

**REVISED PHASE II
RCRA FACILITY ASSESSMENT REPORT
NAVY AMPHIBIOUS BASE, LITTLE CREEK
NORFOLK, VIRGINIA**

EPA I.D. No. VA 5170022482

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TABLE OF CONTENTS

	<u>Page</u>
I. INTRODUCTION	1
II. FACILITY DESCRIPTION	2
III. ENVIRONMENTAL SETTING	5
A. Meteorology	5
B. Floodplain and Surface Water	5
C. Geology and Soils	6
D. Groundwater	9
E. Receptor Information	10
IV. SOLID WASTE MANAGEMENT UNITS	13
V. OTHER AREAS OF CONCERN	122
VI. EXECUTIVE SUMMARY	124
VII. RELEASE PATHWAYS	126
VIII. CONCLUSIONS AND SUGGESTED FURTHER ACTIONS	127
IX. REFERENCES	167
X. VISUAL SITE INSPECTION SUMMARY AND PHOTO LOG	168
A. Copy of Field Notes and Log Book	
B. Visual Site Inspection Photography Log	

I. INTRODUCTION

The Hazardous and Solid Waste Amendments of 1984 (HSWA) expanded EPA's authority under the Resource Conservation and Recovery Act (RCRA) to require corrective action for releases of hazardous wastes or constituents from solid waste management units (SWMUs) and other areas of concern (AOCs) at all operating, closed, or closing RCRA-regulated facilities.

The first phase of the corrective action program established by EPA is the RCRA Facility Assessment (RFA). The RFA includes a Preliminary Review (PR), Visual Site Inspection (VSI), and, as warranted, a Sampling Visit (SV). The primary objective of the RFA is to identify SWMUs and other AOCs, and to assess their potential for release of hazardous waste or constituents to the environment. This document presents the results of the PR and the VSI portions of the RFA for the Naval Amphibious Base, Little Creek, Virginia. The Naval Amphibious Base is a Department of Defense facility involved in the support of Naval operations along the east coast of the United States. Operations at this facility involving hazardous materials include: closed & active landfills, electroplating, laundry waste storage, oil disposal, paint spraying, vehicle maintenance, PCB storage areas and a hazardous waste storage facility.

This report presents the information acquired through the RFA process including the Preliminary Review (PR) and the Visual Site Inspection (VSI) performed at the facility. The PR identified SWMUs and other AOCs at the facility, and additional information needs. The PR information represents a desk-top review of the file information from EPA Region III (including RCRA, CERCLA, Air, and Water information). The VSI conducted on June 27-July 1, 1988, focused on identifying SWMUs and collecting visual evidence of release at the facility. Data gaps identified during the PR process were discussed with facility personnel in an attempt to obtain all available information. This report was prepared using the U.S. EPA's RCRA Facility Assessment Guidance document (October 1986). The focus of this report was on SWMUs and AOCs with high potential for release. Also, as many similar units as possible were grouped (e.g., oil/water separators).

II. FACILITY DESCRIPTION

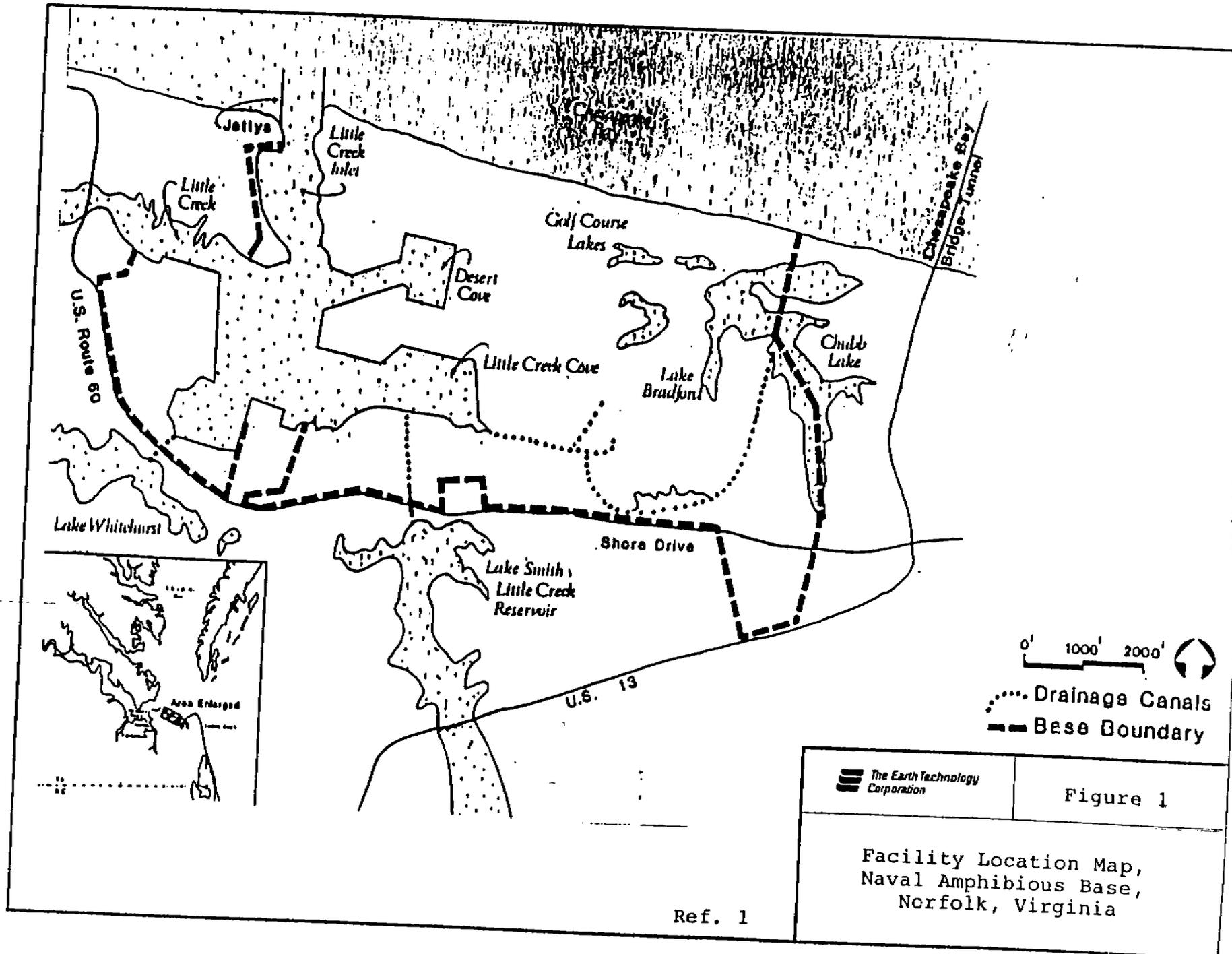
The Naval Amphibious Base (NAB), Little Creek is located about seven miles northeast of Norfolk, Virginia. The facility is adjacent to the Chesapeake Bay, as shown in Figure 1.

The base was commissioned in July 1945 by combining four other contiguous properties. The NAB's original mission was to provide logistic support for amphibious operations and training. The Navy began purchasing land in 1940 from private estates and the Pennsylvania Railroad. The Amphibious Training Base was the first activity to be commissioned, and was located on the southwestern corner of the present NAB Little Creek. This training base started in August 1941 and was aimed at training landing craft crews for operational assignments. Another facility, the U.S. Naval Section Base, was located in the same area until 1944. Its mission was to act as a forwarding depot and patrol vessel and minesweeper servicing facility. In 1942, Camp Bradford (which now makes up most of acreage NAB uses today) was established as a Construction Battalion Training Center. In 1943, this camp was relinquished to the Amphibious Training Base, and the area was used for underwater demolition units, beachmaster units, scouts and raiders units, and for training landing ship crews. Another camp was located east of Camp Bradford. The name was Camp Shelton and it housed the Armed Guard Training Center (used in training gun crews for merchant vessels). In late 1946, the NAB absorbed Camp Shelton. (Ref. 1).

In 1946, the Naval Amphibious Base became a permanent base. In the 1950s, barracks, upgraded training facilities, and service and utility buildings were constructed. During that same time, a new water supply system and pier space for ships and landing craft were added. The total area of the base was 2,000 acres by 1959 (Ref. 1).

In 1964, the U.S. Naval and Marine Corps Reserve Training Center was constructed. Repair services were established to provide port, pier, and other support for ships based at the facility. An expansion in shopping areas, medical and dental support, and laundry facilities was seen when counterinsurgency training for Southeast Asia began. Many of these facilities were upgraded in the 1970s (Ref. 1). In 1975, a new command (Commander Naval Surface Force Atlantic) assumed administrative control over NAB Little Creek. In the late 1970's and 1980's several new activities were established while others were disestablished. For example, the SEAL Team 2 was begun while the Inshore Undersea Warfare Group Two was terminated. Also, some new tenant activities were added, including the Behavior Skill Training Unit (BEST).

The Naval Amphibious Base is operating under interim status and has numerous small, separate, and distinct waste generating activities resulting from its maintenance functions. These wastes include solvents, used paints, used batteries, paint



 The Earth Technology Corporation	Figure 1
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Facility Location Map,
Naval Amphibious Base,
Norfolk, Virginia

Ref. 1

strippers, and others. The Public Works Department (PWD) has oversight responsibilities for management of wastes generated through the base operations. To support these operations, NAB currently operates one hazardous waste storage facility (SWMU 76) at Building 3091 and a hazardous waste accumulation area (SWMU 111) at Building 106. The units collect all hazardous waste from ships and tenant units at the base. The wastes are then removed by private contractors to the Defense Reutilization and Marketing Office (DRMO) offsite base. The NAB will be submitting a Part B permit to the Virginia Department of Waste Management (VDWM) prior to November 8, 1988 to operate (SWMU 111) as a hazardous waste storage facility. The NAB then plans to RCRA close the current hazardous waste storage pad (SWMU 76), although a time has not yet been determined (Ref. 1 and 2).

As mentioned above, the facility is operating under interim status; RCRA Part B permit application was submitted to the Virginia Department of Waste Management on September 22, 1988. The NAB also has or is in the process of obtaining other environmental permits. In July 1988 the NAB applied for an NPDES permit from the State of Virginia for discharges to surface water bodies. Since 1981, NAB has also had an air permit (Registration No. 60033) for the Steam Plant (SWMU 105) and SIMA operations (SWMU 85-91). According to facility personnel, there have been no violations to date (Ref. 6).

Under the Navy Assessment and Control of Installation Pollutants (NACIP) Program, several multiphased environmental surveys are being conducted. Six sites at NAB are being addressed under the NACIP Program. These are:

<u>SWMU #</u>	<u>Unit Name</u>
15	PCP Dip Tank Area
24	Driving Range Landfill
25-26	Sewage Treatment Plant Area Landfills
27-28	Former School of Music Plating Shop
77	Old Navy Exchange Laundry
124-128	Amphibious Base Landfill

The first phase of the NACIP Program, the Initial Assessment Study (IAS) was completed in December 1984. The IAS identified and assessed contamination from suspected past hazardous material operations that could pose a threat to human health and the environment. The second phase of the NACIP Program, the Confirmation Study (CS), is currently in progress, with additional environmental sampling to be performed at all six sites during the fall of 1988. The CS is intended to confirm or deny the presence of contamination or possible health hazard and quantify the extent of any problems that might exist. The individual SWMU writeups for these NACIP units are presented in Section IV of this report, which discusses all findings.

III. ENVIRONMENTAL SETTING

A. Meteorology

Little Creek Naval Amphibious Station is located on the outer part of the Atlantic Coastal Plain. The climate of the coastal plain is moderated by the nearby Chesapeake Bay and Atlantic Ocean. Winters in this area are typically mild, rarely reaching the freezing point. Daily winter temperatures often average near 50°F. Summers in the area benefit from ocean-originating breezes during the day and land breezes returning more slowly at night. Average daily temperatures in July range from 75-87 degrees°F. The maximum temperature recorded for the region during the period 1879-1988 was 103 degrees°F. The minimum temperature, over the same period, was -3 degrees°F in 1985. (Ref. 8).

Annual precipitation for the area is 45 inches per year with the bulk of the precipitation occurring in the summer months. Snowfall averages 7.3 inches per year at the Norfolk International Airport. Atlantic Ocean hurricanes are moderated at Little Creek, in large part, because of the location of the base within the mouth of the Chesapeake Bay. Even with this moderating effect, hurricane Gloria (1985) provided 5.52 inches of rain (within a 24 hour period) and caused flooding to occur in the City of Norfolk. The highest rain recorded during a single 24 hour period in the area was 11.2 inches from Hurricane Cleo, 1964. (Ref. 8).

The prevailing winds are from the southwest and average 12.2 miles per hour. The mean tidal range in Little Creek Harbor is 2.6 feet and currents average 0.9 knots. (Ref. 1).

B. Floodplain and Surface Water

The Base is nearly surrounded by surface water. The Chesapeake Bay is located along the northern boundary of the base, Lake Bradford and Chubb Lake form part of the eastern boundary, Little Creek Channel meanders through the western section of the base and Lake Smith and Lake Whitehurst are located about one-half mile to the south of the facility. In addition, there are five freshwater ponds located throughout the golf course on the base and swampy areas in various locations both on and around the base. (Ref. 7).

Surface drainage on the site is influenced by the surface topography, artificial and natural drainage channels, and the amount of impervious area, such as pavement and compacted soils, on the site. The surface topography of the amphibious station has been altered over the years by the extensive development and filling of the site.

Overall, the area is flat to gently sloping and is approximately 10 feet above mean sea level across the base, with the exception of the dunes fronting on the Chesapeake Bay. The dunes vary in elevation with the highest dunes approaching 40 feet above mean sea level. (Ref. 7).

Overland drainage from the Base is primarily into Little Creek Harbor and ultimately into the Chesapeake Bay. A canal system on the eastern portion of the Base drains into Lake Bradford and Chubb Lake. These lakes do not have a surface outlet. (Ref. 1). Approximately fifty percent of the NAB is located on the 100 year floodplain, according to facility personnel (Ref. 6).

The major part of the Bay shoreline within Little Creek NAS jurisdiction has been improved using bulkheads and piers. The channel at Little Creek has also been dredged. Much of the fill material used on the base originated from dredge spoils. (Ref. 1).

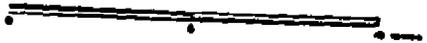
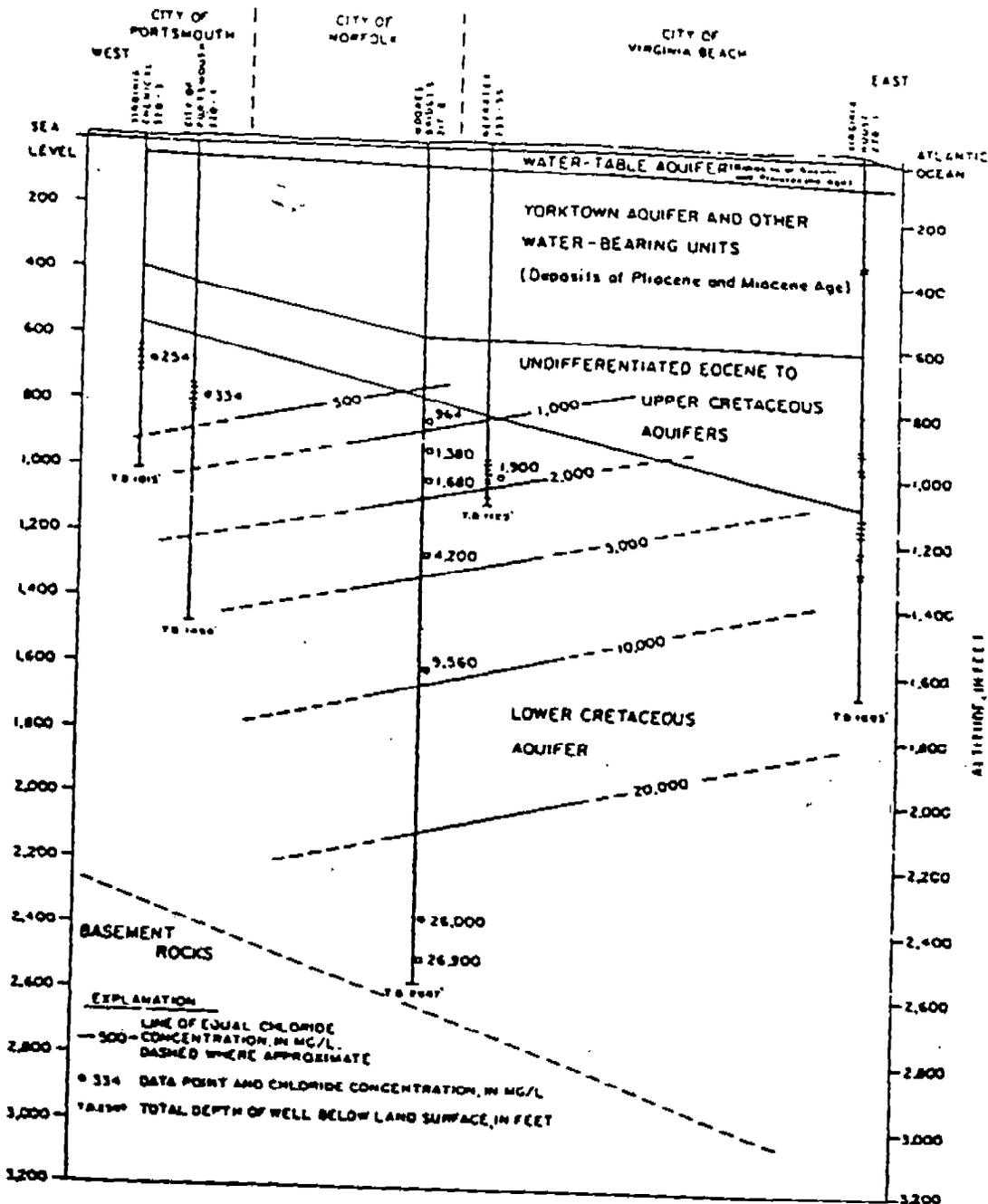
C. Geology and Soils

The Atlantic Coastal Plain in the Four Cities area is underlain by several thousand feet of unconsolidated sand, clay and some gravel, ranging in age from the lower Cretaceous Period to Holocene deposits. Depth to solid bedrock is estimated in excess of 2,000 feet below mean sea level in the area near the base (Figure 2.). The bedrock consists of Precambrian and Triassic/Jurassic age materials.

Deposits in the Four Cities study area have been divided into six geologic units which are, from youngest to oldest: the Columbia Group, the Yorktown Formation, the Calvert Formation, the Mattaponi Formation, "transitional beds" and the Patuxent Formation. Wells in the study area can be found penetrating the Columbia, Yorktown, and lower Cretaceous formations with the majority of the wells located in the Yorktown. A description of each formation is presented in Table 1. Of these, the Columbia and Yorktown are the most important to consider in part because of their proximity to the ground surface. (Ref. 9, pg. 13). Soil borings taken during the NACIP Program indicate sands, silty sands, sandy clays, and clays at depths of 15 to 20 feet. Shell fragments were common at the lower depths (Ref. 3).

Information on area soils is important when determining overland flow and infiltration pollutant migration potential. However, soils on the major portion of this 2,000 acre base have been filled, graded or otherwise altered. Therefore soil survey descriptions only serve as indicators of potential underlying or historic soil conditions. Further information on the migration potential of materials through soils on this site would require site specific testing and evaluation.

The 1945 soil survey of the area divides the native soil types on the basis of drainage and water table characteristics rather than by classic soils profiles and



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Figure 2

Geologic Cross-Section Showing Chloride Distribution, Four Cities Area

Ref. 9

Table 1.
Stratigraphic and Hydrogeologic Units - Southeastern Virginia (Ref. 9, pg. 14)

Stratigraphic Unit	Hydrogeologic Unit	Description of Hydrogeologic Unit
Recent Columbia Group	Water Table or Quaternary	Unconsolidated sand, silt and some gravel. Sand units yield adequate domestic/small industry. Used for lawn watering. Unconfined Aquifer.
Yorktown	Yorktown Aquifer	Sand and shell beds main water-bearing units. Moderate public & industrial supplies. Artesian.
Calvert	(Confining Units)	Silt & clay predominant, minor sand lenses.
Mattaponi	Eocene-Upper Cretaceous Aquifer	Glaucinitic sand and interbedded clay & silt. Yields adequate, brackish infrequent use. Artesian.
Transitional	Lower Cretaceous	Interbedded gravel, sand Beds silt and clay. Yields adequate for large industrial use. Brackish Artesian.
Patuxent		

weathering of parent rock materials. (Ref. 9, pg. 10). The divisions included the following:

- o Well-drained
- o Imperfectly drained
- o Light-colored, poorly drained
- o Dark-colored, poorly drained
- o Miscellaneous (dune sand, tidal marsh, swamp).

Overall, soils of this physiographic province are made up of stratified sediments of sand, silt and clay from marine or fluvial origin. These soils are very deep and range from well drained to somewhat poorly drained. The area also includes wet, colluvial soils in depressional areas and swampy alluvial soils and marsh along drainage ways. Shallow water tables and perched water tables are common. (Ref. 9, pg. 11).

D. Groundwater

Groundwater gradients in this area are gradual due to the relatively flat conditions found at Little Creek NAB. Groundwater discharge from the NAB is ultimately to the coves or the Chesapeake Bay. Specific groundwater information for the NACIP areas is presented in the CH₂M Hill Report, 1986 (Ref. 3). Water in both the Columbia and Yorktown aquifers tends to be variable with respect to quality and quantity. A description of hydrogeologic units is presented in Table 1.

The Columbia Formation contains a shallow water table (unconfined aquifer) which ranges from 20 - 50 feet thick. This water table underlies the Naval Amphibious Base and is composed of geologically recent sand and gravel of marine and shoreline deposits. Most of the water withdrawn from this shallow aquifer is used for irrigating lawns and filling swimming pools.

The Yorktown Formation is 300 - 400 feet thick. However, the major water-bearing zones are found in the upper 50 - 100 feet of the formation. The confining beds separating the aquifers are composed of silts and clays and are considered to be "leaky". The rate of water movement through these "leaky" layers or aquitards, is considered to be quite slow and at present possess a slightly upward head and flow under present pumping conditions.

The Yorktown aquifer is currently being used primarily for domestic and public water systems. The aquifer is also being evaluated for use as a potable water supply for the City of Virginia Beach. Some lawn irrigation systems are penetrating the Yorktown aquifer in order to avoid low water table conditions in the Columbia formation during dry weather. Ground water heat pumps are also being installed in the area, utilizing the Yorktown aquifer as a source of water. (Ref. 9, pgs. 13-29, 63-83).

E. Receptor Information

The area surrounding Little Creek Naval Amphibious Station (NAS) is used primarily for residential and some commercial development. The western end of Little Creek channel, Lake Bradford, and the Chesapeake Bay are used for recreational purposes. (Ref. 1).

The city of Norfolk, Virginia, is approximately 7 miles from the base and has a population of 274,800. Virginia Beach is approximately 14 miles from the facility and has a population of 333,400. The combined metropolitan population for the area which includes Norfolk, Virginia Beach and Newport News is 1,309,500. (Ref. 10).

Both Norfolk and Virginia Beach are served by a public water supply system which currently obtains a portion of water from Smith Lake. Lake Whitehurst is designated as a backup reservoir. Both Lakes discharge across the southern portion of the base through open, unlined drainage canals, and empty into Little Creek Channel. The channel, in turn, discharges into the Chesapeake Bay. Both of these lakes are located upgradient from the Harbor. The NAB also obtains its drinking water from the City of Norfolk (Ref. 1 and 9).

A major portion of the surface drainage from the Base flows into Little Creek Channel. The canal system on the eastern portion of the Base, which includes most of the base housing, drains into Lake Bradford and Chubb Lake. These lakes do not have an outlet and could be subject to an accumulation of pollutants. (Ref. 1).

Hampton Roads Sanitation District is adjacent to the base and normally discharges directly into the Chesapeake Bay. However, a storm water bypass pipeline empties into the southeast corner of Little Creek Cove during severe rainfall events. (Ref. 1)

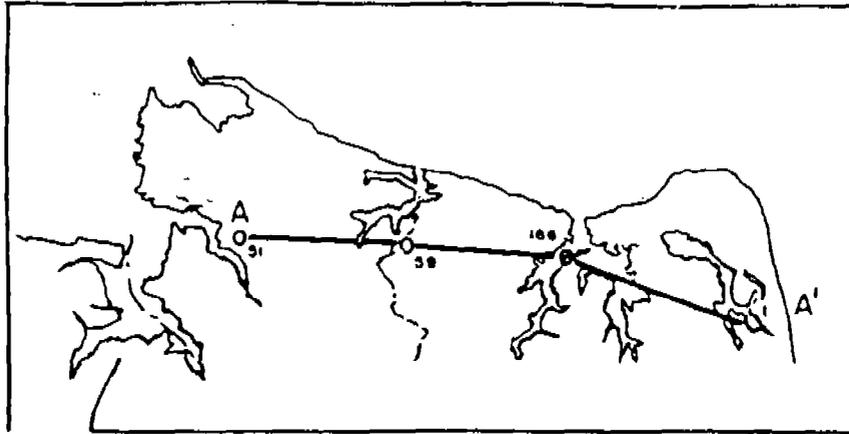
The channel is tidal and may exhibit chemical (saline) stratification, such as many other coves on the Chesapeake Bay. Flushing time for the basin will be reduced under these circumstances. A potential exists for sediments in the cove to trap a portion of the pollution load emanating from any sources which discharge directly into the cove. This situation could become a problem during the resuspension of sediments during dredging or a storm event.

Local hydrology is further influenced by tidal fluctuations in the Chesapeake Bay. Little Creek harbor experiences a semi-diurnal tide of approximately 2.5 feet. At low tide, water flow from shallow aquifers will be toward the channel. Conversely, during high tide, the shallow aquifers will be recharged. The shallow aquifer could potentially convey a diluted pollutant load to the harbor and ultimately to the Chesapeake Bay in this manner. This shallow water table, which is part of the Columbia formation, is not being utilized as a drinking water source on the Base. (Ref. 1, 9).

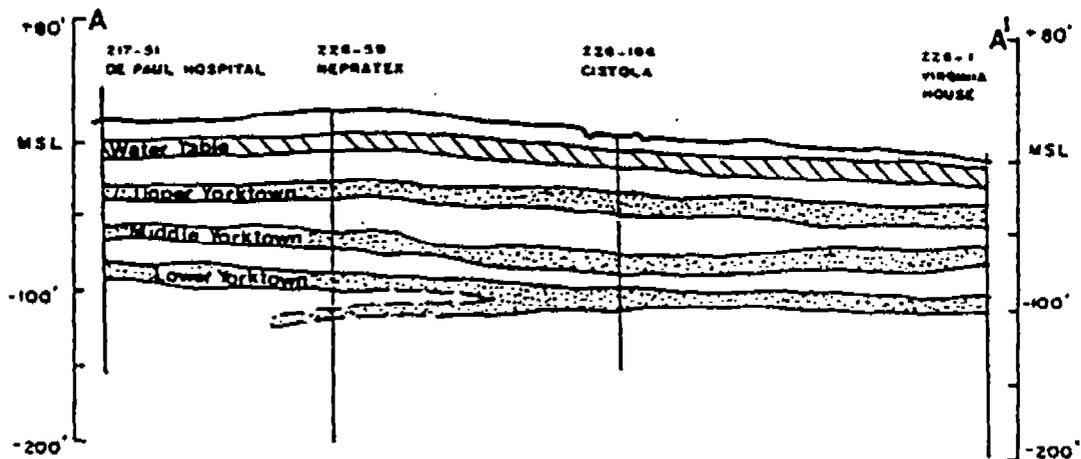
The upper Yorktown aquifer contains water from approximately 50 to 100 feet below the surface of the ground. The pathway exists for contamination of this aquifer due to the presence of a leaky aquitard separating the water table (shallow aquifer) and the upper Yorktown aquifer. In addition, wells in the area of the Naval Amphibious Base

penetrate the Yorktown formations. Figure 3 gives a cross section of the area to the south of Little Creek NAS, showing the significant water tables encountered. At present, the Yorktown aquifer exhibits positive flow into the lower water table under current pumping conditions. This positive head pressure reduces the potential for contamination unless the contaminant was conveyed in or along a well casing ending in a Yorktown aquifer: (Ref. 9, pgs. 34, 35 and pgs. 20-21).

Due to the presence of sports fishing in the harbor and Lake Bradford, some potential for bioaccumulation or food chain contamination exists. However, there is not currently evidence that these types of problems exist.



Cross Section A-A'



-  SAND, SHELL BED Yorktown
-  SAND, SHELL BED Water Table
-  CLAY, SILT (WITH MINOR SAND LENSES)



 The Earth Technology Corporation Figure 3

Ref. 9

Hydrogeologic Cross-Section
of Four Cities Area

IV. SOLID WASTE MANAGEMENT UNITS

There were a total of one hundred forty-eight (148) grouped SWMUs identified during the RCRA Facility Assessment process. A SWMU location map is presented in Figure 4. This section presents a directory of the SWMUs along with the individual fact sheets containing information gathered through the RFA process. The unit summaries include observations made during the VSI, pertinent information acquired through interviews with plant personnel, and additional information compiled during the PR phase of the assessment such as the dates of start-up and closure, wastes managed, release controls, and a history of releases. The list of SWMUs is presented below:

SWMU No.	SWMU Name	Operational Status
1.	Paint Shop Waterwall - Building 3165	A
2-5.	Wood Dust/Chip Collection Bins	A
6-7.	Navy Exchange Maintenance Shop	A
8.	Base Exchange (east Annex) Gas Station Dumpster	A
9-11.	Scrap Metal Dumpsters	A
12.	The Former Wharf Building Shop	I
13.	Former Pesticide Shop	I
* 14-15.	PWD Wash Rack and PCP Dip Tank	14-A, 15-I
16.	Old Pole Yard	A
17.	Small Transformer Storage Area - Building 3175	I
18-22.	Present PWD Transportation Garage	A
23.	Rifle Range	A
* 24.	Driving Range Landfill	I
* 25-26.	Sewage Treatment Plant Area Landfills	I
* 27-28.	Former School of Music Plating Shop Area	I
29.	Harbormaster's Office Area - Paint/Thinner Residue Tank	A
30.	Leaking Above Ground Diesel Tank, Building 3400	A
31.	Pier 10, Leaking Above Ground Fuel Tanks	A
32-33.	Base Exchange (East Annex) Gas Station	A
34-64.	Waste Oil Storage Tanks	A

- * - NACIP Study Area
- ** - RCRA Regulated Unit
- A - Active
- I - Inactive

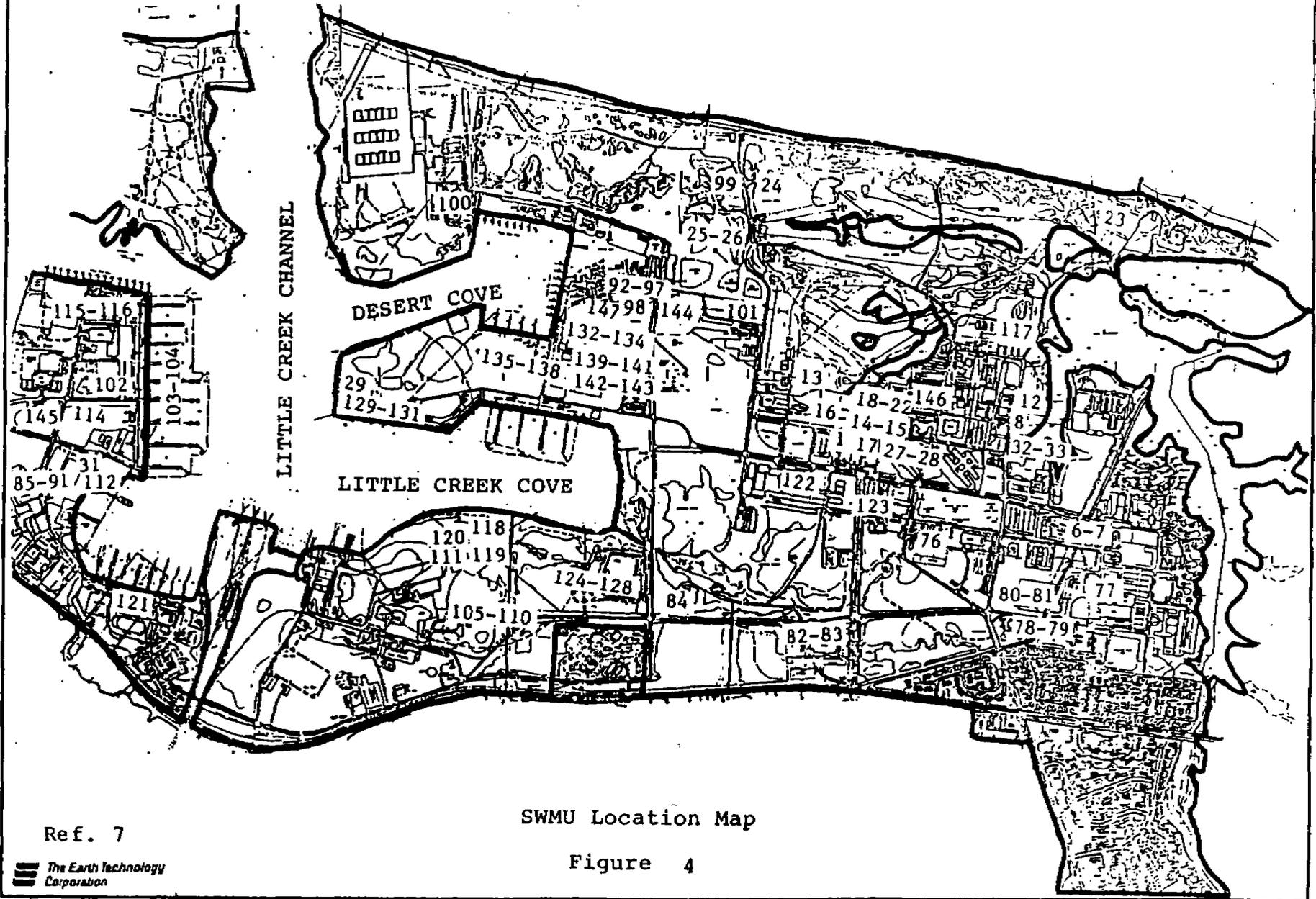
SWMU No.	SWMU Name	Operational Status
65-75.	Facility Oil/Water Separators	A
** 76.	Hazardous Waste Storage Pad	A
* 77.	Old Navy Exchange Laundry	I
78-79.	Navy Exchange Vending Office	A
80-81.	Morale, Welfare, and Recreation (MWR) Auto Hobby Shop	A
82-83.	Boone Clinic	A
84.	Demolition Debris Landfill	I
85-91.	Shore Intermediate Maintenance Activity (SIMA)	A
92-97.	Seabee Vehicle Maintenance Facility	A
98.	Elevated Causeways Mechanic Shop (ELCS) Material Dispensing Area	A
99.	Solid Waste Incinerator Site	I
100.	Fuel Farm Loading Platform Underground Storage Tank	A
101.	Beachmaster Unit 2 (BU2) Satellite Accumulation Point	A
102.	West Annex Fuel Spill	A
103.	Piers 11-19	A
104-109.	Steam Plant	A
** 110.	90-Day Accumulation Point	A
111-112.	Pier 10 Sandblasting Area	I
113.	Building 1256 Motor Oil Disposal Area	I
114-115.	Assault Craft unit 2 (ACU2) Storage Yard	A
116.	MWR Boat Maintenance Facility	A
117.	Special Boat Unit (SBU) Battery Storage Area	A
118.	Special Boat Unit (SBU) Yard	A
119.	Former Special Warfare Group 2 (SWG2) Electronics Shop	A
120.	VC6 Satellite Accumulation Point	A
121.	Landing Force Training Command (LFTC) Satellite Accumulation Point	A
122.	Gymnasium Emergency Generator	A
* 123-127.	Amphibious Base Landfill	I
128-130.	Building 3896 ??	A
131-133.	Seabee Area	A
134-137.	Piers 51-59	A

- * - NACIP Study Area
- ** - RCRA Regulated Unit
- A - Active
- I - Inactive

SWMU No.	SWMU Name	Operational Status
138-140.	Seal Team 4	A
141-142.	Seal Delivery Vehicle 4	A
143.	Former Seabee Vehicle Maintenance Facility	A
144.	West Annex Sandblasting Area	A
145.	Fuel Oil Tank - Building 3029	A
146.	SEAL Team 2 Material Storage Area - Building 3813	A
147.	Facility Storm Sewers/Drains	A

- * - NACIP Study Area
- ** - RCRA Regulated Unit
- A - Active
- I - Inactive

Chesapeake Bay



SWMU Location Map

Figure 4

LC-00008-01.02-03/01/89

1. **Unit Name:** **Paint Shop Waterwall - Building 3165**
- Description:** This paint shop waterwall is in one of three painting rooms located in Building 3165 (Figure 4). Water cascades over the interior walls of the paint booth and collects overspray from the painting operations. The paint shop uses between 1,000 and 2,000 gallons of paint and solvent a year, a large percentage of which is used for spray painting. The paint shop reportedly used almost three times these quantities ten years ago.
- Date of Start-Up:** The paint shop has been in operation at this location since 1945. It is not known exactly when the waterwall paint booth went into operation.
- Date of Closure:** There are no plans for closure of this unit.
- Wastes Managed:** Approximately 100 gallons per month of paint contaminated water are generated from painting operations. The wastes are stored adjacent to the shop and have been removed for the last seven years by an outside contractor. According to base personnel the paint contaminated water has been tested and was determined to be non-hazardous. Prior to 1977, the wastes were sent to the Amphibious Base Landfill (SWMU 124).
- A review of 27 months of PWD hazardous waste records for the 1980s indicates that 1,155 gallons of chromium paint and 120 gallons of other paints were removed as wastes. According to the Initial Assessment Study, 1984, this represents the house cleaning of materials on hand and generation of this quantity of waste would not be expected to be repeated.
- Release Controls:** The unit is designed to collect and contain the overspray from the painting operations. The booth is located completely inside Building 3165 on a concrete floor of good integrity.
- History of Releases:** No releases from this unit have been identified in the file information or were observed during the VSI.
- References:** 1,2
- Photograph:** None

2-5. Unit Name: **Wood Dust/Chip Collection Bins**

Description: A total of four wood dust/chip collection bins were identified facility-wide during the VSI. All bins are a waste management component of facility carpenter's shops. The carpenter's shops are responsible for performing building repairs, installing sheetrock, paneling offices, installing drop and tile ceilings, cutting glass, building cabinets and furniture, and repairing counter tops. All dust and chips from carpenter activities are pulled into these collection units, via vacuum systems.

SWMU #	Building	Installation Date	Construction Material
2	Building 3165 PWD Carpentry Shop	1945	Steel
3	Building 3227 PWD Training Service Carpentry Shop	1954	Steel
4	Building 3334 Navy Maintenance Carpentry Shop	Not Available	Wood
5	Building 3530 MWR Carpentry Shop	Not Available	Steel

Date of Closure: There are no plans for closure of these units.

Wastes Managed: The units manage the waste dusts collected from carpenter operations. There is no evidence that these units manage hazardous waste or constituents.

Release Controls: SWMUs 2, 3, and 5 are constructed of steel. SWMU 4 is constructed of wood. All four units rest on concrete pads and are either surrounded by grass or asphalt. All units and pads appeared to be in good condition during the VSI.

History of Releases: No releases from these units have been identified in the file information or were observed during the VSI.

References: 1,2

Photograph: 1,2,3

6-7. Unit Name: **Navy Exchange Maintenance Shop**

Description: Maintenance for Navy Exchange facilities is performed through the exchange's maintenance group, located at Building 3334 (Figure 4), northwest of the 5th and B Street intersection. Units identified at the shop include:

- o SWMU 6 - Spent Battery Accumulation Area
- o SWMU 7 - Satellite Accumulation Area

Maintenance activities include carpentry, oil changes, air conditioning work, minor mechanical and electrical repairs, and cleaning. Several spent car batteries were stacked immediately outside of the shop. The satellite accumulation area consists of a metal cabinet inside the shop that holds several cans of waste paint, solvents, and pesticides.

Date of Start-Up: Building 3334 was used as the Automobile Hobby Shop for several years prior to its use as a maintenance facility. The Automotive Hobby Shop occupied Building 3334 from 1943 to 1974. (Presently housed in Building 3530 (SWMUs 80-81))

Date of Closure: There is no plan for closure of these units.

Wastes Managed: The facility receives and stores spent batteries (SWMU 6) prior to pick-up by the PWD; during the VSI a metal tray containing lids with some oily material adhering to them were also noted in this area. The facility serves as a satellite accumulation area (SWMU 7) for a small quantity of paints, solvents and pesticides that are turned into the Navy Exchange Maintenance shop prior to pick-up by the PWD.

Release Controls: Batteries are stacked on concrete in the battery storage area (SWMU 6). The area is located outside the shop and the concrete appears to be in good condition. The lids were in a tray on the ground. The satellite accumulation area (SWMU 7) is located inside the shop on top of a small metal cabinet that rests on a concrete floor of good integrity.

History of Releases: No releases from these units were identified in the file information or were observed during the VSI.

References: 1,2

Photograph: 3

8. Unit Name: **Base Exchange (East Annex) Gas Station Dumpster**
- Description: The east annex gas station is located at Building 3615 (Figure 4). Several types of waste have been disposed in the dumpster located in the parking lot behind the station. The gas station stores spent batteries (SWMU 32) prior to their pick-up for recycling. The station also has a waste accumulation point (SWMU 33) with drums of water taken from the gasoline storage tanks.
- Date of Start-up: The date of start-up for the unit is not presently available.
- Date of Closure: There are no plans for closure of this unit.
- Wastes Managed: During the VSI, various petroleum oil-laden items were disposed in the dumpster, including auto engine parts, chassis, and other items.
- Release Controls: The dumpster is located near the perimeter of a concrete parking-lot. The concrete is in good condition and bordered by a 3-inch high curb.
- History of Releases: Oily stains were present on the dumpster, on the concrete surface, and over the curbed surface and into a grassy area during the VSI.
- References: 1,2
- Photograph: 4

9-11. Unit Name: **Scrap Metal Dumpsters**

Description: A total of three scrap metal dumpsters were identified facility-wide during the VSI. Shops separate scrap metal from the rest of the waste stream and dispose of it in these units. These units are representative of a larger number of scrap metal dumpsters throughout the facility.

SWMU #	Building # & Name
9	Building 3614 - PWD Training Center
10	Building 3165 - PWD Sheet Metal Shop
11	Building 3894 - Harbormaster Shop

Date of Start-Up: The date of start-up for these units is not currently available.

Date of Closure: There are no plans for closure of these units.

Wastes Managed: Scrap metal is separated from the rest of the solid waste generated from shop operations and placed in these dumpsters. There is no evidence that SWMUs 9 or 11 manage hazardous waste on constituents. Some hazardous constituents may have been present in oils in SWMU 11.

Release Controls: The units are all constructed of steel and are resting on concrete or asphalt surfaces of good integrity.

History of Releases: No releases from SWMU 9 or 10 have been identified at the present time. Oily stains were observed on the soils at the base of SWMU 11 during the VSI.

References: 2

Photograph: 5,27

12. Unit Name: **The Former Wharf Building Shop**
- Description: The former wharf building shop was located near Building 3165 (Figure 4). Construction activities at this unit included installation of pilings and fender systems at piers on NAB Little Creek. A pentachlorophenol (PCP) dip tank (SWMU 15) used to treat lumber was located adjacent to Building 3165E from 1954 to 1975. This 300-400 gallon tank of PCP was used until 1975. The tank was removed to Camp Allen as salvage in 1982. Old pilings that have been removed from piers were deposited in a designated section of the Amphibious Base Landfill (SWMU 124). The site of this former unit is now a gravel parking lot.
- Date of Start-Up: The former wharf building shop began operating about 1945.
- Date of Closure: The estimated date the unit became inactive was 1974.
- Wastes Managed: Pentachlorophenol (EPA listed hazardous waste number U242) was used as a preservative on lumber in the maintenance and repair of wharves and waterfront structures. It has not been used since the unit ceased operating.
- Release Controls: There were no release controls identified for this area.
- History of Releases: The site is presently covered by an asphalt and gravel parking lot and no visual evidence of release was noted during the VSI. However, no formal closure or follow-up sampling was conducted at the time the unit was razed.
- References: 1,2
- Photograph: 6

13. Unit Name: **Former Pesticide Shop**

Description: The former pesticide shop was located in Building 3360-3, near Building 3166 and the intersection of 6th and F Streets (Figure 4). The shop managed and applied all pesticides at the base. Since the change from Navy to contractor pest control at NAB Little Creek in 1980, there has been no storage or mixing of pesticides on the base. The pesticide materials that remained at the time of the changeover were transferred to the Pesticide Shop at Naval Air Station, Oceana. The site is now a gravel parking lot.

Hand-held sprayers were reportedly rinsed daily after their use was completed and between mixtures of different pesticides if they occurred on the same day. Empty pesticide containers were triple-rinsed at this unit and disposed of with the other general solid waste in base landfills (SWMU's 24, 25, 26, 124). Metal containers were triple rinsed and then punctured or crushed to prevent reuse before disposal.

Date of Start-Up: Operations were initiated at the pesticide shop in 1973.

Date of Closure: Operations at the pesticide shop ended in 1980, after which the building was razed.

Wastes Managed: Pesticide application was done by tank sprayers and hand-held sprayers. The mixed pesticides were usually completely used at the job site. Residue in tank sprayers was either left in the tank until the next job or diluted with rinse water and left in the tank to mix with the next application. Types of pesticides previously used in the shop between 1981 and 1982 are listed below:

	Pounds Formulated		
	1980	1981	1982
Abate (Insect)	312	60	20
Anticoagulant (Rodent)	178	224	368
Baygon (Insect)	5,619	7,730	8,092
Diazinon (Insect)	38,352	74,160	71,460
Dursban (Insect)	2,424	890	--
Mineral Oils (Insect)	1,277	524	900
Naled (Insect)	1,207	251	470

	Pounds Formulated		
	1980	1981	1982
Other Carbamate (Insect)	3,456	384	--
Pyrethrum (Insect)	55	--	--
Silica Aerogel (Insect)	--	90	170
TOTAL	52,880	84,313	81,480
TOTAL #, Active Ingredient	1,556	982	1,259

Release Control: The types of release controls (if any) for this unit are not currently available.

History of Releases: The former pesticide shop site is presently covered by a gravel parking lot. No releases were observed during the VSI. However, no formal closure or follow-up sampling was conducted at the time the unit was razed.

References: 1,2

Photograph: 7

14-15. Unit Name: **PWD Wash Rack and PCP Dip Tank (NACIP Study Area)**

Description: The PWD sheet metal shop maintains a wash rack (SWMU 14) outside Building 3165D (Figures 4 and 5). The wash rack has a drain that leads to an underground oil/water separator (SWMU 70), located under the paved apron in front of the wash rack. The maintenance history of the oil/water separator is unknown. Steam and chemical cleaners are used for cleaning parts of vehicles, dumpster bodies, and other metal objects that are maintained by the sheet metal, welding, and machine shops. Other PWD shops may use this wash rack from time to time, but a record of frequency or extent does not exist.

A 300 to 400 gallon dip tank (SWMU 15) containing pentachlorophenol was located behind Building 3165E, immediately north of the wash rack area. The tank area is currently undergoing remedial activities under the NACIP program. The tank was used by the former wharf building shop (SWMU 12) from the early 1960's until 1974. Wood was dipped into the tank for treatment and set on racks in the surrounding yard for drying.

