsoil is defined as native or amended soil with an organic salt concentration less than 500 parts per million, organic content at a minimum of 1.5

Site Restoration

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percent, and a pH of 6 to 7.5 Topsoil shall be classified as a loam, sandy loam, silt loam, sandy clay loam, or clay loam and have a maximum particle size of $\frac{3}{4}$ in.

- D. The engineered shoulder should be constructed of VADOT 21 A Stone.

PART 3 EXECUTION

3.1 GENERAL

- A. The restoration shall be conducted to return the Site to the pre-existing conditions as shown on the Contract Drawings and Existing Conditions Plan.
- B. In the event that certain construction materials are not available, Contractor shall provide adequate documentation of the failure to procure, and propose a better grade of material for consideration of the Engineer. This upgrade shall be at no additional cost to the Navy.

3.2 RESTORATION OF TEMPORARY DISTURBANCES

- A. Restoration of temporary disturbances will include regrading to maintain proper drainage and as-built surface elevations and seeding to promote establishment of native vegetation.

3.3 MAINTENANCE

- A. The Contractor is responsible for maintaining the restored vegetation through the end of the first growing season (to be determined by Engineer). A proposed water schedule, including specification of a potable water source suitable for vegetation maintenance and details regarding any other planned maintenance, is required.

3.4 GRAVEL PAVEMENT

- A. All pavement and other areas surfaced with stone or gravel outside the limits of the access road shall be replaced with material to match the existing surface unless otherwise specified on the Drawings.
1. The depth of the stone or gravel shall be at least equal to the existing.
 2. After compaction, the surface shall conform to the slope and grade of the area being replaced.
- B. The existing access road shall be capped with an aggregate base course (6 inches) and asphalt surface (5 inches) in accordance with the Drawings.

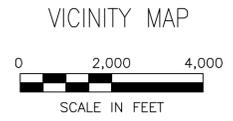
END OF SECTION

Site Restoration

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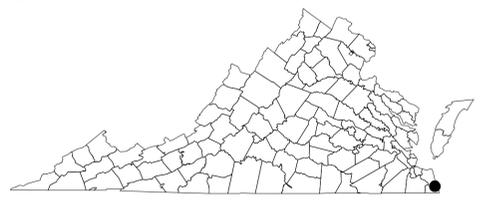
DRAWINGS

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OCEANA SALVAGE YARD NON-TIME CRITICAL REMOVAL ACTION AT NAVAL AIR STATION OCEANA, VIRGINIA BEACH, VA

CONTRACT No. N40085-11-D-0043
CONTRACT TASK ORDER No.



DRAWING INDEX

DRAWING NUMBER	DESCRIPTION	REV	DATE
C-100	TITLESHEET	0	3/19/2012
C-101	GENERAL NOTES, LEGEND & ABBREVIATIONS	0	3/19/2012
C-102	EXISTING SITE PLAN	0	3/19/2012
C-103	SOIL EROSION & SEDIMENT CONTROL PLAN	0	3/19/2012
C-104	SOIL EROSION & SEDIMENT CONTROL NOTES & DETAILS	0	3/19/2012
C-105	EXCAVATION SITE PLAN	0	3/19/2012
C-106	EXCAVATION SECTIONS & DETAILS	0	3/19/2012
C-107	FINAL SITE GRADING PLAN	0	3/19/2012

DEPARTMENT OF THE NAVY NAVAL AIR STATION OCEANA	NAVAL FACILITIES ENGINEERING COMMAND VIRGINIA BEACH, VA NAVFAC Mid-Atlantic	OCEANA SALVAGE YARD NON-TIME CRITICAL REMOVAL ACTION TITLESHEET
DRAWN BY: _____ DATE: _____ CHECKED BY: _____ DATE: _____ SUBMITTED BY: _____ DATE: _____ DESIGNED BY: _____ DATE: _____ PERMITTED BY: _____ DATE: _____ OFFICER IN CHARGE: _____ DATE: _____ APPROVED: _____ DATE: _____	3-19-2012 DATE APPROVED	0 REV ISSUED FOR CONSTRUCTION DESCRIPTION
SHEET _____ OF _____ SIZE: D DWS. SH. NO. C-100	SMT TO: _____ DATE: _____ CODE ID. NO.: _____ SCALE: AS SHOWN SPEC. NO.: _____ CONSTR. CONTR. NO.: N40085-11-D-0043 NAVFAC DRAWING NO.: _____	

GENERAL NOTES

- G1. NOTIFY LOCAL GOVERNING AGENCIES IN ADVANCE OF COMMENCEMENT OF CONSTRUCTION OF ANY IMPROVEMENTS UNDER ITS JURISDICTION, AS REQUIRED.
- G2. PROVIDE AND MAINTAIN, AS INDICATED IN THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES," LOCAL AND VIRGINIA BEACH, VA REQUIREMENTS, SUFFICIENT CONSTRUCTION WARNING SIGNS. MAINTAIN UNTIL CONSTRUCTION IS COMPLETED.
- G3. PROVIDE SUCH TEMPORARY DRAINAGE, SOIL EROSION, AND DUST CONTROL MEASURES AS MAY BE DIRECTED BY THE ENGINEER.
- G4. ALL ROADWAYS ARE TO BE PASSABLE FOR FIRE DEPARTMENT USE DURING CONSTRUCTION. COORDINATE ANY ROADWAY CLOSURE OR RELOCATION WITH THE FIRE DEPARTMENT. ENSURE ADEQUATE FIRE PROTECTION FOR ALL AREAS AT ALL TIMES.
- G5. BEFORE WORK MAY COMMENCE, FIELD VERIFY LOCATION OF EXISTING INLETS, CATCH BASINS, AND MANHOLES. BRING ANY CONFLICTING INFORMATION FROM THAT SHOWN TO THE IMMEDIATE ATTENTION OF THE OWNER OR ITS REPRESENTATIVE.
- G6. INSTALL ALL SOIL EROSION CONTROL MEASURES PRIOR TO THE START OF ANY CONSTRUCTION.
- G7. OBTAIN APPROVAL BY THE ENGINEER FOR ANY SUBSTITUTIONS OF PROPRIETARY MATERIAL AND/OR PRODUCT SPECIFICATIONS THAT NOTE "OR EQUAL." BE RESPONSIBLE TO DEMONSTRATE TO THE SATISFACTION OF THE ENGINEER THAT THE SUBSTITUTION IS EQUAL AND ACCEPTABLE.
- G8. PROVIDE SHOP DRAWINGS AND OTHER SUBMITTALS A MINIMUM OF TWELVE (12) BUSINESS DAYS IN ADVANCE OF CONTRACTOR'S NEED.
- G9. PREPARE AS-BUILT DRAWINGS FOR ALL NEW CONSTRUCTION, INCLUDING UNDERGROUND IMPROVEMENTS INSTALLED DURING CONSTRUCTION.
- G10. RESTORE ALL WETLAND AREAS DISTURBED DURING CONSTRUCTION WITH 6" OF TOPSOIL AND SEED ACCORDINGLY, UNLESS OTHERWISE NOTED OR DIRECTED BY THE ENGINEER OR NAVY.
- G11. PERFORM ALL WORK INDICATED ON THE PROJECT DRAWINGS IN ACCORDANCE WITH THE VIRGINIA BUILDING CODE, RULES AND REGULATIONS OF VIRGINIA DEC, OR OTHER AUTHORITIES HAVING JURISDICTION, AS WELL AS IN ACCORDANCE WITH U.S. NAVY STANDARD SPECIFICATIONS AS APPLICABLE. IN CASE OF DIFFERENT REQUIREMENTS FOR THE SAME TYPE OF WORK OR TRADE, THE MORE STRINGENT REQUIREMENT GOVERNS.
- G12. PROTECT ALL TREES WITHIN EXCAVATION AREA THAT HAVE A DIAMETER OF 6" OR GREATER. ALSO PROTECT ROOT SYSTEM OF SAME TREES.

CONSTRUCTION SCHEDULE

- THE ITEMS BELOW PROVIDE A GENERALIZED CONSTRUCTION SEQUENCE FOR THE CONTROL OF EROSION AND SEDIMENTATION DURING PROJECT CONSTRUCTION:
- CS1. INSTALL EROSION AND SEDIMENT CONTROLS AS IDENTIFIED ON THE CONSTRUCTION DRAWINGS.
 - CS2. COMPLETE SITE CLEARING AND GRUBBING.
 - CS3. EXCAVATE SOIL AS DESIGNATED ON THE DRAWINGS.
 - CS4. COMPLETE THE BACKFILL AND GRADING OF THE SITE, AND STABILIZE ACCORDING TO THE DRAWINGS.
 - CS5. CAP EXISTING ACCESS ROAD SURFACE.
 - CS6. AFTER SITE HAS BEEN STABILIZED, REMOVE TEMPORARY EROSION AND SEDIMENT CONTROLS.

CONTRACTOR'S PRECONSTRUCTION REQUIREMENTS

- C1. PERFORM ALL EXCAVATIONS WITH MINIMAL DISTURBANCE TO THE SITE. PREPARE AND SUBMIT A WORK PLAN DEMONSTRATING MINIMIZATION OF DISTURBANCE TO THE SITE.

SOIL EROSION AND SEDIMENT CONTROL NOTES

- SE1. INSTALL ALL SOIL EROSION AND SEDIMENT CONTROL PRACTICES PRIOR TO ANY MAJOR SOIL DISTURBANCE OR IN THEIR PROPER SEQUENCE AND MAINTAIN UNTIL PERMANENT PROTECTION IS ESTABLISHED.
- SE2. USE SEED FOR PERMANENT VEGETATION ON ALL EXPOSED AREAS WITHIN SEVEN (7) DAYS AFTER FINAL GRADING. MULCHING IS REQUIRED ON ALL SEEDING. WHEN HYDROSEEDING, DO NOT INCLUDE MULCH IN THE TANK WITH SEED.
- SE3. PERFORM ALL WORK IN ACCORDANCE WITH CITY AND STATE GUIDELINES FOR URBAN SOIL AND SEDIMENT CONTROL.
- SE4. THE STANDARD FOR STABILIZED CONSTRUCTION ENTRANCE REQUIRES THE INSTALLATION OF A STONE PAD OF 2.5 INCH STONE, AT SITE ENTRANCE, IMMEDIATELY AFTER INITIAL SITE DISTURBANCE.
- SE5. ANY CHANGES TO THE APPROVED SOIL EROSION AND SEDIMENT CONTROL PLANS REQUIRE APPROPRIATE APPROVALS. PROVIDE REVISED PLANS WHICH MEET ALL CURRENT STATE SOIL EROSION AND SEDIMENT CONTROL GUIDELINES FOR SUBMISSION BY THE ENGINEER.
- SE6. UNFILTERED DEWATERING IS NOT PERMITTED. TAKE ALL NECESSARY PRECAUTIONS DURING ALL DEWATERING OPERATIONS TO MINIMIZE SEDIMENT TRANSFER.
- SE7. SHOULD THE CONTROL OF DUST AT THE SITE BE NECESSARY, SPRINKLE THE SITE UNTIL THE SURFACE IS WET. ESTABLISH TEMPORARY VEGETATIVE COVER OR MULCH APPLIED IN ACCORDANCE WITH STATE STANDARDS.
- SE8. REMOVE IMMEDIATELY ALL SOIL WASHED, DROPPED, SPILLED, OR TRACKED OUTSIDE THE LIMIT OF DISTURBANCE OR ONTO PUBLIC RIGHT-OF-WAYS.
- SE9. BE RESPONSIBLE FOR ANY EROSION AND SEDIMENTATION THAT MAY OCCUR BELOW STORMWATER OUTFALLS OR OFFSITE AS A RESULT OF CONSTRUCTION ACTIVITIES.

UTILITY INSTALLATION NOTES

- U1. BE SOLELY RESPONSIBLE FOR DEWATERING AND PRECLUDING ANY PONDING OF WATER IN ALL AREAS EXCEPT WHERE REASONABLE AND SAFE WITHIN THE INTENDED AREA WITH SOIL EROSION AND SEDIMENT CONTROL.
- U2. THE APPROXIMATE LOCATION OF KNOWN UTILITY STRUCTURES AND FACILITIES ARE SHOWN ON THE PLANS. THE ACCURACY AND COMPLETENESS OF THIS INFORMATION IS NOT GUARANTEED. VERIFY IN THE FIELD THE UTILITY LOCATIONS AND OTHER CONSTRUCTION OBSTACLES PRIOR TO CONSTRUCTION. NOTIFY THE OWNER AND ITS REPRESENTATIVE IN WRITING, PRIOR TO CONSTRUCTION, OF ANY DISCREPANCIES WHICH MAY AFFECT PROJECT DESIGN AND/OR SCOPE.
- U3. NOTIFY MISS UTILITY OF VIRGINIA AT 1-800-552-6001 OR DIAL 811 IN VIRGINIA NOT LESS THAN THREE WORKING DAYS PRIOR TO EXCAVATION.
- U4. THE CONTRACTOR'S ATTENTION IS CALLED TO THE OVERHEAD HIGH-VOLTAGE ELECTRICAL LINE THAT RUNS ADJACENT TO THE EAST END OF THE SITE. LINE IS IN SERVICE AND WILL NOT BE RELOCATED. COMPLY WITH OSHA 20 CFR 1926.550(g)(15) WITH A MINIMUM OF 10' CLEARANCE, AND/OR NAS STANDARDS, WHICHEVER ARE MORE STRINGENT.

NOTES ON USE OF PLANS

- N1. UNLESS THESE DRAWINGS ARE SPECIFICALLY DESIGNATED AS "CONSTRUCTION ISSUE," THESE DRAWINGS SHALL NOT BE USED FOR CONSTRUCTION OR THE IMPROVEMENTS DEPICTED HEREIN. NOTIFY THE ENGINEER OF RECORD TO OBTAIN CONSTRUCTION DOCUMENTS.
- N2. VERIFY ALL DIMENSIONS. NOTIFY SES TECH ATLANTIC OF ANY CONFLICTS, ERRORS, AMBIGUITIES OR DISCREPANCIES IN THE DRAWINGS OR SPECIFICATIONS BEFORE PROCEEDING WITH CONSTRUCTION.
- N3. NOTE ALL DIMENSIONS IN WORDS OR NUMBERS ON THE DRAWINGS. DO NOT SCALE THE DRAWINGS TO DETERMINE DIMENSIONS.
- N4. THESE DRAWINGS CONTAIN DATA INTENDED SPECIFICALLY FOR THE NOTED PROJECT AND CLIENT. THEY ARE NOT INTENDED FOR USE ON EXTENSIONS OF THIS PROJECT OR FOR REUSE ON ANY OTHER PROJECT.
- N5. THE COPYING AND/OR MODIFICATION OF THIS DOCUMENT OR ANY OTHER PORTION THEREOF WITHOUT THE WRITTEN PERMISSION OF SES TECH ATLANTIC IS PROHIBITED.
- N6. INFORMATION FOR DESIGN LAYOUT IS CONTAINED SOLELY IN THE WRITTEN DIMENSIONS, BEARINGS, AND ANGLES CONTAINED ON THE DRAWINGS.
- N7. THE DIMENSIONAL INFORMATION IS NOT WARRANTED NOR SHALL IT BE CONSIDERED AS COMPLETE FOR EVERY ASPECT OF THE LAYOUT. STANDARD PRACTICE REQUIRES THAT THE SURVEYOR CHECK THE DIMENSIONAL DATA CONSISTENCY AND MAKE SURVEY CALCULATIONS WHICH ARE CUSTOMARY FOR CONSTRUCTION LAYOUT. IN THE EVENT A QUESTION OR INCONSISTENCY IS DISCOVERED, IMMEDIATELY NOTIFY THE ENGINEER OF RECORD.
- N8. THE GRAPHICAL INFORMATION CONTAINED IN ELECTRONIC FILES IS INTENDED AS DRAWING DATA ONLY, IT IS NOT INTENDED TO SERVE AS SURVEY LAYOUT DATA.

LEGEND:

- IFF (IRON PIPE FOUND)
- IRF (IRON ROD FOUND)
- IRS (IRON ROD SET)
- X—X BARBED WIRE
- RF FLAG SET IN ROAD
- TELEPHONE PEDESTAL
- EXISTING TREE
- ▨ PROPOSED EXCAVATION GRID
- ▩ STAGING AREA
- ▧ GRID CELL EXTENDED TO MATCH NEW ROAD
- ⊠ TRANSMISSION LINE POLE
- SILT FENCE

ABBREVIATIONS:

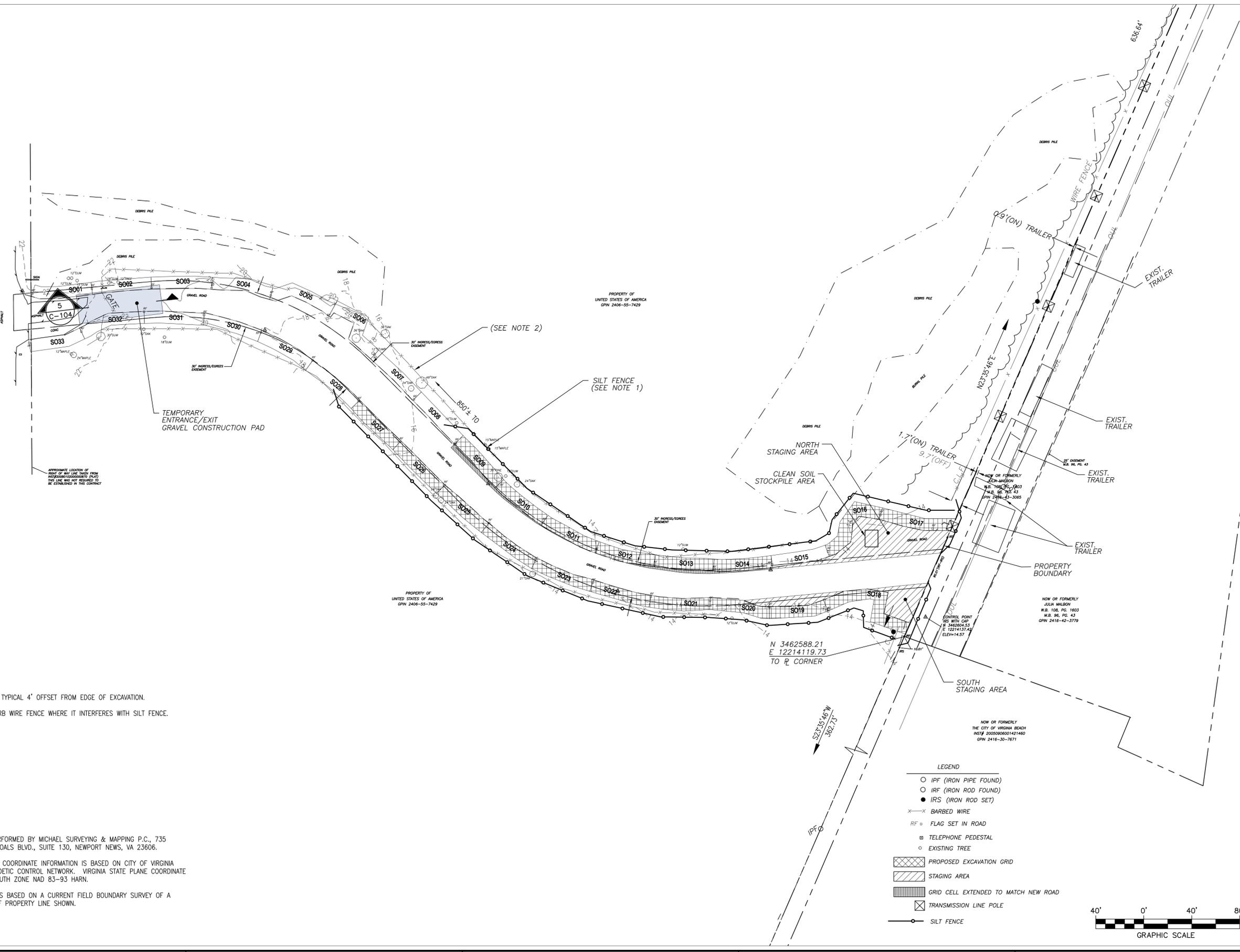
- NAS - NAVAL AIR STATION
- BGS - BELOW GROUND SURFACE

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SUBMITTED BY: _____	DATE: _____	DATE: _____	DATE: _____	DATE: _____	DATE: _____
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APPROVED: _____	DATE: _____	DATE: _____	DATE: _____	DATE: _____	DATE: _____
ISSUED FOR CONSTRUCTION: _____	DATE: _____	DATE: _____	DATE: _____	DATE: _____	DATE: _____
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DEPARTMENT OF THE NAVY NAVAL AIR STATION OCEANA NAVAL FACILITIES ENGINEERING COMMAND VIRGINIA BEACH, VA NAVFAC Mid-Atlantic OCEANA SALVAGE YARD NON-TIME CRITICAL REMOVAL ACTION GENERAL NOTES, LEGEND & ABBREVIATIONS					
SHEET NO. _____	DATE: _____	DATE: _____	DATE: _____	DATE: _____	DATE: _____
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D	C-101	DATE: _____	DATE: _____	DATE: _____	DATE: _____

1 2 3 4 5

CITY OF VIRGINIA BEACH
 GEODETIC CONTROL NETWORK
 VIRGINIA STATE PLANE
 SOUTH ZONE NAD 83-93 HARN

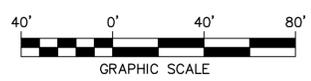
OCEANA BOULEVARD
 VARIABLE WIDTH R/W



- NOTES:
- SILT FENCE TYPICAL 4' OFFSET FROM EDGE OF EXCAVATION.
 - REMOVE BARB WIRE FENCE WHERE IT INTERFERES WITH SILT FENCE.

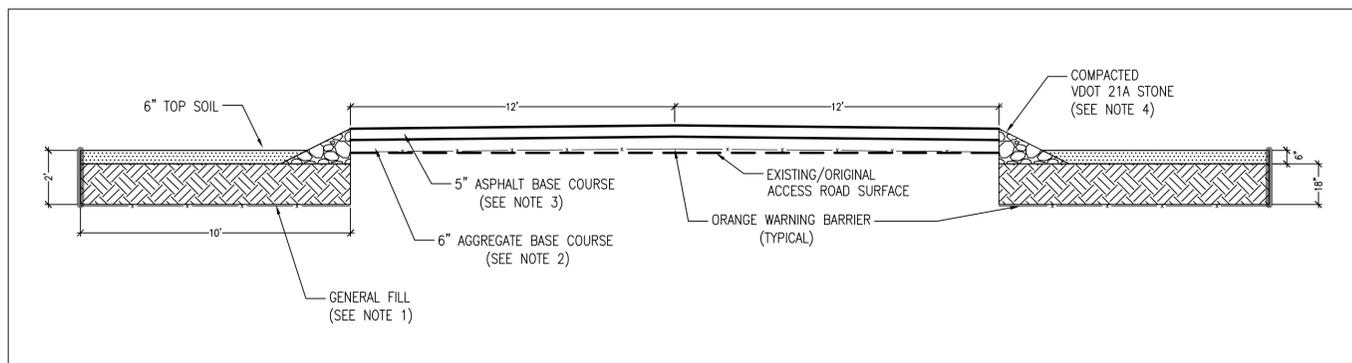
- SURVEY NOTES:
- SURVEY PERFORMED BY MICHAEL SURVEYING & MAPPING P.C., 735 THIMBLE SHOALS BLVD., SUITE 130, NEWPORT NEWS, VA 23606.
 - HORIZONTAL COORDINATE INFORMATION IS BASED ON CITY OF VIRGINIA BEACH GEODETIC CONTROL NETWORK, VIRGINIA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE NAD 83-93 HARN.
 - THIS PLAT IS BASED ON A CURRENT FIELD BOUNDARY SURVEY OF A PORTION OF PROPERTY LINE SHOWN.

- LEGEND
- IPF (IRON PIPE FOUND)
 - IRF (IRON ROD FOUND)
 - IRS (IRON ROD SET)
 - ××× BARBED WIRE
 - RF □ FLAG SET IN ROAD
 - TELEPHONE PEDESTAL
 - EXISTING TREE
 - ▨ PROPOSED EXCAVATION GRID
 - ▩ STAGING AREA
 - ▧ GRID CELL EXTENDED TO MATCH NEW ROAD
 - ⊠ TRANSMISSION LINE POLE
 - SILT FENCE

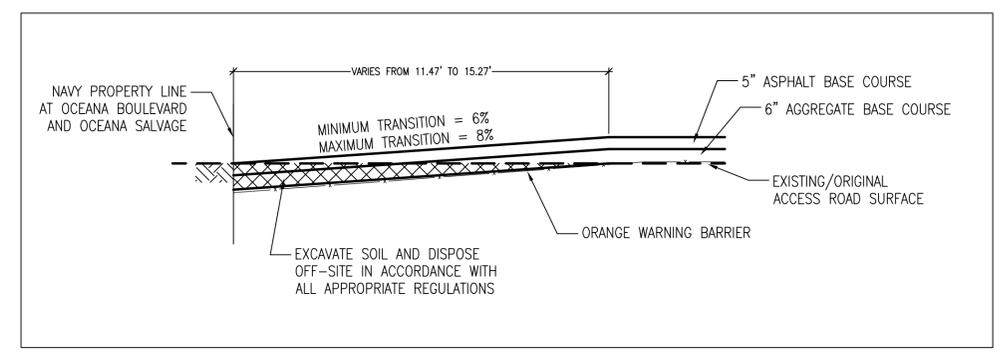


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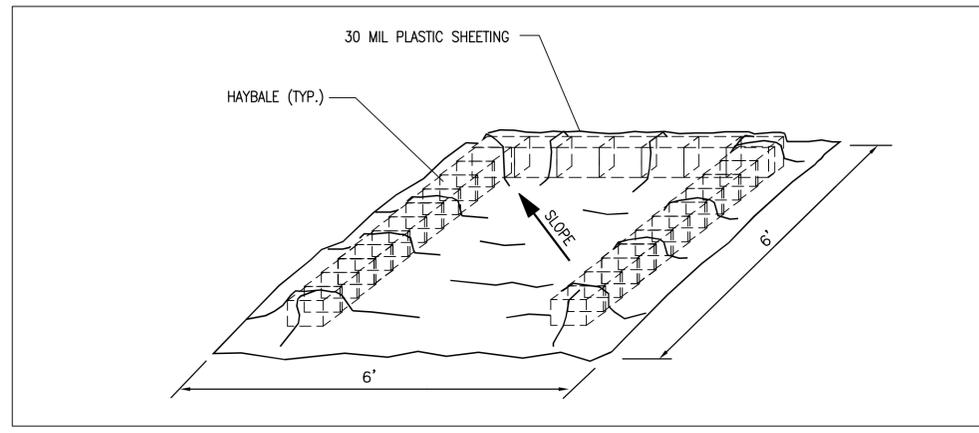
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NAVFAC Mid-Atlantic	
OCEANA SALVAGE YARD NON-TIME CRITICAL REMOVAL ACTION	
SOIL EROSION & SEDIMENT CONTROL PLAN	
DEPARTMENT OF THE NAVY	NAVAL FACILITIES ENGINEERING COMMAND
NAVAL AIR STATION OCEANA	VIRGINIA BEACH, VA
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7 ACCESS ROAD DETAIL
NOT TO SCALE



8 END SECTION OF ROAD DETAIL
AT OCEANA SALVAGE/OCEANA BLVD.
NOT TO SCALE



9 DECONTAMINATION PAD
FOR EQUIPMENT AND PERSONNEL
NOT TO SCALE

NOTES:

1. GENERAL FILL SHALL BE PLACED AND COMPACTED IN A MINIMUM OF TWO LIFTS. SEE SECTION 312323 FOR DESCRIPTION OF GENERAL FILL.
2. AGGREGATE BASE COURSE SHALL BE VA DOT TYPE II MATERIAL AND COMPACTED.
3. ASPHALT MIX SHALL BE TYPE BM-25.0 A IN ACCORDANCE WITH VA DOT SPECIFICATIONS SECTION 211 AND PLACED IN ACCORDANCE WITH SPECIFICATION SECTION 315.
4. VDOT 21 A STONE SHOULDER MATERIALS SHALL BE COMPACTED TO 100% OF STANDARD PROCTOR.

DEPARTMENT OF THE NAVY NAVAL AIR STATION OCEANA NAVFAC Mid-Atlantic OCEANA SALVAGE YARD NON-TIME CRITICAL REMOVAL ACTION EXCAVATION SECTIONS & DETAILS		NAVFACILITIES ENGINEERING COMMAND VIRGINIA BEACH, VA		SES - TECH Atlantic	
DATE	DATE	DATE	DATE	DATE	DATE
DESIGNED BY	DESIGNED BY	DESIGNED BY	DESIGNED BY	DESIGNED BY	DESIGNED BY
CHECKED BY	CHECKED BY	CHECKED BY	CHECKED BY	CHECKED BY	CHECKED BY
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ATTACHMENT E

ROAD LAYOUT AND CONSTRUCTION DRAWINGS PROVIDED BY THE NAVY

Figure 3 Oceana Salvage Yard Non-Time Critical Removal Action

**Figure 4 Oceana Salvage Yard Non-Time Critical Removal Action Access Road Construction
Detail**

**Figure 5 Oceana Salvage Yard Non-Time Critical Removal Action Access Road Construction
Detail**

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- Legend**
- NAS Oceana Boundary
 - Grid Cell Extended to Match New Road
 - Improved Area
 - Grid Cell
 - Impacted Area

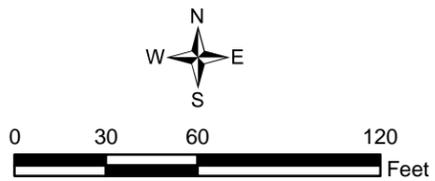
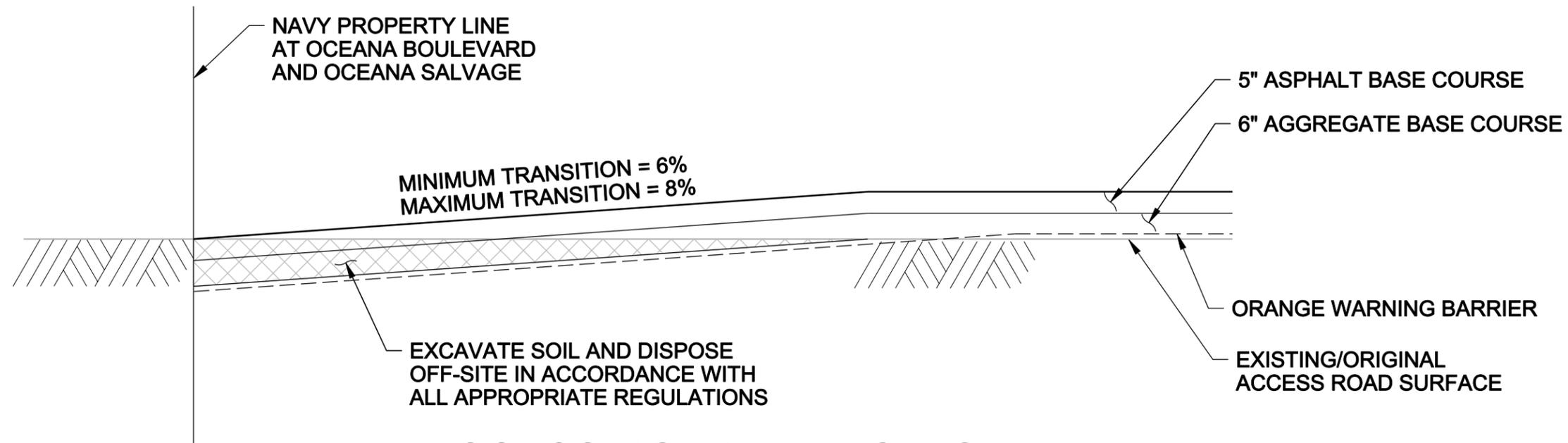
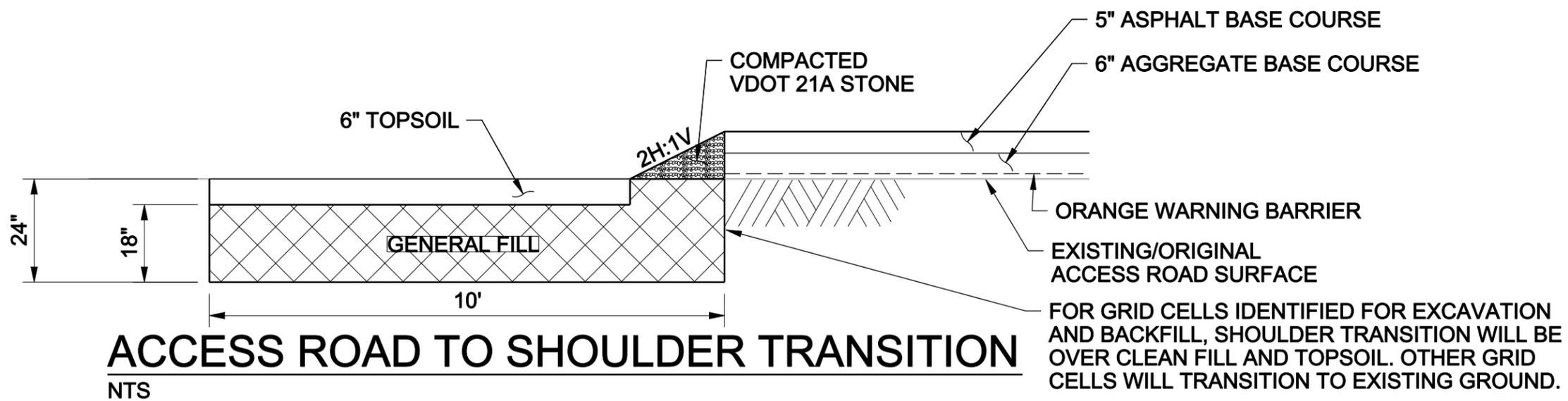


Figure 3
Oceana Salvage Yard
Non-Time Critical Removal Action



ACCESS ROAD TRANSITION

NTS



ACCESS ROAD TO SHOULDER TRANSITION

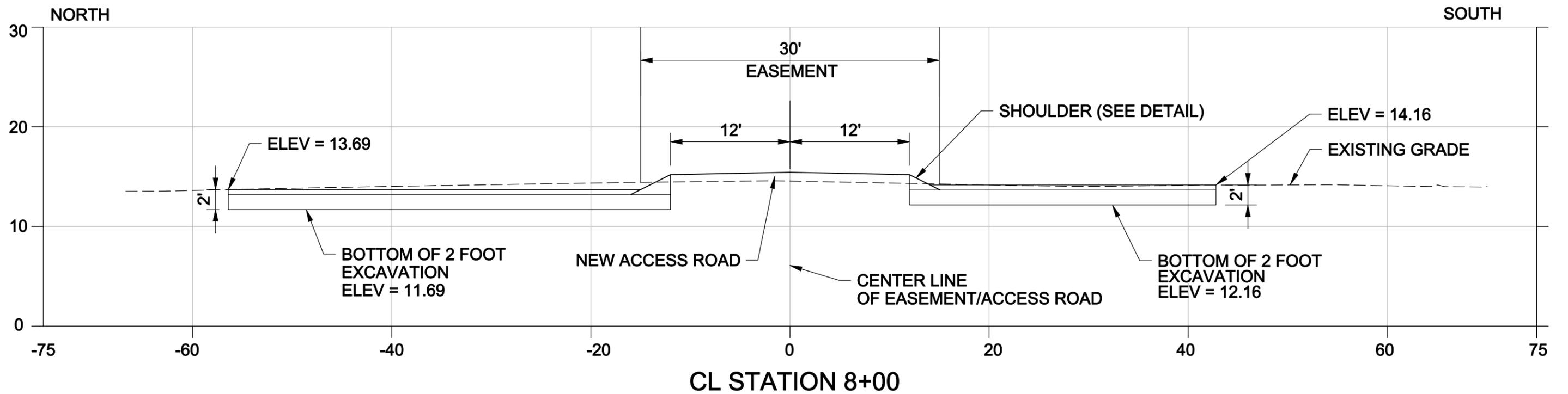
NTS

FIGURE 4

OCEANA SALVAGE YARD
 NON-TIME CRITICAL REMOVAL ACTION
 ACCESS ROAD CONSTRUCTION DETAIL

NOTES:

1. EXCAVATE 2 FT DEPTH AND THE OUTER EXTENT (AWAY FROM ACCESS ROAD) OF GRID CELLS SO16, SO17, and SO18.
2. ESTABLISH THAT BOTTOM ELEVATION FOR 2 FT OF EXCAVATION AND HOLD CONSTANT TO THE EDGE OF THE 'NEW' 24-FT ACCESS ROAD. SOME EXCAVATION DEPTH WILL EXCEED 2 FT.
3. BACKFILL WITH 1.5 FT OF CLEAN GENERAL FILL AND 0.5 FT OF TOPSOIL. FINISHED ELEVATION IS INTENDED TO MATCH EXISTING ELEVATION AT THE OUTER EDGE OF EACH GRID CELL. TOPSOIL IS NOT NECESSARY UNDERNEATH THE ACCESS ROAD SHOULDER.



ACCESS ROAD/WETLAND AT EASTERN EXTENT

NTS

FIGURE 5

**OCEANA SALVAGE YARD
NON-TIME CRITICAL REMOVAL ACTION
ACCESS ROAD CONSTRUCTION DETAIL**

ATTACHMENT F

STORM WATER POLLUTION PREVENTION PLAN

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**DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, ATLANTIC
REMEDIAL ACTION OPERATIONS (RAO)/LONG TERM MANAGEMENT (LTM),
ENVIRONMENTAL MULTIPLE AWARD CONTRACT (EMAC)
CONTRACT NO. N40085-11-D-0043
TASK ORDER NO. 0001**

**FINAL
STORMWATER POLLUTION PREVENTION PLAN
FOR
OCEANA SALVAGE YARD ACCESS ROAD
NON-TIME-CRITICAL REMOVAL ACTION
AT
NAVAL AIR STATION OCEANA
VIRGINIA BEACH, VA**

Issued:

March 26, 2012

Prepared for:

Department of the Navy
Naval Facilities Engineering Command, Mid-Atlantic
9742 Maryland Ave.
Norfolk, VA 23511-3095

Prepared by:

SES-TECH Atlantic
5700 Lake Wright Drive
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DCN: SESTECH-RAO/LTM-12-0021

Revision:
00

Date:
3/26/12

Prepared by:
Sean Wilson

Approved by
Stavros Patselas

Pages Affected:
All

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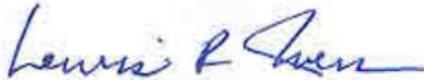
**OPERATOR PLAN AUTHORIZATION/CERTIFICATION/DELEGATION
(To be signed by Responsible Corporate Officer)**

I state that based on my review this SWPPP meets the minimum requirements of the Construction General Permit and that SES-Tech Atlantic has day-to-day operational control of the project site. SES-Tech Atlantic is responsible for the maintenance and implementation of the SWPPP including inspections, documentation, and application of the Best Management Practices at the site. SES-Tech Atlantic will notify all subcontractors of the requirement of this SWPPP. SES-Tech Atlantic has operational control over the project specifications, including the ability to make changes to the project specifications.

I hereby designate **Jerrett Patterson**
SWPPP Administrator as my authorized representative. This designee is responsible for the overall operations of the site and will be responsible for the implementation of the Storm Water Pollution Prevention Plan, compliance with the Construction General Permit, selecting and implementing additional Best Management Practices as conditions warrant, and signing all inspection reports required.

I certify under penalty of law that this document and all attachments were prepared under direction of SES-Tech Atlantic in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

SES-Tech Atlantic



3/15/12

Signature

Date

Lewis R. Ivers

COO

Print name

Title

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3.0	CONSTRUCTION ACTIVITIES	2
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5.0	CONTROL MEASURES	3
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LIST OF APPENDICES

Appendix A	Permits
Appendix B	Record of SWPPP Amendments
Appendix C	Site Maps and Soil Erosion and Sediment Control Details (Figure 3)
Appendix D	Schedule of Construction Activities
Appendix E	Control Measures Description

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1.0 INTRODUCTION

This Stormwater Pollution Prevention Plan (SWPPP) has been developed as a requirement of the Virginia Stormwater Management Program (VSMP) General Permit for Discharges of Stormwater from Construction Activities No. VAR10 (Permit). The purpose of this Plan is to:

- Identify potential sources of pollutants that may reasonably be expected to affect the quality of stormwater discharges from the construction site
- Describe control measures that will be used to minimize pollutants in stormwater discharges from the construction site
- Comply with the terms and conditions of the Permit.

A copy of the SWPPP shall be kept on-site along with the Permit and be made available to the Department of Environmental Quality (DEQ). The permit is contained in Appendix A. A sign or notice shall be posted conspicuously near the main entrance of the construction site with the following information:

- A copy of the permit coverage letter that includes the registration number for the construction activity
- The internet address at which a copy of the SWPPP may be found or the location of a hard copy of the SWPPP and name and telephone number of a contact person for scheduling viewing times

For discharges that commence after July 1, 2009 that have not previously held coverage under a VSMP or Permit, the SWPPP must be made available to the public for review. Information about the SWPPP will be posted on the sign previously mentioned.

The Contractor shall amend the SWPPP whenever there is a change in design, construction, operation, or maintenance that has a significant effect on the discharge of pollutants to state waters that has not been previously addressed in the SWPPP. All updates to the SWPPP must be made available upon request to the VDEQ. If the existing control measures are found to be ineffective during inspection additional control measures must be designed to correct the problems identified. A log to record all amendments to the SWPPP can be found in Appendix B.

2.0 SITE DESCRIPTION

This SWPPP is being prepared for a Non-Time-Critical Removal Action (NTCRA) for the Oceana Salvage Yard Access Road (OSY). The OSY is located adjacent to Oceana Boulevard and within the boundary of the Naval Air Station (NAS) Oceana. An Environmental Survey was completed in 1997 (ABB Environmental Services, 1997) and soil samples were collected from the Access Road in 2005 (CH2M HILL, 2005). These investigations identified lead-contaminated soil, buried and crushed car batteries, and debris within and along the Access Road, its shoulders, and an adjacent Burial Unit. The objective of the remedial action for the OSY is to minimize the potential risks to public health and the environment associated with lead-contaminated soil beneath the Access Road, Access Road Shoulders, and within the staging area at the eastern end of the access road. This removal action is designed to ensure that contaminated soils are remediated and / or capped with a protective cover to protect human health.

3.0 CONSTRUCTION ACTIVITIES

The OSY Project is expected to begin construction activities in March 2012 and be completed within 4 to 6 weeks of the start of construction. The total area of land disturbed including excavation and grading is 13,650 sq. ft. (0.31 acres). The Access Road, with a total area of 22,626.5 sq. ft. (0.52 acres), will not be disturbed but capped with gravel and asphalt. Appendix C contains the site maps pertinent to the permit area. All clean fill material that will be stored on site will be staged in areas that require excavation so no additional land will be disturbed. A construction schedule of all construction activities is available in Appendix D. The following is a list of areas that will be addressed in the remedial action:

- Access Road Shoulder Area Excavation - This area involves the excavation and off-site disposal of 726.5 Cubic Yards (CY) of lead contaminated soil found to exceed 800 mg/kg.
- Current Staging Area Excavation – This area involves the excavation and off-site disposal of 259.5 CY of lead contaminated soil found to exceed 800 mg/kg.
- Access Road Cover - This work element includes capping of the existing access road with gravel and asphalt to create a paved 24' access road with engineered shoulders.

The Access Road shoulders were divided into 35 grids along both sides of the Access Road and Staging Area. Each grid extends out 10 feet from the road and 50 feet along the edge. A total of 18 grids will be excavated and backfilled where the soil has a lead contact greater than 800 mg/kg. The soil will be excavated 2 feet below ground surface. It is anticipated that soils below the 2 foot excavation may exceed the project limit of 800 mg/kg of lead so a three-point composite soil sample from the bottom of each excavated grid will be taken. These confirmatory samples will be analyzed for lead content by a laboratory with the Department of Defense (DOD) Environmental Laboratory Accreditation Program (ELAP). Additionally, a visible (e.g. orange) protective fabric barrier will be placed at the 2 foot depth following excavation. Excavated soil will be disposed offsite in accordance with state and federal regulations. All waste disposal facilities will require Navy approval prior to shipment of any wastes.

The current staging area excavation will be completed in the same procedures as the Access Road shoulders. The south side area, approximately 807 sq. ft., will be divided into 2 subareas for the confirmatory sampling. The north side area, approximately 2,433 sq. ft., will be divided into 4 equal subareas for the confirmatory sampling. These areas will be excavated to a depth of 2 feet, confirmatory samples taken, and a visible (orange) protective fabric barrier will be placed on the bottom of the excavated grids prior to backfilling and grading. The excavated soil will be disposed of offsite in accordance with state and federal regulations and at a Navy approved facility.

The existing Access Road shoulders and staging area are identified as wetlands according to a Jurisdictional Determination completed by the United States Army Corps of Engineers (USACE). All wetlands activities will be constructed in accordance with the Virginia Water Protection Permit Program (9 VAC 25-210-50). Clean general fill material will be used to backfill the initial 18 inches of the excavated grids. General fill (compacted VDOT 21A stone) will be used to fill the remaining 6 inches or more for approximately 3 feet at a 2:1 slope from the edge of the Access Road to the top of the existing general fill. This stone backfill will become the shoulder of the newly constructed Access Road. The remaining 6 inch depth of the shoulder and staging area will be filled with top soil from the outer edge of excavation until it meets the new stone shoulder. All offsite backfill material will be certified clean through analytical testing of Volatile Organic Compounds (VOC), Semi-volatile Organic Compounds (SVOC), Polychlorinated Biphenyls (PCBs), metals, and comparison to the United States Environmental Protection Agency (USEPA) Regional Screening Levels. Permanent seeding will be placed to re-establish wetlands. The Contractor will abide by the National Toxics Rule (NTR) and coordinate with the

Navy to determine a soil mix conducive for wetland re-establishment. For additional information regarding permanent seeding see Appendix E.

