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RESPONSE TO COMMENTS RESOURCE CONSERVATION AND RECOVERY ACT  
FACILITY INVESTIGATION CNC CHARLESTON SC  
7/20/1992  
ENSAFE/ ALLEN AND HOSHALL

**COMPREHENSIVE LONG-TERM  
ENVIRONMENTAL ACTION  
CHARLESTON NAVAL SHIPYARD  
CHARLESTON, SOUTH CAROLINA**



**RESPONSE TO COMMENTS  
RFI WORKPLAN  
CHARLESTON NAVAL SHIPYARD**

**Prepared for:**

**DEPARTMENT OF THE NAVY  
SOUTHERN DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
WASHINGTON, D.C.**

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## USEPA COMMENTS

### CHAPTER 2 - BACKGROUND INFORMATION AND SWMU DESCRIPTION

#### COMMENT 1:

The units of concentration for the compounds listed in Tables 2-5, 2-12, 2-13, and 2-14 should be provided.

**RESPONSE:** The tables will be revised to include the appropriate units.

#### COMMENT 2:

Aquifer tests should be conducted on the site to determine the hydraulic properties of the surficial aquifer, i.e., hydraulic conductivity, storage, and seepage velocity. Ideally, the control well should be pumped for 72 hours due to the fact that the uppermost aquifer is unconfined. However, if this type of test is not feasible, slug tests can be performed at the sites that require remediation. The proposed construction details of the wells used during the tests should be provided for review and comment.

**RESPONSE:** The RFI will be conducted using a phased approach to provide ancillary data necessary to determine the nature and extent of soil and groundwater contamination. If it is determined groundwater contamination exists, an appropriate aquifer test will be designed and conducted at the end of Phase II. The Workplan will outline the basic concepts that will be utilized to design the aquifer test. A detailed design of the pumping well, observation wells, pumping duration, etc. will be dependent upon information developed during Phase I and the earlier stages of Phase II.

#### COMMENT 3:

The collection and analysis of unfiltered metals samples was not discussed in Section 2.6.9. We require that a filtered metals analysis always be accompanied by a split sample for an unfiltered metals analysis.

**RESPONSE:** The text will be revised to state that only unfiltered samples will be collected for metals analysis. If elevated total metals concentrations are detected, subsequent sampling events may involve the collection of both filtered and unfiltered samples.

**COMMENT 4:**

We could not find a summary of human exposure to contaminants by way of human consumption of contaminated biota in Section 3.2.1 as stated in your response to comment 6. Please specify where this information is located in the revised RFI Workplan.

**RESPONSE:** It would be premature to summarize human exposure to contaminants by way of consumption of contaminated biota prior to the implementation of field work. Environmental and human health evaluations are different processes which share general data needs. Section 3.2.1 states that if high lead levels are identified in the Cooper River then bioassays will be required. As outlined, ecological assessments will be conducted under a separate phase of the RFI if needed.

**COMMENT 5:**

Figure 2-6:

The geologic cross-section through the caustic pond area does not indicate the presence of fill material.

**RESPONSE:** The borings installed in this area did not penetrate the caustic pond, therefore, it is not depicted on Figure 2-6.

**COMMENT 6:**

Figure 2-9:

Same as comment 2-6.

**RESPONSE:** The exact location of the chemical disposal area is not known. Therefore, boring logs completed to date may not have penetrated the fill material. A magnetometer and terrain conductivity survey will be conducted in an attempt to locate the disposal area prior to installing soil borings/monitoring wells.

**COMMENT 7:**

Page 2-12: The permeability of the fill material should be given for well location DLF-1 (i.e., Is it the same as the listed permeability for well LF-1?).

**RESPONSE:** The permeability was not calculated for the fill material in DLF-1. The cover letter which accompanied the testing results stated that a consolidation test could not be performed on sample number 1 (fill material) from DLF-1 due to the high sand content.

**COMMENT 8:**

Page 2-12:

The comment that the Cooper Marl is "essentially impermeable" is not necessarily true as the first paragraph indicates a permeability of  $1.3 \times 10^{-4}$  to  $3.2 \times 10^{-5}$  cm/sec. This indicates a potential for some minimal permeability. Also, permeability for water (H<sub>2</sub>O) is not relevant to contaminants.

**RESPONSE:** Soils with permeabilities such as those listed above may hinder vertical groundwater movement, however, it is agreed that these soils are not totally impermeable. The text will be revised accordingly.

**COMMENT 9:**

Page 2-13 (2.3.6, paragraph two):

Is data available to validate the statement that some upgradient wells "...would not be threatened by contaminant migration from NSY"?

**RESPONSE:** Ms. Brenda Hockensmith of the South Carolina Water Resources Commission was contacted concerning the use of the shallow aquifer as a source for potable water. An inventory was conducted of all wells within a seven mile radius of the site. The inventory did not identify any wells screened in the surficial aquifer within a four mile radius of the site currently used as a drinking water source. Water wells located within the four mile radius are listed as being used for irrigation purposes only.

**COMMENT 10:**

Page 2-13 (2.3.6, paragraph three):

The workplan still does not address human exposure concerns through fish or shell fish consumption, although the threat from contamination of the shallow groundwater system and adjacent surface waters is recognized.

**RESPONSE:** Ecological assessments of hazardous waste sites may be an essential element in determining overall risk and protecting human health. As outlined in Section 3.2.1 human exposure risk via the food chain will be addressed in a later phase if warranted (See COMMENT 4, Chapter 2).

**COMMENT 11:**

Page 2-13 (2.3.6, paragraph four):

The "essentially impermeable" statement for the Cooper Marl should be addressed (see comment above). Note that solvent contamination may degrade clays, thus increasing permeability.

**RESPONSE:** The permeabilities calculated from samples of the Cooper Marl are not indicative of a completely impervious layer; therefore, the text will be revised accordingly. Solvent contamination may degrade clays if elevated concentrations or DNAPLs are present. The integrity of the clay layer will be addressed in Phase II if DNAPLs are identified during the initial phase of the RFI.

**CHAPTER 3 - INVESTIGATIVE ACTIVITIES**

**SWMU #1 - DRMO STAGING AREA**

**COMMENT 1:**

The RFI Workplan proposes to investigate the level and extent of lead (Pb) contamination at SWMU #1. However, this strategy does not address other types of contamination which may be present at this site. It appears that a variety of hazardous materials and/or hazardous constituents were stored, on unpaved ground, at SWMU #1. The RFI should document (to the maximum extent possible) what was stored at SWMU #1, and also the presence or absence of contamination from these sources.

In addition, we acknowledge that sampling has been done to document the level and extent of metals contamination at SWMU #1 and that this information is included in the RFI Workplan. However, as stated above, based on what was stored at the site (i.e. organics and/or other hazardous waste/constituents), additional sampling/analysis may be warranted to completely characterize the level and extent of contamination (other than metals) from this site.

**RESPONSE:** Table 2-6 identifies the hazardous constituents for all wastes known to have been stored at the DRMO storage shed. Samples collected on October 5, 1987 were analyzed for that list of 20 organics, hydrazine, 9 metals, and 4 hazardous waste characteristic parameters; all site-specific compounds. The data are included in the revised workplan.

**SWMU #3 - PESTICIDE STORAGE BUILDING**

**COMMENT 2:**

The RFI Workplan states that no additional investigations are recommended for these SWMU. However, before this action is taken, a full scan should be run for groundwater and soil samples at the site (40 CFR Part 264 Appendix IX scan for groundwater).

**RESPONSE:** SWMU #3 is the pesticide mixing area, not the pesticide storage building. A soil and groundwater investigation will be conducted at both SWMUs #3 and #4. The RFI Workplan will propose that samples collected at these sites be analyzed for VOCs, SVOCs, RCRA metals, and pesticides.

#### **SWMU #5 - BATTERY ELECTROLYTE TREATMENT AREA**

##### **COMMENT 3:**

Figure 3-2 should include general groundwater direction and contaminant plumes information (if known).

**RESPONSE:** Groundwater flow direction in this area is assumed to be towards the Cooper River, but since this assumption has not been verified the figure will not be revised to include speculative information.

#### **SWMU #7 - PCB TRANSFORMER STORAGE AREA**

##### **COMMENT 4:**

Reference 22 (Field Manual for Grid Sampling of PCB Spill sites to Verify Cleanup) was not included in Chapter 8 (the Reference List).

**RESPONSE:** A reference will be included in Chapter 8.

##### **COMMENT 5:**

The Workplan states that four stations east of the concrete pad and fence will not be sampled since this area was clean closed during construction of the cold storage warehouse. Please specify what (if any) soil sampling was performed as part of this closure.

**RESPONSE:** Soil samples from this area were collected prior to and during the partial closure of the Cold Storage Warehouse. Furthermore, soils in this area were excavated and replaced with clean fill in 1986. Therefore, resampling is unwarranted. Analytical data from the partial closure will be included in Appendix F.

##### **COMMENT 6:**

Please specify the rationale for not including Arsenic and BHC in the groundwater sampling strategy. If these constituents are present in the groundwater then they have to be addressed.

**RESPONSE:** The groundwater samples will be analyzed for chlorinated pesticides and RCRA metals.

**COMMENT 7:**

Figure 3-4 should include general groundwater direction and contaminant plumes information (if known).

**RESPONSE:** Groundwater flow direction in this area is in a northerly direction (towards the Cooper River) based on water level data collected by Geraghty & Miller during the Confirmation Study conducted in 1982. An arrow indicating flow direction will be included on the revised figure. Contaminant plume information is not known.

**SWMU #8 - OIL SLUDGE PIT AREA**

**COMMENT 8:**

Figure 3-5 should include general groundwater direction and contaminant plumes information (if known).

**RESPONSE:** Groundwater flow direction in this area is assumed to be towards the Cooper River, but since this assumption has not been verified the figure will not be revised to include speculative information.

**SWMU #9 - CLOSED LANDFILL**

**COMMENT 9:**

In addition to the collection of soil and ground-water samples at SWMU #9, surface and sediment samples should be collected in Shipyard Creek to determine if leachate is migrating away from the site along this pathway.