Date of Start-Up: A wash rack was originally installed in 1945. The good condition of the wash rack suggests it may have been replaced one or more times since 1945.

The PCP dip tank became operational in 1954.

Date of Closure: There are no plans for closure of the wash rack.

The PCP dip tank was taken out of operation and removed in 1975. It was then dismantled in 1982 and removed to Camp Allen as salvage.

Wastes Managed: Pentachlorophenol, kerosene, tar, paint, and solvents were present in the PCP dip tank. Pentachlorophenol is an EPA listed hazardous waste, number U242.

Release Controls: The wash rack is a concrete pad of good integrity with bermed sides and deck drain in the center. The drain leads to an underground oil/water separator (SWMU 70), located under the paved apron in front of the wash rack.

The oil from the oil/water separator is removed by a vacuum truck, placed on a barge and taken to Craney Island Fuel Facility. The treated water is released into the sanitary sewer.

The PCP Dip Tank was originally cleaned out every six months. Typical volumes of sludge removed were 55 gallons per year. However, near the end of service, the tank received very little maintenance. All solution was removed and disposed in 1975. Shop personnel are unaware of the used PCP disposal location. The sludge was likely disposed in the Amphibious Base Landfill (SWMU 124) as were most other wastes prior to its closure in 1979.

History of Releases:

The grounds of the area between the wash rack and the former location of the PCP dip tank had oily stains during the VSI.

The PWD PCP dip tank falls under the NACIP study program. As a part of this program, soil borings were drilled, monitoring wells were installed, and sampling was performed. During Round 1 Sampling of the Confirmation Study, CH2M Hill analyzed ground-water samples taken from 5 monitoring wells. Six soil samples were also obtained. Sample locations shown in Figure 5. The samples were collected on May 30, 1986 and were analyzed for:

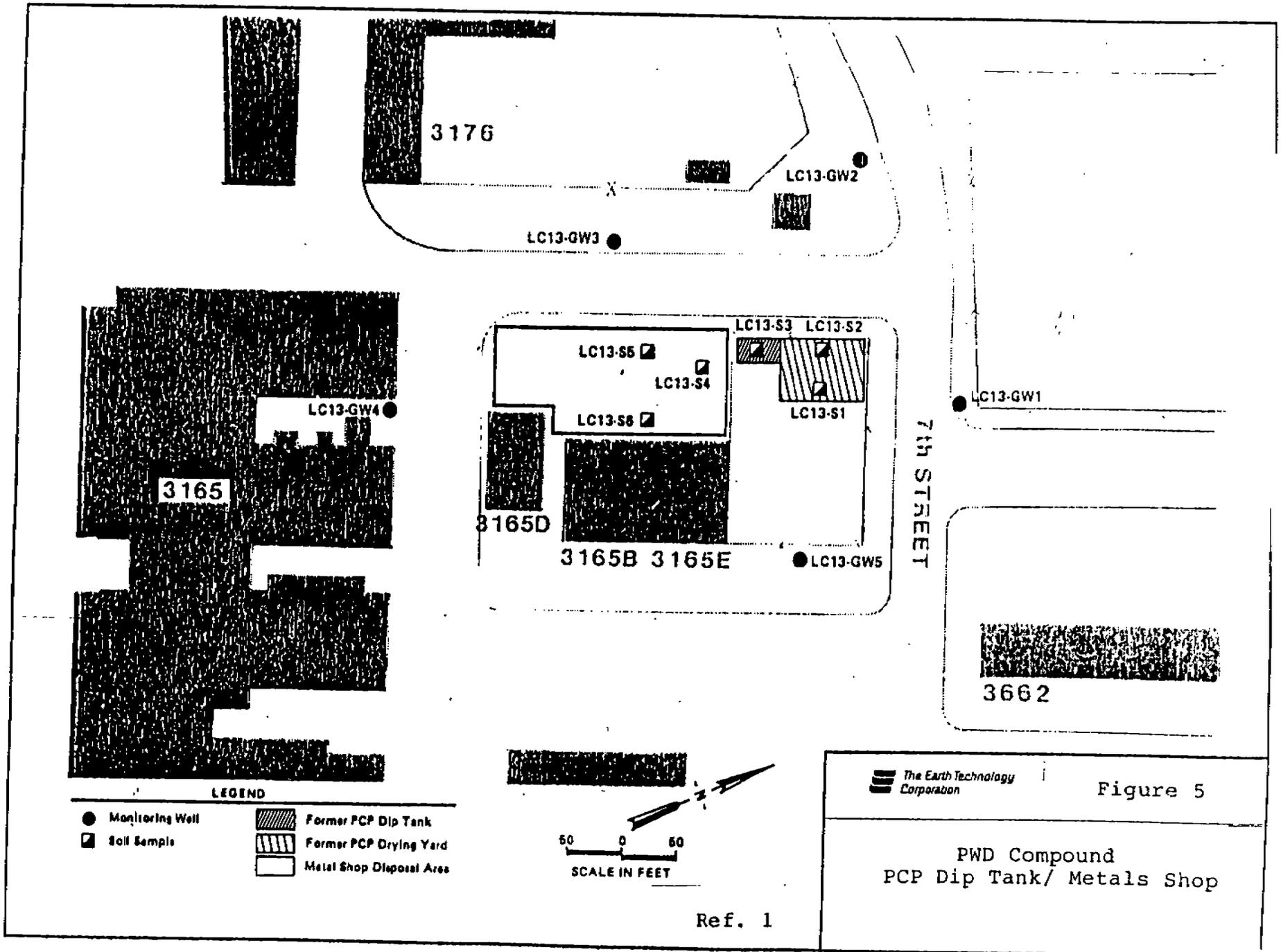
- o Oil and Grease
- o Priority Pollutants Volatile Organic Compounds
- o Priority Pollutants Acid Extractable Compounds
- o Priority Pollutants Base/Neutral Compounds.

Concentrations of constituents in the samples were generally below or near detection limits. Trichloroethene was measured at LC13-GW1 (8.5 ppb), GW3 (7.7 ppb), GW4 (16 ppb), GW5 (15 ppb). These concentrations are above the proposed maximum contaminant level (MCL) of 5 ppb. Tetrachloroethane was measured at GW3 (14 ppb) and GW4 (21 ppb) above the (RMCL) (0 ppb). Pentachlorophenol was measured at GW2 (55 ppb), GW3 (17 ppb), and GW4 (8.1 ppb). These concentrations were all below the pentachlorophenol RMCL of 220 ppb.

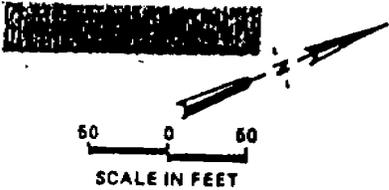
Soil sample LC13-S3 had a pentachlorophenol concentration of 79 ppm and a total base/neutral extractable concentration of 140 ppm. Oil and grease concentrations were also elevated at LC13-S3, S5, and S6 when compared to the other soil samples.

References: 1,2

Photograph: 8



- LEGEND**
- Monitoring Well
 - ▣ Soil Sample
 - ▨ Former PCP Dip Tank
 - ▧ Former PCP Drying Yard
 - ▭ Metal Shop Disposal Area



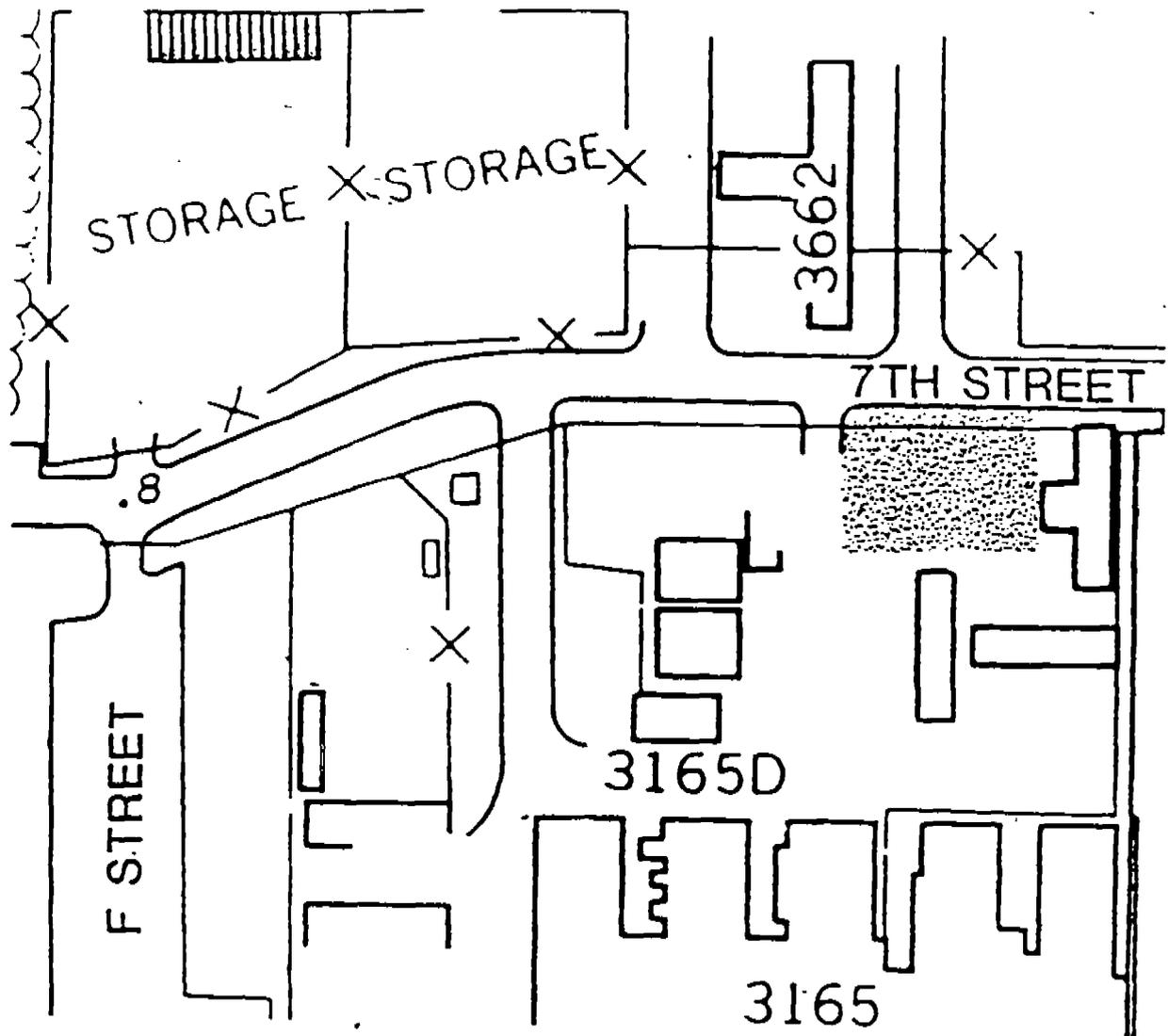
The Earth Technology Corporation

Figure 5

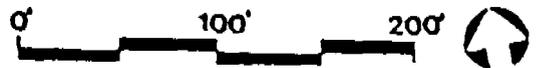
PWD Compound
PCP Dip Tank/ Metals Shop

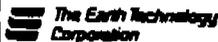
Ref. 1

16. Unit Name: **Old Pole Yard**
- Description: The old pole yard (across 7th Street from the Public Works compound as shown in Figure 4) is surrounded by a chain linked fence and has been used to store large, PCB-containing transformers, vehicles, and equipment. A section of the old pole yard, approximately 150 feet by 15 feet is used to store the transformers (Figure 6). Since 1975, these transformers have been phased out of use on the base. During the VSI, at least 12 labeled PCB transformers stored in the old pole yard were awaiting pickup by the PWD and disposal through the DPDO. Eleven rusted 55-gallon drums were also present at the site. The drums were stored on a rack and were on their side.
- Date of Start-Up: The old pole yard has been used to store large PCB transformers since at least 1953.
- Date of Closure: There are no plans for closure of this unit.
- Wastes Managed: The unit is used to store PCB-containing transformers, non-PCB transformers, drums with unknown contents (presumably some type of oil), and used vehicles and equipment.
- Release Controls: The transformers and drums are stored on asphalt. Some of the asphalt was cracked during the VSI. No curbing or diking was present.
- History of Releases: According to the Initial Assessment Study, 1984, it is estimated that less than one gallon of PCB fluids may have leaked in this area. Oil stains were observed on the grass edges of the asphalt surface during the VSI.
- References: 1,2
- Photograph: 9,10,11,12



-  Small Transformer Storage Area
-  Large (PCB) Transformer Storage Area



	<p>Figure 6</p>
<p>Location of Old Pole Yard (SWMU 16) and Small Transformer Storage Area (SWMU 17)</p>	

Ref. 1

17. Unit Name: **Small Transformer Storage Area - Building 3175**
- Description: The paved yard in the Public Works Department compound immediately west of Building 3175 (Figures 4 and 6) was used in the past as a storage yard for small transformers that reportedly do not contain PCBs. The area has an asphalt pad which is surrounded by a locked fence.
- Date of Start-Up: The yard has been in use since about 1975.
- Date of Closure: There are no plans for closure of this unit or for future use of the area to store transformers.
- Wastes Managed: Reported waste non-PCB transformers are present. In the past this yard may have been used to store and repair PCB-containing transformers, according to the Initial Assessment Study, 1984.
- Release Controls: The yard is covered with asphalt that was visibly cracked during the VSI. No drain or berming is present to control run-off from the yard. The yard is surrounded by a chain-link fence.
- History of Releases: The release history for this unit is not currently known.
- References: 1,2
- Photograph: 13

18-22. Unit Name:

Present PWD Transportation Garage

* Description:

All PWD transportation maintenance is conducted at Building 3661 (Figure 4). The facility operations include waste oil collection, spent battery collection, painting, scrap metal collection, and collection of salvageable parts. Units identified at the garage included:

- o SWMU 18, Spent Battery Shop and Collection Area
- o SWMU 19, Paint Booth Filters
- o SWMU 20, Salvage Parts Storage Area
- o SWMU 21, Lubricating Oil Storage Area
- o SWMU 22, Wash Rack.

Batteries are held in both the battery shop and on a wooden platform outside the shop (SWMU 18). Paint booth filters (SWMU 19) are present in a forced air paint booth in Building 3661. Waste oil is stored in an underground tank (SWMU 35). Water draining from the wash rack (SWMU 22) runs through an oil-water separator (SWMU 71). The salvage parts storage area (SWMU 20) is located in a metal shed and a dumpster behind Building 3661. Several 55-gallon drums inside a fenced area behind Building 3661 hold lubricating oils (SWMU 21).

Date of Start-Up:

The new transportation maintenance shop (Building 3661) was constructed in 1974.

Date of Closure:

There are no plans for closure of these units.

Wastes Managed:

Oils are collected in the underground tank (SWMU 35) and are removed by PWD Waste Oil Collection group to Craney Island. Other wastes include:

- o Spent batteries (SWMU 18)
- o Paint residue (SWMU 19)
- o Mufflers, paint cans, oily substances (SWMU 20)
- o Oil and grease from oil storage and wash racks (SWMUs 21 and 22).

These wastes are all picked up by the PWD on a regular basis.

Release Controls: The pitted concrete floor in the battery shop (SWMU 18) is evidence of acid spills, although the cement floor seems to have contained the spills. Spent batteries are placed outside the shop on a wooden platform that rests on the edge of the asphalt parking lot.

The paint booth filters (SWMU 19) are placed in the dumpster which are stored at the Amphibious Base Landfill (SWMU 124) before being hauled off-site to a privately-owned landfill.

The salvaged parts storage (SWMU 20) are contained in a metal shed and a dumpster. The shed rests on skids on the asphalt parking lot. The metal dumpster rests on the asphalt lot also.

The drums of rusted lubricating oil (SWMU 21) rest directly on the bare ground behind a locked chain-link fence. A 3-inch high concrete curb surrounds the unit.

The concrete wash rack (SWMU 22) area is sloped toward a center drain. Water from the oil/water separator enters the sanitary sewer.

History of Releases: No releases were identified at the wash racks (SWMU 22).

Oily stains were observed inside and over the curbing at the lubricating oil storage area (SWMU 21). Staining from the spent battery collection area (SWMU 18) on the grassy area adjacent to the unit was observed. Staining was also present around the salvage parts storage area (SWMU 20).

No releases from the paint booth filter (SWMU 19) were observed.

References: 1,2

Photograph: 14-21

23. Unit Name: **Rifle Range**

Description: The rifle range is located near Building 3060A (Figure 4). It is designed for fire arms practice. Weapons are discharged at targets located on a 25 foot high bunker of sand. The bunker is adjacent to the beach along the Chesapeake Bay. Some of the soils from the bunker have been excavated and placed in a plastic-lined waste pile located several feet to the west. The State of Virginia has concerns that EP tox metals, such as lead, may be leaching into the soil and groundwater.

Date of Start-Up: The date of start-up for the unit is not presently available.

Date of Closure: There are no closure dates for the unit. Waste pile will be closed in accordance with stipulations in Virginia Waste Management Board Enforcement Order.

Wastes Managed: Metals (such as lead) and residual explosives from shell fragments are present at the unit.

Release Controls: Soils from the sand bunker containing shell fragments have been removed and placed to the immediate west in a plastic-lined pile and covered with a plastic sheeting.

History of Releases: Shell fragments were observed during the VSI around the unit. The NAB is currently negotiating with the State of Virginia on soil sampling protocols and methodologies.

References: 2, 11

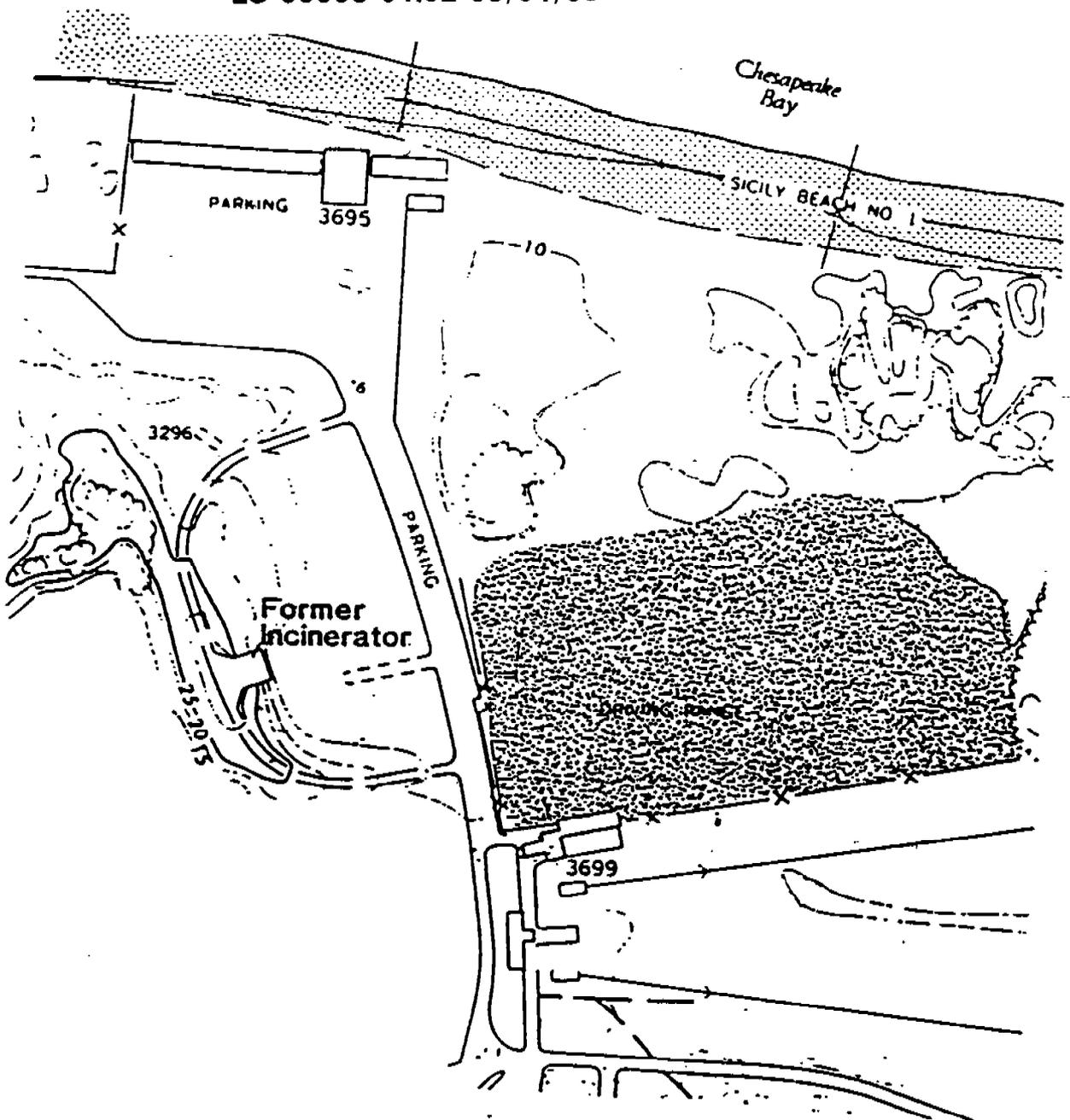
Photograph: 22

24. Unit Name: **Driving Range Landfill (NACIP Study Area)**
- Description: The driving range landfill is located near Building 3699 as shown in Figures 4 and 7 (SWMU 99). During the period of operation of the base incinerator, this landfill was the primary disposal area for all solid waste generated on the base. After the landfill was closed a berm was constructed, using clean fill, along the east side of Hewitt Drive. Sewage sludge was brought in from the Hampton Roads Sanitation District plant along the southern base boundary to enhance the growth of grasses. The area was converted into a driving range.
- Date of Start-Up: This landfill began operations in 1950.
- Date of Closure: The landfill ceased operations in 1956.
- Wastes Managed: Incinerator ash, bypassed materials, all base solid waste (after segregation of metals), motor oils, transformer oils containing PCB's, and scrap containers from pesticides were disposed here. It is estimated that 40,000 cubic yards of solid waste was disposed at the unit.
- Release Controls: No release controls were used at this unit. The disposal method employed was to dig a pit or trench with a piece of heavy equipment with a bucket, such as a dragline or a crane. The hole was excavated to a depth at which caving of the sides became a problem. This was usually from one to six feet below the water table, depending on the nature of the material being excavated. The ash or solid waste was then disposed directly into these pits. No precautions were taken to isolate the waste from the ground water. The operator covered the active cell whenever a piece of suitable equipment was available.
- History of Releases: The driving range landfill falls under the NACIP program. During Round 1 Sampling of the Confirmation Study, CH2M Hill analyzed ground-water samples taken from 6 monitoring wells located on the perimeter of the driving range landfill (locations shown in Figure 8. The samples were taken on May 28, 1986 and were analyzed for:
- o Priority Pollutants
 - o Oil and Grease
 - o Xylene
 - o Methyl Ethyl Ketone
 - o Methyl Isobutyl Ketone
 - o Ethylene Dibromide
 - o Hexavalent Chromium.

Concentrations of constituents in the groundwater were generally below or near detection limits according to the Navy. All concentrations were below IMCLs, MCLs, and RMCLs.

References: 1,2,3

Photograph: 23



 Driving Range Landfill



 <p>The Earth Technology Corporation</p>	<p>Figure 7</p>
<p>Location of Driving Range Landfill (SWMU 24)</p>	

Ref. 1

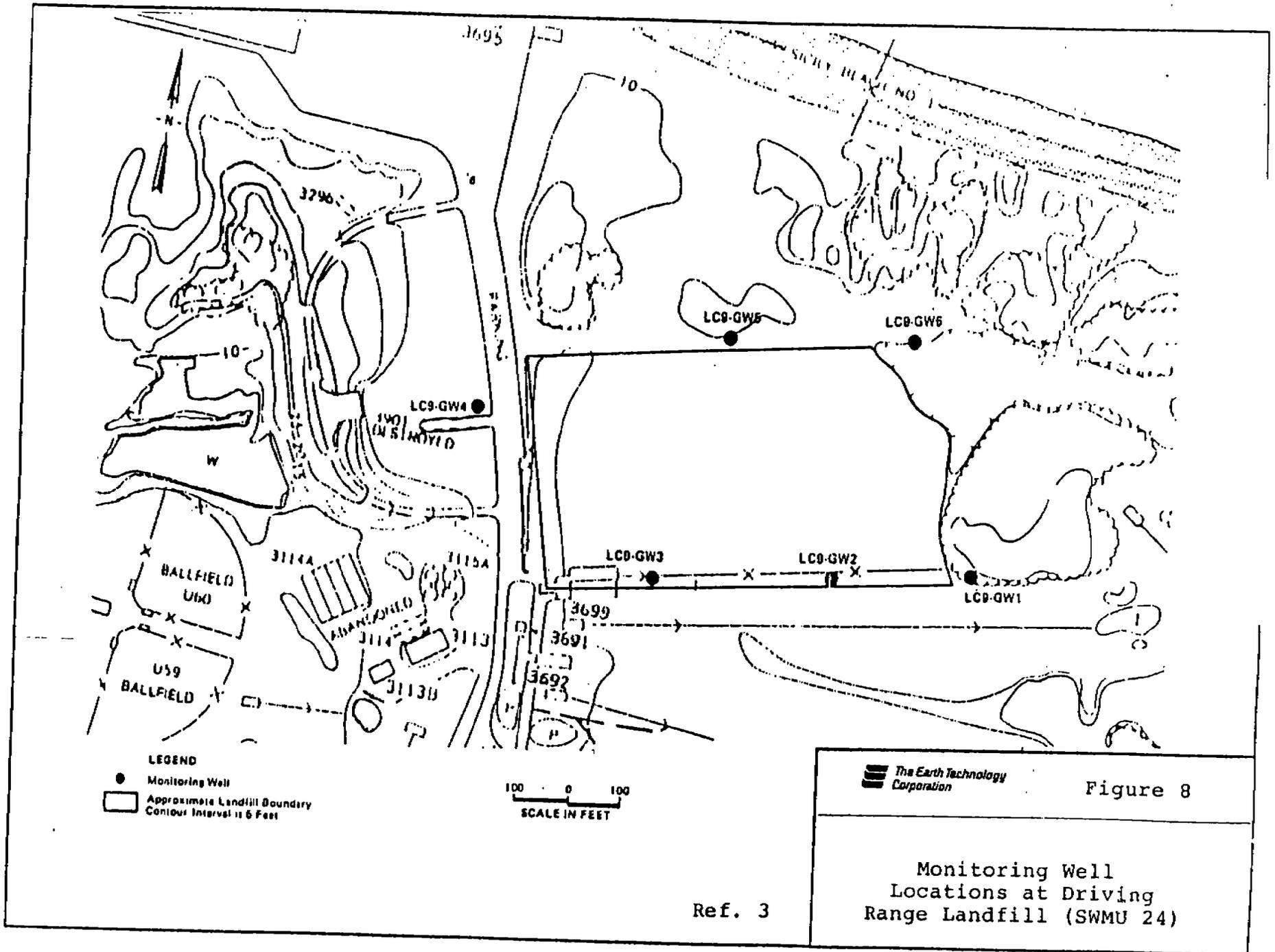


Figure 8

Monitoring Well Locations at Driving Range Landfill (SWMU 24)

Ref. 3

25-26. Unit Name: **Sewage Treatment Plant Area Landfills (NACIP Study Areas)**

o SWMU 25 - Desert Cove Landfill

o SWMU 26 - South of Desert Cove Landfill

Description:

Two landfills were operated just west of the former base sewage treatment plant (Figures 4 and 9). The southerly of the two was the original base landfill. Reportedly, it was operated as an area landfill, which was extended out into a now filled arm of Desert Cove. Disposal was directly into the water and resulted in the total filling of approximately five acres of the cove. After the five-acre area on the south side of Desert Cove had been partially filled, disposal began on the north side of the cove in an area with marshy vegetation. A total of about 13-1/2 acres of this area was filled.

Date of Start-Up:

These landfills accepted the refuse of the base from its inception around 1941-1942.

Date of Closure:

These landfills were no longer used when the driving range landfill (SWMU 24) was opened in 1952. Sludge from the sewage treatment plant continued to be deposited here until the plant ceased operating in 1968.

Wastes Managed:

According to the Initial Assessment Study, 1984, at an average landfill thickness of six feet, the total volume landfilled here would be approximately 46,500 cubic yards of material. During the period of 1949 to 1952, most of the filling was with solid waste. After 1952, and until shutdown of the sewage treatment plant in 1968, sludge from that operation was disposed of in the eastern portion of this area (northwest of the sewage treatment plant). The disposal areas accommodated domestic waste and virtually all types of industrial waste generated on the base. It is likely that almost any waste or surplus material probably was disposed there.

Release Controls:

Materials were disposed directly into the water and there was no containment mechanisms. During extremely high tides, the area would naturally have been inundated, and during extreme storm events, the washover from the bay across the beach could also have contributed to the expected migration of material. By 1954,

Desert cove had been improved by bulkheading and much of the original Desert Cove Inlet which extended back into this area had been filled.

History of Releases:

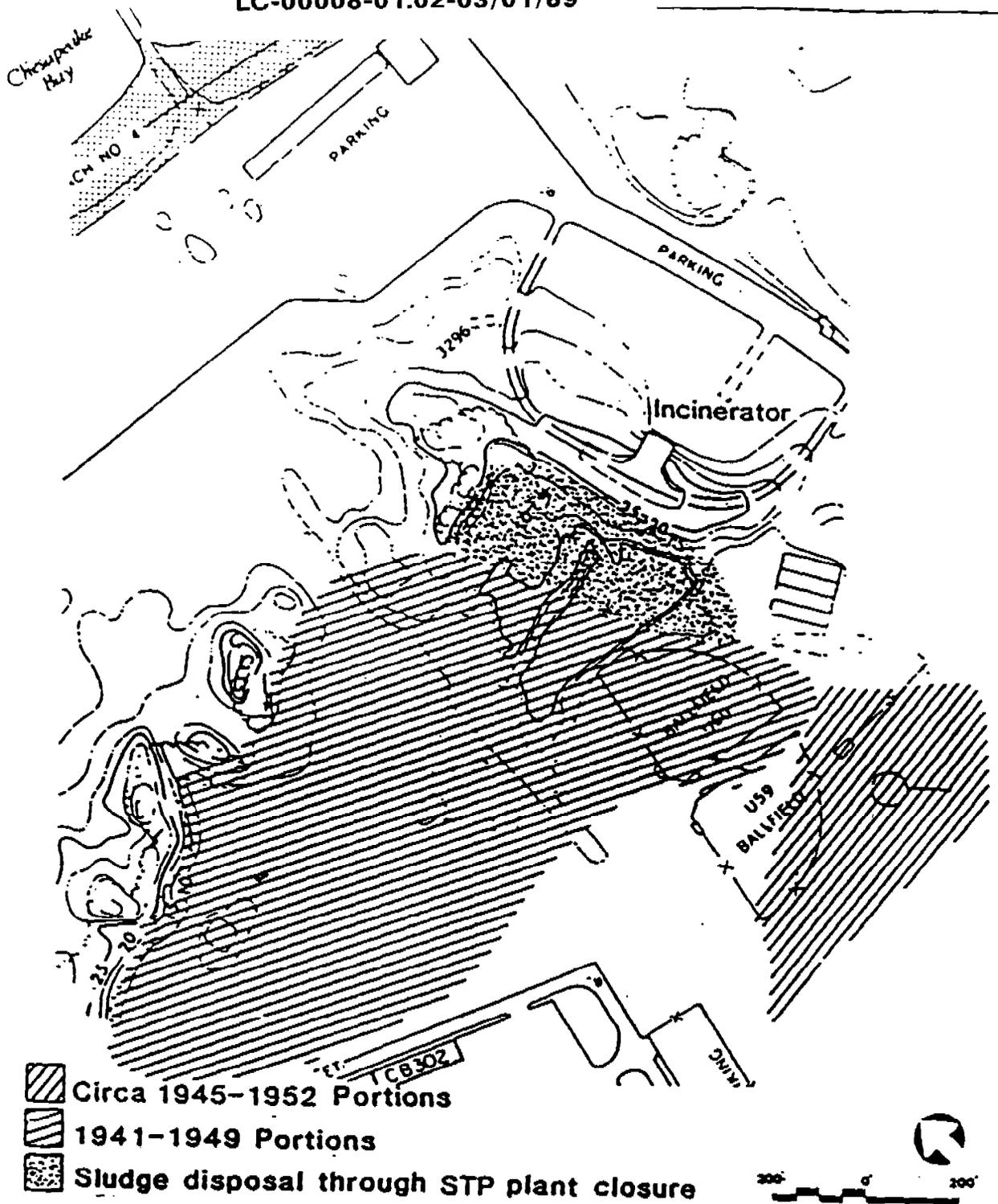
The sewage treatment plant landfills fall under the NACIP program. During Round 1 Sampling of the Confirmation Study, CH2M Hill analyzed ground-water samples taken from 8 monitoring wells located on the perimeter of the Sewage Treatment Plant Landfills (locations shown in Figure 10). The samples were taken on May 29, 1986. Samples were analyzed for:

- o Priority Pollutants
- o Oil and Grease
- o Xylene
- o Methyl Ethyl Ketone
- o Methyl Isobutyl Ketone
- o Ethylene Dibromide
- o Hexavalent Chromium.

Most of the concentrations of constituents analyzed in the groundwater were below or near detection limits. According to the Navy, all concentrations were below IMCLs, RMCLs, and MCLs. The zinc concentration at LC10-GW1 (2,800 ppb) was one to two orders of magnitude greater than zinc levels at the other sample locations. Two volatile organic compounds (VOCs) were measured above detection limits at LC10-GW1: 1,1-dichloroethane (16 ppb) and 1,1,1-trichloroethane (13 ppb). DDD was detected at LC10-GW6 (0.02 ppb).

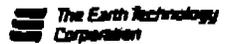
References: 1,2,3

Photograph: 24

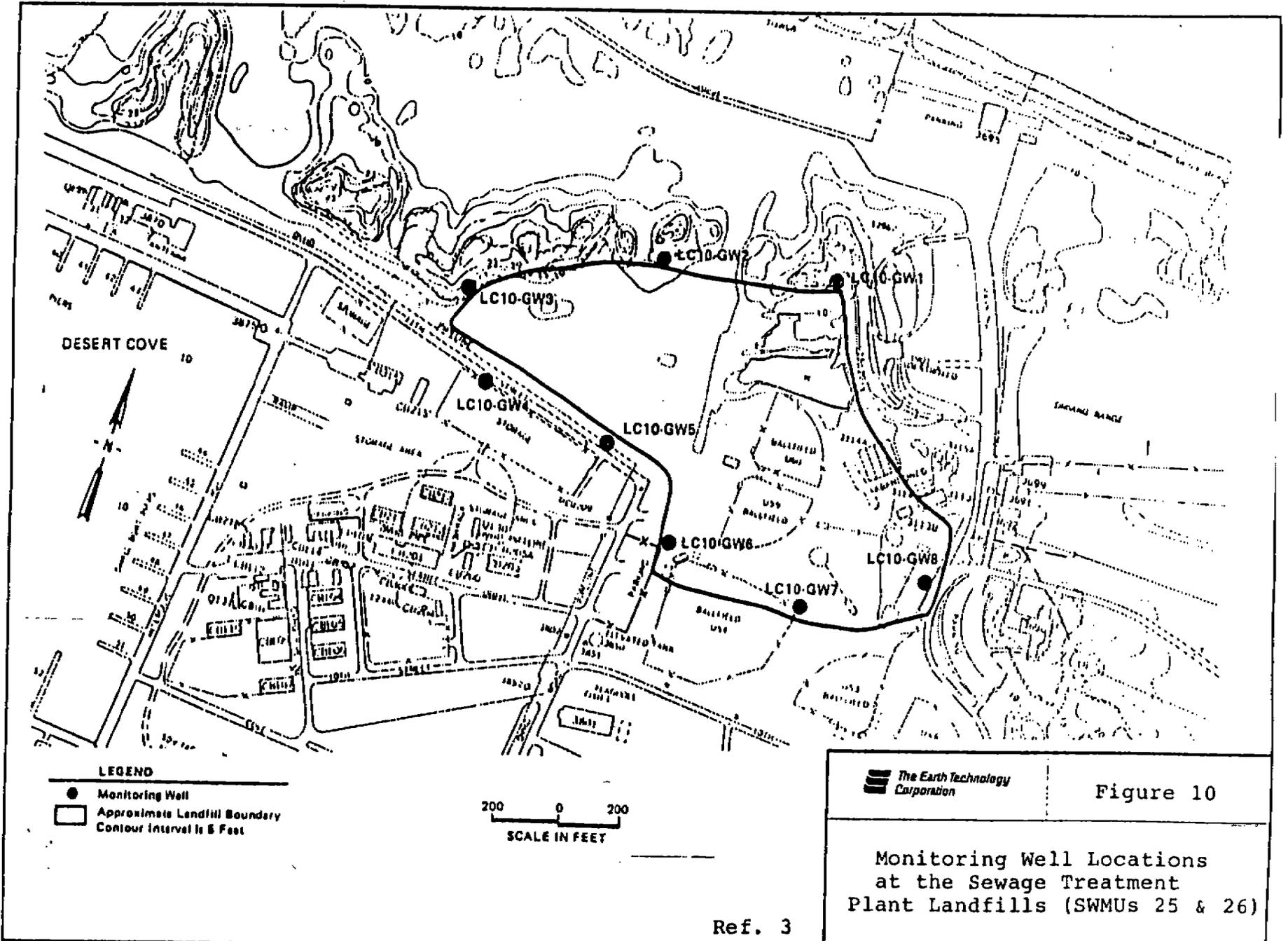


-  Circa 1945-1952 Portions
-  1941-1949 Portions
-  Sludge disposal through STP plant closure



	<p>Figure 9</p>
<p>Location Map of Sewage Treatment Plant Area Landfills (SWMUs 25 & 26)</p>	

Ref. 1



27-28. Unit Name: **Former School of Music Plating Shop Area (NACIP Study Area)**

- o SWMU 27 - Former School of Music Plating Shop
- o SWMU 28 - Former School of Music Lime Neutralization Pit

Description: The school of music was located in Building 3651 (Figures 4 and 11). The shop was used to repair and plate musical instruments for about 10 years. There are three rooms in the building, one of which contained a plating line. The plating bath materials were reportedly disposed of down the sink drain. The drain lead to a limestone neutralization pit about 25 feet southeast of the shop. After an unknown contact time in the neutralization pit the wastes were released to the sanitary sewer.

Date of Start-Up: Electroplating operations at the school of music were started in 1964.

Date of Closure: Electroplating operations at the school of music ceased in 1974.

Wastes Managed: Materials used at the shop and disposed in the pit included silver cyanide, copper cyanide, bittedip (Chromic Acid), nickel plating bath waters, and acids. Other chemicals used and disposed of included lacquer stripper and lacquer. About 10 gallons per year of each plating chemical and lacquer stripper were disposed, for a total of 300 gallons of solution.

Release Controls: The neutralization pit treated the acidic portions of the plating baths. It is possible neutralization of the strippers and plating wastes may have immobilized the metals in the limestone pit. If not, any lower pH groundwater has the potential to transport contaminants away from the disposal site.

History of Releases: The school of music plating shop falls under the NACIP program. During Round 1 Sampling of the Confirmation Study, CH2M Hill analyzed ground-water samples taken from 8 monitoring wells located on the perimeter of the Sewage Treatment Plant Landfills (locations shown in

Figure 12). The samples were collected on June 3, 1986. Samples were analyzed for:

- o Total Chromium
- o Hexavalent Chromium
- o Cyanide
- o Priority Pollutants Volatile Organic Compounds
- o Priority Pollutants Acid Extractable Compounds

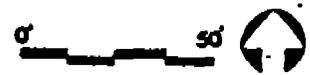
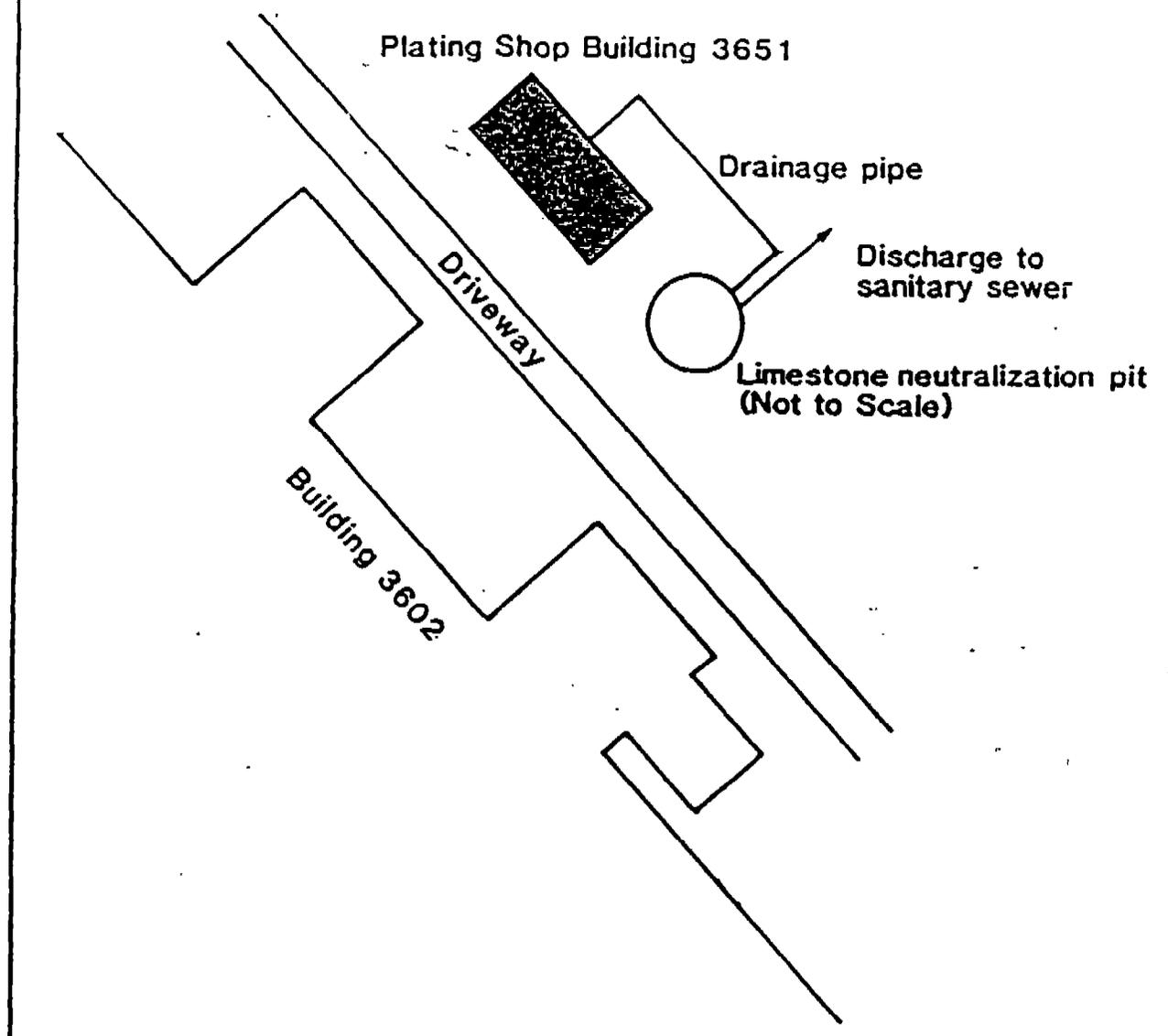
Concentrations of constituents in the samples were generally below or near detection limits. The soil sample from the dry well (LC11-S1) had elevated chromium (4,200 ppm) and cyanide (19 ppm) relative to the other soil samples.

Eight VOCs were observed at LC11-GW1. The compounds 1,1-dichloroethene, 1,2-dichloroethane, 1,1,1-trichloroethane, and trichloroethene were all present in concentrations above the proposed MCLs. 1,2-dichloropropane was above the RMCL.

According to the CH2M Hill report, the Round 1 results indicate that contamination from the plating shop remains in the soil at the dry well but is not currently migrating from the site. VOC contamination at LC11-GW1 can not presently be attributed to the dry well and may have another source.

References: 1,2,3

Photograph: 25,26

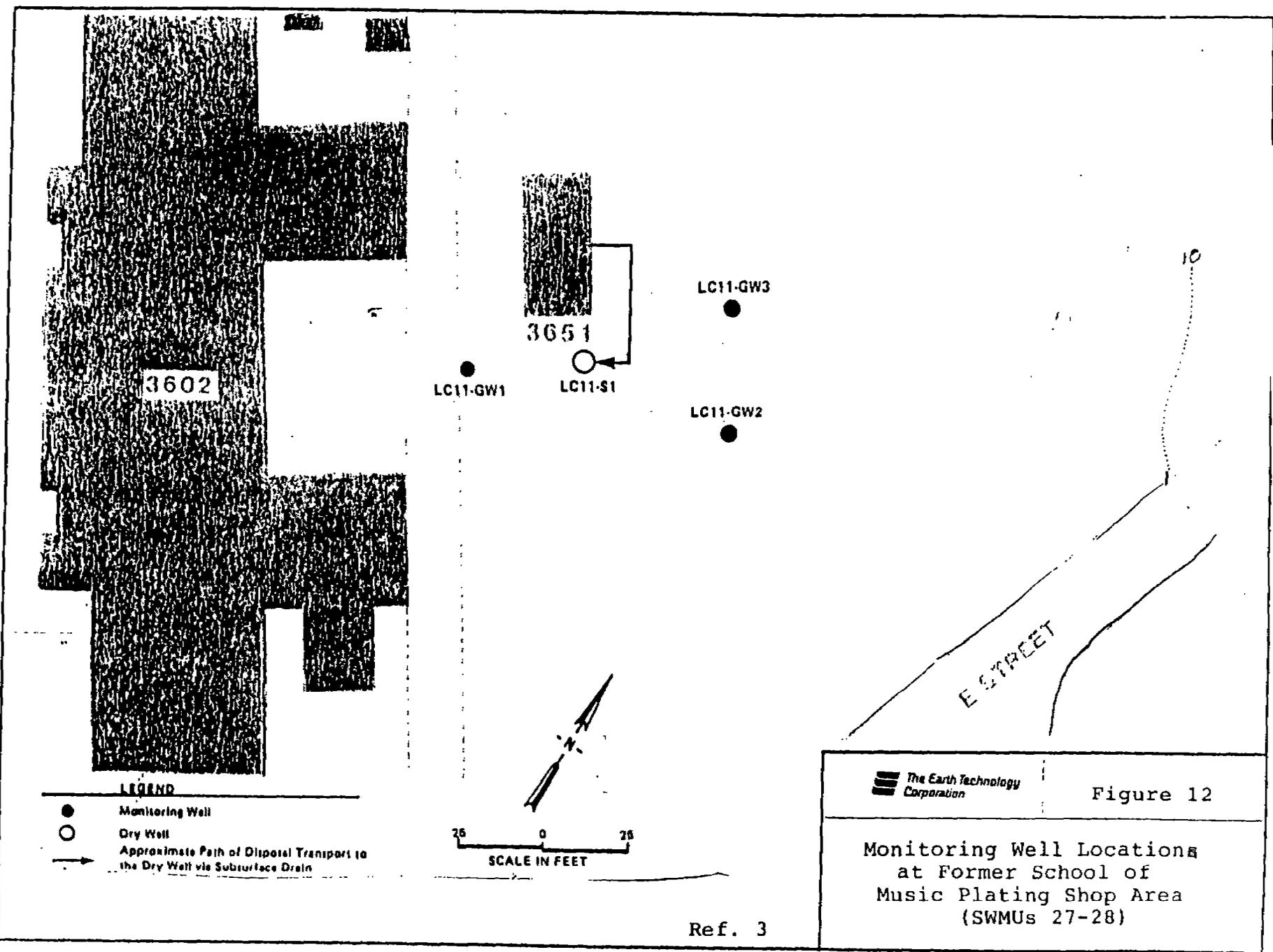


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Figure 11

Location Map of Former School of Music Plating Shop Area (SWMUs 27-28)

Ref. 1



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Figure 12

Monitoring Well Locations
at Former School of
Music Plating Shop Area
(SWMUs 27-28)

Ref. 3

29. Unit Name: **Harbormaster's Office Area - Paint/Thinner Residue Tank**

Description: The Harbormaster's Office is located in Building 3894 (Figure 4). The Harbormaster is responsible for the direction of movement of ships in Little Creek Cove, Desert Cove, and Little Creek Channel. These operations produce waste materials from the maintenance of pusher boats. There are two 250-gallon tanks located adjacent to Building 3894 for liquid wastes. SWMU 29 is an above ground paint/thinner residue tank. It is elevated over gravel and soil. At this time, the unit is not receiving wastes. SWMU 61 is a waste oil tank and is discussed in a later section.