Construction will conclude with the capping of the existing Access Road with gravel and asphalt to create a paved 24 foot Access Road with engineered shoulders. The paved road will serve as a protective barrier from human exposure to lead-contaminated soil. The Access Road cap will include an orange protective fabric barrier placed on the existing gravel road surface and covered with 6 inches of aggregate base course stone and 5 inches of asphalt concrete base course.

4.0 RECEIVING WATERS

The only body of water near the OSY Project site that may receive stormwater runoff is an unidentified private pond located approximately 2,250 feet to the north of the project site. The site is heavily wooded so any stormwater runoff will be able to percolate into the existing wetlands onsite.

5.0 CONTROL MEASURES

Best Management Practices (BMPs) will be used to minimize pollutants in stormwater discharges on the OSY Project. All control measures will be designed, installed, and maintained in accordance with the minimum standards of the Virginia Erosion and Sediment Control Law and regulations. The Contractor will ensure that they minimize the creation of disturbed areas by only excavating the areas specified in the project plans. Excavated areas will be backfilled after confirmatory samples have been determined to be clean soil beneath the excavation. This will minimize the time that disturbed soil will be exposed.

Silt Fence will be installed 4 feet off of edge of construction to intercept and detain any sediment that may leave the disturbed areas of the shoulder and staging area. If determined in the field that they are needed, berms may be constructed next to the excavation to control run-on. Appendix D, Figure 3 provides details on the site specific control measures. All control measures will be constructed following pertinent sections of The Virginia Erosion and Sediment Control Handbook located in Appendix E.

All fueling activities will take place on site by a fueling truck. A spill kit will be readily available in case any fuel is spilt on site. To control human waste 1 portable toilet will be available on site and will be emptied on a regular basis.

A gravel pad will be constructed at the entrance and exit point of the OSY Project to clean vehicle wheels prior to entering the adjacent roadway. It is not anticipated that any contaminated soil will be stockpiled on site, but if determined in the field that a non-contaminated soil stockpile is needed; runoff will be controlled by silt fence and the soil will be covered during storm events. No dust control is anticipated on site, but if it is determined in the field that it is necessary, disturbed areas will be watered.

6.0 INSPECTIONS

Inspections of all control measures will be conducted at least once every 7 calendar days and within 48 hours following any runoff producing storm event. Where areas have been temporarily stabilized or runoff is unlikely due to winter conditions, such inspections shall be conducted at least once every month. All areas where soil has been disturbed by construction and control measures installed will be inspected. Control measures will be inspected for proper installation, maintenance, and operation. Discharge locations will be inspected to ascertain whether control measures are effective in minimizing impacts to

receiving waters. The location where vehicles enter or exit the site shall be inspected for evidence of off-site sediment tracking.

A report shall be written and retained as part of the SWPPP after each inspection. The report should include names and qualifications of personnel, dates of inspection, and major observations. Major observations should include:

- Locations of discharges of sediment or other pollutants from the site
- Locations of control measures that need to be maintained
- Locations of control measures that failed to operate adequately
- Locations where additional control measures are needed that did not exist at the time of inspection
- Corrective action required including any changes to the SWPPP that are necessary and implementation dates
- An estimate of the amount of rainfall at the construction site (in inches) from the runoff producing storm even requiring the inspection. If inspecting on a 7 day schedule the amount of rainfall since the last inspection
- Weather information and a description of any discharges occurring at the time of inspection

A record of each inspection and action taken will be retained by the operator as part of the SWPPP for at least 3 years from the date that the permit coverage expires. The report shall identify any incidents of noncompliance; if there are no incidents of non-compliance, the report shall contain a certification that the facility is in compliance with the SWPPP and Permit.

7.0 MAINTENANCE OF CONTROLS

All control measures will be properly maintained in effective operating condition in accordance with good engineering practices and manufacturer specifications. If an existing control measure is identified to need modifying or maintenance, implementation will be completed before the next storm event.

Silt Fence deposits will be removed after each storm event. They will be removed when deposits reach half the height of the barrier. If the fabric of silt fences is found to be ineffective or decomposed, the fabric will be replaced. Additional maintenance instructions can be found in Appendix E.

8.0 NONSTORMWATER DISCHARGE MANAGEMENT

OSY Project will have no authorized nonstormwater discharges from the construction site. If the water table is encountered during excavation dewatering of contaminated soil will take place. This will be completed in an area established for dewatering that has secondary containment to capture all contaminated water. The contaminated water will then be sampled and removed from site if deemed necessary.

9.0 TOTAL MAXIMUM DAILY LOADS

No Total Maximum Daily Loads (TMDLs) exist for the OSY Project site.

10.0 IMPAIRED WATERS

No impaired waters exist on the OSY Project site or will be affected by the stormwater runoff.

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APPENDIX A

PERMITS

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COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION
203 Governor Street
Richmond, Virginia 23219-2010
(804) 786-1712
February 22, 2012

SES-TECH Atlantic
5700 Lake Wright Drive, Twin Oaks, Suite 309
Norfolk, VA 23502

RE: VSMP Construction Stormwater General Permit No. VAR10-12-101151, NAS-Oceana, Oceana Salvage Yard Access Road Site - Remedial Action (Non-Time Critical Removal Action) - 1040 Oceana Blvd - Virginia Beach

Dear Lewis R. Ivers:

The staff has received your registration statement for the proposed land-disturbing project under the VSMP General Permit for Discharges of Stormwater from Construction Activities (VAR10) on 2/17/2012. The project's date of coverage is either the date in which you receive this letter or fifteen business days after the postmark date of the project's complete registration packet submittal to DCR.

By submission of the registration statement, you acknowledge that the proposed project is eligible for coverage under the General Permit and you have agreed to the conditions in the General Permit including any applicable conditions regarding Total Maximum Daily Loads and impaired waters. Please be aware that § 10.1-603.8:1 of the Code of Virginia and the General Permit contain additional requirements if nonpoint nutrient offsets are chosen to meet the post-development nonpoint nutrient runoff compliance requirements. Section § 10.1-603.8:1 I requires that the permit issuing authority require that nonpoint nutrient offsets or other off-site options achieve the necessary nutrient reductions **PRIOR TO THE COMMENCEMENT OF THE PERMITTEE'S LAND DISTURBING ACTIVITY.**

A copy of the General Permit is available on the DCR web page at http://www.dcr.virginia.gov/soil_and_water/documents/vsmgpermvar10.pdf. Print the VAR10 permit and read it carefully as you are responsible for meeting all the permit conditions. The General Permit will expire on June 30, 2014.

Your project specific permit registration number is **VAR10-12-101151**. A copy of this permit coverage letter, registration statement, copy of the VAR10 permit, and the project's stormwater pollution prevention plan (SWPPP) must be at the construction site from the date of commencement of the construction activity to final stabilization. In addition, DCR staff conducts periodic site inspections for compliance with the permit.

Additional information on the permit and DCR staff contact information are available at http://www.dcr.virginia.gov/soil_and_water/vsmp.shtml on the DCR web page.

Sincerely,

A handwritten signature in black ink, appearing to read "J. Douglas Fritz".

J. Douglas Fritz
Stormwater Permits Manager

General Permit No.: VAR10

Effective Date: July 1, 2009

Expiration Date: June 30, 2014

GENERAL PERMIT FOR DISCHARGES OF STORMWATER FROM
CONSTRUCTION ACTIVITIES

AUTHORIZATION TO DISCHARGE UNDER THE VIRGINIA STORMWATER
MANAGEMENT PROGRAM AND THE VIRGINIA STORMWATER
MANAGEMENT ACT

In compliance with the provisions of the Clean Water Act, as amended, and pursuant to the Virginia Stormwater Management Act and attendant regulations, operators of construction activities covered by this permit with stormwater discharges are authorized to discharge to state waters, including discharges to a regulated MS4 system, within the boundaries of the Commonwealth of Virginia, except those specifically named in State Water Control Board and Virginia Soil and Water Conservation Board regulations that prohibit such discharges.

The authorized discharge shall be in accordance with this cover page, Section I—Discharge Authorization and Special Conditions, Section II—Stormwater Pollution Prevention Plan, and Section III—Conditions Applicable To All VSMP Permits as set forth herein.

SECTION I

DISCHARGE AUTHORIZATION AND SPECIAL CONDITIONS

A. Coverage under this permit.

1. During the period beginning with the date of coverage under this general permit and lasting until the permit's expiration date, the operator is authorized to discharge stormwater from construction activities.
2. This permit may also authorize stormwater discharges from support activities (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas) located on-site or off-site provided that:
 - a. The support activity is directly related to the construction site that is required to have VSMP permit coverage for discharges of stormwater associated with construction activity;
 - b. The support activity is not a commercial operation serving multiple unrelated construction projects by different operators, and does not operate beyond the completion of the construction activity at the last construction project it supports; and
 - c. Appropriate control measures are identified in a stormwater pollution prevention plan and implemented to address the discharges from the support activity areas.
3. There shall be no discharge of floating solids or visible foam that contravenes established standards or interferes directly or indirectly with designated uses of surface waters.

B. Limitation on coverage.

1. Post-construction discharges. This permit does not authorize stormwater discharges that originate from the site after construction activities have been completed and the site, including any temporary support activity site, has undergone final stabilization. Post-construction industrial stormwater discharges may need to be covered by a separate VPDES permit.
2. Discharges mixed with nonstormwater. This permit does not authorize discharges that are mixed with sources of nonstormwater, other than those discharges that are identified in Section I D 2 (Exceptions to prohibition of nonstormwater discharges) and are in compliance with Section II D 5 (Nonstormwater discharge management).
3. Discharges covered by another permit. This permit does not authorize stormwater discharges associated with construction activity that have been covered under an individual permit or required to obtain coverage under an alternative general permit.
4. TMDL limitation. Discharges to waters for which a wasteload allocation (WLA) for a pollutant has been established in a "total maximum daily load" (TMDL) approved by the State Water Control Board that would apply to stormwater discharges from a construction activity are not eligible for coverage under this permit unless the stormwater pollution prevention plan (SWPPP) developed by the operator is consistent with the requirements related to TMDLs contained in Section II D 6.
5. Impaired waters limitation. Discharges to waters that have been identified as impaired in the 2008 § 305(b)/303(d) Water Quality Assessment Integrated Report are not eligible for coverage under this permit unless the operator implements strategies and control measures consistent with Sections I H and II D 7.

C. Commingled discharges. Any discharge authorized by a different VSMP or VPDES permit may be commingled with discharges authorized by this permit.

D. Prohibition of nonstormwater discharges.

1. Except as provided in Sections I A 2, I C and I D 2, all discharges covered by this permit shall be composed entirely of stormwater associated with construction activity.
2. The following nonstormwater discharges from active construction sites are authorized by this permit provided the nonstormwater component of the discharge is in compliance with Section II D 5 (Nonstormwater discharges):
 - a. Discharges from fire fighting activities;
 - b. Fire hydrant flushings;
 - c. Waters used to wash vehicles where detergents are not used;
 - d. Water used to control dust;
 - e. Potable water sources, including uncontaminated waterline flushings;
 - f. Routine external building wash down which does not use detergents;

- g. Pavement washwaters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used;
- h. Uncontaminated air conditioning or compressor condensate;
- i. Uncontaminated ground water or spring water;
- j. Foundation or footing drains where flows are not contaminated with process materials such as solvents;
- k. Uncontaminated excavation dewatering, and
- l. Landscape irrigation.

E. Releases of hazardous substances or oil in excess of reportable quantities. The discharge of hazardous substances or oil in the stormwater discharges from the construction site shall be prevented or minimized in accordance with the stormwater pollution prevention plan for the site. This permit does not relieve the permittee of the reporting requirements of 40 CFR Part 110 (2002), 40 CFR Part 117 (2002) and 40 CFR Part 302 (2002) or § 62.1-44.34:19 of the Code of Virginia.

Where a release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR Part 110 (2002), 40 CFR Part 117 (2002), 40 CFR Part 302 (2002), or § 62.1-44.34.19 of the Code of Virginia occurs during a 24-hour period:

1. The operator is required to notify the Department of Environmental Quality and the permit-issuing authority in accordance with the requirements of Section III G as soon as he has knowledge of the discharge;
2. Where a release enters a municipal separate storm sewer system (MS4), the operator shall also notify the operator of the MS4; and
3. The stormwater pollution prevention plan required under Section II D of this permit must be reviewed by the operator to identify measures to prevent the reoccurrence of such releases and to respond to such releases, and the plan must be modified where appropriate within seven calendar days of knowledge of a release.

F. Spills. This permit does not authorize the discharge of hazardous substances or oil resulting from an on-site spill.

G. Termination of permit coverage. Coverage under this permit may be terminated in accordance with 4VAC50-60-1160.

H. Water quality protection.

1. The operator must select, install, implement and maintain control measures at the construction site that minimize pollutants in the discharge as necessary to ensure that the operator's discharge does not cause or contribute to an excursion above any applicable water quality standards.
2. If it is determined by the permit-issuing authority in consultation with the State Water Control Board at any time that the operator's stormwater discharges have reasonable potential to cause or contribute to an excursion above any applicable water quality standard, the permit-issuing authority shall require the operator to:

- a. Modify control measures in accordance with Section II C to adequately address the identified water quality concerns;
- b. Submit valid and verifiable data and information that are representative of ambient conditions and indicate that the receiving water is attaining water quality standards; or
- c. Cease discharges of pollutants from construction activity and submit an individual permit application according to 4VAC50-60-410 B 3.

All written responses required under this part must include a signed certification consistent with Section III K.

SECTION II STORMWATER POLLUTION PREVENTION PLAN

A. Stormwater Pollution Prevention Plan Framework.

1. A stormwater pollution prevention plan (SWPPP) shall be developed prior to submission of a registration statement and implemented for the construction activity covered by this permit. SWPPPs shall be prepared in accordance with good engineering practices.
2. The SWPPP shall:
 - a. Identify potential sources of pollutants that may reasonably be expected to affect the quality of stormwater discharges from the construction site;
 - b. Describe control measures that will be used to minimize pollutants in stormwater discharges from the construction site; and
 - c. Comply with the terms and conditions of this permit.
3. The SWPPP requirements of this general permit may be fulfilled by incorporating by reference other state or local plans such as (i) an erosion and sediment control (ESC) plan, (ii) an agreement in lieu of a plan as defined in 4VAC50-30-10, (iii) a stormwater management plan, (iv) a spill prevention control and countermeasure (SPCC) plan developed for the site under § 311 of the federal Clean Water Act or (v) best management practices (BMP) programs otherwise required for the facility provided that the incorporated plan meets or exceeds the SWPPP requirements of Section II D. If an erosion and sediment control plan for the land-disturbing activity is being incorporated by reference, the referenced plan must be approved by the locality in which the construction activity is to occur or by another appropriate plan approving authority authorized under the Virginia Erosion and Sediment Control Regulations (4VAC50-30) prior to the commencement of land disturbance.
4. All plans incorporated by reference into the SWPPP become enforceable under this permit. If a plan incorporated by reference does not contain all of the required elements of the SWPPP of Section II D, the operator must develop the missing elements and include them in the required SWPPP.
5. Once a definable area has been finally stabilized, the operator may mark this on the SWPPP and no further SWPPP or inspection requirements apply to that portion of the site (e.g., earth-disturbing activities around one of three buildings in

a complex are done and the area is finally stabilized; one mile of a roadway or pipeline project is done and finally stabilized, etc.).

6. The SWPPP shall identify all properties that are no longer under the control of the operator and the dates on which the operator no longer had control over each property.

7. The operator must implement the SWPPP as written and updated in accordance with Section II C from commencement of construction activity until final stabilization is complete.

B. Signature, SWPPP review and making SWPPPs available.

1. The SWPPP shall be signed in accordance with Section III K.

2. The SWPPP shall be retained, along with a copy of this permit, registration statement, and acknowledgement letter from the permit-issuing authority, at the construction site or other location easily accessible during normal business hours from the date of commencement of construction activity to the date of final stabilization. Operators with day-to-day operational control over SWPPP implementation shall have a copy of the SWPPP available at a central location on-site for the use of all operators and those identified as having responsibilities under the SWPPP whenever they are on the construction site. The SWPPP must be made available, in its entirety, to the department, the permit-issuing authority, and the operator of a municipal separate storm sewer system receiving discharges from the site for review at the time of an on-site inspection. If an on-site location is unavailable to store the SWPPP when no personnel are present, notice of the SWPPP's location must be posted near the main entrance at the construction site.

3. The operator shall make SWPPPs and all updates available upon request to the department; the permit-issuing authority; EPA; a state or local agency approving erosion and sediment control plans, grading plans, or stormwater management plans; local government officials; or the operator of a municipal separate storm sewer system receiving discharges from the site.

4. A sign or other notice must be posted conspicuously near the main entrance of the construction site. The sign or other notice must contain the following information:

- a. A copy of the permit coverage letter that includes the registration number for the construction activity; and
- b. The internet address at which a copy of the SWPPP may be found or the location of a hard copy of the SWPPP and name and telephone number of a contact person for scheduling viewing times.

For linear projects, the sign or other notice must be posted at a publicly accessible location near an active part of the construction project (e.g., where a pipeline project crosses a public road).

5. For discharges that commence on or after July 1, 2009 that have not previously held coverage under a VSMP or VPDES permit, the operator shall make the SWPPP available to the public for review. A copy of the SWPPP for each site shall be made available on the internet or in hard copy. The website address or contact person for access to the SWPPP shall be posted on the sign required by

subdivision B 4 of this section. If not provided electronically, access to the SWPPP may be arranged upon request at a time and at a publicly accessible location convenient to the operator or his designee but shall be no less than once per month and shall be during normal business hours. If a reproduced copy of the SWPPP is provided to the requestor, the requestor shall be responsible for the costs of reproduction. Information excluded from disclosure under applicable law shall not be required to be released Information not required to be contained within the SWPPP by this permit is not required to be released.]

C. Maintaining an updated SWPPP.

1. The operator shall amend the SWPPP whenever there is a change in design, construction, operation, or maintenance that has a significant effect on the discharge of pollutants to state waters and that has not been previously addressed in the SWPPP.

2. The SWPPP must be amended if during inspections or investigations by the operator's qualified personnel, or by local, state or federal officials, it is determined that the existing control measures are ineffective in minimizing pollutants in stormwater discharges from the construction site. Revisions to the SWPPP shall include additional or modified control measures designed to correct problems identified. If approval by a plan-approving authority is necessary for the control measure, revisions to the SWPPP shall be completed within seven calendar days of approval. Implementation of these additional or modified control measures must be accomplished as described in Section II D 3 b.

3. Revisions to the SWPPP must be dated and signed in accordance with Section III K 2, but are not required to be certified in accordance with Section III K 4.

4. The SWPPP must clearly identify the contractor(s) or subcontractor(s) that will implement and maintain each measure identified in the SWPPP. The SWPPP shall be revised to identify any new contractor that will implement a measure.

D. Stormwater pollution prevention plan contents. The SWPPP shall include the registration statement, this permit, and the following items:

1. Site and activity description. Each SWPPP shall provide the following information:

a. A narrative description of the nature of the construction activity, including the function of the project (e.g., low density residential, shopping mall, highway, etc.);

b. The intended sequence and timing of activities that disturb soils at the site (e.g., grubbing, excavation, grading, utilities and infrastructure installation);

c. A record of the dates when major grading activities occur, when construction activities temporarily or permanently cease on a portion of the site, and when stabilization measures are initiated;

d. Estimates of the total area expected to be disturbed by excavation, grading, or other construction activities including off-site borrow and fill areas;

e. A description of any other potential pollutant sources, such as vehicle fueling, storage of fertilizers or chemicals, sanitary waste facilities, etc.;

- f. Identification of the nearest receiving waters at or near the construction site that will receive discharges from disturbed areas of the project;
- g. The location and description of any discharge associated with industrial activity other than construction at the site. This includes stormwater discharges from dedicated asphalt plants and dedicated concrete plants that are covered by this permit;
- h. A legible general location map (e.g., USGS quadrangle map, a portion of a city or county map, or other map) with sufficient detail to identify the location of the construction activity and surface waters within one mile of the construction activity; and
- i. A legible site map identifying:
 - (1) Directions of stormwater flow and approximate slopes anticipated after major grading activities;
 - (2) Areas of soil disturbance and areas of the site which will not be disturbed;
 - (3) Locations of major structural and nonstructural control measures identified in the SWPPP, including those that will be permanent after construction activities have been completed;
 - (4) Locations where stabilization practices are expected to occur;
 - (5) Locations of surface waters;
 - (6) Locations where concentrated stormwater discharges;
 - (7) Locations of off-site material, waste, borrow or equipment storage areas covered by the SWPPP;
 - (8) Locations of other potential pollutant sources, such as vehicle fueling, storage of chemicals, concrete wash-out areas, sanitary waste facilities, including those temporarily placed on the construction site, etc.; and
 - (9) Areas where final stabilization has been accomplished.

2. Controls to minimize pollutants. The SWPPP shall include a description of all control measures that will be implemented as part of the construction activity to minimize pollutants in stormwater discharges. For each major activity identified in the project description, the SWPPP shall clearly describe appropriate control measures, the general sequencing during the construction process in which the control measures will be implemented, and which operator is responsible for the control measure's implementation.

- a. Erosion and sediment controls.
 - (1) An erosion and sediment control plan or an agreement in lieu of a plan shall be approved by the appropriate plan-approving authority for the land-disturbing activity in accordance with the Virginia Erosion and Sediment Control Law (§ 10.1-560 et seq.) and regulations (4VAC50-30). Where applicable, a plan shall be developed in accordance with board-approved annual general erosion and sediment control specifications.
 - (2) All control measures required by the plan shall be designed, installed, and maintained in accordance with good engineering practices and the minimum

standards of the Virginia Erosion and Sediment Control Law (§ 10.1-560 et seq. of the Code of Virginia) and regulations (4VAC50-30).

b. Management practices.

(1) Plans should ensure that existing vegetation is preserved where possible and that disturbed portions of the site are stabilized.

(2) All control measures must be properly selected, installed, and maintained in accordance with good engineering practices and, where applicable, manufacturer specifications. If periodic inspections or other information indicates a control has been used inappropriately or incorrectly, the operator must replace or modify the control for site situations as soon as practicable and update the SWPPP in accordance with Section II C.

(3) If sediment escapes the construction site, off-site accumulations of sediment must be removed as soon as practicable to minimize off-site impacts. If approval by a plan-approving authority is necessary, control measures shall be implemented to minimize pollutants in stormwater discharges until such approvals can be obtained.

(4) Construction debris and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source in stormwater discharges.

(5) Litter exposed to stormwater shall be prevented from becoming a pollutant source in stormwater discharges and the construction site shall be policed daily to control litter.

c. Stormwater management.

(1) The operator shall ensure compliance with the requirements of 4VAC50-60-1180 through 4VAC50-60-1190 of the Virginia Stormwater Management Regulations, including but not limited to water quality and quantity requirements. The SWPPP shall include a description of, and all necessary calculations supporting, all post-construction stormwater management measures that will be installed prior to the completion of the construction process to control pollutants in stormwater discharges after construction operations have been completed. Structural measures should be placed on upland soils to the degree possible. Such measures must be designed and installed in accordance with applicable local, state, and federal requirements, and any necessary permits must be obtained.

(2) Control measures contained in Part II of the Virginia Stormwater Management Regulations, 4VAC50-60-1184, or on the Virginia BMP Clearinghouse may be utilized. Innovative or alternate control measures may be allowed by the department provided such measures effectively address water quality and quantity in accordance with the requirements of 4VAC50-60-1180 through 4VAC50-60-1190 and are not restricted by the locality.

(3) Where applicable, the SWPPP shall contain additional information related to participation in a regional stormwater management plan, including:

a. Type of regional facility or facilities to which the site contributes;

b. Geographic location of any regional facility to which the site contributes (county or city and Hydrologic Unit Code);

c. Geographic location of the site (county or city and Hydrologic Unit Code). Latitude and longitude may additionally be included if available; and

d. Number of acres treated by a regional facility.

(4) Where applicable, the SWPPP shall contain additional information related to nutrient offsets to be acquired in accordance with § 10.1-603.8:1 of the Code of Virginia, including:

a. Name of the broker from which offsets will be acquired;

b. Geographic location (county or city and Hydrologic Unit Code) of the broker's offset generating facility;

c. Number of nutrient offsets to be acquired (lbs. per acre per year); and

d. Nutrient reductions to be achieved on site (lbs. per acre per year).

(5) Outflows from a stormwater management facility or stormwater conveyance system shall be discharged to an adequate channel as defined in the Virginia Erosion and Sediment Control Regulations (4VAC50-30). In addition, all control measures shall be employed in a manner that minimizes impacts on the physical, chemical and biological integrity of rivers, streams, and other state waters, is protective of water quality standards, and is consistent with Section II D 6 and D 7 and other applicable provisions of this permit.

d. Other controls.

(1) The SWPPP shall describe measures to prevent the discharge of solid materials, including building materials, garbage, and debris to state waters, except as authorized by a Clean Water Act § 404 permit.

(2) The SWPPP shall describe control measures used to comply with applicable state or local waste disposal, sanitary sewer or septic system regulations.

(3) The SWPPP shall include a description of construction and waste materials expected to be stored on-site with updates as appropriate. The SWPPP shall also include a description of controls including storage practices, to minimize exposure of the materials to stormwater, and for spill prevention and response.

(4) The SWPPP shall include a description of pollutant sources from off-site areas (including stormwater discharges from dedicated asphalt plants and dedicated concrete plants), and a description of control measures that will be implemented at those sites to minimize pollutant discharges.

e. Applicable state or local programs. The control measures implemented at the site shall be consistent with all applicable federal, state, or local requirements for erosion and sediment control and stormwater management. The SWPPP shall be updated as necessary to reflect any revisions to applicable federal, state or local requirements that affect the control measures implemented at the site.

3. Maintenance of controls.

a. All control measures must be properly maintained in effective operating condition in accordance with good engineering practices and, where applicable, manufacturer specifications. If site inspections required by Section II D 4 identify control measures that are not operating effectively, maintenance shall be performed as soon as practicable to maintain the continued effectiveness of stormwater controls.

b. If site inspections required by Section II D 4 identify existing control measures that need to be modified or if additional control measures are necessary for any reason, implementation shall be completed before the next anticipated storm event. If implementation before the next anticipated storm event is impracticable, the situation shall be documented in the SWPPP and alternative control measures shall be implemented as soon as practicable.

4. Inspections. The name and phone number of qualified personnel conducting inspections shall be included in the SWPPP.

a. Inspections shall be conducted (i) at least every seven calendar days; or (ii) at least once every 14 calendar days and within 48 hours following any runoff producing storm event. Where areas have been temporarily stabilized or runoff is unlikely due to winter conditions (e.g., the site is covered with snow or ice, or frozen ground exists) such inspections shall be conducted at least once every month.

b. Inspections must include all areas of the site disturbed by construction activity, off-site areas covered by the permit, and areas used for storage of materials that are exposed to precipitation, but does not need to include areas identified pursuant to Section II A 5. Inspectors must look for evidence of, or the potential for, pollutants entering a stormwater conveyance system. Control measures identified in the SWPPP shall be inspected for proper installation, maintenance, and operation. Discharge locations, where accessible, shall be inspected to ascertain whether control measures are effective in minimizing impacts to receiving waters. Where discharge locations are inaccessible, nearby downstream locations shall be inspected to the extent that such inspections are practicable. Locations where vehicles enter or exit the site shall be inspected for evidence of off-site sediment tracking.

c. Utility line installation, pipeline construction, and other examples of long, narrow, linear construction activities may limit the access of inspection personnel to the areas described in Section II D 4 b. Inspection of these areas could require that vehicles compromise temporarily or even permanently stabilized areas, cause additional disturbance of soils, and increase the potential for erosion. In these circumstances, controls must be inspected on the same frequencies as other construction projects, but representative inspections may be performed. For representative inspections, personnel must inspect controls along the construction site for 0.25 miles above and below each access point where a roadway, undisturbed right-of-way, or other similar feature intersects the construction site and allows access to the areas described above. The conditions of the controls along each inspected 0.25-mile segment

may be considered as representative of the condition of controls along that reach extending from the end of the 0.25-mile segment to either the end of the next 0.25-mile segment, or to the end of the project, whichever occurs first. Inspection locations must be listed in the report required by Section II D 4 d.

d. A report summarizing the scope of the inspection, names and qualifications of personnel making the inspection, the dates of the inspection, major observations relating to the implementation of the SWPPP, and actions taken in accordance with Section II D 4 d of the permit shall be made and retained as part of the SWPPP in accordance with Section III B of this permit. Major observations should include:

- (1) The location(s) of discharges of sediment or other pollutants from the site;
- (2) Location(s) of control measures that need to be maintained;
- (3) Location(s) of control measures that failed to operate as designed or proved inadequate for a particular location;
- (4) Location(s) where additional control measures are needed that did not exist at the time of inspection;
- (5) Corrective action required including any changes to the SWPPP that are necessary and implementation dates;
- (6) An estimate of the amount of rainfall at the construction site (in inches) from the runoff producing storm event requiring the inspection, or if inspecting on a seven-day schedule, the amount of rainfall (in inches) since the previous inspection; and
- (7) Weather information and a description of any discharges occurring at the time of inspection.

A record of each inspection and of any actions taken in accordance with Section II must be retained by the operator as part of the SWPPP for at least three years from the date that permit coverage expires or is terminated. The inspection reports shall identify any incidents of noncompliance. Where a report does not identify any incidents of noncompliance, the report shall contain a certification that the facility is in compliance with the SWPPP and this permit. The report shall be signed in accordance with Section III K of this permit.

5. Nonstormwater discharge management. The SWPPP shall identify all allowable sources of nonstormwater discharges listed in Section I D 2 of this permit that are combined with stormwater discharges from the construction activity at the site, except for flows from fire fighting activities. The SWPPP shall identify and require the implementation of appropriate control measures for the nonstormwater components of the discharge.

6. Total maximum daily loads. A total maximum daily load (TMDL) approved by the State Water Control Board may include a wasteload allocation to the regulated construction activity that identifies the pollutant for which stormwater control measures are necessary for the surface waters to meet water quality standards. The pollutant identified in a wasteload allocation as of the effective date of this permit must be specified in the SWPPP. The SWPPP shall include strategies and control measures to ensure consistency with the assumptions and requirements of

the TMDL WLA that apply to the operator's discharge. In a situation where a TMDL has specified a general wasteload allocation applicable to construction stormwater discharges, but no specific requirements for construction sites have been identified in the TMDL, the operator shall consult with the state or federal TMDL authority to confirm that meeting permit requirements will be consistent with the approved TMDL. If the TMDL specifically precludes such discharges, the operator is not eligible for coverage under the general permit.

7. Impaired waters. In accordance with Section I H, control measures shall be protective of water quality standards for impaired waters identified as having impairments for pollutants that may be discharged from the construction activity in the 2008 § 305(b)/303(d) Water Quality Assessment Integrated Report .

SECTION III CONDITIONS APPLICABLE TO ALL VSMP PERMITS

NOTE: Discharge monitoring is not required for this permit. If the operator chooses to monitor stormwater discharges or control measures, the operator must comply with the requirements of subsections A, B, and C, as appropriate.

A. Monitoring.

1. Samples and measurements taken for the purpose of monitoring shall be representative of the monitoring activity.
2. Monitoring shall be conducted according to procedures approved under 40 CFR Part 136 (2001) or alternative methods approved by the U.S. Environmental Protection Agency, unless other procedures have been specified in this permit.
3. The operator shall periodically calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals that will ensure accuracy of measurements.

B. Records.

1. Monitoring records and reports shall include:
 - a. The date, exact place, and time of sampling or measurements;
 - b. The individual(s) who performed the sampling or measurements;
 - c. The date(s) and time(s) analyses were performed;
 - d. The individual(s) who performed the analyses;
 - e. The analytical techniques or methods used; and
 - f. The results of such analyses.
2. The operator shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the registration statement for this permit, for a period of at least three years from the date of the sample, measurement, report or request for coverage. This period of retention shall be extended automatically during the course of any unresolved litigation regarding

the regulated activity or regarding control standards applicable to the operator, or as requested by the board.

C. Reporting monitoring results.

1. The operator shall update the SWPPP to include the results of the monitoring as may be performed in accordance with this permit, unless another reporting schedule is specified elsewhere in this permit.
2. Monitoring results shall be reported on a discharge monitoring report (DMR); on forms provided, approved or specified by the department; or in any format provided that the date, location, parameter, method, and result of the monitoring activity are included.
3. If the operator monitors any pollutant specifically addressed by this permit more frequently than required by this permit using test procedures approved under 40 CFR Part 136 (2001) or using other test procedures approved by the U.S. Environmental Protection Agency or using procedures specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or reporting form specified by the department.
4. Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in this permit.

D. Duty to provide information. The operator shall furnish, within a reasonable time, any information which the board, department, or other permit-issuing authority may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The board, department, or other permit-issuing authority may require the operator to furnish, upon request, such plans, specifications, and other pertinent information as may be necessary to determine the effect of the wastes from his discharge on the quality of state waters, or such other information as may be necessary to accomplish the purposes of the CWA and the Virginia Stormwater Management Act. The operator shall also furnish to the board, department, or other permit-issuing authority, upon request, copies of records required to be kept by this permit.

E. Compliance schedule reports. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

F. Unauthorized stormwater discharges. Pursuant to § 10.1-603.2:2 A of the Code of Virginia, except in compliance with a permit issued by the permit-issuing authority, it shall be unlawful to cause a stormwater discharge from a construction activity.

G. Reports of unauthorized discharges. Any operator who discharges or causes or allows a discharge of sewage, industrial waste, other wastes or any noxious or deleterious substance or a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR Part 110 (2002), 40 CFR Part 117 (2002), or 40 CFR Part 302 (2002) that occurs during a 24-hour period into or upon state waters or who discharges or causes or allows a discharge that may reasonably be expected to enter state waters, shall notify the Department of Environmental Quality of the discharge immediately upon discovery of the discharge, but in no case later than within 24 hours after said discovery. A written report of the unauthorized discharge shall

be submitted to the department, the Department of Environmental Quality, and the permit-issuing authority within five days of discovery of the discharge. The written report shall contain:

1. A description of the nature and location of the discharge;
2. The cause of the discharge;
3. The date on which the discharge occurred;
4. The length of time that the discharge continued;
5. The volume of the discharge;
6. If the discharge is continuing, how long it is expected to continue;
7. If the discharge is continuing, what the expected total volume of the discharge will be; and
8. Any steps planned or taken to reduce, eliminate and prevent a recurrence of the present discharge or any future discharges not authorized by this permit.

Discharges reportable to the department, the Department of Environmental Quality, and the permit-issuing authority under the immediate reporting requirements of other regulations are exempted from this requirement.

H. Reports of unusual or extraordinary discharges. If any unusual or extraordinary discharge including a "bypass" or "upset", as defined herein, should occur from a facility and the discharge enters or could be expected to enter state waters, the operator shall promptly notify, in no case later than within 24 hours, the department, the Department of Environmental Quality, and the permit-issuing authority by telephone after the discovery of the discharge. This notification shall provide all available details of the incident, including any adverse effects on aquatic life and the known number of fish killed. The operator shall reduce the report to writing and shall submit it to the department, the Department of Environmental Quality, and the permit-issuing authority within five days of discovery of the discharge in accordance with Section III I 2. Unusual and extraordinary discharges include but are not limited to any discharge resulting from:

1. Unusual spillage of materials resulting directly or indirectly from processing operations;
2. Breakdown of processing or accessory equipment;
3. Failure or taking out of service of some or all of the facilities; and
4. Flooding or other acts of nature.

I. Reports of noncompliance. The operator shall report any noncompliance which may adversely affect state waters or may endanger public health.

1. An oral report to the department, the Department of Environmental Quality, and the permit-issuing authority shall be provided within 24 hours from the time the operator becomes aware of the circumstances. The following shall be included as information that shall be reported within 24 hours under this subdivision:

- a. Any unanticipated bypass; and
- b. Any upset that causes a discharge to state waters.

2. A written report shall be submitted within five days and shall contain:

- a. A description of the noncompliance and its cause;

b. The period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and

c. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

The permit-issuing authority may waive the written report on a case-by-case basis for reports of noncompliance under Section III I if the oral report has been received within 24 hours and no adverse impact on state waters has been reported.

3. The operator shall report all instances of noncompliance not reported under Section III I 1 or 2 in writing as part of the SWPPP. The reports shall contain the information listed in Section III I 2.

NOTE: The reports required in Section III G, H and I shall be made to the department's Stormwater Program Section of the Division of Soil and Water Conservation, appropriate Department of Environmental Quality's Regional Office Pollution Response Program, and the permit-issuing authority. Reports may be made by telephone or by fax. For reports outside normal working hours, leaving a recorded message shall fulfill the immediate reporting requirement. For emergencies, the Virginia Department of Emergency Management maintains a 24-hour telephone service at 1-800-468-8892.

4. Where the operator becomes aware of a failure to submit any relevant facts, or submittal of incorrect information in any report, including a registration statement, to the department or the permit-issuing authority, the operator shall promptly submit such facts or correct information.

J. Notice of planned changes.

1. The operator shall give notice to the permit-issuing authority as soon as possible of any planned physical alterations or additions to the permitted facility or activity. Notice is required only when:

a. The operator plans an alteration or addition to any building, structure, facility, or installation that may meet one of the criteria for determining whether a facility is a new source in 4VAC50-60-420;

b. The operator plans an alteration or addition that would significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are not subject to effluent limitations in this permit; or

2. The operator shall give advance notice to the permit-issuing authority of any planned changes in the permitted facility or activity, which may result in noncompliance with permit requirements.

K. Signatory requirements.

1. Registration statement. All registration statements shall be signed as follows:

a. For a corporation: by a responsible corporate officer. For the purpose of this part, a responsible corporate officer means: (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy-making or decision-making

functions for the corporation; or (ii) the manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions that govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long-term compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

c. For a municipality, state, federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this part, a principal executive officer of a public agency includes: (i) the chief executive officer of the agency or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

2. Reports, etc. All reports required by permits, including SWPPPs, and other information requested by the board, the department, or the permit-issuing authority shall be signed by a person described in Section III K 1 or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in Section III K 1;

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the operator. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and

c. The signed and dated written authorization is included in the SWPPP. A copy must be provided to the permit-issuing authority, if requested.

3. Changes to authorization. If an authorization under Section III K 2 is no longer accurate because a different individual or position has responsibility for the overall operation of the construction activity, a new authorization satisfying the requirements of Section III K 2 shall be submitted to the permit-issuing authority prior to or together with any reports or information to be signed by an authorized representative.

4. Certification. Any person signing a document under Section III K 1 or 2 shall make the following certification:

"I certify under penalty of law that I have read and understand this document and that this document and all attachments were prepared in accordance with a system

designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

L. Duty to comply. The operator shall comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Virginia Stormwater Management Act and the Clean Water Act, except that noncompliance with certain provisions of this permit may constitute a violation of the Virginia Stormwater Management Act but not the Clean Water Act. Permit noncompliance is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

The operator shall comply with effluent standards or prohibitions established under § 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if this permit has not yet been modified to incorporate the requirement.

M. Duty to reapply. If the operator wishes to continue an activity regulated by this permit after the expiration date of this permit, the operator shall submit a new registration statement at least 90 days before the expiration date of the existing permit, unless permission for a later date has been granted by the board. The board shall not grant permission for registration statements to be submitted later than the expiration date of the existing permit.

N. Effect of a permit. This permit does not convey any property rights in either real or personal property or any exclusive privileges, nor does it authorize any injury to private property or invasion of personal rights, or any infringement of federal, state or local law or regulations.

O. State law. Nothing in this permit shall be construed to preclude the institution of any legal action under, or relieve the operator from any responsibilities, liabilities, or penalties established pursuant to any other state law or regulation or under authority preserved by § 510 of the Clean Water Act. Except as provided in permit conditions on "bypassing" (Section III U) and "upset" (Section III V), nothing in this permit shall be construed to relieve the operator from civil and criminal penalties for noncompliance.

P. Oil and hazardous substance liability. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the operator from any responsibilities, liabilities, or penalties to which the operator is or may be subject under §§ 62.1-44.34:14 through 62.1-44.34:23 of the State Water Control Law or § 311 of the Clean Water Act.

Q. Proper operation and maintenance. The operator shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances), which are installed or used by the operator to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes effective plant performance, adequate funding, adequate staffing, and adequate laboratory and

process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems, which are installed by the operator only when the operation is necessary to achieve compliance with the conditions of this permit.

R. Disposal of solids or sludges. Solids, sludges or other pollutants removed in the course of treatment or management of pollutants shall be disposed of in a manner so as to prevent any pollutant from such materials from entering state waters and in compliance with all applicable state and federal laws and regulations.

S. Duty to mitigate. The operator shall take all reasonable steps to minimize or prevent any discharge in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.

T. Need to halt or reduce activity not a defense. It shall not be a defense for an operator in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

U. Bypass.

1. "Bypass", as defined in 4VAC50-60-10, means the intentional diversion of waste streams from any portion of a treatment facility. The operator may allow any bypass to occur that does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to ensure efficient operation. These bypasses are not subject to the provisions of Section III U 2 and 3 herein.

2. Notice.

a. Anticipated bypass. If the operator knows in advance of the need for a bypass, the operator shall submit prior notice to the department, if possible at least 10 days before the date of the bypass.

b. Unanticipated bypass. The operator shall submit notice of an unanticipated bypass as required in Section III I herein.

3. Prohibition of bypass.

a. Except as provided in Section III U 1, bypass is prohibited, and the permit-issuing authority may take enforcement action against an operator for bypass unless:

(1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage. Severe property damage means substantial physical damage to property, damage to the treatment facilities that causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production;

(2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance; and

(3) The operator submitted notices as required under Section III U 2.

- b. The permit-issuing authority may approve an anticipated bypass, after considering its adverse effects, if the permit-issuing authority determines that it will meet the three conditions listed in Section III U 3 a.

V. Upset.

1. An upset, as defined in 4VAC50-60-10, means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the operator. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
2. An upset constitutes an affirmative defense to an action brought for noncompliance with technology-based permit effluent limitations if the requirements of Section III V 2 herein are met. A determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is not a final administrative action subject to judicial review.
3. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.
4. An operator who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that:
 - a. An upset occurred and that the operator can identify the cause(s) of the upset;
 - b. The permitted facility was at the time being properly operated;
 - c. The operator submitted notice of the upset as required in Section III I herein; and
 - d. The operator complied with any remedial measures required under Section III S herein.
5. In any enforcement proceeding, the operator seeking to establish the occurrence of an upset has the burden of proof.

W. Inspection and entry. The operator shall allow the department as the board's designee, the permit-issuing authority, EPA, or an authorized representative of either entity (including an authorized contractor), upon presentation of credentials and other documents as may be required by law to:

1. Enter upon the operator's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
3. Inspect and photograph at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

4. Sample or monitor at reasonable times, for the purposes of ensuring permit compliance or as otherwise authorized by the Clean Water Act or the Virginia Stormwater Management Act, any substances or parameters at any location.

For purposes of this section, the time for inspection shall be deemed reasonable during regular business hours, and whenever the facility is discharging. Nothing contained herein shall make an inspection unreasonable during an emergency.

X. Permit actions. Permits may be modified, revoked and reissued, or terminated for cause. The filing of a request by the operator for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

Y. Transfer of permits.

1. Permits are not transferable to any person except after notice to the permit-issuing authority. Except as provided in Section III Y 2, a permit may be transferred by the operator to a new operator only if the permit has been modified or revoked and reissued, or a minor modification made, to identify the new operator and incorporate such other requirements as may be necessary under the Virginia Stormwater Management Act and the Clean Water Act.

2. As an alternative to transfers under Section III Y 1, this permit may be automatically transferred to a new operator if:

a. The current operator notifies the permit-issuing authority at least 30 days in advance of the proposed transfer of the title to the facility or property;

b. The notice includes a written agreement between the existing and new operators containing a specific date for transfer of permit responsibility, coverage, and liability between them; and

c. The permit-issuing authority does not notify the existing operator and the proposed new operator of its intent to modify or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in Section III Y 2 b.

3. For ongoing construction activity involving a change of operator, the new operator shall accept and maintain the existing SWPPP, or prepare and implement a new SWPPP prior to taking over operations at the site.

Z. Severability. The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

4VAC50-60-1180. Applicability.

Operators receiving coverage under this general permit shall remain subject to the water quality and quantity criteria set forth in 4VAC50-60-1182 through 4VAC50-60-1190, which specify technical criteria for every land-disturbing activity regulated by this general permit.

4VAC50-60-1182. General.

A. Determination of flooding and channel erosion impacts to receiving streams due to land-disturbing activities shall be measured at each point of discharge from the land disturbance and such determination shall include any runoff from the balance of the watershed that also contributes to that point of discharge.

B. The specified design storms shall be defined as either a 24-hour storm using the rainfall distribution recommended by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) when using NRCS methods or as the storm of critical duration that produces the greatest required storage volume at the site when using a design method such as the Modified Rational Method.

C. For purposes of computing runoff, all pervious lands in the site shall be assumed prior to development to be in good condition (if the lands are pastures, lawns, or parks), with good cover (if the lands are woods), or with conservation treatment (if the lands are cultivated); regardless of conditions existing at the time of computation.

D. Construction of stormwater management facilities or modifications to channels shall comply with all applicable laws and regulations. Evidence of approval of all necessary permits shall be presented.

E. Impounding structures that are not covered by the Impounding Structure Regulations (4VAC50-20) shall be engineered for structural integrity during the 100-year storm event.

F. Predevelopment and postdevelopment runoff rates shall be verified by calculations that are consistent with good engineering practices.

G. Outflows from a stormwater management facility or stormwater conveyance system, shall be discharged to an adequate channel.

H. Proposed residential, commercial, or industrial subdivisions shall apply these stormwater management criteria to the land disturbance as a whole. Individual lots in new subdivisions shall not be considered separate land-disturbing activities, but rather the entire subdivision shall be considered a single land development project. Hydrologic parameters shall reflect the ultimate land disturbance and shall be used in all engineering calculations.

I. All stormwater management facilities shall have an inspection and maintenance plan that identifies the owner and the responsible party for carrying out the inspection and maintenance plan.