**RESPONSE:** The Workplan will be revised to include three sediment sampling locations in Shipyard Creek. The collection of surface water samples is not proposed since it would be very difficult to determine a point source for any contamination which may be present. The surface waters in the creek are influenced by tidal changes and normal river processes.

**SWMU #12 - OLD FIRE FIGHTING TRAINING AREA**

**COMMENT 10:**

The RFI Workplan proposes no additional investigation for this site. This decision is based on data from three soil borings which were drilled at the fire fighting pit. The data from the borings indicated no trace of petroleum contamination.

Please provide additional information concerning depth of the borings and whether the borings were sampled for constituents other than petroleum contamination. It has been our experience that other chemicals and/or solvents may have been used during fire fighting exercises and the RFI should address the absence or presence of these chemicals and solvents.

In addition, since petroleum products float on water, samples should be taken at the water table to determine if petroleum products are present.

**RESPONSE:** The text will be revised to include the installation of soil borings. A grid design employing ten foot grid intervals will be established to locate the sampling points. Soil samples will be collected continuously on two foot intervals until groundwater is encountered. If soil contamination is confirmed by the laboratory analyses, three of the soil borings will be converted to monitoring wells in Phase II. The proposed analytical parameters for this site are TPH, VOCs, SVOCs, and the eight RCRA metals.

#### **SWMU #17 - OIL SPILL AREA**

##### **COMMENT 11:**

Please provide a scale for Figure 3-8 and also the direction for groundwater flow.

**RESPONSE:** Figure 3-8 will be revised to include a scale. Water level data for determining groundwater flow direction is not available.

#### **SWMU #21 - WASTE PAINT STORAGE AREA**

##### **COMMENT 12:**

The narrative on page 3-18 states that 16 soil sampling points are identified on Figure 3-9. We could only find 11 points. Please clarify this discrepancy.

Also, in addition to the soil samples proposed for this site, split spoon samples should be collected to the top of the water table during well installation.

**RESPONSE:** Figure 3-9 will be revised to include all the proposed sampling locations. Three of the soil sampling locations and one monitoring well location at the northeast end of SWMU #21 are located in the Cooper River based on the scale of this figure. These sampling locations will be replaced with three sediment sample locations in the revised Workplan. Sediment samples will be collected utilizing a petite ponar sampling device.

## **SWMU #23 - NEW PLATING SHOP WWTS**

### **COMMENT 13:**

The narrative on page 2-62 states that no evidence of release from this operation has been found and no additional investigations are planned. Please provide documentation to support these statements. In addition, please specify when this facility was put into operation.

**RESPONSE:** Operations began at the "New Plating Shop WWTS" in 1983. The building design included secondary containment walls around the plating tanks and around the interior walls of the building. An inspection of the secondary containment conducted in July 1992 did not reveal any evidence of cracks which could potentially allow spilled material to escape. In addition, the ground surface around the exterior of this building has been covered with an asphalt or concrete surface. Furthermore, no incident reports are on file at the NSY which indicate a release has ever occurred at this facility since it began operation.

## **SWMUs #29 AND #34 - BUILDING X-10 MWR, SOUTHWEST OF BUILDING X-10**

### **COMMENT 14:**

The narrative describing contents of SWMU #29 and SWMU #34 on pages 2-68 and 2-70, respectively, do not agree. Please clarify this discrepancy.

The narrative on page 3-23 states that no groundwater monitoring is warranted at this time. Please provide documentation to support this statement.

**RESPONSE:** The investigation of both of these SWMUs is planned to be conducted concurrently with SWMU #35 as a single investigation. The narrative appropriately discussed the contents of each SWMU individually. The text will be revised as necessary to ensure the sampling scheme, analytical parameters, etc., address all of the contents. However, groundwater monitoring will be addressed under phase II and only if warranted.

## **SWMUs #27, 28, 30, 31, 32, 33, 35**

### **COMMENT 15:**

The above referenced SWMUs were identified during a joint EPA/SCDHEC compliance inspection which was conducted on August 20-22, 1990. Evidence of spills and/or leaking containers were observed at each SWMU during this inspection.

The RFI Workplan states that all spills and/or leaking containers have been addressed and no further action is planned or required. Please provide documentation (for example sampling data

to show that spills have been completely remediated) to support no further investigation of clean-up activities at these sites.

**RESPONSE:**

**SWMU #27** Waste Paint Storage Unit - Although no obvious staining was observed sediment samples will be collected from the Cooper River beneath the outfall of the storm drain grates. One sample will be collected and analyzed for RCRA metals.

**SWMU #28** Former Paint Locker Location - During the inspection a paint stain was identified; however, the shape and dimension is similar to the former locker. Further visual inspection revealed no cracks or evidence of deterioration of the asphalt. To ensure that there has been no surface runoff a sediment sample is proposed in the catch basin adjacent to the unit. The sample will be analyzed for RCRA metals.

**SWMU #30** Hazardous Waste Satellite Accumulation Area - During the inspection of SWMU #30 distinct cracks in the asphalt were observed. One sediment sample is proposed for collection from the catch basin adjacent to the unit. In addition, there is an apparent UST in the immediate vicinity. 4 monitoring wells were identified and are presumed to have been installed for monitoring the UST system. Groundwater samples will be collected from each of the four wells and analyzed for volatiles, semi-volatiles, and RCRA metals. The sediment sample will be analyzed for RCRA metals, only.

**SWMU #31** Waste Paint Storage Area (Dry Dock #5) - SWMU #31 is located within the confines of the dry dock itself. Normal operating procedures for the dry dock would require a sequence of flooding and discharge as ships are brought in for maintenance. Any accumulated waste material would be discharged to the Cooper River. Two sediment samples are proposed to be sampled from the Cooper River and analyzed for RCRA metals.

**SWMU #32** Waste Paint Storage Area (Bldg. 195) - SWMU #32 was a one time accumulation area. Visual inspection of the unit revealed a depressed area in the asphalt that had accumulated sand/dirt. Adjacent to the storage area is a catch basin. Soil samples will be collected within the depressed area to a maximum depth of three feet at one foot intervals. One sediment sample will be collected from the catch basin and analyzed for RCRA metals. Soil samples will be analyzed for volatiles, semi-volatiles, and RCRA metals.

**SWMU #33** Waste Paint Storage Area (West End Dry Dock #2) - SWMU #33 was used as a one time waste accumulation area. During the site inspection spillage was observed at the west end of the dock. 2 catch basins are located east and west of the observed release. One sediment samples will be collected from each basin and analyzed for RCRA metals.

**SWMU #35** Building X-12 - SWMU #35 is currently designated to be investigated concurrent with SWMUs #29 and #34 (COMMENT 14, CHAPTER 3). Figure 3-11 will be revised to reflect the proper location of each SWMU. The text will be revised for clarity.

## **SWMU #36 - BUILDING 68, BATTERY SHOP**

### **COMMENT 16:**

Please specify why soil borings are proposed for five feet in depth with sampling interval of 0-2 feet and 3-5 feet, respectively. Also, please specify how the borings will be made.

Concerning the use of the hydropunch, how will groundwater depth be determined and also how will sampling depth for groundwater be determined?

**RESPONSE:** The Workplan addendum submitted for the investigation of SWMU #36 will be incorporated into the text of the revised RFI Workplan. The investigation of this facility will implement a phased approach during which soil samples will be collected from the 0-1' and 1-2' intervals. If significant soil contamination exists at the lowermost soil sample interval, a series of soil borings converted to shallow monitoring wells will be installed in Phase II of the RFI.

## **CHAPTER 4 - QUALITY ASSURANCE/QUALITY CONTROL PLAN**

### **COMMENT 1:**

#### **Pg 4-3: 4.3.2.1 Documentation of Field Data**

It is recommended that all field notes be kept in a bound notebook.

**RESPONSE:** The text will be revised to indicate that all field notes will be kept in a bound notebook.

### **COMMENT 2:**

#### **Pg 4-4: 4.3.2.2 Equipment Decontamination Procedures**

The first paragraph states that drilling augers will be cleaned using a steam of hot water pressure washing system. This equipment should undergo the same eight decontamination procedures outlined on page 4-4 for teflon and stainless steel equipment. The steam cleaning should be in addition to cleaning with tap water and detergent.

**RESPONSE:** The revised RFI Workplan will propose a seven step decontamination process which is similar to the eight step process with the exception of the nitric acid rinse. Decontamination of the drilling augers will follow the proposed seven step process. The seven step process is standard operating protocol for field investigations as outlined by the USEPA Region IV Engineering Services Division.

**COMMENT 3:**

Pg 4-5 : Second paragraph

The number of field blanks should be clarified. The frequency of collection as described in this paragraph is confusing.

**RESPONSE:** Field blanks will be collected in accordance with NEESA level C protocols. The text will be revised accordingly.

**COMMENT 4:**

**Pg 4-5: Third paragraph**

The first sentence of this paragraph states that, "An equipment blank should be prepared periodically if non-dedicated sampling equipment is utilized.". Equipment blanks should be collected during any sampling event where sampling equipment is decontaminated in the field.

**RESPONSE:** Equipment blanks will be collected at the frequency of one per day per sampling event at each individual SWMU.

**COMMENT 5:**

Pg 4-5: Fourth paragraph

ESD recommends using blind duplicates when sending samples to contract laboratories for analysis.

**RESPONSE:** Blind duplicates will be submitted to the laboratory at a frequency of 10% of the total number of samples collected.

**COMMENT 6:**

Pg 4-6: 4.4.2 Monitoring Well Construction

ESD recommends using stainless steel screens and well casings as opposed to PVC. However, PVC may be used if the AF provides the sufficient rationale (See attached).

**RESPONSE:** The revised Workplan will include the information necessary to rationalize the use of PVC well screens and casings. Documentation will be provided to satisfy the EPA document entitled "Information Requirements for Justification of Alternative Well Casing Materials for Groundwater Monitoring Well Construction".

