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Monitoring and Phytoremediation O&M Report – September 2008 through October 2008

Former Waste Area Behind Paint Hangar Building 87 (SWMU 33)

United States Coast Guard Support Center Elizabeth City, North Carolina

Contract No. DTCG83-02-D-3CL375
Task Order No. HSCG83-06-J-3CL531
USCG Project No. 442689

ENSR Consulting and Engineering (NC), Inc.
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1.0 Introduction

The United States Coast Guard (USCG) Civil Engineering Unit, Cleveland (CEU-Cleveland) retained ENSR to perform monitoring activities at the Solid Waste Management Unit (SWMU) 33 (Former Waste Storage Area Behind Paint Hanger Building 87) at the USCG Support Center, Elizabeth City (SCEC), North Carolina. Monitoring activities were designed to assess the progress of the phytoremediation system. The phytoremediation system was installed in 2007 in accordance with the Corrective Measures Study (ENSR 2007). This work was performed under contract number DTCG83-02-D-3CL375 and task order number HSCG83-06-J-3CL531.

1.1 Facility location

The SCEC is located approximately 3 miles south of Elizabeth City, Pasquotank County, in northeastern North Carolina along Highway 34. The facility is situated on approximately 800 acres and is located along the southern bank of the Pasquotank River approximately 8 miles upstream of the confluence of the Pasquotank River and the Albemarle Sound. The topography of the site is flat with an average elevation 7 feet above mean sea level (msl). The geographic facility location is latitude 36° 15' 07" north and longitude 76° 10' 05" west. Site location and facility layout maps are shown on Figures 1-1 and 1-2, respectively.

1.2 Facility operations

The primary functions of the SCEC are support, training, operation and maintenance associated with USCG aircraft. The facilities include aircraft hangers, aircraft wash racks, painting and paint removal areas, engine maintenance facilities, a jet-fuel storage area, aircraft refueling systems, three active runways and their associated taxiways, and other various support facilities. As part of operations, hazardous materials are used and stored at the facility. The USCG SCEC operates in accordance with a Resource Conservation and Recovery Act (RCRA) Part B Permit (NC2690308232).

1.3 SWMU 33 (Former waste storage area behind Paint Hanger Building 87)

SWMU 33 is located near the shoreline of the Pasquotank River between Buildings 87 and 96 (Figure 1-2). The topography of the area is relatively flat with a general slope to the north towards the Pasquotank River.

Previously, flammable lockers/storage cabinets and drums with hazardous materials and, potentially, wastes were stored in this area. During the RCRA Facility Assessment (RFA), the cabinets were observed to be in poor condition and unknown liquids were observed in the base of the cabinets. There are no records of the condition of the flammable lockers or drums (A.T. Kearney, 1986). The flammable lockers/storage cabinets and drums have been removed. The wastes that were managed were reportedly process materials such as ketones and naphtha (A.T. Kearney, 1986). The history of storage in the area is unknown. Although not noted in the historical documents, drum-like ring indentations in the asphalt between Buildings 87 and 96 were observed, which indicate historic storage of drums in this area. No releases have been reported in this area (ARCADIS, 2002).

1.4 Regulatory status

Corrective action is being performed by the USCG as directed under the RCRA Hazardous Waste Management permit issued on July 12, 1995. The State of North Carolina is authorized by United States Environmental Protection Agency (USEPA) Region IV to monitor corrective actions at RCRA facilities under the state RCRA program. Facility-wide compliance requirements for assessment activities and corrective actions are coordinated between the USCG and the NCDENR Hazardous Waste Section (HWS). The RFI was completed in 2006 followed by the CMS in 2007 (ENSR 2007). Prior to submission of the CMS, the USCG received concurrence of the proposed remedy from the HWS in an email correspondence on March 30,

2007, and during a subsequent on-site meeting (in April 2007) with the USCG. Implementation of the CMS was initiated in the spring of 2007 and is currently on-going.

1.5 Objectives

The CMS report specified phytoremediation as the best remedy to address soil and groundwater impacts at SWMU 33. A phytoremediation system consisting of four staggered rows of deep-rooted willow trees (*Salix alba*) was installed. The primary objective of the phytoremediation system is to control groundwater contaminant plume migration and remove contaminants from the saturated zone (via sorption to the organic fraction of the plant root tissue followed by slow degradation). A secondary objective of the system is remediation of the inorganic contaminants in the vadose zone soil (arsenic [As], chromium [Cr], and mercury Hg) as well as any residual organic contaminants.

The success of the system is evaluated by its ability to reduce constituent concentrations to below the remedial soil goals (USEPA Region 9 Residential preliminary remediation goals [PRGs]) and below the remedial groundwater goals (Title 15A North Carolina Administrative Code Subchapter 2L groundwater quality standards [2L Standards]).

This report presents the results of soil and groundwater monitoring activities that occurred in the fourth quarter of 2008 (October 2008 through December 2008). The sampling event performed in October 2008 consisted of soil and groundwater sample collection for analysis of target pesticides and metals. The analytical results of the October 2008 sampling event, in conjunction with the existing data set established during previous investigations, provides a basis for evaluating the effectiveness of the phytoremediation system as well as the progress toward achieving soil and groundwater remediation goals.

2.0 Sampling

The following section provides a discussion of the methodology and results of the sampling event conducted by ENSR in October 2008. The sampling methodology is in accordance with the CMS (ENSR 2006a). Sampling locations and analyses are consistent with those specified in the work plan (ENSR, 2007b). Field activities included collection of soil and groundwater samples for laboratory analysis as well as water level measurements.

2.1 Methods

2.1.1 Soil

Three grab soil samples (33SB-13, 33SB-14, and 33SB-15) were collected from SWMU 33 (Figure 2-1) using a decontaminated stainless steel hand auger. Continuous soil samples were collected at each location from the ground surface to a depth of 1 foot bls. Each core was manually mixed via the quartering method using a decontaminated stainless steel scoop and glass bowl. The samples were analyzed for metals (As, Cr, and Hg) via USEPA Method 6010 or Method 7470A and pesticides via USEPA Method 8081.

2.1.2 Groundwater

Water Level Measurements

ENSR collected depth to water level measurements prior to collecting groundwater samples. Depth to water measurements were converted to water level elevations using top of casing (TOC) elevation data and are summarized in Table 2-1 for the October 2008 sampling event. Water level measurements were performed by opening the well cap and allowing the static water level to equilibrate with atmospheric pressure for approximately 15 minutes. An electronic water level indicator was then slowly inserted into the well, and the measurements were recorded on the field data sheet. The water level indicator was decontaminated with a phosphate-free soap (i.e., Liquinox) and distilled-water rinse prior to use and between each well location.

Groundwater Sample Collection

ENSR collected groundwater samples from monitoring wells 33MW-01 through 33MW-03 and 33MW-05 through 33MW-09 during the October 2008 sampling event (Figure 2-1). Per the CMS, a groundwater sample was not collected from monitoring well 33MW-04 as it is located well outside the contaminant plume and target compounds were not detected in past sampling events. Wells were sampled using low-flow sampling techniques with peristaltic pumps and new, disposable polyethylene tubing. The water levels were monitored during purging and the flow rate was adjusted in order to maintain a stabilized water level (drawdown of 0.3 feet or less).

While purging the wells, field measurements were recorded and used to determine when parameters had stabilized over consecutive readings, indicating that an adequate purging volume had been removed. Field measurements, including pH, specific conductance, temperature, oxidation-reduction potential (ORP) and dissolved oxygen (DO) were recorded using a YSI 556 multi-parameter meter and a flow-through cell. In addition, groundwater turbidity measurements were collected with a Hach 2100P turbidimeter. The YSI 556 was calibrated prior to use and daily thereafter, in accordance with manufacturer instructions.

Once water quality parameters stabilized and turbidity levels were less than 10 NTUs, groundwater samples were collected into laboratory prepared sample containers, labeled, and placed on ice pending transfer to a laboratory courier. The samples were analyzed for pesticides via USEPA Method 8081, mercury via USEPA Method 7470A, and arsenic and chromium via USEPA Method 6010. Copies of the groundwater sample collection records are presented in Appendix A.

2.1.3 Quality assurance/Quality control procedures

Field work was performed according to ENSR standard operating procedures, which comply with the requirements in the USEPA Region IV Environmental Compliance Branch Standard Operating Procedures and Quality Assurance Manual (USEPA, 2001). Procedures were followed during the field program to ensure that groundwater samples were properly containerized, preserved, and transferred to the analytical laboratory.

After sampling, containers were appropriately labeled and immediately placed in an iced cooler to maintain them at or below a temperature of 4 degrees Celsius. The samples were packaged, sealed, and transferred to a laboratory courier. A complete chain-of-custody record was provided in the cooler to maintain a comprehensive record of personnel who had contact with the samples.

2.1.4 Investigative derived waste management

Water generated during well development and purging and sampling activities was temporarily contained in mobile tankers prior to on-site treatment and disposal by the USCG. Disposable materials generated during the sampling of the monitoring wells and decontamination of equipment were containerized in plastic garbage bags and disposed of in a solid-waste dumpster on the SCEC facility.

2.2 October 2008 Results

2.2.1 Soil analytical results

Soil analytical results are presented in Table 2-2 and Figure 2-2. Soil concentrations were compared to the residential and industrial criteria of the USEPA Region 9 PRGs (PRGs) (USEPA, 2002) and the NCDENR Hazardous Waste Section (HWS) Soil Screening Levels (SSLs) (NCDENR, 2005).

Metals

Laboratory results indicate that arsenic concentrations in the grab samples 33SB-13, 33SB-14, and 33SB-15 are 10 milligrams per kilogram (mg/kg), 12 mg/kg, and 49 mg/kg, respectively. Results for 33SB-13 and 33SB-14 are consistent with 2007 baseline and semi-annual sampling event results. Results for 33SB-13 are higher than April 2008 sampling results. Results for 33SB-15 are higher than 2007 baseline and semi-annual sampling event results as well as April 2008 sampling results. All three grab samples exceed the Region 9 Residential (0.39 mg/kg) and Industrial (1.6 mg/kg) PRGs, as well as the SSL (5.24 mg/kg).

Grab samples from 33SB-13, 33SB-14, and 33SB-15 contain 19 mg/kg, 47 mg/kg, and 23 mg/kg of chromium, respectively. Chromium in the 33SB-13 and 33SB-15 grab samples is below the residential and industrial PRGs (210 mg/kg and 450 mg/kg, respectively) and the SSL (27.2 mg/kg). Chromium in 33SB-14 is below the residential and industrial PRGs however exceeds the SSL. The results for 33SB-13 and 33SB-15 are consistent with sampling results from the 2007 baseline and semi-annual sampling results and April 2008 sampling results while 33SB-14 is higher than previous results.

Laboratory results indicate that mercury concentrations in the grab samples 33SB-13, 33SB-14, and 33SB-15 are 0.071 mg/kg, 0.098 mg/kg, and 0.077 mg/kg, respectively. Mercury in the 33SB-13, 33SB-14, and 33SB-15 grab samples is below the residential and industrial PRGs (23 mg/kg and 310 mg/kg, respectively) however above the SSL of 0.0154 mg/kg. The results for 33SB-13, 33SB-14, and 33SB-15 are slightly elevated in comparison to sampling results from the 2007 baseline and semi-annual sampling results as well as April 2008 results.

Pesticides

Grab samples 33SB-13, 33SB-14, and 33SB-15 were analyzed for twenty two pesticides. Two pesticides were detected in 33SB-13 including 4,4'-DDE and 4,4'-DDT at 0.011 mg/kg and 0.067 mg/kg, respectively. Concentrations of 4,4'-DDE and 4,4'-DDT did not exceed the residential PRG, industrial PRG, or the SSL.

4,4'-DDE and 4,4'-DDT were previously not detected in 33SB-13. No pesticides were detected above reporting limits in 33SB-14 or 33SB-15. Results for the remaining twenty pesticides analyzed in 33SB-13 as well as results for 33SB-14 and 33SB-15 are consistent with findings from the 2007 baseline and semi-annual sampling events as well as the April 2008 sampling event.

2.2.2 Groundwater gauging

Table 2-1 and Figure 2-3 summarize the depth to groundwater measurements and calculated elevation data during the October 2008 sampling event. Potentiometric elevations at the site ranged from 0.32 feet below mean sea level (ft msl) (33MW-08) to 1.05 ft above msl (33MW-05). The groundwater elevations measured during the October 2008 event are consistent with historical elevations.

During the October 2008 event, the shallow horizontal groundwater gradient is northward towards the Pasquotank River. Past groundwater flow directions at the site have varied, but were generally towards the Pasquotank River, which is consistent with site topography and other investigations conducted nearby at the SCEC.

Historical water level data at the SCEC indicate that groundwater flow rate and direction proximate to the Pasquotank River can be influenced by wind tides. Tidal influence on the groundwater table has been observed to retard the migration of impacted groundwater at other sites at the SCEC. It is expected that fluctuating groundwater flow direction will have a similar influence on the impacted groundwater at SWMU 33.

2.2.3 Groundwater analytical results

A summary of groundwater analytical results is presented in Table 2-3 and Figure 2-4. Figures 2-5 through 2-7 present concentrations of chlordane, dieldrin, and heptachlor epoxide over time. Laboratory and Data Validation Reports are presented in Appendix B. The analytical results were compared with the 2L Standards.

Metals

Arsenic was detected in groundwater collected from 33MW-09 (4.4 J µg/L). Laboratory results indicate that arsenic in groundwater samples collected from monitoring wells 33MW-01, 33MW-02, 33MW-03, 33MW-05, 33MW-06, 33MW-07, and 33MW-08 was below the reporting limit of 10 µg/L and therefore also below the 2L Standard of 10 µg/L. These results are consistent with historical groundwater sampling results.

Chromium was detected in groundwater samples collected from 33MW-01 (1.3 µg/L), 33MW-02 (3.3 J µg/L), 33MW-03 (5.6 µg/L), 33MW-05 (2.3 J µg/L), 33MW-06 (5.2 µg/L), 33MW-07 (2.5 J µg/L), 33MW-08 (1.8 J µg/L), and 33MW-09 (2.2 J µg/L). All sample concentrations are below the 2L Standard of 50 µg/L for chromium. October 2008 results are consistent with historical groundwater sampling results.

Laboratory results indicate that mercury concentrations in groundwater samples collected from monitoring wells 33MW-01 through 33MW-09 are below the reporting limit of 0.2 µg/L and the 2L Standard of 1.05 µg/L. October 2008 results are consistent with historical groundwater sampling results.

Pesticides

Results indicate that all pesticide concentrations in the groundwater samples are below the reporting limit with the exception of those collected from monitoring wells 33MW-01, 33MW-05, 33MW-06, and 33MW-09. Pesticides detected during the October 2008 event include chlordane, dieldrin, and heptachlor epoxide.

The chlordane concentration reported is representative of technical chlordane, which was the form of commercially available chlordane (e.g. Chlordan, Velsicol 1068®, or Octachlor®). Technical chlordane is composed of a mixture of many (over 40) closely related compounds that include a-chlordane (also known as α-chlordane and cis-chlordane), g-chlordane (also known as γ-chlordane, β-chlordane, and trans-chlordane), and heptachlor (ASTDR, 1994). a-chlordane and g-chlordane are stereoisomers (i.e. compounds with the same chemical bonds, but different arrangement of atoms) and typically represent the majority (over half) of technical chlordane (referred to here out simply as chlordane) (ASTDR, 1994). The concentrations of a-chlordane and g-chlordane are also presented below. Heptachlor is also a degradation product of cis- and trans-chlordane via dehydrochlorination. Oxidation of heptachlor results in the formation of heptachlor epoxide, which was detected in the October 2008 sampling event.

Chlordane was detected above its 2L Standard of 0.1 µg/L in monitoring wells 33MW-01 (16 µg/L), 33MW-06 (28 µg/L) and 33MW-09 (7.6 µg/L). Concentrations of chlordane detected during the October 2008 sampling event are consistent with historical results.

a-Chlordane was detected in monitor wells 33MW-01 (1.6 µg/L), 33MW-06 (2.9 µg/L), and 33MW-09 (0.66 µg/L). There is no 2L Standard for a-chlordane. Concentrations of a-chlordane detected during the October 2008 sampling event are consistent with historical results.

g-Chlordane was detected in monitor wells 33MW-01 (2.4 µg/L), 33MW-06 (4.4 µg/L), and 33MW-09 (0.91 µg/L). There is no 2L Standard for g-chlordane. Concentrations of g-chlordane detected during the October 2008 sampling event are consistent with historical results.

Dieldrin was detected above its 2L Standard of 0.0022 µg/L in monitoring wells 33MW-01 (0.31 µg/L), 33MW-06 (0.46 µg/L), and 33MW-09 (0.24 µg/L). Concentrations of dieldrin detected during the October 2008 sampling event are consistent with historical results.

Heptachlor epoxide was detected above its 2L Standard of 0.0038 µg/L in monitoring wells 33MW-01 (0.93 µg/L), 33MW-05 (0.16 µg/L), 33MW-06 (1.6 µg/L), and 33MW-09 (0.56 µg/L). Concentrations of heptachlor epoxide detected during the October 2008 sampling event are consistent with historical results.

3.0 Phytoremediation system

The phytoremediation system at SWMU 33 (Figure 3-1) was designed to control groundwater flow and remediate groundwater containing pesticides above applicable standards.

During the October 2008 site visit, a visual survey was conducted to assess general health of the phytoremediation system installed within SWMU 33. The tree stand appeared to be in good health. No tree mortality was observed during the site visit (Table 3-1).

The tree stand is developing well and is expected to reach full maturity approximately three years after installation (i.e. 2010 for the majority of the stand and 2011 for trees planted in 2008). An appreciable decrease in constituent concentrations is not expected during the first several growing seasons as the tree stand will not achieve maximum evapo-transpiration rates prior to maturity.

Per the CMS, the flushing of clean groundwater through the impacted zone resulting from evapo-transpiration will actively remove contaminants of concern (COCs) and eventually reduce groundwater concentrations below remediation goals. The remediation timeframe was evaluated using the SourceDK software (Farhat et al., 2004). Chlordane was assumed to be the rate limiting chemical, as it is the least soluble of the detected COCs. It was also assumed that the phytoremediation system would remove approximately 10,000 cubic feet of groundwater per growing season. Using these assumptions, it was predicted that remedial standards would be achieved after approximately five to ten years of operation. Further, it is expected that phytoaccumulation will reduce concentrations of heavy metals within the rhizosphere after several growing seasons.

Analytical data collected thus far support this idea. Groundwater concentrations detected in October 2008 are consistent with historical concentrations in previous sampling events (Table 2-3 and Figures 2-4 through 2-7).

4.0 Conclusions and summary

In October 2008, ENSR collected soil and groundwater samples from SWMU 33 to further assess the performance of phytoremediation activities. The soil and groundwater sample results were generally consistent with historical results.

Soil samples were collected from three locations within SWMU 33. Arsenic was detected in soil samples at concentrations above the Region 9 Residential and Industrial PRGs (0.39 mg/kg and 1.6 mg/kg, respectively), as well as the SSL (5.24 mg/kg). In addition, chromium and mercury were detected in soil samples at concentrations above SSLs (27.2 mg/kg and 0.0154 mg/kg, respectively). Pesticides were also detected in soil samples however were below respective Region 9 Residential and Industrial PRGs and SSLs.

Groundwater samples were collected from eight shallow monitoring wells. Arsenic was below the 2L Standard of 10 µg/L in groundwater in all eight wells. Chromium was detected in groundwater samples at concentrations below the respective 2L Standard of 50 µg/L. Mercury was not detected in groundwater samples. Pesticides detected during the October 2008 event included a-chlordane, g-chlordane, chlordane, dieldrin, and heptachlor epoxide. Currently, there are no 2L Standards for either a-chlordane or g-chlordane however, 2L Standards for chlordane, dieldrin, and heptachlor epoxide are 0.1 µg/L, 0.0022 µg/L, and 0.0038 µg/L, respectively. These COCs were detected above 2L Standards in groundwater samples.

The primary objective of the phytoremediation system was to control groundwater contaminant plume migration and remove contaminants from the saturated zone (via sorption to the organic fraction of the plant root tissue followed by slow degradation). Since the stand is not expected to achieve maturity until three years after installation (2010), an appreciable decrease in constituent concentrations is not expected during the first several growing seasons. Analytical data collected thus far support this idea with concentrations detected in October 2008 being consistent with historical concentrations in previous sampling events. Based on estimates in the CMS, the phytoremediation system was predicted to achieve remedial goals approximately five to ten years after reaching maturity. As the tree stand approaches maturity over the next several years, the system is expected to reduce pesticide and metal concentrations in soil.

Future steps for SWMU 33 include site maintenance as well as soil and groundwater sampling to monitor the progress of the phytoremediation system. Pending approval from NCDENR, sampling events will be conducted semi-annually for approximately two years beginning in April 2009 and then annually in following years.

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Tables

Table 2-1
Well Construction and Groundwater Elevation Data
SWMU 33 USCG Support Center
Elizabeth City, North Carolina

Well	Installation Date	Well Diameter (inches)	Screened Interval (ft bls)	Total Depth (ft bls)	MP Elevation (ft msl)	Date	Depth to Water (ft bTOC)	Groundwater Elevation (ft msl)
33MW-01	09/20/05	1	5-15	15	5.92	03/29/07	5.59	0.33
						06/20/07	4.01	1.91
						09/11/07	4.49	1.43
						01/08/08	5.42	0.50
						04/30/08	4.53	1.39
						07/23/08	4.74	1.18
						10/07/08	5.1	0.82
33MW-02	09/20/05	1	5-15	15	5.86	03/29/07	5.26	0.60
						06/20/07	4.65	1.21
						09/11/07	4.51	1.35
						01/08/08	5.45	0.41
						04/30/08	4.38	1.48
						07/23/08	4.85	1.01
						10/07/08	5	0.86
33MW-03	09/20/05	1	5-15	15	7.14	03/29/07	6.57	0.57
						06/20/07	5.81	1.33
						09/11/07	5.88	1.26
						01/08/08	6.83	0.31
						04/30/08	5.91	1.23
						07/23/08	6.11	1.03
						10/07/08	6.53	0.61
33MW-04	09/20/05	1	5-15	15	7.46	03/29/07	6.51	0.95
						06/20/07	5.83	1.63
						09/11/07	6.08	1.38
						01/09/08	6.99	0.47
						04/30/08	5.75	1.71
						07/23/08	6.32	1.14
						10/07/08	6.60	0.86
33MW-05	03/28/07	1	6-8	8	6.10	03/29/07	5.68	0.42
						06/20/07	4.52	1.58
						09/11/07	4.68	1.42
						01/09/08	5.63	0.47
						04/30/08	4.55	1.55
						07/23/08	4.95	1.15
						10/08/08	5.05	1.05
33MW-06	03/28/07	1	12-14	14	6.24	03/29/07	5.91	0.33
						06/20/07	4.70	1.54
						09/11/07	4.75	1.49
						01/09/08	5.69	0.55
						04/30/08	4.72	1.52
						07/23/08	4.8	1.44
						10/07/08	5.31	0.93
33MW-07	03/28/07	1	19-21	21	6.33	03/29/07	6.00	0.33
						06/20/07	4.84	1.49
						09/11/07	6.33	0.00
						01/09/08	5.81	0.52
						04/30/08	4.9	1.43
						07/23/08	5.21	1.12
						10/08/08	5.61	0.72
33MW-08	03/28/07	1	26-28	28	6.40	03/29/07	5.60	0.80
						06/20/07	5.81	0.59
						09/11/07	6.20	0.20
						01/09/08	6.78	-0.38
						04/30/08	5.00	1.40
						07/23/08	6.66	-0.26
						10/08/08	6.72	-0.32
33MW-09	03/28/07	1	5-15	15	5.73	03/29/07	5.69	0.04
						06/20/07	4.26	1.47
						09/11/07	4.19	1.54
						01/08/08	5.13	0.60
						04/30/08	4.51	1.22
						07/23/08	4.6	1.13
						10/07/08	5.16	0.57

Notes:
ft bls - feet below land surface
ft bTOC - feet below top of casing
ft msl - feet above mean sea level
MP - measuring point elevation

Table 2-2
Soil Analytical Results
SWMU 33 USCG Support Center
Elizabeth City, North Carolina

