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CLOSURE ACTIVITIES REPORT AND CERTIFICATION FOR BUILDING 246 CNC CHARLESTON SC

3/1/1996

RUST ENVIRONMENT AND INFRASTRUCTURE

CLOSURE ACTIVITIES REPORT AND CERTIFICATION FOR BUILDING 246

CHARLESTON NAVAL SHIPYARD
Charleston, South Carolina

Rust Project No. 35167.000
March 1996

Prepared For

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
Charleston, South Carolina
and
ENVIRONMENTAL DIVISION
CLOSURE ENGINEERING AND PLANNING DEPARTMENT
CHARLESTON NAVAL SHIPYARD
Charleston, South Carolina

Prepared By
RUST ENVIRONMENT AND INFRASTRUCTURE
2694 Lake Park Drive
North Charleston, South Carolina 29406
803/572-5600

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I. INTRODUCTION

This report has been prepared to present the results of the closure sampling and analysis activities conducted by the United States Navy in an effort to "clean close" Building 246 of the Charleston Naval Shipyard, Charleston, South Carolina. The closure efforts were performed in accordance with procedures required by the State of South Carolina Department of Health and Environmental Control (SCDHEC), as described in the approved closure plan, Section I of the RCRA Hazardous Waste Permit. To implement this portion of the RCRA Hazardous Waste Permit, the Environmental Closure Procedure No.16-Rev A (ECP #16), titled "DECONTAMINATION OF BUILDING 246 HAZARDOUS WASTE STORAGE SITES" was written and is included as Appendix A. A drawing showing the location of the cleaned areas within Building 246 is included as Figure 1.

II. CLOSURE ACTIVITIES

Closure procedures described in the ECP #16 were implemented by Charleston Naval Shipyard employees. Dr. James L. Brickell, P.E., of Rust Environment and Infrastructure, inspected the facility on January 30, 1996, accompanied by Charleston Naval Shipyard personnel, Mr. Jim Ritchie, Mr. John H. Wilder, and other representatives from the Environmental Department. Upon completion of the inspection, it was determined that the facility was ready for cleaning operations.

Soil sampling began on February 6, 1996 and consisted of taking composite soil samples in accordance with paragraph 4.5 of ECP#16. These soil samples were analyzed for Total Appendix IX constituents excluding dioxins. Soil sampling was completed on February 8, 1996.

Cleaning activities commenced on February 9, 1996 and generally included applying an anionic surfactant solution to the floor surface and scrubbing it with a brush. Each area was then rinsed with a pressure washer with the rinsate wet-vacuumed and stored in drums dedicated to the area cleaned. Rinsing of each area was continued until the rinsate appeared clear. Samples from each area were extracted from the wet-vacuum bucket after the final rinse. Samples were analyzed for mercury, silver, arsenic, barium, cadmium, chromium, lead, selenium, total organic carbon and total organic halogens.

The closure activities are documented by Dr. Brickell in the daily field reports included as the "Observation Log" in Appendix B.

III. ANALYTICAL RESULTS - RINSATE

Samples were collected as described in the ECP #16 at the locations shown in Figure 1. Analytical results relating to these samples are summarized in Table 1. The final rinse water concentration limits, within Building 246, for the constituents listed below were established in the approved closure plan, Section I of the RCRA Hazardous Waste Permit.

Compound	Bldg. 246 Limits (mg/l)
Arsenic	0.5
Barium	10.0
Cadmium	0.1
Chromium	0.5
Lead	0.5
Mercury	0.02
Selenium	0.1
Silver	0.5
Total Organic Carbon	25.0
Total Organic Halogens	25.0

The concentrations of all constituents for all areas sampled within Building 246 were below the limits indicated. Copies of the laboratory analytical reports are included in Appendix C

IV. ANALYTICAL RESULTS - SOILS

The sides of the paved areas adjacent to Building 246 were divided into five zones as shown in Figure 2. Within each zone samples were taken in accordance with ECP#16 in five foot increments and deposited in a stainless steel pan. When each zone was completed, the samples were thoroughly mixed to obtain a composite sample for each zone. One composite sample from each zone was analyzed for Total Appendix IX constituents excluding dioxins.

A minor modification to the Building 246 closure requirements of the Part B Permit Application was requested by the Charleston Naval Shipyard, as seen in the correspondence dated March, 7, 1996 given in Appendix D. This modification deals with the original permit requirement to obtain and

analyze a "clean" background sample to compare with samples taken at Building 246. Because the entire Naval Complex is undergoing a RCRA Facility Investigation plus the debatable point of finding a location where a "clean" sample could be obtained, the modification requested a comparison between the soils taken at Building 246 with an adjacent area (Zone H) approximately 200 feet away. Background levels for Zone H have already been statistically determined as part of the RCRA Facility Investigation, while for the area in which Building 246 is located (Zone G), background levels have not been determined. Should any contaminant concentrations exceed the Zone H levels, it was requested that those concentrations be compared with the U.S. EPA Region III Risk-based Concentration Table, Fourth Quarter, 1994 to determine if the soil was contaminated. Correspondence from SCDHEC dated March 18, 1996 indicated approval of the minor modification, and is given in Appendix D.

Laboratory analytical reports are in Appendix C. Upon review of these reports, it appears that the dates the samples for Zones 2 , 3, and 4 were entered incorrectly on the Chain of Custody form. The date these samples were taken as reported in the Engineer's Field Observation Log was March 7, 1996, rather than the March 8, 1996 date shown on the Chain of Custody. A memo addressing the sample dates entered on the Chain of Custody is given at the end of Appendix C.

Table 2 summarizes all contaminant concentrations that were found above detection limits. Essentially, eight metals and PCB Aroclor 1260 fall into this category. The following summarizes the sample locations, contaminants, and concentrations that exceeded background levels of Zone H.

Analyte	Area 2	Area 3	Area 4	Zone H
Barium	48.8 mg/kg	----	----	43.8 mg/kg
Copper	48.1 mg/kg	89.6 mg/kg	----	31.62 mg/kg
Mercury	----	----	1.01 mg/kg	0.735 mg/kg

Thus, these concentrations were compared with U.S. EPA Region III Risk-based Concentration Table, Fourth Quarter, 1994. The Risk Based Concentration levels for residential soil are given as:

Barium	5,500 mg/kg,
Copper	2,900 mg/kg, and
Mercury	23 mg/kg.

All concentrations that exceed Zone H levels are well below the Region III levels. Therefore, it is concluded that corrective action is not required due to these compounds.

Analytical results and Table 2 show that PCB Aroclor 1260 was detected in the soil samples. No other organic constituents were detected. As indicated in the correspondence dated March 12, 1996 in Appendix D, PCBs were not stored at Building 246 nor would they have been released from any operations of the RCRA facility. Rather, it is likely that the PCBs were a result of other activities on the site prior to construction of Building 246 in 1986. The presence of PCBs will be fully investigated as part of the complex-wide ongoing RCRA investigation within Zone G under the Area of Concern (AOC) 706. It is therefore concluded that the presence of PCBs is not an issue for the RCRA Closure of Building 246.

V. STORAGE/REMOVAL OF WASH AND RINSE WATER

Wash and rinse water was labeled and stored in Building 246, in accordance with the Closure Procedure until analytical results were available. The wash and rinse water was disposed of in accordance with the ECP #16, Section 4.6.2..

VI. CERTIFICATION

I certify under penalty of law that this document and supporting documentation consisting of my Observation Log has been prepared to document the closure actions taken for the waste storage areas of Building 246 of the Charleston Naval Shipyard, Charleston, South Carolina. Based on my observations of the persons directly responsible for gathering the data evaluated, the data evaluated is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Certified By: _____ Date: 3/27/96
James L. Brickell, South Carolina PE #17119
Rust Environment and Infrastructure, Inc.

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 17119 JAMES LOUIS BRICKELL

SOUTH CAROLINA RUST ENVIRONMENT & INFRASTRUCTURE No. C00610 CERTIFICATE OF AUTHORIZATION

Certified By: _____ Date: _____
Captain William F. Nold
Commanding Officer
Charleston Naval Shipyard

TABLE 1
SUMMARY OF ANALYTICAL RESULTS
BUILDING 246
CHARLESTON NAVAL SHIPYARD

Date	Sample No.	Description	Parameter	Concentration	Units	*Qualifier
2/12/96	TCG0399-6-3	Rinse Water	Mercury	0.191	ug/L	J
		Bay 01	Silver	0.000492	mg/L	U
			Arsenic	0.00221	mg/L	U
			Barium	0.0218	mg/L	J
			Cadmium	0.00100	mg/L	U
			Chromium	0.00765	mg/L	J
			Lead	0.0182	mg/L	U
			Selenium	0.00149	mg/L	U
			Total OrganicCarbon	7.21	mg/L	
			Total Organic Halogens	155	ug/L	
2/12/96	TCG0399-6-4	Rinse Water	Mercury	0.520	ug/L	
		Bay 02	Silver	0.00124	mg/L	U
			Arsenic	0.00357	mg/L	U
			Barium	0.0274	mg/L	J
			Cadmium	0.00107	mg/L	U
			Chromium	0.00713	mg/L	J
			Lead	0.0169	mg/L	U
			Selenium	0.000153	mg/L	U
			Total OrganicCarbon	5.47	mg/L	
			Total Organic Halogens	138	ug/L	
2/12/96	TCG0399-6-5	Rinse Water	Mercury	0.0560	ug/L	J
		Bay 03	Silver	0.000594	mg/L	U
			Arsenic	0.00222	mg/L	U
			Barium	0.0346	mg/L	
			Cadmium	0.00127	mg/L	U
			Chromium	0.00679	mg/L	J
			Lead	0.0201	mg/L	U
			Selenium	0.000760	mg/L	U
			Total OrganicCarbon	7.97	mg/L	
			Total Organic Halogens	151	ug/L	
2/12/96	TCG0399-6-6	Rinse Water	Mercury	0.0760	ug/L	J
		Bay 04	Silver	0.000456	mg/L	U
			Arsenic	0.000934	mg/L	U
			Barium	0.0194	mg/L	J
			Cadmium	0.000799	mg/L	U
			Chromium	0.00590	mg/L	J
			Lead	0.0175	mg/L	U
			Selenium	0.00184	mg/L	U
			Total OrganicCarbon	12.2	mg/L	
			Total Organic Halogens	124	ug/L	

*U indicates that the analyte was not detected at a concentration greater than the detection limit

J indicates presence of analyte at a concentration less than the reporting limit and greater than the detection limit

TABLE 1 - PAGE 2
SUMMARY OF ANALYTICAL RESULTS
BUILDING 246
CHARLESTON NAVAL SHIPYARD

Date	Sample No.	Description	Parameter	Concentration	Units	*Qualifier
2/09/96	TCG0399-6-7	Rinse Water	Mercury	0.0500	ug/L	J
		Bay 05	Silver	0.0000972	mg/L	U
			Arsenic	-0.00333	mg/L	U
			Barium	0.0248	mg/L	J
			Cadmium	0.000613	mg/L	U
			Chromium	0.00308	mg/L	U
			Lead	0.00885	mg/L	U
			Selenium	-0.000466	mg/L	U
			Total OrganicCarbon	5.24	mg/L	
			Total Organic Halogens	197	ug/L	
2/09/96	TCG0399-6-8	Rinse Water	Mercury	0.0760	ug/L	J
		Bay 06	Silver	0.000572	mg/L	U
			Arsenic	-0.000416	mg/L	U
			Barium	0.0243	mg/L	J
			Cadmium	0.00124	mg/L	U
			Chromium	0.00588	mg/L	J
			Lead	0.0188	mg/L	U
			Selenium	0.00208	mg/L	U
			Total OrganicCarbon	5.37	mg/L	
			Total Organic Halogens	101	ug/L	
2/12/96	TCG0399-6-9	Rinse Water	Mercury	0.102	ug/L	J
		Bay 07	Silver	0.000706	mg/L	U
			Arsenic	0.00363	mg/L	U
			Barium	0.0320	mg/L	
			Cadmium	0.000837	mg/L	U
			Chromium	0.0609	mg/L	
			Lead	0.0217	mg/L	U
			Selenium	0.00165	mg/L	U
			Total OrganicCarbon	9.75	mg/L	
			Total Organic Halogens	460	ug/L	
2/12/96	TCG0399-6-10	Rinse Water	Mercury	0.640	ug/L	
		Bay 08	Silver	0.00590	mg/L	U
			Arsenic	0.00194	mg/L	U
			Barium	0.0694	mg/L	
			Cadmium	0.00219	mg/L	U
			Chromium	0.0159	mg/L	J
			Lead	0.0658	mg/L	J
			Selenium	0.0000915	mg/L	U
			Total OrganicCarbon	12.70	mg/L	
			Total Organic Halogens	117	ug/L	

*U indicates that the analyte was not detected at a concentration greater than the detection limit

J indicates presence of analyte at a concentration less than the reporting limit and greater than the detection limit

TABLE 1 - PAGE 3
SUMMARY OF ANALYTICAL RESULTS
BUILDING 246
CHARLESTON NAVAL SHIPYARD

Date	Sample No.	Description	Parameter	Concentration	Units	*Qualifier
2/12/96	TCG0399-6-11	Rinse Water	Mercury	0.660	ug/L	J
		Main Hallway	Silver	0.00111	mg/L	U
			Arsenic	0.00236	mg/L	U
			Barium	0.0340	mg/L	
			Cadmium	0.00224	mg/L	U
			Chromium	0.00864	mg/L	J
			Lead	0.0413	mg/L	J
			Selenium	0.000999	mg/L	U
			Total OrganicCarbon	5.05	mg/L	
			Total Organic Halogens	182	ug/L	

*U indicates that the analyte was not detected at a concentration greater than the detection limit

J indicates presence of analyte at a concentration less than the reporting limit and greater than the detection limit

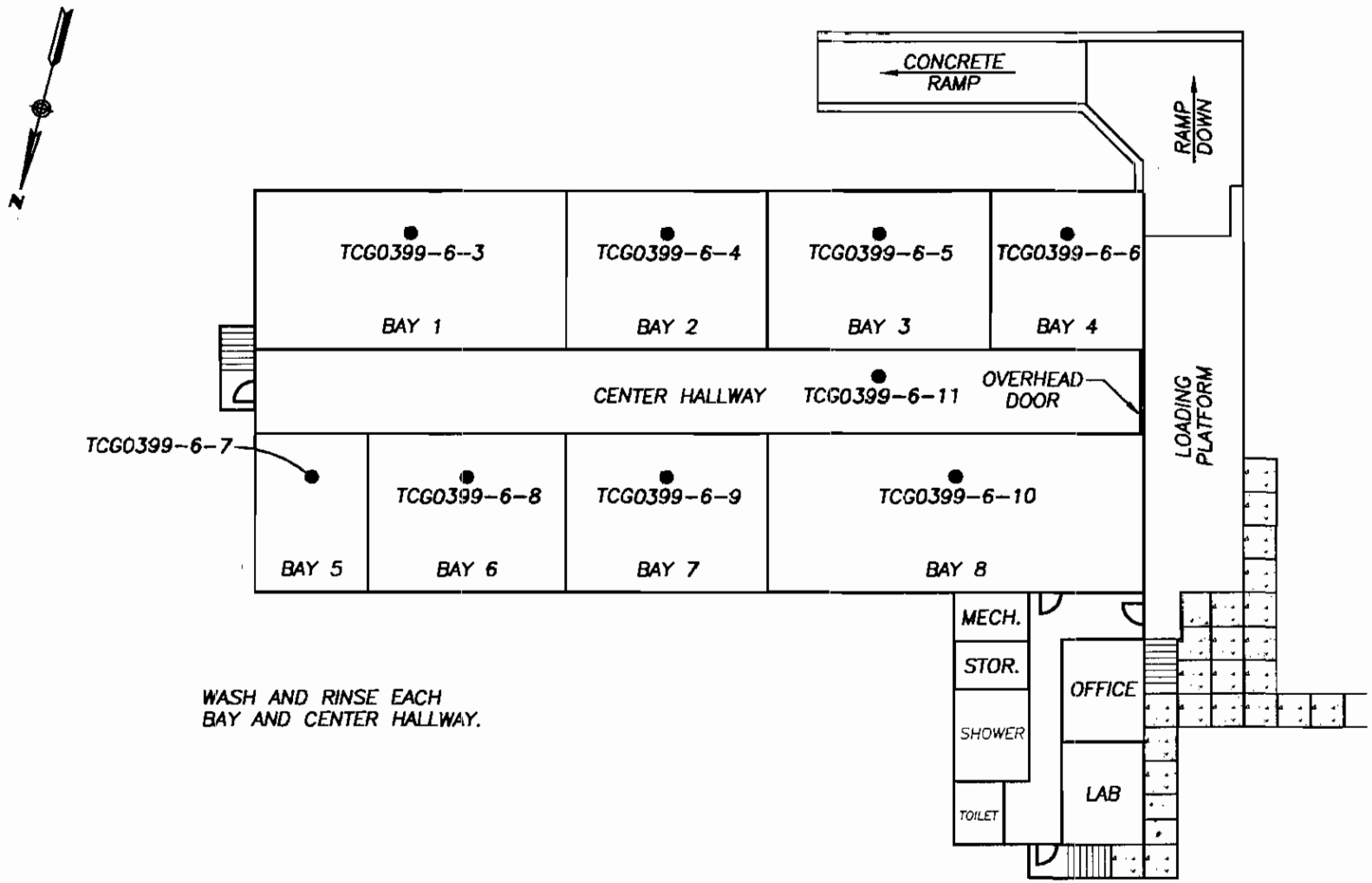
TABLE 2
SUMMARY OF ANALYTICAL RESULTS
(SOILS SAMPLING)
BUILDING 246
CHARLESTON NAVAL SHIPYARD

Analyte	Area 1	Area 2	Area 3	Area 4	Area 5	Zone H
Barium	7.97 mg/kg	48.8 mg/kg	32.4 mg/kg	16 mg/kg	10.1 mg/kg	43.8 mg/kg
Chromium	3.46 mg/kg	13.4 mg/kg	38.2 mg/kg	7.16 mg/kg	4.36 mg/kg	83.86 mg/kg
Copper	4.55 mg/kg	48.1 mg/kg	89.6 mg/kg	26.0 mg/kg	11.8 mg/kg	31.62 mg/kg
Nickel	3.29 mg/kg	6.45 mg/kg	12.8 mg/kg	4.16 mg/kg	J	29.9 mg/kg
Lead	5.05 mg/kg	40.8 mg/kg	59.7 mg/kg	11.4 mg/kg	9.53 mg/kg	68.69 mg/kg
Vanadium	U	9.02 mg/kg	9.57 mg/kg	J	3.67 mg/kg	131.6 mg/kg
Zinc	20 mg/kg	124 mg/kg	118 mg/kg	53.4 mg/kg	23.9 mg/kg	129.6 mg/kg
Mercury	U	J	J	1.01 mg/kg	J	0.735 mg/kg
PCB-1260	U	84 ug/kg	95.7 ug/kg	761 ug/kg	U	N/A

*U indicates that the analyte was not detected at a concentration greater than the detection limit

J indicates presence of analyte at a concentration less than the reporting limit and greater than the detection limit

Exceeds background levels of zone H



WASH AND RINSE EACH BAY AND CENTER HALLWAY.

NOT TO SCALE

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FIGURE 1

BLDG. 246–RINSATE SAMPLING LOCATIONS
CHARLESTON NAVAL SHIPYARD
CHARLESTON, SOUTH CAROLINA

RUST Project No. 35167.000 MARCH, 1996

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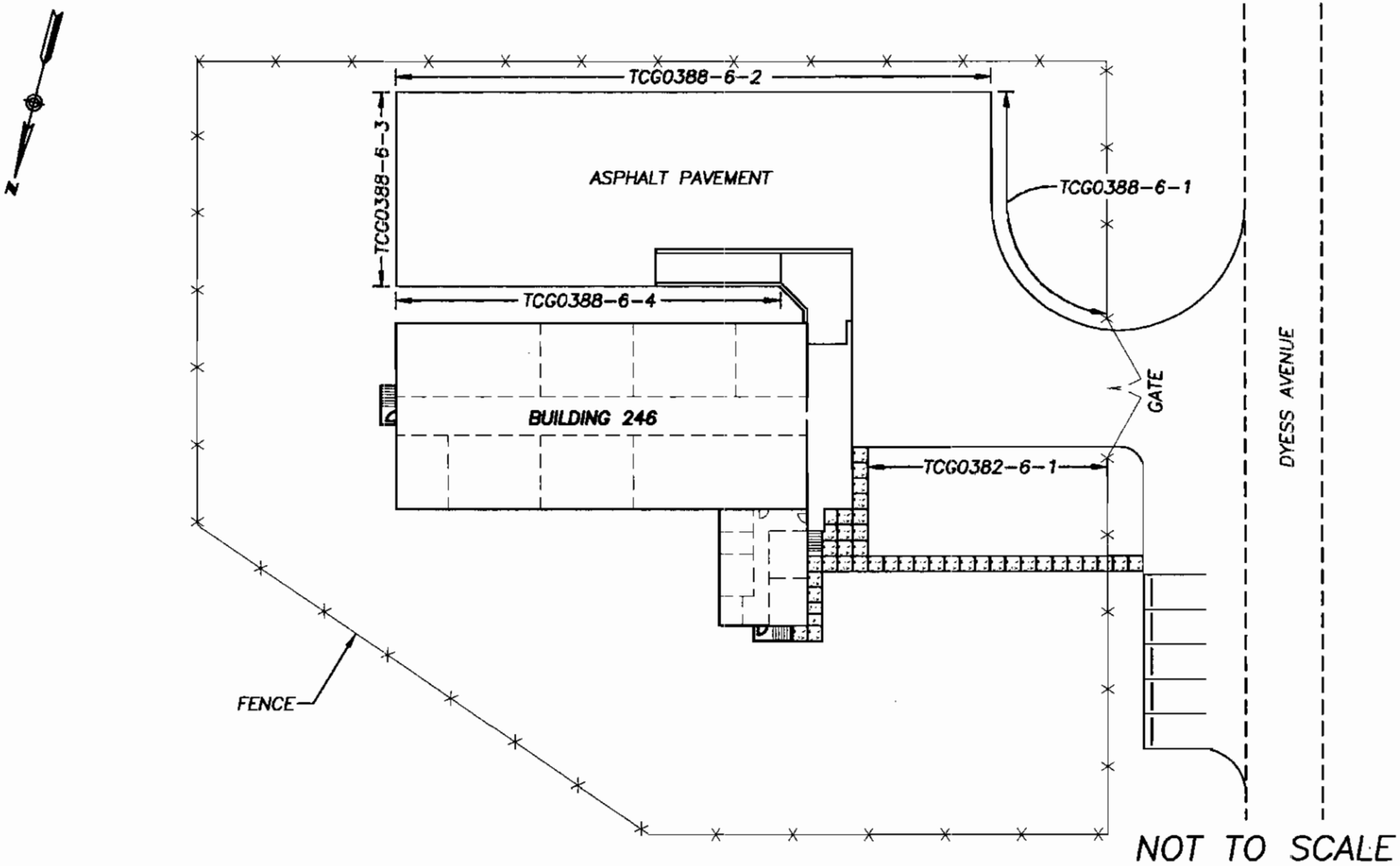

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FIGURE 2

BLDG. 246 – SOIL SAMPLE LOCATIONS
CHARLESTON NAVAL SHIPYARD
CHARLESTON, SOUTH CAROLINA

RUST Project No. 35167.000 MARCH, 1996

APPENDIX A

Environmental Closure Procedure #16 (Rev A)
"DECONTAMINATION OF BUILDING 246 HAZARDOUS WASTE STORAGE SITES"

Environmental Closure Procedure #16
Rev A

Title: **Decontamination of Building 246 Hazardous Waste Storage Sites**

Environmental Division
Closure Engineering and Planning Department
Charleston Naval Shipyard

ECP #16
Rev A

Revisions

Rev	Description	Prepared By	Approval/Date
A	Purpose - This revision is being done to incorporate revised soil sampling plans. Added sheet 1-B "Revisions" Sheet 5 - Revised paragraph 3.3 Sheet 9 - Revised paragraph 4.5.1 Sheet 10 - Revised paragraphs 4.5.2 & 4.5.3 Figure 3 - Revised soil sampling locations	JBC 2/2/96	Approve 106C Date 2/2/96 Concurrence 106.2 Date 2/2/96

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OUTLINE

This is a general procedure for final cleaning, sampling and certified closure of Building 246 which has been used for storage of hazardous materials and hazardous wastes. This procedure is intended to give the building a final cleaning to remove potentially hazardous metals and flammable materials from exposed floor and wall surfaces. All work described by this ECP will be done after hazardous wastes and mixed wastes have been removed from the building and the building has been released from radiological controls.

1.0 REFERENCES

1.1 CNSYDINST P-5100.1C, "Safety Manual"

1.2 Charleston Naval Shipyard Comprehensive Health and Safety Plan of March 1995 prepared by Environmental Engineering and Remediation Division of the Engineering and Planning Department

1.3 Public Works Dwg. H246-4 (NAVFAC 5141368) "Site Plan"

1.4 Public Works Dwg. H246-5 (NAVFAC 5141369) "Grading Plan"

1.5 Public Works Dwg. H246-9 (NAVFAC 5159392) "Floor Plan, Finish Schedule, Details"

1.6 CNSYDINST P-5100.43A, "Manual for Control of Work in Confined Spaces and/or Hazardous Atmospheres"

1.7 USEPA Region IV Environmental Compliance Branch Standard Operating Procedures and Quality Assurance Manual, dated February 1, 1991 (ECBSOPQAM)

1.8 South Carolina Hazardous Waste Management Regulation R.61-79.261, "Identification and Listing of Hazardous Waste"

1.9 USEPA, Test Methods for Solid Waste, SW-846

2.0 GENERAL REQUIREMENTS

2.1 This procedure shall be invoked by a technical work document (TWD) prior to use. Code 106.1 and 106.2 concurrence will be required on TWD because of explicit personal protective equipment (PPE) requirements and the potential for generation of hazardous waste. Activities of this process are not expected to exceed the action level of toxic contaminants, but do pose the possibility of skin and eye irritation from dust or splashing from liquids being repackaged for sampling and disposal.