**COMMENT 7:**

Pg 4-6: 4.4.2 Monitoring Well Construction, First Paragraph

The hydration time for the bentonite pellets should be 8 hours or to the manufacturer's specifications, whichever is greater.

**RESPONSE:** The text will be revised accordingly.

**COMMENT 8:**

Pg 4-6: Monitoring Well Construction, Second Paragraph

The size of the concrete pad was not specified. For a 2 inch monitoring well, the pad should be 3 feet x 3 feet by 6 inches.

**RESPONSE:** The text will be revised accordingly.

**COMMENT 9:**

Pg 4-8: 4.4.4 Monitoring Well Sampling Procedures, First Paragraph

The temperature should be monitored along with Ph and specific conductivity while purging the well.

**RESPONSE:** The text will be revised accordingly.

**COMMENT 10:**

Pg 4-8: 4.4.4 Monitoring Well Sampling Procedures, Third Paragraph

It is stated that latex gloves **may** be worn while sampling. Latex gloves **should** be worn at all times while sampling protect the samples from cross contamination.

**RESPONSE:** Latex gloves will be worn during the collection of samples to prevent cross contamination. The text will be revised to reflect this change.

**COMMENT 11:**

Pg 4-8: 4.4.4 Monitoring Well Sampling Procedures, Last Paragraph

If at all possible, the pump and/or pump tubing should be placed just below the surface of the water to ensure that all stagnant water is removed before sampling.

**RESPONSE:** The following measures will be adhered to help ensure evacuation of stagnated water prior to sampling: a minimum of three well casing volumes will be purged, temperature, pH, and specific conductance parameters will be measured for stability after the evacuation of each well volume.

**COMMENT 12:**

Pg 4-9: First Paragraph

If after purging five well volumes the temperature, Ph, and specific conductance have not stabilized, it is permissible to sample. Avoid purging the well dry if possible.

**RESPONSE:** The text will be revised to include this statement.

**COMMENT 13:**

Pg 4-9: Last Paragraph

It is recommended that three 40 ml vials be filled for analysis of volatile organics of water samples.

**RESPONSE:** Agreed.

**COMMENT 14:**

Pg 4-10: 4.4.5 Hand Auger Borings

The procedures for shipping samples should be outlined. Appendix C of the US-EPA Region IV, Environmental Services Division, Environmental Compliance Branch Standard Operating Procedures and Quality Assurance Manual, (February 1, 1991) contains detailed procedures for shipping samples.

**RESPONSE:** The procedures for shipping samples will be included in Section 4.5, Sample Custody.

**COMMENT 15:**

Pg 4-10: 4.5 Sample Custody, Second Paragraph

How will laboratory personnel distinguish between samples? Sample conditions can change very easily in the field. ESD recommends affixing labels to sample containers immediately after collection. Are preprinted labels feasible if this method of labeling is to be used?

**RESPONSE:** An eight digit sample identification scheme will be outlined in the QAPP. The proposed sample identification scheme will allow the laboratory to distinguish between samples. Sample labels will only be partially preprinted, therefore, field sampling conditions will not affect their use.

**COMMENT 16:**

Pg 4-10: 4.6.1 Field Equipment, Second Paragraph

All air monitoring equipment should be calibrated each time it is turned on.

**RESPONSE:** The text will be revised accordingly.

**CHAPTER 6 - IDENTIFICATION OF POTENTIAL RECEPTORS**

**COMMENT 1:**

The narrative concerning Interim Measures at SWMU #2 should be deleted since Interim Measures are no longer being considered for this particular unit.

**RESPONSE:** This narrative will be deleted.

**COMMENT 2:**

As stated in our previous comment number 60., the RFI should identify the locations in which there are ground water pumping wells in the shallow aquifer. Also, as stated in previous comment 60., the RFI should identify the human consumption of biota in the area and the potentially affected ecological communities.

**RESPONSE:** As outlined in COMMENT 9, CHAPTER 2, there are no potable water wells which use the shallow aquifer within a 4 mile radius of the NSY. As outlined in COMMENTS 4 and 10 (also CHAPTER 2) a Baseline Risk Assessment will be conducted to evaluate both human health and ecological receptors upon completion of the Phase I & II field activities if warranted.

**COMMENT 3:**

As stated earlier in Comment 4, Chapter 2, we could not locate the section concerning potential pathways for human exposure by way of human consumption of contaminated biota and fish. Please specify where this discussion is located in the Workplan.

**RESPONSE:** Currently the text is found in Section 3.2.1; however, this is SWMU specific. The text will be revised to include a brief description of identifying potential pathways for human exposure.

## SCDHEC COMMENTS

### GENERAL COMMENTS

#### COMMENT 1:

The RFI Workplan cites proposed action levels and target cleanup levels (55 Federal Register 30798, July 27, 1990) in discussions of relative degree of contamination of several SWMUs. However, since action levels and target cleanup levels are not in effect until this regulation becomes final, they have no bearing on the activities conducted during the RFI. Therefore, references to these subjects should be deleted from the RFI Workplan. NSY must develop and use background concentrations for the various media of interest (soil, groundwater, etc.) when making comparisons regarding whether or not a particular SWMU is contaminated.

**RESPONSE:** To more effectively address possible contaminant levels at the NSY a baseline risk assessment will be completed for those sites that may indicate elevated contaminant levels. Background levels will not be utilized. Previous studies have indicated that the shipyard is situated on predominantly river sediments (dredged material) and fill material.

#### COMMENT 2:

The locations of all SWMUs are depicted on Figure 2-6 in the first RFI Workplan (dated March 1991) and Figure 2-10 of the current RFI Workplan (dated September 1991). It is noted that the locations of some SWMUs have been altered between these two figures. For instance, the locations of SWMUs 10 and 11 have changed significantly. NSY should clarify which of these maps is most accurate. In addition, the RFI Workplan should be revised to include maps which indicate the approximate boundaries of all SWMUs.

**RESPONSE:** The revised RFI Workplan will include figures derived from a base map generated in January 1992. This base map shows the location of all the SWMUs and will be included as a "D" size plate accompanying the report. The boundaries of the SWMUs will be determined by sampling conducted during the RFI.

#### COMMENT 3:

As indicated in Comment 1 above, background concentrations for constituents of concern must be developed for soils and groundwater. The RFI Workplan must be revised to indicate the number and location(s) of samples proposed for use in developing background concentrations.

**RESPONSE:** See Comment 1 above.

**COMMENT 4:**

The RFI Workplan is unclear as to the operational status of several SWMUs. The RFI Workplan should be revised to indicate whether the SWMUs are still in use.

**RESPONSE:** The NSY has provided a list of all SWMUs still in use. The text will be revised to reflect the current status of all SWMUs.

**COMMENT 5:**

The RFI Workplan should be revised to include development/measurement of physical/chemical properties and characteristics of the site or hazardous constituents as described in Appendix B (RFI Workplan Outline) of NSY's Hazardous Waste Permit. NSY should refer to section II.A.2 (soils characteristics) and II.B (Source Characterization) for the additional detail that should be included in a revised RFI Workplan. These data should be used to aid in determining the fate and transport properties of hazardous constituents that have been identified at the site.

**RESPONSE:** The RFI work plan will be revised to include those physical/chemical properties of the site as applicable. The source characterization process will involve both a thorough record search and laboratory analysis of soil/groundwater samples to evaluate what hazardous constituents, if any, may be present at each SWMU. The analytical parameters proposed for each site will be selected based upon documented activities which are known to have occurred at the individual sites in lieu of analyzing samples for the full 40 CFR 264 Appendix IX scan.

**COMMENT 6:**

The RFI Workplan notes that monitoring wells exist around several SWMUs. These wells have generally been in existence since approximately the early 1980's. All known details of the construction and installation methods of these monitoring wells should be included in the revised RFI Workplan. If the monitoring or construction of existing wells do not meet current RCRA standards, abandonment and installation of replacement monitoring wells may be required.

**RESPONSE:** Many of the monitoring wells installed during previous investigations could not be located during recent site visits and the integrity of the ones that could be located is not known. Therefore, new groundwater monitoring wells will be installed in accordance with all applicable State and Federal guidelines. In addition, all existing monitoring wells that can be located during the course of the investigation will be properly abandoned.

**COMMENT 7:**

Throughout the RFI Workplan, units such as "g/kg" and "g/g" are used to denote concentrations. The former seems to indicate a concentration of parts per thousand while the meaning of the latter is unclear. The RFI Workplan should be revised to clarify this point. Conventional

notation for concentrations should be used throughout the Workplan such as mg/kg or mg/l for parts per million and ug/kg or ug/l for parts per billion, etc.

**RESPONSE:** The text will be revised to reflect conventional notations for concentration such as  $\mu\text{g/g}$ , mg/kg or mg/l for parts per million and  $\mu\text{g/kg}$  or  $\mu\text{g/l}$  for parts per billion.

**COMMENT 8:**

It is recognized that the amount of work proposed for investigation of the SWMUs may not determine the full vertical and horizontal extents of soil and/or groundwater contamination. While the Department approves of such a phased approach, NSY must recognize that subsequent assessment may be necessary to determine the full extent of environmental contamination. The Department encourages interaction between itself and NSY regarding the assessment of these SWMUs.

**RESPONSE:** The NSY concurs with this viewpoint.

**COMMENT 9:**

The RFI workplan has been revised in accordance with the Department's previous comments to include installation of monitoring wells around several SWMUs. The Workplan goes on to note that "gauging of the monitoring wells should be conducted on a regular basis to allow construction of a series of groundwater surface contour maps". The approach is satisfactory as an initial step in assessment of groundwater contamination. However, the groundwater flow direction and rate must be verified for each SWMU around which monitoring wells are installed. The RFI Workplan should be revised to indicate the frequency at which measurement of water levels in the monitoring wells will be conducted. It is recommended that these measurements be taken for sufficient duration and frequency to allow the determination of potential tidal and seasonal effects on groundwater flow directions.