			Sample ID	33SB-13				33SB-14				33SB-15			
			Sample Depth	0 to 2 ft bls				0 to 2 ft bls				0 to 2 ft bls			
			Sample Type	Grab				Grab				Grab			
Constituent			Sample Date	03/29/07	09/11/07	04/30/08	10/07/08	03/29/07	09/11/07	04/30/08	10/07/08	03/29/07	09/11/07	04/30/08	10/07/08
	SSL	Region 9 Res. PRG	Region 9 Indus. PRG												
Inorganics by EPA 6010* (µg/kg)															
Arsenic	5,240	390	1,600	**18,000**	**5,100**	**2,400**	**10,000**	**2,300**	**9,400**	**12,000**	**12,000**	**13,000**	**22,000**	**7,200**	**49,000**
Chromium	27,200	210,000	450,000	**21,000**	**19,000**	**9,200**	**19,000**	**30,000**	**26,000**	**23,000**	**47,000**	**21,000**	**23,000**	**24,000**	**23,000**
Mercury	15.4	23,000	310,000	**58**	**29**	**37**	**71**	**51**	**61**	**62**	**98**	**45**	**44**	**64**	**77**
Pesticides by EPA 8081 (µg/kg)															
4,4'-DDD	129	2,400	10,000	<2.3	<2.3	<2.5	<2.3	<2.7	<2.3	<2.4	<2.6	<2.8	<2.3	<2.6	<2.4
4,4'-DDE	NS	1,700	7,000	<2.3	<2.3	<2.5	**11**	<2.7	<2.3	<2.4	<2.6	<2.8	<2.3	<2.6	<2.4
4,4'-DDT	1,360	1,700	7,000	<2.3	<2.3	<2.5	**67**	<2.7	<2.3	<2.4	<2.6	<2.8	<2.3	<2.6	<2.4
4,4'-Methoxychlor	56,100	310,000	3,100,000	<4.6	<4.6	<5.1	<4.6	<5.4	<4.6	<4.8	<5.1	<5.7	<4.6	<5.2	<4.8
a-BHC	NS	90	360	<2.3	<2.3	<2.5	<2.3	<2.7	<2.3	<2.4	<2.6	<2.8	<2.3	<2.6	<2.4
a-Chlordane	NS	NS	NS	<2.3	<2.3	<2.5	<2.3	<2.7	<2.3	<2.4	<2.6	<2.8	<2.3	<2.6	<2.4
Aldrin	NS	29	100	<2.3	<2.3	<2.5	<2.3	<2.7	<2.3	<2.4	<2.6	<2.8	<2.3	<2.6	<2.4
b-BHC	NS	320	1,300	<2.3	<2.3	<2.5	<2.3	<2.7	<2.3	<2.4	<2.6	<2.8	<2.3	<2.6	<2.4
Chlordane	103	1,600	6,500	<58	<58	<63	<58	<67	<58	<60	<64	<71	<57	<64	<60
d-BHC	NS	NS	NS	<2.3	<2.3	<2.5	<2.3	<2.7	<2.3	<2.4	<2.6	<2.8	<2.3	<2.6	<2.4
Dieldrin	1.13	30	110	<1.2	<1.2	<1.3	<1.2	<1.3	<1.2	<1.2	<1.3	<1.4	<1.1	<1.3	<1.2
Endosulfan I	NS	370,000	3,700,000	<2.3	<2.3	<2.5	<2.3	<2.7	<2.3	<2.4	<2.6	<2.8	<2.3	<2.6	<2.4
Endosulfan II	NS	NS	NS	<2.3	<2.3	<2.5	<2.3	<2.7	<2.3	<2.4	<2.6	<2.8	<2.3	<2.6	<2.4
Endosulfan Sulfate	NS	NS	NS	<2.3	<2.3	<2.5	<2.3	<2.7	<2.3	<2.4	<2.6	<2.8	<2.3	<2.6	<2.4
Endrin	440	18,000	180,000	<2.3	<2.3	<2.5	<2.3	<2.7	<2.3	<2.4	<2.6	<2.8	<2.3	<2.6	<2.4
Endrin Aldehyde	NS	NS	NS	<2.3	<2.3	<2.5	<2.3	<2.7	<2.3	<2.4	<2.6	<2.8	<2.3	<2.6	<2.4
Endrin Ketone	NS	NS	NS	<2.3	<2.3	<2.5	<2.3	<2.7	<2.3	<2.4	<2.6	<2.8	<2.3	<2.6	<2.4
g-BHC	6.2	440	1,700	<2.3	<2.3	<2.5	<2.3	<2.7	<2.3	<2.4	<2.6	<2.8	<2.3	<2.6	<2.4
g-Chlordane	NS	NS	NS	<2.3	<2.3	<2.5	<2.3	<2.7	<2.3	<2.4	<2.6	<2.8	<2.3	<2.6	<2.4
Heptachlor	2.3	110	380	<2.3	<2.3	<2.5	<2.3	<2.7	<2.3	<2.4	<2.6	<2.8	<2.3	<2.6	<2.4
Heptachlor Epoxide	6.34	53	190	<2.3	<2.3	<2.5	<2.3	<2.7	<2.3	<2.4	<2.6	<2.8	<2.3	<2.6	<2.4
Toxaphene	59.5	440	1,600	<58	<58	<63	<58	<67	<58	<60	<64	<71	<57	<64	<60

Notes:
* Mercury analyzed using EPA 7470A
SSL - North Carolina Hazardous Waste Section Soil Screening Level (NCDENR, December 2003)
PRG - Preliminary Remediation Goal
NS - no standard
Bolded data indicate a detection
Blue - Sample exceeds SSL
Orange - Sample exceeds Region 9 Residential PRG
Yellow - Sample exceeds Region 9 Industrial PRG
Green - Sample exceeds both SSL and the Region 9 Industrial PRG

Table 2-3
Groundwater Analytical Results
SWMU 33 USCG Support Center
Elizabeth City, North Carolina

Parameters	Well ID / Screen Interval / Sample Date	33MW-01 5-15 09/21/05	03/29/07	06/20/07	09/11/07	01/08/08	04/30/08	07/23/08	10/07/08
Field Parameters	**2L Standard**								
Temperature (°C)	NS	21.4	16.7	20.1	22.3	19.6	17.0	21.6	21.3
pH (standard units)	NS	6.0	6.3	6.0	5.7	5.8	6.1	5.9	6.0
Specific Conductivity (µS/cm)	NS	325	446	414	364	641	808	439	732
Dissolved Oxygen (mg/L)	NS	1.2	1.4	*	1.8	0.5	0.7	0.7	0.4
Oxidation-Reduction Potential (mV)	NS	26.2	10.6	207	128.6	99.8	11.2	135.7	-30
Turbidity (NTUs)	NS	12	45	8.5	1.0	6.2	6.5	3.7	2.3
Inorganics by EPA 6010$^{\Phi}$ (µg/L)									
Arsenic	10	--	<10	<10	<10	<10	**4.5 J**	**3.7 J**	<10
Chromium	50	--	**2.5 J**	**2.1 J**	**1.8 J**	**3 J**	**0.2 J**	**5**	**1.3 J**
Mercury	1.05	--	<0.2	<0.2	**0.05 J**	<0.2	<0.2	<0.2	<0.2
Pesticides by EPA 8081 (µg/L)									
Chlordane	0.1	**10**	**18**	**10**	**11**	**16**	**3.2**	**20**	**16**
a-Chlordane	NS	**1.3**	**1.8**	**1.1**	**1.6**	**1.4**	**0.28**	**2.5**	**1.6**
g-Chlordane	NS	**2.0**	**2.0**	**1.8**	**2.4**	**2.3**	**0.29**	**4.0**	**2.4**
Dieldrin	0.0022	<0.050	<0.050	<0.050	**0.24**	**0.23**	<0.053	<0.050	**0.31**
Heptachlor Epoxide	0.0038	<0.050	**1.1**	**0.94**	**0.78**	**0.94**	**0.53**	**1.2**	**0.93**

Parameters	Well ID / Screen Interval / Sample Date	33MW-02 5-15 09/21/05	03/29/07	06/20/07	09/11/07	01/08/08	04/30/08	07/23/08	10/07/08
Field Parameters	**2L Standard**								
Temperature (°C)	NS	23.4	14.7	20.1	24.5	18.5	16.8	22.8	22.9
pH (standard units)	NS	6.7	6.9	6.8	3.0	6.5	6.7	6.7	6.8
Specific Conductivity (µS/cm)	NS	627	747	791	928	466	756	710	1100
Dissolved Oxygen (mg/L)	NS	0.5	0.8	*	0.2	0.5	0.3	0.7	0.2
Oxidation-Reduction Potential (mV)	NS	-27.1	-9.9	17.2	138.3	-50.9	-8.6	-29.1	-84.9
Turbidity (NTUs)	NS	31	18	9	9.9	7.6	3.2	6.7	0.9
Inorganics by EPA 6010$^{\Phi}$ (µg/L)									
Arsenic	10	--	<10	<10	<10	**3.7 J**	**3.2 J**	**3.5 J**	<10
Chromium	50	--	**2.0 J**	**1.1 J**	**3.1 J**	**7.3**	**0.2 J**	**1.7 J**	**3.3 J**
Mercury	1.05	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Pesticides by EPA 8081 (µg/L)									
Chlordane	0.1	<0.050	<0.50	<0.50	<0.50	<0.50	<0.51	<0.53	<0.50
a-Chlordane	NS	<0.050	<0.050	<0.050	<0.050	<0.050	<0.051	<0.053	<0.050
g-Chlordane	NS	<0.050	<0.050	<0.050	<0.050	<0.050	<0.051	<0.053	<0.050
Dieldrin	0.0022	<0.050	<0.050	<0.050	<0.050	<0.050	<0.051	<0.053	<0.050
Heptachlor Epoxide	0.0038	<0.050	<0.050	<0.050	<0.050	<0.050	<0.051	<0.053	<0.050

* - Equipment malfunction; dissolved oxygen sensor would not calibrate
$^{\Phi}$ - Mercury analyzed using EPA 7470A
▲ - Well went dry during purging and parameters were not measured
2L Standard - 15A NCAC 2L Groundwater Standard
Bolded data indicate a detection
Blue - Sample exceeds 2L Standard
J - Result estimated due to concentration between reporting limit and method detection limit
NM - not measured
NS - no standard
Only detected compounds are shown
-- parameter was not analyzed for or well was not sampled

Table 2-3
Groundwater Analytical Results
SWMU 33 USCG Support Center
Elizabeth City, North Carolina

Parameters	Well ID / Screen Interval / Sample Date	33MW-03 5-15 09/21/05	03/28/07	06/20/07	09/11/07	01/08/08	04/30/08	07/23/08	10/07/08
Field Parameters	**2L Standard**								
Temperature (°C)	NS	22.2	17.0	20.4	25.2	19.8	16.2	22.2	21.3
pH (standard units)	NS	5.9	3.7	5.8	5.7	5.6	5.9	6.0	6.1
Specific Conductivity (µS/cm)	NS	228	229	262	283	291	712	547	386
Dissolved Oxygen (mg/L)	NS	1.1	1.0	*	2.4	1.8	1.1	0.7	1.3
Oxidation-Reduction Potential (mV)	NS	12.8	123.8	189.1	71.2	121.5	158.8	109.1	102.4
Turbidity (NTUs)	NS	21	49	7	2.2	9.0	3.1	5.4	6.8
Inorganics by EPA 6010$^{\Phi}$ (µg/L)									
Arsenic	10	--	<10	<10	<10	<10	**3.4 J**	<10	<10
Chromium	50	--	**12**	**2.3 J**	**2 J**	**4.3 J**	**0.4 J**	**1.2 J**	**5.6**
Mercury	1.05	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Pesticides by EPA 8081 (µg/L)									
Chlordane	0.1	<0.050	<0.50	<0.50	<0.50	<0.50	<0.56	<0.50	<0.50
a-Chlordane	NS	<0.050	<0.050	<0.050	<0.050	<0.050	<0.056	<0.050	<0.050
g-Chlordane	NS	<0.050	<0.050	<0.050	<0.050	<0.050	<0.056	<0.050	<0.050
Dieldrin	0.0022	<0.050	<0.050	<0.050	<0.050	<0.050	<0.056	<0.050	<0.050
Heptachlor Epoxide	0.0038	<0.050	<0.050	<0.050	<0.050	<0.050	<0.056	<0.050	<0.050

Parameters	Well ID / Screen Interval / Sample Date	33MW-05 6-8 09/21/05	03/30/07	06/20/07	09/11/07	01/09/08	04/30/08	07/23/08	10/08/08
Field Parameters	**2L Standard**								
Temperature (°C)	NS	--	15.1	20.6	25.8	NM▲	18.4	25.6	22.2
pH (standard units)	NS	--	6.3	6.3	6.3	NM▲	6.2	6.5	6.3
Specific Conductivity (µS/cm)	NS	--	504	669	617	NM▲	570.0	529.0	581.0
Dissolved Oxygen (mg/L)	NS	--	6.0	*	6.3	NM▲	1.7	1.5	1.3
Oxidation-Reduction Potential (mV)	NS	--	129.2	132.7	-74.5	NM▲	48.6	-9.8	-3.5
Turbidity (NTUs)	NS	--	NM	12	9.2	NM▲	8.1	6.2	8.8
Inorganics by EPA 6010$^{\Phi}$ (µg/L)									
Arsenic	10	--	**7.5 J**	<10	<10	<10	**4.7 J**	**2.2 J**	<10
Chromium	50	--	**30**	**2.5 J**	**0.9 J**	**1.3 J**	**0.6 J**	<5	**2.3 J**
Mercury	1.05	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Pesticides by EPA 8081 (µg/L)									
Chlordane	0.1	--	<0.50	<0.50	<0.50	<0.65	<0.67	<0.53	<0.50
a-Chlordane	NS	--	<0.050	<0.050	<0.050	<0.065	<0.067	<0.053	<0.050
g-Chlordane	NS	--	<0.050	<0.050	<0.050	<0.065	<0.067	<0.053	<0.050
Dieldrin	0.0022	--	<0.050	<0.050	<0.050	<0.065	<0.067	<0.053	<0.050
Heptachlor Epoxide	0.0038	--	<0.050	**0.32**	**0.35**	**0.33**	**0.23**	**0.27**	**0.16**

* - Equipment malfunction; dissolved oxygen sensor would not calibrate
$^{\Phi}$ - Mercury analyzed using EPA 7470A
▲ - Well went dry during purging and parameters were not measured
2L Standard - 15A NCAC 2L Groundwater Standard
Bolded data indicate a detection
Blue - Sample exceeds 2L Standard
J - Result estimated due to concentration between reporting limit and method detection limit
NM - not measured
NS - no standard
Only detected compounds are shown
-- parameter was not analyzed for or well was not sampled

Table 2-3
Groundwater Analytical Results
SWMU 33 USCG Support Center
Elizabeth City, North Carolina

Parameters	Well ID / Screen Interval / Sample Date	33MW-06 12-14 09/21/05	03/29/07	06/20/07	09/11/07	01/09/08	04/30/08	07/23/08	10/07/08
Field Parameters	**2L Standard**								
Temperature (°C)	NS	--	15.6	19.8	22.8	19.5	17.6	20.9	21.4
pH (standard units)	NS	--	6.1	5.9	5.7	5.9	5.8	5.8	5.9
Specific Conductivity (µS/cm)	NS	--	254	282	298	400	282	294	290
Dissolved Oxygen (mg/L)	NS	--	1.9	*	2.6	2.4	1.1	1.2	1.0
Oxidation-Reduction Potential (mV)	NS	--	-30.3	146.5	83.6	111.8	105.6	82.4	60.2
Turbidity (NTUs)	NS	--	84.1	5.9	1.8	5.2	6.0	3.0	3.0
Inorganics by EPA 6010$^{\Phi}$ (µg/L)									
Arsenic	10	--	<10	**2.7 J**	<10	<10	**2.2 J**	<10	<10
Chromium	50	--	**8.9**	**12**	**1.2 J**	**4.8 J**	**3.6 J**	**6.8**	**5.2**
Mercury	1.05	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Pesticides by EPA 8081 (µg/L)									
Chlordane	0.1	--	**21**	**13**	**15**	**29**	**23**	**18**	**28**
a-Chlordane	NS	--	**2.1**	**2**	**2.2**	**3.1**	**3.1**	**2.2**	**2.9**
g-Chlordane	NS	--	**2.4**	**2.1**	**2.7**	**4.8**	**4.8**	**3.5**	**4.4**
Dieldrin	0.0022	--	<0.050	<0.050	<0.050	**0.49**	<0.056	**0.48**	**0.46**
Heptachlor Epoxide	0.0038	--	**1.1**	**1.2**	**1**	**1.5**	**1.9**	**1.7**	**1.6**

Parameters	Well ID / Screen Interval / Sample Date	33MW-07 19-21 09/21/05	03/29/07	06/20/07	09/11/07	01/09/08	04/30/08	07/23/08	10/08/08
Field Parameters	**2L Standard**								
Temperature (°C)	NS	--	17.3	19.2	22.4	19.9	18.2	20.6	20.5
pH (standard units)	NS	--	6.2	6.0	5.9	5.9	5.9	6.0	6.0
Specific Conductivity (µS/cm)	NS	--	191	198	220	210	214	208	242
Dissolved Oxygen (mg/L)	NS	--	0.9	*	0.7	0.5	0.7	0.5	0.4
Oxidation-Reduction Potential (mV)	NS	--	8.0	200.1	72.7	72.7	190.7	122.5	82.6
Turbidity (NTUs)	NS	--	118	7	3.1	4.9	1.5	3.6	2.44
Inorganics by EPA 6010$^{\Phi}$ (µg/L)									
Arsenic	10	--	<10	<10	<10	<10	<10	<10	<10
Chromium	50	--	**14**	**3.2 J**	**2.3 J**	**6.3**	**2.8 J**	**2.9 J**	**2.5 J**
Mercury	1.05	--	**0.13 J**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Pesticides by EPA 8081 (µg/L)									
Chlordane	0.1	--	<0.50	**5.6**	<0.50	<0.50	<0.56	<0.51	<0.50
a-Chlordane	NS	--	<0.050	**0.63**	<0.050	<0.050	<0.056	<0.051	<0.050
g-Chlordane	NS	--	<0.050	**0.94**	<0.050	<0.050	<0.056	<0.051	<0.050
Dieldrin	0.0022	--	<0.050	<0.050	<0.050	<0.050	<0.056	<0.051	<0.050
Heptachlor Epoxide	0.0038	--	<0.050	**0.38**	<0.050	<0.050	<0.056	<0.051	<0.050

* - Equipment malfunction; dissolved oxygen sensor would not calibrate
$^{\Phi}$ - Mercury analyzed using EPA 7470A
▲ - Well went dry during purging and parameters were not measured
2L Standard - 15A NCAC 2L Groundwater Standard
Bolded data indicate a detection
Blue - Sample exceeds 2L Standard
J - Result estimated due to concentration between reporting limit and method detection limit
NM - not measured
NS - no standard
Only detected compounds are shown
-- parameter was not analyzed for or well was not sampled

Table 2-3
Groundwater Analytical Results
SWMU 33 USCG Support Center
Elizabeth City, North Carolina

Parameters	Well ID / Screen Interval / Sample Date	2L Standard	33MW-08 26-28 09/21/05	03/29/07	06/20/07	09/11/07	01/09/08	04/30/08	07/23/08	10/08/08
Field Parameters										
Temperature (°C)		NS	--	17.5	19.6	21.5	19.5	18.5	21.2	20.2
pH (standard units)		NS	--	6.3	6.2	5.9	5.6	6.0	6.2	6.1
Specific Conductivity (µS/cm)		NS	--	124	146	161	181	199	156	185
Dissolved Oxygen (mg/L)		NS	--	0.2	*	0.4	0.2	0.3	0.2	0.3
Oxidation-Reduction Potential (mV)		NS	--	-41.1	-68.7	-18.4	-44.4	39.6	49.1	-18.8
Turbidity (NTUs)		NS	--	393	8	3.1	6.3	6.9	8.9	7.25
Inorganics by EPA 6010$^{\Phi}$ (µg/L)										
Arsenic		10	--	**8.4 J**	**4.7 J**	**2.9 J**	**9.2 J**	<10	<10	<10
Chromium		50	--	**18**	**17**	**16**	**33**	**0.3 J**	**0.9 J**	**1.8 J**
Mercury		1.05	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Pesticides by EPA 8081 (µg/L)										
Chlordane		0.1	--	<0.50	<0.50	<0.50	<0.50	<0.53	<0.50	<0.50
a-Chlordane		NS	--	<0.050	<0.050	<0.050	<0.050	<0.053	<0.050	<0.050
g-Chlordane		NS	--	<0.050	<0.050	<0.050	<0.050	**0.069**	<0.050	<0.050
Dieldrin		0.0022	--	<0.050	<0.050	<0.050	<0.050	<0.053	<0.050	<0.050
Heptachlor Epoxide		0.0038	--	<0.050	<0.050	<0.050	<0.050	<0.053	<0.050	<0.050

Parameters	Well ID / Screen Interval / Sample Date	2L Standard	33MW-09 5-15 09/21/05	03/29/07	06/20/07	09/11/07	01/08/08	04/30/08	07/23/08	10/07/08
Field Parameters										
Temperature (°C)		NS	--	15.5	21.1	24.2	17.64	16.69	23.39	22.29
pH (standard units)		NS	--	6.3	6.3	6.9	6.32	6	6.41	6.75
Specific Conductivity (µS/cm)		NS	--	314	919	323	1853	399	NM*	5882
Dissolved Oxygen (mg/L)		NS	--	0.3	*	1.4	0.4	0.56	0.85	0.22
Oxidation-Reduction Potential (mV)		NS	--	-37.5	145.4	-15.3	-8.1	20.3	-71.8	-151.7
Turbidity (NTUs)		NS	--	45.8	3	3.3	5.1	3.7	5.47	0.03
Inorganics by EPA 6010$^{\Phi}$ (µg/L)										
Arsenic		10	--	**20**	<10	<10	<10	<10	**18**	**4.4 J**
Chromium		50	--	**59**	**2.1 J**	**1 J**	**1.7 J**	**0.8 J**	<5	**2.2 J**
Mercury		1.05	--	**0.08 J**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Pesticides by EPA 8081 (µg/L)										
Chlordane		0.1	--	<0.50	<0.50	**2.8**	**10**	**9.7**	**9.1**	**7.6**
a-Chlordane		NS	--	<0.050	<0.050	**0.34**	**1.4**	**1.2**	**1.1**	**0.66**
g-Chlordane		NS	--	<0.050	<0.050	**0.44**	**2.2**	**1.9**	**1.7**	**0.91**
Dieldrin		0.0022	--	<0.050	<0.050	**0.088**	**0.26**	<0.053	**0.24**	**0.24**
Heptachlor Epoxide		0.0038	--	<0.050	<0.050	**0.34**	**0.92**	**0.9**	**0.98**	**0.56**

* - Equipment malfunction; dissolved oxygen sensor would not calibrate
$^{\Phi}$ - Mercury analyzed using EPA 7470A
▲ - Well went dry during purging and parameters were not measured
2L Standard - 15A NCAC 2L Groundwater Standard
Bolded data indicate a detection
Blue - Sample exceeds 2L Standard
J - Result estimated due to concentration between reporting limit and method detection limit
NM - not measured
NS - no standard
Only detected compounds are shown
-- parameter was not analyzed for or well was not sampled

Table 3-1
Summary of Tree Installation and Mortality
SWMU 33 USCG Support Center
Elizabeth City, North Carolina

Calender Year	Growing Season	Existing Trees	New Trees Installed	Mortality		Surviving Trees
				Number	Percentage	
2007	1	0	22	3	13.6%	19
2008	2	19	4	0	0.0%	23

Figures

S:\PUBS\GIS\U\USCG\Elizabeth_City\GIS\SWMU_33\Quarter2_2008\MXD\Fig_1_1_Site_Location.mxd

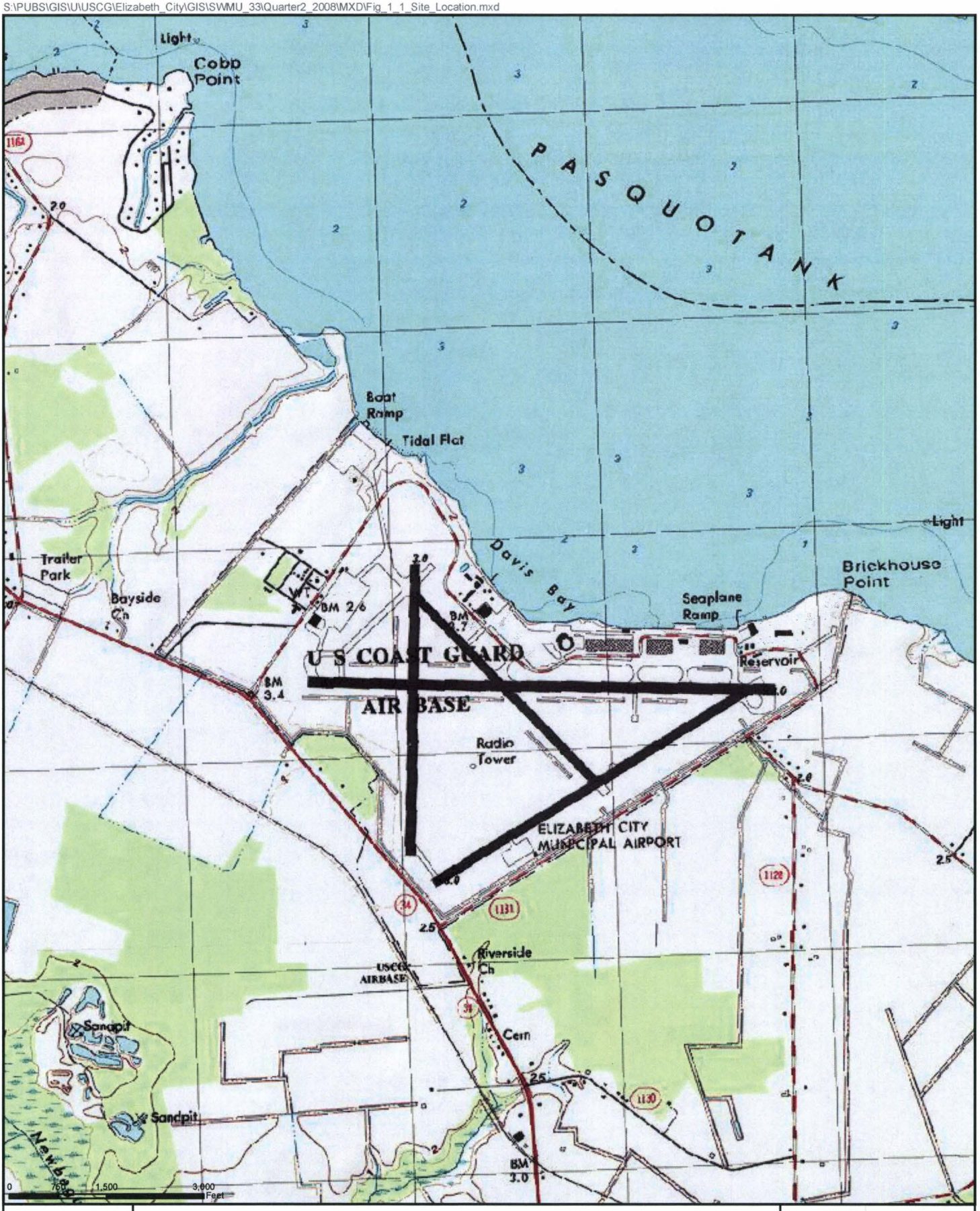

FIGURE NUMBER:

1-1

Site Location Map

USCG SUPPORT CENTER
ELIZABETH CITY, NORTH CAROLINA

Image Source: USGS
Quadrangle: Elizabeth City, NC

SCALE: 1:24000

DATE: December 2008

Project Number: 09020-066

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Suite 103
Raleigh, NC 27616

S:\PUBS\GIS\U\USCG\Elizabeth_City\GIS\SWMU_33\Quarter2_2008\MXD\Fig_1_2_Facility_Layout.mxd

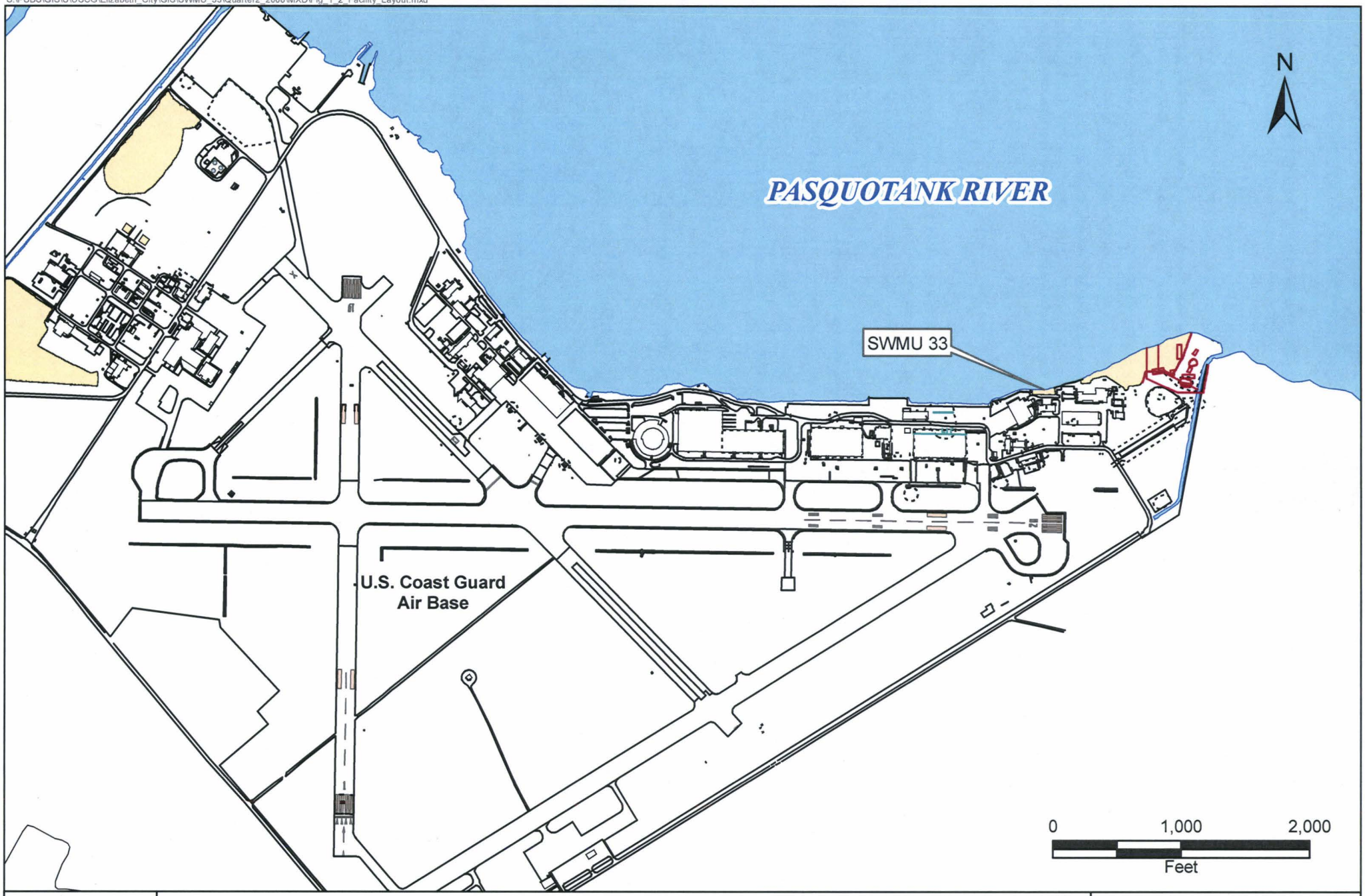

FIGURE NUMBER	Facility Layout	ENSR AECOM
1-2	USCG Support Center Elizabeth City, North Carolina	ENSR Consulting and Engineering, (NC) Inc. 7041 Old Wake Forest Road Suite 103 Raleigh, NC 27616
	DATE: December 2008 SCALE: 1" = 1000' PROJECT NUMBER: 09020-066	

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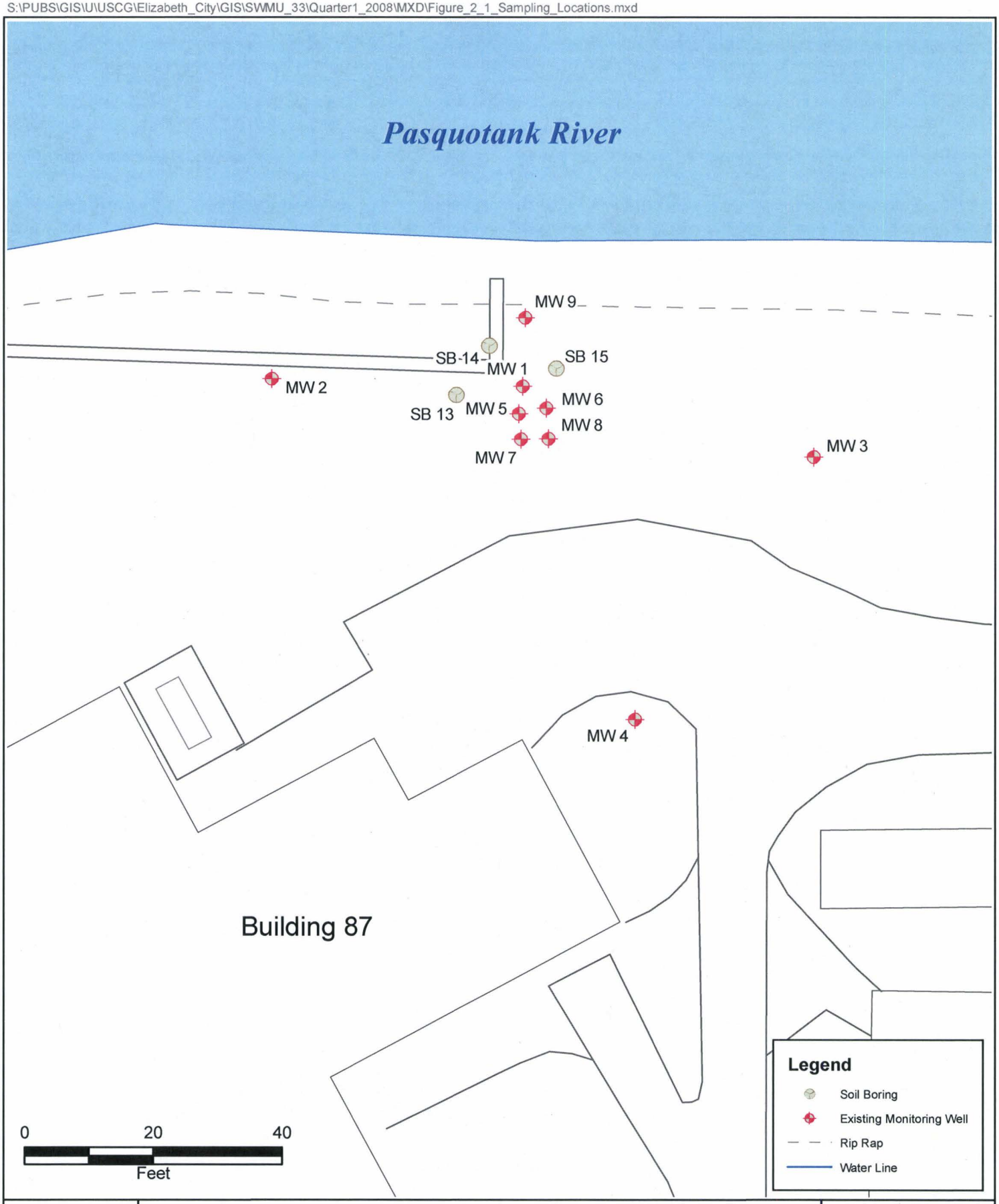

FIGURE NUMBER:	Sample Location Map SWMU 33 FORMER WASTE STORAGE AREA USCG SUPPORT CENTER ELIZABETH CITY, NORTH CAROLINA			ENSR AECOM ENSR Consulting and Engineering (NC), Inc. 7041 Old Wake Forest Road Suite 103 Raleigh, NC 27616
2-1	SCALE: 1" = 20'	DATE: December 2008	DRAWN BY: NCR	

S:\PUBS\GIS\U\USCG\Elizabeth_City\GIS\SWMU_33_Phyto_Workplan\MXD\Figure_2_7_Annual_Soil_Analytical_Results.mxd

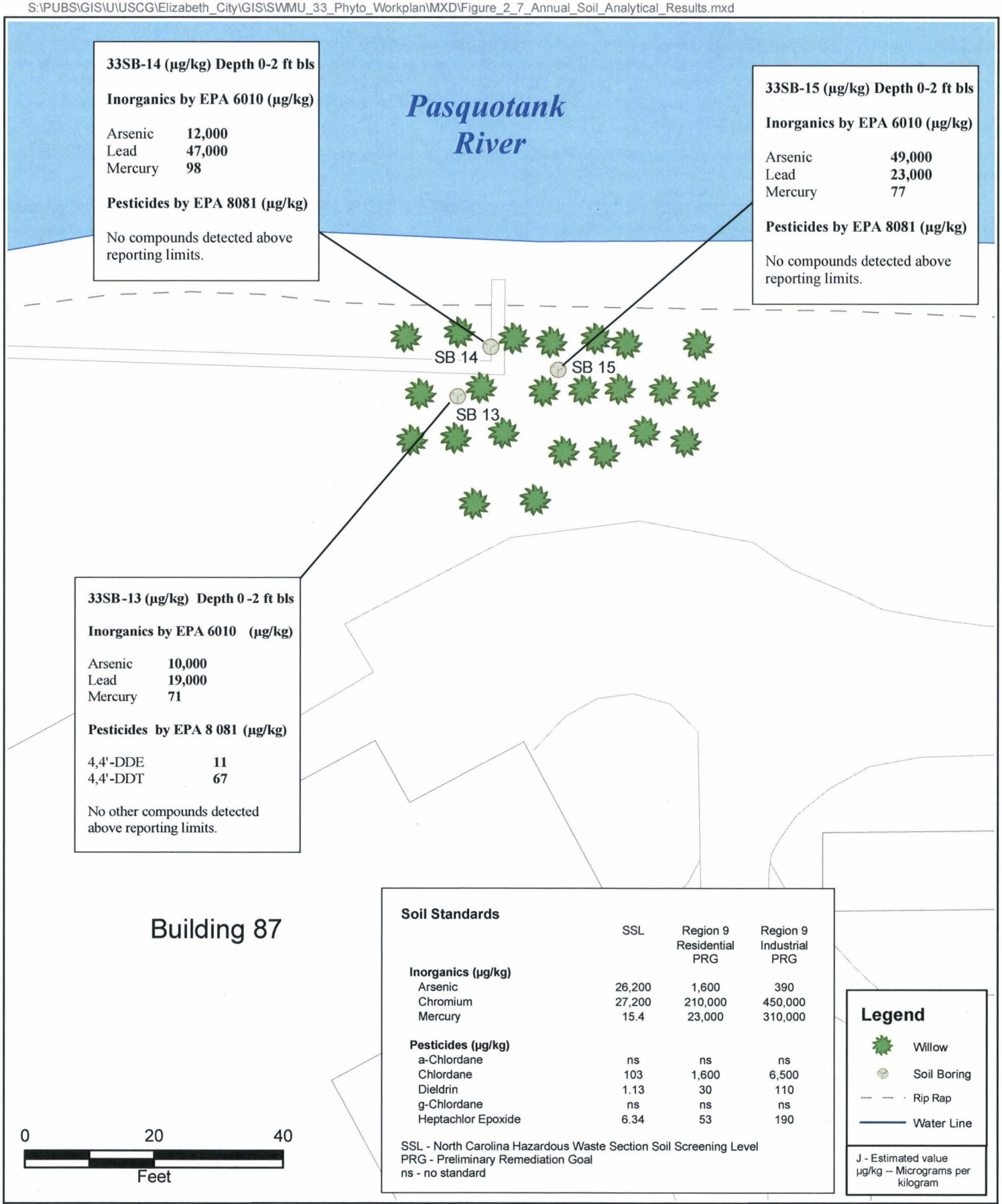

FIGURE NUMBER: **2-2**

Soil Analytical Results - October 2008
SWMU 33 FORMER WASTE STORAGE AREA
USCG SUPPORT CENTER
ELIZABETH CITY, NORTH CAROLINA

SCALE: 1" = 20' | DATE: December 2008 | DRAWN BY: NCR

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Raleigh, NC 27616

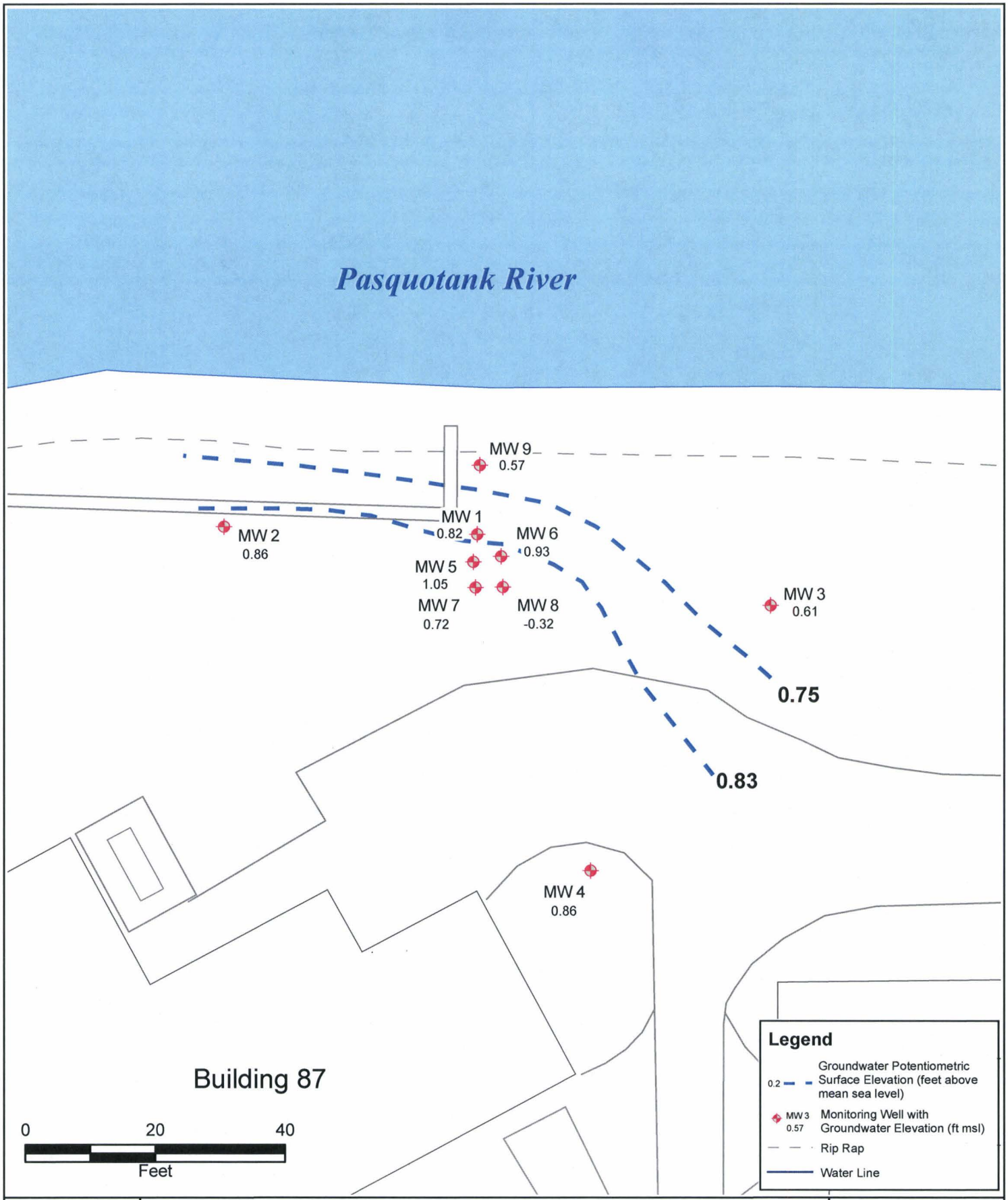

FIGURE NUMBER:

2-3

Groundwater Potentiometric Surface Map - October 2008
SWMU 33 FORMER WASTE STORAGE AREA

USCG SUPPORT CENTER
ELIZABETH CITY, NORTH CAROLINA

N W E S

SCALE: 1" = 20' | DATE: December 2008 | DRAWN BY: NCR

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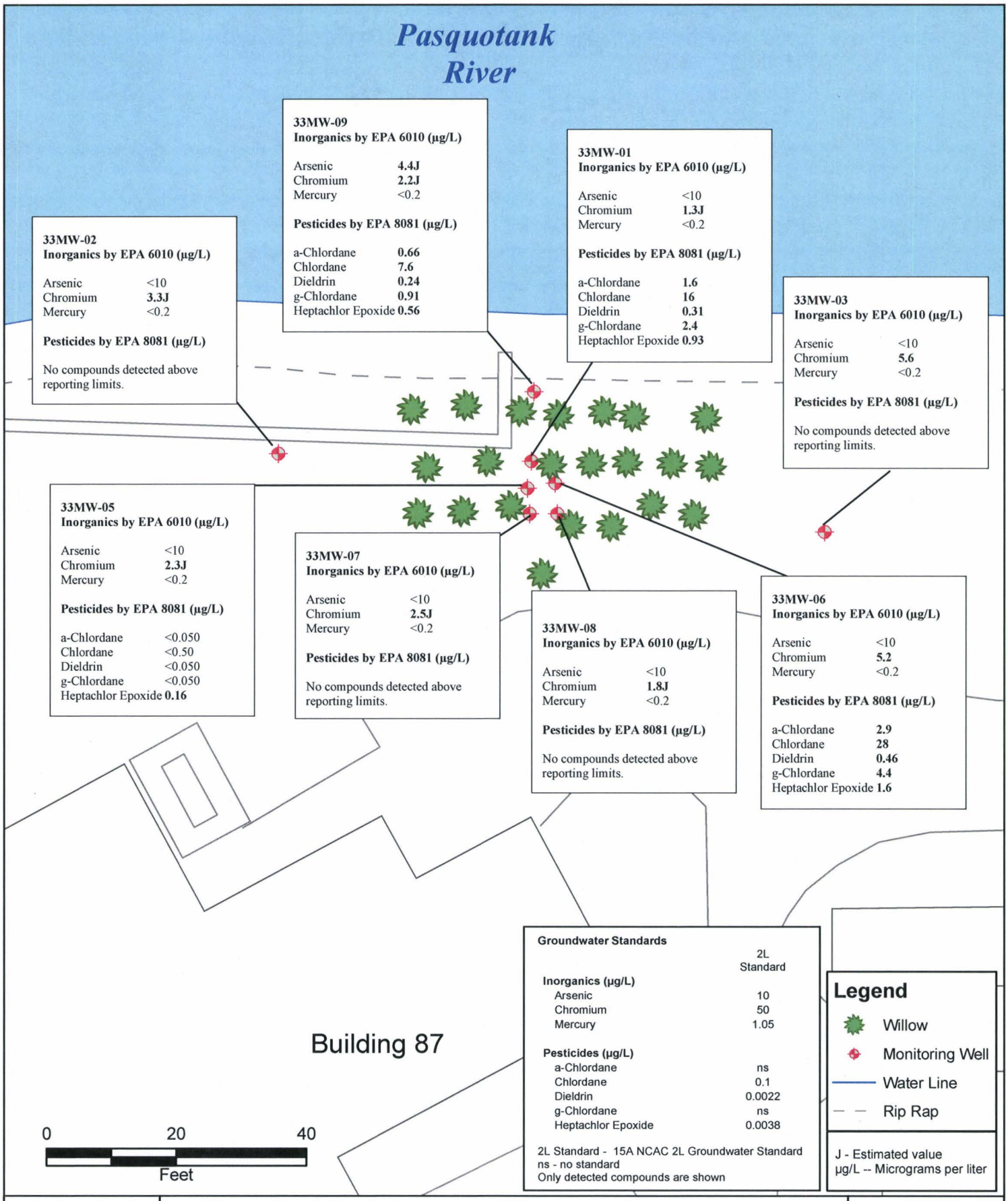

FIGURE NUMBER:

2-4

Groundwater Analytical Results - October 2008
SWMU 33 FORMER WASTE STORAGE AREA

USCG SUPPORT CENTER
ELIZABETH CITY, NORTH CAROLINA

SCALE: 1" = 20' | DATE: December 2008 | DRAWN BY: NCR

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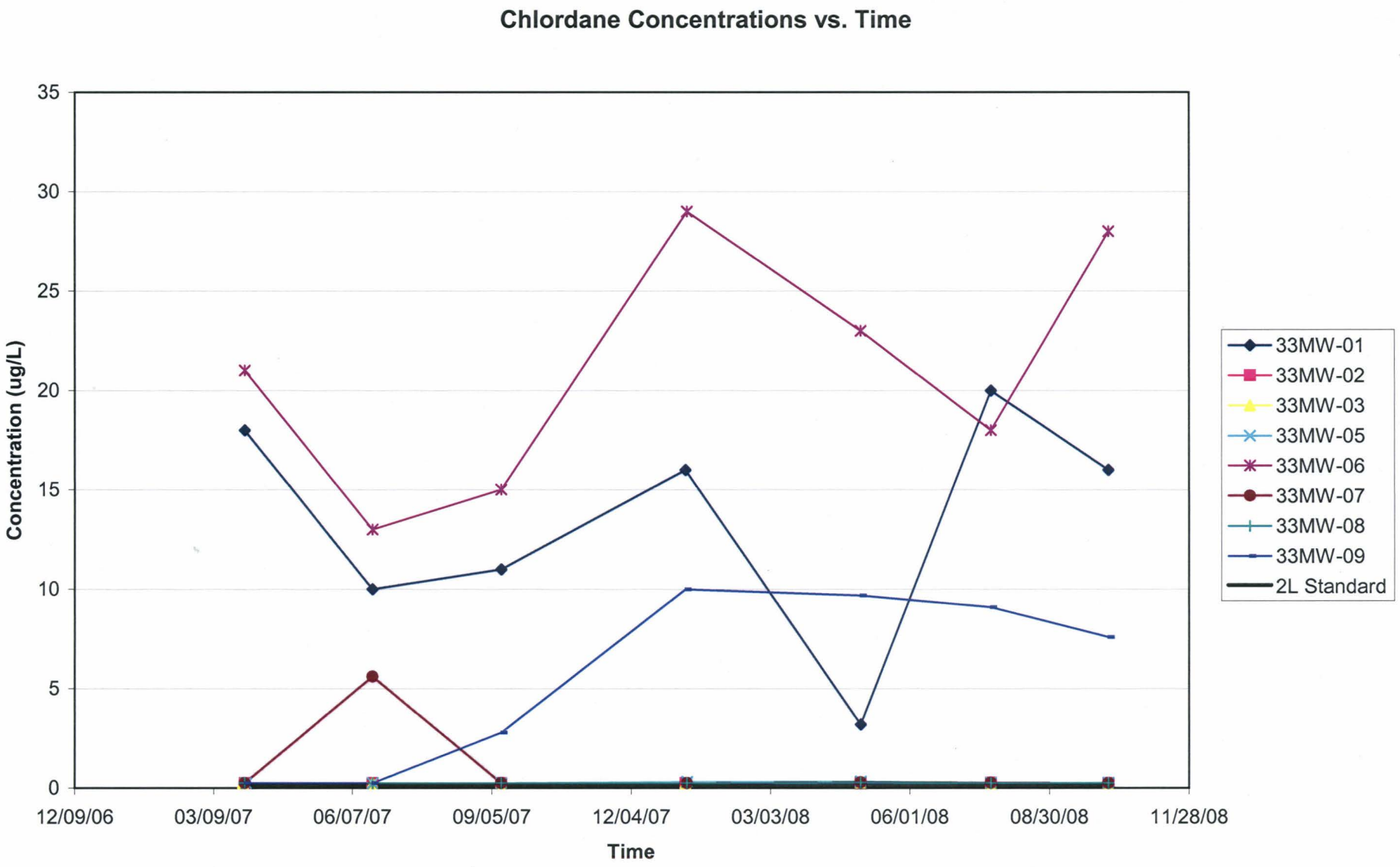


