

N61165.AR.003455  
CNC CHARLESTON  
5090.3a

INTERIM MEASURE COMPLETION REPORT FOR SOIL AND LIGHT NON-AQUEOUS  
PHASE LIQUID REMOVAL SOLID WASTE MANAGEMENT UNIT 17 (SWMU 17) ZONE H  
CNC CHARLESTON SC  
5/27/2005  
CH2M HILL

# INTERIM MEASURE COMPLETION REPORT

## Soil and LNAPL Removal SWMU 17, Zone H



***Charleston Naval Complex  
North Charleston, South Carolina***

SUBMITTED TO  
***U.S. Navy Southern Division  
Naval Facilities Engineering Command***

*CH2M Jones*

*May 2005*

*Contract N62467-99-C-0960*



CH2M HILL

3011 SW Williston Road

Gainesville, FL 32608-3928

P.O. Box 147009

Gainesville, FL 32614-7009

Tel 352.335.7991

Fax 352.335.2959

May 27, 2005

Mr. David Scaturro  
Division of Hazardous and Infectious Wastes  
South Carolina Department of Health and  
Environmental Control  
Bureau of Land and Waste Management  
2600 Bull Street  
Columbia, SC 29201

Re: Soil and LNAPL Removal Interim Measure Completion Report (Revision 1) – SWMU  
17, Zone H

Dear Mr. Scaturro:

Enclosed are two copies of the Soil and LNAPL Removal Interim Measure Completion Report (Revision 1) for SWMU 17 in Zone H of the Charleston Naval Complex (CNC). This report has been prepared pursuant to agreements by the CNC BRAC Cleanup Team for completing the RCRA Corrective Action process.

Please contact me at 352/335-5877, extension 2280, if you have any questions or comments.

Sincerely,

CH2M HILL

A handwritten signature in black ink, appearing to read "Dean Williamson".

Dean Williamson, P.E.

cc: Dann Spariosu/USEPA, w/att  
Rob Harrell/Navy, w/att  
Gary Foster/CH2M HILL, w/att

# CH2MHILL TRANSMITTAL

**To:** David Scaturo  
South Carolina Department of Health  
and Environmental Control  
Bureau of Land and Waste  
Management  
8901 Farrow Road  
Columbia, SC 29203

**From:** Dean Williamson/CH2M-Jones

**Date:** May 19, 2004

**Re:** Figure 2-1 in the *Soil and LNAPL Removal Interim Measure Completion Report, SWMU 17, Zone H, Revision 0* – Submitted on April 6, 2004

**We Are Sending You:**

X	Attached	Under separate cover via	
	Shop Drawings	Documents	Tracings
	Prints	Specifications	Catalogs
	Copy of letter	Other:	

---

Quantity	Description
2	Missing Figure 2-1 (page 2-9) and replacement pages IV and V of the Contents in the <i>Soil and LNAPL Removal Interim Measure Completion Report, SWMU 17, Zone H, Revision 0</i> – Submitted on April 6, 2004

---

If material received is not as listed, please notify us at once.

**Copy To:**

Dann Spariosu/USEPA, w/att  
Rob Harrell/Navy, w/att  
Gary Foster/CH2M-Jones, w/att



**CH2MHILL**

**CH2M HILL**  
115 Perimeter Center Place, NE  
Suite 700  
Atlanta, GA 30346-1278  
Tel 770.604.9095  
Fax 770.604.9282

April 6, 2004

Mr. David Scaturo  
Division of Hazardous and Infectious Wastes  
South Carolina Department of Health and  
Environmental Control  
Bureau of Land and Waste Management  
2600 Bull Street  
Columbia, SC 29201

Re: Soil and LNAPL Removal Interim Measure Completion Report (Revision 0) – SWMU  
17, Zone H

Dear Mr. Scaturo:

Enclosed are two copies of the Soil and LNAPL Removal Interim Measure Completion Report (Revision 0) for SWMU 17 in Zone H of the Charleston Naval Complex (CNC). This report has been prepared pursuant to agreements by the CNC BRAC Cleanup Team for completing the RCRA Corrective Action process.

Please contact me at 352/335-5877, extension 2280, if you have any questions or comments.

Sincerely,

CH2M HILL

A handwritten signature in cursive script, appearing to read "Dean Williamson".

Dean Williamson, P.E.

cc: Rob Harrell/Navy, w/att  
Gary Foster/CH2M HILL, w/att

# INTERIM MEASURE COMPLETION REPORT

## Soil and LNAPL Removal SWMU 17, Zone H



***Charleston Naval Complex  
North Charleston, South Carolina***

SUBMITTED TO  
***U.S. Navy Southern Division  
Naval Facilities Engineering Command***

PREPARED BY  
***CH2M-Jones***

***May 2005***

Revision 1  
Contract N62467-99-C-0960  
158814.ZH.EX.09

## Certification Page for Soil and LNAPL Interim Measure Completion Report (Revision 1) – SWMU 17, Zone H

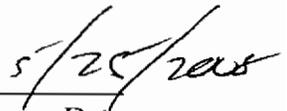
I, Dean Williamson, certify that this report has been prepared under my direct supervision. The data and information are, to the best of my knowledge, accurate and correct, and the report has been prepared in accordance with current standards of practice for engineering.

South Carolina

P.E. Number 21428



Dean Williamson, P.E.



Date

# 1 Contents

---

2 Section	Page
3 <b>Acronyms and Abbreviations .....</b>	<b>vi</b>
4 <b>1.0 Introduction.....</b>	<b>1-1</b>
5     1.1 Background .....	1-1
6     1.2 Interim Measure Completion Report Organization .....	1-2
7 <b>2.0 Interim Measure Implementation for Soils.....</b>	<b>2-1</b>
8     2.1 Media Cleanup Standards for Polychlorinated Biphenyl-Impacted Soil .....	2-1
9     2.2 Pre-Excavation Confirmation Soil Sampling .....	2-2
10     2.3 Soil Analytical Results .....	2-3
11         2.3.1 Target Excavation Area At H017SB006 .....	2-3
12         2.3.2 Target Excavation Area At H017SB020 .....	2-3
13         2.3.3 Target Excavation Area At H017SB002 .....	2-4
14         2.3.4 Target Excavation Area At LH037SB013.....	2-4
15         2.3.5 Summary.....	2-4
16     2.4 Conclusions .....	2-5
17 Table 2-1 Pre-Excavation Soil Sample Analytical Results.....	2-6
18 Table 2-2 Subsurface PCBs Detected, 2002 Soil Confirmation Sampling .....	2-8
19 Figure 2-1 Aroclor 1260 Results in Surface Soil.....	2-9
20 <b>3.0 Interim Measure Implementation for Light Non-Aqueous Phase Liquid .....</b>	<b>3-1</b>
21     3.1 Background .....	3-1
22     3.2 Implementation of Aggressive Fluid Vapor Recovery.....	3-2
23         3.2.1 Conclusions .....	3-3
24     3.3 Dense Non-Aqueous Phase Liquid Recovery .....	3-3
25     3.4 Waste Management and Disposal.....	3-3
26 Table 3-1 Historical NAPL Thickness Measured at SWMU 17 .....	3-5
27 Figure 3-1 Extent of NAPL - January 2000.....	3-6
28 Figure 3-2 Extent of NAPL - January 2003.....	3-7

1 **Contents, Continued**

---

2 **4.0 Conclusions From Interim Measure Activities.....4-1**  
3 4.1 Polychlorinated Biphenyl Soil Sampling.....4-1  
4 4.2 Non-Aqueous Phase Liquid Recovery Activities.....4-1  
5 **5.0 References .....5-1**

6

7 **Appendices**

8 **A** Excerpts from the SWMU 17 IM Work Plan  
9 **B** Analytical Data Sheets for Confirmation Samples  
10 **C** Photographs for Confirmation Soil Sampling  
11 **D** Data Sheets for AFVR Events  
12 **E** Well Construction Drawings for New Recovery Wells  
13 **F** Waste Disposal Manifests  
14 **G** Well Development Logs  
15 **H** Responses to SCHDEC Comments on the Revision 0 IMCR for SWMU 17, Zone H

# 1 **Acronyms and Abbreviations**

---

2	AFVR	Aggressive Fluid Vapor Recovery
3	AST	aboveground storage tank
4	CA	corrective action
5	CNC	Charleston Naval Complex
6	CMS	corrective measures study
7	DNAPL	dense non-aqueous phase liquid
8	EnSafe	EnSafe Inc.
9	EPA	U.S. Environmental Protection Agency
10	EPC	exposure point concentration
11	FBM	Fleet Ballistic Missile
12	ft bls	feet below land surface
13	ILCR	Incremental Lifetime Cancer Risk
14	IM	interim measure
15	LNAPL	light non-aqueous phase liquid
16	MCS	media cleanup standard
17	mg/kg	milligrams per kilogram
18	NAPL	non-aqueous phase liquid
19	PCB	polychlorinated biphenyl
20	PPE	personal protective equipment
21	RCRA	Resource Conservation and Recovery Act
22	RFI	RCRA Facility Investigation
23	SCDHEC	South Carolina Department of Health and Environmental Control
24	SVOC	semivolatile organic compound
25	SWMU	solid waste management unit
26	TSCA	Toxic Substance Control Act
27	VOC	volatile organic compound

**Section 1.0**

---

# 1.0 Introduction

---

This Soil and Light Non-Aqueous Phase Liquid (LNAPL) Interim Measure (IM) Completion Report documents the activities and results for two separate IMs conducted at Solid Waste Management Unit (SWMU) 17 in Zone H at the Charleston Naval Complex (CNC). The first IM was implemented to address surface soils contaminated with Aroclor 1260. The second IM was implemented to evaluate the effectiveness of Aggressive Fluid Vapor Recovery (AFVR) for removal of LNAPL from the subsurface at SWMU 17. The IM activities were performed in accordance with the June 2001 *Interim Measure Work Plan, Soil and NAPL Removal, Solid Waste Management Unit (SWMU) 17, Zone H (IM Work Plan)* (CH2M-Jones, 2001a).

## 1.1 Background

A Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI), a baseline risk assessment, and an RFI Addendum prepared by EnSafe Inc. (EnSafe) (EnSafe, 2000) were completed for SWMU 17 and submitted to the South Carolina Department of Health and Environmental Control (SCDHEC). Comments on the RFI and RFI Addendum were addressed by the Navy/EnSafe team and CH2M-Jones. Currently, the overall nature and extent of contamination is well-established for the site.

After approval of the RFI and RFI addendum, CH2M-Jones prepared a Corrective Measures Study (CMS) Work Plan for SWMU 17 (CH2M-Jones, 2001b). The CMS Work Plan was approved by SCDHEC in February 2002.

The next step in the RCRA corrective action (CA) program for SWMU 17 is the preparation of a CMS report, which will describe and evaluate various potential corrective measure alternatives for the contaminated media at SWMU 17. The IM activities for soil and LNAPL were conducted because CH2M-Jones considers these interim corrective measures to be appropriate actions that will reduce long-term risk at the site, and they can be implemented quickly and in a cost-effective manner.

SWMU 17 is located at Building Fleet Ballistic Missile (FBM) 61, which is a former FBM Training Center that was used by the Navy from 1962 until June 1996. It is leased by the U.S. Border Patrol and is used as a law enforcement training facility.

## 1 **1.2 Interim Measure Completion Report Organization**

2 This IM Completion Report consists of the following five sections, including this  
3 introductory section.

4 **1.0 Introduction** — Presents the purpose of the IM Completion Report and background  
5 information regarding the site.

6 **2.0 Interim Measure Implementation for Soils** — Provides a description of the  
7 polychlorinated biphenyl (PCB) soil media cleanup standards, pre-excavation confirmation  
8 sampling conducted for PCBs in soil, the analytical results, and conclusions.

9 **3.0 Interim Measure Implementation for Light Non-Aqueous Phase Liquid** — Provides a  
10 description of the LNAPL recovery approach using AFVR and results of AFVR activities.

11 **4.0 Conclusions** — Provides a summary of conclusions from these IM activities.

12 **5.0 References** — Lists the references used in this document.

13 **Appendix A** contains excerpts from the SWMU 17 IM Work Plan.

14 **Appendix B** contains analytical data sheets for confirmation samples.

15 **Appendix C** contains photographs for confirmation soil sampling.

16 **Appendix D** contains data sheets for AFVR events.

17 **Appendix E** contains well construction drawings for new recovery wells.

18 **Appendix F** contains waste disposal manifests.

19 **Appendix G** contains development logs for new wells installed at the site.

20 **Appendix H** contains CH2M-Jones' responses to SCDHEC comments on the *Soil and LNAPL*  
21 *Removal, Interim Measure Completion Report, SWMU 17, Zone H, Revision 0* (CH2M-Jones,  
22 2004).

23 All tables and figures appear at the end of their respective sections.



# 1 **2.0 Interim Measure Implementation for Soils**

## 2 **2.1 Media Cleanup Standards for Polychlorinated Biphenyl-** 3 **Impacted Soil**

4 Aroclor 1260 was reported in surface soil from both paved and unpaved areas at SWMU 17  
 5 at concentrations ranging between 0.036 J to 180 J milligrams per kilogram (mg/kg), as  
 6 shown in Figure 1-2 from the SWMU 17 IM Work Plan (shown in Appendix A). In the RFI  
 7 Report for SWMU 17, Aroclor 1260 was reported in paved areas at concentrations ranging  
 8 between 0.067 to 23.1 mg/kg, while Aroclor 1260 was reported in unpaved surface soil areas  
 9 at concentrations ranging between 0.036 J to 180 J mg/kg (see Table 2-1 from IM Work Plan  
 10 in Appendix A).

11 The media cleanup standards (MCSs) for Aroclor 1260, based upon potential risks from  
 12 exposure scenarios that could potentially occur at SWMU 17, were proposed in the CMS  
 13 Work Plan (CH2M-Jones, 2001b). MCSs proposed and agreed upon were:

Medium	Exposure Scenario	Aroclor 1260 MCS (mg/kg)
Surface soil	Unrestricted (residential), unpaved	1
Surface soil	Industrial, unpaved	10
Surface soil	Industrial, paved	57.4
Subsurface soil	Unpaved	15.7
Subsurface soil	Paved	57.4

14  
 15 Because SWMU 17 is in an area expected to be used for restricted land use, the 10 mg/kg  
 16 MCS is applicable for the site for unpaved surface soil. Pavement eliminates direct human  
 17 exposure to soils; therefore, soils in the paved areas are evaluated based on the leachability-  
 18 based MCS of 57.4. The MCS of 10 mg/kg for unpaved soil corresponds to an Incremental  
 19 Lifetime Cancer Risk (ILCR) of  $1 \times 10^{-5}$  for an industrial worker. The other industrial use soil  
 20 MCSs are based on site-specific soil screening levels (SSLs) for leachability to protect  
 21 groundwater under paved and unpaved conditions.

22 The soil excavation IM activities were developed to address surface soil that contains  
 23 Aroclor 1260 at concentrations above the unpaved surface soil MCS for Aroclor 1260 of 10

1 mg/kg. The IM Work Plan proposed pre-excavation sampling for delineation purposes and  
2 the excavation of soils with Aroclor 1260 at concentrations at or above 10 mg/kg for both  
3 unpaved and paved soils. This general approach was conservative since some of the  
4 locations where PCBs exceeded 10 mg/kg were in paved areas that are expected to remain  
5 paved.

## 6 **2.2 Pre-Excavation Confirmation Soil Sampling**

7 The IM Work Plan proposed conducting confirmation soil sampling prior to soil excavation  
8 to evaluate the extent of Aroclor 1260 detected at previous investigation sample locations  
9 that caused the exposure point concentration (EPC) to exceed the 10 mg/kg MCS (see IM  
10 Work Plan, Section 2.1). The following four previous soil samples had Aroclor 1260 detected  
11 above 10 mg/kg: LH037SB013, H017SB006, H017SB002, and H017SB020 (see Figure 2-1).

12 The first three sample locations are located under paved surfaces and, therefore, need to be  
13 only below the paved soil MCS (57.4 mg/kg) to meet the target MCSs. The fourth sample,  
14 H017SB020, was originally believed to have been located in an unpaved area, but, as noted  
15 below, was found during the confirmation sampling to have been collected from within the  
16 containment area near the aboveground storage tank (AST).

17 For the confirmation sampling, in general, a 10-foot by 10-foot sampling grid was planned  
18 to be positioned around each of the previous sampling locations where Aroclor 1260  
19 exceeded 10 mg/kg, with the previous sample locations in the center and the four  
20 confirmation samples collected at the four corners, from the 0 to 1-foot depth interval.

21 Confirmation surface soil samples were proposed for collection at the original sample  
22 locations. Subsurface samples were also collected at borings H017SB006 and H017SB020.

23 The location of the delineation and confirmation samples are also shown on Figure 2-1. The  
24 soil samples were analyzed for PCBs by U.S. Environmental Protection Agency (EPA)  
25 Method SW8082.

26 Due to physical obstructions (i.e., a building and newly installed AST), a 10-foot by 10-foot  
27 grid could not be positioned at previous sample location H017SB002 (see Photograph 1 in  
28 Appendix C). Instead, two samples (017SB044 and 017SB045) were collected in the vicinity  
29 of the previous sample location.

30 Also, at previous sample location LH037SB013, the confirmation sample could not be  
31 collected at the precise original location due to the presence of a new concrete pad installed  
32 at the original sample location (see Photograph 2 in Appendix C).

1 Previously, sample location H017SB020 was originally identified as being in the grass  
2 courtyard and in an unpaved area. However, during confirmation sampling, this location  
3 was found to be located beneath an asphalt surface of the secondary containment of an AST  
4 (Photographs 3 and 4 in Appendix C). Because of the presence of pavement, the original and  
5 pre-excitation sample results should be compared to the paved soil MCS. One of the four  
6 delineation samples (017SB050) from this area was collected in the grass area located outside  
7 of the secondary containment and will be compared to the unpaved soil MCS.

## 8 **2.3 Soil Analytical Results**

9 Analytical results of the surface soil samples for Aroclor 1260 are presented in Table 2-1.  
10 Analytical data sheets for the pre-excitation samples are presented in Appendix B.

### 11 **2.3.1 Target Excavation Area At H017SB006**

12 As summarized on Figure 2-1, the delineation and confirmation sampling at H017SB006 did  
13 not detect significant levels of Aroclor 1260. All detections of Aroclor 1260 in samples from  
14 this area were below 1 mg/kg, even at H017SB006 where the original sample was reported  
15 as containing Aroclor 1260 at a concentration of 18 mg/kg. No other PCBs were detected at  
16 this location. Based on these results, excavation or other corrective measures do not appear  
17 necessary for surface soil at this location, since the levels are below the unrestricted land use  
18 MCS of 1 mg/kg and the industrial MCS for surface soil of 10 mg/kg.

19 Subsurface detections of PCBs at H017SB006 during the 2002 sampling (Station H017SB051)  
20 are presented in Table 2-2. During the original RFI sampling in August 1994, Aroclor 1260  
21 was reported in the subsurface sample (3 to 5 feet below land surface [ft bls]) at a  
22 concentration of 245 mg/kg. The resampling at this location in August 2002 indicated an  
23 Aroclor concentration of 1.4 mg/kg. Aroclor 1242 and Aroclor 1254 were reported at  
24 concentrations of 0.026 J and 0.19 J mg/kg, respectively, in the August 2002 confirmation  
25 sampling. These concentrations are well below the unpaved and paved site-specific SSLs of  
26 15.7 and 57.4 mg/kg, respectively, indicating that soils in this area do not pose a leaching  
27 hazard even under unpaved conditions. No further corrective actions appear necessary for  
28 subsurface soil at this location of SWMU 17.