J. Construction of stormwater management impoundment structures within a Federal Emergency Management Agency (FEMA) designated 100-year floodplain shall be avoided to the extent possible. When this is unavoidable, all stormwater management facility construction shall be in compliance with all applicable regulations under the National Flood Insurance Program, 44 CFR Part 59.

K. Natural channel characteristics shall be preserved to the maximum extent practicable.

L. Land-disturbing activities shall comply with the Virginia Erosion and Sediment Control Law (§ 10.1-560 et seq. of the Code of Virginia) and attendant regulations.

M. Flood control and stormwater management facilities that drain or treat water from multiple development projects or from a significant portion of a watershed may be allowed in Resource Protection Areas defined in the Chesapeake Bay Preservation Act, provided that (i) the local government has conclusively established that the location of the facility within the Resource Protection Area is the optimum location; (ii) the size of the facility is the minimum necessary to provide necessary flood control, stormwater treatment, or both; and (iii) the facility must be consistent with a stormwater management program that has been approved by the board, the Chesapeake Bay Local Assistance Board, or the Board of Conservation and Recreation.

4VAC50-60-1184. Water quality.

A. Compliance with the water quality criteria may be achieved by applying the performance-based criteria or the technology-based criteria to either the site or a planning area.

B. Performance-based criteria. For land-disturbing activities, the calculated postdevelopment nonpoint source pollutant runoff load shall be compared to the calculated predevelopment load based upon the average land cover condition or the existing site condition. A BMP shall be located, designed, and maintained to achieve the target pollutant removal efficiencies specified in Table 1 of this section to effectively reduce the pollutant load to the required level based upon the following four applicable land development situations for which the performance criteria apply:

1. Situation 1 consists of land-disturbing activities where the existing percent impervious cover is less than or equal to the average land cover condition and the proposed improvements will create a total percent impervious cover that is less than the average land cover condition.

Requirement: No reduction in the after disturbance pollutant discharge is required.

2. Situation 2 consists of land-disturbing activities where the existing percent impervious cover is less than or equal to the average land cover condition and the proposed improvements will create a total percent impervious cover that is greater than the average land cover condition.

Requirement: The pollutant discharge after disturbance shall not exceed the existing pollutant discharge based on the average land cover condition.

3. Situation 3 consists of land-disturbing activities where the existing percent impervious cover is greater than the average land cover condition.

Requirement: The pollutant discharge after disturbance shall not exceed (i) the pollutant discharge based on existing conditions less 10% or (ii) the pollutant discharge based on the average land cover condition, whichever is greater.

4. Situation 4 consists of land-disturbing activities where the existing percent impervious cover is served by an existing stormwater management BMP that addresses water quality.

Requirement: The pollutant discharge after disturbance shall not exceed the existing pollutant discharge based on the existing percent impervious cover while

served by the existing BMP. The existing BMP shall be shown to have been designed and constructed in accordance with proper design standards and specifications, and to be in proper functioning condition.

C. Technology-based criteria. For land-disturbing activities, the postdeveloped stormwater runoff from the impervious cover shall be treated by an appropriate BMP as required by the postdeveloped condition percent impervious cover as specified in Table 1 of this section. The selected BMP shall be located, designed, and maintained to perform at the target pollutant removal efficiency specified in Table 1. Design standards and specifications for the BMPs in Table 1 that meet the required target pollutant removal efficiency will be available at the department.

Table 1*

Water Quality BMP*	Target Phosphorus Removal Efficiency	Percent Impervious Cover
Vegetated filter strip	10%	16-21%
Grassed Swale	15%	
Constructed wetlands	20%	22-37%
Extended detention (2 x WQ Vol)	35%	
Retention basin I (3 x WQ Vol)	40%	
Bioretention basin	50%	38-66%
Bioretention filter	50%	
Extended detention-enhanced	50%	
Retention basin II (4 x WQ Vol)	50%	
Infiltration (1 x WQ Vol)	50%	
Sand filter	65%	67-100%
Infiltration (2 x WQ Vol)	65%	
Retention basin III (4 x WQ Vol with aquatic bench)	65%	

*Innovative or alternate BMPs not included in this table may be allowed at the discretion of the local program administrator or the department. Innovative or alternate BMPs not included in this table that target appropriate nonpoint source pollution other than phosphorous may be allowed at the discretion of the local program administrator or the department.

4VAC50-60-1186. Stream channel erosion.

A. Properties and receiving waterways downstream of any land-disturbing activity shall be protected from erosion and damage due to changes in runoff rate of flow and hydrologic characteristics, including but not limited to, changes in volume, velocity, frequency, duration, and peak flow rate of stormwater runoff in accordance with the minimum design standards set out in this section.

B. The permit-issuing authority shall require compliance with subdivision 19 of 4VAC50-30-40 of the Erosion and Sediment Control Regulations, promulgated pursuant to Article 4 (§ 10.1-560 et seq.) of Chapter 5 of Title 10.1 of the Code of Virginia.

C. The permit-issuing authority may determine that some watersheds or receiving stream systems require enhanced criteria in order to address the increased frequency of bankfull flow conditions (top of bank) brought on by land-disturbing activities. Therefore, in lieu of the reduction of the two-year post-developed peak rate of runoff as required in subsection B of this section, the land development project being considered shall provide 24-hour extended detention of the runoff generated by the one-year, 24-hour duration storm.

D. In addition to subsections B and C of this section, permit-issuing authorities, by local ordinance may, or the board by state regulation may, adopt more stringent channel analysis criteria or design standards to ensure that the natural level of channel erosion, to the maximum extent practicable, will not increase due to the land-disturbing activities. These criteria may include, but are not limited to, the following:

1. Criteria and procedures for channel analysis and classification.
2. Procedures for channel data collection.
3. Criteria and procedures for the determination of the magnitude and frequency of natural sediment transport loads.
4. Criteria for the selection of proposed natural or manmade channel linings.

4VAC50-60-1188. Flooding.

A. Downstream properties and waterways shall be protected from damages from localized flooding due to changes in runoff rate of flow and hydrologic characteristics, including but not limited to, changes in volume, velocity, frequency, duration, and peak flow rate of stormwater runoff in accordance with the minimum design standards set out in this section.

B. The 10-year postdeveloped peak rate of runoff from the development site shall not exceed the 10-year predeveloped peak rate of runoff.

C. In lieu of subsection B of this section, localities may, by ordinance, adopt alternate design criteria based upon geographic, land use, topographic, geologic factors or other downstream conveyance factors as appropriate.

D. Linear development projects shall not be required to control post-developed stormwater runoff for flooding, except in accordance with a watershed or regional stormwater management plan.

4VAC50-60-1190. Regional (watershed-wide) stormwater management plans.

This section enables localities to develop regional stormwater management plans. State agencies intending to develop large tracts of land such as campuses or prison compounds are encouraged to develop regional plans where practical.

The objective of a regional stormwater management plan is to address the stormwater management concerns in a given watershed with greater economy and efficiency by installing regional stormwater management facilities versus individual, site-specific facilities. The result will be fewer stormwater management facilities to design, build and maintain in the affected watershed. It is also anticipated that regional stormwater management facilities will not only help mitigate the impacts of new development, but may also provide for the remediation of erosion, flooding or water quality problems caused by existing development within the given watershed.

If developed, a regional plan shall, at a minimum, address the following:

1. The specific stormwater management issues within the targeted watersheds.
2. The technical criteria in 4VAC50-60-1180 through 4VAC50-60-1188 as needed based on subdivision 1 of this section.
3. The implications of any local comprehensive plans, zoning requirements, local ordinances pursuant to the Chesapeake Bay Preservation Area Designation and Management Regulations adopted pursuant to the Chesapeake Bay Preservation Act, and other planning documents.
4. Opportunities for financing a watershed plan through cost sharing with neighboring agencies or localities, implementation of regional stormwater utility fees, etc.
5. Maintenance of the selected stormwater management facilities.
6. Future expansion of the selected stormwater management facilities in the event that development exceeds the anticipated level.



Address Search na Boulevard in Virginia Beach, VA Search

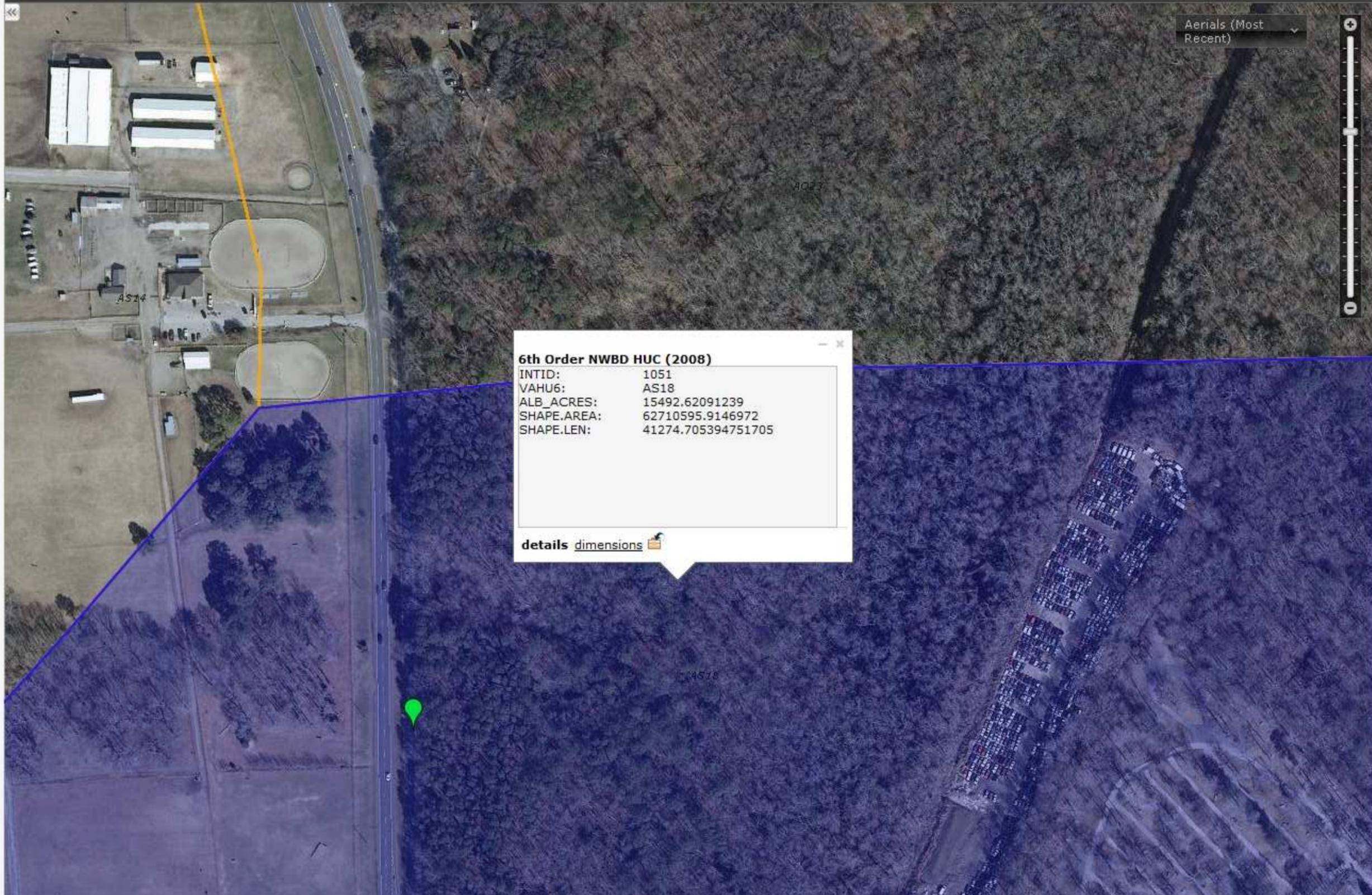
Virginia DEQ Home > VEGIS Home > Web Map

Map Results

Tools Print/Export Map Bookmarks

View Additional Maps

- 3 Northern Virginia Regional Offi
- 4 Piedmont Regional Office
- 5 Tidewater Regional Office
- 6 Valley Regional Office
- Monitoring Stations (2010)
 - Ambient
 - Ambient/Biological
 - Ambient/Biological/Fish Tissue
 - Ambient/Fish Tissue
 - Biological
 - Biological/Fish Tissue
 - Citizen Monitoring
 - Federal
 - Fish Tissue
 - Trend
 - VDH-BEACH
- Significant VPDES Dischargers (20
- 2010 Rivers
 - 1 - Supporting
 - 2A - Supporting
 - 2B - Supporting
 - 2C - Supporting
 - 3A - Insufficient Data
 - 3B - Insufficient Data
 - 3C - Insufficient Data
 - 3D - Insufficient Data
 - 4A - Not Supporting
 - 4B - Not Supporting
 - 4C - Not Supporting
 - 5A - Not Supporting
 - 5C - Not Supporting
 - 5D - Not Supporting
 - 5F - Not Supporting
- 2010 Estuaries
 - 2A - Supporting
 - 2B - Supporting
 - 3A - Insufficient Data
 - 3B - Insufficient Data
 - 5A - Not Supporting
 - 5B - Not Supporting
 - 5C - Not Supporting
 - 5D - Not Supporting
- 2010 Reservoirs
 - 2A - Supporting
 - 2B - Supporting
 - 3A - Insufficient Data
 - 3B - Insufficient Data
 - 4C - Insufficient Data
 - 5A - Not Supporting
 - 5C - Not Supporting
 - 5D - Not Supporting
- 6th Order NWBD HUC (2008)
- Impaired Segments (2010)



6th Order NWBD HUC (2008)

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[details](#) [dimensions](#)

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APPENDIX B
RECORD OF SWPPP AMENDMENTS

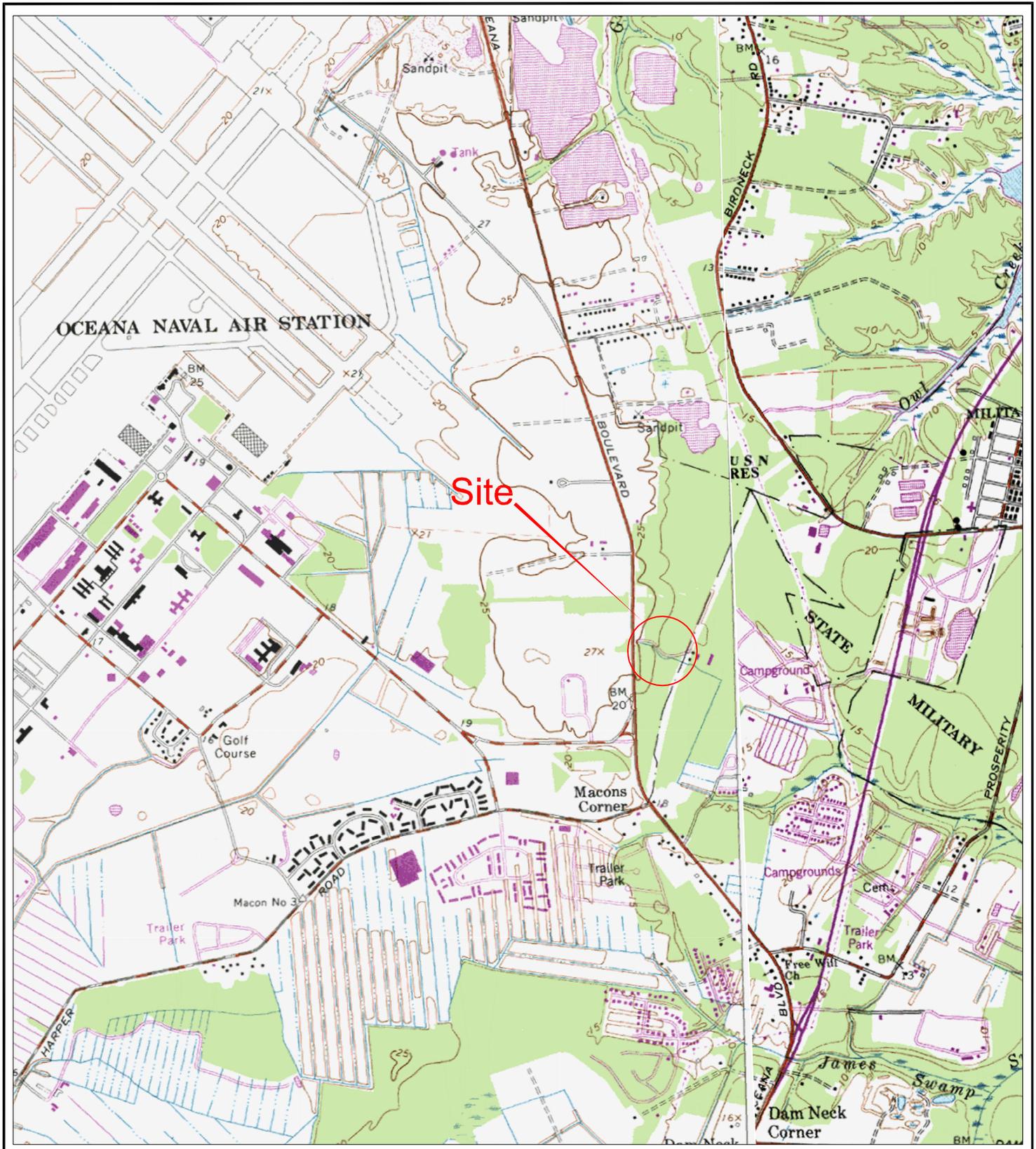
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APPENDIX C

SITE MAPS AND SOIL EROSION AND SEDIMENT CONTROL DETAILS (FIGURE 3)

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Source: U.S.G.S. Topographic Maps (7.5 Minute)
Princess Anne & Virginia Beach, VA Quadrangles

NAVFAC MID-ATLANTIC Hampton Roads RAO LTM EMAC
NAS Oceana, Virginia Beach, VA Oceana Salvage Access Road Removal Action & Asphalt Cap
Figure 1 Site Location Map
SES-TECH Atlantic

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CITY OF VIRGINIA BEACH
 GEODETIC CONTROL NETWORK
 VIRGINIA STATE PLANE
 SOUTH ZONE NAD 83-93 HARN

OCEANA BOULEVARD
 VARIABLE WIDTH R/W

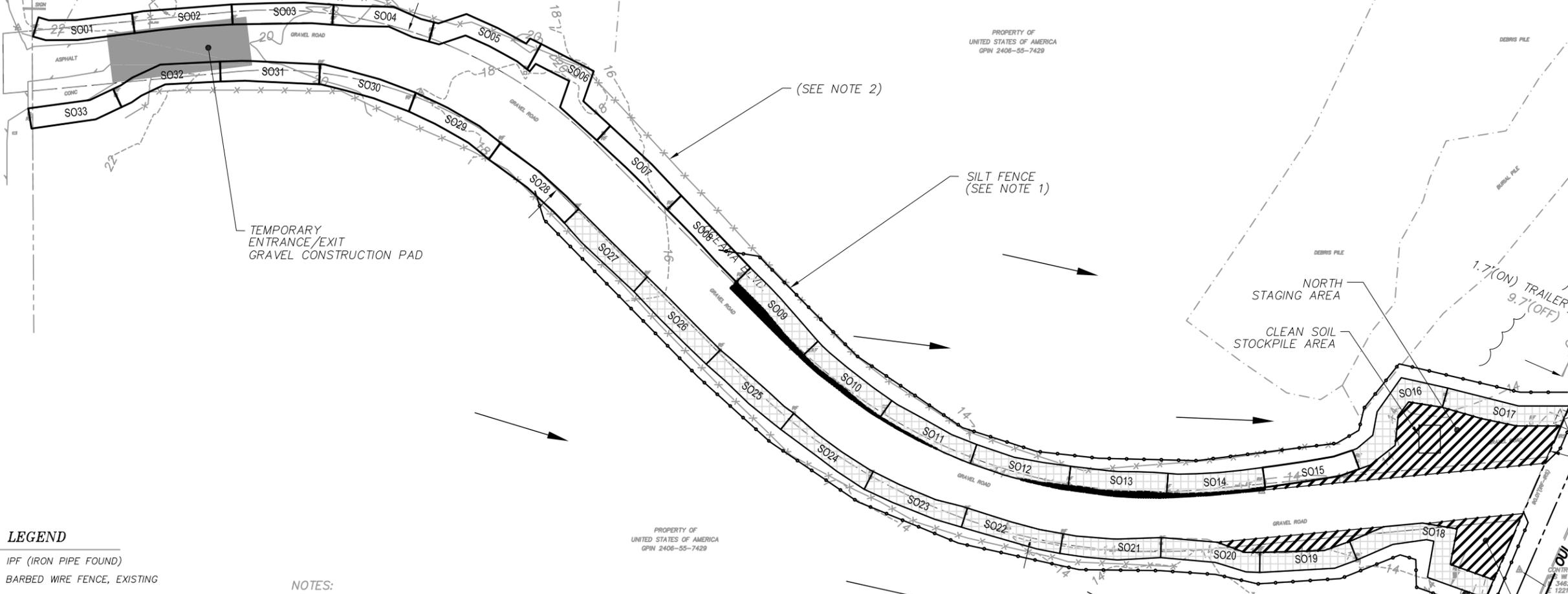
UNKNOWN PRIVATE POND LOCATED
 APPROXIMATELY 2450' NORTH FROM THE SITE

PROPERTY OF
 UNITED STATES OF AMERICA
 GPIN 2406-55-7429

PROPERTY OF
 UNITED STATES OF AMERICA
 GPIN 2406-55-7429

NOW OR FORMERLY
 THE CITY OF VIRGINIA BEACH
 INST# 20050906001421480
 GPIN 2416-30-7871

NOW OR FORMERLY
 JULIA MALBON
 W.B. 96, PG. 1603
 M.B. 96, PG. 43
 GPIN 2416-42-3779

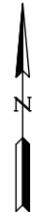


LEGEND

- IPF (IRON PIPE FOUND)
- ✕ BARBED WIRE FENCE, EXISTING
- ▨ PROPOSED EXCAVATION GRID
- ▩ STAGING AREA
- GRID CELL EXTENDED TO MATCH NEW ROAD
- ⊠ TRANSMISSION LINE POLE
- SILT FENCE
- ➔ DIRECTION OF STORMWATER FLOW
- ~ TREE LINE

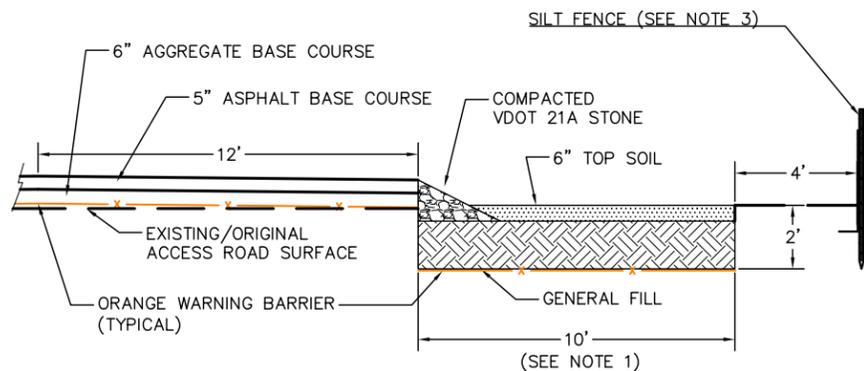
NOTES:

1. SILT FENCE TYPICAL 4' OFFSET FROM EDGE OF EXCAVATION.
2. REMOVE BARB WIRE FENCE WHERE IT INTERFERES WITH SILT FENCE.
3. SITE IS RELATIVELY FLAT SO ALL STORMWATER FLOW WILL BE IN SHEET FLOW OFF THE SLOPED ACCESS ROAD AND TOWARDS THE EAST END OF THE SITE. STORMWATER WILL PERCOLATE INTO THE GROUND.



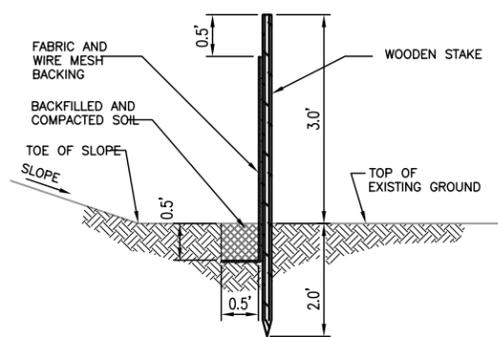
PROJECT NAME		
OCEANA SALVAGE YARD		
TITLE		
OCEANA SALVAGE YARD SITE MAP		
SES-TECH Atlantic		
CAD FILE:	DATE:	FIGURE:
FIGURE 2 SITE MAP.DWG	09.23.2011	2

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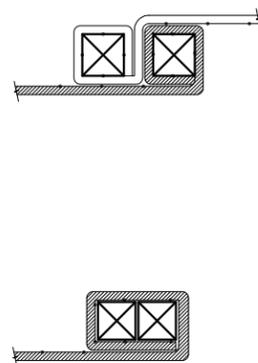
ACCESS ROAD DETAIL WITH SILT FENCE (TYP)

N.T.S.



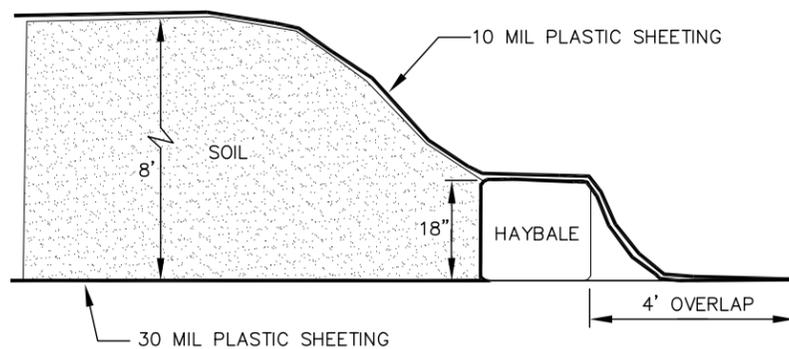
SILT FENCE DETAIL

N.T.S.



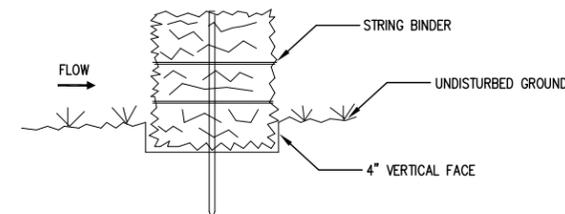
SILT FENCE POST DETAILS

N.T.S.

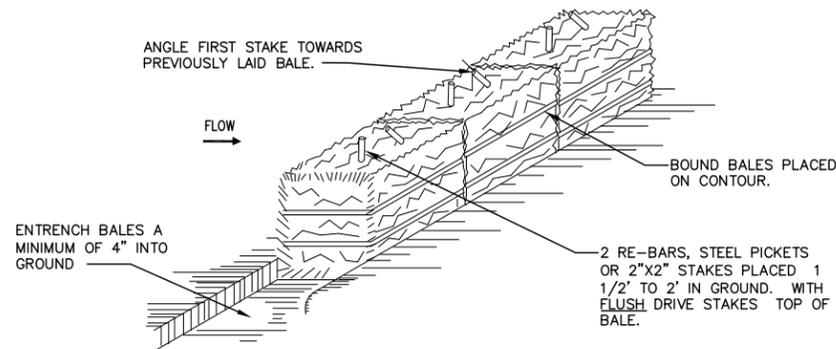


STOCKPILE DETAIL FOR CLEAN SOIL

N.T.S.

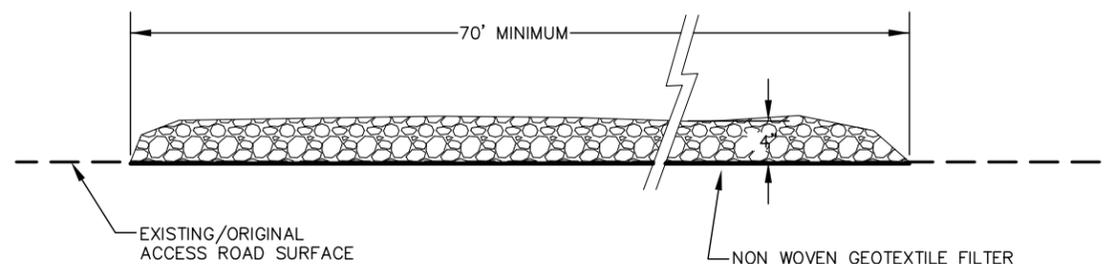


DRAINAGE AREA NO MORE THAN 1/4 ACRE PER 100 FEET OF STRAW BALE DIKE FOR SLOPES LESS THAN 25%.



HAY BALE DETAIL

N.T.S.



TEMPORARY ENTRANCE/EXIT GRAVEL CONSTRUCTION PAD

N.T.S.

NOTES:

1. THE PRIMARY PURPOSE OF A SILT FENCE IS TO REDUCE RUNOFF VELOCITY AND TRAP SEDIMENT. VELOCITY IS REDUCED, WATER IS IMPOUNDED BEHIND THE MEASURE, AND SEDIMENT FALLS OUT OF SUSPENSION.
2. SILT FENCE SHALL BE INSTALLED ON A LINE OF EQUAL ELEVATION (CONTOUR).
3. SILT FENCE SHALL NOT BE USED IN OR ACROSS A FLOWING NATURAL CHANNEL.
4. SILT FENCE SHALL BE BE CONSTRUCTED OF SILT FENCE AND WOOD POSTS AT 6' MAXIMUM SPACING. SILT FENCE IS ONLY SUITABLE FOR SHORT-TERM INSTALLATIONS OF LESS THAN TWO MONTHS, WOOD POSTS SHALL BE A MINIMUM OF 60" LENGTH WITH A DIAMETER OF 2" WHEN OAK IS USED AND 4" WHEN PINE IS USED. POSTS SHALL BE DRIVEN A MINIMUM OF 24" INTO GROUND.
5. IF STEEL POSTS ARE UTILIZED FOR SILT FENCE CONSTRUCTION, THEY MUST HAVE A MINIMUM WEIGHT OF 1.33 POUNDS PER LINEAR FOOT AND SHALL HAVE A MINIMUM LENGTH OF 5 FEET.
6. SILT FENCE FABRIC SHALL BE WOVEN POLYPROPYLENE WITH A MINIMUM WIDTH OF 35" AND A MINIMUM TENSILE STRENGTH OF 100 LBS, THE FABRIC SHALL CONFORM TO THE REQUIREMENTS OF ASTM D4632. THE FABRIC SHALL BE FASTENED TO THE POSTS ACCORDING WITH MANUFACTURER'S RECOMMENDATIONS.
7. THE BOTTOM EDGE OF THE SILT FENCE SHALL BE BURIED A MINIMUM OF 0.5' BELOW GROUND. THE FENCE SHALL BE INSTALLED WITH THE POSTS ON THE DOWNSTREAM SIDE OF THE FABRIC.
8. THE END OF THE SILT FENCE SHALL BE TURNED UP SLOPE (SEE END DETAIL)
9. DIMENSIONS MAY VARY TO FIT FIELD CONDITIONS. ROOM FOR MAINTENANCE SHALL BE PROVIDED WHEN PRACTICAL.
10. POSTS SHALL BE SPACED 6' MAXIMUM AND SHALL BE POSITIONED ON THE DOWNSTREAM SIDE OF FENCE.
11. POSTS TO OVERLAP AND FENCE FABRIC TO FOLD AROUND EACH POST ONE FULL TURN AT JOINT. SECURE FABRIC TO POSTS WITH 4 STAPLES OR WIRE RINGS.
12. POSTS SHALL BE DRIVEN TIGHTLY TOGETHER TO PREVENT POTENTIAL FLOW-THROUGH OF SEDIMENT AT THE JOINT. THE TOPS OF THE POSTS SHALL BE SECURED WITH WIRE.
13. FENCE FABRIC SHALL BE FOLDED AROUND TWO POSTS ONE FULL TURN AND SECURED WITH 4 STAPLES.
14. SILT FENCE SHALL BE INSPECTED AFTER EACH RAINFALL EVENT AND MAINTAINED WHEN BULGES OCCUR OR WHEN SEDIMENT ACCUMULATION REACHED 50% OF THE FABRIC HEIGHT

PROJECT NAME		
OCEANA SALVAGE YARD		
TITLE		
OCEANA SALVAGE YARD DETAILS		
SES-TECH Atlantic		
CAD FILE:	DATE	FIGURE
FIGURE 3 DETAILS.DWG	09.23.2011	3

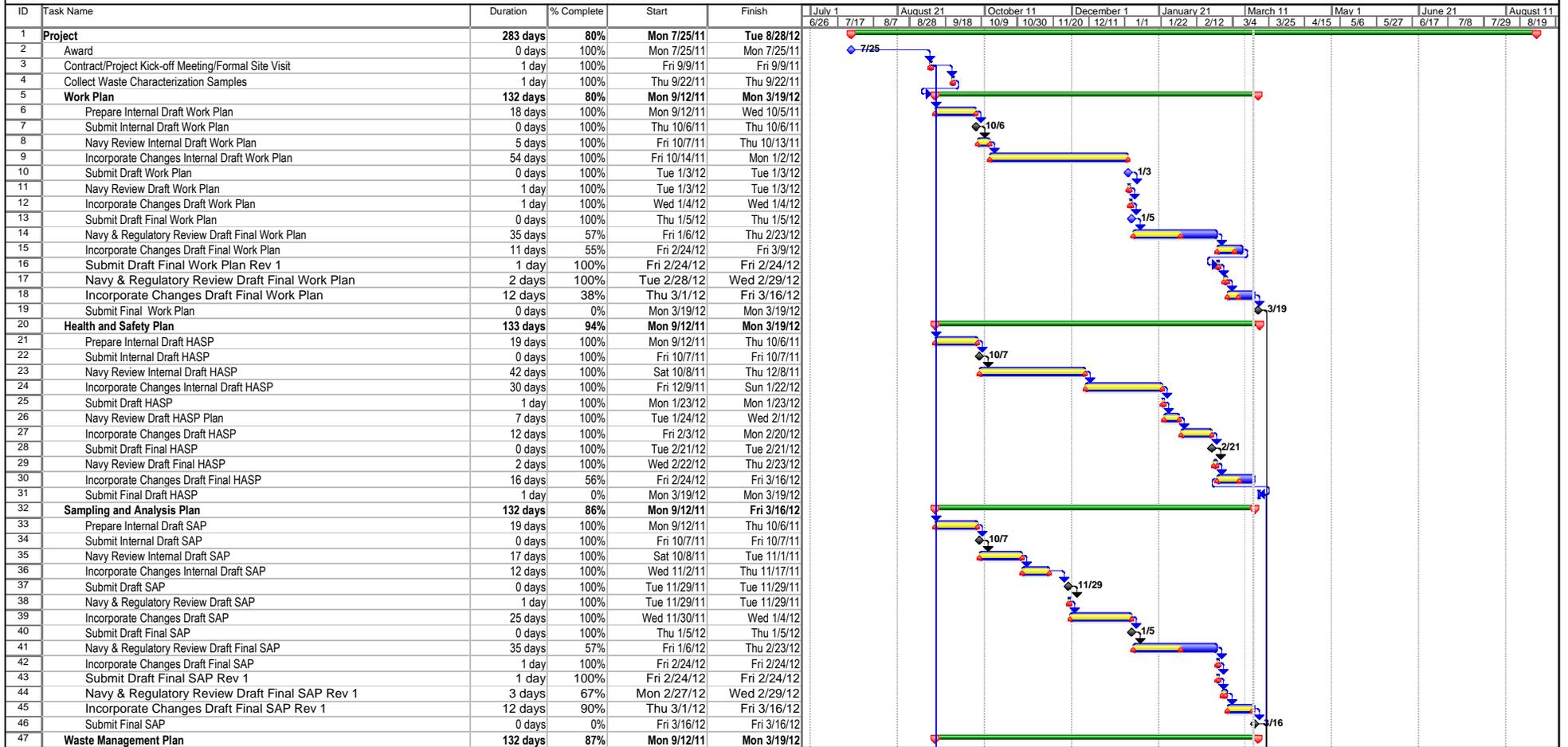
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APPENDIX D

SCHEDULE OF CONSTRUCTION ACTIVITIES

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NAS Oceana Salvage Yard NTCRA
 Contract No.: N40085-11-D-0043
 CTO No.: 0001



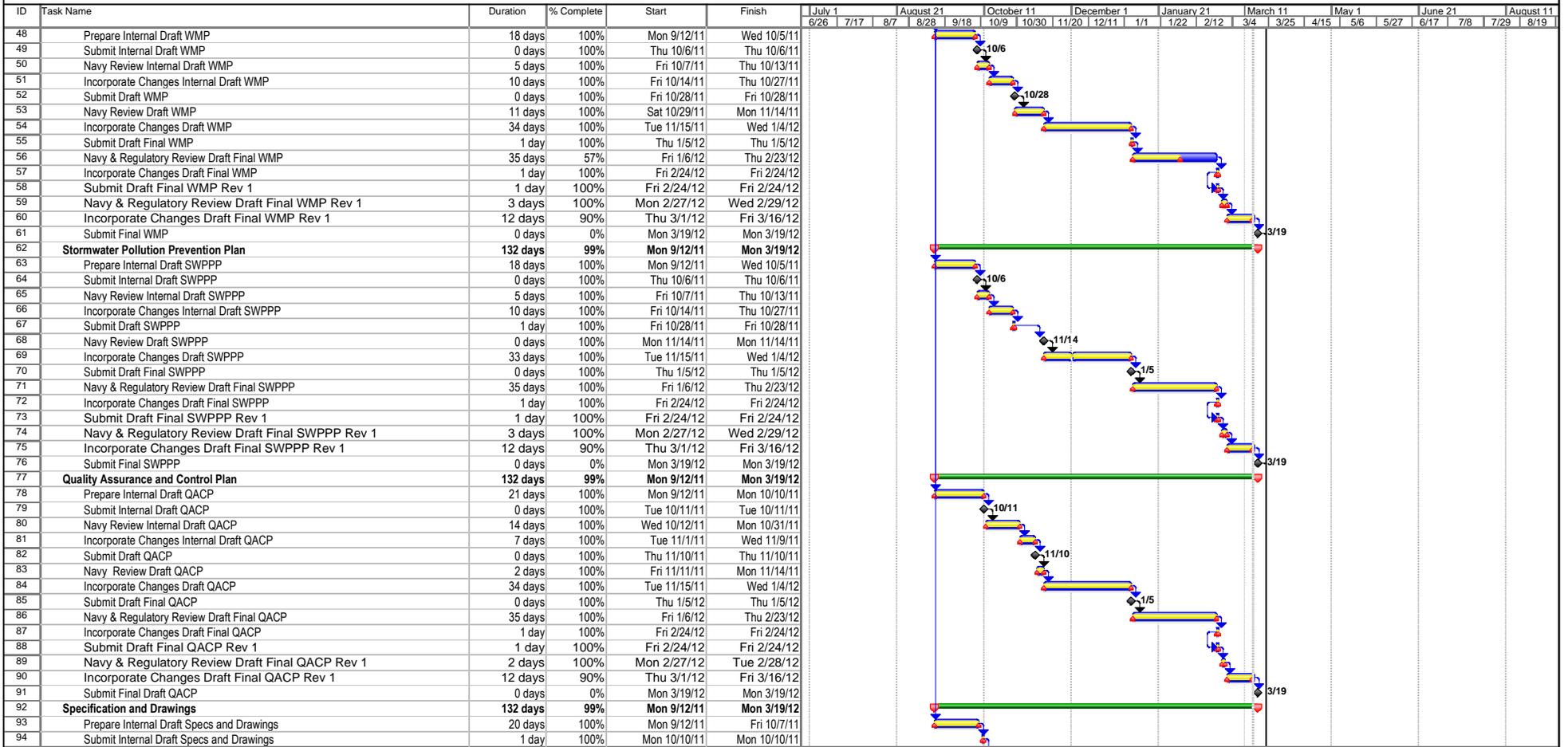
Project: Oceana Salvage Road NTCRA
 Date: Fri 3/16/12

Task Progress: Milestone: Rolled Up Task: Rolled Up Progress: External Tasks: Group By Summary:

Task Summary: Milestone Summary: Rolled Up Milestone: Split: Project Summary: Deadline:

Page 1

NAS Oceana Salvage Yard NTCRA
 Contract No.: N40085-11-D-0043
 CTO No.: 0001



Project: Oceana Salvage Road NTCRA
 Date: Fri 3/16/12

Task Progress: Milestone: Rolled Up Task: Rolled Up Progress: External Tasks: Group By Summary:

Summary: Rolled Up Milestone: Split: Project Summary: Deadline:

Page 2

NAS Oceana Salvage Yard NTCRA
 Contract No.: N40085-11-D-0043
 CTO No.: 0001

ID	Task Name	Duration	% Complete	Start	Finish	July 1		August 21		October 11		December 1		January 21		March 11		May 1		June 21		August 11	
						6/26	7/17	8/7	8/28	9/18	10/9	10/30	11/20	12/11	1/1	1/22	2/12	3/4	3/25	4/15	5/6	5/27	6/17
95	Navy Review Internal Draft Specs and Drawings	10 days	100%	Mon 10/10/11	Fri 10/21/11																		
96	Incorporate Changes Internal Draft Specs and Drawings	14 days	100%	Mon 10/24/11	Thu 11/10/11																		
97	Submit Draft Specs and Drawings	0 days	100%	Thu 11/10/11	Thu 11/10/11																		
98	Navy Review Draft Specs and Drawings	2 days	100%	Fri 11/11/11	Mon 11/14/11																		
99	Incorporate Changes Draft Specs and Drawings	35 days	100%	Tue 11/15/11	Thu 1/5/12																		
100	Submit Draft Final Specs and Drawings	1 day	100%	Fri 1/6/12	Fri 1/6/12																		
101	Navy & Regulatory Review Draft Final Specs and Drawings	35 days	100%	Fri 1/6/12	Thu 2/23/12																		
102	Incorporate Changes Draft Final Specs and Drawings	1 day	100%	Fri 2/24/12	Fri 2/24/12																		
103	Submit Draft Final Specs and Drawings Rev 1	1 day	100%	Fri 2/24/12	Fri 2/24/12																		
104	Navy & Regulatory Review Draft Final Specs and Drawings Rev 1	2 days	100%	Mon 2/27/12	Tue 2/28/12																		
105	Incorporate Changes Draft Final Specs and Drawings Rev 1	12 days	90%	Thu 3/1/12	Fri 3/16/12																		
106	Submit Final Specs and Drawings	0 days	0%	Mon 3/19/12	Mon 3/19/12																		
107	Project Team Meeting	5 days	0%	Tue 3/13/12	Mon 3/19/12																		
108	Meeting Preparation	1 day	0%	Mon 3/19/12	Mon 3/19/12																		
109	Attend Meeting	1 day	0%	Tue 3/13/12	Tue 3/13/12																		
110	Field Work	38 days	0%	Mon 3/26/12	Tue 5/29/12																		
111	Start Field Work	0 days	0%	Mon 3/26/12	Mon 3/26/12																		
112	Mobilization, Set up and Erosion Control	2 days	0%	Mon 3/26/12	Tue 3/27/12																		
113	Survey and Layout	1 day	0%	Mon 3/26/12	Mon 3/26/12																		
114	Clearing and Grubbing	6 days	0%	Mon 3/26/12	Tue 4/3/12																		
115	Soil Stabilization	5 days	0%	Mon 4/2/12	Fri 4/6/12																		
116	Waste Characterization Sampling	6 days	0%	Mon 4/9/12	Tue 4/17/12																		
117	Excavation of Shoulder Area	6 days	0%	Wed 4/18/12	Thu 4/26/12																		
118	Excavation of Staging Area	5 days	0%	Mon 4/30/12	Mon 5/7/12																		
119	Confirmatory Sampling	8 days	0%	Thu 5/10/12	Mon 5/21/12																		
120	Transportation and Disposal	11 days	0%	Wed 4/18/12	Mon 5/7/12																		
121	Restoration of Access Road and Staging Area	5 days	0%	Tue 5/8/12	Tue 5/15/12																		
122	Restoration of Access Road	6 days	0%	Wed 5/16/12	Thu 5/24/12																		
123	Demobilization	2 days	0%	Mon 5/28/12	Tue 5/29/12																		
124	Completion Report	72 days	0%	Mon 5/21/12	Tue 8/28/12																		
125	Prepare Internal Construction Completion Report	20 days	0%	Mon 5/21/12	Fri 6/15/12																		
126	Submit Internal Construction Completion Report	0 days	0%	Fri 6/15/12	Fri 6/15/12																		
127	Navy Review Internal Construction Completion Report	10 days	0%	Mon 6/18/12	Fri 6/29/12																		
128	Incorporate Changes Internal Construction Completion Report	10 days	0%	Mon 7/2/12	Fri 7/13/12																		
129	Submit Draft Construction Completion Report	0 days	0%	Fri 7/13/12	Fri 7/13/12																		
130	Navy and Regulatory Review Draft Construction Completion Report	22 days	0%	Mon 7/16/12	Tue 8/14/12																		
131	Incorporate Changes Draft Construction Completion Report	10 days	0%	Wed 8/15/12	Tue 8/28/12																		
132	Final Draft Construction Completion Report	0 days	0%	Tue 8/28/12	Tue 8/28/12																		

Project: Oceana Salvage Road NTCRA
 Date: Fri 3/16/12

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

Page 3

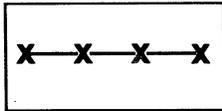
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APPENDIX E

CONTROL MEASURES DESCRIPTION

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STD & SPEC 3.05



SILT FENCE

Definition

A temporary sediment barrier consisting of a synthetic filter fabric stretched across and attached to supporting posts and entrenched.

Purposes

1. To intercept and detain small amounts of sediment from disturbed areas during construction operations in order to prevent sediment from leaving the site.
2. To decrease the velocity of sheet flows and low-to-moderate level channel flows.



Conditions Where Practice Applies

1. Below disturbed areas where erosion would occur in the form of sheet and rill erosion.
2. Where the size of the drainage area is no more than one quarter acre per 100 feet of silt fence length; the maximum slope length behind the barrier is 100 feet; and the maximum gradient behind the barrier is 50 percent (2:1).
3. In minor swales or ditch lines where the maximum contributing drainage area is no greater than 1 acre and flow is no greater than 1 cfs.
4. Silt fence will not be used in areas where rock or some other hard surface prevents the full and uniform depth anchoring of the barrier.

