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RESOURCE CONSERVATION AND RECOVERY ACT FACILITY INVESTIGATION REPORT
ADDENDUM SOLID WASTE MANAGEMENT UNIT 81 (SWMU 81) ZONE E CNC
CHARLESTON SC
8/26/2002
CH2M HILL

RFI REPORT ADDENDUM

SWMU 81, Zone E



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

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

CH2M Jones

August 2002

Contract N62467-99-C-0960



CH2MHILL

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August 26, 2002

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

Re: RFI Report Addendum (Revision 0) – SWMU 81, Zone E

Dear Mr. Scaturo:

Enclosed please find four copies of the RFI Report Addendum (Revision 0) for SWMU 81 in Zone E 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.

The principal author of this document is Sam Naik. Please do not hesitate to contact him at 770/604-9182, extension 255, should you have any questions or comments.

Sincerely,

CH2M HILL

Dean Williamson, P.E.

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

RFI REPORT ADDENDUM

SWMU 81, Zone E



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

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

PREPARED BY
CH2M-Jones

August 2002

Revision 0
Contract N62467-99-C-0960
158814.ZE.PR.01

Certification Page for RFI Report Addendum (Revision 0) – SWMU 81, Zone E

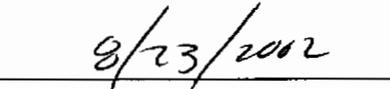
I, Dean Williamson, certify that this report has been prepared under my direct supervision. The data and information are, to the best of my knowledge, accurate and correct, and the report has been prepared in accordance with current standards of practice for engineering.

South Carolina

P.E. No. 21428



Dean Williamson, P.E.



Date

1 Contents

2 Section	Page
3 Acronyms and Abbreviations	vi
4 1.0 Introduction	1-1
5 1.1 Background	1-1
6 1.2 Purpose of the RFI Report Addendum	1-2
7 1.3 Report Organization	1-2
8 Figure 1-1 Location of SWMU 81 in Zone E.....	1-4
9 Figure 1-2 Aerial Photograph of SWMU 81.....	1-5
10 2.0 Summary of RFI Conclusions for SWMU 81	2-1
11 2.1 Sediment Sampling and Analysis.....	2-1
12 2.2 Concrete Sampling and Analysis.....	2-2
13 2.3 RFI Human Health Risk Assessment (HHRA).....	2-2
14 2.4 RFI Conclusions and Recommendations.....	2-2
15 Figure 2-1 RFI Sediment Sample Locations	2-3
16 Figure 2-2 RFI Concrete Core Sample Locations.....	2-4
17 3.0 Interim Measures and UST/AST Removals	3-1
18 3.1 UST/AST Removals	3-1
19 3.2 Interim Measures	3-1
20 4.0 Summary of Additional Investigations	4-1
21 5.0 COPC/COC Refinement	5-1
22 5.1 Sediment.....	5-1
23 5.2 Concrete.....	5-1
24 5.3 COC Summary	5-1
25 6.0 Summary of Information Related to Site Closeout Issues	6-1
26 6.1 RFI Status.....	6-1
27 6.2 Presence of Inorganics in Groundwater	6-1
28 6.3 Potential Linkage to SWMU 37, Investigated Sanitary Sewers	
29 at the CNC.....	6-1
30 6.4 Potential Linkage to AOC 699, Investigated Storm Sewers at the CNC.....	6-1
31 6.5 Potential Linkage to AOC 504, Investigated Railroad Lines at the CNC	6-2
32 6.6 Potential Migration Pathways to Surface Water Bodies at the CNC.....	6-2
33 6.7 Potential Contamination in Oil/Water Separators (OWSs)	6-2

1 **Contents, Continued**

2	6.8	Land Use Controls (LUCs).....	6-2
3	7.0	Recommendations	7-1
4	8.0	References	8-1
5			
6		Appendices	
7	A	Responses to SCDHEC comments for SWMU 81 from the <i>Zone E RFI Report, Revision</i>	
8		<i>0</i> (EnSafe, 1997)	
9	B	Excerpts from the <i>Zone E RFI Report, Revision 0</i> , including summaries of detected	
10		chemicals, and a groundwater flow map for the site vicinity	

1 **Acronyms and Abbreviations**

2	AST	Aboveground storage tank
3	BCT	BRAC Cleanup Team
4	BRAC	Base Realignment and Closure Act
5	CA	Corrective action
6	CMS	Corrective measures study
7	CNC	Charleston Naval Complex
8	COC	Chemical of concern
9	COPC	Chemical of potential concern
10	CSI	Confirmatory sampling investigation
11	EnSafe	EnSafe Inc.
12	HHRA	Human Health Risk Assessment
13	IM	Interim measure
14	LUC	Land use control
15	MCL	Maximum contaminant level
16	$\mu\text{g}/\text{kg}$	Micrograms per kilogram
17	NAVBASE	Naval Base
18	NFA	No further action
19	NFI	No further investigation
20	OWS	Oil/water separator
21	PCB	Polychlorinated biphenyl
22	RCRA	Resource Conservation and Recovery Act
23	RFI	RCRA Facility Investigation
24	SAA	Satellite Accumulation Area
25	SCDHEC	South Carolina Department of Health and Environmental Control
26	SSV	Sediment screening value
27	SVOC	Semivolatile organic compound
28	SWMU	Solid waste management unit
29	VOC	Volatile organic compound
30	UST	Underground storage tank

Section 1.0

1.0 Introduction

In 1993, Naval Base (NAVBASE) Charleston was added to the list of bases scheduled for closure as part of the Defense Base Realignment and Closure Act (BRAC), which regulates closure and transition of property to the community. The Charleston Naval Complex (CNC) was formed as a result of the dis-establishment of the Charleston Naval Shipyard and NAVBASE on April 1, 1996.