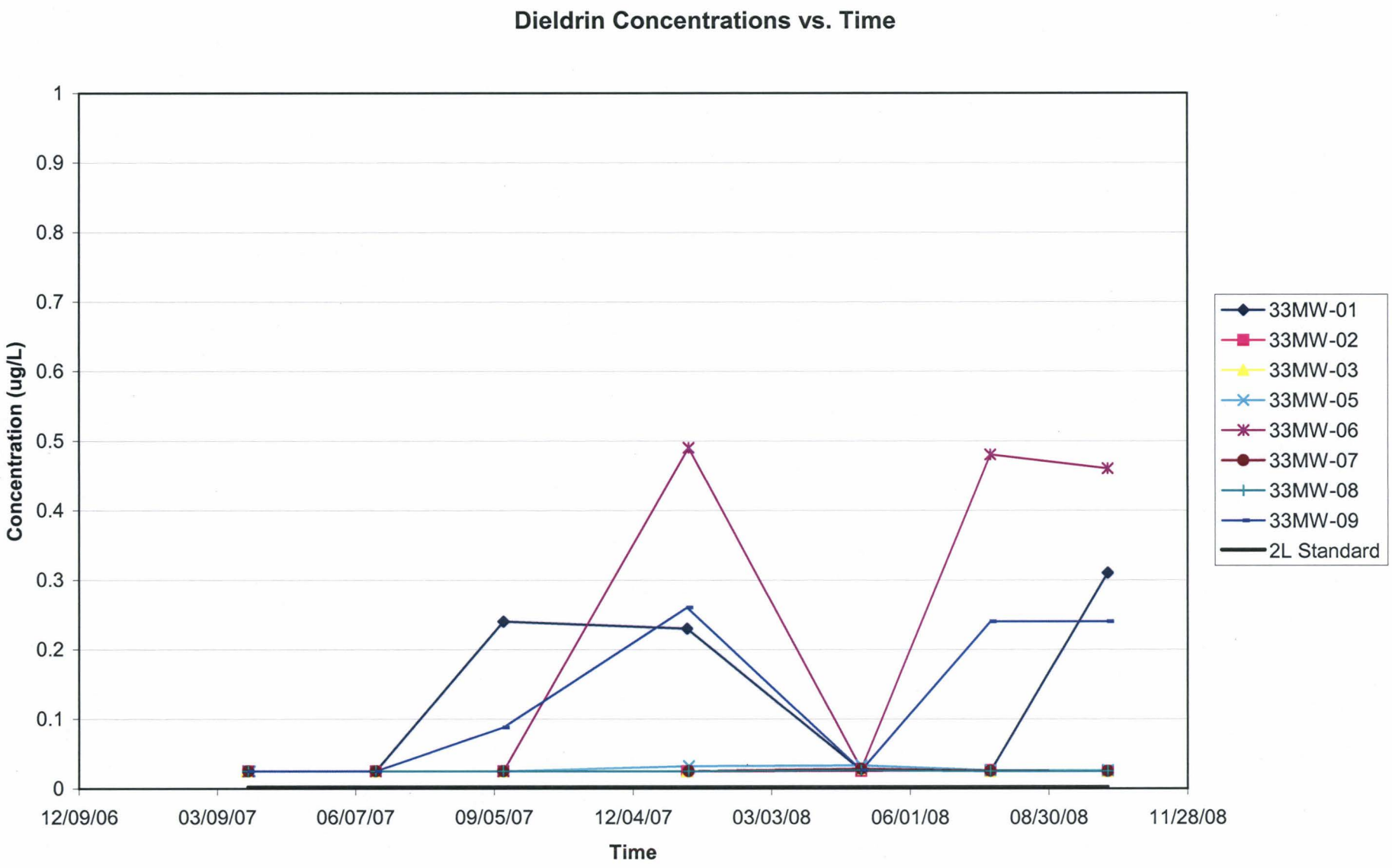
ENSR | AECOM

ENSR Consulting and Engineering (NC), Inc.
7041 Old Wake Forest Road Suite 103
Raleigh, North Carolina 27616

Drawn: MTJ
Date: 10/02/08
Project Number: 09020-066-1200

Chlordane Concentrations versus Time
SWMU 33 Former Waste Storage Area
USCG Support Center Elizabeth City, NC

FIGURE: 2-5



ENSR | AECOM

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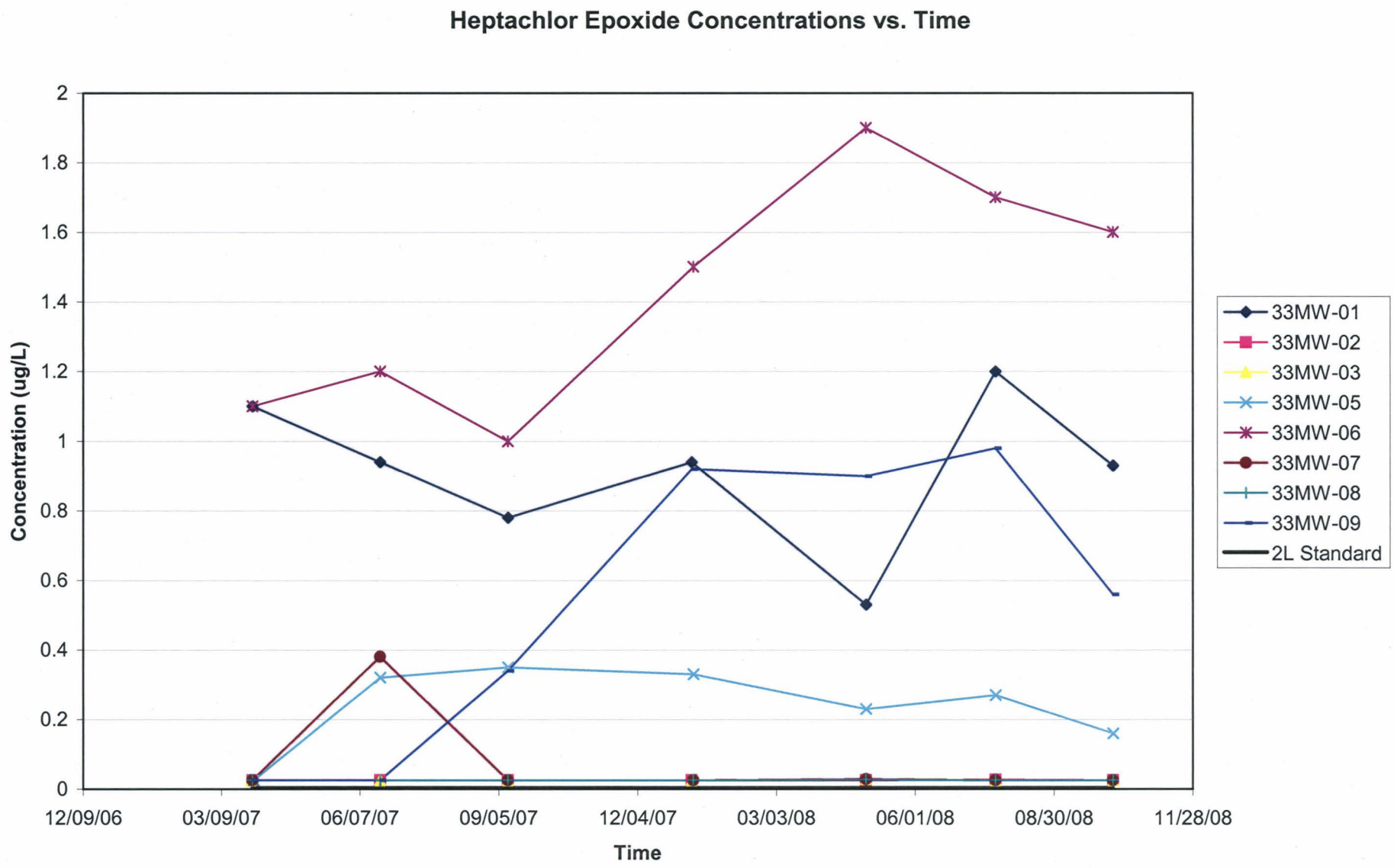
7041 Old Wake Forest Road Suite 103
Raleigh, North Carolina 27616

Drawn: MTJ
Date: 10/02/08
Project Number: 09020-066-1200

Dieldrin Concentrations versus Time
SWMU 33 Former Waste Storage Area
USCG Support Center Elizabeth City, NC

FIGURE: 2-6



ENSR | AECOM

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Raleigh, North Carolina 27616

Drawn: MTJ
Date: 10/02/08
Project Number: 09020-066-1200

Heptachlor Epoxide versus Time
SWMU 33 Former Waste Storage Area
USCG Support Center Elizabeth City, NC

FIGURE: 2-7

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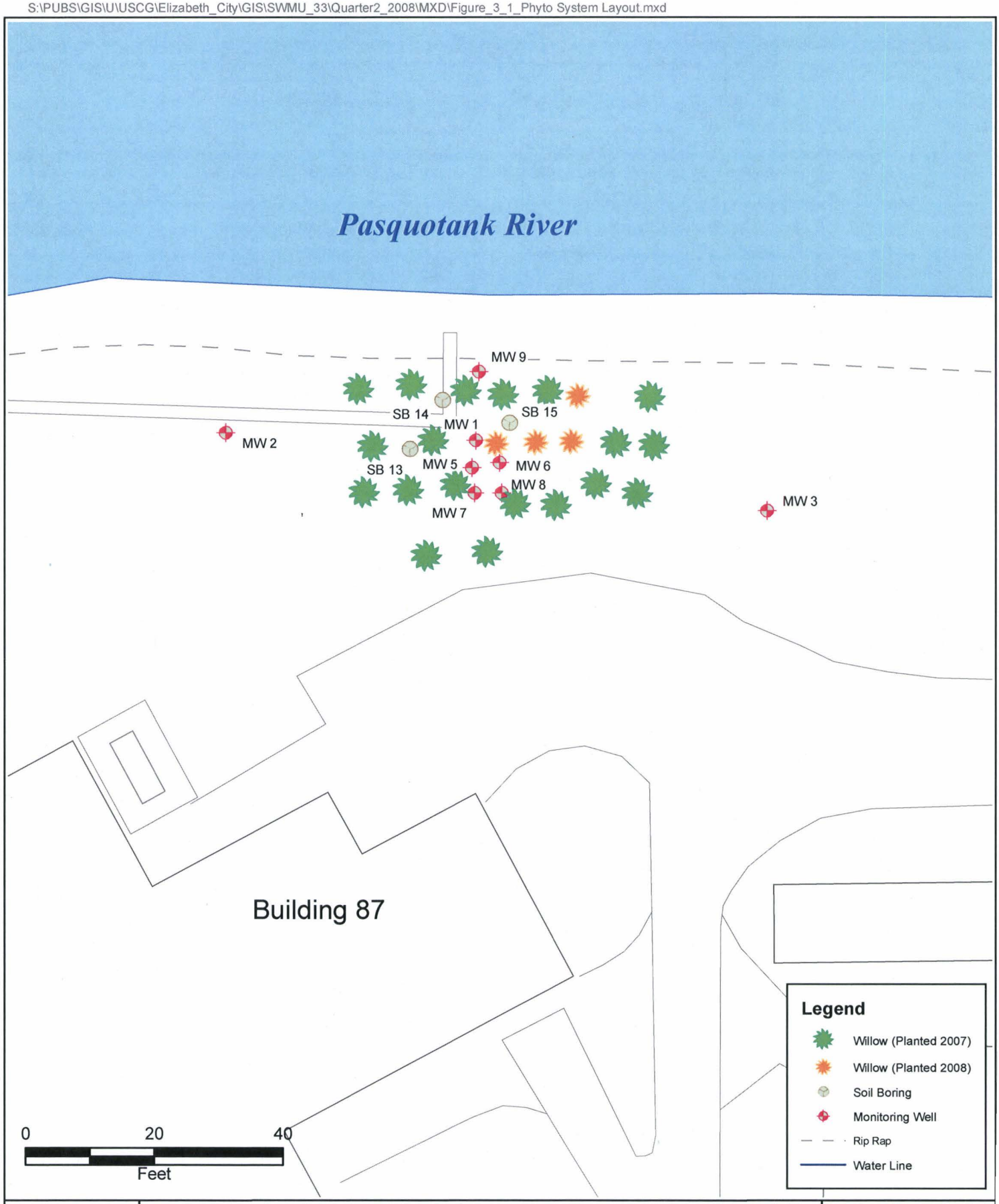

FIGURE NUMBER:

3-1

Phytoremediation System Layout
SWMU 33 FORMER WASTE STORAGE AREA
USCG SUPPORT CENTER
ELIZABETH CITY, NORTH CAROLINA

N W E S

SCALE: 1" = 20' | DATE: June 2008 | DRAWN BY: NCR

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Raleigh, NC 27616

Appendix A

Groundwater Sampling Logs

ENSR | AECOM

Well: 33MW-01

Ground Water Sample Collection Record

Client:	USCG	Date:	10/7/08
Project No:	09020-066	Start Time:	1400
Site Location:	SWMU 33	Finish Time:	1435
Weather:	~65 + sunny	Collector(s)	D. Babineau

WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length _____

b. Screen Interval 5-15 d. Well Material PVC f. Length of Water Column 9.90

c. Water Table Depth 5.10 e. Diameter 1 g. Calculated Well Volume 1.52

WELL PURGING DATA

a. Purge Method peristaltic

b. Acceptance Criteria
- Temperature: 5%
- pH: ± 0.5 unit
- Spec. Cond: 5%
- D.O.: 10%
- ORP: ± 10mV
- Drawdown: <0.3'
- Turbidity: <10 NTUs
- Volume: >1 well volume

c. Field Testing Equipment Used:

Make	Model	Serial Number
YSI	556	11446
Lamotte	2020	3349

Time	Volume Removed (gal)	Temp (°C)	pH	Spec. Cond (µmhos)	DO (mg/L)	ORP (mV)	Turbidity (NTUs)	Color	Drawdown (feet)
1410	1.0	21.65	6.04	792	1.55	-48.8	29.0	cloudy	5.15
1413	1.5	21.50	6.02	713	1.19	-44.4	11.2	clear	5.17
1416	2.0	21.40	6.00	713	0.48	-33.7	5.33	clear	5.21
1419	2.5	21.36	5.99	727	0.45	-31.7	5.01	clear	5.22
1422	3.0	21.33	5.99	729	0.43	-30.9	4.21	clear	5.23
1425	3.5	21.32	5.99	732	0.43	-30.0	2.34	clear	5.25

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☒	☐	☐
Has required turbidity been reached	☒	☐	☐
Have parameters stabilized	☒	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: Peristaltic

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
33MW-01	1L Amber	2	none	8081	1429
33MW-01	500mL Plastic	1	HNO3	6010 - As, Cr, Hg	1429

Comments Collect blind duplicate (33Dup-1)

Signature _____ Date _____

ENSR | AECOM

Well: 33MW-02

Ground Water Sample Collection Record

Client: USCG
Project No: 09020-066
Site Location: SWMU 33
Weather: upper 60's, sunny
Collector(s): D. Babineau, J. Musella

Date: 10/7/08
Start Time: 1456
Finish Time: 1540

WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length: 15
b. Screen Interval: 5-15
c. Water Table Depth: 5.00
d. Casing Material: PVC
e. Diameter: 1
f. Length of Water Column: 10
g. Calculated Well Volume: 1.54

WELL PURGING DATA

a. Purge Method: peristaltic

b. Acceptance Criteria
- Temperature: 5%
- pH: ± 0.5 unit
- Spec. Cond: 5%
- D.O.: 10%
- ORP: ± 10mV
- Drawdown: <0.3'
- Turbidity: <10 NTUs
- Volume: >1 well volume

c. Field Testing Equipment Used:

Make	Model	Serial Number
YSI 556	MPS	06519
LaMotte	2020e	07475

Time	Volume Removed (gal)	Temp (°C)	pH	Spec. Cond (µmhos)	DO (mg/L)	ORP (mV)	Turbidity (NTUs)	Color	Drawdown (feet)
1506	0.75	22.89	6.85	1.071	0.17	-92.7	4.03	clear	5.39
1511	1.1	22.83	6.85	1.075	0.16	-89.4	3.23	clear	5.38
1516	1.5	22.81	6.84	1.087	0.16	-86.9	1.40	clear	5.37
1521	1.75	22.86	6.83	1.100	0.15	-84.9	0.85	clear	5.36
~~1526~~									
JM ~~1531~~									
~~1536~~									

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: peristaltic

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
33MW-02	1L Amber	2	none	8081	1524
33MW-02	500mL Plastic	1	HNO3	6010 - As, Cr, Hg	1524

Comments

Signature: [signature] Date: 10/7/08

ENSR | AECOM

Well: 33MW-03

Ground Water Sample Collection Record

Client: USCG
Project No: 09020-066
Site Location: SWMU 33
Weather: Upper 60's, sunny breezy
Collector(s): D. Babineau

Date: 10/7/08
Start Time: 1330
Finish Time: 1430

WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length: 15
b. Screen Interval: 5-15'
c. Water Table Depth: 6.53
d. Casing Material: PVC
e. Diameter: 1
f. Length of Water Column: 8.47
g. Calculated Well Volume: 1.30

WELL PURGING DATA

a. Purge Method: peristaltic

b. Acceptance Criteria
- Temperature: 5%
- pH: ± 0.5 unit
- Spec. Cond: 5%
- D.O.: 10%
- ORP: ± 10mV
- Drawdown: <0.3'
- Turbidity: <10 NTUs
- Volume: >1 well volume

c. Field Testing Equipment Used:

Make	Model	Serial Number
YSI 556	MPS	06519
LaMotte	2020e	07475

Time	Volume Removed (gal)	Temp (°C)	pH	Spec. Cond (µmhos)	DO (mg/L)	ORP (mV)	Turbidity (NTUs)	Color	Drawdown (feet)
1340	0.5	21.82	6.22	0.528	1.45	81.8	106.4	cloudy	6.91
1343	0.6	21.83	6.20	0.509	1.39	83.0	75.9	cloudy	6.87
1346	0.7	21.84	6.20	0.486	1.35	83.1	64.6	cloudy	6.85
1349	0.8	21.72	6.17	0.467	1.38	84.5	46.6	cloudy	6.90
1352	0.9	21.50	6.15	0.436	1.39	88.2	30.8	cloudy	6.83
1355	1.1	21.47	6.14	0.432	1.39	91.2	16.8	clear	6.94
1358	1.4	21.44	6.13	0.422	1.40	92.7	15.5	clear	6.81

↳ Cont. on back

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: peristaltic

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
33MW-03	1L Amber	2	none	8081	1421
33MW-03	500mL Plastic	1	HNO3	6010 - As, Cr, Hg	1421

Comments

Signature: [signature]

Date: 10/7/08

ENSR | AECOM

Well: 33MW-03 (cont.)

Ground Water Sample Collection Record

Client:	USCG	Date:	10/7/08
Project No:	09020-066	Start Time:	1330
Site Location:	SWMU ~~15~~ 33 (Jim)	Finish Time:	1430
Weather:	upper 60's, breezy	Collector(s)	D. Babineau + J. Musella

WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length _____

b. Screen Interval 5-15 d. Well Material PVC f. Length of Water Column 8.47

c. Water Table Depth 6.53 e. Diameter 1 g. Calculated Well Volume 1.30

WELL PURGING DATA

a. Purge Method peristaltic

b. Acceptance Criteria
- Temperature: 5%
- pH: ± 0.5 unit
- Spec. Cond: 5%
- D.O.: 10%
- ORP: ± 10mV
- Drawdown: <0.3'
- Turbidity: <10 NTUs
- Volume: >1 well volume

c. Field Testing Equipment Used:

Make	Model	Serial Number
YSI	556 MPS	06519
La Motte	2020e	07475

Time	Volume Removed (gal)	Temp (°C)	pH	Spec. Cond (µmhos)	DO (mg/L)	ORP (mV)	Turbidity (NTUs)	Color	Drawdown (feet)
1401	1.4	21.43	6.12	0.415	1.38	93.7	16.6	clear	6.82
1404	1.5	21.41	6.11	0.408	1.37	96.0	17.7	↓	6.79
1407	1.6	21.36	6.09	0.399	1.35	98.9	12.9	↓	6.80
1410	1.7	21.31	6.08	0.392	1.33	100.3	10.95	↓	6.80
1413	1.75	21.30	6.08	0.389	1.33	100.8	8.13	↓	6.82
1416	1.8	21.35	6.07	0.386	1.32	102.4	6.75	↓	

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: peristaltic

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
	1L Amber	2	none	610 - PAHs	1421
	500mL Plastic	1	HNO3	6010 - As, Pb	1421

Comments _____

Signature [signature] Date 10/7/08

ENSR | AECOM

Well: 33MW-05

Ground Water Sample Collection Record

Client:	USCG	Date:	10/8/08
Project No:	09020-066	Start Time:	1045
Site Location:	SWMU 33	Finish Time:	1500
Weather:	~70° & sunny	Collector(s)	D. Babineau

WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length: 8

b. Screen Interval: 6-8

c. Water Table Depth: 5.05

d. Casing Material: PVC

e. Diameter: 1

f. Length of Water Column: 2.95

g. Calculated Well Volume: .45

WELL PURGING DATA

a. Purge Method: peristaltic

b. Acceptance Criteria
- Temperature: 5%
- pH: ± 0.5 unit
- Spec. Cond: 5%
- D.O.: 10%
- ORP: ± 10mV
- Drawdown: <0.3'
- Turbidity: <10 NTUs
- Volume: >1 well volume

c. Field Testing Equipment Used:

Make	Model	Serial Number
YSI	556	6516
Lamotte	2020	7475

Time	Volume Removed (gal)	Temp (°C)	pH	Spec. Cond (µmhos)	DO (mg/L)	ORP (mV)	Turbidity (NTUs)	Color	Drawdown (feet)
1055	<1.0	22.09	6.29	0.582	1.32	-2.6	12.5	clear	7.58
1058	1.0	22.10	6.28	0.582	1.22	-2.9	10.3	clear	Dry
1102	1.5	22.23	6.30	0.581	1.27	-3.5	8.78	clear	Dry

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☒	☐	☐
Has required turbidity been reached	☒	☐	☐
Have parameters stabilized	☐	☒	☐

If no or N/A - Explain below.

well went dry

SAMPLE COLLECTION: Method: peristaltic

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
33MW-05	1L Amber	2	none	8081	1105
33MW-05	500mL Plastic	1	HNO3	6010 - As, Cr, Hg	1105

Comments: Well went dry - allowed to recharge then re-due turbidity

Signature: [signature] Date: 10/8/08

ENSR | AECOM

Well: 33MW-06

Ground Water Sample Collection Record

Client: USCG
Project No: 09020-066
Site Location: SWMU 33
Weather: ~65° Sunny
Collector(s) D. Babineau

Date: 10/7/08
Start Time: 1500
Finish Time: 1535

WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 14

b. Screen Interval 12-14

c. Water Table Depth 5.31

d. Casing Material PVC

e. Diameter 1

f. Length of Water Column

g. Calculated Well Volume

WELL PURGING DATA

a. Purge Method peristaltic

b. Acceptance Criteria
- Temperature: 5%
- pH: ± 0.5 unit
- Spec. Cond: 5%
- D.O.: 10%
- ORP: ± 10mV
- Drawdown: <0.3'
- Turbidity: <10 NTUs
- Volume: >1 well volume

c. Field Testing Equipment Used:

Make	Model	Serial Number
YSI	556	11446
Lamotte	2020	3344

Time	Volume Removed (gal)	Temp (°C)	pH	Spec. Cond (µmhos)	DO (mg/L)	ORP (mV)	Turbidity (NTUs)	Color	Drawdown (feet)
1510	1.0	21.40	6.00	313	2.40	68.7	18.8	clear	10.05
1513	1.5	21.56	6.09	303	1.50	54.4	12.0	clear	10.05
1516	2.0	21.50	5.85	291	1.03	60.1	4.03	clear	10.04
1519	2.5	21.43	5.88	290	0.99	60.1	3.97	clear	10.06
1522	3.0	21.42	5.87	290	0.97	60.2	3.02	clear	10.07

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☒	☐	☐
Has required turbidity been reached	☒	☐	☐
Have parameters stabilized	☒	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: Peristaltic

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
33MW-06	1L Amber	2	none	8081	1525
33MW-06	500mL Plastic	1	HNO3	6010 - As, Cr, Hg	1525

Comments

Signature [signature] Date 10/7/08

ENSR | AECOM

Well: 33MW-07

Ground Water Sample Collection Record

Client:	USCG	Date:	10/8/08
Project No:	09020-066	Start Time:	1150
Site Location:	SWMU 33	Finish Time:	1230
Weather:	~70° & Sunny	Collector(s)	D. Babineau / S. Mussella

WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length: 21

b. Screen Interval: 19-21 d. Casing Material: PVC f. Length of Water Column: 15.39

c. Water Table Depth: 5.61 e. Diameter: 1 g. Calculated Well Volume: 2.37

WELL PURGING DATA

a. Purge Method: peristaltic

b. Acceptance Criteria
- Temperature: 5%
- pH: ± 0.5 unit
- Spec. Cond: 5%
- D.O.: 10%
- ORP: ± 10mV
- Drawdown: <0.3'
- Turbidity: <10 NTUs
- Volume: >1 well volume

c. Field Testing Equipment Used:

Make	Model	Serial Number
YSI	556	11446
Lamotte	2020	7475

Time	Volume Removed (gal)	Temp (°C)	pH	Spec. Cond (µmhos)	DO (mg/L)	ORP (mV)	Turbidity (NTUs)	Color	Drawdown (feet)
1158	0.1	21.08	6.02	240	0.85	55.4	143	cloudy	5.56
1203	0.25	20.82	5.99	242	0.40	72.3	40.8	cloudy	5.58
1208	0.5	20.64	5.98	242	0.67	76.2	10.51	clear	5.59
1213	0.8	20.54	5.98	242	0.38	82.6	2.44	clear	5.59
~~1218~~									
ON									

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: peristaltic

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
33MW-07	1L Amber	2	none	8081	1215
33MW-07	500mL Plastic	1	HNO3	6010 - As, Cr, Hg	1215

Comments

Signature: [signature] Date: 10/8/08

ENSR | AECOM

Well: 33MW-08

Ground Water Sample Collection Record

Client:	USCG	Date:	10/8/08
Project No:	09020-066	Start Time:	1051
Site Location:	SWMU 33	Finish Time:	1150
Weather:	60's sunny	Collector(s)	D. Babineau

WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length: 28

b. Screen Interval: 26-28

c. Water Table Depth: 6.72

d. Casing Material: PVC

e. Diameter: 1

f. Length of Water Column: 21.28

g. Calculated Well Volume: 3.28

WELL PURGING DATA

a. Purge Method: peristaltic

b. Acceptance Criteria
- Temperature: 5%
- pH: ± 0.5 unit
- Spec. Cond: 5%
- D.O.: 10%
- ORP: ± 10mV
- Drawdown: <0.3'
- Turbidity: <10 NTUs
- Volume: >1 well volume

c. Field Testing Equipment Used:

Make	Model	Serial Number
YSI	556 MPS	11446
LaMotte	2020e	07475

Time	Volume Removed (gal)	Temp (°C)	pH	Spec. Cond (µmhos)	DO (mg/L)	ORP (mV)	Turbidity (NTUs)	Color	Drawdown (feet)
1101	0.6	20.14	6.04	191	1.14	67.6	30.3	cloudy	12.61
1106	0.75	20.24	6.05	184	0.72	32.1	19.1	clear	12.86
1111	0.8	20.12	6.06	184	0.52	17.0	12.0	clear	13.3
1116	1.2	19.97	6.09	184	0.43	1.2	8.82	clear	13.95
1121	1.3	19.97	6.05	184	0.38	-8.8	17.3	clear	13.50
1126	1.5	20.39	6.06	185	0.34	-12.3	15.4	clear	13.26
1131	1.7	20.17	6.09	185	0.34	-18.8	~~15~~ 7.25	clear	13.21

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: peristaltic

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
33MW-08	1L Amber	2	none	8081	1132
33MW-08	500mL Plastic	1	HNO3	6010 - As, Cr, Hg	1132

Comments

Signature: [signature] Date: 10/8/08

ENSR | AECOM

Well: 33MW-01 DB

Ground Water Sample Collection Record

Client:	USCG	Date:	10/7/08
Project No:	09020-066	Start Time:	1320
Site Location:	SWMU 33	Finish Time:	1400
Weather:	clear/warm ~68° Collector(s) D. Babineau		

WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length: 15

b. Screen Interval: 5-15 d. Casing Material: PVC f. Length of Water Column: 9.84

c. Water Table Depth: 5.16 e. Diameter: 1 g. Calculated Well Volume: 1.47

WELL PURGING DATA

a. Purge Method: peristaltic

b. Acceptance Criteria
- Temperature: 5%
- pH: ± 0.5 unit
- Spec. Cond: 5%
- D.O.: 10%
- ORP: ± 10mV
- Drawdown: <0.3'
- Turbidity: <10 NTUs
- Volume: >1 well volume

c. Field Testing Equipment Used:

Make	Model	Serial Number
YSI	556	11446
Lamott	2020	3349

Time	Volume Removed (gal)	Temp (°C)	pH	Spec. Cond (µmhos)	DO (mg/L)	ORP (mV)	Turbidity (NTUs)	Color	Drawdown (feet)
1330	1.0	22.33	6.73	5.867	0.26	-146.8	0.09	clear	5.15
1333	2.0	22.32	6.74	5.872	0.25	-148.7	0.05	clear	5.16
1336	3.0	22.30	6.74	5880	0.23	-149.3	0.04	clear	5.16
1339	4.0	22.30	6.75	5881	0.22	-150.0	0.04	clear	5.17
1342	5.0	22.29	6.75	5882	0.22	-151.7	0.03	clear	5.17

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

SAMPLE COLLECTION: Method: Peristaltic

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
33MW-01	1L Amber	2	none	8081	1345
33MW-01	500mL Plastic	1	HNO3	6010 - As, Cr, Hg	

Comments: collected ~~blind duplicate (33DUP-1)~~ DB

Signature: [signature] Date: 10/7/08

Appendix B

Laboratory and Data Validation Reports

Case Narrative

PRISM LABORATORIES, INC.