### 29 **2.3.2 Target Excavation Area At H017SB020**

30 Aroclor 1260 concentrations detected in all delineation samples and confirmation samples at  
31 H017SB020 were below 0.3 mg/kg. No other PCBs were detected at these sampling

1 locations. No further corrective measures appear to be necessary for surface soil at this  
2 location of SWMU 17.

3 For the subsurface soil sample collected at H017SB020 during the 1995 sampling (Station  
4 H017SB46), Aroclor 1260 was detected at a concentration of 2.7 mg/kg. The August 2002  
5 subsurface soil confirmatory sampling at this same location indicated the presence of  
6 Aroclor 1260 at a concentration of 0.13 mg/kg. No other PCBs were detected in these  
7 samples. No further corrective measures appear to be necessary at this location for  
8 subsurface soil.

### 9 **2.3.3 Target Excavation Area At H017SB002**

10 The two samples collected near sample H017SB002 had Aroclor 1260 concentrations of 3.4  
11 and 36 mg/kg. These concentrations are below the paved soil MCS of 57.4 mg/kg. Because  
12 this area is expected to remain paved in the future, no further remediation in this area is  
13 necessary at this time.

### 14 **2.3.4 Target Excavation Area At LH037SB013**

15 The three samples collected near sample LH037SB013 had Aroclor 1260 concentrations of  
16 0.65, 2.2, 5.6, and 32 mg/kg. These concentrations are below the paved soil MCS of 57.4  
17 mg/kg. Because this area is expected to remain paved in the future, no further remediation  
18 in this area is necessary at this time.

### 19 **2.3.5 Summary**

20 As summarized in Table 2-1, Aroclor 1260 was not detected at a concentration above the  
21 paved soil industrial MCS in the 2002 confirmation soil samples. The single sample collected  
22 in an unpaved area (017SB050) had an Aroclor 1260 concentration of 0.21 J mg/kg, which is  
23 well below the unpaved MCS of 10 mg/kg.

24 A review of the previous investigation analytical results (see Appendix A) indicates that  
25 there was only a single exceedance of the paved soil industrial MCS (57.4 mg/kg); Aroclor  
26 1260 was reported in previous sample H017SB020 at a concentration of 180 mg/kg.  
27 However, the confirmation sampling results in the vicinity of H017SB020 did not detect  
28 Aroclor 1260 above 1.4 mg/kg. Thus, the Aroclor 1260 detection of 180 mg/kg appears to be  
29 an isolated result, and a significant source of PCBs is not present.

## 1 2.4 Conclusions

2 The IM Work Plan proposed excavation of soil with Aroclor 1260 at concentrations above 10  
3 mg/kg for both unpaved and paved areas. However, because of newly constructed facilities  
4 and the presence of existing underground utilities and aboveground facilities in the vicinity  
5 of samples H017SB002 and LH037SB013, excavation of soil in this area was determined to be  
6 impracticable. Based on the pre-excavation and confirmation sampling, none of the soil  
7 samples in this area exceed the paved soil MCS for industrial land use. The pavement is  
8 expected to remain present at SWMU 17 for the foreseeable future. Therefore, excavation of  
9 soil is not necessary as long as the pavement is present.

10 Also, based on the pre-excavation and confirmation sample analytical results, detections of  
11 Aroclor 1260 in soil samples collected at SWMU 17 are below the industrial surface soil MCS  
12 (10 mg/kg) in the unpaved areas. Therefore, excavation of soil is not necessary in the  
13 unpaved areas at SWMU 17. During the CMS, the use of institutional controls to maintain  
14 the presence of the pavement as a cover will be evaluated.

1

**TABLE 2-1**  
 Pre-Excavation Soil Sample Analytical Results  
 Soil and LNAPL IM Completion Report, SWMU 17, Zone H, Charleston Naval Complex

Sample Location	Sample Interval (feet bls)	Date Collected	Aroclor 1260 Concentration (mg/kg)	Comment
H017SB002	0 - 1	Aug 16, 1994	23.1 J	Previous Investigation Sample Location
H017SB006	0 - 1	Aug 16, 1994	18 J	Previous Investigation Sample Location
H017SB020	0 - 1	Jan 1, 1995	180 J	Previous Investigation Sample Location
LH037SB013	0 - 1	Jun 5, 1997	18 J	Previous Investigation Sample Location
037SB038	0 - 1	Aug 16, 2002	0.65 J	
	1 - 2	Aug 16, 2002	0.26 J	
	2 - 3	Aug 16, 2002	0.24 J	
037SB039	0 - 1	Aug 16, 2002	5.6 J	
037SB040	0 - 1	Aug 16, 2002	2.2 J	
037SB041	0 - 1	Aug 16, 2002	32.0 J	Aroclor 1254 detected at 9.0 J mg/kg
037SB042	0 - 1	Aug 16, 2002	1.8 J	Confirmation Sample of H037SB013 Aroclor 1254 detected at 0.56 J
017SB044	0 - 1	Aug 16, 2002	3.4 J	
017SB045	0 - 1	Aug 16, 2002	36.0 J	
H017SB046	0 - 1	Aug 16, 2002	0.11 J	Confirmation Sample of H017SB020
	1 - 2	Aug 16, 2002	0.13 J	
	2 - 3	Aug 16, 2002	< 0.085 J	
017SB047	0 - 1	Aug 16, 2002	0.28 J	
017SB048	0 - 1	Aug 16, 2002	0.14 J	
017SB049	0 - 1	Aug 16, 2002	0.14 J	
017SB050	0 - 1	Aug 16, 2002	0.21 J	Collected in grass outside of secondary containment structure
017SB051	0 - 1	Aug 16, 2002	0.05 J	Confirmation Sample of H017SB006
	1 - 2	Aug 16, 2002	< 0.088 J	
	2 - 3	Aug 16, 2002	1.4 J	Aroclor 1242 detected at 0.026 J Aroclor 1254 detected at 0.19 J mg/kg
017SB052	0 - 1	Aug 16, 2002	0.87 J	

**TABLE 2-1**  
Pre-Excavation Soil Sample Analytical Results  
*Soil and LNAPL IM Completion Report, SWMU 17, Zone H, Charleston Naval Complex*

<b>Sample Location</b>	<b>Sample Interval (feet bls)</b>	<b>Date Collected</b>	<b>Aroclor 1260 Concentration (mg/kg)</b>	<b>Comment</b>
H017SB053	0 - 1	Aug 16, 2002	0.096 J	
H017SB054	0 - 1	Aug 16, 2002	0.2 J	
H017SB055	0 - 1	Aug 16, 2002	0.07 J	

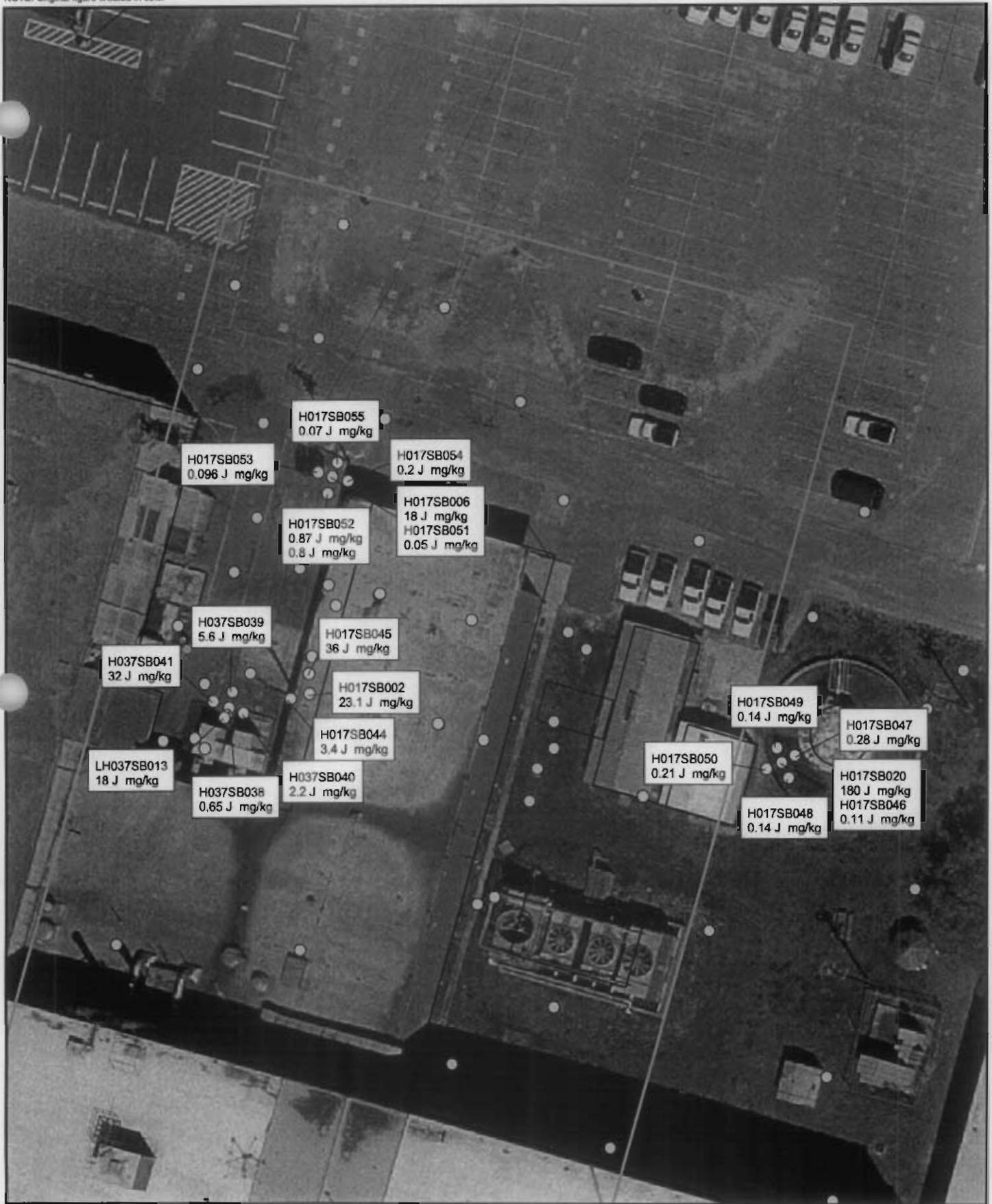
1

1

**TABLE 2-2**  
 Subsurface PCBs Detected, 2002 Soil Confirmation Sampling  
*Soil and LNAPL IM Completion Report, SWMU 17, Zone H, Charleston Naval Complex*

Station	Sample	CHEM_NAME	Result	Unit	Qualifier	TOP_DEPTH	BOT_DEPTH	DATE_COL
H017SB046	017SB04603	PCB-1260 (Aroclor 1260)	0.13000	mg/kg	J	3.00000	5.00000	08/16/2002
H017SB051	017SB05104	PCB-1260 (Aroclor 1260)	1.40000	mg/kg	J	3.00000	5.00000	08/16/2002
H017SB051	017SB05104	PCB-1242 (Aroclor 1242)	0.02600	mg/kg	J	3.00000	5.00000	08/16/2002
H017SB051	017SB05104	PCB-1254 (Aroclor 1254)	0.19000	mg/kg	J	3.00000	5.00000	08/16/2002

NOTE: Aerial Photo Date is 1997  
NOTE: Original figure created in color



○ Surface Soil



0 30 60 Feet

1 inch = 39.732 feet

**Figure 2-1**  
Aroclor 1260 Results in Surface Soil  
Pre-Excavation Sampling, SWMU 17  
Charleston Naval Complex



## 3.0 Interim Measure Implementation for Light Non-Aqueous Phase Liquid

---

### 3.1 Background

In June 1987, a rupture of an underground fuel line beneath the storage addition of Building FBM 61 released approximately 14,000 gallons of No. 5 diesel fuel oil (EnSafe, 2000). This fuel was supplied by a 30,000 gallon AST located in the grass courtyard west of the release. Approximately 7,300 gallons of the released fuel was recovered during cleanup activities in June 1987.

Historically, light non-aqueous phase liquid (LNAPL) and dense non-aqueous phase liquid (DNAPL) have been detected in a limited number of monitoring wells at the site. PCBs were detected in the NAPL and likely are associated with undocumented releases of fluids from a former transformer (TV-1) located in the paved courtyard area. Historical measurements of NAPL thickness are summarized in Table 3-1. Wells that have historically detected NAPL are shown in Figure 1-3 from the IM Work Plan (provided in Appendix A of this report). The extent of NAPL based on the January 6, 2000, and January 2, 2003, measurements are presented on Figures 3-1 and 3-2, respectively. As shown on these figures, the extent of NAPL has not migrated significantly in a 3-year period. This is not unexpected because the viscosity of No. 5 diesel fuel is relatively high, compared to gasoline and kerosene, and therefore is less mobile and tends not to migrate far from its release point, particularly in the relatively fine-grained soil medium present at SWMU 17.

The IM approach for removal of LNAPL at SWMU 17, as described in the IM Work Plan, involves the use of a vacuum truck to aggressively pull a vacuum on existing wells that contain NAPL, in order to extract NAPL, soil vapor, and contaminated groundwater. A key objective was to assess the degree to which the LNAPL is recoverable at the site using this method. If successful, the AFVR would be continued until the LNAPL thickness is less than 0.1 inch in each well.

Prior to extraction, an interface probe was used to measure the NAPL thickness in the target wells, shown in Figures 3-1 and 3-2. Initially, all wells in which NAPL was previously reported were used to attempt to extract NAPL. Once the measured NAPL is less than 0.1 inch, it is no longer practical to use those wells as extraction points. Instead, those wells will

1 be monitored periodically to determine if the NAPL levels are increasing in thickness. For  
2 the monitoring well that contains DNAPL, the IM Work Plan called for an attempt to extract  
3 the contaminated groundwater and DNAPL. If this process were successful, extraction  
4 would continue until the DNAPL thickness is less than 0.1 inch. If insufficient drawdown  
5 occurs, or this technical approach is determined not to be sufficiently effective, future  
6 attempts to extract the LNAPL or DNAPL using this method would be abandoned.

### 7 **3.2 Implementation of Aggressive Fluid Vapor Recovery**

8 Two AFVR events were conducted by Alpha Environmental Services on wells in which the  
9 presence of LNAPL was identified from the July 8, 2002, and January 2, 2003, monitoring  
10 well measurements (see Table 3-1). The AFVR events were performed using a vacuum truck  
11 to apply a high vacuum pressure and flow rates to remove multiple phase (i.e., vapor,  
12 absorbed, dissolved, and free phase LNAPL), volatile organic compounds (VOCs) from the  
13 subsurface via the wells. Results of the AFVR events are summarized in Appendix D.

14 The initial AFVR event was conducted on July 10 and 11, 2002, and approximately 635  
15 gallons of liquids were generated from 6 wells. Groundwater made up the majority of the  
16 generated liquids, with only an estimated 5 gallons of LNAPL recovered. The wells used for  
17 the initial AFVR event were installed using direct-push technology resulting in small  
18 boreholes (1-inch in diameter). These small boreholes greatly diminished the radius of  
19 influence of the vacuum and is believed to have attributed to the limited recovery of  
20 LNAPL.

21 To increase the recovery of LNAPL during the AFVR, two 4-inch diameter recovery wells  
22 (017RW01 and 017RW02) were installed (SCDHEC Permit No. HW-02-082) within the  
23 LNAPL plume. The locations of the new wells are shown in Figure 3-3. Recovery well  
24 017RW02 was installed at the location of monitoring well 017GWL03, which was abandoned  
25 by overdrilling. Recovery well 017RW01 was initially going to be installed at the location of  
26 monitoring well 017GWL04. However, due to the close proximity of 017GWL04 to the  
27 loading dock, the final location of 017RW01 was shifted approximately 3 feet to the  
28 northeast to allow enough space for installation. Well completion diagrams for the recovery  
29 wells are provided in Appendix E. Appendix G contains the development logs for these  
30 wells.

31 The second AFVR event was conducted on January 9 and 10, 2003, and approximately 735  
32 gallons of liquids were generated from the 8 wells, including the two newly installed  
33 recovery wells. As with initial AFVR, groundwater made up the majority of the AFVR-  
34 generated liquids, with only an estimated 5 gallons of LNAPL recovered. Due to the small

1 volume of LNAPL, the LNAPL portion of AFVR liquids were separated with absorbent rags  
2 for disposal purposes. The newly installed recovery wells yielded only approximately 122  
3 gallons of total liquids for 3 hours of AFVR operations. In addition, measurable LNAPL was  
4 not encountered in the recovery wells.

### 5 **3.2.1 Conclusions**

6 The AFVR events did not effectively remove much LNAPL from the subsurface. Based on  
7 the site geology, the LNAPL appears to be located within marsh clay deposits and possibly  
8 some overlying fill sands. The LNAPL appears bound in the clay units and is immobile. This  
9 is evident in the fact that recovery well 017RW02 was installed in the exact location of  
10 monitoring well 017GWL03 (which historically detected LNAPL) and no LNAPL was  
11 encountered in the recovery well. As this recovery well boring was installed over  
12 017GWL03, product was observed on the drill cuttings. Likely the extent of LNAPL in the  
13 vicinity of H017GWL03 was removed during the overdrilling of the well. In addition, as  
14 shown on Figures 3-1 and 3-2, the extent of NAPL has not migrated significantly in a 3-year  
15 period.

## 16 **3.3 Dense Non-Aqueous Phase Liquid Recovery**

17 Monitoring well 017GW002 is the only well that historically detected DNAPL at the site.  
18 During past investigation activities, four wells (017GW01D, -02D, -03D, and -04D) were  
19 installed around 017GW002 to evaluate the extent of DNAPL. DNAPL has not been detected  
20 in these wells since their installation.

21 A DNAPL recovery attempt was performed by pumping the DNAPL from well 017GW002  
22 with a peristaltic pump during two events (February 3 and March 5, 2003). Less than 1 pint  
23 of liquids (DNAPL/groundwater) were removed from the well. The liquids were solidified  
24 with absorbent rags for disposal purposes. The well was gauged on April 11, 2003, and a  
25 small amount of DNAPL was present but not at a measurable quantity. No DNAPL was  
26 encountered in the four wells (017GW01D, -02D, -03D, and -04D) surrounding 017GW002.  
27 Therefore, the DNAPL is considered immobile and isolated to a small area around  
28 017GW002.

## 29 **3.4 Waste Management and Disposal**

30 The following waste streams were generated as part of the IM NAPL recovery activities:

- 31
- Fluids from AFVR;

- 1 • Development and decontamination fluids;
- 2 • Personal protective equipment (PPE) and absorbent rags used for LNAPL/DNAPL  
3 separation; and
- 4 • Soil cuttings from well installation.