2.2 It should be noted that all spills have been cleaned and/or neutralized. Personnel using this procedure shall complete Hazardous Communication Training per reference 1.1, Article 1201, Enclosure 4 , particularly HMTM's #2, 5, 6, 7, 8, 10 and #12. The 40-Hour Health and Safety Training for Hazardous Waste Operations and Emergency Response - "HAZWOPER" (per 29 CFR 1910.120) is also required. Training for all persons involved in cleaning and disposal shall include a job by job briefing by the supervisor on the health hazards from the chemicals in the area cleaned.

2.3 The supervisor shall instruct workers in the proper use of all equipment, as well as safety precautions, emergency procedures and the location of emergency showers, eyewash stations and cleaning facilities. Workers shall inspect all equipment used for cleaning and disposal operations to ensure that it is free of defects and adequate for its intended purpose.

2.4 Workers involved in the cleaning and sampling operations in Building 246 shall be in the following medical surveillance programs: 1) respiratory and 2) hazardous waste worker per Article 143 (current revision to NAVHOSPINST 6120.2) of reference 1.1. Hazard Worker medical (711-B27) shall be provided.

2.5 Emergency notification: If any situation or unplanned occurrence requires emergency assistance, including any hazardous substance spill, the site supervisor shall contact the Chief-of-the-Watch (3-6444) to activate the proper NAVBASE response. In the event of an emergency which necessitates the evacuation of the site, the alarm procedures of Section 10.4 of reference 1.2 shall be followed.

2.6 This procedure applies only to Building 246. Building 246 was constructed in 1986 per RCRA standards for temporary storage of hazardous materials and hazardous wastes and was operated as a 90-day TSD from March 1987 until September 1993 when it was converted to a mixed waste storage facility. The hazardous materials and wastes were stored in eight bays comprising approximately 6500 square feet. Site details and building floor plan are shown in References 1.3, 1.4, and 1.5. Site control measures for each area will be implemented based on the guidelines of reference 1.2.

3.0 PROCEDURE OUTLINE

3.1 Preliminary preparations include inspection of the work site, training and indoctrination of the crew, obtaining PPE and inspection of equipment.

3.2 Prior to the start of cleaning operations, an independent, SC registered Professional Engineer will inspect Building 246 and certify that it is ready for decontamination. Each area of Building 246 shall be cleaned with anionic surfactant and water. All of the washwater from this cleaning operation shall be collected and sampled for the materials of concern. Each area of Building 246 shall then be rinsed with fresh water. The rinsewater shall be sampled and the rinse cycle shall be repeated as needed until the rinsewater meets the requirements as stated in Table 1. Contaminated rinsewater shall be disposed of in accordance with Code 106.2 instructions depending on sample results. The building must then be certified as clean by an independent, SC registered Professional Engineer.

3.3 Samples of the top 6 inches of soil will be taken at 5 foot intervals along each side of the drive. The samples will be analyzed for hazardous constituents applicable to all hazardous wastes stored in the building.

4.0 PROCEDURE

4.1 Preparation for Cleaning

4.1.1 A supervisor who is competent to handle hazardous materials and knowledgeable of references 1.1, 1.2 and 1.6 shall be placed in charge of the operation. The Supervisor shall determine any conditions that may affect the cleaning and disposal operations. Obtain the Material Safety Data Sheets (MSDS) for those substances that may be encountered: cadmium, chromium, lead, silver, mercury, arsenic, barium, selenium, nickel, and copper and for any cleaning materials used. All of the MSDS's shall be reviewed and made available on-site during cleaning and disposal operations. Any unknowns should be brought to the attention of Code 106.2.

4.1.2 Before starting the cleanup in accordance with this ECP, Industrial Hygienists from Code 106.15 and Code 024.2 (Naval Hospital) shall be notified. Additionally, NAVHOSP Code 024.2 will brief workers prior to starting work. Supervisory job by job briefings per paragraph 4.1.5 will continue for subsequent tasks as required. Problems and questions which arise on PPE and respiratory protection shall be directed to Code 106.15 (3-6309) and Code 024.2 (3-7748) respectively.

4.1.3 After all hazardous waste and materials have been removed, inspect Building 246 and remove all loose items (paper, pallets, or empty containers). Prior to the start of cleaning operations, an independent, SC registered Professional Engineer shall inspect Building 246 and certify that it is ready for decontamination.

4.1.4 Note that this procedure will involve the application of water to the floors of Building 246. The areas to be cleaned are shown on Figure 1. De-energize electrical circuits using lockout, tagout of reference 1.1, Article 154, of any electrical equipment, including switches and receptacles, that might be affected by the application of the cleaning water. Note: permanent ventilation shall not be disconnected or removed without specific written instructions.

4.1.5 Prior to any sampling and decontamination operations of the subject areas, any construction joints and holes in the concrete flooring slabs must be properly sealed to prevent any contaminated rinsewater from migrating to underlying soils. This includes plugging all pipes, conduits and storm drains that are subject to rinsewater drainage. The sealant used must be an inert, non-toxic material such as silicon caulking.

4.1.6 All closure equipment and containers needed to accomplish this ECP shall be cleaned in accordance with reference 1.7 prior to use.

4.2 Personal Protective Equipment (PPE)

The following PPE and respiratory controls are provided for the work of this procedure.

4.2.1 The basic PPE requirements are Level D as listed below for general cleaning and disposal of material in Building 246:

a. One piece coveralls with joints secured (PVC rainsuit recommended, disposable TYVEK allowed if splashing is kept to a minimum)
b. Gloves, impervious (disposable)
c. Head cover (disposable), (optional for soil sampling)
d. Shoe covers (disposable) or rubber boots
e. Safety glasses or greater (chemical goggles); face shield is required for washing storage racks

4.2.2 This list of PPE is in addition to other safety equipment such as hard hats, hearing protection, etc. PPE should be inspected before each use to ensure that it is approved, in satisfactory condition, and suitable for intended use.

4.3 Preliminary Wash

4.3.1 The floor of each storage bay in Building 246 shall be thoroughly cleaned with soap (anionic surfactant) and water using a pressure washer, brushes, or mops. The areas to be cleaned include the 8 bays and the center hallway, as shown in Figure 1. The office area and loading dock are not required to be cleaned. The washwater from the cleaning shall be collected using either a wet vacuum or mops and squeeze buckets. This washing procedure should continue until all storage bays in Building 246 have been cleaned.

4.3.2 The washwater, either wrung from the mops or collected with a vacuum, shall be containerized. The containerized washwater and all cleaning equipment containing washwater residue shall be stored in a secure and environmentally acceptable location within Building 246 until the appropriate samples have been taken and analyzed. The washwater container shall be labeled as "awaiting analysis" with the name and number of the point of contact and the date a sample was taken.

4.3.3 The container(s) of washwater shall be composite sampled and analyzed for potential disposal in the North Charleston sanitary sewer system. Code 106.2 will review the concentration of contaminants of all washwater to ensure correct disposal. All collected washwater found to be contaminated above the regulatory levels as defined in R.61-79.261, reference 1.8, shall be disposed of as hazardous waste. Discharge of washwater to the sanitary system shall not be done until directed by Code 106.2 (3-5519) in conjunction with the Publicly Owned Treatment Works (POTW) of the North Charleston Sewer District.

4.4 Confirmation Rinse

4.4.1 The floor in each storage bay in Building 246 shall be thoroughly rinsed with clean, fresh water using a pressure sprayer and/or mops. The areas to be rinsed include the 8 bays and the center hallway, as shown in Figure 1. The office area and loading dock are not required to be rinsed. The rinsewater from the rinsing shall be collected using either a wet vacuum and/or mops and squeeze buckets. This rinsing procedure should continue until all storage bays in Building 246 have been done.

4.4.2 The rinsewater shall be containerized in separate drums for each area of Building 246. The rinsewater containers and all cleaning equipment containing rinsewater residue shall be stored in a secure and environmentally acceptable location within Building 246 until the appropriate samples have been taken and analyzed. The rinsewater containers may be stored in the same area as the washwater containers.

4.4.3 The container(s) of rinsewater for each area shall be sampled in accordance with reference 1.7. The reporting, records management, and quality control procedures for the sampling and analysis shall also be per reference 1.7.

4.4.4 Each sample taken shall be uniquely identified in the following manner:

4.4.4.1 A unique four digit serial number will be assigned to each sample. A sample identifying tag is shown on Figure 2. Place the applicable section of the sample identifying tag on the sample bottle, the sample data sheet, and on the rinsewater container. The rinsewater container shall be labeled as "awaiting analysis" with the following information noted: 1) sample number, 2) area rinsed, 3) name and number of the point of contact, and 4) date the sample was taken.

4.4.4.2 When the sample is taken, Section 1 of the applicable "Building 246 Sample Data Sheet", Table 1, shall be signed and dated in ink and retained in the Work Package Folder with the sample label affixed.

4.4.4.3 Any mistakes on the sample data sheets shall be corrected by drawing a single line through the error so it remains legible and initialed and dated by the responsible individual; the correction should be annotated adjacent to the error.

4.4.5 Prepare chain-of-custody documentation for transporting the sample to a certified laboratory for analysis. The constituent analysis of the rinsewater samples shall be in accordance with the procedures set forth in reference 1.9 for all contaminants listed on the "Building 246 Sample Data Sheet", Table 1.

4.4.6 Analysis data shall be reviewed and sample results recorded on Section 2 "Analysis" of the sample data sheet. A copy of each completed sample data sheet shall be given to Codes 106C and 106.2.

4.4.7 The results of the rinsewater analysis for each area shall be compared against the limits shown on Table 1. If the sample shows no constituents at levels greater than the limits shown on Table 1, the area shall be considered clean. If hazardous constituents are still present in the sample at levels greater than the Table 1 limits, the rinse cycle shall be repeated until a sample of rinsewater fails to exceed the limits shown on Table 1.

4.4.8 Code 106.2 will review the concentration of contaminants of all rinsewater to ensure proper disposal. All collected rinsewater found to be contaminated above the regulatory levels as defined in R.61-79.261, reference 1.8, shall be disposed of as hazardous waste. Discharge of rinsewater to the sanitary system shall not be done until directed by Code 106.2 (3-5519) in conjunction with the Publicly Owned Treatment Works (POTW) of the North Charleston Sewer District.

4.5 Soil Sampling

4.5.1 Obtain samples of the top 6 inches of soil in accordance with reference 1.7 at 5 foot intervals from each area along the sides of the drive as shown on Figure 3. Composite samples from each area in separate containers.

4.5.2 Obtain a representative soil sample from each container. The containerized soil shall be stored in a secure and environmentally acceptable location until the appropriate samples have been analyzed.

4.5.3 Analyze the resulting composite soil samples for hazardous constituents as directed by Code 106.2 and 106C. Code 106.2 will review the concentration of contaminants of all soils to ensure correct disposal. Dispose of soil as instructed by Code 106.2

4.6 Related Cleanup Action

4.6.1 Tools, equipment, and other non-expendable items used in the cleaning, sampling and disposal of hazardous wastes will be washed/rinsed and maintained for further use. Rinse water shall be sampled and the results furnished to Code 106.2 for determination of disposal method.

4.6.2 As rinsewater drums are filled, or as an area is finished, the drums shall be transferred to an approved site within the building and handled as described in paragraph 4.4.2. Code 106.2 will review the concentration of contaminants of all rinsewater to ensure proper disposal. If the drums are determined to contain hazardous waste, they shall be labeled with a hazardous waste label and completed form 1348. Code 106.2 shall be notified to coordinate pick up and disposal. Discharge of rinsewater to the sanitary system shall not be done until directed by Code 106.2 (3-5519) in conjunction with the Publicly Owned Treatment Works (POTW) of the North Charleston Sewer District.

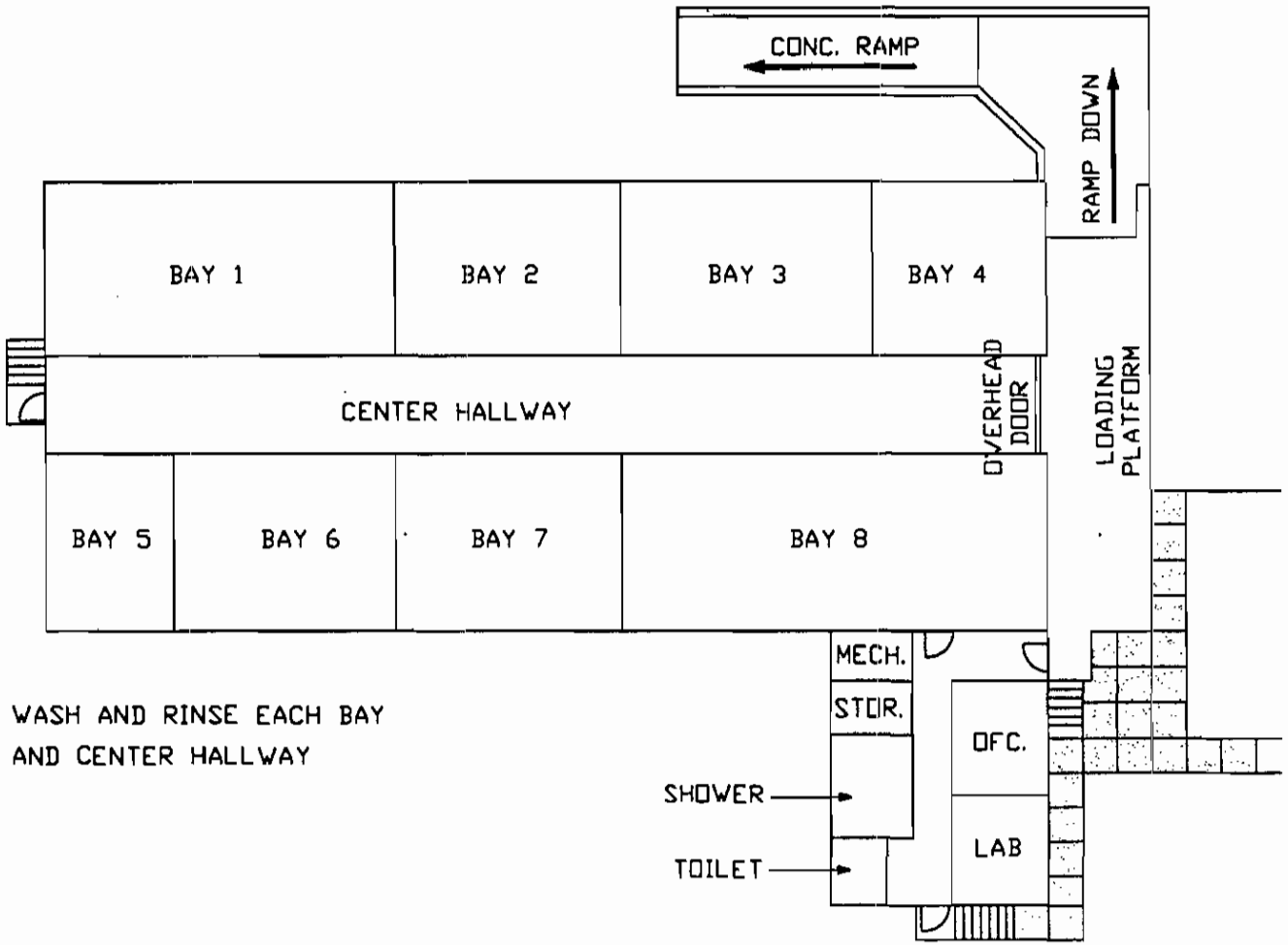
5.0 CLOSURE CERTIFICATION

5.1 A formal certification of closure will be required for Building 246 after it is cleaned. Final closure will be certified by an independent, registered Professional Engineer (PE).

5.2 The certification by the PE must occur within 60 days of the closure of the facility.

FIGURE 1

BUILDING 246
HAZ. WASTE STORAGE & TRANS. FAC.
FLOORPLAN



WASH AND RINSE EACH BAY
AND CENTER HALLWAY

Table 1

BLDG 246 SAMPLE DATA SHEET

SECTION 1 SAMPLE TAKING

Sample Number _____

TGI Number _____

Sample Location _____

(S) _____ Pay No. _____ Date _____

SECTION 2 ANALYSES Lab Service Request # _____

Toxic Metals COMPOUND	RESULT mg/l	BLDG 246 LIMITS mg/l
Arsenic	_____	0.5
Barium	_____	10.0
Cadmium	_____	0.1
Chromium	_____	0.5
Lead	_____	0.5
Mercury	_____	0.02
Selenium	_____	0.1
Silver	_____	0.5

	RESULT mg/l	BLDG 246 LIMITS mg/l
Total Organic Carbon	_____	25.0
Total Organic Halogens	_____	25.0

(S) _____ Pay No. _____ Date _____

Figure 2

Example Three Part Tag

o

Attach to rinsewater container

Awaiting Analysis

Sampled for Hazardous Constituents

Bldg 246 Sample # _____
Date _____
Area Rinsed _____
Point of Contact _____

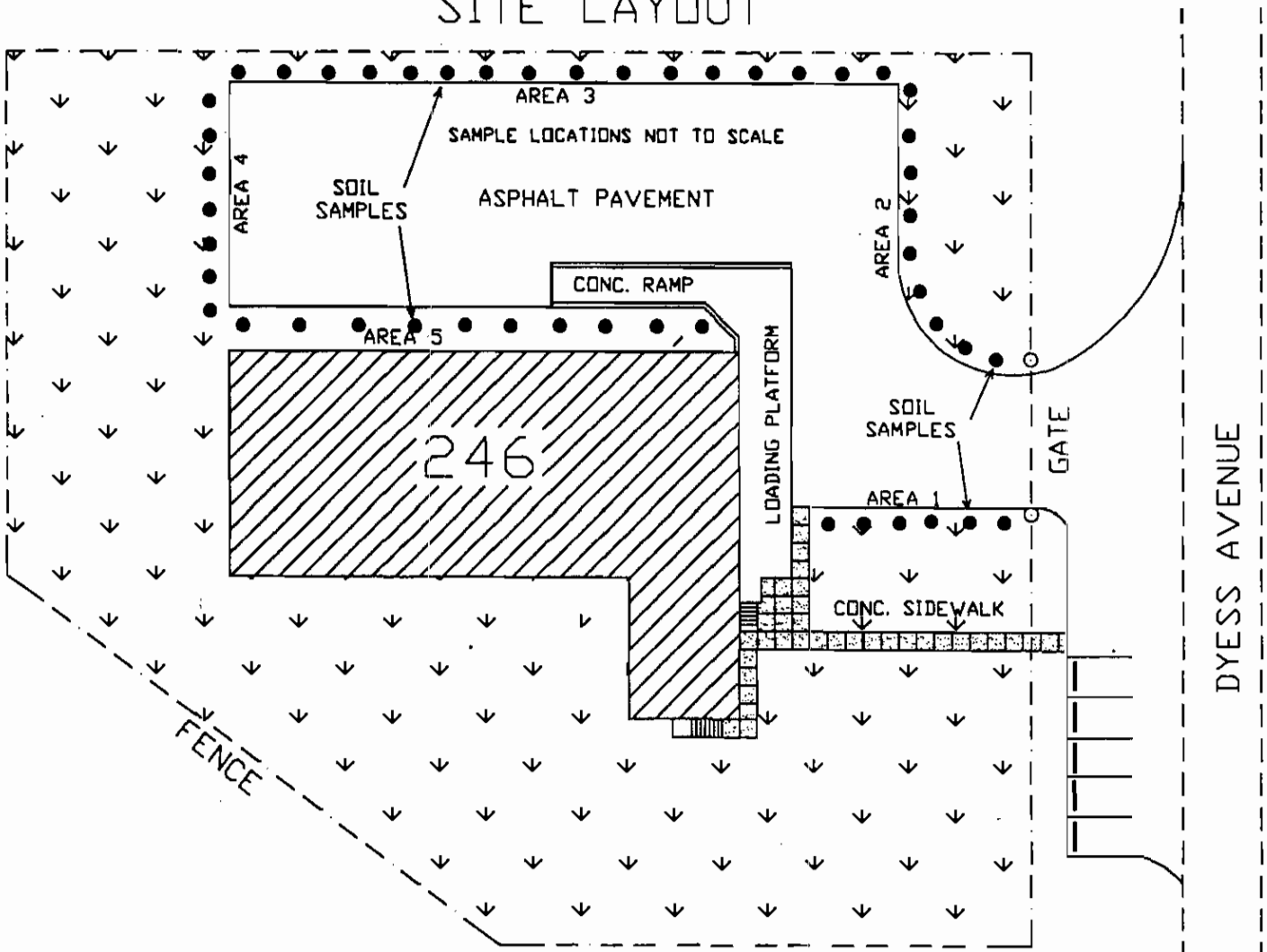
Attach to Sample Data Sheet

Bldg 246 Sample # _____

Attach to Sample Bottle

Bldg 246 Sample # _____

FIGURE 3
BUILDING 246
HAZ. WASTE STORAGE & TRANS. FAC.
SITE LAYOUT



COLLECT SOIL SAMPLES AT 5-FOOT INTERVALS
ALONG EACH SIDE OF ASPHALT DRIVEWAY

APPENDIX B

ENGINEER'S FIELD OBSERVATION LOG

RUST ENVIRONMENT & INFRASTRUCTURE

Daily Field Report

Owner: NAVFAC

Report No.: 1

Project: Bldg 246 Closure

Page 1 of 1

Date: 1/30/96

Project No.: 35167.000

Weather: A.M. Cloudy P.M. Cloudy

Temp.(°F): High 60°F Low 47°F Rain Trace

Contractor(s) CNSY Personnel

Contractor Super(s) J. H. Wilder

Number and Function of Contractors' Personnel, Hours Worked (Identify Subcontractors Separately)

Contractor	No. of People	Major Constr. Equip. Description	Size/Capacity	No.	No. in Use
CNSY	3				

Visitors

Representing

Daily Notations: Arrived Bldg 246 1330. Performed walk-through with Jim Ritchie, J. H. Wilder and other representative from Environmental Detachment.

Building was free of all contents in the main Bay area. Appears to be ready for cleaning. Discussed soil sampling - Env. Detachment coordinating with SCDHEC to eliminate soil sampling as part of the building 246 closure, and make the soil sampling part of the basewide soil sampling program. With written authorization from SCDHEC to do this, the building could be closed without soil sampling. Soil samples will be taken for "informational purposes" but no background sample will be taken. Departed Bldg 246 at 1400.

Signature: J. Benkoski

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RUST ENVIRONMENT & INFRASTRUCTURE

Daily Field Report

Owner: NAVFAC

Report No.: 2

Page 1 of 1

Project: Bldg 246 Closure

Date: 2/7/96

Project No.: 35167.000

Weather: A.M. Sunny P.M. Sunny

Temp.(°F): High 58°F Low 29° Rain None

Contractor(s) CNSY Personnel

Contractor Super(s) J H Wilder

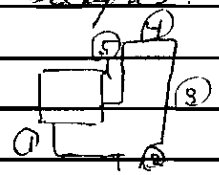
Number and Function of Contractors' Personnel, Hours Worked (Identify Subcontractors Separately)

Contractor	No. of People
CNSY	5

Major Constr. Equip. Description	Size/Capacity	No.	No. in Use

Visitors	Representing
Jim Ritchie	CNSY
Kenny Norman	CNSY

Daily Notations: Arrived CNSY 0830. Area around drive was divided into 5 seperate areas to take Composite Samples:



Stainless steel pans, spoons & augers well deconned using detergent, Alcohol, and de-I water. Samples were taken in 5-feet increments alongside the drive and deposited in a stainless steel pan. The samples were thoroughly mixed and 2 1 liter and 1 approximately 250 ml jar were filled, capped, and labelled. Equipment was deconned between sampling each sub-area. Sample 1 was taken 2/6/96, and samples 2, 3 & 4 were taken 2/7/96. Departed CNSY 3:00 p.m.

Signature: [illegible]

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RUST ENVIRONMENT & INFRASTRUCTURE

Daily Field Report

Owner: NAVFAC

Report No.: 3

Project: Bldg 246 Closure

Page 1 of 1

Date: 2/8/96

Project No.: 35167.000

Weather: A.M. Sunny P.M. Sunny

Temp.(°F): High 60° Low 45°F Rain None

Contractor(s) CNSY Personnel

Contractor Super(s) J. H. Wilder

Number and Function of Contractors' Personnel, Hours Worked (Identify Subcontractors Separately)

Contractor	No. of People
CNSY	3

Major Constr. Equip. Description	Size/Capacity	No.	No. in Use

Visitors	Representing
Kenny Norman	CNSY
Jim Ritchie	CNSY

Daily Notations: Arrived CNSY 0830. Crew sampled area (5) as described in Report #2. Departed CNSY at 1130.

Signature: [illegible]

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RUST ENVIRONMENT & INFRASTRUCTURE

Daily Field Report

Owner: NAVFAC

Report No.: 4

Project: Bldg 246 Closure

Page 1 of 1

Date: 2/9/96

Project No.: 35167.000

Weather: A.M. Sunny P.M. Sunny

Temp.(°F): High 60° Low 50° Rain None

Contractor(s) CNSY Personnel

Contractor Super(s) J.H. Wilder

Number and Function of Contractors' Personnel, Hours Worked (Identify Subcontractors Separately)

Contractor	No. of People
CNSY	5

Major Constr. Equip. Description	Size/Capacity	No.	No. in Use

Visitors	Representing
Kenny Normam	CNSY
Jim Ritchie	CNSY

Daily Notations: Arrived CNSY 0800. Crew set-up for washing Bays in Building 246. Approximately 250 ml LedDisolv (anionic surfactant) was mixed in a 3 gallon mop bucket. The floor was mopped and brushed, and solution allowed to be in contact with floor for at least 15 minutes. The area was rinsed several times with a spray washer, and a sample extracted from the final rinsewater contained in the wet-vac bucket. 2-1 liter plastic jars & 1-1 liter amber jar were collected for each sample. A clean-water sample & sample w/detergent were taken. Bays 5 & 6 were treated as described above, and samples taken. Excess rinsewater was stored in dedicated drums for each bay. Departed CNSY at 1500.

