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TECHNICAL MEMORANDUM OCEANA SALVAGE YARD BURIAL UNIT AND DEBRIS PILE
SAMPLING PLAN NAS OCEANA VA
04/01/2011
CH2M HILL

Oceana Salvage Yard Burial Unit and Debris Pile Sampling Plan, Naval Air Station Oceana, Virginia Beach, Virginia

PREPARED FOR: NAVFAC Mid-Atlantic and Virginia Department of Environmental Quality

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DATE: April 2011

Background

The Oceana Salvage Yard is located east of Naval Air Station (NAS) Oceana and is privately owned (**Figure 1**). Access to the Salvage Yard is provided by a road created between 1955 and 1963 which runs from Oceana Boulevard through Navy property to the Oceana Salvage Yard Property. The road will be referred to as the "Access Road" in the remainder of this plan. During operation of the salvage yard, waste has been disposed on the Navy property to the north and south of the Access Road in numerous debris piles. Additionally, waste was buried in a portion of the Navy property just west of the salvage yard referred to as the "Burial Unit."

Use of the Salvage Yard began in the 1960s and has been continuous since that time. From 1993 through 1995, the Salvage Yard property owners purportedly engaged in a cleanup of the Burial Unit (**Figure 2**). However, the owners did not create a closure plan during the purported cleanup period.

The Oceana Salvage Yard was first investigated as part of an Environmental Survey in 1997 (ABB Environmental Services, 1997). During this investigation, several soil samples were collected along the Access Road and from the debris piles adjacent to the Access Road and Oceana Salvage Road property. Thirty-four shallow soil samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), and inorganics. Lead was detected in soil from the investigated areas 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. Additionally, battery casing and other waste were noted in the location of the Burial Unit after the purported cleanup.

In January 2005, CH2M HILL completed a direct push investigation to verify whether the Access Road was constructed on crushed car batteries (CH2M HILL, 2005). Direct push samples were collected at 25 locations along the roadway to a depth of 4 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 ft and 3 ft

bgs. The average depth to the bottom of the battery casings was approximately 2.5 ft bgs, however pieces of battery casings were observed to a depth of 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. Twelve (seventeen total samples screened) of the samples exceeded the field test kit 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.

In 2007, the USEPA issued a Draft Consent Order for the Oceana Salvage Yard Site, including the Access Road and Burial Unit. The Consent Order was never finalized, and contamination on the Oceana Salvage property was remediated in accordance with a previous version of the Consent Order (USEPA, 2002). This previous version was finalized, but did not include the Access Road, Burial Unit or any other contamination on the Navy portion of the property. However, consistent with the decision of the NAS Oceana Tier I Partnering Team (July 2010), it was agreed that the Navy portion of the site could be remediated in accordance with the 2007 Draft Consent Order. Prior to making this decision, the USEPA remedial project manager (RPM) consulted the Resource, Compensation, and Recovery Act (RCRA) RPM for Oceana Salvage Yard. The requirements of the 2007 Draft Consent Order for cleanup of the Access Road, Access Road shoulders and Burial Unit are as follows (note that only requirement 3 is covered by this plan):

1. Delineation of the physical extent of lead contamination along the shoulders of the Access Road, defined as strips of land extending 10 feet from the edges of either side of the Access Road to a maximum depth of 2 ft bgs.
2. Capping of the entire right of way of the Access Road. Soils or other materials having concentrations of lead greater than (>) 800 mg/kg in the Access Road shoulders shall be excavated to a depth of 2 feet and the excavations capped and backfilled with clean fill. The cap should have a top layer of gravel or comparable material, an orange warning barrier, and clean fill to a minimum thickness of 6 inches. Caps installed in the shoulders of the Access Road must cover all materials having concentrations of lead of 800 mg/kg or greater at depths of 2 feet or greater. Clean fill shall consist of material consisting of less than 800 mg/kg of lead and shall not contain any other hazardous substance at levels allowable under federal and state law.
3. Delineation of the physical extent of lead contamination within the boundary of the Burial Unit.
4. Excavation of all soils in the Burial Unit with lead concentrations greater than 800 mg/kg, to a maximum depth of 2 ft bgs, placement of an orange warning barrier over remaining soils with concentrations of greater than 800 mg/kg of lead, and backfilling with clean fill to the original ground surface elevation.