5 Representative analytical samples of the LNAPL and groundwater were collected prior to  
6 initiating AFVR activities and were used to evaluate disposal options for the wastes. The  
7 results of this analyses are presented in the *Interim Progress Report of Monitored Natural*  
8 *Attenuation Pilot Test, SWMU 17, Zone H, Charleston Naval Complex, dated June 24, 2002.*  
9 Waste profiles, waste manifests, and certificates of disposal for each wastestream are  
10 provided in Appendix F.

11 The groundwater and LNAPL generated from the July 10 and 11, 2002, AFVR event were  
12 disposed of by Shamrock Environmental Corporation at the disposal facility located at 6106  
13 Corporate Park Drive, Browns Summit, North Carolina.

14 After the initial AFVR, the contaminated groundwater, soils, and LNAPL/DNAPL were  
15 tested for PCB compounds to evaluate appropriate disposal of the wastes. The analytical  
16 results are presented in Appendix D. In addition, the soils were analyzed for semivolatile  
17 organic compounds (SVOCs) (see Appendix D).

18 The analytical results indicated that the groundwater and soils were below Toxic Substance  
19 Control Act (TSCA) levels. The soil was disposed of by Waste Management Inc. (WMI) at  
20 Oak Ridge Landfill, 2183 Highway 78, Dorchester, South Carolina. Disposal of the AFVR  
21 groundwater and the well installation decontamination/development water generated  
22 during the January 9 and 10, 2003 AFVR effort was handled by the EQ Management facility  
23 located at 5600 Fulton Industrial Blvd., Atlanta, Georgia.

24 The LNAPL/DNAPL analytical results were at concentrations that required disposal at a  
25 TSCA approved facility. The PPE and absorbent rags used for LNAPL/DNAPL separation  
26 were disposed of as solids at Wayne Disposal, Inc. Site 2 Landfill, a hazardous waste landfill  
27 located at 49350 N. I-94 Service Drive in Belleville, Michigan.

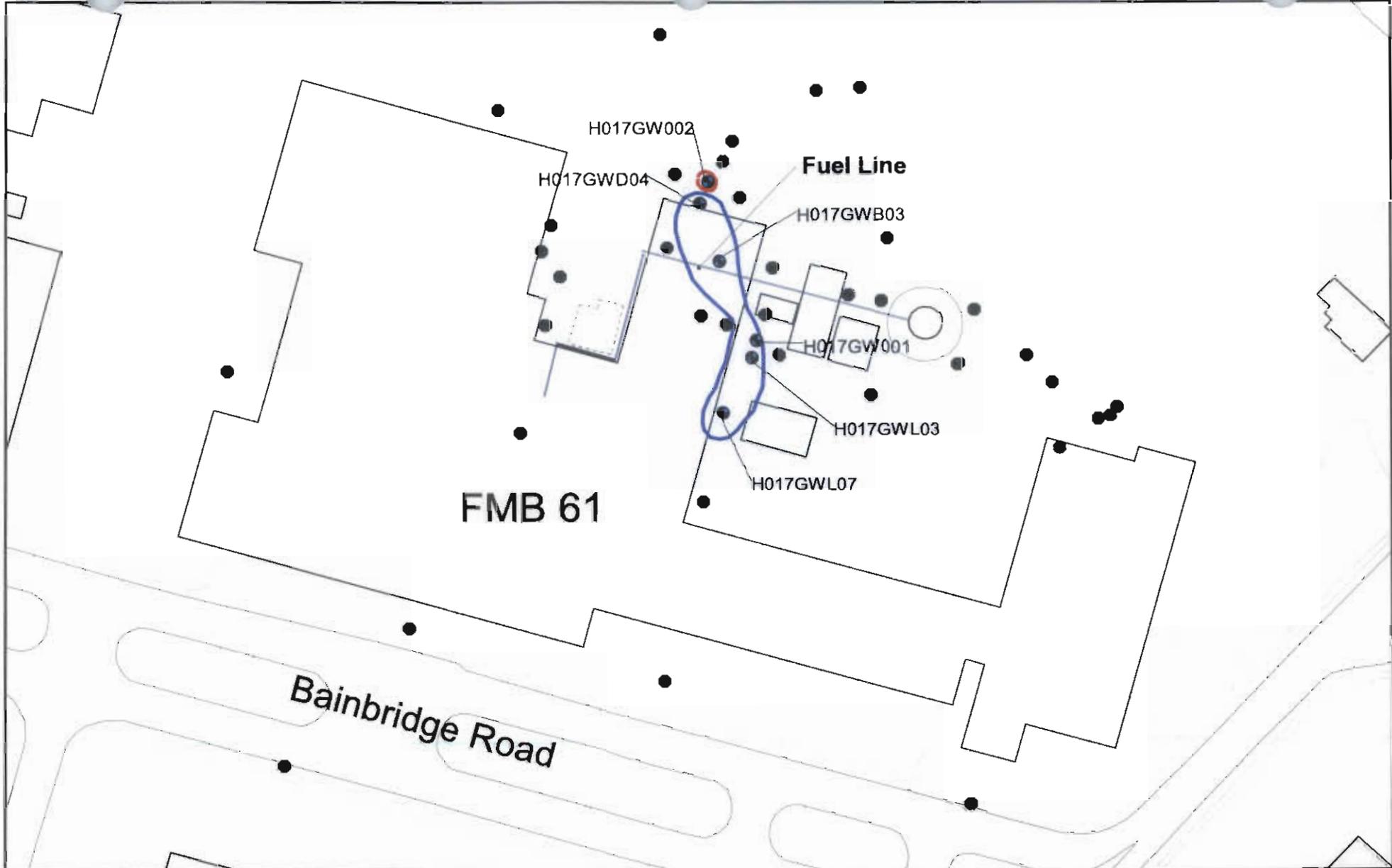
**TABLE 3-1**  
 Historical NAPL Thickness Measured at SWMU 17  
 Soil and LNAPL IM Completion Report, SWMU 17, Zone H, Charleston Naval Complex

Well Location	NAPL Thickness (feet) <sup>a</sup>							
	Sept 22, 1998	Dec 22, 1999	Jan 6, 2000	July 2000	Feb 26, 2002	July 8, 2002	July 22, 2002	Jan 2, 2003
H017GW001	NE	0.17 LNAPL	0.05 LNAPL	0.6 LNAPL	LNAPL	LNAPL	LNAPL	LNAPL
H017GW002	NE	0.10 DNAPL	0.04 DNAPL	>1.0 DNAPL	DNAPL	NE	0.09 DNAPL <sup>b</sup>	DNAPL
H017GWB03	NI	0.07 LNAPL	1.31 LNAPL	NE	NM	NM	NM	LNAPL
H017GWB04	NI	NE	NE	NE	LNAPL	LNAPL	LNAPL	LNAPL
H017GWD04	NI	Trace LNAPL	0.09 LNAPL	NE	0.43 LNAPL	LNAPL	LNAPL	0.02 LNAPL
H017GWL03	NI	0.57 LNAPL	1.52 LNAPL	NE	LNAPL	LNAPL	LNAPL	NE <sup>c</sup>
H017GWL04	NI	Trace LNAPL	NE	NE	NE	NE	NE	NE
H017GWL06	NI	NE	NE	NE	LNAPL	LNAPL	LNAPL	LNAPL
H017GWL07	NI	NE	0.65 LNAPL	NE	1.55 LNAPL	LNAPL	LNAPL	LNAPL
H017RW01	NI	NI	NI	NI	NI	NI	NI	NE
H017RW02	NI	NI	NI	NI	NI	NI	NI	NE

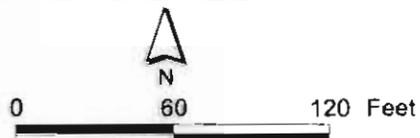
<sup>a</sup> Thickness value could not be measured on select measurement due to viscosity of NAPL.  
<sup>b</sup> Measurement from July 11, 2002.  
<sup>c</sup> Monitoring well H017GWL03 was abandoned and replaced with recovery well H017RW02 on October 23, 2002.

NE not encountered  
 NI not installed

NOTE: Original file plotted in color



- Well with no NAPL encountered - Jan2000.shp
- Wells with NAPL - Jan 2000
- ▭ DNAPL
- ▭ LNAPL
- ▭ Buildings and other structures

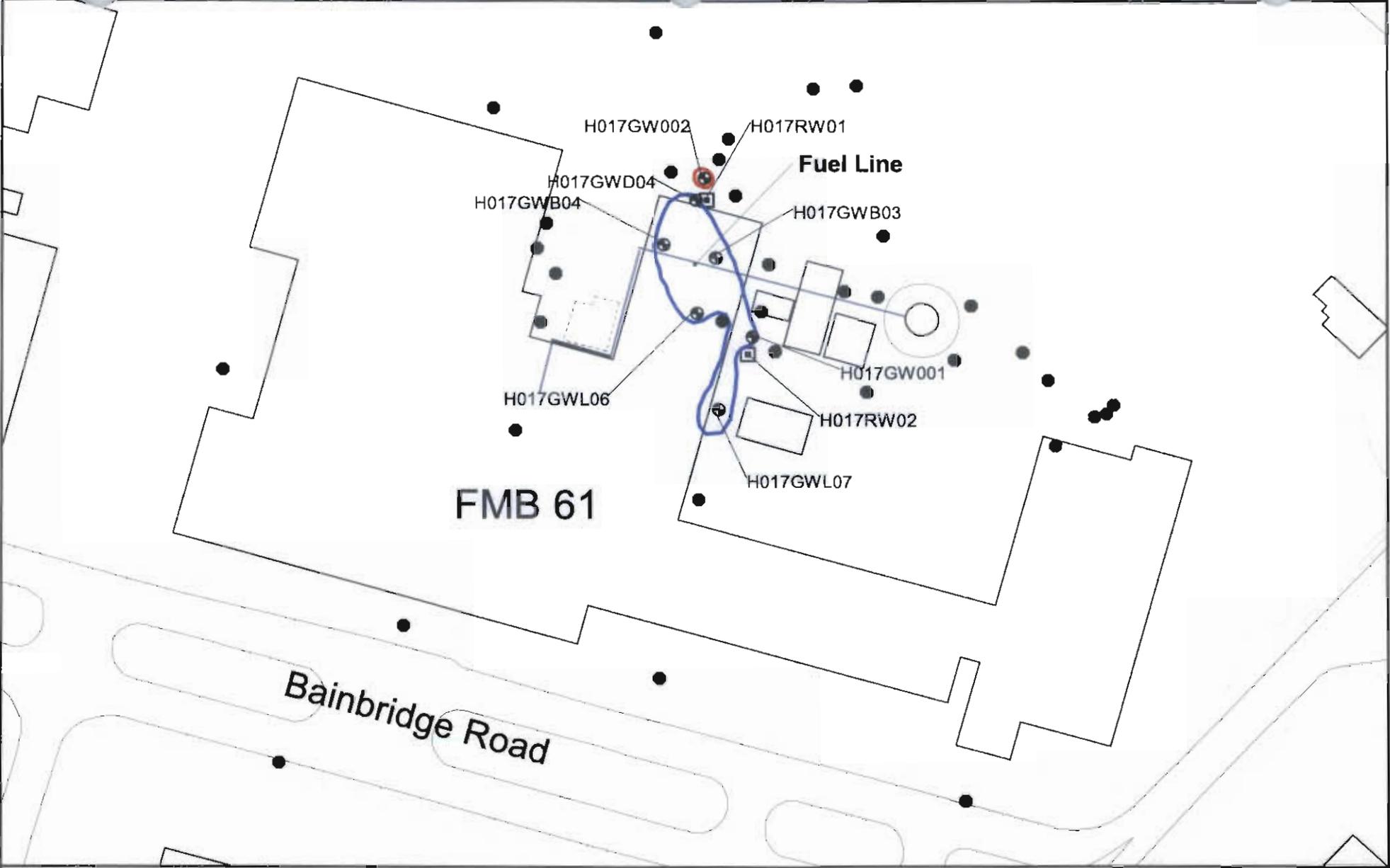


1 Inch = 75 feet

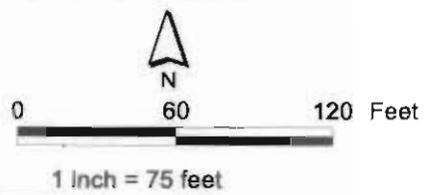
**Figure 3-1**  
Extent of NAPL - January 2000  
Map Subtitle  
Charleston Naval Complex

**CH2M HILL**

NOTE: Original map generated in color

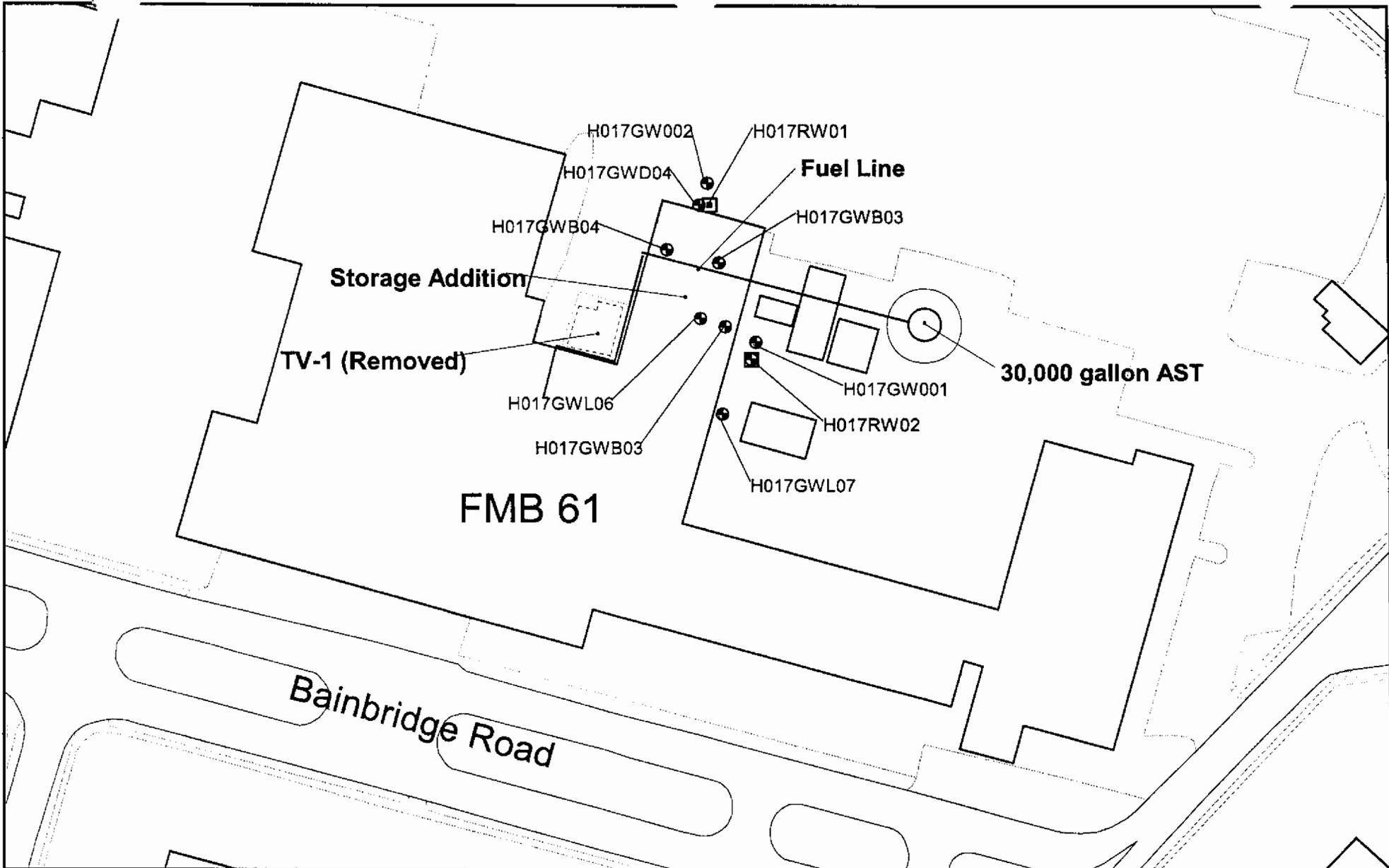


- Well with NAPL January 2003
- Well with no NAPL encountered Jan 2003
- DNAPL
- LNAPL
- Recovery Wells
- Buildings and other structures

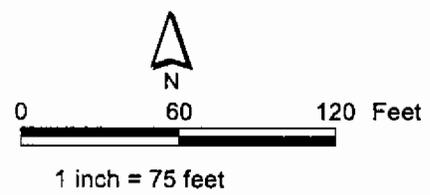


**Figure 3-2**  
Extent of NAPL - January 2003  
SWMU 17, Zone H  
Charleston Naval Complex





- Wells that historically detected NAPL
- ▣ Newly installed recovery wells
- ▭ Buildings and other structures



**Figure 3-3**  
 Site Layout  
 SWMU 17, Zone H  
 Charleston Naval Complex



## 1 **4.0 Conclusions From Interim Measure** 2 **Activities**

---

3 The following conclusions were made based on the soil confirmation sampling and NAPL  
4 removal activities and results:

### 5 **4.1 Polychlorinated Biphenyl Soil Sampling**

- 6 • All surface soil concentrations of Aroclor 1260 in unpaved areas are below the unpaved  
7 industrial MCS of 10 mg/kg.
- 8 • All surface soil concentrations of Aroclor 1260 in paved areas are below the paved  
9 industrial MCS of 57.4 mg/kg.

10 Based on these observations, no soil remediation appears necessary at this time. Soil  
11 remediation alternatives will be evaluated as part of the CMS.

### 12 **4.2 Non-Aqueous Phase Liquid Recovery Activities**

- 13 • NAPL at SWMU 17 is relatively immobile and has not migrated significantly in a 3-year  
14 period.
- 15 • AFVR is not an effective method of removing LNAPL from the subsurface at SWMU 17.
- 16 • DNAPL is not present at measurable levels in SWMU 17 monitoring wells.

17 Site wells will be gauged for the presence of NAPL during groundwater monitoring  
18 activities. Remedial approaches to address the risks posed by the LNAPL at the site will be  
19 evaluated during the CMS.