Date of Start-Up: According to the Initial Assessment Study of 1984, this tank was installed in 1954.

Date of Closure: There are no plans for closure of this unit.

Wastes Managed: Paint and paint thinner residues are managed by the unit. According to the Initial Assessment Study, 1984, in the past, there have been approximately 100 gallons of waste generated per month.

Release Controls: This above ground steel tank is on a stand which rests directly on a gravel surface. There is no berming around the tank.

History of Releases: No releases from this unit have been identified in file information or observed during the VSI.

References: 1,2

Photograph: 27

30. Unit Name: **Leaking Above Ground Diesel Tank, Building 3400**

Description: Building 3400 is a lift station for the Hampton Road Wastewater Treatment Plant. Adjacent to the building is an above ground diesel tank that has leaked (Figure 4). The tank holds about 150 gallons and rests about two feet above ground by four steel legs.

Date of Start-Up: The date of start-up for this tank is not currently available.

Date of Closure: There are no plans for closure of this unit.

Wastes Managed: Diesel fuel is reportedly held in this tank.

Release Controls: The tank rests on a stand above an asphalt surface. The asphalt appears to be in good condition although, certain portions appeared to have been recently repaired. Sand has been placed immediately below the tank in what appeared to be an attempt to adsorb some of the leaked product.

History of Releases: The asphalt area immediately below and the grass surrounding the tank was heavily stained with oily liquids.

References: 2

Photograph: 28

31. Unit Name: **Pier 10, Leaking Above Ground Fuel Tanks**
- Description: The leaking fuel tanks are located on Pier 10, near Building 1263 (Figure 4). Two 55-gallon drums storing waste oil are also located in the tank area. The tanks are identical in capacity (approximately 200 gallons each) and are labeled as "diesel", "gasoline", and "JP-5". The tanks are adjacent to one another and are resting on a steel platform. The leaking appears to be routine and systematic. The drums are frequently pumped by a vacuum truck, and the water and waste oil are disposed of as waste oil.
- Date of Start-Up: The date of start-up for these tanks is not currently available.
- Date of Closure: There are no plans for closure of these units.
- Wastes Managed: The three tanks are labeled and presumably contain diesel fuel, gasoline, and JP-5 fuel. The two drums contain waste oil.
- Release Controls: The drums are resting on a steel platform above a concrete pad in good repair. The pad is bermed by a 4-inch high concrete curb containing a valve that allows release to the outside of the bermed area. A metal drip collection pan is located beneath the tank valves.
- History of Releases: At the time of the VSI there was standing fluids in the containment area. These fluids appeared to have been a combination of fuels and precipitation. Staining of the curb and immediately outside the curb was also observed.
- References: 2, 11
- Photograph: 29

32-33. Unit Name:

Base Exchange (East Annex) Gas Station

o SWMU 32 - Battery Storage Area

o SWMU 33 - Waste Accumulation Area

Description:

The east annex gas station is located at Building 3615 (Figure 4). The gas station stores spent batteries (SWMU 32) prior to their pick-up by a contractor for recycling. The spent batteries are stacked two to three high on a concrete and gravel surface adjacent to the station. They are located inside a locked fence. The station also has a waste accumulation point (SWMU 33) which contains drums of water taken from the gasoline storage tanks. The drums are held in the same area as the spent batteries. Several types of metal waste have also been disposed in the dumpster located in the parking lot (SWMU 8).

Date of Start-Up:

The date of start-up for these units is not currently available.

Date of Closure:

There are no plans for closure of these units.

Wastes Managed:

The gas station stores spent automobile batteries (SWMU 32). As many as 100 automotive storage batteries are taken in at the station per month for exchange. The batteries are exchanged about once a month with the wholesaler who takes the entire battery, including the electrolyte, back to the manufacturer for recycling. The gas station also stores drums of gasoline-contaminated water removed from the underground gasoline storage tanks. There is greater than 55 gallons of wastewater stored at the site (SWMU 33).

Release Controls:

SWMU 32 - The batteries are stored in an uncovered fenced area at the side of the station. They are stacked on a wooden pallet that is partially on concrete and partially on gravel.

SWMU 33 - The drums of waste oil are stored on concrete in the same fenced in area as the batteries. The PWD removes the drums on a regular basis.

History of Releases:

The units are not in good condition. An assessment of release could not be made due to the inaccessibility of the areas.

References: 1,2

Photograph: 30

34-64. Unit Name: **Waste Oil Storage Tanks**

Description: A total of 26 underground and 4 above-ground waste oil storage tanks were identified facility-wide. These tanks store waste oil generated from vehicle and boat maintenance operations. The waste oil tank inventory is shown below:

SWMU #	Building # & Name	Capacity (Gallons)	Installation Date	Construction Material	Position
34	3319 - Navy Exchange Vending Office	1000	1969	Steel	U
35	3661 - PWD Garage	550	1964	Steel	U
36	3530 - Auto Hobby Shop	500	1954	Steel	U
37	CB301 - Seabee Maintenance	550 (2)	NA	FRP	U
38	3817 - ACU4	550 (2)	After '86	- Not in tank inventory	U
39	3615 - East Annex Gas Station	550	1961 (IAS)	- Not in tank inventory	U
40	3142 - BMU2	550	1985	FRP	U
41	3108 - MWR Equip. Rental	550	1985	FRP	U
42	1231-3 - ACU2	550	1981	FRP	U
43	1231-4 - ACU2	550	1981	FRP	U
44	T-9 - NSWG-2	550	1985	FRP	U

FRP - Fiberglass Reinforce Plastic
 NA - Not Available
 U - Underground
 A - Aboveground

SWMU #	Building # & Name	Capacity (Gallons)	Installation Date	Construction Material	Position
45	3806 - NSWG-2	200	1983	FRP	U
46	3872-4 - NAMS	500	1985	S.S.	U
47	SurTass-3	4000	1985	FRP	U
48	3896-1	NA	NA	NA	U
49	3860-1	10,000	1976	FRO	U
50	3860-2	500	NA	Steel	U
51	3530-6	500	1954	Steel	U
52	201-CB Area	550	1983	FRP	U
53	214-CB Area	550	1983	FRP	U
54	301-4	550	1981	FRP	U
55	315	550	1983	FRP	U
56	1265-2 - SIMA	1000	1984	Steel	U
57	1265-3 - SIMA	1000	1984	Steel	U
58	1265-4 - SIMA	1000	1984	Steel	U
59	1 - Naval Marine Reserve Center	550	1983	FRP	U
60	3033	550	1983	FRP	U

FRP - Fiberglass Reinforce Plastic

NA - Not Available

U - Underground

A - Aboveground

SWMU #	Building # & Name	Capacity (Gallons)	Installation Date	Construction Material	Position
61	3894 - Harbormasters Office	250 (2)	1954	Steel	A
62	CB210 - ELCS Mechanic Shop	200	NA	Steel	A
63	3867 - Fuel Farm Platform	5000 (2)	Post 1954	Steel	A
64	3142 - BMU2 Maintenance	500	NA	Steel	A

FRP - Fiberglass Reinforce Plastic
 NA - Not Available
 U - Underground
 A - Aboveground

Date of Closure: There are no plans for closure of these units.

Wastes Managed: These tanks generally contain waste crankcase and transmission oil.

Release Controls: The tanks are constructed of fiberglass reinforced plastic or steel and are emptied on a regular basis either by the PWD or an outside contractor.

The above ground units are all on located some type of stand that rest on concrete pads in good repair. SWMU 61 is the only exception. There is no concrete pad below this tank. SWMU 64 is the only tank that has a bermed area around it. The bermed area has a release valve.

History of Releases: No releases were reported in the file information for the underground tanks. During the VSI, evidence of releases were observed at the following units:

- o SWMU 35 - Stains were observed on soils surrounding the tank fill pipe.
- o SWMU 40 - The unit is located within a bermed area. The asphalt outside the bermed area is discolored, especially under the dispensing valve coming off of the bermed area.

No releases were identified for SWMUs 61, 62, and 64. The one above ground unit with releases was SWMU 63, where staining was observed on the ground surface.

References: 1,2,5

Photograph: 4,27,31,32,33,34

65-75. Unit Name: **Facility Oil/Water Separators**

Description: A total of 14 oil water separators were observed during the VSI. These units are representative of oil/water separators throughout the facility. A representative inventory is shown below:

SWMU #	Building # and Name	Installation Date	Construction Material
65	3817 - Assault Craft Unit 4	1987	concrete
66	3142 - Beachmaster Unit 2	1944	concrete
67	CB301 - Seabee Vehicle Maintenance (Light Shop)	NA	concrete
68	CB301 - Seabee Vehicle Maintenance (Heavy Shop)	NA	concrete
69	3894 - Harbormaster's Office	NA	concrete
70	3650 - PWD Sheet Metal Shop	1945	concrete
71	3661 - PWD Transportation Garage	NA	concrete
72 (3)	T 9, 10, 11 - Special Boat Units	NA	concrete
73	1SS1 - Tanker Unloading Area	NA	concrete
74 (2)	3187 - Assault Craft Units	NA	concrete
75	3876 - Engine Overhaul Shop	NA	concrete

Date of Closure: There are no plans for closure of these units.

Wastes Managed: The units receive water and oils from cleaning, maintenance, washing, and other operations.

Release Controls: The units observed during the VSI appeared to be in good condition. After fluids are put through the oil-water separators, the water is released into the sanitary sewer.

History of Releases: No releases were reported in the file information for the units. The condition of the units could not be determined during the VSI, however, no evidence of straining was noted at the surface.

References: 2

Photograph: 8,35,45,72

76. Unit Name: **Hazardous Waste TSD Pad**

Description: This unit of Public Works is located at Building 3091 (Figure 4) and is a RCRA-permitted storage pad. The PWD hazardous waste group is responsible for pickup and arrangements for offsite disposal of NAB Little Creek hazardous wastes. All base and tenant activity wastes, except for photographic, ordnance, and Boone Clinic wastes, are handled by this unit. The unit consists of a covered building and uncovered areas, all of which are enclosed by a fence.

Date of Start-Up: The outdoor and indoor storage facilities have been in use since 1980 to provide temporary storage for hazardous waste generated at NAB Little Creek. Presently, the outdoor facility is used as "overflow" storage for the indoor facility.

Date of Closure: There are plans for closure of this unit after the 90-day accumulation point (SWMU 111) has been permitted as a TSD facility.

Wastes Managed: The capacity of indoor storage on the concrete pad is about 5,000 gallons, with unlined outdoor storage used as necessary for up to 3,000 additional gallons. Wastes accepted by this facility between 1981-1984 are described in Table 2.

Release Controls: Drums of hazardous waste are stored on drums on a concrete surface in the indoor facility. The concrete integrity appeared to be in good condition. The outdoor facility has an unbermed asphalt lot surrounded by a chain-link privacy fence.

History of Releases: There has been reported surface accumulations of oily, tarry, or otherwise discolored soils indicating that there have been several spills of waste in the outdoor storage area. According to base personnel, soil samples surrounding the outdoor storage facility have been tested for oil and grease, with no contaminants encountered. However, this data was not provided.

References: 1,2,11

Photograph: 36,37

**Table 2
Hazardous Materials Handled
for Off-Base Disposal by
PWD, 1981-1984**

Source	Material	Volume
Ships	Paint thinner	1,800 + gal
	Mercuric nitrate	1,250 gal
	Batteries	110 +
	Oils/greases	1,250 + gal
	DBA canisters	200 +
	Fluorescent tubes	3,000 +
	Gasoline	500 gal
	Mercury	3 - 4 gal
	Sulfuric acid	40 gal
	Boiler chemicals	200 + gal
	PKP	700 lb
	PCE, other halocarbons	120 + gal
	Sodium nitrate	155 lb
	Miscellaneous	150 lb
SIMA	Solvents	2,000 gal
	Zepton exceed/oil	500 gal
	Batteries	75 +
	Sulfuric acid	230 gal
	Paint/thinner	100 + gal
	Mercury	4 - 5 gal
	Miscellaneous	350 gal
ACU2	Paint	900 + gal
	Batteries	190 +
	Solvent	175 gal
	Miscellaneous	25 gal
Naval Construction Battalion 2	Paint	800 + gal
	Oil	1,000 + gal
	Solvents	1,300 + gal
	Batteries	108
Amphibious School	Ethylene oxide	100 gal
	Mercuric nitrate	275 gal
	Solvents	38 gal
Boiler School	Mercuric nitrate	495 gal
	Batteries	76

77. Unit Name: **Old Navy Exchange Laundry (NACIP Study Area)**
- Description: The exchange laundry/dry cleaning facility was operated in the former Building 3323 across from Building 3324 (Figures 4 and 13). Perchloroethylene (PCE) was used in dry cleaning operations there. The unit was razed and the former location now consists of a grassy field.
- Date of Start-Up: The old navy exchange laundry began operations in 1973.
- Date of Closure: The unit ceased operations in 1978.
- Wastes Managed: The wastes listed in Table 3 were used as part of the laundry and dry cleaning operations.
- Release Controls: No release controls were used at this unit, according to facility personnel.
- History of Releases: A total of approximately 1,320 gallons of the chemicals listed in Table 3 were disposed of on the ground or in a nearby storm drain. In 1979, all remaining wastes were removed to the PWD hazardous waste storage facility (SWMU 76).
- The old navy exchange laundry is under the NACIP program. During Round 1 sampling of the Confirmation Study, CH2M Hill analyzed six surface water and six sediment samples taken in the drainage area below the discharge point of the storm-sewer in which the wastes were disposed. Sediment samples were taken at a depth between 0.0 to 0.5 feet. The samples were collected on May 22, 1986. Samples were analyzed for:
- o Trichloroethylene
 - o Perchloroethylene
(Tetrachloroethene)
- Concentrations of constituents in the samples were generally below or near detection limits according to the Navy. Trichloroethene and tetrachloroethane were observed in the surface water at the three locations downstream of the discharge from the disposal drain (LC12-SW4, SW5, SW6). Trans 1,2-dichloroethene was observed at SW5 and SW6. Trichloroethene was near the proposed MCL at all three locations. Tetrachloroethane exceeded the RMCL (0 ppb) and the 1×10^{-6} cancer risk level for drinking water (0.88 ppb). Trans 1,2-dichloroethene, vinyl chloride, and toluene were

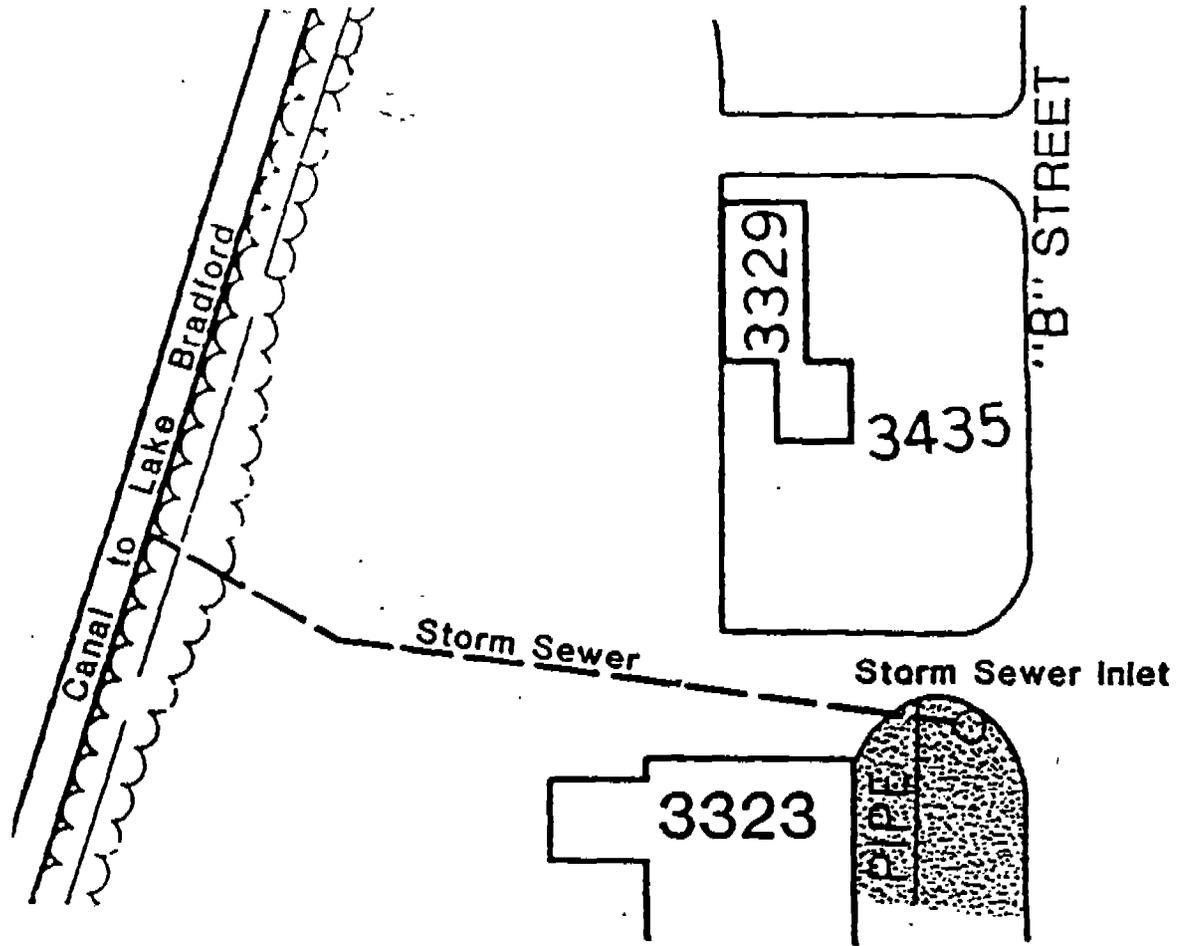
observed at SED6. Methylene chloride, acetone, chloroform, trichloro-trifluoroethane and 3-methylpentane were observed in some of the sediment and water samples at low concentrations.

References: 1,2,3

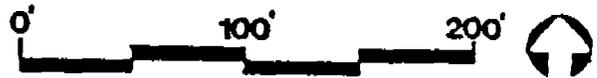
Photograph: 38

Table 3
Chemicals Disposed of in Navy Exchange
Laundry's Storm Drain

Waste	Quantity/Dates	Origin
Perchloroethylene Sludge	4 drums (55 gal) per year 1973 to 1978	Perchloroethylene solvent
Soap	4 drums (55 gal) per year 1973 to 1978	Soap
Sizing	4 drums (55 gal) per year	Sizing
Dyes	4 drums (55 gal) per year 1973 to 1978	Dyes



 Perchloroethylene
Sludge Storage Area



 The Earth Technology Corporation	Figure 13
Location Map of Old Navy Exchange Laundry (SWMU 77)	

Ref. 1

78-79. Unit Name: **Navy Exchange Vending Office**

Description: Building 3319 presently houses the navy exchange vending office (Figure 4). From 1944 to 1954 the Public Works Department used the building for vehicle maintenance. A service bay in the building is still used for vehicle maintenance. There were three units identified at the vending office. They are:

- o SWMU 78 - Navy Exchange Vending Office Drum Area
- o SWMU 79 - Navy Exchange Vending Office Scrap Yard
- o SWMU 31 - Underground Waste Oil Tank (Described in another writeup)

The drum area consisted of two rusted drums on a wooden skid. Both drums were full. The drums are not labeled and their contents are unknown. The scrap yard was located behind the building on asphalt and grass and consisted of used equipment and scrap metal.

Date of Start-Up: The building became the navy exchange vending office in 1954. It is not known how long the drum area or scrap yard have been in use.

Date of Closure: There are no plans for closure of these units.

Wastes Managed: The drum storage area (SWMU 78) contains two drums that apparently hold an oily-like substance.

The scrap yard (SWMU 79) contains various used metal equipment (e.g. ovens, cylinders, and wire) and other metal parts. There is no evidence that hazardous wastes or constituents are managed by this unit.

Release Controls: The two drums (SWMU 78) are resting on a dilapidated wooden skid that lies partially on grass and partially on asphalt.

The scrap metal lies on and adjacent to the asphalt parking lot. The materials lie on wooden skids or directly on the ground.

History of Releases: During the VSI, oily stains were observed below the drum area (SWMU 78). No releases were observed at the scrap yard (SWMU 79).

References: 1,2

Photograph: 39,40,41

80-81. Unit Name: **MWR Auto Hobby Shop**

- o SWMU 80 - Paint Booth Filters
- o SWMU 81 - Stain in Parking Lot Area

Description: The auto hobby shop is presently located in Building 3530, between 5th and 3rd Streets (Figure 4). Prior to this shop the building was used for heavy duty equipment maintenance. The shop is accessible to base personnel to work on their motor vehicles. Oil changes, lubrication work, body work and painting are common activities. A forced air paint booth is located in the auto hobby shop and waste paint filters are generated from this operation (SWMU 80). Large oily stains were located next to the parking lot at several locations (SWMU 81). These stains likely emanate from oily liquids from dumpsters, out of use vehicles, and equipment stored around the site.

Date of Start-Up: In 1954, a heavy duty maintenance shop, Building 3530, was constructed. The building became the auto hobby shop in 1974 when the transportation department relocated to its new building.

Date of Closure: There are no plans for closure of these units.

Wastes Managed: Paint filters from spray painting activities are managed at the unit. Oily liquids from dumpsters, inactive vehicles, and equipment are present around the site.

Release Controls: Personnel at the unit mentioned that spent paint filters are thrown in the trash dumpster. No release controls were observed for SWMU 81.

History of Releases: No releases from SWMU 80 were identified.

Oily stains and stressed vegetation were observed at several locations on the parking lot edge during the VSI (SWMU 81).

References: 1,2

Photograph: 42

82-83. Unit Name:

Boone Clinic

- o SWMU 82 - Medical X-Ray Silver Recovery Unit
- o SWMU 83 - Dental Clinic

Description:

The Boone Clinic is located in Building 3505 (Figure 4) and houses both the Medical Clinic and Dental Clinic. Both clinics have X-ray facilities. X-ray films taken at the clinic are kept for five years by the Medical Clinic radiology department.

The Medical Clinic recovers silver from spent photographic processing baths (fixer) using an electrolytic recovery unit. According to base personnel, the pH of the unit effluent is tested with litmus paper. If the pH is found to be in the correct range for complete formation of silver hydroxides, it is assumed that the effluent does not contain silver. Recovered silver is collected by the DRMO for resale.

The Dental Clinic stores spent photographic processing baths (fixer) in one gallon plastic containers. The spent baths are collected by the Naval Dental Clinic at the Norfolk Naval Base for silver recovery. Excess amalgam from filling teeth and x-ray film packets containing lead are also stored at the Dental Clinic. The amalgam contains mercury and is stored in small glass jars (about 25 ml) with a chelating agent. The film packets are collected in a cardboard box. The amalgam and the film packets are also collected by the Naval Dental Clinic at the Norfolk Naval Base for metal recovery.

Date of Start-Up:

Startup information for these units is not available at this time.

Date of Closure:

There are no plans for closure of these units.

Wastes Managed:

Spent photographic processing baths containing silver, excess amalgam containing mercury, and x-ray film packets containing lead are managed at the Boone Clinic.

Release Controls:

These units are located inside a building with a concrete subfloor.

History of Releases: No releases from the Boone Clinic were identified in the file information or observed during the VSI.

References: 1,2

Photograph: none

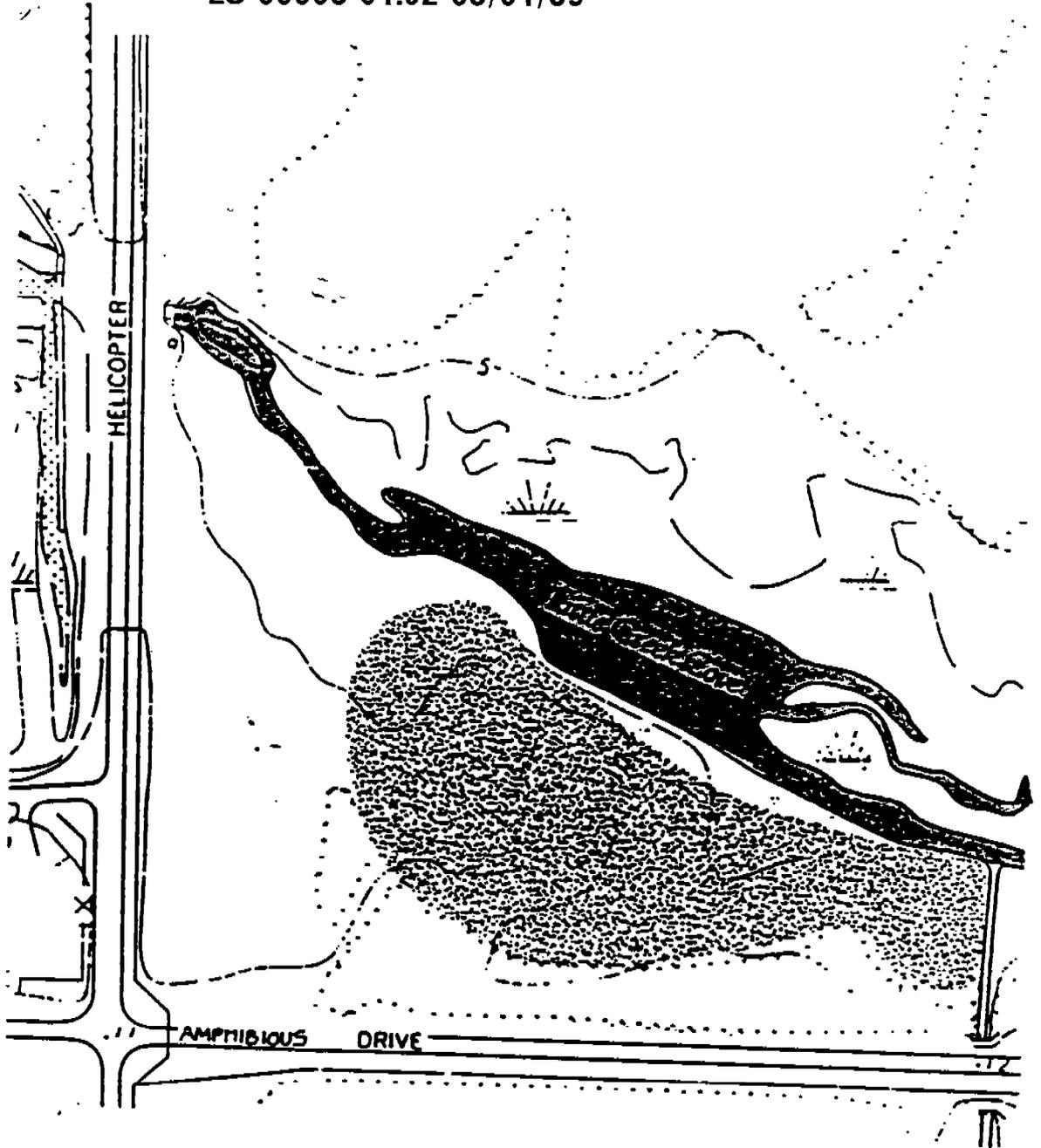
84. Unit Name: **Demolition Debris Landfill**
- Description: The demolition debris landfill located on the northwest corner of the intersection of Amphibious Drive and Helicopter Road was used for the disposal of basically inert materials (Figures 4 and 14). The debris landfill was in operation approximately the same period of time as the Amphibious Base Landfill (SWMU 124). The base landfill is directly across Helicopter Road from the demolition debris landfill. This debris landfill was created in the pit left after the Public Works Department-Transportation Division excavated material from the site to surface parking lots. The borrowed area assumed a crescent shape as it was developed, but never included the areas still in woods between the tributary of Little Creek Cove and Amphibious Drive. The total land area involved in this disposal area is about two acres, with an average depth of disposal of approximately three feet.
- Date of Start-Up: The unit began operation in 1971.
- Date of Closure: Operations were ceased at the unit in 1979.
- Wastes Managed: Some of the items disposed of in the area include the debris from demolition of the former Dental Clinic (SWMU 83) (including a mercury-contaminated carpet); debris from the commissary store, which burned down in the mid-1960s; and debris from the 1975 Public Works Building fire. At present, several old concrete pipe sections are visible at the surface of the landfill, and an old loading ramp is also visible. This ramp may have been used in the borrow pit operations or in some unrelated mission. The only other wastes identified as entering this landfill were an occasional pail of diapers and other debris removed from the bar screen in the sewage pump stations on the base. The volume of these contributions was minimal. Because the base landfill was open during the time that this area was also open, and because access into the base landfill was somewhat simpler, none of those interviewed felt that the other solid wastes were disposed of here. The approximate volume of nondegradable (and inert) material disposed in this area was determined to be 17,000 cubic yards. There is no evidence that the unit has managed hazardous wastes or constituents.

Release Controls: Materials disposed of here were placed directly into the borrow formed by removal of soils. There are no release controls at this unit.

History of Releases: No releases from this unit were identified in the file information. However, an inventory of wastes disposed there does not exist and there are no release controls.

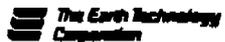
References: 1,2

Photograph: 43



 Demolition Debris Landfill



 The Earth Technology Corporation	Figure 14
Location Map of Demolition Debris Landfill (SWMU 84)	

Ref. 1

85-91. Unit Name:

Short Intermediate Maintenance Activity (SIMA)

Description:

SIMA operates industrial shops in Building 1265 (Figure 4). The shops are used to perform a variety of activities as shown below:

- o SWMU 85 - Machine Shop. Machine cooling oil wastes are collected in small (about 5 gallon) containers which are collected by the PWD for disposal.
- o SWMU 86 - Grind Shop. Small-scale electroplating activities are carried out here. Wastes are collected in plastic bottles with a capacity of about a quart. The containers are collected by the PWD for disposal.
- o SWMU 87 - Rewind Shop. Small-scale electroplating activities are carried out here. Wastes are collected in a 600 gallon underground storage tank. Wastes from SWMU 89 are also collected in this tank. No additional information was available about the tank.
- o SWMU 88 - Mechanical Calibration Laboratory. Calibration of mechanical equipment is performed here.
- o SWMU 89 - Carpentry Shop. Woodworking and painting activities are performed here. Wood chips and dust are collected in a hopper connected to the ventilation system. A water-wall spray paint booth is used for painting. Sludge and skimmings from the waterwall are collected in a 55-gallon drum. The water drains to the underground holding tank associated with SWMU 87.

SIMA also operates SWMU 90, the boat shop storage yard satellite accumulation point, and SWMU 91, the cable rigger shop satellite accumulation point. The boat shop storage yard satellite accumulation point (SWMU 91) is located in front of Building 1265. Painting wastes are collected in a 55-gallon drum which stands on a wooden pallet over gravel. The cable rigger shop satellite accumulation point is in Building 1131. Waste TCE from degreasing operations is collected in a 55 gallon drum located inside Building 1131 on a concrete floor. The location Building 1265, the boat shop storage yard, and Building 1131 are shown in Figure 4.

Date of Start-Up: Operation of SWMUs 85, 86, 87, 88, and 89 began after 1984.

Date of Closure: There are no plans to close these units.

Wastes Managed: Wastes managed by SIMA include:

- o SWMU 85 (Machine Shop) - Spent machine coolants
- o SWMU 86 (Grind Shop) - Spent electroplating solutions
- o SWMU 87 (Rewind Shop) - Spent nickel and copper electroplating solutions and fluoroboric acid etching solutions
- o SWMU 88 (Mechanical Calibration Laboratory) - Mercury contaminated thermocouples and waste freon
- o SWMU 89 (Carpentry Shop) - Wood chips and painting wastes
- o SWMU 90 (Boat Shop Storage Yard Satellite Accumulation Point) - Painting wastes
- o SWMU 91 (Cable Rigger Shop Satellite Accumulation Point) - Waste TCE

Release Controls: All of the SIMA SWMUs, except the boat shop storage yard satellite accumulation point (SWMU 90), are located inside a building with a concrete floor. The underground storage tank associated with SWMU 87 (rewind shop) and SWMU 89 (carpentry shop) is equipped with a gauge. No release controls were identified for the boat shop storage yard satellite accumulation point (SWMU 90).

History of Releases: No releases from SWMUS 85, 86, 87, 88, 89, or 91 were identified in the file information or observed during the VSI. Stains at the boat shop storage yard satellite accumulation point (SWMU 90) indicate a release to the soil has occurred.

References: 2

Photograph: None

92 - 97. Unit Name:

Seabee Vehicle Maintenance Facility**Description:**

The Seabees operate two vehicle maintenance shops in Building CB301 (Figure 4); a "light shop" and a "heavy shop." The light shop is used for automotive maintenance. The heavy shop is used for construction equipment maintenance. Five SWMUs are associated with this facility:

- o SWMU 37 - Two 550-gallon waste oil underground storage tanks (described in another section)
- o SWMUs 67-68 - Oil-water separators associated with vehicle washracks (described in another section)
- o SWMU 92 - Satellite Accumulation Point. This unit consists of small containers of painting wastes inside a metal locker in the scrap storage area (SWMU 96).
- o SWMU 93 - Battery Storage Area. Drained battery carcasses are stored on a wooden pallet outside the entrance to the heavy shop over a concrete slab.
- o SWMU 94 - Battery Shop. Lead-acid batteries are drained in this shop. The acid is collected in a 55-gallon drum and held until it is removed by the PWD for disposal.
- o SWMU 95 - Paint Booth Filters. The filters are used in a forced air paint booth to collect paint particles. The spent filters are collected by the PWD for disposal.
- o SWMU 96 - Scrap Storage Area. This unit is located in back of Building CB 301. Scrap metal is stored here. The yard is visibly stained with oil.
- o SWMU 97 - Storm Drain. The storm drain (SWMU 97) is located in the scrap storage area (SWMU 96) and is used to remove storm water runoff. Storm water from the NAB is discharged to the Chesapeake Bay. At the time of the VSI, oil from a forklift parked near the drain was flowing into the drain.

Date of Start-Up:

The SWMUs in this area went into operation after 1984. Start-up information for SWMU 92 and 93 is not available at this time.

- Date of Closure:** There are no plans for closure of these units.
- Wastes Managed:** Wastes managed at the Seabee Vehicle Maintenance Facility include:
- o SWMU 92 (Satellite Accumulation Point) - small quantities of painting wastes
 - o SWMU 93 (Battery Storage Area) - drained lead-acid automotive batteries
 - o SWMU 96 (Battery Shop) - sulfuric acid drained from lead-acid automotive batteries
 - o SWMU 95 (Paint Booth Filters) - paint particles
 - o SWMU 96 (Scrap Storage Area) - scrap metal
 - o SWMU 97 (Storm Drain) - storm water from the scrap storage area (SWMU 96)
- Release Controls:** The following release controls were identified for the Seabee Vehicle Maintenance Facility:
- o SWMU 92 (Satellite Accumulation Point) - wastes are collected in small containers which are placed inside a metal locker with a metal lip approximately 3 inches deep.
 - o SWMU 93 (Battery Storage Area) - drained batteries are placed on a wooden pallet over a concrete slab.
 - o SWMU 94 (Battery Shop) - this unit is located inside a building with a concrete floor.
 - o SWMU 95 (Paint Booth Filters) - the filters are allowed to dry prior to collection by the PWD.
 - o SWMU 96 (Scrap Yard) - no release controls were identified for this unit.
 - o SWMU 97 (Storm Drain) - no release controls were identified for this unit.
- History of Releases:** No releases were identified in the file information or observed during the VSI for SWMUs 92, 93, 94, and 95. The scrap yard (SWMU 96) is stained with oil indicating a release to the soil has occurred. At the time of the VSI, oil was entering the storm drain (SWMU 97).

References: 1,2

Photographs: 44, 45, 46

98. Unit Name: **Elevated Causeways Mechanic Shop (ELCS) Material Dispensing Area**

Description: This unit is located near Building CB210, a supply building (Figure 4). One above-ground waste oil tank (SWMU 62) is associated with the ELCS. The ELCS material dispensing area (SWMU 98) consists of three 55-gallon drums of lubricants on wooden pallets over gravel.

Wastes Managed: Waste oil lubricants are managed in this unit.

Date of Start-Up: Start-up information for this unit is not available at this time.

Date of Closure: There are no plans to close this unit.

Release Controls: As the drums are opened, they are fitted with a dispensing pump which helps prevent spills.

History of Releases: The gravel area beneath the drums was stained during the VSI. It appeared to have occurred from routine dripage.

References: 2

Photograph: 34

99. Unit Name: **Solid Waste Incinerator Site**

Description: This unit is bounded by Helicopter Road to the west, 10th Street to the south, and Hewitt Drive to the east. The incinerator has been demolished. A picnic/lookout/veranda facility has been constructed at the site. During its operation, the unit was used to incinerate municipal refuse generated at the Naval Amphibious Base.

Date of Start-Up: Intermittent operation of this unit began in 1955.

Date of Closure: Operation of this unit ended in 1957.

Wastes Managed: Municipal refuse generated at the Naval Amphibious Base was incinerated in this unit.

Release Controls: No release controls were identified for this unit.

History of Releases: Air emissions from this unit occurred in the past. No other releases were identified.

Photograph: None (covered by a veranda facility)

References: 2

100. Unit Name: **Fuel Farm Loading Platform Underground Storage Tank**

Description: The fuel farm is adjacent to the Chesapeake Bay as shown in Figure 4. The loading platform is used to fill tank trucks with fuel from above-ground fuel tanks at the fuel farm. The loading platform is downslope from the fuel tanks, and consists of valves, piping, and associated equipment for dispensing fuel. The platform base is constructed of concrete and is visibly stained. The fuel farm loading platform storm water drain is located between the loading platform and the bay and is connected to an underground storage tank (SWMU 100). Two above-ground waste oil tanks (SWMU 63) are also associated with SWMU 100.

Date of Start-Up: Start-up information for this SWMU is not available at this time.

Date of Closure: There are no plans to close this unit.

Wastes Managed: This unit manages storm water runoff from the fuel farm loading platform. Fuels from the area also enter this drain.

Release Controls: The unit is contained with a sloped concrete surface of good integrity.

History of Releases: No releases have been identified or observed at the present time.

References: 1,2

Photograph: 47

101. Unit Name: **Beachmaster Unit 2 (BMU2) Satellite Accumulation Point**

Description: SWMU 101, the BMU2 satellite accumulation point is located outside Building 3804 (Figure 4). This unit consists of a 55-gallon drum on a wooden pallet over a concrete slab. It is used to collect flammable wastes.

Date of Start-Up: Start-up information for this SWMU is not available at this time.

Date of Closure: There are no plans to close this unit.

Wastes Managed: Flammable wastes are managed in this unit.

Release Controls: Wastes are accumulated in a drum which rests on a concrete slab.

History of Releases: The grassy area around the unit was observed to be stained during the VSI.

References: 2

Photograph: None

102. Unit Name: **West Annex Fuel Leak**

Description: Ship fuel and waste oil are known to contaminate soil along Piers 11 - 19 on the west side of Little Creek Channel (Figures 4 and 15). In the 1950s, waste oil was periodically sprayed in the area to control dust. In the 1960s, approximately 11,000 gallons of ship fuel was lost from the subsurface pipeline in the vicinity of Piers 16 to 19. The loss is thought to have occurred from a number of slow leaks in the pipeline. A new fuel pipeline was installed in 1970. No leaks have been detected in the new lines.

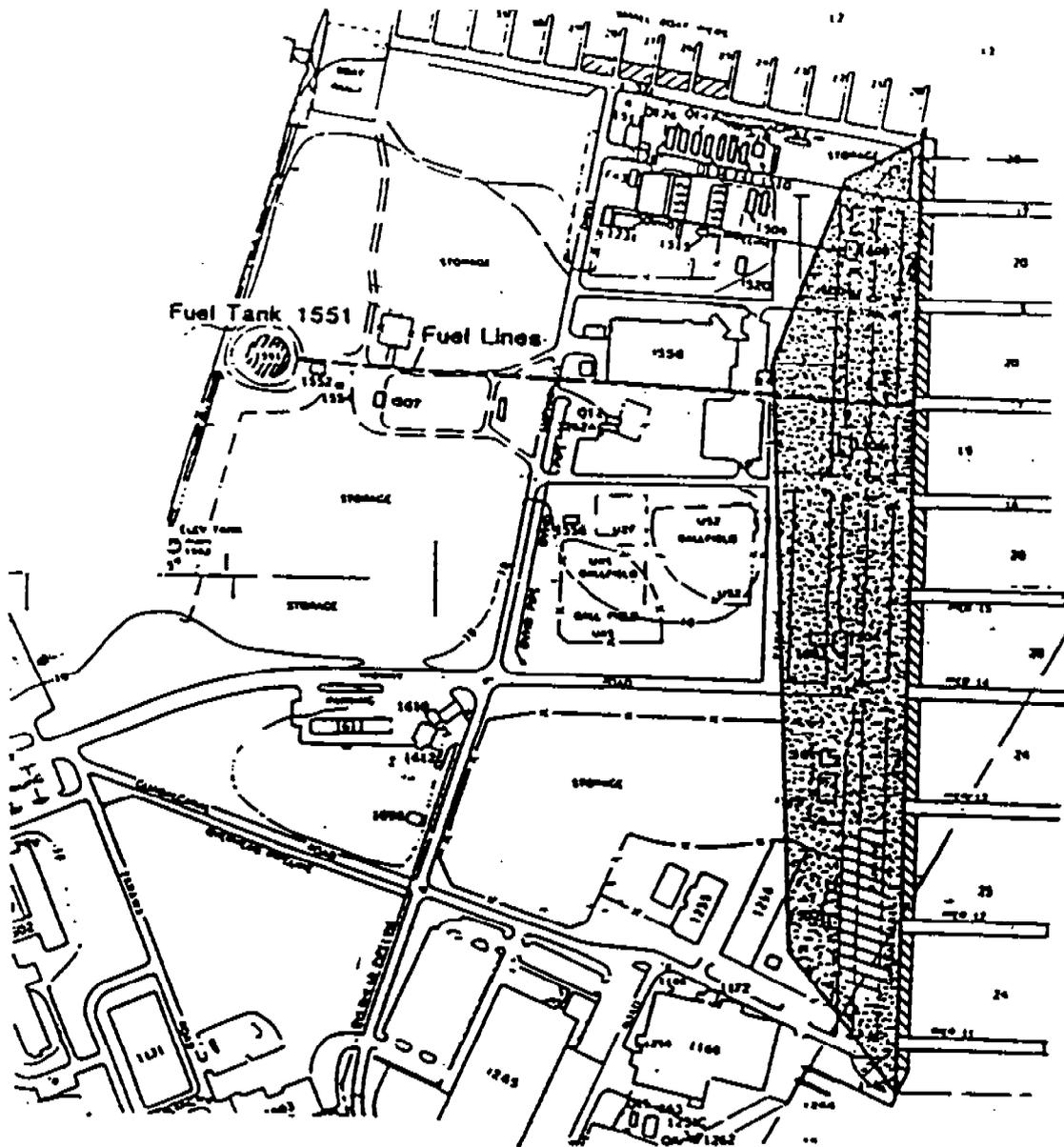
Date of Start-Up: Waste oil was periodically sprayed in the area during the 1950s. The fuel spill occurred in the 1960s.

Date of Closure: Small amounts of water and fuel are currently being pumped from a sump in the area, but full-scale remediation efforts have not begun.

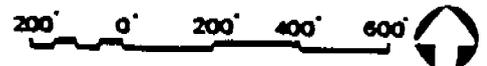
Wastes Managed: The unit is the site of a ship fuel spill. Waste oil was also sprayed on the soil in the area.

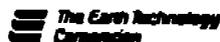
Release Controls: A boom had been deployed on the water in the area. A product recovery system which pumps and collects floating oil from the surface of the groundwater has been installed. The recovered product is stored in above-ground tanks.

History of Releases: In the 1950s, waste oil was applied to soil in the area. In the 1960s, approximately 11,000 gallons of ship fuel was released to soil and groundwater along Piers 11 - 19. The presence of fuel in groundwater at the piers was discovered in the mid-1970s when a sewer was installed in the area. During the installation, several hundred thousand gallons of a fuel-groundwater mixture were pumped from the excavation, but only a small fraction of this was fuel. In 1982, an engineering firm retained by the Navy determined that 3,000 to 16,000 gallons of fuel are present in the unsaturated zone above the water table over a 13-acre area underlying the waterfront. It was also determined that an elongated slug of free oil is floating on the water table near Pier 12. The maximum slug size is estimated to be 0.8 acres and to contain 700 - 10,000 gallons of fuel. During the VSI, a sheen was observed on the water between Piers 16 and 17. A containment boom was in



-  Approximate Area of Fuel Contaminated Soil
-  Area of Recoverable Fuel



 The Earth Technology Corporation	Figure 15
Location of Approximate Area of Contaminated Soil from Fuel Leak (SWMU 102)	

Ref. 1

place, but was not containing the oil. Facility personnel indicated that oil flows out from the pier area when the tide goes out.

References: 2

Photograph: None

103. Unit Name: **Piers 11 - 19**

Description: Piers 11 - 19 are located along Little Creek Cove (Figure 4). Navy vessels are serviced in this area. Service activities include loading and unloading cargo, supplies, and fuel. Utility services are provided to vessels moored at the piers. Three SWMUs are associated with Piers 11 - 19:

- o SWMU 102 - West Annex Fuel Spill (discussed previously)
- o SWMU 103 - Stationary Crane Area

SWMU 104, the stationary crane area, is located between Piers 10 and 11. The crane has been removed. The area is now used to store scrap, including spent batteries, cable, and scrap metal.

Date of Start-Up: Start-up information for these units is not available at this time.

Date of Closure: SWMU 104, the stationary crane area, may be converted to other uses within the next five years, according to facility personnel.

Wastes Managed: SWMU 104, the stationary crane area, is used to store scrap metal, cables, and discarded equipment. It is assumed that the batteries contain lead and sulfuric acid.

Release Controls: No release controls were identified for SWMU 104.

History of Releases: No releases from SWMU 104, the stationary crane area were identified in file information or observed during the VSI.

