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SUMMARY OF MAY 1983 INITIAL ASSESSMENT STUDY OF NAVAL BASE CHARLESTON  
NEESA REPORT NUMBER 13 007 CNC CHARLESTON SC  
05/01/1983  
NAVFAC SOUTHERN



DEPARTMENT OF THE NAVY

CHARLESTON NAVAL SHIPYARD

NAVAL BASE

CHARLESTON, S. C. 29408

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S. C. DEPT. OF HEALTH AND  
ENVIRONMENTAL CONTROL  
Bureau of Solid & Hazardous  
Waste Management

Mr. Robert Malpass  
S.C. Department of Health  
and Environmental Control  
Bureau of Hazardous and Solid  
Waste Management  
2600 Bull Street  
Columbia, SC 29201

Gentlemen:

Enclosed please find the final reports, Initial Assessment Study, Naval Base, Charleston, and Assessment of Potential Oil and Hazardous Waste Contamination of Soil and Ground Water, Charleston Naval Shipyard. These studies have been completed in accordance with the Navy program to determine where hazardous waste have been deposited in the past, to assess the present and future environmental impact of these waste, and to develop control measures where needed. Copies of these reports have also been forwarded to EPA Region IV. It should be noted that while the studies conclude no immediate threat to human health or the environment exists, certain minor corrective action is indicated. Consistent with the recommendations contained in the reports, the following actions have been or are being taken:

- a. Caustic Pond - The site has been identified as a potential safety hazard on the Base Master Development Plan.
- b. Chemical Disposal Area - The site has been identified as a potential safety hazard on the Base Master Development Plan.
- c. Pesticide Mixing Area - The area has been disced, fertilized and seeded with grass.
- d. Electrical Transformer Storage Area - A more definitive soil sampling and analysis program has already been completed for this area. There are several spots with DDT and PCB concentrations in the 50 ppm range along the eastern and southern boundaries of the concrete slab. A linear strip of soil along these portions of the slab will be removed, containerized, and disposed of as hazardous waste.

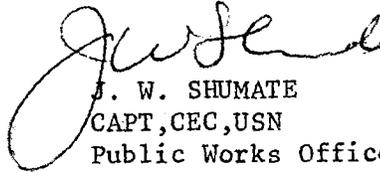
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e. Oil Sludge Pit - A collection system has been installed in this area to avoid possible contamination of nearby watercourses by periodically removing the collected oil.

If you have any questions, please contact John Sneed, P.E., Head, Environmental Engineering and Hazardous Waste Management Branch at (803) 743-5519.

Sincerely,



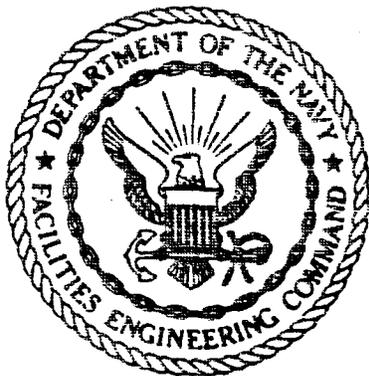
J. W. SHUMATE

CAPT, CEC, USN

Public Works Officer

By direction of the Commandant  
Charleston Naval Shipyard

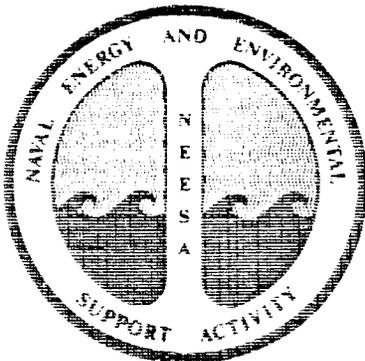
*See Tom Nix, BSHNM  
for copies of the reports*



May 1983

**INITIAL ASSESSMENT STUDY  
OF NAVAL BASE CHARLESTON,  
CHARLESTON, SOUTH CAROLINA**

NEESA Report No. 13-007



**NAVAL ENERGY AND ENVIRONMENTAL  
SUPPORT ACTIVITY**

Port Hueneme, California 93043

RELEASE OF THIS DOCUMENT REQUIRES PRIOR NOTIFICATION  
OF THE CHIEF OFFICIAL OF THE STUDIED ACTIVITY

rec'd from  
Cresswell  
Oct 27, 1983

SUMMARY OF MAY 1983 INITIAL ASSESSMENT STUDY OF NAVAL BASE CHARLESTON  
NEESA Report Number 13-007  
by: John Cresswell

Eight areas have been designated by the Navy as potentially contaminated. The following is a list of those areas, a brief description of the waste placed in them, a summary of any monitoring done, and the Navy's proposed solution.

1. Base "Sanitary" Landfill - Closed 1973
  - a) Wastes Disposed of Include: asbestos, acids, PCB's, waste oils, waste solvents, waste paints, paint sludges, mercury, metal sludge, acid neutralization sludge, various inorganic and organic chemicals, and sanitary waste. The quantities are unknown, but are believed to be large. (See May 1983 Report Page 2-4)
  - b) Groundwater Monitoring Results: Indicator parameters Na, TOC, and Conductivity were very high. The following primary and secondary parameters were high: Sulfate, Iron, Arsenic, Barium, and Selenium. The organic G.C. Scan included twenty separate compounds. In addition Methylene Chloride, Chlorobenzene, Vinyl Chloride, Chloroform, Dibromochloromethane, and PCB's were detected.
  - c) Conclusions - (See Page 3-4 May 1983 Report)  
Potential contamination of groundwater is being investigated, no conclusions have been made.
  - d) Recommendations - (See Page 4-5 May 1983 Report)  
Install six groundwater monitoring wells and sample to determine contaminants then sample probable entry points of landfill leachate into surface water for those contaminant parameters.