Signature: [signature]

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RUST ENVIRONMENT & INFRASTRUCTURE

Daily Field Report

Owner: NAVFAC

Report No.: 5

Project: Bldg 246 Closure

Page 1 of 1

Date: 2/12/96

Project No.: 35167.000

Weather: A.M. Sunny P.M. Sunny

Temp.(°F): High 52°F Low 40°F Rain None

Contractor(s) CNSY Personnel

Contractor Super(s) J.H. Wilder

Number and Function of Contractors' Personnel, Hours Worked (Identify Subcontractors Separately)

Contractor	No. of People
CNSY	6

Major Constr. Equip. Description	Size/Capacity	No.	No. in Use

Visitors	Representing
Kenny Norman	CNSY
Jim Ritchie	CNSY

Daily Notations: Arrived CNSY 0800. Bays 1, 2, 3, 4, 7 & 8 and the center hallway had been mopped, brushed and rinsed as described in Report #4. Final rinses and sampling were conducted on the above mentioned areas similar to the procedures described in Report #4 for sampling. Departed CNSY at 1300.

Signature: [illegible]

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APPENDIX C

ANALYTICAL RESULTS FOR BUILDING 246

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

CERTIFICATE OF ANALYSIS

Client: Navy Public Works Center-Chas. Zone
Charleston Naval Shipyard
Code 106.24, Bldg.234
Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

cc: NPWC00195 Report Date: February 16, 1996

Sample ID : TCG0399-6-1 Clean water
Lab ID : 9602245-01
Matrix : WasteH2O
Date Collected : 02/08/96
Date Received : 02/13/96
Priority : Rush
Collector : Client

'arameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
etals Analysis											
'ilver	U	-0.000350	0.00780	0.0300	mg/l	1.0	WCC	02/15/96	1203	80359	1
\rsenic	U	-0.000355	0.0421	0.300	mg/l	1.0					
larium	J	0.0122	0.00220	0.0300	mg/l	1.0					
'admium	U	0.000244	0.00330	0.00500	mg/l	1.0					
'hromium	U	0.000925	0.00420	0.0300	mg/l	1.0					
,ead	U	0.000378	0.0364	0.100	mg/l	1.0					
'elenium	U	0.000769	0.0841	0.300	mg/l	1.0					
'lercury	J	0.0260	0.0148	0.500	ug/l	1.0	DVW	02/13/96	2207	80378	N
eneral Chemistry											
'otal Organic Carbon		2.82	0.143	1.00	mg/l	1.0	LS	02/13/96	1430	80356	2
'otal Organic Halogens		121	2.28	10.0	ug/l	1.0	SJ	02/14/96	1100	80400	3

ie following prep procedures were performed:

CP	DVW	02/13/96	2030	80359	4
'lercury	DVW	02/13/96	1930	80378	5

'l = Method	Method-Description
1 1	EPA 200.7
1 2	EPA 415.1
1 3	EPA 9020B
1 4	EPA 200/3010
1 5	EPA 245.1

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CERTIFICATE OF ANALYSIS

Client:	Navy Public Works Center-Chas. Zone Charleston Naval Shipyard Code 106.24, Bldg.234 Charleston, South Carolina 29408-2020
Contact:	Mr. Matt Cissel
Project Description:	Code 106

:c: NPWC00195 Report Date: February 16, 1996

Sample ID : TCG0399-6-1

: = Method	Method-Description

tes:

e qualifiers in this report are defined as follows:

ıdicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

ndicates that the analyte was not detected at a concentration greater than the detection limit.

ıdicate that a quality control analyte recovery is outside of specified acceptance criteria.

EL Laboratory Certifications		EPI Laboratory Certifications	
, - 41040	AZ - AZ0514	AL - 41050	AZ - AZ0514
ı - 2089	CT - PH-0169	CA - I-1023/2056	CT - PH-0175
: - SC012	FL - E87156/87294	FL - E87472/87458	MS - 29417
E - SC012	MS - 10120	NY - 11502	RI - 138
: - 233	NY - 11501	SC - 10582	TN - 02934
- 135	SC - 10120	UT - E-227	VA - 00111
I - 02934	UT - E-251	WA - C225	NJ - 79002
ı - 00151	WA - C223	PA - 68-485	
- 999887790			

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CERTIFICATE OF ANALYSIS

Client:	Navy Public Works Center-Chas. Zone Charleston Naval Shipyard Code 106.24, Bldg.234 Charleston, South Carolina 29408-2020
Contact:	Mr. Matt Cissel
Project Description:	Code 106

:: NPWC00195 Report Date: February 16, 1996

Sample ID : TCG0399-6-1

L Laboratory Certifications EPI Laboratory Certifications

; data report has been prepared and reviewed
ccordance with General Engineering Laboratories
dard operating procedures. Please direct
questions to your Project Manager, Karen Blakeney at (803) 769-7386.

lytical Report Specialist

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CERTIFICATE OF ANALYSIS

Client: Navy Public Works Center-Chas. Zone
Charleston Naval Shipyard
Code 106.24, Bldg.234
Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

c: NPWC00195 Report Date: February 16, 1996

Sample ID : TCG0399-6-2 water w/Detergent
Lab ID : 9602245-02
Matrix : WasteH2O
Date Collected : 02/08/96
Date Received : 02/13/96
Priority : Rush
Collector : Client

arameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
:tals Analysis											
ilver	U	-0.0000549	0.00780	0.0300	mg/l	1.0	WCC	02/15/96	1208	80359	1
rsenic	U	-0.00220	0.0421	0.300	mg/l	1.0					
arium	J	0.0149	0.00220	0.0300	mg/l	1.0					
admium	U	0.000348	0.00330	0.00500	mg/l	1.0					
hromium	U	0.00196	0.00420	0.0300	mg/l	1.0					
ead	U	0.00788	0.0364	0.100	mg/l	1.0					
elenium	U	0.00908	0.0841	0.300	mg/l	1.0					
ercury	J	0.0390	0.0148	0.500	ug/l	1.0	DVW	02/13/96	2209	80378	N
neral Chemistry											
otal Organic Carbon		1130	14.3	100	mg/l	100	LS	02/13/96	1430	80356	2
otal Organic Halogens		148	2.28	10.0	ug/l	1.0	SJ	02/14/96	1100	80400	3

e following prep procedures were performed:

CP	DVW	02/13/96	2030	80359	4
ercury	DVW	02/13/96	1930	80378	5

= Method	Method-Description
1	EPA 200.7
2	EPA 415.1
3	EPA 9020B
4	EPA 200/3010
5	EPA 245.1

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CERTIFICATE OF ANALYSIS

Client: Navy Public Works Center-Chas. Zone
Charleston Naval Shipyard
Code 106.24, Bldg.234
Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

c: NPWC00195 Report Date: February 16, 1996

Sample ID : TCG0399-6-3 Rinsewater Bay #1
Lab ID : 9602245-03
Matrix : WasteH2O
Date Collected : 02/12/96
Date Received : 02/13/96
Priority : Rush
Collector : Client

rameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
tals Analysis											
lver	U	0.000492	0.00780	0.0300	mg/l	1.0	WCC	02/15/96	1212	80359	1
senic	U	0.00221	0.0421	0.300	mg/l	1.0					
rium	J	0.0218	0.00220	0.0300	mg/l	1.0					
dmium	U	0.00100	0.00330	0.00500	mg/l	1.0					
romium	J	0.00765	0.00420	0.0300	mg/l	1.0					
ad	U	0.0182	0.0364	0.100	mg/l	1.0					
lenium	U	0.00149	0.0841	0.300	mg/l	1.0					
ercury	J	0.191	0.0148	0.500	ug/l	1.0	DVW	02/13/96	2212	80378	N
neral Chemistry											
tal Organic Carbon		7.21	0.143	1.00	mg/l	1.0	LS	02/13/96	1430	80356	2
tal Organic Halogens		155	2.28	10.0	ug/l	1.0	SJ	02/14/96	1100	80400	3

following prep procedures were performed:

P	DVW	02/13/96	2030	80359	4
ercury	DVW	02/13/96	1930	80378	5

= Method	Method-Description
1	EPA 200.7
2	EPA 415.1
3	EPA 9020B
4	EPA 200/3010
5	EPA 245.1

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GENERAL ENGINEERING LABORATORIES

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CERTIFICATE OF ANALYSIS

Client: Navy Public Works Center-Chas. Zone
Charleston Naval Shipyard
Code 106.24, Bldg.234
Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

:c: NPWC00195 Report Date: February 16, 1996

Sample ID : TCG0399-6-4 Rinsewater Bay #2
Lab ID : 9602245-04
Matrix : WasteH2O
Date Collected : 02/12/96
Date Received : 02/13/96
Priority : Rush
Collector : Client

arameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
etals Analysis											
ilver	U	0.00124	0.00780	0.0300	mg/l	1.0	WCC	02/15/96	1217	80359	1
rsenic	U	0.00357	0.0421	0.300	mg/l	1.0					
arium	J	0.0274	0.00220	0.0300	mg/l	1.0					
admium	U	0.00107	0.00330	0.00500	mg/l	1.0					
hromium	J	0.00713	0.00420	0.0300	mg/l	1.0					
ead	U	0.0169	0.0364	0.100	mg/l	1.0					
elenium	U	0.000153	0.0841	0.300	mg/l	1.0					
lercury		0.520	0.0148	0.500	ug/l	1.0	DVW	02/13/96	2214	80378	N
neral Chemistry											
otal Organic Carbon		5.47	0.143	1.00	mg/l	1.0	LS	02/13/96	1430	80356	2
otal Organic Halogens		138	2.28	10.0	ug/l	1.0	SJ	02/14/96	1100	80400	3

e following prep procedures were performed:

CP	DVW	02/13/96	2030	80359	4
ercury	DVW	02/13/96	1930	80378	5

I = Method	Method-Description
1	EPA 200.7
2	EPA 415.1
3	EPA 9020B
4	EPA 200/3010
5	EPA 245.1

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GENERAL ENGINEERING LABORATORIES

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CERTIFICATE OF ANALYSIS

Client: Navy Public Works Center-Chas. Zone
Charleston Naval Shipyard
Code 106.24, Bldg.234
Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

:c: NPWC00195 Report Date: February 16, 1996

Sample ID : TCG0399-6-5 Rinsewater Bay # 3
Lab ID : 9602245-05
Matrix : WasteH2O
Date Collected : 02/12/96
Date Received : 02/13/96
Priority : Rush
Collector : Client

arameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
:tals Analysis											
ilver	U	0.000594	0.00780	0.0300	mg/l	1.0	WCC	02/15/96	1221	80359	1
rsenic	U	0.00222	0.0421	0.300	mg/l	1.0					
arium		0.0346	0.00220	0.0300	mg/l	1.0					
admium	U	0.00127	0.00330	0.00500	mg/l	1.0					
hromium	J	0.00679	0.00420	0.0300	mg/l	1.0					
ead	U	0.0201	0.0364	0.100	mg/l	1.0					
elenium	U	0.000760	0.0841	0.300	mg/l	1.0					
lercury	J	0.0560	0.0148	0.500	ug/l	1.0	DVW	02/13/96	2217	80378	N
neral Chemistry											
otal Organic Carbon		7.97	0.143	1.00	mg/l	1.0	LS	02/13/96	1430	80356	2
otal Organic Halogens		151	2.28	10.0	ug/l	1.0	SJ	02/14/96	1100	80400	3

e following prep procedures were performed:

CP	DVW	02/13/96	2030	80359	4
ercury	DVW	02/13/96	1930	80378	5

= Method	Method-Description
1	EPA 200.7
2	EPA 415.1
3	EPA 9020B
4	EPA 200/3010
5	EPA 245.1

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CERTIFICATE OF ANALYSIS

Client: Navy Public Works Center-Chas. Zone
Charleston Naval Shipyard
Code 106.24, Bldg.234
Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

cc: NPWC00195 Report Date: February 16, 1996

Sample ID : TCG0399-6-6 Rinsewater Bay #4
Lab ID : 9602245-06
Matrix : WasteH2O
Date Collected : 02/12/96
Date Received : 02/13/96
Priority : Rush
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Silver	U	0.000456	0.00780	0.0300	mg/l	1.0	WCC	02/15/96	1304	80359	1
Arsenic	U	0.000934	0.0421	0.300	mg/l	1.0					
Barium	J	0.0194	0.00220	0.0300	mg/l	1.0					
Cadmium	U	0.000799	0.00330	0.00500	mg/l	1.0					
Chromium	J	0.00590	0.00420	0.0300	mg/l	1.0					
Lead	U	0.0175	0.0364	0.100	mg/l	1.0					
Selenium	U	0.00184	0.0841	0.300	mg/l	1.0					
Mercury	J	0.0760	0.0148	0.500	ug/l	1.0	DVW	02/13/96	2219	80378	N
General Chemistry											
Total Organic Carbon		12.2	0.143	1.00	mg/l	1.0	LS	02/13/96	1430	80356	2
Total Organic Halogens		124	2.28	10.0	ug/l	1.0	SJ	02/14/96	1100	80400	3

The following prep procedures were performed:

ICP	DVW	02/13/96	2030	80359	4
Mercury	DVW	02/13/96	1930	80378	5

M = Method	Method-Description
M1	EPA 200.7
M2	EPA 415.1
M3	EPA 9020B
M4	EPA 200/3010
M5	EPA 245.1

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Client: Navy Public Works Center-Chas. Zone
Charleston Naval Shipyard
Code 106.24, Bldg.234
Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

cc: NPWC00195 Report Date: February 16, 1996

Sample ID : TCG0399-6-7 Rinsewater Bay #5
Lab ID : 9602245-07
Matrix : WasteH2O
Date Collected : 02/09/96
Date Received : 02/13/96
Priority : Rush
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
etals Analysis											
ilver	U	0.0000972	0.00780	0.0300	mg/l	1.0	WCC	02/15/96	1427	80359	1
rsenic	U	-0.00333	0.0421	0.300	mg/l	1.0					
arium	J	0.0248	0.00220	0.0300	mg/l	1.0					
admium	U	0.000613	0.00330	0.00500	mg/l	1.0					
hromium	U	0.00308	0.00420	0.0300	mg/l	1.0					
ead	U	0.00885	0.0364	0.100	mg/l	1.0					
elenium	U	-0.000466	0.0841	0.300	mg/l	1.0					
ercury	J	0.0500	0.0148	0.500	ug/l	1.0	DVW	02/13/96	2221	80378	N
eneral Chemistry											
otal Organic Carbon		5.24	0.143	1.00	mg/l	1.0	LS	02/13/96	1430	80356	2
otal Organic Halogens		197	9.12	40.0	ug/l	4.0	SJ	02/14/96	1100	80400	3

e following prep procedures were performed:

CP	DVW	02/13/96	2030	80359	4
ercury	DVW	02/13/96	1930	80378	5

l = Method	**Method-Description**
l 1	EPA 200.7
l 2	EPA 415.1
l 3	EPA 9020B
l 4	EPA 200/3010
l 5	EPA 245.1

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Client: Navy Public Works Center-Chas. Zone
Charleston Naval Shipyard
Code 106.24, Bldg.234
Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

cc: NPWC00195 Report Date: February 16, 1996

Sample ID	: TCG0399-6-8
Lab ID	: 9602245-08
Matrix	: WasteH2O
Date Collected	: 02/09/96
Date Received	: 02/13/96
Priority	: Rush
Collector	: Client

Rinsewater Bay # 6

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
etals Analysis											
ilver	U	0.000572	0.00780	0.0300	mg/l	1.0	WCC	02/15/96	1432	80359	1
rsenic	U	-0.000416	0.0421	0.300	mg/l	1.0					
arium	J	0.0243	0.00220	0.0300	mg/l	1.0					
admium	U	0.00124	0.00330	0.00500	mg/l	1.0					
hromium	J	0.00588	0.00420	0.0300	mg/l	1.0					
ead	U	0.0188	0.0364	0.100	mg/l	1.0					
elenium	U	0.00208	0.0841	0.300	mg/l	1.0					
ercury	J	0.0760	0.0148	0.500	ug/l	1.0	DVW	02/13/96	2224	80378	N
eneral Chemistry											
otal Organic Carbon		5.37	0.143	1.00	mg/l	1.0	LS	02/13/96	1430	80356	2
otal Organic Halogens		101	2.28	10.0	ug/l	1.0	SJ	02/14/96	1100	80400	3

e following prep procedures were performed:

CP	DVW	02/13/96	2030	80359	4
ercury	DVW	02/13/96	1930	80378	5

I = Method	**Method-Description**
I 1	EPA 200.7
I 2	EPA 415.1
I 3	EPA 9020B
I 4	EPA 200/3010
I 5	EPA 245.1

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Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

cc: NPWC00195 Report Date: February 16, 1996

Sample ID : TCG0399-6-9 Rinsewater Bay #7
Lab ID : 9602245-09
Matrix : WasteH2O
Date Collected : 02/12/96
Date Received : 02/13/96
Priority : Rush
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Silver	U	0.000706	0.00780	0.0300	mg/l	1.0	WCC	02/15/96	1436	80359	1
Arsenic	U	0.00363	0.0421	0.300	mg/l	1.0					
Barium		0.0320	0.00220	0.0300	mg/l	1.0					
Cadmium	U	0.000837	0.00330	0.00500	mg/l	1.0					
Chromium		0.0609	0.00420	0.0300	mg/l	1.0					
Lead	U	0.0217	0.0364	0.100	mg/l	1.0					
Selenium	U	0.00165	0.0841	0.300	mg/l	1.0					
Mercury	J	0.102	0.0148	0.500	ug/l	1.0	DVW	02/13/96	2231	80378	N
General Chemistry											
Total Organic Carbon		9.75	0.143	1.00	mg/l	1.0	LS	02/13/96	1430	80356	2
Total Organic Halogens		460	9.12	40.0	ug/l	4.0	SJ	02/14/96	1100	80400	3

The following prep procedures were performed:

ICP	DVW	02/13/96	2030	80359	4
Mercury	DVW	02/13/96	1930	80378	5

M = Method	Method-Description
M 1	EPA 200.7
M 2	EPA 415.1
M 3	EPA 9020B
M 4	EPA 200/3010
M 5	EPA 245.1

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Client: Navy Public Works Center-Chas. Zone
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Code 106.24, Bldg.234
Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

cc: NPWC00195 Report Date: February 16, 1996

Sample ID : TCG0399-6-10 Rinse water Bay #9
Lab ID : 9602245-10
Matrix : WasteH2O
Date Collected : 02/12/96
Date Received : 02/13/96
Priority : Rush
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Silver	U	0.00590	0.00780	0.0300	mg/l	1.0	WCC	02/15/96	1441	80359	1
Arsenic	U	0.00194	0.0421	0.300	mg/l	1.0					
Barium		0.0694	0.00220	0.0300	mg/l	1.0					
Cadmium	U	0.00219	0.00330	0.00500	mg/l	1.0					
Chromium	J	0.0159	0.00420	0.0300	mg/l	1.0					
Lead	J	0.0658	0.0364	0.100	mg/l	1.0					
Selenium	U	0.0000915	0.0841	0.300	mg/l	1.0					
Mercury		0.640	0.0148	0.500	ug/l	1.0	DVW	02/13/96	2234	80378	N
General Chemistry											
Total Organic Carbon		12.7	0.715	5.00	mg/l	5.0	LS	02/13/96	1430	80356	2
Total Organic Halogens		117	2.28	10.0	ug/l	1.0	SJ	02/14/96	1100	80400	3

The following prep procedures were performed:

ICP	DVW	02/13/96	2030	80359	4
Mercury	DVW	02/13/96	1930	80378	5

M = Method	Method-Description
M 1	EPA 200.7
M 2	EPA 415.1
M 3	EPA 9020B
M 4	EPA 200/3010
M 5	EPA 245.1

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Client: Navy Public Works Center-Chas. Zone
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Code 106.24, Bldg.234
Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

cc: NPWC00195 Report Date: February 16, 1996

Sample ID : TCG0399-6-11 Rinsewater Aisleway
Lab ID : 9602245-11
Matrix : WasteH2O
Date Collected : 02/12/96
Date Received : 02/13/96
Priority : Rush
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Silver	U	0.00111	0.00780	0.0300	mg/l	1.0	WCC	02/15/96	1334	80359	1
Arsenic	U	0.00236	0.0421	0.300	mg/l	1.0					
Barium		0.0340	0.00220	0.0300	mg/l	1.0					
Cadmium	U	0.00224	0.00330	0.00500	mg/l	1.0					
Chromium	J	0.00864	0.00420	0.0300	mg/l	1.0					
Lead	J	0.0413	0.0364	0.100	mg/l	1.0					
Selenium	U	0.000999	0.0841	0.300	mg/l	1.0					
Mercury	J	0.0660	0.0148	0.500	ug/l	1.0	DVW	02/13/96	2236	80378	N
General Chemistry											
Total Organic Carbon		5.05	0.715	5.00	mg/l	5.0	LS	02/13/96	1430	80356	2
Total Organic Halogens		182	2.28	10.0	ug/l	1.0	SJ	02/14/96	1100	80400	3

The following prep procedures were performed:

ICP	DVW	02/13/96	2030	80359	4
Mercury	DVW	02/13/96	1930	80378	5

M = Method	Method-Description
M 1	EPA 200.7
M 2	EPA 415.1
M 3	EPA 9020B
M 4	EPA 200/3010
M 5	EPA 245.1

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Charleston, South Carolina 29414
P.O. Box 30712
Charleston, South Carolina 29417
(803) 556-8171

CHAIN OF CUSTODY RECORD

Client Name/Facility Name: CNSY

Collected by/Company: K.B. Norman 8401/116

SAMPLE ANALYSIS REQUIRED (X) - use remarks area to specify specific compounds or method

Use F or P in the boxes to indicate whether sample was filtered and/or preserved

BLDG 246

SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify (Pb, Cd)	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	TOTAL ORGANIC CARBONS	TOTAL ORGANIC HALOGENS	Remarks
TC60399-6-1	2/8/96	0900				X	2							X									X	X	CLEAN WATER
TC60399-6-2	2/8/96	0900				X	2							X									X	X	WATER W/ DETERGENT
TC60399-6-3	2/12/96	1300				X	2							X									X	X	RINSE WATER BAY #1
TC60399-6-4	2/12/96	1200				X	2							X									X	X	RINSE WATER BAY #2
TC60399-6-5	2/12/96	1100				X	2							X									X	X	RINSE WATER BAY #3
TC60399-6-6	2/12/96	1000				X	2							X									X	X	RINSE WATER BAY #4
TC60399-6-7	2/9/96	1100				X	2							X									X	X	RINSE WATER BAY #5
TC60399-6-8	2/9/96	1300				X	2							X									X	X	RINSE WATER BAY #6
TC60399-6-9	2/12/96	1000				X	2							X									X	X	RINSE WATER BAY #7
TC60399-6-10	2/12/96	0900				X	2							X									X	X	RINSE WATER BAY #8
TC60399-6-11	2/12/96	1330				X	2							X									X	X	RINSE WATER AISLEWAY
~~TC60399-6-12~~																									

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
K.B. Norman	2/12/96	1514	[illegible signature]				

Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:

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CERTIFICATE OF ANALYSIS

Client: Navy Public Works Center-Chas. Zone
Charleston Naval Shipyard
Code 106.24, Bldg.234
Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

WC00195 Report Date: February 15, 1996

Sample ID : TCG0382-6-1 Zone #1
Lab ID : 9602171-01
Matrix : Soil
Date Collected : 02/06/96
Date Received : 02/08/96
Priority : Routine
Collector : Client

ieter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
e Organics											
dix IX Volatiles - 53 items											
-Tetrachloroethane	U	0.00	1.00	2.00	ug/kg	1.0	DLS	02/12/96	1841	80295	1
Trichloroethane	U	0.00	1.00	2.00	ug/kg	1.0					
-Tetrachloroethane	U	0.00	1.00	2.00	ug/kg	1.0					
Trichloroethane	U	0.00	1.00	2.00	ug/kg	1.0					
chloroethane	U	0.00	1.00	2.00	ug/kg	1.0					
chloroethylene	U	0.00	1.00	2.00	ug/kg	1.0					
Trichloropropane	U	0.00	1.00	2.00	ug/kg	1.0					
bromo-3-chloropropane	U	0.00	1.00	2.00	ug/kg	1.0					
bromoethane	U	0.00	1.00	2.00	ug/kg	1.0					
chloroethane	U	0.00	1.00	2.00	ug/kg	1.0					
chloropropane	U	0.00	1.00	2.00	ug/kg	1.0					
ns-Dichloroethylene	U	0.00	1.00	2.00	ug/kg	1.0					
none	U	0.00	2.00	10.0	ug/kg	1.0					
mone	U	0.00	5.00	10.0	ug/kg	1.0					
yl-2-pentanone	U	0.00	5.00	10.0	ug/kg	1.0					
e	U	4.38	5.00	10.0	ug/kg	1.0					
itrile	U	0.00	2.00	10.0	ug/kg	1.0					
in	U	0.00	10.0	20.0	ug/kg	1.0					
nitrile	U	0.00	5.00	50.0	ug/kg	1.0					
hloride	U	0.00	5.00	10.0	ug/kg	1.0					
e	U	0.00	1.00	2.00	ug/kg	1.0					
form	U	0.00	1.00	2.00	ug/kg	1.0					
Disulfide	U	0.00	2.00	10.0	ug/kg	1.0					
Tetrachloride	U	0.00	1.00	2.00	ug/kg	1.0					
benzene	U	0.00	1.00	2.00	ug/kg	1.0					
dibromomethane	U	0.00	1.00	2.00	ug/kg	1.0					
ethane	U	0.00	1.00	2.00	ug/kg	1.0					