Planning Considerations

Laboratory work at the Virginia Highway and Transportation Research Council (VHTRC) has shown that silt fences can trap a much higher percentage of suspended sediments than straw bales, though silt fence passes the sediment-laden water slower. Silt fences are preferable to straw barriers in many cases because of their durability and potential cost savings. While the failure rate of silt fences is lower than that of straw barriers, many instances have been observed where silt fences are improperly installed, inviting failure and sediment loss. The installation methods outlined here can improve performance and reduce failures.

As noted, flow rate through silt fence is significantly lower than the flow rate for straw bale barriers. This creates more ponding and hence more time for sediment to fall out. Table 3.05-A demonstrates these relationships.

Both woven and non-woven synthetic fabrics are commercially available. The woven fabrics generally display higher strength than the non-woven fabrics and, in most cases, do not require any additional reinforcement. When tested under acid and alkaline water conditions, most of the woven fabrics increase in strength, while the reactions of non-woven fabrics to these conditions are variable. The same is true of testing under extensive ultraviolet radiation. Permeability rates vary regardless of fabric type. While all of the fabrics demonstrate very high filtering efficiencies for sandy sediments, there is considerable variation among both woven and non-woven fabrics when filtering the finer silt and clay particles.

Design Criteria

1. No formal design is required. As with straw bale barriers, an effort should be made to locate silt fence at least 5 feet to 7 feet beyond the base of disturbed slopes with grades greater than 7%.

TABLE 3.05-A

**TYPICAL FLOW RATES AND FILTERING
EFFICIENCIES OF PERIMETER CONTROL**

<u>Material</u>	<u>Flow Rate (gal./sq.ft./min)</u>	<u>Filter Efficiency(%)</u>
Straw	5.6	67
Synthetic Fabric	0.3	97

Source: VHTRC

2. The use of silt fences, because they have such a low permeability, is limited to situations in which only sheet or overland flows are expected and where concentrated flows originate from drainage areas of 1 acre or less.
3. Field experience has demonstrated that, in many instances, silt fence is installed too short (less than 16 inches above ground elevation). The short fence is subject to breaching during even small storm events and will require maintenance "clean outs" more often. Properly supported silt fence which stands 24 to 34 inches above the existing grade tends to promote more effective sediment control.

Construction Specifications

Materials

1. Synthetic filter fabric shall be a pervious sheet of propylene, nylon, polyester or ethylene yarn and shall be certified by the manufacturer or supplier as conforming to the requirements noted in Table 3.05-B.
2. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life at a temperature range of 0° F to 120° F.
3. If wooden stakes are utilized for silt fence construction, they must have a diameter of 2 inches when oak is used and 4 inches when pine is used. Wooden stakes must have a minimum length of 5 feet.

TABLE 3.05-B
PHYSICAL PROPERTIES OF
FILTER FABRIC IN SILT FENCE

<u>Physical Property</u>	<u>Test</u>	<u>Requirements</u>
Filtering Efficiency	ASTM 5141	75% (minimum)
Tensile Strength at 20% (max.) Elongation*	VTM-52	Extra Strength - 50 lbs./linear inch (minimum) Standard Strength - 30 lbs./linear inch (minimum)
Flow Rate	ASTM 5141	0.2 gal./sq.ft./ minute (minimum)
Ultraviolet Radiation Stability %	ASTM-G-26	90% (minimum)

* Requirements reduced by 50% after six months of installation.

Source: VHTRC

4. If steel posts (standard "U" or "T" section) are utilized for silt fence construction, they must have a minimum weight of 1.33 pounds per linear foot and shall have a minimum length of 5 feet.
5. Wire fence reinforcement for silt fences using standard-strength filter cloth shall be a minimum of 14 gauge and shall have a maximum mesh spacing of 6 inches.

Installation

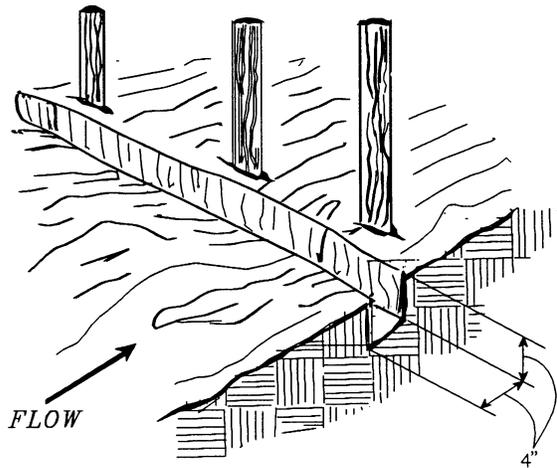
1. The height of a silt fence shall be a minimum of 16 inches above the original ground surface and shall not exceed 34 inches above ground elevation.

2. The filter fabric shall be purchased in a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are unavoidable, filter cloth shall be spliced together only at a support post, with a minimum 6-inch overlap, and securely sealed.
3. A trench shall be excavated approximately 4-inches wide and 4-inches deep on the upslope side of the proposed location of the measure.
4. When wire support is used, standard-strength filter cloth may be used. Posts for this type of installation shall be placed a maximum of 10-feet apart (see Plate 3.05-1). The wire mesh fence must be fastened securely to the upslope side of the posts using heavy duty wire staples at least one inch long, tie wires or hog rings. The wire shall extend into the trench a minimum of two inches and shall not extend more than 34 inches above the original ground surface. The standard-strength fabric shall be stapled or wired to the wire fence, and 8 inches of the fabric shall be extended into the trench. The fabric shall not be stapled to existing trees.
5. When wire support is not used, extra-strength filter cloth shall be used. Posts for this type of fabric shall be placed a maximum of 6-feet apart (see Plate 3.05-2). The filter fabric shall be fastened securely to the upslope side of the posts using one inch long (minimum) heavy-duty wire staples or tie wires and eight inches of the fabric shall be extended into the trench. The fabric shall not be stapled to existing trees. This method of installation has been found to be more commonplace than #4.
6. If a silt fence is to be constructed across a ditch line or swale, the measure must be of sufficient length to eliminate endflow, and the plan configuration shall resemble an arc or horseshoe with the ends oriented upslope (see Plate 3.05-2). Extra-strength filter fabric shall be used for this application with a maximum 3-foot spacing of posts.

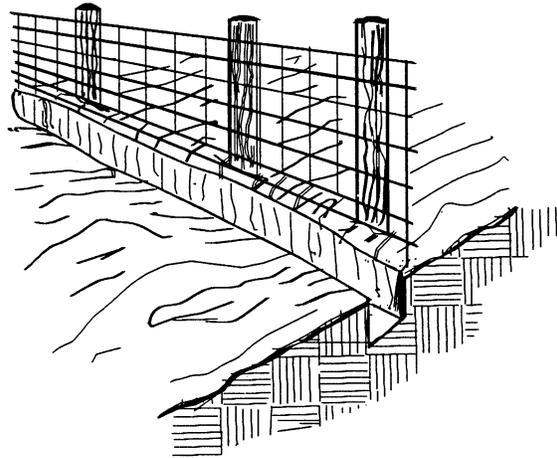
All other installation requirements noted in #5 apply.
7. The 4-inch by 4-inch trench shall be backfilled and the soil compacted over the filter fabric.
8. Silt fences shall be removed when they have served their useful purpose, but not before the upslope area has been permanently stabilized.

CONSTRUCTION OF A SILT FENCE (WITH WIRE SUPPORT)

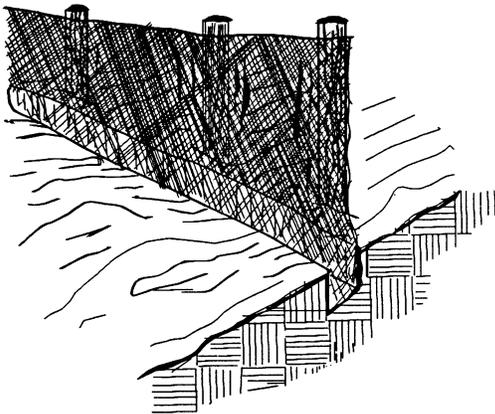
1. SET POSTS AND EXCAVATE A 4"X4" TRENCH UPSLOPE ALONG THE LINE OF POSTS.



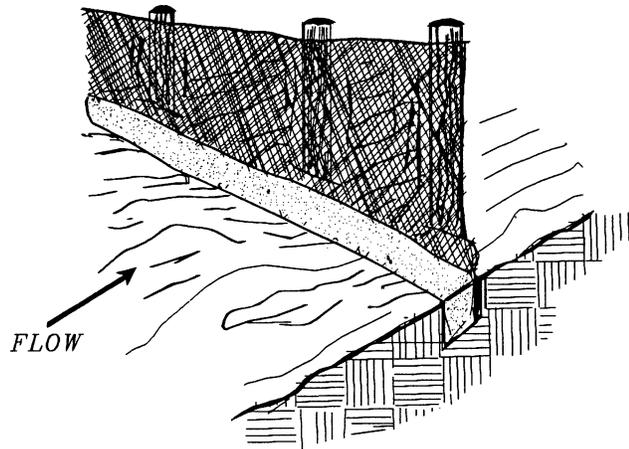
2. STAPLE WIRE FENCING TO THE POSTS.



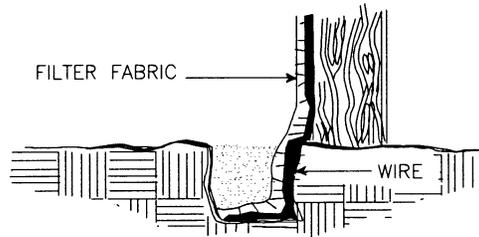
3. ATTACH THE FILTER FABRIC TO THE WIRE FENCE AND EXTEND IT INTO THE TRENCH.



4. BACKFILL AND COMPACT THE EXCAVATED SOIL.



EXTENSION OF FABRIC AND WIRE INTO THE TRENCH.

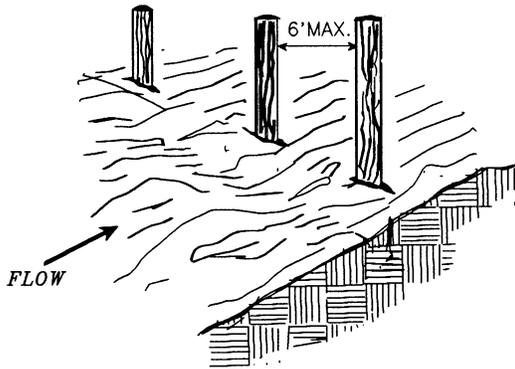


Source: Adapted from Installation of Straw and Fabric Filter Barriers for Sediment Control, Sherwood and Wyant

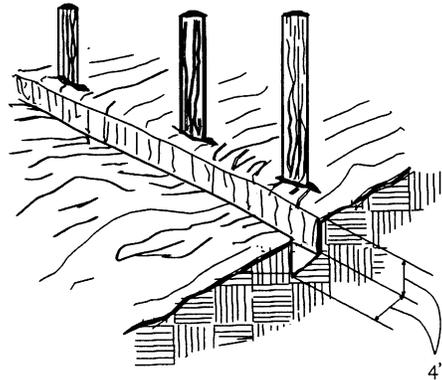
Plate 3.05-1

CONSTRUCTION OF A SILT FENCE (WITHOUT WIRE SUPPORT)

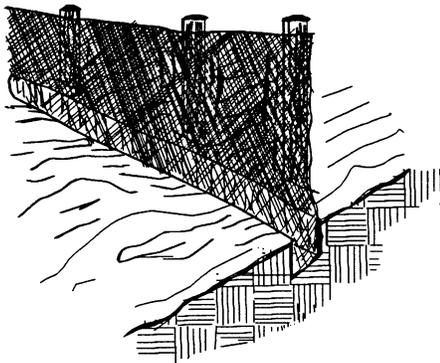
1. SET THE STAKES.



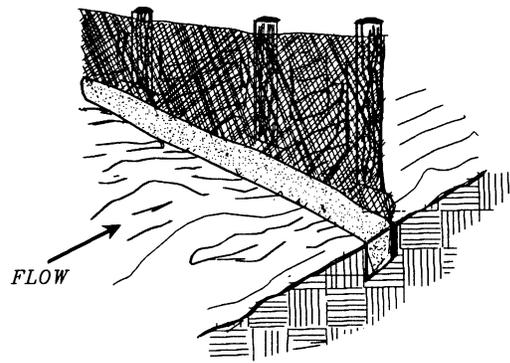
2. EXCAVATE A 4" X 4" TRENCH UPSLOPE ALONG THE LINE OF STAKES.



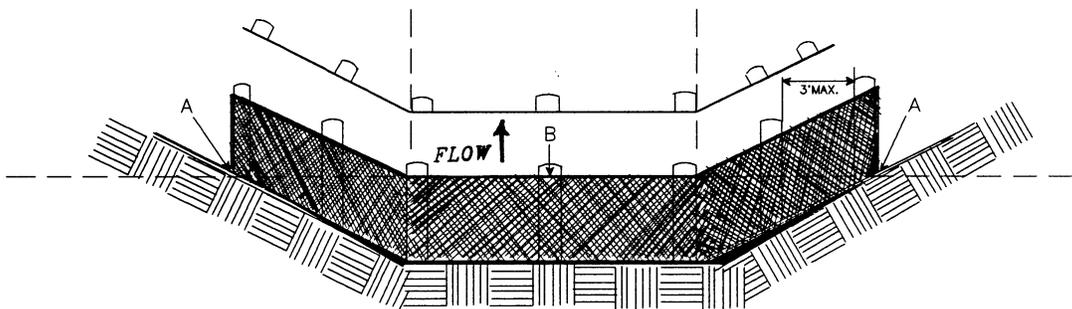
3. STAPLE FILTER MATERIAL TO STAKES AND EXTEND IT INTO THE TRENCH.



4. BACKFILL AND COMPACT THE EXCAVATED SOIL.



SHEET FLOW INSTALLATION
(PERSPECTIVE VIEW)



POINTS A SHOULD BE HIGHER THAN POINT B.

DRAINAGEWAY INSTALLATION
(FRONT ELEVATION)

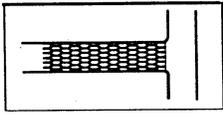
Source: Adapted from Installation of Straw and Fabric Filter Barriers for Sediment Control, Sherwood and Wyant

Plate 3.05-2

Maintenance

1. Silt fences shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. Any required repairs shall be made immediately.
2. Close attention shall be paid to the repair of damaged silt fence resulting from end runs and undercutting.
3. Should the fabric on a silt fence decompose or become ineffective prior to the end of the expected usable life and the barrier still be necessary, the fabric shall be replaced promptly.
4. Sediment deposits should be removed after each storm event. They must be removed when deposits reach approximately one-half the height of the barrier.
5. Any sediment deposits remaining in place after the silt fence is no longer required shall be dressed to conform with the existing grade, prepared and seeded.

STD & SPEC 3.02

TEMPORARY STONE
CONSTRUCTION ENTRANCEDefinition

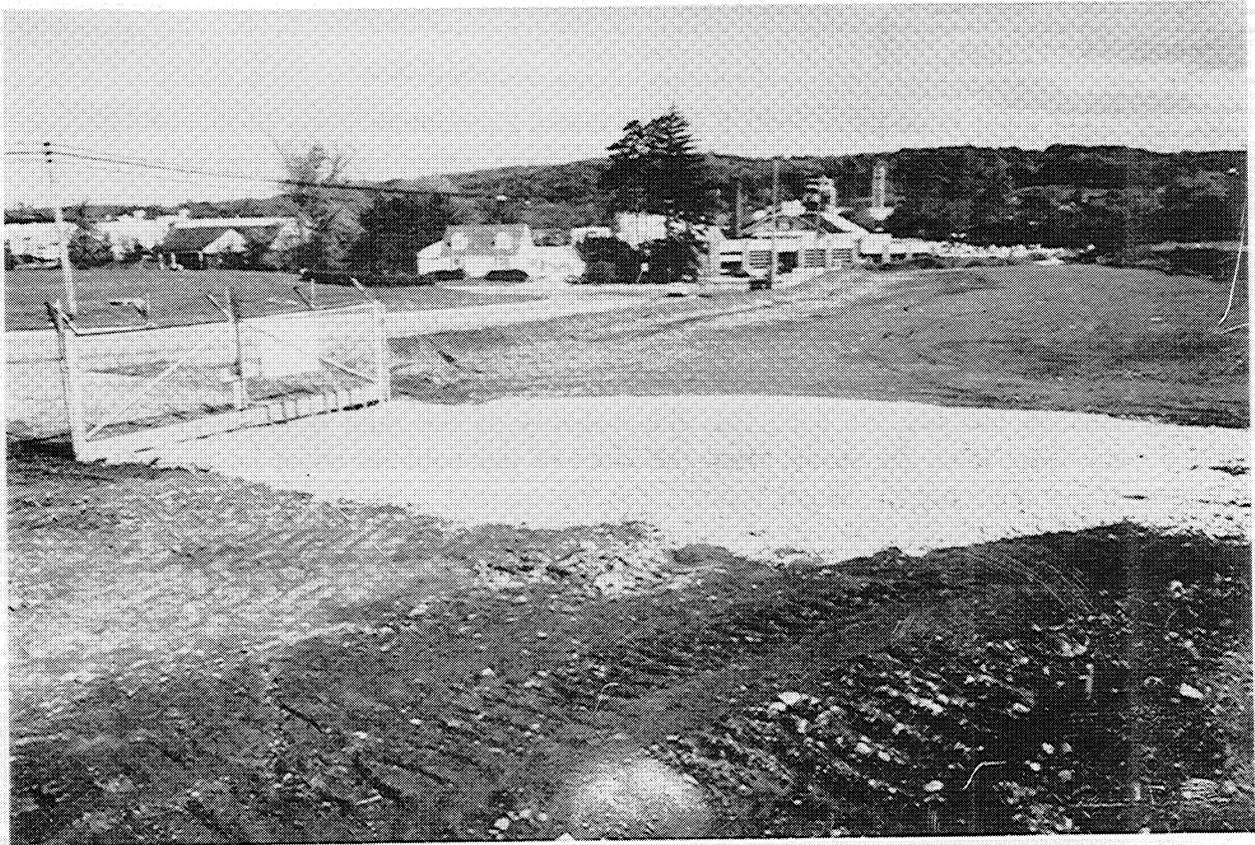
A stabilized stone pad with a filter fabric underliner located at points of vehicular ingress and egress on a construction site.

Purpose

To reduce the amount of mud transported onto paved public roads by motor vehicles or runoff.

Conditions Where Practice Applies

Wherever traffic will be leaving a construction site and move directly onto a public road or other paved area.



Planning Considerations

Minimum Standard #17 (MS #17) requires that provisions be made to minimize the transport of sediment by vehicular traffic onto a paved surface. Construction entrances provide an area where a significant amount of mud can be removed from construction vehicle tires before they enter a public road and, just as important, the soil adjacent to the paved surface can be kept intact. A filter fabric liner is used as a "separator" to minimize the dissipation of aggregate into the underlying soil due to construction traffic loads. If the action of the vehicles traveling over the gravel pad is not sufficient to remove the majority of the mud or there exists an especially sensitive traffic situation on the adjacent paved road, the tires must be washed before the vehicle enters the public road. If washing is necessary, provisions must be made to intercept the wash water and trap the sediment so it can be collected and stabilized. Construction entrances should be used in conjunction with the stabilization of construction roads (see Std. & Spec. 3.03, CONSTRUCTION ROAD STABILIZATION) to reduce the amount of mud picked up by construction vehicles and to do a better job of mud removal. Other innovative techniques for accomplishing the same purpose (such as a bituminous entrance) can be utilized, but only after specific plans and details are submitted to and approved by the appropriate Plan-Approving Authority.

Design Criteria

Aggregate Size

VDOT #1 Coarse Aggregate (2- to 3-inch stone) should be used.

Entrance Dimensions

The aggregate layer must be at least 6 inches thick; a minimum three inches of aggregate should be placed in a cut section to give the entrance added stability and to help secure filter cloth separator. It must extend the full width of the vehicular ingress and egress area and have a minimum 12-foot width. The length of the entrance must be at least 70 feet (see Plate 3.02-1).

Washing

If conditions on the site are such that the majority of the mud is not removed by the vehicles traveling over the stone, then the tires of the vehicles must be washed before entering the public road. Wash water must be carried away from the entrance to a approved settling area to remove sediment. All sediment shall be prevented from entering storm drains, ditches, or watercourses. A wash rack may also be used to make washing more convenient and effective (see Plate 3.02-1).

Location

The entrance should be located to provide for maximum utilization by all construction vehicles.

Construction Specifications

The area of the entrance must be excavated a minimum of 3 inches and must be cleared of all vegetation, roots, and other objectionable material. The filter fabric underliner will then be placed the full width and length of the entrance.

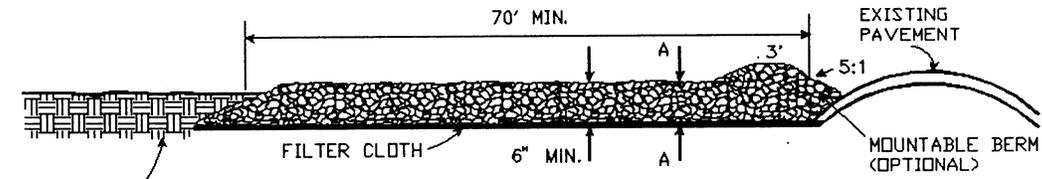
Following the installation of the filter cloth, the stone shall be placed to the specified dimensions. If wash racks are used, they should be installed according to manufacturer's specifications. Any drainage facilities required because of washing should be constructed according to specifications. Conveyance of surface water under entrance, through culverts, shall be provided as required. If such conveyance is impossible, the construction of a "mountable" berm with 5:1 slopes will be permitted.

The filter cloth utilized shall be a woven or nonwoven fabric consisting only of continuous chain polymeric filaments or yarns of polyester. The fabric shall be inert to commonly encountered chemicals and hydrocarbons, be mildew and rot resistant, and conform to the physical properties noted in Table 3.02-A.

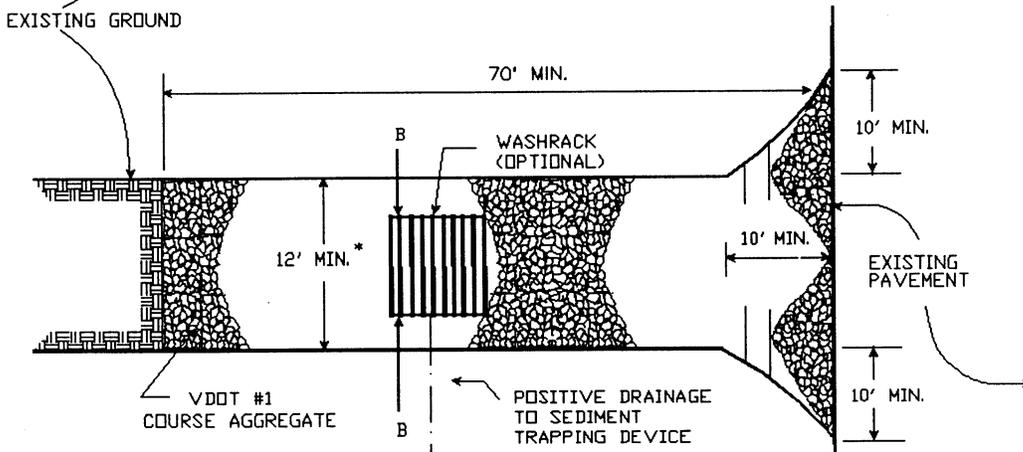
Maintenance

The entrance shall be maintained in a condition which will prevent tracking or flow of mud onto public rights-of-way. This may require periodic top dressing with additional stone or the washing and reworking of existing stone as conditions demand and repair and/or cleanout of any structures used to trap sediment. All materials spilled, dropped, washed, or tracked from vehicles onto roadways or into storm drains must be removed immediately. The use of water trucks to remove materials dropped, washed, or tracked onto roadways will not be permitted under any circumstances.

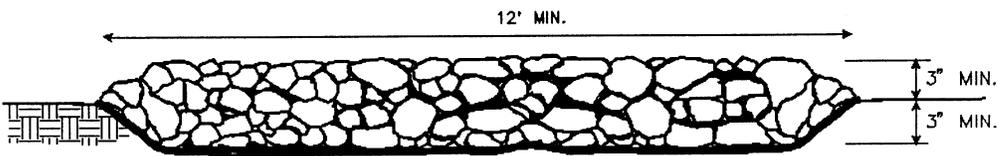
STONE CONSTRUCTION ENTRANCE



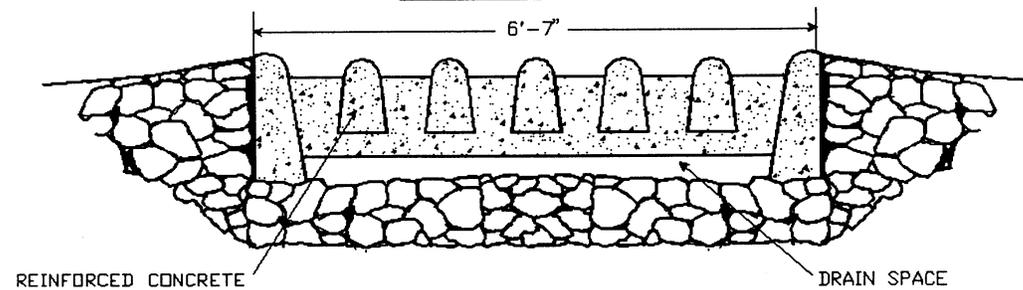
SIDE ELEVATION



PLAN VIEW



SECTION A-A



SECTION B-B

Source: Adapted from 1983 Maryland Standards for Soil Erosion and Sediment Control, and Va. DSWC

Plate 3.02-1

TABLE 3.02-A

**CONSTRUCTION SPECIFICATIONS
FOR FILTER CLOTH UNDERLINER**

<u>Fabric Properties¹</u>	<u>Light-Duty Entrance² (Graded Subgrade)</u>	<u>Heavy-Duty Entrance³ (Rough Graded)</u>	<u>Test Method</u>
Grab Tensile Strength (lbs.)	200	220	ASTM D1682
Elongation at Failure (%)	50	220	ASTM D1682
Mullen Burst Strength (lbs.)	190	430	ASTM D3786
Puncture Strength (lbs.)	40	125	ASTM D751 (modified)
Equivalent Opening Size (mm)	40-80	40-80	U.S. Standard Sieve CW-02215

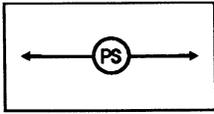
¹ Fabrics not meeting these specifications may be used only when design procedure and supporting documentation are supplied to determine aggregate depth and fabric strength.

² Light Duty Entrance: Sites that have been graded to subgrade and where most travel would be single axle vehicles and an occasional multi-axle truck. Examples of fabrics which can be used are: Trevira Spunbond 1115, Mirafi 100X, Typar 3401, or equivalent.

³ Heavy Duty Entrance: Sites with only rough grading and where most travel would be multi-axle vehicles. Examples of fabrics which can be used are: Trevira Spunbond 1135, Mirafi 600X, or equivalent.

Source: Virginia Highway and Transportation Research Council (VHTRC)

STD & SPEC 3.32



PERMANENT SEEDING

Definition

The establishment of perennial vegetative cover on disturbed areas by planting seed.

Purposes

1. To reduce erosion and decrease sediment yield from disturbed areas.
2. To permanently stabilize disturbed areas in a manner that is economical, adaptable to site conditions, and allows selection of the most appropriate plant materials.
3. To improve wildlife habitat.
4. To enhance natural beauty.



Conditions Where Practice Applies

1. Disturbed areas where permanent, long-lived vegetative cover is needed to stabilize the soil.
2. Rough-graded areas which will not be brought to final grade for a year or more.

Planning Considerations

Vegetation controls erosion by reducing the velocity and the volume of overland flow and protecting the bare soil surface from raindrop impact.

Areas which must be stabilized after the land has been disturbed require vegetative cover. The most common and economical means of establishing this cover is by seeding grasses and legumes. Permanent vegetative covers must meet the requirements of Minimum Standard #3.

Advantages of seeding over other means of establishing plants include the small initial establishment cost, the wide variety of grasses and legumes available, low labor requirement, and ease of establishment in difficult areas.

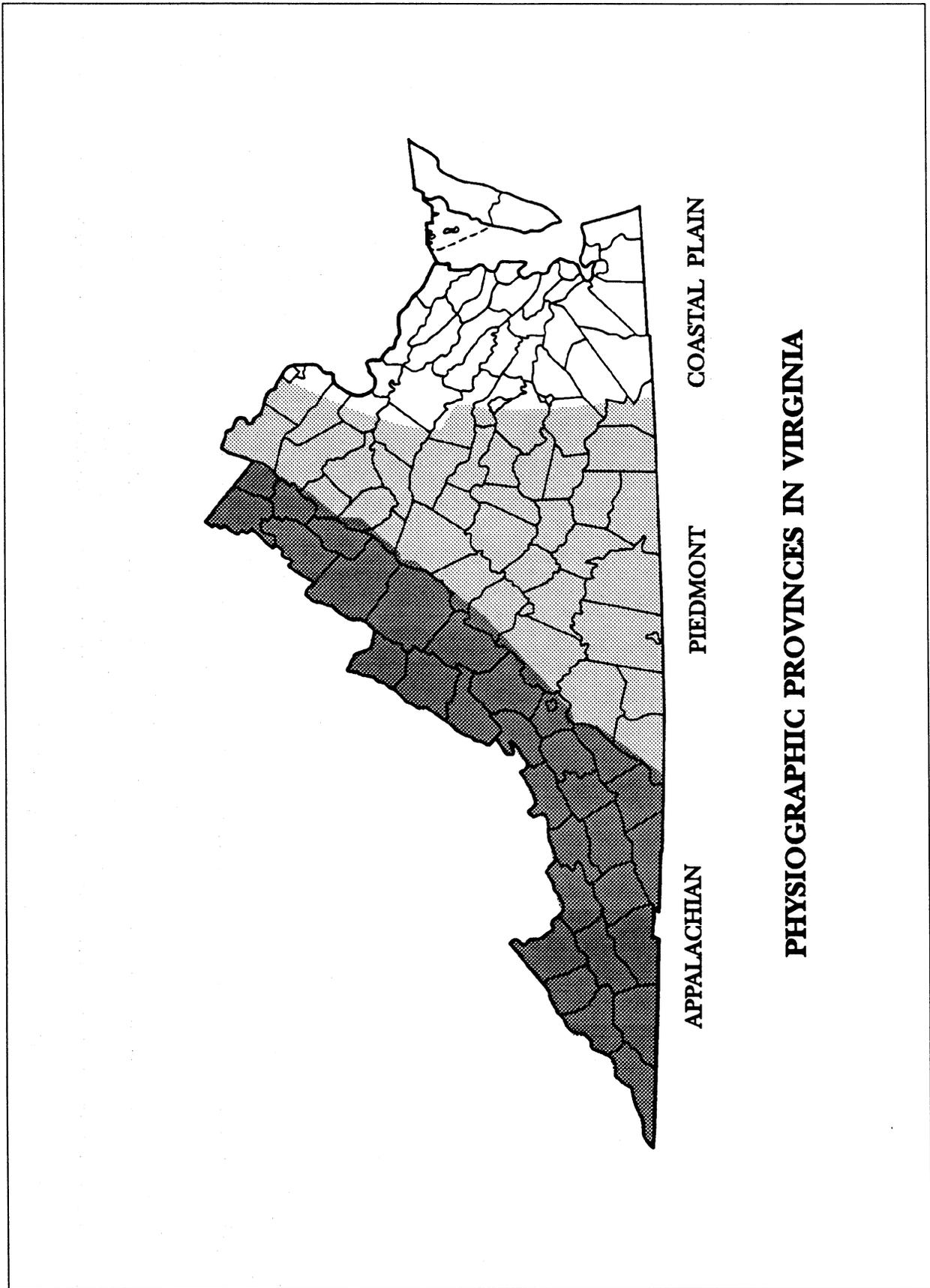
Disadvantages which must be dealt with are the potential for erosion during the establishment stage, a need to reseed areas that fail to establish, limited periods during the year suitable for seeding, the potential need for weed control during the establishment phase, and a need for water and appropriate climatic conditions during germination.

There are so many variables in plant growth that an end product cannot be guaranteed. Much can be done in the planning stages to increase the chances for successful seeding. Selection of the right plant materials for the site, good seedbed preparation, and conscientious maintenance are important.

SELECTING PLANT MATERIALS: The factors affecting plant growth are climate, soils, and topography. In Virginia, there are three major physiographic regions that reflect changes in soil and topography. In selecting appropriate plant materials, one should take into account the characteristics of the physiographic region in which the project is located (see Plate 3.32-1).

PHYSIOGRAPHIC REGIONS:

Coastal Plain - Soils on the Coastal Plain are deeply weathered, stratified deposits of sand and clay. They are generally acidic and low in plant nutrients. The sandy soils are hot and droughty in summer. This region receives more rain and is warmer than the other regions of the state. The land is fairly level, and many areas are poorly drained. Warm season grasses traditionally perform well in these areas.



Source: Va. DSWC

Plate 3.32-1

Piedmont - Soils on the Piedmont plateau are highly variable. They tend to be shallow, with clayey subsoils. Piedmont soils are low in phosphorus. Soils derived from mica schist are highly erodible. Topography is rolling and hilly. The southern Piedmont has much the same climate as the Coastal Plain. Often referred to as the "transition zone" in planting. Contains areas that will support both warm or cool season grasses.

Appalachian and Blue Ridge Region - This region is divided into plateaus, mountains, and narrow valleys. Soils tend to be shallow and acid, and may erode rapidly on steep slopes. Shaley slopes are often unstable and droughty. This area is colder and drier than the rest of the State. The rugged topography makes plant establishment difficult. Cool season grasses are normally specified in this region.

SOILS: On the whole, soils in Virginia always require some nitrogen (N) fertilization to establish plants. Phosphorus (P) and potassium (K) are usually needed. Except for some small pockets of shallow limestone soils, lime is universally needed.

Soils can be modified with lime and fertilizer, but climate cannot be controlled. For this reason, the State has been divided into two major climatic regions, referred to as the Northern Piedmont and Mountain Region and the Southern Piedmont and Coastal Plain Region, for grass and legume selection (see map, Plate 3.32-2).

Microclimate, or localized climate conditions, can affect plant growth. A south-facing slope is drier and hotter than a north-facing slope, and may require drought-tolerant plants. Shaded areas require shade-tolerant plants; the windward side of a ridge will be drier than the leeward, etc.

LAND USE: A prime consideration in selecting which plants to establish is the intended use of the land. All of these uses - residential, industrial, commercial, recreational - can be separated into two major categories: high-maintenance and low-maintenance.

High-maintenance areas will be mowed frequently, limed and fertilized regularly, and will either receive intense use (e.g., athletics) or require maintaining to an aesthetic standard (home lawns). Grasses used for these situations must be fine-leaved and attractive in appearance, able to form tight sod, and be long-lived perennials. They must be well-adapted to the geographic area where they are planted, because constant mowing puts turf under great stress. Sites where high-maintenance vegetative cover is desirable include homes, industrial parks, schools, churches, athletic playing surfaces as well as some recreational areas.

Low-maintenance areas will be mowed infrequently or not at all; lime and fertilizer may not be applied on a regular basis; the areas will not be subjected to intense use, nor required to have a uniform appearance. These plants must be able to persist with little maintenance over long periods of time. Grass and legume mixtures are favored for these sites because legumes are capable of fixing nitrogen from the air for their own use, and the use of the plants around them. Such mixed stands are better able to withstand adverse conditions.

Sites that would be suitable for low-maintenance vegetation include steep slopes, stream or channel banks, some commercial properties, and "utility turf" areas such as roadbanks.

Seedbed Preparation - The soil on a disturbed site must be modified to provide an optimum environment for seed germination and seedling growth. The surface soil must be loose enough for water infiltration and root penetration. The pH (acidity and alkalinity) of the soil must be such that it is not toxic and nutrients are available, usually between pH 6.0-7.0. Sufficient nutrients (added as fertilizer) must be present. After seed is in place, it must be protected with a mulch to hold moisture and modify temperature extremes, and to prevent erosion while seedlings are growing.

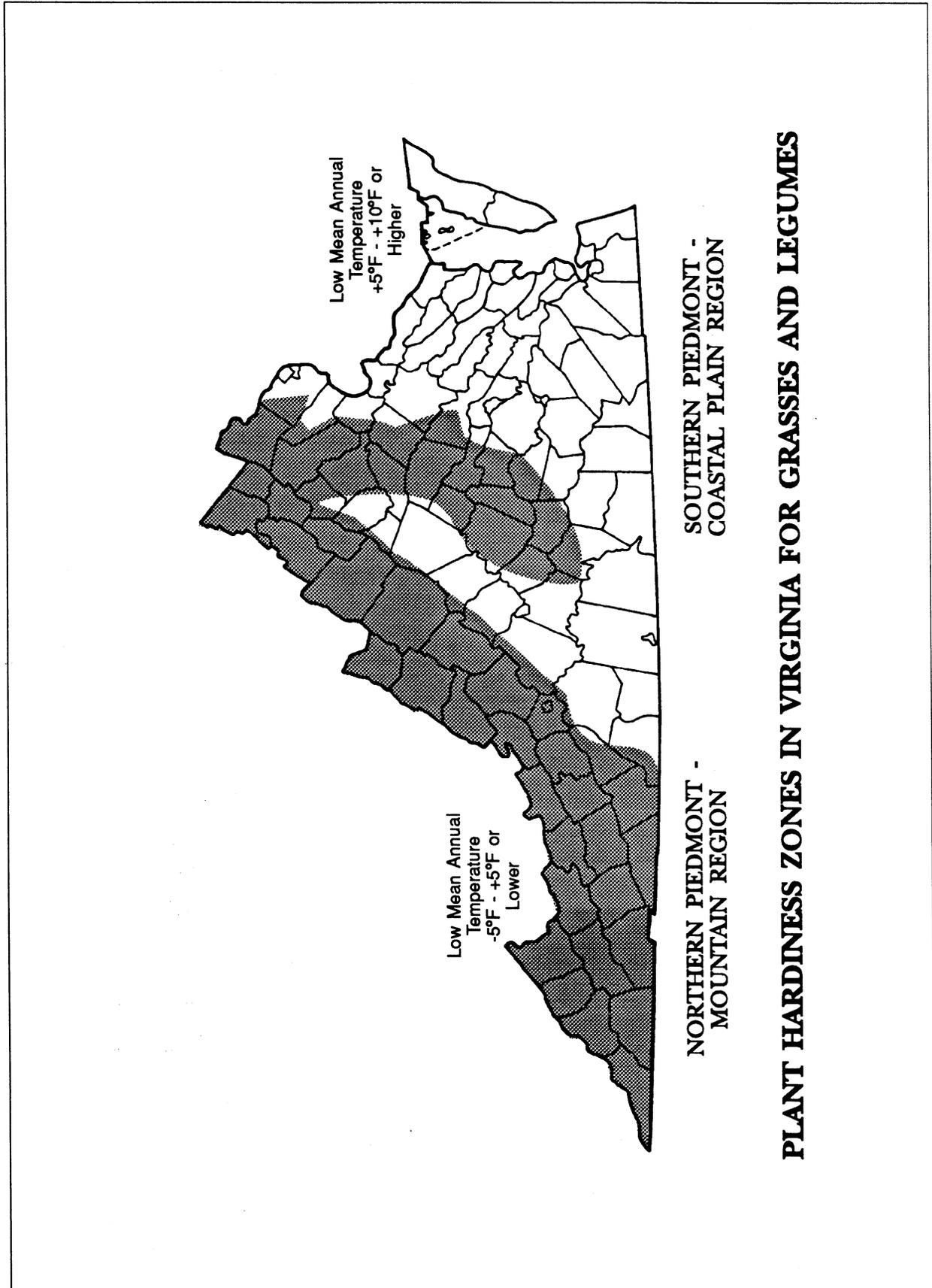
The addition of lime is equally as important as applying fertilizer. Lime is best known as a pH, or acidity, modifier, but it also supplies calcium and magnesium which are plant nutrients. Its effect on pH makes other nutrients more available to the plant. It can also prevent aluminum toxicity by making aluminum less soluble in the soil. Many soils in Virginia are high in aluminum, which stunts the growth of plant roots.

MAINTENANCE: Even with careful, well-planned seeding operations, failures can occur. When it is clear that plants have not germinated on an area or have died, these areas must be reseeded immediately to prevent erosion damage. However, it is extremely important to determine for what reason germination did not take place and make any corrective action necessary prior to reseeding the area. Healthy vegetation is the most effective erosion control available.

Specifications

Selection of Plant Materials

1. Selection of plant materials is based on climate, topography, soils, land use, and planting season. To determine which plant materials are best adapted to a specific site, use Tables 3.32-A and 3.22-B which describe plant characteristics and list recommended varieties.
2. Appropriate seeding mixtures for various site conditions in Virginia are given in Tables 3.32-C, 3.32-D and 3.32-E. These mixtures are designed for general use, and are known to perform well on the sites described. Check Tables 3.32-A and 3.32-B for recommended varieties.
3. A more extensive description of plant materials (grasses and legumes), their usage and pictorial representation can be found in Appendix 3.32-c.
4. When using some varieties of turfgrasses, the Virginia Crop Improvement Association (VCIA) recommended turfgrass mixtures may also be used. Consumer protection programs have been devised to identify quality seed of the varieties recommended by the Virginia Cooperative Extension Service. These will bear a label indicating



Source: Adapted from Virginia Climate Advisory, 1979.

Plate 3.32-2

that they are approved by the Association. Mixtures may be designed for a specific physiographic region or based on intended use. Special consideration is given to plant characteristics, performance, etc.

**TABLE 3.32-A
CHARACTERISTICS OF COMMONLY SELECTED GRASSES**

COMMON NAME (Botanical Name)	Life Cycle	Season	pH Range	Germination Time In Days	Optimum Germination Temperature (°F)	Winter Hardiness	Drought Tolerance	Fertility	Soil Drainage Tolerance	Seeds Per Pound	MAINTENANCE REQUIREMENTS	REMARKS	Suggested Varieties for Virginia
TALL FESCUE (<i>Festuca arundinacea</i>)	P	C	5.5-6.2	10-14	60-85	F	F	M	SPD	225K	Low when used for erosion control; high when used in lawn	Better suited for erosion control and rough turf application.	Ky 31
TALL FESCUES (Improved)	P	C	5.5-6.2	10-14	60-85	F	G	M	SPD	220K	Responds well to high maintenance.	Excellent for lawn and fine turf.	See current VCIA list.
KENTUCKY BLUEGRASS (<i>Poa pratense</i>)	P	C	6.0-6.5	14	60-75	G	P	M	SPD	2.2m	Needs fertile soil, favorable moisture. Requires several years to become well established.	Excellent for fine turfs-takes traffic, mowing. Poor drought/heat tolerance.	See current VCIA list.
PERENNIAL RYEGRASS (<i>Lolium perenne</i>)	P	C	5.8-6.2	7-10	60-75	F	F	M-H	SPD	227K	Will tolerate traffic.	May be added to mixes. * Improved varieties will perform well all year.	See current VCIA list.