## 1 **5.0 References**

---

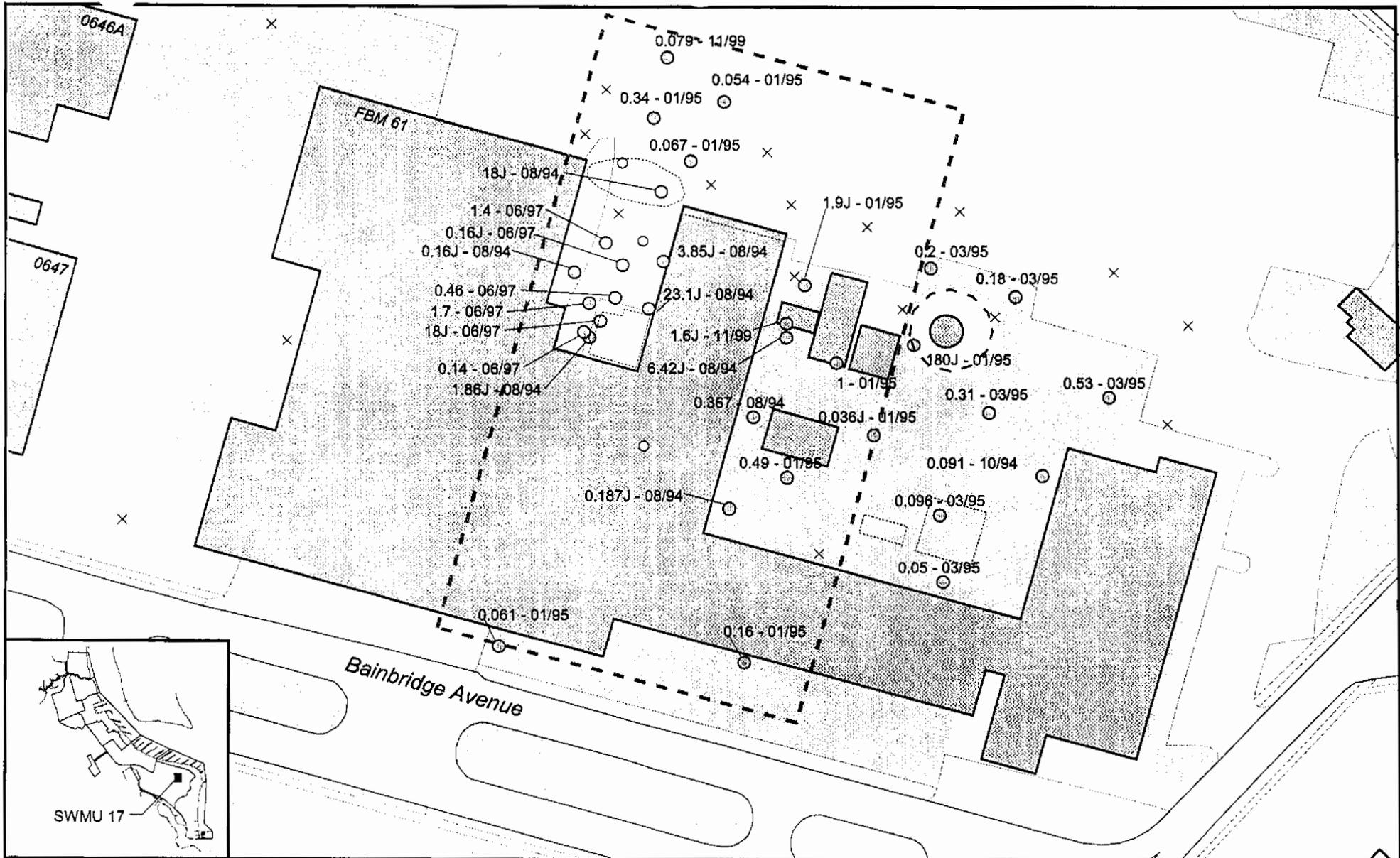
- 2 CH2M-Jones. *Interim Progress Report of Monitored Natural Attenuation Pilot Test, SWMU 17,*  
3 *Zone H, Charleston Naval Complex. June 24, 2002.*
- 4 CH2M-Jones. *Corrective Measures Study Work Plan, Solid Waste Management Unit 17, Zone H,*  
5 *Charleston Naval Complex. January 2001.*
- 6 CH2M-Jones. *Interim Measures Work Plan, Soil and NAPL Removal, Solid Waste Management*  
7 *Unit (SWMU) 17, Zone H, Charleston Naval Complex. June 2001.*
- 8 EnSafe Inc. (EnSafe). *RCRA Facility Investigation Addendum, NAVBASE Charleston. 2000.*



**TABLE 2-1**  
**Statistical Exposure Point Concentrations in the Paved Area and Grass Courtyard**  
*IM Work Plan, Soil and NAPL Removal, SWMU 17, Zone H, Charleston Naval Complex*

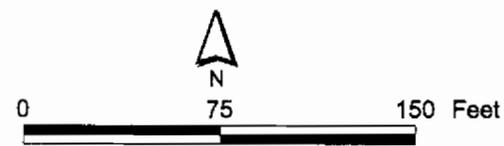
<b>Paved Area</b>		<b>Grass Courtyard</b>	
<b>Sample ID</b>	<b>Aroclor-1260 Concentration (mg/kg)</b>	<b>Sample ID</b>	<b>Aroclor-1260 Concentration (mg/kg)</b>
H017SB001	1.86	H017SB011	0.187
LH037SB014	0.14	H017SB022	0.49
LH037SB013	18	H017SB010	0.0367
LH037SB012	1.7	H017SB021	0.036
LH037SB011	0.46	HGDHSB040	0.091
H017SB003	0.16	H017SB031	0.096
LH037SB010	0.16	H017SB032	0.05
LH037SB009	1.4	H017SB030	0.31
H017SB004	3.85	H017SB029	0.53
H017SB006	18	H017SWT02	180.00
H017SB016	0.067	H017SB023	1.00
H017SB014	0.34	H017SB009	6.42
H017SB015	0.054	H017SWL01	1.60
H017SB035	0.079	H017SB019	1.90
H017SB002	23.1	H017SB027	0.20
H017SB005	0.0066	H017SB028	0.18
H017SB012	0.0066	H017SB033	0.0066
H017SB007	0.0066	H017SWT03	0.0066
H017SB036	0.0066	H017SWT01	0.0066
		H017SWB02	0.0066
Arithmetic Mean	3.7	Arithmetic Mean	9.7
Geometric Mean	0.24	Geometric Mean	0.18
EPC (=maximum detected concentration due to lognormal distribution)	23.1	EPC (=maximum detected concentration due to lognormal distribution)	180

EPC exposure point concentration

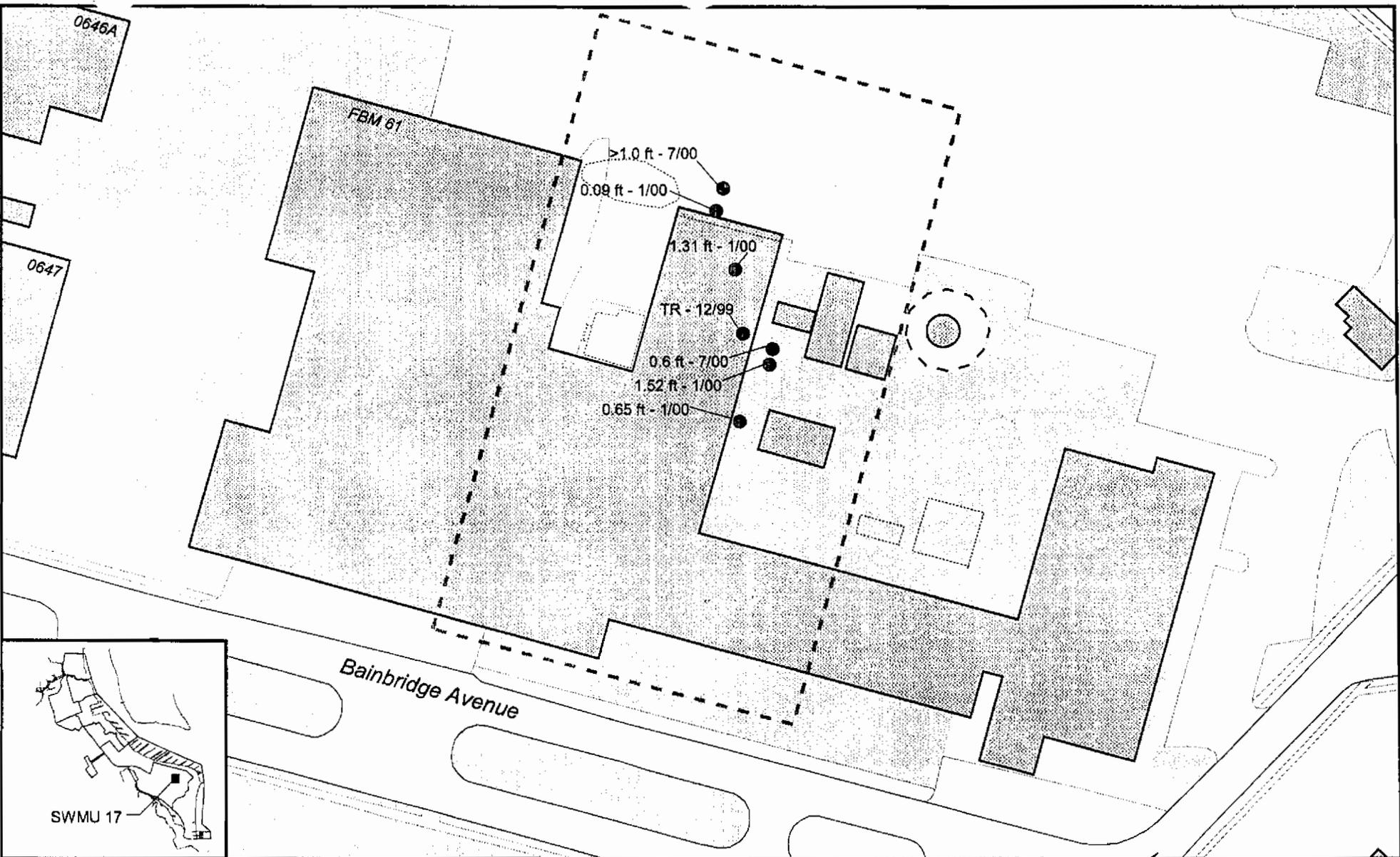


- LEGEND:**
- Surface Soil Sample Locations
  - Not Sampled
  - X Not Detected

- NOTES:**
1. 18J - 11/97 = Concentration/Qualifier/Date Sampled
  2. J = Estimated Concentration
  3. Units in mg/kg



**Figure 1-2**  
 Surface Soil  
 Arochlor-1260 Concentrations  
 SWMU 17, Zone H  
 Charleston Naval Complex



- LEGEND:**
- DNAPL Sample Location
  - ⊙ LNAPL Sample Location

- NOTES:**
1. 1.0 ft - 6/00 = Liquid Thickness/Date Sampled
  2. Liquid units in feet.
  3. Maximum thickness displayed for each sample location
  4. Refer to Table 2-4 for complete NAPL thickness history



**Figure 1-3**  
 Extent of LNAPL/DNAPL  
 In Groundwater  
 SWMU17, Zone H  
 Charleston Naval Complex



Analytical Data Summary

04/06/2004 10:34 AM

StationID	H017SB044		H017SB045		H017SB046		H017SB046		
SampleID	017SB04401RE		017SB04501RE		017SB04601RE		017SB04603RE		
DateCollected	08/16/2002		08/16/2002		08/16/2002		08/16/2002		
DateExtracted	09/04/2002		09/04/2002		09/04/2002		09/04/2002		
DateAnalyzed	09/06/2002		09/06/2002		09/06/2002		09/06/2002		
SDGNumber	CNC140		CNC140		CNC140		CNC140		
Parameter	Units								
PCB-1016 (Arochlor 1016)	ug/kg	520	UJ	1600	UJ	39	UJ	41	UJ
PCB-1221 (Arochlor 1221)	ug/kg	520	UJ	1600	UJ	39	UJ	41	UJ
PCB-1232 (Arochlor 1232)	ug/kg	520	UJ	1600	UJ	39	UJ	41	UJ
PCB-1242 (Arochlor 1242)	ug/kg	520	UJ	1600	UJ	39	UJ	41	UJ
PCB-1248 (Arochlor 1248)	ug/kg	520	UJ	1600	UJ	39	UJ	41	UJ
PCB-1254 (Arochlor 1254)	ug/kg	1100	UJ	3300	UJ	80	UJ	83	UJ
PCB-1260 (Arochlor 1260)	ug/kg	3400	J	36000	J	110	J	130	J

Analytical Data Summary

04/06/200... 5:34 AM

StationID	H017SB046		H017SB047		H017SB048		H017SB049		
SampleID	017SB04604RE		017SB04701RE		017SB04801RE		017SB04901RE		
DateCollected	08/16/2002		08/16/2002		08/16/2002		08/16/2002		
DateExtracted	09/04/2002		09/04/2002		09/04/2002		09/04/2002		
DateAnalyzed	09/06/2002		09/06/2002		09/06/2002		09/06/2002		
SDGNumber	CNC140		CNC140		CNC140		CNC140		
Parameter	Units								
PCB-1016 (Arochlor 1016)	ug/kg	42	UJ	44	UJ	40	UJ	45	UJ
PCB-1221 (Arochlor 1221)	ug/kg	42	UJ	44	UJ	40	UJ	45	UJ
PCB-1232 (Arochlor 1232)	ug/kg	42	UJ	44	UJ	40	UJ	45	UJ
PCB-1242 (Arochlor 1242)	ug/kg	42	UJ	44	UJ	40	UJ	45	UJ
PCB-1248 (Arochlor 1248)	ug/kg	42	UJ	44	UJ	40	UJ	45	UJ
PCB-1254 (Arochlor 1254)	ug/kg	85	UJ	90	UJ	82	UJ	92	UJ
PCB-1260 (Arochlor 1260)	ug/kg	85	UJ	280	J	140	J	140	J

Analytical Data Summary

04/06/2006 10:34 AM

StationID	H017SB050		H017SB051		H017SB051		H017SB051		
SampleID	017SB05001RE		017SB05101RE		017SB05103RE		017SB05104RE		
DateCollected	08/16/2002		08/16/2002		08/16/2002		08/16/2002		
DateExtracted	09/04/2002		09/04/2002		09/04/2002		09/04/2002		
DateAnalyzed	09/06/2002		09/06/2002		09/11/2002		09/06/2002		
SDGNumber	CNC140		CNC140		CNC140		CNC140		
Parameter	Units								
PCB-1016 (Arochlor 1016)	ug/kg	36	UJ	52	UJ	43	UJ	90	UJ
PCB-1221 (Arochlor 1221)	ug/kg	36	UJ	52	UJ	43	UJ	90	UJ
PCB-1232 (Arochlor 1232)	ug/kg	36	UJ	52	UJ	43	UJ	90	UJ
PCB-1242 (Arochlor 1242)	ug/kg	36	UJ	52	UJ	43	UJ	26	J
PCB-1248 (Arochlor 1248)	ug/kg	36	UJ	52	UJ	43	UJ	90	UJ
PCB-1254 (Arochlor 1254)	ug/kg	73	UJ	110	UJ	88	UJ	190	J
PCB-1260 (Arochlor 1260)	ug/kg	210	J	50	J	88	UJ	1400	J

Analytical Data Summary

04/06/2008 10:34 AM

StationID	H017SB052		H017SB053		H017SB054		H017SB055		
SampleID	017SB05201RE		017SB05301RE		017SB05401RE		017SB05501RE		
DateCollected	08/16/2002		08/16/2002		08/16/2002		08/16/2002		
DateExtracted	09/04/2002		09/04/2002		09/04/2002		09/04/2002		
DateAnalyzed	09/06/2002		09/06/2002		09/06/2002		09/06/2002		
SDGNumber	CNC140		CNC140		CNC140		CNC140		
Parameter	Units								
PCB-1016 (Arochlor 1016)	ug/kg	50	UJ	45	UJ	50	UJ	36	UJ
PCB-1221 (Arochlor 1221)	ug/kg	50	UJ	45	UJ	50	UJ	36	UJ
PCB-1232 (Arochlor 1232)	ug/kg	50	UJ	45	UJ	50	UJ	36	UJ
PCB-1242 (Arochlor 1242)	ug/kg	50	UJ	45	UJ	50	UJ	36	UJ
PCB-1248 (Arochlor 1248)	ug/kg	50	UJ	45	UJ	50	UJ	36	UJ
PCB-1254 (Arochlor 1254)	ug/kg	100	UJ	92	UJ	100	UJ	73	UJ
PCB-1260 (Arochlor 1260)	ug/kg	870	J	96	J	200	J	70	J





**Photograph 1**

*Photographed by: Jed Heames/JJ Jones Date: 08-15-2002*

*Viewing: Area in vicinity of H017SB002.*

1



**Photograph 2**

*Photographed by: Jed Heames/JJ Jones Date: 08-15-2002*

*Viewing: Area in vicinity of H037SB013.*



**Photograph 3**

*Photographed by: Jed Heames/JJ Jones Date: 08-15-2002  
Viewing: Area in vicinity of H017SB020.*

1

2



**Photograph 4**

*Photographed by: Jed Heames/JJ Jones Date: 08-15-2002  
Viewing: Area in vicinity of H017SB020.*



AFVR Event - Vacuum Applied to Recovery and Monitoring Wells/Calculated Parameters	RW01	RW02	GWB03
Time Duration (hours)	1.5	1.5	1.5
Average Temperature ( <sup>o</sup> F)	180.6	183.8	185.6
Average Relative Humidity (%)	2.9	1.3	1
Average Velocity (ft/min)	5110	5277.1	6007.1
Average FID Reading (ppm)	1	4	15
B <sub>WSW</sub> (lb. water/lb. dry air)	0.01	0.0050	0.0040
B <sub>WS</sub> (water vapor % by volume)	0.0158	0.0079	0.0064
Stack Pipe Cross Sectional Area (ft <sup>2</sup> )	0.196	0.196	0.196
T <sub>s</sub> Stack Temperature ( <sup>o</sup> R)	640.6	643.8	645.6
Q <sub>std</sub> (flow at DSCRM)	812.5	841.5	956.8
PPM <sub>w</sub> (wet concentration=measured concentration)	1	4	15
PPM <sub>d</sub> (dry concentration)	1	4	15
PPM <sub>c</sub> (PPM <sub>v</sub> , volumetric concentration of VOC emissions as carbon, dry basis at STP)	1	4	15
C <sub>cm</sub> (mg/dsm <sup>3</sup> , mass concentration of VOC emissions as carbon)	1	2	8
C <sub>c</sub> (lb/dscf, mass concentration of VOC emissions as carbon, dry basis, at STP)	0.000000	0.000000	0.000000
PMR <sub>c</sub> (lb/hr, pollutant mass removal rate of VOCs as carbon)	0.00	0.01	0.03
PMR <sub>diesel</sub> (lb/hr, pollutant mass removal rate of VOCs as Diesel Fuel)	0.00	0.01	0.03
PMR <sub>diesel</sub> (lbs, total pollutant mass removal of VOCs as Diesel Fuel)	0.00	0.01	0.04
PMR <sub>diesel</sub> (gals, total pollutant mass removal of VOCs as Diesel Fuel)	0.00	0.00	0.01
<b>Total Gallons of Pollutant Volume Removal of VOCs as Diesel Fuel</b>		<b>0.03</b>	
<b>Gallons of LNAPL Removed as Product from Jan 9/10, 2003 AFVR Event</b>			
<b>Total Gallons of Pollutant Removed as Product from Jan 9/10 2003 AFVR Event</b>		<b>0.03</b>	
<b>Total Gallons of Pollutant Removed as Product Since Initiation of AFVR Activites Jan 9/10, 2003</b>		<b>0.03</b>	