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9602171-01

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Charleston Naval Shipyard
Code 106.24, Bldg.234
Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

IPWC00195 Report Date: February 15, 1996

Sample ID : TCG0382-6-1

neter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
oform	U	0.00	1.00	2.00	ug/kg	1.0					
oprene	U	0.00	2.00	10.0	ug/kg	1.0	DLS	02/12/96	1841	80295	1
omomethane	U	0.00	1.00	2.00	ug/kg	1.0					
orobromomethane	U	0.00	1.00	2.00	ug/kg	1.0					
orodifluoromethane	U	0.00	1.00	2.00	ug/kg	1.0					
benzene	U	0.00	1.00	2.00	ug/kg	1.0					
tyl Alcohol	U	0.670	10.0	20.0	ug/kg	1.0					
acrylonitrile	U	0.00	5.00	10.0	ug/kg	1.0					
yl Bromide	U	0.00	1.00	2.00	ug/kg	1.0					
yl Chloride	U	0.00	1.00	2.00	ug/kg	1.0					
yl Iodide	U	0.00	2.00	5.00	ug/kg	1.0					
yl Methacrylate	U	0.00	2.00	10.0	ug/kg	1.0					
ylene Chloride	J	1.38	1.00	5.00	ug/kg	1.0					
onitrile	U	0.00	10.0	20.0	ug/kg	1.0					
ne	U	0.00	1.00	2.00	ug/kg	1.0					
chloroethylene	U	0.00	1.00	2.00	ug/kg	1.0					
ne	U	0.00	1.00	2.00	ug/kg	1.0					
loroethylene	U	0.00	1.00	2.00	ug/kg	1.0					
lorofluoromethane	U	0.00	1.00	2.00	ug/kg	1.0					
Acetate	U	0.00	5.00	10.0	ug/kg	1.0					
chloride	U	0.00	1.00	2.00	ug/kg	1.0					
ies (TOTAL)	U	0.00	1.00	4.00	ug/kg	1.0					
Chloromethylethyl)ether	U	0.00	10.0	20.0	ug/kg	1.0					
3-Dichloropropylene	U	0.00	1.00	2.00	ug/kg	1.0					
1,3-Dichloropropylene	U	0.00	1.00	2.00	ug/kg	1.0					
1,4-Dichloro-2-butene	U	0.00	1.00	2.00	ug/kg	1.0					
table Organics											
ndix IX Acid Compounds - 17 items											
6-Tetrachlorophenol	U	0.00	660	1320	ug/kg	4.0	JCB	02/13/96	1931	80262	2
Trichlorophenol	U	0.00	660	1320	ug/kg	4.0					
Trichlorophenol	U	0.00	660	1320	ug/kg	4.0					
lchlorophenol	U	0.00	660	1320	ug/kg	4.0					
imethylphenol	U	0.00	660	1320	ug/kg	4.0					
initrophenol	U	0.00	1320	2640	ug/kg	4.0					
ichlorophenol	U	0.00	660	1320	ug/kg	4.0					

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Charleston Naval Shipyard
Code 106.24, Bldg.234
Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

PWC00195 Report Date: February 15, 1996

Sample ID : TCG0382-6-1

neter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
orophenol	U	0.00	660	1320	ug/kg	4.0					
ophenol	U	0.00	660	1320	ug/kg	4.0	JCB	02/13/96	1931	80262	2
hyl-4,6-dinitrophenol	U	0.00	660	1320	ug/kg	4.0					
-Butyl-4,6-Dinitrophenol	U	0.00	331	1320	ug/kg	4.0					
rophenol	U	0.00	660	1320	ug/kg	4.0					
oro-3-methyl phenol	U	0.00	660	1320	ug/kg	4.0					
chlorophene	U	0.00	33000	66000	ug/kg	4.0					
ol	U	0.00	660	1320	ug/kg	4.0					
Cresol	U	0.00	462	1320	ug/kg	4.0					
sol	U	0.00	483	1320	ug/kg	4.0					
ndix IX Base/Neutral Compounds - 98 items											
5-Tetrachlorobenzene	U	0.00	660	1320	ug/kg	4.0					
ichlorobenzene	U	0.00	660	1320	ug/kg	4.0					
ichlorobenzene	U	0.00	660	1320	ug/kg	4.0					
ioxane	U	0.00	660	1320	ug/kg	4.0					
aphthoquinone	U	0.00	660	1320	ug/kg	4.0					
hthylamine	U	0.00	660	1320	ug/kg	4.0					
initrotoluene	U	0.00	660	1320	ug/kg	4.0					
ylaminofluorene	U	0.00	660	1320	ug/kg	4.0					
oronaphthalene	U	0.00	660	1320	ug/kg	4.0					
hylnaphthalene	U	0.00	660	1320	ug/kg	4.0					
hthylamine	U	0.00	660	1320	ug/kg	4.0					
line	U	0.00	660	1320	ug/kg	4.0					
ichlorobenzidine	U	0.00	6600	6600	ug/kg	4.0					
imethylbenzidine	U	0.00	3300	6600	ug/kg	4.0					
hylcholanthrene	U	0.00	660	1320	ug/kg	4.0					
mophenyl phenyl ether	U	0.00	660	1320	ug/kg	4.0					
roaniline	U	0.00	660	1320	ug/kg	4.0					
rophenyl phenyl ether	U	0.00	660	1320	ug/kg	4.0					
oquinoline	U	0.00	660	1320	ug/kg	4.0					
obiphenyl	U	0.00	660	1320	ug/kg	4.0					
o-o-toluidine	U	0.00	660	1320	ug/kg	4.0					
Dimethylbenz(a)anthracene	U	0.00	660	1320	ug/kg	4.0					
phthene	U	0.00	660	1320	ug/kg	4.0					
phthylene	U	0.00	660	1320	ug/kg	4.0					

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CERTIFICATE OF ANALYSIS

Client: Navy Public Works Center-Chas. Zone
Charleston Naval Shipyard
Code 106.24, Bldg.234
Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

PWC00195 Report Date: February 15, 1996

Sample ID : TCG0382-6-1

neter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
phenone	U	0.00	660	1320	ug/kg	4.0					
ie	U	0.00	660	1320	ug/kg	4.0	JCB	02/13/96	1931	80262	2
acene	U	0.00	660	1320	ug/kg	4.0					
ite	U	0.00	660	1320	ug/kg	4.0					
o(a)anthracene	U	0.00	660	1320	ug/kg	4.0					
o(a)pyrene	U	0.00	660	1320	ug/kg	4.0					
o(b)fluoranthene	U	0.00	660	1320	ug/kg	4.0					
o(ghi)perylene	U	0.00	660	1320	ug/kg	4.0					
o(k)fluoranthene	U	0.00	660	1320	ug/kg	4.0					
yl Alcohol	U	0.00	660	1320	ug/kg	4.0					
benzyl phthalate	U	0.00	660	1320	ug/kg	4.0					
obenzilate	U	0.00	3300	6600	ug/kg	4.0					
ene	U	0.00	660	1320	ug/kg	4.0					
butyl phthalate	U	0.00	660	1320	ug/kg	4.0					
octyl phthalate	U	0.00	660	1320	ug/kg	4.0					
ate	U	0.00	660	1320	ug/kg	4.0					
zo(a,h)anthracene	U	0.00	660	1320	ug/kg	4.0					
zofuran	U	0.00	660	1320	ug/kg	4.0					
yl phthalate	U	0.00	513	1320	ug/kg	4.0					
thoate	U	0.00	3300	6600	ug/kg	4.0					
hyl phthalate	U	0.00	660	1320	ug/kg	4.0					
nylamine	U	0.00	226	1320	ug/kg	4.0					
oton	U	0.00	660	1320	ug/kg	4.0					
Methanesulfonate	U	0.00	660	1320	ug/kg	4.0					
methacrylate	U	0.00	43.6	330	ug/kg	4.0					
ur	U	0.00	660	1320	ug/kg	4.0					
nthene	U	0.00	660	1320	ug/kg	4.0					
ne	U	0.00	660	1320	ug/kg	4.0					
hlorobenzene	U	0.00	792	1320	ug/kg	4.0					
hlorobutadiene	U	0.00	660	1320	ug/kg	4.0					
hlorocyclopentadiene	U	0.00	924	1320	ug/kg	4.0					
hloroethane	U	0.00	660	1320	ug/kg	4.0					
hloropropene	U	0.00	660	1320	ug/kg	4.0					
o(1,2,3-c,d)pyrene	U	0.00	660	1320	ug/kg	4.0					
n	U	0.00	660	1320	ug/kg	4.0					

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Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

PWC00195 Report Date: February 15, 1996

Sample ID : TCG0382-6-1

neter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
ɔrone	U	0.00	660	1320	ug/kg	4.0					
role	U	0.00	660	1320	ug/kg	4.0	JCB	02/13/96	1931	80262	2
ne	U	0.00	660	1320	ug/kg	4.0					
ɪpyrilene	U	0.00	3300	6600	ug/kg	4.0					
yl Methanesulfonate	U	0.00	660	1320	ug/kg	4.0					
rosodi-n-butylamine	U	0.00	660	1320	ug/kg	4.0					
rosodiethylamine	U	0.00	660	1320	ug/kg	4.0					
rosodimethylamine	U	0.00	660	1320	ug/kg	4.0					
rosodiphenylamine	U	0.00	660	1320	ug/kg	4.0					
rosomethylethylamine	U	0.00	660	1320	ug/kg	4.0					
rosomorpholine	U	0.00	660	1320	ug/kg	4.0					
rosopiperidine	U	0.00	660	1320	ug/kg	4.0					
rosopyrolidine	U	0.00	660	1320	ug/kg	4.0					
thalene	U	0.00	660	1320	ug/kg	4.0					
ɔenzene	U	0.00	660	1320	ug/kg	4.0					
)-Triethylphosphorothioate	U	0.00	139	1320	ug/kg	4.0					
chlorobenzene	U	0.00	660	1320	ug/kg	4.0					
chloroethane	U	0.00	660	1320	ug/kg	4.0					
chloronitrobenzene	U	0.00	660	1320	ug/kg	4.0					
cetin	U	0.00	660	1320	ug/kg	4.0					
nthrene	U	0.00	660	1320	ug/kg	4.0					
mide	U	0.00	660	1320	ug/kg	4.0					
e	U	0.00	660	1320	ug/kg	4.0					
ne	U	0.00	660	1320	ug/kg	4.0					
e	U	0.00	660	1320	ug/kg	4.0					
ɪpp	U	0.00	660	1320	ug/kg	4.0					
azin	U	0.00	660	1320	ug/kg	4.0					
dimethylphenethylamine	U	0.00	792	1320	ug/kg	4.0					
Chloroethoxy)methane	U	0.00	660	1320	ug/kg	4.0					
Chloroethyl) ether	U	0.00	660	1320	ug/kg	4.0					
Ethylhexyl)phthalate	U	0.00	660	1320	ug/kg	4.0					
ɪitrobenzene	U	0.00	660	1320	ug/kg	4.0					
roaniline	U	0.00	1030	1320	ug/kg	4.0					
oaniline	U	0.00	370	1320	ug/kg	4.0					
ɪidine	U	0.00	660	1320	ug/kg	4.0					

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Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

PWC00195 Report Date: February 15, 1996

Sample ID : TCG0382-6-1

neter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
ethylaminoazobenzene	U	0.00	660	1320	ug/kg	4.0					
oaniline	U	0.00	541	1320	ug/kg	4.0	JCB	02/13/96	1931	80262	2
ylenediamine	U	0.00	1320	2640	ug/kg	4.0					
rinitrobenzene	U	0.00	4250	6600	ug/kg	4.0					
dix IX - Herbicides - 3 items											
T	U	0.00	4.98	9.96	ug/kg	10.	JLS	02/14/96	0211	80261	3
TP	U	0.00	2.49	4.98	ug/kg	10.					
	U	0.00	4.98	9.96	ug/kg	10.					
dix IX - Pesticides & PCBs - 29 items											
DD	U	0.00	8.28	16.6	ug/kg	5.0	JEB	02/14/96	1145	80260	4
DE	U	0.00	4.14	8.28	ug/kg	5.0					
DT	U	0.00	8.28	16.6	ug/kg	5.0					
a	U	0.00	2.07	4.14	ug/kg	5.0					
dane	U	0.00	20.7	41.4	ug/kg	5.0					
rin	U	0.00	4.14	8.28	ug/kg	5.0					
sulfan I	U	0.00	4.14	8.28	ug/kg	5.0					
sulfan II	U	0.00	8.28	16.6	ug/kg	5.0					
sulfan sulfate	U	0.00	8.28	16.6	ug/kg	5.0					
n	U	0.00	4.14	8.28	ug/kg	5.0					
n aldehyde	U	0.00	10.3	20.7	ug/kg	5.0					
chlor	U	0.00	4.14	8.28	ug/kg	5.0					
chlor epoxide	U	0.00	4.14	8.28	ug/kg	5.0					
oxychlor	U	0.00	41.4	82.8	ug/kg	5.0					
1016	U	0.00	16.6	20.7	ug/kg	5.0					
1221	U	0.00	16.6	20.7	ug/kg	5.0					
1232	U	0.00	16.6	20.7	ug/kg	5.0					
1242	U	0.00	16.6	20.7	ug/kg	5.0					
1248	U	0.00	16.6	20.7	ug/kg	5.0					
1254	U	0.00	16.6	20.7	ug/kg	5.0					
1260	U	0.00	16.6	20.7	ug/kg	5.0					
ion	U	0.00	4.14	8.28	ug/kg	5.0					
ion, methyl	U	0.00	4.14	8.28	ug/kg	5.0					
te	U	0.00	4.14	8.28	ug/kg	5.0					
hene	U	0.00	82.8	166	ug/kg	5.0					
BHC	U	0.00	2.07	4.14	ug/kg	5.0					

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Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

WC00195 Report Date: February 15, 1996

Sample ID : TCG0382-6-1

eter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
HC	U	0.00	4.14	8.28	ug/kg	5.0					
HC	U	0.00	4.14	8.28	ug/kg	5.0	JEB	02/14/96	1145	80260	4
-BHC	U	0.00	2.07	4.14	ug/kg	5.0					
Analysis											
	U	-1.46	0.386	2.50	mg/kg	1.0	JSS	02/12/96	1125	80181	5
c	U	-3.85	2.08	14.9	mg/kg	1.0					
1		7.97	0.109	2.50	mg/kg	1.0					
um	J	0.0916	0.0149	2.50	mg/kg	1.0					
um	J	0.405	0.163	2.50	mg/kg	1.0					
	J	0.847	0.168	2.50	mg/kg	1.0					
ium		3.46	0.208	2.50	mg/kg	1.0					
		4.55	0.416	2.50	mg/kg	1.0					
		3.29	0.391	2.50	mg/kg	1.0					
		5.05	1.80	4.95	mg/kg	1.0					
ony	U	-4.84	1.98	4.95	mg/kg	1.0					
m	U	-1.22	4.16	14.9	mg/kg	1.0	JSS	02/12/96	1230	80181	5
	U	0.709	1.16	4.95	mg/kg	1.0	JSS	02/12/96	1125	80181	5
m	U	0.580	2.33	14.9	mg/kg	1.0					
um	U	-3.74	0.208	2.50	mg/kg	1.0					
		20.0	0.104	2.50	mg/kg	1.0					
y	U	0.00	0.00229	0.200	mg/kg	1.0	DVW	02/09/96	2339	80182	N

owing prep procedures were performed:

Acid Compounds	DLF	02/10/96	1600	80262	6
Base/Neutral Compounds	DLF	02/10/96	1600	80262	6
des	DDT	02/10/96	2000	80261	7
les	DLF	02/10/96	1600	80260	6
	DVW	02/10/96	1115	80181	8
y	DVW	02/09/96	2000	80182	9

nts:

n was required for Extractables Organics due to matrix interference.
lt, the detection limit is elevated.

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CERTIFICATE OF ANALYSIS

Client: Navy Public Works Center-Chas. Zone
Charleston Naval Shipyard
Code 106.24, Bldg.234
Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

IPWC00195 Report Date: February 15, 1996

Sample ID : TCG0382-6-1

›gate Recovery	Test	Percent%	Acceptable Limits
-Tribromophenol	APP 9 ACID	44.8	(40.3 - 122.)
orophenol	APP 9 ACID	47.6	(25.0 - 121.)
ol-d6	APP 9 ACID	59.2	(24.0 - 113.)
orobiphenyl	APP 9 B/N	62.4	(30.0 - 115.)
benzene-d5	APP 9 B/N	54.4	(23.0 - 120.)
rphenyl-d14	APP 9 B/N	99.3	(37.3 - 128.)
4-Dichlorophenoxy)Butyric	APP 9 HERBICIDES	60.3*	(64.6 - 159.)
X	APP 9 PESTICIDES	201.*	(45.8 - 152.)
tylchlorendate	APP 9 PESTICIDES	222.*	(40.5 - 143.)
ofluorobenzene	APP 9 VOA-8260	31.2*	(80.0 - 120.)
omofluoromethane	APP 9 VOA-8260	106.	(80.0 - 120.)
ene-d8	APP 9 VOA-8260	116.	(80.0 - 120.)

Method	Method-Description
	EPA 8260
	EPA 8270
	EPA 8150 modified
	EPA 8080
	EPA 6010A
	EPA 3550
	EPA 8150
	EPA 3050
	EPA 7471

ualifiers in this report are defined as follows:
ates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
cates that the analyte was not detected at a concentration greater than the detection limit.
ate that a quality control analyte recovery is outside of specified acceptance criteria.

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Client:	Navy Public Works Center-Chas. Zone Charleston Naval Shipyard Code 106.24, Bldg.234 Charleston, South Carolina 29408-2020
Contact:	Mr. Matt Cissel
Project Description:	Code 106

PWC00195 Report Date: February 15, 1996

Sample ID : TCG0382-6-1

aboratory Certifications		EPI Laboratory Certifications	
040	AZ - AZ0514	AL - 41050	AZ - AZ0514
89	CT - PH-0169	CA - 1-1023/2056	CT - PH-0175
012	FL - E87156/87294	FL - E87472/87458	MS - 29417
012	MS - 10120	NY - 11502	RI - 138
3	NY - 11501	SC - 10582	TN - 02934
5	SC - 10120	UT - E-227	VA - 00111
934	UT - E-251	WA - C225	NJ - 79002
151	WA - C223	PA - 68-485	
9887790			

ta report has been prepared and reviewed
dance with General Engineering Laboratories
l operating procedures. Please direct
stions to your Project Manager, Karen Blakeney at (803) 769-7386.

cal Report Specialist

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2040 Savage Road
Charleston, South Carolina 29414
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Charleston, South Carolina 29417
(803) 556-8171

CHAIN OF CUSTODY RECORD

Page 1 of 1

7 DAY Turnaround

Client Name/Facility Name: CNSY

Collected by/Company: K.B. NORMAN -8401 / 116

SAMPLE ANALYSIS REQUIRED (x) - use remarks area to specify specific compounds or methods

Use F or P in the boxes to indicate whether sample was filtered and/or preserved

BLDG 246

SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	SEE REMARKS		Remarks
TCG03826-1	2/6/96	1400		X			3																X		ZONE #1
																									TOTAL APPENDIX IX
																									EXCLUDING DIOXINS

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
K.B. Norman	2/7/96	0855	Michael B Hart	W.R. Hiers, Jr.	2/8/96		
Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:	

White = sample collector Yellow = file Pink = with report

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Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

c: NPWC00195 Report Date: February 14, 1996

Sample ID : TCG0388-6-1 Zone 2
Lab ID : 9602204-01
Matrix : Soil
Date Collected : 02/08/96
Date Received : 02/09/96
Priority : Rush
Collector : Client

ıramater	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
latile Organics											
ppendix IX Volatiles - 53 items											
1,1,2-Tetrachloroethane	U	0.00	1.00	2.00	ug/kg	1.0	DLS	02/12/96	1406	80295	1
1,1-Trichloroethane	U	0.00	1.00	2.00	ug/kg	1.0					
1,2,2-Tetrachloroethane	U	0.00	1.00	2.00	ug/kg	1.0					
1,2-Trichloroethane	U	0.00	1.00	2.00	ug/kg	1.0					
1-Dichloroethane	U	0.00	1.00	2.00	ug/kg	1.0					
1-Dichloroethylene	U	0.00	1.00	2.00	ug/kg	1.0					
2,3-Trichloropropane	U	0.00	1.00	2.00	ug/kg	1.0					
2-Dibromo-3-chloropropane	U	0.00	1.00	2.00	ug/kg	1.0					
2-Dibromoethane	U	0.00	1.00	2.00	ug/kg	1.0					
2-Dichloroethane	U	0.00	1.00	2.00	ug/kg	1.0					
2-Dichloropropane	U	0.00	1.00	2.00	ug/kg	1.0					
2-trans-Dichloroethylene	U	0.00	1.00	2.00	ug/kg	1.0					
Butanone	U	0.00	2.00	10.0	ug/kg	1.0					
Hexanone	U	0.00	5.00	10.0	ug/kg	1.0					
Methyl-2-pentanone	U	0.00	5.00	10.0	ug/kg	1.0					
etone	U	3.74	5.00	10.0	ug/kg	1.0					
etonitrile	U	0.00	2.00	10.0	ug/kg	1.0					
crolein	U	0.00	10.0	20.0	ug/kg	1.0					
crylonitrile	U	0.00	5.00	50.0	ug/kg	1.0					
lyl Chloride	U	0.00	5.00	10.0	ug/kg	1.0					
nzene	U	0.00	1.00	2.00	ug/kg	1.0					
romoform	U	0.00	1.00	2.00	ug/kg	1.0					
rbon Disulfide	U	0.00	2.00	10.0	ug/kg	1.0					
rbon Tetrachloride	U	0.00	1.00	2.00	ug/kg	1.0					
lorobenzene	U	0.00	1.00	2.00	ug/kg	1.0					
lorodibromomethane	U	0.00	1.00	2.00	ug/kg	1.0					
loroethane	U	0.00	1.00	2.00	ug/kg	1.0					

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Code 106.24, Bldg.234
Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

Sample ID : TCG0388-6-1

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Chloroform	U	0.00	1.00	2.00	ug/kg	1.0					
Chloroprene	U	0.00	2.00	10.0	ug/kg	1.0	DLS	02/12/96	1406	80295	1
Dibromomethane	U	0.00	1.00	2.00	ug/kg	1.0					
Dichlorobromomethane	U	0.00	1.00	2.00	ug/kg	1.0					
Dichlorodifluoromethane	J	1.67	1.00	2.00	ug/kg	1.0					
Ethylbenzene	U	0.00	1.00	2.00	ug/kg	1.0					
Isobutyl Alcohol	U	0.00	10.0	20.0	ug/kg	1.0					
Methacrylonitrile	U	0.00	5.00	10.0	ug/kg	1.0					
Methyl Bromide	U	0.00	1.00	2.00	ug/kg	1.0					
Methyl Chloride	U	0.00	1.00	2.00	ug/kg	1.0					
Methyl Iodide	U	0.00	2.00	5.00	ug/kg	1.0					
Methyl Methacrylate	U	0.00	2.00	10.0	ug/kg	1.0					
Methylene Chloride	J	2.42	1.00	5.00	ug/kg	1.0					
Propionitrile	U	0.00	10.0	20.0	ug/kg	1.0					
Styrene	U	0.00	1.00	2.00	ug/kg	1.0					
Tetrachloroethylene	U	0.00	1.00	2.00	ug/kg	1.0					
Toluene	U	0.00	1.00	2.00	ug/kg	1.0					
Trichloroethylene	U	0.00	1.00	2.00	ug/kg	1.0					
Trichlorofluoromethane	U	0.00	1.00	2.00	ug/kg	1.0					
Vinyl Acetate	U	0.00	5.00	10.0	ug/kg	1.0					
Vinyl chloride	U	0.00	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)	U	0.00	1.00	4.00	ug/kg	1.0					
is(2-Chloroethylethyl)ether	U	0.00	10.0	20.0	ug/kg	1.0					
is-1,3-Dichloropropylene	U	0.00	1.00	2.00	ug/kg	1.0					
rans-1,3-Dichloropropylene	U	0.00	1.00	2.00	ug/kg	1.0					
rans-1,4-Dichloro-2-butene	U	0.00	1.00	2.00	ug/kg	1.0					
xtractable Organics											
ppendix IX Acid Compounds - 17 items											
2,3,4,6-Tetrachlorophenol	U	0.00	658	1320	ug/kg	4.0	JCB	02/13/96	2005	80262	2
2,4,5-Trichlorophenol	U	0.00	658	1320	ug/kg	4.0					
2,4,6-Trichlorophenol	U	0.00	658	1320	ug/kg	4.0					
2,4-Dichlorophenol	U	0.00	658	1320	ug/kg	4.0					
2,4-Dimethylphenol	U	0.00	658	1320	ug/kg	4.0					
2,4-Dinitrophenol	U	0.00	1320	2630	ug/kg	4.0					
2,6-Dichlorophenol	U	0.00	658	1320	ug/kg	4.0					

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CERTIFICATE OF ANALYSIS

Client: Navy Public Works Center-Chas. Zone
Charleston Naval Shipyard
Code 106.24, Bldg.234
Charleston, South Carolina 29408-2020