KEY

A = Annual P = Perennial C = Cool Season Plant W = Warm Season Plant G = Good F = Fair P = Poor VP = Very Poor H = High
M = Medium L = Low SPD = Somewhat Poorly Drained MPD = Moderately Poorly Drained PD = Poorly Drained VPD = Very Poorly Drained

TABLE 3.32-A (Continued)
CHARACTERISTICS OF COMMONLY SELECTED GRASSES

COMMON NAME (Botanical Name)		Life Cycle	Season	pH Range	Germination Time, In Days	Optimum Germination Temperature (°F)	Winter Hardness	Drought Tolerance	Fertility	Soil Drainage Tolerance	Seeds Per Pound	MAINTENANCE REQUIREMENTS	REMARKS	Suggested Varieties for Virginia
FINE FESCUES	HARD FESCUE (Festuca Longifolia)	P	C	5.0- 6.2	10- 14	60- 80	VG	G	L	MWD	400K	Grows well in sun or shade and will tolerate infertile soils; improved disease resistance.	Exceeds all fine fescues in most tests. Excellent for low-maintenance situations.	Reliant, Spartan, Aurora
	CHEWINGS FESCUE	P	C	5.0- 6.2	10- 14	60- 80	VG	G	L	MWD	400K	Tolerates shade, dry infertile soils.	Poor traffic tolerance, less thatch than other fine fescues.	Flyer
	RED FESCUE (Festuca Rubra)	P	C	5.0- 6.2	10- 14	60- 80	VG	G	L	MWD	400K	Low to medium fertility requirements. Requires well-drained soil.	Spreads by rhizomes, tillers and stolons. Will not take traffic - very shade tolerant.	Long- fellow, Victory
REED CANARYGRASS (Phalaris arundinacea)		P	C	5.8- 6.2	21	70- 85	G	G	M-H	VPD	530K	Do not mow closely or often.	Conservation cover in wet areas.	No named varieties

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TABLE 3.32-A (Continued)
CHARACTERISTICS OF COMMONLY SELECTED GRASSES

COMMON NAME (Botanical Name)	Life Cycle	Season	pH Range	Germination Time, In Days	Optimum Germination Temperature (°F)	Winter Hardiness	Drought Tolerance	Fertility	Soil Drainage Tolerance	Seeds Per Pound	MAINTENANCE REQUIREMENTS	REMARKS	Suggested Varieties for Virginia
REDTOP (<i>Agrostis alba</i>)	P	C	5.8- 6.2	10	65-85	G	F	L	PD	5m	Will tolerate poor, infertile soils; deep rooted.	Does well in erosion control mixes - not for lawns.	No named varieties.
WEeping LOVEGRASS (<i>Evagrostis curvula</i>)	P	W	4.5- 6.2	14	65-85	F-P	G	L-M	SPD	1.5m	Low-fertility requirements; excellent drought tolerance.	Fast-growing, warm-season bunch grass. Excellent cover for erosion control.	No named varieties.
BERMUDAGRASS (<i>Cynodon dactylon</i>)	P	W	5.8- 6.2	21	70-95	P	G	M-H	SPD	1.8m hulled	High nitrogen utilization, excellent drought tolerance. Some varieties adapted to western VA.	Common varieties used for erosion control. Hybrids used for fine turf.	See current VCIA list.
ORCHARDGRASS (<i>Dactylis glomerata</i>)	P	C	5.8- 6.2	18	60-75	F	F	M	SPD	625K	Does best on well-drained, loamy soil.	Good pasture selection - may be grazed.	Virginia origin or Potomac

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TABLE 3.32-A (Continued)
CHARACTERISTICS OF COMMONLY SELECTED GRASSES

COMMON NAME (Botanical Name)	Life Cycle	Season	pH Range	Germination Time In Days	Optimum Germination Temperature (°F)	Winter Hardness	Drought Tolerance	Fertility	Soil Drainage Tolerance	Seeds Per Pound	MAINTENANCE REQUIREMENTS	REMARKS	Suggested Varieties for Virginia
ANNUAL RYEGRASS (<i>Lolium multiflorum</i>)	A	C	5.8- 6.2	7	60-70	G	P	M-H	SPD	227K	Will grow on most Virginia Soils. Do not use in fine-turf areas.	May be added into mixes or established alone as temporary cover in spring and fall.	No named varieties.
RYE (<i>Secale cereale</i>)	A	C	5.8- 6.2	7	55-70	VG	G	L-M	SPD	18K	Will establish in most all Virginia soils. Do not use in fine-turf areas.	May be added into mixes or established alone for late fall/winter cover.	Abruzzi, Balboa
FOXTAIL MILLET (<i>Setaria italica</i>)	A	W	5.8- 6.2	10	65-85	VP	G	M	MWD	220K	Establishes well during summer. Very low moisture requirements.	May be added to erosion-control mixes or established alone.	Common, German

KEY

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**TABLE 3.32-B
CHARACTERISTICS OF LEGUMES APPROPRIATE FOR EROSION CONTROL**

COMMON NAME (Botanical Name)	Life Cycle	Season	pH Range	Germination Time In Days	Optimum Germination Temperature (°F)	Winter Hardness	Drought Tolerance	Fertility	Soil Drainage Tolerance	Seeds Per Pound	MAINTENANCE REQUIREMENTS	REMARKS	Suggested Varieties for Virginia
CROWNVETCH (<i>Coronilla varia</i>)	P	C	6.0- 6.5	14-21	70	G	VG	M	MWD	110K	Does best on well-drained soils. Minimum maintenance when established. May need phosphorus. Inoculation is essential.	Excellent for steep, rocky slopes. Produces colorful blooms in May/June. Slow to establish. Does best when seeded in spring.	Penngift Chemung Emerald
SERICEA LESPEDEZA (<i>Lespedeza cuneata</i>)	P	W	5.8- 6.2	21-28	70- 85	F	VG	L	MWD	335K	Grows in most well-drained soils. Low fertility requirements. Inoculation is essential.	Use hulled seed in spring; unhulled in fall. Very deep-rooted legume. Excellent choice for eastern Va.	Serecia Interstate
FLATPEA (<i>Lathyrus silvestrus</i>)	P	C	5.0- 7.0	14-28	65- 75	G	G	L	PD	15K	Needs lime and high phosphorus. Good shade tolerance.	Tolerates acidic and wetter soils better than other legumes.	Lathco
BIRDSFOOT TREFOIL (<i>Lotus corniculatus</i>)	P	C	6.0- 6.5	7	65- 70	G	F	M	SPD	375K	Inoculation is essential. Grows in medium-fertile, slightly acid soils.	Grows better on poorly drained soils than most legumes. Poor drought/heat tolerance.	No named varieties.

KEY

A = Annual P = Perennial C = Cool Season Plant W = Warm Season Plant G = Good F = Fair P = Poor VP = Very Poor H = High
M = Medium L = Low SPD = Somewhat Poorly Drained MPD = Moderately Poorly Drained PD = Poorly Drained VPD = Very Poorly Drained

TABLE 3.32-B (Continued)
CHARACTERISTICS OF LEGUMES APPROPRIATE FOR EROSION CONTROL

COMMON NAME (Botanical Name)	Life Cycle	Season	pH Range	Germination Time In Days	Optimum Germination Temperature (°F)	Winter Hardiness	Drought Tolerance	Fertility	Soil Drainage Tolerance	Seeds Per Pound	MAINTENANCE REQUIREMENTS	REMARKS	Suggested Varieties for Virginia
ANNUAL LESPEDEZAS (<i>Lespedeza striata</i> , <i>L. stipulacea</i>)	A	W	5.8- 6.2	14	70- 85	F	VG	L	MWD	200K	Will grow on almost any well-drained soil.	Choose Kobe for southeastern Va.; needs almost no nitrogen to survive.	Kobe, Korean
RED CLOVER (<i>Trifolium pratense</i>)	P	C	6.0- 6.5	7-14	70	G	F	M	SPD	275K	Needs high levels of phosphorus and potassium.	Acts as a biennial. Can be added to low- maintenance mixes.	Kenstar, Kenland
WHITE CLOVER (<i>Trifolium repens</i>)	P	C	6.0- 6.5	10	70	G	P	M	PD	700K	Requires favorable moisture, fertile soils, high pH.	Spreads by soil surface stolons, white flowers.	Common, White Dutch

KEY

A = Annual P = Perennial C = Cool Season Plant W = Warm Season Plant G = Good F = Fair P = Poor VP = Very Poor H = High
M = Medium L = Low SPD = Somewhat Poorly Drained MPD = Moderately Poorly Drained PD = Poorly Drained VPD = Very Poorly Drained

**TABLE 3.32-C
SITE SPECIFIC SEEDING MIXTURES
FOR APPALACHIAN/MOUNTAIN AREA**

<u>Minimum Care Lawn</u>	<u>Total Lbs. Per Acre</u>
- Commercial or Residential	200-250 lbs.
- Kentucky 31 or Turf-Type Tall Fescue	90-100%
- Improved Perennial Ryegrass *	0-10%
- Kentucky Bluegrass	0-10%
<u>High-Maintenance Lawn</u>	
Minimum of three (3) up to five (5) varieties of bluegrass from approved list for use in Virginia.	125 lbs.
<u>General Slope (3:1 or less)</u>	
- Kentucky 31 Fescue	128 lbs.
- Red Top Grass	2 lbs.
- Seasonal Nurse Crop **	<u>20 lbs.</u>
	150 lbs.
<u>Low-Maintenance Slope (Steeper than 3:1)</u>	
- Kentucky 31 Fescue	108 lbs.
- Red Top Grass	2 lbs.
- Seasonal Nurse Crop **	20 lbs.
- Crownvetch ***	<u>20 lbs.</u>
	150 lbs.

* Perennial Ryegrass will germinate faster and at lower soil temperatures than fescue, thereby providing cover and erosion resistance for seedbed.

** Use seasonal nurse crop in accordance with seeding dates as stated below:
 March, April through May 15th Annual Rye
 May 16th through August 15th Foxtail Millet
 August 16th through September, October Annual Rye
 November through February Winter Rye

*** If Flatpea is used, increase to 30 lbs./acre. All legume seed must be properly inoculated. Weeping Lovegrass may also be included in any slope or low-maintenance mixture during warmer seeding periods; add 10-20 lbs/acre in mixes.

**TABLE 3.32-D
SITE SPECIFIC SEEDING MIXTURES FOR PIEDMONT AREA**

	<u>Total Lbs. Per Acre</u>
<u>Minimum Care Lawn</u>	
- Commercial or Residential	175-200 lbs.
- Kentucky 31 or Turf-Type Tall Fescue	95-100%
- Improved Perennial Ryegrass	0-5%
- Kentucky Bluegrass	0-5%
<u>High-Maintenance Lawn</u>	
- Kentucky 31 or Turf-Type Tall Fescue	200-250 lbs. 100%
<u>General Slope (3:1 or less)</u>	
- Kentucky 31 Fescue	128 lbs.
- Red Top Grass	2 lbs.
- Seasonal Nurse Crop *	<u>20 lbs.</u> 150 lbs.
<u>Low-Maintenance Slope (Steeper than 3:1)</u>	
- Kentucky 31 Fescue	108 lbs.
- Red Top Grass	2 lbs.
- Seasonal Nurse Crop *	20 lbs.
- Crownvetch **	<u>20 lbs.</u> 150 lbs.

* Use seasonal nurse crop in accordance with seeding dates as stated below:
 February 16th through April Annual Rye
 May 1st through August 15th Foxtail Millet
 August 16th through October Annual Rye
 November through February 15th Winter Rye

** Substitute Sericea lespedeza for Crownvetch east of Farmville, Va. (May through September use hulled Sericea, all other periods, use unhulled Sericea). If Flatpea is used in lieu of Crownvetch, increase rate to 30 lbs./acre. All legume seed must be properly inoculated. Weeping Lovegrass may be added to any slope or low-maintenance mix during warmer seeding periods; add 10-20 lbs./acre in mixes.

Seedbed Requirements

Vegetation should not be established on slopes that are unsuitable due to inappropriate soil texture, poor internal structure or internal drainage, volume of overland flow, or excessive steepness, until measures have been taken to correct these problems.

To maintain a good stand of vegetation, the soil must meet certain minimum requirements as a growth medium. The existing soil must have these characteristics:

1. Enough fine-grained material to maintain adequate moisture and nutrient supply.
2. Sufficient pore space to permit root penetration. A bulk density of 1.2 to 1.5 indicates that sufficient pore space is present. A fine granular or crumb-like structure is also favorable.
3. Sufficient depth of soil to provide an adequate root zone. The depth to rock or impermeable layers such as hardpans shall be 12 inches or more, except on slopes steeper than 2:1 where the addition of soil is not feasible.
4. A favorable pH range for plant growth. If the soil is so acidic that a pH range of 6.0-7.0 cannot be attained by addition of pH-modifying materials, then the soil is considered an unsuitable environment for plant roots and further soil modification would be required.
5. Freedom from toxic amounts of materials harmful to plant growth.
6. Freedom from excessive quantities of roots, branches, large stones, large clods of earth, or trash of any kind. Clods and stones may be left on slopes steeper than 3:1 if they do not significantly impede good seed soil contact.

If any of the above criteria cannot be met, i.e., if the existing soil is too coarse, dense, shallow, acidic, or contaminated to foster vegetation, then topsoil shall be applied in accordance with TOPSOILING, Std. & Spec. 3.30.

Necessary structural erosion and sediment control practices will be installed prior to seeding. Grading will be carried out according to the approved plan.

Surfaces will be roughened in accordance with SURFACE ROUGHENING, Std. & Spec. 3.29.

Soil Conditioners

In order to modify the texture, structure, or drainage characteristics of a soil, the following materials may be added to the soil:

1. Peat is a very costly conditioner, but works well. If added, it shall be sphagnum moss peat, hypnum moss peat, reed-sedge peat or peat humus, from fresh-water sources. Peat shall be shredded and conditioned in storage piles for at least six months after excavation.
2. Sand shall be clean and free of toxic materials. Sand modification is ineffective unless you are adding 80 to 90% sand on a volume basis. This is extremely difficult to do on-site. If this practice is considered, consult a professional authority to ensure that it is done properly.
3. Vermiculite shall be horticultural grade and free of toxic substances. It is an impractical modifier for larger acreage due to expense.
4. Raw manure is more commonly used in agricultural applications. However, when stored properly and allowed to compost, it will stabilize nitrogen and other nutrients. Manure, in its composted form, is a viable soil conditioner; however, its use should be based on site-specific recommendations offered by a professional in this field.
5. Thoroughly rotted sawdust shall have 6 pounds of nitrogen added to each cubic yard and shall be free of stones, sticks, and toxic substances.
6. The use of treated sewage sludge has benefitted from continuing advancements in its applications in the agricultural community. When composted, it offers an alternative soil amendment. Limitations include a potentially undesirable pH (because of lime added during the treatment process) and the possible presence of heavy metals. This practice should be thoroughly evaluated by a professional and be used in accordance with any local, state, and federal regulations.

Lime and Fertilizer

Lime and fertilizer needs should be determined by soil tests. Soil tests may be performed by the Cooperative Extension Service Soil Testing Laboratory at VPI&SU, or by a reputable commercial laboratory. Information concerning the State Soil Testing Laboratory is available from county extension agents. Reference Appendix 3.32-d for liming applications (in lbs.) needed to correct undesirable pH for various soil types.

Under unusual conditions where it is not possible to obtain a soil test, the following soil amendments will be applied:

Lime

Coastal Plain: 2 tons/acre pulverized agricultural grade limestone (90 lbs./1000 ft.²).

Piedmont and Appalachian Region: 2 tons/acre pulverized agricultural grade limestone (90 lbs./1000 ft.²).

Note: An agricultural grade of limestone should always be used.

Fertilizer

Mixed grasses and legumes: 1000 lbs./acre 10-20-10 or equivalent nutrients (23 lbs./1000 ft.²).

Legume stands only: 1000 lbs./acre 5-20-10 (23 lbs./ 1000 ft.²) is preferred; however, 1000 lbs./acre of 10-20-10 or equivalent may be used.

Grass stands only: 1000 lbs./acre 10-20-10 or equivalent nutrients, (23 lbs./1000 ft.²).

Other fertilizer formulations, including slow-release sources of nitrogen (preferred from a water quality standpoint), may be used provided they can supply the same amounts and proportions of plant nutrients.

Incorporation - Lime and fertilizer shall be incorporated into the top 4-6 inches of the soil by discing or other means whenever possible. For erosion control, when applying lime and fertilizer with a hydroseeder, apply to a rough, loose surface.

Seeding

1. Certified seed will be used for all permanent seeding whenever possible. Certified seed is inspected by the Virginia Crop Improvement Association or the certifying agency in other states. The seed must meet published state standards and bear an official "Certified Seed" label (see Appendix 3.32-a).

Kentucky Bluegrass Seed Mixtures

**MARYLAND - VIRGINIA
RECOMMENDED**

Virginia Crop Improvement Association
Manassas, Virginia




FINE TEXTURED TURF MIXTURE

This seed is recommended by the Extension Divisions of Maryland and Virginia and has been packaged under the supervision of an authorized inspector of the Virginia Crop Improvement Association or the Maryland State Board of Agriculture.

* Recommended Area is Shaded. **V 33505**

Kentucky Bluegrass Seed Blends

**VIRGINIA - MARYLAND
RECOMMENDED**

Virginia Crop Improvement Association
Manassas, Virginia




KENTUCKY BLUEGRASS TURF SEED

This seed is composed of improved Kentucky Bluegrass varieties currently recommended by Extension Divisions of Virginia and Maryland for use in shaded areas of the states on this label and has been packaged under the supervision of an authorized inspector of the Virginia Crop Improvement Association or the Maryland Department of Agriculture.

* Recommended Area is Shaded. **V 25004**

2. Legume seed should be inoculated with the inoculant appropriate to the species. Seed of the Lespedezas, the Clovers and Crownvetch should be scarified to promote uniform germination.
3. Apply seed uniformly with a broadcast seeder, drill, culti-packer seeder, or hydroseeder on a firm, friable seedbed. Seeding depth should be 1/4 to 1/2 inch.
4. To avoid poor germination rates as a result of seed damage during hydroseeding, it is recommended that if a machinery breakdown of 30 minutes to 2 hours occurs, 50% more seed be added to the tank, based on the proportion of the slurry remaining in the tank. Beyond 2 hours, a full rate of new seed may be necessary.

Often hydroseeding contractors prefer not to apply lime in their rigs as it is abrasive. In inaccessible areas, lime may have to be applied separately in pelletized or liquid form. Surface roughening is particularly important when hydroseeding, as a roughened slope will provide some natural coverage of lime, fertilizer and seed.

Legume inoculants should be applied at five times the recommended rate when inoculant is included in the hydroseeder slurry.

Mulching

All permanent seeding must be mulched immediately upon completion of seed application. Refer to MULCHING, Std. & Spec. 3.35.

Maintenance of New Seedings

In general, a stand of vegetation cannot be determined to be fully established until it has been maintained for one full year after planting.

Irrigation: New seedings should be supplied with adequate moisture. Supply water as needed, especially late in the season, in abnormally hot or dry weather, or on adverse sites. Water application rates should be controlled to prevent excessive runoff. Inadequate amounts of water may be more harmful than no water.

Re-seeding: Inspect seeded areas for failure and make necessary repairs and re-seedings within the same season, if possible.

- a. If vegetative cover is inadequate to prevent rill erosion, over-seed and fertilize in accordance with soil test results.
- b. If a stand has less than 40% cover, re-evaluate choice of plant materials and quantities of lime and fertilizer. The soil must be tested to determine if acidity or nutrient imbalances are responsible. Re-establish the stand following seedbed preparation and seeding recommendations.

Fertilization: Cool season grasses should begin to be fertilized 90 days after planting to ensure proper stand and density. Warm season fertilization should begin at 30 days after planting.

Apply maintenance levels of fertilizer as determined by soil test. In the absence of a soil test, fertilization should be as follows:

Cool Season Grasses

4 lbs. nitrogen (N)	}	Per 1000 ft. ² per year
1 lb. phosphorus (P)		
2 lbs. potash (K)		

Seventy-five percent of the total requirements should be applied between September 1 and December 31st. The balance should be applied during the remainder of the year. **More than 1 lb. of soluble nitrogen per 1000 ft.² should not be applied at any one time.**

Warm Season Grasses

Apply 4-5 lbs. nitrogen (N) between May 1 and August 15th per 1000 ft.² per year.

Phosphorus (P) and Potash (K) should only be applied according to soil test.

Note: The use of slow-release fertilizer formulations for maintenance of turf is encouraged to reduce the number of applications and the impact on groundwater.

Additional Information on the Successful Establishment of Grasses and Legumes

See Appendix 3.32-b for "helpful hints" in achieving high success rates in grass or legume plantings.

APPENDIX 3.32-a**SEED QUALITY CRITERIA**

Where certified seed is not available, the minimum requirements for grass and legume seed used in vegetative establishment are as follows:

- a. All tags on containers of seed shall be labeled to meet the requirements of the State Seed Law.
- b. All seed shall be subject to re-testing by a recognized seed laboratory that employs a registered seed technologist or by a state seed lab.
- c. All seed used shall have been tested within twelve (12) months.
- d. Inoculant - the inoculant added to legume seed in the seed mixtures shall be a pure culture of nitrogen-fixing bacteria prepared for the species. Inoculants shall not be used later than the date indicated on the container. Twice the supplier's recommended rate of inoculant will be used on dry seedings; five times the recommended rate if hydroseeded.
- e. The quality of the seed used shall be shown on the bag tags to conform to the guidelines in Table 3.32-E.

TABLE 3.32-E
QUALITY OF SEED*

	<u>Minimum Seed Purity (%)</u>	<u>Minimum Germination (%)</u>
<u>Legumes</u>		
Crownvetch	98	65**
Lespedeza, Korean	97	85**
Lespedeza, Sericea	98	85**
<u>Grasses</u>		
Bluegrass, Kentucky	97	85
Fescue, Tall (Improved, Turf-Type Cultivars)	98	85
Fescue, Tall (Ky-31)	97	85
Fescue, Red	98	85
Redtop	94	80
Reed Canarygrass	98	80
Perennial Ryegrass	98	90
Weeping Lovegrass	98	87
<u>Annuals</u>		
Annual Ryegrass	97	90
German Millet	98	85
Oats	98	80
Cereal Rye	98	85

* Seed containing prohibited or restricted noxious weeds should not be accepted. Seed should not contain in excess of 0.5% weed seed. To calculate percent pure, live seed, multiply germination times purity and divide by 100.

Example: Ky-31 Tall Fescue with a germination of 85 percent and a purity of 97 percent.

$$97 \times 85 = 8245. \quad 8245 \div 100 = 82.45 \text{ percent pure live seed.}$$

** Includes "hard seed"

APPENDIX 3.32-b**KEYS TO SUCCESSFUL ESTABLISHMENT OF GRASSES AND LEGUMES****Planning**

Where feasible, grading operations should be planned around optimal seeding dates for the particular region. The most effective times for establishing perennial grass in Virginia generally extend from March through May and from August through October. Outside these dates, the probability of failure is much higher. If the time of year is not suitable for seeding a permanent cover (perennial species), a temporary cover crop should be planted. Temporary seeding of annual species (small grains, ryegrasses or millets) often succeeds during periods of the year that are unsuitable for seeding permanent (perennial) species.

Variations in weather and local site conditions can modify the effects of regional climate on seeding success. For this reason, mixtures including both cool and warm season species are preferred for low-maintenance cover, particularly in the Coastal Plain. Such mixtures promote cover which can adapt to a range of conditions. Many of these mixtures are not desirable, however, for high quality lawns, where variation in texture of the turf is inappropriate. It is important to note that in Virginia the establishment of 100% warm season grasses in a high quality lawn is limited to the extreme eastern portions of the Coastal Plain.

Selection

Species selection should be considered early in the process of preparing an erosion and sediment control plan. A variety of vegetation can be established in Virginia due to the diversity in both soils and climate. However, for practical, economical stabilization and long-term protection of disturbed sites, species selection should be made judiciously.

Seasonality must be considered when selecting species. Grasses and legumes are usually classified as warm or cool season in reference to their season of growth. Cool season plants realize most of their growth during the spring and fall and are relatively inactive or dormant during the hot summer months. Therefore, fall is the most favorable time to plant them. Warm season plants "green-up" late in the spring, grow most actively during the summer, and go dormant at the time of the first frost in fall. Spring and early summer are preferred planting times for warm season plants.

Seed Mixtures

As previously noted, the establishment of high quality turf frequently involves planting one single species. However, in seedings for erosion control purposes, the inclusion of more than one species should always be considered. Mixtures need not be excessive in poundage or seed count. The addition of a quick-growing annual provides early protection and facilitates establishment of one or two perennials in a mix. More complex mixtures might include a quick-growing annual, one or two legumes and more than one perennial grass.

The addition of a "nurse" crop (quick-growing annuals added to permanent mixtures) is a sound practice for soil stabilization, particularly on difficult sites - those with steep slopes; poor, rocky, erosive soils; those seeded out the optimum seeding periods; or in any situation where the development of permanent cover is likely to be slow. The nurse crop germinates and grows rapidly, holding the soil until the slower-growing perennial seedlings become established.

APPENDIX 3.32-c

PLANT INFORMATION SHEETS

Contents:

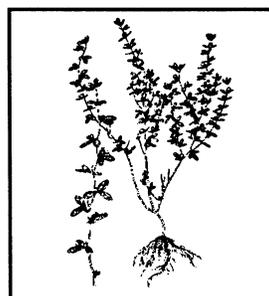
Annual Grasses and Grains

- Oats
- Rye
- Foxtail Millet
- Annual Ryegrass



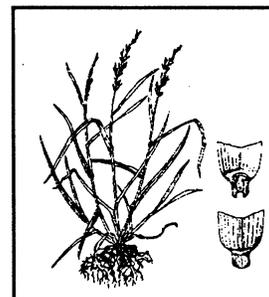
Annual Legumes

- Annual Lespedeza



Perennials

- Tall Fescue
- Kentucky Bluegrass
- Perennial Ryegrass
- Fine Fescues
- Bermudagrass
- Reed Canarygrass



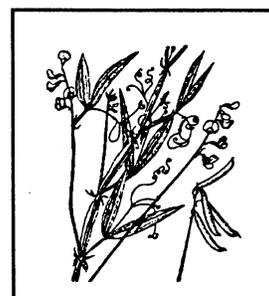
Miscellaneous Erosion Control Grasses

- Weeping Lovegrass
- Redtop



Legumes

- Crownvetch
- Flatpea
- Sericea Lespedeza
- White Clover

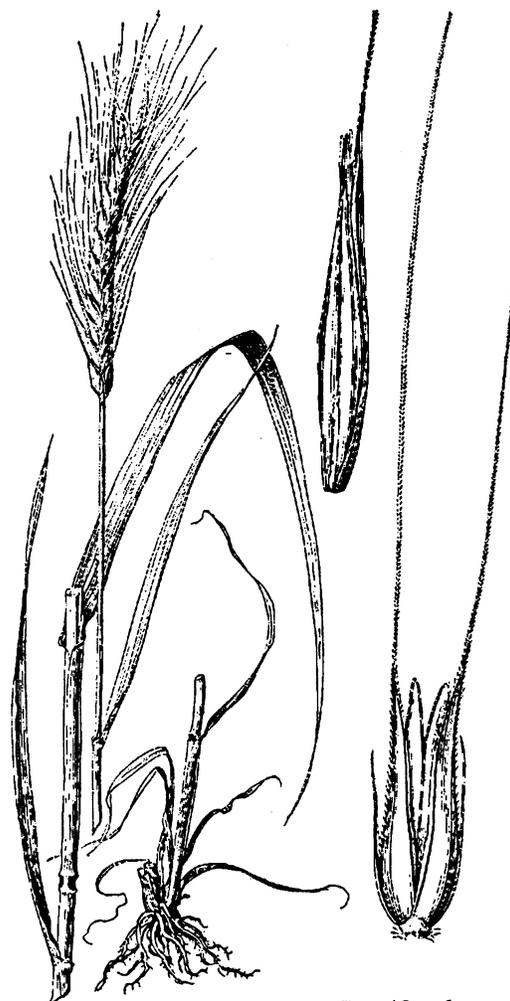


ANNUAL GRASSES AND GRAINS

Small grains are cool season annual grasses primarily grown for animal feed and human consumption. In Virginia, the grains used for soil stabilization are primarily Rye and Oats. Foxtail Millet, which is sometimes considered a small grain, is becoming a very popular and successful planting for soil stabilization.

1. **Oats** (*Avenasativa*): A cool season annual grass primarily grown for animal feed and human consumption, but also used for soil stabilization. Oats are seeded in early spring in the western part of the state (winter oats may be sown in the Coastal Plain). Seeding rates are 3 bushels (100 lbs.) per acre bare ground or 2-1/2 lbs. per 1000 square feet.

2. **Rye** (*Secale cereale*): Often referred to as Winter Rye because of its winter hardiness, Rye is the most common small grain used for soil stabilization. It is also the most productive grain on dry, infertile, acid or sandy soils. It may be seeded in the fall for winter ground cover. By maturing early, it offers less competition during the late spring period, a critical time in the establishment of perennial species. Rye grain germinates quickly and is tolerant of poor soils. Including Rye grain in fall-seeded mixtures is almost always advantageous, but it is particularly helpful on difficult and erodible soils, erodible slopes or when seeding is late. Rates up to 100 lbs. for bare ground. Overly thick stands of Rye grain will suppress the growth of perennial seedlings. Approximately 50 lbs. per acre is the maximum for this purpose and, where lush growth is



Rye (Secale cereale)

expected, that rate should either be cut in half, or Rye grain should be totally eliminated from the mixture.

3. Foxtail Millet (*Setaria italica*): A warm season annual grass which may be used for temporary cover. German Millet (variety commonly used in Virginia) germinates quickly and goes to seed quickly. These features make it an excellent companion grass for summer seedlings. It dies at first frost. Seeding rates are up to 50 lbs. per acre for temporary cover. Use 10 to 20 lbs. per acre in mixes.



Foxtail Millet (Setaria italica)

4. Annual Rye (*Lolium multiflorum*): A cool season annual grass used for temporary cover or as a nurse grass to allow for germination of permanent stands. Most commonly used in mixes for erosion control. Performs well throughout the state in neutral to slightly acid soils. Rates up to 100 lbs. per acre for temporary cover. Use 10 to 20 lbs. per acre in mixes.



Annual Rye (Lolium multiflorum)

ANNUAL LEGUMES

1. Annual Lespedezas (*Lespedeza striata*)

Uses: Pasture, hay, erosion control, soil improvement, wildlife food.

Description: Annual warm season legumes. Korean Lespedeza is larger and coarser than Common Lespedeza and grows to about 12 inches. Seed of Korean is shiny and black, while seed of Common is stippled. Kobe is the most desirable variety of Common Lespedeza.

Adaptation: Throughout Virginia. Optimum pH range is 6.0 to 6.5; will grow from 5.5 to 7.0. Will grow in soil textures ranging from sands to clays and through a wide range of fertility conditions.

Establishment: Seed should always be inoculated. May be seeded alone or mixed with grasses or small grains. Requires a firm seedbed; may be broadcast or drilled. Should be seeded in early spring at 25 to 40 lbs. per acre or one-half to 1 lb. per 1000 square feet, depending on use. (Use lower figure as half the seeding rate of any spring seeding with grass or grain.) Should not be mowed at less than three inches. Lespedeza will not make a large contribution in sod grasses like Bluegrass; they do best in open sod grasses like tall fescue.

Sources: Seed of common variety (Kobe) and Korean varieties (Climax, Harbin and Rowan) are commercially available.



Annual Lespedezas (*Lespedeza striata*)

PERENNIALS

1. Tall Fescue (*Festuca arundinacea*)

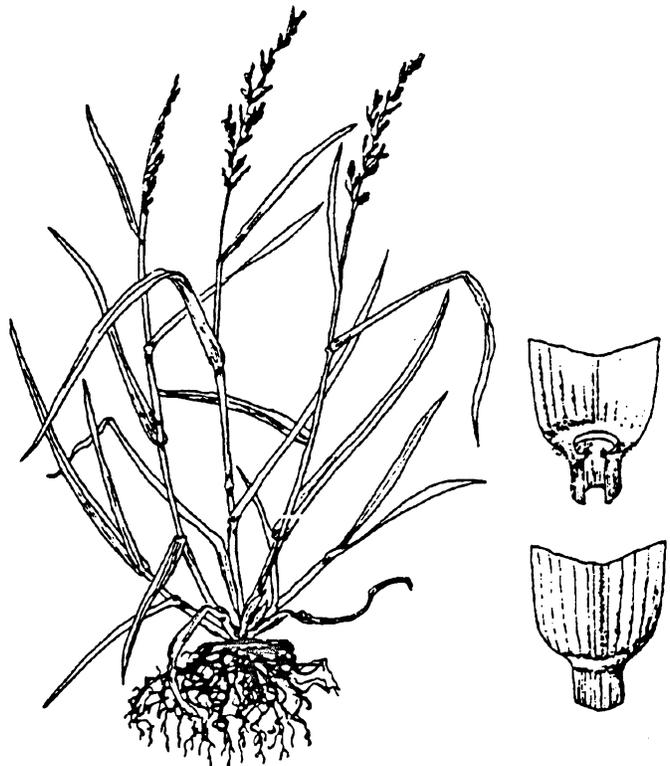
Uses: Pasture, hay, recreation areas, lawns and stabilization of waterways, banks, slopes, cuts, fills, and spoils. It is the most widely used grass at this time for stabilizing large disturbed areas.

Description: A robust, cool season, long-lived, deep-rooted bunchy grass which may have short rhizomes (underground stems). Kentucky 31 is the best-known variety. A number of new varieties of Tall Fescue are becoming available for lawn and other fine-turf uses, and several offer definite improvements. However, their higher cost over the old standby, KY 31, is seldom justified when used for purposes of stabilization and erosion control. Tall Fescue tolerates a wide range of seeding dates; however, with the possible exception of high mountain elevation, it is most dependable when planted in fall.

Adaptation: Adapts well to both high and low maintenance uses throughout Virginia. Adapted to a wide range of climatic conditions. Optimum pH range is 6.0 to 7.0; will tolerate from 3.0 to 8.0. Will grow on shallow and claypan soils if they are moist. Growth is limited more by moisture than by temperature extremes, but it will tolerate drought, infertile soils and moderate shade.

Establishment: Requires a firm seedbed. Hydroseeding is successful. Seeding rates vary from 100 lbs. per acre for erosion control to 250 lbs. per acre for lawns. Plant in early spring or from the middle of August through September. Legumes may not thrive in fescue stands due to the aggressive growth habits of this grass. Mowing is desirable on critical areas at least once every two years; lack of periodic mowing will encourage clumpiness.

Sources: Readily available as seed and sod.



Tall Fescue (Festuca arundinacea)

2. Kentucky Bluegrass (*Poa pratense*)

Uses: Pasture, turf for lawns, athletic fields, golf courses, and playgrounds. Also used to stabilize waterways, slopes, cuts and fills. Choice food for grouse, turkeys, deer and rabbits.

Description: Long-lived, cool season perennial grass which forms a dense sod. Becomes dormant in the heat of summer since its growing season is spring and fall.

Adaptation: Best adapted to well-drained, fertile soils of limestone origin and the climate of northern and western Virginia. Optimum pH range is 6.0 to 7.0. Bluegrasses are better suited to high maintenance situations in the transition zone. Essentially dormant during dry or hot weather; however, it will normally survive severe drought.

Establishment: Requires a firm, weed-free seedbed and adequate fertilization (liberal phosphorus) and lime are important. Can be used with Tall Fescues at low rates. Minimum mowing height is 1-1/2 inches. Critical erosion areas may be mowed only once per year, if desired. This grass is usually seeded with a mixture of other grasses or legumes; several varieties of Bluegrass should be used together to ensure good stand survival. Bare ground rates are 120 lbs. per acre. Overseed 1 to 1-1/2 per 1000 square feet.

Sources: Readily available as seed and sod.



Kentucky Bluegrass (Poa pratense)

3. Perennial Ryegrass (*Lolium perenne*)

Uses: Erosion control, soil improvement, lawns, pasture, and hay; newer varieties are excellent for high-traffic areas.

Description: Perennial Ryegrasses are an excellent selection where rapid establishment is desired. Cool season. Ryegrasses cross-pollinate freely so "Common Ryegrass" may be a mixture of annual and perennial species. Certified seed of Perennial Ryegrass varieties is produced: Blaser, Palmer, Goalie, Fiesta II, Ranger, Regal and Pennfine may be used in Virginia.

Adaptation: Throughout Virginia. Grows best on dark, rich soils in mild climates. Newer varieties have good drought tolerance but may require irrigation if under drought stress or heavy traffic. Will tolerate wet soils with good surface drainage.

Establishment: A firm, mellow surface over compact subsoils gives good results. Seed in fall or spring. Perennial Ryegrass may also be seeded in mid-August to early September. For turf, use a rate of 5 to 8 lbs. per 1000 square feet, if seeded alone; lesser amounts are suitable in mixtures, depending on the characteristics of the companion species. Generally not seeded alone except on athletic fields with intensive use. Perennial Ryegrass does best when used with bluegrass as 20 percent or less of the mixture. Ryegrasses germinate rapidly which makes them particularly suited to disturbed-area stabilization and temporary



Perennial Ryegrass (*Lolium perenne*)

seeding. They will, however, tend to dominate stands in mixtures if percentage is too high.

Sources: Readily available commercially. Care should be taken to buy seed appropriate to the needs of the project.

4. Fine Fescues

- * Red Fescue
- * Hard Fescue
- * Chewings Fescue

Uses: Excellent for shady, low maintenance areas and north-facing slopes. May be used to stabilize waterways, slopes, banks, cuts, fills, and as a cover crop in orchards.

Description: Red Fescue is a cool season perennial that occurs in two forms: bunch-type and creeping. Creeping Red Fescue forms a tight sod. The leaves of Red Fescue are narrow and wiry. Hard Fescues are slow-growing with excellent shade tolerance.

Adaptation: Shade tolerant and somewhat drought-resistant once established. Grows well in sandy and acidic soils. Optimum pH range is 4.5 to 6.0. Prefers well-drained soils but requires adequate moisture for establishment. In areas of high temperature and humidity (such as southeastern Virginia), some Fine Fescues may turn brown or deteriorate during the summer. Newer varieties of Hard Fescue are more drought tolerant.

Establishment: Rarely seeded in pure stands. Seedbed preparation and fertility adjustments are usually dictated by the other grasses in the mixture. Red Fescues may comprise 25 to 60% by weight of a seeding mixture. In shaded areas red fescue may be the key grass in the mixture. Mowing consistently below 1-1/2 is not recommended.

Sources: Readily available commercially. New Hard Fescues may be in short supply.



Red Fescue (Festuca rubra)

5. Bermudagrass (*Cynodon dactylon*)

Uses: Soil and water conservation, pasture, hay, silage, lawns, both high maintenance and general purpose turf, and stabilization of grassed waterways.

Description: A long-lived, warm season perennial that spreads by stolons and rhizomes (runners and underground stems). Height of stems of Common Bermudagrass may be 12 inches. The stems are short-jointed and the leaves flat and spreading. Common Bermudagrass may be established vegetatively with sprigs (sections of stems) or from seeds; however, it has the potential to develop into a weed problem because it spreads vigorously. Cold-tolerant hybrids are usually specified. These are traditionally established from sprigs or sod, but seed is now available.

Adaptation: Southern Piedmont and Coastal Plain in Virginia and some southern appalachian ridges and valleys. Check Std. & Spec. 3.34 for regional adaptations of varieties. Makes its best growth when average daily temperatures are above 75 degrees. Grows on a wide range of soils from heavy clays to deep sands. Optimum pH is 6.0 to 6.5. It is drought-resistant and salt-tolerant. Tolerates floods of short duration but will not thrive on waterlogged soils; does not persist under heavy shade. For rough areas, the varieties Midland (a forage hybrid) and Coastal are recommended. For fine-turf areas, Tufcote (a fine-leaved turf hybrid), Midiron, Tifway, and Vamont are used in Virginia.



Bermudagrass (*Cynodon dactylon*)

Establishment: By sodding or planting sprigs. Sprigs should be planted (by hand or machine) when soil is warm in a well-prepared, moist seedbed. One end of the sprig should extend above ground, and the other should be covered by firmly packed soil.

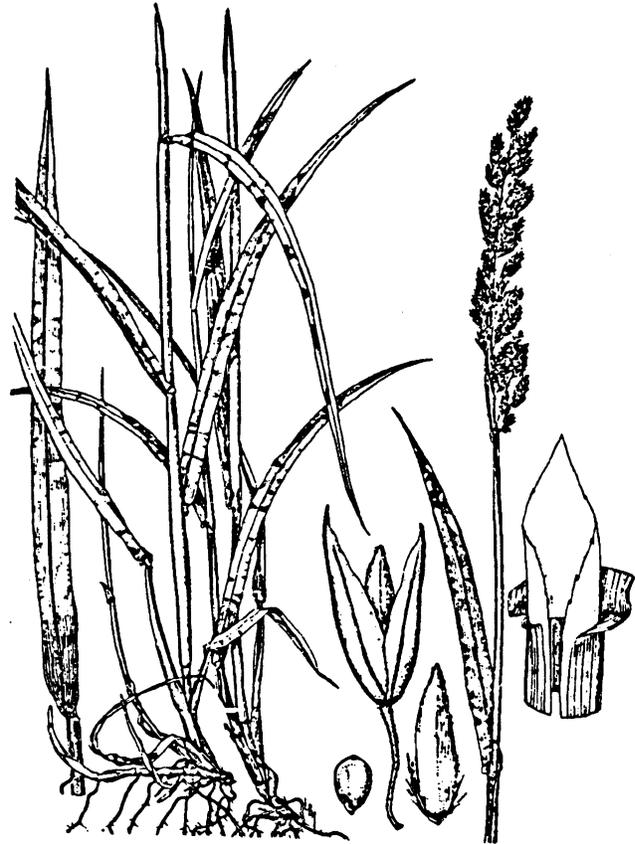
Sources: Readily available as seed, sprigs, and sod.

6. Reed Canarygrass (*Phalaris arundinacea*)

Uses: Pasture, hay silage, and erosion control. An excellent grass for stabilizing waterways, healing and controlling gullies, and protecting shorelines of ponds and reservoirs from wave action. Also provides good cover for shooting preserves. Can be used in deep gullies and drainage ditches where streamflow is rapid. Vigorous growth may impede flow in small, low velocity channels.

Description: A long-lived, cool season, clumpy perennial with coarse rhizomes (underground stems). Grows 4 to 7 feet tall. Most widely used variety is Ioreed.

Adaptation: Throughout Virginia. Does best in a cool, moist climate. Makes best growth on fertile, moist, medium to fine soils; but will grow in a wide range of soil moisture conditions. Will also grow well on swampy or floodplain soils consisting of peat, muck or sand. Will withstand flooding, yet is quite drought-tolerant when mature. Optimum pH range 5.0 to 7.5.



Reed Canarygrass (Phalaris arundinacea)

Establishment: Requires a well-prepared seedbed that is firm and weed free. Seed in spring or late summer; drill seed alone or with a legume. Seed must be fresh - it should be labeled as having at least 70% germination tested within the last 6 months. Normally, pure stands should be established because this grass is not very compatible with other plants. Mowing should not occur more than twice a year on stabilized critical erosion areas or waterway as this will result in reduced stands.

Sources: Available commercially.

MISCELLANEOUS EROSION CONTROL GRASSES

1. Weeping Lovegrass (*Eragrostis curvula*)

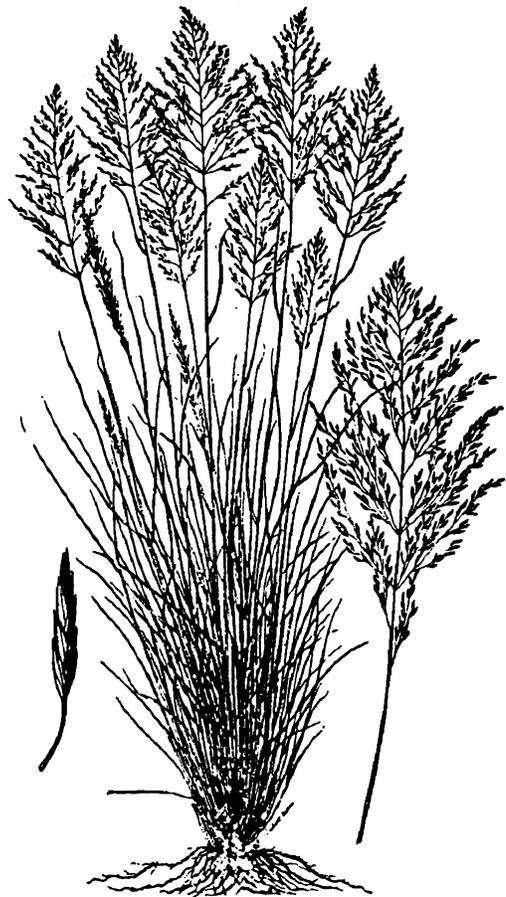
Uses: Fast-growing cover for erosion control. In the northeast, weeping lovegrass acts as a summer annual. The normal life of 3 to 5 years may be foreshortened by low winter temperatures. May provide permanent cover on southern exposure.

Description: A rapid-growing, warm season bunch grass introduced from East Africa. The long, narrow leaves are numerous, very fine, and droop over to the ground, hence the name. Leaf height is rarely above 12 inches.

Adaptation: Prefers light-textured, well-drained soil; will thrive on soil of low fertility. Low winter temperatures may deplete stand.

Establishment: Easy to establish by seed; germinates rapidly and grows quickly. Lime and fertilizer needs are similar to those of Tall Fescue and Ryegrass. Requires pH of 5.5 or higher. May be planted any time after danger of frost and throughout the summer. Very fine seed, commonly added to erosion control seed mixtures. Use of hydroseeders is successful if the seeding rate is increased to compensate for the lack of a firm seedbed. Normal seeding rates are 5 to 20 lbs. per acre in mixes.

Sources: Readily available from large seed companies.



Weeping Lovegrass (Eragrostis curvula)

2. Redtop (*Agrostis alba*)

Uses: Erosion control, pasture, companion grass in turf seedings and stabilizing ditch and channel banks, grassed waterways, and other disturbed areas.

Description: A coarse, cool season perennial grass with rhizomes (underground stems). Grows to 30 to 40 inches.

Adaptation: Throughout Virginia; does better in the cool, humid areas. Will grow under a wide variety of soil and moisture conditions. Grows on very acid soils (pH 4.0 to 7.5) and poor, clay soils of low fertility. While drought-resistant, it is also a useful wetland grass.

Establishment: Has very small seed and requires a compact seedbed. May be sown in early spring or late summer. Seldom seeded alone except as temporary turf. Adequate fertilization is essential on critical areas to obtain good cover rapidly. Most commonly added to mixes, usually 2 to 3 lbs. per acre. Redtop will disappear from a stand under frequent low mowing.

Sources: Available from commercial sources.



Redtop (Agrostis alba)

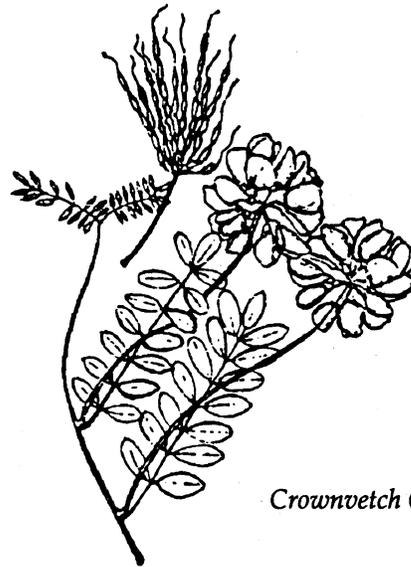
LEGUMES

1. Crownvetch (*Coronilla varia*)

Uses: For erosion control of critical areas such as steep roadbanks, surface mine spoil and industrial waste areas. It is also useful as a residential ground cover. It provides high-quality forage for ruminant animals and serves as a wildlife food and cover plant.

Description: A deep-rooted, cool season, perennial, herbaceous legume with a semi-reclining growth habit. It reaches 2 to 3 feet in height, and does not climb or twine. It fixes nitrogen in the soil and makes a dense mat of vegetative cover.

Adaptation: Best adapted to the northern Piedmont and Mountain regions of Virginia. It grows best on well-drained soils with a pH range of 5.5 to 8.3. It will persist on more acid soils for a prolonged period once established. It is not adapted to soils with poor drainage. Crownvetch is winter-hardy and drought-tolerant. Varieties commonly used are Chemung, Penngift and Emerald.