**RESPONSE:** The Workplan will be revised accordingly.

**SPECIFIC COMMENTS**

**COMMENT 10: SWMU #1 — DRMO Staging Area**

SWMU #1 — DRMO Staging Area was used to temporarily store materials and property no longer used by various branches of the Armed Forces in the region of NSY. The RFI Workplan notes incorrectly that this SWMU has been clean closed under the authority of Interim Status while further noting that the source of lead contamination found in this area came from SWMU #2 (Lead Contamination Area) (See related Comment 1 above). Several comments have been generated in relation to this SWMU:

- A. The RFI Workplan notes that No Further Action is planned for SWMU #1 and that if any additional investigation relative to SWMU #1 are proposed, they will be conducted together with assessment activities for SWMU #2 — Lead Contamination Area. However, as noted in the Department's original comment on this SWMU, the Progress Report on Interim Status Facility Closure (dated 5/89) indicated chromium, cadmium, nickel, lead silver, and cyanide contamination in the soils of this SWMU. The Department further noted that assessment/remediation of any soil contamination in this area will be completed under the direction of a document titled "Risk Assessment and Development of Health-Based Soil Clean-up Goals for the Charleston Navy Shipyard," dated November 1991. The Department must approve this plan prior to implementation. The potential for groundwater contamination may, however, be investigated under the RFI Workplan.

**RESPONSE:** As of July 1992, the Hazardous Waste Permitting Section of SCDHEC has requested a revision to the closure plan for this unit that will permit approval of the conclusions in the risk assessment document. When SCDHEC issues final approval no further action is necessary relating to soil contamination. Groundwater will be addressed as a separate issue under the RFI investigation for SWMU #2.

- B. Analytical results from previous sampling of this SWMU are included in Appendix D of the RFI Workplan. However, units of measure are not specified for the data included in this appendix. The RFI Workplan should be revised to include units for the data included in this appendix.

**RESPONSE:** The table will be revised to include the appropriate units of concentration [mg/kg (standard units for pH)].

- C. The RFI Workplan states that dimethyl ether was the only organic compound detected with a concentration below (emphasis added) 50 g/kg. Appendix D does not include any analytical results for organic compounds. The analytical results should be provided in the revised Workplan. Also, by noting that dimethyl ether is the only organic compound detected below 50 g/kg seems to indicate that other organic compounds analyzed for were detected in higher concentrations. The Workplan must be revised to clarify this point.

**RESPONSE:** Samples collected on October 5, 1987 were analyzed for a list of 21 compounds. Diethyl ether (vs. dimethyl ether) was the only organic compound detected at or above their respective analytical detection limit. The diethyl ether concentration ranged as high as 75.8  $\mu\text{g}/\text{kg}$ . That concentration is substantially below the action level of 6 mg/kg for soil contamination, and soil remediation for that constituent is unwarranted. Laboratory analytical data for organic constituents are provided in the revised workplan.

#### **COMMENT 11: SWMU #2 — Lead Contamination Area**

The RFI Workplan describes SWMU #2 — Lead Contamination Area which consists of a salvage bin and adjacent paved ground surface. The area was used to store recovered lead from lead-acid batteries from the mid-1960's until 1984. Internal components from the batteries were removed in the battery electrolyte treatment area. Lead dust from the recovered materials was released to the salvage bin area. The RFI Workplan notes that treatability studies will be completed for the soils of this SWMU. However, one of the primary goals of the RFI is to develop adequate information to support a Corrective Measures Study (CMS). A treatability study is usually completed as part of the CMS. Therefore, it would appear that pursuing a treatability study under the RFI is premature. Information to support such a study should be collected during the RFI. The RFI Workplan should be revised to include the type of information to be collected to support such a treatability study during the CMS.

**RESPONSE:** The reference to treatability studies will be deleted.

#### **COMMENT 12: SWMU #3 — Pesticide Mixing Area**

The RFI Workplan describes this SWMU as approximately 50 feet by 25 feet in size. Approximately 20 square yards of this area is devoid of vegetation. The Workplan goes on to note that the area is contaminated with low concentrations of various pesticides and associated degradation products which were handled at this site. The Workplan summarizes a soil sampling program that was conducted at this SWMU in February 1982. It notes that in eight soil samples collected during this sampling event, six pesticides were detected. The Workplan goes on to note that "Three of the six pesticides are interrelated in that DDD and DDE are metabolites of DDT and are formed during the biodegradation of DDT. The fact that these constituents were found in all eight samples is significant since DDT has not been in general use for about 15 years; therefore, they represent compounds that may have been present in the soil for a long period of time." The Workplan then recommends no additional investigations for this SWMU. Additional assessment of soil and groundwater contamination is warranted to fully define the extent and severity of contamination. The Workplan must be revised accordingly.

**RESPONSE:** The RFI Workplan will propose a surface soil sampling program which addresses the denuded area. In addition, the installation of monitoring wells will be proposed.

#### **COMMENT 13: SWMU #4 — Pesticide Storage Building**

The description of SWMU #4 — Pesticide Storage Building states that this building has been used to store insecticides and rodenticides since 1980. Sink and floor drains within the building are either connected to the sanitary sewer or to blind sumps (sumps with no outlets). The RFI Workplan recommends no further investigation for this SWMU since the building and its concrete floor have since been removed and the area is now a paved parking lot. However,

since the potential of soil and groundwater contamination must be addressed. The RFI Workplan must be revised to include assessment measures of this SWMU.

**RESPONSE:** The revised RFI Workplan will outline the proposed soil and groundwater investigation for SWMU #4

**COMMENT 14: SWMU #5 — Battery Electrolyte Treatment Area**

**SWMU #5** — Battery Electrolyte Treatment Area includes a tank which was used to neutralize battery acids. Soil samples collected from around the tank indicated high levels of lead contamination. The RFI Workplan has been revised per the Department's previous review to include installation of monitoring wells around this SWMU to determine the existence of groundwater contamination. However, the list of constituents which will be analyzed in groundwater samples should be expanded to include volatile and semivolatile constituents since the RFA Report notes in Section 4.5.2 (p. 4-23) that the unit also contains 55-gallon drums which were used to segregate and store spill residue from paint solvents (paint and paint related spills). The RFI Workplan should be revised accordingly.

**RESPONSE:** The list of constituents to be analyzed for will be expanded to include VOCs and SVOCs.

**COMMENT 15: SWMU #6 — Public Works Storage Yard**

As discussed in the Department's previous review of the RFI Workplan, this SWMU is a former Interim Status Standards unit. Currently, closure of this SWMU is being managed under a document titled "Risk Assessment and Development of Health-Based Soil Clean-up Goals for the Charleston Navy Shipyard," dated November 1991. However, from the data presented in the RFI Workplan, it does not appear that the full vertical and horizontal extents of soil contamination has been defined at this unit. As noted in the Department's previous review, concentrations of hazardous constituents in solid other than lead must be assessed. These other constituents include chromium, cadmium, nickel, silver, barium and mercury. Assessment must also include determination of the concentrations of these constituents in the soils. NSY may, however, assess the potential for groundwater contamination during the RFI.

**RESPONSE:** On March 28, 1986, preceding the partial closure, samples were analyzed for metals (including chromium, cadmium, nickel, silver, barium, and mercury), 20 organics, hydrazine, and PCBs. On October 5, 1987, as a prerequisite to final closure, surface samples were collected and analyzed for 20 organics, hydrazine and metals. The data for these sampling dates are provided. Supplemental samples were taken at 1-, 2-, and 3-foot intervals for only those constituents exceeding apparent background concentrations. Existing Appendix F-2 contains data from soil samples, surface to six inches. Appendix F-3 contains data from supplemental soil samples at 1', 2', and 3' intervals.

**COMMENT 16: SWMU #7 — PCB Transformer Storage Area**

This SWMU consists of Building 3902, the adjacent concrete slab located outside the building and surrounding areas that were used for storage of transformers and associated electrical equipment. Several comments were generated regarding the proposed assessment of this SWMU.

- A. The RFI Workplan proposes collection of soil samples from around this unit based on recommendations included in an EPA document titled "Field Manual for Grid Sampling of PCB Spill Sites to Verify Cleanup" and lists this reference as number 22 in the bibliography. However, there is not a reference included in the bibliography numbered 22. Please provide this reference.

**RESPONSE:** A reference to the EPA document will be included in the reference list.

- B. The RFI Workplan notes that four proposed sampling stations east of the concrete pad and fence will not be sampled. The Workplan notes that this areas was "clean closed" during construction of the Cold Storage Warehouse (Building 193), which is part of SWMU #6 (Public Works Storage Yard). However, NSY must collect samples from these four sampling locations since it is noted in the RFI Workplan that significant concentrations of PCB's were detected in samples collected on the east and south side of the Cold Storage Warehouse (Building 193). The Workplan must be revised accordingly.

**RESPONSE:** Soil samples from this area were collected prior to and during the partial closure of the Cold Storage Warehouse. Frurthermore, soils in this area were excavated and replaced with clean fill in 1986. Therefore, resampling is unwarranted. Analytical data from the partial closure will be included in Appendix F.

- C. The RFI Workplan proposes the collection of additional soil samples if analytical results for PCB's are equal to or greater than 5 parts per million (ppm) or 2 ppm for DDT and its derivatives (DDD and DDE). This is unacceptable. The RFI Workplan must be revised to include all necessary provisions to determine the full vertical and horizontal extents of contamination above site-specific background concentrations. The RFI Workplan must be revised accordingly.

**RESPONSE:** The RFI work plan will be revised to address human health criteria as previously outlined, and will not incorporate background studies.

- D. The Workplan notes that the maximum number of samples which can be analyzed for PCBs and pesticides is 108. Additional soil sampling may be necessary to fully determine the vertical and horizontal extents of soil contamination. The Workplan must be revised accordingly.