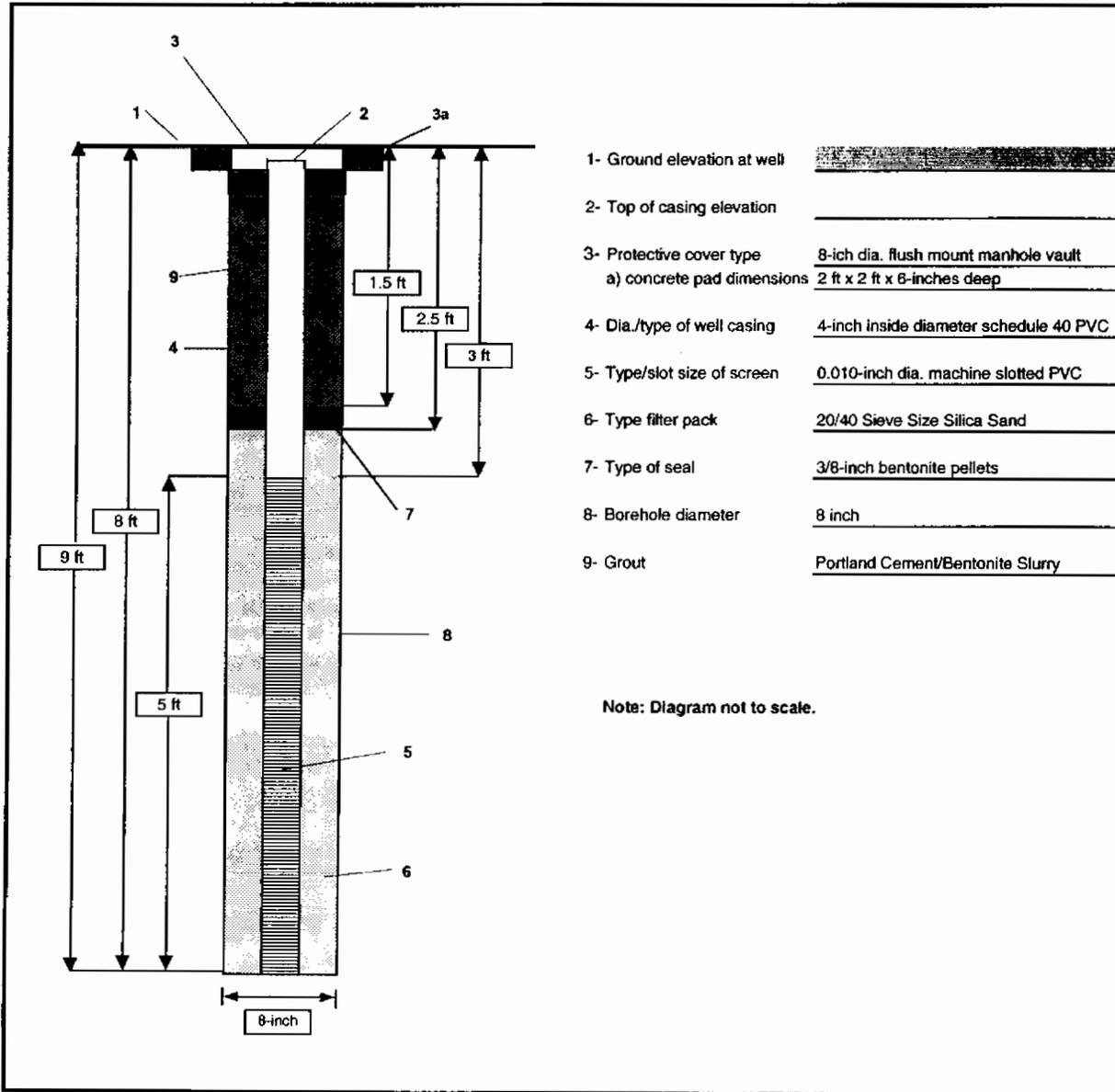
AFVR Event - Vacuum Applied to Recovery and Monitoring Wells/Calculated Parameters	GWB04	GW001
Time Duration (hours)	1.50	1.47
Average Temperature ( <sup>o</sup> F)	210.9	211.4
Average Relative Humidity (%)	2.2	2.9
Average Velocity (ft/min)	2379	2331
Average FID Reading (ppm)	257	65
B <sub>WSW</sub> (lb. water/lb. dry air)	0.0120	0.0190
B <sub>WS</sub> (water vapor % by volume)	0.0189	0.0295
Stack Pipe Cross Sectional Area (ft <sup>2</sup> )	0.196	0.196
T <sub>S</sub> Stack Temperature ( <sup>o</sup> R)	670.9	671.4
Q <sub>std</sub> (flow at DSCR/M)	360.0	348.7
PPM <sub>w</sub> (wet concentration=measured concentration)	257	65
PPM <sub>d</sub> (dry concentration)	262	67
PPM <sub>c</sub> (PPM <sub>v</sub> , volumetric concentration of VOC emissions as carbon, dry basis at STP)	262	67
C <sub>cm</sub> (mg/dsm <sup>3</sup> , mass concentration of VOC emissions as carbon)	130	33
C <sub>c</sub> (lb/dscf, mass concentration of VOC emissions as carbon, dry basis, at STP)	0.000008	0.000002
PMR <sub>c</sub> (lb/hr, pollutant mass removal rate of VOCs as carbon)	0.18	0.04
PMR <sub>diesel</sub> (lb/hr, pollutant mass removal rate of VOCs as Diesel Fuel)	0.19	0.05
PMR <sub>diesel</sub> (lbs, total pollutant mass removal of VOCs as Diesel Fuel)	0.28	0.07
PMR <sub>diesel</sub> (gals, total pollutant mass removal of VOCs as Diesel Fuel)	0.04	0.01
<b>Total Gallons of Pollutant Volume Removal of VOCs as Diesel Fuel</b>	<b>0.36</b>	
<b>Gallons of LNAPL Removed as Product from July 10/11, 2002 AFVR Event</b>		
<b>Total Gallons of Pollutant Removed as Product from July 10/11 AFVR Event</b>	<b>0.36</b>	
<b>Total Gallons of Pollutant Removed as Product Since Initiation of AFVR Activites July 10/11, 2002</b>	<b>0.36</b>	





PROJECT NUMBER 158814.ZH.EX.09	WELL NUMBER RW-1	SHEET 1 OF 1
<b>WELL COMPLETION DIAGRAM</b>		

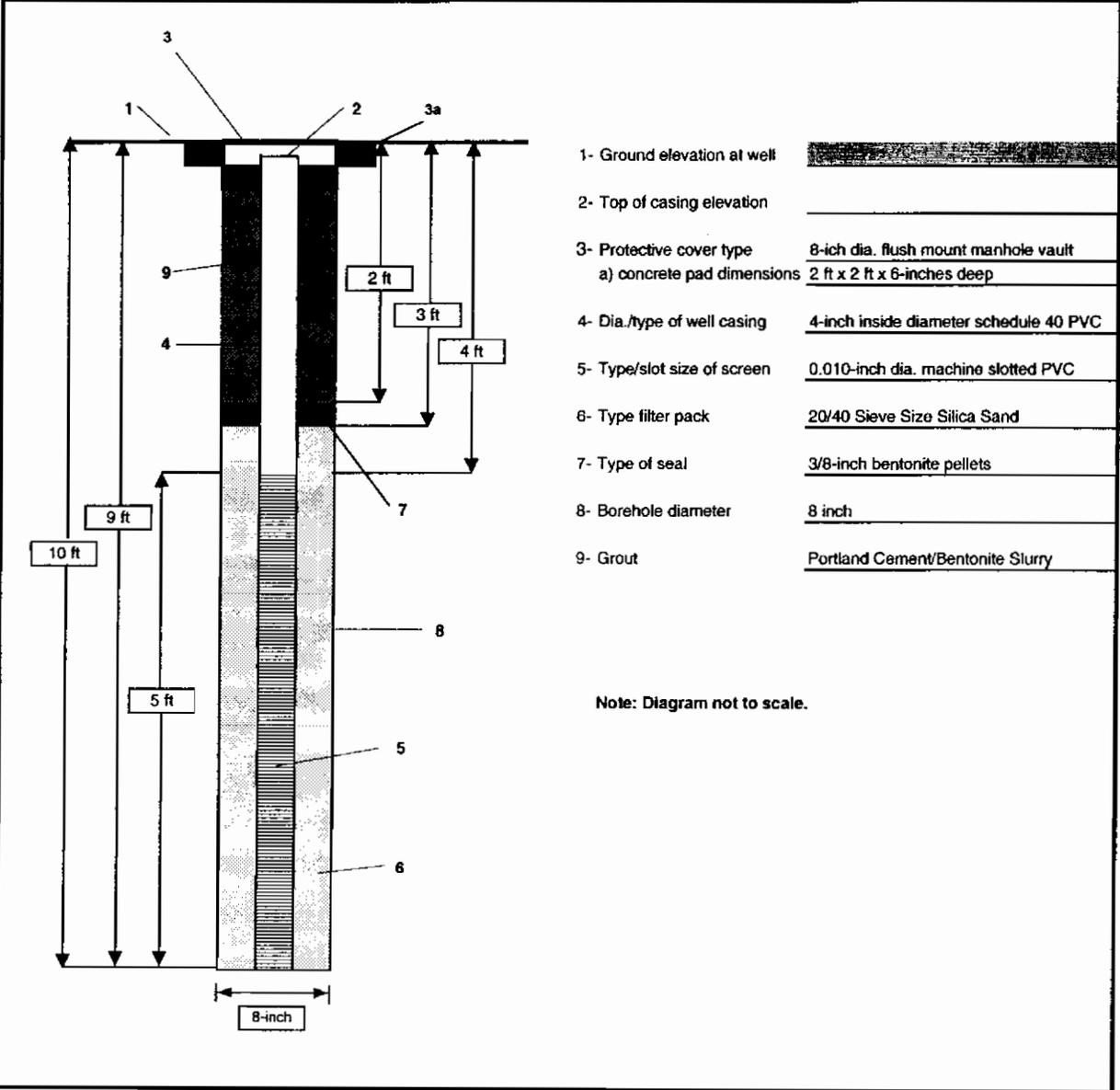
PROJECT : SWMU 17, Zone H, Charleston Naval Complex	LOCATION : Charleston, South Carolina
DRILLING CONTRACTOR : Prosonic Corporation License # 1435	NORTHING:
DRILLING METHOD AND EQUIPMENT USED : Hollow Stem Auger	EASTING:
WATER LEVELS : 4.5	START : 10/23/2002      END: 10/24/2002      LOGGER : Michael Karafa





PROJECT NUMBER <b>158814.ZH.EX.09</b>	WELL NUMBER <b>RW-2</b>	SHEET 1 OF 1
<b>WELL COMPLETION DIAGRAM</b>		

PROJECT : SWMU 17, Zone H, Charleston Naval Complex	LOCATION : Charleston, South Carolina
DRILLING CONTRACTOR : Prosonic Corporation License # 1435	NORTHING:
DRILLING METHOD AND EQUIPMENT USED : Hollow Stem Auger	EASTING:
WATER LEVELS : ██████████	START : 10/23/2002      END: 10/24/2002      LOGGER : Michael Karafa



1- Ground elevation at well	██████████
2- Top of casing elevation	_____
3- Protective cover type	8-inch dia. flush mount manhole vault
a) concrete pad dimensions	2 ft x 2 ft x 6-inches deep
4- Dia./type of well casing	4-inch inside diameter schedule 40 PVC
5- Type/slot size of screen	0.010-inch dia. machine slotted PVC
6- Type filter pack	20/40 Sieve Size Silica Sand
7- Type of seal	3/8-inch bentonite pellets
8- Borehole diameter	8 inch
9- Grout	Portland Cement/Bentonite Slurry

Note: Diagram not to scale.



CC... RACTOR PRODUCTION REPORT (Attach Additional Sheets if Necessary)				Date	January 9, 2003
Contract No. <b>158827-02-107</b>	CTO #	Location <b>Charleston Naval Complex</b>	Report No. <b>001</b>		
Contractor: <b>Alpha Environmental Services, Inc</b>		Superintendent: <b>Patrick</b>			
AM Weather <b>Sunny</b> / PM Weather <b>Sunny</b>		Max Temp <b>62</b> °F	Min Temp <b>32</b> °F		
<div style="border: 1px solid black; border-radius: 50%; padding: 5px; width: 40px; margin: 0 auto;"> <b>JOB SAFETY</b> </div>	Was A Job Safety Meeting Held This Date? <small>(If Yes, attach copy of the meeting minutes)</small>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Total Worked Hours On Job Site This Date	<b>12</b>	
	Were There Any Lost Time Accidents This Date? <small>(If Yes, attach copy of completed OSHA report)</small>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Cumulative Total Of Work Hours From Previous Report	<b>0</b>	
Was Trenching/Scaffold/HV Electrical/High Work Done? <small>(If Yes, attach statement or checklist showing inspection performed)</small>		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Total Work Hours From Start Of Construction	<b>12</b>	
Was Hazardous Material/Waste Released Into The Environment? <small>(If Yes, attach description of incident and proposed action)</small>		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
List Safety Actions Taken Today/Safety Inspections Conducted: <b>Tailgate Safety Meeting</b>			<input checked="" type="checkbox"/>	Safety Requirements Have Been Met	
<b>Tailgate Safety Meeting Held at 0815. Discussed project scope, contamination issues</b>					
Equipment/Material Received Today to be Incorporated in Job <b>PID</b>					
Construction and Plant Equipment of Job Site Today. Include Number of Hours Used Today. (1) Pick-up Trucks 3,000 gal Vacuum Truck					
Work Performed Today					
Work Location and Description	Employer	Number	Trade	Hrs	
<b>SWMU #17</b>	<b>Alpha</b>	<b>1</b>	<b>PM</b>	<b>12</b>	
<b>SWMU #17</b>	<b>EQIS</b>	<b>1</b>	<b>H&amp;S</b>	<b>12</b>	
Remarks <b>After meeting with JA Jones a safety meeting was held to discuss all issues of the project. Performed AFVR on eight wells for one hour per well. Removed approximately 500 gallons of material from wells. Performed stack test on truck every fifteen minutes. Completed AFVR operation.</b>					
				<b>1/9/03</b> Date	
Contractors Superintendent					

CO... RACTOR PRODUCTION REPORT (Attach Additional Sheets If Necessary)				Date	January 10, 2003
Contract No. 158827-02-107	CTO #	Location Charleston Naval Complex	Report No. 001		
Contractor: Alpha Environmental Services, Inc			Superintendent: Patrick		
AM Weather Sunny / PM Weather Sunny		Max Temp 62 °F	Min Temp 32 °F		
<div style="border: 1px solid black; border-radius: 50%; padding: 5px; display: inline-block;"> <b>JOB SAFETY</b> </div>	Was A Job Safety Meeting Held This Date? <small>(If Yes, attach copy of the meeting minutes)</small>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Total Worked Hours On Job Site This Date	12	
	Were There Any Lost Time Accidents This Date? <small>(If Yes, attach copy of completed OSHA report)</small>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Cumulative Total Of Work Hours From Previous Report	12	
	Was Trenching/Scaffold/HV Electrical/High Work Done? <small>(If Yes, attach statement or checklist showing inspection performed)</small>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Total Work Hours From Start Of Construction	24	
Was Hazardous Material/Waste Released into The Environment? <small>(If Yes, attach description of incident and proposed action)</small>			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
List Safety Actions Taken Today/Safety Inspections Conducted: Tailgate Safety Meeting			<input checked="" type="checkbox"/> Safety Requirements Have Been Met		
Tailgate Safety Meeting Held at 0630. Discussed project scope, contamination issues					
Equipment/Material Received Today to be Incorporated in Job PID					
Construction and Plant Equipment of Job Site Today. Include Number of Hours Used Today. (1) Pick-up Trucks 3,000 gal Vacuum Truck					
Work Performed Today					
Work Location and Description	Employer	Number	Trade	Hrs	
SWMU #17	Alpha	1	PM	12	
SWMU #17	EQIS	1	H&S	12	
Remarks Tailgate safety meeting was held to discuss all issues of the project. Performed AFVR on eight wells for one half hour per well. Removed approximately 235 gallons of material from wells. Performed stack test on truck every fifteen minutes. Completed AFVR operation. Decanted approximately 735 gallons of material into totes supplied by CCI/Jones. Used 3,000 psi hotsy to decontaminate tank. Gross deconned the tank using water and then tripled rinsed inside using hexane solvent. Once the tank had been triple rinsed three wipe samples were taken from the front, middle and back of the truck. Demobilized at 1830.					
				1/10/03	
Contractors Superintendent				Date	



Industrial Services, Inc.  
5600 Fulton Industrial Blvd  
Atlanta, GA 30336

# Certificate of Disposal

This certificate is to verify the waste specified on Manifest/Bill of Lading # 01103 has been properly disposed of in accordance with all local, state and federal regulations.

## FACILITY NAME:

EQIS Atlanta  
Transfer and Processing  
5600 Fulton Industrial Blvd, SW  
Atlanta, GA 30336  
404 494-3520  
404 494-3560 fax

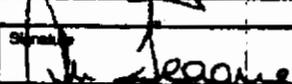
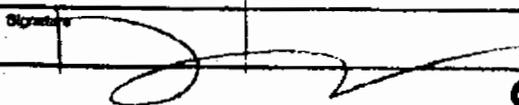
Authorized Signature: \_\_\_\_\_

Date: \_\_\_\_\_

01/22/03

# NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on office (12 pitch) typewriter)

<b>NON-HAZARDOUS WASTE MANIFEST</b>		1. Generator's US EPA ID No. <b>SC0170022560</b>		Manifest Document No. <b>01103</b>	2. Page 1 of 1
3. Generator's Name and Mailing Address <b>US NAVY 1849 AVE F N CHARLESTON SC 29405</b>					
4. Generator's Phone <b>(843) 925525</b>		5. Transporter 1 Company Name <b>EQ INDUSTRIAL SERVICES</b>		A. State Transporter's ID	
		6. US EPA ID Number <b>MI0 000 131 292</b>		B. Transporter 1 Phone <b>800 275 6629</b>	
7. Transporter 2 Company Name		8. US EPA ID Number		C. State Transporter's ID	
				D. Transporter 2 Phone	
9. Designated Facility Name and Site Address <b>EQ INDUSTRIAL SERVICES 5600 FULTON INDUSTRIAL Blvd ATLANTA GA 30336</b>		10. US EPA ID Number <b>N/A</b>		E. State Facility's ID	
				F. Facility's Phone <b>(404) 494-3520</b>	
11. WASTE DESCRIPTION			12. Containers	13. Total Quantity	14. Units
a. <b>NON-REGULATED/NON-HAZARDOUS MATERIAL ATL4624 ALV-1</b>			No. <b>001</b>	Type <b>TT</b>	<b>XXX 377 G</b>
b.					
c.					
d.					
G. Additional Descriptions for Materials Listed Above <b>1192 TL 519 ALV-1 4624</b>			H. Handling Codes for Wastes Listed Above		
15. Special Handling Instructions and Additional Information <b>IN CASE OF EMERGENCY: 1-800-275-6629</b>					
<b># 101797</b>					
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.					
Printed/Typed Name <b>BRIAN R CRAWFORD</b>		Signature 		Date <b>JAN 10 2003</b>	
17. Transporter 1 Acknowledgement of Receipt of Materials		Signature 		Date <b>01 10 02</b>	
Printed/Typed Name <b>JOHN TEAGUE</b>		Signature		Date <b>01 10 02</b>	
18. Transporter 2 Acknowledgement of Receipt of Materials		Signature		Date	
Printed/Typed Name		Signature		Date	
19. Discrepancy Indication Space					
20. Facility Owner or Operator, Certification of receipt of the waste materials covered by this manifest, except as noted in item 16.					
Printed/Typed Name <b>Danielle Waske</b>		Signature 		Date <b>01 10 03</b>	