In October 2010, CH2M HILL completed a Confirmation Sampling event to meet the first requirement of the Draft Consent order as described above (CH2M HILL, 2010). This sampling was performed to aid in the cost estimation and planning for the remedy implementation for the Access Road and shoulders (second requirement of the Draft Consent Order, as described above). During the sampling event, each side (north and south) of the Access Road was divided into approximate 50-ft by 10-ft grids. Three-point composite

samples were collected to a maximum depth of 2 ft (ideal interval 0 ft to 2 ft bgs) from each grid cell and analyzed for lead using method SW846 6010B. The sampling results indicate that soil samples collected from 18 of the 33 grid cells exceeded the project threshold value of 800 mg/kg lead and will require excavation in accordance with the 2007 Draft Consent Order.

The sampling at the Burial Unit described in this Technical Memorandum Work Plan is intended to fulfill the third requirement listed above for the portion of the site within the Navy property boundary. The sampling results will be evaluated to aid in the cost estimating and planning for the remedy implementation in the Burial Unit.

This memorandum also addresses investigation of the debris piles at the site and the area along the property boundary. While not required by the 2007 Draft Consent Order, the Navy proposes to conduct these investigations to better evaluate the contamination present at the site in order to plan for a housekeeping effort to remove the debris piles.

Proposed Sampling Objectives

The objectives of the Burial Unit, debris pile, and property boundary investigations are:

- Adequately define areas within the Burial Unit with concentrations of lead greater than 800 mg/kg to a maximum depth of 2 feet bgs to determine what areas of the burial unit require action (removal/capping)
- Verify debris locations noted during previous investigations and identify additional debris locations at the site by GPS
- Document approximate dimensions and the type of surface debris observed at each of the debris piles at the site
- Determine whether lead or polychlorinated biphenyl (PCB) contamination is present in soils beneath the debris piles
- Survey and mark the property boundary between Oceana Salvage Yard and the Navy property
- Evaluate lead concentrations between the property boundary and the fence line if the existing fence line for the Oceana Salvage Yard lies within the Navy property

Laboratory Analysis

Samples collected during the Burial Unit, debris pile and property boundary sampling efforts will be analyzed for lead using method SW846 6010B. Additional samples collected during the investigation of the debris piles will be also be analyzed for PCBs using method SW846 8082. Sample results will be requested with a 28-day turnaround time.

Data Quality Objectives

The data quality objective (DQO) for lead is considered to be 800 mg/kg (cleanup goal established by 2007 Draft Consent Order). The DQO for PCBs is 50 mg/kg based on the Federal Resource Conservation and Recovery Act (RCRA) value for total PCBs.

Sample Design and Methods

A detailed approach for the field activities to be conducted during the investigation of the Burial Unit, debris piles, and property boundary are presented in the following sections.

Burial Unit Sampling

Prior to sample collection, the Burial Unit Area (approximately 275-ft by 50-ft) will be partitioned into 22 grids approximately 25-ft by-25 ft (**Figure 2**). Soil samples from five locations in each grid will be collected from 0 ft to 2 ft bgs using a stainless steel hand auger or comparable soil collection device. Sample locations will be marked using a Global Positioning System (GPS) prior to sample collection. Utilities will be marked by a third party locator prior to initiation of intrusive activities. The intent of sampling within the Burial Unit is to analyze the soil beneath surficial debris. If obstructions are encountered during augering/ digging, sample locations will be adjusted slightly and documented in the field book. The five subsurface soil samples from each grid will be composited and homogenized in a stainless steel bowl prior to sample collection. Pieces of debris or waste will be removed prior to placement in soil jars. Any soil remaining after the sample has been collected will be returned to the boreholes. Samples will be given identification numbers (IDs) SO36 through SO57 as shown on the proposed sampling grid on **Figure 2**. The sample ID format will be:

OSAL-SampleID-MMY

For example, a composite sample collected from the five locations in grid SO36 in March 2011 would receive the following ID:

OSAL-SO36-0311

The 22 composite samples will be placed in laboratory-prepared sample containers and packed on ice for shipment to an offsite lab for lead analysis (method SW846 6010B).