Date:	10/22/08	**Client Project ID:**	USCG Support Ctr. (SWMU-33)
Company:	ENSR C & E, Inc	**Prism COC Group No:**	G1008219
Contact:	MICHAEL JORDAN	**Collection Date(s):**	10/07/08
Address:	7041 Old Wake Forest Rd. Suite 103 Raleigh, NC 27616	**Lab Submittal Date(s):**	10/08/08
		Client Project Name Or No:	Elizabeth City, NC

This data package contains the analytical results for the project identified above and includes a Case Narrative, Laboratory Report and Quality Control Data totaling 27 pages. A chain-of-custody is also attached for the samples submitted to Prism for this project.

Data qualifiers are flagged individually on each sample. A key reference for the data qualifiers appears at the end of this case narrative. Quality control statements and/or sample specific remarks are included in the sample comments section of the laboratory report for each sample affected.

Semi Volatile Analysis

Analysis Note for Q36092 MSD 4,4'-DDT: MSD recovery outside the control limits.

Volatile Analysis

No Anomalies Reported

Metals Analysis

Analysis Note for Q36185 Method Blank Mercury: MB is less than 1/2 the reporting limit of 0.05 mg/kg.

Wet Lab and Micro Analysis

N/A

Please call if you have any questions relating to this analytical report.

Date Reviewed by:	Robbi A. Jones	**Project Manager:**	Robbi A. Jones
Signature:	Robbi A. Jones	**Signature:**	Robbi A. Jones
Review Date:	10/22/08	**Approval Date:**	10/22/08

Data Qualifiers Key Reference:

B: Compound also detected in the method blank.
#: Result outside of the QC limits.
DO: Compound diluted out.
E: Estimated concentration, calibration range exceeded.
J: The analyte was positively identified but the value is estimated below the reporting limit.
H: Estimated concentration with a high bias.
L: Estimated concentration with a low bias.
M: A matrix effect is present.

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NC Drinking Water Cert. No. 37735

Full Service Analytical & Environmental Solutions

Laboratory Report

10/21/08

ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)
Sample Matrix: Water

Client Sample ID: 33MW06
Prism Sample ID: 227186
COC Group: G1008219
Time Collected: 10/07/08 15:25
Time Submitted: 10/08/08 9:35

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Organochlorine Pesticides by GC/ECD									
4,4'-DDD	**BRL**	µg/L	0.050	0.014	1	8081A	10/11/08 10:15	jvogel	Q36227
4,4'-DDE	**BRL**	µg/L	0.050	0.0086	1	8081A	10/11/08 10:15	jvogel	Q36227
4,4'-DDT	**BRL**	µg/L	0.050	0.014	1	8081A	10/11/08 10:15	jvogel	Q36227
4,4'-Methoxychlor	**BRL**	µg/L	0.050	0.017	1	8081A	10/11/08 10:15	jvogel	Q36227
a-BHC	**BRL**	µg/L	0.050	0.0075	1	8081A	10/11/08 10:15	jvogel	Q36227
a-Chlordane	**2.9**	µg/L	0.25	0.036	5	8081A	10/16/08 14:02	jvogel	Q36227
Aldrin	**BRL**	µg/L	0.050	0.015	1	8081A	10/11/08 10:15	jvogel	Q36227
b-BHC	**BRL**	µg/L	0.050	0.012	1	8081A	10/11/08 10:15	jvogel	Q36227
Chlordane	**28**	µg/L	2.5	0.72	5	8081A	10/16/08 14:02	jvogel	Q36227
d-BHC	**BRL**	µg/L	0.050	0.0077	1	8081A	10/11/08 10:15	jvogel	Q36227
Dieldrin	**0.46**	µg/L	0.050	0.0084	1	8081A	10/11/08 10:15	jvogel	Q36227
Endosulfan I	**BRL**	µg/L	0.050	0.0076	1	8081A	10/11/08 10:15	jvogel	Q36227
Endosulfan II	**BRL**	µg/L	0.050	0.0071	1	8081A	10/11/08 10:15	jvogel	Q36227
Endosulfan Sulfate	**BRL**	µg/L	0.050	0.0086	1	8081A	10/11/08 10:15	jvogel	Q36227
Endrin	**BRL**	µg/L	0.050	0.0082	1	8081A	10/11/08 10:15	jvogel	Q36227
Endrin Aldehyde	**BRL**	µg/L	0.050	0.016	1	8081A	10/11/08 10:15	jvogel	Q36227
Endrin Ketone	**BRL**	µg/L	0.050	0.0094	1	8081A	10/11/08 10:15	jvogel	Q36227
g-BHC	**BRL**	µg/L	0.050	0.0083	1	8081A	10/11/08 10:15	jvogel	Q36227
g-Chlordane	**4.4**	µg/L	0.25	0.044	5	8081A	10/16/08 14:02	jvogel	Q36227
Heptachlor	**BRL**	µg/L	0.050	0.016	1	8081A	10/11/08 10:15	jvogel	Q36227
Heptachlor Epoxide	**1.6**	µg/L	0.050	0.0088	1	8081A	10/11/08 10:15	jvogel	Q36227
Toxaphene	**BRL**	µg/L	0.50	0.15	1	8081A	10/11/08 10:15	jvogel	Q36227

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Full Service Analytical & Environmental Solutions

Laboratory Report

10/21/08

ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)
Sample Matrix: Water

Client Sample ID: 33MW06
Prism Sample ID: 227186
COC Group: G1008219
Time Collected: 10/07/08 15:25
Time Submitted: 10/08/08 9:35

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Sample Preparation:				950 mL /	10 mL	3510C	10/10/08 7:00	smanivanh	P22756

Surrogate	% Recovery	Control Limits
Tetrachloro-m-xylene (TCMX)	121	40 - 134
Decachlorobiphenyl (DCB)	81	13 - 186

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Mercury by CVAA									
Mercury	**BRL**	mg/L	0.0002	0.000011	1	7470A	10/09/08 15:48	heasler	Q36014
Sample Preparation:				20 mL /	30 mL	7470A	10/09/08 10:15	mbarber	P22754
Metals by ICP									
Arsenic	**BRL**	mg/L	0.010	0.0022	1	6010B	10/14/08 17:20	mcampbell	Q36089
Chromium	**0.0052**	mg/L	0.0050	0.00015	1	6010B	10/14/08 17:20	mcampbell	Q36089
Sample Preparation:				50 mL /	50 mL	3010A	10/13/08 8:00	mbarber	P22769

Sample Comment(s):

BRL = Below Reporting Limit

J- Estimated value between the Reporting Limit and the MDL

The results in this report relate only to the samples submitted for analysis and meet state certification requirements other than NELAC certification except for those instances indicated in the case narrative and/or test comments.

All results are reported on a wet-weight basis

Angela D. Overcash, V.P. Laboratory Services

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10/21/08

ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)
Sample Matrix: Water

Client Sample ID: 33MW02
Prism Sample ID: 227187
COC Group: G1008219
Time Collected: 10/07/08 15:24
Time Submitted: 10/08/08 9:35

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Organochlorine Pesticides by GC/ECD									
4,4'-DDD	**BRL**	µg/L	0.050	0.014	1	8081A	10/11/08 10:57	jvogel	Q36227
4,4'-DDE	**BRL**	µg/L	0.050	0.0086	1	8081A	10/11/08 10:57	jvogel	Q36227
4,4'-DDT	**BRL**	µg/L	0.050	0.014	1	8081A	10/11/08 10:57	jvogel	Q36227
4,4'-Methoxychlor	**BRL**	µg/L	0.050	0.017	1	8081A	10/11/08 10:57	jvogel	Q36227
a-BHC	**BRL**	µg/L	0.050	0.0075	1	8081A	10/11/08 10:57	jvogel	Q36227
a-Chlordane	**BRL**	µg/L	0.050	0.0071	1	8081A	10/11/08 10:57	jvogel	Q36227
Aldrin	**BRL**	µg/L	0.050	0.015	1	8081A	10/11/08 10:57	jvogel	Q36227
b-BHC	**BRL**	µg/L	0.050	0.012	1	8081A	10/11/08 10:57	jvogel	Q36227
Chlordane	**BRL**	µg/L	0.50	0.14	1	8081A	10/11/08 10:57	jvogel	Q36227
d-BHC	**BRL**	µg/L	0.050	0.0077	1	8081A	10/11/08 10:57	jvogel	Q36227
Dieldrin	**BRL**	µg/L	0.050	0.0084	1	8081A	10/11/08 10:57	jvogel	Q36227
Endosulfan I	**BRL**	µg/L	0.050	0.0076	1	8081A	10/11/08 10:57	jvogel	Q36227
Endosulfan II	**BRL**	µg/L	0.050	0.0071	1	8081A	10/11/08 10:57	jvogel	Q36227
Endosulfan Sulfate	**BRL**	µg/L	0.050	0.0086	1	8081A	10/11/08 10:57	jvogel	Q36227
Endrin	**BRL**	µg/L	0.050	0.0082	1	8081A	10/11/08 10:57	jvogel	Q36227
Endrin Aldehyde	**BRL**	µg/L	0.050	0.016	1	8081A	10/11/08 10:57	jvogel	Q36227
Endrin Ketone	**BRL**	µg/L	0.050	0.0094	1	8081A	10/11/08 10:57	jvogel	Q36227
g-BHC	**BRL**	µg/L	0.050	0.0083	1	8081A	10/11/08 10:57	jvogel	Q36227
g-Chlordane	**BRL**	µg/L	0.050	0.0089	1	8081A	10/11/08 10:57	jvogel	Q36227
Heptachlor	**BRL**	µg/L	0.050	0.016	1	8081A	10/11/08 10:57	jvogel	Q36227
Heptachlor Epoxide	**BRL**	µg/L	0.050	0.0088	1	8081A	10/11/08 10:57	jvogel	Q36227
Toxaphene	**BRL**	µg/L	0.50	0.15	1	8081A	10/11/08 10:57	jvogel	Q36227

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Laboratory Report

10/21/08

ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)
Sample Matrix: Water

Client Sample ID: 33MW02
Prism Sample ID: 227187
COC Group: G1008219
Time Collected: 10/07/08 15:24
Time Submitted: 10/08/08 9:35

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Sample Preparation:				980 mL /	10 mL	3510C	10/10/08 7:00	smanivanh	P22756

Surrogate	% Recovery	Control Limits
Tetrachloro-m-xylene (TCMX)	121	40 - 134
Decachlorobiphenyl (DCB)	76	13 - 186

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Mercury by CVAA									
Mercury	**BRL**	mg/L	0.0002	0.000011	1	7470A	10/09/08 15:59	heasler	Q36014
Sample Preparation:				20 mL /	30 mL	7470A	10/09/08 10:15	mbarber	P22754
Metals by ICP									
Arsenic	**BRL**	mg/L	0.010	0.0022	1	6010B	10/14/08 17:38	mcampbell	Q36089
Chromium	**0.0033 J**	mg/L	0.0050	0.00015	1	6010B	10/14/08 17:38	mcampbell	Q36089
Sample Preparation:				50 mL /	50 mL	3010A	10/13/08 8:00	mbarber	P22769

Sample Comment(s):

BRL = Below Reporting Limit

J- Estimated value between the Reporting Limit and the MDL

The results in this report relate only to the samples submitted for analysis and meet state certification requirements other than NELAC certification except for those instances indicated in the case narrative and/or test comments.

All results are reported on a wet-weight basis

Angela D. Overcash, V.P. Laboratory Services

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Laboratory Report

10/21/08

ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)
Sample Matrix: Soil

Client Sample ID: 33SB13
Prism Sample ID: 227188
COC Group: G1008219
Time Collected: 10/07/08 15:55
Time Submitted: 10/08/08 9:35

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Percent Solids Determination									
Percent Solids	**86.9**	%			1	SM2540 G	10/13/08 10:45	dsullivan	
Organochlorine Pesticides by Gas Chromatography									
4,4'-DDD	**BRL**	µg/kg	2.3	0.70	1	8081A	10/12/08 0:26	jvogel	Q36092
4,4'-DDE	**11**	µg/kg	2.3	0.49	1	8081A	10/12/08 0:26	jvogel	Q36092
4,4'-DDT	**67**	µg/kg	2.3	0.83	1	8081A	10/12/08 0:26	jvogel	Q36092
4,4'-Methoxychlor	**BRL**	µg/kg	4.6	1.6	1	8081A	10/12/08 0:26	jvogel	Q36092
a-BHC	**BRL**	µg/kg	2.3	0.21	1	8081A	10/12/08 0:26	jvogel	Q36092
a-Chlordane	**BRL**	µg/kg	2.3	0.40	1	8081A	10/12/08 0:26	jvogel	Q36092
Aldrin	**BRL**	µg/kg	2.3	0.46	1	8081A	10/12/08 0:26	jvogel	Q36092
b-BHC	**BRL**	µg/kg	2.3	0.58	1	8081A	10/12/08 0:26	jvogel	Q36092
Chlordane	**BRL**	µg/kg	58	5.4	1	8081A	10/12/08 0:26	jvogel	Q36092
d-BHC	**BRL**	µg/kg	2.3	0.32	1	8081A	10/12/08 0:26	jvogel	Q36092
Dieldrin	**BRL**	µg/kg	1.2	0.48	1	8081A	10/12/08 0:26	jvogel	Q36092
Endosulfan I	**BRL**	µg/kg	2.3	0.41	1	8081A	10/12/08 0:26	jvogel	Q36092
Endosulfan II	**BRL**	µg/kg	2.3	0.52	1	8081A	10/12/08 0:26	jvogel	Q36092
Endosulfan Sulfate	**BRL**	µg/kg	2.3	0.60	1	8081A	10/12/08 0:26	jvogel	Q36092
Endrin	**BRL**	µg/kg	2.3	0.69	1	8081A	10/12/08 0:26	jvogel	Q36092
Endrin Aldehyde	**BRL**	µg/kg	2.3	0.64	1	8081A	10/12/08 0:26	jvogel	Q36092
Endrin Ketone	**BRL**	µg/kg	2.3	0.45	1	8081A	10/12/08 0:26	jvogel	Q36092
g-BHC	**BRL**	µg/kg	2.3	0.27	1	8081A	10/12/08 0:26	jvogel	Q36092
g-Chlordane	**BRL**	µg/kg	2.3	0.37	1	8081A	10/12/08 0:26	jvogel	Q36092
Heptachlor	**BRL**	µg/kg	2.3	0.54	1	8081A	10/12/08 0:26	jvogel	Q36092
Heptachlor Epoxide	**BRL**	µg/kg	2.3	0.42	1	8081A	10/12/08 0:26	jvogel	Q36092
Toxaphene	**BRL**	µg/kg	58	5.9	1	8081A	10/12/08 0:26	jvogel	Q36092

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Full Service Analytical & Environmental Solutions

Laboratory Report

10/21/08

ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)
Sample Matrix: Soil

Client Sample ID: 33SB13
Prism Sample ID: 227188
COC Group: G1008219
Time Collected: 10/07/08 15:55
Time Submitted: 10/08/08 9:35

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Sample Preparation:			30.09 g	/	10 mL	3550B	10/10/08 10:00	jbarnette	P22766

Surrogate	% Recovery	Control Limits
Tetrachloro-m-xylene (TCMX)	143	40 - 162
Decachlorobiphenyl (DCB)	119	26 - 204

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Mercury by CVAA									
Mercury	**0.071**	mg/kg	0.058	0.0026	1	7471A	10/15/08 13:05	heasler	Q36185
Sample Preparation:			0.6 g	/	50 mL	7471A	10/15/08 10:30	mbarber	P22800
Metals by ICP									
Arsenic	**10**	mg/kg	0.56	0.056	1	6010B	10/14/08 20:50	mcampbell	Q36093
Chromium	**19**	mg/kg	0.28	0.036	1	6010B	10/14/08 20:50	mcampbell	Q36093
Sample Preparation:			2.05 g	/	50 mL	3050B	10/13/08 7:30	mbarber	P22770

Sample Comment(s):

BRL = Below Reporting Limit
J- Estimated value between the Reporting Limit and the MDL
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Angela D. Overcash, V.P. Laboratory Services

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10/21/08

ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)
Sample Matrix: Soil

Client Sample ID: 33SB14
Prism Sample ID: 227189
COC Group: G1008219
Time Collected: 10/07/08 15:50
Time Submitted: 10/08/08 9:35

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Percent Solids Determination									
Percent Solids	**78.1**	%			1	SM2540 G	10/13/08 10:45	dsullivan	
Organochlorine Pesticides by Gas Chromatography									
4,4'-DDD	**BRL**	µg/kg	2.6	0.78	1	8081A	10/12/08 1:09	jvogel	Q36092
4,4'-DDE	**BRL**	µg/kg	2.6	0.55	1	8081A	10/12/08 1:09	jvogel	Q36092
4,4'-DDT	**BRL**	µg/kg	2.6	0.92	1	8081A	10/12/08 1:09	jvogel	Q36092
4,4'-Methoxychlor	**BRL**	µg/kg	5.1	1.8	1	8081A	10/12/08 1:09	jvogel	Q36092
a-BHC	**BRL**	µg/kg	2.6	0.23	1	8081A	10/12/08 1:09	jvogel	Q36092
a-Chlordane	**BRL**	µg/kg	2.6	0.45	1	8081A	10/12/08 1:09	jvogel	Q36092
Aldrin	**BRL**	µg/kg	2.6	0.51	1	8081A	10/12/08 1:09	jvogel	Q36092
b-BHC	**BRL**	µg/kg	2.6	0.65	1	8081A	10/12/08 1:09	jvogel	Q36092
Chlordane	**BRL**	µg/kg	64	6.0	1	8081A	10/12/08 1:09	jvogel	Q36092
d-BHC	**BRL**	µg/kg	2.6	0.36	1	8081A	10/12/08 1:09	jvogel	Q36092
Dieldrin	**BRL**	µg/kg	1.3	0.53	1	8081A	10/12/08 1:09	jvogel	Q36092
Endosulfan I	**BRL**	µg/kg	2.6	0.45	1	8081A	10/12/08 1:09	jvogel	Q36092
Endosulfan II	**BRL**	µg/kg	2.6	0.58	1	8081A	10/12/08 1:09	jvogel	Q36092
Endosulfan Sulfate	**BRL**	µg/kg	2.6	0.66	1	8081A	10/12/08 1:09	jvogel	Q36092
Endrin	**BRL**	µg/kg	2.6	0.77	1	8081A	10/12/08 1:09	jvogel	Q36092
Endrin Aldehyde	**BRL**	µg/kg	2.6	0.72	1	8081A	10/12/08 1:09	jvogel	Q36092
Endrin Ketone	**BRL**	µg/kg	2.6	0.51	1	8081A	10/12/08 1:09	jvogel	Q36092
g-BHC	**BRL**	µg/kg	2.6	0.30	1	8081A	10/12/08 1:09	jvogel	Q36092
g-Chlordane	**BRL**	µg/kg	2.6	0.42	1	8081A	10/12/08 1:09	jvogel	Q36092
Heptachlor	**BRL**	µg/kg	2.6	0.60	1	8081A	10/12/08 1:09	jvogel	Q36092
Heptachlor Epoxide	**BRL**	µg/kg	2.6	0.47	1	8081A	10/12/08 1:09	jvogel	Q36092
Toxaphene	**BRL**	µg/kg	64	6.5	1	8081A	10/12/08 1:09	jvogel	Q36092

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Full Service Analytical & Environmental Solutions

Laboratory Report

10/21/08

ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)
Sample Matrix: Soil

Client Sample ID: 33SB14
Prism Sample ID: 227189
COC Group: G1008219
Time Collected: 10/07/08 15:50
Time Submitted: 10/08/08 9:35

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Sample Preparation:				29.9 g /	10 mL	3550B	10/10/08 10:00	jbarnette	P22766

Surrogate	% Recovery	Control Limits
Tetrachloro-m-xylene (TCMX)	136	40 - 162
Decachlorobiphenyl (DCB)	114	26 - 204

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Mercury by CVAA									
Mercury	**0.098**	mg/kg	0.064	0.0029	1	7471A	10/15/08 13:16	heasler	Q36185
Sample Preparation:				0.6 g /	50 mL	7471A	10/15/08 10:30	mbarber	P22800
Metals by ICP									
Arsenic	**12**	mg/kg	0.64	0.063	1	6010B	10/14/08 21:08	mcampbell	Q36093
Chromium	**47**	mg/kg	0.32	0.041	1	6010B	10/14/08 21:08	mcampbell	Q36093
Sample Preparation:				2 g /	50 mL	3050B	10/13/08 7:30	mbarber	P22770

Sample Comment(s):

BRL = Below Reporting Limit

J- Estimated value between the Reporting Limit and the MDL

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ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)
Sample Matrix: Soil

Client Sample ID: 33SB15
Prism Sample ID: 227190
COC Group: G1008219
Time Collected: 10/07/08 16:00
Time Submitted: 10/08/08 9:35

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Percent Solids Determination									
Percent Solids	**83.1**	%			1	SM2540 G	10/13/08 10:45	dsullivan	
Organochlorine Pesticides by Gas Chromatography									
4,4'-DDD	**BRL**	µg/kg	2.4	0.73	1	8081A	10/12/08 1:52	jvogel	Q36092
4,4'-DDE	**BRL**	µg/kg	2.4	0.51	1	8081A	10/12/08 1:52	jvogel	Q36092
4,4'-DDT	**BRL**	µg/kg	2.4	0.87	1	8081A	10/12/08 1:52	jvogel	Q36092
4,4'-Methoxychlor	**BRL**	µg/kg	4.8	1.6	1	8081A	10/12/08 1:52	jvogel	Q36092
a-BHC	**BRL**	µg/kg	2.4	0.22	1	8081A	10/12/08 1:52	jvogel	Q36092
a-Chlordane	**BRL**	µg/kg	2.4	0.42	1	8081A	10/12/08 1:52	jvogel	Q36092
Aldrin	**BRL**	µg/kg	2.4	0.48	1	8081A	10/12/08 1:52	jvogel	Q36092
b-BHC	**BRL**	µg/kg	2.4	0.61	1	8081A	10/12/08 1:52	jvogel	Q36092
Chlordane	**BRL**	µg/kg	60	5.7	1	8081A	10/12/08 1:52	jvogel	Q36092
d-BHC	**BRL**	µg/kg	2.4	0.34	1	8081A	10/12/08 1:52	jvogel	Q36092
Dieldrin	**BRL**	µg/kg	1.2	0.50	1	8081A	10/12/08 1:52	jvogel	Q36092
Endosulfan I	**BRL**	µg/kg	2.4	0.43	1	8081A	10/12/08 1:52	jvogel	Q36092
Endosulfan II	**BRL**	µg/kg	2.4	0.54	1	8081A	10/12/08 1:52	jvogel	Q36092
Endosulfan Sulfate	**BRL**	µg/kg	2.4	0.62	1	8081A	10/12/08 1:52	jvogel	Q36092
Endrin	**BRL**	µg/kg	2.4	0.72	1	8081A	10/12/08 1:52	jvogel	Q36092
Endrin Aldehyde	**BRL**	µg/kg	2.4	0.67	1	8081A	10/12/08 1:52	jvogel	Q36092
Endrin Ketone	**BRL**	µg/kg	2.4	0.48	1	8081A	10/12/08 1:52	jvogel	Q36092
g-BHC	**BRL**	µg/kg	2.4	0.28	1	8081A	10/12/08 1:52	jvogel	Q36092
g-Chlordane	**BRL**	µg/kg	2.4	0.39	1	8081A	10/12/08 1:52	jvogel	Q36092
Heptachlor	**BRL**	µg/kg	2.4	0.57	1	8081A	10/12/08 1:52	jvogel	Q36092
Heptachlor Epoxide	**BRL**	µg/kg	2.4	0.44	1	8081A	10/12/08 1:52	jvogel	Q36092
Toxaphene	**BRL**	µg/kg	60	6.1	1	8081A	10/12/08 1:52	jvogel	Q36092