NON-HAZARDOUS WASTE GENERATOR

RECEIVED BY FACILITY



# WASTE CHARACTERIZATION REPORT

EQ Tracking #

TO EXPEDITE YOUR WASTE APPROVAL, PLEASE COMPLETE THIS FORM ENTIRELY

### Please Choose One EQ Management Facility

- Michigan Disposal Waste Treatment Plant (Stabilization and Treatment) 49350 N. I-94 Service Drive, Belleville, MI 48111 EPA ID # MID000724811  
Phone: 800-592-5480 Fax: 800-592-5329
- Wayne Disposal, Inc. Site #3 Landfill (Hazardous & Chemical Waste Landfill) 49350 N. I-94 Service Drive, Belleville, MI 48111 EPA ID # MID04809663  
Phone: 800-592-5489 Fax: 800-592-5329
- EQ Resource Recovery, Inc. (Solvent Recycling, Fuel Blending, WW Treatment) 36345 Van Born Road, Romulus, MI 48174 EPA ID # MID06097584  
Phone: 866-373-8357 Fax: 734-326-4033
- EQ Transfer & Processing (Drum Transfer/Non-Hazardous Waste Processing) 1010 Old Rawsonville Rd., Ypsilanti, MI 48198 EPA ID # MIR000033949  
Phone: 734-547-1000 Fax: 734-480-9195
- EQ Indianapolis (Drum Transfer/Non-Hazardous Waste Processing) 4000 West 10<sup>th</sup> Street, Indianapolis, IN 46222 EPA ID # IND161049309  
Phone: 317-247-7160 Fax: 317-247-7170
- EQ Atlanta (Drum Transfer/Non-Hazardous Waste Processing) 3600 Fulton Industrial Blvd South, Atlanta, GA 30336 EPA ID # MID000131197  
Phone: 404-494-3520 Fax: 404-494-3560

### Section 1 - Generator & Customer Information

Generator EPA ID # SC0170922569 SIC # \_\_\_\_\_ EQ Customer No. 4624

Generator US NAVY Invoicing Company ALPHA ENV

Facility Address 1442 AVE F Address \_\_\_\_\_

City N. CHARLESTON State SC Zip 29405 City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

County \_\_\_\_\_ Country \_\_\_\_\_

Mailing Address (if different) Invoicing Contact \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_ Phone \_\_\_\_\_ Fax \_\_\_\_\_

Generator Contact DAVID BEVERLY Technical Contact TONY PATRICK

Title \_\_\_\_\_ Phone \_\_\_\_\_ Fax \_\_\_\_\_

*water*

*4604 MW-1*

### Section 2 - Shipping & Packaging Information

2.1) Shipping Volume <1000 GALLONS  
Shipping Frequency  One Time Only  Annual

2.2) DOT Shipping Name NON-REGULATED, NON-HAZARDOUS WASTE  
Density \_\_\_\_\_ lbs./gallon or lbs./cubic yard (or) Specific Gravity 1.00

2.3) Packaging (check all that apply)  
 Bulk Solid (Yd<sup>3</sup> < 2000 lbs/yd<sup>3</sup>)  
 Bulk Solid (Ton > 2000 lbs/yd<sup>3</sup>)  
 Bulk Liquids (Gallon)  
 Cubic Yard Boxes/Bags  
 Drums  
 Other (palletized, 5 gal. Pail, etc.) **TOTES**

Quoted bulk disposal charges for solid materials will be billed by the cubic yard, if the waste density is less than 2,000 lbs./cy. If waste density is greater than 2,000 lbs./cy, then bulk disposal charges will be billed by the ton, regardless of the approved container.

### Section 3 - Physical Characteristics

Waste Common Name: GROUNDWATER AND OIL

3.1) Color DARK

3.2) Odor MILD

3.3) Physical State at 70°F (check all that apply)  
 Solid  Dust  Liquid  Sludge

3.4) Does this waste contain? (check all that apply)  
 Free Liquids  Biodegradable Solvents  Powders  
 Metal Pieces  Oily Residue  None

3.5) Does this waste contain? (check all that apply)  
 Asbestos - friable  Pyrophoric Waste  
 Asbestos - non-friable  Reactive Waste  
 Dioxins  Shock Sensitive Waste  
 Furans  Radioactive Waste  
 Biohazard  Explosives  
 None

3.6) Describe the composition of the waste (i.e. key chemical compounds, soil, water, ppe, debris, etc.)  
GROUNDWATER 28 to 32%  
OIL 1 to 2%  
 \_\_\_\_\_ to \_\_\_\_\_ %  
 \_\_\_\_\_ to \_\_\_\_\_ %  
 Total = 100%

3.7) Does this waste contain >50% contaminated soil?  Yes  No

3.8) Does this waste contain >50% debris by volume?  Yes  No  
 (Debris is greater than 2.5 inches in size.)

**Section 4 - Generating Process and Regulatory Information**

4.1) Provide a detailed description of the process (es) generating this waste (attach flow diagram if available).

**GROUND WATER CONTAMINATED WITH FUEL OIL FROM OLD PIPE LEAKAGE PLUMPED FROM GROUNDWATER WELLS TO REMOVE PRODUCT.**

Based upon RCRA waste regulations (40 CFR 261) and Michigan Act 451 Rules:

Waste Code (s)

- 4.2) Is this an EPA RCRA listed hazardous waste (F, K, P or U)?  Yes  No
- 4.3) Is this a MICHIGAN hazardous waste (Other than RCRA)?  Yes  No
- 4.4) Is this a MICHIGAN non-hazardous liquid industrial waste?  Yes  No
- 4.5) Is this a UNIVERSAL waste?  Yes  No
- 4.6) Does this waste exceed LDR treatment standards?  Yes  No
- 4.7) Is this an EPA RCRA characteristic hazardous waste (D001-D043)?  Yes  No
- 4.8) What is the flash point of this waste?  <90°F  90-140°F  140-199°F  ≥200°F
- 4.9) Is the waste an oxidizer?  Yes  No
- 4.10) What is the pH of this waste?  ≤2  2-4.9  5-10  10.1-12.4  ≥12.5
- 4.11) Does this waste contain reactive oxide ≥ 250 ppm?  Yes  No
- 4.12) Does this waste contain reactive sulfide ≥ 500 ppm?  Yes  No
- 4.13) Is the waste surcharge exempt?  Yes  No

Code	Regulatory Level TCLP (mg/l)	Concentration (if above)
D004	Arsenic 5	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D005	Barium 100	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D006	Cadmium 1	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D007	Chromium 5	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D008	Lead 5	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D009	Mercury 0.2	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D010	Selenium 1	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D011	Silver 5	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D012	Endrin 0.02	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D013	Lindane 0.4	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D014	Methoxychlor 10	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D015	Toxaphene 0.5	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D016	2,4-D 10	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D017	2,4,3-TP (Silvex) 1	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D018	Benzene 0.5	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D019	Carbon Tetrachloride 0.5	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D020	Chlordane 0.03	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D021	Chlorobenzene 100	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D022	Chloroform 6.0	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D023	o-Cresol 200	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above

Code	Regulatory Level TCLP (mg/l)	Concentration (if above)
D024	m-Cresol 200	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D025	p-Cresol 200	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D026	Cresols 200	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D027	1,4-Dichlorobenzene 7.5	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D028	1,2-Dichloroethane 0.5	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D029	1,1-Dichloroethylene 0.7	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D030	2,4-Dinitrotoluene 0.13	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D031	Heptachlor 0.008	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D032	Hexachlorbenzene 0.13	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D033	Hexachlorbutadiene 0.5	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D034	Hexachlorcyclopentadiene 3.0	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D035	Methyl Ethyl Ketone 200	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D036	Nitrobenzene 2	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D037	Pentachlorophenol 100	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D038	Pyridine 5	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D039	Tetrachloroethylene 0.7	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D040	Trichloroethylene 0.5	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D041	2,4,5-Trichlorophenol 400	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D042	2,4,6-Trichlorophenol 2	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D043	Vinyl Chloride 0.2	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above

4.14) The hazardous constituent information is based on:  Analysis (Please attach for review)  Generator Knowledge  Both

4.15) If this is a characteristic (D-coded) hazardous waste, does it contain underlying hazardous constituents (List in Section 5)?  Yes  No  N/A

**Section 5 - Constituent Information**

Review the following items in the EQ Resource Guide and indicate their concentrations below:

- 1) MVOC (Michigan Volatile Organic Compounds)
- 2) CCVOC (Subpart CC Volatile Organic Compounds)
- 3) UHC (Underlying Hazardous Constituents)
- 4) TRI (Toxic Release Inventory Constituents)

Indicate all constituents in your waste stream, their concentrations, and circle Yes or No for UHC:

UHC?	Concentration
<input type="checkbox"/> Yes <input type="checkbox"/> No	
<input type="checkbox"/> Yes <input type="checkbox"/> No	
<input type="checkbox"/> Yes <input type="checkbox"/> No	

UHC?	Concentration
<input type="checkbox"/> Yes <input type="checkbox"/> No	
<input type="checkbox"/> Yes <input type="checkbox"/> No	
<input type="checkbox"/> Yes <input type="checkbox"/> No	

Section 6 - PCB & TCE1 Information

- 6.1) What is the concentration of PCBs in the waste?  None  1-9 ppm  10-49 ppm  50-99 ppm  100+ ppm
- 6.2) Does the waste contain PCB concentrations from a source with a concentration  $\geq 50$  ppm?  Yes  No
- 6.3) Does this waste contain free liquids? (See page 01 for test)  Yes  No
- 6.4) Has this waste been processed into a non-liquid form?  
 (If yes, what was the concentration of PCBs prior to processing?)  N/A  1-99 ppm  100+ ppm
- 6.5) Is the non-liquid PCB waste in the form of soil, rock, debris, or other environmental matrix?  Yes  No
- 6.6) Are you a PCB separator, manufacturer or a PCB equipment manufacturer?  Yes  No
- 6.7) Has the PCB waste (e.g., transformer, hydraulic machine, PCB-contaminated electrical equipment) been drained/flushed of all PCBs and destroyed in accordance with 40 CFR 761.60(f)?  N/A  Yes  No

Section 7 - Benzene NESHAP Information

UNCLASIFIED	CONFIDENTIAL	SECRET
2012	2045	2079
2013	2041	2077
2016	2045	2081
2019	2043	2080
2021	2044	2080
2022	2041	2080
2023	2041	2080
2024	2040	2071
2025	2039	2073
2026	2037	2069
2029	2036	2061

- 7.1) Does this waste exceed certain Benzene? (If "no" in 7.1, please skip to Section 8)  Yes  No
- 7.2) Does the waste stream come from a facility with one of the SIC codes listed under NESHAP?  Yes  No
- 7.3) Does your company manage waste from facilities with Total Annual Benzene (TAB)  $\geq 10$  Mg/year?  
 \* If you answered "YES" to question 7.3, please skip to Section 8
- 7.4) Does the waste contain methyl water?  Yes  No
- 7.5) What is the TAB quantity for your facility? \_\_\_\_\_ Mg/Year
- 7.6) Does the waste contain methyl dipping liquid Benzene?  Yes  No
- 7.7) What is the total Benzene concentration in your waste? \_\_\_\_\_ Percent or \_\_\_\_\_ ppm.  
 (Do not use PCB analytical results. Acceptable laboratory methods include EPA 8210, 8210A, and 8210B.)

Section 8 - Waste Characterization Information

\* Complete for Subpart 300.11000 Waste Treatment Plant, Waste Disposal, and RCRA

- 8.1) Does this waste contain any "Priority Organic Constituents" as defined in the EQ Resource Guide?  Yes  No
- 8.2) Does this waste contain any MVOC constituents as defined in the EQ Resource Guide?  Yes  No
- 8.3) Is the waste subject to Subpart 300.11000 (i.e., certain PFOO ppm (VOCs) Volatile Organic Compound)?  Yes  No  
 \* If 8.1, 8.2, or 8.3 is "yes" - please indicate the constituents and their concentrations in the table provided in Section 1.

Section 9 - Resuspension/Spilling/Pool Standing

\* Complete for EQ Resource Category ONLY

- 9.1) Wash water @ (Y/N) \_\_\_\_\_ Coarse (Y/N) \_\_\_\_\_ Fine (Y/N) \_\_\_\_\_ Solids (Y/N) \_\_\_\_\_
  - 9.2) Is this material a resuspendible petroleum product?  Yes  No
  - 9.3) Is this material for waste water treatment?  Yes  No
- \* If you answered "Y" or "N" - please check the Waste-water Addition Form found in the EQ Resource Guide.

Section 10 - Certification

I certify that all information (including attachments) is complete and factual and is an accurate representation of the known and suspected hazards pertaining to the waste described herein. I authorize EQ's Resource Team to add supplemental information to the waste approval file, provided I am contacted and give verbal permission. I authorize EQ's Resource Team to obtain a sample from any waste shipment for purposes of verification and confirmation.

Generator Signature: [Signature] Printed Name: Jack Hennessy  
 Company: CH2M HILL Title: Site Superintendent Date: 2/25/03

The generator's signature must appear on the EQ Waste Characterization Report. If the generator has authorized a third party to create this document, a written notice (see generator letterhead) must accompany this submission. Although the EQ Resource Team is authorized to make certain modifications to the information provided on this form, the addition or removal of waste codes and waste constituents must be documented by the generator.

# NON-HAZARDOUS WASTE MANIFEST

DAVID  
CHECK!

Please print or type (Form designed for use on elite (12 pitch) typewriter)

<b>NON-HAZARDOUS WASTE MANIFEST</b>		1. Generator's US EPA ID No. <b>SC0170022560</b>		Manifest Document No. <b>01103</b>	2. Page 1 of 1	
3. Generator's Name and Mailing Address <b>US NAVY 1849 Ave F N. CHARLESTON SC 29405</b>						
4. Generator's Phone <b>(843) 820 5525</b>		5. Transporter 1 Company Name <b>EQ INDUSTRIAL SERVICES</b>		6. US EPA ID Number <b>M10 000 131 292</b>		
		7. Transporter 2 Company Name		A. State Transporter's ID		
				B. Transporter 1 Phone <b>800 275 6629</b>		
				C. State Transporter's ID		
				D. Transporter 2 Phone		
9. Designated Facility Name and Site Address <b>EQ INDUSTRIAL SERVICES 5600 FULTON INDUSTRIAL Blvd ATLANTA, GA 30336</b>		10. US EPA ID Number <b>N/A</b>		E. State Facility's ID		
				F. Facility's Phone <b>(404) 494-3520</b>		
11. WASTE DESCRIPTION  <b>a. NON-RECYCLED/NON-HAZARDOUS MATERIAL</b>			12. Containers		13. Total Quantity <b>XXX 377</b>	
			No.	Type		14. Unit Wt./Vol. <b>G</b>
			<b>001</b>	<b>TT</b>		
G. Additional Descriptions for Materials Listed Above <b>11a) ATL SHIP ALV-1 4624</b>			H. Handling Codes for Wastes Listed Above			
15. Special Handling Instructions and Additional Information <b>IN CASE OF EMERGENCY: 1-800-275-6629</b>						
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.						
Printed/Typed Name <b>Brian R. Crawford</b>		Signature <i>[Signature]</i>		Date <b>JAN 10 2003</b>		
17. Transporter 1 Acknowledgement of Receipt of Materials		Printed/Typed Name <b>JOHN TEAGUE</b>		Signature <i>[Signature]</i>		
18. Transporter 2 Acknowledgement of Receipt of Materials		Printed/Typed Name		Signature		
19. Discrepancy Indication Space						
20. Facility Owner or Operator, Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.						
Printed/Typed Name <b>Danielle Waske</b>		Signature <i>[Signature]</i>		Date <b>0110 103</b>		

NON-HAZARDOUS WASTE GENERATOR SITE



Industrial Services, Inc.  
5600 Fulton Industrial Blvd  
Atlanta, GA 30336

# Certificate of Disposal

This certificate is to verify the waste specified on Manifest/Bill of Lading # 01103 has been properly disposed of in accordance with all local, state and federal regulations.

## FACILITY NAME:

EQIS Atlanta  
Transfer and Processing  
5600 Fulton Industrial Blvd, SW  
Atlanta, GA 30336  
404 494-3520  
404 494-3560 fax

Authorized Signature: \_\_\_\_\_

A handwritten signature in black ink, consisting of a large, stylized initial 'D' followed by a long, horizontal stroke that tapers to the right.

Date: \_\_\_\_\_

01/22/03





Industrial Services, Inc.  
5600 Fulton Industrial Blvd  
Atlanta, GA 30336

# Certificate of Disposal

This certificate is to verify the waste specified on Manifest/Bill of Lading # 31103 has been properly disposed of in accordance with all local, state and federal regulations.

## FACILITY NAME:

EQIS Atlanta  
Transfer and Processing  
5600 Fulton Industrial Blvd, SW  
Atlanta, GA 30336  
404 494-3520  
404 494-3560 fax

Authorized Signature: \_\_\_\_\_

A handwritten signature in black ink, appearing to be 'D. [unclear]', written over a horizontal line.

Date: \_\_\_\_\_

3/25/03



6106 Corporate Park Dr. Browns Summit, NC 27214  
 Phone No: 336-375-1989 Fax No: 336-375-1801

13821

Approval Number 0-207113-N

Name of Waste Fuel Oil / Water

Material Characterization Form

Section 1: Generator Information SOUTHNAVFAC ENG COM

Generator Name CHARLESTON NAVAL COMPLEX  
 Pickup Address P.O. Box 190010  
NORTH CHARLESTON, SC 29419-9010  
 Generator Contact RICK NIELSON  
 Phone Number (843) 743-2985 Fax No (843) 743-2947  
 Billing Address SOUTHNAVFAC ENG COM CSO  
P.O. Box 190010 N. CHAS. SC 29419-9010

Billing Name ALPHA ENVIRONMENTAL  
 Billing Address 4995 CARDENTER Rd.  
VPILANTI MI 48877  
 Billing Contact TONY PATRICK  
 Phone Number (734) 572-7372 Fax No (734) 572-7563  
 SIC Code \_\_\_\_\_

Process Generating UST Pump Out

This waste stream subject to categorical pretreatment discharge standards listed in 40 CFR 400 through 471?  Yes  No

If yes, which category applies: \_\_\_\_\_  
 Please see reverse side for listing.