Contact: Mr. Matt Cissel

Project Description: Code 106

ox: NPWC00195 Report Date: February 14, 1996

Sample ID : TCG0388-6-1

arameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
-Chlorophenol	U	0.00	658	1320	ug/kg	4.0					
-Nitrophenol	U	0.00	658	1320	ug/kg	4.0	JCB	02/13/96	2005	80262	2
-methyl-4,6-dinitrophenol	U	0.00	658	1320	ug/kg	4.0					
-sec-Butyl-4,6-Dinitrophenol	U	0.00	330	1320	ug/kg	4.0					
-Nitrophenol	U	0.00	658	1320	ug/kg	4.0					
-chloro-3-methyl phenol	U	0.00	658	1320	ug/kg	4.0					
~~ra~~chlorophene	U	0.00	32900	65800	ug/kg	4.0					
henol	U	0.00	658	1320	ug/kg	4.0					
,p-Cresol	U	0.00	461	1320	ug/kg	4.0					
-Cresol	U	0.00	482	1320	ug/kg	4.0					
ppendix IX Base/Neutral Compounds - 98 items											
2,4,5-Tetrachlorobenzene	U	0.00	658	1320	ug/kg	4.0					
2-Dichlorobenzene	U	0.00	658	1320	ug/kg	4.0					
3-Dichlorobenzene	U	0.00	658	1320	ug/kg	4.0					
4-Dioxane	U	0.00	658	1320	ug/kg	4.0					
4-Naphthoquinone	U	0.00	658	1320	ug/kg	4.0					
Naphthylamine	U	0.00	658	1320	ug/kg	4.0					
6-Dinitrotoluene	U	0.00	658	1320	ug/kg	4.0					
Acetylaminofluorene	U	0.00	658	1320	ug/kg	4.0					
Chloronaphthalene	U	0.00	658	1320	ug/kg	4.0					
Methylnaphthalene	U	0.00	658	1320	ug/kg	4.0					
Naphthylamine	U	0.00	658	1320	ug/kg	4.0					
Picoline	U	0.00	658	1320	ug/kg	4.0					
3'-Dichlorobenzidine	U	0.00	6580	6580	ug/kg	4.0					
3'-Dimethylbenzidine	U	0.00	3290	6580	ug/kg	4.0					
Methylcholanthrene	U	0.00	658	1320	ug/kg	4.0					
Bromophenyl phenyl ether	U	0.00	658	1320	ug/kg	4.0					
Chloroaniline	U	0.00	658	1320	ug/kg	4.0					
Chlorophenyl phenyl ether	U	0.00	658	1320	ug/kg	4.0					
Nitroquinoline	U	0.00	658	1320	ug/kg	4.0					
uminobiphenyl	U	0.00	658	1320	ug/kg	4.0					
Nitro-o-toluidine	U	0.00	658	1320	ug/kg	4.0					
2-Dimethylbenz(a)anthracene	U	0.00	658	1320	ug/kg	4.0					
enaphthene	U	0.00	658	1320	ug/kg	4.0					
enaphthylene	U	0.00	658	1320	ug/kg	4.0					

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Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
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cc: NPWC00195 Report Date: February 14, 1996

Sample ID : TCG0388-6-1

arameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
cetophenone	U	0.00	658	1320	ug/kg	4.0					
niline	U	0.00	658	1320	ug/kg	4.0	JCB	02/13/96	2005	80262	2
nthracene	U	0.00	658	1320	ug/kg	4.0					
rsenite	U	0.00	658	1320	ug/kg	4.0					
enzo(a)anthracene	U	0.00	658	1320	ug/kg	4.0					
enzo(a)pyrene	U	0.00	658	1320	ug/kg	4.0					
enzo(b)fluoranthene	U	0.00	658	1320	ug/kg	4.0					
enzo(ghi)perylene	U	0.00	658	1320	ug/kg	4.0					
enzo(k)fluoranthene	U	0.00	658	1320	ug/kg	4.0					
enzyl Alcohol	U	0.00	658	1320	ug/kg	4.0					
utyl benzyl phthalate	U	0.00	658	1320	ug/kg	4.0					
hlorobenzilate	U	0.00	3290	6580	ug/kg	4.0					
hrysene	U	0.00	658	1320	ug/kg	4.0					
i-n-butyl phthalate	U	0.00	658	1320	ug/kg	4.0					
i-n-octyl phthalate	U	0.00	658	1320	ug/kg	4.0					
allate	U	0.00	658	1320	ug/kg	4.0					
ibenzo(a,h)anthracene	U	0.00	658	1320	ug/kg	4.0					
ibenzofuran	U	0.00	658	1320	ug/kg	4.0					
iethyl phthalate	U	0.00	512	1320	ug/kg	4.0					
imethoate	U	0.00	3290	6580	ug/kg	4.0					
imethyl phthalate	U	0.00	658	1320	ug/kg	4.0					
iphenylamine	U	0.00	225	1320	ug/kg	4.0					
isulfoton	U	0.00	658	1320	ug/kg	4.0					
thyl Methanesulfonate	U	0.00	658	1320	ug/kg	4.0					
thyl methacrylate	U	0.00	43.4	330	ug/kg	4.0					
amphur	U	0.00	658	1320	ug/kg	4.0					
luoranthene	U	0.00	658	1320	ug/kg	4.0					
luorene	U	0.00	658	1320	ug/kg	4.0					
exachlorobenzene	U	0.00	790	1320	ug/kg	4.0					
exachlorobutadiene	U	0.00	658	1320	ug/kg	4.0					
exachlorocyclopentadiene	U	0.00	921	1320	ug/kg	4.0					
exachloroethane	U	0.00	658	1320	ug/kg	4.0					
exachloropropene	U	0.00	658	1320	ug/kg	4.0					
deno(1,2,3-c,d)pyrene	U	0.00	658	1320	ug/kg	4.0					
odrin	U	0.00	658	1320	ug/kg	4.0					

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Contact: Mr. Matt Cissel

Project Description: Code 106

o: NFWC00195 Report Date: February 14, 1996

Sample ID : TCG0388-6-1

arameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
ophorone	U	0.00	658	1320	ug/kg	4.0					
osafrole	U	0.00	658	1320	ug/kg	4.0	JCB	02/13/96	2005	80262	2
epone	U	0.00	658	1320	ug/kg	4.0					
ethapyrilene	U	0.00	3290	6580	ug/kg	4.0					
ethyl Methanesulfonate	U	0.00	658	1320	ug/kg	4.0					
-Nitrosodi-n-butylamine	U	0.00	658	1320	ug/kg	4.0					
-Nitrosodiethylamine	U	0.00	658	1320	ug/kg	4.0					
-Nitrosodimethylamine	U	0.00	658	1320	ug/kg	4.0					
-Nitrosodiphenylamine	U	0.00	658	1320	ug/kg	4.0					
-Nitrosomethylethylamine	U	0.00	658	1320	ug/kg	4.0					
-Nitrosomorpholine	U	0.00	658	1320	ug/kg	4.0					
-Nitrosopiperidine	U	0.00	658	1320	ug/kg	4.0					
-Nitrosopyrolidine	U	0.00	658	1320	ug/kg	4.0					
aphthalene	U	0.00	658	1320	ug/kg	4.0					
itrobenzene	U	0.00	658	1320	ug/kg	4.0					
,O,O-Triethylphosphorothioate	U	0.00	138	1320	ug/kg	4.0					
entachlorobenzene	U	0.00	658	1320	ug/kg	4.0					
entachloroethane	U	0.00	658	1320	ug/kg	4.0					
entachloronitrobenzene	U	0.00	658	1320	ug/kg	4.0					
enacetin	U	0.00	658	1320	ug/kg	4.0					
enanthrene	U	0.00	658	1320	ug/kg	4.0					
onamide	U	0.00	658	1320	ug/kg	4.0					
rene	U	0.00	658	1320	ug/kg	4.0					
ridine	U	0.00	658	1320	ug/kg	4.0					
ifrole	U	0.00	658	1320	ug/kg	4.0					
ilfotepp	U	0.00	658	1320	ug/kg	4.0					
ionazin	U	0.00	658	1320	ug/kg	4.0					
a-Dimethylphenethylamine	U	0.00	790	1320	ug/kg	4.0					
(2-Chloroethoxy)methane	U	0.00	658	1320	ug/kg	4.0					
(2-Chloroethyl) ether	U	0.00	658	1320	ug/kg	4.0					
(2-Ethylhexyl)phthalate	U	0.00	658	1320	ug/kg	4.0					
-Dinitrobenzene	U	0.00	658	1320	ug/kg	4.0					
-Nitroaniline	U	0.00	1030	1320	ug/kg	4.0					
Nitroaniline	U	0.00	368	1320	ug/kg	4.0					
Toluidine	U	0.00	658	1320	ug/kg	4.0					

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o: NPWC00195 Report Date: February 14, 1996

Sample ID : TCG0388-6-1

ramster	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Dimethylaminoazobenzene	U	0.00	658	1320	ug/kg	4.0					
Nitroaniline	U	0.00	540	1320	ug/kg	4.0	JCB	02/13/96	2005	80252	2
Phenylenediamine	U	0.00	1320	2630	ug/kg	4.0					
m-Trinitrobenzene	U	0.00	4240	6580	ug/kg	4.0					
pendix IX - Herbicides - 3 items											
4,5-T	U	0.00	4.93	9.86	ug/kg	10.	JLS	02/14/96	0233	80261	3
4,5-TP	U	0.00	2.47	4.93	ug/kg	10.					
4-D	U	0.00	4.93	9.86	ug/kg	10.					
pendix IX - Pesticides & PCBs - 29 items											
4'-DDD	U	0.00	16.4	32.8	ug/kg	10.	JEB	02/14/96	1221	80260	4
4'-DDE	U	0.00	8.20	16.4	ug/kg	10.					
4'-DDT	U	0.00	16.4	32.8	ug/kg	10.					
drin	J	7.64	4.10	8.20	ug/kg	10.					
lordane	U	0.00	41.0	82.0	ug/kg	10.					
eldrin	U	0.00	8.20	16.4	ug/kg	10.					
dosulfan I	U	0.00	8.20	16.4	ug/kg	10.					
dosulfan II	U	0.00	16.4	32.8	ug/kg	10.					
dosulfan sulfate	U	0.00	16.4	32.8	ug/kg	10.					
drin	U	0.00	8.20	16.4	ug/kg	10.					
drin aldehyde	U	0.00	20.5	41.0	ug/kg	10.					
ptachlor	U	0.00	8.20	16.4	ug/kg	10.					
ptachlor epoxide	U	0.00	8.20	16.4	ug/kg	10.					
thoxychlor	U	0.00	82.0	164	ug/kg	10.					
B-1016	U	0.00	32.8	41.0	ug/kg	10.					
B-1221	U	0.00	32.8	41.0	ug/kg	10.					
B-1232	U	0.00	32.8	41.0	ug/kg	10.					
B-1242	U	0.00	32.8	41.0	ug/kg	10.					
B-1248	U	0.00	32.8	41.0	ug/kg	10.					
B-1254	U	0.00	32.8	41.0	ug/kg	10.					
B-1260		84.0	32.8	41.0	ug/kg	10.					
rathion	U	0.00	8.20	16.4	ug/kg	10.					
rathion, methyl	U	0.00	8.20	16.4	ug/kg	10.					
orate	U	0.00	8.20	16.4	ug/kg	10.					
xaphene	U	0.00	164	328	ug/kg	10.					
ha-BHC	U	0.00	4.10	8.20	ug/kg	10.					

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Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

cc: NPWC00195 Report Date: February 14, 1996

Sample ID : TCG0388-6-1

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
eta-BHC	U	0.00	8.20	16.4	ug/kg	10.					
lelta-BHC	U	0.00	8.20	16.4	ug/kg	10.	JBB	02/14/96	1221	80260	4
amma-BHC	U	0.00	4.10	8.20	ug/kg	10.					
letals Analysis											
Silver	U	-1.15	0.390	2.50	mg/kg	1.0	JSS	02/12/96	1141	80181	5
Arsenic	U	-4.43	2.11	15.0	mg/kg	1.0					
Barium		48.8	0.110	2.50	mg/kg	1.0					
Beryllium	J	0.146	0.0150	2.50	mg/kg	1.0					
Cadmium	J	0.949	0.165	2.50	mg/kg	1.0					
Cobalt	J	1.42	0.170	2.50	mg/kg	1.0					
Chromium		13.4	0.210	2.50	mg/kg	1.0					
Copper		48.1	0.420	2.50	mg/kg	1.0					
Nickel		6.45	0.395	2.50	mg/kg	1.0					
Lead		40.8	1.82	5.00	mg/kg	1.0					
Antimony	U	-5.48	2.00	5.00	mg/kg	1.0					
Selenium	U	-8.30	4.21	15.0	mg/kg	1.0	JSS	02/12/96	1233	80181	5
Tin	J	1.49	1.17	5.00	mg/kg	1.0	JSS	02/12/96	1141	80181	5
Thallium	U	1.21	2.35	15.0	mg/kg	1.0					
Vanadium		9.02	0.210	2.50	mg/kg	1.0					
Zinc		124	0.105	2.50	mg/kg	1.0					
Mercury	J	0.0773	0.00229	0.200	mg/kg	1.0	DVW	02/10/96	0003	80182	N

he following prep procedures were performed:

C/MS Acid Compounds	DLF	02/10/96	1600	80262	6
C/MS Base/Neutral Compounds	DLF	02/10/96	1600	80262	6
Herbicides	DDT	02/10/96	2000	80261	7
esticides	DLF	02/10/96	1600	80260	6
CP	DVW	02/10/96	1115	80181	8
Mercury	DVW	02/09/96	2000	80182	9

omments:
dilution was required for Extractable Organics, Herbicides and
sticides due to matrix interference. As a result, the detection limits

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Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

Sample ID : TCG0388-6-1

rameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
elevated.											

rrogate Recovery	Test	Percent%	Acceptable Limits
4,6-Tribromophenol	APP 9 ACID	54.4	(40.3 - 122.)
Fluorophenol	APP 9 ACID	67.9	(25.0 - 121.)
enol-d6	APP 9 ACID	69.5	(24.0 - 113.)
Fluorobiphenyl	APP 9 B/N	71.4	(30.0 - 115.)
itrobenzene-d5	APP 9 B/N	65.7	(23.0 - 120.)
Terphenyl-d14	APP 9 B/N	111.	(37.3 - 128.)
(2,4-Dichlorophenoxy)Butyric	APP 9 HERBICIDES	71.5	(64.6 - 159.)
CMX	APP 9 PESTICIDES	0.00*	(45.8 - 152.)
ibutylchlorendate	APP 9 PESTICIDES	0.00*	(40.5 - 143.)
romofluorobenzene	APP 9 VOA-8260	35.6*	(80.0 - 120.)
ibromofluoromethane	APP 9 VOA-8260	106.	(80.0 - 120.)
oluene-d8	APP 9 VOA-8260	113.	(80.0 - 120.)

= Method	Method Description
1	EPA 8260
2	EPA 8270
3	EPA 8150 modified
4	EPA 8080
5	EPA 6010A
6	EPA 3550
7	EPA 8150
8	EPA 3050
9	EPA 7471

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Contact:	Mr. Matt Cissel
Project Description:	Code 106

c: NPWC00195 Report Date: February 14, 1996

Sample ID : TCG0388-6-1

= Method	Method-Description

tes:

s qualifiers in this report are defined as follows:

dicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

ndicates that the analyte was not detected at a concentration greater than the detection limit.

dicate that a quality control analyte recovery is outside of specified acceptance criteria.

L Laboratory Certifications		EPI Laboratory Certifications	
- 41040	AZ - AZ0514	AL - 41050	AZ - AZ0514
- 2089	CT - PH-0169	CA - I-1023/2056	CT - PH-0175
- SC012	FL - E87156/87294	FL - E87472/87458	MS - 29417
- SC012	MS - 10120	NY - 11502	RI - 138
- 233	NY - 11501	SC - 10582	TN - 02934
- 135	SC - 10120	UT - E-227	VA - 00111
- 02934	UT - E-251	WA - C225	NJ - 79002
- 00151	WA - C223	PA - 68-485	
- 999887790			

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Contact:	Mr. Matt Cissel
Project Description:	Code 106

c: NPWC00195 Report Date: February 14, 1996

Sample ID : TC00398-6-1

L Laboratory Certifications EPI Laboratory Certifications

s data report has been prepared and reviewed
ccordance with General Engineering Laboratories
ndard operating procedures. Please direct
questions to your Project Manager, Karen Blakeney at (803) 769-7386.

alytical Report Specialist

r2204-01*

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Charleston, South Carolina 29408-2020

Contact: Mr. Matt Cissel

Project Description: Code 106

o: NPWC00195 Report Date: February 14, 1996

Sample ID : TCG0388-6-2 zone 3
Lab ID : 9602204-02
Matrix : Soil
Date Collected : 02/08/96
Date Received : 02/09/96
Priority : Rush
Collector : Client

ramster	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
latile Organics											
pendix IX Volatiles - 53 items											
1,1,2-Tetrachloroethane	U	0.00	1.00	2.00	ug/kg	1.0	DLS	02/12/96	1436	80295	1
1,1-Trichloroethane	U	0.00	1.00	2.00	ug/kg	1.0					
1,2,2-Tetrachloroethane	U	0.00	1.00	2.00	ug/kg	1.0					
1,2-Trichloroethane	U	0.00	1.00	2.00	ug/kg	1.0					
1-Dichloroethane	U	0.00	1.00	2.00	ug/kg	1.0					
1-Dichloroethylene	U	0.00	1.00	2.00	ug/kg	1.0					
2,3-Trichloropropane	U	0.00	1.00	2.00	ug/kg	1.0					
2-Dibromo-3-chloropropane	U	0.00	1.00	2.00	ug/kg	1.0					
2-Dibromoethane	U	0.00	1.00	2.00	ug/kg	1.0					
2-Dichloroethane	U	0.00	1.00	2.00	ug/kg	1.0					
2-Dichloropropane	U	0.00	1.00	2.00	ug/kg	1.0					
2-trans-Dichloroethylene	U	0.00	1.00	2.00	ug/kg	1.0					
Butanone	U	0.00	2.00	10.0	ug/kg	1.0					
Hexanone	U	0.00	5.00	10.0	ug/kg	1.0					
Methyl-2-pentanone	U	0.00	5.00	10.0	ug/kg	1.0					
etone	U	3.27	5.00	10.0	ug/kg	1.0					
etonitrile	U	0.00	2.00	10.0	ug/kg	1.0					
rolein	U	0.00	10.0	20.0	ug/kg	1.0					
rylonitrile	U	0.00	5.00	50.0	ug/kg	1.0					
lyl Chloride	U	0.00	5.00	10.0	ug/kg	1.0					
nzene	U	0.00	1.00	2.00	ug/kg	1.0					
omoform	U	0.00	1.00	2.00	ug/kg	1.0					
rbon Disulfide	U	0.00	2.00	10.0	ug/kg	1.0					
rbon Tetrachloride	U	0.00	1.00	2.00	ug/kg	1.0					
lorobenzene	U	0.00	1.00	2.00	ug/kg	1.0					
lorodibromomethane	U	0.00	1.00	2.00	ug/kg	1.0					
loroethane	U	0.00	1.00	2.00	ug/kg	1.0					

9602204-02

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CERTIFICATE OF ANALYSIS

Client: Navy Public Works Center-Chas. Zone
Charleston Naval Shipyard
Code 106.24, Bldg.234
Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

Sample ID : TC00388-6-2

rameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
loroform	U	0.00	1.00	2.00	ug/kg	1.0					
loroprene	U	0.00	2.00	10.0	ug/kg	1.0	DLS	02/12/96	1436	80295	1
bromomethane	U	0.00	1.00	2.00	ug/kg	1.0					
chlorobromomethane	U	0.00	1.00	2.00	ug/kg	1.0					
chlorodifluoromethane	J	1.31	1.00	2.00	ug/kg	1.0					
ylbenzene	U	0.00	1.00	2.00	ug/kg	1.0					
butyl Alcohol	U	0.00	10.0	20.0	ug/kg	1.0					
thacrylonitrile	U	0.00	5.00	10.0	ug/kg	1.0					
thyl Bromide	U	0.00	1.00	2.00	ug/kg	1.0					
thyl Chloride	U	0.00	1.00	2.00	ug/kg	1.0					
thyl Iodide	U	0.00	2.00	5.00	ug/kg	1.0					
thyl Methacrylate	U	0.00	2.00	10.0	ug/kg	1.0					
thylene Chloride	J	2.26	1.00	5.00	ug/kg	1.0					
pionitrile	U	0.00	10.0	20.0	ug/kg	1.0					
rene	U	0.00	1.00	2.00	ug/kg	1.0					
trachloroethylene	U	0.00	1.00	2.00	ug/kg	1.0					
luene	U	0.00	1.00	2.00	ug/kg	1.0					
ichloroethylene	U	0.00	1.00	2.00	ug/kg	1.0					
ichlorofluoromethane	U	0.00	1.00	2.00	ug/kg	1.0					
ryl Acetate	U	0.00	5.00	10.0	ug/kg	1.0					
ryl chloride	U	0.00	1.00	2.00	ug/kg	1.0					
lenes (TOTAL)	U	0.00	1.00	4.00	ug/kg	1.0					
(2-Chloromethylethyl)ether	U	0.00	10.0	20.0	ug/kg	1.0					
-1,3-Dichloropropylene	U	0.00	1.00	2.00	ug/kg	1.0					
ns-1,3-Dichloropropylene	U	0.00	1.00	2.00	ug/kg	1.0					
ns-1,4-Dichloro-2-butene	U	0.00	1.00	2.00	ug/kg	1.0					
ractable Organics											
pendix IX Acid Compounds - 17 items											
,4,6-Tetrachlorophenol	U	0.00	662	1320	ug/kg	4.0	JCB	02/13/96	2114	80262	2
,5-Trichlorophenol	U	0.00	662	1320	ug/kg	4.0					
,6-Trichlorophenol	U	0.00	662	1320	ug/kg	4.0					
-Dichlorophenol	U	0.00	662	1320	ug/kg	4.0					
-Dimethylphenol	U	0.00	662	1320	ug/kg	4.0					
-Dinitrophenol	U	0.00	1320	2650	ug/kg	4.0					
-Dichlorophenol	U	0.00	662	1320	ug/kg	4.0					

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Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

Sample ID : TCG0388-6-2

erameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
-Chlorophenol	U	0.00	662	1320	ug/kg	4.0					
-Nitrophenol	U	0.00	662	1320	ug/kg	4.0	JCB	02/13/96	2114	80262	2
-methyl-4,6-dinitrophenol	U	0.00	662	1320	ug/kg	4.0					
-sec-Butyl-4,6-Dinitrophenol	U	0.00	552	1320	ug/kg	4.0					
-Nitrophenol	U	0.00	662	1320	ug/kg	4.0					
-chloro-3-methyl phenol	U	0.00	662	1320	ug/kg	4.0					
Hexachlorophene	U	0.00	33100	66200	ug/kg	4.0					
henol	U	0.00	662	1320	ug/kg	4.0					
,p-Cresol	U	0.00	463	1320	ug/kg	4.0					
-Cresol	U	0.00	485	1320	ug/kg	4.0					
ppendix IX Base/Neutral Compounds - 98 items											
2,4,5-Tetrachlorobenzene	U	0.00	662	1320	ug/kg	4.0					
2-Dichlorobenzene	U	0.00	662	1320	ug/kg	4.0					
3-Dichlorobenzene	U	0.00	662	1320	ug/kg	4.0					
4-Dioxane	U	0.00	662	1320	ug/kg	4.0					
4-Naphthoquinone	U	0.00	662	1320	ug/kg	4.0					
Naphthylamine	U	0.00	662	1320	ug/kg	4.0					
6-Dinitrotoluene	U	0.00	662	1320	ug/kg	4.0					
Acetylaminofluorene	U	0.00	662	1320	ug/kg	4.0					
Chloronaphthalene	U	0.00	662	1320	ug/kg	4.0					
Methylnaphthalene	U	0.00	662	1320	ug/kg	4.0					
Naphthylamine	U	0.00	662	1320	ug/kg	4.0					
Picoline	U	0.00	662	1320	ug/kg	4.0					
3'-Dichlorobenzidine	U	0.00	6620	6620	ug/kg	4.0					
3'-Dimethylbenzidine	U	0.00	3310	6620	ug/kg	4.0					
Methylcholanthrene	U	0.00	662	1320	ug/kg	4.0					
Bromophenyl phenyl ether	U	0.00	662	1320	ug/kg	4.0					
Chloroaniline	U	0.00	662	1320	ug/kg	4.0					
Chlorophenyl phenyl ether	U	0.00	662	1320	ug/kg	4.0					
Nitroquinoline	U	0.00	662	1320	ug/kg	4.0					
aminobiphenyl	U	0.00	662	1320	ug/kg	4.0					
Nitro-o-toluidine	U	0.00	662	1320	ug/kg	4.0					
12-Dimethylbenz(a)anthracene	U	0.00	662	1320	ug/kg	4.0					
enaphthene	U	0.00	662	1320	ug/kg	4.0					
enaphthylene	U	0.00	662	1320	ug/kg	4.0					

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Charleston Naval Shipyard
Code 106.24, Bldg.234
Charleston, South Carolina 29408-2020