Crownvetch (Coronilla varia)

Establishment: Only inoculated seed should be used. Requires at least 500 lbs. per acre of 5-10-10 fertilizer (or the area should be fertilized according to soil test results). Soil acidity must be raised above a pH of 5.5. Crownvetch requires mulch and can be hydroseeded successfully. Seeding in the spring is most successful. Frost-seeding may be used on steep or stony sites (seed in late winter, and allow frost action to work the seed into soil). Crownvetch often takes 2 to 3 years to establish a dense stand. A companion grass such as Perennial Ryegrass or Redtop needs to be mixed into the initial planting, but the Crownvetch will eventually crowd out the companion plants. It will not persist under frequent mowing.

Sources: Available commercially.

2. Flatpea (*Lathyrus sylvestris*)

Uses: Flatpea is an erosion control plant that provides a thick mat of vegetative cover, fixes nitrogen in the soil, and can be maintained with a minimum of management. It is useful on roadbanks, dams, borrow area, gravel pits, surface mine spoil, and industrial waste areas. It is an ideal plant for stabilizing logging roads and utility right-of-ways since it will restrict the invasion of many woody species. It also provides good wildlife cover and food.

Description: A cool season perennial legume. It will climb to a height of 6 to 7 feet if support is available, but the normal height is 2 to 3 feet.

Adaptation: Flatpea is adaptable to a wide variety of soil conditions. It is drought-tolerant, cold-hardy, and does well on low-fertility sites such as sands, gravels, and soils from acid sandstones. It is not adapted to wet sites, but it will grow on somewhat poorly drained soils. It will tolerate minor shade and a minor degree of flooding. The optimum pH range is from 6.0 to 6.5. The only available variety is Lathco, developed by the USDA-Soil Conservation Service.

Establishment: Use only inoculated seed. The seedbed should be scarified, if possible. The seed is normally drilled or band seeded, but on rough sites or steep slopes, it can be broadcast and then worked into the soil by light dragging. Where possible, a light application of mulch, properly anchored, will assure a good stand. Lime is essential if the soil is below a pH of 5.0. Fertilize according to a soil test or apply 400 lbs. per acre of 10-20-10. Work lime and fertilizer into soil when preparing



Flatpea (Lathyrus sylvestris)

the seedbed. For a primary stand, use a seeding rate of 30 to 40 lbs. in a mixture with 8 to 10 lbs. of Perennial Ryegrass or 10 to 15 lbs. of Tall Fescue. Flatpea is slow to germinate, so grasses are needed to provide quick cover. Early spring seedings in April or May are best; June seedings are less desirable. Grass seedings may be overseeded with Flatpea from November through March. Flatpea is usually not winter-hardy if seeded in mid or late summer; therefore, dormant seedings are recommended. Mulch with straw at a minimum rate of 1-1/2 tons per acre on all critical sites, and anchor. Little management is required. Remove woody vegetation if the site is invaded. Mowing is acceptable once the stand is established. Mow after full bloom at a 6-inch minimum height.

Sources: Lathco is commercially available.

3. Sericea Lespedeza (*Lespedeza cuneata*)

Uses: Hay, pasture, erosion control, cover crop, wildlife food.

Description: Warm season perennial legume with upright woody stems 12 to 18 inches tall. Roots widely branched penetrating soil 3 feet or more.

Adaptation: Well adapted to all parts of Virginia. Best on well-drained, deep soils of medium texture. Will also grow on sandy, rather acidic, infertile soils. Most often the legume of choice for eastern Virginia. Optimum pH range is 6.0 to 6.5, but will tolerate a range of 5.0 to 7.0. It is drought-tolerant. Common varieties in Virginia are Serala and Interstate.

Establishment: Seed from April to June. Requires a firm seedbed. Use only inoculated seed. Rates vary from 20 to 30 lbs. of unhulled seed per acre. Requires phosphate and potash. Will not persist under frequent mowing (once a year recommended).

Sources: Seed of common varieties is commercially available.



Sericea Lespedeza (*Lespedeza cuneata*)

4. White Clover (*Trifolium repens*)

Uses: Common White Clover is used mostly for pastures. Ladino clover, a giant white clover, is also used for hay and silage in mixtures with a grass. The thick-growing, spreading characteristics of the common type make it ideal for erosion control.

Description: A cool season perennial legume. The common type has a prostrate type of growth, while the Ladino is more upright. Both spread by stolons (horizontal branches along ground) and by roots at the nodes. Representative common varieties used in Virginia are Tillman, Common and White Dutch. Ladino is the only cultivar for the large type.

Adaptation: Thrives in cool climates and on moist, rich soils with full sun. Will not tolerate extremes of cold or drought. Where soil moisture is not adequate, Ladino is short-lived. Optimum soil pH is 6.5, but it will grow in a range of 5.0 to 7.5. Common White Clover volunteers readily in Bluegrass mixtures where moderate to high fertility is maintained. Stands are persistent.

Establishment: Ladino Clover requires inoculation, fertilizing, and liming for successful growth. Phosphorus and potash are the key fertilizer elements required. Ladino makes a good companion crop with grasses such as Orchardgrass, Bromegrass, Tall Fescue and Timothy. These grasses will normally crowd out the Ladino after 2 to 3 years. Seed should be planted (drilled or broadcast) at shallow depths, and a firm seedbed is desirable.

Sources: Available commercially.



White Clover (Trifolium repens)

APPENDIX 3.32-d

TABLE 3.32-F
LBS. OF GROUND AGRICULTURAL LIMESTONE*
PER THOUSAND SQUARE FEET NEEDED
TO CORRECT pH LEVEL OF ACID SOILS TO 6.5

Existing pH	Soil Texture		
	Sandy Loam	Loam	Clay Loam
6.2	20	35	40
6.0	40	55	70
5.8	55	65	85
5.6	70	80	105
5.4	90	100	125
5.2	105	120	140
5.0	120	140	160
4.8	125	180	205
4.6	155	210	230
4.0	200	250	300

* Lime should always be applied in accordance with the results of a soil test, such as may be obtained through the soil testing laboratory at VPI&SU or through a reputable commercial laboratory.

Source: DSWC's Basic Urban E&S in Virginia

ATTACHMENT G

ECOBOND® PROCESS INFORMATION

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OVERVIEW OF ECOBOND® TECHNOLOGIES



MT2 maintains a broad portfolio of patented and proprietary chemical metals stabilization processes; known as ECOBOND® that provide permanent stabilization of all heavy metals. The MT2 processes are previously approved by the US EPA and are non-hazardous. The resulting treated soils contain extremely stable metal compounds that virtually eliminate the leaching of metals to the environment. The strength and effectiveness of the stabilization has been verified using the EPA's TCLP test parameters and Multiple Extraction Procedure (MEP) tests.

Advantages of ECOBOND® chemical stabilization also include its robust capability and ease of application. The technology can be applied in a wet or dry form and can be used to stabilize metals in-situ or ex-situ. These varied applications make it ideal for use at a wide range of metals contaminated sites. At some sites the technology can be surface applied and mixed into soil in its dry form. At other sites the technology can be sprayed in its wet form onto the contaminated material in a topical fashion. In addition to the technical and application advantages, the cost of utilizing chemical stabilization to treat heavy metals contamination is attractive. By being able to treat metals contamination to EPA RCRA or Universal Treatment Standards (UTS), stabilized waste can often be left on-site rather than transported off-site to a hazardous landfill. The disposal cost savings for stabilized metals can often be measured in the hundreds of dollars per ton.

MT2 ECOBOND® ADVANTAGE

Lower Cost: Typically 30%-50% lower cost

Reduction of Environmental Liability: Significantly reduces potential of long-term liabilities

Proven Technology: Technology previously approved by EPA and state regulators with guaranteed, field validated reliability

Best Available Technology: Permanent and irreversible chemical process, strength and durability to 1,000 years verified by EPA approved testing

Table 1 MT2 Metals Treatment Results (TCLP)

Waste Stream	Metals	Pre Treatment	Post-Treatment	Regulatory Standards	
		TCLP (ppm)	TCLP (ppm)	RCRA (ppm)	UTS (ppm)
Mill Tailing	As	2,200.0	1.030	5.0	5.000
Sludge	Cd	160.0	0.100	1.0	0.110
Mill Tailing	Cr	14.0	<0.050	5.0	0.650
Industrial Site	Ba	249.0	0.030	100.0	210.0
Industrial Site	Pb	980.0	0.250	5.0	0.750
Firing Range	Pb	977.0	0.180	5.0	0.750
Mine Tailing	Zn	108.0	2.000	NA	4.300
Mill Tailing	Se	190.0	0.890	1.0	5.700
Chemical Waste	Hg	500.0	0.070	0.2	0.025

TCLP = Toxicity Chemical Leaching Procedure

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Table 2 MT2 Lead (Pb) Treatment Results (SPLP)

Project Location	Metal	Pre Treatment	Post-Treatment	Regulatory	
		SPLP	SPLP	Standards	
		(mg/L)	(mg/L)	RCRA (ppm)	UTS (ppm)
Florida Soils/Sediment					
Sample 1	Pb	0.17	0.0140	5.0	0.750
Sample 2	Pb	0.11	BDL	5.0	0.750
Sample 3	Pb	4.70	0.0130	5.0	0.750
Massachusetts Inland Soils/Sediment					
Sample 1	Pb	3.30	0.0530	5.0	0.750
Sample 2	Pb	3.30	0.0550	5.0	0.750
Sample 3	Pb	3.30	0.1400	5.0	0.750
Utah Soils					
Sample 1	Pb	3.79	0.0800	5.0	0.750
Sample 2	Pb	2.17	0.0900	5.0	0.750
New York Soils/Sediments					
Sample 1	Pb	1,040	0.0184	5.0	0.750
Sample 2	Pb	1,090	0.0330	5.0	0.750
Sample 3	Pb	2,220	0.0104	5.0	0.750

SPLP = Synthetic Precipitate Leaching Procedure

Heavy metals contamination can be found associated with spent battery recycling sites, electroplating facilities, process sludge, military sites, firing ranges, brownfields redevelopment, lead based paint coated buildings and structures, and associated with mining activities. Our services and technologies have been applied to project work for the following types of commercial, industrial and government clients:

Commercial and Industry Applications: mining and smelting operations, battery recycle and disposal sites, military and private firing ranges, brownfields/real estate development, process wastes and sludge, and electric arc steel manufactures.

Government Agencies and Programs: Environmental Protection Agency, Department of Energy, Department of Defense, Bureau of Reclamation, U.S. Army Corps of Engineers and State Environmental and Health Agencies.

MT2's ECOBOND® process utilizes a combination of proprietary materials that are nature's best stabilizers of leachable metals. ECOBOND® compounds have extremely low Ksp (solubility potential) values indicating that it is virtually impossible to dissolve these metal complexes (Table 3). This technique has been used to stabilize heavy metals for a number of years and have proven superior to cementation and other methods that rely on increasing the alkalinity of the matrix to immobilize the metals. Unlike many stabilizing compounds, the MT2's reagents bond directly with metals and are not subject to long-term pH related deterioration.

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Table 3 - Ksp (Solubility Potential) of Various Lead-Phosphate Minerals

Lead Species / Mineral Name	Formula	Log Ksp
Salt	NaCl	0.0*
Quartz	SiO ₂	-4.0
Anglesite	PbSO ₄	-7.7
Cerussite	PbCO ₃	-12.8
Galena	PbS	-27.5
Fluoropyromorphite	Pb ₅ (PO ₄) ₃ F	-71.6
Hydroxypyromorphite	Pb ₃ (PO ₄) ₃ OH	-76.8
Plumbogummite	PbAl ₃ (PO ₄) ₂ (OH) ₅ H ₂ O	-99.3
Corkite	PbFe ₃ (PO ₄)(SO ₄)(OH) ₆	-112.6

**For comparison purposes*

The EPA's TCLP is one measure of the long-term stability of a treated waste because it simulates the leaching effect of water or acid that may come into contact with stabilized metals. To simulate a longer period of environmental exposure, the Multiple Extraction Procedure (MEP) test has been developed. The MEP test consists of multiple acid extractions and pH adjustments that are similar to the TCLP test. However, different leachates are used for each of ten separate extractions. It is estimated that each TCLP extraction simulates 100 years of stability and after ten MEP extractions, 1,000 years of metals stability are simulated. The durability of similar treated materials has been tested by numerous MEP tests and has been evaluated in the EPA's Superfund Innovative Technology Evaluation (SITE) program. The MEP test is just one of the tests that have been conducted to establish the long-term stability of chemically stabilized waste. See Table 4.

Table 4 - Example of Treatment Results using MEP Testing of MT2 Stabilized Lead Contaminated Soil

	Crookville Lead Superfund Site	Crookville Lead Superfund Site	Lead Paint Sand Blast Grit	Lead Paint Sand Blast Grit	Lead Paint Sand Blast Grit
Pre Treatment Lead TCLP	32	980	26	34	49
MEP Extraction Post Treatment					
#1 – 100 years	0.08	<0.05	<0.05	<0.05	<0.05
#2 – 200 years	0.14	0.13	<0.05	<0.05	<0.05
#3 – 300 years	0.21	0.05	<0.05	<0.05	<0.05
#4 – 400 years	0.13	0.06	0.13	0.23	0.08
#5 – 500 years	0.14	0.08	0.31	0.12	0.07
#6 – 600 years	<0.05	0.15	0.15	0.06	0.06
#7 – 700 years	0.16	<0.05	0.19	0.03	0.04
#8 – 800 years	0.25	0.18	0.19	0.05	0.06
#9 – 900 years	0.26	0.53	0.18	0.06	<0.05
#10–1,000 years	0.23	0.33	0.14	<0.05	<0.05
Average MEP Extraction	0.165	0.161	0.14	0.075	0.056

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OVERVIEW OF ECOBOND® TECHNOLOGIES



In summary, MT2's proprietary ECOBOND® technology has previously been approved by the U.S. Environmental Protection Agency as well as state regulators. ECOBOND® provides an advanced in situ and ex situ treatment for a wide variety of metals utilizing innovative methods with standard equipment, converting RCRA hazardous waste into non-hazardous material. MT2's state-of-the-art technologies and experienced personnel provide clients with technical and field services producing substantial cost savings. MT2's ECOBOND® technologies are broadly applicable for chemical conversion and stabilization for:

- Soils, Silts and Sediments
- Process Waste and Sludges
- Firing Ranges/Shooting Ranges
- Lead Paint and Glass
- Mine/Smelter Sites
- Former Disposal Locations
- Brownfields Sites
- Battery Recycling Site

The advantages of ECOBOND® technologies and MT2 services include:

- Lower Cost: Typically 30%-50% lower cost than other alternatives
- Reduction of Environmental Liability: Significantly reduced potential of long-term liabilities through improved best management practices
- Eliminates Generation of Hazardous Wastes: No hazardous waste manifesting, substantial disposal cost reduction and reduced liability
- Proven Technology: Technology previously approved by EPA and state regulators in over seven (7) years of operations with guaranteed, field validated reliability
- Best Available Technology: Permanent and irreversible chemical process, strength and durability to 1,000 years verified by EPA approved testing.



Advanced
Treatment
Technologies

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Treatability Report

Prepared for

**Oceana Salvage Yard
Virginia Beach, VA**

Prepared by

**MT2, LLC
14045 West 66th Ave
Arvada, CO 80004**

888-435-6645

www.mt2.com

November 10, 2011





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1.0 OBJECTIVE

The objective of this report is to present the findings of a laboratory treatability study conducted on the Oceana Salvage Yard samples by MT2 designed to determine the RCRA leachable lead (Pb) concentration from a Pb contaminated sample and to develop a chemical formulation to pass the TCLP Pb criteria for Pb.

2.0 SAMPLE DESCRIPTION and CHARACTERIZATION

Six samples of Pb-contaminated material were delivered to MT2 Sample Receiving and logged in. The samples were received in plastic bags and glass containers. The samples that were selected for the treatability study are presented in Table 1.

Table 1 Sample Description and Characterization

MT2 Sample #	Client I.D. #	Description
448-1	WC-01-Grab	Moist Loam with vegetation
448-2	WC-02-Grab	Moist Loam with vegetation
448-3	WC-03-Grab	Moist Loam with vegetation

The material was then tested for hazardous Pb by using EPA’s SW-846 Method No. 1311 “Toxicity Characteristic Leaching Procedure” (TCLP). The TCLP extraction fluids were then filtered and analyzed by ICP or AAS. The results of the subsequent analysis are presented in Table 2.

Table 2 Pre-Treatment TCLP Results

MT2 Sample #	Client I.D. #	Total Pb mg/Kg (via XRF)	MT2 Test #	Natural pH of Material	TCLP Pb (mg/l)
448-1	WC-01-Grab	8561	19-48-1	6.97	11.75
448-2	WC-02-Grab	842	19-48-2	8.33	0.83
448-3	WC-03-Grab	1334	19-48-3	8.31	3.39

The untreated TCLP Pb extraction values of the samples indicate that the material with the high XRF reading is well above the RCRA criteria for leachable Pb, while the other samples are below the RCRA criteria for leachable Pb.



3.0 TREATMENT STUDIES

ECOBOND® Pb formula was applied and mixed with the samples. Some water was added to the samples (~5 weight %). After weighing measurements and complete mixing with the treatment material, the samples and treatment material were allowed to cure and stabilize. Sub-samples were taken and extracted for Pb implementing EPA’s SW-846 Method No. 1311 “Toxicity Characteristic Leaching Procedure” (TCLP). The TCLP extraction fluid was then filtered and analyzed by ICP. The results of the ECOBOND® Pb treatment test are presented in Table 3.

Table 3 ECOBOND® Pb TCLP Treatment Data

MT2 Test #	MT2 Sample #	Client I.D. #	Sample Weight, grams	ECOBOND® Pb Formulation (Weight %)	TCLP Pb mg/l TREATED
19-48-2	448-1	WC-01-Grab	100	2.5	0.83
19-48-4	448-2	WC-02-Grab	100	0.5	bdl
19-48-6	448-3	WC-03-Grab	100	1.5	0.67
RCRA Criteria					5.0 mg/l
UTS Limit					0.75 mg/l

4.0 CONCLUSIONS

The addition of ECOBOND® Pb significantly lowers the TCLP Pb in the samples to well below the RCRA TCLP Pb criteria of 5.0mg/L.

5.0 RECOMMENDATION

Assuming that the samples delivered to MT2 are typical of site soils at Oceana Salvage Yard, it is recommended that the addition of approximately 1 – 2% by weight of ECOBOND® Pb be used to stabilize the soils to meet the RCRA limits for Pb.

Material Safety Data Sheet

ECOBOND[®] Pb

SECTION 1 – PRODUCT AND COMPANY ID

Product Name: ECOBOND[®] Pb
Chemical Family: Inorganic Salt
Date of Preparation:
Information Phone Number: (888) 435-6645

Manufacturers' Name:
MT², LLC
14045 West 66th Avenue
Arvada, CO 80004
Emergency Phone Number: (888) 435-6645
Information Phone Number: (888) 435-6645

SECTION 2 – PRECAUTIONARY MEASURES

Avoid breathing dust.
Avoid ingestion.
Avoid excessive contact with eyes or skin.
Use in adequate ventilation.

Respiratory protection: Single use dust respirator.
Skin Protection: Protect open wounds.
Eye protection: Eye protection should be worn at all times; wash thoroughly after handling.

SECTION 3 – EMERGENCY AND FIRST AID PROCEDURES

IF IN EYES: Immediately flush with plenty of water for at least 30 minutes. Seek medical attention.
IF ON SKIN: Wash contaminated area with soap or mild detergent and water. If solution soaks through clothing, remove clothing in area and wash contaminated skin as above. If irritation persists after washing, seek medical attention.
IF INHALED: Move to fresh air. Treat symptomatically. Get medical attention promptly.
IF INGESTED: First aid is not normally required; however, if swallowed and symptoms develop, seek medical attention.

SECTION 4 – HEALTH HAZARD DATA

May cause severe eye burns. Keep container tightly closed. Use ventilation adequate to keep exposures below recommended limits. Do not get in eyes. Wear appropriate eye protection. Wash thoroughly after handling.

OSHA: Total weighted average for dust over an 8-hour period is 15 mg/m³
ACGIH: Total weighted average for dust over an 8-hour period is 10 mg/m³

NFPA Hazard Class

Health:	2 (Minor)
Flammability:	0 (Least)
Instability:	Special 0 (Least)
Hazard:	None

SECTION 5 – PHYSICAL DATA

Boiling Point (°F): Decomposes
Melting Point (°F): 288 degrees F
Vapor Pressure (mmHg): Not applicable
Specific Gravity (H₂O=1): 2.22
% Volatile by Volume: Not applicable
Vapor Density: Not applicable
Solubility in Water: (20°C): 85.0%

Evaporation Rate (Butyl Acetate = 1): Not applicable
Physical State: Solid
Density: Bulk (Packed), 68-72 Lbs./Ft³
pH: (1% Sol), 2.5 to 3.0
Appearance And Odor: Black to Green, Granulated Solid Material. Slight Odor.

SECTION 6 – REACTIVITY

Stability: Stable
Hazardous Polymerization: Will not occur
Conditions And Materials To Avoid: Extreme temperatures.
Hazardous Decomposition Products. Extreme temperatures such as a fire cause formation of toxic fumes of PO_x.



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SECTION 7 – FIRE AND EXPLOSION HAZARDS

Flash Point: Not applicable.

Flammable Limits: Not applicable.

Extinguishing Media: Small Fire – Water spray, foam, dry chemical, or CO₂. Large Fire – Water spray, fog, or foam.

Special Fire Fighting Procedures: Use self-contained breathing apparatus. Wear full protective clothing.

Unusual Fire and Explosion Hazards: Toxic PO_x fumes are formed in a fire.

SECTION 8 – SPILL/LEAK

Storage: When possible store this material in cool, dry, well-ventilated areas to protect product quality. Keep container(s) tightly closed. Store only in approved containers, if applicable. Protect container(s) against physical damage.

Emergency Action: Avoid breathing dust. Wear respiratory equipment.

Small Spills: Carefully shovel material into clean, dry container. Remove from site.

Large Spills: Use same procedure as above. Contact proper local, state or Federal regulatory agency to ascertain proper disposal technique and procedure.

SECTION 9 – OTHER INFORMATION

Transport: Not listed in the hazardous materials shipping regulations (49 CFR, Table 172.101) by the U.S. Department of Transportation or in the Transport of Dangerous Goods (TDG) Regulations, Canada.

Regulatory Information

CERCLA: No

RCRA 261.33: No

TSCA: 8(b) Chemical Inventory: Yes TSCA 8(d): No

Proposition 65 (CA Health & Safety Code Section 25249.5): Warning: This product contains substances known to the State of California to cause cancer and birth defects or other reproductive harm.

NTP, IARC, OSGA: This material has not been identified as a carcinogen by NTP, IARC, or OSHA.

References: Sax and Lewis, Dangerous Properties of Industrial Materials, seventh edition, Van Nostrand Reinhold Co., N.Y., 1989.

DISCLAIMER

The information in this document is believed to be correct as of the date of issue. **However, no warranty of merchantability, fitness for any particular purpose or any other warranty is expressed or is to be implied regarding the accuracy or completeness of this information, the results to be obtained from the use of this information or the product, the safety of this product or the hazards related to its use.** This information and product are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use thereof. Metals Treatment Technologies, LLC (MT², LLC) specifically **disclaims any liability whatsoever for the use of such information**, including without limitation any recommendations which user may construe and attempt to apply which may infringe or violate patents, licenses and/or copyright.



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ATTACHMENT H
WASTE MANAGEMENT PLAN

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**DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, MID-ATLANTIC
REMEDIAL ACTION OPERATIONS (RAO)/LONG TERM MANAGEMENT (LTM),
ENVIRONMENTAL MULTIPLE AWARD CONTRACT (EMAC)
CONTRACT NO. N40085-11-D-0043
TASK ORDER NO. 0001**

**FINAL
WASTE MANAGEMENT PLAN
FOR
OCEANA SALVAGE YARD ACCESS ROAD
NON-TIME-CRITICAL REMOVAL ACTION
AT
NAVAL AIR STATION OCEANA
VIRGINIA BEACH, VA**

Issued:

March 26, 2012

Prepared for:

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ACRONYMS AND ABBREVIATIONS

APP	Accident Prevention Plan
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, xylene
CFR	Code of Federal Regulations
EHS	Environmental Health and Safety
mg/Kg	milligram per Kilogram
n.o.s.	not otherwise specified
OSHA	Occupational Safety and Health Administration
PESM	Project Environmental Safety Manager
PCB	polychlorinated biphenyls
PPE	personal protective equipment
RCRA	Resource Conservation and Recovery Act
RPM	Navy Remediation Project Manager
SES-TECH	SES-Tech Atlantic
SES	Sealaska Environmental Services, LLC
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
SVOC	semi-volatile compound
TCLP	Toxicity Characteristic Leaching Procedure
TPH-DRO/GRO	total petroleum hydrocarbons diesel range organics/gasoline range organics
TO	Task Order
TSCA	Toxic Substances Control Act
TtEC	Tetra Tech EC, Inc.
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
VAC	Virginia Administrative Code
VDEQ	Virginia Department of Environmental Quality
VOCs	volatile organic compounds

1.0 INTRODUCTION

This Waste Management Plan describes the hazardous and non-hazardous waste management characterization and handling procedures to be used during the non-time-critical removal action (NTCRA) of lead-contaminated soils at Oceana Salvage Yard Access Road Site (the Site) at Naval Air Station (NAS) Oceana, Virginia Beach, Virginia. The planned NTCRA will be performed by SES-Tech Atlantic (SES-TECH), a joint venture between Sealaska Environmental Services, LLC (SES) and Tetra Tech EC, Inc. (TtEC) under the Naval Facilities Engineering Command Mid-Atlantic (NAVFAC MIDLANT) Remedial Action Operation (RAO) Long Term Monitoring (LTM) Environmental Multiple Award Contract (EMAC), Contract Number (No.) N40085-11-D-0043, Task Order (TO) No. 0001.

1.1 Site Location and Description

NAS Oceana, located in Virginia Beach, VA, has been in existence since 1940 when it was established as a small auxiliary airfield. NAS Oceana is now a 6,000-acre master jet base. The primary mission of NAS Oceana is to provide the personnel, operations, maintenance, and training facilities to ensure that fighter and attack squadrons on aircraft carriers of the U.S. Atlantic Fleet are ready for deployment.

The Site is not within the gated portion of the base, but is owned by the Navy. Oceana Salvage is located within the buffer zone of NAS Oceana, to the east of Oceana Blvd (see Figure 1). The Access Road to Oceana Salvage Yard is on Navy Property; Oceana Salvage Yard maintains an easement to allow access (see Figure 2). Historical site info indicates that a large volume of crushed car battery casings were brought to the salvage yard in the 1960s and were used as fill material for the base of the Access Road.

During an Environmental Survey of the entire salvage yard in 1997, several samples within the Access Road and staging areas were collected and analyzed for volatile organic compounds (VOCs), semi-volatile compounds (SVOCs), polychlorinated biphenyls (PCBs), and inorganics. Lead was detected in soil from waste piles at concentrations up to 86,500 mg/kg. In 2005, a direct-push investigation encountered battery casings with the first 3 feet of soil along the Access Road (and associated staging areas), with an average waste depth of 2.5 feet below ground surface (bgs). Concentrations of lead in soil samples ranged from 18.1 to 149,000 mg/Kg.

In 2010, a grid system was established along both sides of the Access Road to delineate the shoulders of the Access Road. Each grid extended to 10-feet from the edge of the Access Road/staging area and had a length of 50 feet along the Access Road/staging areas. Three point composite samples were collected to a depth of 2-feet bgs. Of the 35 grids delineated and sampled, 18 grids were determined by the Navy to exceed the United States Environmental Protection Agency (USEPA) action level for lead, Figure 2. The lead action level of 800 mg/kg for this project was defined in the USEPA Draft Administrative Settlement and Order on Consent for Removal Response Action (USEPA, 2007).

1.2 Scope of Work

The scope of work includes the following:

- Mobilization activities, including underground utility clearance, site/traffic control, and erosion controls;
- Clearing and grubbing;
- In-situ treatment of soil in grids determined hazardous waste by pre-excavation Toxicity Characteristic Leaching Procedure (TCLP) lead analysis;

- Excavation of the shoulder and staging areas, and soil management;
- Confirmatory soil sampling;
- Excavation backfilling and regrading;
- Installation of the engineered shoulders and Access Road asphalt cap;
- Waste management;
- Decontamination;
- Restoration of the Access Road, Access Road shoulders, and staging area;
- Site survey; and
- Demobilization.

2.0 FEDERAL, STATE AND LOCAL REGULATIONS

2.1 Federal Regulations

Subtitle C of the Resource Conservation and Recovery Act (RCRA) regulations are designed to control hazardous waste from the point of generation to a secure disposal, often referred to as “cradle to grave.” RCRA regulations are administered by the USEPA and are found in the Code of Federal Regulations (CFR), Volume 40 Parts 260 – 265 and 268. Subsequent changes in the CFR are published in the Federal Register. These regulations use the following mechanisms to control hazardous waste:

- Facilities that generate, store, treat, and/or dispose of hazardous waste must apply for identification numbers and/or permits and comply with their conditions. Generators of hazardous waste may store the waste on-site without a RCRA permit for up to 90 days.
- Hazardous waste being transported to a Treatment, Storage, or Disposal Facility (TSDF) must be properly contained, labeled, identified, and manifested per State and Federal regulations.
- A USEPA Uniform Hazardous Waste Manifest that provides a waste description and quantity, and that designates the generator, transporter, and facility receiving the waste, must accompany all off-site hazardous waste shipments.
- Other features of RCRA regulations include a notification requirement for organizations engaged in hazardous waste activities; annual report requirements; generator, transporter, and facility standards; facility inspections; personnel training; and a deadline for filing applications for facility permits.

RCRA Subtitle D and the associated regulations (primarily under 40 CFR Parts 257 & 258) are designed to control refuse disposal and to promote recovery and recycling of refuse. However, the State and local governments are the primary planning, permitting, regulating, implementing, and enforcement agencies for management and disposal of industrial or commercial non-hazardous solid wastes. USEPA establishes technical design and operating criteria (which, at a minimum, the States include in their own regulations) for disposal facilities. Also, per Subtitle D, USEPA must determine the adequacy of the State permit programs.

2.2 Commonwealth of Virginia Regulations

Virginia has adopted the Federal hazardous waste regulations and Virginia’s hazardous waste program has been authorized by the USEPA. Most hazardous waste regulations are contained in Title 9 of the Virginia Administrative Code (VAC) under Chapter 60 of Agency 20 (the Environmental Agency). These regulations are enforced by the Virginia Department of Environmental Quality (VDEQ). The USEPA in

turn regulates the VDEQ to ensure the Commonwealth of Virginia regulations are equal to or more stringent than Federal regulations.

The Virginia solid waste management regulations set standards for the siting, design, construction, operation, closure and post-closure care of solid waste management facilities. The solid waste regulations governing solid waste management are found in Title 9 of the VAC under Chapter 81 within Agency 20.

2.3 Local Regulations

The County of Virginia Beach City and the City of Virginia Beach do not impose any additional regulations or ordinances regarding the management of hazardous or solid wastes.

3.0 WASTE TYPES

Waste materials that are determined to be non-hazardous will be managed in compliance with applicable Virginia solid waste regulations. If RCRA regulated hazardous wastes are identified, they will be managed in accordance with VDEQ Hazardous Waste Regulations.

Based on previous site investigations, RCRA hazardous wastes are expected to be generated from site activities and include the following:

- Root balls from grubbing activities, and
- Contaminated materials including soil sampling & equipment decontamination items.

Non-hazardous wastes are expected to be generated from site activities include the following:

- Cleared vegetative material,
- Soil excavated after in-situ chemical stabilization treatment;
- Soil excavated from grids designated as “non-hazardous” by pre-excavation sampling,
- Personal protective equipment (PPE),
- Decontamination water,
- General construction debris and trash, and
- Recyclable materials.

The following sections provide further detail on management of anticipated waste streams.

3.1 Grubbed Material

All grubbed vegetative material (e.g., root balls) is assumed to contain lead-contaminated soil at hazardous levels and will be characterized for disposal purposes as a RCRA hazardous waste exhibiting the characteristic of toxicity for lead. This corresponding RCRA hazardous waste code of D008 will be entered on the Waste Profile to define the specific hazards of the waste. Root balls will be segregated and staged in lined rolloff containers for subsequent disposal as hazardous waste at an appropriate, approved off-site disposal facility.

3.2 Soil from “Pre-Excavation Hazardous” Grids

The soil samples that were collected during previous investigations and during a pre-excavation sampling phase (October 2011) for this project were used to characterize the associated grids as either hazardous or non-hazardous. These pre-excavation soil samples were analyzed for Full TCLP (TCLP VOCs, TCLP SVOCs, TCLP Metals, TCLP Pesticides/PCBs, TCLP Herbicides), Reactivity, Ignitability, Corrosivity, total metals (antimony, arsenic, iron and lead), total petroleum hydrocarbons diesel range organics/gasoline range organics (TPH-DRO/GRO), total organic halides, and total benzene, ethylbenzene, toluene and xylene (BTEX).

The grids and staging areas were grouped for pre-excavation waste class sampling as described in Section 12.0 of the Work Plan. The initial waste classification of grids and areas, by group, is shown on Table 3-1 below. The table also contains data from previous sampling (Total Lead Range) provided by the Navy during the project planning stage and data from the pre-excavation samples collected on October 5, 2011 (TCLP-Lead and PCBs). Analytical data indicates that Groups 1 and 3 are currently classified as RCRA Characteristically Hazardous for Lead (D008). Analytical data indicates that Group 2 is characterized as non-hazardous waste. Based on the analytical results for PCBs, the wastes are not Toxic Substances Control Act (TSCA)-regulated wastes. Other detected constituents had very low concentrations that do not impact waste characterization for disposal purposes. Additional information on the waste classification and disposal requirements is included in Sections 8.0 and 12.0 of the Work Plan and in this WMP.

Table 3-1 Grid and Area Pre-Excavation Waste Classification

Group 1	Group 2	Group 3
RCRA Hazardous for Lead	Non-Hazardous	RCRA Hazardous for Lead
Grid#	Grid # / Area	Grid #
S009	S011	S012
S010	S014	S016
S013	S025	S017
S020	S026	S018
S024	S027	S019
	South Staging Area	S021
	North Staging Area	S022
		S023
Total Lead Range: 2,685 to 3,800 mg/L	Total Lead Range: 200 to 2,450 mg/L	Total Lead Range: 6,785 to 24,000 mg/L
TCLP-Lead: 54 mg/l	TCLP-Lead: 2.8 mg/l	TCLP-Lead: 160 mg/
Total PCBs: 0.78 mg/kg	Total PCBs: 1.09 mg/kg	Total PCBs: 2.13 mg/kg

The soil in Groups 1 and 3 grids, as discussed above will be treated in-situ to achieve chemical stabilization of the lead contamination. Post-treatment waste classification samples will be collected from the treated soil for TCLP lead analysis. It is anticipated that TCLP lead levels in treated soil will not exceed the TCLP lead limit after the chemical stabilization treatment and the soil will be disposed of as a non-hazardous waste. Based on the characterization determined by the analytical results, other waste codes are not applicable nor will the excavated soil be considered a TSCA regulated waste.

3.3 Contaminated Materials Soil Sampling & Equipment Decontamination Items

Items used to collect soil samples (including stainless steel spoons, aluminum pans) and items used for equipment decontamination (including brushes, plastic sheeting from decontamination area) will be characterized as a RCRA hazardous waste because they may contain enough adhered soil to have a higher level of lead contamination. These items will be containerized separately in a drum(s) and managed as hazardous waste (D008).

3.4 Cleared and Grubbed Material

All cleared vegetative material that is above ground is assumed not in contact with the contaminated soil and this material will be characterized for reuse purposes as a non-hazardous solid waste. This vegetative material will be chipped and reused on-site as appropriate.

Root balls that are grubbed from the ground will be segregated and staged on-site in lined, tarped rolloffs for subsequent off-site disposal as RCRA hazardous waste.

3.5 Soil from “Pre-Excavation Non-Hazardous” Grids

The waste characterization samples that were collected during previous investigations and during the pre-excavation sampling phase for this project was used to characterize the soil from grids in Group 2 as non-hazardous waste. These most recent soil samples were analyzed for Full TCLP (TCLP VOCs, TCLP SVOCS, TCLP Metals, TCLP Pesticides/PCBs, TCLP Herbicides), Reactivity, Ignitability, Corrosivity, total metals (antimony, arsenic, iron and lead), TPH-DRO/GRO, total organic halides, and total BTEX. As discussed in Section 3.2, soil in Group 2 grids is non-hazardous based on sample analyses.

The soil excavated from grids in Group 2 is designated as “non-hazardous” and will be characterized as a RCRA solid waste for disposal purposes. Grids S011, S014, S025, S026, and S027 as well as the north and south staging areas will be designated as non-hazardous based on the waste classification data. These soils do not meet the definition of a D008 hazardous waste and will be designated on the Waste Profile as a non-hazardous waste for characterization purposes. These soils may be disposed of at a solid waste facility able to accept the total levels of lead present. If the soil is characterized as non-hazardous and meets the facility’s acceptance criteria, the soil may be disposed at an approved, state-permitted solid waste landfill.

3.6 Personal Protective Equipment

Used PPE will be containerized prior to off-site disposal. The PPE is not anticipated to contain enough lead-contaminated soil to meet the definition of a hazardous waste, so these materials are expected to be non-hazardous, and will not be sampled for waste classification.

3.7 Decontamination Wastewater

Wastewater generated from personal and limited sampling equipment decontamination will be collected in DOT-approved 55-gallon drums and labeled as “Wastewater – Pending Analysis.” The drums will be temporarily staged within the waste storage area. Decontamination wastewater will be sampled and analyzed as per the disposal facilities requirements and as detailed in the Work Plan to determine its waste classification. Decontamination wastewater is anticipated to be non-hazardous based on analytical results.

3.8 General Construction Debris and Trash

Construction debris and trash generated during the site activities will be placed into waste containers for disposal as non-hazardous waste at an approved off-site facility.

3.9 Recyclable Materials

The following uncontaminated recyclable materials may be generated during project activities and will be recycled if suitable recycling facilities are available:

- Metal,
- Paper and cardboard, and
- Glass, aluminum, and plastic beverage containers.

3.9.1 Recycling Procedures

The necessary containers and bins for recycling will be provided at the Site. They will be clearly and appropriately marked. Contamination of recyclable materials due to contact with incompatible products and materials will be prevented by good housekeeping practices.

Construction waste at the Site will be separated by one of the following methods:

- Source Separated Method: Recyclable waste products and materials are separated from trash and sorted into appropriately marked separate containers and then transported to the respective recycling facility for further processing. Trash will be transported to an approved, permitted Subtitle D landfill.
- Co-Mingled Method: All construction waste is placed into a single container and then transported to an approved recycling facility, where the recyclable materials are sorted and processed and the remaining trash is transported to an approved landfill or incinerator.

3.10 Contact Information

As treatment, disposal, and recycling facilities are procured, names, addresses, and phone numbers of the facilities will be provided to the Navy for approval.

4.0 WASTE HANDLING PROCEDURES

As a part of waste handling, site access will be controlled at the front gate and with signage and barriers as needed. The gate will be open during work hours and locked outside of work hours. A double lock will be used to allow site access to the Navy and Oceana Salvage Yard outside of work hours. Site security will not be provided, however, a small storage facility (in use for satellite accumulation area) or temporary fencing will be used to secure stored hazardous waste.

Procedures for handling solid and hazardous wastes include, but are not limited to, the following:

- The contaminated area will remain isolated, and site access will be restricted to authorized SES-TECH employees, subcontractors, and authorized Navy employees. The Exclusion Zone will be demarcated which will limit access to authorized, trained workers only.
- The decontamination activities will be conducted on-site at a designated area. During decontamination activities, wastes that are anticipated to be hazardous will be collected and containerized in a manner intended to prevent contact with personnel. This will include the use of appropriate PPE. All on-site personnel will be informed of the known hazards and will be properly trained in safe handling procedures contained herein and in the Accident Prevention Plan (APP)/Site Safety and Health Plan (SSHP).
- During collection of the hazardous wastes, proper equipment and work procedures will be utilized to control the flow of material and to eliminate the potential for any of the hazardous wastes to contact an uncontaminated surface.
- It is anticipated that excavated soil wastes will be direct-loaded into trucks for off-site disposal; excavated soil wastes will not remain on site for storage.
- All wastes will be containerized and/or covered, as appropriate, for on-site storage and off-site transport.
- Drums for waste storage shall be United States Department of Transportation (USDOT) UN-spec 1A2 (open-top steel) 55-gallon drums or similar USDOT-approved container. At least 6 to 12 inches of empty space will be allowed in each drum to facilitate the addition of absorbent, if necessary.
- Spill prevention and control measures will be implemented and spill kits will be stored at the waste storage area.

4.1 Soil Waste Handling

After treatment and sample analysis confirms that treated soil in Groups 1 and 3 does not exceed the RCRA TCLP limit, the soil will be excavated and direct-loaded into lined (“sift-proof”) dump trucks. Soil from Group 2 will also be excavated and direct-loaded into trucks. The trucks and transport will be provided by a subcontractor who has appropriate USDOT registration, permits, and has been approved by both SES-TECH and the Navy. Once trucks arrive on-site, the driver will place a liner in the bed of the truck and the cover will be placed prior to leaving the site. Each will be inspected to ensure the liner and cover is intact.

4.2 Non-hazardous Wastes

Non-hazardous solid wastes will be containerized in appropriately sized drums. They will be kept closed to prevent release to the environment, have proper labels (including contents and date), and will be stored on-site in designated areas prior to off-site disposal. The non-hazardous waste containers shall be segregated from the hazardous waste containers. Liquid filled drums will be placed in secondary containment appropriate to contain fluids. There is no time limit for on-site storage of non-hazardous waste.

4.3 Hazardous Wastes

Hazardous wastes that will not be live loaded into trucks (including decon brushes, plastic sheeting and root balls) will be collected in the appropriate sized containers. Based on expected quantities of hazardous wastes (other than root balls), it is anticipated that USDOT approved drums will be used to store hazardous wastes. Root balls will be placed into lined, tarped rolloff containers. Polyethylene

sheeting will be used when necessary for spill protection while containers are being filled. All containers will be inspected prior to use.

When the first amount of hazardous waste is placed into a container, it shall be marked with the date, contents and USEPA waste code (“D008”). This can be done using a paint pen or other permanent marker until a label is applied. Prior to moving to the designated on-site hazardous waste storage area, a “Hazardous Waste” label shall be applied, which includes such information as contents, generator information, start accumulation date and the USEPA waste code “D008”.

Filled containers of hazardous waste will be placed in the segregated hazardous waste storage area to await off-site disposal at an approved facility. The hazardous waste storage area will be secured with temporary fencing and marked with signage, as appropriate. The location will be designated by the Navy. At the storage area, the drums will be stored on pallets under a tarp. Liquid filled drums will be placed in secondary containment appropriate to contain fluids in the event of a leak or a spill. If needed, drums will be arranged in rows with adequate space between rows. This arrangement allows access to any drum without rearranging drums. Drums will be arranged so the labels on the sides are facing outward and are visible after staging. Drums will not be stacked on top of each other. Rolloffs will be lined and tarped and staged so that loading is possible.

Hazardous waste satellite accumulation areas may be utilized to store potentially or known hazardous wastes at the point of generation, provided the quantity of waste does not exceed 55-gallons. This waste currently consists of decontamination wastewater and sampling equipment generated during sampling that occurred prior to the start of construction/excavation activities. The wastes are in a secure and locked storage facility. Wastes stored in a satellite accumulation area will be moved to the waste storage area when the quantity meets 55-gallons. Waste classification will be completed, as needed, and the wastes will be disposed of at an appropriate, approved facility based on the final waste classification. The current satellite accumulation area is being inspected on a weekly basis.

Hazardous waste containers stored in the hazardous waste storage area (but not including the satellite accumulation area) shall be stored on-site for no more than ninety (90) days and shall be inspected weekly to ensure that containers are properly closed, intact and not leaking; and that they are properly labeled. Inspections will be documented in the site logbook and will be retained in the project file.

5.0 OFF-SITE HAZARDOUS WASTE TRANSPORTATION

SES-TECH will manage the transportation of waste. Off-site transportation of hazardous waste shall be managed according to the following procedures.

- Manifests and Shipping Papers - SES-TECH will organize and maintain the material shipment records/manifests required by RCRA, VDEQ, and the disposal facility. All manifests will be reviewed, approved, and signed by the designated Navy representative. Copies of all final completed manifests, including final waste quantities and disposition, will be submitted during the project to the Navy representative, retained in the SES-TECH project file, and will be included in SES-TECH’s Construction Completion Report submitted to the Navy.
- SES-TECH will coordinate the schedule for truck arrival and material deliveries at the disposal site to meet the approved schedule. The schedule will be compatible with the availability of equipment and personnel for material handling operations.

- SES-TECH will prepare all waste manifests and other shipping documents for the Navy representative's signature as generator. SES-TECH will not sign any waste manifests/shipping document or assume generator status for transportation purposes. The Navy will be notified prior to start of shipment so arrangements can be made for a Navy representative to be on-site to sign manifests.
- SES-TECH will comply with the following requirements for RCRA hazardous waste and USDOT hazardous materials. Hazardous materials will be assigned the proper hazard class, described, packaged, marked, labeled, and in condition for shipment as required by 49 CFR 171. Waste that does not exhibit one of the nine USDOT hazard class characteristics (i.e., explosive, flammable, poison, combustible, etc.) is not regulated under USDOT rules for the transportation of hazardous material.
- The wastes that are classified as hazardous waste (D008) will be shipped off-site as a USDOT hazardous material meeting the definition of hazard class 9 (Miscellaneous), according to the following:

Shipping Name	Hazard Class	ID Number	Packing Group	Label
RQ, Environmentally hazardous substance, solid, n.o.s. (D008)	9	UN3077	III	CLASS 9

- Liquid hazardous waste is not anticipated.
- The shipping name, identification number, packing group, instructions, cautions, weights, USEPA waste code numbers and consignee/consignor designations will be marked on packages for shipment. Labeling provides information regarding the USDOT hazard class.
- The container will be marked and labeled as specified in 49 CFR 172.301.
- A Class 9 placard is not required for domestic shipments.