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Laboratory Report

10/21/08

ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)
Sample Matrix: Soil

Client Sample ID: 33SB15
Prism Sample ID: 227190
COC Group: G1008219
Time Collected: 10/07/08 16:00
Time Submitted: 10/08/08 9:35

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Sample Preparation:			30.33 g	/	10 mL	3550B	10/10/08 10:00	jbarnette	P22766

Surrogate	% Recovery	Control Limits
Tetrachloro-m-xylene (TCMX)	115	40 - 162
Decachlorobiphenyl (DCB)	102	26 - 204

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Mercury by CVAA									
Mercury	**0.077**	mg/kg	0.060	0.0028	1	7471A	10/15/08 13:19	heasler	Q36185
Sample Preparation:			0.6 g	/	50 mL	7471A	10/15/08 10:30	mbarber	P22800
Metals by ICP									
Arsenic	**49**	mg/kg	0.60	0.060	1	6010B	10/14/08 21:14	mcampbell	Q36093
Chromium	**23**	mg/kg	0.30	0.039	1	6010B	10/14/08 21:14	mcampbell	Q36093
Sample Preparation:			2 g	/	50 mL	3050B	10/13/08 7:30	mbarber	P22770

Sample Comment(s):

BRL = Below Reporting Limit
J- Estimated value between the Reporting Limit and the MDL
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7041 Old Wake Forest Rd.
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Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)
Sample Matrix: Soil

Client Sample ID: 33DUP-02
Prism Sample ID: 227191
COC Group: G1008219
Time Collected: 10/07/08
Time Submitted: 10/08/08 9:35

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Percent Solids Determination									
Percent Solids	**77.6**	%			1	SM2540 G	10/10/08 14:30	dsullivan	
Organochlorine Pesticides by Gas Chromatography									
4,4'-DDD	**BRL**	µg/kg	2.6	0.79	1	8081A	10/12/08 2:34	jvogel	Q36092
4,4'-DDE	**BRL**	µg/kg	2.6	0.55	1	8081A	10/12/08 2:34	jvogel	Q36092
4,4'-DDT	**BRL**	µg/kg	2.6	0.93	1	8081A	10/12/08 2:34	jvogel	Q36092
4,4'-Methoxychlor	**BRL**	µg/kg	5.2	1.8	1	8081A	10/12/08 2:34	jvogel	Q36092
a-BHC	**BRL**	µg/kg	2.6	0.23	1	8081A	10/12/08 2:34	jvogel	Q36092
a-Chlordane	**BRL**	µg/kg	2.6	0.45	1	8081A	10/12/08 2:34	jvogel	Q36092
Aldrin	**BRL**	µg/kg	2.6	0.51	1	8081A	10/12/08 2:34	jvogel	Q36092
b-BHC	**BRL**	µg/kg	2.6	0.65	1	8081A	10/12/08 2:34	jvogel	Q36092
Chlordane	**BRL**	µg/kg	64	6.1	1	8081A	10/12/08 2:34	jvogel	Q36092
d-BHC	**BRL**	µg/kg	2.6	0.36	1	8081A	10/12/08 2:34	jvogel	Q36092
Dieldrin	**BRL**	µg/kg	1.3	0.53	1	8081A	10/12/08 2:34	jvogel	Q36092
Endosulfan I	**BRL**	µg/kg	2.6	0.46	1	8081A	10/12/08 2:34	jvogel	Q36092
Endosulfan II	**BRL**	µg/kg	2.6	0.58	1	8081A	10/12/08 2:34	jvogel	Q36092
Endosulfan Sulfate	**BRL**	µg/kg	2.6	0.67	1	8081A	10/12/08 2:34	jvogel	Q36092
Endrin	**BRL**	µg/kg	2.6	0.77	1	8081A	10/12/08 2:34	jvogel	Q36092
Endrin Aldehyde	**BRL**	µg/kg	2.6	0.72	1	8081A	10/12/08 2:34	jvogel	Q36092
Endrin Ketone	**BRL**	µg/kg	2.6	0.51	1	8081A	10/12/08 2:34	jvogel	Q36092
g-BHC	**BRL**	µg/kg	2.6	0.30	1	8081A	10/12/08 2:34	jvogel	Q36092
g-Chlordane	**BRL**	µg/kg	2.6	0.42	1	8081A	10/12/08 2:34	jvogel	Q36092
Heptachlor	**BRL**	µg/kg	2.6	0.61	1	8081A	10/12/08 2:34	jvogel	Q36092
Heptachlor Epoxide	**BRL**	µg/kg	2.6	0.47	1	8081A	10/12/08 2:34	jvogel	Q36092
Toxaphene	**BRL**	µg/kg	64	6.6	1	8081A	10/12/08 2:34	jvogel	Q36092

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Laboratory Report

10/21/08

ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)
Sample Matrix: Soil

Client Sample ID: 33DUP-02
Prism Sample ID: 227191
COC Group: G1008219
Time Collected: 10/07/08
Time Submitted: 10/08/08 9:35

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Sample Preparation:			30.15 g	/	0 mL	3550B	10/10/08 10:00	jbarnette	P22766
Mercury by CVAA									
Mercury	**0.065**	mg/kg	0.064	0.0030	1	7471A	10/15/08 13:23	heasler	Q36185
Sample Preparation:			0.6 g	/	50 mL	7471A	10/15/08 10:30	mbarber	P22800
Metals by ICP									
Arsenic	**10**	mg/kg	0.64	0.063	1	6010B	10/14/08 21:20	mcampbell	Q36093
Chromium	**19**	mg/kg	0.32	0.041	1	6010B	10/14/08 21:20	mcampbell	Q36093
Sample Preparation:			2.01 g	/	50 mL	3050B	10/13/08 7:30	mbarber	P22770

Surrogate	% Recovery	Control Limits
Tetrachloro-m-xylene (TCMX)	128	40 - 162
Decachlorobiphenyl (DCB)	101	26 - 204

Sample Comment(s):

BRL = Below Reporting Limit
J- Estimated value between the Reporting Limit and the MDL
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Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)
Sample Matrix: Water

Client Sample ID: 33MW09
Prism Sample ID: 227192
COC Group: G1008219
Time Collected: 10/07/08 13:45
Time Submitted: 10/08/08 9:35

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Organochlorine Pesticides by GC/ECD									
4,4'-DDD	**BRL**	µg/L	0.050	0.014	1	8081A	10/11/08 11:40	jvogel	Q36227
4,4'-DDE	**BRL**	µg/L	0.050	0.0086	1	8081A	10/11/08 11:40	jvogel	Q36227
4,4'-DDT	**BRL**	µg/L	0.050	0.014	1	8081A	10/11/08 11:40	jvogel	Q36227
4,4'-Methoxychlor	**BRL**	µg/L	0.050	0.017	1	8081A	10/11/08 11:40	jvogel	Q36227
a-BHC	**BRL**	µg/L	0.050	0.0075	1	8081A	10/11/08 11:40	jvogel	Q36227
a-Chlordane	**0.66**	µg/L	0.050	0.0071	1	8081A	10/11/08 11:40	jvogel	Q36227
Aldrin	**BRL**	µg/L	0.050	0.015	1	8081A	10/11/08 11:40	jvogel	Q36227
b-BHC	**BRL**	µg/L	0.050	0.012	1	8081A	10/11/08 11:40	jvogel	Q36227
Chlordane	**7.6**	µg/L	0.50	0.14	1	8081A	10/11/08 11:40	jvogel	Q36227
d-BHC	**BRL**	µg/L	0.050	0.0077	1	8081A	10/11/08 11:40	jvogel	Q36227
Dieldrin	**0.24**	µg/L	0.050	0.0084	1	8081A	10/11/08 11:40	jvogel	Q36227
Endosulfan I	**BRL**	µg/L	0.050	0.0076	1	8081A	10/11/08 11:40	jvogel	Q36227
Endosulfan II	**BRL**	µg/L	0.050	0.0071	1	8081A	10/11/08 11:40	jvogel	Q36227
Endosulfan Sulfate	**BRL**	µg/L	0.050	0.0086	1	8081A	10/11/08 11:40	jvogel	Q36227
Endrin	**BRL**	µg/L	0.050	0.0082	1	8081A	10/11/08 11:40	jvogel	Q36227
Endrin Aldehyde	**BRL**	µg/L	0.050	0.016	1	8081A	10/11/08 11:40	jvogel	Q36227
Endrin Ketone	**BRL**	µg/L	0.050	0.0094	1	8081A	10/11/08 11:40	jvogel	Q36227
g-BHC	**BRL**	µg/L	0.050	0.0083	1	8081A	10/11/08 11:40	jvogel	Q36227
g-Chlordane	**0.91**	µg/L	0.050	0.0089	1	8081A	10/11/08 11:40	jvogel	Q36227
Heptachlor	**BRL**	µg/L	0.050	0.016	1	8081A	10/11/08 11:40	jvogel	Q36227
Heptachlor Epoxide	**0.56**	µg/L	0.050	0.0088	1	8081A	10/11/08 11:40	jvogel	Q36227
Toxaphene	**BRL**	µg/L	0.50	0.15	1	8081A	10/11/08 11:40	jvogel	Q36227

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Full Service Analytical & Environmental Solutions

Laboratory Report

10/21/08

ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)
Sample Matrix: Water

Client Sample ID: 33MW09
Prism Sample ID: 227192
COC Group: G1008219
Time Collected: 10/07/08 13:45
Time Submitted: 10/08/08 9:35

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Sample Preparation:				950 mL /	10 mL	3510C	10/10/08 7:00	smanivanh	P22756

Surrogate	% Recovery	Control Limits
Tetrachloro-m-xylene (TCMX)	120	40 - 134
Decachlorobiphenyl (DCB)	88	13 - 186

Mercury by CVAA									
Mercury	**BRL**	mg/L	0.0002	0.000011	1	7470A	10/09/08 16:03	heasler	Q36014
Sample Preparation:				20 mL /	30 mL	7470A	10/09/08 10:15	mbarber	P22754
Metals by ICP									
Arsenic	**0.0044 J**	mg/L	0.010	0.0022	1	6010B	10/14/08 17:45	mcampbell	Q36089
Chromium	**0.0022 J**	mg/L	0.0050	0.00015	1	6010B	10/14/08 17:45	mcampbell	Q36089
Sample Preparation:				50 mL /	50 mL	3010A	10/13/08 8:00	mbarber	P22769

Sample Comment(s):

BRL = Below Reporting Limit

J- Estimated value between the Reporting Limit and the MDL

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Angela D. Overcash, V.P. Laboratory Services

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Full Service Analytical & Environmental Solutions

Laboratory Report

10/21/08

ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)
Sample Matrix: Water

Client Sample ID: 33MW03
Prism Sample ID: 227193
COC Group: G1008219
Time Collected: 10/07/08 14:21
Time Submitted: 10/08/08 9:35

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Organochlorine Pesticides by GC/ECD									
4,4'-DDD	**BRL**	µg/L	0.050	0.014	1	8081A	10/11/08 12:23	jvogel	Q36227
4,4'-DDE	**BRL**	µg/L	0.050	0.0086	1	8081A	10/11/08 12:23	jvogel	Q36227
4,4'-DDT	**BRL**	µg/L	0.050	0.014	1	8081A	10/11/08 12:23	jvogel	Q36227
4,4'-Methoxychlor	**BRL**	µg/L	0.050	0.017	1	8081A	10/11/08 12:23	jvogel	Q36227
a-BHC	**BRL**	µg/L	0.050	0.0075	1	8081A	10/11/08 12:23	jvogel	Q36227
a-Chlordane	**BRL**	µg/L	0.050	0.0071	1	8081A	10/11/08 12:23	jvogel	Q36227
Aldrin	**BRL**	µg/L	0.050	0.015	1	8081A	10/11/08 12:23	jvogel	Q36227
b-BHC	**BRL**	µg/L	0.050	0.012	1	8081A	10/11/08 12:23	jvogel	Q36227
Chlordane	**BRL**	µg/L	0.50	0.14	1	8081A	10/11/08 12:23	jvogel	Q36227
d-BHC	**BRL**	µg/L	0.050	0.0077	1	8081A	10/11/08 12:23	jvogel	Q36227
Dieldrin	**BRL**	µg/L	0.050	0.0084	1	8081A	10/11/08 12:23	jvogel	Q36227
Endosulfan I	**BRL**	µg/L	0.050	0.0076	1	8081A	10/11/08 12:23	jvogel	Q36227
Endosulfan II	**BRL**	µg/L	0.050	0.0071	1	8081A	10/11/08 12:23	jvogel	Q36227
Endosulfan Sulfate	**BRL**	µg/L	0.050	0.0086	1	8081A	10/11/08 12:23	jvogel	Q36227
Endrin	**BRL**	µg/L	0.050	0.0082	1	8081A	10/11/08 12:23	jvogel	Q36227
Endrin Aldehyde	**BRL**	µg/L	0.050	0.016	1	8081A	10/11/08 12:23	jvogel	Q36227
Endrin Ketone	**BRL**	µg/L	0.050	0.0094	1	8081A	10/11/08 12:23	jvogel	Q36227
g-BHC	**BRL**	µg/L	0.050	0.0083	1	8081A	10/11/08 12:23	jvogel	Q36227
g-Chlordane	**BRL**	µg/L	0.050	0.0089	1	8081A	10/11/08 12:23	jvogel	Q36227
Heptachlor	**BRL**	µg/L	0.050	0.016	1	8081A	10/11/08 12:23	jvogel	Q36227
Heptachlor Epoxide	**BRL**	µg/L	0.050	0.0088	1	8081A	10/11/08 12:23	jvogel	Q36227
Toxaphene	**BRL**	µg/L	0.50	0.15	1	8081A	10/11/08 12:23	jvogel	Q36227

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Full Service Analytical & Environmental Solutions

Laboratory Report

10/21/08

ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)
Sample Matrix: Water

Client Sample ID: 33MW03
Prism Sample ID: 227193
COC Group: G1008219
Time Collected: 10/07/08 14:21
Time Submitted: 10/08/08 9:35

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Sample Preparation:				1000 mL /	10 mL	3510C	10/10/08 7:00	smanivanh	P22756

Surrogate	% Recovery	Control Limits
Tetrachloro-m-xylene (TCMX)	120	40 - 134
Decachlorobiphenyl (DCB)	56	13 - 186

Mercury by CVAA									
Mercury	**BRL**	mg/L	0.0002	0.000011	1	7470A	10/09/08 16:07	heasler	Q36014
Sample Preparation:				20 mL /	30 mL	7470A	10/09/08 10:15	mbarber	P22754
Metals by ICP									
Arsenic	**BRL**	mg/L	0.010	0.0022	1	6010B	10/14/08 17:52	mcampbell	Q36089
Chromium	**0.0056**	mg/L	0.0050	0.00015	1	6010B	10/14/08 17:52	mcampbell	Q36089
Sample Preparation:				50 mL /	50 mL	3010A	10/13/08 8:00	mbarber	P22769

Sample Comment(s):

BRL = Below Reporting Limit
J- Estimated value between the Reporting Limit and the MDL
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Angela D. Overcash, V.P. Laboratory Services

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ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)
Sample Matrix: Water

Client Sample ID: 33MW01
Prism Sample ID: 227194
COC Group: G1008219
Time Collected: 10/07/08 14:29
Time Submitted: 10/08/08 9:35

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Organochlorine Pesticides by GC/ECD									
4,4'-DDD	**BRL**	µg/L	0.050	0.014	1	8081A	10/11/08 13:06	jvogel	Q36227
4,4'-DDE	**BRL**	µg/L	0.050	0.0086	1	8081A	10/11/08 13:06	jvogel	Q36227
4,4'-DDT	**BRL**	µg/L	0.050	0.014	1	8081A	10/11/08 13:06	jvogel	Q36227
4,4'-Methoxychlor	**BRL**	µg/L	0.050	0.017	1	8081A	10/11/08 13:06	jvogel	Q36227
a-BHC	**BRL**	µg/L	0.050	0.0075	1	8081A	10/11/08 13:06	jvogel	Q36227
a-Chlordane	**1.6**	µg/L	0.050	0.0071	1	8081A	10/11/08 13:06	jvogel	Q36227
Aldrin	**BRL**	µg/L	0.050	0.015	1	8081A	10/11/08 13:06	jvogel	Q36227
b-BHC	**BRL**	µg/L	0.050	0.012	1	8081A	10/11/08 13:06	jvogel	Q36227
Chlordane	**16**	µg/L	2.5	0.72	5	8081A	10/16/08 13:18	jvogel	Q36227
d-BHC	**BRL**	µg/L	0.050	0.0077	1	8081A	10/11/08 13:06	jvogel	Q36227
Dieldrin	**0.31**	µg/L	0.050	0.0084	1	8081A	10/11/08 13:06	jvogel	Q36227
Endosulfan I	**BRL**	µg/L	0.050	0.0076	1	8081A	10/11/08 13:06	jvogel	Q36227
Endosulfan II	**BRL**	µg/L	0.050	0.0071	1	8081A	10/11/08 13:06	jvogel	Q36227
Endosulfan Sulfate	**BRL**	µg/L	0.050	0.0086	1	8081A	10/11/08 13:06	jvogel	Q36227
Endrin	**BRL**	µg/L	0.050	0.0082	1	8081A	10/11/08 13:06	jvogel	Q36227
Endrin Aldehyde	**BRL**	µg/L	0.050	0.016	1	8081A	10/11/08 13:06	jvogel	Q36227
Endrin Ketone	**BRL**	µg/L	0.050	0.0094	1	8081A	10/11/08 13:06	jvogel	Q36227
g-BHC	**BRL**	µg/L	0.050	0.0083	1	8081A	10/11/08 13:06	jvogel	Q36227
g-Chlordane	**2.4**	µg/L	0.050	0.0089	1	8081A	10/11/08 13:06	jvogel	Q36227
Heptachlor	**BRL**	µg/L	0.050	0.016	1	8081A	10/11/08 13:06	jvogel	Q36227
Heptachlor Epoxide	**0.93**	µg/L	0.050	0.0088	1	8081A	10/11/08 13:06	jvogel	Q36227
Toxaphene	**BRL**	µg/L	0.50	0.15	1	8081A	10/11/08 13:06	jvogel	Q36227

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Full Service Analytical & Environmental Solutions

Laboratory Report

10/21/08

ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)
Sample Matrix: Water

Client Sample ID: 33MW01
Prism Sample ID: 227194
COC Group: G1008219
Time Collected: 10/07/08 14:29
Time Submitted: 10/08/08 9:35

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Sample Preparation:				950 mL /	10 mL	3510C	10/10/08 7:00	smanivanh	P22756

Surrogate	% Recovery	Control Limits
Tetrachloro-m-xylene (TCMX)	121	40 - 134
Decachlorobiphenyl (DCB)	96	13 - 186

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Mercury by CVAA									
Mercury	**BRL**	mg/L	0.0002	0.000011	1	7470A	10/09/08 16:11	heasler	Q36014
Sample Preparation:				20 mL /	30 mL	7470A	10/09/08 10:15	mbarber	P22754
Metals by ICP									
Arsenic	**BRL**	mg/L	0.010	0.0022	1	6010B	10/14/08 17:58	mcampbell	Q36089
Chromium	**0.0013 J**	mg/L	0.0050	0.00015	1	6010B	10/14/08 17:58	mcampbell	Q36089
Sample Preparation:				50 mL /	50 mL	3010A	10/13/08 8:00	mbarber	P22769

Sample Comment(s):

BRL = Below Reporting Limit

J- Estimated value between the Reporting Limit and the MDL

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Laboratory Report

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ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)
Sample Matrix: Water

Client Sample ID: 33DUP-1
Prism Sample ID: 227195
COC Group: G1008219
Time Collected: 10/07/08
Time Submitted: 10/08/08 9:35

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Organochlorine Pesticides by GC/ECD									
4,4'-DDD	**BRL**	µg/L	0.050	0.014	1	8081A	10/11/08 13:48	jvogel	Q36227
4,4'-DDE	**BRL**	µg/L	0.050	0.0086	1	8081A	10/11/08 13:48	jvogel	Q36227
4,4'-DDT	**BRL**	µg/L	0.050	0.014	1	8081A	10/11/08 13:48	jvogel	Q36227
4,4'-Methoxychlor	**BRL**	µg/L	0.050	0.017	1	8081A	10/11/08 13:48	jvogel	Q36227
a-BHC	**BRL**	µg/L	0.050	0.0075	1	8081A	10/11/08 13:48	jvogel	Q36227
a-Chlordane	**1.6**	µg/L	0.050	0.0071	1	8081A	10/11/08 13:48	jvogel	Q36227
Aldrin	**BRL**	µg/L	0.050	0.015	1	8081A	10/11/08 13:48	jvogel	Q36227
b-BHC	**BRL**	µg/L	0.050	0.012	1	8081A	10/11/08 13:48	jvogel	Q36227
Chlordane	**17**	µg/L	2.5	0.72	5	8081A	10/16/08 15:18	jvogel	Q36227
d-BHC	**BRL**	µg/L	0.050	0.0077	1	8081A	10/11/08 13:48	jvogel	Q36227
Dieldrin	**0.31**	µg/L	0.050	0.0084	1	8081A	10/11/08 13:48	jvogel	Q36227
Endosulfan I	**BRL**	µg/L	0.050	0.0076	1	8081A	10/11/08 13:48	jvogel	Q36227
Endosulfan II	**BRL**	µg/L	0.050	0.0071	1	8081A	10/11/08 13:48	jvogel	Q36227
Endosulfan Sulfate	**BRL**	µg/L	0.050	0.0086	1	8081A	10/11/08 13:48	jvogel	Q36227
Endrin	**BRL**	µg/L	0.050	0.0082	1	8081A	10/11/08 13:48	jvogel	Q36227
Endrin Aldehyde	**BRL**	µg/L	0.050	0.016	1	8081A	10/11/08 13:48	jvogel	Q36227
Endrin Ketone	**BRL**	µg/L	0.050	0.0094	1	8081A	10/11/08 13:48	jvogel	Q36227
g-BHC	**BRL**	µg/L	0.050	0.0083	1	8081A	10/11/08 13:48	jvogel	Q36227
g-Chlordane	**2.4**	µg/L	0.050	0.0089	1	8081A	10/11/08 13:48	jvogel	Q36227
Heptachlor	**BRL**	µg/L	0.050	0.016	1	8081A	10/11/08 13:48	jvogel	Q36227
Heptachlor Epoxide	**0.95**	µg/L	0.050	0.0088	1	8081A	10/11/08 13:48	jvogel	Q36227
Toxaphene	**BRL**	µg/L	0.50	0.15	1	8081A	10/11/08 13:48	jvogel	Q36227

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Full Service Analytical & Environmental Solutions

Laboratory Report

10/21/08

ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)
Sample Matrix: Water

Client Sample ID: 33DUP-1
Prism Sample ID: 227195
COC Group: G1008219
Time Collected: 10/07/08
Time Submitted: 10/08/08 9:35

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Sample Preparation:				1000 mL /	10 mL	3510C	10/10/08 7:00	smanivanh	P22756

Surrogate	% Recovery	Control Limits
Tetrachloro-m-xylene (TCMX)	118	40 - 134
Decachlorobiphenyl (DCB)	94	13 - 186

Mercury by CVAA									
Mercury	**BRL**	mg/L	0.0002	0.000011	1	7470A	10/09/08 16:14	heasler	Q36014
Sample Preparation:				20 mL /	30 mL	7470A	10/09/08 10:15	mbarber	P22754
Metals by ICP									
Arsenic	**BRL**	mg/L	0.010	0.0022	1	6010B	10/14/08 18:04	mcampbell	Q36089
Chromium	**0.0013 J**	mg/L	0.0050	0.00015	1	6010B	10/14/08 18:04	mcampbell	Q36089
Sample Preparation:				50 mL /	50 mL	3010A	10/13/08 8:00	mbarber	P22769

Sample Comment(s):

BRL = Below Reporting Limit
J- Estimated value between the Reporting Limit and the MDL
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Angela D. Overcash, V.P. Laboratory Services

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Level II QC Report

10/21/2008

ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)

COC Group Number: G1008219
Date/Time Submitted: 10/8/200 9:35

Mercury by CVAA, method 7470A

Method Blank

	Result	RL	Control Limit	Units					QC Batch ID
Mercury	-0.00009	0.0002	<0.0001	mg/L					Q36014

Laboratory Control Sample

	Result	Spike Amount		Units	Recovery %	Recovery Ranges %			QC Batch ID
Mercury	0.00907	0.0093		mg/L	97	80-120			Q36014