Section 3: Material Characteristics

Physical State @ 70°F: 100 % Liquid \_\_\_\_\_ % Sludge \_\_\_\_\_ % Solid Color Varies  
 Viscosity: \_\_\_\_\_ One  Two \_\_\_\_\_ Multi \_\_\_\_\_ Viscosity  Low \_\_\_\_\_ Medium \_\_\_\_\_ High  
 Pourable @ 70°F:  Yes \_\_\_\_\_ No \_\_\_\_\_ Pourable @ 70°F:  Yes \_\_\_\_\_ No  
 Description: Fuel  
 Shipping Volume:  gallons \_\_\_\_\_ yds<sup>3</sup> \_\_\_\_\_ cmtotes Frequency: \_\_\_\_\_ Week \_\_\_\_\_ Month \_\_\_\_\_ Year

Section 4: Proper D.O.T Shipping Information

Proper Shipping Name: Non-Hazardous Non-Regulated Material  
 Hazard Class: \_\_\_\_\_ UN/NA: \_\_\_\_\_ PG: \_\_\_\_\_ RQ: \_\_\_\_\_ ERG #: \_\_\_\_\_

Section 5: Chemical Constituents (Must Total 100%)

<u>Water</u>	<u>1-99</u> %
<u>Fuel Oil</u>	<u>1-99</u> %
_____	_____ %
_____	_____ %
_____	_____ %
_____	_____ %

Section 6	Section 7	Section 8	Section 9
Flash Point:	pH:	Spec. Gravity:	TSS:
<input type="checkbox"/> <100°F	<input type="checkbox"/> <2.0	<input type="checkbox"/> <0.80	<input checked="" type="checkbox"/> <0.5
<input type="checkbox"/> 101-140°F	<input type="checkbox"/> 2.1-6.0	<input checked="" type="checkbox"/> 0.81-1.0	<input type="checkbox"/> 0.5-2.0
<input type="checkbox"/> 141-200°F	<input checked="" type="checkbox"/> 6.1-9.0	<input type="checkbox"/> 1.01-1.2	<input type="checkbox"/> 2.0-5.0
<input checked="" type="checkbox"/> >200°F	<input type="checkbox"/> 9.1-12.4	<input type="checkbox"/> 1.21-1.40	<input type="checkbox"/> 5.0-10.0
Exact _____	<input type="checkbox"/> >12.5	<input type="checkbox"/> >1.4	<input type="checkbox"/> >10

Section 10	Section 11	Section 12
(X1000ppm)	Halogens:	BTU: (X1000lb)
<50	Chlorine <u>0</u> %	<input checked="" type="checkbox"/> <2
50-100	Bromine <u>0</u> %	<input type="checkbox"/> 3-5
100-200	Fluorine <u>0</u> %	<input type="checkbox"/> 5-9
200-300	Iodine <u>0</u> %	<input type="checkbox"/> 9-12
300-400	Total <u>0</u> %	<input type="checkbox"/> 12-15
>400		<input type="checkbox"/> >15

Section 13 Metals	Totals	TCLP	Reg Limit	Amount
D004 Arsenic (As)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	5.0	<u>&lt;lig</u> ppm
D005 Barium (Ba)	<input type="checkbox"/>	<input type="checkbox"/>	100.0	_____ ppm
D006 Cadmium (Cd)	<input type="checkbox"/>	<input type="checkbox"/>	1.0	_____ ppm
D007 Chromium (Cr)	<input type="checkbox"/>	<input type="checkbox"/>	5.0	_____ ppm
D008 Lead (Pb)	<input type="checkbox"/>	<input type="checkbox"/>	5.0	_____ ppm
D009 Mercury (Hg)	<input type="checkbox"/>	<input type="checkbox"/>	0.2	_____ ppm
D010 Selenium (Se)	<input type="checkbox"/>	<input type="checkbox"/>	1.0	_____ ppm
D011 Silver (Ag)	<input type="checkbox"/>	<input type="checkbox"/>	5.0	_____ ppm
Copper (Cu)	<input type="checkbox"/>	<input type="checkbox"/>		_____ ppm
Nickel (Ni)	<input type="checkbox"/>	<input type="checkbox"/>		_____ ppm
Zinc (Zn)	<input type="checkbox"/>	<input type="checkbox"/>		_____ ppm

Notification and Certification

I am familiar with the waste as described on this form through analysis and testing or through knowledge of the waste generating process to support this notification. It is not regulated as specified in 40 CFR 268, Subpart D and all applicable prohibitions set forth in 40 CFR 268.52 or RCRA Section 304 (c).

Signature: Rick Nielson Print Name: Rick Nielson Date: 7/10/02

Chem Oil on Water Spills

Date: 7-11-2002  
 Manifest #: 29120  
 Time In: \_\_\_\_\_  
 Gallons: 655  
 Unit #: VT7

**Wet Chemistry**

pH: 7.23 (As Is Meter 1:1 Extraction 10% Dispersion)  
 Density: 5.23 lbs/gal  
 BSW: % Organic (Free) <1 %  
 % Organic (Soluble) — %  
 (Cooked Centrifuged)  
 Organics (Total) 3 %  
 Water 655 gal.  
 Solids \_\_\_\_\_ gal.

**Metal Analysis**

Ag 1.0 ppm  
 Cd 0.25 ppm  
 Cr 0.97 ppm  
 Cu 0.74 ppm  
 Ni 1.01 ppm  
 Pb 0.17 ppm  
 Zn 1.62 ppm

Flash Point: 71.4 °F Phenol 0 ppm  
 Ammonia: 0 ppm Glycol: 0 ppm  
 Sulfide: NS (+/-) Virus Check: Negative / Positive  
 Halogens: 0 +/- (Meter) Halogens: 0 ppm (Chlor-D-Tect)  
 Rxn w/ Acid: None  
 Rxn w/ Caustic: None  
 Rxn w/ Water: None  
 Rxn w/ Sawdust: \_\_\_\_\_ Misc w/ Oil: \_\_\_\_\_

**Physical Description**

Layers: 1 2 3 4 Pumpable: Yes No Pourable: Yes No  
 Appearance: Light Color: Clear  
 Odor: None Slight Mild Strong Describe:  
 Viscosity: Water #2 #4 #5 #6 Sludge Solids

**Pretreatment Methodology**

Unloading Station: 1 2 3 4 5 6 7 Water Tank: TW1 TW2 TK 7  
 Handling Method: DAF Oil Sys Solidify Gas Recycling Dir Discharge Land Farm Glycol Recycling Used Oil  
 Handling Codes: HM01 HM02 HM03 HM04 HM05 HM06 HM07 HM08 HM09 HM10

Health & Safety Concern: \_\_\_\_\_  
 Comments: \_\_\_\_\_

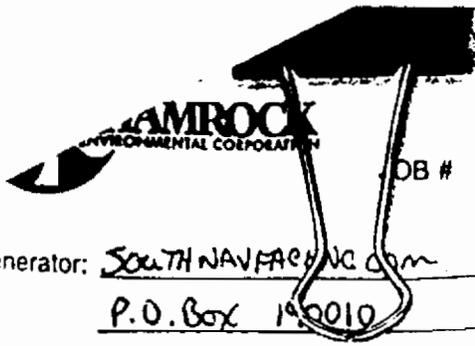
Analytical Certified By: [Signature] Date: 7-11-2002

**Off-Spec Discrepancy Form**

Discrepancy: \_\_\_\_\_ New Cost: \_\_\_\_\_  
 Person(s) Contacted: \_\_\_\_\_  
 Phone Number: \_\_\_\_\_ Call Made By: \_\_\_\_\_  
 Time: \_\_\_\_\_ am / pm  
 Authorization From: \_\_\_\_\_  
 Mgmt Approval Of Pricing: \_\_\_\_\_ Date: \_\_\_\_\_

**Discharge**

Feet: \_\_\_\_\_ Gallons: \_\_\_\_\_ Start: \_\_\_\_\_ Stop: \_\_\_\_\_



**MATERIAL MANIFEST**

JOB # 02-AFV-02-0925

MANIFEST 29120

Date: 7/10/02

Phone No.: (843) 743-2985

EPA ID No.: 13821

Generator: SOUTH NAVY FAC, NC COM CHAS. NAVAL COMPLEX  
P.O. Box 190010  
NORTH CHARLSTON, SC. 29419-9010

Process which generated waste:  
 I certify that the materials described below are properly described, classified, packaged, marked & labeled, and are in the proper condition to be transported as specified by the Department of Transportation. I certify that the waste described below is non hazardous in accordance with the Environmental Protection Agency. I certify that the specific waste was delivered to the carrier named below for transport to the facility indicated.

Date: 7-11-02 Signature: [Signature]

HM	PROPER SHIPPING NAME AS LISTED ON 172.101 TABLE	HAZ CLASS	DOT I.D. NUMBER	PG GROUP	QUANTITY	CIRCLE UNIT	CONTAINER NO. TYPE	ERG. NO.
	NON-REGULATED/NON-HAZARDOUS PER 40.49 CER	NOKE	N/A	N/A	635	Gals. Pounds Tons Cu. Yds.	1 TT DT CM DM DF	N/A

SHAMROCK ENVIRONMENTAL USE ONLY						
DESCRIPTION OF MATERIAL		CIRCLE FORM	AMOUNT SOLIDS		AMOUNT LIQUIDS	
			GALLONS	TONS	NO. DRUMS	GALLONS
WATER AND FUEL OIL		SOLID LIQUID SLUDGE				
CONTAINER	NUMBER					
<u>02071103-N</u>						

Transporter: SHAMROCK ENVIRONMENTAL CORPORATION  
6106 CORPORATE PARK DRIVE  
BROWNS SUMMIT, NC 27214

Unit Number(s) UT 2  
 Phone No.: (336) 375-1989  
 EPA ID No.: NC 0000 942144  
 Container: 1/17C TRUCK  
 24 Hour Emergency No.: (336) 375-1989

Vehicle License Tag Number(s) 199599 LV  
 Transporter Certification:  
 I certify that the specified material was transferred in a registered (licensed) vehicle to the facility named and was accepted.

Pick-up Driver's Signature [Signature] Date 7-10-02  
 Delivery Driver's Signature [Signature] Date 7-11-02

Facility: SHAMROCK ENVIRONMENTAL CORPORATION  
6106 CORPORATE PARK DRIVE  
BROWNS SUMMIT, NC 27214  
 Phone No.: (336) 375-1989  
 Contact: \_\_\_\_\_

Handling Method: Hand

Facility Certification:  
 I certify that the transporter above delivered the specified material to this facility and was handled in the above listed handling method.

Date: 7/10/02 Signature: [Signature]

DESTINATION RETAIN:



## CERTIFICATE OF WASTE DISPOSAL

SHAMROCK ENVIRONMENTAL CORPORATION  
6106 Corporate Park Drive  
Browns Summit, NC 27214

Mail to: Alpha Environmental  
4995 Carpenter Rd.  
Ypsilanti, MI 48197

Pickup Address: SouthNavFacEngCom  
Charleston Naval Complex  
North Charleston, SC 29419-9010

Attention: Felicia Rutledge

EPA ID#: N/A

*This is to certify that non-hazardous material removed from South Nav Fac Eng Com  
has been disposed of in accordance with all applicable local, state, and federal regulations in the following manner.*

<u>Date</u>	<u>Manifest #</u>	<u>Waste Stream #</u>	<u>Final Disposal</u>	<u>Method</u>
7/10/02	29120	02071103-N	POTW & Noble Oil Svc.	Wastewater treatment & oil recycling

  
\_\_\_\_\_  
Facility Manager





# WASTE CHARACTERIZATION REPORT

TO EXPEDITE YOUR WASTE APPROVAL, PLEASE COMPLETE THIS FORM ENTIRELY

EQ Tracking #

*Good*

### Please Check One EQ Management Facility

- Michigan Disposal Waste Treatment Plant (Stabilization and Treatment) 49350 N. I-94 Service Drive, Belleville, MI 48111 EPA ID # MID 000 724 531  
Phone: 800-592-5489 Fax: 800-592-5329
- Wayne Disposal, Inc. Site #3 Landfill (Hazardous & Chemical Waste Landfill) 49350 N. I-94 Service Drive, Belleville, MI: 48111 EPA ID # MID 048 090 533  
Phone: 800-592-5489 Fax: 800-592-5329
- EQ Resource Recovery, Inc. (Solvent Recycling, Fuel Blending, WW Treatment) 36345 Van Buren Road, Romulus, MI 48174 EPA ID # MID 060 975 344  
Phone: 866-373-8357 Fax: 734-326-4033
- EQ Transfer & Processing (Drum Transfer/Non-Hazardous Waste Processing) 1010 Old Revereville Rd., Ypsilanti, MI 48198 EPA ID # MIR 000 033 263  
Phone: 734-547-1090 Fax: 734-480-9195
- EQ Indianapolis (Drum Transfer/Non-Hazardous Waste Processing) 4000 West 10<sup>th</sup> Street, Indianapolis, IN 46222 EPA ID # IND 161 049 001  
Phone: 317-247-7160 Fax: 317-247-7170
- EQ Atlanta (Drum Transfer/Non-Hazardous Waste Processing) 3800 Palton Industrial Blvd South, Atlanta, GA 30336 EPA ID # M30 000 13 191  
Phone: 404-494-3520 Fax: 404-494-3560

*PCB Debris*

### Section 1 - Generator & Customer Information

Generator EPA ID # SCB17882569 SIC # \_\_\_\_\_  
 Generator US NAVY  
 Facility Address 1849 AVE F  
 City N CHARLESTON State SC Zip 29404  
 County \_\_\_\_\_  
 Mailing Address (if different) \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
 Generator Contact David Beverly  
 Title \_\_\_\_\_  
 Phone \_\_\_\_\_ Fax \_\_\_\_\_

EQ Customer No 4506  
 Invoicing Company EQ - Atlanta  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
 Country \_\_\_\_\_  
 Invoicing Contact \_\_\_\_\_  
 Phone \_\_\_\_\_ Fax \_\_\_\_\_  
 Technical Contact Danielle Washie  
 Phone \_\_\_\_\_ Fax \_\_\_\_\_  
404.494.3500 404.494.3560

### Section 2 - Shipping & Packaging Information

2.1) Shipping Volume 2-5 drums  
 Shipping Frequency  One Time Only  Annual  
 2.2) DOT Shipping Name Environmentally Hazardous Substance, Solids, (Polychlorinated Bi-Phenyls) 9, UN3077, PG III  
 Density \_\_\_\_\_ lbs./gallon or lbs./cubic yard (or) Specific Gravity 1.00

2.3) Packaging (check all that apply)  
 Bulk Solid (Yd<sup>3</sup> < 2000 lbs/yd<sup>3</sup>)  
 Bulk Solid (Ton > 2000 lbs/yd<sup>3</sup>)  
 Bulk Liquids (Gallon)  
 Cubic Yard Boxes/Bags  
 Drums  
 Other (palletized, 5 gal. Pail, etc.)  
 Quoted bulk disposal charges for solid materials will be billed by the cubic yard, if the waste density is less than 2,000 lbs./yd<sup>3</sup>. If waste density is greater than 2,000 lbs./yd<sup>3</sup>, then bulk disposal charges will be billed by the ton, regardless of the approved container.

### Section 3 - Physical Characteristics

Waste Common Name: PCB CONTAMINATED DEBRIS

3.1) Color DARK  
 3.2) Odor MILD  
 3.3) Physical State at 70°F (check all that apply)  
 Solid  Dust  Liquid  Sludge  
 3.4) Does this waste contain? (check all that apply)  
 Free Liquids  Biodegradable Solvents  Powders  
 Metal Flakes  Other Residue  None  
 3.5) Does this waste contain? (check all that apply)  
 Asbestos - friable  Pyrophoric Waste  
 Asbestos - non-friable  Reactive Waste  
 Dioxins  Shock Sensitive Waste  
 Furans  Radioactive Waste  
 Biohazard  Explosives  
 None

3.6) Describe the composition of the waste (i.e. key chemical compounds, soil, water, ppe, debris, etc.)  
PCB DEBRIS \_\_\_\_\_ to 100%  
RAGS PADS WIPES PPE \_\_\_\_\_ to \_\_\_\_\_ %  
CARDBOARD PLASTIC FLOOR DRY \_\_\_\_\_ to \_\_\_\_\_ %  
CONT'D WHITE ANE DECON SOLN \_\_\_\_\_ to \_\_\_\_\_ %  
 Total = 100%

3.7) Does this waste contain >50% contaminated soil?  Yes  No  
 3.8) Does this waste contain >50% debris by volume?  Yes  No  
 (Debris is greater than 2.5 inches in size.)

*good*

**Section 4 - Generating Process and Regulatory Information**

4.1) Provide a detailed description of the process (es) generating this waste (attach flow diagram if available).  
**DECON OF INTERIOR OF VAC TRUCK USING HEXANE SOLUTION, RAGS, WIPES, PADS, ETC. AFTER PUMPING LNAPL AND WATER FROM CONTAMINATED WELLS. ALSO INCLUDES SPILL PADS USED TO REMOVE NAPL LAYER FROM WATER.**

Based upon RCRA waste regulations (40 CFR 261) and Michigan Act 451 Rules:

Waste Code (s)

- 4.2) Is this an EPA RCRA listed hazardous waste (F, K, P or U)?  Yes  No
- 4.3) Is this a MICHIGAN hazardous waste (Other than RCRA)?  Yes  No
- 4.4) Is this a MICHIGAN non-hazardous liquid industrial waste?  Yes  No
- 4.5) Is this a UNIVERSAL waste?  Yes  No
- 4.6) Does this waste exceed LDR treatment standards?  Yes  No
- 4.7) Is this an EPA RCRA characteristic hazardous waste (D001-D043)?  Yes  No PCB#
- 4.8) What is the flash point of this waste?  <90°F  90-140°F  140-199°F  ≥200°F
- 4.9) Is the waste an oxidizer?  Yes  No
- 4.10) What is the pH of this waste?  ≤  2-4.9  5-10  10.1-12.4  ≥12.5
- 4.11) Does this waste contain reactive cyanide ≥ 250 ppm?  Yes  No
- 4.12) Does this waste contain reactive sulfide ≥ 500 ppm?  Yes  No
- 4.13) Is the waste surcharge exempt?  Yes  No

Code	Regulatory Level TCLP (mg/l)	Concentration (if above)
D004	Arsenic 5	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D005	Barium 100	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D006	Cadmium 1	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D007	Chromium 5	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D008	Lead 5	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D009	Mercury 0.2	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D010	Selenium 1	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D011	Silver 5	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D012	Endrin 0.02	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D013	Lindane 0.4	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D014	Methoxychlor 10	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D015	Toxaphene 0.5	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D016	2,4-D 10	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D017	2,4,5-TP (Silvex) 1	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D018	Benzene 0.5	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D019	Carbon Tetrachloride 0.5	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D020	Chlordane 0.02	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D021	Chlorobenzene 100	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D022	Chloroform 6.0	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D023	o-Cresol 200	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above

Code	Regulatory Level TCLP (mg/l)	Concentration (if above)
D024	m-Cresol 200	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D025	p-Cresol 200	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D026	Cresols 200	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D027	1,4-Dichlorobenzene 7.5	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D028	1,2-Dichloroethane 0.5	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D029	1,1-Dichloroethylene 0.7	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D030	2,4-Dinitrotoluene 0.13	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D031	Heptachlor 0.008	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D032	Heptachlorobenzene 0.13	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D033	Heptachlorobutadiene 0.5	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D034	Heptachloroethane 3.0	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D035	Methyl Ethyl Ketone 200	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D036	Nitrobenzene 2	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D037	Pentachlorophenol 100	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D038	Pyridine 5	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D039	Tetrachloroethylene 0.7	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D040	Trichloroethylene 0.5	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D041	2,4,5-Trinitrophenol 400	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D042	2,4,6-Trinitrophenol 2	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above
D043	Vinyl Chloride 0.2	<input checked="" type="checkbox"/> Below <input type="checkbox"/> Above

- 4.14) The hazardous constituent information is based on:  Analysis (Please attach for review)  Generator Knowledge  Bot
- 4.15) If this is a characteristic (D-coded) hazardous waste, does it contain underlying hazardous constituents (List in Section 5)?  Yes  No  N/A