The USDOT hazardous material shipping papers for all D008 Hazardous Waste shipments shall be the USEPA Uniform Hazardous Waste Manifest. The USDOT Basic Description on the manifest will contain information below in the following order:

- UN/NA USDOT Identification Number.
- Proper Shipping Name.
- Hazard class.
- Packaging group.
- Total quantity (must appear either before or after the above information).
- Technical names, chemical group names or the USEPA Waste Code may be entered in parentheses between the proper shipping name and hazard class or following the basic description (e.g., "UN3077, Environmentally hazardous substance, solid, n.o.s. [D008], 9, PG III").

Other required information includes:

- USEPA identification number (on manifests).
- Emergency Response Guidebook numbers.
- A 24-hour emergency response number (in this case, supplied by the transporter on behalf of the generator and answered by a knowledgeable person).
- Signatures of generator and transporter representatives.
- Shipper's certification.

All SES-TECH and subcontractor personnel involved in USDOT Hazardous Material Shipment activities will have current training in accordance with USDOT Hazardous Material Regulations. All waste transporters and disposal/recycling facilities will be reviewed and approved by SES-TECH prior to disposal in accordance with corporate Environmental Health and Safety (EHS) Procedure 1-4 - *Subcontractor Selection and Management*.

Additional procedures for transportation include, but are not limited to, the following:

- SES-TECH will utilize fully licensed, permitted, appropriate vehicles and operating practices to prevent spillage or leakage of contaminated material from occurring en-route.
- SES-TECH will not deliver waste to any facility other than the disposal facility(s) listed on the shipping manifest/bill of lading.
- SES-TECH will coordinate vehicle inspection, manifest review, and recording of quantities leaving the site with the Navy. These quantities will be verified with recorded quantities at the disposal facility(s). If any deviation between the two weight records occurs, the matter will be reported in a timely manner to the Navy Hazardous Waste Coordinator and Navy Remedial Project Manager (RPM).
- SES-TECH will use an approved designated transport route to haul waste off-site. This route will be determined based on facility requirements.
- SES-TECH will ensure that trucks are protected against contamination by properly covering and lining them with compatible material or by decontaminating them prior to any use other than hauling contaminated materials.
- Liquid-containing drums, if generated, will be sealed by SES-TECH or its subcontractor in a manner such that tampering with the contents cannot occur without breaking the seal.
- The designated Navy representative will sign the manifest as the generator. Copies of all final completed manifests will be submitted to the Navy representative within one week after removal of waste from the site. The Navy will review waste profiles and sign as generator before wastes are shipped off-site.

6.0 OFF-SITE DISPOSAL OF NON-HAZARDOUS WASTE

Procedures for off-site disposal of non-hazardous wastes include, but are not limited to, the following:

- Soil that is excavated and designated as “non-hazardous” will be direct-loaded into lined dump trucks for transportation off-site. All loads shall be covered to prevent dust emissions during transport.
- SES-TECH will use only approved treatment, disposal, and/or recycling facilities. All facilities and transporters will be approved prior to use in accordance with corporate EHS Procedure 1-4 *Subcontractor Selection and Management*). Substitutions or additions will not be permitted without prior written approval from the Navy.
- SES-TECH will ensure that the facility is properly permitted to accept the stated material and that the facility provides the stated treatment and/or disposal services.
- The designated Navy representative will sign the manifest as the generator. The Navy will be notified prior to start of shipment so arrangements can be made for a Navy representative to be on-site to sign manifests.

- Copies of all final completed manifests will be submitted to the Navy representative within one week after removal of waste from the site. The Navy will review waste profiles and sign as generator before wastes are shipped off-site.

7.0 RECORDKEEPING

SES-TECH will obtain manifest forms and complete the shipment manifest records as required by the appropriate regulatory agencies for verifying the material type (Code No.) and quantity of each load in unit of volume and weight. Copies of each manifest will be submitted to the Navy within one week following shipment, and as soon as possible after notification of receipt of the disposal facility. Copies of the manifests and all waste documentation will be retained in the SES-TECH project file and will be returned to the client with the Construction Completion Report. Any manifest discrepancies will be reported immediately to the Navy RPM and will be resolved by SES-TECH.

SES-TECH will maintain a Drum/Container Log for all wastes generated. The log will contain the date and location where the waste was generated, the waste name, the waste classification, the sampling date (if applicable), shipment date, and manifest/bill of lading number. A Daily Shipment Log that documents each day's off-site waste shipments will be maintained. Both logs will be retained in the project file.

SES-TECH will maintain in the project file copies of all waste documentation including drum/container inventory and inspection forms, waste characterization analyses and waste determinations, waste profile sheets and waste manifests/shipping papers for all waste shipments. SES-TECH will maintain a tickler file on the project site for all waste manifests. Copies of the outgoing manifests will be maintained in the project file, which will be checked weekly. SES-TECH will review final manifest copies returned from the disposal facility and match them with the initial copies. Both copies will be retained in the project file.

If the returned manifest copy has not been received within 30 days after the shipment date, SES-TECH will contact the disposal facility to obtain the copy. If the manifest copy is not received within 45 days after the shipment date, SES-TECH will contact the Navy and will prepare a Manifest Discrepancy letter, which will be signed by the Navy and sent to the appropriate USEPA Regional Administrator.

Waste drum/container storage areas will be inspected weekly, and will be documented either in the site logbook or on a SES-TECH Drum/Container Inspection Sheet. Deficiencies will be corrected immediately.

8.0 HAZARDOUS MATERIALS

Hazardous materials (other than site waste, grubbed root balls, and potentially decontamination wastewater) are not expected to be encountered or generated during this project. However, if additional hazardous materials are encountered, SES-TECH will notify the Contracting Officer and Navy RPM. In the unlikely event that additional hazardous waste is generated, it will be stored, handled, transported, and disposed in accordance with Federal, State, and local regulations.

9.0 TRAINING

SES-TECH employees will have Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response Standard 40-hr (HAZWOPER) training and current 8-hr HAZWOPER Refresher, RCRA Hazardous Waste and USDOT Hazardous Material Transportation Training. Waste generation activities will be conducted under the worker protection provisions of regulations promulgated by the OSHA in 29 Code of Federal Regulations (CFR) Parts 1910 and 1926.

10.0 RELEASE REPORTING

An Emergency Response Plan is included in the Site Safety and Health Plan (SSHP). The information contained therein details how SES-TECH will address spill control, prevention, and emergency response activities on site. Any release of petroleum, hazardous substances, or hazardous waste to land, surface water, groundwater, or air is defined as a reportable release by VDEQ.

Any reportable release must be immediately reported by the Site Superintendent or Site Safety and Health Officer (SSHO) to the On-Base Emergency dispatcher for Oceana at (757) 433-9111. These releases then must be immediately reported by the Site Superintendent or SSHO to the Project Manager and then to the Project Environmental Safety Manager (PESM) or the project Regulatory Specialist. The PESM or Regulatory Specialist will determine the reporting requirements and the Project Manager will notify the Navy RPM of the release.

The Navy has primary responsibility for release reporting, although they may delegate this authority to SES-TECH. The Project Manager, Site Safety and Health Manager, or Regulatory Specialist (not field personnel) will perform agency notification (if so directed by the Navy). Prior to mobilization, SES-TECH will discuss notification requirements with the Navy, and attempt to establish the reporting responsibilities for each party. Note that releases which occur onto an impervious surface (provided no runoff is released to State waters), or those which are contained, and are immediately cleaned up are not defined as reportable releases by VDEQ, but must still be reported internally.

If so directed by the Navy, SES-TECH will perform agency notification in the event of a release of petroleum, hazardous substances, or hazardous waste to land, surface water, groundwater, or air by notifying the following:

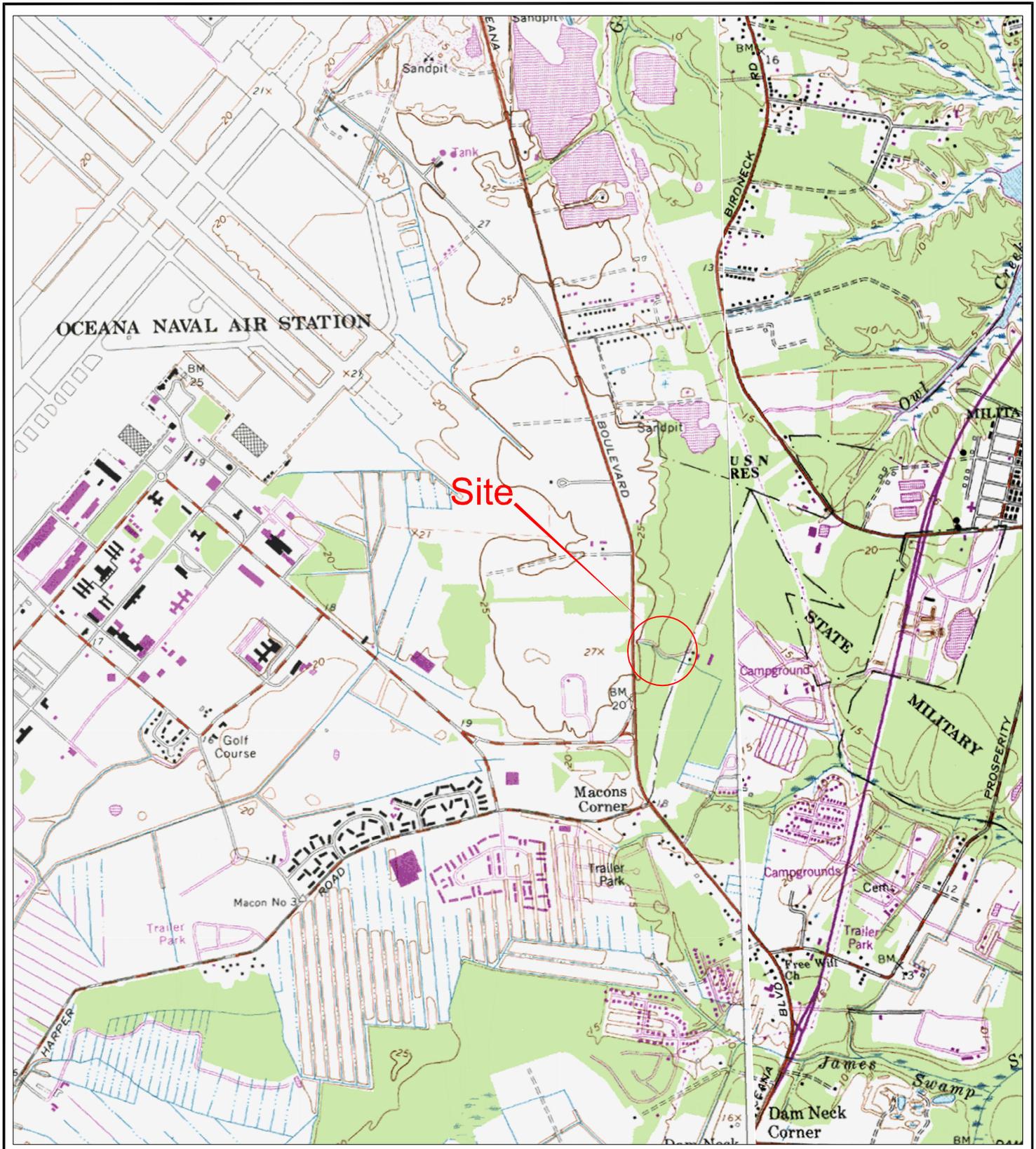
- Virginia Emergency Response Council (VERC) c/o Virginia Dept. of Emergency Management (24 hours, 7-days a week hotline): 1-800-468-8892 (toll-free in Virginia only) or (804) 674-2400.
- National Response Center (NRC) (24 hours, 7-days a week line): 1-800-424-8802.

FIGURES

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FIGURES

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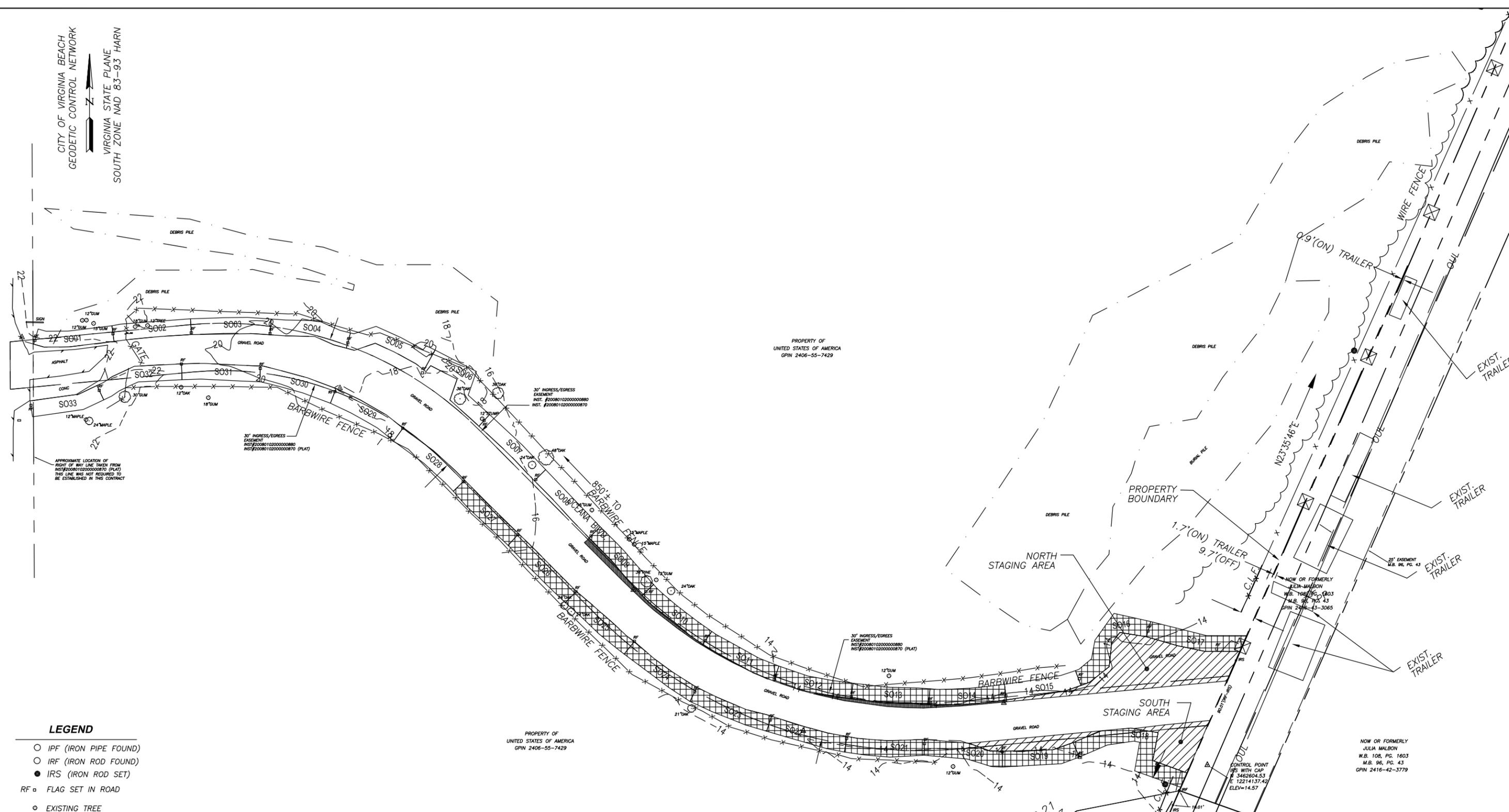


Source: U.S.G.S. Topographic Maps (7.5 Minute)
Princess Anne & Virginia Beach, VA Quadrangles

<p>NAVFAC MID-ATLANTIC Hampton Roads RAO LTM EMAC</p>
<p>NAS Oceana, Virginia Beach, VA Oceana Salvage Access Road Removal Action & Asphalt Cap</p>
<p>Figure 1 Site Location Map</p>
<p>SES-TECH Atlantic</p>

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CITY OF VIRGINIA BEACH
 GEODETIC CONTROL NETWORK
 VIRGINIA STATE PLANE
 SOUTH ZONE NAD 83-93 HARN

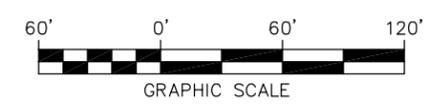


LEGEND

- IPF (IRON PIPE FOUND)
- IRF (IRON ROD FOUND)
- IRS (IRON ROD SET)
- RF □ FLAG SET IN ROAD
- EXISTING TREE
- TELEPHONE PEDESTAL
- ▨ PROPOSED EXCAVATION GRID
- ▨ STAGING AREA
- ▨ GRID CELL EXTENDED TO MATCH NEW ROAD
- SO19 EXCAVATION CELL I.D.
- ⊠ TRANSMISSION LINE POLE

NOTES:

1. SURVEY PERFORMED BY MICHAEL SURVEYING & MAPPING P.C., 735 THIMBLE SHOALS BLVD., SUITE 130, NEWPORT NEWS, VA 23606.
2. HORIZONTAL COORDINATE INFORMATION IS BASED ON CITY OF VIRGINIA BEACH GEODETIC CONTROL NETWORK. VIRGINIA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE NAD 83-93 HARN.
3. THIS PLAT IS BASED ON A CURRENT FIELD BOUNDARY SURVEY OF A PORTION OF PROPERTY LINE SHOWN.



N 3462588.21
 E 12214119.73
 TO R CORNER

S23°35'46"W
 362.73'

NAVFAC MID-ATLANTIC
 Hampton Roads RAO LTM EMAC
NAS Oceana, Virginia Beach, VA
 Oceana Salvage Access Road
 Removal Action & Asphalt Cap

Figure 2
 Site Layout Map

SES-TECH Atlantic

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ATTACHMENT I
SAMPLING AND ANALYSIS PLAN

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Title and Approval Page

(UFP-QAPP Manual Section 2.1 – Worksheet #1)

**DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, ATLANTIC
REMEDIAL ACTION OPERATIONS (RAO)/LONG TERM MANAGEMENT (LTM),
ENVIRONMENTAL MULTIPLE AWARD CONTRACT (EMAC)
CONTRACT NO. N40085-11-D-0043
TASK ORDER NO. 0001**

**FINAL
TIER II SAMPLING AND ANALYSIS PLAN
(FIELD SAMPLING PLAN AND QUALITY ASSURANCE PROJECT PLAN)
FOR
OCEANA SALVAGE YARD ACCESS ROAD
NON-TIME CRITICAL REMOVAL ACTION
AT
NAVAL AIR STATION OCEANA
VIRGINIA BEACH, VA**

Issued:

March 26, 2012

Prepared for:

Department of the Navy
Naval Facilities Engineering Command, Mid-Atlantic
9742 Maryland Avenue
Norfolk, VA 23511-3095

Prepared by:

SES-TECH Atlantic
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DCN: SESTECH-RAO/LTM-12-0021

Review Signature:



Greg Joyce, Program Quality Control Manager

3-19-12

Date

Approval Signature:

NIELSEN.JANICE.L.1069943540

NAVFAC Quality Assurance Officer

Date

Digitally signed by NIELSEN.JANICE.L.1069943540
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USN,
cn=NIELSEN.JANICE.L.1069943540
Date: 2012.03.19 15:32:37 -0400

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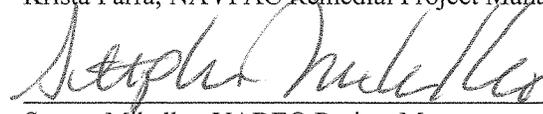
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DN: c=US, o=U.S. Government, ou=DoD, ou=PKI,
ou=USN, cn=PARRA.KRISTA.R.1381421593
Date: 2012.03.19 15:50:22 -04'00'

Reviewer Signature:

Krista Parra, NAVFAC Remedial Project Manager

Date

Reviewer Signature:


Steven Mihalko, VADEQ Project Manager

3/26/12

Date

EXECUTIVE SUMMARY

This Tier II Sampling and Analysis Plan (SAP) has been prepared by SES-TECH, a joint venture between Sealaska Environmental Services, LLC, and Tetra Tech EC, Inc., under Naval Facilities Engineering Command (NAVFAC) Mid-Atlantic (MIDLANT) Remedial Action Operation (RAO) Long Term Monitoring (LTM) Environmental Multiple Award Contract (EMAC) Number N40085-11-D-0043, Task Order 0001. This SAP has been prepared to support a non-time-critical removal action (NTCRA) involving remedial activities designed to remove approximately 986 cubic yards (15,717 tons) of soil containing lead from the Oceana Salvage Yard Access Road at Naval Air Station (NAS) – Oceana located in Virginia Beach, Virginia (the Site) and dispose of the material at an approved off-site facility. The NTCRA is scheduled to be performed in the fall of 2012.

NAS Oceana was first established in 1940 as a small auxiliary airfield, but has grown to become a 6,000-acre master jet base. The Site is not within the gated portion of the base, but it is owned by the Navy. Oceana Salvage (privately owned property) is located within the buffer zone of NAS Oceana, to the east of Oceana Boulevard (Blvd) (Figure 1). Because Navy property land-locks Oceana Salvage, the access road to Oceana Salvage is on Navy property; Oceana Salvage maintains an easement to continue access. The Access Road provides the only ingress and egress from Oceana Boulevard to the adjacent Oceana Salvage Yard, which is privately owned.

Previous investigations at the Site confirmed that the soil beneath the Oceana Salvage Yard Access Road was contaminated with lead as a result of the use of crushed automobile batteries as a sub-base for the access road. In 2007, the U. S. Environmental Protection Agency (USEPA) drafted a Draft Administrative Settlement and Order on Consent for Removal Response Action Order (“AOC” or “Settlement Agreement”) to implement actions to prevent exposure to contaminants potentially posing unacceptable risk to human health related to lead contamination in soil, defined as soils exceeding 800 milligrams per kilogram (mg/kg) of lead, beneath the Oceana Salvage Access Road (including the improved staging areas at the east end of the access road) and the access road shoulders (strips of land extending 10 feet from the edges of either side of the access road to a maximum depth of 2 feet below ground surface [bgs]).

An Engineering Evaluation/Cost Analysis (EE/CA) for a Non-Time-Critical Removal Action (NTCRA) for the Oceana Salvage Yard Access Road and Burial Unit (CH2MHill, May 2011) was prepared to evaluate alternatives and document the selected alternative and decision to take action. The EE/CA described NTCRA for the Burial Unit, non-roadway debris, and the Salvage Yard Access Road; however, the approach for the NTCRA for the Oceana Salvage Yard Access Road provided to SES-TECH Atlantic through the Navy solicitation package does not include the Burial Unit or non-roadway debris. The NTCRA also does not address groundwater.

The NTCRA will be performed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Virginia Department of Environmental Quality (VADEQ) regulations. The United States Department of the Navy (Navy) is the lead agency responsible for the NTCRA. Oversight will be provided by the Navy, the USEPA and the VADEQ.

The NTCRA was designed to ensure that contaminated soils are remediated and/or capped with a protective cover to protect human health. The work to be performed at the Site will be consistent with the AOC and in accordance with CERCLA and the National Oil and Hazardous Substances Contingency Plan (NCP).

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FIGURES

- Figure 1 Site Location Map
Figure 2 Site Layout Map (with Grid Layout and Proposed Excavation Area)

ATTACHMENTS

- Attachment 1 Laboratory Accreditation Documentation

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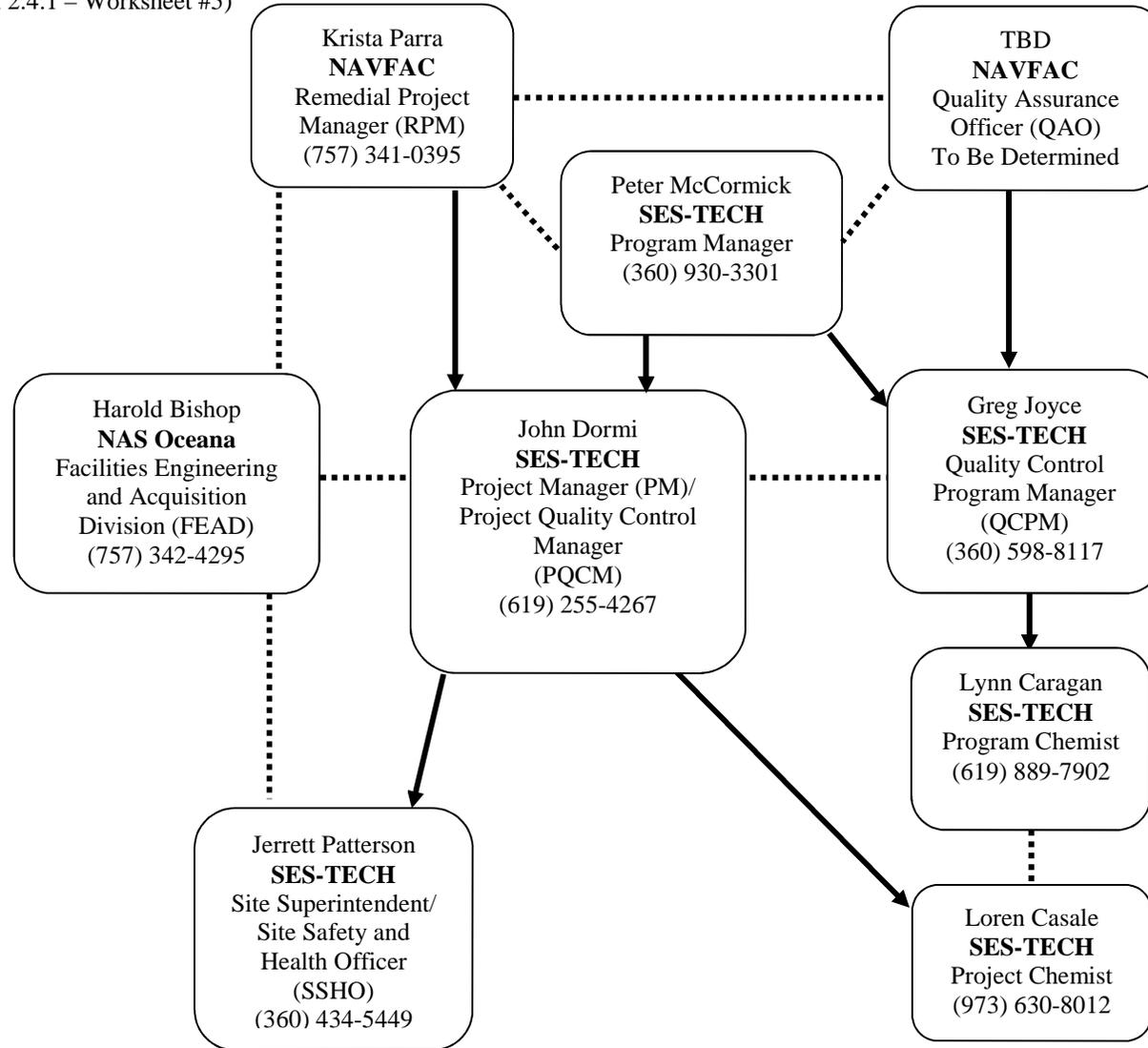
ABBREVIATIONS AND ACRONYMS

AES	Atomic Emission Spectroscopy
AL	Action Level
AOC	Administrative Settlement and Order on Consent for Removal Response Action Order
bgs	Below Ground Surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DoD	Department of Defense
DQI	Data Quality Indicator
EDD	Electronic Data Deliverable
EE/CA	Engineering Evaluation/Cost Analysis
ELAP	Environmental Laboratory Accreditation Program
EMAC	Environmental Multiple Award Contract
FCR	Field Change Request
FEAD	Facilities Engineering and Acquisition Division
ICP	Inductively Coupled Plasma
LCS	Laboratory Control Sample
LTM	Long Term Monitoring
MDL	Method Detection Limit
mg/kg	Milligrams per Kilogram
MIDLANT	Mid-Atlantic
MS/MSD	Matrix Spike/Matrix Spike Duplicate
NAS	Naval Air Station
NAVFAC	Naval Facilities Engineering Command
NCP	National Oil and Hazardous Substances Contingency Plan
NEDD	NIRIS Electronic Data Deliverable
NIRIS	Navy Installation Restoration Information Solution
NTCRA	Non-Time-Critical Removal Action
PDS	Post-Digestion Spike
PM	Project Manager
POC	Point of Contact
PQCM	Project Quality Control Manager
QA	Quality Assurance
QAM	Quality Assurance Manager
QAO	Quality Assurance Officer
QAPP	Quality Assurance Project Plan
QC	Quality Control
QCPM	Quality Control Program Manager
QL	Quantitation Limit
%R	Percent Recovery
RL	Reporting Limit
RAO	Remedial Action Operation
RPD	Relative Percent Difference
RPM	Remedial Project Manager
SAP	Sampling and Analysis Plan

ABBREVIATIONS AND ACRONYMS (CONTINUED)

SES-TECH	Sealaska Environmental Services, LLC, and Tetra Tech EC, Inc.
SSHO	Site Safety and Health Officer
SOP	Standard Operating Procedure
SVOC	Semi-Volatile Organic Compound
TBD	To be Determined
UFP	Uniform Federal Policy
USDOT	U. S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
VADEQ	Virginia Department of Environmental Quality
VOC	Volatile Organic Compound
WP	Work Plan

1.0 Project Organizational Chart
 (UFP-QAPP Manual Section 2.4.1 – Worksheet #5)



Line of Authority



Line of Communication



2.0 Communication Pathways
 (UFP-QAPP Manual Section 2.4.2 – Worksheet #6)

Communication Drivers	Responsible Entity	Name	Phone Number	Procedure
Point of contact for Navy quality issues	NAVFAC QAO	TBD	TBD	QAO will review and approve this SAP and all amendments to this SAP. Authorizes the suspension of project execution if quality assurance requirements are not adequately followed.
Project management for Navy	NAVFAC RPM	Krista Parra	(757) 341-0395	RPM will ensure that the project scope of work requirements are fulfilled in accordance with the contract.
Point of contact for NAS Oceana; Field quality control oversight	FEAD	Harold Bishop	(757) 342-4295	FEAD will review project documents and schedule to ensure site access and that field work is completed in accordance with project requirements.
Project management	PM	John Dormi	(757) 685-9566	PM will be the primary point of contact for the Navy. The PM will manage field and project personnel including subcontractors, and provide a technical review of submittals.
SAP review	QCPM	Greg Joyce	(360) 598-8177	SES-TECH Quality Control Program Manager (QCPM) will review SAP prior to submittal to the Navy.
Field Progress Reports	Site Superintendent	Jerrett Patterson	(360) 434-5449	Site Superintendent will communicate relevant field information to the PM and Project Chemist.
Stop Work due to safety issues	SSHO	Jerrett Patterson	(306) 434-5449	The SSHO has the authority to stop work when work activities or site conditions will impact health and safety of the field personnel. The SSHO will communicate with the field personnel and the PM regarding any health and safety issues. The SSHO will document unsafe conditions encountered on-site and the corrective actions taken.
Stop Work due to quality issues	NAVFAC RPM QCPM	Krista Parra Greg Joyce	(757) 341-0395 (360) 598-8177	The Navy RPM and SES-TECH QCPM have the authority to stop work when work practices that could have serious adverse impacts on data quality are observed or noted. SES-TECH QCPM will prepare a corrective action report within 2 weeks of the incident, which will include a findings summary, checklist(s), and recommended corrective action(s). SES-TECH QCPM will also follow up on implementation of corrective actions stated in the report.

Communication Drivers	Responsible Entity	Name	Phone Number	Procedure
SAP/Work Plan (WP) changes prior to field/laboratory work	Project Chemist NAVFAC QAO QCPM	Loren Casale TBD Greg Joyce	(973) 630-8012 TBD (360) 598-8177	If changes to the SAP are required, then the Project Chemist will prepare an addendum that will be approved by the SES-TECH QCPM and NAVFAC QAO prior to submittal to regulatory agencies for review and commencement of any related field activities. Major changes require Navy approval prior to implementation.
SAP/WP changes in the field	QCPM	Greg Joyce	(360) 598-8177	The SES-TECH QCPM, or designee, will prepare a Field Change Request (FCR) for any changes in sampling procedures that occur due to conditions in the field. The SES-TECH QCPM and PM must approve the FCR prior to submittal to the Navy.
Sample receipt variances	Project Chemist	Loren Casale	(973) 630-8012	The Laboratory PM will provide the Project Chemist with sample log-in receipts for review. The Project Chemist will notify the Laboratory PM immediately when incorrect sample information is noted.
Reporting lab quality variances	Laboratory PM	Nasreen DeRubeis	(412) 963-7058	The Laboratory PM will report all QA/QC issues to the Project Chemist in writing within two business days.
Reporting concerns involving lab	Project Chemist QCPM Laboratory QAM	Loren Casale Greg Joyce TBD	(973) 630-8012 (360) 598-8177 TBD	The Project Chemist will prepare a Notice of Non-compliance when a concern involving the laboratory arises. The SES-TECH QCPM will review the non-compliance issue and contact the Laboratory QCM to discuss the concern and identify cause.
Notification of unusable data	Project Chemist QCPM	Loren Casale Greg Joyce	(973) 630-8012 (360) 598-8177	If unusable data are identified by the laboratory or the project team (i.e., the data are rejected or data quality objectives are not met), the SES-TECH QCPM will notify the PM, who will in turn contact the RPM and the NAVFAC QAO within 24 hours or the next business day.
Analytical corrective actions	Project Chemist Laboratory QAM	Loren Casale TBD	(973) 630-8012 TBD	Laboratories must provide SES-TECH corrective actions within three business days of being notified of the analytical concerns. Any replacement pages of the laboratory reports must be provided within one business day of SES-TECH receiving the corrective actions.

Notes:

TBD – To be determined.

3.0 Project Planning Session Participants Sheet

(UFP-QAPP Manual Section 2.5.1 – Worksheet #9)

Project Name:	NTCRA			Site Name:	NAS Oceana Salvage Yard Access Road Site
Projected Date(s) of Sampling:	Waste Characterization Samples in Fall 2011 Confirmation Samples in Spring 2012			Site Location:	Virginia Beach, Virginia
Project Manager:	Linda Hollingsworth				
Date of Session:	September 28, 2011				
Scoping Session Purpose:	Data Quality Objectives Meeting				
Name	Title	Affiliation	Phone #	E-mail Address	Project Role
Krista Parra	NAVFAC RPM	Navy	(757) 341-0395	Krista.parra@navy.mil	Navy Point of Contact (POC)
Steven Mihalko	VADEQ Project Manager	VADEQ	(804) 698-4202	samihalko@deq.virginia.gov	VADEQ POC
Linda Hollingsworth	Former PM	SES-TECH	(619) 255-4267	Linda.hollingsworth@sealaska.com	POC at SES-TECH
Stavros Patselas	Project Engineer	SES-TECH	(215) 702-4099	Stavros.patselas@tetrattech.com	SES-TEC Technical Lead
Christine Joblon	Project Geologist	SES-TECH	(215) 702-4008	Christine.joblon@tetrattech.com	Preparation of Project Plans
Loren Casale	Project Chemist	SES-TECH	(973) 630-8012	Loren.casale@tetrattech.com	Preparation of SAP

1. Introductions

2. Discussion Subjects

- Boundaries of Removal Action – This Non-Time Critical Removal Action only addresses the excavation and replacement of the Access Road contaminated shoulders and does not address the Burial Unit or off roadway debris.
- Extent of removal action – Top two feet of soil contaminated in exceedance of 800 mg/kg. Contaminated soil at a depth of more than two feet will be left in place.
- Purpose of confirmation sampling – A 3 point composite grid sampling for total lead to determine total lead concentration in remaining soil. It will be verified that this is the same approach that was done at Oceana Salvage area previously. Krista Parra, the

Navy RPM, verified that the 3 point composite grid sampling approach was the same approach that was done at Oceana Salvage area previously and agreed upon by the VADEQ.

- Orange barrier fabric will be used to separate all soil remaining in place from the certified clean backfill.
- Level of Sampling and Analysis Plan appropriate for the project – Since there is only one analyte of concern, the Navy and VADEQ agree that a Tier II SAP is appropriate.

3. Project Schedule

- a. Waste characterization samples will be collected on Oct. 5th.
- b. The planning documents are due to Navy on Oct. 7th.
- c. Field activities and confirmation sampling will occur in Spring 2012.

4.0 Conceptual Site Model

(UFP-QAPP Manual Section 2.5.2 – Worksheet #10)

NAS Oceana, located in Virginia Beach, Virginia, has been in existence since 1940 when it was established as a small auxiliary airfield. The primary mission of NAS Oceana is to provide the personnel, operations, maintenance, and training facilities to ensure that fighter and attack squadrons on aircraft carriers of the U.S. Atlantic Fleet are ready for deployment.

Oceana Salvage (privately owned property) is located within the buffer zone of NAS Oceana, to the east of Oceana Boulevard. The Site is not within the gated portion of the base, but it is owned by the Navy. The Site consists of a gravel and soil roadway and shoulders surrounded by minimal wetland areas and wooded areas. The entrance to the Site is to the east of and just off Oceana Boulevard.

4.1 Previous Investigations

Previous investigations detected lead concentrations in soil that ranged from 18.1 mg/kg to 149,000 mg/kg in samples collected along the roadway. Lead concentrations detected were found above the residential soil screening level of 400 mg/kg from USEPA's Regional Screening Level Table (USEPA, 2010) and therefore were determined to potentially pose unacceptable risks to human receptors.

In 2007, the USEPA prepared a Draft Administrative Settlement and Order on Consent for Removal Response Action Order ("AOC" or "Settlement Agreement") to implement actions to prevent exposure to contaminants potentially posing unacceptable risk to human health related to lead contamination in soil. "Unacceptable risk" was defined as soils exceeding 800 mg/kg of lead, beneath the Oceana Salvage Access Road (including the improved staging areas at the east end of the access road) and the access road shoulders (strips of land extending 10 feet from the edges of either side of the access road to a maximum depth of 2 feet bgs).

In 2010, the Navy delineated areas of lead contamination, as defined in the USEPA's AOC. To delineate the shoulders of the Access Road, a total of 35 grids were established along both sides of the Access Road/Staging Areas. Each grid extended 10 feet from the edge of the Access Road/Staging Areas and had a length of approximately 50 feet along the Access Road/Staging Areas. Three-point composite samples were collected to a depth of 2 feet bgs. Of the 35 grids delineated and sampled, 18 grids were determined by the Navy to exceed the USEPA AOC's action level.

An Engineering Evaluation/Cost Analysis (EE/CA) for a Non-Time-Critical Removal Action (NTCRA) for the Oceana Salvage Yard Access Road and Burial Unit (CH2MHill, May 2011) was prepared to evaluate alternatives and document the selected alternative and decision to take action. The approach for the NTCRA for the Oceana Salvage Yard Access Road provided to SES-TECH Atlantic through the Navy solicitation package is also presented in the EE/CA and does not include the Burial Unit or non-roadway debris. The NTCRA also does not address groundwater.

5.0 Data Quality Objectives/Systematic Planning Process Statements

(UFP-QAPP Manual Section 2.6.1 – Worksheet #11)

STEP 1: State the Problem

Previous investigations at the Site identified lead at concentrations that pose unacceptable risks to human receptors. A removal action and capping will be performed at the Site to mitigate these risks. The project team for the task order consists of the Navy and SES-TECH.

STEP 2: Identify the Goals of the Study

Determine the concentration of lead remaining in place after excavation activities have been completed.

STEP 3: Identify Information Inputs

Information obtained during the 2010 field investigation by the Navy was used to determine the soil excavation areas.

STEP 4: Define the Boundaries of the Study

A total of 24 soil samples will be collected and analyzed for lead. These confirmation soil samples will be collected as three-point composite samples from the soil at the base of each excavation area prior to backfilling. Samples along the Access Road shoulder will be collected within 18 separate 10' x 50' grids plus the north and south staging areas. The south side staging area will be subdivided into two equal subareas, while the north side staging area will be subdivided into four equal subareas. One confirmation sample will be collected from each of the staging area subareas. Figure 2 shows the proposed excavation areas, sample grids, and sample locations. Section 8.2 of this SAP summarizes the samples to be collected and the associated analytical requirements.

STEP 5: Develop the Analytic Approach

Characterize the soil to determine if soils remaining within the proposed excavation boundaries exceed the cleanup level of 800 mg/kg for lead.

STEP 6: Specify Performance or Acceptance Criteria

- To minimize sampling error, samples will be collected at 24 grid/subarea locations by SES-TECH personnel who are trained in the collection of soil samples. SES-TECH personnel will collect samples using the methods described in Section 8.0 of this SAP.
- Error will be further managed by using laboratory standard operating procedures (SOPs) and laboratory quality control (QC) limits.
- Analytical results will be used for characterization only, so data validation will not be necessary.

STEP 7: Develop the Plan for Obtaining Data

Approximately 24 soil samples will be collected from 24 locations at approximately 2 feet bgs prior to backfilling and grading of the excavation areas. All soil samples will be analyzed for lead. The sampling rationale and plan are detailed in Sections 7.0 and 8.0 of this SAP.

6.0 Field Quality Control Samples
 (UFP-QAPP Manual Section 2.6.2 – Worksheet #12)

Measurement Performance Criteria Table – Field QC Samples

QC Sample	Analytical Group	Frequency	Data Quality Indicators (DQIs)	Measurement Performance Criteria
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	Lead	5%	Precision Accuracy	RPD < 20% Percent recovery (%R) 80-120%
Equipment Rinsate	Lead	One per sampling event	Accuracy	No analyte greater than (>) quantitation level (QL)

7.0 Sampling Design and Rationale

(UFP-QAPP Manual Section 3.1.1 - Worksheet #17)

In planning for the NTCRA, it was determined that various portions of the Oceana Salvage Yard Access Road were contaminated with lead concentrations in soil exceeding 800 mg/kg. During previous investigations, a total of 35 grids were established along both sides of the access road/staging areas. Each grid extended 10 feet from the edge of the access road/staging area and had a length of approximately 50 feet along the road/staging area. Eighteen of these grids were found to contain soils with lead concentration above 800 mg/kg. These 18 grids, along with the current staging area, will be excavated to a depth of two feet bgs.

It is anticipated that soils below the excavation depth (two feet bgs) may still contain lead. Because of this possibility, a three-point composite confirmation soil sample will be collected from the bottom of each excavated grid/subarea prior to backfilling to characterize the material remaining.

A total of 24 confirmation samples at 24 grid/subarea locations will be collected. The confirmation samples will be analyzed for total lead by a laboratory with Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP) certification.

Sample locations and method requirements are summarized in Section 8.2.

8.0 Field Project Implementation (Field Project Instructions)

8.1 FIELD PROJECT TASKS

(UFP-QAPP Manual Sections 2.8.1, 3.1.1, and 3.3.3 – Worksheets #14, 20, and 27)

It is anticipated that soils below the project's excavation limits of two feet bgs may contain lead; therefore, prior to backfilling activities, SES-TECH will collect a three-point composite confirmatory soil sample from the bottom of each excavated area. The confirmatory soil samples will be collected and analyzed to quantify total lead concentrations in the soil remaining at the bottom of the excavation areas, after the two-feet of surface soil is removed. A total of 24 confirmatory soil samples will be collected from the 18 grids and two staging areas.

Confirmatory Sampling Procedure

1. Using a decontaminated stainless steel spoon, spatula or trowel, collect soil from the top 6 inches of the remaining soil in the excavation area, and place the soil in a decontaminated stainless steel bowl. Disposable sampling equipment (plastic scoop, aluminum bowl) may also be used to collect the sample, but may not be reused.
2. Repeat Step 1 for two additional locations within the selected grid/subarea. Place the soil from all three sampling locations in the stainless steel bowl. Homogenize the soils.
3. Fill the sample jar with the homogenized soil.
4. Complete sample labels, custody seals, and chain of custody forms. Record sample information in the field notebook.
5. Affix a completed sample label to the sample jar and cover the label with clear packaging tape.
6. Place the sample jar into a resealable bag, and place the sample container into a cooler for shipment. Chill the sample to 4°C.

All information pertinent to field sampling will be recorded in a field logbook to maintain the integrity and traceability of samples. All samples will be properly labeled before they are transported to the laboratory and accompanied by completed custody seal and chain-of-custody documentation. Sample numbers for this project are listed in Section 8.2, the Sample Details Table. All documentation will be recorded in a field logbook in indelible ink.

Decontamination Procedure

Decontamination of non-disposable sampling equipment (stainless steel spoon, spatula or trowel; stainless steel bowl), if used, will be performed to prevent the introduction of extraneous material into samples and cross-contamination between samples. The following procedure will be used to decontaminate all equipment used to collect samples:

1. Follow manufacturer instructions to dilute a nonphosphate detergent, such as Liquinox[®], with potable water in a bucket. Wash the equipment with the nonphosphate detergent and potable water solution.
2. Use a second bucket with potable water to rinse the equipment.
3. Use a third bucket with potable water to rinse the equipment again.
4. Allow the equipment to air dry or use a clean paper towel to dry the equipment in between sample locations.

5. Collect the rinsate and place into U.S. Department of Transportation (USDOT)-approved 55-gallon drums.

The wastewater will be stored on-site to be combined with wastewater from NTCRA activities to be performed in the future. After the NTCRA is completed, wastewater will be analyzed and profiled, and transported to an appropriate off-site permitted facility for treatment and/or disposal.

Sample Labeling and Custody Procedures

Sample labels will be completed by field personnel in indelible ink. Labels will include the project identification, sample identification (see Section 8.2), date and time of collection, sampler's initials, sample matrix, type of sample (grab or composite), analyses to be performed, and preservative used (if applicable).

To maintain and document sample possession, chain-of-custody records will be kept. These procedures are necessary to ensure sample integrity from the collection time through data reporting. The chain-of-custody protocol provides the ability to trace sample possession and handling. Personnel collecting samples are responsible for sample care and integrity until the samples are properly transferred or dispatched. The number of people handling a sample will be kept to a minimum.