2. Chemical Disposal Area

- a) Waste Disposed Of: An unknown amount and variety of chemicals including decontaminating agents.
  
- b) Groundwater Monitoring Results: Indicator parameters Na, TOC, and Conductivity were high. The following primary\* and secondary parameters were high: Sulfate, Iron. The Organic G.C. Scan included five separate compounds. In addition Methylene Chloride, Chlorobenzene, and Chloroform were detected.  
\*Note: not enough primary D/W standards were analyzed for. See appendix D of G&M, Inc. Report.
  
- c) Conclusions - (Page 3-4 May 1983 Report)  
The probability of contaminant migration is unlikely; however, if proposed excavations occur there may be a potential safety hazard.
  
- d) Recommendations - (Page 4-6 May 1983 Report)  
Locate individual locations of chemicals and excavate them and dispose of off base. No ground water monitoring recommended.

3. Oil Sludge Pits

- a) Wastes Disposed Of: Oil sludges.
- b) Groundwater Monitoring Results: Sulfate was high. Methylene Chloride was detected as well as PCB's. In addition to the samples taken several test holes were dug and they filled with oil. Also, several oil slicks of "undetermined" origin have been reported in the Cooper River near the pits.
- c) Conclusions - (Page 3-4 May 1983 Report)  
Oil leaching into the Cooper River could create environmental degradation to the aquatic communities. No impacts to human health are anticipated.
- d) Recommendations - (Page 4-6 May 1983 Report)  
Determine extent of contamination and remove and dispose of the oil and oily residue.

4. Petroleum, Oil, and Lubricants (POL) Transfer Area

- a) Wastes Disposed Of: Spillage of Petroleum, Oil, and Lubricants on the ground when transferring these products from train cars to tanks.
- b) Groundwater Monitoring Results: No groundwater monitoring has been done. However, post holes were dug near by at one time and they showed oil in the holes. Also, 36 borings were drilled around the site.
- c) Conclusions - (Page 3-5 May 1983 Report)  
POL could be migrating to the Cooper River and thus may cause degradation of the aquatic communities; however, no adverse impacts on the terrestrial biota of the base are expected.
- d) Recommendations - (Page 4-7 May 1983 Report)  
Determine extent of contamination and remove and dispose of the oil and oily residue.

5. Former Firefighting Training Pit - Closed 1972

- a) Wastes Disposed Of: waste oil, gasoline, and alcohol which were burned during firefighting training exercises.
- b) Groundwater Monitoring Results: No monitoring wells were installed. However, the Coast Guard in 1971 cited the Navy Base for an oil spill from the pit into Shipyard Creek. At the time of closure four inches of sludge reportedly lay at the bottom of the pit. Also, three borings were made around the site.
- c) Conclusions - (Page 3-5 May 1983 Report)  
Any POL remaining in the soil could leach into Shipyard Creek, resulting in the potential degradation of aquatic and littoral communities.
- d) Recommendations - (Page 4-9 May 1983 Report)  
Install five borings to verify presence of contamination. If soils are found to be contaminated remove and dispose of, or if possible degrade the residual sludge biochemically in place by nutrient enrichment and disking.

6. PCB Storage Area

- a) Wastes Disposed Of: Transformer oil possibly containing PCB's.
- b) Groundwater Monitoring Results: High levels of PCB were noted in the sediments around this site. However, the groundwater did not reflect as high a concentration.
- c) Conclusions - (Page 3-5 May 1983 Report)  
The Navy is currently conducting a study program to determine if these soils are contaminated with PCB's. No conclusions have been made.
- d) Recommendations - (Page 4-9 May 1983 Report)  
Take 25 samples around the site of the top composite 12" of soil.

7. Former Pesticide Mixing Area

- a) Waste Disposed Of: Pesticide equipment was rinsed off in this area (approximately 20 square yards) which now is devoid of vegetation.
- b) Groundwater Monitoring Results: Some Pesticide compounds were reflected in both the ground water and sediments.
- c) Conclusions - (Page 3-5 May 1983 Report)  
The soils in the area are potentially contaminated by pesticides that could be transported to Shipyard Creek via stormwater runoff. This runoff may cause environment degradation to aquatic and littoral communities of shipyard Creek.
- d) Recommendations - (Page 4-9 May 1983 Report)  
Recommend five 12" composite soil samples be taken. If soil is contaminated several soil borings should be made and the cores segmented by depth and analyzed to determine the extent of vertical migration.

8. Caustic Pond

- a) Waste Disposed Of: Calcium Hydroxide.
- b) Groundwater Monitoring Results: Calcium, Chloride, and Sulfate are all high.
- c) Conclusions -  
The site represents little hazard if left undisturbed and if public access is prohibited. The pit represents a possible safety hazard due to the potential for caustic burns to personnel disturbing the ground.
- d) Recommendations - (Page 4-10 May 1983 Report)  
Hand auger approximately 25 to 50 borings one foot deep to determine the horizontal and vertical extent of the calcium hydroxide sludge. Once the location of the residual sludge has been determined, it is recommended that one of the following alternatives be implemented:
  - 1) The contaminated area be permanently identified as a potential hazard, with signs at the actual location and also on the installation base map; or,
  - 2) The calcium hydroxide sludge be neutralized in situ by the use of a dilute solution of an appropriate acid (e.g., dilute hydrochloric acid solution). The sludge outside of the ponded area could be repeatedly disked to bring it to the surface and treated with acid solution until neutralized. The sludge in the ponded area could be similarly treated after the pond is drained.