Corrective Action (CA) activities are being conducted under the Resource Conservation and Recovery Act (RCRA), with the South Carolina Department of Health and Environmental Control (SCDHEC) as the lead agency for CA activities at the CNC. All RCRA CA activities are performed in accordance with the Final RCRA Part B Permit (Permit No. SC0 170 022 560).

In April 2000, CH2M-Jones was awarded a contract to provide environmental investigation and remediation services at the CNC. This submittal has been prepared by CH2M-Jones to complete the RCRA Facility Investigation (RFI) for Solid Waste Management Unit (SWMU) 81 in Zone E of the CNC. The location of SWMU 81 in Zone E is shown in Figure 1-1. Figure 1-2 shows an aerial view of SWMU 81 and its vicinity.

1.1 Background

SWMU 81 consisted of a former less-than 90-day hazardous waste satellite accumulation area (SAA) located east of Building 1245. Building 1245 is located on Fourth Street between Dry Dock No. 5 and the Cooper River in Zone E of the CNC. The SAA was removed in May 1994, and the area is currently covered by asphalt and concrete.

The materials of concern identified based on historical operations for SWMU 81 the *Final Zone E RFI Work Plan, Revision 1* (EnSafe Inc. [EnSafe]/Allen & Hoshall, 1995) include metals, paints, and solvents. This area of Zone E is zoned M-2 (industrial). The CNC RCRA Permit identified SWMU 81 as requiring a Confirmatory Sampling Investigation (CSI).

The RFI was initially conducted by EnSafe, and the *Zone E RFI Report, Revision 0* (EnSafe, 1997) was prepared and submitted during 1997. Regulatory review was conducted on this document and draft responses to the comments from SCDHEC were prepared by the Navy/EnSafe team. A copy of these responses to comments is provided in Appendix A.

1.2 Purpose of the RFI Report Addendum

The purpose of this RFI Report Addendum is to document the results of the previous RFI investigation conducted by the Navy/EnSafe team at SWMU 81. This RFI Report Addendum also discusses the findings of previous investigations, existing site conditions, and surrounding area land use. SWMU 81 is recommended for No Further Action (NFA) status.

Prior to changing the status of any site in the CNC RCRA CA permit, the BRAC Cleanup Team (BCT) agreed that the following issues should be considered:

- Status of the RFI
- Presence of metals (inorganics) in groundwater
- Potential linkage to SWMU 37, Investigated Sanitary Sewers at the CNC
- Potential linkage to AOC 699, Investigated Storm Sewers at the CNC
- Potential linkage of AOC 504, Investigated Railroad Lines at the CNC
- Potential linkage to surface water bodies (Zone J)
- Potential contamination associated with oil/water separators (OWSs)
- Relevance or need for land use controls (LUCs) at the site

Information regarding these issues is also provided in this RFI Report Addendum to expedite evaluation of closure of the site.

1.3 Report Organization

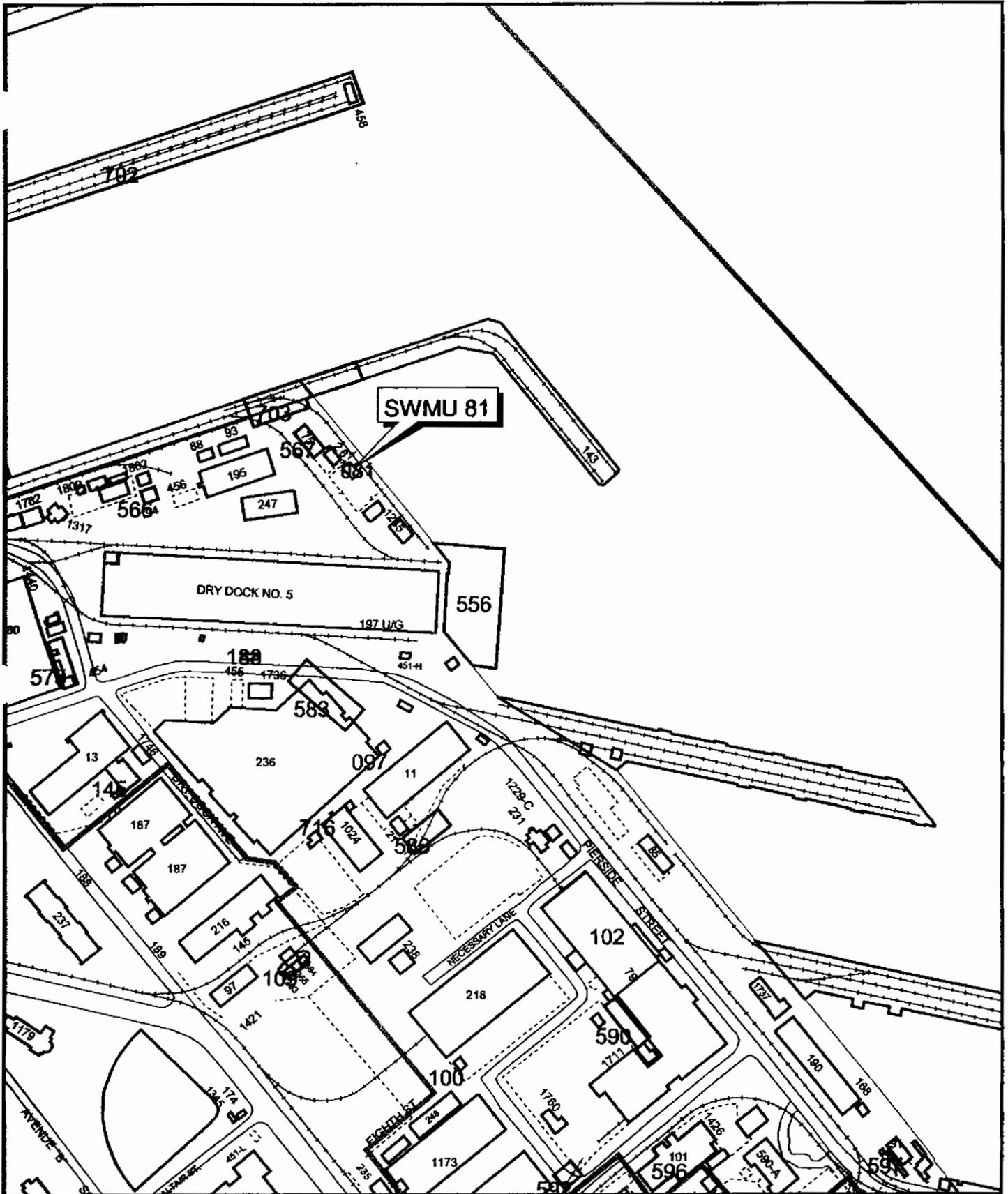
This RFI Report Addendum consists of the following sections, including this introductory section:

1.0 Introduction – Presents the purpose of the report and background information relating to the RFI Report Addendum.

2.0 Summary of RFI Conclusions for SWMU 81 – Summarizes the conclusions from the RFI investigation and risk evaluation for SWMU 81 as presented in the *Zone E RFI Report, Revision 0*.

3.0 Interim Measures and UST/AST Removals – Provides information regarding any interim measures (IMs) or tank removal activities performed at the site.

- 1 **4.0 Summary of Additional Investigations** – Summarizes information, if any, collected
2 after completion of the *Zone E RFI Report, Revision 0*.
- 3 **5.0 COPC/COC Refinement** – Provides further evaluation of chemicals of potential concern
4 (COPCs) based on the RFI and additional data used to assess them as chemicals of
5 concern (COCs).
- 6 **6.0 Summary of Information Related to Site Closeout Issues** – Discusses the various site
7 closeout issues that the BCT agreed to evaluate prior to site closeout.
- 8 **7.0 Recommendations** – Provides recommendations for NFA at SWMU 81.
- 9 **8.0 References** – Lists the references used in this document.
- 10 **Appendix A** – Contains responses to SCDHEC comments for SWMU 81 from the *Zone E RFI*
11 *Report, Revision 0* (EnSafe, 1997).
- 12 **Appendix B** – Contains excerpts from the *Zone E RFI Report, Revision 0*, including summary
13 of detections of chemicals and a groundwater flow map for the site vicinity.
- 14 All figures appear at the end of their respective sections.



- Fence
- Railroads
- Roads
- Shoreline
- AOC Boundary
- SWMU Boundary
- Buildings
- Zone Boundary

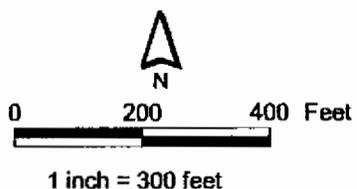
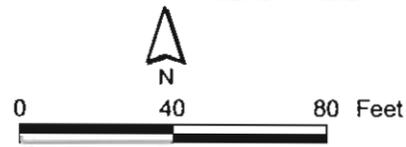


Figure 1-1
 Location of SWMU 81 in Zone E
 Charleston Naval Complex

NOTE: Aerial Photo Date is 1997



-  Fence
-  Railroads
-  Roads
-  Shoreline
-  AOC/SWMU Boundary
-  Buildings
-  Zone Boundary



1 inch = 50 feet

Figure 1-2
Site Map
SWMU 81
Charleston Naval Complex

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Section 2.0

2.0 Summary of RFI Conclusions for SWMU 81

This section summarizes the results and conclusions from the RFI conducted at SWMU 81 which were reported in the *Zone E RFI Report, Revision 0* (EnSafe, 1997). As part of the Zone E RFI, a sediment and concrete investigation was conducted at SWMU 81 during 1995-1997. Figures 2-1 and 2-2 show the sediment and concrete sampling locations, respectively.

The RFI report presented the results of this investigation and conclusions concerning contamination and risk, as summarized in the following sections. A further evaluation of COCs at SWMU 81 is provided in Section 5.0. Appendix A contains a summary of the detected chemicals in sediment and concrete from the *Zone E, RFI Report, Revision 0*. A groundwater flow map for the site vicinity is also included.

2.1 Sediment Sampling and Analysis

Sediment was sampled during one sampling event at SWMU 81. Sediment samples were collected from the Cooper River at sampling locations E081M0001 and E081M0002. The sampling locations are shown in Figure 2-1. Sediment samples were analyzed for organotins, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), metals, and cyanide. Duplicate sediment samples were not collected.

Detected concentrations of organic and inorganic compounds for sediment samples were as follows:

- **Organotins:** Organotins were not detected in sediment above laboratory detection limits.
- **VOCs:** 2-Butanone and carbon disulfide were detected in both sediment samples. Sediment screening values (SSVs) have not been established for either compound.
- **SVOCs:** Benzo[a]anthracene, chrysene, fluoranthene, and pyrene were detected in both sediment samples above their respective SSVs.
- **Pesticides:** Pesticides were not detected in sediment above laboratory detection limits.
- **PCBs:** PCBs were not detected in sediment above laboratory detection limits.
- **Inorganics:** Arsenic and copper were detected in sediment above screening criteria.
- **Cyanide:** Cyanide was not detected in sediment above laboratory detection limits.