Matrix Spike

Sample ID:	Result	Spike Amount		Units	Recovery %	Recovery Ranges %			QC Batch ID
227186 Mercury	0.00886	0.0093		mg/L	95	80-120			Q36014

Matrix Spike Duplicate

Sample ID:	Result	Spike Amount		Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
227186 Mercury	0.00913	0.0093		mg/L	98	80-120	3	0 - 20	Q36014

Metals by ICP, method 6010B

Method Blank

	Result	RL	Control Limit	Units					QC Batch ID
Arsenic	-0.001	0.01	<0.005	mg/L					Q36089
Chromium	0.0009	0.005	<0.0025	mg/L					Q36089

Laboratory Control Sample

	Result	Spike Amount		Units	Recovery %	Recovery Ranges %			QC Batch ID
Arsenic	0.2565	0.25		mg/L	103	80-120			Q36089
Chromium	0.2557	0.25		mg/L	102	80-120			Q36089

Matrix Spike

Sample ID:	Result	Spike Amount		Units	Recovery %	Recovery Ranges %			QC Batch ID
227186 Arsenic	0.2569	0.25		mg/L	103	75-125			Q36089
Chromium	0.2494	0.25		mg/L	98	75-125			Q36089

Matrix Spike Duplicate

Sample ID:	Result	Spike Amount		Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
227186 Arsenic	0.257	0.25		mg/L	103	75-125	0	0 - 20	Q36089
Chromium	0.2495	0.25		mg/L	98	75-125	0	0 - 20	Q36089

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NC Certification No. 402
SC Certification No. 99012
NC Drinking Water Cert. No. 37735

Full Service Analytical & Environmental Solutions

Level II QC Report

10/21/2008

ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)

COC Group Number: G1008219
Date/Time Submitted: 10/8/200 9:35

Organochlorine Pesticides by Gas Chromatography, method 8081A

Method Blank

	Result	RL	Control Limit	Units	QC Batch ID
4,4'-DDD	ND	2	<1	µg/kg	Q36092
4,4'-DDE	ND	2	<1	µg/kg	Q36092
4,4'-DDT	ND	3	<1.5	µg/kg	Q36092
4,4'-Methoxychlor	ND	2	<1	µg/kg	Q36092
a-BHC	ND	2	<1	µg/kg	Q36092
a-Chlordane	ND	2	<1	µg/kg	Q36092
Aldrin	ND	2	<1	µg/kg	Q36092
b-BHC	ND	2	<1	µg/kg	Q36092
Chlordane	ND	50	<25	µg/kg	Q36092
d-BHC	ND	2	<1	µg/kg	Q36092
Dieldrin	ND	2	<1	µg/kg	Q36092
Endosulfan I	ND	2	<1	µg/kg	Q36092
Endosulfan II	ND	2	<1	µg/kg	Q36092
Endosulfan Sulfate	ND	2	<1	µg/kg	Q36092
Endrin	ND	2	<1	µg/kg	Q36092
Endrin Aldehyde	ND	2	<1	µg/kg	Q36092
Endrin Ketone	ND	2	<1	µg/kg	Q36092
g-BHC	ND	2	<1	µg/kg	Q36092
g-Chlordane	ND	2	<1	µg/kg	Q36092
Heptachlor	ND	2	<1	µg/kg	Q36092
Heptachlor Epoxide	ND	2	<1	µg/kg	Q36092
Toxaphene	ND	50	<25	µg/kg	Q36092

Laboratory Control Sample

	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
4,4'-DDT	41.1	33	µg/kg	125	75-141	Q36092
Aldrin	33.7	33	µg/kg	102	66-132	Q36092
Dieldrin	33.4	33	µg/kg	101	72-136	Q36092
Endrin	38.0	33	µg/kg	115	74-147	Q36092
Heptachlor	36.0	33	µg/kg	109	72-134	Q36092

Matrix Spike

Sample ID:		Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
226778	4,4'-DDT	51.2	33	µg/kg	155	56-163	Q36092
	Aldrin	36.9	33	µg/kg	112	57-137	Q36092
	Dieldrin	37.8	33	µg/kg	115	60-141	Q36092

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NC Certification No. 402
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Full Service Analytical & Environmental Solutions

Level II QC Report

10/21/2008

ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)

COC Group Number: G1008219
Date/Time Submitted: 10/8/200 9:35

Matrix Spike

Sample ID:		Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
226778	Endrin	51.2	33	µg/kg	155	65-164	Q36092
	Heptachlor	46.0	33	µg/kg	139	63-142	Q36092

Matrix Spike Duplicate

Sample ID:		Result	Spike Amount	Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
226778	4,4'-DDT	54.4	33	µg/kg	165 #	56-163	6	0 - 38	Q36092
	Aldrin	35.9	33	µg/kg	109	57-137	3	0 - 29	Q36092
	Dieldrin	37.5	33	µg/kg	114	60-141	1	0 - 30	Q36092
	Endrin	50.7	33	µg/kg	154	65-164	1	0 - 21	Q36092
	Heptachlor	46.5	33	µg/kg	141	63-142	1	0 - 27	Q36092

Metals by ICP, method 6010B

Method Blank

	Result	RL	Control Limit	Units	QC Batch ID
Arsenic	-0.0095	0.5	<0.25	mg/kg	Q36093
Chromium	0.0406	0.25	<0.125	mg/kg	Q36093

Laboratory Control Sample

	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
Arsenic	23.6831	25	mg/kg	95	80-120	Q36093
Chromium	24.4271	25	mg/kg	98	80-120	Q36093

Matrix Spike

Sample ID:		Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
227188	Arsenic	28.6692	24.630	mg/kg	81	75-125	Q36093
	Chromium	37.4073	24.630	mg/kg	83	75-125	Q36093

Matrix Spike Duplicate

Sample ID:		Result	Spike Amount	Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
227188	Arsenic	29.1358	24.875	mg/kg	82	75-125	2	0 - 20	Q36093
	Chromium	37.5054	24.875	mg/kg	83	75-125	0	0 - 20	Q36093

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Full Service Analytical & Environmental Solutions

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NC Drinking Water Cert. No. 37735

Level II QC Report

10/21/2008

ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)

COC Group Number: G1008219
Date/Time Submitted: 10/8/200 9:35

Mercury by CVAA, method 7471A

Method Blank	Result		RL	Control Limit	Units					QC Batch ID
Mercury	0.02431	#	0.02	<0.01	mg/kg					Q36185

Laboratory Control Sample	Result	Spike Amount	Units	Recovery %	Recovery Ranges %			QC Batch ID
Mercury	0.46226	0.417	mg/kg	111	80-120			Q36185

Matrix Spike Sample ID:	Result	Spike Amount	Units	Recovery %	Recovery Ranges %			QC Batch ID
227188 Mercury	0.46648	0.4162	mg/kg	97	80-120			Q36185

Matrix Spike Duplicate Sample ID:	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
227188 Mercury	0.46175	0.4111	mg/kg	97	80-120	1	0 - 20	Q36185

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Level II QC Report

10/21/2008

ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)

COC Group Number: G1008219
Date/Time Submitted: 10/8/200 9:35

Organochlorine Pesticides by GC/ECD, method 8081A

Method Blank

	Result	RL	Control Limit	Units	QC Batch ID
4,4'-DDD	ND	0.05	<0.025	µg/L	Q36227
4,4'-DDE	ND	0.05	<0.025	µg/L	Q36227
4,4'-DDT	ND	0.05	<0.025	µg/L	Q36227
4,4'-Methoxychlor	ND	0.05	<0.025	µg/L	Q36227
a-BHC	ND	0.05	<0.025	µg/L	Q36227
a-Chlordane	ND	0.05	<0.025	µg/L	Q36227
Aldrin	ND	0.05	<0.025	µg/L	Q36227
b-BHC	ND	0.05	<0.025	µg/L	Q36227
Chlordane	ND	0.5	<0.25	µg/L	Q36227
d-BHC	ND	0.05	<0.025	µg/L	Q36227
Dieldrin	ND	0.05	<0.025	µg/L	Q36227
Endosulfan I	ND	0.05	<0.025	µg/L	Q36227
Endosulfan II	ND	0.05	<0.025	µg/L	Q36227
Endosulfan Sulfate	ND	0.05	<0.025	µg/L	Q36227
Endrin	ND	0.05	<0.025	µg/L	Q36227
Endrin Aldehyde	ND	0.05	<0.025	µg/L	Q36227
Endrin Ketone	ND	0.05	<0.025	µg/L	Q36227
g-BHC	ND	0.05	<0.025	µg/L	Q36227
g-Chlordane	ND	0.05	<0.025	µg/L	Q36227
Heptachlor	ND	0.05	<0.025	µg/L	Q36227
Heptachlor Epoxide	ND	0.05	<0.025	µg/L	Q36227
Toxaphene	ND	0.5	<0.25	µg/L	Q36227

Laboratory Control Sample

	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
4,4'-DDT	1.21	1	µg/L	121	66-142	Q36227
Aldrin	0.824	1	µg/L	82	62-124	Q36227
Dieldrin	0.917	1	µg/L	92	69-130	Q36227
Endrin	1.15	1	µg/L	115	69-144	Q36227
Heptachlor	0.974	1	µg/L	97	61-136	Q36227

Matrix Spike

Sample ID:		Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
227186	4,4'-DDT	1.24	1	µg/L	124	15-171	Q36227
	Aldrin	0.999	1	µg/L	100	24-142	Q36227
	Dieldrin	1.16	1	µg/L	70	27-148	Q36227

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Full Service Analytical & Environmental Solutions

Level II QC Report

10/21/2008

ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)

COC Group Number: G1008219
Date/Time Submitted: 10/8/200 9:35

Matrix Spike

Sample ID:	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
227186 Endrin	1.32	1	µg/L	132	35-165	Q36227
Heptachlor	1.13	1	µg/L	113	38-150	Q36227

Matrix Spike Duplicate

Sample ID:	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
227186 4,4'-DDT	1.35	1	µg/L	135	15-171	8	0 - 30	Q36227
Aldrin	1.08	1	µg/L	108	24-142	8	0 - 35	Q36227
Dieldrin	1.25	1	µg/L	79	27-148	7	0 - 28	Q36227
Endrin	1.44	1	µg/L	144	35-165	9	0 - 27	Q36227
Heptachlor	1.28	1	µg/L	128	38-150	12	0 - 36	Q36227

#-See Case Narrative

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Full Service Analytical & Environmental Solutions
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Phone: 704/529-6364 • Fax: 704/525-0409

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1 QUOTE # TO ENSURE PROPER BILLING: _____

Client Company Name: USCG
Report To/Contact Name: MICHAEL JORDAN
Reporting Address: ENSR RALEIGH

Phone: _____ Fax (Yes) (No): _____
Email (Yes) (No) Email Address _____
EDD Type: PDF ☒ Excel ☒ Other _____
Site Location Name: USCG SWMU 33
Site Location Physical Address: _____

Project Name: USCG SWMU 33
Short Hold Analysis: (Yes) (No) UST Project: (Yes) (No)
*Please ATTACH any project specific reporting (QC LEVEL I II III IV) provisions and/or QC Requirements
Invoice To: _____
Address: _____

Purchase Order No./Billing Reference 2058194
Requested Due Date ☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 4 Days ☐ 5 Days
"Working Days" ☐ 6-9 Days ☐ Standard 10 days ☐ Rush Work Must Be Pre-Approved
Samples received after 15:00 will be processed next business day.
Turnaround time is based on business days, excluding weekends and holidays.
(SEE REVERSE FOR TERMS & CONDITIONS REGARDING SERVICES RENDERED BY PRISM LABORATORIES, INC. TO CLIENT)

LAB USE ONLY

	YES	NO	N/A
Samples INTACT upon arrival?	✓		
Received ON WET ICE? Temp 0.9	✓		
PROPER PRESERVATIVES indicated?	✓		
Received WITHIN HOLDING TIMES?	✓		
CUSTODY SEALS INTACT?	✓		
VOLATILES rec'd W/OUT HEADSPACE?			✓
PROPER CONTAINERS used?	✓		

TO BE FILLED IN BY CLIENT/SAMPLING PERSONNEL
Certification: NELAC ____ USACE ____ FL ____ NC ☒ ____
SC ____ OTHER ____ N/A ____
Water Chlorinated: YES ___ NO ___
Sample Iced Upon Collection: YES ☒ NO ___

CLIENT SAMPLE DESCRIPTION	DATE COLLECTED	TIME COLLECTED MILITARY HOURS	MATRIX (SOIL, WATER OR SLUDGE)	SAMPLE CONTAINER *TYPE SEE BELOW	NO.	SIZE	PRESERVATIVES	ANALYSES REQUESTED: 8081 PESTICIDES	As, Cr, Hg 6010						REMARKS	PRISM LAB ID NO.
33MW06	10/07/08	1525	WATER					2	1							227186
33MW02	↓	1524	↓					2	1							227187
33SB13	↓	1555	SOIL					1	1							227188
33SB14	↓	1550	↓					1	1							227189
33SB15	↓	1600	↓					1	1							227190
33DUP-02	↓	—	↓					1	1							227191

Sampler's Signature [signature] Sampled By (Print Name) MICHAEL JORDAN Affiliation _____

PRESS DOWN FIRMLY - 3 COPIES

Upon relinquishing, this Chain of Custody is your authorization for Prism to proceed with the analyses as requested above. Any changes must be submitted in writing to the Prism Project Manager. There will be charges for any changes after analyses have been initialized.

Relinquished By: (Signature)	Received By: (Signature)	Date	Military/Hours
[signature]			
Relinquished By: (Signature)	Received By: (Signature)	Date	
	[signature]		
Relinquished By: (Signature)	Received For Prism Laboratories By:	Date	
	[signature]	10/8/08	435 ~~935~~

Additional Comments:

PRISM USE ONLY
Site Arrival Time:
Site Departure Time:
Field Tech Fee:
Mileage:

Method of Shipment: NOTE: ALL SAMPLE COOLERS SHOULD BE TAPED SHUT WITH CUSTODY SEALS FOR TRANSPORTATION TO THE LABORATORY. SAMPLES ARE NOT ACCEPTED AND VERIFIED AGAINST COC UNTIL RECEIVED AT THE LABORATORY.
☒ Fed Ex ☐ UPS ☐ Hand-delivered ☐ Prism Field Service ☐ Other _____
COC Group No. G1008219

NPDES:	UST:	GROUNDWATER:	DRINKING WATER:	SOLID WASTE:	RCRA:	CERCLA	LANDFILL	OTHER:
☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC

SEE REVERSE FOR TERMS & CONDITIONS

ORIGINAL

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Full Service Analytical & Environmental Solutions
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Phone: 704/529-6364 • Fax: 704/525-0409

CHAIN OF CUSTODY RECORD

PAGE 2 OF 2 QUOTE # TO ENSURE PROPER BILLING: _____

Client Company Name: USCG
Report To/Contact Name: MICHAEL JORDAN
Reporting Address: ENSR RALEIGH

Phone: _____ Fax (Yes) (No): _____
Email (Yes) (No) Email Address _____
EDD Type: PDF X Excel X Other _____
Site Location Name: USCG SWMU 33
Site Location Physical Address: _____

Project Name: USCG SWMU 33
Short Hold Analysis: (Yes) (No) UST Project: (Yes) (No)
*Please ATTACH any project specific reporting (QC LEVEL I II III IV) provisions and/or QC Requirements
Invoice To: _____
Address: _____

Purchase Order No./Billing Reference _____
Requested Due Date ❑ 1 Day ❑ 2 Days ❑ 3 Days ❑ 4 Days ❑ 5 Days
"Working Days" ❑ 6-9 Days ❑ Standard 10 days ❑ Rush Work Must Be Pre-Approved
Samples received after 15:00 will be processed next business day.
Turnaround time is based on business days, excluding weekends and holidays.
(SEE REVERSE FOR TERMS & CONDITIONS REGARDING SERVICES RENDERED BY PRISM LABORATORIES, INC. TO CLIENT)

LAB USE ONLY

	YES	NO	N/A
Samples INTACT upon arrival?	✓		
Received ON WET ICE? Temp 0.9	✓		
PROPER PRESERVATIVES indicated?	✓		
Received WITHIN HOLDING TIMES?	✓		
CUSTODY SEALS INTACT?	✓		
VOLATILES rec'd W/OUT HEADSPACE?			✓
PROPER CONTAINERS used?	✓		

TO BE FILLED IN BY CLIENT/SAMPLING PERSONNEL
Certification: NELAC ____ USACE ____ FL ____ NC X
SC ____ OTHER ____ N/A ____
Water Chlorinated: YES ____ NO ____
Sample Iced Upon Collection: YES X NO ____

CLIENT SAMPLE DESCRIPTION	DATE COLLECTED	TIME COLLECTED MILITARY HOURS	MATRIX (SOIL, WATER OR SLUDGE)	SAMPLE CONTAINER *TYPE SEE BELOW	NO.	SIZE	PRESERVATIVES	ANALYSES REQUESTED: 8081 PESTICIDES	As, Cr, Hg 6010						REMARKS	PRISM LAB ID NO.
33MW09	10/07/08	1345	WATER					2	1							227192
33MW03	↓	1421	↓					2	1							227193
33MW01		1429						2	1							227194
33DUP-1		—						2	1							227195

Sampler's Signature [signature] Sampled By (Print Name) MICHAEL JORDAN Affiliation _____

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Upon relinquishing, this Chain of Custody is your authorization for Prism to proceed with the analyses as requested above. Any changes must be submitted in writing to the Prism Project Manager. There will be charges for any changes after analyses have been initialized.

Relinquished By: (Signature)	Received By: (Signature)	Date	Military/Hours
[signature]			
Relinquished By: (Signature)	Received By: (Signature)	Date	
Relinquished By: (Signature)	Received For Prism Laboratories By: [signature]	Date 10/8/08	935

Method of Shipment: NOTE: ALL SAMPLE COOLERS SHOULD BE TAPED SHUT WITH CUSTODY SEALS FOR TRANSPORTATION TO THE LABORATORY. SAMPLES ARE NOT ACCEPTED AND VERIFIED AGAINST COC UNTIL RECEIVED AT THE LABORATORY.
X Fed Ex ❑ UPS ❑ Hand-delivered X Prism Field Service ❑ Other _____
COC Group No. G1008219

Additional Comments:

PRISM USE ONLY
Site Arrival Time:
Site Departure Time:
Field Tech Fee:
Mileage:

NPDES:	UST:	GROUNDWATER:	DRINKING WATER:	SOLID WASTE:	RCRA:	CERCLA	LANDFILL	OTHER:
❑ NC ❑ SC	❑ NC ❑ SC	❑ NC ❑ SC	❑ NC ❑ SC	❑ NC ❑ SC	❑ NC ❑ SC	❑ NC ❑ SC	❑ NC ❑ SC	❑ NC ❑ SC
❑ _____	❑ _____	❑ _____	❑ _____	❑ _____	❑ _____	❑ _____	❑ _____	❑ _____

SEE REVERSE FOR TERMS & CONDITIONS

ORIGINAL

Case Narrative

PRISM
LABORATORIES,INC.

Date:	10/21/08	**Client Project ID:**	USCG Support Ctr. (SWMU-33)
Company:	ENSR C & E, Inc	**Prism COC Group No:**	G1008354
Contact:	MICHAEL JORDAN	**Collection Date(s):**	10/08/08
Address:	7041 Old Wake Forest Rd. Suite 103 Raleigh, NC 27616	**Lab Submittal Date(s):**	10/09/08
		Client Project Name Or No:	Elizabeth City, NC

This data package contains the analytical results for the project identified above and includes a Case Narrative, Laboratory Report and Quality Control Data totaling 10 pages. A chain-of-custody is also attached for the samples submitted to Prism for this project.

Data qualifiers are flagged individually on each sample. A key reference for the data qualifiers appears at the end of this case narrative. Quality control statements and/or sample specific remarks are included in the sample comments section of the laboratory report for each sample affected.

Semi Volatile Analysis

No Anomalies Reported

Volatile Analysis

N/A

Metals Analysis

No Anomalies Reported

Wet Lab and Micro Analysis

N/A

Please call if you have any questions relating to this analytical report.

Date Reviewed by:	Robbi A. Jones	**Project Manager:**	Robbi A. Jones
Signature:	Robbi A. Jones	**Signature:**	Robbi A. Jones
Review Date:	10/21/08	**Approval Date:**	10/21/08

Data Qualifiers Key Reference:

B: Compound also detected in the method blank.
#: Result outside of the QC limits.
DO: Compound diluted out.
E: Estimated concentration, calibration range exceeded.
J: The analyte was positively identified but the value is estimated below the reporting limit.
H: Estimated concentration with a high bias.
L: Estimated concentration with a low bias.
M: A matrix effect is present.

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NC Certification No. 402
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Full Service Analytical & Environmental Solutions

Laboratory Report

10/21/08

ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)
Sample Matrix: Water

Client Sample ID: 33MW-05
Prism Sample ID: 227538
COC Group: G1008354
Time Collected: 10/08/08 11:05
Time Submitted: 10/09/08 15:10

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Organochlorine Pesticides by GC/ECD									
4,4'-DDD	**BRL**	µg/L	0.050	0.014	1	8081A	10/16/08 20:22	jvogel	Q36221
4,4'-DDE	**BRL**	µg/L	0.050	0.0086	1	8081A	10/16/08 20:22	jvogel	Q36221
4,4'-DDT	**BRL**	µg/L	0.050	0.014	1	8081A	10/16/08 20:22	jvogel	Q36221
4,4'-Methoxychlor	**BRL**	µg/L	0.050	0.017	1	8081A	10/16/08 20:22	jvogel	Q36221
a-BHC	**BRL**	µg/L	0.050	0.0075	1	8081A	10/16/08 20:22	jvogel	Q36221
a-Chlordane	**BRL**	µg/L	0.050	0.0071	1	8081A	10/16/08 20:22	jvogel	Q36221
Aldrin	**BRL**	µg/L	0.050	0.015	1	8081A	10/16/08 20:22	jvogel	Q36221
b-BHC	**BRL**	µg/L	0.050	0.012	1	8081A	10/16/08 20:22	jvogel	Q36221
Chlordane	**BRL**	µg/L	0.50	0.14	1	8081A	10/16/08 20:22	jvogel	Q36221
d-BHC	**BRL**	µg/L	0.050	0.0077	1	8081A	10/16/08 20:22	jvogel	Q36221
Dieldrin	**BRL**	µg/L	0.050	0.0084	1	8081A	10/16/08 20:22	jvogel	Q36221
Endosulfan I	**BRL**	µg/L	0.050	0.0076	1	8081A	10/16/08 20:22	jvogel	Q36221
Endosulfan II	**BRL**	µg/L	0.050	0.0071	1	8081A	10/16/08 20:22	jvogel	Q36221
Endosulfan Sulfate	**BRL**	µg/L	0.050	0.0086	1	8081A	10/16/08 20:22	jvogel	Q36221
Endrin	**BRL**	µg/L	0.050	0.0082	1	8081A	10/16/08 20:22	jvogel	Q36221
Endrin Aldehyde	**BRL**	µg/L	0.050	0.016	1	8081A	10/16/08 20:22	jvogel	Q36221
Endrin Ketone	**BRL**	µg/L	0.050	0.0094	1	8081A	10/16/08 20:22	jvogel	Q36221
g-BHC	**BRL**	µg/L	0.050	0.0083	1	8081A	10/16/08 20:22	jvogel	Q36221
g-Chlordane	**BRL**	µg/L	0.050	0.0089	1	8081A	10/16/08 20:22	jvogel	Q36221
Heptachlor	**BRL**	µg/L	0.050	0.016	1	8081A	10/16/08 20:22	jvogel	Q36221
Heptachlor Epoxide	**0.16**	µg/L	0.050	0.0088	1	8081A	10/16/08 20:22	jvogel	Q36221
Toxaphene	**BRL**	µg/L	0.50	0.15	1	8081A	10/16/08 20:22	jvogel	Q36221

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Full Service Analytical & Environmental Solutions

Laboratory Report

10/21/08

ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)
Sample Matrix: Water

Client Sample ID: 33MW-05
Prism Sample ID: 227538
COC Group: G1008354
Time Collected: 10/08/08 11:05
Time Submitted: 10/09/08 15:10

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Sample Preparation:				900 mL /	10 mL	3510C	10/14/08 8:00	smanivanh	P22810
Mercury by CVAA									
Mercury	**BRL**	mg/L	0.0002	0.000011	1	7470A	10/14/08 16:30	heasler	Q36111
Sample Preparation:				20 mL /	30 mL	7470A	10/14/08 10:50	mbarber	P22785
Metals by ICP									
Arsenic	**BRL**	mg/L	0.010	0.0022	1	6010B	10/14/08 18:33	mcampbell	Q36089
Chromium	**0.0023 J**	mg/L	0.0050	0.00015	1	6010B	10/14/08 18:33	mcampbell	Q36089
Sample Preparation:				50 mL /	50 mL	3010A	10/13/08 8:00	mbarber	P22769

Surrogate	% Recovery	Control Limits
Tetrachloro-m-xylene (TCMX)	94	40 - 134
Decachlorobiphenyl (DCB)	168	13 - 186

Sample Comment(s):

BRL = Below Reporting Limit

J- Estimated value between the Reporting Limit and the MDL

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Angela D. Overcash, V.P. Laboratory Services

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Laboratory Report

10/21/08

ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)
Sample Matrix: Water

Client Sample ID: 33MW-07
Prism Sample ID: 227539
COC Group: G1008354
Time Collected: 10/08/08 12:15
Time Submitted: 10/09/08 15:10