References: 1,2

Photograph: None

104 - 109. Unit Name: **Steam Plant**

Description: The steam plant is housed in Building 757 between Murray Road and Amphibious Drive (Figure 4). The plant has provided steam heat to the NAB since 1956. From 1956 to 1969 the steam plant burned approximately 40,000 to 45,000 tons of coal per year. In 1969, the plant switched to Burning No. 6 diesel oil (approximately 6 million gallons/ year). The plant switched back to coal in 1983. Six SWMUs are associated with the Steam Plant:

- o SWMU 104 - Baghouses (3)
- o SWMU 105 - Flyash Silo
- o SWMU 106 - French Drain
- o SWMU 107 - Coal Pile Leachate Collection System
- o SWMU 108 - Fuel Tanks and Associated Pipes
- o SWMU 109 - Floor Drains

Three baghouses (SWMU 104) at the steam plant are used to remove particulates (flyash) from gases leaving the plant. The collected flyash is then transferred by a conveyor belt to the flyash silo (SWMU 105). Flyash is removed through a duct at the bottom of the flyash silo (SWMU 105) to a truck parked over a concrete slab with a french drain (SWMU 106) beneath the flyash silo (SWMU 105). The ash is then taken off-site for disposal. Prior to 1969, the ash was disposed in the Amphibious Base Landfill (SWMU 123). Flyash production averages 32 tons (50 cubic yards) per day in the winter. Coal use and ash production are reduced in the summer. The french drain (SWMU 106) is approximately 3 feet deep, two feet wide, and 20 feet long. It is constructed of concrete with a metal grate covering. The french drain (SWMU 106) receives wash water laden with flyash from the adjacent concrete slab. The french drain (SWMU 106) is connected to the coal pile leachate collection system (SWMU 107).

In addition to wash water from the french drain (SWMU 106), the coal pile leachate collection system (SWMU 107) receives leachate from the plant coal pile. The liquids enter a concrete basin. The basin has two compartments. The liquid may be directed to either basin

compartment. It is then pumped out of the basin to a mixing tank (there is one mixing tank for each basin compartment) where caustic soda is added to adjust the pH of the leachate. The neutralized liquid is then returned to the basin. The pH of the liquid is tested. If the liquid is neutral, it is discharged to the Hampton Roads Sanitation District POTW. Sludge from the basins is disposed off-site by a contractor. SWMU 108, consists of two 500,000 gallon above ground tanks and associated piping in front of the steam plant. These tanks and pipes were formerly used to provide No. 6 diesel fuel to the steam plant. It was not determined if the tanks still contain fuel. Each tank sits in a basin formed by an earthen berm. Each basin has a storm water drain with a manual cut-off valve. Floor drains (SWMU 109) inside the steam plant are connected to the storm water sewer which drains to Chesapeake Bay. Caustic soda from water pH adjustment activities inside the plant enters the floor drains.

- Date of Start-Up:** Operation of the steam plant began in 1956.
- Date of Closure:** There are no plans to close the steam plant.
- Wastes Managed:** The following wastes are managed at the steam plant:
- o SWMU 104 (Baghouses) - flyash
 - o SWMU 105 (Fly Ash Silo) - flyash
 - o SWMU 106 (French Drain) - flyash laden wash water
 - o SWMU 107 (Coal Pile Leachate Collection System) - leachate from the coal pile and flyash laden wash water from the french drain (SWMU 107). Sludge from the basins is considered a hazardous waste due to corrosivity (D002)
 - o SWMU 108 (Fuel Tanks and Associated Pipes) - No. 6 fuel oil has been released from this unit
 - o SWMU 109 (Floor Drains) - caustic soda enters the floor drains

- Release Controls:** The following release controls are associated with the steam plant:
- o SWMU 104 (Baghouses) - the baghouse filters are enclosed
 - o SWMU 105 (Flyash Silo) - the silo is an enclosed structure and the ash transfer duct is angled
 - o SWMU 106 (French Drain) - no release controls were identified for this unit
 - o SWMU 107 (Coal Pile Leachate Collection System) - the collection basin is constructed of concrete and is divided into two compartments; if one compartment fails, liquid can be directed to the other compartment
 - o SWMU 108 (Fuel Tank and Associated Pipes) - no release controls were identified for this unit
 - o SWMU 109 (Floor Drains) - no release controls were identified for this unit

- History of Releases:** A summary of the release history for the steam plant is presented below:
- o SWMU 104 (Baghouses) - no releases from this unit were identified
 - o SWMU 105 (Flyash Silo) - flyash from the conveyor belt associated with the silo has probably been carried to nearby soils by the wind; flyash may also have been dispersed to nearby soils during transfer of the ash to trucks
 - o SWMU 106 (French Drain) - no releases from this unit were identified
 - o SWMU 107 (Coal Pile Leachate Collection System) - no releases from this unit were identified
 - o SWMU 108 (Fuel Tanks and Associated Pipes) - oil stains were observed in the tank and pipeline areas
 - o SWMU 109 (Floor Drains) - caustic soda has been discharged to the storm water sewer through the floor drains: the sewer is connected to Chesapeake Bay

References: 1,2

Photographs: 48-56

110. Unit Name: **90-Day Accumulation Point**
- Description: The 90-Day accumulation point includes two bays in Building 106 and an outdoor storage yard next to Building 106 (Figure 4). The facility is used as a central staging area for hazardous waste generated throughout the NAB. The two bays inside Building 106 are used to store waste containers with a volume less than 55 gallons. The bays have concrete floors and cinderblock walls approximately five feet in height. The outdoor yard is used to store wastes in 55-gallon drums on pallets. Spent batteries are stored in the yard on pallets. Most of the yard is paved with concrete. The yard is surrounded by a 6 inch asphalt berm. Wastes stored in the bays and the yard are segregated by type. Empty drums are stored between the back of Building 106 and the perimeter fence.
- Date of Start-Up: Start-up for this unit was 1984.
- Date of Closure: There are no plans to close this facility in the near future.
- Wastes Managed: Hazardous wastes generated throughout the NAB are stored here. Waste types include flammable (D001), corrosive (D002), oxidizer, reactive (D003), and spent lead-acid batteries. Liquid and solid wastes are stored in this unit. Typical wastes sent to this unit are shown in Table 2.
- Release Controls: Most of the outdoor yard is paved with concrete. The storm water drain for the yard is equipped with a manual valve which was in the closed position during the VSI. The building and the yard are surrounded by a six inch asphalt berm. The building has a concrete floor and a roof. For ventilation purposes, the roof does not meet the bay walls.
- History of Releases: Stains on the floor of Building 106 indicate that spills have occurred in the bays. However, the concrete floor is in good condition and there is no evidence of releases from the building. During the VSI, one leaking battery was observed in the outdoor yard. There are some stains on the yard pavement, indicating wastes have been spilled. The yard pavement has some surficial cracks and there are seams in the pavement. However, no releases from the yard were identified.

References: 2, 11

Photographs: 57 - 61

111-112. Unit Name:

Pier 10 Sandblasting Area

Description:

The location of SWMU 111, the Pier 10 sandblasting area, is shown in Figures 4 and 16. Two SWMUs are associated with this area:

- o SWMU 111 - Pier 10 Sandblasting Yard
- o SWMU 112 - Pier 10 Sandblasting Yard Satellite Accumulation Point

From 1962 to 1984, SWMU 111, the Pier 10 sandblasting yard, was used to sandblast boats. At the present time, this area is used to sandblast anchors and anchor chains. Grit and paint chips cover the unpaved area to the water's edge and the nearshore bottom of Little Creek Channel. In 1982, a fence was installed around the perimeter of the sandblasting area to reduce the amount of grit reaching the water. Sandblasting residue is removed from the area by the PWD for off-site disposal. The residue is tested for EP toxicity prior to disposal. SWMU 112, the Pier 10 sandblasting yard satellite accumulation point is located in SWMU 111, the Pier 10 sandblasting yard. The satellite accumulation point (SWMU 112) is a metal locker used to accumulate small containers of painting wastes. The locker sits on the ground. A dispensing area is present and consists of three above ground tanks (SWMU 31) on a concrete slab surrounded by a six inch concrete berm with a drain valve. This unit is described in an earlier section.

Date of Start-Up:

Start-up information for these units is not available at the present time.

Date of Closure:

According to facility personnel, these units will cease operating during the 1990s when an indoor sandblasting facility will be constructed.

Wastes Managed:

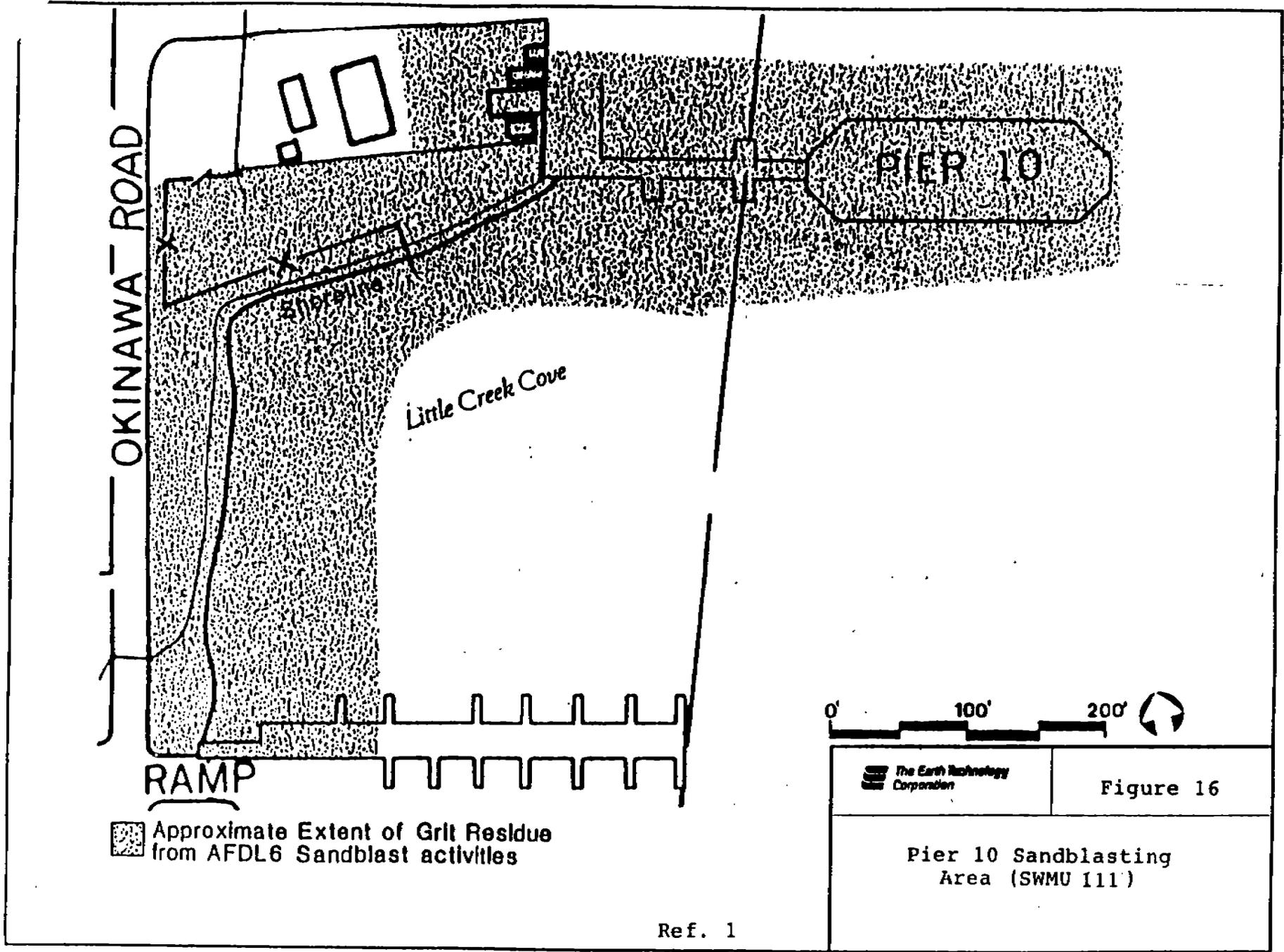
Sandblasting residue containing grit and paint chips is managed in SWMU 111, the Pier 10 sandblasting yard. Painting wastes are managed in SWMU 112, the Pier 10 satellite accumulation point. Residue has been tested for EP Toxicity. Results have indicated that the residue is not hazardous.

Release Controls: A fence has been installed around the perimeter of the Pier 10 sandblasting yard (SWMU 111) to reduce the amount of sandblasting residue entering Little Creek Channel. The metal locker at the Pier 10 Satellite accumulation point has a metal lip approximately 3 inches in height.

History of Releases: The sandblasting residue is lying directly on the ground surface. According to facility personnel, EP toxicity tests from some of the residue indicated the material was not hazardous.

References: 1,2

Photographs: 62,63



Approximate Extent of Grit Residue from AFDL6 Sandblast activities

The Earth Technology Corporation

Figure 16

Pier 10 Sandblasting Area (SWMU 111)

Ref. 1

113. Unit Name: **Building 1256 Motor Oil Disposal Area**

Description: Waste motor oil from a vehicle maintenance facility (the SIMA Transportation Shop) was formerly disposed by pouring it onto the soil in a corner of the scrap yard adjacent to Building 1256 (Figures 4 and 17). The location of SWMU is shown in Figure 4. It is estimated that the vehicle maintenance facility disposed of approximately 100 gallons of waste oil per year from 1949 to 1984. Runoff from a nearby lube oil and hydraulic fluid storage shed may also have contributed to soil contamination in the area. The area is close to the west annex fuel leak (SWMU 102) and it might be difficult to distinguish between groundwater contamination from these units.

Date of Start-Up: Use of the vehicle maintenance facility began in 1949.

Date of Closure: Use of this SWMU was discontinued in 1984.

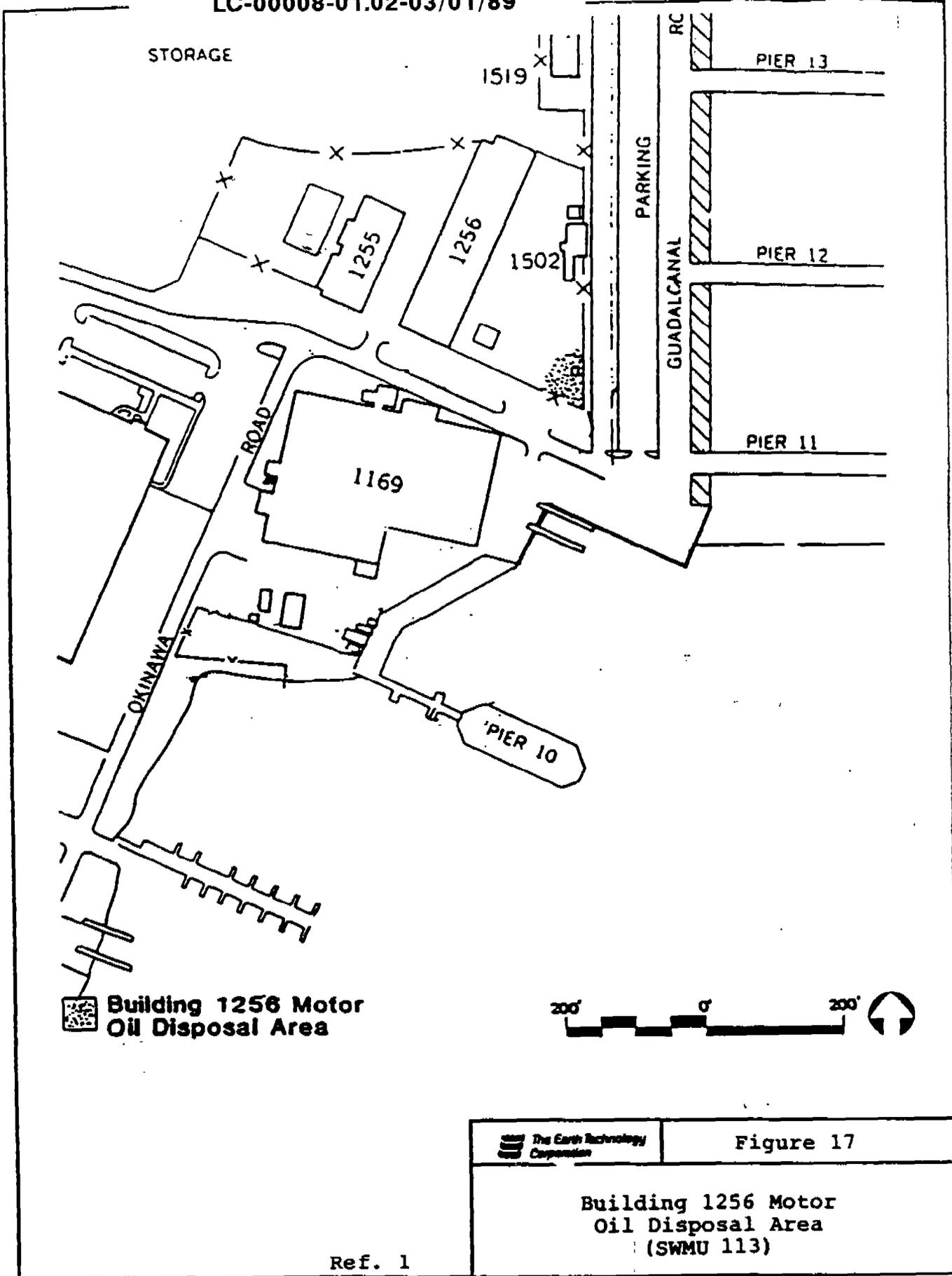
Wastes Managed: Waste motor oil was disposed of at SWMU 113. Runoff from a nearby lube oil and hydraulic fluid storage shed may also have entered the area.

Release Controls: No release controls for this unit were identified.

History of Releases: Waste motor oils were released to soil in this area. It is estimated that about 100 gallons of waste oil were disposed there between 1949 and 1984.

References: 1,2

Photographs: 64



 The Earth Technology Corporation	Figure 17
<p style="text-align: center;"> Building 1256 Motor Oil Disposal Area (SWMU 113) </p>	

Ref. 1

114-115. Unit Name: **Assault Craft Unit 2 (ACU2) Storage Yard**

Description: Two SWMUs are associated with the ACU2 Storage Yard (Figure 4):

- o SWMU 114 - ACU2 Drum Rack and Tank Area
- o SWMU 115 - ACU2 Fuel Dispensing Area

The ACU2 drum rack and tank area consists of a 100 square foot concrete area surrounded by a berm (SWMU 114). A two-tier metal drum rack which holds drums of liquids on their sides. Materials are dispensed from the drums. Empty drums are also stored on the rack. A 200 gallon above ground steel tank is also present. There is a storm water drain in the slab. No means of closing the drain was identified during the VSI. SWMU 115, the ACU2 fuel dispensing area, is adjacent to the ACU2 drum rack (SWMU 114). The ACU2 fuel dispensing area (SWMU 115) consists of two metal tanks, each with an approximate capacity of 200 gallons, elevated over a concrete slab.

Date of Start-Up: No start-up information is available for these units at the present time.

Date of Closure: There are no plans to close these units.

Wastes Managed: Petroleum fuels and wastes are present at SWMU 114. Gasoline and diesel fuel are stored in the ACU2 Fuel Dispensing Area (SWMU 115).

Release Controls: SWMU 114 rests on a concrete slab surrounded by a 4-inch concrete berm. SWMU 115 also rests on a concrete slab surrounded by a 6-inch concrete berm. There is a gauge on one side of the berm, thus reducing the site of the spill that the berm can effectively contain.

History of Releases: Oily substances have been released to the soil from the bermed area containing SWMU 114. Releases from SWMU 115, the ACU2 Fuel Dispensing Area were likely, since staining was apparent near the top of the berm.

References: 2

Photographs: 65,66,67

116. Unit Name: **Morale, Welfare, and Recreation (MWR) Boat Maintenance Facility**

Description: The MWR Boat Maintenance Facility is located in Building 3021 (Figure 4). The facility is currently used to store recreational boats. In the past, gasoline was poured along the fence in back of Building 3021 for weed control.

Date of Start-Up: Operation of the MWR Boat Maintenance Facility began in 1943.

Date of Closure: There are no plans to close the MWR Boat Maintenance Facility.

Wastes Managed: In the past, gasoline was poured along the fence in back of Building 3021.

Release Controls: No release controls for this unit were identified.

History of Releases: In the past, gasoline was released to the soil along the fence in back of Building 3021. Facility personnel estimate approximately 5 gallons of gasoline per year were used from approximately 1969-1979.

References: 1,2

Photographs: None (camera became inoperative)

117. Unit Name: **Special Boat Unit (SBU) Battery Storage Area**

Description: The SBU battery storage area (SWMU 117) is located next to Building 103 (Figure 4). Prior to off-site disposal, spent lead-acid batteries containing electrolyte are stored outside Building 103 on wooden pallets over soil. At the time of the VSI, no batteries were in storage. In the past, the storage area was much larger. From 1943 until 1980, an area of about 300 - 400 square feet, located west of Schofield Avenue and about 100 feet south of Pier 2, was used to store batteries. Painting wastes, oily wastes, and scrap metal are also stored at the unit on wooden pallets over soil.

Date of Start-Up: Batteries have been stored in this area since 1943.

Date of Closure: There are no plans to close this unit.

Wastes Managed: Spent batteries containing lead and sulfuric acid are stored at this unit. Painting wastes, oily wastes, and scrap metal are also stored at this unit.

Release Controls: No release controls for this unit were identified.

History of Releases: There are stains on the pallets, and oil stains on the soil during the VSI. File material indicates that in the past, batteries have ruptured during the winter due to freezing and that electrolyte has been released to the soil.

References: 1,2

Photographs: 68

118. Unit Name: **Special Boat Unit (SBU) Yard**

Description: The SBU Yard is located between Buildings 9 and 11 and in back of Building T10 as shown in Figure 4 and 18. It appears that a portion of the yard is used for dispensing petroleum products. File information indicates that Building 9 has been used for vehicle maintenance and that oil from this facility has been applied to soil between Buildings 9 and 11. File information also indicates that a cable runs under the floor of Building 11 and has been used for disposal of waste oil.

Date of Start-Up: Buildings 9 and 11 have been used continuously since 1943.

Date of Closure: There are no plans to close this unit.

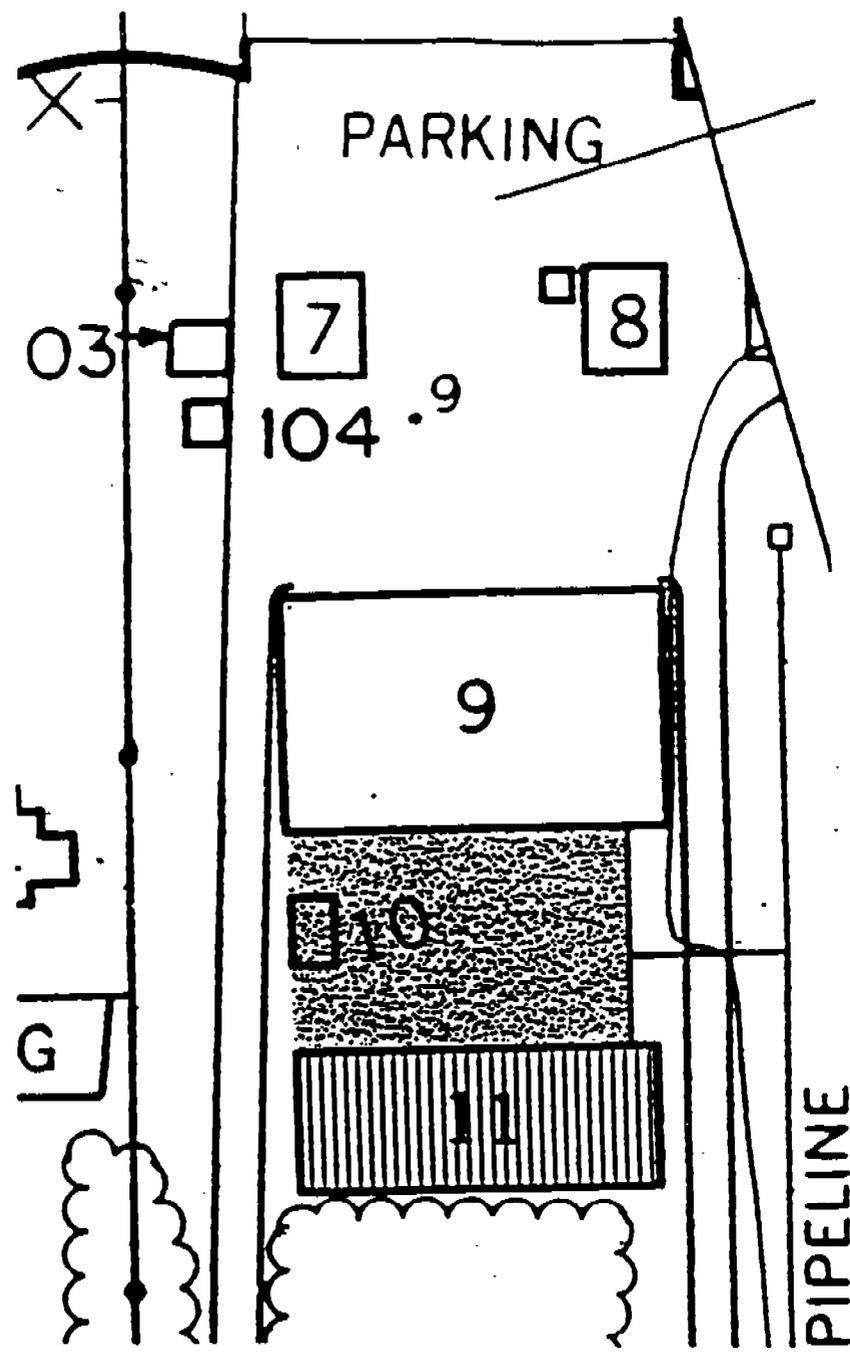
Wastes Managed: Waste oils are managed at the SBU Yard.

Release Controls: No release controls were identified for this unit.

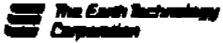
History of Releases: The soil in the SBU Yard was stained with oil, during the VSI.

References: 1,2

Photograph: none. (Camera became inoperative)



-  Vehicular motor pool oil disposal through Marsden Matting
-  Special boat motor oil disposal into cable shafts in building

	Figure 18
Location Map of Special Boat Unit (SBU) Yard (SWMU 118)	

Ref. 1

119. Unit Name: **Former Special Warfare Group 2 (SWG2)
Electronics Shop**

Description: SWMU 119, the former SWG2 electronics shop, is located in Building W112 (Figure 4). The SWG2 electronics shop no longer occupies this facility. File information indicates that, in the past, the building was served by a septic system which received waste solvents and dilute phosphoric acid generated by the shop. The current status of the septic system is not available.

Date of Start-Up: The SWG2 electronics shop began operations in Building W112 in 1943.

Date of Closure: The SWG2 electronics shop vacated Building W112 after 1984.

Wastes Managed: File information indicates a septic system associated with Building W112 received waste solvents and dilute phosphoric acid.

Release Controls: No release controls for this facility were identified.

History of Releases: File information indicates waste solvents and dilute phosphoric acid may have been released to a tile field associated with Building W112.

References: 1,2

Photograph: 69

120. Unit Name: **VC6 Satellite Accumulation Point**

Description: This unit is adjacent to Building 2074 (Figure 4) and consists of wastes stored in three 55-gallon drums and three small containers on wooden pallets over gravel. Wastes collected at this unit include waste fuel, waste oil, and painting wastes.

Date of Start-Up: Start-up information for this unit is not available at this time.

Date of Closure: There are no plans to close this unit.

Wastes Managed: SWMU 120 is used to store waste fuel, waste oil, and painting wastes.

Release Controls: Some of the wastes are stored in a locked, metal cabinet that is resting on a concrete slab. No release controls for this 55-gallon drums were identified.

History of Releases: Stains on the soil near SWMU 120 were observed during the VSI.

References: 2

Photograph: 70

121. Unit Name: **Landing Force Training Command (LFTC) Satellite Accumulation Point**

Description: This unit is located in Building 3532 as shown in Figure 4. It is an accumulation point for spent magnesium batteries. The spent batteries are stored in a refrigerator prior to removal by the PWD for off-site disposal.

Date of Start-Up: Start-up information for this unit is not available at this time.

Date of Closure: There are no plans to close this unit.

Wastes Managed: Spent magnesium batteries are stored at this unit.

Release Controls: The refrigerator is used for storage located inside a building with a concrete floor.

History of Releases: No releases from this unit were identified in file information or observed during the VSI.

References: 2

Photograph: None (camera became inoperative)

122. Unit Name: **Gymnasium Emergency Generator**

Description: This unit is an emergency generator located adjacent to the front entrance to Building 3147, the gymnasium (Figure 4). The generator sits on a concrete slab at grade. The pad is visibly stained with oil. In addition, during the VSI, a milky white substance was observed leaking from the generator, off the concrete pad and onto the adjoining soil and grass. White stains on the pad indicate that the release has been ongoing.

Date of Start-Up: No start-up information for this unit is available at this time.

Date of Closure: There are no plans to close this unit.

Wastes Managed: Oil and a milky white substance are leaking from the generator.

Release Controls: The unit sits on concrete pavement with no berms and no drain.

History of Releases: During the VSI, oils and a milky white substance were observed leaking from the generator to soil.

References: 2

Photograph: 71

123 - 127. Unit Name: **Amphibious Base Landfill (NACIP Study Area)**

Description:

This unit was initially operated as a trench-type landfill with open burning of refuse in the trenches. Later, it was operated as an area landfill with the refuse spread over the ground surface and covered on a regular basis. The landfill (SWMU 123) is located on the northwest corner of the intersection of Helicopter Road and Amphibious Drive (Figure 4). It is no longer used for refuse disposal, although there are active SWMUs in the area including:

- o SWMU 124 - Scrap Metal Separation Area
- o SWMU 125 - Wood Accumulation Area
- o SWMU 126 - Drum Turn-In Staging Area
- o SWMU 127 - Transfer Station.

The locations of SWMUS 123-127 are shown in Figure 4. In the scrap metal separation area (SWMU 124), scrap metals are sorted and crushed for salvage off-base. In the wood accumulation area (SWMU 125), scrap lumber is stored prior to being salvaged off-base by a contractor. In the drum turn-in staging area (SWMU 126), "empty" 55-gallon drums are stored prior to being salvaged disposed of off-base by the Defense Reutilization and Marketing Office (DRMO). The drums may contain up to an inch of liquids. The refuse transfer station (SWMU 127) is used to transfer municipal refuse from a central collection area to trucks for off-site disposal.

Date of Start-Up:

The Amphibious Base Landfill (SWMU 123) was operated from 1962 to 1979. The scrap metal separation area (SWMU 124) has been in operation from 1970 to the present. The wood accumulation area (SWMU 125) start-up date is not available. The drum turn-in staging area (SWMU 124) start-up date is not available. The refuse transfer station (SWMU 127) is assumed to have begun operation in 1979 when the Amphibious Base Landfill (SWMU 123) was closed.

Date of Closure:

The Amphibious Base Landfill (SWMU 123) was closed in 1979. No closure dates have been established for the scrap metal separation area (SWMU 124), the wood accumulation area (SWMU 125), the drum turn-in staging area (SWMU 126), or the transfer station (SWMU 127).

Wastes Managed: The Amphibious Base Landfill (SWMU 123) was used for the disposal of several categories of hazardous substances including pesticides, PCBs, PCB transformer cases, metal products, coal ash, lubricating oils, and solvents. The scrap metal separation area (SWMU 124) accepts scrap metal. The wood accumulation area (SWMU 125) accepts scrap lumber, such as wooden pallets. The drum turn-in staging area (SWMU 108) accepts drums which may be empty or may contain up to an inch of liquids. The transfer station (SWMU 109) accepts municipal refuse.

Release Controls: The Amphibious Base Landfill (SWMU 123) has been covered with native soils. No other release controls were identified for this unit or the other units.

History of Releases: Groundwater, surface water and sediment sampling in the Amphibious Base Landfill (SWMU 123) area, conducted as part of the NACIP Program, indicate that selenium, thallium, and silver may be migrating from the landfill to Little Creek Cove through groundwater transport. Additional sampling in the landfill area is planned to determine the source of Little Creek Cove contaminants. Staining on the ground in the drum turn-in staging area (SWMU 126) indicates that releases of oils and possibly other substances have occurred. No releases from the scrap metal separation area (SWMU 124), the wood accumulation area (SWMU 124), or the transfer station (SWMU 127) have been identified.

References: 3,4

Photograph: 73-77

128-130. Unit Name:

Building 3896 Area**Description:**

Building 3896 (Figure 4) houses the engine overhaul shop for a boat maintenance area. Boat bilges are emptied of residual bilge water, hulls are ground by hand and painted, and engine maintenance is performed in this area. SWMUs in this area include:

- o SWMU 128 - Lube Oil Dispensing Area Storm Water Drain. This unit drains runoff from a lube oil dispensing area into the cove.
- o SWMU 129 - Satellite Accumulation Point for paint wastes. Wastes are collected in drums at this unit.
- o SWMU 130 - Boat Painting Area. Grinding and painting of boats elevated on stands occurs in this area. Grindings and paint fall on the soil beneath the stands.

The locations of SWMUs 128 - 130 are shown in Figure 4.

Date of Start-Up:

Start-up information for these SWMUs is not available at this time.

Date of Closure:

There are no plans to close these SWMUs.

Wastes Managed:

The lube oil dispensing area storm water drain (SWMU 128) is used to manage runoff from the lube oil dispensing area. Flammable painting wastes are collected at the satellite accumulation point for paint wastes (SWMU 129). Metal grindings and paint overspray fall on the soil at SWMU 130.

Release Controls:

No release controls were identified for SWMUs 128 and 130. Paint wastes from SWMU 129 rest on a concrete slab of good integrity.

History of Releases:

The lube oil dispensing area storm water drain (SWMU 128) is stained, suggesting that oil from the lube oil dispensing area has been released from SWMU 128 to the cove. Stains on the concrete from the satellite accumulation point for paint wastes (SWMU 129) were identified. Releases of bilge water, metal grindings, paints, and paint thinners to the soil have occurred at the boat painting area (SWMU 130).

References:

2

Photographs:

78 - 80

131-133. Unit Name: **Seabee Area**

Description: This area is used for equipment maintenance and storage of excess material awaiting turn-in to the Defense Reutilization and Marketing Office (DRMO). Maintenance activities include painting and degreasing. There are SWMUs in the area including:

- o SWMU 131 - Satellite Accumulation Point for Paint Wastes
- o SWMU 132 - Inoperative Wire Degreaser
- o SWMU 133 - Excess Material Storage Area

The locations of SWMUs 131 - 133 are shown in Figure 4. The satellite accumulation point for paint wastes (SWMU 131) consists of a 55-gallon steel drum and varying numbers and sizes of smaller metal cans on a wooden pallet which stands on soil. The inoperative wire degreaser (SWMU 132) is an elevated metal trough approximately 20 feet long and 12 inches deep. This unit was formerly contained jet propellant 5 (JP-5) used to degrease wires. The excess material storage area (SWMU 133) is a gravel yard used to store excess paints and cables.

Date of Start-Up: Start-up information for these SWMUs is not available at this time.

Date of Closure: No closure dates have been established for the satellite accumulation point for paint wastes (SWMU 131) or the excess material storage area (SWMU 133). The Inoperative wire degreaser (SWMU 134) has been taken out of service but has not been removed from the Seabee Area.

Wastes Managed: The satellite accumulation point for paint wastes (SWMU 131) is used to manage waste paints and thinners. The inoperative wire degreaser (SWMU 132) formerly held jet propellant 5 (JP-5). The excess material storage area (SWMU 133) is used to store excess paints.

Release Controls: No release controls were identified for SWMUs 131 or 132. Paints in SWMU 133 are elevated on wooden pallets and covered with canvas tarps to protect them from corrosion.

History of Releases: Paint wastes have been spilled on the soils at SWMU 131. JP-5 appears to have leaked from a valve on SWMU 132 staining the soil under this unit. Stains were observed at several locations at SWMU 133.

References: 2

Photographs: 81, 82, 83

134-137. Unit Name:

Piers 51 - 59:**Description:**

This area is used to moor ships and provide utilities, transfer supplies, and load and unload cargo (Figure 4). There are SWMUs in this area, including:

- o SWMU 134 - Portable Waste Oil Tanks
- o SWMU 135 - Hydraulic Fluid Leak
- o SWMU 136 - Mobile Diving Salvage Unit (MDSU) II Salvage Area
- o SWMU 137 - Small Boats Sandblast Yard

The portable waste oil tanks (SWMU 134) are skid-mounted steel tanks with an estimated capacity of approximately 400 gallons. The location and number of tanks in this area varies with the number of moored ships and the need to collect wastes. The hydraulic fluid leak (SWMU 135) is located on the dog leg of the pier area near Building 3882. The MDSU II Salvage Area (SWMU 136) is a gravel yard located northwest of Pier 59. Salvaged cables, tanks, and other equipment is normally stored in this area; at the time of the VSI the stored items had been removed to accommodate some nearby construction. The Small Boats Sandblast Yard (SWMU 137) is used to sandblast and paint ships.

Date of Start-Up:

Start-up information for this area is not available at this time.

Date of Closure:

No closure dates have been established for the portable waste oil tanks (SWMU 134), hydraulic fluid leak (SWMU 135), or the MDSU II salvage area (SWMU 136). An indoor sandblasting facility is scheduled for construction in 1991 to replace the small boats sandblast yard (SWMU 137).

Wastes Managed:

The portable waste oil tanks (SWMU 134) are used to collect waste oils and oil/water wastes. The possible hydraulic fluid spill (SWMU 135) appeared to be red hydraulic fluid. The MDSU II Salvage Area (SWMU 136) is used to store salvaged cables, tanks, and other equipment. The small boats sandblast yard (SWMU 137) is used to store spent sandblast grit while awaiting EP toxicity test results. All grit is currently disposed off-base; approximately 4,000 cubic yards of grit from sandblasting conducted between the 1960s and 1982

underlie the yard. Two apparently abandoned drums near Building 3878 were observed in the small boats sandblast yard during the VSI. One drum was marked "contaminated".

Release Controls:

The portable waste oil tanks (SWMU 134) are fitted with filling funnels to prevent spills during waste transfer activities. At the time of the VSI, the hydraulic fluid spill (SWMU 135) area was covered with a tarp and the area is adjacent to a concrete curb, however, the area is connected to a drain which empties into Little Creek Cove. No release controls were identified for the MDSU II salvage area (SWMU 138) or the small boats sandblast yard (SWMU 137).

History of Releases:

Stains in the pier area suggest that waste oils and other materials have been released to Little Creek and Desert Coves. Waste oils may have been released from the portable waste oil tanks (SWMU 134). Hydraulic fluid may have been released to Little Creek Cove from the hydraulic fluid leak (SWMU 135). Soils in the MDSU II salvage area is heavily stained with oil. Releases of spent grit and oily substances in the small boats sandblast yard (SWMU 137) area to soil and the Desert Cove have occurred.

References:

2

Photographs:

84 - 88

138-140. Unit Name:

Seal Team 4 Area

Description:

This area is used to maintain and store boats, weapons, and other used by Seal Team 4 (Figure 4). SWMUs in this area include:

- o SWMU 138 - Satellite Accumulation Point
- o SWMU 139 - Waste PD 680 Underground Storage Tank (UST)
- o SWMU 140 - Spent Battery Staging Area

The satellite accumulation point (SWMU 138) is located outside of Building 3806. The accumulation point consists of multiple 55-gallon drums on a concrete slab inside a locked fence. The slab runoff collects in a storm drain which carries the runoff to Little Creek Channel. The Waste PD 680 UST (SWMU 139) is located outside Building 3806 and is plumbed to a sink used for weapons cleaning inside the Seal Team 4 section of the building. The tank capacity is 200 gallons. The tank is periodically pumped and wastes are disposed off-base. The spent battery staging area (SWMU 140) is located inside Building 3806. Spent potassium hydroxide/silver/zinc batteries are crated here prior to turn-in to the PWD.

Date of Start-Up:

Start-up information for these SWMUs is not available at this time.

Date of Closure:

At the present time, there are no plans to close these units.

Wastes Managed:

The satellite accumulation point (SWMU 138) is used to store waste fuels, primarily gasoline, prior to off-base disposal. The Waste PD 680 UST (SWMU 139) is used to store a waste Stoddard solvent commonly used by the military and known as PD 680. Spent potassium hydroxide/silver/zinc batteries are managed at the battery staging area (SWMU 140).

Release Controls:

The satellite accumulation point (SWMU 138) is located on a concrete slab, however the slab storm water drain is connected to Little Creek Channel. There is a gauge for the Waste PD 680 UST (SWMU 139) although no waste level inventory records were identified for the tank. The spent battery staging area (SWMU 140) is inside a building with a concrete floor of good integrity.

History of Releases: Stains on the concrete slab for the satellite accumulation point (SWMU 138) suggest that liquids may have been released to the storm drain. Release history from the Waste PD 680 UST (SWMU 139) is not known. No releases from the spent battery staging area (SWMU 140) were identified.

References: 1

Photograph: 89

141-142. Unit Name:

Seal Delivery Vehicle 4 Area

Description:

This area is used to maintain boats and other equipment used by Seal Teams (Figure 4). SWMUs in this area include:

- o SWMU 141 - Satellite Accumulation Point
- o SWMU 142 - Waste PD 680 Underground Storage Tank (UST)

The satellite accumulation point (SWMU 141) is located outside of Building 3806 in a separate fenced area adjacent to SWMU 120. The accumulation point consists of multiple 55-gallon drums on a concrete slab inside a locked fence. At the time of the VSI, some of the drums were open. The slab runoff collects in a storm drain which carries the runoff to Little Creek Channel. The Waste PD 680 UST (SWMU 142) is located outside Building 3806 and is plumbed to a sink used for weapons cleaning inside the Seal Team 2 (sic) section of the building. The tank capacity is 200 gallons. The tank is periodically pumped and wastes are disposed off-base.

Date of Start-Up:

Start-up information for these SWMUs is not available at this time.

Date of Closure:

At the present time, there are no plans to close these units.

Wastes Managed:

The satellite accumulation point (SWMU 141) is used to store waste paints and thinners prior to off-base disposal. The Waste PD 680 UST (SWMU 142) is used to store waste oils and a waste Stoddard solvent commonly used by the military and known as PD 680. The flash point of this solvent is greater than 140° F.

Release Controls:

The satellite accumulation point (SWMU 141) is located on a concrete slab. However the slab storm water drain is connected to Little Creek Channel. There is a gauge for the Waste PD 680 UST (SWMU 142) although no waste level inventory records were identified for the tank.

History of Releases:

Stains on the concrete slab for the satellite accumulation point (SWMU 141) suggest that liquids have been released to the storm drain. Volatile compounds have been released from open drums at the accumulation point. No releases were noted in the available file information.

or observed during the VSI for the Waste PD 680 UST
(SWMU 142).

References: 2

Photograph: 90

143. Unit Name: **Former Seabee Vehicle Maintenance Facility**

Description: The Former Seabee Vehicle Maintenance Facility was located in Building CB 201 (Figure 4). At the time of the VSI, this facility was boarded up and not operating. The records search shows that an oil/water separator and a battery storage room were associated with this facility. Prior to 1980, waste oil may have been poured into a floor drain in Building CB201 which was connected to an oil/water separator. The separator emptied into a storm sewer and ultimately to Desert Cove. After 1980, used oil was disposed off-base. Disposal practices for spent batteries are unknown prior to 1980 when the Public Works Department began coordinating off-base battery disposal. The file search showed that the concrete floor and the floor drain of the battery storage room were corroded, suggesting that battery electrolyte may have been discharged to the drain which connects to the storm sewer system and empties into Desert Cove. An abandoned gasoline station is also located at Building CB 201. It appears that the tanks for the gasoline station are still in place.

Date of Start-Up: Start-up information for this SWMU is not available at this time.

Date of Closure: This unit was abandoned sometime between 1984 and the present.

Wastes Managed: Waste oil and spent batteries have been managed at this unit.

Release Controls: No release controls were identified for this unit.

History of Releases: Oil from the oil/water separator and battery electrolyte may have been released to Desert Cove from this unit through the storm sewer system in the past.

References: 1

Photograph: 91

144. Unit Name: **West Annex Sandblasting Area**

Description: The vacant lot west of the ACU2 area in the West Annex was previously used for sandblasting activities (Figures 4 and 19). Boats were hauled up into this area and paint was removed by sandblasting. The residue then accumulated on the ground. Between 1949 and 1954, sandblasting and residue disposal occurred in the shaded areas on each side of Guadalcanal Road. From 1954 to 1971, the operations shifted to another area, as shown in Figure 19. The average thickness of residue remaining at the site is about four inches.

Date of Start-Up: The unit began operating in 1949.

Date of Closure: The sandblasting/disposal operations ceased in 1971.

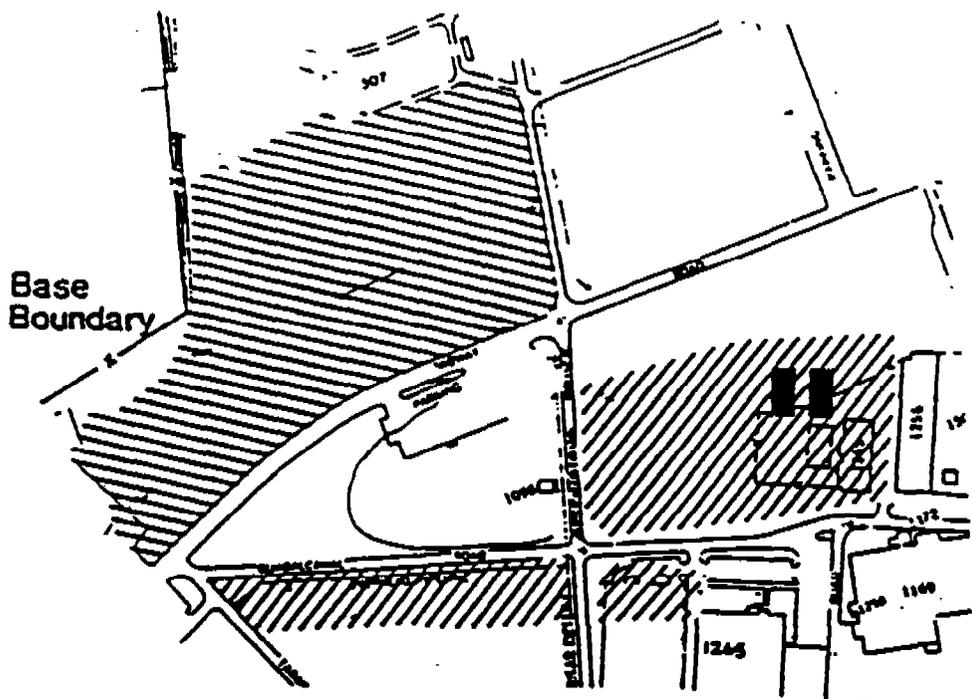
Waste Managed: The unit accepted paint residue from boats and sand from the sandblasting operations. Between 1949 and 1954, 5,125 cubic yards of residue was disposed. The waste disposal rate dropped off between 1954 through 1971, with only an additional 3,525 cubic yards of residue being disposed.

Release Controls: No release controls have been identified for this unit.

History of Releases: The residue was disposed directly on the ground surface and was not covered.

References: 1, 2

Photograph: None (This unit was not accessible during the VSI.)



■ Sandblast Booths (1949)

▨ Small Boat Storage and Maintenance Areas

▨ 1949

▨ 1954-1971

200' 0' 200' 400' 600'



The Earth Technology Corporation

Figure 19

West Annex Sandblasting Area (SWMU 144)

Ref. 1

145. Unit Name: **Fuel Oil Tank - Building 3029**

Description: The fuel oil tank is located adjacent to Building 3029 (Fire Station 1), as shown in Figure 4. The tank rests on a two concrete cradles, about two feet above the ground. The tank is constructed of steel and holds about 500 gallons of fuel oil, which is used in the Fire Station 1. Leaks from the tank appear to be routine and systematic.

Date of Start-Up: The start-up date for this unit is not available at this time.

Date of Closure: There are no plans for closure of this unit.

Waste Managed: The unit holds fuel oil that is used in Fire Station 1.