**RESPONSE:** The Workplan will be revised to specify a minimum number of samples instead of a maximum number.

- E. The RFI Workplan proposes to investigate groundwater contamination for both SWMU #6 and SWMU #7 with the installation of monitoring wells around both units. Since these SWMUs appear to be contiguous on the site map provided (Figure 2-10), this approach appears reasonable. Currently the RFI Workplan provides separate maps for each of these SWMUs. Since the Workplan proposes to assess the potential for groundwater contamination from both SWMU #6 and SWMU #7 together, a map should be developed which shows both of these SWMUs and the positions of all proposed sampling and monitoring well locations. The RFI Workplan should be revised accordingly.

**RESPONSE:** The figure will be revised accordingly.

#### **COMMENT 17: SWMU #8 — Oil Sludge Pit Area**

**SWMU #8 — Oil Sludge Pit** consists of three separate pits in which oil sludges were disposed during the period of 1944 to 1971. Past investigations indicate that free-phase oil exists on the water table in the vicinity of this SWMU. Three comments have been generated from review of this section of the Workplan.

- A. The RFI Workplan states "Selected (soil) samples will be sent to the lab for Total Petroleum Hydrocarbons (TPH) analysis to confirm or initially delineate the presence of contamination." The Workplan goes on to state that "selected samples containing oil will be analyzed for RCRA metals, volatile and semivolatile organic compounds and PCBs. However, specific numbers of these types of confirmatory analyses were not specified. The RFI Workplan must be revised to indicate the minimum number of these samples that will be analyzed and the basis upon which the samples will be chosen for analyses.

**RESPONSE:** Following the procedures outlined in the workplan a minimum of 96 samples will be analyzed for TPH, 36 samples for RCRA metals, 36 samples for pesticides, 39 samples for volatiles, and 36 samples for semi-volatiles.

- B. The Workplan proposes to analyze soil samples for "RCRA metals". The RFI Workplan should specify the specific metals this analysis will include.

**RESPONSE:** The RCRA metals include Cadmium, Chromium, Lead, Arsenic, Barium, Mercury, Selenium, and Silver.

- C. The RFI Workplan proposes to analyze groundwater samples from monitoring wells installed in this area for TPH and additional constituents as determined by the soil assessment results. The workplan should be revised to include specific analyses that will

be completed on groundwater samples. Analyses should be conducted for an expanded list of parameters which could reasonably be expected to include in petroleum-based products. The analytical methods chosen should provide the lowest detection limits available. The Workplan must be revised accordingly.

**RESPONSE:** The text will be revised to indicate that groundwater samples will be analyzed for the same parameters as soil samples.

#### **COMMENT 18: SWMU #9 — Closed Landfill**

This SWMU is a landfill used from the 1930's until 1973 for the disposal of many solid wastes generated at the NSY. The area was originally marshland. The RFI Workplan proposes several phases to investigation of this area. Two comments regarding this SWMU have been generated.

- A. One of the proposed assessment methods is soil gas sampling. However, the Workplan does not include sufficient detail to adequately describe such a sampling program. The Workplan did not discuss the type of soil gas sampling points to be used, whether they were active or passive monitoring stations, how these stations will be installed, expected depths, how long the stations will be left in place (if at all), how the results of samples from the soil gas stations will be verified (such as collection of a soil sample from immediately adjacent to the soil gas monitoring point), etc. Finally a discussion should be included in the revised Workplan regarding the anticipated accuracy of such a soil gas sampling program taking into account such physical parameters as Henry's Law Constant for expected constituents, the porosity and moisture content of the soil, etc.

**RESPONSE:** A soil gas survey is currently being conducted at SWMU #9. The methodologies employed during the soil gas sampling program will be described in detail in the text. The physical and chemical properties of the soil and expected constituents could be measured to aid in predicting the accuracy of the soil gas survey. However, the purpose of the survey is to qualitatively determine whether expected constituents are present at any appreciable concentration. The survey is strictly utilized as a screening process to define areas requiring further, more quantitative soil and groundwater investigations. Therefore, the physical and chemical properties will not be measured due to technical and economic considerations.

- B. The RFI Workplan proposes to collect soils samples during trenching and during installation of monitoring well boreholes. In additions, the Workplan notes that soil samples will be collected from drum(s) or container(s), sludge or fill material, or any suspect material in the excavations. However, the RFI Workplan does not propose collection of a minimum number of soil samples from this SWMU. Instead, the Workplan states that the number of soil samples collected will be dependent on the results of the geophysical and soil gas surveys. The Workplan should be revised to include collection of a minimum number of soil samples from this SWMU.

**RESPONSE:** At least one soil sample per trench will be collected during trenching activities. If soils data was generated during the installation of existing monitoring wells at the site this data will be incorporated into the Workplan. Otherwise, one soil sample will be selected for analysis from each of the new monitoring wells installed at this site during the RFI. The text will be revised to reflect these changes. The text will also detail the criteria used to determine which soil samples are sent to the laboratory and the analytical parameters to be utilized.

#### **COMMENT 19: SWMU #12 — Old Fire Training Area**

**SWMU #12** — Old Fire Fighting Training Area consisted of a pit approximately 30 to 50 feet in diameter used between 1966 and 1971. Oil, gasoline, and alcohol were poured into the pit and ignited during fire training exercises. The pit was cited by the coast guard for an oil spill that occurred in 1971 following a heavy rain that resulted in oil flowing into Shipyard Creek. The RFI Workplan reports that no petroleum contamination was found during investigations conducted in 1982. These investigations consisted of a total of three soil borings, one drilled into the suspected area of the pit, and two adjacent to shipyard creek approximately 75 feet from the first boring. Additional assessment is necessary for this SWMU. Soil samples should be collected on grid which is centered in the suspected area of the Fire Training Pit. An appropriate number of soil samples should be collected over an area of the SWMU and from appropriate depths and analyzed for appropriate constituents to enable detection of soil contamination, should it exist. Finally, groundwater assessment may be necessary following the results of the soil analyses. The RFI Workplan should be revised to include information on the proposed soil sampling program for this SWMU.

**RESPONSE:** The RFI Workplan will establish a grid system which locates sampling points on ten foot centers. Soil samples will be collected continuously on two foot intervals until groundwater is encountered. All samples will be analyzed for TPH, VOCs, SVOCs, and the eight RCRA metals.

#### **COMMENT 20: SWMU #13 — Current Fire Training Area**

The RFI Workplan described SWMU #13 — Current Fire Fighting Training Area as a fire training area in which No. 2 diesel fuel and gasoline are burned for training purposes. This SWMU has been in use since 1973. Approximately 20,000 gallons of No. 2 diesel fuel and 2,000 gallons of gasoline per year are burned during the training exercises. Wastewater from the area is routed to a gravity oil-water separator prior to discharge into the sanitary sewer system. The RFI Workplan does not propose assessment of this SWMU. However, since hazardous constituents included in fuels burned at this unit may be released to the sewer system, the potential for a release from the sewer system should be assessed. The Workplan should be revised to include assessment activities for the sewer leading from this SWMU.

**RESPONSE:** The Workplan will be revised to address sampling in the sewer system at a location in close proximity to the Site. If contamination is present, soil sampling will be

conducted around the sewer line to determine if leaks have occurred which may have impacted soils surrounding the line. No sampling will be proposed for the main sewer line serving this area of the NSY since it would be virtually impossible to determine a point source for any contamination that may be present.

**COMMENT 21: SWMU #14 — Chemical Disposal Area**

The Chemical Disposal Area is located in the vicinity of the skeet and pistol ranges. Unknown amounts of various chemicals, including decontaminating agent non-corrosive (DANC) and DS-2 (a mixture of 70% diethylene triamine, 28% methyl cellosolve and 3% sodium hydroxide) have reportedly been disposed of at the site. It is noted that construction workers who unearthed drums of chemicals at the skeet range in 1972 and 1974 suffered chemical burns. The RFI Workplan states that approximately 25 soil borings will be installed in and around this SWMU and that three discrete samples will be collected from each boring. It is proposed in the Workplan to use an Organic Vapor Analyzer (OVA) to aid in field determinations of contaminated zones. Soil samples will be analyzed based on the readings of the OVA. However, detection of organic vapors utilizing an OVA is only a qualitative determination of the presence of certain types of contamination. The OVA is not capable of detecting vapors from all organic compounds of concern and should not be relied upon as the only method of choosing the soil samples of analyses. All available information should be used to make this determination, such as visual evidence of contamination, etc. The RFI workplan should be revised accordingly.

**RESPONSE:** The text will be revised to allow field personnel to exercise professional judgement and consider all available information such as visual evidence of contamination to select representative samples for laboratory analysis.

**COMMENT 22: SWMU #17 — Oil Spill Area**

SWMU #17 — Oil Spill Area is located beneath building FBM61 where a spill of No. 2 diesel fuel occurred in June 1987 due to a ruptured pipe. The RFI Workplan proposes installation of four monitoring wells in the vicinity of building FBM61 to assess possible impacts to groundwater from this SWMU. Eight discrete soil samples will be collected from the monitoring well boreholes for analysis for PCBs, Total Petroleum Hydrocarbons, and Base/Neutral compounds. Several comments regarding the assessment proposed for this SWMU have been generated.

- A. The list of parameters of which soil and groundwater samples will be analyzed should be expanded to include metals which could reasonably be expected to have been components of the diesel fuel. The RFI Workplan should be revised to include these analyses.

**RESPONSE:** The text incorrectly states that #2 diesel fuel was spilled at SWMU #17. The fuel used at this facility is #5 NSF fuel oil. The firm Friedman & Bruya, Inc. which specializes in "fingerprinting" petroleum products was contacted regarding the occurrence of metals in #5 fuel oil. Mr. Jim Bruya stated that the only metals likely to be found in this type of fuel are vanadium and nickel. These metals would be present only in trace amounts, therefore, metals analysis will not be included as one of the analytical parameters for this site.

- B. A scale should be provided on Figure 3-8, Proposed monitoring well locations at SWMU #17.