Due to the nature of the confirmation sampling, no quality check/quality assurance (QA/QC) of the field samples will be collected and the data will not be validated by a project chemist. The analytical data will not be uploaded to the Naval Installation Restoration Information Solution (NIRIS) database; however the data will be archived with the project files.

Preliminary Debris Pile Investigation

An initial evaluation of the known debris piles and any additional debris piles discovered during the evaluation will be performed by CH2M HILL personnel. When evaluating each debris pile, CH2M HILL personnel will document the approximate dimensions, take a photograph of the debris piles, and record the type and quantity of debris observed on the

ground surface at each debris pile. In addition, the location of each debris pile will be recorded using GPS equipment. In the event that the overhead canopy prevents the use of GPS equipment, the debris pile will be flagged, the location will be noted on a figure, and a surveyor licensed in the State of Virginia will survey the location as described in the section below.

The information collected during the evaluation will be reviewed by Navy and CH2M HILL personnel and soil samples will be collected from 10 locations selected based on areas most likely to be contaminated with lead (beneath battery fragments, etc.). One sample will also be collected for PCBs beneath cables observed at the site. Samples will be collected using a stainless steel hand auger or comparable soil collection device. If obstructions are encountered during augering/digging, sample locations will be adjusted slightly and documented in the field book. Utilities will be marked by a third party locator prior to initiation of intrusive activities. Once sampling is complete, the coordinates of each sampling location will be recorded using GPS equipment. Sample identification numbers (IDs) for the soil samples collected from beneath the debris piles will be SO58 through SO67 and the same sample ID format described above for the Burial Unit will be used.

The 10 debris pile soil samples will be placed in laboratory-prepared sample containers and packed on ice for shipment to the offsite lab for lead analysis (method SW846 6010B) or PCB analysis (method SW846 8260B), as appropriate based on the waste stream present in the debris pile.

No quality assurance/quality control (QA/QC) samples will be collected to support the debris pile sampling and the data will not be validated by a project chemist. The analytical data will not be uploaded to the NIRIS database, however the data will be archived with the project files.

Property Boundary Survey and Sampling

A surveyor licensed in the State of Virginia will locate and mark the property boundary between the Navy and Oceana Salvage Yard properties. All location information obtained by the surveyor during the planned field activities will be recorded in Virginia State Plane coordinates. Survey data will also be loaded into NIRIS for use during figure generation and future investigations.

It is anticipated that the fence currently present at the site is located several feet onto Navy property. If this is the case, the area between the fence and the actual property boundary will require sampling. The total estimated length of the property boundary extending from the northern side of the access road to the northern end of the active salvage yard is approximately 1,500 ft. If sampling is necessary, CH2M HILL personnel will measure and mark Navy side of the property boundary in sections approximately 100 ft in length. The first section will extend 100 ft south of the southern edge of the Access Road. The remaining sections will extend from the northern edge of the Access Road to approximately 100 feet north of the active salvage yard. The Access Road and shoulders have been sampled during previous investigations and will not be evaluated during the property boundary sampling.

Three soil samples from each of these sections will be collected from 0 to 2 ft bgs using a stainless steel hand auger or comparable soil collection device. Sample locations will be marked using GPS equipment prior to sample collection. Utilities will be marked by a third

party locator prior to initiation of intrusive activities. If obstructions are encountered during augering/digging, sample locations will be adjusted slightly. The three samples from each section will be composited and homogenized in a stainless steel bowl. Remaining soil and pieces of debris/waste will be returned to the boreholes. Sample identification numbers (IDs) for the boundary samples collected from the fence line will be SO68 through SO85 (assuming a total of 17 samples will be collected) and the same sample ID format described above for the Burial Unit will be used for sample identification.

The property boundary composite soil samples will be placed in laboratory-prepared sample containers and packed on ice for shipment to the offsite lab for lead analysis (method SW846 6010B).

Due to the nature of the soils characterization sampling, no quality check/quality assurance (QA/QC) of the field samples will be collected and the data will not be validated by a project chemist. The analytical data will not be uploaded to the NIRIS database, however the data will be archived with the project files.