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Organochlorine Pesticides by GC/ECD									
4,4'-DDD	**BRL**	µg/L	0.050	0.014	1	8081A	10/16/08 21:47	jvogel	Q36221
4,4'-DDE	**BRL**	µg/L	0.050	0.0086	1	8081A	10/16/08 21:47	jvogel	Q36221
4,4'-DDT	**BRL**	µg/L	0.050	0.014	1	8081A	10/16/08 21:47	jvogel	Q36221
4,4'-Methoxychlor	**BRL**	µg/L	0.050	0.017	1	8081A	10/16/08 21:47	jvogel	Q36221
a-BHC	**BRL**	µg/L	0.050	0.0075	1	8081A	10/16/08 21:47	jvogel	Q36221
a-Chlordane	**BRL**	µg/L	0.050	0.0071	1	8081A	10/16/08 21:47	jvogel	Q36221
Aldrin	**BRL**	µg/L	0.050	0.015	1	8081A	10/16/08 21:47	jvogel	Q36221
b-BHC	**BRL**	µg/L	0.050	0.012	1	8081A	10/16/08 21:47	jvogel	Q36221
Chlordane	**BRL**	µg/L	0.50	0.14	1	8081A	10/16/08 21:47	jvogel	Q36221
d-BHC	**BRL**	µg/L	0.050	0.0077	1	8081A	10/16/08 21:47	jvogel	Q36221
Dieldrin	**BRL**	µg/L	0.050	0.0084	1	8081A	10/16/08 21:47	jvogel	Q36221
Endosulfan I	**BRL**	µg/L	0.050	0.0076	1	8081A	10/16/08 21:47	jvogel	Q36221
Endosulfan II	**BRL**	µg/L	0.050	0.0071	1	8081A	10/16/08 21:47	jvogel	Q36221
Endosulfan Sulfate	**BRL**	µg/L	0.050	0.0086	1	8081A	10/16/08 21:47	jvogel	Q36221
Endrin	**BRL**	µg/L	0.050	0.0082	1	8081A	10/16/08 21:47	jvogel	Q36221
Endrin Aldehyde	**BRL**	µg/L	0.050	0.016	1	8081A	10/16/08 21:47	jvogel	Q36221
Endrin Ketone	**BRL**	µg/L	0.050	0.0094	1	8081A	10/16/08 21:47	jvogel	Q36221
g-BHC	**BRL**	µg/L	0.050	0.0083	1	8081A	10/16/08 21:47	jvogel	Q36221
g-Chlordane	**BRL**	µg/L	0.050	0.0089	1	8081A	10/16/08 21:47	jvogel	Q36221
Heptachlor	**BRL**	µg/L	0.050	0.016	1	8081A	10/16/08 21:47	jvogel	Q36221
Heptachlor Epoxide	**BRL**	µg/L	0.050	0.0088	1	8081A	10/16/08 21:47	jvogel	Q36221
Toxaphene	**BRL**	µg/L	0.50	0.15	1	8081A	10/16/08 21:47	jvogel	Q36221

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Full Service Analytical & Environmental Solutions

Laboratory Report

10/21/08

ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)
Sample Matrix: Water

Client Sample ID: 33MW-07
Prism Sample ID: 227539
COC Group: G1008354
Time Collected: 10/08/08 12:15
Time Submitted: 10/09/08 15:10

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Sample Preparation:				1000 mL /	10 mL	3510C	10/14/08 8:00	smanivanh	P22810

Surrogate	% Recovery	Control Limits
Tetrachloro-m-xylene (TCMX)	98	40 - 134
Decachlorobiphenyl (DCB)	167	13 - 186

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Mercury by CVAA									
Mercury	**BRL**	mg/L	0.0002	0.000011	1	7470A	10/14/08 16:41	heasler	Q36111
Sample Preparation:				20 mL /	30 mL	7470A	10/14/08 10:50	mbarber	P22785
Metals by ICP									
Arsenic	**BRL**	mg/L	0.010	0.0022	1	6010B	10/14/08 18:39	mcampbell	Q36089
Chromium	**0.0025 J**	mg/L	0.0050	0.00015	1	6010B	10/14/08 18:39	mcampbell	Q36089
Sample Preparation:				50 mL /	50 mL	3010A	10/13/08 8:00	mbarber	P22769

Sample Comment(s):

BRL = Below Reporting Limit

J- Estimated value between the Reporting Limit and the MDL

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Angela D. Overcash, V.P. Laboratory Services

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Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)
Sample Matrix: Water

Client Sample ID: 33MW-08
Prism Sample ID: 227540
COC Group: G1008354
Time Collected: 10/08/08 11:32
Time Submitted: 10/09/08 15:10

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Organochlorine Pesticides by GC/ECD									
4,4'-DDD	**BRL**	µg/L	0.050	0.014	1	8081A	10/16/08 23:13	jvogel	Q36221
4,4'-DDE	**BRL**	µg/L	0.050	0.0086	1	8081A	10/16/08 23:13	jvogel	Q36221
4,4'-DDT	**BRL**	µg/L	0.050	0.014	1	8081A	10/16/08 23:13	jvogel	Q36221
4,4'-Methoxychlor	**BRL**	µg/L	0.050	0.017	1	8081A	10/16/08 23:13	jvogel	Q36221
a-BHC	**BRL**	µg/L	0.050	0.0075	1	8081A	10/16/08 23:13	jvogel	Q36221
a-Chlordane	**BRL**	µg/L	0.050	0.0071	1	8081A	10/16/08 23:13	jvogel	Q36221
Aldrin	**BRL**	µg/L	0.050	0.015	1	8081A	10/16/08 23:13	jvogel	Q36221
b-BHC	**BRL**	µg/L	0.050	0.012	1	8081A	10/16/08 23:13	jvogel	Q36221
Chlordane	**BRL**	µg/L	0.50	0.14	1	8081A	10/16/08 23:13	jvogel	Q36221
d-BHC	**BRL**	µg/L	0.050	0.0077	1	8081A	10/16/08 23:13	jvogel	Q36221
Dieldrin	**BRL**	µg/L	0.050	0.0084	1	8081A	10/16/08 23:13	jvogel	Q36221
Endosulfan I	**BRL**	µg/L	0.050	0.0076	1	8081A	10/16/08 23:13	jvogel	Q36221
Endosulfan II	**BRL**	µg/L	0.050	0.0071	1	8081A	10/16/08 23:13	jvogel	Q36221
Endosulfan Sulfate	**BRL**	µg/L	0.050	0.0086	1	8081A	10/16/08 23:13	jvogel	Q36221
Endrin	**BRL**	µg/L	0.050	0.0082	1	8081A	10/16/08 23:13	jvogel	Q36221
Endrin Aldehyde	**BRL**	µg/L	0.050	0.016	1	8081A	10/16/08 23:13	jvogel	Q36221
Endrin Ketone	**BRL**	µg/L	0.050	0.0094	1	8081A	10/16/08 23:13	jvogel	Q36221
g-BHC	**BRL**	µg/L	0.050	0.0083	1	8081A	10/16/08 23:13	jvogel	Q36221
g-Chlordane	**BRL**	µg/L	0.050	0.0089	1	8081A	10/16/08 23:13	jvogel	Q36221
Heptachlor	**BRL**	µg/L	0.050	0.016	1	8081A	10/16/08 23:13	jvogel	Q36221
Heptachlor Epoxide	**BRL**	µg/L	0.050	0.0088	1	8081A	10/16/08 23:13	jvogel	Q36221
Toxaphene	**BRL**	µg/L	0.50	0.15	1	8081A	10/16/08 23:13	jvogel	Q36221

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Full Service Analytical & Environmental Solutions

Laboratory Report

10/21/08

ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)
Sample Matrix: Water

Client Sample ID: 33MW-08
Prism Sample ID: 227540
COC Group: G1008354
Time Collected: 10/08/08 11:32
Time Submitted: 10/09/08 15:10

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Sample Preparation:				1000 mL /	10 mL	3510C	10/14/08 8:00	smanivanh	P22810

Surrogate	% Recovery	Control Limits
Tetrachloro-m-xylene (TCMX)	109	40 - 134
Decachlorobiphenyl (DCB)	172	13 - 186

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Mercury by CVAA									
Mercury	**BRL**	mg/L	0.0002	0.000011	1	7470A	10/14/08 16:44	heasler	Q36111
Sample Preparation:				20 mL /	30 mL	7470A	10/14/08 10:50	mbarber	P22785
Metals by ICP									
Arsenic	**BRL**	mg/L	0.010	0.0022	1	6010B	10/14/08 18:46	mcampbell	Q36089
Chromium	**0.0018 J**	mg/L	0.0050	0.00015	1	6010B	10/14/08 18:46	mcampbell	Q36089
Sample Preparation:				50 mL /	50 mL	3010A	10/13/08 8:00	mbarber	P22769

Sample Comment(s):

BRL = Below Reporting Limit
J- Estimated value between the Reporting Limit and the MDL
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Level II QC Report

10/21/08

ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)

COC Group Number: G1008354
Date/Time Submitted: 10/09/08 15:10

Metals by ICP, method 6010B

Method Blank	Result	RL	Control Limit	Units					QC Batch ID
Arsenic	-0.001	0.01	<0.005	mg/L					Q36089
Chromium	0.0009	0.005	<0.0025	mg/L					Q36089

Laboratory Control Sample	Result	Spike Amount		Units	Recovery %	Recovery Ranges %			QC Batch ID
Arsenic	0.2565	0.25		mg/L	103	80-120			Q36089
Chromium	0.2557	0.25		mg/L	102	80-120			Q36089

Matrix Spike Sample ID:	Result	Spike Amount		Units	Recovery %	Recovery Ranges %			QC Batch ID
227186 Arsenic	0.2569	0.25		mg/L	103	75-125			Q36089
Chromium	0.2494	0.25		mg/L	98	75-125			Q36089

Matrix Spike Duplicate Sample ID:	Result	Spike Amount		Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
227186 Arsenic	0.257	0.25		mg/L	103	75-125	0	0 - 20	Q36089
Chromium	0.2495	0.25		mg/L	98	75-125	0	0 - 20	Q36089

Mercury by CVAA, method 7470A

Method Blank	Result	RL	Control Limit	Units					QC Batch ID
Mercury	-0.00011	0.0002	<0.0001	mg/L					Q36111

Laboratory Control Sample	Result	Spike Amount		Units	Recovery %	Recovery Ranges %			QC Batch ID
Mercury	0.00982	0.0093		mg/L	105	80-120			Q36111

Matrix Spike Sample ID:	Result	Spike Amount		Units	Recovery %	Recovery Ranges %			QC Batch ID
227538 Mercury	0.00919	0.0093		mg/L	99	80-120			Q36111

Matrix Spike Duplicate Sample ID:	Result	Spike Amount		Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
227538 Mercury	0.00926	0.0093		mg/L	100	80-120	1	0 - 20	Q36111

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Level II QC Report

10/21/08

ENSR C & E, Inc
Attn: MICHAEL JORDAN
7041 Old Wake Forest Rd.
Suite 103
Raleigh, NC 27616

Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)

COC Group Number: G1008354
Date/Time Submitted: 10/09/08 15:10

Organochlorine Pesticides by GC/ECD, method 8081A

Method Blank

	Result	RL	Control Limit	Units	QC Batch ID
4,4'-DDD	ND	0.05	<0.025	µg/L	Q36221
4,4'-DDE	ND	0.05	<0.025	µg/L	Q36221
4,4'-DDT	ND	0.05	<0.025	µg/L	Q36221
4,4'-Methoxychlor	ND	0.05	<0.025	µg/L	Q36221
a-BHC	ND	0.05	<0.025	µg/L	Q36221
a-Chlordane	ND	0.05	<0.025	µg/L	Q36221
Aldrin	ND	0.05	<0.025	µg/L	Q36221
b-BHC	ND	0.05	<0.025	µg/L	Q36221
Chlordane	ND	0.5	<0.25	µg/L	Q36221
d-BHC	ND	0.05	<0.025	µg/L	Q36221
Dieldrin	ND	0.05	<0.025	µg/L	Q36221
Endosulfan I	ND	0.05	<0.025	µg/L	Q36221
Endosulfan II	ND	0.05	<0.025	µg/L	Q36221
Endosulfan Sulfate	ND	0.05	<0.025	µg/L	Q36221
Endrin	ND	0.05	<0.025	µg/L	Q36221
Endrin Aldehyde	ND	0.05	<0.025	µg/L	Q36221
Endrin Ketone	ND	0.05	<0.025	µg/L	Q36221
g-BHC	ND	0.05	<0.025	µg/L	Q36221
g-Chlordane	ND	0.05	<0.025	µg/L	Q36221
Heptachlor	ND	0.05	<0.025	µg/L	Q36221
Heptachlor Epoxide	ND	0.05	<0.025	µg/L	Q36221
Toxaphene	ND	0.5	<0.25	µg/L	Q36221

Laboratory Control Sample

	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
4,4'-DDT	1.20	1	µg/L	120	66-142	Q36221
Aldrin	0.931	1	µg/L	93	62-124	Q36221
Dieldrin	1.02	1	µg/L	102	69-130	Q36221
Endrin	1.14	1	µg/L	114	69-144	Q36221
Heptachlor	1.01	1	µg/L	101	61-136	Q36221

Matrix Spike

Sample ID:		Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
227540	4,4'-DDT	1.20	1	µg/L	120	15-171	Q36221
	Aldrin	0.915	1	µg/L	92	24-142	Q36221
	Dieldrin	0.988	1	µg/L	99	27-148	Q36221

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Project Name: Elizabeth City, NC
Project ID: USCG Support Ctr. (SWMU-33)

COC Group Number: G1008354
Date/Time Submitted: 10/09/08 15:10

Matrix Spike

Sample ID:	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
227540 Endrin	1.14	1	µg/L	114	35-165	Q36221
Heptachlor	1.01	1	µg/L	101	38-150	Q36221

Matrix Spike Duplicate

Sample ID:	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
227540 4,4'-DDT	1.15	1	µg/L	115	15-171	4	0 - 30	Q36221
Aldrin	0.925	1	µg/L	93	24-142	1	0 - 35	Q36221
Dieldrin	0.997	1	µg/L	100	27-148	1	0 - 28	Q36221
Endrin	1.10	1	µg/L	110	35-165	4	0 - 27	Q36221
Heptachlor	0.999	1	µg/L	100	38-150	1	0 - 36	Q36221

#-See Case Narrative

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Full Service Analytical & Environmental Solutions

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CHAIN OF CUSTODY RECORD

PAGE 1 OF 1 QUOTE # TO ENSURE PROPER BILLING:

Client Company Name: ENSR / Aecom
Report To/Contact Name: M. Jordan
Reporting Address: 7041 old wake Forest. Rd Raleigh NC 27616
Phone: 919-872-6600 Fax (Yes) (No)
Email (Yes) (No) Email Address: Mike_Jordan@Aecom.com
EDD Type: PDF X Excel ___ Other ___
Site Location Name: USCG
Site Location Physical Address: Elizabeth City, NC

Project Name: USCG SWMU-33
Short Hold Analysis: (Yes) (No) UST Project: (Yes) (No)
*Please ATTACH any project specific reporting (QC LEVEL I II III IV) provisions and/or QC Requirements
Invoice To: ENSR
Address: 7041 old wake Forest Rd, Raleigh, NC
Purchase Order No./Billing Reference: 09020-066-
Requested Due Date ☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 4 Days ☐ 5 Days
"Working Days" ☐ 6-9 Days X Standard 10 days ☐ Rush Work Must Be Pre-Approved
Samples received after 15:00 will be processed next business day.
Turnaround time is based on business days, excluding weekends and holidays.
(SEE REVERSE FOR TERMS & CONDITIONS REGARDING SERVICES RENDERED BY PRISM LABORATORIES, INC. TO CLIENT)

LAB USE ONLY

	YES	NO	N/A
Samples INTACT upon arrival?	✓		
Received ON WET ICE? Temp. 3.0	✓		
PROPER PRESERVATIVES indicated?	✓		
Received WITHIN HOLDING TIMES?	✓		
CUSTODY SEALS INTACT?			✓
VOLATILES rec'd W/OUT HEADSPACE?			✓
PROPER CONTAINERS used?	✓		

TO BE FILLED IN BY CLIENT/SAMPLING PERSONNEL
Certification: NELAC ___ USACE ___ FL ___ NC X SC ___ OTHER ___ N/A ___
Water Chlorinated: YES ___ NO X
Sample Iced Upon Collection: YES X NO ___

CLIENT SAMPLE DESCRIPTION	DATE COLLECTED	TIME COLLECTED MILITARY HOURS	MATRIX (SOIL, WATER OR SLUDGE)	SAMPLE CONTAINER *TYPE SEE BELOW	NO.	SIZE	PRESERVATIVES	8081	6010 Pb, Cr, Hg					REMARKS	PRISM LAB ID NO.
33MW-05	10/8/08	1105	Water	P / Amber	1/2	500ml / 1L	HNO3 / None	X	X						227538
33 MW-07	10/8/08	1215	Water	"	"	"	"	X	X						227539
33 MW-08	10/8/08	1132	Water	"	"	"	"	X	X						227540

Sampler's Signature: [signature] Sampled By (Print Name): David Babineau Affiliation: ENSR / Aecom

PRESS DOWN FIRMLY - 3 COPIES

Upon relinquishing, this Chain of Custody is your authorization for Prism to proceed with the analyses as requested above. Any changes must be submitted in writing to the Prism Project Manager. There will be charges for any changes after analyses have been initialized.

Relinquished By: (Signature)	Received By: (Signature)	Date	Military/Hours
[signature]	Alex Lassiter	10-9-8	1045
Alex Lassiter	[signature]	10-9-08	1250
David Morris 10-9-08 1500	[signature]	10/9/08	1510

Method of Shipment: NOTE: ALL SAMPLE COOLERS SHOULD BE TAPED SHUT WITH CUSTODY SEALS FOR TRANSPORTATION TO THE LABORATORY. SAMPLES ARE NOT ACCEPTED AND VERIFIED AGAINST COC UNTIL RECEIVED AT THE LABORATORY.
☐ Fed Ex ☐ UPS ☐ Hand-delivered X Prism Field Service ☐ Other ___
COC Group No. G1008354

Additional Comments:

PRISM USE ONLY
Site Arrival Time:
Site Departure Time:
Field Tech Fee:
Mileage:

NPDES:	UST:	GROUNDWATER:	DRINKING WATER:	SOLID WASTE:	RCRA:	CERCLA	LANDFILL	OTHER:
☐ NC ☐ SC	☐ NC ☐ SC	X NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC	☐ NC ☐ SC
☐ ___	☐ ___	☐ ___	☐ ___	☐ ___	☐ ___	☐ ___	☐ ___	☐ ___

*CONTAINER TYPE CODES: A = Amber C = Clear G = Glass P = Plastic; TL = Teflon-Lined Cap VOA = Volatile Organics Analysis (Zero Head Space)

SEE REVERSE FOR TERMS & CONDITIONS

ORIGINAL

ENSR | AECOM

Memorandum

To:	Michael Jordan/Raleigh	**Date:**	November 13, 2008
From:	Rob Davis/Atlanta	**File:**	SWMU-33_2008October.doc
RE:	Validation of soil and groundwater data SWMU-33 Site in Elizabeth City, North Carolina	**Project#:**	09020-066-1100
		CC:	Jennifer Musella/Raleigh

Data validation was performed on two data packages from Prism Laboratories on groundwater samples collected on October 7-8, 2008 at the SWMU-33 Site in Elizabeth City, North Carolina. The data were reviewed for conformance to the requirements of SW-846, *Test Methods for Evaluating Solid Waste Physical/Chemical Methods.* Prism processed the samples and reported the results under sample delivery groups (SDG) G1008219 and G1008354. The following analytical methods were requested on the chains-of-custody (COC) and/or by the project manager:

- Method 8081A – Organochlorine Pesticides by Gas Chromatography,
- Method 6010B – Metals by ICP (Arsenic and Lead),
- Method 7470A – Mercury by CVAA, and
- Method SM2540D – Percent Soilds.

Data qualifiers were applied using the United States Environmental Protection Agency (*USEPA) Contract Laboratory Program National Functional Guidelines for Organic Data Review* (July 2007) and (*USEPA) Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (October 2004) as they applied to the methods used.

Review Elements

Sample data were reviewed for the following parameters:

- Agreement of analyses conducted with the chain of custody (COC) requests;
- Holding times and sample preservation;
- Gas chromatography/mass spectrometry (GC/MS) tunes;
- Initial and continuing calibrations;
- Method blanks/trip blanks/equipment blanks;
- Matrix spike/matrix spike duplicate (MS/MSD) results;
- Field duplicate results;
- Laboratory control sample/laboratory control sample duplicate (LCS/LCSD) results; and
- Quantitation limits and sample results.

Samples

ENSR collected eleven (11) groundwater samples and two (2) duplicate on October 7-8, 2008.

The samples included in this review are listed below:

Laboratory project number G1008219

Lab ID	Sample ID	Lab ID	Sample ID
227186	33MW06	227191	33DUP-02
227187	33MW02	227192	33MW09
227188	33SB13	227193	33MW03
227189	33SB14	227194	33MW01
227190	33SB15	227195	33DUP-1

Laboratory project number G1008354

Lab ID	Sample ID	Lab ID	Sample ID
227538	33MW-05	227540	33MW-08
227539	33MW-07		

Analytical Results

In general, the data are valid as reported and may be used for decision making purposes. Sample data are qualified with "J" (estimated) and "UJ" (not detected, approximate quantitation limit). See Table 1.

Positive results less than the reporting limit, but greater than the method detection limit (MDL) were qualified "J" by the laboratory, as estimated concentrations, due to increased uncertainty near the detection limit.

DISCUSSION

Agreement of Analyses Conducted with COC Requests

Sample reports were checked to verify that the results corresponded to analytical requests as designated on the COC and subsequent communications with ENSR.

Holding Times and Preservation

All samples were analyzed within the holding times required by the methods.

Sample coolers were all received within the 4±2° C requirement for all analyses.

All samples were chemically preserved to the proper pH.

Tunes and Calibrations

Gas chromatography-mass spectrometry hardware tune summaries were not submitted for validation in this Level II data package. Initial and continuing calibration data were not submitted for validation.

Blanks

No target analytes were detected at concentrations exceeding the reporting limits in the laboratory blanks for the analyses requested on the COC.

LCS/LCSD Results

All LCS/LCSD recoveries were within the quality control limits.

MS/MSD Recoveries

All MS/MSD recoveries were within the advisory limits with the following exceptions:

Method 8081A: The MS/MSD was outside of the advisory limits biased high for compound 4,4'-DDT. The sample chosen by the laboratory for the MS/MSD was non-client specific; therefore, no data qualification was required.

Surrogate Recoveries

All of the surrogate recoveries were within the quality control limits.

Field Duplicate Results

Two field duplicates were collected on samples 33SB13 and 33MW01.The results for the primary and field duplicate samples were non-detects, with the exception of those listed in Table 2. The advisory limit for the %RPD is 30% for aqueous samples and 50% for soil samples, or the difference between the primary and field duplicate results must be less than or equal to the reporting limit for results less than five times the reporting limit. All field duplicate %RPDs were acceptable with the exception of the compounds in bold text. These compounds were qualified. See Table 1.

Table 1
Qualified Analytical Data

Sample ID	Method	Analyte	Lab Result	Lab Qualifier	Validated Result	Validation Qualifier[1]	Units	Reason Codes[2]
33SB13	8081A	4,4'-DDE	11		11	J	µg/Kg	FD
33SB13	8081A	4,4'-DDT	67		67	J	µg/Kg	FD
33DUP-02	8081A	4,4'-DDE	BRL		2.6	UJ	µg/Kg	FD
33DUP-02	8081A	4,4'-DDT	BRL		2.6	UJ	µg/Kg	FD

[1]: USEPA-defined data validation qualifiers applied in this data evaluation:
J: The analyte was positively identified. The associated numerical value is the approximate concentration of the analyte in the sample.
UJ: The analyte was analyzed for, but was not detected. The reported quantitation limit is approximated and may be inaccurate or imprecise.

[2]: Reason Codes:
FD: Field duplicate RPD is outside of the advisory limits.
µg/L: micrograms per liter

Table 2A
Field Precision

Field ID	Analyte	Sample 33-MW-01	Duplicate 33 DUP-01	Units	% RPD
33MW-01 33DUP-01	a-Chlordane	1.6	1.6	µg/L	0
	Chlordane	16	17	µg/L	6
	Dieldrin	0.31	0.31	µg/L	0
	g-Chlordane	2.4	2.4	µg/L	0
	Heptachlor Epoxide	0.93	0.95	µg/L	2
	Chromium	0.0013 J	0.0013 J	mg/L	0

J: The analyte was positively identified. The associated numerical value is the approximate concentration of the analyte in the sample.

Table 2B
Field Precision

Field ID	Analyte	Sample 33-SB13	Duplicate 33 DUP-02	Units	% RPD
33SB13 33DUP-02	Percent Solid	86.9	77.6	%	11
	4,4'-DDE	**11**	**BRL**	**µg/Kg**	**NC**
	4,4'-DDT	**67**	**BRL**	**µg/Kg**	**NC**
	Mercury	0.071	0.065	mg/Kg	9
	Arsenic	10	10	mg/Kg	0
	Chromium	19	19	mg/Kg	0

NC: RPD could not be calculated.
BRL: Below reporting limit.

Appendix C

Photo Log

Photo 1. View of willow trees at SWMU 33 facing east (October 2008).

Photo 2. View of 3 willow trees at SWMU 33 planted in April 2008 facing northeast (October 2008).

Photo 3. View of willow trees at SWMU 33 facing northwest (October 2008).

Photo 4. Willow tree at SWMU 33 facing northeast; installed April 2008 (October 2008).

About AECOM Environment

Evolving to better serve global clients, AECOM has formed AECOM Environment—a new global business line that utilizes the environmental management resources of ENSR, Earth Tech, STS and Metcalf & Eddy. With over 4200 staff worldwide in 20 countries, AECOM Environment is one of five new globally integrated business lines of AECOM (AECOM Water, AECOM Transportation, AECOM Design, AECOM Energy and Power). As AECOM Environment, we can offer clients broader and deeper environmental health and safety services with greater technical expertise across greater geographies—closer to sites and facilities. Plus, we can deliver more value by leveraging the full resources of AECOM's worldwide staff of 41,000 people in 450 offices. Our commitment to the success of your projects and your organization is our top priority, as we harness the global capabilities of AECOM.

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