The sampler(s) will initially complete the chain-of-custody records, which will accompany the samples at all times. The following information will be indicated on the chain-of-custody record:

- Project identification.
- Signature of samplers.
- Sample identification, sample matrix, date and time of collection, grab or composite sample designation, number of containers corresponding to that sample identification, analyses required, remarks or sample location (if applicable), and preservation method(s).
- Signature of the individual relinquishing the samples.
- Name of the individual(s) receiving the samples and air bill number, if applicable.

The individual that completed the chain-of-custody will then check the sample label and chain-of-custody record for accuracy and completeness.

Sample Packing and Shipping

Samples for off-site laboratory analysis will be shipped via Federal Express or by courier for overnight delivery in waterproof coolers using the procedures outlined below. The samples taken for this project will be considered low-level or environmental samples for packaging and shipping purposes. The sample packing procedures are as follows:

- Fill out the pertinent information on the sample label, and ensure agreement with the chain-of-custody.
- Place approximately 3 inches of cushioning material, such as vermiculite or bubblepack, in the bottom of the cooler.
- Wrap the sample containers in bubblepack. Place containers in the cooler in such a manner that will prevent them from touching during shipment.
- Place ice, sealed in plastic bags, around and on top of the containers. The temperature of the samples will be maintained at $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$ during shipment to the laboratory.
- Fill cooler with cushioning material.

If a laboratory courier will pick up the cooler, the cooler may be closed, secured with custody seals, and transferred to the courier. The courier will sign the chain-of-custody as a record of receipt, returning one signed copy to the sampler. If samples are to be shipped via Federal Express or other delivery service, the following steps will be taken.

- Place chain-of-custody in a waterproof plastic bag and tape it to the inside lid of the cooler.
- Tape the cooler drain shut.
- Secure the lid by wrapping the cooler completely with nylon strapping tape or duct tape at a minimum of two locations.
- Attach completed shipping label to top of the cooler or to a secured luggage tag, and secure cooler with custody seals.

From the time of sample collection, samples for off-site analysis must be stored on ice. The laboratory will record the temperature of the samples upon arrival at the facility.

Quality Control Procedures

Quality control (QC) samples that will be collected for the purpose of quantitatively assessing the quality of the sampling effort and the laboratory analysis are discussed in this subsection. These samples include equipment blanks and MS/MSD/MD. The descriptions below include sampling methodologies, sample frequencies, and the purpose of the samples. QC samples will not be collected for the waste characterization sampling program.

Equipment Rinsate Blanks

Equipment rinsate blanks are samples consisting of reagent (analyte-free) water collected during a sampling event from a final rinse of sampling equipment after the decontamination procedure has been performed. The purpose is to determine whether the sampling equipment is causing contamination of samples. Equipment rinsate blanks will be collected at a frequency of one per 20 samples when non-disposable sampling equipment is used.

Matrix Spike/Matrix Spike Duplicate/Matrix Duplicate

Matrix spike (MS) and matrix spike duplicate (MSD) samples are collected as additional aliquots of sample, as required, to be used by the laboratory as QC samples. The samples are spiked in the laboratory by adding a predetermined concentration of target analytes into the sample prior to sample extraction/digestion and analysis. The concentration of the target analytes determined during analysis are compared to the known concentration of the added spiked compound (percent recovery) to provide a measure of the accuracy of the laboratory method. Laboratory precision is assessed by measuring the RPD between two spiked samples. For this project, MS/MSD samples will be designated for laboratory QC at a frequency of one per 20 field samples.

Temperature Blanks

A temperature blank consisting of potable water will be included in each cooler to document cooler temperature upon receipt at the laboratory.

Document Corrections

Changes or corrections on any project documentation will be made by crossing out the erroneous item with a single line. The person performing the correction will initial and date the correction. The original item, although erroneous, must remain legible beneath the cross-out line. The new information should be written clearly above the crossed-out item.

Data Management

The laboratory will provide all data by e-mail, website download, or other mutually-acceptable method on or before the designated turnaround time of 21 calendar days. Prior to releasing data to project personnel, the Project Chemist will review the data to verify that the sampling procedures and analytical results follow the SAP protocols and that the data are of sufficient quality to satisfy data quality objectives. The laboratory will provide final data by submitting a data package on or before 21 calendar days from sample receipt. The laboratory will submit hard copy data with associated QC information and electronic data deliverables (EDDs) compatible with Navy Installation Restoration Information Solution (NIRIS) Electronic Data Deliverable (NEDD).

All data reported by the laboratory analyst must be reviewed by a peer analyst qualified to perform the method and a supervisor, prior to reporting the data. In addition, the laboratory QAM must annually review 10 percent of the data reported for each section. The laboratory QAM review may be conducted after the data have been reported.

A third party independent data validation is not necessary and will not be performed.

Electronic Data

EDDs from the laboratory will be compatible with NIRIS requirements. The data will be checked for required values and project-specific requirements. Any discrepancies in an EDD will be corrected by the Project Chemist, or the laboratory will be notified to make corrections. The Project Chemist will check 10 percent of the data against the hard copy data package. If errors are found in the electronic data, the Project Chemist will contact the laboratory for corrections.

All relevant environmental tabular data will be submitted to the Navy using the NEDD format as outlined in the current NEDD SOP. Environmental spatial data will be submitted to the Navy in accordance with the current Non-NEDD Deliverable Submittal Guidelines.

8.2 SAMPLE DETAILS TABLE

(UFP-QAPP Manual Sections 3.1.1 and 3.5.2.3 – Worksheets #18, 19, 20 and 30)

Analysis Group			Lead			
Preparation and Analytical Method			SW846 6010B			
Analytical Laboratory/Analytical Standard Operating Procedure (SOP) Reference			TestAmerica/ PT-MT-001, Rev. 12			
Data Package Turnaround Time			21 business days			
Container Type/Volume required (if different than container volume)			1 – 4 ounce jar			
Preservative			None			
Holding Time (Preparation/Analysis)			6 months			
Site	Matrix	Sample Location ^b	Sample ID ^c	Depth/Sampling Interval	Number of Samples	
Oceana Salvage Yard Access Road	Soil	Grid S009	OSYAR-CS-S009	2 feet bgs	1	
Oceana Salvage Yard Access Road	Soil	Grid S010	OSYAR-CS-S010	2 feet bgs	1	
Oceana Salvage Yard Access Road	Soil	Grid S011	OSYAR-CS-S011	2 feet bgs	1	
Oceana Salvage Yard Access Road	Soil	Grid S012	OSYAR-CS-S012	2 feet bgs	1	
Oceana Salvage Yard Access Road	Soil	Grid S013	OSYAR-CS-S013	2 feet bgs	1	
Oceana Salvage Yard Access Road	Soil	Grid S014	OSYAR-CS-S014	2 feet bgs	1	
Oceana Salvage Yard Access Road	Soil	Grid S016	OSYAR-CS-S016	2 feet bgs	1	
Oceana Salvage Yard Access Road	Soil	Grid S017	OSYAR-CS-S017	2 feet bgs	1	
Oceana Salvage Yard Access Road	Soil	Grid S018	OSYAR-CS-S018	2 feet bgs	1	
Oceana Salvage Yard Access Road	Soil	Grid S019	OSYAR-CS-S019	2 feet bgs	1	
Oceana Salvage Yard Access Road	Soil	Grid S020	OSYAR-CS-S020	2 feet bgs	1	
Oceana Salvage Yard Access Road	Soil	Grid S021	OSYAR-CS-S021	2 feet bgs	1	
Oceana Salvage Yard Access Road	Soil	Grid S022	OSYAR-CS-S022	2 feet bgs	1	
Oceana Salvage Yard Access Road	Soil	Grid S023	OSYAR-CS-S023	2 feet bgs	1	

Analysis Group			Lead		
Preparation and Analytical Method			SW846 6010B		
Analytical Laboratory/Analytical SOP Reference			TestAmerica/ PT-MT-001, Rev. 12		
Data Package Turnaround Time			21 business days		
Container Type/Volume required (if different than container volume)			1 – 4 ounce jar		
Preservative			None		
Holding Time (Preparation/Analysis)			6 months		
Site	Matrix	Sample Location	Sample ID ^a	Depth/Sampling Interval	Number of Samples
Oceana Salvage Yard Access Road	Soil	Grid S024	OSYAR-CS-S024	2 feet bgs	1
Oceana Salvage Yard Access Road	Soil	Grid S025	OSYAR-CS-S025	2 feet bgs	1
Oceana Salvage Yard Access Road	Soil	Grid S026	OSYAR-CS-S026	2 feet bgs	1
Oceana Salvage Yard Access Road	Soil	Grid S027	OSYAR-CS-S027	2 feet bgs	1
Oceana Salvage Yard Access Road	Soil	North Side Subarea 1	OSYAR-CS-NS1	2 feet bgs	1
Oceana Salvage Yard Access Road	Soil	North Side Subarea 2	OSYAR-CS-NS2	2 feet bgs	1
Oceana Salvage Yard Access Road	Soil	North Side Subarea 3	OSYAR-CS-NS3	2 feet bgs	1
Oceana Salvage Yard Access Road	Soil	North Side Subarea 4	OSYAR-CS-NS4	2 feet bgs	1
Oceana Salvage Yard Access Road	Soil	South Side Subarea 1	OSYAR-CS-SS1	2 feet bgs	1
Oceana Salvage Yard Access Road	Soil	South Side Subarea 2	OSYAR-CS-SS2	2 feet bgs	1
Field QC Samples ^b					
Oceana Salvage Yard Access Road	Soil	Matrix Spike	See Note a	2 feet bgs	2
Oceana Salvage Yard Access Road	Soil	Matrix Spike Duplicate	See Note a	2 feet bgs	2
Oceana Salvage Yard Access Road	Water	Field Blank	See Note a	NA	1
Total Number of Samples to the Laboratory					32

Frequency of QA/QC sample collection:
MS/MSD – One pair per 20 field samples (including field QC samples)
Trip Blank – Not Applicable for this project
Equipment Rinsate Blank – One per 20 field samples

Notes:

- a For QC samples, sample numbering will include types of QC in the sample name. For example: OSYAR-FB-111511, where “OSYAR” represents Oceana Salvage Yard Access Road, “FB” denotes equipment rinsate (field) blank, “111511” is the date that the equipment sample is collected. For MS/MSD samples, sample number will be the same as the location, but on the chain-of-custody comment section, the word “MS/MSD” will be included and an additional jar will also be submitted to the laboratory.
- b Field QC applicable to this sampling activity and number of samples are summarized in table.

9.0 Reference Limits and Evaluation Table

(UFP-QAPP Manual Section 2.8.1 – Worksheet # 15)

9.1 Matrix: Soil

Analytical Group: Lead

Analyte	CAS No.	Project AL (mg/kg) ^a	Project AL Reference	Project QL Goal (mg/kg)	Laboratory Specific Limits ^b	
					MDL (mg/kg)	RL (mg/kg)
Lead	7439-92-1	800	Draft Administrative Settlement and Order on Consent for Removal Response Action Order	20	0.145	0.3

Notes:

^a The action level (AL) was established in the Draft Administrative Settlement and Order on Consent for Removal Response Action Order (USEPA 2007).

^b Laboratory-specific method detection limit (MDL) and reporting limit (RL) values are reported from TestAmerica Pittsburgh Laboratory.

10.0 Analytical SOP References Table

(UFP-QAPP Manual Section 3.2.1 – Worksheet #23)

10.1 TestAmerica Pittsburgh
301 Alpha Drive
Pittsburgh, PA 15238
Nasreen DeRubeis
(412) 963-7058

Lab SOP Number	Title, Revision Date, and Number	Definitive or Screening Data	Matrix and Analytical Group	Instrument	Variance to QSM	Modified for Project Work? (Y/N)
PT-MT-001, Rev. 12	Inductively Coupled Plasma-Atomic Emission Spectroscopy ICP for Methods: SW-846 6010B, 6010C, and EPA 200.7, Rev. 12, 03/01/2011	Definitive	Soil/Metals	ICP/AES	None	No

Note:

TestAmerica Pittsburgh is a DoD-ELAP-accredited laboratory. The certification is valid until March 2012.

11.0 Laboratory QC Samples Table
 (UFP-QAPP Manual Section 3.4 – Worksheet #28)

11.1 Matrix: Soil
Analytical Method/ SOP Reference: SW-846 6010B/ PT-MT-001, Rev. 12
Analytical Group: Lead

QC Sample	Frequency & Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	DQI	Measurement Performance Criteria
Method Blank	One per preparation batch (up to 20)	All analytes < ½ LOQ or 1/10 AL (whichever greater)	Re-prep and reanalyze blank and all samples processed with the non-conforming blank.	Laboratory Chemist	Accuracy/Bias - Contamination	All analytes < ½ LOQ or 1/10 AL (whichever greater)
Laboratory Control Sample (LCS)	One per preparation batch (up to 20)	%R: 80–120	Re-prep and reanalyze LCS and all samples processed with the non-conforming LCS.	Laboratory Chemist	Accuracy/Bias	%R: 80–120
MS/MSD	One per preparation batch (up to 20)	%R: 80-120 RPD: 20%	If result is indicative of matrix interference, then discuss in case narrative. Otherwise check for possible source of error and re-prepare/ reanalyze the sample.	Laboratory Chemist	Accuracy/Bias – Interferences; Precision	%R: 80-120 RPD: 20%
Dilution Test	One per preparation batch (up to 20)	1:5 dilution must agree within ± 10% of the original determination	Perform post-digestion spike addition.	Laboratory Chemist	Accuracy/Bias	Within ± 10% of the original determination
Post-digestion Spike (PDS)	After dilution test failure	%R: 75-125	Run all associated samples in batch by method standard additions (MSA)	Laboratory Chemist	Accuracy/Bias	%R: 75-125

12.0 Data Verification and Validation (Steps I and IIa/IIb) Process Table

(UFP-QAPP Manual Sections 5.2.1, 5.2.2, Figure 37, and Table 9 – Worksheets #34, 35, 36)

Data Review Input	Description	Responsible for Verification (name, organization)	Internal/ External
Field logbook	Field logbooks will be reviewed and placed in the project file upon project completion.	Field Sampling Personnel (SES-TECH) QCM (SES-TECH)	Internal
Chain-of-custody forms	Chain-of-custody forms will be reviewed upon their completion and verified for completeness. A copy of the chain-of-custody will be retained in the project file, and the original and remaining copies will be taped inside the container for shipment.	Field Sampling Personnel (SES-TECH)	Internal
Sample logins	Sample login information will be reviewed and verified for completeness in accordance with the chain-of-custody forms.	Project Chemist (SES-TECH) Laboratory Project Manager (TestAmerica Pittsburgh)	Internal External
Preliminary data prior to release	Verify analyses requested on the chain-of-custody forms were performed and note any deviations. Verify holding times and QC samples met performance criteria and that any deviations were documented. Determine that QLs were achieved as outlined in the SAP. Evaluate QC data against performance criteria in the SAP.	Project Chemist (SES-TECH) Laboratory Project Manager (TestAmerica Pittsburgh)	Internal External
Laboratory data packages	All laboratory data packages will be verified by the laboratory performing the work for completeness and technical accuracy prior to submittal. Data packages will then be reviewed by the Project Chemist for completeness.	Project Chemist (SES-TECH) Laboratory Project Manager (TestAmerica Pittsburgh)	Internal External
Field and electronic data	One hundred percent of manual entries will be reviewed against the hard copy information, and 10 percent of electronic uploads will be checked against the hard copy.	Project Chemist (SES-TECH) Laboratory Project Manager (TestAmerica Pittsburgh)	Internal External
Communication between laboratory and SES-TECH	Establish that required communication procedures were followed by field or laboratory personnel.	Program QCM (SES-TECH)	Internal

Data Review Input	Description	Responsible for Verification (name, organization)	Internal/ External
Sampling Methods and Procedures	Establish that the required sampling methods were used and that any deviations were noted. Verify that the sampling procedures and field measurements met performance criteria and that any deviations were documented.	P... QCM (SES-TECH)	Internal
Data Qualifiers	Verify that the laboratory data qualifiers were defined in the laboratory data package and applied as specified.	Analyst-primary, supervisor or peer-secondary (TestAmerica Pittsburgh) Project Chemist (SES-TECH)	External
Sampling Plan	Determine whether the sampling plan was executed and the type, number, location, etc. of field samples were collected and analyzed as specified in the SAP.	Project Chemist (SES-TECH)	Internal
Sampling Procedures	Evaluate whether sampling procedures were followed with respect to equipment and proper sampling support (e.g., techniques, equipment, decontamination, volume, temperature, preservative).	Project Chemist (SES-TECH)	Internal
Metals Analysis/Soil	Assess that laboratory procedures were in accordance with TestAmerica SOP " <i>Inductively Coupled Plasma-Atomic Emission Spectroscopy ICP for Methods: SW-846 6010B, 6010C, and EPA 200.7, Rev. 12, 03/01/2011;</i> " and DoD QSM.	Project Chemist (SES-TECH)	Internal

REFERENCES AND INFORMATION SOURCES

CH2MHill, May 2011. Engineering Evaluation/Cost Analysis (EE/CA) for a Non-Time-Critical Removal Action (NTCRA) for the Oceana Salvage Yard Access Road and Burial Unit.

Test America Pittsburgh, 2011. Inductively Coupled Plasma-Atomic Emission Spectroscopy ICP for Methods: SW-846 6010B, 6010C, and EPA 200.7, Rev. 12, 03/01/2011.

United States Department of Defense. 2010. Quality Systems Manual for Environmental Laboratories. Version 4.2. October.

United States Environmental Protection Agency. 2002. EPA Guidance for Quality Assurance Project Plans (QAPPs), EPA QA/G-5.

USEPA/DoD. 2005. Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPPs). March 2005. USEPA: EPA-505-B-04-900A; DoD: DTIC ADA 427785.

USEPA, 2007. Draft Administrative Settlement and Order on Consent for Removal Response Action Order.

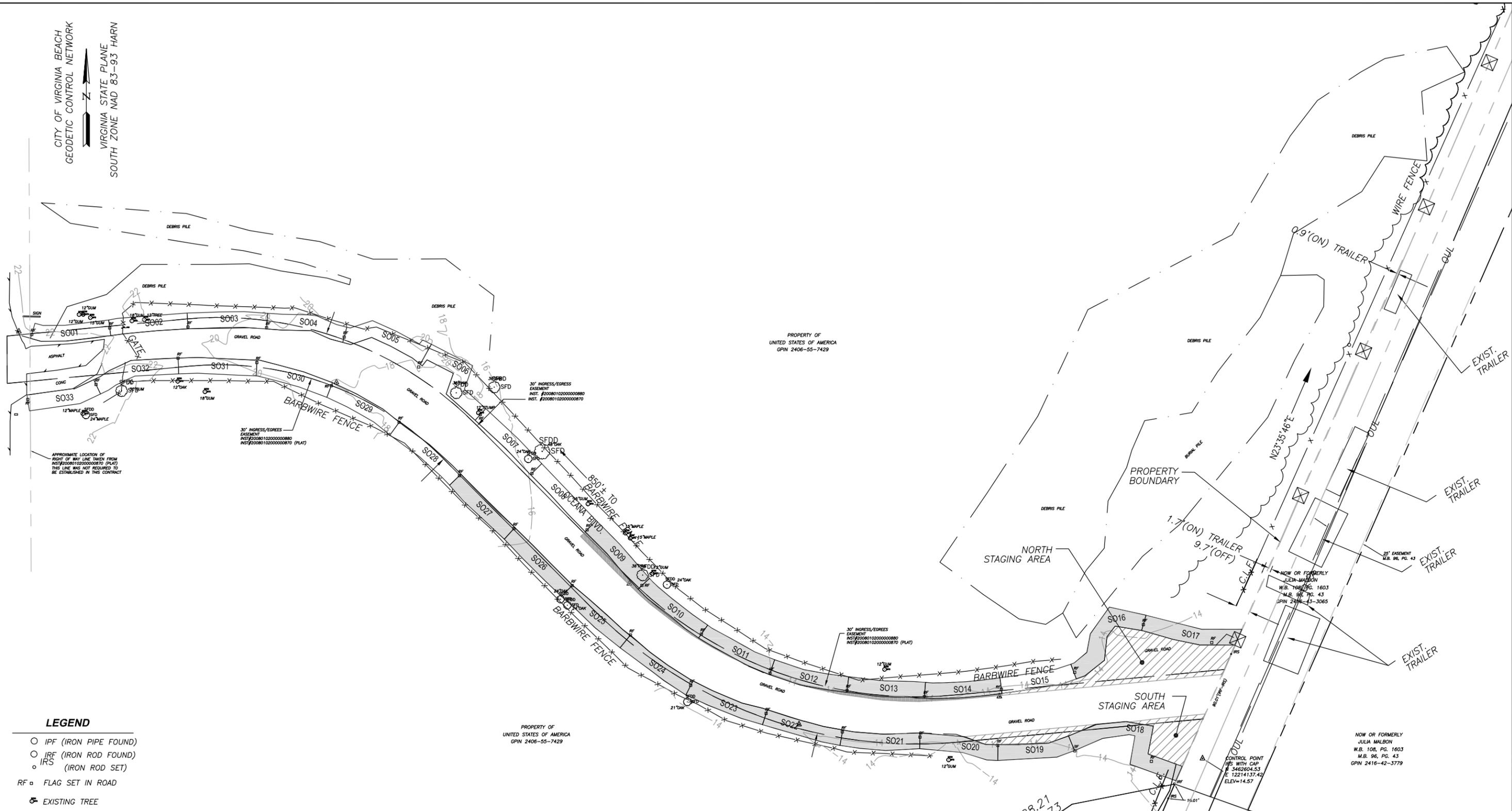
FIGURES

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CITY OF VIRGINIA BEACH
 GEODETIC CONTROL NETWORK
 VIRGINIA STATE PLANE
 SOUTH ZONE NAD 83-93 HARN

OCEANA BOULEVARD
 VARIABLE WIDTH R/W



LEGEND

- IPF (IRON PIPE FOUND)
- IRF (IRON ROD FOUND)
- IRS (IRON ROD SET)
- RF □ FLAG SET IN ROAD
- ⊕ EXISTING TREE
- TELEPHONE PEDESTAL
- ▨ PROPOSED EXCAVATION GRID
- ▨ STAGING AREA
- ▨ GRID CELL EXTENDED TO MATCH NEW ROAD
- SO19 EXCAVATION CELL I.D.
- ⊗ TRANSMISSION LINE POLE

NOTES:

1. SURVEY PERFORMED BY MICHAEL SURVEYING & MAPPING P.C., 735 THIMBLE SHOALS BLVD., SUITE 130, NEWPORT NEWS, VA 23606.
2. HORIZONTAL COORDINATE INFORMATION IS BASED ON CITY OF VIRGINIA BEACH GEODETIC CONTROL NETWORK, VIRGINIA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE NAD 83-93 HARN.
3. THIS PLAT IS BASED ON A CURRENT FIELD BOUNDARY SURVEY OF A PORTION OF PROPERTY LINE SHOWN.



NAVFAC MID-ATLANTIC
 Hampton Roads RAO LTM EMAC
 NAS Oceana, Virginia Beach, VA
 Oceana Salvage Access Road
 Removal Action & Asphalt Cap

Figure 2
 Site Layout Map

SES-TECH Atlantic

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ATTACHMENT 1

LABORATORY ACCREDITATION DOCUMENTATION

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CERTIFICATE OF ACCREDITATION

ANSI-ASQ National Accreditation Board/AClass
500 Montgomery Street, Suite 625, Alexandria, VA 22314, 877-344-3044

This is to certify that

TestAmerica - Pittsburgh
301 Alpha Drive
Pittsburgh, PA 15238

has been assessed by AClass
and meets the requirements of

DoD-ELAP

while demonstrating technical competence in the field(s) of

TESTING

Refer to the accompanying Scope(s) of Accreditation for information regarding the types of tests to which this accreditation applies.

ADE-1442

Certificate Number

AClass Approval





SCOPE OF DoD-ELAP ACCREDITATION

TestAmerica - Pittsburgh

301 Alpha Drive, Pittsburgh PA 15238
 Nasreen K. DeRubeis Phone: 412-963-7058

TESTING

Valid to: March 12, 2012

Certificate Number: ADE - 1442

I. Environmental

MATRIX	SPECIFIC TEST or ANALYTE GROUP	SPECIFICATION OR STANDARD METHOD (all EPA unless specified)	* KEY EQUIPMENT OR TECHNOLOGY USED
Water and Solids	Metals	6010B / C	ICP-AES
Water and Solids	Metals	6020 / 6020A	ICP-MS
Solids	Mercury	7471A/B	CVAA
Water	Mercury	7470A	CVAA
Water and Solids	Hexavalent Chromium with Alkaline Digestion	7196A	Spectrophotometer
Solids	Cyanide Extraction from Solids	9013	
Water	Total Cyanide	9012A / B 9010B / C	
Water and Solids	Anions	9056A	IC
Solids	Hexane Extractable Material, HEM (Oil and Grease)	9071B	Gravimetric
Water	Hexane Extractable Material	9070A 1664A	Gravimetric
Water / Solids	Organochlorine Pesticides	8081A / B	GC
Water / Solids	Organo-Phosphorus Compounds	8141A / B	GC



MATRIX	SPECIFIC TEST or ANALYTE GROUP	SPECIFICATION OR STANDARD METHOD (all EPA unless specified)	* KEY EQUIPMENT OR TECHNOLOGY USED
Water, Solids, and Oil	PCBs	8082 / 8082A	GC
Water and Solids	Chlorinated Herbicides	8151A	GC
Water and Solids	Volatiles	8260B	GC/MS
Water and Solids	Semi-Volatiles	8270C / D	GC/MS
Water	Total Organic Carbon	9060/9060A	TOC Analyzer
Water	EDB and DBCP	8011	GC
Water and Solids	PAHs	8310	HPLC
Solids	Total Organic Carbon	Lloyd Kahn	TOC Analyzer
Water and Solids	Sulfide	9030B / 9034	Titration
Water	pH	9040B / C	pH Meter
Solids	pH	9045C / D	pH Meter
Water-Organic Liquids	Flashpoint	1020B / ASTM- D3278-96	Setaflash closed tester
Water –Organic Liquids	Flashpoint	1010A / ASTM- D93-08	Pensky-Martens Closed Flash Tester.
Solids	Percent Moisture	SM 2540G	Balance
Water	Acid Digestion	3005A	FLAA / ICP
Water	Acid Digestion	3010A	FLAA / ICP
Solids	Acid Digestion	3050B	
Solids	Alkaline Digestion	3060A	
Water	Purge-and-Trap	5030B	
Solids	Closed-system Purge-and-Trap	5035	
Solids	Waste Dilution	3580A / 3585	

MATRIX	SPECIFIC TEST or ANALYTE GROUP	SPECIFICATION OR STANDARD METHOD (all EPA unless specified)	* KEY EQUIPMENT OR TECHNOLOGY USED
Solids	Automated Soxhlet Extraction	3541	
Water	Liquid-Liquid Extraction	3510C	
Water	Continuous Liquid-Liquid Extraction	3520C	
Solids	Ultrasonic Extraction	3550C	
Water and Solids	Sulfur Cleanup	3660B	
Water and Solids	Gel Permeation Cleanup	3640A	
Water and Solids	TCLP Toxicity Leaching	1311	
Water and Solids	Chromium Speciation	6800	

Notes:

1. * = As Applicable
2. This scope is part of and must be included with the Certificate of Accreditation No. ADE-1442



Vice President



Accredited Analytes/Methods (by matrix)

TestAmerica - Pittsburgh

Pittsburg, PA

NELAC Code	Analyte	Matrix							
		Aqueous				Solid			
	Trace Metals								
1000	Aluminum	6010B/C	6020/A			6010B/C	6020A		
1005	Antimony	6010B/C	6020/A			6010B/C	6020A		
1010	Arsenic	6010B/C	6020/A			6010B/C	6020A		
1015	Barium	6010B/C	6020/A			6010B/C	6020A		
1020	Beryllium	6010B/C	6020/A			6010B/C	6020A		
1025	Boron	6010B/C	6020/A			6010B/C	6020A		
1030	Cadmium	6010B/C	6020/A			6010B/C	6020A		
1035	Calcium	6010B/C	6020/A			6010B/C	6020A		
1040	Chromium, total	6010B/C	6020/A			6010B/C	6020A		
1045	Chromium VI			7196A				7196A	
---	Chromium Speciation			6800				6800	
1050	Cobalt	6010B/C	6020/A			6010B/C	6020A		
1055	Copper	6010B/C	6020/A			6010B/C	6020A		
1070	Iron	6010B/C	6020/A			6010B/C	6020A		
1075	Lead	6010B/C	6020/A			6010B/C	6020A		
1085	Magnesium	6010B/C	6020/A			6010B/C	6020A		
1090	Manganese	6010B/C	6020/A			6010B/C	6020A		
1095	Mercury			7470A				7471A/B	
1100	Molybdenum	6010B/C	6020/A			6010B/C	6020A		
1105	Nickel	6010B/C	6020/A			6010B/C	6020A		
1125	Potassium	6010B/C	6020/A			6010B/C	6020A		
1140	Selenium	6010B/C	6020/A			6010B/C	6020A		
1990	Silicon	6010B/C	6020/A			6010B/C	6020A		
1462	Silica	6010B/C	6020/A			6010B/C	6020A		
1150	Silver	6010B/C	6020/A			6010B/C	6020A		
1155	Sodium	6010B/C	6020/A			6010B/C	6020A		
1165	Strontium	6010B/C	6020/A			6010B/C	6020A		
1165	Thallium	6010B/C	6020/A			6010B/C	6020A		
1175	Tin	6010B/C	6020/A			6010B/C	6020A		
1180	Titanium	6010B/C	6020/A			6010B/C	6020A		
1185	Vanadium	6010B/C	6020/A			6010B/C	6020A		
1190	Zinc	6010B/C	6020/A			6010B/C	6020A		
	Misc Analytes								
1900	pH	9040C	9040B			9045D	9045C		
1645	Total Cyanide	9012A/B	9010B/C			9012A/B	9013		
2040	Total Organic Carbon	9060/A				Lloyd Kahn			
2005	Sulfide	9030B/9034				9030B/9034			
---	Flashpoint	1020B	ASTM D3278-96	1010A	ASTM D93-08	1020B	ASTM D3278-96	1010A	ASTM D93-08
3850	Percent Moisture					SM 2540G			
1540	Bromide	9056A				9056A			
1575	Chloride	9056A				9056A			
1730	Fluoride	9056A				9056A			
1810	Nitrate as N	9056A				9056A			
1840	Nitrite as N	9056A				9056A			
1820	Nitrate + Nitrite as N	9056A				9056A			
1870	ortho-phosphorus	9056A				9056A			
2000	Sulfate	9056A				9056A			
	Petroleum Hydrocarbons								
1935	Oil & Grease	1664A	9070A			9071B			
1860	Hexane Extractable Material (HEM)	1664A	9070A			9071B			
	VOCs								
4315	Acetone	8260B				8260B			
4375	Benzene	8260B				8260B			
4385	Bromobenzene	8260B				8260B			
4390	Bromochloromethane	8260B				8260B			
4395	Bromodichloromethane	8260B				8260B			
4400	Bromoform	8260B				8260B			
4950	Bromomethane	8260B				8260B			
4410	2-Butanone (MEK)	8260B				8260B			
4435	n-Butylbenzene	8260B				8260B			
4440	sec-Butylbenzene	8260B				8260B			
4445	tert-Butylbenzene	8260B				8260B			
4450	Carbon disulfide	8260B				8260B			
4455	Carbon Tetrachloride	8260B				8260B			
4475	Chlorobenzene	8260B				8260B			
4575	Chlorodibromomethane	8260B				8260B			
4485	Chloroethane	8260B				8260B			
4505	Chloroform	8260B				8260B			
4960	Chloromethane	8260B				8260B			
4535	2-Chlorotoluene	8260B				8260B			
4540	4-Chlorotoluene	8260B				8260B			
4555	Cyclohexane	8260B				8260B			
4570	1,2-Dibromo-3-chloropropane (DBCP)	8260B	8011			8260B			
4585	1,2-Dibromoethane (EDB)	8260B	8011			8260B			
4595	Dibromomethane	8260B				8260B			

Accredited Analytes/Methods (by matrix)

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NELAC Code	Analyte	Matrix							
		Aqueous			Solid				
4610	1,2-Dichlorobenzene	8260B				8260B			
4615	1,3-Dichlorobenzene	8260B				8260B			
4620	1,4-Dichlorobenzene	8260B				8260B			
4625	Dichlorodifluoromethane	8260B				8260B			
4630	1,1-Dichloroethane	8260B				8260B			
4635	1,2-Dichloroethane	8260B				8260B			
4640	1,1-Dichloroethene	8260B				8260B			
4645	cis-1,2-Dichloroethene	8260B				8260B			
---	Dichloroethene (total)	8260B				8260B			
4700	trans-1,2-Dichloroethene	8260B				8260B			
4975	Dichloromethane (Methylene Chloride)	8260B				8260B			
4655	1,2-Dichloropropane	8260B				8260B			
4660	1,3-Dichloropropane	8260B				8260B			
4665	2,2-Dichloropropane	8260B				8260B			
4670	1,1-Dichloropropene	8260B				8260B			
4680	cis-1,3-Dichloropropene	8260B				8260B			
4685	trans-1,3-Dichloropropene	8260B				8260B			
4765	Ethylbenzene	8260B				8260B			
4835	Hexachlorobutadiene	8260B				8260B			
4860	2-Hexanone	8260B				8260B			
4900	Isopropylbenzene	8260B				8260B			
4910	4-Isopropyltoluene	8260B				8260B			
4940	Methyl Acetate	8260B				8260B			
4965	Methylcyclohexane	8260B				8260B			
4995	4-Methyl-2-pentanone (MIBK)	8260B				8260B			
5000	Methyl-tert-butylether (MTBE)	8260B				8260B			
5005	Naphthalene	8260B				8260B			
5090	n-Propylbenzene	8260B				8260B			
5100	Styrene	8260B				8260B			
5105	1,1,1,2-Tetrachloroethane	8260B				8260B			
5110	1,1,2,2-Tetrachloroethane	8260B				8260B			
5115	Tetrachloroethene	8260B				8260B			
5140	Toluene	8260B				8260B			
5150	1,2,3-Trichlorobenzene	8260B				8260B			
5155	1,2,4-Trichlorobenzene	8260B				8260B			
5160	1,1,1-Trichloroethane	8260B				8260B			
5165	1,1,2-Trichloroethane	8260B				8260B			
5170	Trichloroethene	8260B				8260B			
5175	Trichlorofluoromethane (Freon 11)	8260B				8260B			
5180	1,2,3-Trichloropropane	8260B				8260B			
---	1,1,2-Trichloro-1,2,2-trifluoroethane	8260B				8260B			
5210	1,2,4-Trimethylbenzene	8260B				8260B			
5215	1,3,5-Trimethylbenzene	8260B				8260B			
5235	Vinyl chloride	8260B				8260B			
5250	o-Xylene	8260B				8260B			
5240	m+p-Xylene	8260B				8260B			
5260	Xylenes, total	8260B				8260B			
	SVOCs - Base/Neutrals/Acids								
5500	Acenaphthene	8270C/D				8270C/D			
5505	Acenaphthylene	8270C/D				8270C/D			
5510	Acetophenone	8270C/D				8270C/D			
5545	Aniline	8270C/D				8270C/D			
5555	Anthracene	8270C/D				8270C/D			
7065	Atrazine	8270C/D				8270C/D			
5570	Benzaldehyde	8270C/D				8270C/D			
5575	Benzo(a)anthracene	8270C/D				8270C/D			
5585	Benzo(b)fluoranthene	8270C/D				8270C/D			
5600	Benzo(k)fluoranthene	8270C/D				8270C/D			
5590	Benzo(g,h,i)perylene	8270C/D				8270C/D			
5580	Benzo(a)pyrene	8270C/D				8270C/D			
5595	Benzidine	8270C/D				8270C/D			
5610	Benzoic acid	8270C/D				8270C/D			
5630	Benzyl alcohol	8270C/D				8270C/D			
5640	1,1'-Biphenyl	8270C/D				8270C/D			
5660	4-Bromophenyl-phenylether	8270C/D				8270C/D			
5670	Butyl benzyl phthalate	8270C/D				8270C/D			
7180	Caprolactam	8270C/D				8270C/D			
5680	Carbazole	8270C/D				8270C/D			
5745	4-Chloroaniline	8270C/D				8270C/D			
5760	bis(2-Chloroethoxy)methane	8270C/D				8270C/D			
5765	bis(2-Chloroethyl)ether	8270C/D				8270C/D			
5780	bis(2-Chloroisopropyl) ether	8270C/D				8270C/D			
5700	4-Chloro-3-methylphenol	8270C/D				8270C/D			
5795	2-Chloronaphthalene	8270C/D				8270C/D			
5825	4-Chlorophenyl-phenylether	8270C/D				8270C/D			
5800	2-Chlorophenol	8270C/D				8270C/D			
5855	Chrysene	8270C/D				8270C/D			
5895	Dibenzo(a,h)anthracene	8270C/D				8270C/D			
5905	Dibenzofuran	8270C/D				8270C/D			
5925	Di-n-butylphthalate	8270C/D				8270C/D			

Accredited Analytes/Methods (by matrix)

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NELAC Code	Analyte	Matrix							
		Aqueous			Solid				
4610	1,2-Dichlorobenzene	8270C/D				8270C/D			
4615	1,3-Dichlorobenzene	8270C/D				8270C/D			
4620	1,4-Dichlorobenzene	8270C/D				8270C/D			
5945	3,3'-Dichlorobenzidine	8270C/D				8270C/D			
6000	2,4-Dichlorophenol	8270C/D				8270C/D			
6005	2,6-Dichlorophenol	8270C/D				8270C/D			
6070	Diethyl phthalate	8270C/D				8270C/D			
6130	2,4-Dimethylphenol	8270C/D				8270C/D			
6135	Dimethylphthalate	8270C/D				8270C/D			
6175	2,4-Dinitrophenol	8270C/D				8270C/D			
6185	2,4-Dinitrotoluene	8270C/D				8270C/D			
6190	2,6-Dinitrotoluene	8270C/D				8270C/D			
6200	Di-n-octylphthalate	8270C/D				8270C/D			
4740	p-Dioxane	8270C/D				8270C/D			
---	1,2-Diphenyl hydrazine	8270C/D				8270C/D			
6255	bis(2-ethylhexyl) phthalate	8270C/D				8270C/D			
6265	Fluoranthene	8270C/D				8270C/D			
6270	Fluorene	8270C/D				8270C/D			
6275	Hexachlorobenzene	8270C/D				8270C/D			
4835	Hexachlorobutadiene	8270C/D				8270C/D			
6285	Hexachlorocyclopentadiene	8270C/D				8270C/D			
4840	Hexachloroethane	8270C/D				8270C/D			
6315	Indeno(1,2,3, cd)pyrene	8270C/D				8270C/D			
6320	Isophorone	8270C/D				8270C/D			
6360	2-Methyl-4,6-Dinitrophenol	8270C/D				8270C/D			
6380	1-Methylnaphthalene	8270C/D				8270C/D			
6385	2-Methylnaphthalene	8270C/D				8270C/D			
6400	2-Methylphenol	8270C/D				8270C/D			
6410	4-Methylphenol (and/or 3-Methylphenol)	8270C/D				8270C/D			
5005	Naphthalene	8270C/D				8270C/D			
6460	2-Nitroaniline	8270C/D				8270C/D			
6465	3-Nitroaniline	8270C/D				8270C/D			
6470	4-Nitroaniline	8270C/D				8270C/D			
5015	Nitrobenzene	8270C/D				8270C/D			
6490	2-Nitrophenol	8270C/D				8270C/D			
6500	4-Nitrophenol	8270C/D				8270C/D			
6530	N-Nitrosodimethylamine	8270C/D				8270C/D			
6535	N-Nitrosodiphenylamine	8270C/D				8270C/D			
6545	N-Nitroso-di-n-propylamine	8270C/D				8270C/D			
6565	N-Nitrosopyrrolidine	8270C/D				8270C/D			
4659	2,2-Oxybis(1-chloropropane)	8270C/D				8270C/D			
6605	Pentachlorophenol	8270C/D				8270C/D			
6615	Phenanthrene	8270C/D				8270C/D			
6625	Phenol	8270C/D				8270C/D			
6665	Pyrene	8270C/D				8270C/D			
5095	Pyridine	8270C/D				8270C/D			
6735	2,3,4,6-Tetrachlorophenol	8270C/D				8270C/D			
	2,3,5,6-Tetrachlorophenol	8270C/D				8270C/D			
5155	1,2,4-Trichlorobenzene	8270C/D				8270C/D			
6835	2,4,5-Trichlorophenol	8270C/D				8270C/D			
6840	2,4,6-Trichlorophenol	8270C/D				8270C/D			
	Pesticides								
7025	Aldrin	8081B	8081A			8081B	8081A		
7110	alpha-BHC	8081B	8081A			8081B	8081A		
7115	beta-BHC	8081B	8081A			8081B	8081A		
7105	delta-BHC	8081B	8081A			8081B	8081A		
7120	gamma-BHC (Lindane)	8081B	8081A			8081B	8081A		
7240	alpha-Chlordane	8081B	8081A			8081B	8081A		
7245	gamma-Chlordane	8081B	8081A			8081B	8081A		
7250	Chlordane (total)	8081B	8081A			8081B	8081A		
7355	DDD (4,4)	8081B	8081A			8081B	8081A		
7360	DDE (4,4)	8081B	8081A			8081B	8081A		
7365	DDT (4,4)	8081B	8081A			8081B	8081A		
7470	Dieldrin	8081B	8081A			8081B	8081A		
7510	Endosulfan I	8081B	8081A			8081B	8081A		
7515	Endosulfan II	8081B	8081A			8081B	8081A		
7520	Endosulfan sulfate	8081B	8081A			8081B	8081A		
7540	Endrin	8081B	8081A			8081B	8081A		
7530	Endrin aldehyde	8081B	8081A			8081B	8081A		
7535	Endrin ketone	8081B	8081A			8081B	8081A		
7685	Heptachlor	8081B	8081A			8081B	8081A		
7690	Heptachlor Epoxide (beta)	8081B	8081A			8081B	8081A		
7810	Methoxychlor	8081B	8081A			8081B	8081A		
8250	Toxaphene (total)	8081B	8081A			8081B	8081A		
	Organophosphorus Pesticides								
7075	Azinphos-methyl (Guthion)	8141A	8141B			8141A	8141B		
7125	Bolstar	8141A	8141B			8141A	8141B		
7300	Chlorpyrifos	8141A	8141B			8141A	8141B		
7315	Coumaphos	8141A	8141B			8141A	8141B		

Accredited Analytes/Methods (by matrix)

TestAmerica - Pittsburgh

Pittsburg, PA

NELAC Code	Analyte	Matrix							
		Aqueous				Solid			
7475	Dimethoate	8141A	8141B			8141A	8141B		
7390	Demeton O & S	8141A	8141B			8141A	8141B		
7410	Diazinon	8141A	8141B			8141A	8141B		
8610	Dichlorvos	8141A	8141B			8141A	8141B		
8625	Disulfoton	8141A	8141B			8141A	8141B		
7555	EPN	8141A	8141B			8141A	8141B		
7570	Ethoprop	8141A	8141B			8141A	8141B		
7600	Fensulfothion	8141A	8141B			8141A	8141B		
7605	Fenthion	8141A	8141B			8141A	8141B		
995	Famphur	8141A	8141B			8141A	8141B		
1132	Malathion	8141A	8141B			8141A	8141B		
7850	Mevinphos	8141A	8141B			8141A	8141B		
7955	Parathion, ethyl	8141A	8141B			8141A	8141B		
7825	Parathion, methyl	8141A	8141B			8141A	8141B		
7985	Phorate	8141A	8141B			8141A	8141B		
8110	Ronnel	8141A	8141B			8141A	8141B		
8200	Stirophos	8141A	8141B			8141A	8141B		
8155	Sulfotepp	8141A	8141B			8141A	8141B		
8290	O,O,O-Triethyl phosphorothioate	8141A	8141B			8141A	8141B		
8235	Thionazin	8141A	8141B			8141A	8141B		
8245	Tokuthion (Protothiofos)	8141A	8141B			8141A	8141B		
8275	Trichlorate	8141A	8141B			8141A	8141B		
	Herbicides								
8655	2,4,5-T	8151A				8151A			
8650	2,4,5-TP (Silvex)	8151A				8151A			
8545	2,4-D	8151A				8151A			
8560	2,4-DB	8151A				8151A			
8555	Dalapon	8151A				8151A			
8595	Dicamba	8151A				8151A			
8605	Dichloroprop (2,4-DP)	8151A				8151A			
8620	Dinoseb	8151A				8151A			
7775	MCPA	8151A				8151A			
7780	MCPP	8151A				8151A			
6605	Pentachlorophenol	8151A				8151A			
	PCBs								
8880	Aroclor 1016	8082A	8082			8082A	8082		
8885	Aroclor 1221	8082A	8082			8082A	8082		
8890	Aroclor 1232	8082A	8082			8082A	8082		
8895	Aroclor 1242	8082A	8082			8082A	8082		
8900	Aroclor 1248	8082A	8082			8082A	8082		
8905	Aroclor 1254	8082A	8082			8082A	8082		
8910	Aroclor 1260	8082A	8082			8082A	8082		
8912	Aroclor 1262	8082A	8082			8082A	8082		
8913	Aroclor 1268	8082A	8082			8082A	8082		
---	Aroclor 1016/1260	8082A	8082			8082A	8082		
	PAHs								
5500	Acenaphthene	8310				8310			
5505	Acenaphthylene	8310				8310			
5555	Anthracene	8310				8310			
5575	Benzo(a)anthracene	8310				8310			
5585	Benzo(b)fluoranthene	8310				8310			
5600	Benzo(k)fluoranthene	8310				8310			
5590	Benzo(g,h,i)perylene	8310				8310			
5580	Benzo(a)pyrene	8310				8310			
5855	Chrysene	8310				8310			
5895	Dibenz(a,h)anthracene	8310				8310			
6265	Fluoranthene	8310				8310			
6270	Fluorene	8310				8310			
6315	Indeno(1,2,3-cd)pyrene	8310				8310			
5005	Naphthalene	8310				8310			
6615	Phenanthrene	8310				8310			
6665	Pyrene	8310				8310			