Release Controls: The unit is constructed of steel.

History of Releases: Stains were observed during the VSI on the concrete pad and grass area immediately below the dispensing valve of the tank. The release appeared to be a routine event.

References: 2

Photograph: 92

146. Unit Name: **SEAL Team 2 Material Storage Area - Building 3813**

Description: The unit is located near Building 3813, as shown in Figure 4. Flammable material containers holding gasoline and other equipment is stored inside a locked fenced area. The equipment is stored on wooden pallets which rest on a concrete surface. The storage area measures about seven feet on a side. Leaks from the tank appear to be routine and systematic.

Date of Start-Up: The start-up date for this unit is not presently available.

Date of Closure: There are no plans for closure of this unit.

Waste Managed: The unit stores petroleum fuels in 10 gallon containers for use on the SEAL Team 2 boats. Some oily rags were observed inside the unit, also.

Release Controls: The fuels are stored on wooden pallets on a concrete surface of good integrity. The unit has a steel roof, but no walls, other than the steel fence.

History of Releases: Stains were observed on the wooden pallets, the concrete surface, and the grassy area immediately behind the unit.

References: 2

Photograph: 93

147. Unit Name: **Facility Storm Sewers/Drains**

Description: Storm sewers/drains exist throughout the facility. They are used to collect surface runoff from areas at the base, and then discharge to the coves and the Chesapeake Bay, or to storm swales which in turn discharge to these surface water bodies. The facility applied for an NPDES permit for surface water discharge from the State of Virginia in July, 1988.

Date of Start-Up: The units have been installed at different times since the inception of the facility.

Date of Closure: There are no plans to close these units.

Waste Managed: The units accept stormwater runoff which may contain oily wastes, paint wastes, and other wastes which are generated at the NAB.

Release Controls: The release controls for the units are not currently known.

History of Releases: During the VSI, many drains were observed that were stained, particularly in the pier areas.

References: 2

Photograph: None (units are underground)

V. OTHER AREAS OF CONCERN

Eight other areas of concern (AOC) were identified as a result of the PR and VSI phases. The AOCs are discussed in the following paragraphs.

A. PCB Capacitor Spill - Fire Station No. 1

In the early 1980s, lightning struck an electric utility pole on E Street immediately south of Fire Station 1 (Figure 4). One of the capacitors was damaged, resulting in a leak of about five gallons of dielectric fluid onto the ground beneath the capacitor pole. The damaged capacitor was replaced after the accident and analysis of soil samples taken in this area revealed PCB concentrations of 170 ppm and 601 ppm. No cleanup actions have been taken to date (Ref. 1). See photo 94.

B. PCB Capacitor Spill - Pole No 425

The PCB capacitor pole is located about 300 feet east of the intersection of Amphibious Drive and Helicopter Road, as shown in Figure 4. Less than five gallons of dielectric fluid were missing from the capacitor. A soil sample taken from this site in April 1981 showed a level of 1,000 ppm PCB's. According to facility personnel, more samples are proposed (Ref. 1, 2). See photo 95.

C. Non-PCB Transformer Leak - Building 3661

A non-PCB transformer was observed to be leaking near the PWD Garage at Building 3661 (Figure 4). A concrete and asphalt pad immediately below the transformer was stained with oils. The pavement gradually slopes to a grassy area approximately 75 feet away (Ref. 2). See photo 96.

D. PCB Transformer Leak - Building 3530

A PCB transformer is present near the front walk entrance to the MWR Hobby Shop at Building 3530 (Figure 4). The transformer is located at ground level and appears to have leaked some oils, which are contained within a four inch high metal container surrounding the transformer. About one to two inches of liquids (presumably precipitation and oils) were present in the metal pan during the VSI (Ref. 2).

E. Non-PCB Transformer Leak - Building 3896

A non-PCB transformer is present near Building 3896, as shown in Figure 4. Heavy oil stains were present on the concrete and asphalt pad around the unit. The pavement slopes toward Little Creek Cove, which is about 30 feet away. No containment is present for this transformer (Ref. 2). See photo 97.

F. Emergency Generator Leak - Pier 59

A leak from an emergency generator at Pier 59 was observed during the VSI. The generator is attached to the front end of a tractor trailer that was placed temporarily at Pier 59. Some adsorbent material had been spread on part of the leak. The leak is only several feet from Little Creek Cove (Ref. 2). See photo 98.

G. Emergency Generator Leak - Fire Station 1

An emergency generator is located at Fire Station 1, near Building 3029, as shown in Figure 4. The generator is housed within a roofed shed with three sides. It rests on a concrete pad of good integrity. Heavy oil stains were observed on the concrete pad away from the enclosed area. Precipitation could wash the oils to grassy areas several feet away (Ref. 2). See photo 99.

H. Pesticide Mixing Area

Pesticides are stored in Building 3630 and mixed in Building 3109. They are then applied to the golf course. There is the possibility that pesticide spills have occurred in the mixing area (Figure 4) (Ref. 1).

VI. EXECUTIVE SUMMARY

A RCRA Facility Assessment (RFA) of the Naval Amphibious Base (NAB) located near Norfolk, Virginia adjacent to the Chesapeake Bay was conducted to evaluate the potential for release of hazardous constituents associated with solid waste management units (SWMUs) and other areas of concern (AOC) at the site. The 1984 HSWA amendments provide a new authority to EPA to require comprehensive corrective actions of SWMUs and AOCs at facilities operating under Interim status and those applying for RCRA Part B permits. The intent of this authority is to address unregulated releases of hazardous constituents to the surface water, soils/groundwater, air, and through sub-surface gas generation. To meet this objective, a RCRA Facility Assessment was conducted consisting of a Preliminary Review (PR) of available file documentation and a Visual Site Inspection (VSI) and subsequent assessment of the collected data.

This report was prepared using the U.S. EPA's RCRA Facility Assessment Guidance document (October 1986). Additional sources of information used in the preparation of this report include the EPA Region III file information and information acquired through the VSI conducted on June 27-July 1, 1988. Information presented in the Phase I Preliminary Review dated June 1988 established the groundwork for this report.

Suggestions for further actions were developed through: (1) identification of all SWMUs at the facility; (2) assessment of release potential; and (3) review of past and ongoing NACIP programs at the site. This report addresses potential releases from SWMUs at the facility through the development of a comprehensive corrective action strategy in the following manner:

- o Compilation of an inventory of SWMUs currently being addressed through the NACIP program
- o Identification of additional SWMUs where corrective action may be integrated into NACIP remedial actions
- o Treatment of SWMUs with potential for release of hazardous waste or constituents through the RCRA corrective action program where independent actions are required.

The NAB is operating under Interim status and generates and stores hazardous waste resulting from its maintenance functions. In support of these functions, the base has numerous separate and distinct waste generating activities. The RFA resulted in the identification of 147 SWMUs and 8 AOCs. Six of the SWMUs are included in the Navy Assessment and Control of Installation Pollutants (NACIP) Program, which involves multiphased environmental surveys. All of these NACIP units are in the second phase of a Confirmation Study (CS) of the NACIP Program. Additional environmental sampling is to be performed at each site during the fall of 1988. The CS is intended to confirm or deny the presence of contamination or possible health hazard and quantify the extent of

any problems that might exist. Through the RFA, a total of forty (40) SWMUs were identified that require no further action (see Table 4). Through the RFA, a total of 116 SWMUs and AOCs were identified that require further action under the RCRA Corrective Action Program. These actions involve verification investigation type soil and sediment sampling in addition to integrity testing of tanks and piping to determine if there has been a release of hazardous waste or hazardous constituents to the environment.

VII. RELEASE PATHWAYS

A. Air

The potential for air release at the Naval Amphibious Base is moderate to high. This is due to releases of volatile and semivolatile organics from waste oil and petroleum storage tanks. The potential is also high in sandblast operations, where dust particles can become airborne.

B. Soil/Groundwater

The potential for release to the soil and groundwater at the site is moderate to high. Soil and groundwater samples are currently being obtained in the NACIP areas for analysis. The potential for release is also high in non-NACIP areas at the NAB. For instance, oil staining on soils from waste oil tanks (SWMUs 34-64) was observed during the VSI. Stains were also present on soils surrounding the PCB storage areas (SWMUs 16-17). Due to high water table conditions that exist at the site, the potential for release to groundwater in these areas is also high.

C. Surface Water

The potential for release to surface water is high since so many of the facility operations occur on or adjacent to the piers along Desert Cove, Little Creek Cove, and Little Creek Channel, which in turn discharge to the Chesapeake Bay. The sandblasting operation areas (SWMUs 112, 135-138, 145) all occur in this vicinity. Another critical area is the fuel leak along piers 11-19 (SWMU 102). Oils can be seen floating from beneath the pier area into the channel, particularly during low tides.

D. Subsurface Gas

The potential for subsurface gas generation varies from low to high. Volatile organics from the fuel leak (SWMU 102) along piers 11-19 could generate subsurface gases. This scenario may also exist where oils and petroleum products have been released on the surface and infiltrated. Another example is where acids were reportedly poured down a leach field tile drain system at SWMU 120.

VIII. CONCLUSIONS AND SUGGESTED FURTHER ACTIONS

This section presents the conclusions regarding the potential for release and suggestions for further action for the identified SWMUs and AOCs based on information and evidence gathered through the PR and VSI. The potential for release through surface water, soils/groundwater, air, and through subsurface gas generation was evaluated.

Of the 147 SWMUs and 8 AOCs identified at NAB, it was determined that 108 of the SWMUs and 8 of the AOCs had a potential for release to one or more environmental pathways. Detailed conclusions and suggestions for further action are provided for these units.

The remaining 40 SWMUs were determined to have low or no potential for release to all environmental pathways based on factors including unit design and operation, release controls and waste managed and require no further action at this time. These units are listed in Table 4. As discussed with Region III, pathway-by-pathway conclusions are not required for these units. However, detailed descriptions of the units have been presented in Section V.

The SWMUs with low/no potential for release and not requiring further action are presented in Table 4. The basis for the no release determination was made on one of five criteria. These are (1) the unit is inside a building with a concrete floor, (2) no hazardous waste or constituents are managed by the unit, (3) the unit has been removed and there is no evidence of release, (4) the unit is in good condition, and (5) the unit is located in a contained area.

Table 4

**Naval Amphibious Base
Norfolk, Virginia**

**SWMUs With Low/No Potential For Release and
Not Requiring Further Action**

SWMU No.	SWMU Name	Basis for No Release Determination
1.	Paint Shop Waterwall - Building 3165	1
2-5.	Wood Dust/Chip Collection Bins	2
6-7.	Navy Exchange Maintenance Shop	1
9-10.	Scrap Metal Dumpsters	2
19.	Paint Booth Filters - Building 3661	1
22.	Wash Rack - Building 3661	4
29.	Harbormaster's Office Area - Paint/Thinner Residue Tank	4
61,62,64.	Above Ground Waste Oil Storage Tanks	4,5
79.	Navy Exchange Vending Office	2
80.	MWR Auto Hobby Shop	1
82-83.	Boone Clinic	1
85-91.	Short Intermediate Maintenance Activity (SIMA)	1
92-95.	Seabee Vehicle Maintenance Facility	1
99.	Solid Waste Incinerator Site	3
100.	Fuel Farm Loading Platform Storm Water Drain	4,5
103.	Piers 11-19 - Stationary Crane Area	3
104,106,107.	Steam Plant	4
110.	90-Day Accumulation Point	4,5
121.	Landing Force Training Command (LFTC) Satellite Accumulation Point	1
140.	Seal Team 4 Area	1

- 1 - Located inside a building or under roof with a concrete floor
 2 - No hazardous waste or hazardous constituents managed
 3 - Unit removed and no evidence of release
 4 - Unit in good condition
 5 - Unit located in contained area

UNIT NAME: Waste or Used Petroleum SWMUs

- 8. Base Exchange (East Annex) Gas Station Dumpster
- 11. Scrap Metal Dumpster - Harbormaster Shop
- 40. Underground Waste Oil Tank - BMU2
- 63. Above Ground Waste Oil Tank - Fuel Farm Platform
- 78. Navy Exchange Vending Office Drum Area
- 81. Stains In Parking Lot Area - MWR Auto Hobby Shop
- 96. Scrap Storage Area - Seabee Vehicle Maintenance Facility
- 97. Storm Drain - Seabee Vehicle Maintenance Facility
- 101. Beachmaster Unit 2 (BU2) Satellite Accumulation Point
- 113. Building 1256 Motor Oil Disposal Area
- 114. ACU2 Drum Rack
- 118. Special Boat Unit (SBU) Yard
- 121. Gymnasium Emergency Generator
- 136. Mobile Diving Salvage Unit (MDSU) II Salvage Area

CONCLUSIONS:

Air:

The potential for release from these units is low to moderate due to the semi-volatile nature of the waste.

Soil/Groundwater:

The potential for release from these units is high since staining of soils was observed during the VSI. Also, the potential for release to the groundwater is high due to high water table conditions at the facility.

Surface Water:

The potential for release is moderate to high. The units are either located adjacent to the coves, which discharge into the Chesapeake Bay, or are located next to storm swales, which discharge into the coves at the facility.

Subsurface Gas:

The potential for release is moderate due to the semi-volatile nature of the waste.

FURTHER ACTION:

It is suggested that surface and shallow subsurface soil sampling be conducted to determine if a release of hazardous constituents has occurred. An appropriate grid system should be constructed to include the visibly stained areas, plus an area of several feet around the stained zone. A surface and at least one shallow subsurface soil sample should be collected from each grid and analyzed for VOC's, semi-volatiles, and oil and grease.

12. UNIT NAME: The Former Wharf Building Shop

CONCLUSIONS:

Air:

The potential for release is low since the unit was razed several years ago.

Soil/Groundwater:

The potential for release is moderate since residual contamination from operations could still be present.

Surface Water:

The potential for release is low since the unit has been removed and no surface water bodies are in the immediate proximity.

Subsurface Gas:

The potential for subsurface gas generation is low due to the nature of the waste.

FURTHER ACTION:

It is suggested that the facility provide documentation on demolition procedures. If deemed necessary after review of these procedures, shallow subsurface soil sampling should be conducted to determine if residual PCP contamination exists. An appropriate grid system should be constructed and soil samples should be analyzed for PCP.

13. UNIT NAME: Former Pesticide Shop

CONCLUSIONS:

Air:

The potential for release is low since the unit was razed several years ago.

Soil/Groundwater:

The potential for release is moderate since residual contamination from operations could still be present.

Surface Water:

The potential for release is low since the unit has been removed and no surface water bodies are in the immediate proximity.

Subsurface Gas:

The potential for subsurface gas generation is low due to the nature of the waste.

FURTHER ACTION:

It is suggested that the facility provide documentation on demolition procedures. If deemed necessary after review of these procedures, shallow subsurface soil sampling should be conducted around the building perimeter and surrounding areas to determine if residual contamination exists. An appropriate grid system should be constructed and soil samples should be analyzed for pesticides (Appendix 8).

14-15. UNIT NAME: PWD Wash Rack and PCP Dip Tank

CONCLUSIONS:

Air:

The potential for release is low since the units are located underground.

Soil/Groundwater:

The potential for release is high since soil and groundwater contamination has been confirmed from sampling during the Confirmation Study (CS) in 1986. Elevated levels of trichloroethane, tetrachloroethane, PCP, and oil and grease were present.

Surface Water:

The potential for release is low since no surface water bodies are in the immediate proximity.

Subsurface Gas:

The potential for subsurface gas generation is moderate due to the volatile nature of the wastes.

FURTHER ACTION:

The facility is currently conducting a soil and groundwater remedial investigation as part of the NACIP Program. No additional action is suggested beyond the scope of this study at the present time.

16-17. UNIT NAME: Transformer Storage Areas

16. Old Pole Yard

17. Small Transformer Storage Area

CONCLUSIONS:

Air:

The potential for release is low since wastes are stored in closed containers or encased in a transformer and are of low volatility.

Soil/Groundwater:

The potential for release from SWMU 16 is high since staining of soils was observed adjacent to the asphalt. The potential for release from SWMU 17 is high since the asphalt paving is cracked.

Surface Water:

The potential for release is moderate to high since the units are in proximity to storm swales, which drain toward the coves at the facility.

Subsurface Gas:

The potential for subsurface gas generation is low due to the above-ground design of the units.

FURTHER ACTION:

It is suggested that surface and shallow subsurface soil sampling be conducted to determine if releases of hazardous constituents have occurred. An appropriate spacing system should be constructed on the perimeter soils of the paved areas. At least one surface and subsurface soil sample should be collected from each spaced section. The soils should be analyzed for PCB's and semi-volatiles at SWMU 16. Soils at SWMU 17 should be tested for PCBs.

18,20,21. UNIT NAME: Present PWD Transportation Garage

- 18. Spent Battery Shop and Collection Area
- 20. Salvage Parts Storage Area
- 21. Lubricating Oil Storage Area

CONCLUSIONS:

Air:

The potential for release is low due to nonvolatile nature of wastes in SWMU 18, and due to containerized cans or drums at SWMUs 20 and 21.

Soil/Groundwater:

The potential for release is high due to soil staining that was observed during the VSI and due to the shallow water table at the site.

Surface Water:

The potential for release is moderate to high since a storm swale is located several feet from the units.

Subsurface Gas:

The potential for subsurface gas generation is low due to the above-ground design of the unit.

FURTHER ACTION:

It is suggested that soil sampling be conducted to determine if releases of hazardous constituents has occurred. An appropriate grid system should be constructed in the grassy areas immediately adjacent to the asphalt pavement of all three SWMUs, with a minimum of one sample collected per grid. Samples should be analyzed for semi-volatiles, metals, and PCBs.

23. UNIT NAME: Rifle Range

CONCLUSIONS:

Air:

The potential for release is low due to the inorganic nature of the waste.

Soil/Groundwater:

The potential for release is moderate to high since the waste is in direct contact with the soils and due to the shallow water table.

Surface Water:

The potential for release is high since the Chesapeake Bay is located less than 100 feet north of the unit.

Subsurface Gas:

The potential for subsurface gas generation is low due to the nonvolatile nature of the waste.

FURTHER ACTION:

The facility is currently undergoing discussions with the Virginia Department of Waste Management with regard to remediation of this area. No further actions are suggested until these negotiations are completed.

24. UNIT NAME: Driving Range Landfill

CONCLUSIONS:

Air:

The potential for release is low since the units are located underground.

Soil/Groundwater:

The potential for release is high since soil and groundwater contamination from semi-volatiles, volatiles, and metals has been confirmed from sampling during the CS in 1986.

Surface Water:

The potential for release is moderate to high due to discharge via groundwater to the Chesapeake Bay.

Subsurface Gas:

The potential for release is moderate due to the volatile nature of some of the wastes.

FURTHER ACTION:

The facility is currently conducting a soil and groundwater remedial investigation as part of the NACIP Program. No additional action is suggested beyond the scope of this study at the present time.

25-26. UNIT NAME: Sewage Treatment Plant Landfills

CONCLUSIONS:

Air:

The potential for release is low since the units are located underground.

Soil/Groundwater:

The potential for release is high since soil and groundwater contamination from semi-volatiles, volatiles, and metals has been confirmed from sampling during the CS in 1986.

Surface Water:

The potential for release is moderate due to discharge via groundwater to the facility coves or the Chesapeake Bay.

Subsurface Gas:

The potential for release is high due to the volatile nature of some of the wastes.

FURTHER ACTION:

The facility is currently conducting a soil and groundwater remedial investigation as part of the NACIP Program. No additional action is suggested beyond the scope of this study at the present time.

27-28. UNIT NAME: Former School of Music Plating Shop Area

CONCLUSIONS:

Air:

The potential for release is low since the units are located underground.

Soil/Groundwater:

The potential for release is high since soil and groundwater contamination from semi-volatiles, volatiles, and metals has been confirmed from sampling during the CS in 1986.

Surface Water:

The potential for release is low since no surface water bodies are in the immediate proximity.

Subsurface Gas:

The potential for release is moderate due to the volatile nature of some of the wastes.

FURTHER ACTION:

The facility is currently conducting a soil and groundwater remedial investigation as part of the NACIP Program. No additional action is suggested beyond the scope of this study at the present time.

UNIT NAME: Petroleum Dispensing SWMUs

- 30. Leaking Above Ground Diesel Tank, Building 3400
- 98. Elevated Causeways Mechanic Shop (ELCS) Material Dispensing Area
- 109. Fuel Tanks and Associated Piping - Steam Plant
- 113. Pier 10 Sandblasting Yard Satellite Accumulation Point
- 116. ACU2 Fuel Dispensing Area
- 146. Fuel Oil Tank - Building 3029
- 147. SEAL Team 2 Material Storage Area - Building 3813

CONCLUSIONS:

Air:

The potential for release from the units is low to moderate due to the volatile nature of the waste.

Soil/Groundwater:

The potential for release from SWMUs 30, 98, 109, 113, 116, 146, and 147 is high since staining of soils was observed around each of these units during the VSI. The potential for release to groundwater is also high due to shallow water table conditions that prevail at the facility.

Surface Water:

The potential for release is high from all the units since the units are either located adjacent to the coves which in turn discharge into the Chesapeake Bay, or are located near storm swales which discharge into the coves.

Subsurface Gas:

The potential for subsurface gas generation from the units is low since units are above ground.

FURTHER ACTION:

It is suggested that surface and shallow subsurface soil sampling be conducted to determine the extent of contamination at SWMUs 30, 98, 109, 113, 116, 146, and 147. An appropriate grid system should be constructed in and several feet around the visible stained areas. Soil samples should be analyzed for EP Tox lead, VOC's, and semi-volatiles.

UNIT NAME: Petroleum Dispensing SWMU

31. Pler 10, Leaking Above Ground Fuel Tanks

CONCLUSIONS:

Air:

The potential for release from SWMU 31 is moderate due to the volatile nature of the waste.

Soil/Groundwater:

The potential for release from SWMU 31 is low due to presence of a concrete surface of good integrity.

Surface Water:

The potential for release is high from the unit since it is located adjacent to the coves which in turn discharge into the Chesapeake Bay.

Subsurface Gas:

The potential for subsurface gas generation from the unit is low since the unit is above ground.

FURTHER ACTION:

Adequate secondary containment should be provided for SWMU 31 to preclude the spread of contamination to surface waters.

32-33. UNIT NAME: Base Exchange (East Annex Gas Station)

CONCLUSIONS:

Air:

The potential for release is low since the wastes are containerized or are nonvolatile.

Soil/Groundwater:

The potential for release is moderate since the units are partially resting on gravel and the units are in poor condition.

Surface Water:

The potential for release is low since no surface water bodies are in the immediate vicinity.

Subsurface Gas:

The potential for subsurface gas generation is low since the units are located aboveground.

FURTHER ACTION:

It is suggested that two random subsurface soil samples be obtained immediately under each unit. The samples should be analyzed for semi-volatiles, pH, and metals.

UNIT NAME: 34-39, 41-60 Underground Waste Oil Tanks
139, 142 Waste PD 680 Underground Storage Tanks

CONCLUSIONS:

Air:

The potential for release to air is low since the units are located below the ground surface.

Soil/Groundwater:

The potential for release to soil/groundwater is dependent on the integrity of the tanks.

Surface Water:

The potential for release is low since the units are located below the ground surface.

Subsurface Gas:

The potential for subsurface gas generation is dependent on the integrity of the units.

FURTHER ACTION:

Integrity testing of the tank and associated piping is suggested to verify the integrity of the unit. The testing should be completed through an appropriate method (e.g., pressure testing). If the unit is not intact, soil sampling should be performed to determine if releases have occurred. The sampling should be conducted at locations where cracks have been identified. If the tank is found to be leaking or evidence of prior releases are discovered during integrity testing, soil sampling should be conducted at locations where cracks have been identified. If the tank is found to be leaking or evidence of prior releases is discovered during integrity testing, soil sampling should be conducted to characterize the extent of such releases. The sampling should be conducted at locations where cracks or leakage points have been identified.

65-75. UNIT NAME: Facility Oil/Water Separators

CONCLUSIONS:

Air:

The potential for release to air is low since the units are located below the ground surface.

Soil/Groundwater:

The potential for release to soil/groundwater is dependent on the integrity of the units.

Surface Water:

The potential for release to surface water is low since the units are located below the ground surface.

Subsurface Gas:

The potential for subsurface gas generation is dependent on the integrity of the units.

FURTHER ACTION:

Integrity testing of the tank and associated piping is suggested to verify the integrity of the unit. The testing should be completed through an appropriate method (e.g., pressure testing). If the unit is found to be leaking or evidence of prior releases is discovered during integrity testing, soil sampling should be conducted at locations where cracks have been identified. Samples should be analyzed for volatile and semi-volatile organic compounds. If the unit is found to be leaking or evidence of prior releases is discovered during integrity testing, soil sampling should be conducted to characterize the extent of such releases. The sampling should be conducted at locations where cracks or leakage points have been identified.

76. UNIT NAME: Hazardous Waste Storage Pad

CONCLUSIONS:

Air:

The potential for release is low as long as drums of waste are stored inside the enclosed building.

Soil/Groundwater:

The potential for release is moderate to high from surface runoff since there is no secondary containment on the pad located outside. The concrete pad was stained and is bordered by grass.

Surface Water:

The potential for release is low since no surface water is located in the proximity of the unit.

Subsurface Gas:

The potential for release is low due to the above-ground design of the unit.

FURTHER ACTION:

It is suggested that surface and shallow subsurface soil sampling be conducted to determine if releases have occurred. An appropriate grid system should be constructed in the grassy areas immediately adjacent to the outdoor pad. Soil samples should be analyzed for semi-volatiles, metals and soil pH.

77. UNIT NAME: Old Navy Exchange Laundry

CONCLUSIONS:

Air:

The potential for release is low since the unit has been removed.

Soil/Groundwater:

The potential for release is high since shallow soil samples indicated elevated levels of volatile organics during the CS in 1986.

Surface Water:

The potential for release is high since surface water samples in the drainage area below the discharge point of the storm sewer in which wastes were disposed indicated elevation of levels of volatile compounds.

Subsurface Gas:

The potential for release is moderate since volatile compounds are present.

FURTHER ACTION:

The facility is currently conducting a soil and groundwater remedial investigation as part of the NACIP Program. No additional action is suggested beyond the scope of this study at the present time.

84. UNIT NAME: Demolition Debris Landfill

CONCLUSIONS:

Air:

The potential for release is low since the unit is covered with vegetation.

Soil/Groundwater:

The potential for release is dependent upon the presence of hazardous constituents.

Surface Water:

The potential for release is high since there are surface water bodies in the immediate proximity.

Subsurface Gas:

The potential for subsurface gas generation depends on the types of wastes disposed at the unit.

FURTHER ACTION:

It is suggested that shallow subsurface, soil sampling be conducted to determine if releases have occurred. An appropriate grid system should be constructed, with one sample per grid to be analyzed for metals and semivolatiles.

102. UNIT NAME: West Annex Fuel Leak

CONCLUSIONS:

Air:

The potential for release is low since the leak occurred underground.

Soil/Groundwater:

The potential for release is high since the leak occurred in pipelines located underground.

Surface Water:

The potential for release is high since the release occurred adjacent to the Little Creek Channel. Oils were observed to be seeping from the banks of Piers 11- 19 during the VSI, indicating that releases are via groundwater discharge to the channel.

Subsurface Gas:

The potential for subsurface gas generation is high due to the volatile nature of the waste.

FURTHER ACTION:

Remedial activities are currently ongoing by a contractor in the vicinity of the leak. A product recovery well system is operating near Pier 11. Product is collected via skimmer pumps and stored in above-ground tanks. Also, booms placed along Piers 11-19 were broken during the VSI and product was floating out into Little Creek Channel. It is suggested that additional product recovery systems be employed along Piers 11-19 and that adequate containment booms be placed along the piers.

134. UNIT NAME: Mobile Waste Oil Tanks - Piers 11-19 and 51-59

CONCLUSIONS:

Air:

The potential for release is low to moderate since the wastes do contain some volatile compounds.

Soil/Groundwater:

The potential for release is low since the units are located on concrete piers.

Surface Water:

The potential for release is high since the units are located on concrete piers and any leakage drains toward pipe outfalls that enter into the coves.

Subsurface Gas:

The potential for subsurface gas generation is low since the piers that units rest on are constructed of concrete with good integrity.

FURTHER ACTION:

It is suggested that a secondary containment device should be constructed around the mobile tanks.

105. UNIT NAME: Steam Plant - Flyash Silo and Conveyor Belt

CONCLUSIONS:

Air:

The potential for release from the unit is moderate to high since flyash can become airborne.

Soil/Groundwater:

The potential for release from the unit is high since flyash was observed on the soils during the VSI.

Surface Water:

The potential for release from the unit is moderate to high. Flyash or constituents could enter storm swales in the vicinity that drain toward the coves at the facility.

Subsurface Gas:

The potential for subsurface gas generation from the unit is low due to the nonvolatile nature of the wastes.

FURTHER ACTION:

It is suggested that surface soil sampling be conducted to determine the extent of contamination in the area of the unit. An appropriate grid system should be constructed. One soil sample per grid should be collected and analyzed for metals.

109. UNIT NAME: Steam Plant - Floor Drains

CONCLUSIONS:

Air:

The potential for release from the unit is low since the unit is located inside the Steam Plant.

Soil/Groundwater:

The release potential from the unit is dependent on the unit's integrity.

Surface Water:

The potential for release from the unit is moderate to high. Wastes from the unit enter a storm drain that discharges to the coves at the facility.

Subsurface Gas:

The potential for subsurface gas generation is low due to the nonvolatile nature of the wastes.

FURTHER ACTION:

It is suggested that water samples entering the storm drain should be collected and analyzed for pH due to caustic sodas that may be entering the unit. The integrity of the drain should also be determined by removing the grate and observing the condition of the concrete.

111, 130, 137, 144. UNIT NAME: Boat Painting/Sandblast Areas

- 111. Pier 10 Sandblasting Area
- 130. Boat Painting Area
- 137. Small Boats Sandblast Area
- 144. West Annex Sandblasting Area

CONCLUSIONS:

Air:

The potential for release is moderate since the waste is not covered and particles could become airborne.

Soil/Groundwater:

The potential for release is moderate to high since the wastes are spread directly on the ground surface and the water table is shallow.

Surface Water:

The potential for release is moderate to high since the units are located either on or near piers on the coves at the facility.

Subsurface Gas:

The potential for release is low due to the inorganic nature of the waste.

FURTHER ACTION:

It is suggested that soil sampling be conducted to determine the extent of contamination. An appropriate grid system should be constructed with at least one sample obtained per grid. Samples should be analyzed for metals and soil pH. A cover should be placed over all residue to preclude future wind dispersal of the wastes.

116. UNIT NAME: Morale, Welfare, and Recreation (MWR) Boat Maintenance Facility

CONCLUSIONS:

Air:

The potential for release is low since gasoline is no longer used as a weed killer.

Soil/Groundwater:

The potential for release is high since gasoline was poured directly on the ground surface to kill weeds.

Surface Water:

The potential for release is low since no surface water bodies are present in the area.

Subsurface Gas:

The potential for subsurface gas generation is low due to the above-ground nature of the unit.

FURTHER ACTION:

It is suggested that shallow subsurface soil sampling be conducted to determine the extent of contamination. Soil samples should be collected at regular intervals along the fence line where gasoline was reportedly poured. The soil samples should be analyzed for semi-volatiles.

117. UNIT NAME: Special Boat Unit (SBU) Battery Storage Area

CONCLUSIONS:

Air:

The potential for release is low due to low volume of volatile wastes stored.

Soil/Groundwater:

The potential for release is high. Staining of soils was observed during the VSI and there is no containment.

Surface Water:

The potential for release is moderate since Little Creek Cove is located in the immediate proximity of the unit.

Subsurface Gas:

The potential for release is low due to the non-volatile nature of the battery wastes, the low volume of volatile wastes stored, and due to the above-ground design of the unit.

FURTHER ACTION:

It is suggested that surface and shallow subsurface soil sampling be conducted to determine if releases have occurred. An appropriate grid system should be constructed. Soil samples should be collected from each grid and analyzed for pH and lead.

119. UNIT NAME: Former Special Warfare Group 2 (SWG2) Electronics Shop

CONCLUSIONS:

Air:

The potential for release is low since the tile leach field where wastes were disposed is located beneath the ground surface.

Soil/Groundwater:

The potential for release is high since the tile leach field is located beneath ground surface and since the purpose of the unit was to allow wastes to percolate into the soils.

Surface Water:

The potential for release is moderate to high due to the proximity of the coves on the facility and since groundwater discharge is likely at the coves.

Subsurface Gas:

The potential for release is moderate to high since the tile field is located below ground surface and due to the volatile nature of the waste.

FURTHER ACTION:

It is suggested that shallow subsurface soil sampling at a depth immediately below the tile field be conducted to determine the extent of contamination. An appropriate grid system should be constructed around the tile field. One sample per grid should be collected and analyzed for pH, volatiles, and semi-volatiles.

120. UNIT NAME: VC6 Satellite Accumulation Point

CONCLUSIONS:

Air:

The potential for release is low to moderate due to volatile nature of the waste.

Soil/Groundwater:

The potential for release is high since stains were observed on the soil during the VSI. The water table is also very shallow in this area.

Surface Water:

The potential for release is moderate to high since Little Creek Channel is located only about 50 feet from the unit and runoff is directed toward that water body.

Subsurface Gas:

The potential for subsurface gas generation is low due to the above-ground design of the unit.

FURTHER ACTION:

It is suggested that surface and shallow subsurface soil sampling be conducted to determine the extent of contamination. An appropriate grid system should be constructed with soil samples analyzed for metals, volatiles, and semi-volatiles.

123-127. UNIT NAME: Amphibious Base Landfill

CONCLUSIONS:

Air:

The potential for release is low since the wastes are buried underground. No odors were detected during the VSI.

Soil/Groundwater:

The potential for release is high since selenium, thallium, and silver have been detected in samples taken as part of the CS in 1986. Staining on the ground during the VSI was also observed.

Surface Water:

The potential for release is high since contaminants may be migrating to the coves at the facility via groundwater transport. The unit is adjacent to Little Creek Cove and Little Creek Channel.

Subsurface Gas:

The potential for release is high since municipal and industrial wastes have been accepted in the past.

FURTHER ACTION:

The facility is currently conducting a soil and groundwater remedial investigation as part of the NACIP Program. No additional action is suggested beyond the scope of this study at the present time.

128,129. UNIT NAME: Building 3896 Area

128. Lube oil Dispensing Area Storm Water Drain

129. Satellite Accumulation Point for Paint Wastes

CONCLUSIONS:

Air:

The potential for release is moderate due to the volatile compounds present.

Soil/Groundwater:

The potential for release is low since the entire area is covered either with concrete or asphalt.

Surface Water:

The potential for release is high since the storm water drain empties directly into Little Creek Cove and since the satellite accumulation point is located on a pier adjacent to the cove.

Subsurface Gas:

The potential for subsurface gas generation is low since the area consists of concrete and asphalt.

FURTHER ACTION:

It is suggested that sampling be conducted near the drain for sludge that has accumulated there from surface runoff. An appropriate grid system should be constructed, with one sample collected per grid. The samples should be analyzed for lead, semi-volatiles, and pH. In addition, consideration should be given to provide containment of the satellite accumulation area so that releases will not directly enter the storm water drain.

131-133. UNIT NAME: Seabee Area

- 131. Satellite Accumulation Area for Paint Wastes
- 132. Inoperative Wire Degreaser
- 133. Excess Material Storage Area

CONCLUSIONS:

Air:

The potential for release is moderate due to the volatile nature of some of the wastes present.

Soil/Groundwater:

The potential for release is high due to presence of stains on the soil and the shallow water table.

Surface Water:

The potential for release is high since runoff could enter Desert Cove, which is located only a couple hundred feet away.

Subsurface Gas:

The potential for subsurface gas generation is moderate due to the volatile nature of some of the wastes present.

FURTHER ACTION:

It is suggested that soil sampling be conducted to determine the extent of contamination. An appropriate grid system should be constructed with one soil sample collected per grid. The soil samples should be analyzed for metals and semi-volatiles.

35. UNIT NAME: Piers 51-59, Hydraulic Fluid Leak

CONCLUSIONS:

Air:

The potential for release is low since the area is covered with a plastic tarp.

Soil/Groundwater:

The potential for release is low since the unit is located on the pier, which is constructed of concrete, which appeared to be in good condition.

Surface Water:

The potential for release is high since the unit is located on a pier, immediately adjacent to Little Creek Cove.

Subsurface Gas:

The potential for subsurface gas generation is low since the unit is located on a concrete pier of good integrity.

FURTHER ACTION:

The drippage should be stopped either by ceasing operations or installing proper containment. Adsorbent material should also be added to the leak area, drummed, and hauled away for proper disposal.

138,141. UNIT NAME: Satellite Accumulation Points

138. SEAL Team 4 Area

141. SEAL Delivery Vehicle 4 Area

CONCLUSIONS:

Air:

The potential for release is low since the drums at the unit were covered with lids.

Soil/Groundwater:

The potential for release is low since the drums and containers at both units are resting on a concrete surface of good integrity.

Surface Water:

The potential for release is moderate to high since staining in the areas was observed and since the concrete surface sloped toward a storm sewer drain that reportedly empties into the coves at the base.

Subsurface Gas:

The potential for subsurface gas generation is low since the units are above ground on a concrete pad of good integrity.

FURTHER ACTION:

It is suggested that secondary containment be constructed around each unit to prevent surface runoff to the storm sewer drain.

143. UNIT NAME: Former Seabee Vehicle Maintenance Facility

CONCLUSIONS:

Air:

The potential for release is low since the unit is abandoned and since wastes of concern are located below the ground surface.

Soil/Groundwater:

The potential for past release is moderate to high since wastes were reportedly poured down storm drains that were pitted and corroded.

Surface Water:

The potential for past release is high since wastes were reportedly discharged into a drain which connects to the storm sewer system and empties into Desert Cove.

Subsurface Gas:

The potential for past subsurface gas generation is low to moderate due to some of the volatile compounds used.

FURTHER ACTION:

It is suggested that shallow subsurface soil sampling be conducted to determine if releases have occurred. An appropriate grid system should be constructed and soil samples collected and analyzed for pH and semi-volatiles.

147. UNIT NAME: Facility Storm Sewer/Drains

CONCLUSIONS:

Air:

The potential for release is low since the units are designed below ground.

Soil/Groundwater:

The potential for release is dependent on the integrity of the sewers.

Surface Water:

The potential for release is high due to near proximity of surface water bodies.

Subsurface Gas:

The potential for release is dependent on the integrity of the units.

FURTHER ACTION:

The construction materials and age of all storm sewers/drains should be reviewed. The facility is also currently in the process of obtaining an NPDES permit from the State of Virginia. No further actions regarding discharge to surface water are suggested at this time.

AOC's. UNIT NAME: Transformer and Capacitor Leaks

- A. PCB Capacitor Spill - Fire Station No. 1
- B. PCB Capacitor Spill - Pole No. 425
- C. PCB Transformer Leak - Building 3661
- D. PCB Transformer Leak - Building 3530
- E. Non-PCB Transformer Leak - Building 3896

CONCLUSIONS:

Air:

The potential for release is low due to the nonvolatile nature of the waste.

Soil/Groundwater:

The potential for release is high for AOC's A, B, and C since each is surrounded by soils. The other units (D and E) are located on concrete or asphalt pads of good integrity.

Surface Water:

The potential for release is low for AOC's A, B, and C since no surface water is present in the vicinity. The potential for release from AOC's D and E is high since staining was observed on concrete and asphalt pads which slope either to storm swales or to Little Creek Cove.

Subsurface Gas:

The potential for subsurface gas generation is low due to the nonvolatile nature of the waste.

FURTHER ACTION:

It is suggested that surface soil sampling be conducted to determine the extent of contamination at AOC's A and B. An appropriate grid system should be constructed and soil samples collected and analyzed for PCB's. AOC's C, D, and E should all be repaired to prevent further releases. Samples of standing water and scrape samples of stained asphalt or concrete should be collected and analyzed for PCB's.

AOC's. UNIT NAME: Emergency Generator Leaks

F. Pier 59

G. Fire Station No. 1

CONCLUSIONS:

Air:

The potential for release is low due to the semi-volatile nature of the waste.

Soil/Groundwater:

The potential for release at AOC G is high since the concrete pad slopes toward a grassy area. The potential for release from AOC F is low since the unit is located on a concrete pier of good integrity.

Surface Water:

The potential for release from AOC F is high since it is located adjacent to Little Creek Cove. The potential for release from AOC G is low since no surface water is in the vicinity.

Subsurface Gas:

The potential for subsurface gas generation is low due to the semi-volatile nature of the waste and the location of the units on concrete surfaces.

FURTHER ACTION:

These emergency generators should be repaired as soon as possible to preclude contamination of either soils/groundwater or surface water.

AOC H. UNIT NAME: Pesticide Mixing Area

CONCLUSIONS:

Air:

The potential for release is low due to the non-volatile nature of the waste.

Soil/Groundwater:

The potential for release is moderate to high if residual contamination exists from pesticide mixing.

Surface Water:

The potential for release is low since no surface water bodies are in the immediate proximity.

Subsurface Gas:

The potential for release is low due to the non-volatile nature of the wastes.

FURTHER ACTION:

It is suggested that surface soil sampling be conducted to determine if residual contamination exists. An appropriate grid system should be constructed around Building 3109. Samples should be analyzed for pesticides.

IX. REFERENCES

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3. CH2M Hill Round 1 Final Progress Report for Atlantic Division, Naval Facilities Engineering Command, October 15, 1986
4. Solid Waste Management Unit Identification Letter. From J. Sabbatini, Commander, CEC, USN to Mr. Stephen Wassersug, Director EPA, Region III, April 7, 1986,
5. Phase I LUST Study Final Report, Prepared for Naval Facilities Engineering Command, Gerraghty and Miller, Inc., October 1987
6. Personal communication Jon McDaniel (The Earth Technology Corporation) to Sharon Waligora (PWD, NAB), August 12, 1988
7. Naval Amphibious Base, Little Creek Key Map, no date
8. National Weather Service, Norfolk International Airport, personal communication Chriss Pryately (The Earth Technology Corporation) July 29, 1988.
9. Siudyla, E., May, A. and Hawthorne, D. "Ground Water Resources of the Four Cities Area, Virginia." Planning Bulletin 331, State Water Control Board. November 1981, pg. 14.
10. Personal Communication Chriss Pryately (ETC) to Bureau of Census, July 29, 1988. Statistics are from July 1, 1987.
11. Letter, 1/23/89, from P.A. Canady, Department of the Navy, to U.S. EPA, Region III, with Comments on RFA for Naval Amphibious Base, Little Creek, Norfolk, VA.

X. VISUAL SITE INSPECTION SUMMARY AND PHOTO LOG

This VSI summary and photo log documents the activities and observations of The Earth Technology Corporation VSI Team completed on June 27 through July 1, 1988 for the Naval Amphibious Base (NAB) located in Norfolk, VA. Observations and findings from the VSI have been incorporated into the main body of this report and provided a basis for suggested further actions.

VSI Summary

The following individuals were present for the VSI at Letterkenny Army Depot:

<u>Name</u>	<u>Representative of</u>
Jon McDaniel	The Earth Technology Corp.
Mary Savage	The Earth Technology Corp.
John Nevious	EPA, Region III
Sherman Latchaw	EPA, Region III
Steve Frazier	VA Dept. of Waste Mgt.
Bill Niven	PWD, NAB
Wilkie Din	PWD, NAB
G. K. Payne	XO, NAB
E. J. Katzwinkel	PWD, NAB
Greg Sullivan	PWD, NAB
Tom White	NAVFAG ENG COM
Willie Barnes	PWD, NAB
Sharon Waligora	PWD, NAB

An introductory briefing was held at 9:30 AM on June 27 to discuss the purpose of the site visit, review identified SWMUs, and discuss plant operations. NAB representatives summarized the process operations that take place at this facility and supplied additional information for the SWMUs identified in the file review. Following this meeting, the Team was taken on a tour of the facility, focusing on observing the SWMUs identified in the file search, and identifying additional SWMUs throughout the property.

During the visual inspection, photographs were taken by Earth Technology using a Nikon one touch 35mm automatic camera. No special filters or lenses were used. Kodak VRG400 color print film was used.

Following the walk-through inspection of the facility, a meeting was held with the facility representatives to discuss information gaps and to identify further information needs. The first four days' visit ended at approximately 4:00 PM each day. The

last day was used to review documentation located at the facility and discuss information needs with facility personnel. An outbriefing was held at 10:00 AM with facility representatives.

The weather during the VSI was partially overcast throughout the mornings and afternoons. The temperature was in the mid 70s (°F).

Photographic Log

The following photographs were taken during the VSI. They include references to the SWMUs identified during the VSI.

APPENDIX A

Copy of Field Notes and Log Book

TITLE:

PROJECT NO.:

PROJECT NAME:

PAGE

1

OF

40

Commander Payne

Sharon Waligors - PWD } Works
Willie Barnes - PWD } for Wilkie

Obtain

Sandfill SW MU 1 - gw, surface water monitoring results
2
3
4
5

list of o/w seps. - Mr. Barnes

apt for " " LFTC - Bldg 3532
sat acc pts

Steam plant & carpenter shop - baghouse.

* SEMA - calibration lab
Preventative medicine - may do Cl titrations

Underground fuel lines at Piers 16-19 to fuel farm.

Applying for NPDES permit for SW discharge. Have @ 6 outfalls. Ask Sharon or Wilkie for locations.

No fire training done on the base.

BY:

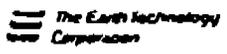
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DATE	ROLL	FRAME	BLDG	COMMENTS
6-27-88	1	1	3165	Paint Shop 1/2 Overall
		2	"	Paint shop vent system
"	1	3	"	Carpenter Shop
"	"	4	"	Carpenter Shop wood chip collection
"	"	5	"	Sheet metal shop - metal waste collection dumpster next to trash dumpster
	"	6	"	location of SWMU31
	"	7	"	location of SWMU27
	"	8	3165D	Wash Rack
	"	9	Close to 3661	#19636 Old pole yard - met. disp. area
	"	10	"	#19636 Old pole yard - transformer storage area

TITLE:	PROJECT NO.:	PAGE <u>3</u>
SWMU 29, 28, 30, 32, 35	PROJECT NAME:	OF <u>40</u>
<p>#32 Paint shop - waterwall - say they had H₂O tested - Claim non-hay. 2nd room - ok. Dirty rags → hay waste. filter (exhaust air) - fate?</p> <p>#30 Carpenter shop - has wood chip collection box.</p> <p>#28 Sheet Metal shop - sheet metal & welding. Some floor cracks, but no evidence of release to ground. Some may need to be sealed.</p> <p>#31 - Demolished wharf bldg shop area - now a gravel parking lot.</p> <p>#27 - Demolished pesticide shop area - more of the SWMU 31 area</p> <p>#7 PCP Dip Tank & Wash Rack - Dip tank has been removed. Area next to wash rack is under construction. Also tied into an o/w sep → sanitary sewer. Oil removed by vacuum truck → barge → Craney Island. Will be sampled. Are gw mon wells in the area.</p> <p>#19 & #36 - Old pole yard - met dip (select oil dispensing area) - some wetness (stains) on asphalt under the drums (elevated on rack).</p>		
BY: DATE:	CHECKED BY: DATE:	

<u>DATE</u>	<u>ROLL</u>	<u>FRAME</u>	<u>BLDG</u>	<u>COMMENTS</u>
6-27-88	1	11	Near Bldg 3661	#119 Old pole yard - apparent leak from unlabeled transformer
"	"	12	"	#119 Old pole yard - transform & emerg generator leaks
"	"	13	Near Bldg 3293 & hi volt E	SWMU 18 - transformer have been moved to pole yard.
"	"	14	3661	SWMU 40 - PWD garage waste oil tank. Heavily stained next to stained dirt area
"	"	15	3661	SWMU 40 - PWD garage lube oil drip area - note storage heavily stained area. As a result concrete floor holes & speedy dry. Berm drain open - evidence that oil escaped - did rain last night
"	"	16	3661	#40 Battery storage at edge of asphalt - one appears to be cracked.
"	"	17	3661	#40 Leaking PCB transformer
"	"	18	"	#40 Wash rack
"	"	19	"	#40 Paint Booth

TITLE:	PROJECT NO.: PROJECT NAME:	PAGE <u>5</u> OF <u>40</u>
<p>Evidence of leaks on asphalt from unlabeled transformer PCB transformers - non conforming storage.</p> <p>#18 Small transformer storage area - fenced asphalt area</p> <p>#40 - Bldg 3661 Public Works Transportation Garage Heavy Duty shop safety Kleen parts cleaner. Have waste oil holding - size unknown. Probably a steel tank, leaking PCB transformer & other problems - see photology. Have o/w sep & open quite top in outdoor wash rack area. Have for an air paint booth, filters => dumpster. Paint Heavy equip yellow. Battery shop - floor is corroded; Use of room unk ^{filling} or charging. No sign of release.</p>		
BY: DATE:	CHECKED BY: DATE:	

<u>DATE</u>	<u>ROLL</u>	<u>FRAME</u>	<u>BLDG</u>	<u>COMMENTS</u>
6-27-88	1	20	3661	#40 Battery Shop
6-27-88	1	21	3661	#40 Metal recycling dumpster
"	"	22	"	#40 " "
"	"	23	"	#40 Salvaged parts storage
"	"	24	3060A	Pipe ramp - dirt pile to left - not visible. Dirt is from bank - contains Pb & Cu

TITLE:

PROJECT NO.:

PAGE

7

PROJECT NAME:

OF

40

Have parking lot drainage → storm ditch - oily dirt

Difle range - dirt piles covered with plastic.
Water acc. on top. Potential for leaching → bay.
also lined w plastic also.