Contact: Mr. Matt Cissel

Project Description: Code 106

o: NPWC00195 Report Date: February 14, 1996

Sample ID : TCG0388-6-2

rameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
etophenone	U	0.00	662	1320	ug/kg	4.0					
niline	U	0.00	662	1320	ug/kg	4.0	JCB	02/13/96	2114	80262	2
nthracene	U	0.00	662	1320	ug/kg	4.0					
ramite	U	0.00	662	1320	ug/kg	4.0					
enzo(a)anthracene	U	0.00	662	1320	ug/kg	4.0					
enzo(a)pyrene	U	0.00	662	1320	ug/kg	4.0					
enzo(b)fluoranthene	U	0.00	662	1320	ug/kg	4.0					
enzo(ghi)perylene	U	0.00	662	1320	ug/kg	4.0					
enzo(k)fluoranthene	U	0.00	662	1320	ug/kg	4.0					
enzyl Alcohol	U	0.00	662	1320	ug/kg	4.0					
utyl benzyl phthalate	U	0.00	662	1320	ug/kg	4.0					
hlorobenzilate	U	0.00	3310	6620	ug/kg	4.0					
hrysene	U	0.00	662	1320	ug/kg	4.0					
i-n-butyl phthalate	U	0.00	662	1320	ug/kg	4.0					
i-n-octyl phthalate	U	0.00	662	1320	ug/kg	4.0					
ieldrin	U	0.00	662	1320	ug/kg	4.0					
ibenzo(a,h)anthracene	U	0.00	662	1320	ug/kg	4.0					
ibenzofuran	U	0.00	662	1320	ug/kg	4.0					
iethyl phthalate	U	0.00	515	1320	ug/kg	4.0					
imethoate	U	0.00	3310	6620	ug/kg	4.0					
imethyl phthalate	U	0.00	662	1320	ug/kg	4.0					
iphenylamine	U	0.00	226	1320	ug/kg	4.0					
isulfoton	U	0.00	662	1320	ug/kg	4.0					
thyl Methanesulfonate	U	0.00	662	1320	ug/kg	4.0					
thyl methacrylate	U	0.00	43.7	330	ug/kg	4.0					
nuphur	U	0.00	662	1320	ug/kg	4.0					
uoranthene	U	0.00	662	1320	ug/kg	4.0					
uorene	U	0.00	662	1320	ug/kg	4.0					
exachlorobenzene	U	0.00	794	1320	ug/kg	4.0					
exachlorobutadiene	U	0.00	662	1320	ug/kg	4.0					
exachlorocyclopentadiene	U	0.00	927	1320	ug/kg	4.0					
exachloroethane	U	0.00	662	1320	ug/kg	4.0					
exachloropropene	U	0.00	662	1320	ug/kg	4.0					
deno(1,2,3-c,d)pyrene	U	0.00	662	1320	ug/kg	4.0					
drin	U	0.00	662	1320	ug/kg	4.0					

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Code 106.24, Bldg.234
Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

cc: NPWC00195 Report Date: February 14, 1996

Sample ID : TCG0388-6-2

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Isophorone	U	0.00	662	1320	ug/kg	4.0					
Isosafrole	U	0.00	662	1320	ug/kg	4.0	JCB	02/13/96	2114	80262	2
Kepone	U	0.00	662	1320	ug/kg	4.0					
Methapyrilene	U	0.00	3310	6620	ug/kg	4.0					
Methyl Methanesulfonate	U	0.00	662	1320	ug/kg	4.0					
N-Nitrosodi-n-butylamine	U	0.00	662	1320	ug/kg	4.0					
N-Nitrosodiethylamine	U	0.00	662	1320	ug/kg	4.0					
N-Nitrosodimethylamine	U	0.00	662	1320	ug/kg	4.0					
N-Nitrosodiphenylamine	U	0.00	662	1320	ug/kg	4.0					
N-Nitrosomethylethylamine	U	0.00	662	1320	ug/kg	4.0					
N-Nitrosomorpholine	U	0.00	662	1320	ug/kg	4.0					
N-Nitrosopiperidine	U	0.00	662	1320	ug/kg	4.0					
N-Nitrosopyrolidine	U	0.00	662	1320	ug/kg	4.0					
Naphthalene	U	0.00	662	1320	ug/kg	4.0					
Nitrobenzene	U	0.00	662	1320	ug/kg	4.0					
O,O,O-Triethylphosphorothioate	U	0.00	139	1320	ug/kg	4.0					
Pentachlorobenzene	U	0.00	662	1320	ug/kg	4.0					
Pentachloroethane	U	0.00	662	1320	ug/kg	4.0					
Pentachloronitrobenzene	U	0.00	662	1320	ug/kg	4.0					
Phenacetin	U	0.00	662	1320	ug/kg	4.0					
Phenanthrene	U	0.00	662	1320	ug/kg	4.0					
Pronamide	U	0.00	662	1320	ug/kg	4.0					
Pyrene	U	0.00	662	1320	ug/kg	4.0					
Pyridine	U	0.00	662	1320	ug/kg	4.0					
Safrole	U	0.00	662	1320	ug/kg	4.0					
Sulfotepp	U	0.00	662	1320	ug/kg	4.0					
Thionazin	U	0.00	662	1320	ug/kg	4.0					
a-,a-Dimethylphenethylamine	U	0.00	794	1320	ug/kg	4.0					
bis(2-Chloroethoxy)methane	U	0.00	662	1320	ug/kg	4.0					
bis(2-Chloroethyl) ether	U	0.00	662	1320	ug/kg	4.0					
bis(2-Ethylhexyl)phthalate	U	0.00	662	1320	ug/kg	4.0					
m-Dinitrobenzene	U	0.00	662	1320	ug/kg	4.0					
m-Nitroaniline	U	0.00	1030	1320	ug/kg	4.0					
o-Nitroaniline	U	0.00	371	1320	ug/kg	4.0					
o-Toluidine	U	0.00	662	1320	ug/kg	4.0					

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Charleston Naval Shipyard
Code 106.24, Bldg.234
Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

Sample ID : TC00388-6-2

ırameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Dimethylaminoazobenzene	U	0.00	662	1320	ug/kg	4.0					
Nitroaniline	U	0.00	543	1320	ug/kg	4.0	JCB	02/13/96	2114	80262	2
Phenylenediamine	U	0.00	1320	2650	ug/kg	4.0					
m-Trinitrobenzene	U	0.00	4260	6620	ug/kg	4.0					
ppendix IX - Herbicides - 3 items											
4,5-T	U	0.00	4.98	9.95	ug/kg	10.	JLS	02/14/96	0255	80261	3
4,5-TP	U	0.00	2.49	4.98	ug/kg	10.					
4-D	U	0.00	4.98	9.95	ug/kg	10.					
ppendix IX - Pesticides & PCBs - 29 items											
4'-DDD	U	0.00	16.5	33.0	ug/kg	10.	JEB	02/14/96	1256	80260	4
4'-DDE	U	0.00	8.25	16.5	ug/kg	10.					
4'-DDT	J	21.3	16.5	33.0	ug/kg	10.					
ldrin	U	0.00	4.13	8.25	ug/kg	10.					
hlordane	U	0.00	41.3	82.5	ug/kg	10.					
ieldrin	J	9.11	8.25	16.5	ug/kg	10.					
ndosulfan I	U	0.00	8.25	16.5	ug/kg	10.					
ndosulfan II	U	0.00	16.5	33.0	ug/kg	10.					
ndosulfan sulfate	U	0.00	16.5	33.0	ug/kg	10.					
ndrin	J	13.6	8.25	16.5	ug/kg	10.					
ndrin aldehyde	U	0.00	20.6	41.3	ug/kg	10.					
eptachlor	U	0.00	8.25	16.5	ug/kg	10.					
eptachlor epoxide	U	0.00	8.25	16.5	ug/kg	10.					
ethoxychlor	U	0.00	82.5	165	ug/kg	10.					
CB-1016	U	0.00	33.0	41.3	ug/kg	10.					
CB-1221	U	0.00	33.0	41.3	ug/kg	10.					
CB-1232	U	0.00	33.0	41.3	ug/kg	10.					
CB-1242	U	0.00	33.0	41.3	ug/kg	10.					
CB-1248	U	0.00	33.0	41.3	ug/kg	10.					
CB-1254	U	0.00	33.0	41.3	ug/kg	10.					
CB-1260		95.7	33.0	41.3	ug/kg	10.					
rathion	U	0.00	8.25	16.5	ug/kg	10.					
rathion, methyl	U	0.00	8.25	16.5	ug/kg	10.					
orate	U	0.00	8.25	16.5	ug/kg	10.					
xaphene	U	0.00	165	330	ug/kg	10.					
ha-BHC	U	0.00	4.13	8.25	ug/kg	10.					

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Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

cc: NPWC00195 Report Date: February 14, 1996

Sample ID : TCG0388-6-2

arameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
eta-BHC	U	0.00	8.25	16.5	ug/kg	10.					
elta-BHC	U	0.00	8.25	16.5	ug/kg	10.	JEB	02/14/96	1256	80260	4
amma-BHC	U	0.00	4.13	8.25	ug/kg	10.					
etals Analysis											
lver	U	-0.554	0.375	2.50	mg/kg	1.0	JSS	02/12/96	1149	80181	5
rsenic	U	-0.813	2.03	14.4	mg/kg	1.0					
arium		32.4	0.106	2.50	mg/kg	1.0					
eryllium	J	0.202	0.0144	2.50	mg/kg	1.0					
admium	J	2.10	0.159	2.50	mg/kg	1.0					
obalt	J	2.05	0.164	2.50	mg/kg	1.0					
hromium		38.2	0.202	2.50	mg/kg	1.0					
opper		89.6	0.404	2.50	mg/kg	1.0					
ickel		12.8	0.380	2.50	mg/kg	1.0					
ead		59.7	1.75	4.81	mg/kg	1.0					
ntimony	U	-5.80	1.92	4.81	mg/kg	1.0					
elenium	U	-10.7	4.05	14.4	mg/kg	1.0	JSS	02/12/96	1238	80181	5
in	J	2.76	1.13	4.81	mg/kg	1.0	JSS	02/12/96	1149	80181	4
hallium	J	3.65	2.26	14.4	mg/kg	1.0					
anadium		9.57	0.202	2.50	mg/kg	1.0					
inc		118	0.101	2.50	mg/kg	1.0					
ercury	J	0.147	0.00241	0.200	mg/kg	1.0	DVW	02/10/96	0005	80182	N

e following prep procedures were performed:

C/MS Acid Compounds	DLF	02/10/96	1600	80262	6
C/MS Base/Neutral Compounds	DLF	02/10/96	1600	80262	6
rbicides	DDT	02/10/96	2000	80261	7
sticides	DLF	02/10/96	1600	80260	6
P	DVW	02/10/96	1115	80181	8
ercury	DVW	02/09/96	2000	80182	9

mments:
ilution was required for Extractable Organics, Herbicides and
ticides due to matrix interference. As a result, the detection limits

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Code 106.24, Bldg.234
Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

cc: NPWC00195 Report Date: February 14, 1996

Sample ID : TCC0388-6-2

arameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M

elevated.

urrogate Recovery	Test	Percent%	Acceptable Limits
,4,6-Tribromophenol	APP 9 ACID	59.2	(40.3 - 122.)
-Fluorophenol	APP 9 ACID	56.0	(25.0 - 121.)
henol-d6	APP 9 ACID	69.2	(24.0 - 113.)
-Fluorobiphenyl	APP 9 B/N	75.0	(30.0 - 115.)
itrobenzene-d5	APP 9 B/N	63.0	(23.0 - 120.)
-Terphenyl-d14	APP 9 B/N	113.	(37.3 - 128.)
-(2,4-Dichlorophenoxy)Butyric	APP 9 HERBICIDES	60.5*	(64.6 - 159.)
CMX	APP 9 PESTICIDES	357.*	(45.8 - 152.)
ibutylchlorendate	APP 9 PESTICIDES	433.*	(40.5 - 143.)
romofluorobenzene	APP 9 VOA-8260	30.0*	(80.0 - 120.)
ibromofluoromethane	APP 9 VOA-8260	108.	(80.0 - 120.)
oluene-d8	APP 9 VOA-8260	116.	(80.0 - 120.)

I = Method	Method-Description
I 1	EPA 8260
I 2	EPA 8270
I 3	EPA 8150 modified
I 4	EPA 8080
I 5	EPA 6010A
I 6	EPA 3550
I 7	EPA 8150
I 8	EPA 3050
I 9	EPA 7471

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CERTIFICATE OF ANALYSIS

Client:	Navy Public Works Center-Chas. Zone Charleston Naval Shipyard Code 106.24, Bldg.234 Charleston, South Carolina 29408-2020
Contact:	Mr. Matt Cissel
Project Description:	Code 106

Sample ID : TCG0388-6-2

= Method	Method-Description

tes:

s qualifiers in this report are defined as follows:

ndicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

ndicates that the analyte was not detected at a concentration greater than the detection limit.

ndicate that a quality control analyte recovery is outside of specified acceptance criteria.

EL Laboratory Certifications		EPI Laboratory Certifications	
- 41040	AZ - AZ0514	AL - 41050	AZ - AZ0514
- 2089	CT - PH-0169	CA - I-1023/2056	CT - PH-0175
- SC012	FL - E87156/87294	FL - E87472/87458	MS - 29417
- SC012	MS - 10120	NY - 11502	RI - 138
- 233	NY - 11501	SC - 10582	TN - 02934
- 135	SC - 10120	UT - E-227	VA - 00111
- 02934	UT - E-251	WA - C225	NJ - 79002
- 00151	WA - C223	PA - 68-485	
- 999887790			

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Project Description:	Code 106

on: NPWC00195 Report Date: February 14, 1996

Sample ID : TCG0388-6-2

EL Laboratory Certifications EPI Laboratory Certifications

is data report has been prepared and reviewed
accordance with General Engineering Laboratories
ndard operating procedures. Please direct
y questions to your Project Manager, Karen Blakeney at (803) 769-7386.

alytical Report Specialist

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Charleston Naval Shipyard
Code 106.24, Bldg.234
Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

cc: NFWC00195 Report Date: February 14, 1996

Sample ID : TCG0388-6-3 Zone 4
Lab ID : 9602204-03
Matrix : Soil
Date Collected : 02/08/96
Date Received : 02/09/96
Priority : Rush
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
Appendix IX Volatiles - 53 items											
1,1,1,2-Tetrachloroethane	U	0.00	1.00	2.00	ug/kg	1.0	DLS	02/12/96	1607	80295	1
1,1,1-Trichloroethane	U	0.00	1.00	2.00	ug/kg	1.0					
1,1,2,2-Tetrachloroethane	U	0.00	1.00	2.00	ug/kg	1.0					
1,1,2-Trichloroethane	U	0.00	1.00	2.00	ug/kg	1.0					
1,1-Dichloroethane	U	0.00	1.00	2.00	ug/kg	1.0					
1,1-Dichloroethylene	U	0.00	1.00	2.00	ug/kg	1.0					
1,2,3-Trichloropropane	U	0.00	1.00	2.00	ug/kg	1.0					
1,2-Dibromo-3-chloropropane	U	0.00	1.00	2.00	ug/kg	1.0					
1,2-Dibromoethane	U	0.00	1.00	2.00	ug/kg	1.0					
1,2-Dichloroethane	U	0.00	1.00	2.00	ug/kg	1.0					
1,2-Dichloropropane	U	0.00	1.00	2.00	ug/kg	1.0					
1,2-trans-Dichloroethylene	U	0.00	1.00	2.00	ug/kg	1.0					
2-Butanone	U	0.00	2.00	10.0	ug/kg	1.0					
2-Hexanone	U	0.00	5.00	10.0	ug/kg	1.0					
4-Methyl-2-pentanone	U	0.00	5.00	10.0	ug/kg	1.0					
Acetone	U	1.03	5.00	10.0	ug/kg	1.0					
Acetonitrile	U	0.00	2.00	10.0	ug/kg	1.0					
Acrolein	U	0.00	10.0	20.0	ug/kg	1.0					
Acrylonitrile	U	0.00	5.00	50.0	ug/kg	1.0					
Allyl Chloride	U	0.00	5.00	10.0	ug/kg	1.0					
Benzene	U	0.00	1.00	2.00	ug/kg	1.0					
Bromoform	U	0.00	1.00	2.00	ug/kg	1.0					
Carbon Disulfide	U	0.00	2.00	10.0	ug/kg	1.0					
Carbon Tetrachloride	U	0.00	1.00	2.00	ug/kg	1.0					
Chlorobenzene	U	0.00	1.00	2.00	ug/kg	1.0					
Chlorodibromomethane	U	0.00	1.00	2.00	ug/kg	1.0					
Chloroethane	U	0.00	1.00	2.00	ug/kg	1.0					

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Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

: NPWC00195 Report Date: February 14, 1996

Sample ID : TCG0388-6-3

rameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
loroform	U	0.00	1.00	2.00	ug/kg	1.0					
loroprene	U	0.00	2.00	10.0	ug/kg	1.0	DLS	02/12/96	1607	80295	1
romomethane	U	0.00	1.00	2.00	ug/kg	1.0					
chlorobromomethane	U	0.00	1.00	2.00	ug/kg	1.0					
chlorodifluoromethane	U	0.630	1.00	2.00	ug/kg	1.0					
ylbenzene	U	0.00	1.00	2.00	ug/kg	1.0					
butyl Alcohol	U	0.00	10.0	20.0	ug/kg	1.0					
thacrylonitrile	U	0.00	5.00	10.0	ug/kg	1.0					
thyl Bromide	U	0.00	1.00	2.00	ug/kg	1.0					
thyl Chloride	U	0.00	1.00	2.00	ug/kg	1.0					
thyl Iodide	U	0.00	2.00	5.00	ug/kg	1.0					
thyl Methacrylate	U	0.00	2.00	10.0	ug/kg	1.0					
thylene Chloride	J	1.40	1.00	5.00	ug/kg	1.0					
pionitrile	U	0.00	10.0	20.0	ug/kg	1.0					
rene	U	0.00	1.00	2.00	ug/kg	1.0					
trachloroethylene	U	0.00	1.00	2.00	ug/kg	1.0					
luene	U	0.00	1.00	2.00	ug/kg	1.0					
ichloroethylene	U	0.00	1.00	2.00	ug/kg	1.0					
ichlorofluoromethane	U	0.00	1.00	2.00	ug/kg	1.0					
nyl Acetate	U	0.00	5.00	10.0	ug/kg	1.0					
nyl chloride	U	0.00	1.00	2.00	ug/kg	1.0					
lenes (TOTAL)	U	0.00	1.00	4.00	ug/kg	1.0					
(2-Chloroethylethyl)ether	U	0.00	10.0	20.0	ug/kg	1.0					
-1,3-Dichloropropylene	U	0.00	1.00	2.00	ug/kg	1.0					
ns-1,3-Dichloropropylene	U	0.00	1.00	2.00	ug/kg	1.0					
ns-1,4-Dichloro-2-butene	U	0.00	1.00	2.00	ug/kg	1.0					
ractable Organics											
pendix IX Acid Compounds - 17 items											
,4,6-Tetrachlorophenol	U	0.00	664	1330	ug/kg	4.0	JCB	02/13/96	2148	80262	2
,5-Trichlorophenol	U	0.00	664	1330	ug/kg	4.0					
,6-Trichlorophenol	U	0.00	664	1330	ug/kg	4.0					
-Dichlorophenol	U	0.00	664	1330	ug/kg	4.0					
-Dimethylphenol	U	0.00	664	1330	ug/kg	4.0					
-Dinitrophenol	U	0.00	1330	2660	ug/kg	4.0					
-Dichlorophenol	U	0.00	664	1330	ug/kg	4.0					

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Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

c: NPWC00195 Report Date: February 14, 1996

Sample ID : TCG0388-6-3

rameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Chlorophenol	U	0.00	664	1330	ug/kg	4.0					
Nitrophenol	U	0.00	664	1330	ug/kg	4.0	JCB	02/13/96	2148	80262	2
methyl-4,6-dinitrophenol	U	0.00	664	1330	ug/kg	4.0					
sec-Butyl-4,6-Dinitrophenol	U	0.00	333	1330	ug/kg	4.0					
Nitrophenol	U	0.00	664	1330	ug/kg	4.0					
chloro-3-methyl phenol	U	0.00	664	1330	ug/kg	4.0					
exachlorophene	U	0.00	33200	66400	ug/kg	4.0					
henol	U	0.00	664	1330	ug/kg	4.0					
,p-Cresol	U	0.00	465	1330	ug/kg	4.0					
-Cresol	U	0.00	486	1330	ug/kg	4.0					
ppendix IX Base/Neutral Compounds - 98 items											
2,4,5-Tetrachlorobenzene	U	0.00	664	1330	ug/kg	4.0					
2-Dichlorobenzene	U	0.00	664	1330	ug/kg	4.0					
3-Dichlorobenzene	U	0.00	664	1330	ug/kg	4.0					
4-Dioxane	U	0.00	664	1330	ug/kg	4.0					
4-Naphthoquinone	U	0.00	664	1330	ug/kg	4.0					
Naphthylamine	U	0.00	664	1330	ug/kg	4.0					
6-Dinitrotoluene	U	0.00	664	1330	ug/kg	4.0					
Acetylaminofluorene	U	0.00	664	1330	ug/kg	4.0					
Chloronaphthalene	U	0.00	664	1330	ug/kg	4.0					
Methylnaphthalene	U	0.00	664	1330	ug/kg	4.0					
Naphthylamine	U	0.00	664	1330	ug/kg	4.0					
Picoline	U	0.00	664	1330	ug/kg	4.0					
3'-Dichlorobenzidine	U	0.00	6640	6640	ug/kg	4.0					
3'-Dimethylbenzidine	U	0.00	3320	6640	ug/kg	4.0					
Methylcholanthrene	U	0.00	664	1330	ug/kg	4.0					
Bromophenyl phenyl ether	U	0.00	664	1330	ug/kg	4.0					
Chloroaniline	U	0.00	664	1330	ug/kg	4.0					
Chlorophenyl phenyl ether	U	0.00	664	1330	ug/kg	4.0					
Nitroquinoline	U	0.00	664	1330	ug/kg	4.0					
aminobiphenyl	U	0.00	664	1330	ug/kg	4.0					
Nitro-o-toluidine	U	0.00	664	1330	ug/kg	4.0					
12-Dimethylbenz(a)anthracene	U	0.00	664	1330	ug/kg	4.0					
cenaphthene	U	0.00	664	1330	ug/kg	4.0					
cenaphthylene	U	0.00	664	1330	ug/kg	4.0					

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cc: NPWC00195 Report Date: February 14, 1996

Sample ID : TCG0388-6-3

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Acetophenone	U	0.00	664	1330	ug/kg	4.0					
Aniline	U	0.00	664	1330	ug/kg	4.0	JCB	02/13/96	2148	80262	2
Anthracene	U	0.00	664	1330	ug/kg	4.0					
Aramite	U	0.00	664	1330	ug/kg	4.0					
Benzo(a)anthracene	U	0.00	664	1330	ug/kg	4.0					
Benzo(a)pyrene	U	0.00	664	1330	ug/kg	4.0					
Benzo(b)fluoranthene	U	0.00	664	1330	ug/kg	4.0					
Benzo(ghi)perylene	U	0.00	664	1330	ug/kg	4.0					
Benzo(k)fluoranthene	U	0.00	664	1330	ug/kg	4.0					
Benzyl Alcohol	U	0.00	664	1330	ug/kg	4.0					
Butyl benzyl phthalate	U	0.00	664	1330	ug/kg	4.0					
Chlorobenzilate	U	0.00	3320	6640	ug/kg	4.0					
Chrysene	U	0.00	664	1330	ug/kg	4.0					
Di-n-butyl phthalate	U	0.00	664	1330	ug/kg	4.0					
Di-n-octyl phthalate	U	0.00	664	1330	ug/kg	4.0					
Diallate	U	0.00	664	1330	ug/kg	4.0					
Dibenzo(a,h)anthracene	U	0.00	664	1330	ug/kg	4.0					
Dibenzofuran	U	0.00	664	1330	ug/kg	4.0					
Diethyl phthalate	U	0.00	517	1330	ug/kg	4.0					
Dimethoate	U	0.00	3320	6640	ug/kg	4.0					
Dimethyl phthalate	U	0.00	664	1330	ug/kg	4.0					
Diphenylamine	U	0.00	227	1330	ug/kg	4.0					
Disulfoton	U	0.00	664	1330	ug/kg	4.0					
Ethyl Methanesulfonate	U	0.00	664	1330	ug/kg	4.0					
Ethyl methacrylate	U	0.00	43.8	330	ug/kg	4.0					
Famphur	U	0.00	664	1330	ug/kg	4.0					
Fluoranthene	U	0.00	664	1330	ug/kg	4.0					
Fluorene	U	0.00	664	1330	ug/kg	4.0					
Hexachlorobenzene	U	0.00	797	1330	ug/kg	4.0					
Hexachlorobutadiene	U	0.00	664	1330	ug/kg	4.0					
Hexachlorocyclopentadiene	U	0.00	930	1330	ug/kg	4.0					
Hexachloroethane	U	0.00	664	1330	ug/kg	4.0					
Hexachloropropene	U	0.00	664	1330	ug/kg	4.0					
Indeno(1,2,3-c,d)pyrene	U	0.00	664	1330	ug/kg	4.0					
Isodrin	U	0.00	664	1330	ug/kg	4.0					