1 **2.2 Concrete Sampling and Analysis**

2 Concrete was sampled during one sampling event at SWMU 81. Concrete cores were
3 collected from sample locations E081CC001, E081CC002, and E081CC003. The concrete
4 sample locations are shown in Figure 2-2. Concrete samples were analyzed for VOCs,
5 SVOCs, pesticides, PCBs, metals, cyanide, and organotins. No screening criteria have been
6 established by the CNC BCT for concrete core samples. Detected concentrations of organic
7 and inorganic compounds for concrete samples were as follows:

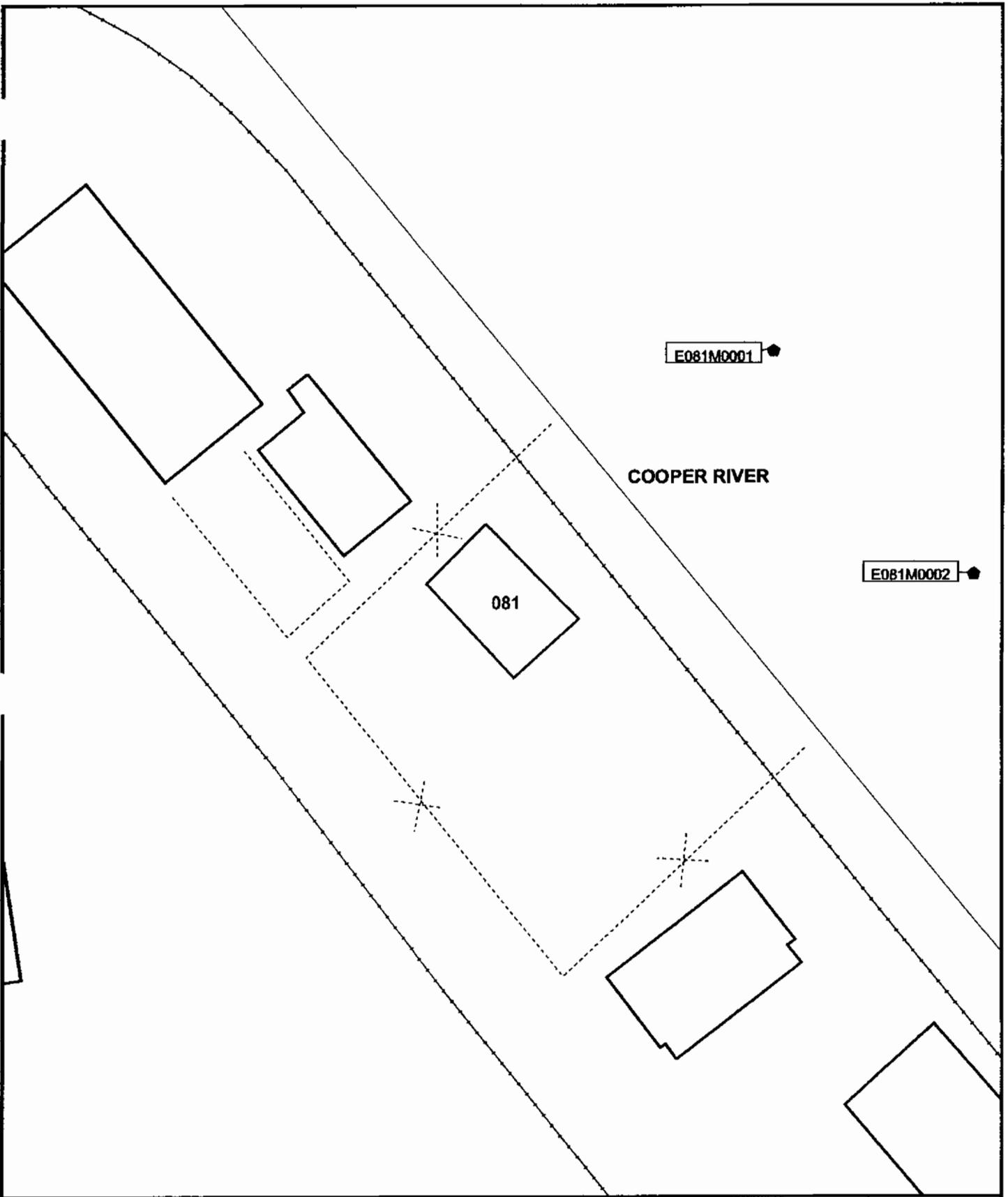
- 8 • **VOCs:** Methylene chloride was reported in one concrete sample at 13 micrograms per
9 kilogram ($\mu\text{g}/\text{kg}$).
- 10 • **SVOCs:** There was a detection each for benzoic acid and dimethylphthalate.
- 11 • **Pesticides:** Pesticides were not detected in concrete above laboratory detection limits.
- 12 • **PCBs:** PCBs were not detected in concrete above laboratory detection limits.
- 13 • **Inorganics:** Several inorganics were detected in concrete. The RFI did not conduct
14 screening of inorganic detections.
- 15 • **Cyanide:** Cyanide was not detected in concrete above laboratory detection limits.
- 16 • **Organotins:** Organotins were not detected in concrete above laboratory detection limits.

17 **2.3 RFI Human Health Risk Assessment (HHRA)**

18 Sediment and concrete were the only media sampled. The RFI report did not conduct a
19 formal risk assessment for SWMU 81.