D. wing range landfill - no obvious problems
site of ~~the~~ ^{the} WWTP landfill - overgrown,
couldn't really see.

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<u>DATE</u>	<u>ROLL</u>	<u>FRAME</u>	<u>BLDG</u>	<u>COMMENTS</u>
6-28-88	2	1	3651	#5 - school of music plating shop
"	2	2	near 3651	#5 line new (old) construction debris
"	2	3	3651	#5 line neut pit.
"	2	4	3029	fuel oil tank - leaks.
"	2	5	3029	fire sta 1 - AOC 1
"	2	6	Base 1 chg gas sta	#21 - battery storage area.

TITLE:	PROJECT NO.:	PAGE <u>9</u>
	PROJECT NAME:	OF <u>40</u>

6-28-88

Pipe Shop - Safety Xerox dehydrator
Bldg 3165

#35 Bldg 3293 - high volt e shop warehouse -
former location of shop itself. Dropped.

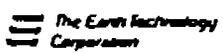
#5 Bldg 3651 - school of music plating shop. No longer
used. Has wells. Room where plating bath were
has a floor drain. One room apparently used for
spray painting (3 rooms in the bldg). some vent
pit next to bldg → POTW? ~~may have been sewer.~~
Closed fail in 1974. ^{fire stat} @ 4' dia x 6 ft

Bldg 3029 - OACI - fuel oil tank for emerg gen -
lots of leaks - see photo - grass dead. OAC because
of ~~transformation~~ ^{capacitor} leak. Base is not convinced there
was a leak.

#21 & 22 - Base X Chg gas station

Battery Storage Area - Batteries on pallet partly
over concrete slab - part of edge over gravel.
2 diam of H₂O from gas tank in area. More than
55 gallons.

→ contractor
fish-tail in
pit

BY:	CHECKED BY:	
DATE:	DATE:	

DATE	ROLL	FRAME	BLDG	COMMENTS
6-28-88	2	7	Base X oil tank	#22 - note stains around neck of waste oil tank. oil flow oil antifreeze poured into tank. line unknown.
6-28-88	2	8	3091	#34 - outdoor hay waste store area. Used to store organics - no corrosive or fl - those stored indoors.
6-28-88	2	9	3091	#33 indoor hay waste store area.
11	2	10	3227	Wood chip collection for carpentry shop.
11	2	11	3147	gym emergency generator is leaking
1	2	12	3029	Emergency generator next to bldg
11	2	13	3334	#39 - Navy X Chg Maint facility.
1	2	14		

TITLE:	PROJECT NO.: PROJECT NAME:	PAGE <u>11</u> OF <u>40</u>
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Metal parts salvage dumpster - heavy stained w/ oil in the area. Depreciated on contract.

#133634 Hay waste storage facil. Bldg 3091

#35 Indoor hay waste stor. facil - OK

34 Outdoor hay waste stor facil - no longer used. Only used now for overflow. Stored outside in past on reg basis. Have tested soil for O&G - no problem. Added @ 8" of fill.

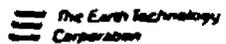
PWD Training Services (CE Yard) - Bldg 3814 - metal recovery dumpster

PWD Training Services Bldg 3227 - carpentry shop - wood chip collector

Gen - emergency generator - AOC - leaks. Bldg 3147.

Bldg 24 - some SWMUs (pairs) Bldg 3319

Bldg 3334 - ~~23639~~ ^{is} here (Navy Xclg Maint) It turned in materials (paints & extenders) - no storage areas - just sitting on top of flamm. cab. also batteries. Wood chip collector for carpentry shop. Compressor at base of bldg lead in on pad, not grass

BY: DATE:	CHECKED BY: DATE:	
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DATE	ROLL	FRAME	BLDG	COMMENTS
6-28-88	2-	14	Lower level across from 3324	In J.P.P. - demerol #24
"	"	15	near bldg 3408	#24 Leaking fuel tank (?) fuel tank for what may be a belt-driven
"	"	16	Near bldg 3408	drainage ditch from MWR. of wash rack → stream
"	"	17	3319	#37 Waste oil drums - 1 leaked
"	"	18	"	#37 Marine Bay
"	"	19	"	#37 paraffinizing oil (?) upside down onto grass.
"	"	20	"	#37 storage area
"	"	21	"	#37 waste oil COST.
"	"	22	3530	#38 - leaking (?) PCB transformer
"	"	23	"	Waste oil tank - fill area is bermed, but some slopping may have occurred.
"	"	24	3530	Oil stain & wood shop chip collector.
"	3	041	Near 3521 (same area as 3530)	Dumpster

TITLE:

PROJECT NO.:

PAGE

13

PROJECT NAME:

OF

40

#6 & 24 - former location of laundry - no wells.
SW line is contaminated & PCC in IRP.
Access from Bldg 3324

#23 & 37 Bldg 3317 Navy Xchg vending office - formerly
garage, still being used (1 bay) as a garage. Have a degreaser
dispensing area for motor oil & trans fluid - leaks on
sloping concrete floor next to door opening on parking lot.
CO₂ fire exting stored in yard. Large (4'x4') metal pan
turned up to drain oil on grass. Waste oil from
main bay → UST. Hasn't been pumped in a while. sewage

Bldg 3400 - leaking heating oil tank - a well well -
line seems to go to MLK wash rack (recently
paved). H₂O drains from paved area → ditch → stream.

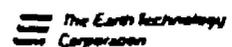
#38 Bldg 3530 auto hobby shop - waste oil tank, 500
gal can be filled outside the bldg from inside.
Have degreaser (use ZIP), waste → waste oil tank.
PWD pumps tank. No O/W sep. No batteries.
Antifreeze also goes to tank. Paint booth (forced air).
filters → dumpster. Parking lot - grass adjacent is
stained in several places.

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DATE	ROLL	FRAME	BLDG	COMMENTS
6-28-88	3	2	3530	<p>Auto lobby dump yard - MWR lobby pest chemicals</p>
"	"	3	<p>east Crest interior of building sample drive</p>	<p>#17 Demolition debris sanfill - also done PCB pole along amphib drive</p>
"	"	4	←	<p>#1 Amphib base landfill</p>
"	"	5	<p>west side of heliport & amphib drive</p>	<p>#1 scrap metal area</p>
"	"	7	"	<p>#1 wood acc area → contractor (not PR/70).</p>
"	"	8	"	<p>down turn - in staging area - immediately next to shore & wetland. Heavily stained.</p>
"	"	9	"	<p>Current transfer station</p>
"	"	10	3894	<p># 2 54 36 - will be taken out of service soon. also metal ... not actively used now (either one)</p>
"	"	11	"	<p>...</p>

TITLE:

PROJECT NO.:
PROJECT NAME:

PAGE 15
OF 40

51 Clinic ^{OK} ~~Dental~~

X-ray - ^{paper & bath} silver recovery OK. For film use "Ditron" paper - efficient - good silver

Dental Clinic

X-ray - collect bottles → (D3, Naval Dental clinic at Norfolk Naval Base) for recovery. No film recovery. Also turn in lead from X ray film packets. Amalgam stored in H6X → D3. Used to use BE for plates - not used any more.

#17 Demolition Debris Landfill - grown over, abandoned. OK. On east side of helicopter near ^{side} west of helicopter campsite.

AOC 2 - pole 425 - no obvious problems. Will be sampled again.

#1 Amphib. Base Landfill - 66 - is here also to 65. ^{active - separate metals,} ^{abandoned} Metals → DRMO.

67 may have been here.

Don't accept paint cans or drums.

500 gal sea, AGT.

#25 Waste oil tank

#26 Waste paint material close to Belg 3594. Also metal recovery dumpster on gravel coil drains.

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DATE	ROLL	FRAME	BLDG	COMMENTS
6-24-89	3	11	CB + 3/3/86	O/wrap for engine I should ship. to 30.0% waste oil tank. H ₂ O → POTH. Stains on concrete.
"	"	11 12	"	Non-PCB transformer leaks. Has been cleaned several times - leaks when temp ↑ - can't find hole.
"	"	13	"	Swdrain from mat deck area
"	"	14	"	sat acc area - labeling of vol problems. note cracks in asphalt.
11.	"	15	"	Boat work area - bilge water, paint, & boat grindings → ground tray to collect water.
"	"	16	CB 110	sat acc pt.
"	"	17	"	"
"	"	18	"	XS material area.
"	"	19	CB 109	wire cleaning facil.

DATE	ROLL	FRAME	BLDG	COMMENTS
6-29-55	3	20	Pier 59	#49 Refrigr. comp. over Leak.
"	3	2.F.	Pier 57	#49 A.G.T. waste oil tank @ 4 ft. 5' - 5' long
"	3	2.2	near Pier 59	MDSU found. + change area - note oil stains
"	3	23	Lambert yard near Bldg 3878	#12 - see notes
"	"	24	"	"
"	4	1	"	#12 Apparently abandoned drums on slanted ground next to water. 1 Drum labeled contaminated
"	4	2	3806	#53 sat use pt o

<u>DATE</u>	<u>ROLL</u>	<u>FRAME</u>	<u>BLDG</u>	<u>COMMENTS</u>
6-29-88	4	3	2406	157 STV hi acc pt
8
11	11	45	3813	# 52 mat ston area note ston
11	4	E	CB 201	#43644 - VST in area may have been abandoned.

TITLE:	PROJECT NO: PROJECT NAME:	PAGE <u>21</u> OF <u>40</u>
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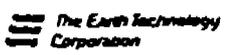
200 gal tank (UST for PWB) for collecting
 guns & weapons cleaning PWB pumps - have
 a gauge. Pipes from tanks → tank.

#54 - KOH 10g/gn batteries, waste. → PRMO.
 No obvious release indoors, concrete floor. Bldg 3806.
 Use vinegar for spills which have been less.

SDV set ac. pt Near Bldg 3806 - more than 55 gal
 of waste oil & gasoline (3 waste oil). 1 gal. Open
 containers, labeling problems. Also generate
 waste paint material from all maint. activities
 waste oil

#52 - 200^{gal} UST for waste PWB handgun cleaning
 tanks → tank. Outside connection to pump-out
 tanks. Pumped by PWB. 7 gal/hr @ 7140°F.
 Seal from 2 mat storage area - gasoline & M&K
 (boat cleaning) - stored on ground in back of
 cage on concrete. Also generate waste in batteries
 immediately picked up by PWB.
 Clean engines @ H₂O & Centric (a detergent) - 7
 SW drain.

43 & 44 - no longer used. Couldn't get in - over led up.
 see photo log notes.

BY: DATE:	CHECKED BY: DATE:	
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DATE	RODS	LINES	DEBS	COMMENTS
1-29-88	4	6	CB 301	Leads storage area
"	4	7	"	Oil p. - pole light → Swedish. Area in new plant. Note groups on site.
"	4	8	ELCS mech shop near CB 2.10	waste oil tank (AGT)
"	4	9	CB 301	Heavy shop end of bldg - work rack Note batteries in front of bldg.
"	4	10		# 2 Driving Range landfill South East of Lookout pt
"	"	11	west	Mid North of Lookout pt # 3 & 4
"	"	12		1

TITLE:

PROJECT NO.:

PAGE 23

PROJECT NAME:

OF 40

CP Bldg 301

Light shop ACB 1 - 550 gal VST for waste oil
 Pumped in by PWD. Pipes from inside
 bldg. Safety Klean sign on. Human oil spill kit
 Pumped by PWD. bldg.

Heavy shop ACB 2 - 550 gal VST for waste oil
 Same setup as above.

95

ELCS mechanic shop - close to CB 210 (supply).
 Have AET for waste oil. Oil is from power units.
 for elevated causeways. On concrete pad.

CP Bldg 301 - Heavy shop - have work rack → O/W
 up. Battery shop - drain acid into drum. Carcasses
 & acid picked up by PWD.
 Paint booth filters (forced air) → PWD.

#61 - Old WWTP - raged, in front of lookout
 point now. Dropped.

#344 WWTP landfills

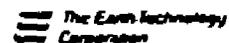
#62 - Solid Waste incinerator, raged, in same
 area as #344.

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DATE	ROLL	FRAME	BLDG	COMMENTS
6-27-84	4	13	3861	#63 -- metal pipe insulation at elbow (see sketch)
"	"	5 14	3867	#63 - 2 inch to oil tank Note dip at valve
"	"	15	3817	4L04 - Water tank, connect on this side -- 2" to H ₂ O pipe to oil tank on the other side of wall exterior 2nd tank - oil pump indirectly thru funnel

TITLE:

PROJECT NO.:

PAGE 25

PROJECT NAME:

OF 40

Fig. 3 Fuel tank loading platform - have 4 boom drains ->
drain out on the water. - need 2 or 3 more to usability

Waste oil drums - see photo log.
B&B 3817 ^{for aircraft} ^{2 drums}

2 O/W Sep. 1 -> POTW for washrack.
2 OSTs for waste oil - each 550 gal from a
hangar Bay 3817 for aircraft.

Have some paints & solvents. JP-5
F16
mil-L-23 699
Use B&B ³¹⁰⁰ engine cleaner -> O/W Sep.

Have acid pit for batteries - is a neat setup
filled w/ ammonium chloride -> overflow -> POTW.
Have not yet used this.

Sheet metal shop - sandblasting machine - good
shopper. Also scrap metal - DP 40.
Have not done
of any of this yet.

Machine shop - waste cutting oils -> waste oil tank.
Have fitting room - not yet in use.

Washrack is 90' long @ 12' wide

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<u>DATE</u>	<u>ROLL</u>	<u>FRAME</u>	<u>BLDG</u>	<u>COMMENTS</u>
6-29-88	4	16	Revised 3142	#100 Vehicle wash rack - Camera capout

TITLE:

purchaser area

PROJECT NO.:

PROJECT NAME:

Hill

PAGE

27

OF

40

#40, Bldg 3142 - vehicle wash rack ^{2 of them}
 connected to o/w sep -> POTW

Waste oil tank sitting (AST) next to wash rack.

~~Vehicle~~ Oil Change Rack next between wash rack & 3142 - drain -> wash rack o/w sep. Also a 600 gal UST for oil change rack. Burned fill area & adjacent ground are heavily stained, especially around drain valve (valve closed during VSI).

Bldg 3804 - sat accept just outside bldg on concrete & a paved area around bldg stained.

Bldg 3142 - scrap metal bin, have degreaser & sandblasting (self-contained unit).

^{spiral lines}
 #41 Bldg 3108 - 600 gal UST for waste oil. Escrowed around fill funnel. Has a gauge. Area in nearby.

#13. Pier 16417 - sheen on water between these piers. Boorn out but not containing well. Fuel spill occurred at Pier 17. Tide comes in, oil goes out. Return line to fuel farm broke about 1968-1969.

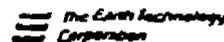
Pier 18 - waste oil tank. No containment - no obvious problems.

BY:

DATE:

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TITLE:	PROJECT NO.: PROJECT NAME:	PAGE <u>28</u> OF <u>40</u>
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Pier 11 - 1st fuel valve from the deck. In inspection line.
 and a... is... just as... (see...)
 into to oil tank... some stains.

former stationary crane area - ^{between} pier 11 & 10 -
 battery abandoned here + some sort of machinery cables.

In front of between piers 12 & 13 - 20/w sep tanks;

1 product recovery tank inside bermed area.

1 o/w sep is dripping, stuff on floor has a sheen.

BY: DATE:	CHECKED BY: DATE:	
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DATE	ROLL	FRAME	BLDG	COMMENTS
6-30-85	4	17	757	#67 Steam Plant
"	"	18	near 757	#6 fuel oil tank at steam plant
"	"	19	near 757	2nd #6 fuel oil tank
"	"	20	"	fuel lines from tanks to steam plant
"	"	21	"	fuel line valves for lines from tanks to steam plant
"	"	22	"	trunk drain in flyash loading area
"	"	23	"	leachate collection pond

TITLE:

PROJECT NO.:

PROJECT NAME:

PAGE 30

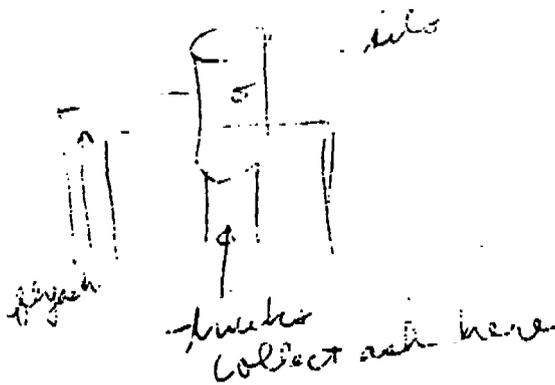
OF 40

#29
Steam Plant

2 AGTS for #6 fuel oil tank farm
p.o. - [unclear] [unclear]

fig. [unclear] boiler

primarily
(with pit
municipal)



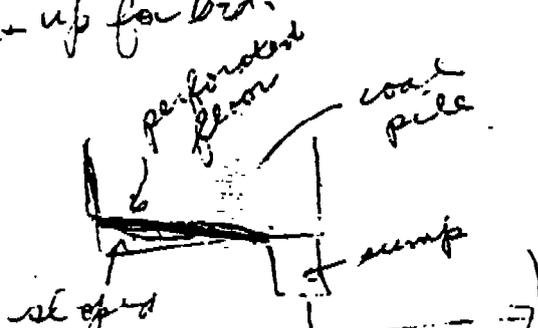
leachate → landfill
off-base, contractor
tests ash (for what?)
↑
test for EP tax.

drains
to
leachate
pond

franchised leachate
& runoff
Part of leachate collection system. Previously
not in service. Collect leachate from coal pile.

and for spill
control

Didn't want to give amt of steam generated - polint
sp. + up for bid.
pumped in from
a tank.



leachate pond
(concrete)
test pH
↓
→ POTW

coal pile → pond → 1 of 2 min
+ tanks
↑
recycle

BY:
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4
DATE

6-30-88

ROLL

4

FRAME

23⁹⁴4

BLDG

757

COMMENTS

Water treatment area
in the plant
(1' depth) 2' from
ditch → SW
7' depth - 5' concrete
area

~~24~~

~~757~~ ⁽²³⁸⁾

"

"

25

757

Bughouse

"

"

26

106

#68 - 90 day acc pt.
indoors

"

"

27

106

#68 - 90 day acc pt
outdoors

"

"

28

"

#68 empty drum
storage

"

"

29

"

#68 battery storage
area

"

"

30

"

#68 - stuff waiting
to be tested &
non-hazardous

"

"

31

near
Bldg
136

#9 & #11 Kanban area
E14000K. East
section of area non
critical area

TITLE:	PROJECT NO.:	PAGE <u>32</u>
	PROJECT NAME:	OF <u>40</u>

ledge from pond, dispo as bay waste (outside)
 All drums inside steam plant 7 steam train,
 3 baghouses.

#68 - 90 day accept, Outside Bldg 106
 drums on pallets of over concrete,
 segregated with types, inside building stock & marker
 containers, also segregated. Concrete floor &
 2 bay sep by cinder block wall. Evidence of
 some spill in bldg.

SW drain in area has manual valve. Yard has 6" asphalt, been
 around whole thing.
 1 battery outdoors ~~may~~ leaked.

Have an asbestos dumpster. Do weekly inspections.

#9 & #11 } Pier 10 area.
 (#55 }

Demolished

#42 MWR Equipment Rental facility Bldg 3021-3022
 Collect oil in 5 gal containers → tank at Bldg 3108.

Have 2 tanks on site for gasoline in depressed area & drum.

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DATE:	DATE:	

<u>DATE</u>	<u>ROLL</u>	<u>FRAME</u>	<u>BLDG</u>	<u>COMMENTS</u>
6-20-89	4	32	New V-19 1203	#14511 fuel dispensing area drift fence & barrier installation
1	4	33	Next to P-19 1256	#20 former installation disproportionate, next area as to soft ground & some material storage (slice).
11	"	34	Revised Bldg 1231	#8,46647 was to be done
11	"	35	"	"
10	"	36	"	80L discrepancy - 2 elevated tanks & gas & diesel
11	5	1	3021	#42 MWR boat facility fence line

TITLE:

PROJECT NO.:

PAGE 34

PROJECT NAME:

OF 40

#20 - Former waste oil storage area, now used for stone lease. No stains (drainage not in water)

#64 - Tank 1551 - still use for diesel fuel. →
pcc 1" lines have leaked, but not tanks.

o/w sep. at tanker loading area → POTL.

Drop #64, add o/w sep.

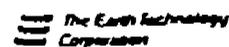
#3, #46, #47 ^{ACU2} - Waste oil tanks in a bermed area & drip pan. Stains on asphalt outside berm. Drain was open to let out rainwater. Have waste oil UST 600 gal & funnel neck to berm. Area is stained (asphalt). Adjacent grass ok. Stone scrap in the yard also.

BY:

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DATE:


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DATE	ROLL	FRAME	BLDG	COMMENTS
6-30-83	5	2	Hick to Bldg 153	#12 Rooming setting etc. equipment.
"	"	3		#15 Area includes only 11th floor of T.O.
"	"	4	Bldg W112	#60 jurisdiction of Spec. Warfare Group
"	"	5	V.C.6 ←	7 Bldg 207A

11/1/83

<u>DATE</u>	<u>ROLL</u>	<u>FRAME</u>	<u>BLDG</u>	<u>COMMENTS</u>
6-30-88	5	6 F 1/2	5-11A Back Yard	+ time + labor

10/1/88

TITLE:

PROJECT NO.:

Final
report

PAGE 38

PROJECT NAME:

OF 40

51#
Revised sketch - The floor plating. Loltma ->
waste tank. All condensate lines and gas
lines. You will supply out of cans.

NDT - spray cans -> decompose

Electronics

Calibration Lab - ok, no wastes

Mech, Cal lab - sometimes get Hg contaminated
thermocouples -> PRMO. Also acc. frozen from
cleaning. Date problem.

Carpenter Shop - have a wood chip collector.
Have water wall paint booth 55 gal drum -
no date. Sludge + skin from water wall ->
drum, H₂O -> drain -> A/C condensate holding tank.

Hydro Shop - waste oil in containers picked
up by PWD.

Boat Shop - storage yard - outside - mostly
empty paint cans. 1 drum of paint waste - not
filled, no date.

Bldg 1131 - still SIMA

Cable Pigger Shop. At least 2 oil tanks -
but acc pt. for T.C. materials out bin.

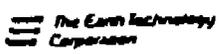
~~1131~~

BY:
DATE:

CHECKED BY:
DATE:

The Earth Technology
Corporation

<u>DATE</u>	<u>ROLL</u>	<u>FRAME</u>	<u>BLDG</u>	<u>COMMENTS</u>
6-30-88	5	X-7 me	+ PDL 6	Paint ^{test} comp.

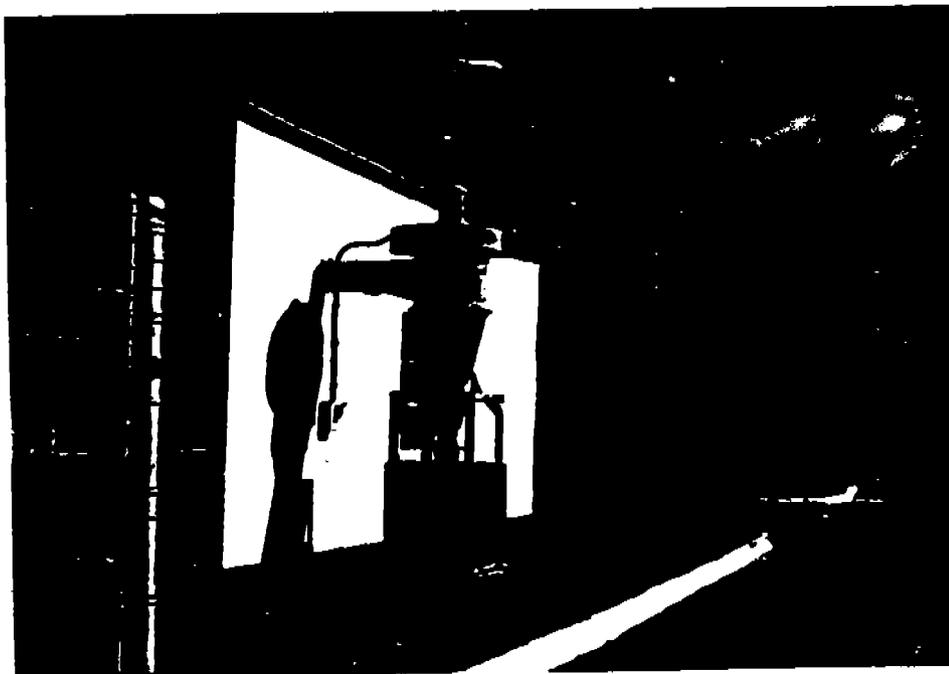
TITLE:	PROJECT NO.:	PAGE <u>40</u>
PROJECT NAME:		OF <u>40</u>
<p><i>at location of site</i> AFDL 6 -- water pump-out no date. <i>1263 same as 9/8/11</i></p> <p><i>ending</i> Bid # 3042 LTI <i>ending</i></p> <p><i>ending</i> Mg. batteries - dry store in <i>ending</i> until <i>ending</i> P. 1/2/82.</p> <p>9:30 AM ← changed to 10:00 for CO outburst</p>		
BY: DATE:	CHECKED BY: DATE:	

APPENDIX B

Visual Site Inspection Photography Log



1. View of wood dust/chip collection bin (SWMU 2) at Building 3165.



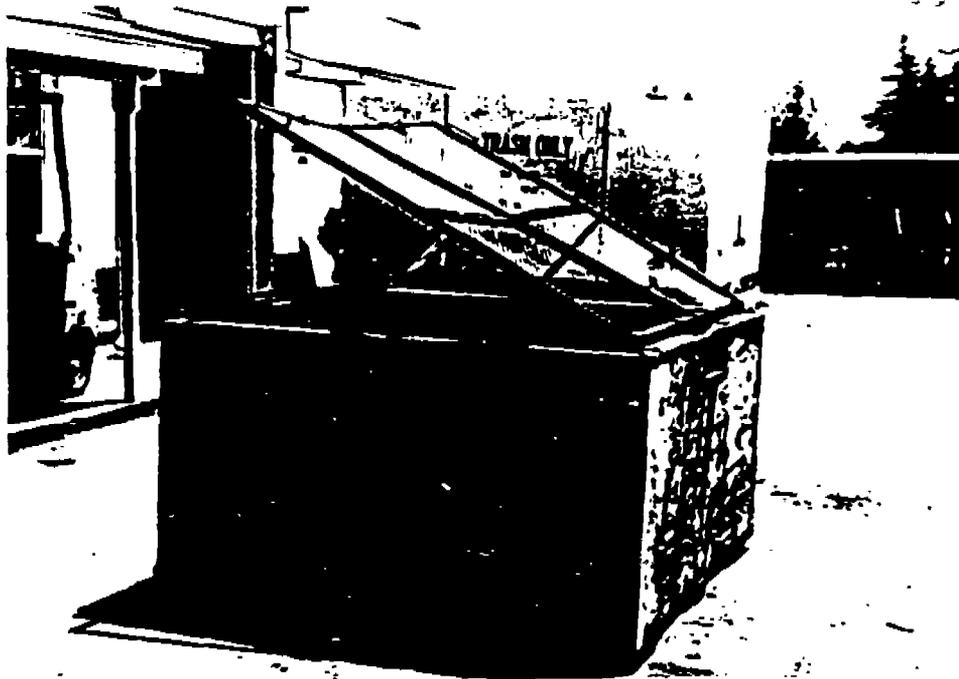
2. Wood dust/chip collection bin (SWMU 3) at Building 3227.



3. View of wood dust/chip collection bin (SWMU 4), spent battery accumulation area (SWMU 6), and satellite accumulation area (SWMU 7). All of these SWMUs are located at the Navy Exchange Maintenance Shop at Building 3334.



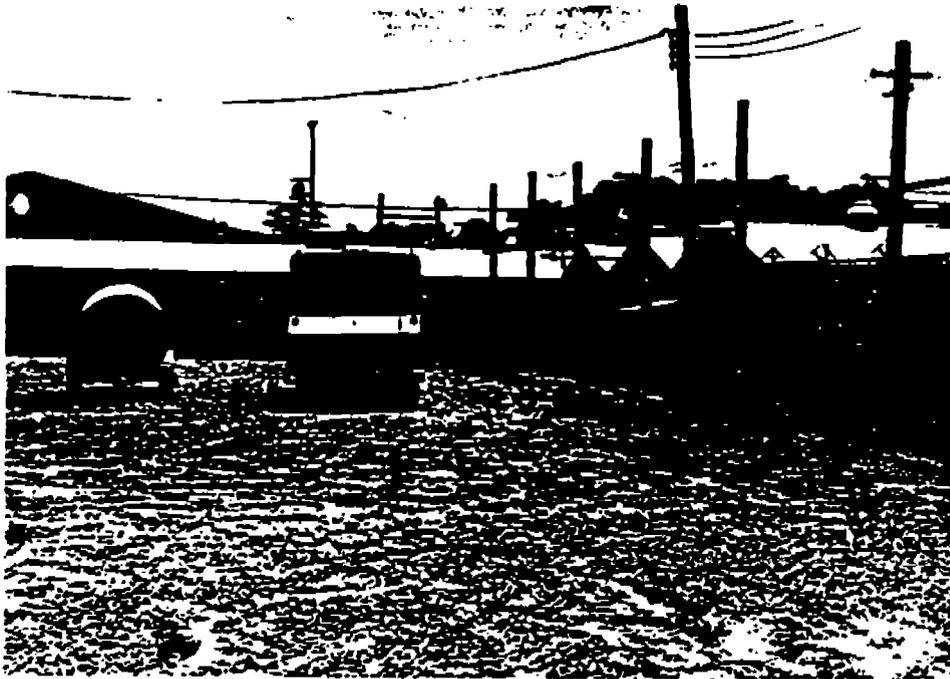
4. View of base exchange (east annex) gas station dumpster (SWMU 8) near Building 3615. Waste oil tank (SWMU 39) fill pipe is located in lower left corner.



5. Example of scrap metal dumpster (SWMU 9) at Building 3614.



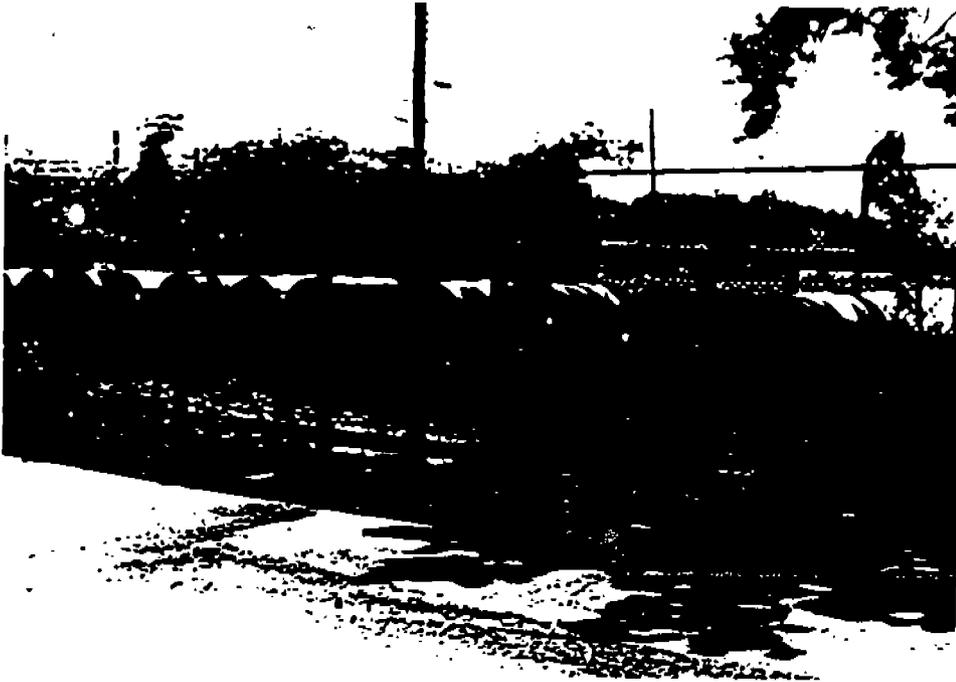
6. Parking lot location of the former wharf building shop (SWMU 12)



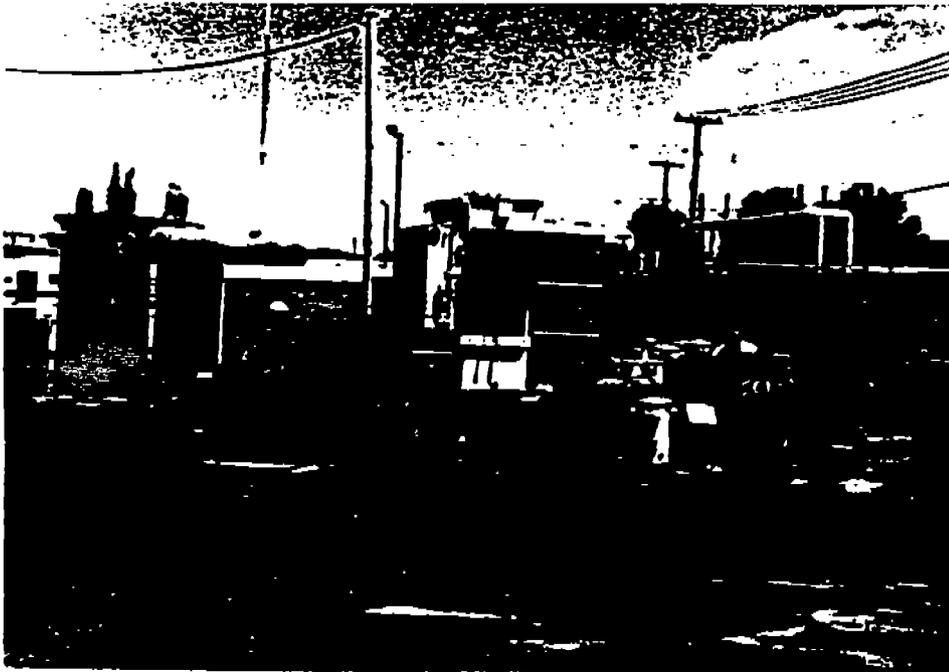
7. Site of the former pesticide shop (SWMU 13), near Building 3165.



8. View of PWD wash rack (SWMU 14) in middle and former location of PCP dip tank (SWMU 15) to left of rack.



9. Portion of old pole yard (SWMU 16) showing rusted drums on a rack.



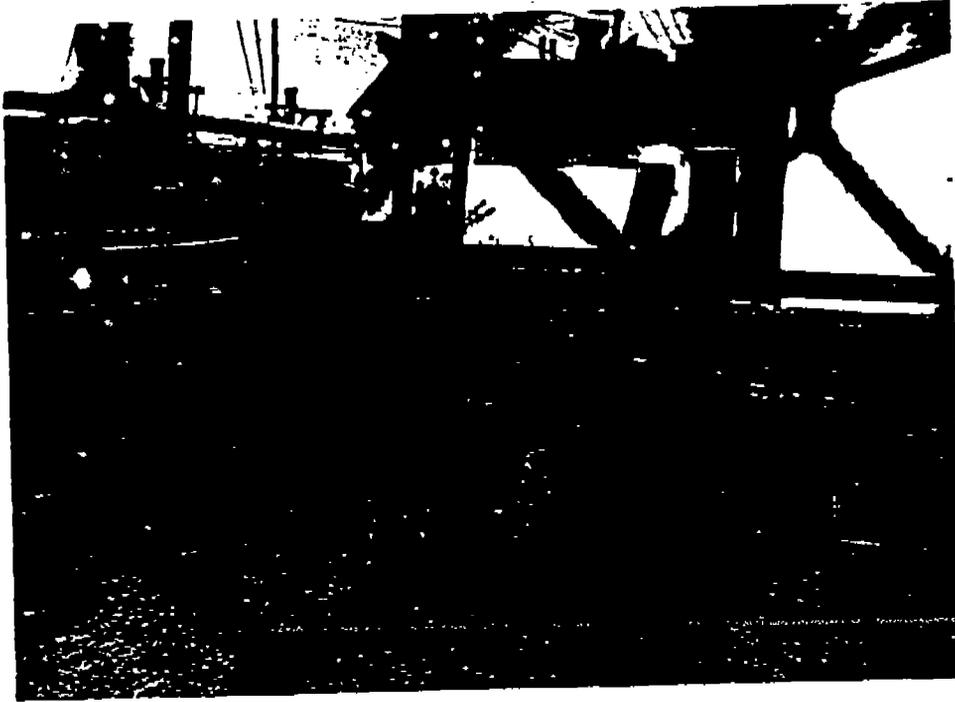
10. View of transformers stored at old pole yard (SWMU 16). near Building 3661.



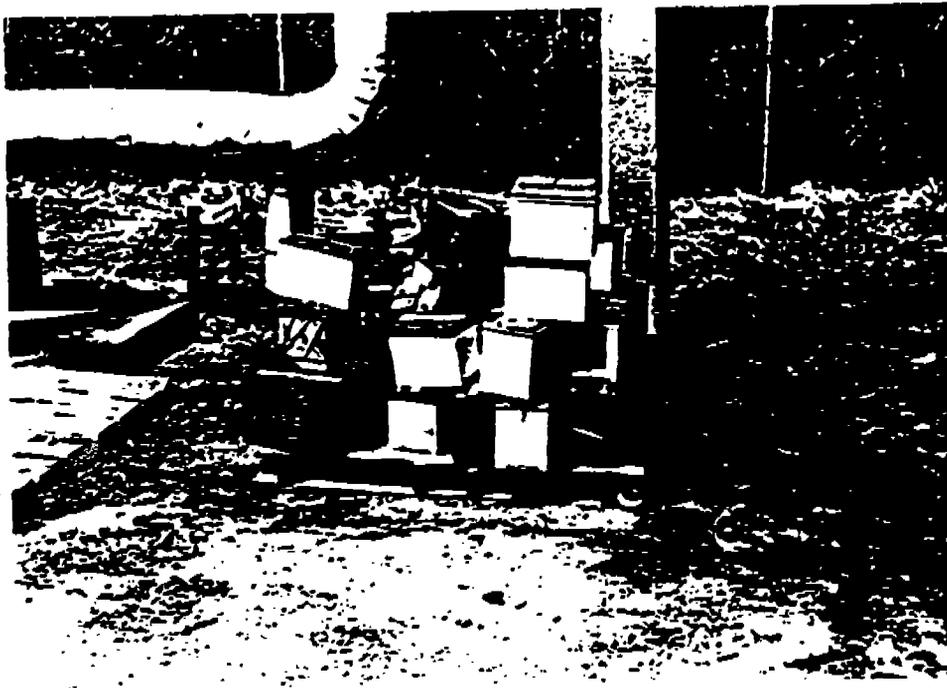
11. Closeup view of apparent leak from unlabeled transformer at old pole yard (SWMU 16), near Building 3661.



12. Transformer and emergency generator leaks at old pole yard (SWMU 16), near Building 3661.



13. Location of former small transformer storage area (SWMU 17) showing asphalt lot.



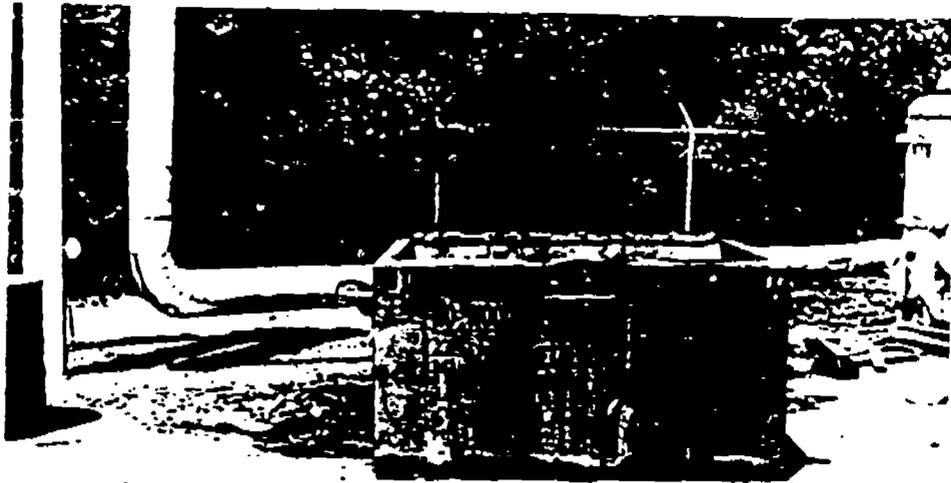
14. Spent battery shop and storage area (SWMU 18) at present PWD Transportation Garage, Building 3661.



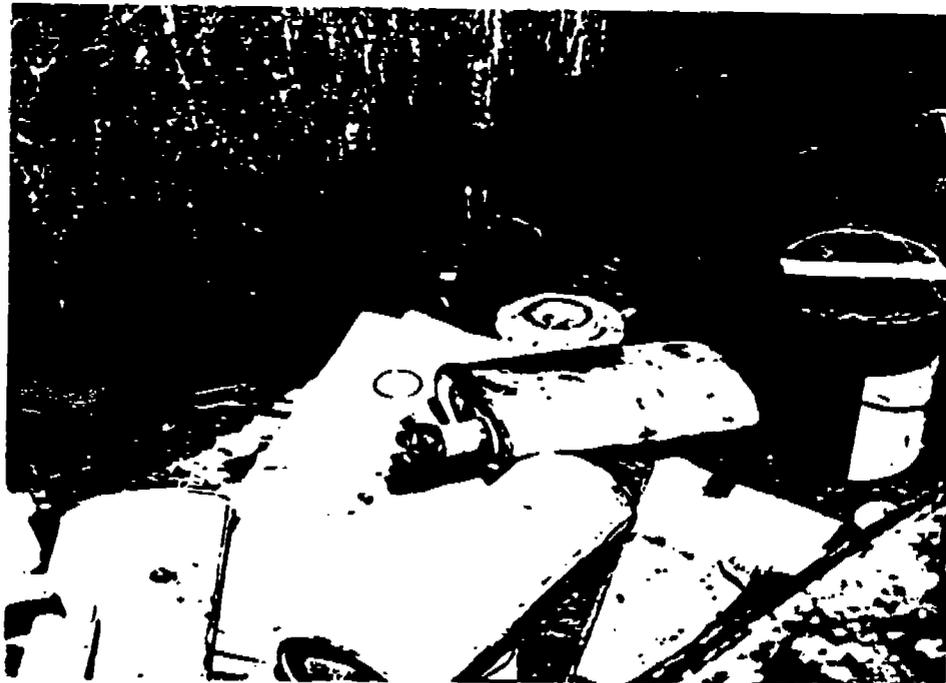
15. View of spent battery shop and storage area (SWMU 18) at present PWD Transportation Garage, Building 3661.



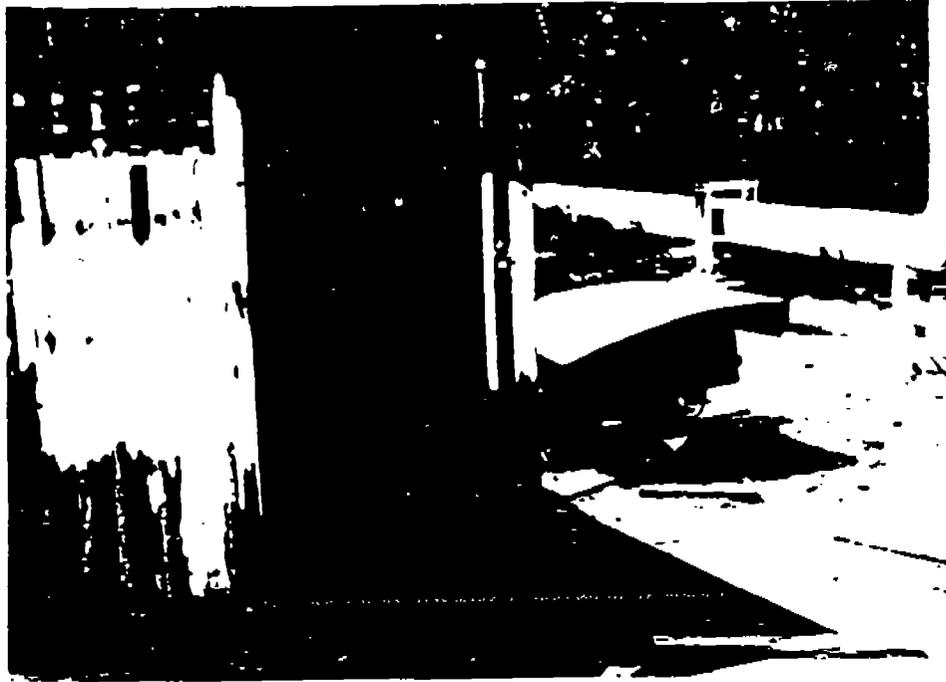
16. View of paint booth area (SWMU 19) at present PWD Transportation Garage, Building 3661.