**RESPONSE:** Figure 3-8 will be revised to include a scale.

- C. It is unclear as to the evidence upon which the statement "Since the potential for advective transport is low, the four monitoring wells should be sufficient to detect transport by diffusion from the area" is based. Diffusion should not be a significant mode of transport, even in regimes of low groundwater flow velocities. The RFI Workplan should be revised to clarify this point with supporting data and discussion.

**RESPONSE:** This statement will be deleted from the text.

- D. The RFI Workplan must be revised to delete the statement that "no further remedial action is planned for this building until it is demolished or until PCBs or other constituents are detected in groundwater." The method and amount of remediation that will be necessary for this SWMU depends upon the results of a complete assessment of the contamination sourced by the unit. Remedial activities should not be determined prior to completion of the RFI.

**RESPONSE:** This statement will be deleted from the text.

### **COMMENT 23: SWMU #18 — PCB Spill Area**

**SWMU #18 — PCB Spill Area** occurred due to spillage of PCBs during the loading of a transformer onto a truck. Appendix O in the RFI Workplan includes soil sampling results for five samples previously collected from this SWMU. Figure 2-22B "SWMU #18 PCB spill area" depicts locations of soil grab samples numbered one through four. However, Appendix O includes analytical results for samples numbered 102 through 106. The correlation between the sample locations on Figure 2-22B and analytical results in Appendix O is unclear. The Workplan should be revised to clarify this point. In addition, pending review of this additional information, additional soil and/or groundwater assessment may be necessary at this SWMU.

**RESPONSE:** A copy of the incident report detailing the spill, sampling activities, and cleanup measures will be included as an appendix in the Workplan. In addition, the text will be revised to clarify the information pertaining to the confirmation sampling which occurred following the cleanup of contaminated soils.

#### **COMMENT 24: SWMU #19 — Solid Waste Transfer Station**

The RCRA Facility Assessment (RFA) Report describes SWMU #19 — Solid Waste Transfer Station as an unpaved, open area which served as a staging area for temporary storage of solid waste. As part of past practices, solid wastes were stored on bare ground. Currently, the wastes are temporarily stored in containers prior to shipment offsite for disposal. Two comments are generated regarding this SWMU.

- A. In the Department's previous review of the RFI Workplan, comment 14 stated that since solid waste had at one time been stored on the ground, soil samples should be collected from this area and analyzed for appropriate constituents. NSY's response to this comment was that since this SWMU was not identified in the Hazardous Waste Permit as one requiring further assessment under the RFI, then further assessment was not proposed. This is unacceptable. Due to the nature of past waste activities at this site and the apparent type of waste managed, there appears to be a distinct possibility of soil and/or groundwater contamination at this SWMU. Unless NSY can furnish the Department additional information to convince it that the potential of contamination to the environment as a result of operations of this SWMU is negligible, the RFI Workplan must be revised to include measures to assess this SWMU.

**RESPONSE:** As previously stated SWMU #19 has served as a transfer station for solid waste. This activity included the transfer of solid waste from one bin to another. Typically the maximum waste accumulation time was 1-2 days. There is no documentation to substantiate this process.

- B. Additional information is required regarding the operational nature of this SWMU. The RFI Workplan should be revised to indicate the origin of the waste(s) staged at this SWMU, how long the waste remains in the staging area prior to shipment offsite, and how often and the quantity shipped offsite.

**RESPONSE:** As outlined in the previous response, activities at SWMU 19 included the transfer of solid waste from one bin to another. The maximum accumulation time was 1-2 days.

#### **COMMENT 25: SWMU #20 — Waste Disposal Area**

SWMU #20 — Waste Disposal Area is an open area in which solid wastes such as cardboard boxes, etc. are disposed and is located adjacent to SWMU #19 — Solid Waste Transfer Station. The RFA Report recommends assessment of soil and groundwater contamination that may be emanating from this SWMU. Two comments have been generated regarding proposed assessment of SWMU #20.

- A. The RFI Workplan recommends assessment of this SWMU in conjunction with the assessment of SWMU #9 — The Sanitary Landfill. This approach appears reasonable since SWMU #20 is reportedly located on the area encompassed by SWMU #9.

However, the proposed assessment activities for SWMU #9 do not include collection of soil samples from the area of SWMU #20. In fact, as noted in comment 18B above, the RFI Workplan does not propose to collect a minimum number of soil samples during assessment of SWMU #9. Therefore, the RFI Workplan must be revised to include collection of soil samples from the vicinity of SWMU #20.

**RESPONSE:** The RFI Workplan will propose the installation of one soil boring which will be converted to a monitoring well. This soil boring/monitoring well will be included in the assessment of SWMU #9.

- B. The RFI Workplan states "Groundwater monitoring in the surrounding area has found widespread but low level contamination which cannot be remediated without much greater expense than potential benefits might justify." This statement is made without any supporting data and information. In addition, the amount of remediation that may be required for each SWMU is dependent upon determining the impact to the environment. After the RFI is complete, a Corrective Measures Study (CMS) will be conducted to determine the levels to which remediation will be completed and the methods of remediation. This statement should be deleted from the RFI Workplan.

**RESPONSE:** This statement will be deleted from the text.

#### **COMMENT 26: SWMU #21 — Old Paint Storage Area**

This area was previously used for temporary storage of containerized paint waste and sand-blasting operations. The waste containers were stored on a 20 by 180 feet concrete pad to await offsite transport. Two comments regarding proposed assessment of this SWMU are provided below.

- A. The RFI Workplan notes that soil samples will be collected from 16 locations surrounding this SWMU, however, Figure 3-9 "Proposed sample locations — Old Paint Storage Area" includes only 11 soil sampling locations. This figure should be revised to indicate all proposed sampling locations.

**RESPONSE:** Figure 3-9 will be revised to illustrate all proposed sampling locations and will include a graphic scale.

- B. It is proposed to install four "temporary" monitoring wells around this SWMU. According to the Workplan, use of a drill rig to install monitoring wells is believed to be difficult due to swampy conditions around the unit. The RFI Workplan proposes the installation of "temporary" monitoring wells must be included in the RFI Workplan. The Workplan should be revised to include the information discussed above concerning the construction of "temporary" monitoring wells. In addition, the South Carolina Well Standards and Regulations (R.61-71) require submittal of a separate request to the Department for monitoring well approval prior to installation of any monitoring wells.

**RESPONSE:** All monitoring wells will be installed as "permanent" monitoring wells in accordance with applicable State and federal guidelines. One of the monitoring wells and three of the proposed soil sampling locations were previously located in the Cooper River based on the Kemron diagram. These are the swampy conditions being referred to in the Workplan. The soil sampling activities and monitoring well installation previously proposed will be replaced by the collection of three sediment samples.

**COMMENT 27: SWMU #22 — Old Plating Shop Waste Treatment System**

This SWMU consists of a treatment facility with two in-ground concrete tanks, one for chronic acid reduction, and one for cyanide oxidation. Additional treatment was conducted in a clarifier where soda ash was manually added and mixed with wastewater to adjust the pH to approximately 8.5 and to precipitate any chromium or other metals. Wastewater in the clarifier was allowed to settle 48 hours before being discharged to the sanitary sewer. This SWMU has not been in operation since 1982. Due to the fact that this SWMU is located adjacent to SWMU #25 — Building 44, Old Plating Operations, the RFI Workplan proposes to assess the potential of contamination of both of these SWMUs together. This approach is acceptable. However, the RFI Workplan should be revised to include a map which illustrates SWMUs #22 and #25 together.

**RESPONSE:** The Workplan will be revised to include a figure which includes both SWMUs #22 and #26.

**COMMENT 28: SWMU #24 — Waste Oil Reclamation Facility**

**SWMU #24 — Waste Oil Reclamation Facility** is utilized to reclaim waste oil from various base operations and from ships. Waste oil storage is pumped in underground pipelines from pier K, the railroad tank car loading facility, and the tank truck unloading facility. Gravity separation of water and oil loading facility, and the tank truck unloading facility. Gravity separation of water and oil occurs in two 740,880 gallon storage tanks (39A and 39D). The RFI Workplan states that all underground lines and piping associated with this SWMU are periodically pressure tested to insure integrity and therefore a release to the environment is not expected. There are three comments regarding this SWMU.

- A. The RFA Report states that this SWMU has been in operation since 1950, while the RFI Workplan states that it has been in operation since 1980. The RFI Workplan should be revised to clarify the period of operation of this SWMU.

**RESPONSE:** The SWMU has been in operation since 1950.

- B. The RFI Workplan states that the underground lines are cathodically protected and all tanks and lines pressure tested. Data from some of these tests are included in Appendix O, but a discussion of the details of these tests and how often they are conducted is not

included in the text of the RFI Workplan. Due to the volume of waste oil managed by this SWMU, the RFI Workplan should be revised to provide adequate detail to show that this testing will allow detection of a leak if one should occur.

**RESPONSE:** The lines are pressure tested annually unless a leak is suspected at which time more frequent testing is required. If a leak is confirmed, SOP requires testing of the entire waste oil system. A discussion of the details of these tests will be included in the revised Workplan.

C. The RFI Workplan should be revised to include collection of soil samples to verify that a release from this SWMU has not occurred. The Workplan should be revised accordingly.

**RESPONSE:** The only documented leak associated with the waste oil reclamation facility was at the Chicora Tank Farm which is located on a section of property that is discontinuous with that of the NSY. This area is not covered under the permit; therefore, no samples will be collected.

#### **COMMENT 29: SWMU #25 — Building 44, Old Plating Operation**

The RFI Workplan describes SWMU #25 — Building 44, Old Plating Operation. This SWMU is located in the northern portion of Building 44. This SWMU was phased out of operation in 1983 when it was replaced by a new non-cyanide process plating operation (SWMU #23 — New Plating Shop Waste Water Treatment System). Three comments have been generated regarding assessment of this SWMU.

A. The RFI Workplan notes that a previous environmental assessment has been completed for this building. The results of this assessment are described in a report titled "Environmental Study of Building 44, Demolition of Electroplating Facility, Charleston Naval Shipyard, Charleston, SC," prepared by Davis and Floyd, Inc. dated April 1991. The Department is not aware of this assessment report. A copy of this report should be submitted to the Department for review.