20 **2.4 RFI Conclusions and Recommendations**

21 The *Zone E RFI Report, Revision 0* concluded that based on the analytical results, no COCs
22 requiring further evaluation through the Corrective Measures Study (CMS) process were
23 identified. No corrective measures were recommended.



- Sediment Sample
- Buildings
- - - Fence
- ∨ Railroads
- ∨ Shoreline
- ▭ AOC Boundary
- ▭ SWMU Boundary

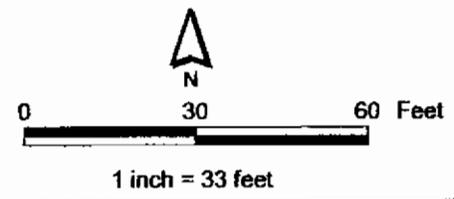
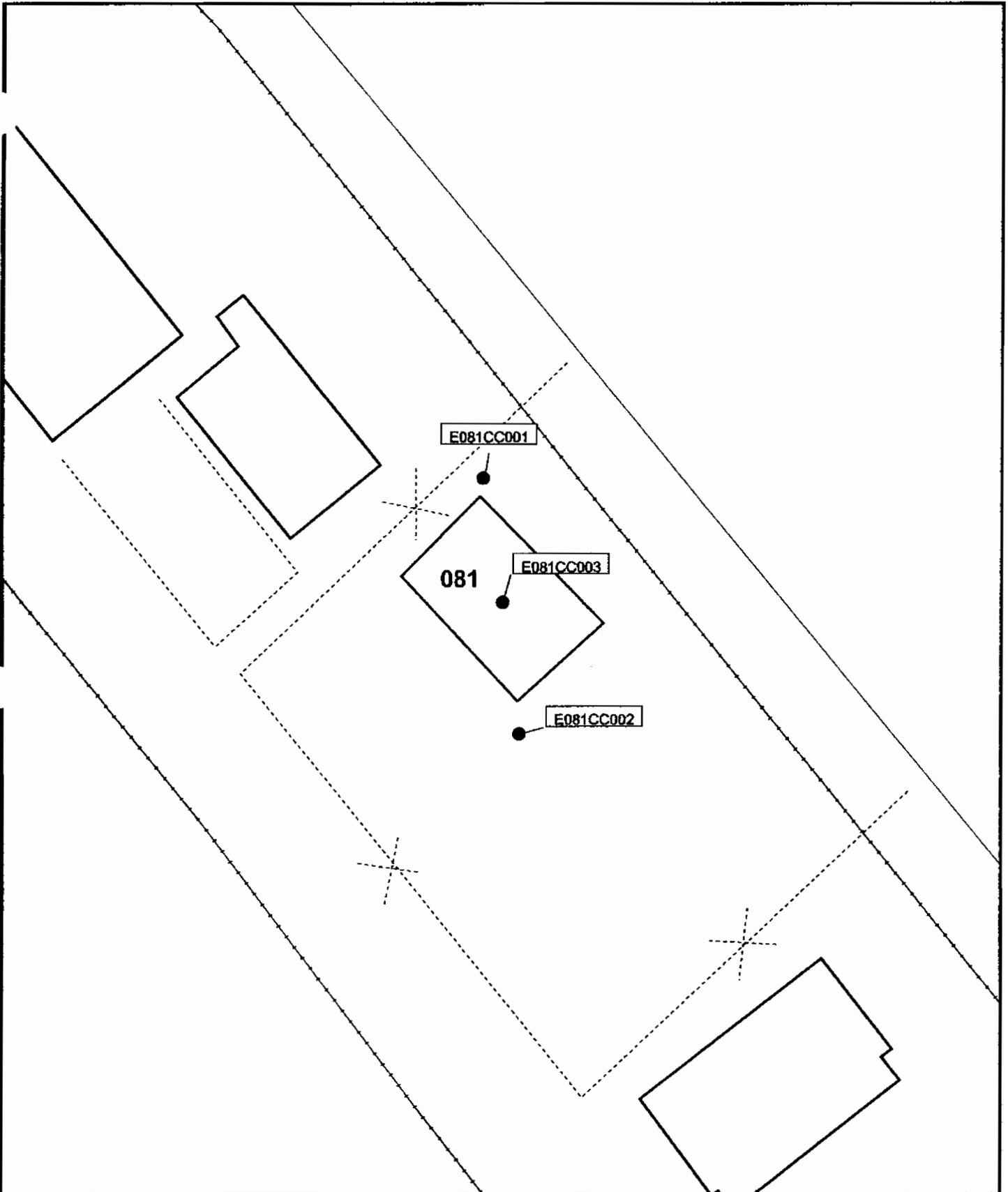


Figure 2-1
Sediment Sample Locations
SWMU 81, Zone E
 Charleston Naval Complex



- Concrete Samples
- ▭ SWMU Boundary
- ▭ Buildings
- ▭ Zone Boundary
- - - Fence
- ▭ Railroads
- ▭ Roads
- ▭ Shoreline
- ▭ AOC Boundary

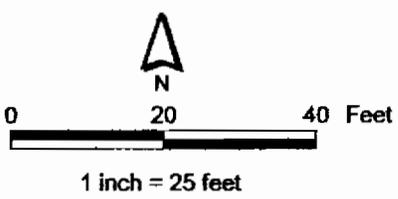


Figure 2-2
Concrete Core Sample Locations
SWMU 81, Zone E
Charleston Naval Complex

1 **3.0 Interim Measures and UST/AST Removals**

2 **3.1 UST/AST Removals**

3 There is no indication that underground storage tanks (USTs) or aboveground storage tanks
4 (ASTs) were located at SWMU 81.