17. Partial view of salvage parts storage area (SWMU 20) at present PWD Transportation Garage, Building 3661.



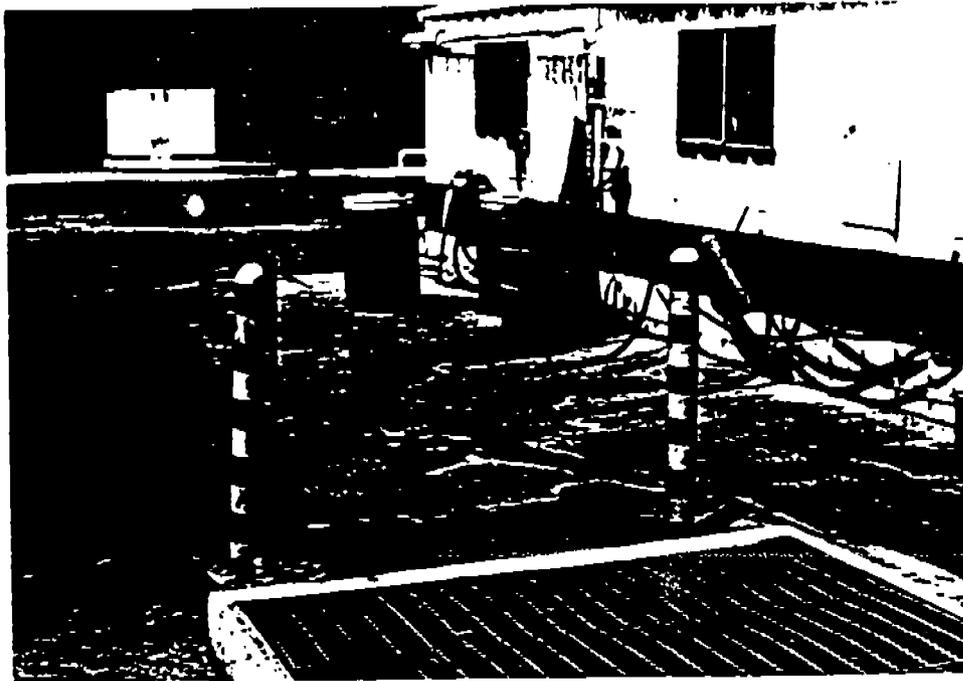
18. Closeup view of metal recovery dumpster at salvage parts storage area (SWMU 20), which is located at the present PWD Transportation Garage, Building 3661.



19. Partial view of salvage parts storage area (SWMU 21), which is located adjacent to the metal dumpster in photo 18.



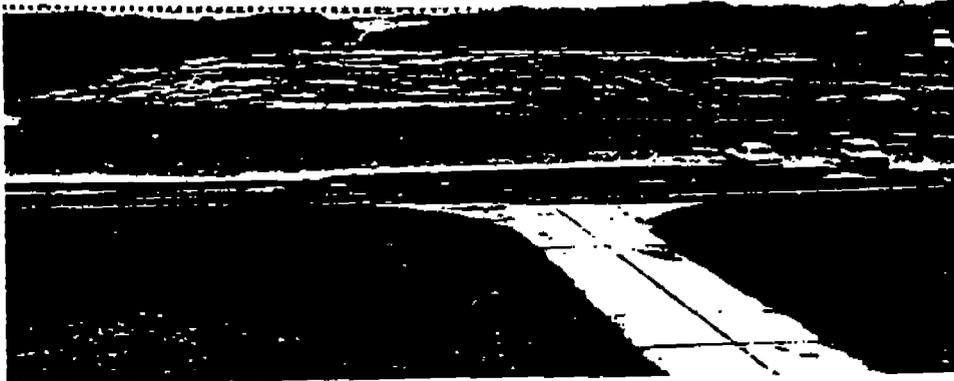
20. View of lubrication oil storage area (SWMU 21) near Building 3661. Drums are located on their sides and leaking.



21. View of wash rack (SWMU 22) and oil/water separator (SWMU 53) near Building 3661.



22. Wide angle view of rifle range (SWMU 23) bunker, near Building 3060A.



23. View of driving range landfill (SWMU 24) which is a NACIP study area.



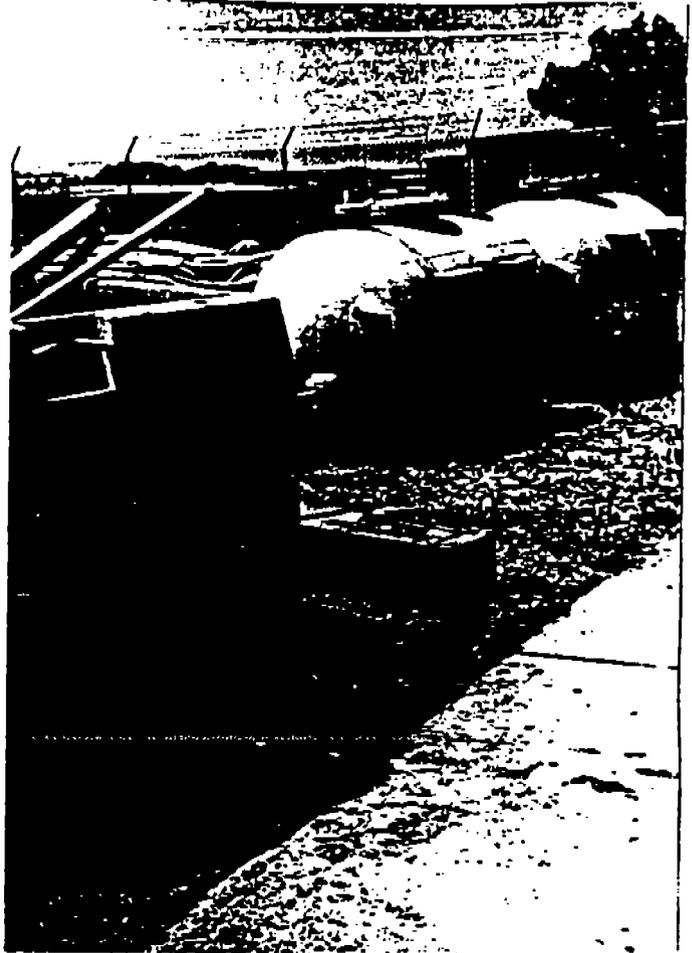
24. Location of former sewage treatment plant area landfills (SWMUs 25 and 26). The boundaries of these NACIP study area units are unidentified.



25. Former school of music plating shop (SWMU 27) which is a NACIP study area.



26. Former school of music lime neutralization pit (SWMU 28) adjacent to Building 3651. Unit is a NACIP study area.



27. Scrap metal dumpster (SWMU 11) in foreground. The Harbormaster office area--paint/thinner residue tank (SWMU 29) is in middle and waste oil tank (SWMU 61) is in background.



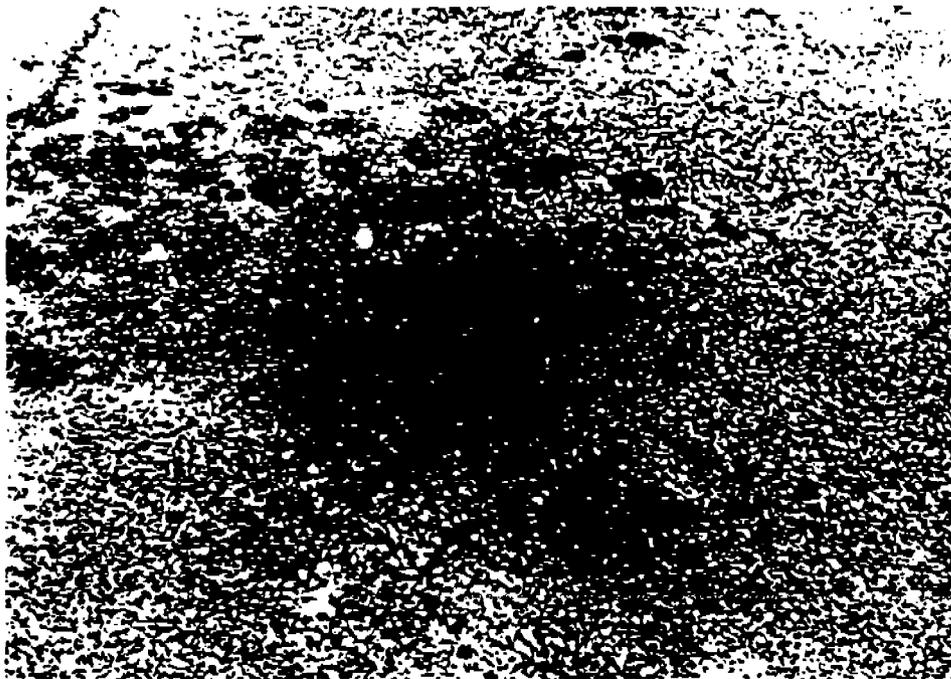
28. View of leaking above ground diesel tank (SWMU 30), next to Building 3400.



29. View of leaking above ground fuel tanks (SWMU 31) on pier 10, near Building 1263.



30. Battery storage area (SWMU 32) in background and waste accumulation area (SWMU 33) in foreground at Base Exchange (East Annex) Gas Station.



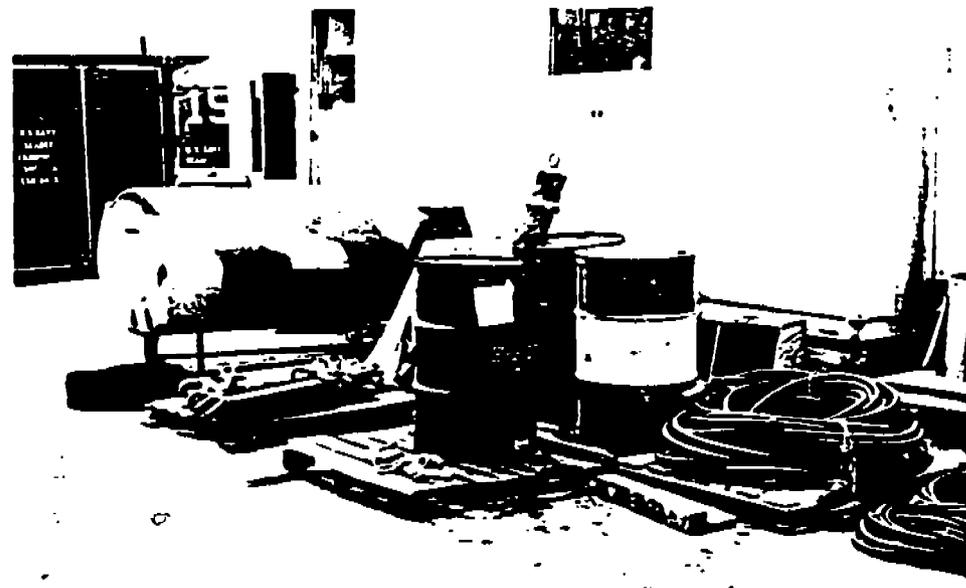
31. Fill pipe of waste oil tank (SWMU 34) at Navy Exchange Vending Office, Building 3319.



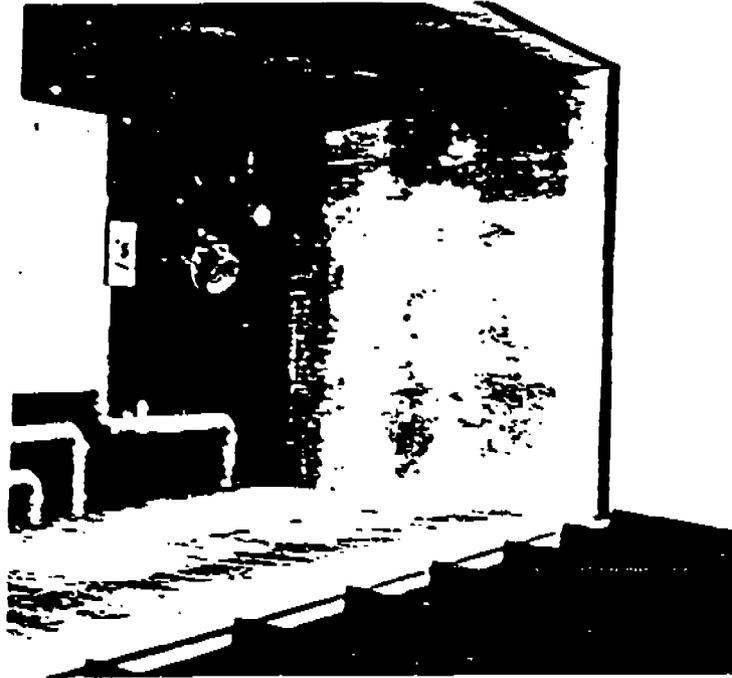
32. Waste oil tank (SWMU 35) near Building 3661. Notice staining of paved and unpaved surface.



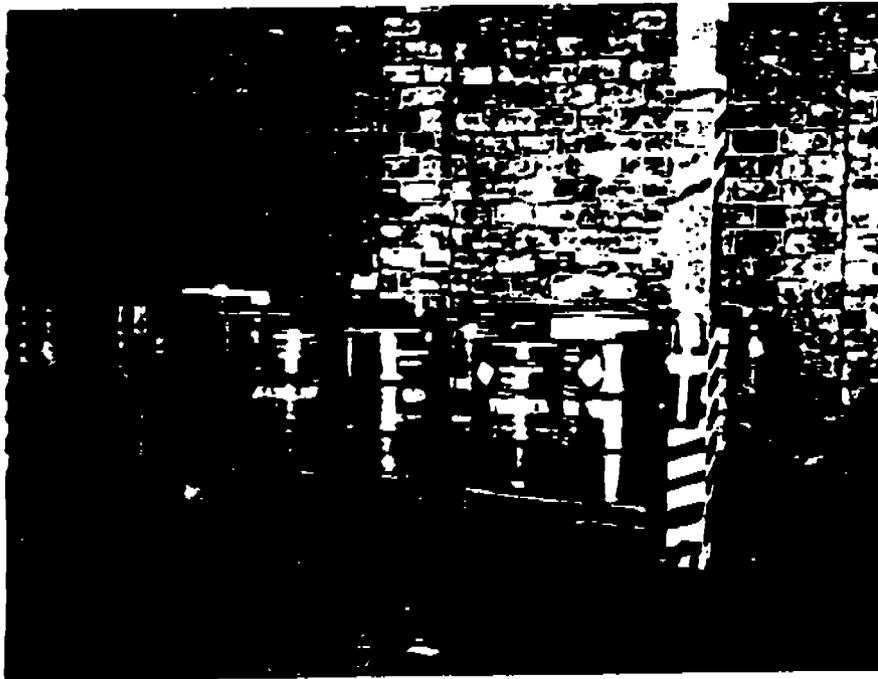
33. View of two fuel farm loading platform waste oil tanks (SWMU 63) near Building 3867.



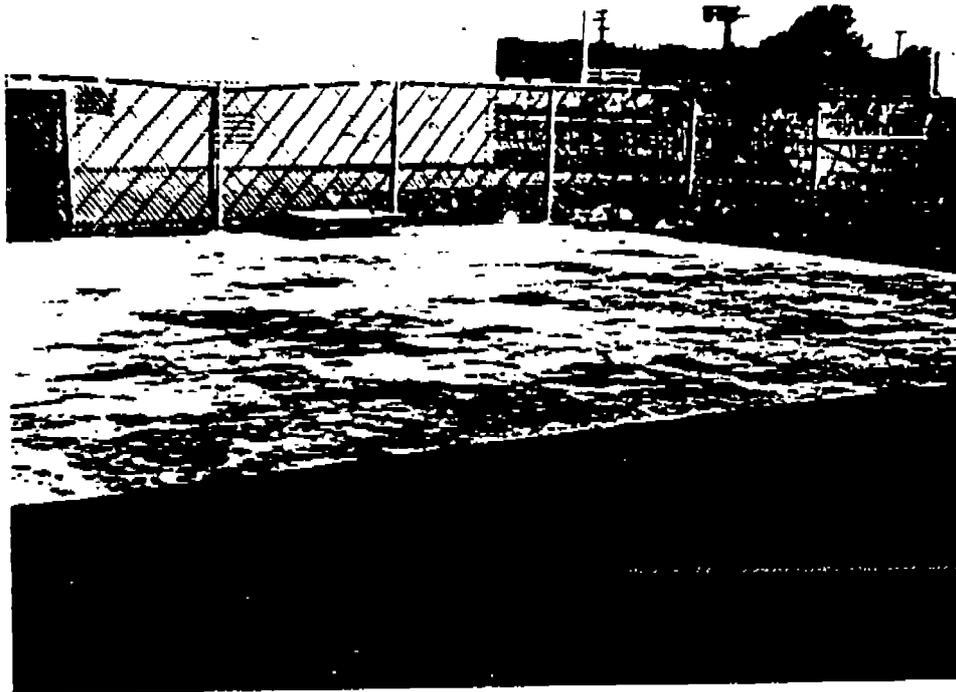
34. View of waste oil tank (SWMU 62) and material dispensing area (SWMU 98) near Building CB 210.



35. Assault craft unit 4 oil/water separator (SWMU 65) near Building 3817.



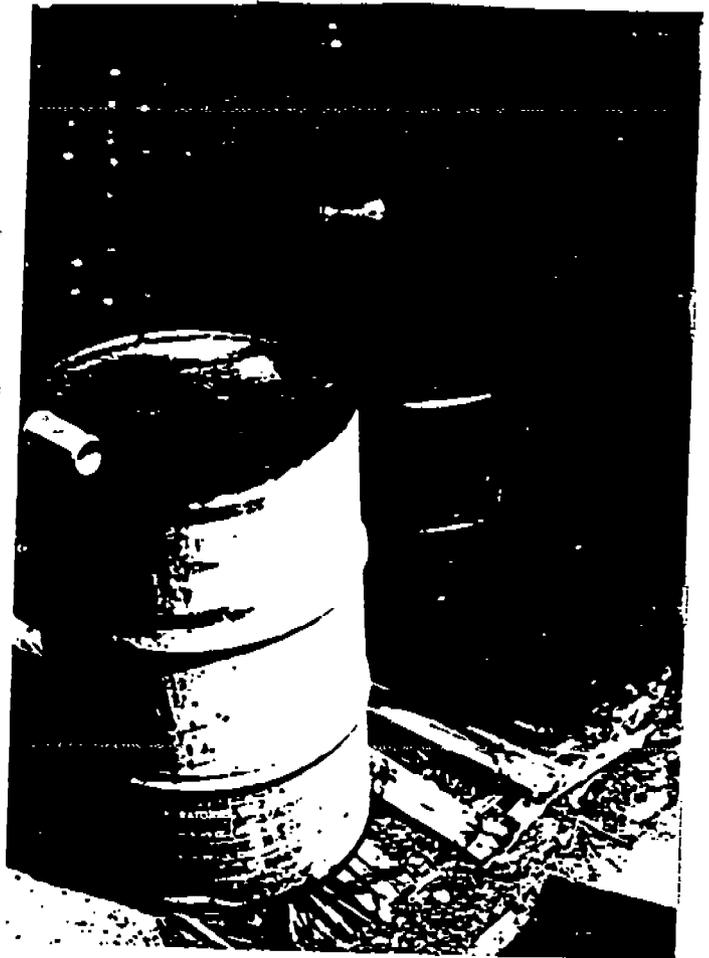
36. Indoor view of storage area at hazardous waste TSD pad (SWMU 76).



37. View of outdoor storage area at hazardous waste TSD pad (SWMU 76).



38. View of grassy field that was site of old navy exchange laundry (SWMU 77). Unit is a NACIP study area.



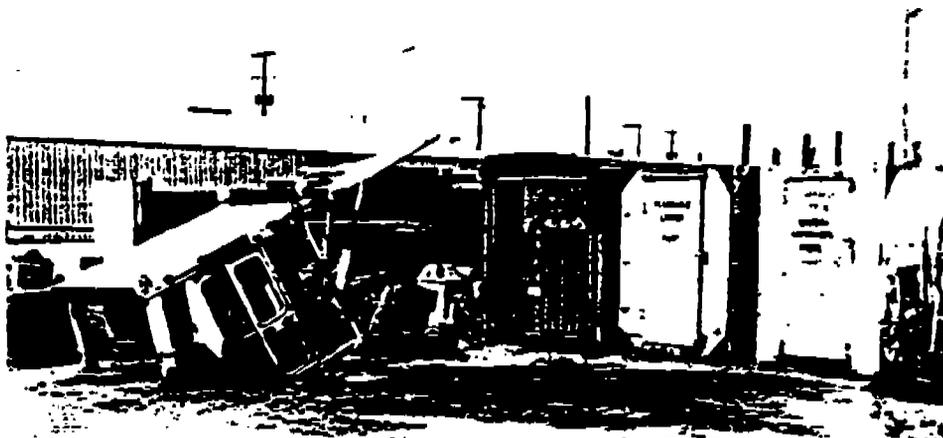
39. Navy exchange vending office drum area (SWMU 78) near Building 3319. Note dilapidated wood skid.



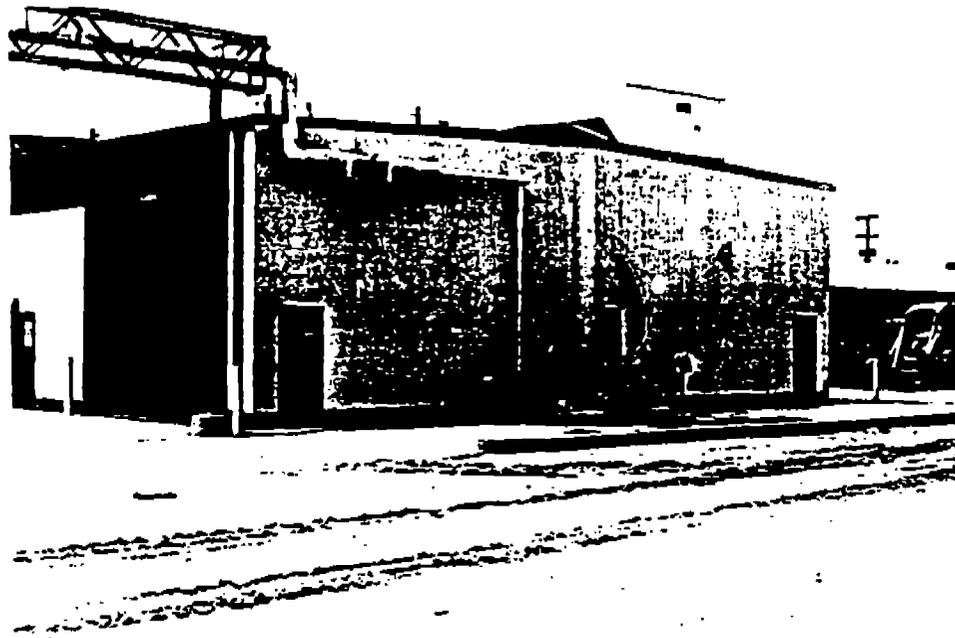
40. Navy exchange vending office scrap yard (SWMU 79) near Building 3319.



43. View of wooded area that was the site of the demolition debris landfill (SWMU 84).



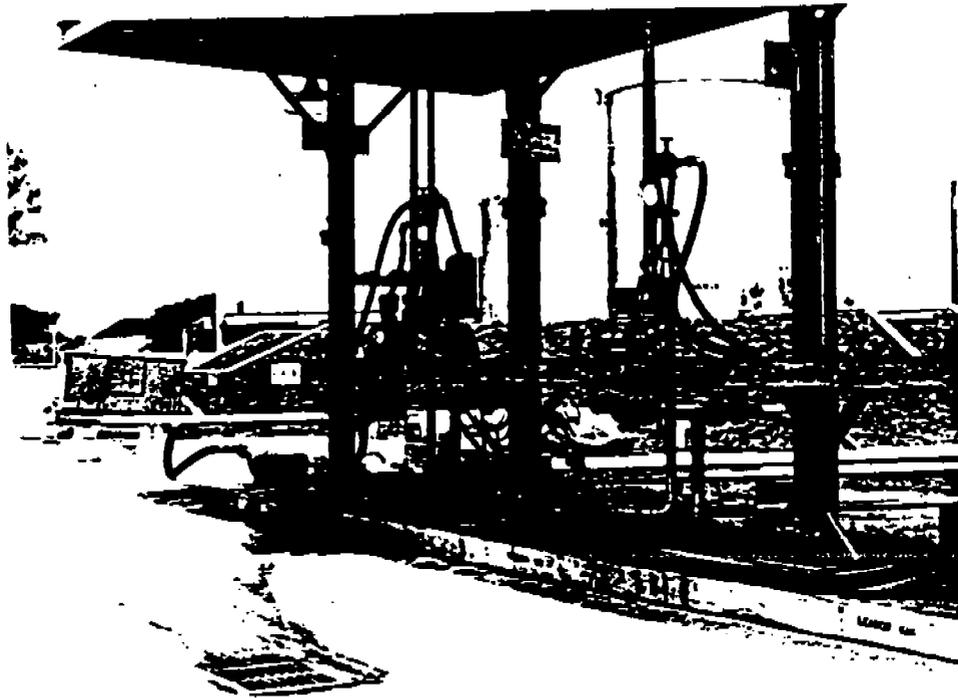
44. View of satellite accumulation point (SWMU 92) and scrap storage area (SWMU 96) at seabee vehicle maintenance facility in Building CB301.



45. View of battery shop (SWMU 94) and paint booth filters (SWMU 95) inside of seabee vehicle maintenance facility, Building CB301. Heavy shop oil/water separator (SWMU 68) in foreground.



46. Storm drain (SWMU 79) at seabee vehicle maintenance facility, near Building CB301.

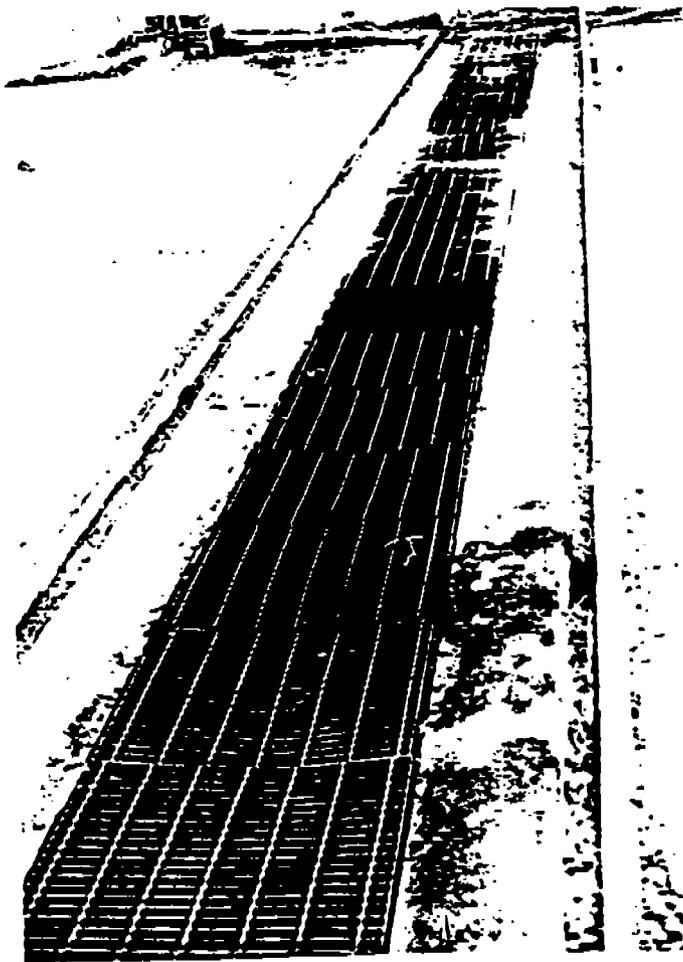
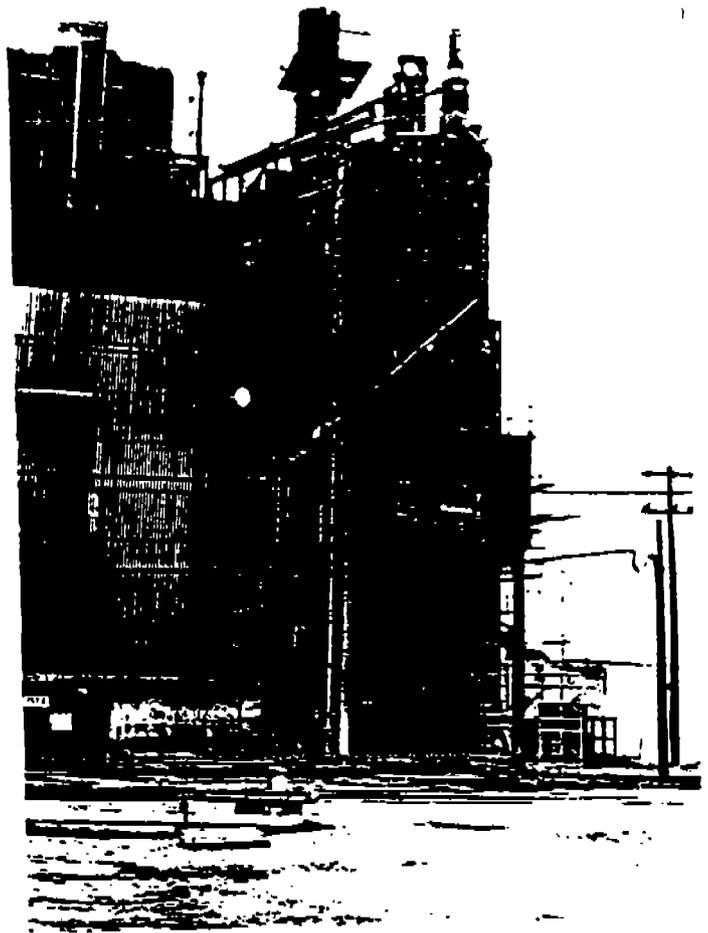


47. Fuel farm loading platform storm water drain (SWMU 100) at dispensing area.

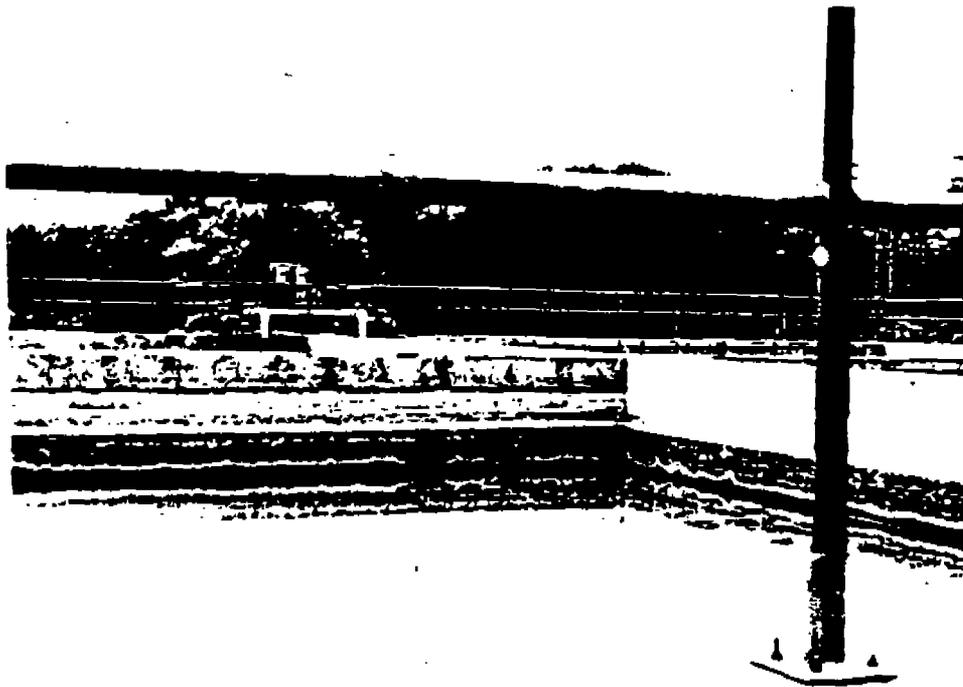


48. View of baghouse (SWMU 104) on left and flyash silo (SWMU 105) right of picture at steam plant.

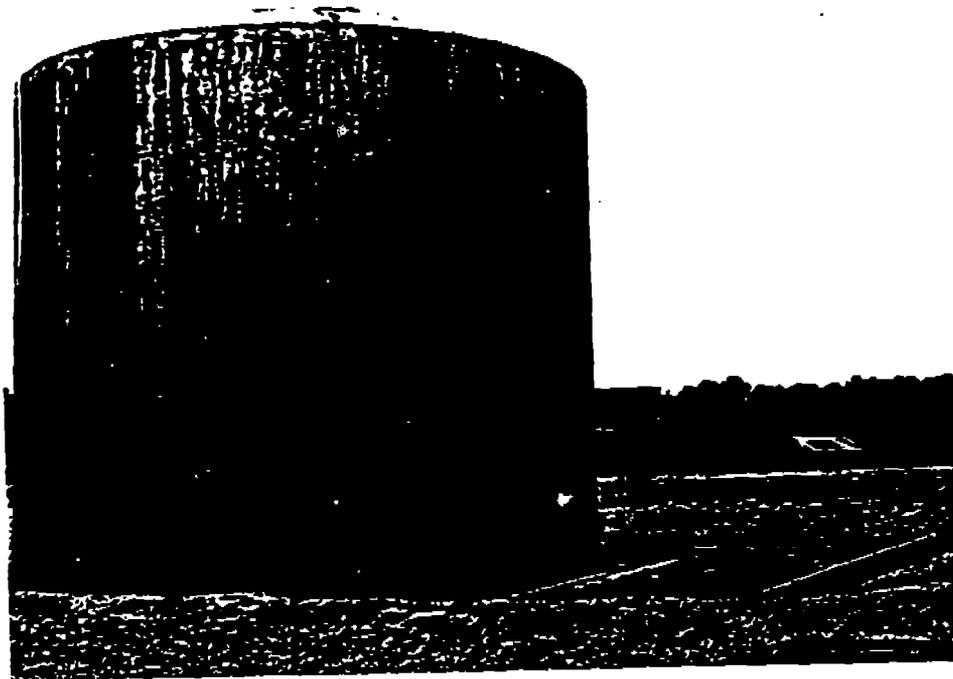
49. Baghouse (SWMU 104) and flyash silo (SWMU 105) at steam plant. The French drain (SWMU 106) is located beneath the flyash silo (SWMU 105).



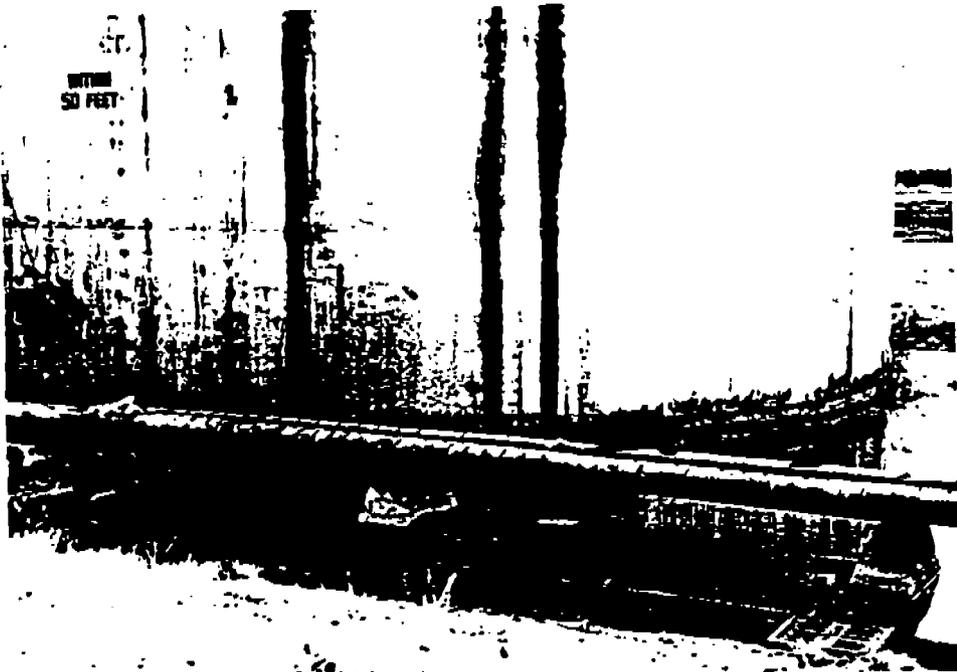
50. Closeup view of French drain (SWMU 106) in flyash loading area steam plant.



51. Coal pile leachate collection system (SWMU 107) at steam plant.



52. One of two fuel oil tanks and associated pipes (SWMU 108) at the steam plant.



53. Closeup view of fuel oil tank and associated pipes (SWMU 108) with staining present. Located at the steam plant.



54. View of the stained lines from the fuel tanks and associated pipes (SWMU 108) located near the steam plant.



55. View of fuel line valves in vault from the fuel tanks and associated pipes (SWMU 108) near the steam plant.



56. Floor drains (SWMU 109) in the pH adjustment area of the steam plant.



57. View inside the storage building at the 90-day accumulation point (SWMU 110).



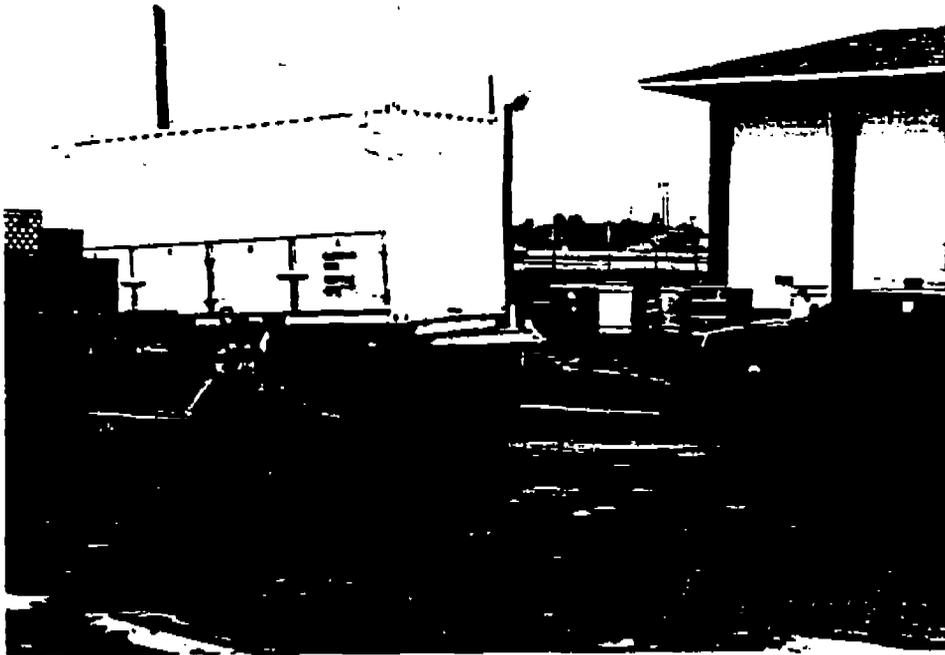
58. View of drums on wooden skids at the 90-day accumulation point (SWMU 110).



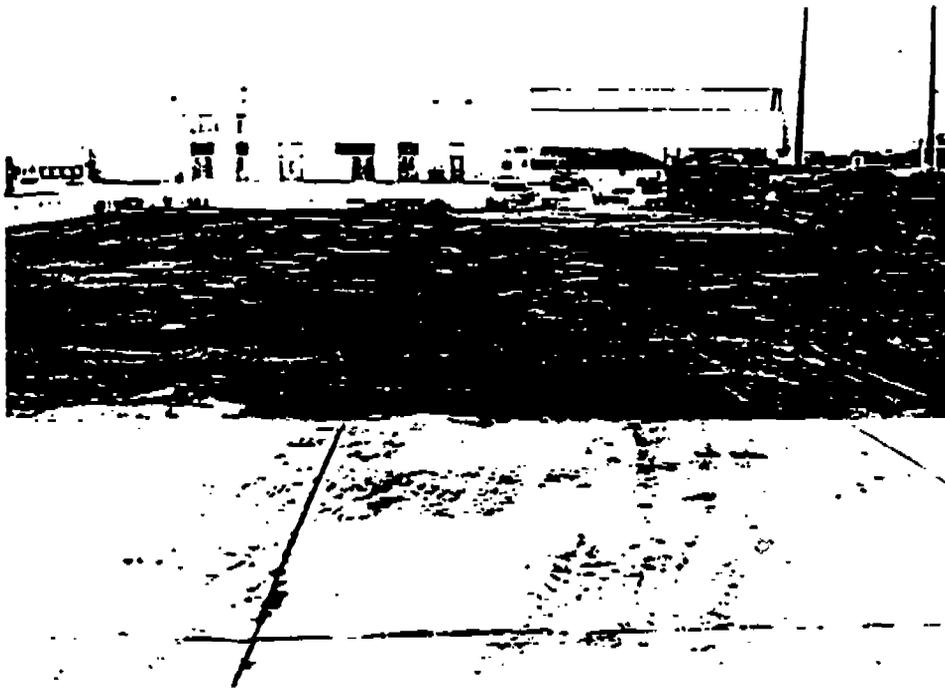
59. Empty drums along fenceline of the 90-day accumulation point (SWMU 110).



60. Spent battery area on concrete pad located outside of storage building at 90-day accumulation point (SWMU 110).



61. Partial view of paved surface at 90-day accumulation point (SWMU 110).



62. Overall view of pier 10 sandblast area (SWMU 111), near Building 1263.



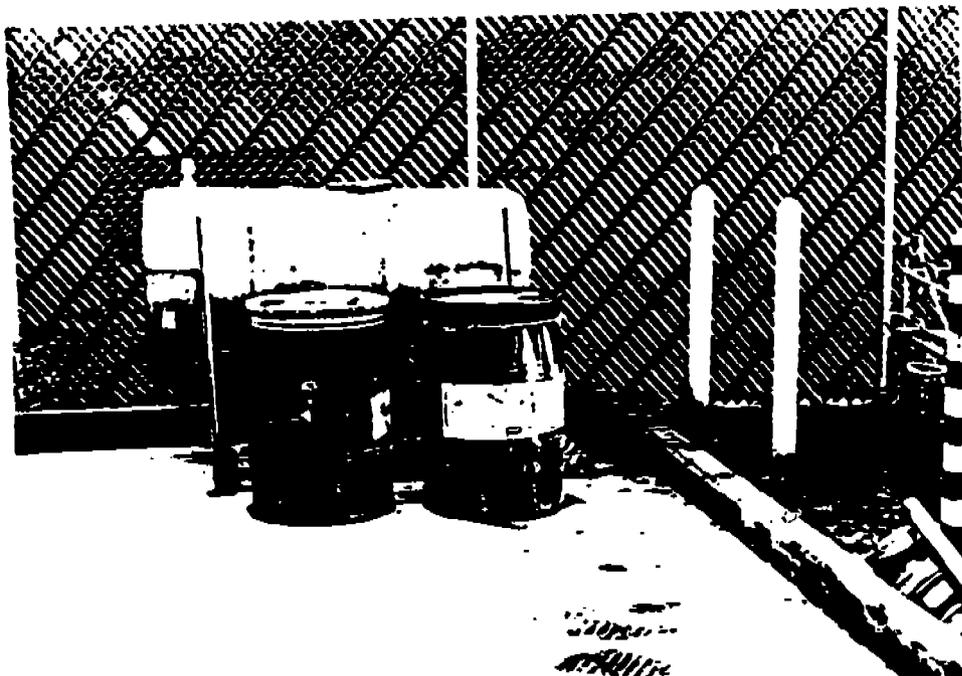
63. Pier 10 sandblasting yard satellite accumulation point (SWMU 112) which is adjacent to SWMU 111.



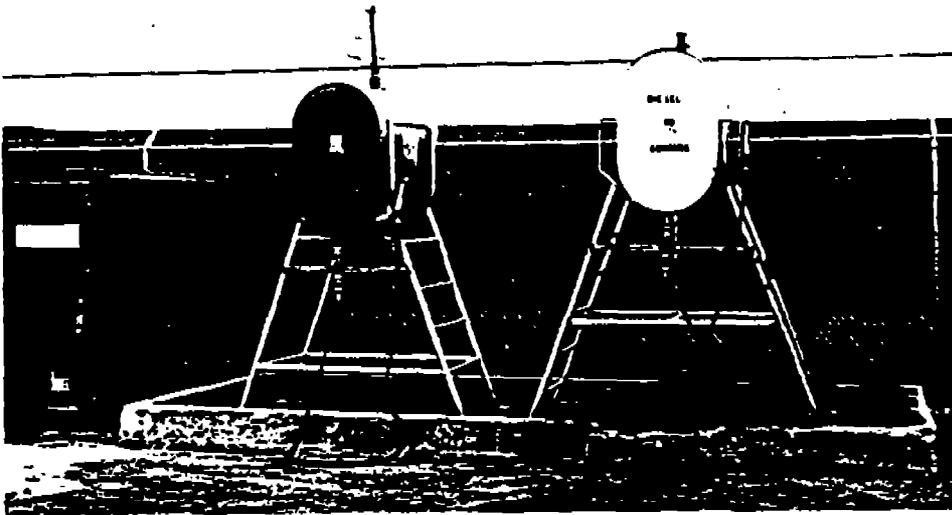
64. View of former location of Building 1256 motor oil disposal area (SWMU 113).



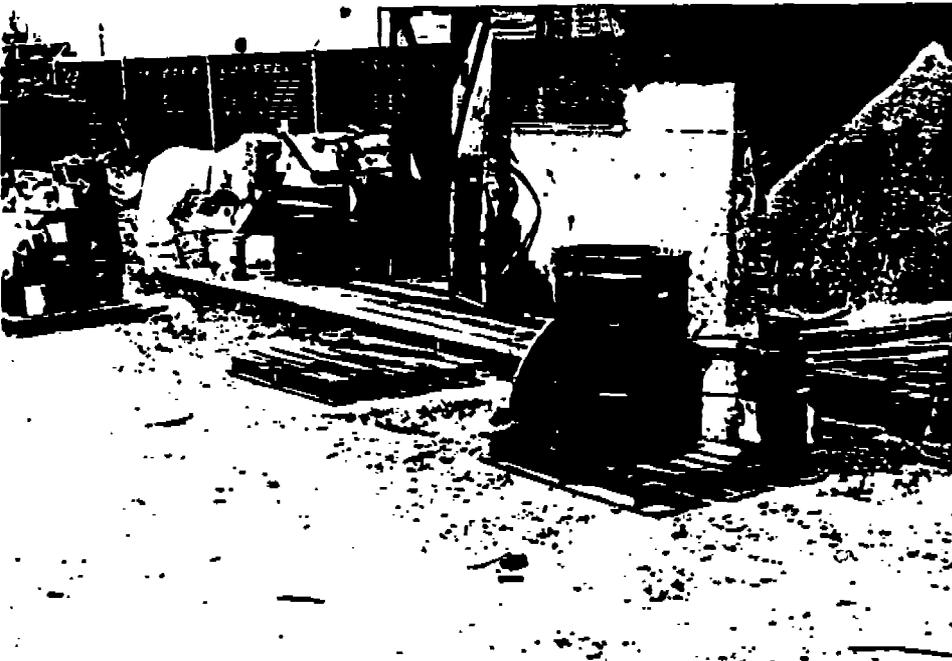
65. Assault craft unit 2 drum rack and tank area (SWMU 114) showing stains over small curbing.