Analytical Laboratory

The laboratory procured for sample analysis is:

Environmental Conservation Laboratories, Inc.
10775 Central Port Dr
Orlando, Florida 32824
407-826-5314(Laboratory)
407-850-6945 (Facsimile)
Project Manager: Ronnie Wambles
rwambles@encolabs.com

Environmental Conservation Laboratories, Inc (ENCO) is accredited by the Department of Defense (DoD) Environmental Laboratory Accreditation Program (ELAP) for all analyses associated with the sampling being performed during this investigation.

Decontamination

Stainless steel sampling equipment will be decontaminated following composite sampling in each section to minimize the potential for cross contamination. Equipment will be washed with a mixture of biodegradable Liquinox® detergent and water. Equipment will then be rinsed with distilled water, 10 percent methanol solution, and a final rinse with laboratory grade deionized (DI) water.

Investigation-derived Waste Management

Excess soil will be returned to bore holes at the site. Rinse water resulting from decontamination activities will be contained in 55-gallon drums for offsite disposal. No more than one 55-gallon drum may be stored onsite at a given time. The drum will be stored on the shoulder of the Access Road within a locked Satellite Accumulation Area plastic container provided by the Navy. Following the investigation, an investigation-derived

waste (IDW) management vendor will be contracted to sample and dispose of the waste assumed to be hazardous; no waste characterization will be conducted.

All personal protective equipment used (tyvek, respirator cartridges, nitrile gloves, etc) will be containerized within a steel drum and disposed of as hazardous with the decontamination water.

Documentation and Path Forward

Based on the discussion from the NAS Oceana July 7, 2010 partnering call, the team agreed remediation of the Access Road and Burial Unit should proceed in accordance with the 2007 Draft Consent Order. Additionally, VDEQ approval of the final remedy would be required. Results of this sampling and surveying efforts in this work plan will be documented in a technical memorandum to be distributed to the Navy and VDEQ. The removal action design for the Burial Unit will be based on the extent of soils exceeding the 800 mg/kg threshold criteria established in the 2007 Draft Consent Order. If sufficient delineation of the burial unit is achieved and the concentration of the composite samples collected from a given grid within the Burial Unit is greater than 800 mg/kg, then the 2007 Draft Consent Order requires at a minimum the following:

- Excavation to a depth of two ft
- Placement of an orange warning barrier at 2 ft bgs if lead concentrations in underlying soil are greater than 800 mg/kg
- Backfilling with clean fill to initial ground surface elevation

Consistent with the lead delineation approach in the 2007 Draft Consent Order, it is assumed that if lead concentrations in soils shallower than two ft bgs are less than 800 mg/kg in the Burial Unit, then concentrations at deeper depths are also less than 800 mg/kg and will not require excavation and cover. This assumption is based on the likely transport pathway of contaminants leaching from the Burial Unit through the shallow soils before reaching deeper soil.

If the lead concentration for the composite sample for a particular grid is less than 800 mg/kg, consistent with the Draft Consent Order, the soils will not require removal.

The 2007 Draft Consent Order does not require remediation of the debris piles or the area between the Navy property boundary and salvage yard fence line. However, the Navy will review the site investigation data collected from the debris piles and property line to determine if additional investigation or remediation is needed in these areas.

References

ABB Environmental Services, 1997. *Environmental Survey, Property Adjacent to Oceana Salvage Yard, Naval Air Station Oceana, Virginia Beach, Virginia.*

CH2M HILL, 2005. *Direct Push Investigation, Oceana Salvage Yard Access Road Sampling, Naval Air Station Oceana, Virginia Beach, Virginia.*

CH2M HILL, 2010. *Oceana Salvage Yard Access Road Confirmation Sampling, Naval Air Station Oceana, Virginia Beach, Virginia.*

United States Environmental Protection Agency (USEPA), 2002. Consent Order.

USEPA, 2007. Draft Consent Order.