5 **3.2 Interim Measures**

6 There were no IMs conducted at SWMU 81.

1 **4.0 Summary of Additional Investigations**

- 2 No additional investigations have been conducted at SWMU 81 since the RFI was
3 completed by the Navy/EnSafe team during 1995-1997.

1 **5.0 COPC/COC Refinement**

2 The *Zone E RFI Report, Revision 0* did not identify any COCs for sediment or concrete at
3 SWMU 81.

4 **5.1 Sediment**

5 An evaluation of chemicals present in sediments associated with surface water bodies at
6 CNC is being conducted separately under the Zone J RFI, and does not warrant further
7 discussion in this report.

8 No COCs were identified during the RFI for sediment at SWMU 81.

9 **5.2 Concrete**

10 No COCs were identified during the RFI for concrete at SWMU 81.

11 **5.3 COC Summary**

12 Based on current screening criteria adopted by the BCT, no COCs were identified in
13 sediment or concrete at SWMU 81.

6.0 Summary of Information Related to Site Closeout Issues

6.1 RFI Status

The *Zone E RFI Report, Revision 0* (EnSafe, 1997) addressed SWMUs/AOCs within Zone E of the CNC, including SWMU 81.

In accordance with the RFI completion process, if a determination of No Further Investigation (NFI) is made upon completion of the RFI, then a site may proceed to either NFA status or to a CMS. The RFI report did not identify any COCs for sediment or concrete at SWMU 81. A sediment evaluation is being conducted separately under the Zone J RFI, and no further evaluation of sediments is warranted.

The remaining subsections address the issues that the BCT agreed to evaluate prior to site closeout.

6.2 Presence of Inorganics in Groundwater

For the purpose of site closeout documentation, the inorganics in groundwater issue refers to the detection of several metals (primarily arsenic, thallium, and antimony) in groundwater at concentrations above the applicable maximum contaminant level (MCL), preceded or followed by detections of these same metals below the MCL or below the practicable quantitation limit. Groundwater was not investigated at this site. Therefore, further evaluation of this issue is not warranted.

6.3 Potential Linkage to SWMU 37, Investigated Sanitary Sewers at the CNC

There are no data suggesting that there was an impact to the sanitary sewers from SWMU 81. Therefore, further evaluation of this issue is not warranted.

6.4 Potential Linkage to AOC 699, Investigated Storm Sewers at the CNC

There are no investigated storm sewers associated with this site. Therefore, further evaluation of this issue is not warranted.

1 **6.5 Potential Linkage to AOC 504, Investigated Railroad Lines** 2 **at the CNC**

3 The nearest railroad line to SWMU 81 is approximately 75 feet to the south of Building 1245.
4 There are no known connections between SWMU 81 and the investigated railroad lines in
5 Zone E at the CNC. Therefore, further evaluation of this issue is not warranted.

6 **6.6 Potential Migration Pathways to Surface Water Bodies at** 7 **the CNC**

8 The nearest surface water body to SWMU 81 is the Cooper River, which lies approximately
9 30 feet north of the site. The only potential migration pathway from the site to surface water
10 is by overland flow from stormwater runoff. No COCs were identified in concrete that
11 would impact runoff to the Cooper River. Therefore, no further evaluation of a potential
12 pathway for contaminant migration by stormwater runoff is warranted.

13 **6.7 Potential Contamination in Oil/Water Separators (OWSs)**

14 There are no OWSs associated with SWMU 81. In addition, there is no reference to an OWS
15 at the site in the *Oil Water Separator Data* report, Department of the Navy, September 2000.
16 Therefore, further evaluation of this issue is not warranted.

17 **6.8 Land Use Controls (LUCs)**

18 No COCs were identified at SWMU 81. LUCs are therefore not necessary at this site. This
19 site is recommended for NFA.

20 However, the BCT has agreed that LUCs will be applied across all of Zone E at the CNC.
21 These LUCs are expected to include, at a minimum, restrictions for future land use to non-
22 residential use only. These LUCs will apply at SWMU 81 due to its location within Zone E.

1 **7.0 Recommendations**

2 SWMU 81 consisted of a former less-than-90-day hazardous waste SAA located east of
3 Building 1245. Building 1245 is located on Fourth Street between Dry Dock No. 5 and the
4 Cooper River in Zone E of the CNC. The SAA was removed in May 1994 and the area is
5 currently covered by asphalt and concrete. The CNC RCRA Permit identified SWMU 81 as
6 requiring a CSI.

7 The *Zone E RFI Report, Revision 0* did not identify any COCs for sediment or concrete at
8 SWMU 81. Therefore, no further corrective action is needed for this site. Evaluation of
9 sediments will be conducted separately under the Zone J RFI and does not require further
10 action under the Zone E RFI.

11 SWMU 81 is recommended for NFA status under Zone E in the RCRA Corrective Action
12 Permit for the CNC. The BCT has agreed that LUCs will be applied across the entire Zone E
13 area of the CNC. These LUCs are expected to include, at a minimum, restrictions limiting
14 the future land use to non-residential activities. Because SWMU 81 is located within Zone E,
15 these LUCs will apply at this unit.

16 Provided that the information presented in this report is adequate to address RFI
17 completion and site closeout issues, it is expected that the BCT will concur that NFA is
18 appropriate for SWMU 81 under Zone E. After BCT concurrence for NFA, a Statement of
19 Basis will be prepared and made available for public comment to allow for public
20 participation in the final remedy selection, in accordance with SCDHEC policy.