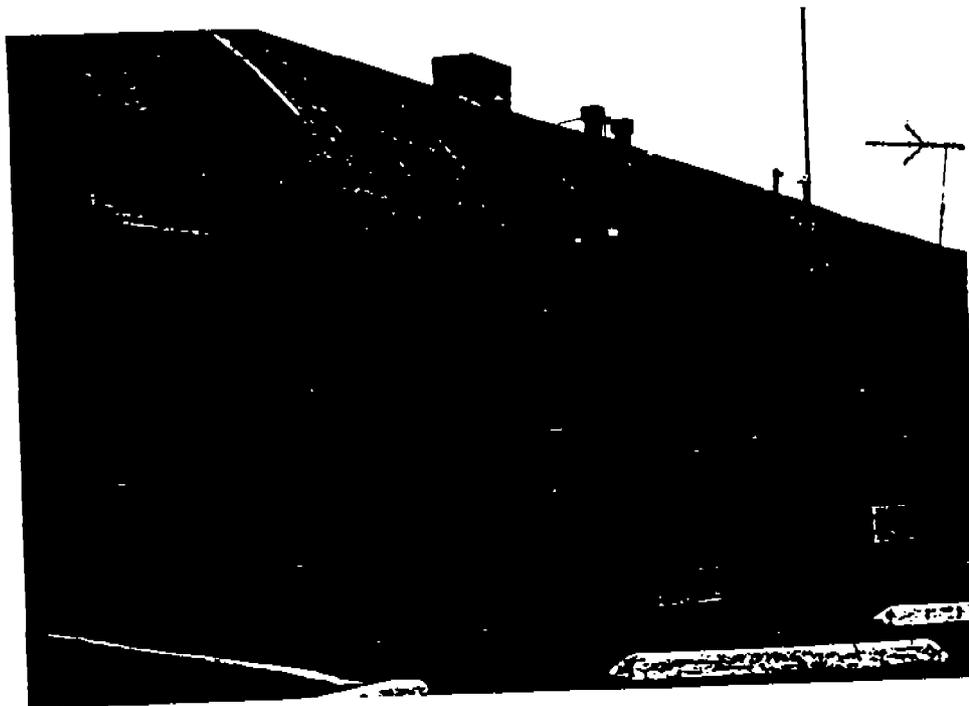
66. Closeup view of oil stains at assault craft unit 2 rack and tank area (SWMU 114).



67. Assault craft unit 2 fuel dispensing area (SWMU 115) showing broken concrete curbing and oil staining.



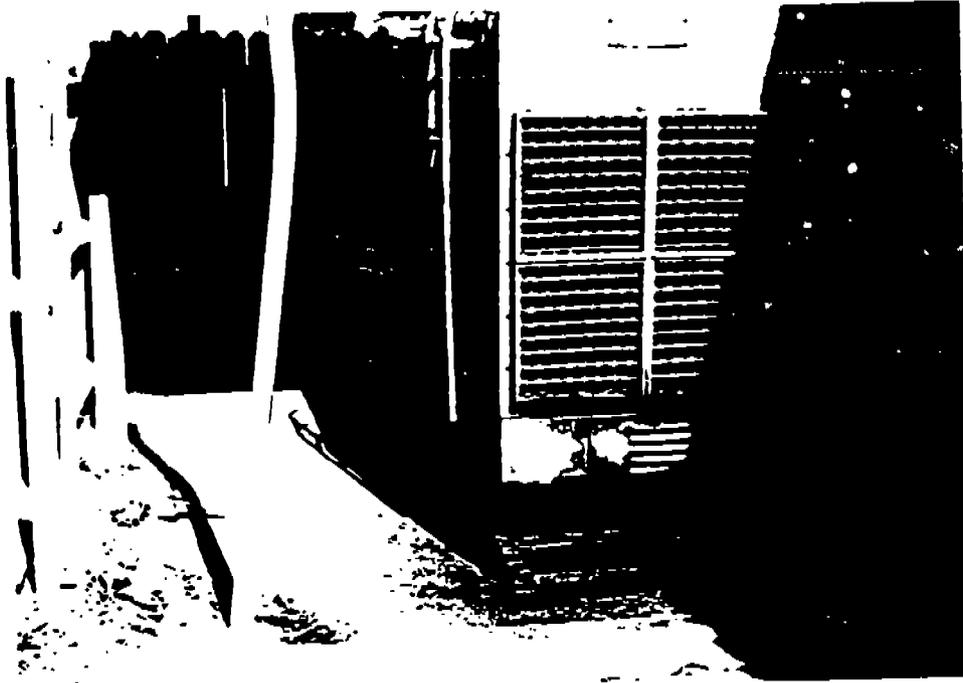
68. View of special boat unit battery storage area (SWMU 117) with staining present on the ground surface.



69. View of former special warfare group 2 electronics shop (SWMU 119).



70. Drums on wooden pallets at VC6 satellite accumulation point (SWMU 120) near Building 2074.



71. View of gymnasium emergency generator (SWMU 122) with leaks on pavement and grass surfaces.



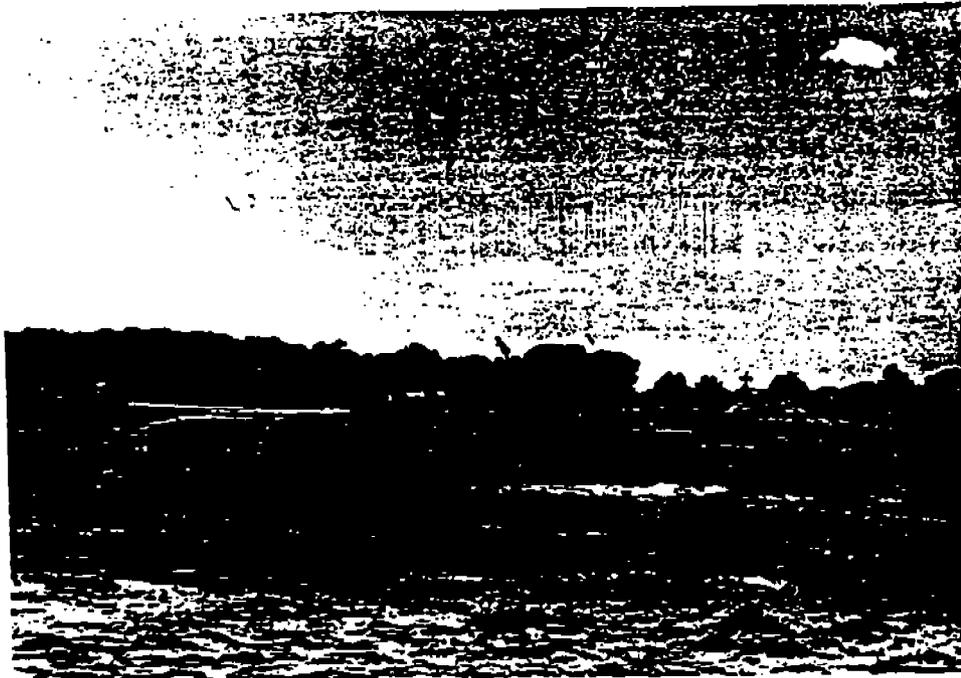
72. View of oil/water separator (SWMU 75) for engine overhaul shop, near Building 3896.



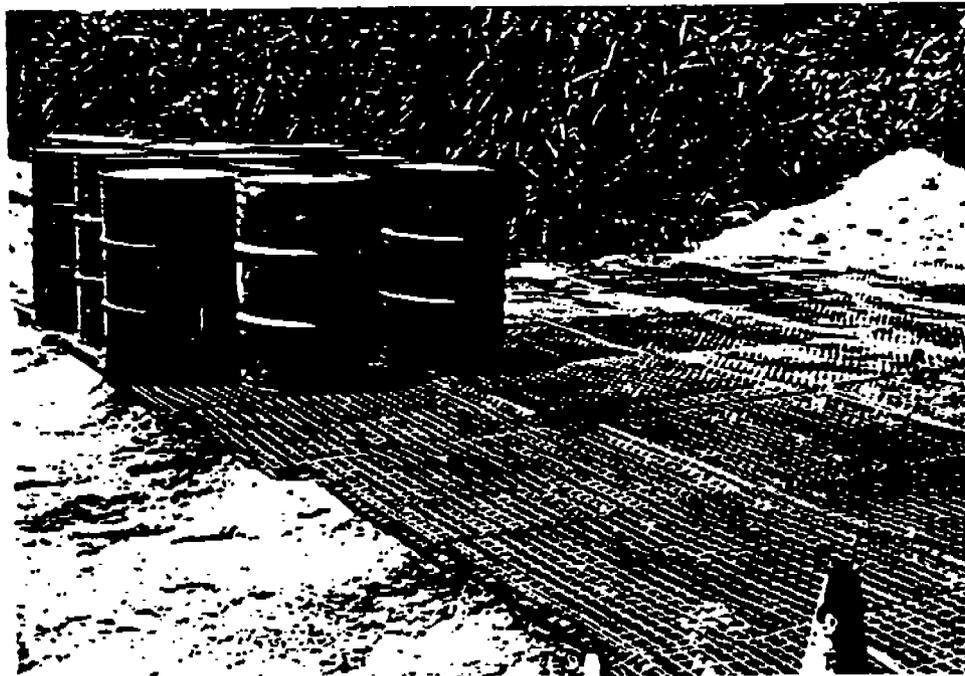
73. Dumpsters near Helicopter Road at the amphibious base landfill (SWMU 123). Unit is a NACIP study area.



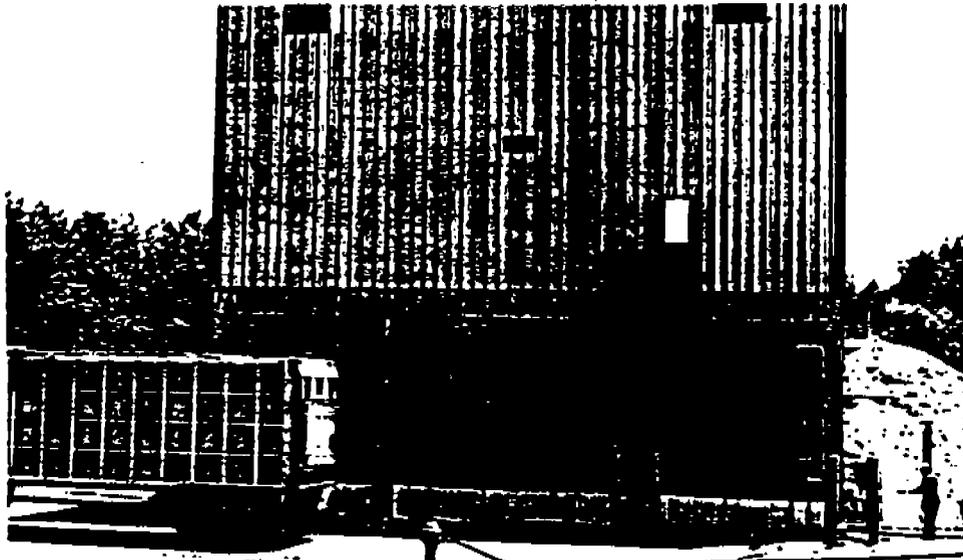
74. Scrap metal separation area (SWMU 124) located inside the amphibious base landfill (SWMU 123).



75. View of wood accumulation area (SWMU 125) at right of picture and located inside the amphibious base landfill (SWMU 123).



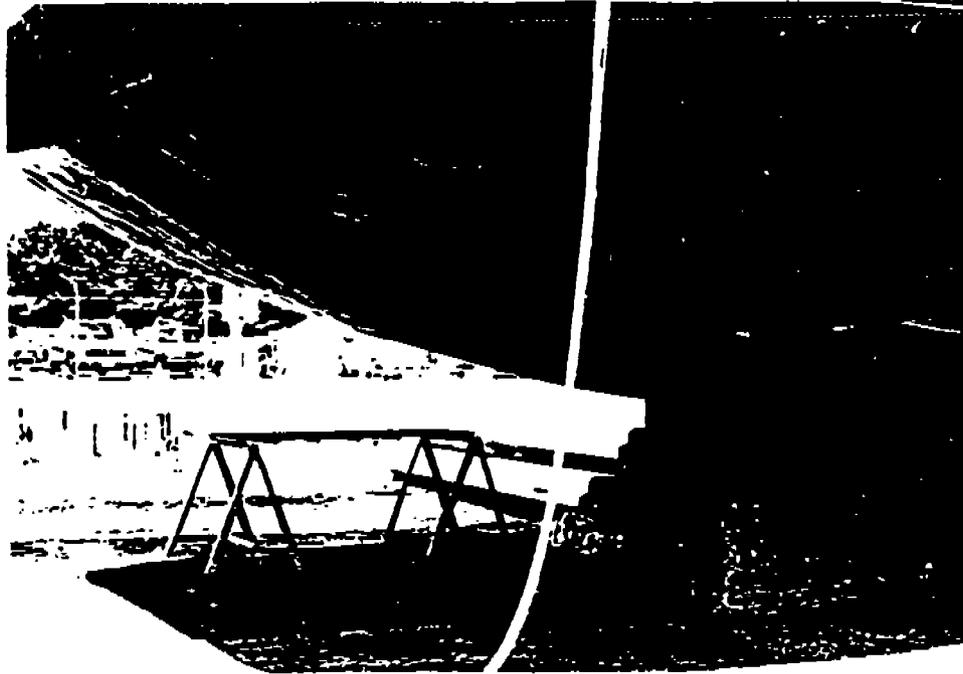
76. Drum turn-in staging area (SWMU 126) which is located inside the amphibious base landfill (SWMU 123).



77. Transfer station (SWMU 127) located inside the amphibious base landfill (SWMU 123).



78. View of lube oil dispensing area storm water drain (SWMU 128) in middle background.



79. Satellite accumulation point for paint wastes (SWMU 129) near Building 3896.



80. Boat painting area (SWMU 130) in the area of Building 3896.



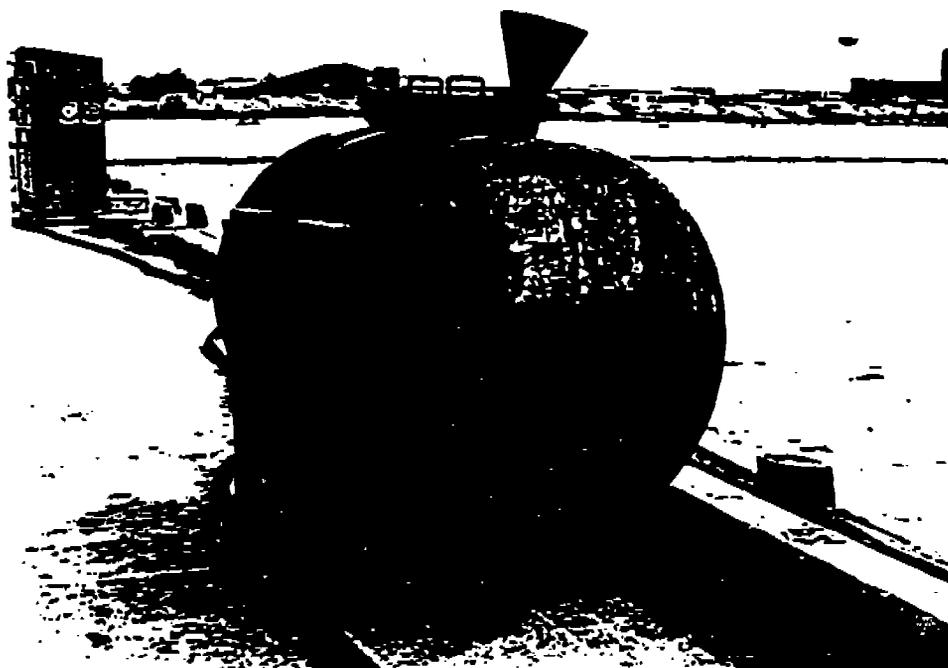
81. View of drums and cans at the satellite accumulation point for paint wastes (SWMU 131) near Building CB110.



82. Additional wastes in the satellite accumulation point for paint wastes (SWMU 131) near Building CB110.



83. Excess material storage area (SWMU 133) in the Building CB110 area.



84. View of portable waste tank (SWMU 134) located at the time on pier 57.



85. View of portion of mobile diving salvage unit II area (SWMU 136) located on pier 59.



86. Partial view of small boats sandblast yard (SWMU 137) in the area of pier 51.



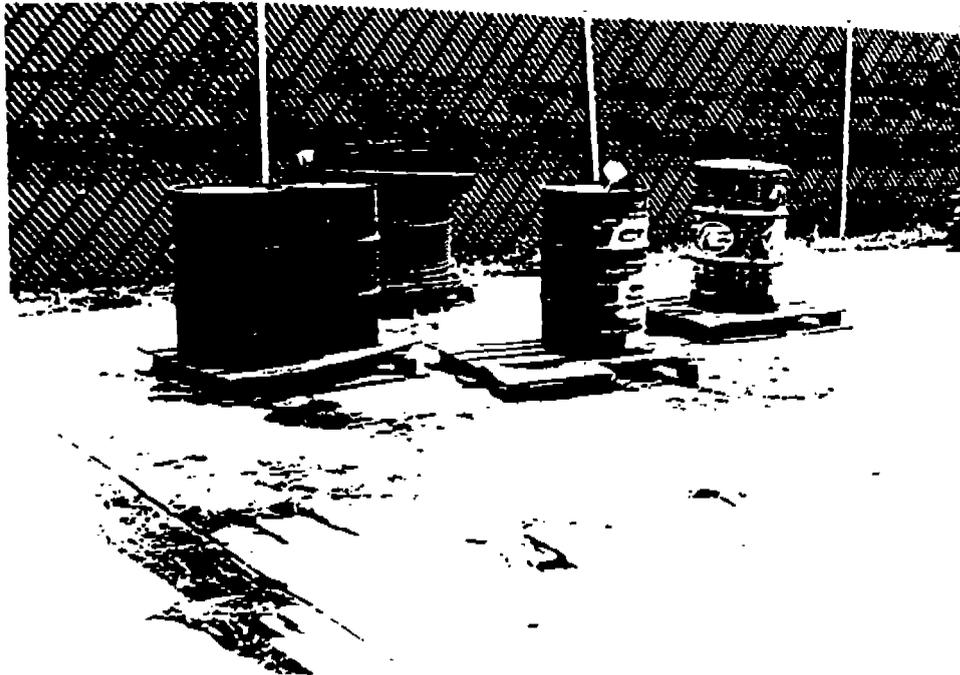
87. View facing south of small boats sandblast yard (SWMU 137) in the area of pier 51.



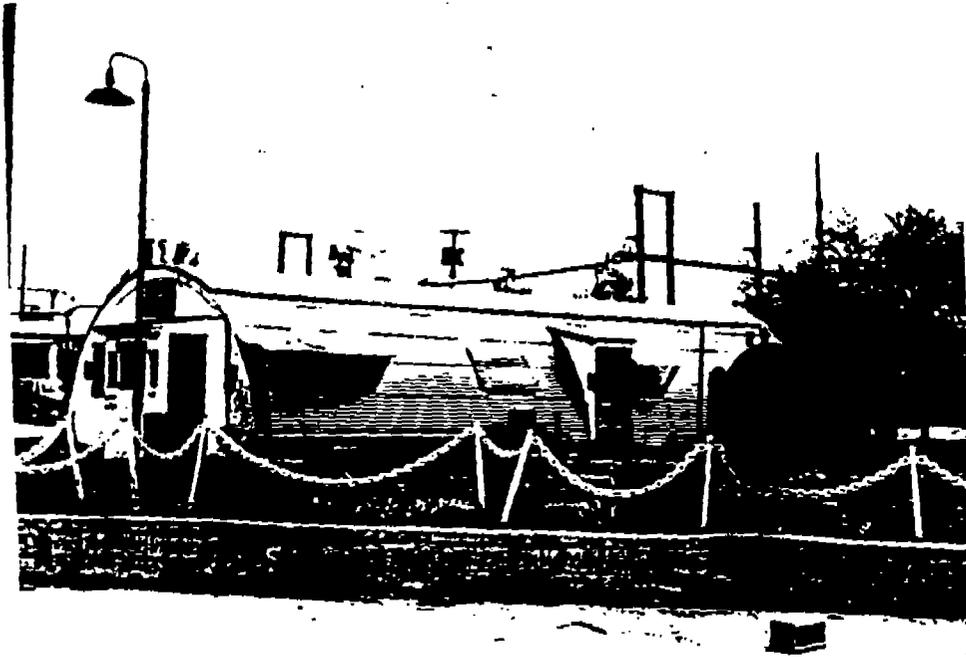
88. Leaking drums present near water at small boats sandblast yard (SWMU 137) in the area of Pier 51.



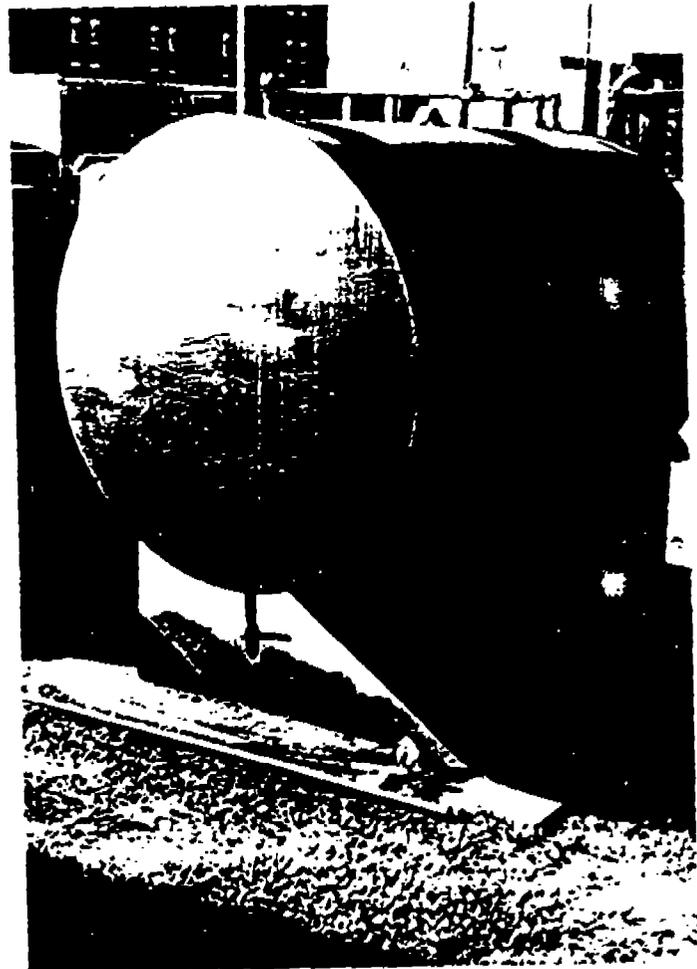
89. SEAL team 4 satellite accumulation point (SWMU 138) near Building 3806.



90. SEAL delivery vehicle 4 satellite accumulation point (SWMU 141) near Building 3806.



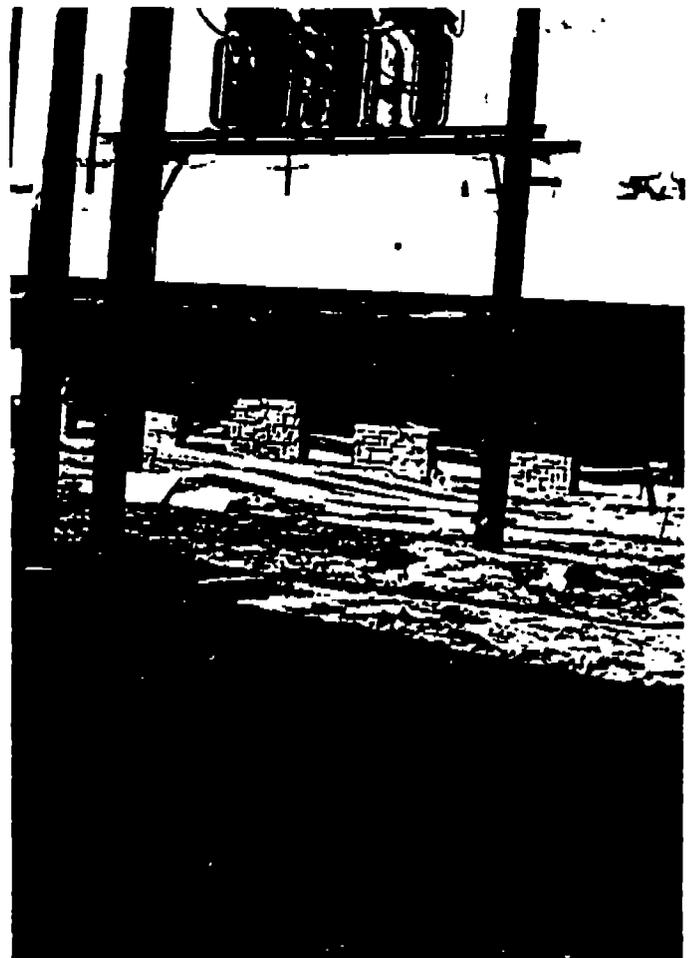
91. View of Building CB201, drums, and tank at the former seabee vehicle maintenance facility (SWMU 143).



92. View of leaking fuel oil tank (SWMU 145) at Fire Station 1, Building 3029.



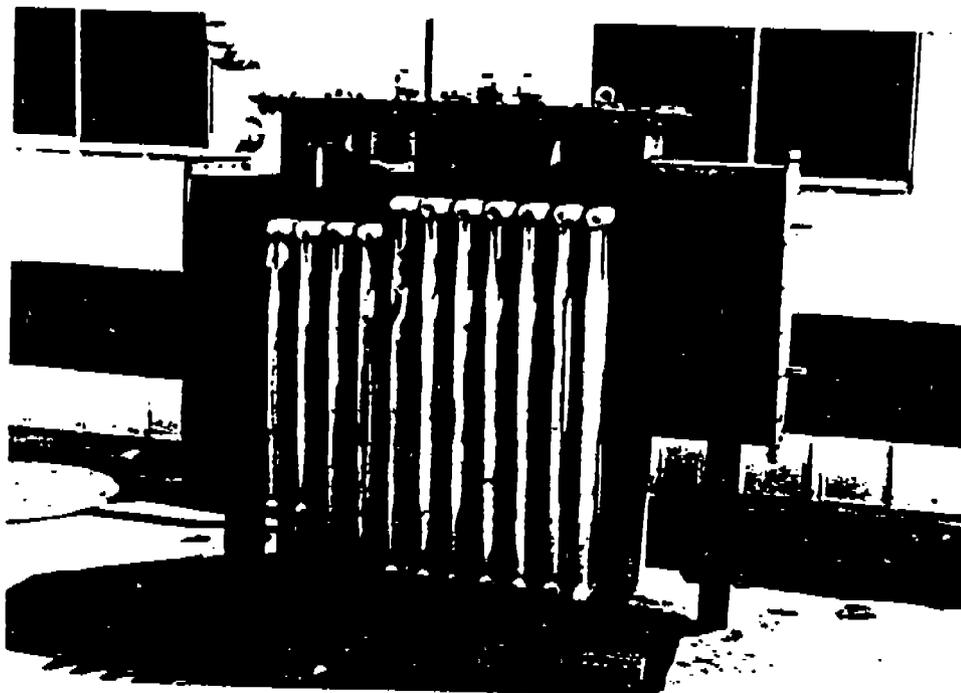
93. SEAL team 2 material storage area (SWMU 146) with leaks present. Unit is near Building 3813.



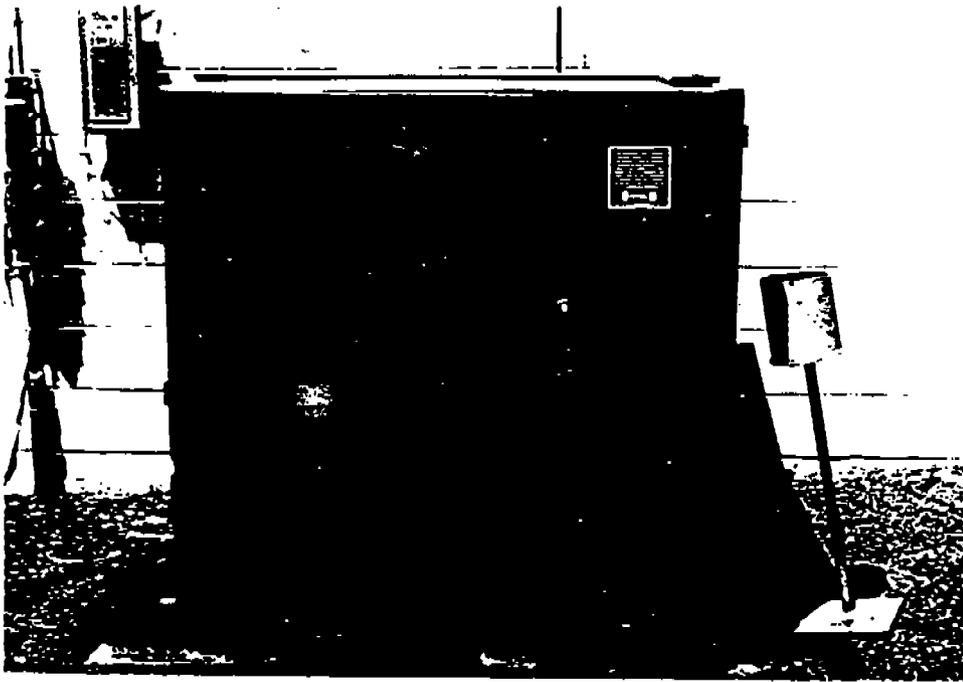
94. PCB capacitor leak (AOC A) location at Fire Station 1, Building 3029.



95. PCB capacitor leak (AOC B) location at pole 425 along Amphibious Drive.



96. Leaking PCB transformer (AOC C) at the PWD garage, Building 3661.



97. View of non-PCB transformer leak (AOC E) near Building 3896.



98. View of refrigeration compressor leak (AOC F) in the area of Pier 59.



99. View of leaking emergency generator (AOC G) adjacent to Fire Station 1. Building 3029.

ADDENDUM TO
REVISED PHASE II
RCRA FACILITY ASSESSMENT REPORT
NAVY AMPHIBIOUS BASE, LITTLE CREEK
NORFOLK, VIRGINIA

EPA I.D. No. VA 5170022482

Prepared for:

U.S. Environmental Protection Agency
Region III
841 Chestnut Street
Philadelphia, Pennsylvania

Prepared by:

A. T. Kearney, Inc.
225 Reinekers Lane
Alexandria, Virginia 22313

and

The Earth Technology Corporation
300 N. Washington Street
Alexandria, Virginia 22314

EPA Contract No. 68-01-7038
Work Assignment RO3-08-42

March 1989

ADDENDUM

Following a review of the August 1988 RCRA Facility Assessment of the Naval Amphibious Base, EPA provided comments by Sherman Latchaw and David Turner of EPA Region III, and Capt. P.A. Canady, Naval Amphibious Base - Little Creek.

The responses to these comments are provided below each comment. Where revisions were made in response to a comment, the revisions are documented. Where comments provided no additional information, this is stated in the addendum. No revisions were made to the original text where comments reflected a change in status of a particular unit from its status during the June 1988 site inspection; however the new status is noted in the addendum.

Some comments provide information which conflicts with information obtained or provided during the June 1988 site inspection. This situation is documented in the addendum with no revisions made to the original text. References to all information are provided within the text of the revised RFA Report.

RESPONSE TO COMMENTS
by Sherman Latchaw, EPA Region III

<u>Comment #</u>	<u>Page #</u>	<u>Comment/Suggested Revision</u>
1.	1, P2	Delete phrase "... and to determine the need for further action." <i>The phrase was deleted.</i>
	1, P3	Delete phrase "... and includes an evaluation of the collected data." <i>The phrase was deleted.</i>
	1, P3	Delete last sentence. <i>The sentence was deleted.</i>
	1	Delete last paragraph. <i>The paragraph was deleted.</i>
2.	5	Delete "degrees". <i>"Degrees" was deleted.</i>
3.	19	Where is discussion of freon cannisters? <i>Empty freon cannisters are turned in to the Public Works Department. The empty cannisters are recycled as scrap metal (i.e., non-hazardous).</i>
4.	32	Where is discussion of unit identified by J. Nevius? <i>The records of this unit appears in the VSI notes or the photolog; however the EPA representative recorded the presence of "a unit in the corner of the fenced area near the outdoor salvage shed. This unit had 3, 4 or 5 lids and inside was a greasy looking substance." A discussion of the lids has been added to the text of SWMU 6.</i>

RESPONSE TO COMMENTS
by Sherman Latchaw, EPA Region III (Continued)

<u>Comment #</u>	<u>Page #</u>	<u>Comment/Suggested Revision</u>
5.	33	<p>“References” needs alignment.</p> <p><i>“Reference” was aligned.</i></p>
6.		<p>Some of the reports go from page 44, to 94 to 96 to 49.</p> <p><i>The page numbers were corrected.</i></p>
7.	44	<p>Where is “Table 6”?</p> <p><i>The reference to Table 6 was deleted, since the text discussion adequately reviews the data in this table.</i></p>
8.	50	<p>“55-gallons” change to 55 gallons; “waste water” change to wastewater.</p> <p><i>The spelling and punctuation changes were made.</i></p>
9.	54	<p>“History of Releases” needs alignment.</p> <p><i>The alignment was corrected.</i></p>
10.	72	<p>“55 gallon” change to 55-gallon (twice); “water-wall” change to waterwall.</p> <p><i>The spelling and punctuation changes were made.</i></p>
11.	73	<p>“Startup” change to Start-up; do not discuss SWMU 92 and 93 here; “RELEASE CONTROLS” change to Release Controls.</p> <p><i>The spelling changes were made; the discussion of SWMU 92; and 93 was omitted from p. 73 and inserted on p. 74.</i></p>
12.	74	<p>“55 gallon” change to 55-gallon.</p> <p><i>The punctuation was corrected.</i></p>

RESPONSE TO COMMENTS
by Sherman Latchaw, EPA Region III (Continued)

<u>Comment #</u>	<u>Page #</u>	<u>Comment/Suggested Revision</u>
13.	77	<p>“Wastes Managed” information is missing.</p> <p><i>A discussion of wastes managed was inserted.</i></p>
14.	78	<p>“Reference” is missing.</p> <p><i>Reference 2 was added.</i></p>
15.	80	<p>“Startup” should be start-up.</p> <p><i>The punctuation was corrected.</i></p>
16.	81	<p>“Release Controls” is missing.</p> <p><i>A release controls section was added.</i></p>
17.	83	<p>“Startup” should be start-up.</p> <p><i>The punctuation was corrected.</i></p>
18.	85	<p>Should “Steam Plant” be inserted after “the” in the fourth line?</p> <p><i>“Steam Plant” was inserted in the fourth line.</i></p>
19.	89	<p>“Startup” should be start-up.</p> <p><i>The punctuation was corrected.</i></p>
20.	97	<p>Explain why SWMU 117 is a SWMU or AOC. Please determine how much gasoline was used and how long ago it was used.</p> <p><i>This is a SWMU because hazardous constituents were released to the environment deliberately and systematically. The discussion of this SWMU was expanded based on information supplied by facility personnel.</i></p>

RESPONSE TO COMMENTS
by Sherman Latchaw, EPA Region III (Continued)

<u>Comment #</u>	<u>Page #</u>	<u>Comment/Suggested Revision</u>
21.	104	<p>“Release Controls” is missing.</p> <p><i>A “Release Controls” section was added to the text which states that the unit sits on concrete pavement with no berms or drains.</i></p>
22.	106	<p>“Waste Managed” appears twice.</p> <p><i>The second reference on the page was deleted and “Release Controls” was added.</i></p>
23.	108	<p>“Waste Managed” appears twice.</p> <p><i>The second reference on the page was deleted and “Release Controls” was added.</i></p>
24.	120	<p>Is there a tank associated with SWMU 147?</p> <p><i>Based on VSI notes and photos, and conversations with facility personnel, no tanks are associated with the unit. The text was not altered.</i></p>
25.	150	<p>“Subsurface Gas” needs vertical spacing.</p> <p><i>Vertical spacing was added to the text.</i></p>
26.	168	<p>Delete phrase “... and provided a basis for suggested further action.”; remove reference to Letterkenney Army Depot; change “Nevlous” to Nevlus.</p> <p><i>The phrase was deleted; the reference to Letterkenny was removed and Naval Amphibious Base, Little Creek was inserted; and the name spelling was corrected.</i></p>
27.		<p>Where are the trash dumpsters?</p> <p><i>SWMU 20, 21, 11, 81, 124, 125, and 132 contain discussions of trash dumpsters associated with the units. The text was not altered.</i></p>

RESPONSE TO COMMENTS
by Sherman Latchaw, EPA Region III (Continued)

<u>Comment #</u>	<u>Page #</u>	<u>Comment/Suggested Revision</u>
28.		<p>Was the car wash drainage to the creek (close to SWMU 30) eliminated? If so, why?</p> <p><i>The car wash drainage was not mentioned in the text. After discussing the area with facility personnel and revisiting the area during the VSI, it was determined that the drainage should not be included in the RFA report because no hazardous constituents are being released from the car wash via the drainage ditch.</i></p>

RESPONSE TO COMMENTS
by David Turner, EPA Region III

1. 5 Hurricane Gloria occurred in 1985, not 1987.

The date was corrected.
2. 17 According to base personnel, the paint contaminated wastes associated with the Paint Shop Waterwall were tested and found to be non-hazardous. Are their test results available?

The test results were provided by the facility and are presented in Exhibit 1.
3. 19 Have stains been observed around either SWMU 6 or 7?

Photographs and notes taken during the VSI do not record stains or releases. The discussion under "History of Releases" indicates that staining and signs of releases were not observed during the VSI. The text was not altered.
4. 23 Additional sampling of the building perimeter and surrounding areas is suggested to characterize the extent of contamination.

Text referring to additional sampling was added.
5. 25 The drains and underground piping networks associated with these SWMUs should be included in future investigations for their integrity and transport features.

Since these SWMUs are currently being investigated under the Navy's Superfund program (NACIP), no further actions are recommended and the further actions text was not revised.
6. 31 Are there any records available on the transformers indicating the quantities leaked or spilled?

No records are available.

RESPONSE TO COMMENTS
by David Turner, EPA Region III (Continued)

7. 144 Indicate the appropriate constituents for analysis of samples collected.

Additional text was provided to call for analysis of volatile and semi-volatile organic compounds.

RESPONSE TO COMMENTS
by **Capt. P.A. Canady, Naval Amphibious Base, Little Creek**

1. Title Page Correct name of installation is Naval Amphibious Base, Little Creek.

The title page was corrected.

2. 1, P3 Naval Amphibious Base does not have active landfills.

This paragraph does not discuss the base's current or past waste management practices. Therefore, the text in this paragraph was not altered.

3. 4, P1 Hazardous wastes are removed by private contractors to the Defense Reutilization and Marketing Office (DRMO). The Part B permit was submitted to VDWM on September 22, 1988.

The text was amended to state that wastes are removed by private contractors to the DRMO. The information regarding the Part B permit submitted was included in the text.

4. 4, P4 The second round of the Confirmation Study (RI/FS) is scheduled to commence Summer, 1989.

The existing text is accurate; no changes were made to the text.

5. 13 These tanks (SWMU 31) are not leaking and are surrounded by a concrete berm.

The tanks are surrounded by a concrete berm and were leaking during the VSI. The text was not altered.

6. 14 "Short" should be Shore.

The spelling was corrected.

RESPONSE TO COMMENTS

**by Capt. P.A. Canady, Naval Amphibious Base, Little Creek
(Continued)**

7. 19 SWMU 7 is not designated HW Satellite Accumulation Area in the Hazardous Waste Program. Paints, solvents, and pesticides are collected in this area in quantities too small to justify this area being controlled as a HW Satellite Accumulation Area.
- The hazardous waste program may need to be revised to include this unit, since the wastes are accumulated on a temporary basis at satellite locations (i.e., less than 90 days). The text was not altered.*
8. 20 Oil stains have been removed from the concrete and curb. Oil stained soil has been removed.
- Since the purpose of the RFA is to report and document conditions at the time of the VSI, the text was not altered.*
9. 21 SWMU 11 has been removed; oil contaminated soil has been removed and the area has been asphalted.
- Since the purpose of the RFA is to report and document conditions at the time of the VSI, the text was not altered.*
10. 29 The Old Pole Yard was closed October 1988. PCB, PCB-contaminated transformers and those undergoing analysis have been moved to building 110 -- the PCB storage building; all non-PCB transformers have been moved to a fenced, secured asphalt area adjacent to building 3165. Drums of virgin oil shown in Photo #9 have also been moved to this area. All stains have been removed from the asphalt in the Old Pole Yard.
- Since the purpose of the RFA is to report and document conditions at the time of the VSI, the text was not altered.*
11. 31 SWMU 17 -- This lumber is not PCP- treated. There are no plans to use this area for transformer storage in the future.
- The text was altered to incorporate this information.*

RESPONSE TO COMMENTS
by Capt. P.A. Canady, Naval Amphibious Base, Little Creek
(Continued)

12. 33 The stained soil at SWMU 18 has been removed.

Paint booth filters are placed in a dumpster and hauled off site to a privately owned landfill. The public Works Department Transportation Garage does not use lead paint. As previously stated, the Amphibious Base Landfill is used only as a staging area. Waste Burial at the landfill ceased in 1979.

SWMU 21 -- These oil drums and oil contaminated soil have been removed and disposed. The curbed drum storage area has a concrete base.

Since the purpose of the RFA is to report and document conditions at the time of the VSI, the text was not altered to reflect removal of stained soil.

The discussion of paint booth filter waste management was revised per this comment. The discussion of wastes managed did not refer to lead-based paints; the text was not altered. Text was added to indicate that the landfill is used as a staging area.

Because the unit does not appear to have a concrete base (see Photograph 20), the text was not altered.

13. 34 The soil removed from the sand bunker, which was placed in a pile that is lined and covered with plastic, has been declared a waste pile by the Commonwealth of Virginia, Department of Waste Management. Waste pile closure will begin in accordance with stipulations in the Virginia Waste Management Board Enforcement Order (yet to be received by Naval Amphibious Base Little Creek).

The "Description" and "Release Controls" sections discussing the waste pile were changed to add the plastic liner. The Closure Date discussion was also altered per this comment.

14. 47 SWMU 29 and 61 have been drained and removed.

Since the purpose of the RFA is to report and document conditions at the time of the VSI, the text was not altered per this comment.

RESPONSE TO COMMENTS
by Capt. P.A. Canady, Naval Amphibious Base, Little Creek
(Continued)

15. 48 This tank does not leak systematically -- stains observed were due to a one time overflow.
- The phrase "on what appears to be a routine and systematic basis" was deleted from the text.*
16. 49 The two 55-gallon drums inside the bermed area are used for waste oil collection. These drums, as well as the bermed area, are frequently pumped by a vacuum truck. Oil and water collected by the vacuum truck are disposed as waste oil.
- The "Wastes Managed" section was revised to add the contents of the two 55-gallon drums. A discussion of the waste management practices was added to the "Description" section.*
17. 50 SWMU 33 contains gasoline- contaminated water only, no waste oil is stored in drums at this site.
- Since the text accurately discusses this, no change was made to the text.*
18. 55 SWMU 35 -- Stained soils surrounding the tank fill pipe have been removed and disposed.
- Since the purpose of the RFA is to report and document conditions at the time of the VSI, the text was not altered.*
19. 58 SWMU 76 -- Both indoor and outdoor storage areas have been in operation since 1980.
- Soil sample analyses revealed high oil and grease content; consequently, twelve inches of soil were removed from the outside storage area. This site will be resampled and analyzed for formal closure.
- Text was added to the Start-up Date Section.*
- Since the purpose of the RFA is to report and document conditions at the time of the VSI, the text was not altered per this portion of the comment.*

RESPONSE TO COMMENTS
by Capt. P.A. Canady, Naval Amphibious Base, Little Creek
(Continued)

20. 64 SWMU 79 -- All items have been removed from this area and it is no longer used as a scrap yard.

Since the purpose of the RFA is to report and document conditions at the time of the VSI, the text was not altered.

21. 72 SWMU 91 is not a designated Satellite Accumulation Area in the Hazardous Waste Program.

The hazardous waste program may need to be revised to include this unit, since the wastes are accumulated on a temporary basis at satellite locations (i.e., less than 90 days). The text was not altered.

22. 75 SWMU 96 and 97 -- Oil stained soil has been removed.

Oil is precluded from entering the storm drain (SWMU 97).

Since the purpose of the RFA is to report and document conditions at the time of the VSI, the text was not altered per this portion of the comment.

During the VSI, no controls were in place to preclude oil from entering the storm drain. The text was not altered.

23. 79 SWMU 100 drains to an underground storage tank and does not discharge to a storm drain.

The text was revised to incorporate this information.

24. 80 The correct acronym for Beachmaster Unit 2 is BMU-2.

The stained soil in this area has been removed.

The acronym was changed in the text.

Since the purpose of the RFA is to report and document conditions at the time of the VSI, the text was not altered regarding removal of the stained soil.

RESPONSE TO COMMENTS
by Capt. P.A. Canady, Naval Amphibious Base, Little Creek
(Continued)

25. 81 An oil recovery project has been initiated in this area. Monitoring and recovery wells are in operation.

Photographs # 44, 45 and 46 are not photos of SWMU 102.

The text was altered to incorporate information about the fuel recovery project since it was in place during the VSI.

Reference to Photos 44, 45 and 46 was deleted.

26. 83 SWMU 103 is the same SWMU as SWMU 135.

The SWMU 103 discussion was deleted and the SWMUs were renumbered.

27. 91 SWMU 112 -- This sand blasting material has been removed and will continue to be removed periodically, as it is accumulated. This area has been bermed and best management practices have been initiated to preclude storm water runoff of sand blast material into Little Creek Channel.

The text notes that the sand blasting material is removed by the PWD for off-site disposal. Since the purpose of the RFA is to report and document conditions at the time of the VSI, the text was not altered regarding the berm and runoff.

29. 94 Soil in this area will be sampled and analyzed for grease and oil content; the necessity and extent of remedial action will be based on analyses results.

Since the purpose of the RFA is to report and document conditions at the time of the VSI, the text was not altered.

RESPONSE TO COMMENTS
by Capt. P.A. Canady, Naval Amphibious Base, Little Creek
(Continued)

30. 99 Three monitoring wells will be installed in this area January, 1989. Samples will be taken from these wells to determine if petroleum product is present in groundwater and if it migrates from this area. Soil samples will be taken and analyzed to establish a clean up protocol for this area.
- Since the purpose of the RFA is to report and document conditions at the time of the VSI, the text was not altered.*
31. 104 This generator was removed October, 1988.
- Since the purpose of the RFA is to report and document conditions at the time of the VSI, the text was not altered.*
32. 106 SWMU 127 -- Oil stained soil has been removed.
- Since the purpose of the RFA is to report and document conditions at the time of the VSI, the text was not altered.*
33. 108 SWMU 132 -- Paint stained soil has been excavated and removed.
- Since the purpose of the RFA is to report and document conditions at the time of the VSI, the text was not altered.*
34. 110 SWMU 136 -- Hydraulic fluid has been cleaned up.
- Since the purpose of the RFA is to report and document conditions at the time of the VSI, the text was not altered.*
35. 112 SWMU 139 -- The concrete in this area has been removed to allow for new construction. The satellite storage area has been relocated away from the storm drain.
- Since the purpose of the RFA is to report and document conditions at the time of the VSI, the text was not altered.*

RESPONSE TO COMEMNTS
by Capt. P.A. Canady, Naval Amphibious Base, Little Creek
(Continued)

36. 114 SWMU 142 -- The concrete in this area has been removed to allow for new construction. The satellite storage area has been relocated in an area away from the storm drain.
- Since the purpose of the RFA is to report and document conditions at the time of the VSI, the text was not altered.*
37. 116 This area is currently being demolished. The underground storage tank has been removed.
- Since the purpose of the RFA is to report and document conditions at the time of the VSI, the text was not altered.*
38. 122 A. This area will be resampled and analyzed for PCB contamination. Remedial Action will be taken based on analytical results.
- C. This is a non-PCB transformer. Leaks on the concrete near the transformer at building 3661 have been removed.
- D. This transformer has been removed and disposed off base.
- The text was corrected to state that a non-PCB transformer is present.*
- Since the purpose of the RFA is to report and document conditions at the time of the VSI, the text was not altered with regard to sampling, removal, and disposal comments.*
39. 123 F. This trailer was only in temporary use on Pier 59. The trailer has been removed and the spill has been cleaned up.
- Since the purpose of the RFA is to report and document conditions at the time of the VSI, the text was not altered.*