Figures

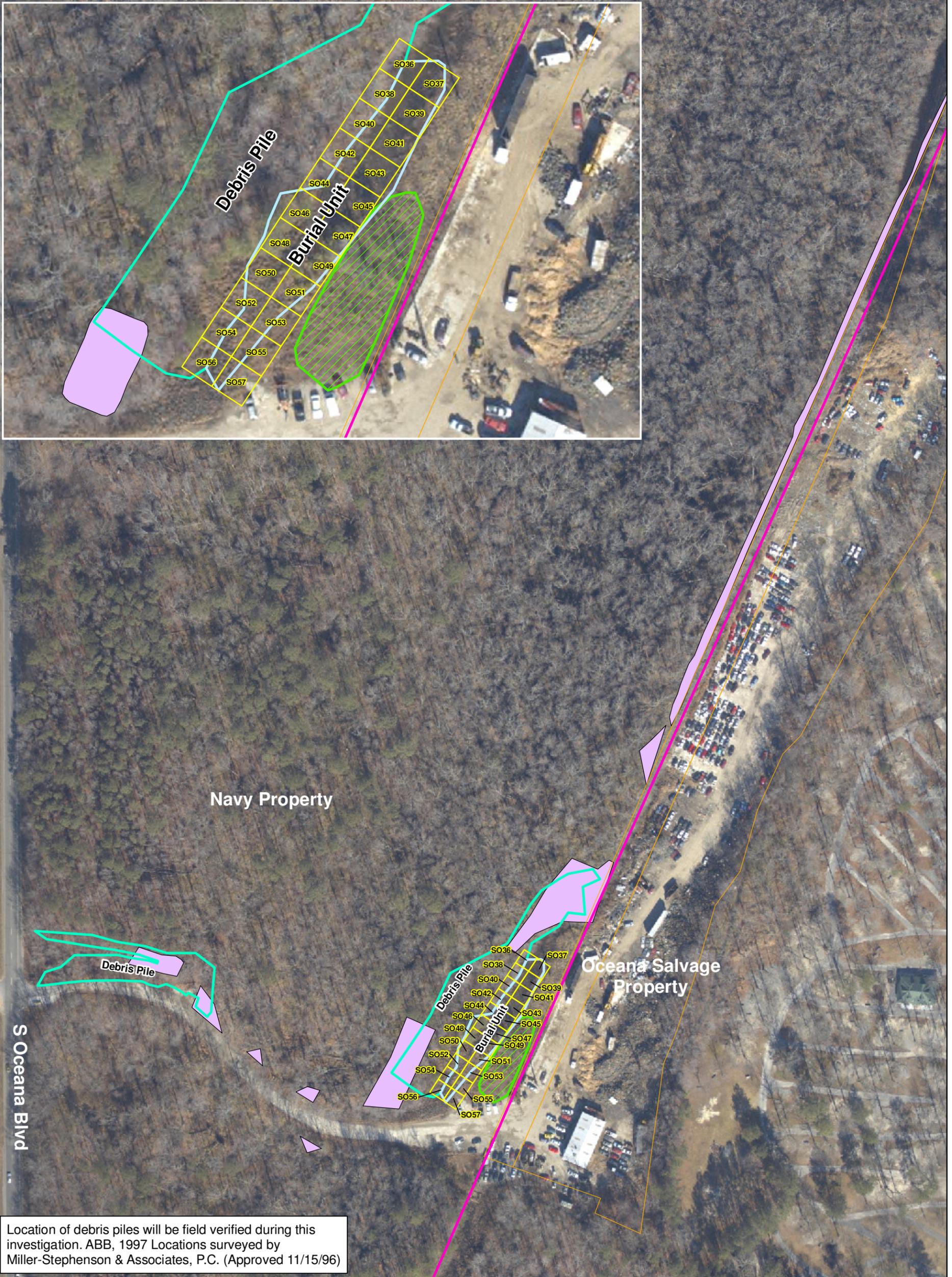


Legend

-  NAS Oceana Boundary
-  Extent of Work
-  Oceana Salvage Yard



Figure 1
Oceana Salvage Yard Location Map
NAS Oceana
Virginia Beach, Virginia



Legend

- Approximate NAS Oceana Property Boundary (U.S. Navy)
- Proposed 25 ft by 25 ft sample grid
- Burial Unit
- Approximate Extent of Debris Piles (CH2M Hill, 2010)
- Approximate location of Debris Piles (ABB, 1997)
- Approximate Location of Casing Removal Project (ABB, 1997)
- Approximate Ocean Salvage Yard Parcel Boundaries (City of Virginia Beach)



Figure 2
 Oceana Salvage Yard Access Road,
 Burial Unit, and Known Debris Pile Locations
 NAS Oceana
 Virginia Beach, Virginia