**Section 5 - Constituent Information**

Review the following items in the EQ Resource Guide and indicate their concentrations below:  
 1) MVOC (Michigan Volatile Organic Compounds) 2) CCVOC (Subpart CC Volatile Organic Compounds)  
 3) UHC (Underlying Hazardous Constituents) 4) TRI (Toxic Release Inventory Constituents)  
 Indicate all constituents in your waste stream, their concentrations, and circle Yes or No for UHC:

UHC?	Yes	No
<input type="checkbox"/> Yes <input type="checkbox"/> No		
<input type="checkbox"/> Yes <input type="checkbox"/> No		
<input type="checkbox"/> Yes <input type="checkbox"/> No		

UHC?	Yes	No
<input type="checkbox"/> Yes <input type="checkbox"/> No		
<input type="checkbox"/> Yes <input type="checkbox"/> No		
<input type="checkbox"/> Yes <input type="checkbox"/> No		

Section 6 - PCB & TSCA Information

- 6.1) What is the concentration of PCBs in the waste?  None  0-4 ppm  4-49 ppm  50-999 ppm  1000+ ppm
- 6.2) Does the waste contain PCB copolymerization from a source with a concentration  $\geq 50$  ppm?  Yes  No
- 6.3) Does the waste contain free liquids? (Use parts other than)  Yes  No
- 6.4) Has this waste been processed into a non-liquid form?  
If yes, what was the concentration of PCBs prior to processing?  N/A  0-499 ppm  1000+ ppm
- 6.5) Is the non-liquid PCB waste in the form of soil, slag, dross, or other contaminated media?  Yes  No
- 6.6) Are you a PCB generator manufacturer or a PCB equipment manufacturer?  Yes  No
- 6.7) Was the PCB Article (e.g., transformers, hydraulic machines, PCB-contaminated electrical equipment) fully drained/flushed of all PCBs and disposed of in accordance with 40 CFR 161.004?  N/A  Yes  No

Section 7 - Resource NEERAP Information

NEERAP SIC CODE	NEERAP SIC CODE	NEERAP SIC CODE
2812	2824	2878
2813	2861	2879
2814	2842	2881
2819	2843	2882
2821	2844	2883
2822	2851	2885
2823	2851	2889
2824	2854	2871
2831	2859	2812
2834	2873	4903
2835	2874	2811

- 7.1) Does the waste stream contain Benzene? (If "no" to 7.1, please skip to Section 8)  Yes  No
- 7.2) Does the waste stream come from a facility with one of the SIC codes listed under NEERAP?  Yes  No
- 7.3) Does your company manage waste from facilities with Total Annual Benzene (TAB)  $\geq 10$  Meg/year?  
If you answered "NO" to question 7.3 AND 7.5, please skip to Section 8.  Yes  No
- 7.4) Does the waste contain  $\geq 100$  mg/l?  Yes  No
- 7.5) What is the TAB quantity for your facility? \_\_\_\_\_ Meg/Year
- 7.6) Does the waste contain  $\geq 1.0$  mg/l total Benzene?  Yes  No
- 7.7) What is the total Benzene concentration in your waste? \_\_\_\_\_ Percent or \_\_\_\_\_ ppmw.  
(Do not use TCLP analytical results. Acceptable laboratory methods include MSB, 820, 4240, 603 and 824.)

Section 8 - Waste Characterization Information

Complete for Michigan Regional Waste Treatment Plant, Water District, and BQIAE

- 8.1) Does this waste contain any "Potentially Odorous Constituent" as defined in the BQ Resource Guide?  Yes  No
- 8.2) Does this waste contain any MVOC constituents as defined in the BQ Resource Guide?  Yes  No
- 8.3) Is this waste subject to Subpart CC regulation (i.e., contains 1000 ppm (VOC) Volatile Organic Compound)?  Yes  No  
If "Yes", "N/A", or "I" or "Yes" - please indicate the constituents and their concentrations in the table provided in Section 9.

Section 9 - Remediation/Recovery/Total Solids

Complete for BQ Resource Guide ONLY.

- 9.1) Total solids (TSU/%) \_\_\_\_\_ Chloride (%) \_\_\_\_\_ Water (%) \_\_\_\_\_ Solids (%) \_\_\_\_\_
  - 9.2) Is this material a recoverable petroleum product?  Yes  No
  - 9.3) Is this material for waste water treatment?  Yes  No
- If you answered 9.2 or 9.3 "yes" - please attach the Waterway Attachment Form found in the BQ Resource Guide.

Section 10 - Certification

I certify that all information (including attachments) is complete and factual and is an accurate representation of the known and expected hazards, pertaining to the waste described herein. I authorize BQ's Resource Team to add supplemental information to the waste approval file, provided I am contacted and give verbal permission. I authorize BQ's Resource Team to obtain a sample from any waste shipped for purposes of verification and confirmation.

Generator Signature: [Signature] Printed Name: Wesley Hearn  
 Company: Alpha Environmental, LLC Title: Site Superintendent Date: 3/27/03

The generator's signature must appear on the BQ Waste Characterization Report. If the generator has authorized a third party to certify this document, a written notice (on generator letterhead) must accompany this submission. Although the BQ Resource Team is authorized to make certain modifications to the information provided on this form, the addition or removal of waste codes and waste characteristics must be determined by the generator.



WASTE MANAGEMENT DIVISION  
MICHIGAN DEPARTMENT OF  
ENVIRONMENTAL QUALITY

DO NOT WRITE IN THIS SPACE  
ATT.  DIS.  REJ.  PR.

Required under authority of Part 111 and Part 121 of Act 401, 1994, as amended.  
Failure to file may subject generator and/or other parties under Sections 320.111(1) or 320.121(1) MCL.

Please print or type.

Form Approved OMB No. 2082-0289

<b>UNIFORM HAZARDOUS WASTE MANIFEST</b>		1. Generator's US EPA ID No. SC2120022800	Manifest Document No. 13843	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.
3. Generator's Name and Mailing Address CHARLESTON MANUFACTURING YARD CODE 300-BUILDING 108 CHARLESTON, SC 29405 SOUTH EN DIVISION NAVAL FACILITIES ENG CORP CSD PO BOX 19000 N. CHARLESTON, SC 29419-9010			A. State Manifest Document Number MI 8875965		B. State Generator's ID
5. Transporter 1 Company Name EQUINDUSTRIAL SERVICES			C. State Transporter's ID		D. Transporter's Phone (734) 877-8122
7. Transporter 2 Company Name Fairchild Corros Inc.			E. State Transporter's ID		F. Transporter's Phone 607-459-5229
8. Designated Facility Name and Site Address WAYNE DISPOSAL INC. - SITE #2 LANDFILL 40308 NORTH LISA SERVICE DR. Belleville, MI 48111			10. US EPA ID Number MI048000033		G. State Facility's ID
			H. Facility's Phone (800) 822-5488		

HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID NUMBER)	12. Containers		13. Total Quantity	14. Unit Wt/Vol	15. Waste No.
		No.	Type			
a.	X ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S. (PCB YCH ORINATED) RHPFM (R) UN3077	1	DM	36/80	K	PCBS
b.						
c.						
d.						

11a. Additional Descriptions for Materials Listed Above  
 11a. 031802AP / ENG 121 / PCB DISCARD ENG-01 (36 PG) OSD 010903  
 Sent to: Charleston Naval Facility, 1819 Ave. F, N. Charleston, SC 29405

15. Special Handling Instructions and Additional Information  
 24 HOUR EMERGENCY PHONE NUMBER 800-830-3075  
 Reference: 1087100-4

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have

Generator's Name Richard G. Jinks	Signature <i>[Signature]</i>	Date 08/12/03
Facility's Name Wayne Disposal Inc.	Signature <i>[Signature]</i>	Date 08/12/03

18. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest, except as noted in item 18.

Printed/Typed Name Richard G. Jinks	Signature <i>[Signature]</i>	Date 08/12/03
--	---------------------------------	------------------

EMERGENCY ALERTING SYSTEM IN MICHIGAN AT 1-800-882-4708 OR OUT OF STATE AT 817-375-7668 AND THE NATIONAL RESPONSE CENTER AT 1-800-424-2861

ALL BILLS MUST BE CENTER AT 1-800-424-2861

WASTE MANAGEMENT DIVISION  
MICHIGAN DEPARTMENT OF  
ENVIRONMENTAL QUALITY

#4506 @CID  
DO NOT WRITE IN THIS SPACE  
ATT.  DIS.  REJ.  PR.

Required under authority of Part 111 of  
Part 121 of Act 451, 1994, as amended

Failure to file may subject you to  
criminal and/or civil penalties under  
Sections 324.11151 or 324.12116 MCL.

Form Approved OMB No. 2050-0038

Please print or type.

Information in the shaded areas  
is not required by Federal law.

UNIFORM HAZARDOUS  
WASTE MANIFEST

1. Generator's US EPA ID No.

SCD170022580

2. EPA ID No.

23853

3. EPA ID No.

at 1

3. Generator's Name and Mailing Address

CHARLESTON NAVAL SHIPYARD  
CODE 100 BUILDING 100  
CHARLESTON, SC 29405

SOUTHERN DIVISION  
NAVAL FACILITIES ENG COM  
C50  
PO BOX 19000  
N. CHARLESTON SC 29449-9010

4. Generator's Phone

843 743-2905

5. Transporter 1 Company Name

EQ INDUSTRIAL SERVICES

US EPA ID Number

MD000131282

7. Transporter 2 Company Name

Freehold Carriage Inc

8. US EPA ID Number

NJ005426164

9. Designated Facility Name and Site Address

WAYNE DISPOSAL INC. - SITE #2 LANDFILL  
48360 NORTH I-94 SERVICE DR.  
Belleville, MI 48111

10. US EPA ID Number

MD048000833

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID NUMBER)

HM

12. Containers

No.

Type

13. Total Quantity

14. Unit Wt/Vol

a. X ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID,  
N O S (POLYCHLORINATED BIPHENYLS)  
UN3077 PGII

1

DM

36  
80

K

15. Special Handling Instructions and Additional Information

24 HOUR EMERGENCY PHONE NUMBER 800-830-3076

16838

Reference: 1087100-4

I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed Name

Richard G. Nielsen

Signature

[Signature]

Date  
Month Day Year

03/12/03

17. Transporter 1 Acknowledgment of Receipt of Materials

Printed/Typed Name

Steve Timemeier

Signature

[Signature]

Date

Month Day Year

03/12/03

18. Transporter 2 Acknowledgment of Receipt of Materials

Printed/Typed Name

Harvey J. Marcelli

Signature

[Signature]

Date

Month Day Year

03/12/03

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name

[Signature]

Signature

[Signature]

Date

Month Day Year

[Date]

800-292-4706 OR OUT OF STATE AT 517-373-7660 AND THE NATIONAL RESPONSE

CALL 1-800-424-9302 24 HOUR PER DAY.

CE

GENERATOR

TRANSPORTER

RECEIVER

CERTIFICATE OF DISPOSAL



FOR MANIFESTED PCB WASTE

This certificate is to verify the wastes identified as PCB Solids  
and specified on Manifest # MI 88 75965, Line Item 11a has been landfilled on  
4-4-, 2003 in accordance with all local, state and federal regulations by:

**Wayne Disposal, Inc.**

(EPA I.D. # MID048090633)

49350 N. I-94 Service Drive, Belleville, Michigan 48111

Telephone: 1-800-KWALITY (592-5489)

Fax: 1-800-KWALFAX (592-5329)

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (18 U.S.C. 1001 and 15 U.S.C. 2615), I certify that the information contained in or accompanying this document is true, accurate and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who are acting under my direct instructions made the verification that this information is true accurate and complete.

Authorized Signature: Tracy Ebel



## FENN-VAC, INC.

A WHOLLY OWNED SUBSIDIARY OF REPUBLIC SERVICES, INC.

P.O. Box 62679

North Charleston, SC 29419-2679

(843) 552-8306 - Fax (843) 760-5220

February 10, 2003

CH2M Jones  
115 Perimeter Center Pl  
NE Suite 700  
Atlanta, GA 30346-1278

### CERTIFICATE OF DISPOSAL

*Profile 7*

Fenn-Vac received waste material from Southern Division Naval Facility on Monday, February 3, 2003. The waste consisted of twenty (20) 55-gallon drums containing IDW soil.

Fenn-Vac hereby certifies that the waste material identified above was received and disposed in compliance with state and federal regulations.

FENN-VAC

Jennifer R. Crim  
Environmental Coordinator

**NON-HAZARDOUS  
WASTE MANIFEST**

1. Generator's US EPA ID No. Manifest Doc. No. 2. Page 1 of 1

3. Generator's Name and Mailing Address  
Southern Division Naval Facility  
Caretaker Jik Office, PO Box 190010  
N Charleston, SC 29419

4. Generator's Phone (843) 740-2780  
5. Transporter 1 Company Name Penn-Vac  
6. US EPA ID Number SC0980837504  
A. Transporter's Phone (843) 552-8306

7. Transporter 2 Company Name  
8. US EPA ID Number  
B. Transporter's Phone

9. Designated Facility Name and Site Address  
Rennell Processing Facility  
141 Rennell Rd  
N. Charleston SC 29418  
10. US EPA ID Number  
C. Facility's Phone (843) 552-4751

11. Waste Shipping Name and Description	12. Containers		13. Total Quantity	14. Unit WWVol
	No.	Type		
a. non-regulated solid, n.o.s. (IDW soil / drill cuttings)	0.2.0	DM	0.0.00	P
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above  
SVOI-70  
E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name: Jed Heames  
Signature: [Signature]  
Month Day Year: 2 | 3 | 05

17. Transporter 1 Acknowledgement of Receipt of Materials  
Printed/Typed Name: Steve Cudec  
Signature: [Signature]  
Month Day Year: 2 | 3 | 05

18. Transporter 2 Acknowledgement of Receipt of Materials  
Printed/Typed Name  
Signature  
Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.  
Printed/Typed Name: [Signature]  
Signature: [Signature]  
Month Day Year: 10 | 2 | 03

GENERATOR  
TRANSPORTER  
FACILITY

U.S. ENVIRONMENTAL PROTECTION AGENCY

ORIGINAL - RETURN TO GENERATOR

12-01-05 Rev. 12/00

## **Appendix G**

---

**Appendix G**

SWMU 17, Zone H

Soil and LNAPL Removal Interim Measure Completion Report

**SWMU 17 / RW-1**

<b>Date</b>	<b>Time</b>	<b>Depth to H2O</b>	<b>pH</b>	<b>Cond</b>	<b>Turb</b>	<b>Temp</b>
10/28/02	1229	6.8	6.76	1.46	12	25.4
<b>Developer:</b> Prat Shaw, EEG	1234	6.8	6.95	1.45	8	25.4
<b>Total depth:</b> 7.40	1237	6.8	6.95	1.45	5	25.1
<b>DTW:</b> 3.64						

**Water Column:** 3.76**One well volume:** 1.3 gallons**Three well volumes:** 3.9 gallons**Start Surge:** 1153**End Surge:** 1201**Start Development:** 1202**End Development:** 1237**Note:** Approximately 9 gallons purged from well prior to initiating water quality readings.**SWMU 17 / RW-2**

<b>Date</b>	<b>Time</b>	<b>Depth to H2O</b>	<b>pH</b>	<b>Cond</b>	<b>Turb</b>	<b>Temp</b>
10/28/02	1400	8.55	6.81	0.92	14	24.9
<b>Developer:</b> Prat Shaw, EEG	1403	8.55	6.88	0.92	10	25
<b>Total depth:</b> 9.02	1406	8.55	6.9	0.92	6	24.9
<b>DTW:</b> 5.13						

**Water Column:** 3.89**One well volume:** 1.3 gallons**Three well volumes:** 3.9 gallons**Start Surge:** 1301**End Surge:** 1309**Start Development:** 1310**End Development:** 1406**Note:** Approximately 11 gallons purged from well prior to initiating water quality readings.

## **Appendix H**

---

# CH2MHILL TRANSMITTAL

**To:** David Scaturo  
South Carolina Department of Health  
and Environmental Control  
Bureau of Land and Waste  
Management  
8901 Farrow Road  
Columbia, SC 29203

**From:** Dean Williamson/CH2M-Jones

**Date:** July 14, 2004

**Re:** CH2M-Jones' Responses to Comments by SCDHEC regarding the *Soil and LNAPL Removal Interim Measure Completion Report, SWMU 17, Zone H, Revision 0* – Originally Submitted on April 6, 2004

**We Are Sending You:**

X	Attached	Under separate cover via	
	Shop Drawings	Documents	Tracings
	Prints	Specifications	Catalogs
	Copy of letter	Other:	

---

Quantity	Description
2	CH2M-Jones' Responses to Comments by SCDHEC regarding the <i>Soil and LNAPL Removal Interim Measure Completion Report, SWMU 17, Zone H, Revision 0</i> – Originally Submitted on April 6, 2004

---

If material received is not as listed, please notify us at once.

Copy To:

Dann Spariosu/USEPA, w/att  
Rob Harrell/Navy, w/att  
Gary Foster/CH2M-Jones, w/att

Responses to SCDHEC Comments  
Interim Measure Completion Report, Soil and LNAPL Removal  
SWMU 17, Zone H  
Charleston Naval Complex  
June 15, 2004

---

**Comments Prepared by Jerry Stamps**

1. General

The Interim Measure Work Plan proposed collecting confirmation/delineation samples and removing contaminated soils with Aroclor 1260 exceeding the unpaved surface soil MCS of 10 mg/kg. In addition to the delineation samples, the original locations were re-sampled to confirm the original detections. Upon collecting the additional soil samples, the results indicate Aroclor 1260 concentrations below the planned MCS. Therefore, the Navy is recommending that soil removal is not necessary. The Navy must present the rationale for why the original contamination no longer appears to be present eliminating the need for excavation.

**CH2M-Jones Response:**

*As noted in the SWMU 17 IMCR report, re-sampling and analysis of soil for PCBs at several areas of SWMU 17 did not detect PCB concentrations as high as previously reported. There are several potential reasons why the re-sampling found lower concentrations. Soil contamination is known to be often more homogenous than groundwater contamination, so some variability in soil concentrations is expected. For the locations where lower PCB concentrations were reported during re-sampling, it is likely that the amount of PCB contamination at the particular location was very limited and localized. Thus, moving away even a short distance from the original sampling location ensured that the collected sample was in an area less impacted than originally sampled. Under such conditions, the amount of contamination originally reported can be concluded to be limited in extent.*

*The finding of lower PCB and other contaminant concentrations during re-sampling of soil has previously occurred at a few other sites at the CNC. For example, at AOC 709 (Zone H), another site with PCB contamination identified in soil, extensive re-sampling of the area did not confirm the concentrations of PCB originally reported and the site was subsequently closed out.*

*At SWMU 17, the site is recommended for a CMS to address contamination of soil and groundwater. Thus, the PCB contamination reported in soil will be appropriately addressed.*

**Comments Prepared by Don Hargrove**

1. The development logs for the newly installed wells should be included in the appendices of this report. Please revise to include these logs.

**CH2M-Jones Response:**

*The development logs for the newly installed will be provided in the revised report.*

2. The purge logs for each of the wells sampled should be included in the appendices of this report. Please revise to include these logs.

**CH2M-Jones Response:**

*For this particular IMCR, no new groundwater samples were collected and analyzed. However, in the future, purge logs will be provided for reports in which new groundwater samples are reported.*