**RESPONSE:** A copy of the assessment report will be included as an appendix in the Workplan.

B. The RFI Workplan proposes collection of soil samples and installation of groundwater monitoring wells on all sides of this building except the south side. The Workplan does not provide an explanation as to why no samples are proposed to be collected from this side of Building 44. The Workplan should be revised to provide an explanation and to collect these samples.

**RESPONSE:** The work plan has been revised to include a groundwater monitoring well on the south side of building 44.

C. The Workplan proposes to analyze soil and groundwater samples collected during assessment of this SWMU for RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) and cyanide. However, since solvents are often used in conjunction with electroplating operations, both soil and groundwater samples must be analyzed for volatile and semi-volatile constituents. The Workplan should be revised accordingly.

**RESPONSE:** The text will be revised to include analysis for volatile and semi-volatile constituents.

**COMMENT 30:**

As indicated in the opening paragraph above, SWMUs 26 through 35 were identified during an unannounced inspection conducted by the EPA and the Department on August 20 through 22, 1990. The RFI Workplan describes "Enforcement of SOP" and "Zone Inspections" as preventative measures the Shipyard will use to prevent areas such as these from coming into use in the future. However, judging from the discovery of 10 SWMUs during this unannounced inspection, it would appear that these procedures have been ineffective. Therefore, the RFI Workplan should be revised to describe additional discussion or measures that NSY will implement to become more effective in preventing areas like those discussed from coming into existence.

**RESPONSE:** The "Zone Inspections" were implemented as a result of the unannounced inspection, therefore, it is inappropriate to describe this preventative measure as ineffective.

**COMMENT 31:**

With respect to SWMUs discovered during the EPA and Department's unannounced inspection conducted on August 20-22, 1990, the RFI Workplan notes that several of these SWMUs (such as SWMU #26 — Waste Storage Area, Building 64-40, Pier C and SWMU #28 — Waste Paint Storage Area, West End, Pier C) were operational during specific time periods even though these areas were in use without proper authorization. It is unclear as to how NSY is aware of the specific operational dates of these SWMUs when in fact these units existed without proper authorization. The RFI Workplan should be revised to discuss this point in detail.

**RESPONSE:** The NSY authorized the use of these areas to perform specific work tasks during the time periods indicated. It is assumed the wastes were generated as a result of the tasks performed. The NSY did not however, approve of the storage of these wastes in the areas in question.

**COMMENT 32: SWMU #27 — Waste Storage Area, East End, Pier C**

The RFI Workplan describes this SWMU as a satellite accumulation area located at the east end of Pier C. It is approximately 200 square feet of concrete floor space which is surrounded by a berm. A storm drain is located within the bermed area. Virgin paints, enamel thinners and fire retardants used for ship repair are stored here. The RFA performed by NSY (dated 3/1/91) noted that this unit ceased use in August 1990. The RFI Workplan, which is dated September 1991, includes recommendations to reduce the possibility of a release to the environment from this SWMU. These recommendations include expanding the bermed area, sealing off the storm drain, etc. The RFI Workplan should be revised to explain why these measures are necessary if the SWMU is no longer used, as indicated in the RFA Report. It may become necessary to assess the potential for a release to the environment via the storm drain. The RFI Workplan should be revised accordingly.

**RESPONSE:** According to the Shipyard this area is no longer in use. The storm drain is actually a grate. The fallout from storm water runoff goes directly into the Cooper River. The Workplan may be revised to include a provision for collecting a sediment sample beneath the dry dock in the Cooper River.

**COMMENT 33: SWMU #29 — Building X-10**

**SWMU #29** — Building X-10 is located on the south side of Building X-10 and was used as a waste accumulation area for waste paint, waste monoethanolamine, and waste solvents. This SWMU is primarily covered with asphalt with some soil and grassy areas to the southwest and northeast. The RFI Workplan proposes to incorporate investigation of SWMU #34 (Morale, Welfare, and Recreation) into this SWMU assessment. Based on their proximity, this approach appears reasonable. Two comments have been generated regarding the proposed assessment of these SWMUs.

- A. A single map depicting both SWMUs, relevant nearby structures and all proposed sampling locations should be prepared and included in the revised RFI Workplan.

**RESPONSE:** Figure 3-11 will be revised to depict both SWMUs.

- B. The RFI Workplan proposes collection of soil samples from 10 locations around these SWMUs. Samples are to be collected at one-foot intervals to a total depth of five feet. The ten samples collected from the surface to 1 foot depth will be split for grab and composite sample analyses. Ten subsamples will be divided and combined into three distinct composites based on location while the remaining grab subsurface samples will be archived. The Workplan goes on to propose that the composite samples will be analyzed for volatile, semi-volatile, and total RCRA metals, cyanide, and PCBs. However, in accordance with Section 4.11.5 (Special Techniques and Considerations) of EPA Region IV's Standard Operating Procedures and Quality Assurance Manual

(dated 2/1/91), soil samples that are to be analyzed for volatile constituents should not be composited. The Workplan must be revised accordingly.

**RESPONSE:** Agreed.

**COMMENT 34: SWMU #30 — Satellite Accumulation Area - Building 13**

The RFI Workplan notes that this SWMU is an asphalt area located between Buildings 13 and 187. This area receives waste generated in a laboratory in Building 13. A storm sewer drain is located 20 feet away. Spillage was noted on the asphalt beside two 55-gallon drums of oil sludge that were observed to be present during the EPA and DHEC site inspection on August 20-22, 1990. The Workplan goes on to note that additional construction, operation, and maintenance measures are planned for this SWMU, such as spill control and installation of additional equipment such as a concrete berm and a roof, drip pans, and signs. Also, routine inspections will be instituted and waste pickup will occur on a preset schedule. The RFI Workplan should be revised to indicate if these measures have been implemented. In addition, since spillage was noted around this SWMU during the Department's and EPA's inspection, the RFI Workplan should be revised to include collection of soil samples through the asphalt at this SWMU, particularly along any cracks that may be observed in the asphalt.

**RESPONSE:** During the inspection of SWMU #30 distinct cracks in the asphalt were observed. One sediment sample is proposed for collection from the catch basin adjacent to the unit. In addition, there is an apparent UST in the immediate vicinity. 4 monitoring wells were identified and are presumed to have been installed for monitoring the UST system. Groundwater samples will be collected from each of the four wells and analyzed for volatiles, semi-volatiles, and RCRA metals. The sediment sample will be analyzed for RCRA metals, only.

**COMMENT 35: SWMU #31 — Waste Paint Storage Area, Dry Dock No. 5**

The RFI Workplan describes this unit as a satellite accumulation point located within Dry Dock Number 5 on a concrete floor near the center of the north wall. A tent is erected over canvas-covered plywood with sand bag berms surrounding it. A trench drain directly behind the unit is part of the intake system to drain the dry dock once a ship has entered. The Workplan notes that hazardous constituents have the potential to migrate to surface waters (the Cooper River) during draining of the dry dock. The Workplan goes on to note that "additional operational and maintenance measures are to be implemented for prevention of spills and handling emergencies" then goes on to recommend No Further Action. However, in order to alleviate the potential for adverse environmental impact from operations of this unit, the NSY should propose to alter the location or the operations of this SWMU to prevent the chance of adverse effects to human health or the environment. NSY should consider all alternatives to eliminating the potential of adverse effects of this SWMU to the environment, including no longer using this area.

**RESPONSE:** According to NSY this area is no longer in use and will be noted as such in the Workplan. SWMU #31 is located within the confines of the dry dock itself. Normal operating procedures for the dry dock would require a sequence of flooding and discharge as ships are brought in for maintenance. Any accumulated waste material would be discharged to the Cooper River. Two sediment samples are proposed to be sampled from the Cooper River and analyzed for RCRA metals.

**COMMENT 36: SWMU #32 — Waste Paint Storage Area, Building 195**

The RFI Workplan describes this unit as being approximately 400 feet square located 40 feet from the edge of the Copper River with a surface of concrete and asphalt to the south. During the EPA and DHEC inspection, this area contained five 55-gallon drums of paint waste, lead and thinner waste, numerous 5-gallon containers with paint waste and trash bags containing paint and solvent rags. The RFI Workplan goes on to note that the shipping container allowed liquids to leak into a storm drain. Finally, the RFI Workplan notes that since this area was used as a one-time accumulation area and that since the materials stored within this area have been removed, that no further action is planned for this SWMU. However, due to past spills and the uncertainty regarding the time period in which this unit was in use, the RFI Workplan should be revised to include assessment of the potential of adverse impact to the environment via the storm drain. The Workplan should be revised accordingly.

**RESPONSE:** The Workplan will be revised accordingly.

**COMMENT 37: SWMU #33—Waste Paint Storage Area, West End, Dry Dock Number 2**

The area was basically of the same nature as waste paint storage areas discussed above, therefore the RFI Workplan for SWMU #33 should be revised as described in comment 35 and 36 above.

**RESPONSE:** SWMU #33 was used as a one time waste accumulation area. During the site inspection spillage was observed at the west end of the dock. Two catch basins are located east and west of the observed release. One sediment samples will be collected from each basin and analyzed for RCRA metals.

**COMMENT 38: SWMU #35 — Building X-12**

The RFI Workplan describes this SWMU as approximately 100 square feet in size and made of gravel. The unit is located on the east side of Building X-12. During the EPA and DHEC inspection, five 55-gallon containers and numerous smaller containers of waste paint were stored here. None of the containers were properly labeled, had dates of accumulation, or were listed in inspection records. The lids on many of the containers were not secured. The RFI Workplan recommends no further action for this SWMU, noting that the stored containers were removed from the area and that no staining or other evidence was observed to indicate a release had occurred from this SWMU. However, due to the unknown time period which this unit could have been in operation, the RFI Workplan should propose collection of soil samples from this

area and to analyze the samples for appropriate constituents. The Workplan should be revised accordingly.