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Contact: Mr. Matt Cissel
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Sample ID : TCG0388-6-3

rameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
ophorone	U	0.00	664	1330	ug/kg	4.0					
safrole	U	0.00	664	1330	ug/kg	4.0	JCB	02/13/96	2148	80262	2
sporte	U	0.00	664	1330	ug/kg	4.0					
ethapyrilene	U	0.00	3320	6640	ug/kg	4.0					
ethyl Methanesulfonate	U	0.00	664	1330	ug/kg	4.0					
-Nitrosodi-n-butylamine	U	0.00	664	1330	ug/kg	4.0					
-Nitrosodiethylamine	U	0.00	664	1330	ug/kg	4.0					
-Nitrosodimethylamine	U	0.00	664	1330	ug/kg	4.0					
-Nitrosodiphenylamine	U	0.00	664	1330	ug/kg	4.0					
-Nitrosomethylethylamine	U	0.00	664	1330	ug/kg	4.0					
-Nitrosomorpholine	U	0.00	664	1330	ug/kg	4.0					
-Nitrosopiperidine	U	0.00	664	1330	ug/kg	4.0					
-Nitrosopyrolidine	U	0.00	664	1330	ug/kg	4.0					
phthalene	U	0.00	664	1330	ug/kg	4.0					
itrobenzene	U	0.00	664	1330	ug/kg	4.0					
,O,O-Triethylphosphorothioate	U	0.00	139	1330	ug/kg	4.0					
entachlorobenzene	U	0.00	664	1330	ug/kg	4.0					
entachloroethane	U	0.00	664	1330	ug/kg	4.0					
entachloronitrobenzene	U	0.00	664	1330	ug/kg	4.0					
henacetin	U	0.00	664	1330	ug/kg	4.0					
henanthrene	U	0.00	664	1330	ug/kg	4.0					
ronamide	U	0.00	664	1330	ug/kg	4.0					
rene	U	0.00	664	1330	ug/kg	4.0					
ridine	U	0.00	664	1330	ug/kg	4.0					
frole	U	0.00	664	1330	ug/kg	4.0					
ilotepp	U	0.00	664	1330	ug/kg	4.0					
ionazin	U	0.00	664	1330	ug/kg	4.0					
,a-Dimethylphenethylamine	U	0.00	797	1330	ug/kg	4.0					
s(2-Chloroethoxy)methane	U	0.00	664	1330	ug/kg	4.0					
s(2-Chloroethyl) ether	U	0.00	664	1330	ug/kg	4.0					
s(2-Ethylhexyl)phthalate	U	0.00	664	1330	ug/kg	4.0					
-Dinitrobenzene	U	0.00	664	1330	ug/kg	4.0					
-Nitroaniline	U	0.00	1030	1330	ug/kg	4.0					
Nitroaniline	U	0.00	372	1330	ug/kg	4.0					
Toluidine	U	0.00	664	1330	ug/kg	4.0					

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Contact: Mr. Matt Cissel
Project Description: Code 106

Sample ID : TCG0388-6-3

arameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
-Dimethylaminoazobenzene	U	0.00	664	1330	ug/kg	4.0					
-Nitroaniline	U	0.00	544	1330	ug/kg	4.0	JCB	02/13/96	2148	80262	2
-Phenylenediamine	U	0.00	1330	2660	ug/kg	4.0					
m-Trinitrobenzene	U	0.00	4270	6640	ug/kg	4.0					
ppendix IX - Herbicides - 3 items											
4,5-T	U	0.00	4.91	9.81	ug/kg	10.	JLS	02/14/96	0316	80261	3
4,5-TP	U	0.00	2.45	4.91	ug/kg	10.					
4-D	U	0.00	4.91	9.81	ug/kg	10.					
ppendix IX - Pesticides & PCBs - 29 items											
4'-DDD	U	0.00	33.1	66.2	ug/kg	20.	JEB	02/14/96	1332	80260	4
4'-DDE	U	0.00	16.6	33.1	ug/kg	20.					
4'-DDT	U	0.00	33.1	66.2	ug/kg	20.					
ldrin	U	0.00	8.28	16.6	ug/kg	20.					
hlordane	U	0.00	82.8	166	ug/kg	20.					
eldrin	U	0.00	16.6	33.1	ug/kg	20.					
ndosulfan I	U	0.00	16.6	33.1	ug/kg	20.					
ndosulfan II	U	0.00	33.1	66.2	ug/kg	20.					
ndosulfan sulfate	U	0.00	33.1	66.2	ug/kg	20.					
ndrin	J	29.9	16.6	33.1	ug/kg	20.					
ndrin aldehyde	U	0.00	41.4	82.8	ug/kg	20.					
eptachlor	U	0.00	16.6	33.1	ug/kg	20.					
eptachlor epoxide	U	0.00	16.6	33.1	ug/kg	20.					
ethoxychlor	U	0.00	166	331	ug/kg	20.					
CB-1016	U	0.00	66.2	82.8	ug/kg	20.					
CB-1221	U	0.00	66.2	82.8	ug/kg	20.					
CB-1232	U	0.00	66.2	82.8	ug/kg	20.					
CB-1242	U	0.00	66.2	82.8	ug/kg	20.					
CB-1248	U	0.00	66.2	82.8	ug/kg	20.					
CB-1254	U	0.00	66.2	82.8	ug/kg	20.					
CB-1260		761	66.2	82.8	ug/kg	20.					
rathion	U	0.00	16.6	33.1	ug/kg	20.					
rathion, methyl	U	0.00	16.6	33.1	ug/kg	20.					
horate	U	0.00	16.6	33.1	ug/kg	20.					
oxaphene	U	0.00	331	662	ug/kg	20.					
pha-BHC	U	0.00	8.28	16.6	ug/kg	20.					

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c: NPWC00195 Report Date: February 14, 1996

Sample ID : TCG0388-6-3

rameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
ta-BHC	U	0.00	16.6	33.1	ug/kg	20.					
lta-BHC	U	0.00	16.6	33.1	ug/kg	20.	JEB	02/14/96	1332	80260	4
mma-BHC	U	0.00	8.28	16.6	ug/kg	20.					
tals Analysis											
lver	U	-0.929	0.371	2.50	mg/kg	1.0	JSS	02/12/96	1153	80181	3
rsenic	U	-1.86	2.00	14.3	mg/kg	1.0					
rium		16.0	0.105	2.50	mg/kg	1.0					
ryllium	J	0.0981	0.0143	2.50	mg/kg	1.0					
dmium	J	0.247	0.157	2.50	mg/kg	1.0					
balt	J	1.09	0.162	2.50	mg/kg	1.0					
hromium		7.16	0.200	2.50	mg/kg	1.0					
pper		26.0	0.400	2.50	mg/kg	1.0					
ickel		4.16	0.376	2.50	mg/kg	1.0					
ad		11.4	1.73	4.76	mg/kg	1.0					
ntimony	U	-1.10	1.90	4.76	mg/kg	1.0					
lenium	U	-1.44	4.00	14.3	mg/kg	1.0					
n	U	0.266	1.11	4.76	mg/kg	1.0					
allium	U	0.764	2.24	14.3	mg/kg	1.0					
nadium	J	2.14	0.200	2.50	mg/kg	1.0					
nc		53.4	0.100	2.50	mg/kg	1.0					
ercury		1.01	0.00234	0.200	mg/kg	1.0	DVW	02/10/96	0008	80182	1

following prep procedures were performed:

C/MS Acid Compounds	DLF	02/10/96	1600	80262	6
C/MS Base/Neutral Compounds	DLF	02/10/96	1600	80262	6
rbicides	DDT	02/10/96	2000	80261	7
sticides	DLF	02/10/96	1600	80260	6
P	DVW	02/10/96	1115	80181	8
ercury	DVW	02/09/96	2000	80182	9

mments:
ilution was required for Extractable Organics, Herbicides and
ticides due to matrix interference. As a result, the detection limits

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CERTIFICATE OF ANALYSIS

Client: Navy Public Works Center-Chas. Zone
Charleston Naval Shipyard
Code 106.24, Bldg.234
Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

: NPWC00195 Report Date: February 14, 1996

Sample ID : TCC0388-6-3

rameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M

elevated.

rrogate Recovery	Test	Percent%	Acceptable Limits
,6-Tribromophenol	APP 9 ACID	60.4	(40.3 - 122.)
luorophenol	APP 9 ACID	72.8	(25.0 - 121.)
enol-d6	APP 9 ACID	68.4	(24.0 - 113.)
luorobiphenyl	APP 9 B/N	73.6	(30.0 - 115.)
robenzene-d5	APP 9 B/N	62.4	(23.0 - 120.)
erphenyl-d14	APP 9 B/N	108.	(37.3 - 128.)
2,4-Dichlorophenoxy)Butyric	APP 9 HERBICIDES	57.1*	(64.6 - 159.)
MX	APP 9 PESTICIDES	671.*	(45.8 - 152.)
butylchlorendate	APP 9 PESTICIDES	815.*	(40.5 - 143.)
omofluorobenzene	APP 9 VOA-8260	38.8*	(80.0 - 120.)
romofluoromethane	APP 9 VOA-8260	108.	(80.0 - 120.)
luene-d8	APP 9 VOA-8260	111.	(80.0 - 120.)

Method	Method-Description
1	EPA 8260
2	EPA 8270
3	EPA 8150 modified
4	EPA 8080
5	EPA 6010A
6	EPA 3550
7	EPA 8150
8	EPA 3050
9	EPA 7471

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Contact:	Mr. Matt Cissel
Project Description:	Code 106

: NPWC00195 Report Date: February 14, 1996 Page 9 of 1

Sample ID : TCG0389-6-3

Method	Method-Description

:
qualifiers in this report are defined as follows:
licates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
dicates that the analyte was not detected at a concentration greater than the detection limit.
licate that a quality control analyte recovery is outside of specified acceptance criteria.

Laboratory Certifications		EPI Laboratory Certifications	
41040	AZ - AZ0514	AL - 41050	AZ - AZ0514
2089	CT - PH-0169	CA - I-1023/2056	CT - PH-0175
SC012	FL - E87156/87294	FL - E87472/87458	MS - 29417
SC012	MS - 10120	NY - 11502	RI - 138
233	NY - 11501	SC - 10582	TN - 02934
155	SC - 10120	UT - E-227	VA - 00111
02934	UT - E-251	WA - C225	NJ - 79002
00151	WA - C223	PA - 68-485	
999887790			

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Contact:	Mr. Matt Cissel
Project Description:	Code 106

:: NPWC00195 Report Date: February 14, 1996 Page 10 of :

Sample ID : TCG0388-6-3

L Laboratory Certifications EPI Laboratory Certifications

s data report has been prepared and reviewed
ccordance with General Engineering Laboratories
ndard operating procedures. Please direct
-questions to your Project Manager, Karen Blakeney at (803) 769-7386.

alytical Report Specialist

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Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

x: NPWC00195 Report Date: February 14, 1996 Page 1 of

Sample ID : TCG0388-6-4 Zone 5
Lab ID : 9602204-04
Matrix : Soil
Date Collected : 02/08/96
Date Received : 02/09/96
Priority : Rush
Collector : Client

rameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch
latile Organics										
ppendix IX Volatiles - 53 items										
1,1,2-Tetrachloroethane	U	0.00	1.00	2.00	ug/kg	1.0	DLS	02/12/96	1709	80295
1,1-Trichloroethane	U	0.00	1.00	2.00	ug/kg	1.0				
1,2,2-Tetrachloroethane	U	0.00	1.00	2.00	ug/kg	1.0				
1,2-Trichloroethane	U	0.00	1.00	2.00	ug/kg	1.0				
1-Dichloroethane	U	0.00	1.00	2.00	ug/kg	1.0				
1-Dichloroethylene	U	0.00	1.00	2.00	ug/kg	1.0				
2,3-Trichloropropane	U	0.00	1.00	2.00	ug/kg	1.0				
2-Dibromo-3-chloropropane	U	0.00	1.00	2.00	ug/kg	1.0				
2-Dibromoethane	U	0.00	1.00	2.00	ug/kg	1.0				
2-Dichloroethane	U	0.00	1.00	2.00	ug/kg	1.0				
2-Dichloropropane	U	0.00	1.00	2.00	ug/kg	1.0				
2-trans-Dichloroethylene	U	0.00	1.00	2.00	ug/kg	1.0				
-Butanone	U	0.00	2.00	10.0	ug/kg	1.0				
-Hexanone	U	0.00	5.00	10.0	ug/kg	1.0				
-Methyl-2-pentanone	U	0.00	5.00	10.0	ug/kg	1.0				
cetone	U	0.950	5.00	10.0	ug/kg	1.0				
cetonitrile	U	0.00	2.00	10.0	ug/kg	1.0				
crolein	U	0.00	10.0	20.0	ug/kg	1.0				
crylonitrile	U	0.00	5.00	50.0	ug/kg	1.0				
llyl Chloride	U	0.00	5.00	10.0	ug/kg	1.0				
enzene	U	0.00	1.00	2.00	ug/kg	1.0				
romoform	U	0.00	1.00	2.00	ug/kg	1.0				
arbon Disulfide	U	0.00	2.00	10.0	ug/kg	1.0				
arbon Tetrachloride	U	0.00	1.00	2.00	ug/kg	1.0				
hlorobenzene	U	0.00	1.00	2.00	ug/kg	1.0				
hlorodibromomethane	U	0.00	1.00	2.00	ug/kg	1.0				
hloroethane	U	0.00	1.00	2.00	ug/kg	1.0				

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Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

oc: NPWC00195 Report Date: February 14, 1996

Sample ID : TCG0388-5-4

'arameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
'hloroform	U	0.00	1.00	2.00	ug/kg	1.0					
'hloroprene	U	0.00	2.00	10.0	ug/kg	1.0	DLS	02/12/96	1709	80295	1
)ibromomethane	U	0.00	1.00	2.00	ug/kg	1.0					
)ichlorobromomethane	U	0.00	1.00	2.00	ug/kg	1.0					
)ichlorodifluoromethane	U	0.530	1.00	2.00	ug/kg	1.0					
'thylbenzene	U	0.00	1.00	2.00	ug/kg	1.0					
sobutyl Alcohol	U	0.00	10.0	20.0	ug/kg	1.0					
'ethacrylonitrile	U	0.00	5.00	10.0	ug/kg	1.0					
'ethyl Bromide	U	0.00	1.00	2.00	ug/kg	1.0					
'ethyl Chloride	U	0.00	1.00	2.00	ug/kg	1.0					
'ethyl Iodide	U	0.00	2.00	5.00	ug/kg	1.0					
'ethyl Methacrylate	U	0.00	2.00	10.0	ug/kg	1.0					
'ethylene Chloride	J	1.71	1.00	5.00	ug/kg	1.0					
'ropionitrile	U	0.00	10.0	20.0	ug/kg	1.0					
'tyrene	U	0.00	1.00	2.00	ug/kg	1.0					
'etrachloroethylene	U	0.00	1.00	2.00	ug/kg	1.0					
'oluene	U	0.00	1.00	2.00	ug/kg	1.0					
'richloroethylene	U	0.00	1.00	2.00	ug/kg	1.0					
'richlorofluoromethane	U	0.00	1.00	2.00	ug/kg	1.0					
'inyl Acetate	U	0.00	5.00	10.0	ug/kg	1.0					
'inyl chloride	U	0.00	1.00	2.00	ug/kg	1.0					
'ylenes (TOTAL)	U	0.00	1.00	4.00	ug/kg	1.0					
is(2-Chloromethylethyl)ether	U	0.00	10.0	20.0	ug/kg	1.0					
is-1,3-Dichloropropylene	U	0.00	1.00	2.00	ug/kg	1.0					
'ans-1,3-Dichloropropylene	U	0.00	1.00	2.00	ug/kg	1.0					
'ans-1,4-Dichloro-2-butene	U	0.00	1.00	2.00	ug/kg	1.0					
'tractable Organics											
ppendix IX Acid Compounds - 17 items											
,3,4,6-Tetrachlorophenol	U	0.00	166	332	ug/kg	1.0	JCB	02/13/96	2223	80262	2
,4,5-Trichlorophenol	U	0.00	166	332	ug/kg	1.0					
,4,6-Trichlorophenol	U	0.00	166	332	ug/kg	1.0					
,4-Dichlorophenol	U	0.00	166	332	ug/kg	1.0					
,4-Dimethylphenol	U	0.00	166	332	ug/kg	1.0					
,4-Dinitrophenol	U	0.00	332	1490	ug/kg	1.0					
6-Dichlorophenol	U	0.00	166	332	ug/kg	1.0					

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Code 106.24, Bldg.234
Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

:: NPWC00195 Report Date: February 14, 1996

Sample ID : TCG0388-6-4

rameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Chlorophenol	U	0.00	166	332	ug/kg	1.0					
Nitrophenol	U	0.00	166	332	ug/kg	1.0	JCB	02/13/96	2223	80262	2
methyl-4,6-dinitrophenol	U	0.00	166	332	ug/kg	1.0					
sec-Butyl-4,6-Dinitrophenol	U	0.00	83.3	332	ug/kg	1.0					
Nitrophenol	U	0.00	166	332	ug/kg	1.0					
chloro-3-methyl phenol	U	0.00	166	332	ug/kg	1.0					
exachlorophene	U	0.00	8300	16600	ug/kg	1.0					
enol	U	0.00	166	332	ug/kg	1.0					
p-Cresol	U	0.00	116	332	ug/kg	1.0					
Cresol	U	0.00	122	332	ug/kg	1.0					
ppendix IX Base/Neutral Compounds - 98 Items											
2,4,5-Tetrachlorobenzene	U	0.00	166	332	ug/kg	1.0					
2-Dichlorobenzene	U	0.00	166	332	ug/kg	1.0					
3-Dichlorobenzene	U	0.00	166	332	ug/kg	1.0					
4-Dioxane	U	0.00	166	332	ug/kg	1.0					
4-Naphthoquinone	U	0.00	166	332	ug/kg	1.0					
Naphthylamine	U	0.00	166	332	ug/kg	1.0					
5-Dinitrotoluene	U	0.00	166	332	ug/kg	1.0					
Acetylaminofluorene	U	0.00	166	332	ug/kg	1.0					
Chloronaphthalene	U	0.00	166	332	ug/kg	1.0					
Methylnaphthalene	U	0.00	166	332	ug/kg	1.0					
Naphthylamine	U	0.00	166	332	ug/kg	1.0					
Picoline	U	0.00	166	332	ug/kg	1.0					
3'-Dichlorobenzidine	U	0.00	1660	1660	ug/kg	1.0					
3'-Dimethylbenzidine	U	0.00	830	1660	ug/kg	1.0					
Methylcholanthrene	U	0.00	166	332	ug/kg	1.0					
Bromophenyl phenyl ether	U	0.00	166	332	ug/kg	1.0					
Chloroaniline	U	0.00	166	332	ug/kg	1.0					
Chlorophenyl phenyl ether	U	0.00	166	332	ug/kg	1.0					
Nitroquinoline	U	0.00	166	332	ug/kg	1.0					
aminobiphenyl	U	0.00	166	332	ug/kg	1.0					
Nitro-o-toluidine	U	0.00	166	332	ug/kg	1.0					
2-Dimethylbenz(a)anthracene	U	0.00	166	332	ug/kg	1.0					
enaphthene	U	0.00	166	332	ug/kg	1.0					
enaphthylene	U	0.00	166	332	ug/kg	1.0					

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Client: Navy Public Works Center-Chas. Zone
Charleston Naval Shipyard
Code 106.24, Bldg.234
Charleston, South Carolina 29408-2020

Contact: Mr. Matt Cissel

Project Description: Code 106

:: NPWC00195 Report Date: February 14, 1996

Sample ID : TCG0388-6-4

rameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
etophenone	U	0.00	166	332	ug/kg	1.0					
iline	U	0.00	166	332	ug/kg	1.0	JCB	02/13/96	2223	60262	
thracene	U	0.00	166	332	ug/kg	1.0					
amite	U	0.00	166	332	ug/kg	1.0					
nzo(a)anthracene	U	0.00	166	332	ug/kg	1.0					
nzo(a)pyrene	U	0.00	166	332	ug/kg	1.0					
nzo(b)fluoranthene	U	0.00	166	332	ug/kg	1.0					
nzo(ghi)perylene	U	0.00	166	332	ug/kg	1.0					
nzo(k)fluoranthene	U	0.00	166	332	ug/kg	1.0					
nzyl Alcohol	U	0.00	166	332	ug/kg	1.0					
tyl benzyl phthalate	U	0.00	166	332	ug/kg	1.0					
lorobenzilate	U	0.00	830	1660	ug/kg	1.0					
rysene	U	0.00	166	332	ug/kg	1.0					
-n-butyl phthalate	U	0.00	166	332	ug/kg	1.0					
-n-octyl phthalate	U	0.00	166	332	ug/kg	1.0					
allate	U	0.00	166	332	ug/kg	1.0					
benzo(a,h)anthracene	U	0.00	166	332	ug/kg	1.0					
benzofuran	U	0.00	166	332	ug/kg	1.0					
ethyl phthalate	U	0.00	129	332	ug/kg	1.0					
methoate	U	0.00	830	1660	ug/kg	1.0					
methyl phthalate	U	0.00	166	332	ug/kg	1.0					
phenylamine	U	0.00	56.8	332	ug/kg	1.0					
sulfoton	U	0.00	166	332	ug/kg	1.0					
hyl Methanesulfonate	U	0.00	166	332	ug/kg	1.0					
hyl methacrylate	U	0.00	11.0	330	ug/kg	1.0					
mphur	U	0.00	166	332	ug/kg	1.0					
uoranthene	U	0.00	166	332	ug/kg	1.0					
uorene	U	0.00	166	332	ug/kg	1.0					
xachlorobenzene	U	0.00	199	332	ug/kg	1.0					
xachlorobutadiene	U	0.00	166	332	ug/kg	1.0					
xachlorocyclopentadiene	U	0.00	232	332	ug/kg	1.0					
xachloroethane	U	0.00	166	332	ug/kg	1.0					
xachloropropene	U	0.00	166	332	ug/kg	1.0					
deno(1,2,3-c,d)pyrene	U	0.00	166	332	ug/kg	1.0					
odrin	U	0.00	166	332	ug/kg	1.0					

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Charleston Naval Shipyard
Code 106.24, Bldg.234
Charleston, South Carolina 29408-2020

Contact: Mr. Matt Ciastel

Project Description: Code 106

: NPWC00195 Report Date: February 14, 1996 Page 5 of

Sample ID : TCG0388-6-4

ameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch N
phorone	U	0.00	166	332	ug/kg	1.0				
safrole	U	0.00	166	332	ug/kg	1.0	JCB	02/13/96	2223	80262
pone	U	0.00	166	332	ug/kg	1.0				
thapyrilene	U	0.00	830	1660	ug/kg	1.0				
thyl Methanesulfonate	U	0.00	166	332	ug/kg	1.0				
Nitrosodi-n-butylamine	U	0.00	166	332	ug/kg	1.0				
Nitrosodiethylamine	U	0.00	166	332	ug/kg	1.0				
Nitrosodimethylamine	U	0.00	166	332	ug/kg	1.0				
Nitrosodiphenylamine	U	0.00	166	332	ug/kg	1.0				
Nitrosomethylethylamine	U	0.00	166	332	ug/kg	1.0				
Nitrosomorpholine	U	0.00	166	332	ug/kg	1.0				
Nitrosopiperidine	U	0.00	166	332	ug/kg	1.0				
Nitrosopyrolidine	U	0.00	166	332	ug/kg	1.0				
phthalene	U	0.00	166	332	ug/kg	1.0				
robenzene	U	0.00	166	332	ug/kg	1.0				
O,O-Triethylphosphorothioate	U	0.00	34.9	332	ug/kg	1.0				
ntachlorobenzene	U	0.00	166	332	ug/kg	1.0				
ntachloroethane	U	0.00	166	332	ug/kg	1.0				
ntachloronitrobenzene	U	0.00	166	332	ug/kg	1.0				
nacetin	U	0.00	166	332	ug/kg	1.0				
nanthrene	U	0.00	166	332	ug/kg	1.0				
namide	U	0.00	166	332	ug/kg	1.0				
ene	U	0.00	166	332	ug/kg	1.0				
idine	U	0.00	166	332	ug/kg	1.0				
role	U	0.00	166	332	ug/kg	1.0				
fotepp	U	0.00	166	332	ug/kg	1.0				
onazin	U	0.00	166	332	ug/kg	1.0				
-Dimethylphenethylamine	U	0.00	199	332	ug/kg	1.0				
2-Chloroethoxy)methane	U	0.00	166	332	ug/kg	1.0				
2-Chloroethyl) ether	U	0.00	166	332	ug/kg	1.0				
2-Ethylhexyl)phthalate	U	0.00	166	332	ug/kg	1.0				
Dinitrobenzene	U	0.00	166	332	ug/kg	1.0				
Nitroaniline	U	0.00	259	332	ug/kg	1.0				
itroaniline	U	0.00	93.0	332	ug/kg	1.0				
nitidine	U	0.00	166	332	ug/kg	1.0				

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:: NPWC00195 Report Date: February 14, 1996 Page 5 of

Sample ID : TCG0388-6-4

rameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
)imethylaminoazobenzene	U	0.00	166	332	ug/kg	1.0					
Nitroaniline	U	0.00	136	332	ug/kg	1.0	JCB	02/13/96	2223	80262	
Phenylenediamine	U	0.00	332	664	ug/kg	1.0					
n-Trinitrobenzene	U	0.00	1070	1660	ug/kg	1.0					
pendix IX - Herbicides - 3 items											
4,5-T	U	0.00	4.96	9.91	ug/kg	10.	JLS	02/14/96	0805	8026	
4,5-TP	U	0.00	2.48	4.96	ug/kg	10.					
4-D	U	0.00	4.96	9.91	ug/kg	10.					
pendix IX - Pesticides & PCBs - 29 items											
4'-DDD	U	0.00	16.7	33.3	ug/kg	10.	JEB	02/13/96	0842	8026	
4'-DDE	U	0.00	8.33	16.7	ug/kg	10.					
4'-DDT	U	0.00	16.7	33.3	ug/kg	10.					
drin	U	0.00	4.16	8.33	ug/kg	10.					
lordane	U	0.00	41.6	83.3	ug/kg	10.					
eldrin	U	0.00	8.33	16.7	ug/kg	10.					
dosulfan I	U	0.00	8.33	16.7	ug/kg	10.					
dosulfan II	U	0.00	16.7	33.3	ug/kg	10.					
dosulfan sulfate	U	0.00	16.7	33.3	ug/kg	10.					
drin	U	0.00	8.33	16.7	ug/kg	10.					
drin aldehyde	U	0.00	20.8	41.6	ug/kg	10.					
eptachlor	U	0.00	8.33	16.7	ug/kg	10.					
eptachlor epoxide	U	0.00	8.33	16.7	ug/kg	10.					
ethoxychlor	U	0.00	83.3	167	ug/kg	10.					
CB-1016	U	0.00	33.3	41.6	ug/kg	10.					
CB-1221	U	0.00	33.3	41.6	ug/kg	10.					
CB-1232	U	0.00	33.3	41.6	ug/kg	10.					
CB-1242	U	0.00	33.3	41.6	ug/kg	10.					
CB-1248	U	0.00	33.3	41.6	ug/kg	10.					
CB-1254	U	0.00	33.3	41.6	ug/kg	10.					
CB-1260	U	0.00	33.3	41.6	ug/kg	10.					
rathion	U	0.00	8.33	16.7	ug/kg	10.					
rathion, methyl	U	0.00	8.33	16.7	ug/kg	10.					
orate	U	0.00	8.33	16.7	ug/kg	10.					
xaphene	U	0.00	167	333	ug/kg	10.					
ha-BHC	U	0.00	4.16	8.33	ug/kg	10.					