1 **8.0 References**

- 2 EnSafe Inc. *Zone E RFI Report, Revision 0, NAVBASE Charleston*. 1997.
- 3 EnSafe Inc./Allen & Hoshall. *Final RCRA Facility Assessment, NAVBASE Charleston*. July
4 1995.
- 5 EnSafe Inc./Allen & Hoshall. *Final Zone E RFI Work Plan, Revision 1, NAVBASE Charleston*.
6 June 1995.
- 7 South Carolina Department of Health and Environmental Control, *Final RCRA Part B*
8 *Permit No. SC0 170 022 560*.

**Responses To Comments from Charles B. Watson (SCDHEC)
Zone E RCRA Facility Investigation Report, Revision 0
Charleston Naval Complex**

Site-Specific Comment

SWMU 81

SCDHEC Comment 5:

The previous building located at this site had a wooden floor which could have allowed spills to reach soil underneath the building. What determined that the soils underneath the pad and around the pad did not need to be sampled?

EnSafe/Navy Response 5:

The less-than-90-day accumulation area was not a building, but a sheltered area with a wooden platform for storing drums and containers. The wooden platform sat on the concrete foundation of the area adjacent to the seawall, thus any spillage would have been onto the concrete, therefore areas of stained concrete were sampled rather than soil. The Final Zone E RFI Report will be clarified to include this information.

CH2M-Jones Response 5:

No additional response.

**Responses To Comments from Susan K. Byrd (SCDHEC)
Zone E RCRA Facility Investigation Report , Revision 0
Charleston Naval Complex**

Site-Specific Comment

SWMU 81

SCDHEC Comment 10:

Table 10.9.7.1, Page 10.9-12: Sediment samples at SWMU 81 detected contamination of arsenic and copper above their respective SSVs. Therefore, potential corrective measures or interim measures should be listed in the table.

EnSafe/Navy Response 10:

NFA will be removed from Section 11. Data will be considered as part of the Zone J RFI Report.

CH2M-Jones Response:

No additional response.

Table 10.9.2.1
SWMU 81
Organic Compounds Detected in Concrete Samples ($\mu\text{g}/\text{kg}$)

Compound	Freq. of Detection	Range of Detected Conc.	Mean of Detected Conc.
VOCs			
Methylene chloride	1/3	13.0	13.0
SVOCs			
Benzoic acid	1/3	140	140
Dimethylphthalate	1/3	300	300

Note:

$\mu\text{g}/\text{kg}$ = Micrograms per kilogram

Table 10.9.2.2
SWMU 81
Inorganic Elements Detected in Concrete Samples (mg/kg)

Element	Freq. of Detection	Range of Detected Conc.	Mean of Detected Conc.
Aluminum (Al)	3/3	1,390 - 5,900	4,330
Arsenic (As)	2/3	1.50 - 1.80	1.65
Barium (Ba)	3/3	15.7 - 87.0	58.6
Beryllium (Be)	2/3	0.260 - 0.270	0.265
Cadmium (Cd)	3/3	0.950 - 3.90	2.65
Calcium (Ca)	3/3	15,900 - 76,100	53,100
Chromium (Cr)	3/3	5.00 - 11.0	8.20
Cobalt (Co)	3/3	0.350 - 2.40	1.62
Copper (Cu)	3/3	10.2 - 154	66.0
Iron (Fe)	3/3	1,120 - 6,820	3,990
Lead (Pb)	3/3	8.00 - 22.5	15.4
Magnesium (Mg)	3/3	559 - 3,240	2,120
Manganese (Mn)	3/3	23.8 - 128	88.6
Nickel (Ni)	3/3	1.50 - 11.0	6.70
Potassium (K)	3/3	568 - 3,480	2,010
Sodium (Na)	3/3	139 - 1,440	727
Vanadium (V)	3/3	2.50 - 12.0	8.47
Zinc (Zn)	3/3	76.7 - 859	424

Note:
mg/kg = Milligrams per kilogram

**Table 10.9.4.1
SWMU 81
Organic Compounds Detected in Sediment ($\mu\text{g}/\text{kg}$)**

Compound	Freq. of Detection	Range of Detected Conc.	Mean of Detected Conc.	Sediment Quality Criteria	Number of Samples Exceeding SSV
VOCs					
Butanone (MEK)	2/2	24.0 - 27.0	25.5	NA	0
Carbon disulfide	2/2	18.0 - 21.0	19.5	NA	NA
SVOCs					
Fluoranthene	2/2	780 - 1,200	1,010	330	0
Pyrene	2/2	840 - 1,200	1,020	330	2
SVOCs (B(a)P Equivalents)					
(a)P Equiv.	2/2	371 - 413	392	330	0
SVOCs (B(a)P Equivalents)					
Benzo(a)anthracene	2/2	370 - 550	460	330	2
Benzo(b)fluoranthene	2/2	300 - 320	310	NA	NA
Benzo(k)fluoranthene	2/2	320 - 460	390	NA	NA
Benzo(a)pyrene	2/2	300 - 320	310	330	0
Chrysene	2/2	430 - 940	685	330	2

Notes:

$\mu\text{g}/\text{kg}$ = Micrograms per kilogram

SSV = Sediment screening value

NA = No SSV established

**Table 10.9.4.2
SWMU 81
Inorganic Detections in Sediment (mg/kg)**

Element	Freq. of Detection	Range of Detected Conc.	Mean of Detected Conc.	Sediment Quality Criteria	Number of Samples Exceeding SSV
Aluminum (Al)	2/2	9,540 - 12,780	11,100	NA	NA
Arsenic (As)	2/2	15.6 - 18.7	17.2	7.24	2
Barium (Ba)	2/2	18.4 - 21.2	19.8	NA	NA
Beryllium (Be)	2/2	1.000 - 1.10	1.05	NA	NA
Calcium (Ca)	2/2	29,100 - 30,100	29,600	NA	NA
Chromium (Cr)	2/2	31.9 - 36.7	34.3	52.3	0
Cobalt (Co)	2/2	7.40 - 8.90	7.70	NA	NA
Copper (Cu)	2/2	25.6 - 27.5	26.6	18.7	2
Iron (Fe)	2/2	22,100 - 26,000	24,100	NA	NA
Lead (Pb)	2/2	23.1 - 24.2	23.7	30.2	0
Magnesium (Mg)	2/2	8,230 - 9,160	8,700	NA	NA
Manganese (Mn)	2/2	412 - 551	482	NA	NA
Nickel (Ni)	2/2	10.5 - 11.4	11.0	15.9	0
Potassium (K)	2/2	4,370 - 4,760	4,570	NA	NA
Sodium (Na)	2/2	18,800 - 21,400	20,100	NA	NA
Vanadium (V)	2/2	40.2 - 50.7	45.5	NA	NA
Zinc (Zn)	2/2	73.5 - 77.5	75.5	124	0

Notes:

mg/kg = Milligrams per kilogram

SSV= Sediment Screening Value

NA = No SSV established

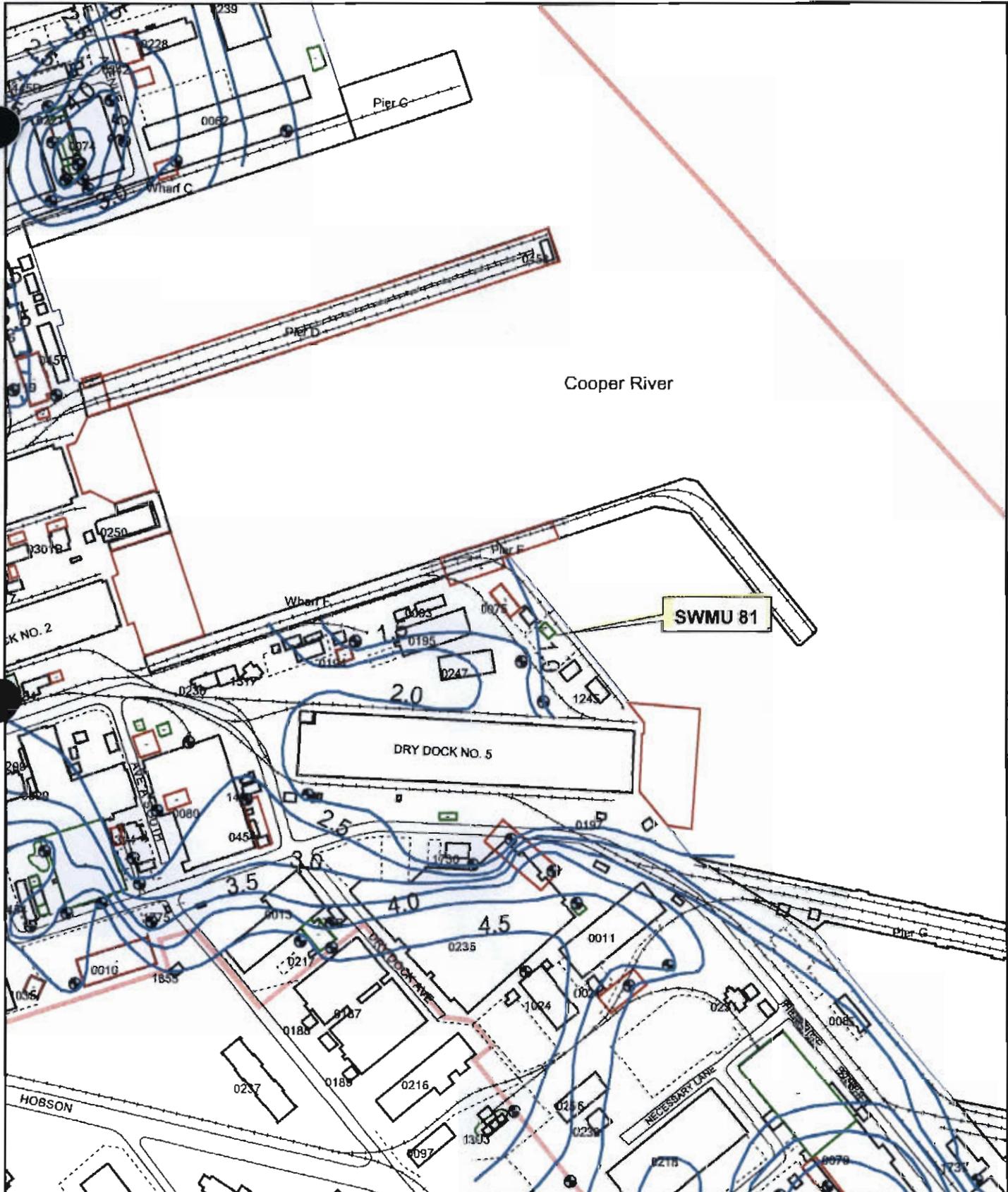


Figure B-1
 Shallow Groundwater Contour Map, May 2002
 SWMU 81, Zone E
 Charleston Naval Complex

0 200 400 Feet
 1 inch = 300 feet