**RESPONSE:** The Workplan does propose sampling in the vicinity of Building X-12. The text will be revised as necessary to clarify the proposed sampling activities.

**COMMENT 39: SWMU #36 — Building 68 - Battery Shop**

This SWMU — Building 68, Battery Shop was discovered by the NSY. An RFA Report was transmitted to the EPA and the Department in October 1991 (Sneed to Scarbrough, 10/18/91). This RFA describes the Battery Shop as a building in which operations began in the 1940's and which is still in use. The RFA notes that on two occasions the floor drain to the holding tank separated from the floor, allowing approximately 1025 gallons of sulfuric acid to discharge to the soil below the building. Two comments have been generated regarding assessment of this SWMU.

- A. The RFA proposes to analyze soil and groundwater samples for lead and pH. Due to the nature of the material that was managed in this building, it appears that soil and groundwater samples should be analyzed for all metals which may be associated with batteries. The RFI Workplan should be revised accordingly.

**RESPONSE:** The acid that was spilled was virgin material which had never been introduced to batteries therefore, analysis for an expanded lists of metals is not thought to be necessary.

- B. The RFA proposes to assess the potential for groundwater contamination through the collection of groundwater samples through the two proposed soil borings discussed in comment A above using the HydroPunch sampling tool. While the HydroPunch can be used as a screening tool to aid in the placement of permanent monitoring wells, the Department does not accept groundwater analytical results from samples collected through a non-repeatable sampling method, such as the HydroPunch, to determine the absence of groundwater contamination. Therefore, permanent monitoring wells must be installed in this area. The RFI Workplan must be revised accordingly.

**RESPONSE:** The Workplan will be revised to include the installation of three permanent groundwater monitoring wells during Phase II if necessary.

**COMMENT 40:**

The RFI Workplan proposes that the degree of monitoring well development will be determined from measurements of pH and specific conductivity. The Department also requires the measurement of turbidity during monitoring well development. The Workplan should be revised accordingly.

**RESPONSE:** The Workplan will be revised to reflect the degree of monitoring well development will be based on pH, temperature, specific conductivity, and turbidity.

**COMMENT 41:**

The Workplan is unclear as to the method of purging of the monitoring wells prior to sampling. The Workplan states "dedicated pumps or tubing will be used." The RFI Workplan should be revised to clearly indicate the method of purging to be used.

**RESPONSE:** The Workplan will be revised accordingly. All wells will be purged by bailing or pumping. Samples will be collected using a bailer.

**COMMENT 42:**

Table 4-1 "EPA Analytical Methods for Constituents of Interest" in the Workplan lists methods 7040 through 7950 (Atomic Absorption) as the methods that will be used to analyze for total metals. The Workplan should be revised to indicate the specific analyses for each metal constituent. The particular analytical method should be the one that provides the lowest detection limit. The Workplan should be revised accordingly.

**RESPONSE:** The Workplan will be revised accordingly.

**Martin Marietta Energy Systems, Inc.**

**COMMENT 1:**

All reporting units for chemical concentrations should be standardized in the descriptions of sample waste management units (SWMUs) in Sect. 2.6. For example, p. 2-28 has defined g/gm as micrograms per gram; the accepted protocol is to report this as ug/g. On the same page, concentrations of g/g are specified, it is not clear to the reviewer what this indicates.

**RESPONSE:** The text will be revised to reflect conventional notations for concentration such as  $\mu\text{g/g}$ , mg/kg or mg/l for parts per million and  $\mu\text{g/kg}$  or  $\mu\text{g/l}$  for parts per billion.

**COMMENT 2:**

It is recommended that a scale of size be provided on each site drawing. Currently, some maps have this information and others do not.

**RESPONSE:** Figures will be revised to include a graphic scale.

**COMMENT 3:**

Kemron Laboratory has been identified as the laboratory to analyze all samples from this site. This laboratory has not undergone review under the Navy laboratory approval program. Details regarding the laboratory approval process may be found on p.9 of NEESA 20.2-047B.

**RESPONSE:** All references to use of the Kemron Laboratory will be deleted from the text. At the present time a laboratory has not been selected for the project.

**COMMENT 4:**

The quality control (QC) level to be utilized during this investigation should be specified, as this level will dictate the deliverables supplied by the laboratory. More information can be obtained on pp.4 and 60 of NEESA 20.2-047B.

**RESPONSE:** The level of quality control for this investigation will be NEESA Level C.

**COMMENT 5:**

Protocols for assigning sample numbers should be outlined. In reviewing historical data in the appendices, one cannot always assess the location of the sample.

**RESPONSE:** The QAPP will be revised to include a narrative describing the protocols for assigning sample identification numbers.

**COMMENT 6:**

It is not clear if and when samples will be obtained for dissolved metals as opposed to total metals. This should be clearly stated for each SWMU.

**RESPONSE:** The text will be revised to indicate only total metals analysis will be performed at all SWMUs where metals are a contaminant of concern. The Workplan will also outline a provision to include analysis for dissolved metals during subsequent sampling events should elevated total metals concentrations be detected during the initial sampling event.

**COMMENT 7:**

A table listing sample volumes, preservatives, and holding times for each sample parameter should be provided. The text should clearly state if preservatives will be added in the laboratory or in the field. Protocols for receiving and storing bottles in the field should be addressed.

**RESPONSE:** A table including this information has been generated and will be included in the revised Workplan.

**COMMENT 8:**

P. 4-5: Field blanks do not determine cross-contamination of samples. Field blanks check for contamination in source and rinse water used for decontamination. Field duplicates may provide information on the precision of the laboratory, but they also assess the heterogeneity of the matrix and consistency of the sample crew.

**RESPONSE:** Agreed. The text will be revised to clarify this discrepancy.

**COMMENT 9:**

P. 4-9: The text states that wells will be developed until pH, conductivity, and temperature stabilize to within 5 percent of each other. While this is applicable to conductivity and temperature; pH should stabilize to +/- .5 pH units, as 5 percent will become larger as the pH becomes more basic.

**RESPONSE:** The text will be revised to state the pH should stabilize to  $\pm .5$  pH units.

**COMMENT 10:**

P. 4-12: It is stated that validation is a primary function of the analytical laboratory. Data validation must always be independent of the laboratory. It is through data validation that data are flagged as usable, unusable, or estimated based on the analysis flags provided by the laboratory. It is a conflict for a laboratory to be charged with stating its data are unusable.

**RESPONSE:** EnSafe/Allen & Hoshall (E/A&H) will be using an independent laboratory to perform analysis of soil and groundwater samples. Upon receipt of the analytical data a E/A&H chemist will evaluate the validity of the data.

**COMMENT 11:**

P. 4-13: The extraction method provided for total petroleum hydrocarbons (3050) is incorrect. Preparation method 3050 is an acid digestion for metals analysis. Sonication using fluorocarbon-113 would be appropriate.

**RESPONSE:** The extraction method for total petroleum hydrocarbons (8015 modified) is 3550.

**COMMENT 12:**

P. 4-13: It is not clear why the 200 and 600 series methods were chosen for the analysis of water samples. The 7000 and 8000 methods are applicable to both soil and water. The 7000 and 8000 series cover Appendix IX compounds as required under the Resource Conservation and Recovery Act (RCRA); the 600 series covers the Priority Pollutant List.

**RESPONSE:** The Workplan will be revised to specify 7000 and 8000 series methods for the analysis of soil and groundwater samples.

**SOUTHDIV COMMENTS ON RFI WORKPLAN  
& CAMP NAVAL BASE CHARLESTON**

**Workplan**

**COMMENT 1:**

Update the following:

- Figure 4-1, page 4-2, "Project organization chart"
- Appendix N, "Resumes of Key Project Personnel"
- All appropriate sections and figures to include SWMU #36, Building 68, Battery Shop information
- All sections where existing monitoring wells were to be sampled. New wells will be installed at those sites and the workplan should state this.
- All changes to the existing workplan as negotiated for this CTO (well locations at SWMU #25, no soil samples located across the fence (at Hess Fuel Farm) at SWMU's 1 & 2, treatability studies as part of phase II not phase I, etc.)

**RESPONSE:** The text will be revised to address the outlined comments. In addition the text will be revised to address a phased approach, where applicable.

**COMMENT 2:**

Specifically describe how IDW will be handled. Minimize the volume of IDW as much as possible throughout the investigation.

**RESPONSE:** Investigation Derived Wastes (IDW) produced during investigation activities will be handled according to the guidelines provided in the guidance document 9345.3-02 - *Guide to the Management of Investigation Derived Wastes* published by the E.P.A. The IDW consisting of soils produced during the completion and installation of hand augerings, soil borings and monitoring wells and groundwater derived from the completion and purging of the monitoring wells may be either spread or poured directly on the ground around the wells from which it originated. This method for disposal of IDW will only be allowed when strict field screening and best professional judgement indicate that the IDW will not impair human health and the environment.

**COMMENT 3:**

Include a table that specifically describes what samples will be collected and how each will be analyzed.

**RESPONSE:** The text will be revised to include a table which identifies samples to be collected and specific analytical methodologies.

**Corrective Action Management Plan (CAMP)**

**COMMENT 1:**

Update to include SWMU #36, Building 68, Battery Shop.

**RESPONSE:** The Workplan addendum outlining investigative activities planned for SWMU #36 will be incorporated into the text.

**COMMENT 2:**

Update the schedule to include both the Project and Field Schedules as submitted by E/A&H. Also add approximately 2 months to the end of the field work for the phase II field investigation.

**RESPONSE:** The project schedule will be updated for submittal.

**COMMENT 3:**

State that the soil gas and geophysical surveys will be implemented prior to the approval of the work plan.

**RESPONSE:** The text will be revised accordingly.

**COMMENT 4:**

Section 2, paragraph 2 — Change "Appropriate measures will be proposed as necessary." to "Appropriate. . . . proposed, following the phase I investigation, as necessary."

**RESPONSE:** The text will be revised accordingly.