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GENERAL ENGINEERING LABORATORIES

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CERTIFICATE OF ANALYSIS

Client: Navy Public Works Center-Chas. Zone
Charleston Naval Shipyard
Code 106.24, Bldg.234
Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

: NPWC00195 Report Date: February 14, 1996 Page 7

Sample ID : TCG0388-6-4

:ameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch
a-BHC	U	0.00	8.33	16.7	ug/kg	10.				
ta-BHC	U	0.00	8.33	16.7	ug/kg	10.	JEB	02/13/96	0842	8026
nma-BHC	U	0.00	4.16	8.33	ug/kg	10.				
als Analysis										
ver	U	-0.862	0.382	2.50	mg/kg	1.0	JSS	02/12/96	1156	8018
senic	U	-1.99	2.06	14.7	mg/kg	1.0				
rium		10.1	0.108	2.50	mg/kg	1.0				
ryllium	J	0.110	0.0147	2.50	mg/kg	1.0				
dmium	U	0.142	0.162	2.50	mg/kg	1.0				
balt	J	0.544	0.167	2.50	mg/kg	1.0				
romium		4.36	0.206	2.50	mg/kg	1.0				
pper		11.8	0.412	2.50	mg/kg	1.0				
ckel	J	1.56	0.387	2.50	mg/kg	1.0				
ad		9.53	1.78	4.90	mg/kg	1.0				
timony	U	-3.31	1.96	4.90	mg/kg	1.0				
lenium	U	-11.8	4.12	14.7	mg/kg	1.0	JSS	02/12/96	1228	8018
n	U	0.254	1.15	4.90	mg/kg	1.0	JSS	02/12/96	1156	8018
allium	J	3.41	2.30	14.7	mg/kg	1.0				
nadium		3.67	0.206	2.50	mg/kg	1.0				
nc		23.9	0.103	2.50	mg/kg	1.0				
ercury	J	0.103	0.00238	0.200	mg/kg	1.0	DVW	02/10/96	0010	8018

following prep procedures were performed:

C/MS Acid Compounds	DLF	02/10/96	1600	80262
C/MS Base/Neutral Compounds	DLF	02/10/96	1600	80262
rbicides	DDT	02/10/96	2000	80261
sticides	DLF	02/10/96	1600	80260
P	DVW	02/10/96	1115	8018
ercury	DVW	02/09/96	2000	8018

nments:

lution was required for Extractable Organics, Herbicides and
icides due to matrix interference. As a result, the detection limits

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CERTIFICATE OF ANALYSIS

Client: Navy Public Works Center-Chas. Zone
Charleston Naval Shipyard
Code 106.24, Bldg.234
Charleston, South Carolina 29408-2020
Contact: Mr. Matt Cissel
Project Description: Code 106

c: NPWC00195 Report Date: February 14, 1996 Page 8 o

Sample ID : TCG0388-6-4

rameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	ref

elevated.

irrogate Recovery	Test	Percent%	Acceptable Limits
4,6-Tribromophenol	APP 9 ACID	66.5	(40.3 - 122.)
Fluorophenol	APP 9 ACID	82.5	(25.0 - 121.)
enol-d6	APP 9 ACID	81.5	(24.0 - 113.)
Fluorobiphenyl	APP 9 B/N	75.7	(30.0 - 115.)
itrobenzene-d5	APP 9 B/N	74.3	(23.0 - 120.)
Terphenyl-d14	APP 9 B/N	108.	(37.3 - 128.)
(2,4-Dichlorophenoxy)Butyric	APP 9 HERBICIDES	91.1	(64.6 - 159.)
CMX	APP 9 PESTICIDES	89.8	(45.8 - 152.)
ibutylchlorendate	APP 9 PESTICIDES	0.00*	(40.5 - 143.)
romofluorobenzene	APP 9 VOA-8260	38.4*	(80.0 - 120.)
lbromofluoromethane	APP 9 VOA-8260	105.	(80.0 - 120.)
luene-d8	APP 9 VOA-8260	109.	(80.0 - 120.)

= Method	Method-Description
1	EPA 8260
2	EPA 8270
3	EPA 8150 modified
4	EPA 8080
5	EPA 6010A
6	EPA 3550
7	EPA 8150
8	EPA 3050
9	EPA 7471

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CERTIFICATE OF ANALYSIS

Client:	Navy Public Works Center-Chas. Zone Charleston Naval Shipyard Code 106.24, Bldg.234 Charleston, South Carolina 29408-2020
Contact:	Mr. Matt Cissel
Project Description:	Code 106

: NPWC00195 Report Date: February 14, 1996 Page 9

Sample ID : TCG0388-6-4

Method	Method-Description

:

qualifiers in this report are defined as follows:

licates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

dicates that the analyte was not detected at a concentration greater than the detection limit.

licate that a quality control analyte recovery is outside of specified acceptance criteria.

L Laboratory Certifications		EPI Laboratory Certifications	
- 41040	AZ - AZ0514	AL - 41050	AZ - AZ0514
- 2089	CT - PH-0169	CA - I-1023/2056	CT - PH-0175
- SC012	FL - E87156/87294	FL - E87472/87458	MS - 29417
- SC012	MS - 10120	NY - 11502	RI - 138
- 233	NY - 11501	SC - 10582	TN - 02934
135	SC - 10120	UT - E-227	VA - 00111
- 02934	UT - E-251	WA - C225	NJ - 79002
- 00151	WA - C223	PA - 68-485	
- 999887790			

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CERTIFICATE OF ANALYSIS

Client:	Navy Public Works Center-Chas. Zone Charleston Naval Shipyard Code 106.24, Bldg.234 Charleston, South Carolina 29408-2020
Contact:	Mr. Matt Cissel
Project Description:	Code 106

:c: NPWC00195 Report Date: February 14, 1996 Page 10

Sample ID : TCG0388-6-4

:L Laboratory Certifications EPI Laboratory Certifications

is data report has been prepared and reviewed
accordance with General Engineering Laboratories
ndard operating procedures. Please direct
/ questions to your Project Manager, Karen Blakeney at (803) 769-7386.

alytical Report Specialist

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Charleston, South Carolina 29414
P.O. Box 30712
Charleston, South Carolina 29417
(803) 556-8171

CHAIN OF CUSTODY RECORD

Client Name/Facility Name: CNSY

Collected by/Company: K.B. NORMAN 8401/16

SAMPLE ANALYSIS REQUIRED (x) - use remarks area to specify specific compounds or methods

Use F or P in the boxes to indicate whether sample was filtered and/or preserved

BLDG 246

SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	SEE REMARKS	Remarks
TCG0388-6-1	2/8/96	0900		X			3																X	ZONE #2
TCG0388-6-2	2/8/96	1000		X			3																X	ZONE #3
TCG0388-6-3	2/8/96	1100		X			3																X	ZONE #4
TCG0388-6-4	2/8/96	1330		X			3																X	ZONE #5
																								TOTAL APPENDIX IX
																								EXCLUDING DIOXINS

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
K.B. Norman	2/8/96	1430	W. R. Hiers, Jr.				

Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:

White = sample collector Yellow = file Pink = with report

February 20, 1996

MEMO TO FILE

Subj: Sample Dates on Chain-of-Custody form

Complete custody was maintained for all samples from Building 246 at all times. The sample containers were labeled and the samples were stored in a secure location immediately after they were taken. The chain-of-custody form was not filled out until just prior to sending the samples to the lab for analysis. At that time incorrect dates were inadvertently entered on the chain-of-custody form. The dates were never off by more than one day and all samples were analyzed within the allowed holding times for the procedures performed.

K. B. Norman

K. B. Norman
Code 300C.9 Remediation Project, APS

APPENDIX D
MISCELLANEOUS CORRESPONDENCE

DEPARTMENT OF THE NAVY
CHARLESTON NAVAL SHIPYARD
1351 FIRST STREET
CHARLESTON, S.C. 29408-2020

5090
Ser 106.21/0133
07 MAR 1996

Mr. G. Randall Thompson
Director, Division of Hazardous and
Infectious Waste Management
Bureau of Solid and Hazardous Waste Management
South Carolina Department of Health and
Environmental Control
2600 Bull Street
Columbia, SC 29201

Re: Closure of Charleston Naval Complex Hazardous Waste Facility

Dear Mr. Thompson,

Based on the discussion between Charleston Naval Shipyard (CNSY)(Amos Webb) and South Carolina DHEC (Jeannie Olano) on 6 March 1996, this letter is being sent to request a minor modification to the Building 246 closure requirements of the Part B Permit Application.

CNSY respectfully requests this minor modification per R.61-79.270.42(a) to make use of the background data obtained during the Zone H RFI. Due to the ongoing RCRA Facility Investigation (RFI), the extent and nature of the contamination throughout the Naval Complex has yet to be determined. The Naval Complex has been separated into 12 zones for purposes of the RFI. Building 246 falls within the bounds of Zone G for which sampling has not yet commenced and thus no background information is available. Zone H has proposed background levels for metals which were statistically derived from the data taken in the RFI and presented in the draft RCRA Facility Investigation Report for Zone H (Dtd 27 December 1995). Zone H, however, is a good choice for comparison to the soils around Building 246. Not only is Zone H the closest zone adjacent to the Building 246 site (as close as 200 feet) but the Zone H surface soils are fill material which are similar to the soils around Building 246. Additionally, it is requested that any metals constituents exceeding the Zone H background levels be then compared to the residential soils limits of the U. S. EPA Region III Risk-Based Concentration Table, Fourth Quarter 1994, prior to removal.

CNSY requests Section I of the Part B Permit application be modified to read as follows commencing at the final paragraph on page I-8:

> ''Samples of the top 6 inches of soil will be taken at 5-foot intervals along each side of the drive. All samples from the same side of the drive will be composited to form one sample. Each of the resulting composite samples will be analyzed for hazardous constituents applicable to all

07 MAR 1996

hazardous waste stored in the building. For each waste stored, the hazardous constituents shall consist of (1) the appropriate characteristic of ignitability, corrosivity, and reactivity; (2) total metal (SW-846 acid digestion methods) for wastes hazardous due to EP toxicity; and (3) the constituents shown in Appendix VII, 40 CFR 261, for "F" and "K" listed waste. For metals these samples will be compared to the statistically derived background levels in the draft RCRA Facility Investigation Report for Zone H (Dtd 27 December 1995), and any metals concentrations above the statistically derived levels will then be compared to the residential soils limits of the U. S. EPA Region III Risk-Based Concentration Table, Fourth Quarter 1994. For any constituent for which a primary or secondary drinking water standard has been promulgated, that standard shall be used in lieu of the background concentration to determine "contamination." Analytical methods for these analyses shall be as specified in EPA Publication SW-846. Minimum detection limit for analyses shall be as specified in SW-846 for soil tests. If any soils containing stored constituents or soils containing metals above acceptable levels are found, further sampling and analysis will be conducted to determine the extent of contamination. All contaminated soils will be removed and transported to a permitted hazardous waste disposal facility."

If you have any questions or require further information, please contact Amos Webb or Kevin Long at (803) 743-5519.

Sincerely,

R. L. Laney
Director, Occupational Safety,
Health and Environmental Office
By direction of the Commander

Copy to:
100, 105
EPA; J. Franzmathes, D. Brittain
N4BEC; E. Dearhart, P. Franklin
SOUTHNAVFACENGCOM; M. Hunt (1877), T. Fielding (1878), P. Kordonis (1825)
SCDHEC; Ann Ragan, Johnny Tapia

DEPARTMENT OF THE NAVY
CHARLESTON NAVAL SHIPYARD
1351 FIRST STREET
CHARLESTON, S.C 29408-2020

5090
Ser 106.2/0142

11 MAR 1996

Mr. G. Randall Thompson
Director, Division of Hazardous and Infectious Waste Management
Bureau of Solid and Hazardous Waste Management
South Carolina Department of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

RE: NOTIFICATION OF SITES AT NAVAL BASE CHARLESTON COMPLEX

Dear Mr. Thompson:

The purpose of this letter is to notify the South Carolina Department of Health and Environmental Control of an additional Area of Concern (AOC) at the Naval Base Charleston Complex in order to comply with its Hazardous and Solid Waste Amendments Part B Permit (EPA SC0 170 022 560). This AOC was discovered during the sampling for RCRA closure of the mixed waste storage facility at Building 246.

Enclosure (1) contains a table of the new AOC at Naval Base Charleston. If you have any questions or require further information, please contact Amos Webb or Kevin Long at (803)743-5519.

Sincerely,

R L Laney

R. L. LANEY
Director, Occupational Safety,
Health and Environmental Office
By direction of the Commander,
Charleston Naval Shipyard

Encl:
(1) Listing of additional AOC

Copy to:
SCDHEC (Bowers, Olano, Tapia)
USEPA (Brittain)
COMNAVBASE (N4BEC, Dearhart, Fontenot, Brittain)
SOUTHNAVFACENGCOM (Hunt, Stockmaster)
E/A&H

Naval Base Charleston				
Additional Areas of Concern				
AOC Number	Site Name	Materials Released, Stored or Disposed	Location	Study Zone
706	Area behind Bldg 246	PCB (Arochlor 1260)	Bldg 246	G

DEPARTMENT OF THE NAVY
CHARLESTON NAVAL SHIPYARD
CHARLESTON, S.C. 29408-6100

5090
Ser 106.21/0146
12 March 1996

Mr. G. Randall Thompson
Director, Division of Hazardous and
Infectious Waste Management
Bureau of Solid and Hazardous Waste Management
South Carolina Department of Health and
Environmental Control
2600 Bull Street
Columbia, SC 29201

Re: Closure of Charleston Naval Complex Hazardous Waste Facility

Dear Mr. Thompson,

Based on the discussion between Charleston Naval Shipyard (CNSY)(Amos Webb) and South Carolina DHEC (Jeannie Olano) on 6 March 1996, this letter is being sent to clarify the Building 246 closure with reguard to the PCB's found during sampling.

The only organic constituant found at detectable levels in the soil surrounding Building 246 was the PCB Aroclor 1260. PCB's were not stored at Building 246 nor would they have been released from any operations of the RCRA facility. Charleston Naval Shipyard (CNS) believes that the PCB's were as a result of other processes on the site prior to the construction of Building 246 in 1986. The appearance of the specific isomer of PCB will be investigated fully within the Zone G RFI under the Area Of Concern (AOC) 706 investigation to locate the source of the contamination and to propose corrective actions consistant with the goals of the ongoing RCRA investigation. CNS does not consider this to be an issue of RCRA Closure of Building 246 and has notified S. C. DHEC of AOC 706 via letter (serial no 106.2/142 dated 11 March 1996) as reqired by the part B permit.

If you have any questions or require further information, please contact Amos Webb at (803) 743-5519 or Bo Camp at (803) 743-9985.

Sincerely,

Amos T. Webb
Head, Environmental Division

Copy to:
100, 106, CSO (Camp)
SOUTHNAVFACENGCOM; M. Hunt (1877)
SCDHEC; Ann Ragan, Jeannie Olano, Johnny Tapia

South Carolina
DHEC
Department of Health and Environmental Control
2600 Bull Street, Columbia, SC 29201-1708

Commissioner: Douglas E. Bryant

Board: John H. Burriss, Chairman
William M. Hull, Jr., MD, Vice Chairman
Roger Leaks, Jr., Secretary
Richard E. Jabbour, DDS
Cyndi C. Mosteller
Brian K. Smith
Rodney L. Grandy

Promoting Health, Protecting the Environment

CERTIFIED MAIL
Return Receipt Requested

March 18, 1996

Captain William F. Nold
Commanding Officer
Charleston Naval Shipyard
Charleston, South Carolina 29408-5100

RE: Letter Dated 07 March, 1996 (Laney to Thompson)
Closure of Charleston Naval Complex Hazardous Waste Facility
Charleston Naval Shipyard
SC0 170 022 560

Dear Captain Nold:

The South Carolina Department of Health and Environmental Control (Department) is in receipt of the request by Charleston Naval Shipyard (CNSY) for a minor modification to the Building 246 Closure requirements of the Part B Permit Application. Building 246 is located in Zone G for which sampling has not started yet and there is no background information available. The minor modification requests the use of proposed background levels for metals, which were statistically derived from the data obtained during the Zone H RFI, to replace for the unavailable data in Zone G. The reasons for the proposed modification are based on: 1) The proximity of Building 246 to Zone H (close to 200 feet) and 2) The similarity of surface soils (fill material) encountered around Building 246 and Zone H. It is also requested that any metal constituents exceeding Zone H background levels be compared to residential soils limits of the U.S. EPA Region III Risk-Based Concentration Table, Fourth Quarter 1994, prior to removal.

Based on previous discussions (Webb-Olano, March 6, 1996) the Department grants the requests. The modification to Section I of the Part B Permit application will read as described in your March 7, 1996 request letter.

recycled paper

If you have any questions concerning this matter please contact Johnny Tapia at (803)896-4182.

Sincerely,

G. Randall Thompson

G. Randall Thompson, P.E., Division Director
Hazardous and Infectious Waste Management
Bureau of Solid and Hazardous Waste Management

cc: Joe Bowers, Hydrogeology
Doyle Brittian, USEPA - Region IV
Bobby Dearhart, BRAC Environmental Coordinator
Tony Hunt, SOUTHDIV

5090
Ser 106.2/0171
19 March 1996

From: Code 106.2
To: Code 106C

Subj: RCRA CLOSURE OF BUILDING 246

Encl: (1) Map of the Sample Locations around Building 246
(2) Tabulated Data of all Detectable Constituants from the Building 246 Sampling

1. In accordance with Section I of the Part B Hazardous Waste Permit Number SCO 170 022 560, RCRA closure of building 246 requires soil samples be taken in the area surrounding the Building 246 driveway. These samples were taken at the locations shown in Enclosure (1). Due to the ongoing RCRA Facility Investigation (RFI), the extent and nature of the contamination throughout the Naval Complex has yet to be determined for the Building 246 area (Zone G); however, as stated in the minor modification to the part B permit, the metals levels were compared to the Zone H background levels.

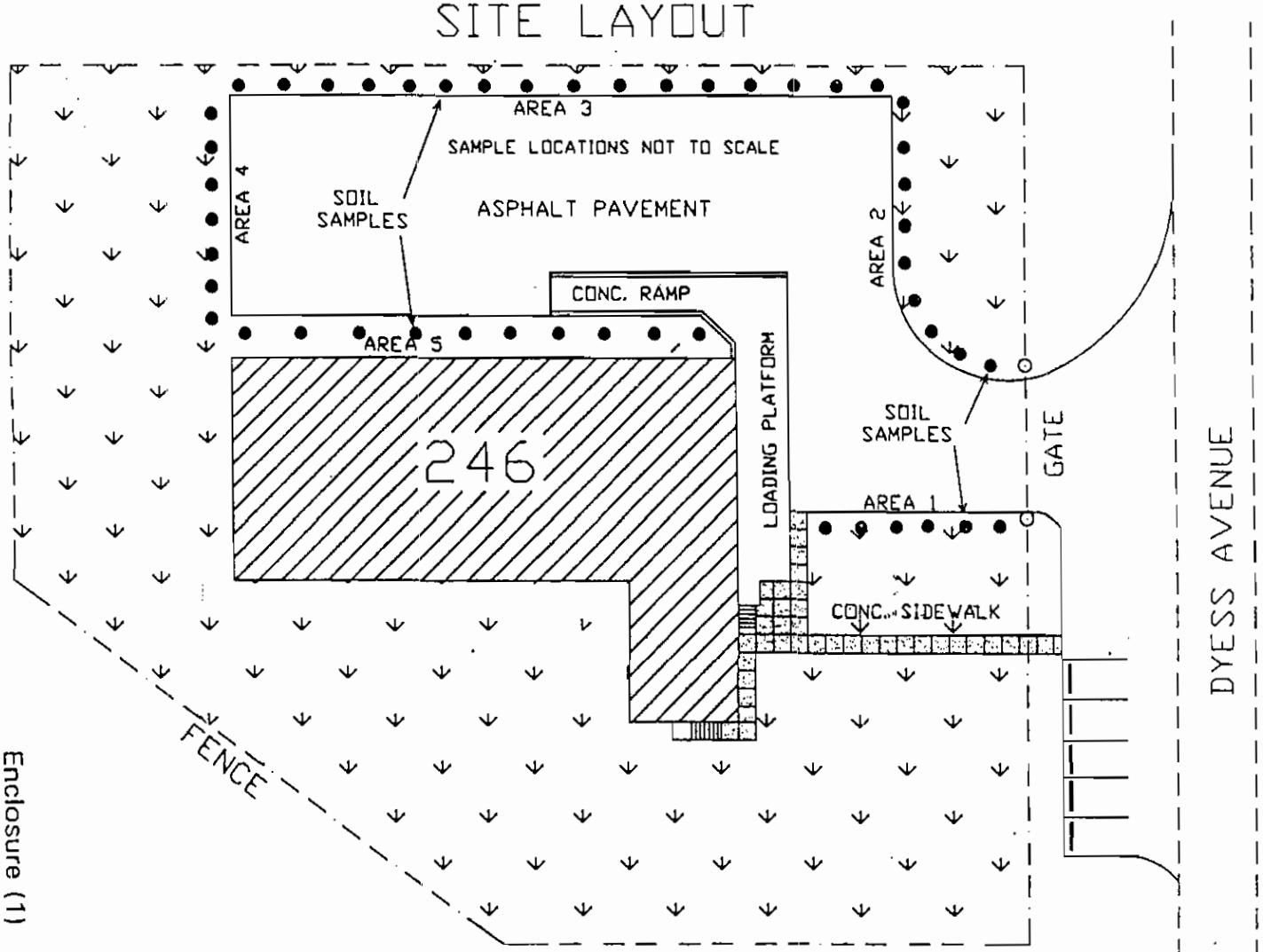
2. Please note from Enclosure (2) that, in all but four cases, the results for metals are below the Zone H backgound levels and in each of those cases the results are well below the residential soils limits of the U. S. EPA Region III Risk-Based Concentration Table, Fourth Quarter 1994. Charleston Naval Shipyard (CNS) considers that the hazardous waste operations of Building 246 have had no impact on the metals content of the soils surrounding Building 246. Therefore, no remedial actions are needed to complete the RCRA closure of Building 246.

3. The only organic constituant found at detectable levels in the soil surrounding Building 246 was the PCB Aroclor 1260. PCB's were not stored at Building 246 nor would they have been released from any operations of the RCRA facility. The appearance of the specific isomer of PCB will be investigated fully within the Zone G RFI under the Area Of Concern (AOC) 706 investigation to locate the source of the contamination and to propose corrective actions consistant with the goals of the ongoing investigation. CNS does not consider this to be an issue of RCRA Closure of Building 246 and has notified S. C. DHEC of AOC 706 in accordance with the part B permit.

A. T. Webb
Head, Environmental Division

Copy to:
106, 105, NRRO. NAVFACENGCOM (1825)

FIGURE 3
BUILDING 246
HAZ. WASTE STORAGE & TRANS. FAC.
SITE LAYOUT



COLLECT SOIL SAMPLES AT 5-FOOT INTERVALS
ALONG EACH SIDE OF ASPHALT DRIVEWAY

Tabulated Data of all Detectable Constituents from Building 246 Sampling						
ANALYTE	Area 1	Area 2	Area 3	Area 4	Area 5	ZONE H
Ba	7.97 mg/kg	**48.8 mg/kg**	32.4mg/kg	16 mg/kg	10.1 mg/kg	43.8 mg/kg
Cr	3.46 mg/kg	13.4 mg/kg	38.2 mg/kg	7.16 mg/kg	4.36 mg/kg	83.86mg/kg
Cu	4.55 mg/kg	**48.1 mg/kg**	**89.6 mg/kg**	26 mg/kg	11.8 mg/kg	31.62 mg/kg
Ni	3.29 mg/kg	6.45 mg/kg	12.8 mg/kg	4.16 mg/kg	J	29.9 mg/kg
Pb	5.05 mg/kg	40.8 mg/kg	59.7 mg/kg	11.4 mg/kg	9.53 mg/kg	68.69 mg/kg
Va	U	9.02 mg/kg	9.57 mg/kg	J	3.67 mg/kg	131.6 mg/kg
Zn	20 mg/kg	124 mg/kg	118 mg/kg	53.4 mg/kg	23.9 mg/kg	129.6 mg/kg
Hg	U	J	J	**1.01 mg.kg**	J	0.735 mg/kg
PCB-1260	U	84 ug/kg	95.7 ug/kg	761 ug/kg	U	N/A

Tabulated Data of EPA Region III RBC Data for Metals in Residential Soil	
Metal	RBC Level
Ba	5500 mg/kg
Cu	2900 mg/kg
Hg	23 mg/kg

U indicates that the analyte was not detected at a concentration greater than the detection limit.

J indicates presence of the analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).